## NATURALIZING A "FOREIGN MENACE": Trachoma, the Geography of Disease, and Public Health in America, 1897-1938

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### **Table of Contents**

Page	e
List of Abbreviationsiv	
Introduction	
Trachoma among European Immigrants11	
Trachoma among Appalachian Americans22	
Trachoma among Native Americans	
The Legacy of Trachoma	-
Figures	,
Bibliography72	
Bibliographic Essay	)

# List of Abbreviations

AMA	American Medical Association
BIA	Bureau of Indian Affairs
TR	Theodore Roosevelt (Boarding School)
USPHS	United States Public Health Service
WHO	World Health Organization

#### Introduction

At the sixty-fourth annual meeting of the American Medical Association's Section on Ophthalmology in June 1913, three physicians from the U.S. Public Health Service led a groundbreaking symposium on trachoma. Up until this point, American health officials believed this blinding eye disease was almost exclusively imported into the country through immigrant bodies.<sup>1</sup> Dr. John McMullen, the first presenter, summarized the decade-old system for excluding trachoma at the borders. Since 1897, U.S. Public Health Service (USPHS) officers had performed medical inspections on all "aliens" arriving in the United States.<sup>2</sup> Anyone suffering from the bacterial infection was denied entry, and trachoma became the leading cause of medical deportation during this period.<sup>3</sup> However, public health surveys had recently uncovered endemic foci of trachoma within the United States. According to the second presenter, Dr. Joseph Schereschewsky, trachoma was "a veritable scourge among the Indians."<sup>4</sup> In the previous fall, fourteen USPHS officers had surveyed one-eighth of the Native American population across the continental U.S. (39,231 individuals) and discovered that 22.7 percent were infected.<sup>5</sup> Similarly, the final speaker, Dr. Joseph Stucky, raised alarm over trachoma's prevalence in white Appalachian communities. His own investigations, also carried out in 1912, revealed that 12.5

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<sup>&</sup>lt;sup>1</sup> John McMullen, "Trachoma, Its Prevalence and Control among Immigrants," In *Transactions of the Section on Ophthalmology of the American Medical Association at the Sixty-Fourth Annual Session, held at Minneapolis, Minn., June 17 to 20, 1913.* (Chicago: AMA Press, 1913), 415.

<sup>&</sup>lt;sup>2</sup> Taliaferro Clark and Joseph W. Schereschewsky, *Trachoma: its Character and Effects* [Treasury Department of the U.S. Public Health and Marine Hospital Service] (Washington, DC: Government Printing Office, 1907), 32. <sup>3</sup> Ibid, 415-416.

<sup>&</sup>lt;sup>4</sup> Joseph W. Schereschewsky, "Trachoma among the Indians," In *Transactions of the Section on Ophthalmology of the American Medical Association at the Sixty-Fourth Annual Session, held at Minneapolis, Minn., June 17 to 20, 1913.* (Chicago: AMA Press, 1913), 425.

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<sup>&</sup>lt;sup>5</sup> Ibid, 426.

percent of the mountain people of eastern Kentucky were trachomatous.<sup>6</sup> This AMA symposium signaled a critical turning point in trachoma's social history. Previously an "exotic disease," trachoma evolved into a "public health problem of the highest importance" – yet one largely confined to groups living at the margins of American society.<sup>7</sup>

Today, trachoma is almost exclusively a disease of poverty.<sup>8</sup> Caused by the bacterium *Chlamydia trachomatis*, this contagious eye disease thrives in crowded conditions that lack basic sanitation or adequate water supply.<sup>9</sup> Transmission occurs through direct contact with ocular or nasal discharge, contact with shared objects (such as a wash towel), or through flies that cluster around the eyes and face (Figure 1).<sup>10</sup> Now endemic in 56 countries, trachoma is especially prevalent in Africa, where nearly 70 percent of cases are found.<sup>11</sup> According to the World Health Organization (WHO), over 40 million people are actively infected, and 1.3 million have been blinded by the disease.<sup>12</sup> As the leading cause of preventable blindness worldwide, trachoma remains a neglected public health challenge for much of the world's population.<sup>13</sup>

Derived from the Greek *trachys* for "roughness," trachoma's most distinctive symptom is the formation of granulated eyelids. Trachoma typically first strikes in childhood, producing itchy, watery, and painful eyes. After an initial inflammatory phase, the inner surface of the upper eyelid (conjunctiva) begins to swell and form granulations (Figure 2). Repeat infections

<sup>&</sup>lt;sup>6</sup> Joseph A. Stucky, "Trachoma among the Natives of the Mountains of Eastern Kentucky," In *Transactions of the Section on Ophthalmology of the American Medical Association at the Sixty-Fourth Annual Session, held at Mineapolis, Minn., June 17 to 20, 1913.* (Chicago: AMA Press, 1913), 443.

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<sup>&</sup>lt;sup>7</sup> McMullen, "Trachoma, Its Prevalence and Control among Immigrants," 414, 423.

<sup>&</sup>lt;sup>8</sup> Pashtoon, Kasi M. et al., "Blinding Trachoma: A Disease of Poverty." *PLoS Medicine* 1 no. 2 (2004): 105.

<sup>&</sup>lt;sup>9</sup> World Health Organization, "WHO Alliance for the Global Elimination of Blinding Trachoma by the year 2020." *Weekly Epidemiological Record.* 39 no. 89 (2014): 422.

<sup>&</sup>lt;sup>10</sup> Matthew J. Burton and David C.W. Mabey, "The Global Burden of Trachoma: A Review." *PLoS Neglected Tropical Diseases*. 3 no. 10 (2009): 2.

<sup>&</sup>lt;sup>11</sup> World Health Organization, "WHO Alliance for the Global Elimination of Blinding Trachoma by the year 2020," 421.

<sup>&</sup>lt;sup>12</sup> Burton and Mabey, "The Global Burden of Trachoma: A Review," 2.

<sup>&</sup>lt;sup>13</sup> Kasi et al., "Blinding Trachoma," 107-108.

contribute to scarring and distortions of the eyelid (Figure 3). This leads to trichiasis, a condition where the eyelashes grow inward and rub against the eyeball. Left untreated, patients can experience corneal opacification, visual impairment, and irreversible blindness (Figure 4). Trachoma is a chronic condition. Patients alternate between latent and active infection, and many experience repeated rounds of infections.<sup>14</sup> Trachoma's highly visible and disabling sequelae contribute to stigma associated with the disease.

Trachoma is believed to have originated in Central Asia and North Africa. Confined to this region since antiquity, *Egyptian ophthalmia* first became a global problem after Napoleon's invasion of Egypt in 1798. As Napoleon's soldiers returned to Europe, they brought with them a blinding eye disease that quickly spread to civilian populations.<sup>15</sup> In the early twentieth century, American health officials mapped this historical narrative onto recent patterns of immigration. Now, they believed trachoma was being exported out of Europe and brought into the U.S. through immigrant bodies.<sup>16</sup>

In the 1890s, American physicians began to raise alarm over trachoma outbreaks in major Atlantic port cities.<sup>17</sup> During this time, Congress passed an act transferring immigration from state to federal control. The 1891 Immigration Act set up compulsory medical inspections for the purpose of excluding "idiots, insane persons, paupers or persons likely to become a public charge, and persons suffering from a loathsome or a dangerous contagious disease."<sup>18</sup> Trachoma was the first disease named in the "dangerous contagious" category.<sup>19</sup> Its tendency to cause

<sup>&</sup>lt;sup>14</sup> Ibid, 105-106.

<sup>&</sup>lt;sup>15</sup> Clark and Schereschewsky, *Trachoma: its Character and* Effects, 14.

<sup>&</sup>lt;sup>16</sup> McMullen, "Trachoma, Its Prevalence and Control among Immigrants," 414-415.

<sup>&</sup>lt;sup>17</sup> Ibid, 415-416.

 <sup>&</sup>lt;sup>18</sup> U.S. Congress. An act in amendment to the various acts relative to immigration and the importation of aliens under contract or agreement to perform labor, 51st Congress, 2nd Sess., 26 Stat. 1084, Chap 51. Washington, 1891.
<sup>19</sup> U.S. Bureau of Public Health and Marine-Hospital Service, *Book of Instructions for the Medical Inspection of Immigrants* (Washington, DC: Government Printing Office, 1903), 7.

vision loss also linked sufferers to the "likely to become a public charge" clause.<sup>20</sup> Immigrant inspection manuals published by the Office of the Surgeon General listed specific nationalities that were especially likely to carry the disease.<sup>21</sup> The trachoma eye examination was a crucial part of medical inspection, and diagnosis nearly always led to deportation.<sup>22</sup> Until 1913, trachoma stood as a reminder of immigrants' biological and social threat to the country.

As reports of the disease surfaced from within America's interior, attention rapidly shifted away from the border. Beginning in 1912, USPHS officials carried out public health surveys to investigate the rate and severity of trachoma in America's heartland. They mapped one endemic region consisting of rural Appalachian communities, termed America's "trachoma belt," and another on Native American reservations west of the Mississippi. Both groups were geographically isolated from recent immigrants.<sup>23</sup>

The AMA Section on Ophthalmology's trachoma symposium in June 1913 brought together these three dimensions of the American trachoma story, and mobilized the public health establishment. Later that month, President Woodrow Wilson signed a law launching the first large-scale government program against trachoma. The same USPHS officials who had worked to exclude trachoma at immigration ports now led campaigns to treat and control the disease within America's heartland.

Historian Charles Rosenberg has described the complex social and biological dimensions of medicine. Medical knowledge, he argued, is not "value-free... but, at least in part, a socially constructed belief system, a reflection of arbitrary social arrangements, social need, and the

<sup>&</sup>lt;sup>20</sup> Ibid, 8.

<sup>&</sup>lt;sup>21</sup> Ibid, 7-8.

<sup>&</sup>lt;sup>22</sup> Anne-Emanuelle Birn, "Six Seconds per Eyelid: The Medical Inspection of Immigrants at Ellis Island, 1892– 1914." *Dynamis*. 17 (1997): 292.

<sup>&</sup>lt;sup>23</sup> Shannen K. Allen and Richard D. Semba, "The Trachoma "Menace" in the United States, 1897–1960." *Survey of Ophthalmology*. 47 no. 5 (2002): 501.

distribution of power."<sup>24</sup> Epidemics are episodes that possess a "public character and dramatic intensity."<sup>25</sup> Because an epidemic is spatially and temporally well-defined, it serves as a "useful sampling device [that reflects] a particular configuration of institutional forms and cultural assumptions."<sup>26</sup>

Drawing from Rosenberg's analogy, certain endemic diseases follow a similar pattern. In the early twentieth century, trachoma was endemic to southern and eastern Europe (the major source of immigrants arriving on the East Coast), rural Appalachia, and Indian reservations. From the perspective of public health officials, the disease unfolded over sharply delineated clinical and epidemiological trajectories. As such, the American trachoma story can be divided into three "epidemics." Each began with legislation or a USPHS investigation, escalated in a series of interventions to control the disease, and ended when the disease was either firmly under control or no longer seen as a threat. The episodes were separated in time and location, affected discrete patient populations, and inspired different reactions from health officials. Among immigrants, trachoma was a foreign menace managed through strict border control. For Appalachian whites and Native Americans, trachoma posed a constant threat and necessitated public health interventions. The specific form and content of the trachoma elimination programs differed vastly, based on ideas about patient culpability for disease. All three episodes were linked by both the disease entity and federal agencies responsible for controlling the disease's spread. Using trachoma as a "sampling device" will provide insight into the interaction of marginalized groups with the public health establishment. An analysis of trachoma thus serves as a compelling study of how a biological condition gives rise to complex identities and histories.

<sup>&</sup>lt;sup>24</sup> Charles E. Rosenberg, "Disease and Social Order in America: Perceptions and Expectations." *The Milbank Quarterly.* 64 no. 1 (1986): 35.

 <sup>&</sup>lt;sup>25</sup> Charles E. Rosenberg, "What Is an Epidemic? AIDS in Historical Perspective." *Daedalus*. 118 no. 2 (1989): 2.
<sup>26</sup> Ibid.

The federal government's efforts to investigate and control trachoma first centered on immigrants at ports of entry, from 1897 to 1924; then on rural whites residing in America's "trachoma belt," from 1912 to 1935; and simultaneously on Native Americans living on reservations, from 1912 to the 1940s. This thesis will explore the ways that health officials mobilized against trachoma in each population. By comparing and contrasting the three episodes, I will show that trachoma was repeatedly redefined based on prevailing attitudes toward the people who were infected. Although scientific understanding of trachoma lagged until the etiological agent *Chlamydia trachomatis* was finally isolated in 1957, trachoma's social identity remained in constant flux.<sup>27</sup>

This thesis will argue that trachoma existed in a nativist framework at American borders and was used to validate prejudices against foreigners. Entire immigrant groups were assigned a label that fit less than 1 percent of individuals who were actually infected.<sup>28</sup> Once trachoma was discovered to be endemic in settled white communities, suspicion against trachomatous patients evolved into sympathy toward their plight. When dealing with Appalachian whites, health officials focused on patients' rich cultural history and uniquely American identity. Trachoma was reinvented from a foreign menace that called for exclusion to a national problem that deserved a collective response. In this framework, trachoma inspired comprehensive interventions for disease treatment and prevention. But for Native Americans, trachoma once again reinforced discriminatory attitudes about racial and cultural inferiority. Trachoma was seen as evidence of the backwardness of Native living and justification for paternalistic policies

<sup>&</sup>lt;sup>27</sup> F.F. T'ang, H.L. Chang, Y.T. Huang, and K.C. Wang, "Studies on the etiology of trachoma with special reference to isolation of the virus in chick embryo." *Chinese Medical Journal*. 75 no. 6 (1957): 429-47.

<sup>&</sup>lt;sup>28</sup> Howard Markel, "'The Eyes Have It": Trachoma, the Perception of Disease, the United States Public Health Service, and the American Jewish Immigration Experience, 1897-1924." *Bulletin of the History of Medicine*. 74 no. 3 (2000): 526.

enacted on Native peoples. Native American patients were subject to a range of experimental treatments. Scientific investigations led to the first effective cure in 1938, sulfanilamide therapy, which tamed the rhetoric surrounding this "national menace."<sup>29</sup> Overall, these episodes illustrate how changing scientific, social, and cultural perspectives on trachoma intersected to shape public health responses.

#### Trachoma among European Immigrants (1897 – 1924)

During the third major wave of immigration, lasting from 1880 to 1930, more than 23 million newcomers arrived in the United States. The majority came from Eastern and Southern Europe and East Asia. Like "old" immigrants who had arrived from Northern and Western Europe in the nineteenth century, these "new" immigrants sought economic opportunity and personal freedom.<sup>30</sup> But their unprecedented volume, distinctive physical traits and cultural values, and low socioeconomic status bolstered protests against the "incessant influx" of foreigners.<sup>31</sup>

American industrialization of the late nineteenth century contributed to overcrowding, filth, disease, and economic downturn in major American cities. As European immigrants seeking jobs in manufacturing settled into urban centers, they became scapegoats for the squalor and decay of these spaces. Newspapers informed the American public that immigrants were "crowding the slums of our great cities, breeding want, disease, and crime."<sup>32</sup> New York, like other large cities, now served as what one journalist called the "dumping ground for the refuse of Europe."<sup>33</sup> An 1894 report by U.S. Commissioner of Labor Carroll Wright found that 44 percent

<sup>&</sup>lt;sup>29</sup> Arthur A. Siniscal, "The Trachoma Story," Public Health Reports 70 no.5 (1955): 505.

<sup>&</sup>lt;sup>30</sup> Leon F. Bouvier, *Peaceful Invasions: Immigration and Changing America*. (New York: University Press of America, 1991), 13-14.

<sup>&</sup>lt;sup>31</sup> Edward O. Shakespeare, "Necessity for a National Quarantine," *Forum* 14, no. 5 (1893): 579.

<sup>&</sup>lt;sup>32</sup> "The New Immigration Law." San Francisco Bulletin, April 1, 1891, 2.

<sup>&</sup>lt;sup>33</sup> "Undesirables: Another Phase of Immigration." San Francisco Bulletin, May 4, 1891, 1.

of the foreign-born population lived in just 124 major cities. Within slum districts, they represented anywhere from forty to sixty percent of residents.<sup>34</sup> Citing this report, a commentator in one sociology journal warned in 1895 that the "alien laborer" belonged to the "lowest, most ignorant, and altogether undesirable part of the community."<sup>35</sup> Not only did immigrants burden American "charitable or corrective institutions," the writer argued that they also refused to adopt the "American way of living... [Instead they lived] more like cattle than like human beings, with little or no regard for sanitation or the common decencies of life."<sup>36</sup> And so, the article warned, immigrants would have "a very real effect" on the "health of the body politic."<sup>37</sup> The new arrivals were framed as social and biological threats to the American public.

