

Pellagrous Repercussions: The Mighty Goliath of Tennessee's Past 1900-1930s

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## **DEDICATION**

I dedicate this thesis to Matthew Reynolds, my first archival mentor. Without him, I would have never found my passion for the archival field, and thus this research would not exist.

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Lastly, I would like to thank the staff at the Rutherford County Archives for the constant support with my studies and the many hours spent listening while I flipped through the pages of so many sources. It was here, due to my curiosity in the death records, that Pellagra revealed itself to me.

## **ABSTRACT**

### **Pellagrous Repercussions: The Mighty Goliath of Tennessee's Past 1900-1930s**

In the early twentieth century, Pellagra was a disease that could be found primarily in the Southern region of the United States, a disease that was strongly associated with poverty and poor diet. Eventually it would be erased from the Southern memory through the production of fortified foods and public health initiatives. The nutrient deficiency of Pellagra encouraged a well-balanced diet and the failures of national and local officials to address regional poverty. Several Southern states that had high rates of the disease Tennessee has received comparatively little attention in the medical history of Pellagra. This thesis uses Rutherford County, a rural county, as a case study on Pellagra in Tennessee. The county has a unique medical history due to the involvement of Northern philanthropic organizations that makes it an excellent place to understand progressive reformers and their impact on Pellagra in Tennessee.

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## Introduction

“Between 1900-1940, at least 100,000 individuals in the Southern United States died of pellagra, a dietary deficiency disease.”<sup>1</sup> The Southern region of the United States in the 20th century was fighting a battle on health that has over time been buried in public record. With the current Covid-19 pandemic, it has become increasingly easy to see the cracks within the United States economy and healthcare system; those faults can be traced back through the history of disease and health. Just like with current headlines, twentieth century newspaper headlines could easily stir up panic for its daily readers. If a reader had family or they, themselves, lived in Tennessee, these headlines would more than likely bring them fear: “1,500 Cases of Pellagra in Tennessee.”<sup>2</sup> “Alarming Increase in Pellagra in Tennessee.”<sup>3</sup> “Is Pellagra Epidemic here?”<sup>4</sup> What exactly was going on in the South? The 20th century South gained national attention because of an increased decline in health. Before the 1900s, the United States as a whole had dealt with harsh diseases such as malaria and yellow fever but were still ill-prepared for much else. Medical professionals insisted that Pellagra and Hookworm were plaguing Southerners in large numbers.<sup>5</sup>

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<sup>1</sup> H. M. Marks, “Epidemiologists Explain Pellagra: Gender, Race, and Political Economy in the Work of Edgar Sydenstricker,” *Journal of the History of Medicine and Allied Sciences* 58, no. 1 (February 2003): pp. 34-55, <https://doi.org/10.1093/jhmas/58.1.34>, 34.

<sup>2</sup> “1,500 Cases of Pellagra in Tennessee,” *Vicksburg Evening Post*, October 20, 1911, <https://newscomwc.newspapers.com/image/200920408>.

<sup>3</sup> “Alarming Increase in Pellagra in Tennessee,” *Knoxville Sentinel*. June 27, 1912, <https://newscomwc.newspapers.com/image/586500743>.

<sup>4</sup> “Is Pellagra Epidemic Here,” *Nashville Banner*; August 18, 1915, <https://newscomwc.newspapers.com/image/604561964>.

<sup>5</sup> James O. Breeden, “Disease as a Factor in Southern Distinctiveness,” In *Disease and*

Pellagra and Hookworm were diseases that became stereotypical of poor southerners due to their inability to fight them considering the poor health conditions and low wage economy.<sup>6</sup> Over time these diseases became distinctive of people in the south. Men, women, and children were all falling victim to these diseases, and with lacking or nonexistent public health; they had very few options to escape the disease. Public health reformers, with the help of northern philanthropies and the government, called for action. Many Southerners rejected the call; the idea of regional inferiority and pride ultimately got in the way of help for many Southerners.<sup>7</sup>

In early studies pellagra is referred to as a “rural problem”<sup>8</sup> because the disease was found commonly in areas where farming was prevalent and there was less access to grocery stores.<sup>9</sup> In the 20th century malnutrition could be found in communities where economically people’s livelihood was based on the success of their cash crops. Because of the focus on cash crops such as cotton, niacin rich foods were not as readily available.<sup>10</sup> The southern diet at that time consisted primarily of pork, molasses, and corn. Though some meats contain niacin, pork does not contain a high percentage.<sup>11</sup> Because of economic hardships not all southerners had access to foods such as milk and eggs that

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*Distinctiveness in the American South*, eds by T.L. Savitt and James H. Young. (University of Tennessee Press, 1988), 13.

<sup>6</sup> Ibid.

<sup>7</sup> Ibid., 13-14.

<sup>8</sup> William Dekleine, “Recent Trends in Pellagra” *American journal of public health and the nation's health* vol. 27, no.6 (1937) doi:10.2105/ajph.27.6, 595.

<sup>9</sup> Ibid.

<sup>10</sup> Karen Clay, Ethan Schmick, and Werner Troesken. “The Rise and Fall of Pellagra in the American South.” *The Journal of Economic History* 79, no. 1 (March 2019) <https://doi.org/10.1017/s0022050718000700>, 33-34.

<sup>11</sup> Ibid,36.

contain an amino acid called tryptophan that the liver can convert to niacin.<sup>12</sup> Proving that gaps in the southern diet were linked to pellagra would be a difficult task.

Pellagra crept into the lives of Southerners just as fast as it was blocked out of their memories; the disease is not a part of the current Southern medical history canon and is typically not known by contemporary Southerners. What set this disease apart was that the sickness and death that it caused could not be blamed on an insect or contagious germ; the Southern economy created a lower class that found themselves falling victim to unhealthy lifestyles.<sup>13</sup> The South, supposedly a land of wealth and prosperity, was also a land of high poverty.<sup>14</sup> Little did Southerners know that their diet was slowly killing them; further even, due to their low wages, they were unable to do anything about it.

The study of disease as being distinctive to the South is not a new concept. Historians have been pondering the connections between social history and disease as early as the 1940s.<sup>15</sup> It can also be tackled by anthropologists and physicians throughout the years. Southern disease can be examined in social history, economics, and agriculture (in addition to studying physicians who were a part of the investigation and cure). By studying the South's unique history of health, old stereotypes of a diseased South can be broken, and a better understanding of how and why diseases plagued the South can be conducted.<sup>16</sup> Diseases such as "Pellagra and Hookworm only served to exacerbate this

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<sup>12</sup> Ibid.

<sup>13</sup> Elizabeth Williams Etheridge, "Pellagra: An Unappreciated Reminder of Southern Distinctiveness," In *Disease and Distinctiveness in the American South*, eds by T.L Savitt and James H. Young (University of Tennessee Press, 1988), 100-103.

<sup>14</sup> Ibid.

<sup>15</sup> Breeden, "Disease as a Factor in Southern Distinctiveness", 8.

<sup>16</sup> Ibid.

situation. Each came to be viewed as largely southern in incidence and as a result of the region's poverty and colonial economy."<sup>17</sup>

Current studies on Pellagra either focus primarily on South Carolina where the majority of historic studies were conducted, or the entire southern region, or the global domain. Pellagra affected a handful of states in the South, but they are often mentioned in passing without much detail; it is also rare to find a study that focuses solely on not only a state but a specific county or city. Historians have studied the disease in many different aspects, but there are several states, like Tennessee from my observations, that have little to no studies conducted about their experience. My research focuses on Rutherford County, a rural county seat in middle Tennessee. This county has a unique medical history due to its participation in the child health demonstration project of the Commonwealth Fund. This participation left documentation of the rural health problems and the overall status of the county, and thus making it a useful place to start on the quest of understanding pellagra in Tennessee. My research questions include: To what extent was Pellagra affecting Tennesseans in the 20th century? Is it possible to obtain a better understanding of Pellagra and its effects through a micro history of a singular rural county?

A number of primary sources will be examined in order to understand how Pellagra was documented in Tennessee from the early 1900s to the late 1930s when the cure was established. These sources include maps, newspapers, State Board of health books, early scientific journals, statistical data of cases and deaths in Tennessee, and a

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<sup>17</sup> Ibid., 13.

number of agricultural and economic sources. The use of case studies will be the most important to this study, because it identifies who and why people were affected. The case studies are conducted from a handful of Pellagra deaths found in Rutherford County as well as a few that were examined by the Tennessee Pellagra commission. As a point of comparison I will be using data and studies of Pellagra from Nashville, which is a city 32 miles away. I do not mention the names of the individuals who were affected or died unless it was mentioned publicly; this is out of respect for not only the sufferers but for the families who still live within these areas. Southern health, especially when associated with mental health disorders, is still considered shameful and difficult to talk about. It is my hope that this research will also be useful to the public when learning about the health of the people here before us, and so I will strive to uphold the utmost of respect.

I first came across Pellagra in the *Record of Death* books held at the Rutherford County Archives. I took notice of many other diseases listed within the books, but I had never heard of Pellagra and neither had many people I asked. I quickly became interested in the medical landscape of the county as I passed by many of the buildings daily and worked with many locals in the archives to discover their family genealogy; there was clearly a story hidden in documents within the archives of the harsh realities of poverty and the repercussions of a negligent political agenda in the United States. The history of Pellagra is not just about the medical field and their thoughts; it is about the Southern tradition to fight for life and basic existence when the odds are stacked against you.

## Chapter I: Historiography

A few years ago it would be difficult to imagine a modern world plagued by disease(s), but it has become a new, visible reality in the last couple of years due to the coronavirus COVID-19. The current pandemic is a new experience for a large portion of the population; some diseases of the past are not even widely known to younger generations, because once they were eradicated, there were only vague, generational memories remaining. Living through a pandemic has been traumatizing to many, and it can already be seen that people are choosing to act as if COVID-19 is non-existent despite it being far from over.

The Southern public health landscape that we see now was shaped by different diseases from the 20th century. Some diseases are more memorable to other generations such as polio and smallpox; which is also owed to vaccinations that were developed during specific decades. Other diseases may not be so well remembered despite the lasting impressions that affect us today. Nutrient deficiency diseases do not often have discussion on the same level as transmittable diseases, and this lack could be due to the fear factor that is linked to diseases that are easily spread. Nutrient deficiencies were not always put in their own medical category, but were widely known just as much as larger communicable diseases of the 20th century.<sup>18</sup> Though there are many people in the United

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<sup>18</sup> See for example *Disease and Distinctiveness in the American South*, edited by T.L. Savitt and James H. Young (Knoxville: University of Tennessee Press, 1988) for information on diseases in the Southern landscape and Elizabeth Williams Etheridge, *The Butterfly Caste: a Social History of Pellagra in the South* (Westport, CT: Greenwood, 1972) and Daphne A. Roe, *A Plague of Corn: the Social History of Pellagra*. (Ithaca: Cornell Univ. Press, 1973) to the effects of and importance of nutritional history in the South and internationally.

States that suffer from hunger, the knowledge of and ability to obtain vitamins has changed the way nutrient deficiencies are viewed historically.<sup>19</sup> When modern minds think about how easily things like scurvy or iron deficiency can be treated, it minimizes the struggles of sufferers in the past.

Pellagra, for example, is a deficiency of B3 known as niacin and is not commonly known to southerners today. It ethered people in their communities and regionally through the formation of visible rashes and the physical ailments inflicted upon the afflicted. Pellagra affected the south for many decades, but as soon as a cure was found, the memories were quickly tucked away.<sup>20</sup> Today, enriched foods line shelves in grocery stores and are evidence of a cultural and medical battle against nutrient deficiencies. To study Pellagra means an investigation has to occur on southern agriculture and regional eating habits.<sup>21</sup> Many Southern foods can be considered comfort foods to people today, but it was slowly killing their ancestors. The enriched foods that can be found today were not created until later, and people were left with either what they grew or what their local markets carried.<sup>22</sup>

The history of Southern health has been used often to define southerners in negative ways so it must be treated carefully. Early works describe Southerners as being plagued with disease in the past but not how it shaped the future of treatment or the battles they faced and could do nothing about.<sup>23</sup> By studying the South's history of health,

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<sup>19</sup> Etheridge, *The Butterfly Caste*, 218-221.

<sup>20</sup> *Ibid.*, vii.

<sup>21</sup> Elizabeth S. D. Engelhardt, *A Mess of Greens : Southern Gender and Southern Food*. (Athens:University of Georgia Press, 2011), 126.

<sup>22</sup> *Ibid.*, 162.

<sup>23</sup> James O. Breeden, "Disease as a Factor in Southern Distinctiveness," In *Disease and*

old stereotypes of a diseased region can be re-examined and a better understanding of how and why certain diseases were found can be conducted.<sup>24</sup> Diseases tied to nutrient deficiencies should be viewed as more than simply sickness and death but also in how people's lived experiences were affected by resources that were available.

The history of pellagra has been and should be told in many different ways: food studies, the physicians who studied it, politics, and the rise of public health. It has been a challenge to locate specific sources on the disease. There are only a handful of sources that only focus on Pellagra, making the relative wealth of evidence from Rutherford County invaluable. The best way to introduce this historiography is by first reviewing how historians who study southern food and the landscape contribute to the study of pellagra. I begin with these sources, because they have served as excellent examples on how to study people as more than just a number or cases, but instead, by appreciating what their culture can tell us. The second section talks about some of the earliest secondary sources to be published about pellagra and how those sources shaped research in the 1970s and beyond. The third section looks at how medical historians have incorporated pellagra into larger studies of southern history. These studies do not focus on pellagra solely, but are able to incorporate the disease as evidence of its impact on southern distinctiveness, the rise of public health facilities and healthcare, and black women's health and activism. The last section focuses on recent scholarship, especially micro histories and biographies.

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*Distinctiveness in the American South*, edited by T.L. Savitt and James H. Young (Knoxville: University of Tennessee Press, 1988), 8.

<sup>24</sup> Ibid.

The study of food is so important to the study of pellagra because; many health problems in the south can still be traced back to the same root cause of food. Many deficiencies like pellagra can be studied by understanding Southern eating habits. In *A Mess of Greens*, (2011) Elizabeth Englehardt explores how southern food choices can be used to dive deeper into topics of race, class, gender, and social power. The kitchen is the melting pot of women where many paths are crossed creating southern cooking. Though this history focuses primarily on the cooking of Black and White women, it must not be forgotten that there was also another hand in how foods were prepared; corporations in the twentieth century were also quickly growing in size and number meaning that women were also relying on what local stores had to offer.<sup>25</sup>

Englehardt primarily focuses on Appalachian culture and mill workers, but many of the themes can also be seen in broader southern culture. Her work is unique because she pulls from the many experiences of the area, including but not limited to, those of her own family; she brings forth the personal experience aspect of studying pellagra that is typically missing in many narratives. She views people as more than just medical cases. Pellagra was an attack on southern bodies and many lives were lost through it; Englehardt explains this tragedy and how it affected families and communities.<sup>26</sup> She has masterfully shown how romantic views of Southern food today can be harmful because of the hardships of earlier generations that need to be acknowledged to understand how the study of food is not always a positive one.

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<sup>25</sup> Englehardt, *A Mess of Greens*, 9.

<sup>26</sup> *Ibid.*, 122.

Englehardt's study picked up from insights in Jack Kirby's earlier *Rural Worlds Lost* (1986). Like Englehardt, Kirby tackled the history of the south from 1920-1960 through stories of and from the people. To study Pellagra, it is more than just data and charts of what was cooked and grown. He focuses on the land and looks at how people were affected with the changing agriculture of the south. Kirby divided his work into three parts: Transformations, Modernization and Rural Life, and Exodus. Through these sections, he is able to cover many topics within southern agricultural history such as specific aspects of race and gender in society, migration, economics, and politics; this, while looking at larger events such as the Great Depression, the New Deal, and World War II.<sup>27</sup> An eye opening moment in his work was when Kirby asked the reader to imagine a Piggly Wiggly market with a pick up truck and explained how that in itself reflects a specific shift in agriculture. This image shows what he calls people "living out of bags"<sup>28</sup> The image of the grocery store as we know now is a relic of agricultural issues like monoculture and pests that either killed crops or made it impossible to grow foods for a profit.<sup>29</sup>

Through Kirby's study on agriculture, he examines how southerners' health and diet were affected by their landscape. From 1930s interviews by the Federal Writers' Project, Kirby concluded that many southerners did not know much about what was considered nutritional because their largest concern was getting anything on the table.<sup>30</sup>

People were not getting the foods that they needed which let diseases such as pellagra

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<sup>27</sup> Jack Temple Kirby, *Rural Worlds Lost : The American South, 1920-1960* (Baton Rouge: Louisiana State University Press, 1986), xiv-xv.

<sup>28</sup> *Ibid.*, 116-117.

<sup>29</sup> *Ibid.*

<sup>30</sup> *Ibid.*, 188-189.

thrive to the point where it was thought that it was hereditary; in some senses, it became a disease that could be seen for generations in certain families.<sup>31</sup> Kirby explains that along with pellagra, diseases such as malaria and hookworm were a part of the narrative that pointed blame at southerners attributed as being lazy, because the diseases ran rampant and weakened people to the point of death.<sup>32</sup> Kirby also addressed the experience of African Americans with the struggles of sharecropping and the lack of opportunities in education for black children.<sup>33</sup> This source has been extremely valuable in the overall understanding of the landscape of pellagra, because it is a study that doesn't only focus on the medical field. It would be largely beneficial to see more sources in the future that focus primarily on pellagra, agriculture, and the rural landscape.

The 1970s was an important time for the study of pellagra as it was the first time other than in medical texts, that the disease was discussed in a social history context. Sources before this point primarily discussed the cure and a brief history. Elizabeth W. Etheridge and Daphne A. Roe are pioneers in pellagra research and can be found as important sources in modern research for both history and medicine. Their works were published a year apart, and they both give different aspects of how pellagra affected people's lives. Etheridge and Roe were just touching the surface for studies on pellagra and left room for others to help fill in the gaps; both show that studying pellagra can tell us so much about hunger issues still occurring today as well as the large amounts we can learn about people through their health and foodways.<sup>34</sup>

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<sup>31</sup> Ibid.

<sup>32</sup> Ibid., 187.

<sup>33</sup> Ibid., 146-156.

<sup>34</sup> Etheridge, *The Butterfly Caste*, and Roe, *A Plague of Corn*.

Elizabeth Etheridge focused primarily on southern states, especially the studies that took place in South Carolina, in *The Butterfly Caste* (1972).<sup>35</sup> Much of her evidence came from studies that were published about Pellagra of mill communities. She provided many cases as well as the changing theories of the disease throughout her work.<sup>36</sup> She also followed Dr. Joseph Goldberger's different studies on his search for a cure for pellagra, he was able to find that giving patients brewers yeast was the answer, but he never understood what exact vitamin deficiency caused pellagra before he died.<sup>37</sup> Her work continues on into later studies and professionals who found a cure. Etheridge grasped that hunger was tied to pellagra; the connection underscored the problem of poverty in 1970s America.<sup>38</sup> Etheridge's book is a key introductory text. She identified key moments that are important in understanding the disease; when interpreting the data she admitted how difficult pellagra is to study because it was near impossible to identify. Her argument on data would be stronger if instead of just mentioning African Americans randomly, she addressed the gaps in the data or the lack of study on Black communities.

Daphne Roe published *A Plague of Corn* a year after Etheridge, she looked at pellagra from a macro perspective, from the perspective of someone in the medical field with a focus on nutrition. She followed the history of pellagra by explaining the different hypotheses of early European doctors and the importance of corn in societies that were plagued by pellagra.<sup>39</sup> Her study took an international approach where she considered many different locations such as the American south and individual countries in Europe.

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<sup>35</sup> Etheridge, *The Butterfly Caste*.

<sup>36</sup> Ibid., 120-121.

<sup>37</sup> Ibid., 179.

<sup>38</sup> Ibid., 220-221.

<sup>39</sup>Roe, *A Plague of Corn*, 1.

Her approach to pellagra was extremely detailed in its focus on groups that grew and ate corn. She even reviewed notes from early explorers such as people involved with voyages with Columbus.<sup>40</sup> Like Etheridge's study, she also followed pellagra on a timeline ending with the moment in which a cure was found. Her authoritative study gave a great perspective of the widespread impact of pellagra, but at times, it was almost too much information to process at once. Roe's study is the early definite book from a medical history perspective on how historically diseases affected communities.

Etheridge and Roe's studies defined the field and Pellagra study for a generation. The southern medical histories that have been important to the study of pellagra can be found starting around the 1980s and into the 2000s. A pivotal study for understanding why many diseases were linked to the American south is *Disease and Distinctiveness*, (1988), a collection of essays compiled by Todd Savitt and James Young. They arranged the essays to create a discussion among historians about the diseases that were prevalent in the South. As they explained, many of these diseases created an image of people's lives that were not exactly true. The South has been characterized in many different ways from being a romantic place free from disease to later becoming a terrifying den of diseases. Savitt and Young admitted that their collection did not address all of the significant topics. They noted that there is more to be done in southern health such as the history of medicine of Black health after 1865 and Native American health.<sup>41</sup> Their hope was that more people would take on topics in southern medical history. They

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<sup>40</sup> Ibid., 20-21.

<sup>41</sup> Todd Lee Savitt, and James Harvey Young. *Disease and Distinctiveness in the American South* (Knoxville: University of Tennessee Press, 1988), xvii.

regretted that it is too common that people write about the region as a “zoo”<sup>42</sup> and that the south has an identity that in itself should be treated lightly.

Among the essays in *Disease and Distinctiveness*, Elizabeth Etheridge contributed “Pellagra: An Unappreciated Reminder of Southern Distinctiveness.” Her essay paralleled her book *The Butterfly Caste* and explained the realities of how sufferers of pellagra were treated and lived. She began by reviewing the mysteries of pellagra, from past names such as “*Mal de la rosa*”<sup>43</sup> (because of the rashes that would appear on people’s bodies) to early European studies that suggested that bad corn was the culprit. This theory was often applied to the American south since corn was a popular staple in the southern diet.<sup>44</sup> Similar to her book, she also used Joseph Goldberger to establish a timeline for the study of pellagra to its cure. This essay worked well with the other contributions to document how the south historically gained a distinctive reputation.

Savitt and Young’s discussion of diseases and their distinctiveness provided many different lenses; to study a region and its common diseases. It is important to look into why those diseases were even able to thrive. What was happening with the landscape and what were people doing that was so different from today? John Duffy explored these questions in *The Sanitarians* (1990), his history of public health in America. He focused on the main developments of the field of public health in different areas of the United States. For pellagra research, it was interesting to see what he had to say about the south.

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<sup>42</sup> Ibid., 2.

<sup>43</sup> Elizabeth Williams Etheridge, “Pellagra: An Unappreciated Reminder of Southern Distinctiveness,” In *Disease and Distinctiveness in the American South*, edited by T.L. Savitt and James H. Young (Knoxville: University of Tennessee Press, 1988), 100-101.