Anti-immigrationists argued that restriction at the borders was necessary for safeguarding the public's health. One resolution by the American Patriotic League claimed that "a foreign plague is at our doors... unrestricted immigration is the cause of all our woes."<sup>38</sup> As reported in the *New York Times*, the resolution demanded the "adoption and enforcement of such measures as will effectually protect our loved ones and ourselves from foreign contagion."<sup>39</sup> Similarly, in the Immigration Restriction League's testimony to the Senate Commission on Immigration, members explained that "we do not hesitate to prohibit the importation of cattle from a foreign country where a cattle disease is present."<sup>40</sup> And yet, they noted, "there are certain parts of Europe from which all medical men... would agree that it would be better for the American race

<sup>&</sup>lt;sup>34</sup> Carroll D. Wright. *The Slums of Baltimore, Chicago, New York, and Philadelphia*. (Washington, DC: Government Printing Office, 1894), 36.

<sup>&</sup>lt;sup>35</sup> John W. Knight. "The Working Man and Immigration." *The Charities Review* 4 (1895): 365, 363.

<sup>&</sup>lt;sup>36</sup> Ibid, 373, 365.

<sup>&</sup>lt;sup>37</sup>Ibid, 375.

<sup>&</sup>lt;sup>38</sup> "Immigrants Not Wanted." New York Times, September 2, 1892, 5.

<sup>&</sup>lt;sup>39</sup> Ibid.

<sup>&</sup>lt;sup>40</sup> U.S. Immigration Commission. *Reports of the Immigration Commission: Statements and Recommendations Submitted by Societies and Organizations Interested in the Subject of Immigration.* Senate Document No. 764, 61st Cong., 3rd Sess., Vol. XLI. (Washington, DC: Government Printing Office, 1911), 107.

if no aliens at all were admitted."<sup>41</sup> The "importation" of a disease that would endanger the "American race" was a theme that entangled immigration with eugenics and public health policy.

Historian Alan Kraut has argued that nativist prejudices become medicalized when a foreign group is viewed as a health menace to the native-born population, creating a powerful fear of contamination from abroad.<sup>42</sup> Throughout the eighteenth and nineteenth centuries, Americans stigmatized entire groups of foreigners for carrying disease. During the yellow fever outbreak of 1793, Philadelphians renamed the disease "Palatine fever", believing it to have originated from German Palatine settlers.<sup>43</sup> From 1830 to the 1850s, cholera was linked to the arrival of Irish Catholic immigrants.<sup>44</sup> By the 1880s, increased immigration from Eastern and Southern Europe revived accusations that the newcomers were both un-hygienic and un-American. In 1893, one popular American magazine explained how these individuals vectored diseases from the Old World to the New World:

Hundreds of thousands of European immigrants who annually reach our country, after starting from or passing through localities infected with contagious diseases, frequently, in their persons or in their pestiferous clothing and effects, carry with them the active germs of these diseases. The herding of these immigrants into the miserably ventilated and unsanitary quarters usually provided for the steerage passengers on Atlantic steamships, the modern rapidity of ocean travel, and the great facility with which these swarms of people are soon distributed all over our country, combine to multiply the danger to the public health.<sup>45</sup>

<sup>&</sup>lt;sup>41</sup> Ibid.

<sup>&</sup>lt;sup>42</sup> Alan M. Kraut, *Silent Travelers: Germs, Genes, and the "Immigrant Menace,"* (Baltimore: Johns Hopkins University Press, 1994), 2-3.

<sup>&</sup>lt;sup>43</sup> Ibid, 26.

<sup>&</sup>lt;sup>44</sup> Ibid, 33.

<sup>&</sup>lt;sup>45</sup> Shakespeare, "Necessity for a National Quarantine," 581.

Business leaders, progressive reformers, organized labor, and nativists united in urging for systematic methods of screening and excluding immigrants.<sup>46</sup> These measures were instrumental in preventing foreign diseases – and foreign bodies – from entering American soil.

The relationship between immigration and contagion was codified in federal policy at the turn of the twentieth century. The first quarantine station and hospital in America was built at the port of Philadelphia in 1799 in response to the yellow fever outbreak which had killed an estimated one-tenth of individuals in the nation's capital.<sup>47</sup> However, not until almost a century later did the government implement a unified national system for excluding diseases at American borders. In March 1891, Congress passed an act transferring immigration from state to federal control under the newly established Bureau of Immigration. The act mandated the exclusion of "idiots, insane persons, paupers or persons likely to become a public charge, [and] persons suffering from a loathsome or a dangerous contagious disease."<sup>48</sup> Officers from the U.S. Marine Hospital Service (which was later renamed the U.S. Public Health and Marine Hospital Service in 1902, and the U.S. Public Health Service in 1912) were responsible for carrying out medical inspections on all immigrants arriving in the U.S. The act also required steamship companies to examine passengers prior to departure; companies were liable for the cost of detaining or deporting any sick individuals. Finally, it commissioned the construction of the Ellis Island Station and Hospital in New York harbor, which opened in the following year.<sup>49</sup>

<sup>&</sup>lt;sup>46</sup> Birn, "Six Seconds per Eyelid: The Medical Inspection of Immigrants at Ellis Island, 1892–1914," 288.

<sup>&</sup>lt;sup>47</sup> Kraut, *Silent Travelers*, 30.

 <sup>&</sup>lt;sup>48</sup> U.S. Congress. An act in amendment to the various acts relative to immigration and the importation of aliens under contract or agreement to perform labor, 51st Congress, 2nd Sess., 26 Stat. 1084, Chap 51. Washington, 1891.
<sup>49</sup> Elizabeth Yew, "Medical Inspection of Immigrants at Ellis Island, 1891-1924." Bulletin of the New York Academy of Medicine 56 (1980): 488.

The notion of otherness assigned to trachoma arose from the exaggerated belief that trachoma was an "imported disease."<sup>50</sup> In 1897, Surgeon General Walter Wyman issued a circular certifying trachoma as a "highly contagious disease," and grounds for immediate exclusion under the 1891 Immigration Act.<sup>51</sup> Wyman claimed that this blinding eye disease was inherently foreign, having been introduced to the U.S. by "immigrants from the eastern end of the Mediterranean, Polish and Russian Jews, Armenians and others from that locality."52 Reports by Wyman's colleagues at the USPHS also constructed trachoma as an "immigrant disease." The 1903 Book of Instructions for the Medical Inspection of Immigrants named trachoma first among the excludable Class A diseases ("Persons suffering from dangerous contagious disease").<sup>53</sup> The handbook warned USPHS officers about the specific national groups ("Syrians, Greeks, Armenians, Russians, and Finns") most likely to be infected.<sup>54</sup> Another trachoma pamphlet tied the disease's ecology directly to immigrants' living conditions. Passed Assistant Surgeons Taliaferro Clark and Joseph Schereschewsky identified the steamship's filth and confinement as providing ideal breeding conditions for trachoma; germs proliferated most easily on the "shipboard," as well as in "tenement houses," and in "city slums."<sup>55</sup> According to Clark and Schereschewsky, trachoma was "frequent along the Atlantic seaboard... and practically always in persons either of foreign birth or foreign parentage."<sup>56</sup> For public health officials, "foreignness" thus represented an important risk factor for infection. Due to trachoma's contagiousness, a

<sup>&</sup>lt;sup>50</sup> Clark and Schereschewsky, *Trachoma: its Character and Effects*, 15.

<sup>&</sup>lt;sup>51</sup> Letter from Dr. Walter S. Wyman to Frank H. Larned, Acting Commissioner General of Immigration, 30 October 1897, in *Copies of Letters Sent by the Office of the Surgeon General, 1872–1918*, vol. 137, October 13 – November 10, 1897, pp. 303–304, RG 90, National Archives, College Park, Md. (Cited in Markel, "The Eyes Have It": Trachoma," 533).

<sup>&</sup>lt;sup>52</sup> Ibid.

 <sup>&</sup>lt;sup>53</sup> U.S. Bureau of Public Health and Marine-Hospital Service. *Book of Instructions for the Medical Inspection of Immigrants*. (Washington, DC: Government Printing Office, 1903), 7.
<sup>54</sup> Ibid, 7-8.

<sup>&</sup>lt;sup>55</sup> Clark and Schereschewsky, *Trachoma: its Character and Effects*, 16.

<sup>&</sup>lt;sup>56</sup> Ibid, 15.

single passenger could infect everyone aboard the steamship. After disembarking, immigrants could then transmit this blinding eye infection to healthy Americans.

The trachoma eye examination functioned as a crucial part of immigrant medical inspection. During the peak years of 1892 to 1924, Ellis Island served as the gateway for 80 percent of immigrants arriving in the U.S. Each day, an average of 2,000 to 5,000 individuals passed through line inspection.<sup>57</sup> After a steamship underwent quarantine inspection in New York harbor, USPHS officers boarded and examined passengers in the first- and second-class cabins. Upon docking, those travelling in third-class or steerage were transported by barge to the main building on Ellis Island (Figure 5). Within the Great Hall they entered into line inspection. Immigrants were arranged into two single-file lines (later increased to four lines in 1902) with two USPHS officers staffing each line. The first physician scrutinized newcomers as they walked past, looking for signs of deformity or disease. He placed a chalk mark on the clothing of anyone with a suspicious symptom (E for eyes or trachoma, L for lameness, and so forth). The second physician everted each immigrant's eyelid using his finger or a buttonhook to check for trachoma (Figure 6). Detained individuals were subject to more thorough physical examination, which sometimes required several days of detention and monitoring at a nearby hospital.<sup>58</sup>

As historians have noted, line inspection accommodated the enormous number of subjects by favoring speed and "snap-shot" diagnosis over sound scientific judgment.<sup>59</sup> However, the trachoma eye exam held a special role in immigrant medical inspection. Unlike fatal diseases such as cholera, typhus and smallpox that had dominated public discourse in the eighteenth and

<sup>&</sup>lt;sup>57</sup> Yew, "Medical Inspection of Immigrants at Ellis Island, 1891-1924," 489.

<sup>&</sup>lt;sup>58</sup> George W. Stoner, "Immigration – The Medical Examination of Immigrants and What the Nation is Doing to Debar Aliens Afflicted with Trachoma," *Medical News* (June 10, 1905): 1067-1071.

<sup>&</sup>lt;sup>59</sup> See Birn, "Six Seconds per Eyelid: The Medical Inspection of Immigrants at Ellis Island, 1892–1914," 316; Amy L. Fairchild, "The Rise and Fall of the Medical Gaze: The Political Economy of Immigrant Medical Inspection in Modern America," *Science in Context* 19 no.3 (2006): 340-344.

nineteenth centuries, trachoma was well-suited for the line inspection process. Trachoma patients wore highly visible features on their face that could be detected at a cursory glance. Consequently, trachoma became a potent means for labeling and excluding immigrants.

The 1907 trachoma pamphlet for USPHS inspectors divided the disease into three stages. Infection began with an acute attack. During the "acute stage," patients had watery, red and itchy eyes, photophobia, and swollen conjunctiva.<sup>60</sup> Because these symptoms were common to benign eye inflammations, the pamphlet recommended that such cases be "held under observation for one or two weeks."<sup>61</sup> After this waiting period, trachoma typically entered the "connective tissue stage."<sup>62</sup> The outward signs of inflammation disappeared and were replaced by extensive scarring and studded granulations on the inner eyelid.<sup>63</sup> Noting that these two features were "invariable and distinctive" signs of trachoma, the pamphlet cautioned that only after the disease had reached this stage could physicians make a definitive diagnosis.<sup>64</sup> Finally, in the "contraction stage" the subconjunctival tissue was completely destroyed, leaving behind a smooth, pale, and scarred conjunctiva. Patients experienced trichiasis, an event where the eyelashes turned inward and scraped against the cornea, leading to complete blindness in three-quarters of untreated cases.<sup>65</sup>

Although USPHS officers possessed a complex clinical understanding of trachoma, they also recognized major challenges to diagnosing the disease. Due to prolonged confusion over trachoma's etiological agent, which was isolated half a century later, laboratory testing was inconclusive. Instead, physicians relied on brief clinical encounters. USPHS officers Clark and

<sup>&</sup>lt;sup>60</sup> Clark and Schereschewsky, Trachoma: its Character and Effects, 9.

<sup>61</sup> Ibid.

<sup>62</sup> Ibid.

<sup>&</sup>lt;sup>63</sup> Ibid, 9-10.

<sup>&</sup>lt;sup>64</sup> Ibid, 10.

<sup>65</sup> Ibid. 8.

Schereschewsky observed that symptoms could vary widely, depending on the "severity of the infection, the intensity of the inflammatory process, the natural resistance of the tissues, and the varying density of subconjunctival tissue."<sup>66</sup> Furthermore, certain symptoms (inflammation, eyelid scarring, corneal clouding, and ingrown eyelashes) could be the result of any number of scenarios: acute conjunctivitis, dust blowing into the eyes, exhaustion from the arduous sea voyage, among other causes. These conditions would not have barred an immigrant from admission. Complicating matters even more, trachoma was known to be a chronic condition that unfolded over months or years, and alternated between phases of virulence and remission.<sup>67</sup> Early nineteenth-century physicians disagreed over trachoma's gravity and contagiousness. One medical textbook declared that patients were only contagious when the eyelids were secreting fluid; scarred tissue in the absence of inflammation indicated that the disease had been cured.<sup>68</sup> In contrast, Commissioner of Immigration Terrence Powderly urged USPHS inspectors to apply strict standards and exercise utmost precaution, for fear that an infected individual might slip through.<sup>69</sup> The lack of consensus over diagnosing trachoma was problematic, particularly for foreigners treading the fine line between admission and exclusion.

Faced with the threat of infection, USPHS officers announced that "the best national prophylaxis is... the exclusion of aliens suffering from trachoma."<sup>70</sup> According to the trachoma pamphlet, USPHS physicians "have but little to do with the curative treatment of trachoma. They are of necessity restricted to the more or less simple remedial measures used to determine the

<sup>&</sup>lt;sup>66</sup> Ibid. 11.

<sup>&</sup>lt;sup>67</sup> Ibid, 14.

<sup>&</sup>lt;sup>68</sup> Charles H. May. *Manual of the Diseases of the Eye for Students and General Practitioners,6th ed.* (New York: William Wood and Company, 1909), 97-100.

<sup>&</sup>lt;sup>69</sup> Terrence V. Powderly, "Immigration's Menace to the National Health," *North American Review* 175 no. 548 (1902): 57.

<sup>&</sup>lt;sup>70</sup> Clark and Schereschewsky, *Trachoma: its Character and Effects*, 32.

nature of disease under observation."<sup>71</sup> Any immigrant with a positive diagnosis from the eye exam was sent to the Board of Special Inquiry, whose three immigration officers determined the fates of passengers not "clearly and beyond a doubt entitled to land."<sup>72</sup> The small number of patients who were ruled as treatable and possessing sufficient funding were sent to Ellis Island Hospital or another local hospital. The treatment regimens were prolonged, costly, and largely unsuccessful. In the absence of an effective cure, physicians could only "facilitate nature's attempts at a cure [or] restrict as far as possible corneal complications."<sup>73</sup> The mildest cases required inpatient stays lasting one to three months (Figure 7). More severe cases demanded six months to years of treatment.<sup>74</sup> Overall, fewer than 200 immigrants diagnosed with trachoma were treated within American borders between 1894 and 1924. In over 95 percent of cases, diagnosis ended with medical deportation.<sup>75</sup>

During the first decade of the twentieth century, the incidence of trachoma at immigration stations began to decline.<sup>76</sup> A 1903 amendment to the immigration law fined steamship companies \$100 for every passenger afflicted "with a loathsome or with a dangerous contagious disease... [that] might have been detected by means of a competent medical examination at the time of foreign embarkation."<sup>77</sup> Because companies were responsible for the cost of detaining and deporting patients, they began to implement their own inspection system prior to

<sup>&</sup>lt;sup>71</sup> Ibid, 31-32.

<sup>&</sup>lt;sup>72</sup> Yew, "Medical Inspection of Immigrants at Ellis Island, 1891-1924," 499.

<sup>&</sup>lt;sup>73</sup> Clark and Schereschewsky, *Trachoma: its Character and Effects*, 30.

<sup>&</sup>lt;sup>74</sup> Ibid, 31.

<sup>&</sup>lt;sup>75</sup>U.S. Treasury Department. Annual Report of the Surgeon General of the Marine Hospital Service and the Public Health Service of the United States. (Washington, DC.: Government Printing Office, 1897–1924); and Annual Reports of the Commissioner General of Immigration. Washington, DC: Government Printing Office, 1897–1924. (Cited in Howard Markel, "The Eyes Have It": Trachoma," Bulletin of the History of Medicine. 74 no. 3 (2000): 535).