<sup>44</sup> Ibid.

He explained that many issues with health occurred due to the lack of healthcare in rural areas and the racism that came with it.<sup>45</sup> His discussion on diseases, such as Pellagra linked with growth of help from philanthropists coming to the south. Duffy then discussed the rise in public health departments and problems with collecting vital statistics that became huge issues in understanding how widespread many diseases were.<sup>46</sup> He concluded by saying that medicine was not the only thing that helped people, it was the action of communities and improvement in systems of things like food and housing.<sup>47</sup>

Similarly to Duffy in *Health Care in America* (2015), John Burnham addresses a topic with a long timeline. His focus was on sickness, health, and the practice of medicine starting from the colonial times to the present. Burnham's book surveyed the history of healthcare in the United States. He wanted people to question how it got to the point it has and what similarities it has to the past. Burnham looked into many different periods of history of medicine and showed how each one branches into new theories and technology. This source has been extremely helpful in understanding the many shifts in the medical field and how those moments affected the understanding of disease and general health.

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<sup>45</sup> John Duffy, *The Sanitarians: A History of American Public Health*. (Urbana: Univ. of Illinois Press, 1990), 226.

<sup>46</sup> *Ibid.*, 229.

<sup>47</sup> *Ibid.*

Pellagra comes at the height of what Burnham refers to as the “physiological era.”<sup>48</sup> This shift begins around 1910 with germ theory being accepted for investigation. These investigations brought on more questions being asked about how certain processes in the body function such as how people are affected by nutrition or the lack of it.<sup>49</sup> It wasn't until roughly the first world war that the public considered the use of vitamins and understood what foods they came from. At this point, there came a rise in understanding of nutrient deficiencies, but when you look at the history of pellagra it is easy to see that people were still extremely skeptical that deficiency of a vitamin could cause diseases that could kill them.<sup>50</sup> Even with the knowledge of more diseases and the field of public health, there were still so many deaths; many of which were African American women who were not receiving adequate health care.<sup>51</sup> Burnham’s study has been very helpful in understanding the space of science and medicine that were occurring during the height of diseases like pellagra.

Writing on public health can be a difficult endeavor depending on the amount of history that needs to be covered. In *Sick and Tired of Being Sick and Tired* (1995), Susan Smith focused on the experience of African Americans in the rural south, specifically women, and the failures of the public health field and how Black women were able to use activism to fight for public health rights.<sup>52</sup> Black women are still not talked about for their

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<sup>48</sup> John C. Burnham, *Health Care in America: a History* (Baltimore: Johns Hopkins University Press, 2015), 188.

<sup>49</sup> Ibid.

<sup>50</sup> Ibid., 199.

<sup>51</sup> Ibid., 197.

<sup>52</sup> Susan Lynn Smith, *Sick and Tired of Being Sick and Tired : Black Women's Health*

contributions and this omission is so relevant in the history of medicine. Many sources on Pellagra lack this perspective and only mention the discrimination of race periodically and without details. Her powerful argument focused on 1890-1950 during which Southern public health passed through three different periods. Smith however admitted that the issue of the 20th century began in slavery where enslavers controlled the bodies and health of Black people.<sup>53</sup> Her first period she examines is from the Civil War to 1890, was a time of many epidemics and the acknowledgement of an obvious need for public health programs. From 1890 to 1915 she explored the aid from foundations and their public health campaigns. From 1915 to 1950 came the impact of two world wars and the eventual federal takeover of public health programs.<sup>54</sup>

Smith relied on both Etheridge and Roe in her argument on Pellagra and expanded on the earlier studies by exploring how African Americans were affected by the disease. Though Smith's focus was not solely on pellagra, her valuable information for understanding the pervasiveness of racial discrimination underscored limits in the collection of vital statistics. For example, white doctors claimed that Black people were immune to pellagra when if you actually look at the death rate Black people were dying far more from the disease.<sup>55</sup> Smith addressed the lack of scholarship on Black public health diseases that they suffered from.

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*Activism in America, 1890-1950. Studies in Health, Illness, and Caregiving* (Philadelphia:University of Pennsylvania Press, 1995), 1.

<sup>53</sup> Ibid.,4.

<sup>54</sup> Ibid.

<sup>55</sup> Ibid.,10

The scholarship of the late 20th century has impacted recent work on Pellagra. Scholars of the 21st century have examined the disease through biographies of the doctors that spent their lives interacting with it and specific factors that allowed the disease to thrive. These books provided a closer examination of both Joseph Goldberger and James Babcock than what Etheridge and Roe provided and serve as a useful way to provide new research on the disease, although more work remains necessary.

Alan Kraut was first introduced to Joseph Goldberger through his family's TV set as a child. Through a TV program, he learned about how Goldberger was viewed as a hero in the study of many diseases; one of these diseases being pellagra.<sup>56</sup> In *Goldberger's War*, you can see the hero arc being played out as he describes the life of Goldberger and it feels like the reader is engaged in more of a story rather than a history. Through Kraut's research in public health, he noted that "Just living their lives can make people sick."<sup>57</sup> That is something that Joseph Goldberger saw as he made his way through the south. Kraut goes into amazing detail talking about Goldberger immigrating with his Jewish family and the struggles that he faced in his college years. He goes beyond just talking about pellagra and the timeline but goes into intimate details of his marriage issues and his wife's thoughts on his research. In *Goldberger's War*, the reader learns not only about the disease, but also get insight into Goldberger's life which is something that is rare in pellagra studies.

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<sup>56</sup> Alan M. Kraut, *Goldberger's War: The Life and Work of a Public Health Crusader* (New York: Hill and Wang, 2003), ix.

<sup>57</sup> *Ibid.*, x.

Another biography study is Charles Bryan's *Asylum Doctor* on the life of James Babcock. Writing as a doctor of infectious disease, Bryan analyzes Babcock's life and his many pellagra theories and the history of the field of mental health which is entwined with the study of Pellagra and not discussed enough. James Babcock, was the superintendent of South Carolina State Asylum, was one of the earlier doctors to study Pellagra, and thus became such an important part of the history of the disease. Typically, he is known as the "Asylum Doctor,"<sup>58</sup> Bryan believes that, but he deserves to be known for his contributions for the study of Pellagra, especially after he and Claude Lavinder published the first English writing on Pellagra.<sup>59</sup> Babcock confirmed that the mysterious disease found among Southerners was the same Pellagra that had been documented in Europe. He knew that Pellagra could only get worse and he warned others in the American medical field.<sup>60</sup>

Bryan's biography of Babcock is extremely informative, focusing on a man who rarely gets praise for his findings while also explaining how the study of asylums is extremely important in studying Pellagra. He also debunked the myth that Goldberger had no idea what to expect when he first went to the South to study the disease, because Bryan identified a 1911 study where Goldberger worked with John Anderson who experimented on monkeys to document the effects of Pellagra.<sup>61</sup> This discovery does not necessarily change the course of pellagra studies, but it does emphasize that key work was underway before Goldberger began working for the Federal government in 1914.

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<sup>58</sup> Charles S. Bryan, *Asylum Doctor: James Woods Babcock and the Red Plague of Pellagra* Book Collections on Project MUSE. (Project Muse, 2014), x.

<sup>59</sup> *Ibid.*, 143.

<sup>60</sup> *Ibid.*, x.

<sup>61</sup> *Ibid.*, 154.

Bryan concluded with a call for more biographies and studies that addressed how families dealt with Pellagra.

In “*Frauds,*” “*Filth Parties,*” “*Yeast Fads,*” and “*Black Boxes*” (2016) Michael Flannery uses many sources such as Kraut and Bryan’s to trace the evolution of the studies of Pellagra. Flannery’s focus on Alabama was a gateway to discussions of many different theories and people of importance within the medical field. Like Charles Bryan, he identified James Babcock’s work on pellagra, as crucial it is not all about Goldberger’s work.<sup>62</sup> Indeed, Flannery emphasized that Goldberger’s research had many flaws such as acting blind to race when visiting communities and processing data collected.<sup>63</sup> He pushed research away from biography to see how communities by state or city were affected with this disease.

Flannery’s work proves there is a need for more topics to be covered within the historiography of Pellagra. Recent journal articles investigate Pellagra on a micro level where the focus is on a specific location or specific factors that resulted in the nutrient deficiency. “The Rise and Fall of Pellagra in the American South” by Clay, Schmick, and Troesken, three economists, focused on the data of southern monoculture in cotton and the boll weevil in North and South Carolina.<sup>64</sup> Because of the high production of cotton there was less local food being grown except when the pesky boll weevil ruined their crops and pushed farmers to grow more diverse crops instead. Within their research it can

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<sup>62</sup> Michael A. Flannery, ““Frauds,” “Filth Parties,” “Yeast Fads,” and “Black Boxes”:  
Pellagra and Southern Pride, 1906-2003.” *The Southern Quarterly* 53, no. 3 (2016),136.

<sup>63</sup> *Ibid.*,132-33.

<sup>64</sup> Clay, Schmick, and Troesken, “The Rise and Fall of Pellagra in the American South,” 32–62.

be seen that with larger infestations of boll weevil there were less cases of pellagra because of the increase in locally grown foods.<sup>65</sup> Because pellagra can be seen as a disease of poverty, a study on economics is just as important as understanding the agriculture of the time. They concluded that, by 1937 because of changing ideas in medicine and food fortification, pellagra had been eliminated.

Studying the history of a disease can be an interesting journey. When choosing pellagra as my focus, it came from my interest in southern medicine; while doing a deep dive on diseases found in the 20th century south, I was instantly drawn to trying to understand it. As a native southerner I had never even heard of it and it amazed me more to see how little there was written about it especially on a state level. Compiling secondary sources on pellagra proved to be extremely challenging at first, but I found evidence in the strangest places sometimes in larger studies. I found myself looking into types of history I never saw myself getting into such as the history of food and agriculture. It is easy to get bogged down in the science and data and completely ignore the people, and sources like *A Mess of Greens* and *Rural Worlds Lost* helped me get a bigger picture beyond the south. The works of Etheridge and Roe from the 1970s remain invaluable background sources. From all of these different sources I have gathered insight on how pellagra fits into larger histories to important people as well as people who are not mentioned enough because of gender and race. I see the lack of representation and the need for more voices.

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<sup>65</sup> Ibid.,32-33.

My research would be impossible without these sources and it excites me to continue studying what pellagra in Tennessee looked like from many different perspectives. I hope with my research I am to show that this work is important in understanding how diseases like pellagra may not be plaguing us now, but they shaped so much of the medical field and our relationship with our food. Living through the COVID-19 pandemic has really affected the access I had to sources as well as my view on health care. I am distanced by time from pellagra, but living during a time of the loss for so many people when there are so many newer resources, now shows how inadequate the healthcare in America truly is. Combined with seeing so many people not wanting to acknowledge Covid, it shows many of the problems that were there with pellagra truly have not changed. Maybe Alan Kraut is correct in stating the power and value of writing the history of public health. It has been time to join in the fight for public health, and it is a massive problem to see the national treatment of newer diseases mirroring older ones.

## Chapter 2: Pellagra

“The characteristic mark of a pellegrin was a skin rash that symmetrically marked the hands and feet and sketched an ugly red butterfly across the victim’s face.”<sup>66</sup> The mark was not only a symptom of the disease, but was a new way to show social status. Sufferers were isolated by their communities and in some cases sent to asylums. The stigma only grew further; it was not only a disease that affected individual people it affected the entire region of the South.<sup>67</sup> Pellagra was shedding light on the poor conditions of the twentieth century South which in itself was a call for help, but many Northerners took the opportunity to take a jab at southern pride. That response led, in turn, Southerners to deny the existence of the disease.<sup>68</sup> Pellagra was not only an attack on Southern bodies it was also an assault on their identity.

Along with the rash that Pellagra caused, there were also internal symptoms that were attached to the disease; victims suffered from uncontrollable diarrhea and problems with their mental health.<sup>69</sup> Pellagra is commonly referred to as causing the four d’s which are dermatitis, diarrhea, dementia, and death.<sup>70</sup> Southern physicians were told to look out for these symptoms, but it was common to get these symptoms mixed up with other diseases. They were urged to not be fooled by the lesions that were caused by syphilis and eczema that look similar to pellagra rashes.<sup>71</sup>

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<sup>66</sup> Etheridge, *The Butterfly Caste*, vii.

<sup>67</sup> Ibid.

<sup>68</sup> Ibid., vii-viii.

<sup>69</sup> Roe, *A Plague of Corn*, 2.

<sup>70</sup> Kraut, *Goldberger's War*, 13.

<sup>71</sup> J. A. Albright, *Biennial Report of the State Board of Health of Tennessee from 1909-1911* (Nashville, Tennessee: Foster & Parkes Co., 1911), 389.

The twentieth century Pellagra outbreak in the United States was not the first time this disease took lives. Gaspar Casal first studied Pellagra in Spain during the eighteenth century. He first witnessed the disease in the northwest region in Spain known as Asturias. Casal noticed that there were people there living in poor living conditions and their health was at risk with many people dying.<sup>72</sup> Like in the American South, Pellagra Casal noted that it affected residents who worked in fields and were forced to eat a poor diet.<sup>73</sup> Not long after Casal's discovery Italian doctors began seeing the symptoms of Pellagra in Italian peasants. Doctors soon identified the disease all over Europe and Africa in the nineteenth century.<sup>74</sup> Pellagra in Europe also had many names such as mal de la rosa, mal de higado, mal de monte, flema salada. These names typically referred to the symptoms and were commonly used by the sufferers.<sup>75</sup> The disease was first called pellagra in 1771 by a physician named Francisco Frapolli in work that he published in Italy called *Animadversiones in morbum vulgo pelagram*.<sup>76</sup> After Frapolli's work and into the twentieth century, not much had been done for the betterment of sufferers of pellagra in Italy. Even after a specific law was put into place to help Pellagra victims with food and treatment it was not solving the social problem.<sup>77</sup> Cases still occurred in Europe and eventually appeared in North America. It is possible that cases of Pellagra were occurring centuries before in the United States, but there is not much evidence.<sup>78</sup>

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<sup>72</sup> Roe, *A Plague of Corn*, 1.

<sup>73</sup> Ibid.,31.

<sup>74</sup> Ibid. 1.

<sup>75</sup> Ibid.,34-38.

<sup>76</sup> Ibid 37.

<sup>77</sup> Ibid.,43.

<sup>78</sup> Ibid.,77.

The first case of Pellagra to be reported in the United States was in 1902. A Georgia farmer who was experiencing extreme weight loss, blisters on his skin, and depression went to a doctor in Atlanta. His physician Dr. H.F. Harris had never dealt with pellagra before, and recommended that he leave the southern heat and not eat decomposed Indian corn.<sup>79</sup> The poor farmer was probably losing money from his sickness. The fact that he went to a doctor in the city shows the extremity and his desperation to get well. Dr. Harris reported this case to his local medical association, but other physicians thought nothing of it. It was not until 1906 when Dr. George H. Searcy at Mount Vernon Insane Hospital, in Alabama, found 88 cases that doctors understood that Pellagra was a Southern problem.<sup>80</sup> Pellagra had appeared early at Mount Vernon, but at that time physicians were unsure what was happening to their patients. Searcy was able to diagnose the disease because of the specific pellagra symptoms.<sup>81</sup> He also made a connection to the disease to people who were poor and had a limited diet. He next identified the problem to lie with the corn that was eaten in the hospital. Once the hospital changed their diet fewer patients died, but there was still a lot to learn about the disease.<sup>82</sup>

The Mount Vernon cases caused southern doctors to look carefully for the disease. Cases were being reported at more hospitals in the south such as at the State Hospital for the Insane at Columbia in South Carolina, Georgia State Sanitarium, and the Louisiana Hospital for the Insane.<sup>83</sup> The reports only continued to grow and cases were found at

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<sup>79</sup> Etheridge, *The Butterfly Caste*, 3.

<sup>80</sup> *Ibid.*, 4.

<sup>81</sup> *Ibid.*

<sup>82</sup> *Ibid.*, 5.

<sup>83</sup> *Ibid.*

more institutions like in Mississippi, Virginia, and as far north as Illinois. Physicians were not only finding cases, but realizing that Pellagra has been present in their institutions longer than they knew.<sup>84</sup> Reports grew outside of hospitals coming from cities and rural areas where poverty was thriving. It was noticed that Pellagra was affecting entire communities of people of different ages.<sup>85</sup>

Pellagra's introduction and quick spread throughout the south highlighted the lack of health care. Along with cases of Hookworm throughout the south, it was apparent that the south needed a health reform to control these diseases.<sup>86</sup> New research throughout the medical field in topics on body functions,<sup>87</sup> combined with a better understanding of germ theory from the nineteenth century and an incorporation of bacteriology, helped physicians to understand how infectious diseases were spread.<sup>88</sup> Improved sanitation movements were established as physicians wanted to teach citizens about germs and staying healthy. These movements pushed for clean air, water, and better waste management all over the United States.<sup>89</sup> Germ theory shifted how physicians thought about the world and disease within it, but due to this theory it took longer for physicians to accept that diseases could also be caused by dietary problems. Thus, Pellagra was not fully understood until later in the century despite the work of Joseph Goldberger.<sup>90</sup>

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<sup>84</sup> Ibid.,6.

<sup>85</sup> Ibid.,6-7.

<sup>86</sup> Ibid.,15.

<sup>87</sup> John C. Burnham, *Health Care in America*,188.

<sup>88</sup> Ibid.,141.

<sup>89</sup> Ibid.,166.

<sup>90</sup> Ibid., 196-197.

Physicians continued to look for an insect or germ as the cause of Pellagra. There were many 20th century theories that were thought to cause Pellagra. Many physicians refused to believe that the disease had anything to do with diet, but looked first at what Southerners were consuming. Italian physicians first investigated corn as a cause of the disease and early on many American physicians also thought spoiled corn was the cause. A corn-based diet was a large factor that linked Pellagra both in the American South and Europe.<sup>91</sup> By 1910, corn as a theory can still be seen but scientists and physicians began looking at Pellagra in a new lens. The medical field began to look for anything that could link the disease to being infectious. The next few years would bring investigative teams that would conduct research on the locations and people in specific areas.<sup>92</sup>

In 1908 James Woods Babcock established that the Pellagra that affected Europeans was the same disease as that being experienced by southern Americans. Babcock's investigations do not get mentioned in depth in pellagra studies as the work of Joseph Goldberger's does. His findings showed the urgency that the United States now had a public health problem to address, and called for an investigation to be done on the disease and offered the state hospital for the Insane in Columbia, South Carolina where he was superintendent.<sup>93</sup> The first attempt to understand and rid pellagra started with the United States Public Health Service (PHS) in 1909. The Mount Vernon cases in Alabama caused them to create an anti-pellagra campaign.<sup>94</sup> The campaign did not do well and the

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<sup>91</sup> H. M. Marks, "Epidemiologists Explain Pellagra: Gender, Race, and Political Economy in the Work of Edgar Sydenstricker," *Journal of the History of Medicine and Allied Sciences* 58, no. 1 (February 2003):34-55, <https://doi.org/10.1093/jhmas/58.1.34>), 38.

<sup>92</sup> *Ibid.*, 38-39.

<sup>93</sup> Etheridge, *The Butterfly Caste*, 12 also see Bryan, *Asylum Doctor*, x.

<sup>94</sup> *Ibid.*, 16.

PHS brought in C.H. Lavinder. After going to many different locations in the South he found that a public health campaign was needed, and the Surgeon General established a commission of seven men to do an investigation.<sup>95</sup>

Laboratory work on Pellagra began in the United States in 1909 in two rooms in the South Carolina hospital for the Insane. Lavinder conducted experiments there by injecting animals with fluids from the spine, spleen, and blood from people with Pellagra. He found that he was not able to induce the disease from the patients.<sup>96</sup> He attempted experimental therapy, studied both live and dead patients, and traveled to different states with outbreaks such as Tennessee and Illinois to study additional cases. His time was spread thin because at that point he conducted this research alone without any team.<sup>97</sup> By 1912, studies from PHS and the Thompson-McFadden Commission (TMC), which was a part of the New York Graduate School of Medicine were underway; both PHS and TMC had different results from their studies.<sup>98</sup> The top theory from the PHS was that the disease was caused by toxicities from the local food, and this research would eventually include the work of Joseph Goldberger.<sup>99</sup> The TMC did several studies and focused on different theories of pellagra such as diet and germs carried by insects. The theory the commission ended their investigation with was that pellagra was caused by an infection that occurred from consuming contaminated food.<sup>100</sup>

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<sup>95</sup> Ibid.

<sup>96</sup> Ibid., 16-17.

<sup>97</sup> Ibid.

<sup>98</sup> Ibid., 40.

<sup>99</sup> Ibid., 64-65.

<sup>100</sup> Ibid., 57.

Although studies were underway, pellagra was on the rise in the south, some considered it an epidemic.<sup>101</sup> The PHS invested more money into pellagra studies. In 1914, PHS added forty-one more researchers to study pellagra as well as hiring Joseph Goldberger to head what would be important to find the cure of pellagra.<sup>102</sup> Goldberger soon became the face of Pellagra research.

### **Joseph Goldberger's Pellagra Research**

“Dr. Joseph Goldberger was a public health physician who, between 1902 and 1924, became an expert epidemic fighter,” concluded historian Alan M. Kraut.<sup>103</sup> His career brought him into battle with many diseases such as yellow fever, typhoid, dengue, and typhus. His focus changed when in 1914 Rupert Blue, the U.S. Surgeon General, tasked him to lead the federal government's study on pellagra.<sup>104</sup> Goldberger soon understood that diet caused Pellagra, but the difficult part was getting other physicians who believed solely in germ theory to listen. Goldberger set up experiments on diet as well as proving that the disease was not contagious. He pushed many boundaries during his experiments because he was so sure Pellagra was not contagious. He did experiments on impoverished people as well as himself and his family.<sup>105</sup>

One of Goldberger's first experiments in 1914 was at the Methodist Orphans home and a Baptist Orphanage in Mississippi. Here he and Dr. C.H. Waring conducted an experiment by changing the children's eating habits. His hope was that with a well

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<sup>101</sup> Ibid., 42.

<sup>102</sup> Ibid., 65.

<sup>103</sup> Kraut, *Goldberger's War*, 7.

<sup>104</sup> Ibid.