<sup>&</sup>lt;sup>76</sup> Stoner, "Immigration – The Medical Examination of Immigrants," 1071.

<sup>&</sup>lt;sup>77</sup> Four years later, this penalty was doubled to \$200 per passenger. U.S. Congress. *An act to regulate the immigration of aliens into the United States*, 57th Congress, 2nd Sess., 32 Stat. 1222, Chap 1012. Washington, 1903; U.S. Congress. *An act to regulate the immigration of aliens into the United States*, 59th Congress, 2nd Sess., 34 Stat. 898, Chap 1134. Washington, 1907.

embarkation. A company physician would first examine customers originating from Eastern Europe at "control stations" near the German border. Upon arriving to the port of embarkation, passengers were examined again by the ship surgeon and a local physician at the company's detention house. Those who passed the inspections were allowed to board. Those who were found to have a diseased condition were sent home and advised to try again once they had been cured.<sup>78</sup> In the fiscal year ending in June 1906, the USPHS claimed that 29,600 people with trachoma had been prevented from leaving foreign ports.<sup>79</sup> Ellis Island's chief medical examiner George Stoner praised one Italian port for rejecting hundreds of applicants for passage to the US after medical inspection.<sup>80</sup>

Immigration decreased rapidly after the onset of the First World War. This episode of the American trachoma story formally concluded with the enactment of two pieces of legislation in 1924. The Immigration Act of 1924 severely restricted the admission of Southern and Eastern Europeans, among many other nationalities.<sup>81</sup> The Rogers Act provided U.S. consulates abroad with the means for inspecting foreigners prior to issuing a visa and authorizing departure to the U.S.<sup>82</sup> As a result, just 0.3 percent of immigrants examined in 1924 were debarred for a "dangerous or loathsome, contagious disease." Within this category of infected immigrants, only 154 (6 percent) had trachoma – representing 0.018 percent of those arriving to American borders.<sup>83</sup>

<sup>&</sup>lt;sup>78</sup> McMullen, "Trachoma, Its Prevalence and Control among Immigrants," 418.

<sup>&</sup>lt;sup>79</sup> John W. Kerr, "The Trachoma Problem," *Public Health Reports* 30 no.34 (1915): 2438.

<sup>&</sup>lt;sup>80</sup> Stoner, "Immigration – The Medical Examination of Immigrants," 1071.

<sup>&</sup>lt;sup>81</sup> U.S. Congress. An act to limit the immigration of aliens into the United States, and for other purposes, 68th Congress, 1st Sess., 32 Stat. 1222, Chap 190. Washington, 1924.

<sup>&</sup>lt;sup>82</sup> U.S. Congress. An act for the reorganization and improvement of the foreign service of the United States, and for other purposes, 68th Congress, 1st Sess., 43 Stat. 140, Chap 182. Washington, 1924.

<sup>&</sup>lt;sup>83</sup> U.S. Treasury Department. Annual Report of the Surgeon General of the Marine Hospital Service and the Public Health Service of the United States. Washington, DC.: Government Printing Office, 1897–1924; and Annual Reports of the Commissioner General of Immigration. Washington, DC: Government Printing Office, 1897–1924. (Cited in Howard Markel, "The Eyes Have It": Trachoma," 535).

Public health policy constructed trachoma within a nativist framework. During the peak immigration period of 1897 to 1924, trachoma accounted for 85 percent of medical deportations. While trachoma was widely identified as a foreign menace, the disease was found in far less than 1 percent of new arrivals (an average of 1500) each year.<sup>84</sup> Yet the USPHS devoted more than 80 percent of its resources toward carrying out medical inspections at ports of entry.<sup>85</sup> Trachoma embodied immigrants' biological and social threat to the American public. The disease justified prejudices against foreigners and sentenced many to an uncertain fate. At the AMA Section on Ophthalmology's trachoma symposium in 1913, USPHS officer McMullen declared:

One had better have smallpox than severe trachoma... Any such modifications [in the government's classification of this disease] would mean the addition to our population of these thousands of trachomatous aliens whose emigration to this country is now prohibited.<sup>86</sup>

In the year when USPHS officers presented their reports at the AMA symposium, fewer than 0.2 percent of inspected immigrants had been debarred on account of trachoma (2,704 out of 1,574,371 individuals examined).<sup>87</sup> The public health establishment focused on trachoma's danger at the borders, blind to the epidemiological reality that was playing out across America's interior. Nonetheless, it was during this period that the USPHS inaugurated a large-scale and systematic method for dealing with trachoma: snapshot diagnosis carried out by a trained taskforce of USPHS officers.

<sup>&</sup>lt;sup>84</sup> Markel, "'The Eyes Have It": Trachoma," 526.

<sup>&</sup>lt;sup>85</sup> Ibid, 527.

<sup>&</sup>lt;sup>86</sup> McMullen, "Trachoma, Its Prevalence and Control among Immigrants," 422.

<sup>&</sup>lt;sup>87</sup> U.S. Treasury Department. Annual Report of the Surgeon General of the Marine Hospital Service and the Public Health Service of the United States. Washington, DC.: Government Printing Office, 1897–1924; and Annual Reports of the Commissioner General of Immigration. Washington, DC: Government Printing Office, 1897–1924. (Cited in Howard Markel, "The Eyes Have It": Trachoma," 535).

#### Trachoma among Appalachian Americans (1912 – 1935)

In the fall of 1910, Joseph Stucky – an ophthalmologist born and trained in Louisville, Kentucky – made a four-day trip to the rural mountains in the eastern region of his state. His goal was to investigate a "devastating sight-destroying" disease that was widespread among the mountain people.<sup>88</sup> For more than twenty-five years, Stucky had operated a private ophthalmology practice in Lexington, Kentucky. Recently, he had noticed an increasing number of people seeking treatment for "sore eyes."<sup>89</sup> To reach Stucky's clinic, these patients typically travelled for days out of Kentucky's "pauper counties," situated in the heart of Appalachia.<sup>90</sup> After examining them, Stucky suspected that the majority were afflicted with trachoma. But without the funds for hospitalization and treatment, these patients had no choice but to return home. Stucky reported that many came back only a few months later "with complete destruction of the eye or with impaired vision beyond restoration."<sup>91</sup> Alarmed by these cases, Stucky set out to determine the source of the infection and the conditions under which these people lived.

Beginning in October 1910, Stucky made several trips through the counties of Laurel, Perry, Knott, and Breathitt. Riding mule-back or in a wagon over the rugged terrain, he visited mountain homes and schoolhouses to perform eye examinations. In town centers he opened trachoma clinics where locals could gather to have their eyes checked. The conditions were appalling. As Stucky later recounted, many of the cases were "more pitiful and hopeless" than he

<sup>&</sup>lt;sup>88</sup> Stucky, "Trachoma among the Natives of the Mountains of Eastern Kentucky," 436.

<sup>&</sup>lt;sup>89</sup> Ibid, 442.

<sup>&</sup>lt;sup>90</sup> Ibid, 436.

<sup>91</sup> Ibid.

had ever seen.<sup>92</sup> Comparing this scenario to his alleged<sup>93</sup> experience working at immigration stations, he declared that "of the 114 [trachoma] cases [he had examined] on Ellis Island and in Baltimore, not 0.5 per cent were comparable in severity to the average of those I see at my clinic in the mountains."<sup>94</sup> One man who could only see a slit of light brought along his child to Stucky's clinic in Kinman, Kentucky. He reminded Stucky of "the pathetic Bible pictures you see with a little child leading the blind."<sup>95</sup> This man had nine family members at home, seven of whom were also suffering from "sore eyes."<sup>96</sup> In another town, Stucky noticed a group of eleven women sitting in front of his medical tent. Seven of them were nursing while "tears from [their] trachomatous eyes [dripped] down in the eyes of the babies."<sup>97</sup> Out of the 398 individuals that Stucky examined, 91 had undoubted trachoma and another 47 were likely to be infected. Having discovered a hidden endemic of "sore eyes" or "cat tracks," Stucky was determined to bring this issue to the attention of medical and public health professionals.<sup>98</sup>

Stucky delivered his first report to the annual meeting of the American Academy of Ophthalmology and Otolaryngology in September 1911. He supplemented his speech with an exhibition of photographs taken at his trachoma clinic in Hindman, Kentucky. The pictures showed large groups of white, Anglo-Saxon Americans, their ages ranging from infancy to old age, gathered in front of the camera (Figure 8). They looked well-dressed and able-bodied, yet displayed unquestionable signs of visual deficiencies. Some wore bandages over one or both

<sup>&</sup>lt;sup>92</sup> Joseph A. Stucky, "Ophthalmia and Trachoma in the Mountains of Kentucky," In *Transactions of the Sixteenth Annual Meeting of the American Academy of Ophthalmology and Otolaryngology, held at Indianapolis, Indiana, Sept. 25, 26, 27, 1911.* 16 (1911): 321.

<sup>&</sup>lt;sup>93</sup> Despite living his entire life in Kentucky, Stucky claims to have also worked as a medical inspector at Ellis Island Station and Locust Immigration Station in Baltimore. I have not been able to find any sources that support these claims.

<sup>&</sup>lt;sup>94</sup> Stucky, "Trachoma among the Natives of the Mountains of Eastern Kentucky," 443.

<sup>&</sup>lt;sup>95</sup> Stucky, "Ophthalmia and Trachoma in the Mountains of Kentucky," 322.

<sup>&</sup>lt;sup>96</sup> Ibid.

<sup>97</sup> Ibid.

<sup>&</sup>lt;sup>98</sup> Ibid, 323.

eyes; others shielded their eyes to avoid sunlight (a consequence of photophobia). One picture showed two young children who had already been cursed with lifelong blindness from trachoma (Figure 9). Another displayed an elderly woman "with one-third vision loss" linked arm-in-arm to her completely-blind husband (Figure 10). This exhibition reinforced Stucky's alarming report by capturing the anguish and hardship that accompanied each trachoma case. Stucky gave the same presentation to the Kentucky State Board of Health.<sup>99</sup> Following the interest that was roused among medical professionals, the AMA's Committee on the Prevention of Blindness announced at its June 1912 meeting: "That the necessity of a study of trachoma in the United States is necessary, and that the Public Health and Marine Hospital Service be requested to undertake a study of this disease, its prevalence, mode of spread and measures of prevention."<sup>100</sup>

Between 1912 and 1915, the U.S. Public Health Service directed a series of investigations on trachoma in America's interior. The same officers who had looked for trachoma during line inspection now studied the disease across large swaths of the American populace. Among the officers in charge were Passed Assistant Surgeon John McMullen, an inspector at Ellis Island Station and Locust Point Immigration Station in Baltimore, who was assigned to survey the prevalence of trachoma in eastern Kentucky;<sup>101</sup> Passed Assistant Surgeon Alfred Foster, an inspector in Boston, assigned to the mountains of North and South Carolina;<sup>102</sup> Passed Assistant Surgeon R.A. Herring, an inspector at Ellis Island Station and in New Orleans, assigned to

<sup>&</sup>lt;sup>99</sup> Stucky, "Trachoma among the Natives of the Mountains of Eastern Kentucky," 436-437.

<sup>&</sup>lt;sup>100</sup> William A. Evans, "Report of the Reference Committee on Legislation and Political Action," In "Minutes of the Sixty-third Annual Session of the American Medical Association, Held at Atlantic City, NJ, June 3-6, 1912 – Minutes House of Delegates," *Journal of the American Medical Association* 58 no. 24 (1912):1911.

<sup>&</sup>lt;sup>101</sup> John McMullan, "A Report on an Investigation of the Prevalence of Trachoma in the Mountains of Eastern Kentucky," *Public Health Reports* 27 no.45 (1912): 1815–22.

<sup>&</sup>lt;sup>102</sup> Alfred D. Foster, "Trachoma: A Survey of Its Prevalence in the Mountain Sections of North and South Carolina," *Public Health Reports* 29 no.28 (1915): 1811-1821.

Alabama;<sup>103</sup> Acting Assistant Surgeon Charles Bailey, an inspector in St. John, New Brunswick, assigned to the mountains of eastern Tennessee and northern Georgia;<sup>104</sup> Surgeon Taliaferro Clark, the co-author of the Office of the Surgeon General's official trachoma pamphlet, assigned to Minnesota, Virginia, and West Virginia;<sup>105</sup> and finally, Surgeon Joseph Schereschewsky, the trachoma pamphlet's other co-author, who was assigned to Tennessee.<sup>106</sup> Their combined expertise on identifying trachoma among immigrants now proved an important asset for mounting a public health survey of this magnitude.

From mining and logging towns to isolated farming communities, the populations targeted by these investigations had historically been overlooked by the health establishment.<sup>107</sup> USPHS officers travelled by horseback over mountainous trails and through dense forests. They visited schools, courts and public meeting spots, often stopping people on the roadside or dropping in homes along the way.<sup>108</sup> School children made up the majority of their samples because USPHS officers found it easier to go school-to-school to examine entire classes than house-to-house for individual inspections.<sup>109</sup> When examining the eyes of school children, officers frequently heard from teachers that the worst cases were not in class that day, on account of "sore eyes." The teachers provided officers with the names of families afflicted with eye

<sup>&</sup>lt;sup>103</sup> R.A., Herring, "Trachoma: Its Prevalence in the Schools of Tuscaloosa, Ala." *Public Health Reports* 30 no. 23 (1915): 1686.

<sup>&</sup>lt;sup>104</sup> Charles A. Bailey, "Trachoma: A Survey of Its Prevalence in the Mountain Sections of East Tennessee and Northern Georgia," *Public Health Reports* 29 no. 38 (1914): 2417-2433.

<sup>&</sup>lt;sup>105</sup> Taliaferro Clark, "An Investigation of the Prevalence of Trachoma in the State of Minnesota," *Public Health Reports* 28 no.26 (1913): 1331-1356; Taliaferro Clark, "Trachoma: A Survey of Its Prevalence in the Mountain Sections of Virginia and West Virginia," *Public Health Reports* 29 no.23 (1914): 1421-1448.

<sup>&</sup>lt;sup>106</sup> Joseph W. Schereschewsky, "Trachoma: Prevalence in Knox County, Tenn." *Public Health Reports* 28 no.36 (1913): 1853-1854.

<sup>&</sup>lt;sup>107</sup> For a history of medical care in Appalachia during the Progressive Era, see Sandra L. Barney, *Authorized to Heal: Gender, Class, and the Transformation of Medicine in Appalachia, 1880-1930,* (Chapel Hill: University of North Carolina Press, 2013).

<sup>&</sup>lt;sup>108</sup> McMullan, "A Report on an Investigation of the Prevalence of Trachoma in the Mountains of Eastern Kentucky," 1815.

<sup>&</sup>lt;sup>109</sup> U.S. Treasury Department, Annual Report of the Surgeon General of the Public Health Service of the United States for the Fiscal Year 1914. (Washington, DC: Government Printing Office, 1914), 32-35.

problems, so that the officers could check in on these homes later.<sup>110</sup> Reflecting on his investigations in eastern Kentucky, McMullen praised both local residents and local doctors for their "assistance and hearty cooperation."<sup>111</sup> Many locals had expressed hope that the Service might be able to offer some medical assistance to help them deal with their "granulated lids."<sup>112</sup>

In order to rapidly screen a sufficient volume of people, USPHS officers employed the same diagnostic techniques they had used during immigrant inspections. They everted each person's eyelids to search for scarring, granulations, ruptured follicles, and ingrown eyelashes. Diagnosis was based solely on clinical observations.<sup>113</sup> But unlike at immigration stations, officers could not afford to wait for days or weeks to resolve more ambiguous symptoms. Diagnosis was even more rudimentary in the sense that officers could only count advanced stages of trachoma (cases that had progressed to an unambiguous state). They were cautioned to exclude indeterminate or suspicious cases from their reports, to avoid inflating the actual rate of disease.<sup>114</sup> Another disadvantage to the snapshot nature of each diagnosis was that officers likely missed cases that appeared to be cured but were actually lurking in the disease's quiescent phase. In recognizing the imprecision of his estimates, USPHS officer Taliaferro Clark professed that "no written description may accurately portray [trachoma's] clinical characteristics....the whole subject of trachoma is confused because the diagnosis is based on the clinic aspects of the disease plus the experience and personal equation of the examiner."<sup>115</sup>

<sup>&</sup>lt;sup>110</sup> McMullan, "A Report on an Investigation of the Prevalence of Trachoma in the Mountains of Eastern Kentucky," 1816.

<sup>&</sup>lt;sup>111</sup> Ibid, 1815.

<sup>&</sup>lt;sup>112</sup> Ibid.

 <sup>&</sup>lt;sup>113</sup> Clark, "Trachoma: A Survey of its Prevalence in the Mountain Sections of Virginia and West Virginia," 1423.
<sup>114</sup> McMullan, "A Report on an Investigation of the Prevalence of Trachoma in the Mountains of Eastern Kentucky,"
1816, 1819; Bailey, "Trachoma: A Survey of Its Prevalence in the Mountain Sections of East Tennessee and Northern Georgia," 2420.

<sup>&</sup>lt;sup>115</sup> Clark, "Trachoma: A Survey of its Prevalence in the Mountain Sections of Virginia and West Virginia," 1423.

Despite these difficulties, the surveys provided indisputable evidence that trachoma posed a serious burden on the white population. Trachoma was present in at least 34 out of the nation's 48 states.<sup>116</sup> Among white Americans, disease prevalence varied from 2.0 percent for school children in Tennessee,<sup>117</sup> to 5.4 percent for school children in Alabama,<sup>118</sup> to 12.6 percent for those children in eastern Kentucky.<sup>119</sup> The prevalence among school children was assumed to accurately reflect the trachoma rate within the larger community, since a trachomatous child likely acquired the infection from, or passed it onto, other family members.<sup>120</sup> From the nearly 200,000 individuals examined by the USPHS, there emerged a distinct geographic patterning to trachoma. Health officials mapped areas of heavy infection for white Americans that spanned across parts of Alabama, Arkansas, Indiana, Illinois, Kansas, Kentucky, Missouri, Ohio, Oklahoma, and Tennessee. As one health official later commented, the cases were distributed along the trail made by the earliest American settlers venturing from the Atlantic seaboard to the junction of the Ohio and Mississippi rivers. This endemic tract became known as "America's trachoma belt."<sup>121</sup>

Beyond facts and figures, the reports published in the U.S. Public Health Service's official journal contained harrowing portrayals of America's oldest settlements. These were some of the poorest and most remote in all of Appalachia. In 1912, the New York Board of Health sent one of its members, Dr. Anna von Sholly, to tour Stucky's clinic in Hindman, Kentucky. Von Sholly deplored the "ludicrous" living conditions; "the high ways are sewers, the

<sup>&</sup>lt;sup>116</sup> Kerr, "The Trachoma Problem," Public Health Reports 30 no.34 (1915): 2440.

<sup>&</sup>lt;sup>117</sup> Bailey, "Trachoma: A Survey of Its Prevalence in the Mountain Sections of East Tennessee and Northern Georgia," 2419.

<sup>&</sup>lt;sup>118</sup> Herring, "Trachoma: Its Prevalence in the Schools of Tuscaloosa, Ala.," 1686.

<sup>&</sup>lt;sup>119</sup> McMullen, "A Report on an Investigation of the Prevalence of Trachoma in the Mountains of Eastern Kentucky," 1816.

<sup>&</sup>lt;sup>120</sup> Ibid.

<sup>&</sup>lt;sup>121</sup> H.S. Gradle, "Incidence and Distribution of Trachoma in the United States," *Sight Saving Review* 10 (1940): 16-18.

homes and public meeting-places huge cuspidors."<sup>122</sup> The typical home was a mere fourteen by fifteen feet, and included a lean-to chimney but no window (Figure 11).<sup>123</sup> Entire families of eight to twenty people crowded together in small cabin homes or shacks.<sup>124</sup> They were noticeably underfed and insufficiently clothed.<sup>125</sup> Many complained of an assortment of conditions in addition to "weak eyes"; the most common co-morbidities were low vitality, "mountain fever," typhoid fever, tuberculosis, and hookworm infection.<sup>126</sup> According to Stucky, the mountain people's "method of living [was] suitable for the propagation of any contagious or infectious disease."<sup>127</sup> But specific to trachoma, transmission centered on two household objects: the "family washbin" and the "fatal family towel."<sup>128</sup> In this transmission pathway, the trachoma germ left the eye through a drop of mucous during face- or hand-washing, migrated into the shared wash-basin or onto the shared towel, and recommenced the infection process in a healthy person (Figure 12).<sup>129</sup> As USPHS officers claimed, it was ironically through a misguided attempt at personal hygiene that the mountain people most likely propagated the trachoma germ. By singling out this causal pathway, authorities reduced a seemingly uncontainable danger to something that could be fixed through straightforward interventions. They recommended that health workers teach the mountain communities proper hygienic behaviors, encourage them to empty out the wash-bin after a certain number of uses, and distribute towels for personal use.<sup>130</sup>

<sup>&</sup>lt;sup>122</sup> Anna von Sholly, 1912 (Cited in Stucky, "Trachoma among the Natives of the Mountains of Eastern Kentucky," 444).

<sup>&</sup>lt;sup>123</sup> Stucky, "Ophthalmia and Trachoma in the Mountains of Kentucky," 321.

<sup>&</sup>lt;sup>124</sup> Stucky, "Trachoma among the Natives of the Mountains of Eastern Kentucky," 439.

<sup>&</sup>lt;sup>125</sup> Stucky, "Ophthalmia and Trachoma in the Mountains of Kentucky," 322.

<sup>&</sup>lt;sup>126</sup> Ibid, 324.

<sup>&</sup>lt;sup>127</sup> Stucky, "Trachoma among the Natives of the Mountains of Eastern Kentucky," 440

<sup>&</sup>lt;sup>128</sup> McMullan, "A Report on an Investigation of the Prevalence of Trachoma in the Mountains of Eastern Kentucky," 1819; Von Sholly, 1912 (Cited in Stucky, "Trachoma among the Natives of the Mountains of Eastern Kentucky," 444).

<sup>&</sup>lt;sup>129</sup> McMullan, "A Report on an Investigation of the Prevalence of Trachoma in the Mountains of Eastern Kentucky," 1819.

<sup>&</sup>lt;sup>130</sup> Ibid, 1820.

In the published reports, officers highlighted the distinctive racial character of Appalachian patients. McMullen, who had conducted investigations in eastern Kentucky, described the "hundreds of cases of trachoma seen among these good and honest Anglo-Saxons of the mountains."<sup>131</sup> During a visit to the Hindman clinic, New York Board of Health Examiner Anna von Sholly expressed outrage over the destruction of "our oldest American stock."<sup>132</sup> Stucky also vouched for his patients' upstanding moral character; despite their pitiful, diseased states, Stucky was impressed by the "genuineness, the simplicity, the honesty and sincerity of the large majority of those so afflicted [with trachoma]."<sup>133</sup> To give a more vivid portray of his trachoma patients to the AMA Ophthalmology conference attendees in 1913, Stucky read from the writings of popular American novelist Emerson Hough:

The men are tall and sinewy, for the most part quiet in habit, slow of speech... the women are delicately beautiful of face and figure, the children being especially very beautiful. They have nothing of the vacuous "poor white" look, and have not the slightest resemblance to the stolid peasants of Europe.<sup>134</sup>

Stucky elevated this new group of patients above the other group of impoverished whites who until this point had been considered trachoma's primary victims. He argued that unlike infected immigrants, "these Americans belong to us, and we owe much to them."<sup>135</sup> By casting aside the disease's foreign overtones, USPHS officers sought to redefine trachoma as an America problem – and by extension, one worthy of collective action.

<sup>&</sup>lt;sup>131</sup> Ibid, 1818.

<sup>&</sup>lt;sup>132</sup> Von Sholly, 1912 (Cited in Stucky, "Trachoma among the Natives of the Mountains of Eastern Kentucky," 444).

<sup>&</sup>lt;sup>133</sup> Stucky, "Trachoma among the Natives of the Mountains of Eastern Kentucky," 436.

<sup>&</sup>lt;sup>134</sup> Emerson Hough, "Burns of the Mountains: The Story of a Southern Mountaineer Who is Remaking His Own People," *The American Magazine* 75 no.2 (1912):13-20. (Cited in Stucky, "Trachoma among the Natives of the Mountains of Eastern Kentucky," 438).

<sup>135</sup> Ibid.

To the broader public, trachoma patients were not simply vectors of disease but existed in fleshed-out form. A newspaper article informing residents of Louisville, Kentucky, about the trachoma investigations described the mountain people in romanticized terms. It identified the infected group as "stalwart, brave, enduring, unmixed with other blood, they show the sturdiness of the pioneers who followed Boone to the virgin wilds beyond the ranges."<sup>136</sup> This article did not suggest any danger that trachomatous individuals might pose in spreading the disease to other white communities. Instead, it emphasized the patients' rich cultural history, which harkened back to the nation's earliest days, and decried the brutal effects of the blinding eye disease that they now endured. Within this framework, trachoma struck at the core of America's identity. Fighting trachoma was a moral imperative, a means of preserving America's cultural heritage and of ensuring the nation's biological integrity.

On June 23, 1913, President Woodrow Wilson signed an act inaugurating the campaign to eliminate trachoma from rural white communities. The Sundry Civil Expenses Appropriations Act authorized the USPHS to use money normally reserved for controlling epidemics (\$200,000) toward reducing the burden of endemic trachoma.<sup>137</sup> Passed Assistant Surgeon John McMullen, who had worked among immigrant trachoma since 1897, was placed in of anti-trachoma programs in Appalachia.<sup>138</sup> He adopted a three-pronged strategy: finding patients suffering from trachoma; treating them at trachoma hospitals or field clinics; and preventing new cases through education and improved hygiene.<sup>139</sup>

<sup>&</sup>lt;sup>136</sup> Alfred C. Reed, "Dread Trachoma Gains Foothold in Mountains." *Courier-Journal* [Louisville, KY], February 23, 1913: C6.

<sup>&</sup>lt;sup>137</sup> U.S. Congress. An act making appropriations for sundry civil expenses of the Government for the fiscal year ending June thirteenth, nineteen hundred and fourteen, and for other purposes, 63rd Congress, 1st Sess., 38 Stat. 4, Chap 3. Washington, 1913.

 <sup>&</sup>lt;sup>138</sup> Ralph C. Williams, *The United States Public Health Service*, *1798-1950*. (Washington, DC: Commissioned Officers Association of the United States Public Health Service, 1951), 288.
<sup>139</sup> Ibid, 291.

McMullen established the first American trachoma hospital in Hindman, Kentucky, in September 1913. Over the next decade, the USPHS opened thirteen other trachoma hospitals, one each in Arkansas, Georgia, Missouri, North Dakota, Virginia, and West Virginia, two in Tennessee, and five in Kentucky.<sup>140</sup> The hospitals were located in heavily infected and largely secluded communities. Typically, an available two-story house was selected and converted into a treatment facility (Figures 13 and 14). Each hospital had a dispensary, an operating room, a nurses' room, an office, and separate wards for men and women. Many also held a model display that showed proper sanitary behaviors to everyone who came in for treatment (Figure 15).<sup>141</sup> The hospitals were staffed by two nurses and one resident physician specializing in diseases of the eye. Every six to eight weeks, the general supervisor of anti-trachoma work (McMullen) and a head nurse who oversaw several trachoma hospitals also visited the facility.<sup>142</sup> Each hospital held between twenty and thirty-five beds and cost around \$7,000 to operate annually.<sup>143</sup>

The trachoma hospitals offered all services free of charge. Local residents visited the hospital's dispensary for trachoma screenings. Individuals with mild infections were given eye drops for home use and instructed to return for re-examination. Those with complicated or advanced infections were admitted to the wards for monitoring and treatment. Upon admission, patients were provided with their own towel, bed linen, washbasin, and cup, and ordered to maintain "absolute cleanliness."<sup>144</sup> Most of the patients received grattage, the standard surgical treatment at the time. In this procedure, the doctor anesthetized the patient, made an incision to

<sup>&</sup>lt;sup>140</sup> Ibid, 288.

<sup>&</sup>lt;sup>141</sup> Gordon L. Berry, "Trachoma a National Menace," In *National Committee for the Prevention of Blindness, Publications no.* 6, (New York: National Committee for the Prevention of Blindness, 1915), 35.

<sup>&</sup>lt;sup>142</sup> John McMullen, "Prevention and Eradication of Trachoma in Kentucky," *Bulletin of the State Board of Health of Kentucky* 10 (1915): 10.

<sup>&</sup>lt;sup>143</sup> Kerr, "The Trachoma Problem," 2442.

<sup>&</sup>lt;sup>144</sup> McMullen, "Prevention and Eradication of Trachoma in Kentucky," 10.

the corner of the infected eye (canthotomy), everted the eyelid, and mechanically scraped off the trachomatous bodies with a cotton-wrapped probe that had been dipped in silver nitrate solution. After the surgery, patients rinsed their eyes with a dilute mercury dichloride or silver nitrate solution every few hours for a week or more.<sup>145</sup> Patients typically stayed in the hospital for up to one month.<sup>146</sup> They were discharged after their disease had been arrested or their condition had substantially improved.

Upon release, patients received a trachoma educational pamphlet and a clean gauze handkerchief. The six-page pamphlet, titled *Trachoma, Its Nature and Prevention*, explained the dangers of trachoma, described available treatment strategies, and provided advice for those suffering from the disease.<sup>147</sup> Medical officers hoped that after returning home, the newly-treated individuals would serve as "missionaries in the ordinary hygienic precautions," spreading the lessons that they had learned during their hospital stay.<sup>148</sup> In September 1914, the Kentucky State Board of Health issued a proclamation declaring that trachoma was "an epidemic and communicable disease" and expressed deep gratitude to the USPHS for operating trachoma hospitals for its residents.<sup>149</sup> The facilities were indispensable in reaching poor and remote areas of the state.<sup>150</sup>

The USPHS also organized temporary field clinics to cover the immediate healthcare needs of the local population. Field clinics were held in homes, churches, courthouses, or by the

<sup>145</sup> John McMullen, "Results of a Three-year Trachoma Campaign Begun in Knott County, Ky., in 1913. As Shown by a Survey Made in the Same Locality 10 Years Later." *Public Health Reports* 38 no.43 (1923): 2463; Herbert Harlan, "Impressions of Eastern Kentucky," *Bulletin of the State Board of Health of Kentucky* 10 (1915): 39.
<sup>146</sup> U.S. Treasury Department, *Annual Report of the Surgeon General of the Public Health Service of the United*

States for the Fiscal Year 1920. (Washington, DC: Government Printing Office, 1920), 29. <sup>147</sup> John McMullen, *Trachoma, Its Nature and Prevention*, (Washington, DC: US Government Printing Office,

<sup>1915).</sup> 

<sup>&</sup>lt;sup>148</sup> McMullen, "Prevention and Eradication of Trachoma in Kentucky," 10.

<sup>&</sup>lt;sup>149</sup> John G South, "Trachoma Proclamation," *Bulletin of the State Board of Health of Kentucky* 10 (1915): 2; A.T. McCormack, "The Trachoma Problem," *Bulletin of the State Board of Health of Kentucky* 10 (1915): 3.

<sup>&</sup>lt;sup>150</sup> McMullen, "Prevention and Eradication of Trachoma in Kentucky," 10.

roadside (Figure 16). They were conducted a few times per week for a period lasting up to several months. One or two field nurses led each clinic, in consultation with the physician based at the nearest trachoma hospital. If surgery was required, the field nurse improvised an operating room at a church or school. After undergoing the operation, patients slept in portable cots and were served food by the local women's club.<sup>151</sup> These field clinics brought diagnosis and treatment to otherwise inaccessible Appalachian communities.

In addition to working in the clinic, field nurses, commissioned by the USPHS, were responsible for seeking out trachomatous patients within their assigned districts. <sup>152</sup> They covered thousands of square miles on horseback, mule-back, or foot to visit individual homes, inspect all family members, and encourage those with suspicious symptoms to visit the nearest trachoma hospital or field clinic (Figure 17).<sup>153</sup> Will Brasher, the first nurse to serve in the trachoma program, began working at the Hindman trachoma hospital in 1913. Mae Hicks, the chief nurse of the trachoma control program, was acknowledged by USPHS officers in several reports for her assistance with their trachoma surveys. <sup>154</sup> Both nurses and physicians stressed the importance of personal hygiene to their patients. They instructed families to use separate towels, and advised healthy individuals to avoid close contact with those who were infected.<sup>155</sup> They also delivered presentations on cleanliness and disease prevention at schools, teachers' institutes, churches, and

<sup>&</sup>lt;sup>151</sup> Williams, The United States Public Health Service, 1798-1950, 289-290.

<sup>&</sup>lt;sup>152</sup> For a history of nursing in the U.S. Public Health Service, see Philip A. Kalisch and Beatrice J. Kalisch, *Nurturer of Nurses: The History of the Division of Nursing of the U.S. Public Health Service and its Antecedents, 1798-1977.* Division of Nursing, Bureau of Health Manpower, Health Resources Administration, U.S. Public Health Service, 1977.

<sup>&</sup>lt;sup>153</sup> Williams, The United States Public Health Service, 1798-1950, 288.