<sup>105</sup> Ibid.

balanced-diet with fresh foods the children would be cured.<sup>106</sup> His experiment was successful with little to no recurrence of the disease. These studies proved that a change in diet could cure Pellagra.<sup>107</sup> He then tested this approach out at the Georgia State Sanitarium where he made dietary changes like he did with the orphans. He got the same results, which were that they were improving.<sup>108</sup>

The high rates of Pellagra led Goldberger to conduct another experiment in Mississippi. With the death rate from Pellagra at 1,192, Governor Earl Brewer reached out to Goldberger to conduct another study within the state.<sup>109</sup> This experiment was not to be conducted on another orphanage, but on twelve adult men on the Rankin Prison farm in 1915. The men were told that if they participated they would be pardoned for their crimes, and would later be called the “pellagra squad.”<sup>110</sup> Goldberger was very sure of his diet theory, but changed the type of experiment with the prisoners. Instead of feeding people with Pellagra a balanced-diet he wanted to induce the disease in these men.<sup>111</sup> This experiment was harmful because of the unethical methods that were used. The men were given a very minimal diet to survive on during the trial and still had to conduct their regular duties on the farm. The prisoner lost weight, grew weaker, and eventually their skin broke out in the familiar rash as the experiment progressed. More than half of the men had gotten Pellagra through the diet change which proved Goldbergers theory.<sup>112</sup>

Because of the unethical treatment the experiment was kept a secret until it ended, and

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<sup>106</sup> Ibid., 107.

<sup>107</sup> Ibid., 115.

<sup>108</sup> Ibid., 117.

<sup>109</sup> Etheridge, *The Butterfly Caste*, 92.

<sup>110</sup> Ibid.

<sup>111</sup> Ibid.

<sup>112</sup> Ibid., 93-95.

when the former prisoners were asked about their experience many of them referenced the experiment as some type of hell.<sup>113</sup> The men survived and received pardons, and as a part of their agreement they were offered time to regain their health through a balanced diet. The experiment made it to the newspaper and although Goldberger got the results that he wanted there was backlash.<sup>114</sup>

### **Other Pellagra Theories**

Even with the evidence that Goldberger was able to provide on Pellagra, physicians still did not believe that the disease was not communicable. While Goldberger was investigating, so were many others and they were publishing their findings in medical journals. For instance, in Nashville physicians blamed sanitation and insects as a cause of Pellagra, in 1913 “An Intensive Study of Insects as a Possible Etiologic Factor in Pellagra” was conducted by Allan H. Jennings and W.V. King. Jennings and King’s research was done alongside the work of the Thompson-McFadden Pellagra Commission in Spartanburg, South Carolina. Their plan was to study what kinds of insects were a problem to the people and were also native to the area. They visited houses of pellagrous and non-pellagrous people and made sure to document any insects found in and around their homes.<sup>115</sup>

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<sup>113</sup> Ibid.,96.

<sup>114</sup> Ibid.,95-96.

<sup>115</sup> Allan H. Jennings and W. V. King, “An Intensive Study Of Insects As A Possible Etiologic Factor In Pellagra.,” *The American Journal of the Medical Sciences* CXLVI, no. 3 (September 1913): pp. 411-440, <https://doi.org/10.1097/00000441-191309000-00010>), 411-412.

Jennings and King attempted to study all the insects they saw but they instead decided to analyze one's known to be blood sucking. They studied flies, lice, bed bugs, fleas, ticks, roaches, and mosquitoes.<sup>116</sup> Their conclusion was that the Stable Fly was a potential cause of Pellagra because of its ability to transport the disease to many people in an area. This particular fly bites humans and sucks blood which is how Jennings and King believed the disease was spread. The Sable Fly could only be found seasonally; which were peak seasons of Pellagra. The flies were also found primarily within rural areas where pellagra was highest in South Carolina.<sup>117</sup>

In 1914, Joseph Goldberger published “The Cause and Prevention of Pellagra: A Letter From Joseph Goldberger.” At this point in Goldberger’s research he was still trying to decide whether Pellagra was just linked to diet or if the disease was communicable. He explained that the Illinois Pellagra Commission and the Thompson-McFadden Commission believed the disease was communicable, but e disagreed<sup>118</sup> From doing a culture study on Pellagrous blood, secretion, and excretion, he found that the results were negative. The negative results proved that it was not an infectious disease. He also argued that doctors and nurses who worked in close contact with infected patients had no signs of the disease.<sup>119</sup> Goldberger's assertions were not widely accepted.

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<sup>116</sup> Ibid.,415-419.

<sup>117</sup> Ibid.,439-440.

<sup>118</sup> Joseph Goldberger, “The Cause an Prevention of Pellagra: A Letter From Joseph Goldberger,”(Washington D.C. :United States Public Health Service, 1914), 3.

<sup>119</sup> Ibid.,3-11.

Not until the 1920s did more physicians and scientists accept Pellagra as a disease of poverty. Germ Theory was used to understand many diseases in the early 20th century; many physicians did not readily accept the idea of how diet can affect one's health. It would take understanding the importance of vitamins to show the effects of a proper diet. The terms vitamin and deficiency were used from the beginning of the century; they just were not used to investigate diseases.<sup>120</sup> In 1921 an article called “Nutrition of Wage-Earners during and After the War in Relation to Pellagra Morality” was published in the journal of the Tennessee State Medical Association. This article documented how people's income and food intake was related to a disease. In this study mortality rates were compared to wages earned and the types of food available to low wage workers. From 1914 to 1915 the economy had worsened which meant that Pellagra mortality was at a high. In 1916 the economy was recovering and there were lower numbers of cases of Pellagra.<sup>121</sup>

By the 1930s, the connection between poverty and diet were written into ideals of public health. The American public began to learn more about vitamins with the spread of knowledge from advertisements and pharmaceutical manufacturers. This information was not always correct, but it informed the public about their dietary health.<sup>122</sup> Public Health officials also took this change seriously and public health manuals began dedicating whole sections in their books to discuss vitamins and the connections between

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<sup>120</sup> Burnham, *Health Care in America*, 196.

<sup>121</sup> “Nutrition of Wage-Earning during and after the War in Relation to Pellagra Morality,” *The Journal of the Tennessee State Medical Association* 13 (January 1921), 356.

<sup>122</sup> Burnham, *Health Care in America*, 199.

nutrition and malnutrition.<sup>123</sup> Poverty became even more apparent in the late 1920s and early 1930s because of the economic depression. There was an obvious class line that could be seen between poor people at an increased rate of disease and the rich. People who were poor were not able to go see a doctor and waited until near death to get help. Public Health programs declined during the great Depression and the number of people dying increased.<sup>124</sup>

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<sup>123</sup> Harry S. Mustard, *An Introduction To Public Health* (New York: MacMillan Company, 1935), 158.

<sup>124</sup> Burnham, *Health Care in America*, 254.

### Chapter III: Pellagra In Tennessee

Tennessee health professionals in the early 20th century were focused on three major diseases: tuberculosis, hookworm, and pellagra. Physicians found it difficult to determine how many diseases one person could have been experiencing at once, and this wasn't even the largest struggle. According to Zeb L. Shipley, “The question of tuberculosis is the biggest one confronting us, not excepting hookworm and pellagra, because it is everywhere, in every community, and we have to admit that our facilities for caring for them is poorly inadequate.”<sup>125</sup> Professionals in the Tennessee medical field saw that there needed to be improvements and it became apparent within their meetings in the *Biennial Report of the State Board of Health of Tennessee*. Doctors in the state were beginning to realize that not only are there many diseases to study; but, there also remained the problem of how to effectively treat people suffering from these diseases past a certain degree. At the time, the state also lacked a laboratory to study these diseases, which made it almost impossible to conduct timely studies. Tennessee was one of two states that did not have a laboratory facility with the other being Arkansas. State leaders understood this type of facility would be necessary in the coming years to continue to move forward.<sup>126</sup>

Another issue facing the State Board was the predicament of getting all doctors to collect vital statistics in Tennessee. A board member stated, “You have a vital statistics law, but it is worthless, so I am told, and it is not recognized by our government on account of its inefficiency.”<sup>127</sup> Not only were doctors not reporting vital statistics, but

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<sup>125</sup> Albright, *Biennial Report of the State Board*, 472.

<sup>126</sup> *Ibid.*, 7.

<sup>127</sup> *Ibid.*, 443.

they were also not documenting and reporting birth or death records within their counties.<sup>128</sup> In that same vein, the distrust from small town doctors made progress in the field of medicine extremely difficult.

Having the cooperation of both the public and their doctors was a must to understand the diseases and the needs of the state.<sup>129</sup> One county officer, W.H. Hawkins, explained that it was difficult to vaccinate the locals due to the false information that doctors were spreading.<sup>130</sup> In one case he said that a doctor would tell people about “some poor fellow that lost an arm from a vaccination...”<sup>131</sup> The stories are only part of the larger issue related to unprofessional acts they were enabling or, in some cases, taking part in. Other doctors were purposely not telling the board about outbreaks within their areas and allowing their patients to continue interacting with others while remaining infectious. They were not putting the patients first in these situations, and it provides evidence that they were unwilling to cooperate with other medical professionals despite the death that may result from it.<sup>132</sup> The situation proved alleviated in urban counties; wherein, locales like Davidson County Dr. B.G. Tucker stated “If I cannot get them through kindness and persuasion, I go after them with the law, and I am satisfied we have 99 percent of all communicable diseases reported to us, with the exception of tuberculosis.”<sup>133</sup> County officers could either allow doctors to continue their negligence, or they could legally force them to report cases. The law as it stood stated that infectious

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<sup>128</sup> Ibid.

<sup>129</sup> Ibid.,290.

<sup>130</sup> Ibid.,290.

<sup>131</sup> Ibid.

<sup>132</sup> Ibid.

<sup>133</sup> Ibid.,306.

disease should be reported, or certain repercussions would come to pass. It was a broad description, and some health officers were not sure when or how it could be implemented.<sup>134</sup>

It may have been difficult to document cases throughout the state, but it was still apparent that there were diseases that could no longer go unnoticed or unreported. Pellagra was one of the diseases that made a sudden entrance in Tennessee or so physicians first believed. The first Pellagra cases reported in the state were found in a Baptist Orphanage in Nashville in 1909. There was much talk about the children, and the newspapers documented every step that was taken; the cases attracted national attention to the point where Assistant Surgeon General C.H. Lavender from the Marine Hospital Service came to examine the cases.<sup>135</sup> There were seventeen children who had pellagra in the orphanage. Some of the cases were minor, while four children died from their condition. The deaths were shocking to local physicians, because they found that the diets of the children were very similar to those at other institutions like the state asylum, where no cases had been reported whatsoever.<sup>136</sup> The children were eventually taken to the county farm where they would be isolated, and it is said that they were put in a building next to the county pest house.<sup>137</sup> Tennessee, like a handful of other southern states, took

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<sup>134</sup>Ibid.,291-292.

<sup>135</sup> J. A. Albright, "HISTORY OF PELLAGRA IN TENNESSEE," *Nashville Tennessean and the Nashville American (1910-1920)*, Oct 01, 1911.

<https://ezproxy.mtsu.edu/login?url=https://www.proquest.com/historical-newspapers/history-pellagra-tennessee/docview/904788730/se-2>.

<sup>136</sup> A M. Townsend, "Pellagra." *Journal of the National Medical Association* vol. 2, 2 (1910), 66-67.

<sup>137</sup> "Children To Be Removed," *Nashville Banner*, July 9th 1909, <https://newscomwc.newspapers.com/image/604099047/>.

isolation very seriously. The isolation of patients is something that can be seen throughout the state. So much so that one of the children who had more severe symptoms was isolated further away to isolate with an adult who was also in poor health.<sup>138</sup>

The children were the first white cases to be documented in the state. This is what ultimately prompted the state board to send out Dr. Louis Leroy, the state Bacteriologist, to deduce all he could about pellagra in the state. He was also tasked to create a brochure of some sort to help other physicians in the state identify the disease.<sup>139</sup> In his investigation, Leroy realized that he had seen pellagra before in the past in many places such as asylums. He would commonly diagnose it as atropho-neurosis before now calling it pellagra.<sup>140</sup> In his report he explained symptoms that he had witnessed and ended without a true diagnosis. He alluded that the disease might have to do with the seasons and potentially what people are eating.<sup>141</sup> Leroy's survey was the state's first move to try and unravel the mystery of the disease, but medical professionals still had so very much more to learn.

The early investigation of pellagra shows strong evidence of the views the public and physicians at the time held; the study of the disease in Tennessee was clearly divided by race. Even though White physicians documented pellagra cases of Black people, they did little to help them and used the disease as another way to other them within the state. There were actually two different pellagra commissions working within Tennessee. One of the commission was created through the State Board of Health and was composed of

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<sup>138</sup> Etheridge, *The Butterfly Caste*, 31.

<sup>139</sup> Albright, *Biennial Report of the State Board*, 30.

<sup>140</sup> *Ibid.*, 398.

<sup>141</sup> *Ibid.*, 409.

White physicians. This group published a booklet called *Pellagra: A Report Upon 316 Cases of This Disease* in 1911. There were three members within this group: Wm. Krauss, Byrd S. Rhea, and J.C. Brooks. The 316 cases were ones that they attended to and examined, even though there were actually closer to 2,500 cases in the state.<sup>142</sup> Out of the 96 counties in Tennessee, they only went to 64 to collect data and found that at least 58 of them had people suffering with the disease.<sup>143</sup> With the information collected, the commission created a map to show where cases seemed to be highest. **Figure 1** shows the map which includes red dots labeling where cases can be found and their relation to waterways and highways.<sup>144</sup>

The report extended beyond just collecting gender and race numbers. They looked at absolutely vital attributes such as occupations, how long the person had the disease, other diseases the people were suffering with, insects nearby, and the hygiene of their homes.<sup>145</sup> Their research ultimately deduced that housewives were the most affected with the disease. The numbers are compared to men and other women working in other fields as well as children. It is also interesting to note that it shows that people who were married were more likely to have pellagra than some who were single or widowed.<sup>146</sup> They did not provide much information about the eating habits other than out of the 361 cases 307 of them used cornmeal in their cooking and that cotton oil was preferred much more than lard. It also appears that most people were going to stores rather than growing

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<sup>142</sup> William Krauss, Byrd S. Rhea, and J.C. Brooks. *Pellagra: A Report Upon 316 Cases of this Disease* (United States: n.p., 1911), 3-5.

<sup>143</sup> *Ibid.*, 5.

<sup>144</sup> *Ibid.*, 1.

<sup>145</sup> *Ibid.*, 6-11.

<sup>146</sup> *Ibid.*, 6.

their own cereal type products.<sup>147</sup> The commission theorized that they believed that the food was a huge factor in either getting the disease or how it was passed around from where they were produced.<sup>148</sup>

The report included 5 separate photos of people with pellagra and many of them were submitted by Dr. Louis Leroy. The first two photos are of one of the children from the Baptist Orphanage. The photos described the appearances of the rashes on his hands and feet. His facial expression was also noted in the description considering it was seen as a discerning characteristic of the disease.<sup>149</sup> The other photos were of men suffering with the disease and all of them showcased the rash on the bodies primarily on their faces and or hands. Two of the men were at different institutions: Western Hospital for the Insane at Bolivar and Davidson County Isolation Hospital. The last photo did not list a location other than that it was submitted by J.C. Brooks M.D.<sup>150</sup> The Tennessee commission did not last long because eventually it lost funding to continue, but in a short period of time (the span of a few, short months) it provided key insight relating to the extent of pellagra within the state and along their travels the commissioners shared their knowledge to the physicians that they visited. They tried to stress the importance of going to a doctor when symptoms occur because people with untreated cases would either be sent to an asylum or die.<sup>151</sup>

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<sup>147</sup> Ibid., 12.

<sup>148</sup> Ibid., 19.

<sup>149</sup> Ibid., 7-9.

<sup>150</sup> Ibid., 13-21.

<sup>151</sup> "Cleaner Living Pellagra's Foe," *Morristown Republican*, October 13, 1911 <https://www.newspapers.com/newspage/586486785/>.

The other commission working in Tennessee was created through the National Medical Association in 1910 and was also known as the commission on “Pellagra among Negroes.” The chairman was A.M. Townsend, a Black doctor who worked in Nashville and was a graduate and faculty member of Meharry Medical College. The other members of the group were Dr. John E. Hunter of Louisville, Ky and Dr. C.M. Wade of Hot Springs, Arkansas.<sup>152</sup> Dr. Townsend along with Dr. C.V. Roman reported the first African American case of pellagra in Tennessee.<sup>153</sup> He believed that he had seen pellagra cases before learning about it as early as 1907-1908 when he treated two women. Both women suffered from extreme cases leading to mental health crises and quickly died.<sup>154</sup> One of the cases he treated was a woman who decided to go to a Hoodoo doctor for help. She only seemed to get worse and on one of Townsend’s visits she had told him that the Hoodoo doctor removed snakes from her body and she was healed. He felt if he argued with her it would not do anything and he continued to try and treat her, but she eventually died because of the extremity of the disease.<sup>155</sup> The causes of pellagra and hookworm can be found associated in communities that practice Hoodoo. It is said that Hoodoo doctors could cause reptiles such as snakes and lizards to grow in people’s bodies and in some cases out of revenge.<sup>156</sup>

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<sup>152</sup> A M. Townsend, “Pellagra.” *Journal of the National Medical Association* vol. 2, (1910), 69-70.

<sup>153</sup> *Ibid.*, 66.

<sup>154</sup> A M. Townsend, “Pellagra: Its History and Symptomatology.” *Journal of the National Medical Association* vol. 1,2 (1909), 90-91.

<sup>155</sup> *Ibid.*, 90-91.

<sup>156</sup> Sam Divine On Arbitrarily Fixed Diets” *Chattanooga Daily Times*, Aug. 20, 1911

Townsend found himself very interested in pellagra stating “Its repulsive and loathsome manifestations have indeed daguerreotyped an impression on my mind that can never be forgotten.”<sup>157</sup> He continued to work with other doctors around the state to try and understand the disease and its many stages. What he began to see is that the disease commonly affected women and that it would not always affect entire families. He admitted in the beginning that even with the cases he had seen so far he was still not remotely sure what was the cause.<sup>158</sup> He was just as confused as many other physicians at the time. Pellagra was not even the hardest challenge that Townsend was facing at that moment. He, like many other Black physicians, were working in a time where not only was their work not being taken seriously in primarily White spaces, but they had to endure the constant spew of racism against Black bodies. In many of his reports he makes it apparent that racism is a problem within the field and fights back. Dr. Charles W. Stiles, of the Marine Hospital, in a meeting with health officers made the comment of “the Negro is the reservoir of disease in the south”<sup>159</sup> to which Townsend commented “It is therefore imperative on the part of the Negro physician to find for himself if such charges are true. If true, then work to alleviate them; if false, let the world know it.”<sup>160</sup>

Dr. A.M. Townsend was not the only Black doctor to take a stand through talking about Pellagra in Tennessee. Dr. H.M. Greene of Knoxville would later publish a book *Pellagra: A Monograph* in 1927. Greene did not believe that pellagra was caused by the food theory that was circulating by Goldberger and other physicians at the time. He felt

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<sup>157</sup> Townsend, A M. “Pellagra.”, 66.

<sup>158</sup> Ibid.,66.

<sup>159</sup> Ibid.,70.

<sup>160</sup> Ibid.

that if it was caused by starvation then there would be other signs and the disease would have been found sooner.<sup>161</sup> Greene explained that Black communities after the Civil war survived on “...corn-pone, molasses, and sweet potatoes,”<sup>162</sup> and with this diet they did not find Pellagra. He attributed the cause of Pellagra to the summer heat that Southerners primarily worked in the cotton belt, and the rashes were a form of sunburn.<sup>163</sup> He would eventually be a part of the commission and in his reports he talked about the social injustices that he and other Black doctors experienced. Greene explained it was time that Black doctors were also known for their research.<sup>164</sup> He stated “But today our opportunity has come. This new and justly dreaded malady rises before us like a mighty Goliath defying the medical army and it is up to us as well as any race to stay the invader.”<sup>165</sup>

In 1930, Etheridge Sibley in conjunction with the Tennessee State Department of Public Health and Fisk University published a statistical study. In the foreword, Fisk’s Charles S. Johnson stated that “The present study is to be considered as the first or exploratory phase of a comprehensive plan for investigation of the causes underlying the prevalence of illness among the colored population and of ways in which this condition can be attacked.”<sup>166</sup> The Sibley study provided data on both White and Black Tennesseans and analyzed the information together instead of as separate studies. Sibley used

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<sup>161</sup> “Holds Food Is Not To Blame,” *The Journal and Tribune*, July 31, 1921.

<sup>162</sup> Ibid.

<sup>163</sup> Ibid.

<sup>164</sup> H.M. Green, “Report from the Pellagra Commission of the National Medical Association.”

*Journal of the National Medical Association* vol. 7, (1915): 29-30.

<sup>165</sup> Ibid., 30.

<sup>166</sup> Elbridge Sibley, *Differential Mortality In Tennessee: 1917-1928* (Nashville, Tennessee: Fisk University Press, 1930), 3.

mortality records because of their availability at the time.<sup>167</sup> Sibley concluded that if Goldberger's theory was correct then the Southern diet could easily cause the disease. In his research he found more deaths of both White and Black people in the cotton growing sections within the state. He needed more information on the cost of living and dietary habits to trace in Pellagra within the state.<sup>168</sup> He put his information into two maps of Tennessee to show where Pellagra was most prevalent. Each map had a key that explains the shading system that represents the percentage of mortalities of both Black and White citizens in the state.<sup>169</sup> Sibley found that pellagra was most prominent in White people in East Tennessee and West Tennessee for African Americans. He also found that more women were dying of Pellagra than men in both urban and rural areas.<sup>170</sup>

In 1911, Pellagra was put on Tennessee's list of reportable diseases. The disease was found all over the state but was seen in larger numbers in eastern and middle tennessee. As physicians began to report diseases it became clear that there were probably cases in the state prior to the understanding of the symptoms.<sup>171</sup> A.M Townsend explained that there were many reasons that Pellagra went unnoticed in Tennessee for so long, including that the disease was not covered in current medical texts and it was almost impossible to diagnose.<sup>172</sup> Townsend also stated that many doctors confused

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<sup>167</sup> Ibid.,5.

<sup>168</sup> Ibid.,90-91.

<sup>169</sup> Ibid.,93.

<sup>170</sup> Ibid.,92.

<sup>171</sup> J. W. Jobling, and W. Petersen. "The Epidemiology of Pellagra in Nashville Tennessee." *Journal of Infectious Diseases* 18, no. 5 (January 1916) <https://doi.org/10.1093/infdis/18.5.501>, 508.

<sup>172</sup> A M.Townsend, "Report of Commission for Study of Pellagra." *Journal of the National Medical Association* vol. 2, no.4 (1910): 253.

pellagra with eczema or even in relation to tuberculosis.<sup>173</sup> Tennessee doctors were told they could keep from mistaking pellagra with other diseases by considering "...the areas covered by the pellagrous eruption, the color of the eruption, the extent of it and the anesthesia associated with it, and the well marked cases of constitutional disturbances associated with it..."<sup>174</sup> Even though doctors increasingly knew the symptoms, they still found it hard to know what exactly they were working with.