<sup>154</sup> Ibid.

<sup>&</sup>lt;sup>155</sup> Ibid, 292.

other public sites.<sup>156</sup> Finally, the USPHS mailed thousands of copies of McMullen's trachoma educational pamphlet to people living in and outside of the affected communities.<sup>157</sup>

By 1920, the USPHS had examined a total of 20,882 individuals and found that 1,810 (9 percent) were either infectious or considered likely to have the disease. By this time, the USPHS had conducted fifty-five field clinics reaching every state in America's trachoma belt. At the clinics 1,526 eye operations had been performed, and at hospitals between nine and ten thousand patients had been treated. <sup>158</sup> While only a minority of patients returned for re-examination, the Surgeon General estimated that more than 8,000 trachomatous patients had been cured between 1913 and 1920.<sup>159</sup> In this seven-year period, USPHS workers had delivered 129 public health talks and distributed over 10,000 trachoma pamphlets. <sup>160</sup> The Surgeon General's report noted that it had received requests from several State Boards of Health to expand the trachoma program, but had not been able to do so because of shortages in personnel and funding. To meet this demand, USPHS physicians had taught local doctors how to diagnose and manage the disease. The states of Ohio and Kentucky had also established their own "trachoma bureaus" under the state's department of health, which collaborated with the USPHS to eliminate trachoma. <sup>161</sup>

Led by a motivated team of USPHS physicians, nurses, local doctors, and state and county health authorities, the Appalachian trachoma program experienced remarkable success. Just three years after the first trachoma hospital opened in Hindman, it was shut down and

<sup>&</sup>lt;sup>156</sup> McMullen, "Prevention and Eradication of Trachoma in Kentucky," 9.

<sup>&</sup>lt;sup>157</sup> Ibid.

<sup>&</sup>lt;sup>158</sup> U.S. Treasury Department, Annual Report of the Surgeon General of the Public Health Service of the United States for the Fiscal Year 1920, 30.

<sup>&</sup>lt;sup>159</sup> Ibid, 29.

<sup>&</sup>lt;sup>160</sup> Ibid, 30.

<sup>&</sup>lt;sup>161</sup> Clark, "Trachoma: A Survey of Its Prevalence in the Mountain Sections of Virginia and West Virginia," 1423; U.S. Treasury Department, *Annual Report of the Surgeon General of the Public Health Service of the United States for the Fiscal Year 1920*, 30.

moved to Pikeville, Kentucky, as health officials considered the disease to have been successfully controlled in the state's worst-infected county.<sup>162</sup> Ten years after McMullen's investigation in eastern Kentucky, he returned for a follow-up study. McMullen discovered that out of 740 trachoma patients who had been treated at the USPHS trachoma hospital in Knott County from 1913 to 1922, 469 (or 65 percent) were known to be completely cured. Another 259 (or 35 percent) were in doubt, and only 12 patients still suffered from active trachoma.<sup>163</sup> In his original report on trachoma in 1912, McMullen optimistically wrote that "by patience and unflagging perseverance this scourge can be removed and these mountain people given the opportunity which has heretofore been denied them by reason of this ever-present handicap – trachoma."<sup>164</sup> Just one decade later, he confidently asserted to his colleagues that his prophecy had been fulfilled in Knott County. McMullen described children who had returned to school, boys who had entered the army, mothers who could now care for their families, and heads of household who could once again earn a living.<sup>165</sup> As McMullen proudly announced, these mountain people were no longer "public charges" nor "paupers on the county."<sup>166</sup>

The USPHS trachoma program was turned over to individual states in 1935, as a result of the Social Security Act and grants made available to states for public health projects.<sup>167</sup> State departments of health continued to hold screenings and public talks, and operate trachoma hospitals and clinics. The rate of trachoma steadily declined through the combined effects of higher living standards, public health education, the continued service provided by trachoma

<sup>&</sup>lt;sup>162</sup> McMullen, "Results of a Three-year Trachoma Campaign Begun in Knott County, Ky., in 1913. As Shown by a Survey Made in the Same Locality 10 Years Later," 2463.

<sup>&</sup>lt;sup>163</sup> Ibid, 2465-2466.

<sup>&</sup>lt;sup>164</sup> McMullen felt that this statement was so important that he quoted directly from his 1912 report. McMullan, "A Report on an Investigation of the Prevalence of Trachoma in the Mountains of Eastern Kentucky," 1820-1821. <sup>165</sup> Ibid.

<sup>&</sup>lt;sup>166</sup> Ibid, 2464.

<sup>&</sup>lt;sup>167</sup> Williams, The United States Public Health Service, 1798-1950, 295.

hospitals and field clinics, and in 1938, the discovery of potent sulfanilamide therapy. By the 1950s, trachoma was no longer considered a serious problem for residents of America's trachoma belt, and the programs were discontinued.<sup>168</sup>

#### Trachoma among Native Americans (1912 – 1940s)

The mapping of trachoma in rural Appalachia coincided with trachoma investigations conducted throughout Indian Country.<sup>169</sup> The Bureau of Indian Affairs (BIA) had first called attention to rampant infectious diseases on Native American reservations in 1909, and the BIA's surveys had revealed that morbidity and mortality were alarmingly high. In some tribes, the death rate exceeded twice the rate for non-Indians. Tuberculosis and trachoma were the two diseases that "most seriously [menaced] the health of the Indians." <sup>170</sup> Trachoma, with its propensity to cause blindness, severely threatened the government's assimilationist policies because it left those afflicted dependent on federal assistance and impossible to integrate into mainstream society. As Commissioner of Indian Affairs William Jones declared in an annual report, Indian health "is and always must be the fundamental consideration in any scheme to educate or civilize him."<sup>171</sup> In light of this apparent public health crisis, Congress began appropriating funds for Indian medical care in 1909.<sup>172</sup> But the exact rate of trachoma and other contagious diseases was largely unknown until 1913, when the USPHS published the results of a three-month health survey of Indians across the continental United States.

<sup>&</sup>lt;sup>168</sup> Siniscal, "The Trachoma Story," 498.

<sup>&</sup>lt;sup>169</sup> Indian country refers to reservations and other lands owned or occupied by Native Americans. As a result of the Indian Removal Act (1830), Indian country was concentrated in the American Southwest by the first decade of the twentieth century. David H. Dejong. "Friend or Foe? Education and the American Indian," PhD Dissertation. (University of Arizona, 1990), 148.

<sup>&</sup>lt;sup>170</sup> U.S. Bureau of Indian Affairs. *Annual Report of the Commissioner of Indian Affairs for the Year 1910*. (Washington, DC: Government Printing Office, 1910), 9-10.

<sup>&</sup>lt;sup>171</sup> U.S. Bureau of Indian Affairs. *Annual Report of the Commissioner of Indian Affairs for the Year 1902*. (Washington, DC: Government Printing Office, 1902), 36.

<sup>&</sup>lt;sup>172</sup> U.S. Congress. An act for the investigation, treatment, and prevention of trachoma among the Indians, 60th Congress, 2nd Sess., 35 Stat. 642, Chap 167. Washington, 1909.
On August 10, 1912, President William Taft delivered a special address to Congress appealing for appropriations to the Indian medical service.<sup>173</sup> The Indian medical service had been established in June 1909 through an emergency sum of \$12,000 allotted to the BIA. Composed of physicians, nurses, and field matrons, this "fighting force" of BIA personnel waged a "vigorous campaign" against disease on reservations.<sup>174</sup> Their efforts included treating sick Indian patients, implementing a compulsory smallpox vaccination program, and maintaining hospitals and tuberculosis sanatoria.<sup>175</sup> An important aspect of the service's mission was to "combat the medicine man and his hateful influence upon reservations" by instituting western medical practices.<sup>176</sup> By 1912, an estimated 160,000 Indians depended entirely on the federal government for medical care, but the Indian medical service had just 160 physicians, more than one-third of whom were hired only part time.<sup>177</sup>

Trachoma became a salient domestic issue as a result of policies opening Indian land to white settlers. During his presidency from 1909 to 1913, Taft signed numerous executive orders and rigorously enforced the Dawes Act of 1887, which divided communally-owned tribal lands into allotments and sold excess lands to non-Indians. The ensuing decline in Indian livelihood, coupled with more frequent contact between Indian and white populations, called attention to the

<sup>175</sup> White, Newberne, and Murphy, "Historical Sketch of the United States Indian Medical Service," 92.
 <sup>176</sup> "United States Indian Medical Service," In *Indians of the United States: Hearings before the Committee of Indian Affairs on the Condition of Various Tribes of Indians. Volume I.* House of Representatives, 66<sup>th</sup> Congress, 1<sup>st</sup> session. (Washington, DC: Government Printing Office, 1919), 284-286.

<sup>&</sup>lt;sup>173</sup> William H. Taft, "Diseases among the Indians: Message from the President of the United States in Relation to the Present Conditions of Health on Indian Reservations and in Indian Schools," August 10, 1912, *Senate Document number 907*, 62<sup>nd</sup> Congress, 2<sup>nd</sup> session (Washington, DC: Government Printing Office, 1912).

<sup>&</sup>lt;sup>174</sup> Ibid, 2; For a history of the Indian medical service and its programs, see Lawrence W. White, Robert E. Newberne, and Joseph A. Murphy, "Historical Sketch of the United States Indian Medical Service," In George M. Kober et al., *Tuberculosis among the Native American Indians* 91-93. (Washington, DC: Government Printing Office, 1923); Dejong, David H. *If You Knew the Conditions: A Chronicle of the Indian Medical Service and American Indian Health Care, 1908-1955.* (Lanham: Lexington Books, 2008).

For more on conflicts between Native healing and Western medical traditions, see Wade Davies, *Healing Ways: Navajo Health Care in the Twentieth Century.* (Albuquerque: University of New Mexico Press, 2001). <sup>177</sup> Taft, "Diseases among the Indians," 2.

deplorable conditions and widespread diseases among Natives.<sup>178</sup> Giving voice to these concerns, Taft lamented to his Congressional audience in 1912 that Indian health was "broadly speaking, very unsatisfactory."<sup>179</sup> Citing statistics collected by the BIA, Taft pointed out that mortality among Indians was more than double that among Americans as a whole (35 compared to 15 per thousand) and these "disastrous" conditions were "exceeded only in some of the most insanitary of our white rural districts and in the worst slums of our large cities."<sup>180</sup> Taft stressed that the near epidemic levels of trachoma and other diseases were a national problem;<sup>181</sup> they endangered Indian lives and transformed Indians into a threat to "the several millions of white persons now living as neighbors to them."<sup>182</sup> Taft ended his speech on a moral high ground: "as guardians of the welfare of the Indians," he proclaimed, "it is our immediate duty to give to the race a fair chance for an unmaimed birth, healthy childhood, and a physically efficient maturity."<sup>183</sup>

Taft urged Congress to allocate \$253,350 to expand the Indian medical service.<sup>184</sup> While he praised the Indian service's doctors for being "efficient and self-sacrificing," he also recognized that they were grossly underpaid (earning approximately half the salary of other government physicians), frequently had to travel for days to reach patients, and faced other limitations inherent to working for a severely underfunded federal agency.<sup>185</sup> Although Taft claimed that increased funding would help turn the tide of disease, his speech conveyed deep pessimism about the BIA's capabilities. Admitting that "the inadequacy of [the Indian] service is

<sup>&</sup>lt;sup>178</sup> Brett L. Shelton, *Legal and Historical Roots of Health Care for American Indians and Alaska Natives in the United States.* Issue brief. (Washington, DC: Henry J Kaiser Family Foundation, 2004), 7. <sup>179</sup> Taft, "Diseases among the Indians," 1.

<sup>&</sup>lt;sup>180</sup> Ibid.

<sup>&</sup>lt;sup>181</sup> On reservations in the Southwest, close to three-quarters of school children had trachoma. Ibid.

<sup>&</sup>lt;sup>182</sup> Ibid, 3.

<sup>&</sup>lt;sup>183</sup> Ibid. 2.

<sup>&</sup>lt;sup>184</sup> Ibid, 3.

<sup>&</sup>lt;sup>185</sup> Ibid, 2.

plain," Taft stated that the money was "not expected to build up a highly organized Indian medical service."<sup>186</sup> Instead, he hoped that the funds would enable the BIA to make a complete medical and sanitary survey of the field and to place greater numbers of physicians, nurses, and field matrons where they were needed. In response to the president's appeal, Congress granted less than half of the requested amount (\$90,000) to the BIA.<sup>187</sup>

Rather than relying on the BIA-operated Indian medical service, Congress turned to the USPHS to investigate the prevalence of contagious and infectious diseases among the Indians. Through an act approved on August 24, 1912, Congress appropriated \$10,000 for the USPHS to undertake the first comprehensive study of Indian health nationwide.<sup>188</sup> Due to the large area to be covered (Figure 18), Surgeon General Rupert Blue divided the country into twenty-six districts and placed a USPHS officer in charge of each. Led by Assistant Surgeon General John Kerr, this group of officers was selected for their familiarity with the manifestations of trachoma and their "large experience with such examinations" at immigration stations.<sup>189</sup> Many had already been involved in conducting trachoma surveys in rural white communities. Officers were instructed to focus on three specific diseases, tuberculosis, trachoma, and small pox. They were also tasked with collecting data on other contagious diseases ("measles, scarlet fever, typhoid fever, and pneumonia"), photographing unsanitary conditions that might facilitate their spread, and recording additional public health problems.<sup>190</sup> All USPHS officers submitted their

<sup>&</sup>lt;sup>186</sup> Ibid, 2, 3.

 <sup>&</sup>lt;sup>187</sup> U.S. Congress. An act making appropriations for the current and contingent expenses of the Bureau of Indian Affairs, for fulfilling treaty stipulations with various Indian tribes, and for other purposes, for the fiscal year ending June thirtieth, nineteen hundred and thirteen, 62nd Congress, 2nd Sess., 37 Stat. 518, Chap 388. Washington, 1912.
 <sup>188</sup> Ibid.

 <sup>&</sup>lt;sup>189</sup> U.S. Congress. Letter from the Secretary of the Treasury. *The Prevalence of Contagious and Infectious Diseases Among the Indians of the United States*. 62<sup>nd</sup> Congress, 3<sup>rd</sup> Session, 1912. Senate Report 1038, serial 6365, 15.
 <sup>190</sup> Ibid, 12-13.

Assistant Surgeon Joseph Schereschewsky, who summarized the information into a single Congressional report.<sup>191</sup>

From September 28 to December 30, 1912, the fourteen USPHS officers carried out field inspections in twenty-five states. Upon arriving to a reservation or school, the officer discussed with the local BIA superintendent the best strategy for examining the greatest number of Indians in the shortest time possible. Most inspections occurred at boarding schools, day schools, and places where rations were distributed. Officers frequently stopped people along the roadside and visited camps to perform house-to-house inspections (Figures 19, 20, and 21).<sup>192</sup> According to Kerr, the USPHS officers' examination methods were "similar to those observed in detecting diseases and disabilities among arriving aliens."<sup>193</sup> Officers everted each subject's eyelids to look for signs of trachoma and then performed a cursory physical examination when indicated by poor physical appearance or family history. Officers scrutinized the oral cavity and neck to look for glandular tuberculosis, enlarged tonsils, tooth decay, or "other conditions provocative of ill health."<sup>194</sup> They checked people's arms to assess the thoroughness of the BIA's smallpox vaccination campaign and to determine whether further preventive measures were required. To estimate the extent of tribal exposure to tuberculosis, officers applied tuberculin tests on 1,225 school children.<sup>195</sup> Finally, officers observed the general sanitary conditions in schools and on reservations, focusing especially on the housing conditions, food supply, social customs, and personal behaviors that might facilitate the spread of disease.<sup>196</sup>

<sup>193</sup> Ibid, 15.

<sup>195</sup> Ibid, 73.

<sup>&</sup>lt;sup>191</sup> Ibid, 12.

<sup>&</sup>lt;sup>192</sup> Ibid, 14.

<sup>&</sup>lt;sup>194</sup> Ibid.

<sup>&</sup>lt;sup>196</sup> Ibid, 15.