In many cases, pellagra was not alone in cases of sickness or death. In 1912 Dr. R.Q. Lillard of Lebanon, Tennessee, reported that it was not rare to find cases of pellagra accompanied by hookworm. He estimated that around 3 out of 5 cases he examined had both diseases.<sup>175</sup> This connection is not surprising since Hookworm is also a disease of poverty and would leave people in bad health. Instead of diet being a factor, however, a parasite caused hookworm. Worms would enter the body via the feet because of poor sanitary habits of the time and not having proper privies to use.<sup>176</sup> Southern people did not want to believe that there was a health problem associated with poverty among them. They did not trust philanthropists such as the Rockefeller Foundation and one journalist, writing under the name of Sam Divine, claimed that the foundation was "spreading Hoodooism"<sup>177</sup> throughout the South. He believed the efforts of philanthropists did not consider what was actually needed for Southerners and thought that efforts should go into

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<sup>173</sup> Ibid.,258.

<sup>174</sup> Albright, *Biennial Report of the State Board*, 389.

<sup>175</sup> "FIGHT BEGINS TO DRIVE PELLAGRA FROM SUNNY SOUTH." *Nashville Tennessean and the Nashville American*, Aug.15,1912.

<sup>176</sup> John Etting, *The Germ of Laziness Rockefeller Philanthropy and Public Health in the New South* (Cambridge, MA: Harvard Univ. Press, 1981), 46.

<sup>177</sup> "Sam Divine On Arbitrarily Fixed Diets," *Chattanooga Daily Times*, Aug. 20,1911.

things like work for the unemployed and teaching the younger generations trade skills.<sup>178</sup>

Divine concluded “Of the two evils, give me the hookworm. Pellagra seems to be another willopowallapus invented by the doctors.”<sup>179</sup> He made it clear that he had a distrust for the medical field and the diseases that were becoming prominent in the South.

Even with disbelief there continued to be high rates of Hookworm in the south, the Rockefeller Foundation organized a Sanitary Commission (RSC) to eradicate the disease.<sup>180</sup> The Hookworm campaign worked as a great example to show how both public health and schools could work together to improve communities. The commission did much work in Tennessee because of the number of counties that had high rates. RSC pushed for more than access to treatment with dispensaries, but also the construction of privies for preventative measures.<sup>181</sup> A Tennessean named Wickliffe Rose led RSC, whose mission was to rid health issues such as hookworm and pellagra within the South. The campaign continued from 1909-1915, and although people continued to get hookworm, its efforts jump started early health programs in the state.<sup>182</sup>

In 1916 James W. Jobling and William F. Petersen published “The Epidemiology of Pellagra in Nashville, Tennessee.” Jobling and Petersen’s research primarily examined

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<sup>178</sup> Ibid.

<sup>179</sup> Ibid.

<sup>180</sup> John Duffy, *The Sanitarians: a History of American Public Health*. (Urbana: Univ. of Illinois Press, 1990), 228-229.

<sup>181</sup> Mary S. Hoffschwelle, *Rebuilding the Rural Southern Community: Reformers, Schools, and Homes in Tennessee, 1900-1930* (Knoxville: University of Tennessee Press, 1998), 26-27.

<sup>182</sup> MTSU Center for Historic Preservation, “Rutherford Health Department, Murfreesboro, Tennessee, National Register of Historic Places Nomination, Tennessee Historical Commission, 1993, 8.

Pellagra in Nashville. This journal article holds a significant amount of information on Pellagra in Tennessee, and gives insight into how the disease was handled in the state. Their data collection started with the first case identified as Pellagra in 1908 in Davidson County at the Baptist Orphanage. They believed that the history of the disease in Tennessee actually began earlier in 1907.<sup>183</sup> Their survey covered 14 of the 25 wards within the city, a total population of 65,000 people, including 27,709 White adults and 16,353 Black adults as well as 14,114 White children and 6,941 Black children.<sup>184</sup>

About one-third of Nashville's population was Black.<sup>185</sup> Though there was farming in Nashville, the city mostly consisted of industrial jobs: cotton mills, snuff factories, fertilizer mills, railroad, and woodwork. Labor wages were low in the city and children worked many industrial jobs.<sup>186</sup> Most workers lived in houses that consisted of three to four rooms. Nashville was not overcrowded like many other cities during this period. Even without overcrowding the city had issues with sanitation. About 80% of the houses in the city did not have adequate places for the residents to go to the bathroom.<sup>187</sup>

Collecting data on Pellagra in Nashville was a hard task for physicians; in Nashville, Jobling and Petersen got examiners to conduct house to house surveys. Within these surveys, they would look for people suffering from pellagra, types of food people ate, clothing, and sanitation habits.<sup>188</sup> Surveyors encountered many people who refused to participate or left their houses to avoid participation. Completed surveys that included

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<sup>183</sup> Jobling and Petersen, "The Epidemiology of Pellagra," 507-512.

<sup>184</sup> Ibid.,513.

<sup>185</sup> Ibid.,504.

<sup>186</sup> Ibid.,506.

<sup>187</sup> Ibid.

<sup>188</sup> Ibid.,502.

men were low because they would be at work around the time the examiner visited.<sup>189</sup> Surveyors also told people to go to the Davidson County Isolation Hospital if they had symptoms of Pellagra. The hospital was far from the city and people did not like being treated like they were contagious so they would not go.<sup>190</sup>

Though the house to house surveys were not ideal, Jobling and Petersen amassed large amounts of data. Their research did not confirm Goldberger's argument that diet caused Pellagra. In their research, they found that eating biscuits made from flour was more common than cornbread, which was commonly linked to Pellagra. They also explained that people in the city were able to afford vegetables and fruits, and thus diet did not explain the cases of grocery store owning families who had pellagra.<sup>191</sup> Jobling and Petersen argued that sanitation was the biggest issue causing Pellagra in Nashville. An example would be the fact that these areas typically did not have sewers and used a pail method to rid of their excrement.<sup>192</sup> From the years 1910-1915, they recorded that a total of 332 people died from pellagra, moreover it was possible that there were cases that were not reported or reported as other diseases.<sup>193</sup> To find this information, Jobling and Petersen not only consulted morbidity records but also examined records of deaths.<sup>194</sup>

The high rates of pellagra concerned the state's physicians, and as early as 1915 they discussed the need for a hospital for pellagra. There was also an interest from locals

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<sup>189</sup> Ibid.,513.

<sup>190</sup> Ibid.,513-514.

<sup>191</sup> Ibid., 520.

<sup>192</sup> Ibid.,524.

<sup>193</sup> Ibid.,530.

<sup>194</sup> Ibid., 528-530.

on where people could be treated for the disease.<sup>195</sup> Davidson County had a pellagra hospital that was located 5 miles away from the city and was near the county Asylum. This hospital was architecturally divided to separate both race and gender.<sup>196</sup> There is also evidence that there was a pellagra hospital located in Memphis, but there are few sources that give information other than its location.<sup>197</sup>

### **Tennessee Economics and Agriculture**

Joseph Goldberger and Edgar Sydenstricker theorized that agricultural practices caused problems within the Southern economy . One of their theories was that the Southern monoculture of cotton led to pellagra. Their data showed that areas where large amounts of cotton were produced showed an increase in cases of Pellagra.<sup>198</sup> The growing cotton for profit could be seen all across the South and had gone on for many generations. Other agricultural industries also could be found in the state such as dairy farms and mill work.<sup>199</sup> Farmers and tenants Most of the farms operated. <sup>200</sup> Southern agriculture had thrived from the labors of enslaved workers, and that would continue under different names into the next century; workers were still being exploited to produce cotton crops. Slavery may have ended, but poor working conditions were carried into the

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<sup>195</sup> “Wants Pellagra Hospital” *Chattanooga Daily Times*, Nov. 6th 1915, <https://newscomwc.newspapers.com/image/60558575>.

<sup>196</sup> “New Hospital for Pellagra” *Nashville Banner*, Sept. 23, 1917.

<sup>197</sup> *The American Hospital Digest and Directory: A Reference Book for Hospitals* (United States: Crain Publishing Company, 1926), 140. [https://www.google.com/books/edition/The\\_American\\_Hospital\\_Digest\\_and\\_Directo/zPEhAQAAAJ?hl=en&gbpv=0](https://www.google.com/books/edition/The_American_Hospital_Digest_and_Directo/zPEhAQAAAJ?hl=en&gbpv=0).

<sup>198</sup> Marks, “Epidemiologists Explain Pellagra”, 34.

<sup>199</sup> Harry S. Mustard, *Cross-Sections of Rural Health Progress. Report of the Commonwealth Fund Child Health Demonstration in Rutherford County, Tennessee, 1924-1928* (New York: Commonwealth Fund, Division of Publications, 1930), x-xi.

<sup>200</sup> *Ibid.*

next century. In the place of enslaved people, other jobs took those positions such as tenant farmers and sharecroppers.<sup>201</sup> Homer Hancock observed: “The physical conditions of the farm as a production plant has depreciated somewhat during the past few year—first, during the war, due to war conditions and the consequent stress of increased food production, and after the war because of forced economics from lack of money to provide the necessary annual improvement.”<sup>202</sup> Not only did the first world war bring about changes in the home, but it also brought changes and challenges on the farm. This also meant trying a variety of different crops and equipment for convenience.<sup>203</sup>

Cotton was being produced for the supply and demand of the United States. Owners of land would not allow tenant farmers or sharecroppers to grow crops such as grain or raise livestock that could be eaten.<sup>204</sup> Because southerners were not able to eat a variety of foods, they were lacking niacin or vitamin B3.<sup>205</sup> There are two factors to consider with the economics of field labor in relation to Pellagra: the effects of the bollweevils and the corn used commonly by southern families. Bollweevils destroyed monoculture crops such as cotton and in response caused farmers to switch to grow food products that would not be targeted by the pest.<sup>206</sup> When cotton crops dominated others, products such as corn were brought into the South after being milled in the midwest and was purchased in stores instead of local commerce. Though it was not known at the time,

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<sup>201</sup> Kraut, *Goldberger's War*, 97.

<sup>202</sup> Homer Hancock, *State of Tennessee, Biennial Report of the Department of Agriculture 1923-1924*, 7.

<sup>203</sup> Ibid.

<sup>204</sup> Ibid., 98.

<sup>205</sup> Karen Clay, Ethan Schmick, and Werner Troesken, “The Rise and Fall of Pellagra in the American South,” *The Journal of Economic History* 79, no. 1 (March 2019): pp. 32-62, <https://doi.org/10.1017/s0022050718000700>, 32.

<sup>206</sup> Ibid.

the way it was processed in the midwest took out many of the nutrients such as niacin that would cause people to get Pellagra.<sup>207</sup>

Among farming there was also an increase in work in factories and mills in rural areas. These jobs come out of the need to continue a production based economy. These workers, like field workers, made low wages and lived on similar foods.<sup>208</sup> “Corn bread, molasses, syrup, fatback, and coffee.”<sup>209</sup> It was impossible for someone to get all the nutrients that they needed through that kind of diet. Sufferers of pellagra also had a social impact on the economy because if the victim was sick enough they would not be able to work. In many of these situations, the family would all suffer and less food would be the outcome.<sup>210</sup>

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<sup>207</sup> Ibid., 40.

<sup>208</sup> Kraut, *Goldberger's War*, 98.

<sup>209</sup> Ibid.

<sup>210</sup> Etheridge, *The Butterfly Caste*, 39.