Survey director Kerr noted significant challenges to the investigations. USPHS officers had to traverse long distances on foot and horseback, and by motor car or motor boat to reach the scattered and inaccessible places where Indians lived. Officers also encountered "diffidence, distrust, or reluctance to submit to examinations" among tribe members.<sup>197</sup> Kerr blamed two factors: first, a clash between Indian and Western attitudes toward the body. For instance, the Indians' "prejudice against exhibiting bodily defects and diseases" made them "loath to permit physical examination."<sup>198</sup> Second, Kerr discussed Indians' suspicion of white physicians. Some Indians refused medical inspection due to the "fear of subjecting themselves to some malign influence."199 To circumvent some of these barriers, officers conducted most of their examinations on children at boarding and day schools. By the end of the three-month period, USPHS officers had examined 39,321 Indians, or approximately one-eighth of the total Indian population in the United States (322,715).<sup>200</sup> Kerr conceded that given the time constraint, his officers might have missed cases that they would have otherwise detected through prolonged or repeated observations. Nevertheless, he assured Congress that the USPHS investigation had accurately assessed the prevalence of infectious diseases among the Indians.<sup>201</sup>

The USPHS's report confirmed what the BIA had repeatedly warned – that "trachoma and tuberculosis are veritable scourges of the Indian race."<sup>202</sup> As Kerr considered trachoma especially alarming, he devoted the first major section of the report toward describing "Indian sore eyes" and its importance from a public health standpoint.<sup>203</sup> Overall, 8,940 (or 23 percent)

- <sup>198</sup> Ibid.
- <sup>199</sup> Ibid.
- <sup>200</sup> Ibid, 73.
- <sup>201</sup> Ibid, 14.
- <sup>202</sup> Ibid, 15.

<sup>&</sup>lt;sup>197</sup> Ibid, 14.

<sup>&</sup>lt;sup>203</sup> Ibid, 15-19.

of the Indians examined were infected with trachoma. By conservative estimates, this amounted to 72,000 total cases among Indians.<sup>204</sup> Trachoma was particularly widespread among Indian tribes west of the Mississippi, where rates peaked at 69 percent in Oklahoma, 51 percent in Wyoming, and 41 percent in Nebraska (Figure 22).

Based on these findings, Kerr rejected the USPHS's notion of trachoma as "an exotic disease" that was "very uncommon in the interior of the United States" except when "imported from time to time" by immigrants.<sup>205</sup> Citing this investigation and John McMullen's recent survey among the "purest types of Anglo-Saxons" in eastern Kentucky, Kerr argued that trachoma had been proven to be endemic and continued to increase.<sup>206</sup> Now, he warned, the danger was "not so much the transmission of contagious and infectious diseases from immigrants to inhabitants of the United States, but from Indians to immigrants settling on lands in the west (Figure 23)."<sup>207</sup> By reversing the contagion process to one that started from native Americans and spread to vulnerable white immigrants, Kerr separated Indian patients into a group that was even further removed from – and an even greater menace to – American society than "arriving aliens."<sup>208</sup>

The report contained a scathing critique of one specific government institution, the Indian boarding school, which was blamed for spreading trachoma.<sup>209</sup> Of the 14,670 boarding school students examined in all, one-third (4,916) were discovered to have trachoma. At over half of all boarding schools, greater than one-quarter of students were infected (Figure 24). The highest rate

<sup>&</sup>lt;sup>204</sup> Ibid, 19.

<sup>&</sup>lt;sup>205</sup> Ibid, 15-16.

<sup>&</sup>lt;sup>206</sup> Ibid, 16, 70.

<sup>&</sup>lt;sup>207</sup> Ibid, 70.

<sup>&</sup>lt;sup>208</sup> Ibid, 16.

<sup>&</sup>lt;sup>209</sup> Ibid, 80; For a detailed history of Indian boarding schools in relation to federal Indian policy and epidemic diseases, see Brenda J. Child, "Illness and Death" In *Boarding school seasons: American Indian families, 1900-1940*, (Lincoln: University of Nebraska Press, 1998), 55-68; Diane T. Putney, "Fighting the Scourge: American Indian Morbidity and Federal Policy, 1897-1928." PhD Dissertation. (Marquette University, 1980).

was found at the Rainey Mountain School in Oklahoma, where 92 percent of students were trachomatous.<sup>210</sup> At on-reservation boarding schools, the trachoma rate far exceeded the rate on the reservations from which students were drawn. At off-reservation boarding schools, disease was widespread even among students coming from regions where trachoma was largely absent. In contrast, at day schools (which had the lowest trachoma rate out of the three types of Indian schools) the trachoma prevalence corresponded to that of the surrounding reservation.<sup>211</sup> Backing this epidemiological evidence were general observations of how "conditions inherent in institutional life" facilitated the spread of disease.<sup>212</sup> The majority of boarding schools were overcrowded and poorly ventilated. Their toilet facilities were "in a state of disrepair" and likely acted as the breeding sites of eye-feeding flies that could carry trachoma.<sup>213</sup> Although BIA regulations had mandated separate student towels for washing, in reality each towel was hung so close to the other that they overlapped and provided ample opportunity for transferring germs (Figure 25). Worse, students suffering from trachoma were "allowed freely to mingle with others in the classrooms, at play, and in the dormitories."<sup>214</sup> As a result of "the intimate contact and daily association of the [healthy] with the diseased," Kerr concluded boarding schools ("one of the most important factors for the advancement of the Indian, in the general scheme of supervision devised for his benefit by the federal government") were decimating the Indian population.<sup>215</sup> Kerr stressed that Indian children were "amenable to civilizing influences" and could be educated "in the principles of hygiene and home sanitation."<sup>216</sup> But instead of acquiring

- <sup>212</sup> Ibid, 66.
- <sup>213</sup> Ibid, 67. <sup>214</sup> Ibid, 68.
- <sup>215</sup> Ibid, 28.
- <sup>216</sup> Ibid, 29.

 <sup>&</sup>lt;sup>210</sup> U.S. Congress. Letter from the Secretary of the Treasury. *The Prevalence of Contagious and Infectious Diseases*, 74.

<sup>&</sup>lt;sup>211</sup> Ibid.

these important lessons, school children contracted trachoma and "on their return to their home implant disease in territory where it is now absent or uncommon."<sup>217</sup> Trachoma was the cause of "much suffering, reduction of physical efficiency, and retardation of education development" on reservations (Figure 26).<sup>218</sup> Poor health conditions at boarding schools thus directly obstructed the federal government's goals of assimilating Indians, ensuring their economic self-sufficiency, and protecting nearby white populations.

Confronted with the precarious future of its policy objectives, Congress drastically expanded appropriations for Indian health care to \$200,000 in 1913, more than twice the amount that had been allocated in the previous year (\$90,000).<sup>219</sup> Heeding the USPHS's advice, Commissioner of Indian Affairs Cato Sells divided Indian Country into five sanitary districts. An ophthalmologist assigned to each district was responsible for training Indian service physicians how to diagnose and treat trachoma. The BIA hired special doctors and nurses specifically for the trachoma program, and expanded the Indian medical service's regular task force of agency and school physicians, general nurses, field matrons, field dentists, and health supervisors.<sup>220</sup> With the additional funding, the Indian medical service opened hospitals to treat school children and reservation adults. The first trachoma hospital, established at the Phoenix Indian School in 1909, had treated 700 cases during its first year (Figure 27).<sup>221</sup> By 1920, the BIA operated close to one hundred hospitals scattered throughout Indian Country. Each hospital held on average

<sup>&</sup>lt;sup>217</sup> Ibid, 74.

<sup>&</sup>lt;sup>218</sup> Ibid, 73.

 <sup>&</sup>lt;sup>219</sup> U.S. Congress. An act making appropriations for the current and contingent expenses of the Bureau of Indian Affairs, for fulfilling treaty stipulations with various Indian tribes, and for other purposes, for the fiscal year ending June thirtieth, nineteen hundred and fourteen, 63rd Congress, 1st Sess., 38 Stat. 78, Chap 6. Washington, 1913.
 <sup>220</sup> U.S. Bureau of Indian Affairs. Annual Report of the Commissioner of Indian Affairs for the Year 1919. (Washington, DC: Government Printing Office, 1919), 30.

<sup>&</sup>lt;sup>221</sup> L.W. Fox, "The Trachoma Problem Among the North American Indians," *Journal of the American Medical Association* 86 no.6 (1926): 405.

only 24 beds and faced chronic shortages in personnel and equipment.<sup>222</sup> Despite these shortcomings, the increased number of facilities and BIA personnel helped to bring medical treatment to neglected sections of the Indian population.

The BIA's strategies for controlling trachoma reflected prejudices about Indian patients' racial and cultural inferiority. In 1911, the BIA had published a pamphlet to assist the service's physicians with their trachoma work. Pamphlet authors W.H. Harrison and Daniel White, both Indian medical service physicians, divided trachoma management into three parts: prophylactic, surgical, and medical. They claimed that prophylaxis was the only "real solution" for controlling disease.<sup>223</sup> Surgery, which involved physically removing diseased granules, was merely a superficial measure and had to be accompanied by prolonged medical treatment to effect a cure.<sup>224</sup> All three methods were well-integrated into the USPHS's campaign against trachoma among Appalachian whites. However, health officials believed that prevention and mild treatments were impossible for Native Americans. USPHS Surgeon Clark claimed that the most serious obstacle in fighting trachoma was the Indian patient himself. Clark described insurmountable biological, racial, and cultural differences between Indian and white patients. He speculated that Indians were "peculiarly susceptible to [trachoma]."<sup>225</sup> Furthermore, Clark observed that "the average Indian is careless in his personal habits, indifferent to dirt in connection with himself and his surroundings, and [has a] known disinclination to continue the prolonged and painful treatment necessary for the cure of trachoma."226 Their social life ("[they

<sup>&</sup>lt;sup>222</sup> Lewis Meriam, The Problem of Indian Administration, (Baltimore: Johns Hopkins Press, 1928), 9.

<sup>&</sup>lt;sup>223</sup> W.H. Harrison and Daniel W. White, "Management and Treatment of Trachoma among Indians," *The Journal of Ophthalmology and Otolaryngology* 5 no.4 (1911): 107.

<sup>&</sup>lt;sup>224</sup> Ibid, 110

<sup>&</sup>lt;sup>225</sup> Clark, "An Investigation of the Prevalence of Trachoma in the State of Minnesota," 1335.

<sup>&</sup>lt;sup>226</sup> Ibid.

are] very hospitable and fond of visiting") undoubtedly facilitated the disease's proliferation.<sup>227</sup> Another ophthalmologist who consulted for the BIA's trachoma work complained:

It is extremely difficult to teach these Indian women that the bottom hem of their skirts is not the proper thing with which to wipe their noses and their babies' eyes. The urging of health journals, such as *Hygeia*, on them would be ridiculous, and even the talks to the youngsters accomplish very little.<sup>228</sup>

From the standpoint of government officials, health education would be wasted on the "ignorant" reservation residents.<sup>229</sup> Due to their "temperamental vagaries," Indians were not considered "in the class that will stand for protracted treatment of any kind."<sup>230</sup> Skeptical that patients would follow the physician's instructions after their initial symptoms had subsided, the BIA largely rejected prophylactic and medical approaches.<sup>231</sup> Instead, they prioritized the third strategy: surgery.

In the summer of 1924, the BIA launched the first highly-organized campaign to eradicate trachoma from Indian communities. As their primary weapons, agency physicians adopted two surgical procedures pioneered by University of Pennsylvania ophthalmologist W.L. Fox.<sup>232</sup> Fox had developed the techniques when operating on trachomatous students at the Carlisle Indian School.<sup>233</sup> For patients with mild disease, Fox recommended "radical grattage." After anesthetizing the patient, the surgeon used a knife to scrape the infected conjunctiva

<sup>&</sup>lt;sup>227</sup> Ibid.

<sup>&</sup>lt;sup>228</sup> Fox, "The Trachoma Problem Among the North American Indians," 405.

<sup>&</sup>lt;sup>229</sup> Ibid, 406.

<sup>&</sup>lt;sup>230</sup> Ibid.

<sup>&</sup>lt;sup>231</sup> Fox, "The Trachoma Problem Among the North American Indians," 405.

<sup>&</sup>lt;sup>232</sup> Meriam, *The Problem of Indian Administration*, 212.

<sup>&</sup>lt;sup>233</sup> The Carlisle Indian School (1879-1918) in Carlisle, Pennsylvania was the earliest government boarding school for Native Americans. Central to the federal government's assimilation campaign, the Carlisle School pioneered the "outing system" which placed Indian children among white American families. The school became a prototype for other Indian boarding schools. Dejong. "Friend or Foe? Education and the American Indian," 218-228.

longitudinally and laterally. Afterward, he vigorously rubbed the inner eyelid using a toothbrush that had been dipped in mercury bichloride solution. Compared to ordinary grattage, which had been used extensively throughout rural Appalachia, radical grattage offered the distinct advantage of shortening post-operative treatment from several weeks to a period of four to six days. For advanced cases, Fox recommended tarsectomy (Figure 28). In this aggressive procedure, the surgeon used a scalpel to cut out the diseased tarsal plate and most of the underlying conjunctival tissue. He then stitched the remaining conjunctiva to the margin of the eyelid. During the eight- to ten-day post-operative period, patients received daily anesthetics to their eyes.<sup>234</sup>

According to Fox, these techniques rendered Indian patients "inert so far as disseminating disease is concerned" and eliminated the need for prolonged aftercare.<sup>235</sup> Fox first demonstrated radical grattage and tarsectomy to BIA officials when operating on Carlisle School students from the Blackfeet reservation in Montana. The BIA embraced and soon afterward standardized Fox's techniques, despite lacking evidence for either operation's safety or long-term efficacy.<sup>236</sup> In 1925, Commissioner of Indian Affairs Charles Burke issued a circular requiring "all our physicians to learn to perform the approved operations for the cure of trachoma," and he later issued a second circular announcing that "station physicians must learn to treat trachoma and perform operations recommended by Dr. Fox... The office desires that every physician in the Indian Service shall become a trachoma specialist."<sup>237</sup> The BIA assembled a group of seven

<sup>&</sup>lt;sup>234</sup> Todd Benson. "Blinded with Science: American Indians, the Office of Indian Affairs, and the Federal Campaign against Trachoma, 1924-1927," In *Medicine Ways: Disease, Health, and Survival among Native Americans*. Edited by Diane E. Weiner and Clifford E. Trafzer. (Walnut Creek: AltaMira Press, 2001), 57.

<sup>&</sup>lt;sup>235</sup> Fox, "The Trachoma Problem Among the North American Indians," 406.

<sup>&</sup>lt;sup>236</sup> Meriam, *The Problem of Indian Administration*, 214.

<sup>&</sup>lt;sup>237</sup> "Circular no. 2122, June 22, 1925," In Meriam, *The Problem of Indian Administration*, 212; "Circular no. 2147, October 3, 1925," In Meriam, *The Problem of Indian Administration*, 213.

ophthalmologists and thirteen nurses who traveled through "trachoma country" to lead teaching clinics for reservation physicians.<sup>238</sup> Many doctors became "enamoured at the possibilities of radical surgery," believing it would cure trachoma once and for all without requiring follow-up treatment.<sup>239</sup> By the end of 1925, all of the BIA's medical specialists had been instructed in Fox's techniques.<sup>240</sup>

Between 1925 and 1927, the BIA engaged in a "wild crusade" against trachoma.<sup>241</sup> Physicians performed tarsectomies indiscriminately on Indian patients, often before any other treatments had been attempted. Some went as far as urging for tarsectomy's use as a preventive measure; one doctor who operated on young children declared that if he had sufficient funding he would "perform the operation on every Indian, irrespective of the stage of the disease."<sup>242</sup> To obtain consent from Indian patients, BIA personnel assured them that tarsectomy would grant immunity against trachoma. To handle staffing shortages, unskilled field doctors were ordered to carry out the surgery. The BIA neglected to follow up on patients and failed to assess complications from the intervention.<sup>243</sup> During the BIA's three-year campaign, tarsectomy accounted for 5,978 (26.25 percent) of the 22,616 trachoma operations performed.<sup>244</sup> As the landmark 1928 Meriam Report later concluded, "this serious operation was unquestionably performed on many Indians who did not need it, and because of the difficulties in diagnosis of trachoma, upon some Indians who did not even have the disease."<sup>245</sup>

<sup>&</sup>lt;sup>238</sup> Meriam, *The Problem of Indian Administration*, 213.

<sup>&</sup>lt;sup>239</sup> Ibid, 213, 215.

<sup>&</sup>lt;sup>240</sup> Ibid, 213.

<sup>&</sup>lt;sup>241</sup> William H. Wilder, "Trachoma Among the Indians: Report of the Advisory Committee of the American Opthalmological Society," *American Journal of Ophthalmology* 13 no. 5 (1930): 387.

<sup>&</sup>lt;sup>242</sup> Ibid; Meriam, *The Problem of Indian Administration*, 213.

<sup>&</sup>lt;sup>243</sup> Robert Gessner, *Massacre: A Survey of Today's American Indian*, (New York: John Cape and Harrison Smith, 1931), 219.

<sup>&</sup>lt;sup>244</sup> Benson, "Blinded with Science," 62-63.

<sup>&</sup>lt;sup>245</sup> Meriam, *The Problem of Indian Administration*, 11; The 1928 Meriam Report, officially titled *The Problem of Indian Administration*, was the product of an extensive investigation into Indian conditions carried out by the

As early as 1925, prominent physicians had expressed strong misgivings about Fox's techniques. That spring a committee of AMA ophthalmologists, who had been convened at the request of Secretary of Interior Hubert Work to advise the BIA on trachoma activities, cautioned Commissioner of Indian Affairs Burke that radical surgery should be reserved for select cases.<sup>246</sup> After visiting reservations and schools, the AMA committee stated more forcefully that it "[doubted] the efficiency" of tarsectomy.<sup>247</sup> Urging Burke to promote a more conservative approach which included health education and home visits, the committee reminded him that "trachoma is a disease that demands continuous after treatment and cannot be cured by one radical treatment, operative or otherwise."<sup>248</sup> One committee member denounced the "evil results of tarsectomy, such as retracted lids and undue scarring." He reported cases where patients had lost sight in both eyes due to complications from the surgery.<sup>249</sup> A follow-up study of children at the Phoenix Indian School in Arizona who had been operated on in the previous year (1925) found a 100 percent trachoma recurrence rate among tarsectomized patients and over 50 percent recurrence among those receiving selective grattage.<sup>250</sup> But these warnings went unheeded. BIA officials continued to push surgery over other strategies for disease control. As historian Todd Benson has argued, the BIA's uncritical acceptance of invasive surgery was based in large part

<sup>246</sup> William Wilder to Commissioner of Indian Affairs, "Outline of Suggestions for the Control and Treatment of Trachoma among the American Indians," (April 24, 1925) In Benson, "Blinded with Science," 61.

Institute for Government Research. Combining narration with statistical evidence, this 842-page report sharply criticized the government for failing to protect Indian lives and livelihoods. Its findings helped usher reforms, most significantly the passage of the "Indian New Deal" (1934) which reversed the tradition assimilationist goal of federal Indian policy. For an analysis of the Meriam Report especially in relation to Indian health, see Putney, "Fighting the Scourge: American Indian Morbidity and Federal Policy, 1897-1928," 309-326.

<sup>&</sup>lt;sup>247</sup> "Report of the Advisory Committee on Trachoma Among the Indians," *Journal of the American Medical Association* 88 no. 2 (1927): 1175.

<sup>&</sup>lt;sup>248</sup> Ibid.

<sup>&</sup>lt;sup>249</sup> William C. Posey, "Trachoma among the Indians of the Southwest," *Journal of the American Medical Association* 88 no. 21 (1927): 1619.

<sup>&</sup>lt;sup>250</sup> Meriam, *The Problem of Indian Administration*, 214.

on its belief that Indians patients were a primitive, uncompliant group.<sup>251</sup> In September 1927, Commissioner of Indian Affairs Burke finally banned Fox's techniques.<sup>252</sup> Thousands of Indians had already been blinded or disfigured, and countless more now harbored intense fears of the BIA physicians and hospitals that had orchestrated what one commenter called the "ghastly" campaign.<sup>253</sup>

To encourage research on trachoma, the BIA established a combined trachoma school and laboratory at the Theodore Roosevelt Boarding School in Fort Apache, Arizona, in 1934. The original USPHS report on Indian health had recommended the BIA set up special schools for trachomatous children as a critical part of the campaign against trachoma.<sup>254</sup> Kerr had pointed out that boarding schools were ideal sites for eliminating disease because they gave government personnel "very complete control… over [the Indians'] habits, environment, and daily life."<sup>255</sup> Students could be treated under the careful supervision of Indian medical service physicians, with minimal disruption to their education or vocational training and at little risk to the health of non-infected Indians. In 1927, the BIA established the first trachoma school by transferring healthy students out of the Fort Defiance Boarding School in Arizona, and accepting infected children from surrounding reservations. Agency nurses, under the supervision of a local physician, administered copper sulfate treatments twice daily to the Fort Defiance School's four-

<sup>&</sup>lt;sup>251</sup> Historian Todd Benson has argued that racial beliefs not only justified the tarsectomy campaign, but also absolved the BIA from responsibility for its failure. BIA doctors denounced Indian patients as the major obstacles to the campaign. They cited Indians' deference to Native medicine men, suspicion of white physicians, and supposed refusal to adhere to post-operative guidelines. Benson, "Blinded with Science," 66-69.

<sup>&</sup>lt;sup>252</sup> "Circular no. 2369, Sept. 20, 1927," In Meriam, *The Problem of Indian Administration*, 214.

<sup>&</sup>lt;sup>253</sup> Gessner, Massacre: A Survey of Today's American Indian, 219.

<sup>&</sup>lt;sup>254</sup> U.S. Congress. Letter from the Secretary of the Treasury. *The Prevalence of Contagious and Infectious Diseases*, 82.

<sup>&</sup>lt;sup>255</sup> Ibid, 29.

hundred and fifty students (Figure 29). Over the next decade, the BIA opened numerous trachoma boarding schools throughout the Southwest.<sup>256</sup>

Unique from other trachoma schools, the Theodore Roosevelt (TR) School pursued an ambitious research objective alongside the goals of education and disease control. The school enrolled over three-hundred Indian children from the Fort Apache, Navajo, San Carlos, and Hopi tribes who required medical treatment (Figure 30).<sup>257</sup> Students attended class in the TR School's main building, which was adjacent to the Fort Apache laboratory.<sup>258</sup> A team of trachoma specialists, comprised of Phillips Thygeson (a Columbia University physician-scientist with expertise in the microbiology of trachoma), Francis Proctor (the director of the BIA's trachoma program and a financial contributor to the Fort Apache laboratory), and Polk Richards (an Indian medical service physician), headed the research program.<sup>259</sup> The BIA equipped the laboratory with incubators for tissue cultures and baboons for experimental infections.<sup>260</sup> Additionally, the researchers benefited tremendously from their access to TR School students; as Thygeson later recalled, the Indian children were "good subjects" for research because they suffered from "very active" trachoma and "very seldom cried" during treatments.<sup>261</sup> TR students were fundamental to the pioneering work of the visiting scientists, contributing sample material and serving as human subjects for the laboratory's studies.

<sup>259</sup> Sally S. Hughes. Ophthalmology Oral History Series, A Link with Our Past, an Interview with Phillips Thygeson, MD. (Berkeley: Regional Oral History Office, University of California, Berkeley, 1987); 51, 54-55.
For more about Thygeson, Proctor, and Richards' professional backgrounds and work for the BIA, see Beret E Strong. "Fort Apache and the Great Experiment," In Seeking the Light: The Lives of Phillips and Ruth Lee Thygeson, Pioneers in the Prevention of Blindness. 101-109. (Jefferson: McFarland, 2008).

<sup>&</sup>lt;sup>256</sup> Meriam, The Problem of Indian Administration, 210-211.

<sup>&</sup>lt;sup>257</sup> Mary J. Wade, "Through their Eyes: Apache Perceptions of Theodore Roosevelt School 1945-1975," PhD Dissertation. (Northern Arizona University, 2014), 82.

<sup>&</sup>lt;sup>258</sup> James Garrison. *Fort Apache Historic District, Navajo County, Arizona sketch map, January 1976.* [map]. Phoenix: Arizona Historic Preservation Office, 1975.

<sup>&</sup>lt;sup>260</sup> Ibid, 55.

<sup>&</sup>lt;sup>261</sup> Ibid, 60.

The Fort Apache laboratory played a central role in the development of an effective cure for trachoma. Thygeson and his team's first major discovery, linking trachoma to a filterable virus, resolved an ongoing debate over whether trachoma was caused by a virus or a bacterium. To investigate trachoma's etiology, researchers selected fourteen TR students suffering from severe trachoma and, using a spatula, scraped off their diseased conjunctival tissue. The scientists inoculated baboons with filtered or unfiltered sample material. All animals developed active trachoma, and laboratory cultures confirmed that the bacteria-free filtrate was highly infectious.<sup>262</sup> To validate their findings, the scientists tested the filtrate on a human volunteer, Clarence Brown from Iowa.<sup>263</sup> Within five days of inoculation, Brown came down with violent signs of active trachoma.<sup>264</sup> Between 1935 and 1938, Fort Apache scientists performed a total of twenty-two filtration experiments using epithelial scrapings gathered from Indian school children.<sup>265</sup> Summarizing this work to his audience at the annual meeting of the AMA Section on Ophthalmology in 1938, Thygeson firmly asserted that trachoma was caused by a filterable virus.<sup>266</sup>

Based on the theory that trachoma was a viral disease, Fred Loe, an Indian medical service physician at the Rosebud Sioux Reservation in South Dakota, proposed testing sulfanilamide treatment. In 1937, Loe had accompanied Thygeson, Proctor, and Polk to a lecture

<sup>263</sup> Clarence Brown was a white patient from Iowa City. He had a virulent tumor on one eye which had metastasized to his olfactory tract. Figuring that he did not have long to live, Brown volunteered to be inoculated with trachomatous material. He received \$1,000 from Francis Proctor for his participation in the Fort Apache experiment. Brown eventually recovered from trachoma after one year of copper sulfate treatment. Hughes, *Ophthalmology Oral History Series*, 62-64.

<sup>&</sup>lt;sup>262</sup> Phillips Thygeson and Francis I. Proctor. "The filterability of trachoma virus." *Archives of Ophthalmology* 13 no.6 (1935):1019-1020.

<sup>&</sup>lt;sup>264</sup> Phillips Thygeson, Francis I. Proctor, and Polk Richards, "Etiologic Significance of the Elementary Body in Trachoma," *American Journal of Ophthalmology* 18 no.9 (1935): 811-812.

<sup>&</sup>lt;sup>265</sup> Phillips Thygeson and Polk Richards, "Nature of the filterable agent of trachoma," *Archives of Ophthalmology* 20 no.4 (1938): 570.

<sup>&</sup>lt;sup>266</sup> Ibid, 582.

at Columbia University where bacteriologist Alphonse Dochez reported using sulfanilamide to cure viral distemper in dogs. Supposedly, Loe immediately thought of his trachoma patients and stated "Well, now, trachoma is a viral disease. This works on dog distemper, why not on trachoma?"<sup>267</sup> With the permission of Indian medical service director James Townsend, Loe selected two Sioux Indians suffering from chronic trachoma. He administered sulfanilamide in two ways, by oral dosage and by dusting their eyelids, every four hours.<sup>268</sup> Within five days, both patients showed significant improvements to their conjunctiva. After one month both were considered cured, and even six months later neither had displayed signs of recurrence.<sup>269</sup> In January 1938, Loe expanded the sulfanilamide trials to one-hundred and forty Sioux Indians, including ninety-three boarding school students. His findings were so remarkable that he gave a preliminary report to the AMA's annual conference in June of that year, and later published his results in the Journal of the American Medical Association. After twenty-four hours, patients' lacrimation and photophobia had disappeared, and within five months, 90 percent of them had been cured.<sup>270</sup> Thygeson, Richards, and Proctor followed up with a range of studies at the Fort Apache laboratory; these included treating one-hundred and twenty-five TR School students (resulting in "striking improvement" in all patients), treating trachomatous baboons, and inoculating epithelial scrapings (before and after sulfanilamide had been administered to trachomatous children) into the eyes of baboons. All experiments led the Fort Apache scientists to the same conclusion: "the therapeutic effect of sulfanilamide....was beyond question."<sup>271</sup>

<sup>&</sup>lt;sup>267</sup> Hughes, *Ophthalmology Oral History Series*, 77.

<sup>&</sup>lt;sup>268</sup> Ibid.

<sup>&</sup>lt;sup>269</sup> Fred Loe. "Sulfanilamide Treatment of Trachoma Preliminary Report," *Journal of the American Medical Association* 111 no.15 (1938): 1371.

<sup>&</sup>lt;sup>270</sup> Ibid, 1371-1372.

<sup>&</sup>lt;sup>271</sup> Polk Richards, Wesley G. Forster, and Phillips Thygeson, "Treatment of Trachoma with Sulfanilamide," *Archives of Ophthalmology* 21 no.4 (1939): 579-580.

In 1938, Commissioner of Indian Affairs John Collier expanded the sulfanilamide trials to reservations throughout the Southwest. After testing various doses and treatment periods, the BIA inaugurated a new trachoma eradication campaign in the early 1940s centered around oral sulfanilamide administration (Figure 31). Meeting widespread success, the BIA ended the program just a few years later, on the premature judgment that trachoma no longer posed a serious threat.<sup>272</sup> Isolated outbreaks surfaced on reservations throughout the following decades. Nevertheless, "Indian sore eyes" continued to dramatically decline due to sulfanilamide therapy, improved living and sanitary conditions, preemptive screening programs, and greater awareness of the disease among Native Americans. By the 1970s, trachoma was considered to have been almost entirely eliminated in the United States.<sup>273</sup>

#### The Legacy of Trachoma

Beginning in 1897, public health officials worked arduously to detect trachoma and, from 1912 onward, to perform risky surgeries and administer prolonged treatments. As this thesis has argued, the form and content of early twentieth-century trachoma programs were shaped by sweeping judgments about the affected populations. Patients were defined in nativist terms. Immigrants and Native Americans were believed to fall outside the national character, and so evoked alarm because of their potential to spread trachoma to healthy white Americans. Immigrant trachoma, which was situated outside of America's borders, could be resolved through careful medical inspection and exclusion. Native American trachoma, which was already entrenched in the nation's interior, required meaningful mobilization by federal agencies to safeguard encroaching white settlers. Native American patients were subject to radical, untested surgeries based on the assumption that they were temperamentally unfit for traditional public

<sup>&</sup>lt;sup>272</sup> Dejong, If You Knew the Conditions, 97-98.

<sup>&</sup>lt;sup>273</sup> Ronald Friederich, "Eye Disease in the Navajo Indians," Annals of Ophthalmology 14 no.1 (1982): 39.

health measures. In contrast, Appalachian Americans fell within, and moreover were believed to embody, the national character. While impoverished and often labeled as backward in public discourse, Appalachian patients aroused the sympathy and moral vouching of health inspectors. Even though USPHS officials confronted Native American and white Appalachian communities in the same decades, Appalachian trachoma inspired a comprehensive approach combining prevention, education, and conservative treatments. Out of an arsenal of strategies for disease control, health professionals selected those that aligned with their pre-existing prejudices about each patient group.

The success of sulfanilamide treatment in 1938 marked a pivotal moment in trachoma's long and notorious history. Sulfanilamide seemed to provide American health officials with the ability to cure trachoma and eliminate the disease from entire communities. Because it was effective across social and racial classes, sulfanilamide appeared to eclipse trachoma's social identities. This magic bullet redefined trachoma into a condition that was amenable to medical intervention, regardless of the circumstances or supposed defects of the infected patient.

And so it is ironic that sulfanilamide treatment was based on a mistaken biological identity. When trachoma's etiological agent was finally isolated in 1957, scientists discovered that it was not, as Fort Apache researchers had claimed, a viral disease. Laboratory studies by Chinese scientist F.F. T'ang demonstrated that trachoma was caused by the small, gram-negative bacterium, *Chlamydia trachomatis*.<sup>274</sup> Furthermore, Fred Loe's breakthrough had stemmed from another mistaken disease identity. As Phillips Thygeson later recounted, Alphonse Dochez's dogs did not have viral distemper, but suffered from a bacterial infection. Due to this constellation of errors, the antibiotic sulfanilamide which had successfully treated "viral

<sup>&</sup>lt;sup>274</sup> T'ang et al., "Studies on the etiology of trachoma with special reference to isolation of the virus in chick embryo," 429-47.

distemper" soon became the first effective cure for "viral" trachoma.<sup>275</sup> Just as the lag in scientific understanding helped foster trachoma's complex social history, so too did it hasten a clinical solution.

Despite the advent of antibiotic treatment, today trachoma persists at "hyper-endemic" levels in certain developing countries.<sup>276</sup> In 1997, the WHO introduced a multi-faceted campaign to eliminate trachoma. The WHO's Alliance for the <u>G</u>lobal <u>E</u>limination of <u>T</u>rachoma by <u>2020</u> (GET2020), a partnership among the WHO, non-governmental organizations, academic institutions, national ministries of health, and Pfizer Inc., has recently launched the SAFE strategy. This extensive public health program encompasses: <u>S</u>urgery to reverse entropion and trichiasis (inwardly folding eyelids and eyelashes), <u>A</u>ntibiotics for trachoma infection, <u>F</u>acial cleanliness, and <u>E</u>nvironmental improvement.<sup>277</sup> Among these components, mass azithromycin administration in entire communities has been proven to be the most effective – and yet, trachoma remains an insidious problem for much of the world's population.<sup>278</sup> While trachoma has become antiquated to American health officials, the disease still divides along sharp social, racial, and geopolitical lines on the global stage.

#### Word Count: 12,499

<sup>&</sup>lt;sup>275</sup> Hughes, Ophthalmology Oral History Series, 77.

<sup>&</sup>lt;sup>276</sup> Thomas M. Lietman, Interview by Kathleen Yu. Phone Interview. March 27, 2017.

<sup>&</sup>lt;sup>277</sup> World Health Organization. "WHO Alliance for the Global Elimination of Blinding Trachoma by the year 2020," *Weekly Epidemiological Record* 39 no. 89 (2014): 421-428.

<sup>&</sup>lt;sup>278</sup> Thomas M. Lietman, Interview by Kathleen Yu. Phone Interview. March 27, 2017.

# Figures



**Figure 1:** Trachoma flies that cluster around the eyes spread the disease [c.2010]. **Source:** Thomas M. Lietman, Francis I. Proctor Foundation for Research in Ophthalmology.



**Figure 2:** Trachoma's telltale diagnostic feature. White granulations on the upper eyelid distinguish trachoma from other inflammatory eye diseases [c.2010]. **Source:** Thomas M. Lietman, Francis I. Proctor Foundation for Research in Ophthalmology.



**Figure 3:** An ancient stupa at Swayambhu in Kathmandu, Nepal. The eyes of Buddha are painted on each of the four sides. The curved eyelids may be an indication of entropion, a common symptom of trachoma in which the eyelid folds inward from tissue scarring [c.2010]. **Source:** Thomas M. Lietman, Francis I. Proctor Foundation for Research in Ophthalmology.



**Figure 4:** Patients with advanced trachoma experience trichiasis and corneal opacity [c.2010]. **Source:** Thomas M. Lietman, Francis I. Proctor Foundation for Research in Ophthalmology.



**Figure 5:** Immigrants walk up the boardwalk after being transported by barge from the steamship dock. The recently opened Ellis Island Hospital is in the background. This picture was published in a pamphlet by the Maltine Company, a patent medicine manufacturer. Intended for distribution to physicians, the pamphlet combined advertisements with illustrations of the government's new program for screening immigrants at Ellis Island [1902]. **Source:** *Quarantine Sketches.* (New York, NY: Maltine Company, 1902), 25.



**Figure 6:** A USPHS officer uses a buttonhook to inspect an immigrant for trachoma [c.1900]. **Source:** National Park Service, Statue of Liberty National Monument Historic Photographs. URL: https://www.nps.gov/media/photo/gallery.htm?id=BCD9B183-155D-451F-6726377B6129FE53



**Figure 7:** The men's ward in Ellis Island Hospital. Some trachomatous patients remained at the hospital for several weeks to months to receive treatment [1902]. **Source:** *Quarantine Sketches.* (New York, NY: Maltine Company, 1902), 21.



**Figure 8:** A group of patients with corneal and lid complications at Joseph Stucky's trachoma clinic in Hindman, Kentucky. The photographs were taken by a nurse at the clinic [1912]. **Source:** Joseph A. Stucky, "Trachoma among the Natives of the Mountains of Eastern Kentucky," In *Transactions of the Section on Ophthalmology of the American Medical Association*, (Chicago: AMA Press, 1913), opposite page 440.



**Figure 9:** Two cases of trachoma in the mountains of Eastern Kentucky. The children have been "almost blind" for months [1912].

Source: John McMullen, "A Report on an Investigation of the Prevalence of Trachoma in the Mountains of Eastern Kentucky," *Public Health Reports* 27 (1912): opposite page 1821.



**Figure 10:** Two elderly patients suffering from chronic trachoma. The husband is blind and the wife has only one-third vision [1912].

**Source:** Joseph A. Stucky, "Trachoma among the Natives of the Mountains of Eastern Kentucky," In *Transactions of the Section on Ophthalmology of the American Medical Association*, (Chicago: AMA Press, 1913), opposite page 440.



**Figure 11:** An Appalachian family stands in front of their cabin in eastern Kentucky. Six of the seven family members have trachoma [c.1920]. This picture is part of the Linda Neville collection. Linda Neville (1873-1961) was an Appalachian health crusader. Beginning in 1911 with Joseph Stucky's Hindman clinic, Neville organized field clinics for trachoma patients throughout eastern Kentucky.

Source: Linda Neville papers, Box 18P item 607, University of Kentucky.



**Figure 12:** A demonstration of how trachoma is transmitted through the shared wash towel [1915].

**Source:** Gordon L. Berry, "Trachoma a National Menace," In *National Committee for the Prevention of Blindness, Publications no. 6*, (New York: National Committee for the Prevention of Blindness, 1915), 4.



**Figures 13 and 14:** Trachoma hospitals operated by the US Public Health Service in Hindman, Kentucky and Lincoln, Kentucky. Early hospitals were located in an available house that had been converted into a treatment facility. They could hold up to 35 beds [c.1920]. **Source:** Linda Neville papers (1873-1961), Box 18P items 595 and 597, University of Kentucky.



**Figure 15:** A model set up in a trachoma hospital. Shown are an individual bed, separate towels, wash clothes, and brushes. USPHS workers used these displays to teach sanitary habits to local people [1915].

**Source:** Gordon L. Berry, "Trachoma a National Menace," In *National Committee for the Prevention of Blindness, Publications no. 6*, (New York: National Committee for the Prevention of Blindness, 1915), 35.



**Figure 16:** A trachoma field clinic in Oneida, Kentucky [c.1920]. **Source:** Linda Neville papers (1873-1961), Box 18P item 570, University of Kentucky.



**Figure 17:** Field nurses returning by wagon from a trachoma clinic in the mountains of eastern Kentucky [c.1920].

Source: Linda Neville papers (1873-1961), Box 18P item 572, University of Kentucky.



Figure 18: Indian reservations west of the Mississippi River [1923].

**Source:** U.S. Office of Indian Affairs. *Indian Reservations west of the Mississippi River*. [S.I.: s.n, 1923] Map. Retrieved from the Library of Congress. URL: https://www.loc.gov/item/99446198



**Figures 19, 20, and 21:** Three types of housing on reservations in Arizona: A Navajo hogan built with slabs and dirt; a typical Apache tepee; a street littered with trash in a Hopi Village. USPHS officers blamed deplorable living conditions and unsanitary personal habits for the unusually high rates of trachoma among Indians in the Southwest [1912].

**Source:** U.S. Congress. Letter from the Secretary of the Treasury. *The Prevalence of Contagious and Infectious Diseases Among the Indians of the United States*. 62<sup>nd</sup> Congress, 3<sup>rd</sup> Session, 1913. Senate Report 1038, serial 6365, 85.

OKLAHOMA	68.72%
WYOMING	51.%
NEBRASKA	41.%
UTAH	39.%
IOWA	32.04%
VIRGINIA	30.80%
NEVADA	26.9%
MONTANA	26.3%
ARIZONA	24.9%
No. DAKOTA	22.94%
NEW MEXICO	22.38%
KANSAS	21.1%
So. DAKOTA	17.247
IDAHO	15.96%
COLORADO	15.64%
CALIFORNIA	15.3 %.
MINNEGOTA	15.05%
PENNSYLVANIA	13.76%
WASHINGTON	13,35%
OREGON	10.40%
MICHIGAN	7.46%
N. CAROLINA	7.%
WISCONSIN	6.86%
NEW YORK	0.2%
FLORIDA	0%

**Figure 22:** The percent of Indians suffering from trachoma in different states [1912]. **Source:** U.S. Congress. Letter from the Secretary of the Treasury. *The Prevalence of Contagious and Infectious Diseases Among the Indians of the United States*. 62<sup>nd</sup> Congress, 3<sup>rd</sup> Session, 1913. Senate Report 1038, serial 6365, opposite 24.



**Figure 23:** Native Americans and Whites often worked side-by-side on threshing crews in the Midwest. Crew members shared a hand basin and roller towel. Two of the Indian workers on this crew had trachoma. USPHS physicians feared that increased contact between Indians and whites would facilitate the spread of trachoma to local white populations [1912].

**Source:** U.S. Congress. Letter from the Secretary of the Treasury. *The Prevalence of Contagious and Infectious Diseases Among the Indians of the United States*. 62<sup>nd</sup> Congress, 3<sup>rd</sup> Session, 1913. Senate Report 1038, serial 6365, 85.



**Figure 24:** A group of students at the Colville Mission School, a boarding school on the Colville Indian Reservation in Washington state. Twenty-one out of these 31 girls suffered from trachoma [1912].

**Source:** U.S. Congress. Letter from the Secretary of the Treasury. *The Prevalence of Contagious and Infectious Diseases Among the Indians of the United States*. 62<sup>nd</sup> Congress, 3<sup>rd</sup> Session, 1912. Senate Report 1038, serial 6365, 38.



**Figure 25:** In 1904, Commissioner of Indian Affairs Francis Leupp issued a circular to Indian school supervisors mandating the provision of individual towels for students. USPHS officers noted these were "separate towels in name only." Overlapping towels could easily transfer the trachoma germ from one student to another [1912].

**Source:** U.S. Congress. Letter from the Secretary of the Treasury. *The Prevalence of Contagious and Infectious Diseases Among the Indians of the United States*. 62<sup>nd</sup> Congress, 3<sup>rd</sup> Session, 1913. Senate Report 1038, serial 6365, 85.



**Figures 26:** An Indian family in front of their cabin on the Fort Berthold Reservation in North Dakota. The wife and all five children suffer from trachoma [1912]. **Source:** U.S. Congress. Letter from the Secretary of the Treasury. *The Prevalence of Contagious and Infectious Diseases Among the Indians of the United States*. 62<sup>nd</sup> Congress, 3<sup>rd</sup> Session, 1913. Senate Report 1038, serial 6365, 38.



**Figures 27:** The hospital on the campus of the Phoenix Indian School in Phoenix, Arizona. The boarding school enrolled Indian children from 23 tribes in Arizona, New Mexico, California, Nevada, and Oregon [1933].

**Source:** Historic American Buildings Survey. *Phoenix Indian School, Hospital, Northeast Corner of Central Avenue & Indian School Road, Phoenix, Maricopa County, AZ. Arizona Maricopa County Phoenix, 1933.* Library of Congress Prints and Photographs Division Digital Collections. URL: https://www.loc.gov/item/az0416/



**Figure 28:** The tarsectomy operation. A. Everting the eyelid to excise the tarsal plate and diseased conjunctiva. B, C. Placing sutures so that the remaining conjunctival tissue covers the surgical area. D. Suturing the conjunctiva to the lining of the eyelid [2011]. **Source:** Robert M. Feibel, "Fred Loe, MD, and the History of Trachoma," *Archives of Ophthalmology* 129 no. 4 (2011): 505.



**Figure 29:** An Indian medical service physician examines the eyes of an Apache child at the trachoma school in Fort Defiance, Arizona [1941]. **Source:** ""If you knew the conditions...": Health Care to Native Americans." National Library of Medicine Exhibit (April 15, 1994 – August 31, 1994). URL: https://www.nlm.nih.gov/exhibition/if\_you\_knew/images/eyelids.jpg



**Figure 30:** A Theodore Roosevelt School student receives topical eye treatment for trachoma [1938].

**Source:** Wayne T. Pratt, "A Study of Changing Conditions Among the White Mountain Apache Indians," Master's Thesis. (Texas A&M University, 1938), 106.



**Figure 31:** Nurses distribute oral prescriptions of sulfanilamide at an Indian school in Window Rock, Arizona, the capital of the Navajo nation. The nurse on the left checks to see that the boy has swallowed the sulfanilamide pill [1942].

**Source:** Grace G. Engleman, "Trachoma Nursing in the US Office of Indian Affairs," *The American Journal of Nursing* 42 no.4 (1942): 387.

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## **Bibliographic Essay**

I began this thesis intending to write about immigrant medical inspection at the turn of the twentieth century. I knew that the rise of laboratory science in America had coincided with the third major wave of immigration (1890-1924), and was curious about scientific medicine's role at immigration stations. As I read the works of Anne-Emmanuelle Birn, Elizabeth Yew, Amy Fairchild, and Alan Kraut, I honed in on one specific component of line inspection: the trachoma eye exam. These secondary sources described how the "button-hook" exam was an emblematic part of every immigrant's entry into the country. Howard Markel's "Their Eyes Have It" discussed trachoma's notoriety as the leading cause of medical deportation during this period; yet from Shannen Allen and Richard Semba's "The Trachoma "Menace" in the United States," I discovered that two domestic groups – Appalachian Americans and Native Americans – suffered from alarmingly high rates of the disease. Intrigued by trachoma's complex social history, I decided to study the disease within these three discrete patient populations.

During my research, I found that many government documents from this era were digitalized and readily available. My primary materials were imbalanced, as I struggled to find the voices of individual trachoma patients. My thesis thus analyzes trachoma from the standpoint of the public health establishment. It draws heavily on annual reports and publications from the Office of the Surgeon General (*Book of Instructions for the Medical Inspection of Immigrants* (1903) and *Trachoma: its Character and Effect* (1907)) to tell the immigrant trachoma story. For Appalachian trachoma, I had at my disposal a wealth of articles published in the USPHS's official journal (*Public Health Reports*). Each officer's report provided me a glimpse into both the scientific objectives and the personal beliefs tied to the investigations. The Native American trachoma investigations were also well-recorded. However, because the fourteen USPHS

80

officers' findings were summarized into a single Congressional document, and I felt that I had lost some of the individual "flavor" of each investigator. The Commissioner of Indian Affair's annual reports and the 1928 Meriam Report (*The Problem of Indian Administration*) helped contextualize many of the conditions described by USPHS and BIA personnel. While my thesis is limited to the perspective of public health authorities, this focus is significant nonetheless in showing how medically- and scientifically-trained personnel responded very differently to a single biological condition, depending on social circumstances.

Other important primary sources include transactions from the AMA Section on Ophthalmology's trachoma symposium in 1913, news articles (especially those conveying antiimmigrant sentiments or informing the public about rampant trachoma), Taft's Special Address to Congress in 1912, and a 1920 House of Representatives hearing that revealed inter-agency conflicts between the USPHS and the BIA. To trace the scientific research on trachoma, I read numerous publications from the Fort Apache laboratory. To flesh-out these "bare-bone" accounts, I turned to Sally Hughes' oral interview with Phillips Thygeson and Beret Stong's biography *Seeking the Light*. I found the interview particularly fun to read because of Thygeson's amusing anecdotes of his colleagues and personal versions of various breakthroughs (including his explanation of how Fred Loe conceived of using sulfanilamide treatment). However, I was also aware of the problems associated with this source. Thirty years had passed by the time Thygeson gave this interview, and I noticed several discrepancies between the scientific accounts that had been published in the 1930s and what Thygeson described during the interview. In these cases, I relied on information from the original scientific article.

I used secondary literature to varying degrees throughout my thesis. The section on Appalachian trachoma contains few references to secondary sources. This was partly because of

81

the small number of relevant secondary works, but more so due to the large volume of available primary literature. The main sources I used were Ralph William's history of the USPHS and Sandra Barney's overview of Appalachian health in the early twentieth century.

In contrast, the immigrant trachoma section relied heavily on secondary works, as so little had been published by the line inspectors themselves. Alan Kraut's Silent Travelers was especially helpful in providing a framework for untangling the interaction of immigration, nativism, and contagious disease. Similarly, the Native American trachoma section's many secondary sources helped me grapple with the sheer length and complexity of the Native American story. For a background on Indian health and federal policy, I read Diane Putney's painstakingly-researched "Fighting the Scourge," David Dejong's If You Knew the Conditions, and Todd Benson's Blinded with Science. For information on the BIA's assimilation through education movement (1880-1920s), I turned to Brenda Child's Boarding School Seasons and David Dejong's "Friend or Foe?" After deciding to focus on the Theodore Roosevelt School/Fort Apache Laboratory, I found two dissertations that were extremely informative: Wayne Pratt's "A Study of Changing Conditions Among the White Mountain Apache Indians," published in 1938, gave thorough descriptions of the treatments and experimental studies that TR students encountered on a regular basis (Pratt was a teacher at the TR School in the 1930s). Mary Wade's dissertation "Through their Eyes" included interviews of Apache elders who had attended the TR School in the 1930s and 1940s (Wade taught at the TR School in the 1990s).

With more time, I would have liked to explore how patients within each of the three communities experienced trachoma. It would be interesting to compare and contrast their construction of trachoma to that of public health officials. This perspective would have also shed light on how the communities viewed the medical establishment – a relationship that certainly

82

influenced the degree of success achieved by each trachoma control program. Additionally, I would have liked to examine how trachoma elimination efforts took shape in the context of numerous other fatal diseases and serious health problems that were widespread in these impoverished communities. Finally, given trachoma's chronic nature and devastating effects, I would have wanted to study how each community accommodated those individuals who had been debilitated by trachoma itself, or by complications from radical surgery.