## Chapter IV: Rutherford County

In Tennessee Pellagra went by many names; it was referred to as the “Black Angel,” “Wolf of Starvation,” and “Summer Sunshine Death.”<sup>211</sup> The people of Tennessee were terrified and no one knew who could be taken next, especially when newspaper headlines only fed their fear. One Tennessee newspaper had several headlines in 1911 such as “Their Lives May End With Winter Going,” “Pellagra Sufferers Think Spring Birds’ Songs Will Be Funeral Dirges,” and the “Grim Reaper is Fast Approaching Home’s of Unfortunate Families.”<sup>212</sup> There was a lot of misinformation about the disease spreading because of the medical mystery. Tennessee would later be known as the state with the largest fear of the disease. It is possible that the fear also came from the information that doctors were spreading to people which was actually terrifying in reality.<sup>213</sup> The fear was so intense in the state that “Lavinder said that pellagraphobia originated in Tennessee...”<sup>214</sup>

To study pellagra at the local level, Rutherford County is a good representative of a rural Tennessee county at the turn of the 20th century. The county originally lacked medical infrastructure, but that would eventually change due to impacts from northern philanthropy. In 1901, the Rutherford County Court established a committee to begin building a pesthouse, to address a rise in people suffering from illnesses in the county. The pesthouse was not built in the middle of town for easy accessibility, but was built on

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<sup>211</sup> “Their Lives May End With Winter’s Going.” *Knoxville Sentinel*, Sept. 8, 1911  
<https://newscomwc.newspapers.com/image/586512432>.

<sup>212</sup> Ibid.

<sup>213</sup> Etheridge, *The Butterfly Caste*, 31.

<sup>214</sup> Ibid.

the County Farm, which was miles from the town of Murfreesboro.<sup>215</sup> The County Farm had different facilities and can be seen as the first public institution of medicine in the county. There was an asylum, poorhouse, and pesthouse on the farm.<sup>216</sup> The poorhouse was the first to be built because the Tennessee General Assembly passed an Act in 1826 to put tax money toward land for the county poor.<sup>217</sup> Its construction reveals that toward the middle of the 19th century the county was beginning to notice the problems relating to poverty and illness.

The pesthouse had an ambulance and a physician named Dr. J.B. Murfree Jr. of Murfreesboro who saw patients at \$3 a visit.<sup>218</sup> There were different reasons that people were placed into the pesthouse and it was typically due to extreme conditions. In 1909 Rutherford County listed pesthouse residents as being crippled, suffering from old age, blind, having syphilis, and of unsound mind.<sup>219</sup> Could there have been cases of Pellagra there? None were documented but it is possible that some of the cases of unsound mind could have been due to untreated pellagra. Cases were being found all over the south in asylums around the same time.<sup>220</sup>

After World War I, chapters of the American Red Cross shifted services to public health to provide health in local communities. They provided some of the first organized public health services. The number of places of public health in Tennessee was growing,

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<sup>215</sup>Ed Annable, "The Rutherford County Farm, 1892-1946." *Rutherford County Historical Society*, (Publication No. 30, 1988), 16.

<sup>216</sup> Ibid., 1.

<sup>217</sup> Ibid.

<sup>218</sup> Ibid., 16.

<sup>219</sup> Ibid., 22.

<sup>220</sup> Goldberger, "The Cause and Prevention of Pellagra", 4.

and Rutherford County received its first nursing service in 1920.<sup>221</sup> At first the finances for this service came from the Red Cross local chapter, but eventually funds also came from the state department of health.<sup>222</sup> The first public health nurse in Rutherford County was Maud Coverdale, but she developed a heart condition and had to leave after three months.<sup>223</sup> Before Coverdale left she was able to set up examinations at the local schools with a doctor and dentist. They examined the children and were able to begin talking to the children about proper health.<sup>224</sup> The Red Cross would find there was a lot to be done in the county, but there were also efforts at work that began earlier in the century. In 1911 Jeannette King, a physical education teacher in the county, set up a program to examine elementary age children which quickly showed that there was a necessity for public health in the county.<sup>225</sup>

After Coverdale left, Maud Ferguson became the nurse of the entire county with the help of the Red Cross. The county had a total of ten doctors at the time and only two of them were African American. Within the community there were two doctors that lived on farms and a handful of dentists in the county.<sup>226</sup> This was the first of an organized system of public health that Rutherford County received. It was based on the work of one nurse and the community of physicians and dentists. Rutherford County nurse Maud Ferguson had to create a general health plan for the county. With the help of a country

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<sup>221</sup> Maud Ferguson, "Pioneer Nursing In Tennessee ,"(Murfreesboro, TN, 1955), 1.

<sup>222</sup> Ibid., 1-2.

<sup>223</sup> Ibid., 2.

<sup>224</sup> Ibid.

<sup>225</sup> MTSU Center for Historic Preservation, "Rutherford Health Department, Murfreesboro, Tennessee, National Register of Historic Places Nomination, Tennessee Historical Commission, 1993, 7-8.

<sup>226</sup> Maud Ferguson, "Pioneer Nursing In Tennessee ,"(Murfreesboro, TN, 1955), 1-4.

health officer, Ferguson conducted house visits where several diseases were found such as tuberculosis, typhoid, hookworm, and pellagra. It was also noted that in parts of the county many homes lacked preventive measures to ensure hygiene.<sup>227</sup> The work of the Red Cross was one of the first steps to a larger public health future. It showed the community what a health program could be like.<sup>228</sup> Ferguson did all that she could, commenting “The deficiencies in the service she gave were due, not to the lack of vision or lack of enthusiasm and energy, but to the inability of one worker to care for 33,000 people in a territory of more than six hundred square miles.”<sup>229</sup>

Rutherford County, like many other rural counties, was late in establishing adequate public health. In the 1920s the county was about 614 sq miles with land that is considered hilly and soil well-suited for different types of agricultural products.<sup>230</sup> The population of the county was about 33,059 people. The agricultural sector included cotton growing, dairying, and cattle. The industrial population was comparatively small, but there was a milk plant, hosiery mill, woolen mill, overall factory, and a cedar slat mill.<sup>231</sup>

Rutherford County was a special case when it comes to public health because it became one of four counties nationally to participate in the Commonwealth Fund’s rural

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<sup>227</sup> Ibid.,4-5.

<sup>228</sup> W. Frank Walker and Carolina R. Randolph, *Influence of a Public Health Program on a Rural Community: Fifteen Years in Rutherford County, Tennessee, 1924-1938* (New York: Commonwealth Fund, 1940), 61.

<sup>229</sup> Ibid.,62.

<sup>230</sup> Walker and Randolph, *Influence of a Public Health Program on a Rural Community*, 59.

<sup>231</sup> Harry S. Mustard, *Cross-Sections of Rural Health Progress. Report of the Commonwealth Fund Child Health Demonstration in Rutherford County, Tennessee, 1924-1928* (New York: Commonwealth Fund, Division of Publications, 1930), x-xi.

public health demonstration. Anna Harkness and her son Edward founded the Commonwealth Fund in 1918. Harkness's husband was a former partner to Rockefeller through the Standard Oil Company.<sup>232</sup> After the end of the Rockefeller Sanitary Commission ended in 1915 there was no organization to take its place immediately. After a few years of planning the Harkness were ready to begin work through the Commonwealth Fund in 1921.<sup>233</sup> The non-profit organization promoted and funded systems of public health. The twentieth century brought a progressive reform movement that would focus on public health within the South. This movement was pushed through by foundations that wanted to put attention toward rural life.<sup>234</sup>

It took the efforts of many in Rutherford County to show their interest in the opportunities that the Commonwealth Fund could bring. King, Ferguson and Simon B. Christy, director of the Red Cross led the effort. As a part of their efforts to get the Commonwealth Fund's attention, Christy sent in a report of the efforts they had taken to try and better the health of the people and to show the support they could have in the county.<sup>235</sup> In order for Rutherford County to be considered an application process had to be completed which also included an investigation on the health of the people and if it would be a good location for a demonstration.<sup>236</sup> "In 1923, the Commonwealth Fund selected Rutherford county, Tennessee, for an experimental five year child health demonstration."<sup>237</sup> Along with Rutherford County there were four other locations that

<sup>232</sup> MTSU Center for Historic Preservation, "Rutherford Health Department", 8.

<sup>233</sup> Ibid.

<sup>234</sup> MTSU Center for Historic Preservation, "Rutherford Health Department", 7.

<sup>235</sup> Ibid.,9-10.

<sup>236</sup> Ibid.,7.

<sup>237</sup> Mary S. Hoffschwelle. "Organizing Rural Communities for Change: The Commonwealth Fund Child Health Demonstration in Rutherford County, 1923-1927."

benefited from its help.<sup>238</sup> The Commonwealth fund's goal was to help the children, but they were hoping that would transcend into having a healthier community.<sup>239</sup> There were many reasons that Rutherford County was selected for the demonstration such as its close distance to Nashville and the many medical schools there. The support of the community that S.J. Crumbine saw during his visit impressed the fund.<sup>240</sup> The demonstration was to have a director along with 6 nurses to work in the county.<sup>241</sup> This demonstration involved not only the Commonwealth but also the state department of health and the locals. With a few more health professionals they were able to have a full time public health department in the area.<sup>242</sup>

The director of the demonstration was Harry S. Mustard from 1924-1928. Mustard used children and schools as a way of ensuring community involvement. His program emphasized things such as having safe milk products, detecting diseases, and education. All these aspects involved everyone and were a part of creating a healthy community in the county.<sup>243</sup> The goal was for health to be valued by the community. Within the program nurses and doctors would have to work with the people in the community to bridge the gap between smaller clinical help and the prevention that the

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*Tennessee Historical Quarterly* 53, no. 3 (1994), 155.

<http://search.ebscohost.com.ezproxy.mtsu.edu/login.aspx?direct=true&db=edsjsr&AN=edsjsr.42627140&site=eds-live&scope=site>.

<sup>238</sup> Carroll Van West, "A Sense of Permanency: The Commonwealth Fund and the Rutherford Hospital and Health Center, 1926-1940," *Border States: Journal of the Kentucky-Tennessee American Studies Association* No.10 (1995), 1.

<sup>239</sup> Hoffschwelle, *Organizing Rural Communities for Change*, 155.

<sup>240</sup> MTSU Center for Historic Preservation, "Rutherford Health Department", 11.

<sup>241</sup> Hoffschwelle, *Organizing Rural Communities for Change*, 157.

<sup>242</sup> Walker and Randolph, *Influence of a Public Health Program on a Rural Community*, 1.

<sup>243</sup> *Ibid.*, 63.

health department was aiming for.<sup>244</sup> Each year of the demonstration had a purpose and specific goal to reach. 1924, the first year, was used to examine what was needed to help the county. Within this year they still provided health services to the community. 1925 was spent trying to rid the problems that were seen the year before during their examinations. At this point there was no more inspecting for problems, but conducting full on examinations.<sup>245</sup>

To appeal to the children and families, the fund set up the “blue ribbon” plan. These values and ideas of sanitation were being taken home when the children reached their families.<sup>246</sup> It became popular with not only teachers and students but by the entire community. It was a way to measure the changes in students' health and also reward them for taking part in their health. Children would be examined and by the end of the semester if their health met standards they would be awarded a blue ribbon. The schools with the most blue ribbons would win a cup.<sup>247</sup> The students were taught healthy habits at school and got recommendations on how to fix any issues that they had (vision, needing shots, and dental)<sup>248</sup>

Children would receive blue ribbons based on individual health, immunity status, practicing health habits, behavior, and how well they were doing in school.<sup>249</sup> Many health requirements became a part of the students' school day. Basins for handwashing were added to many of the schools along with the use of flour sacks for hand drying.

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<sup>244</sup> Mustard, *Cross-Sections of Rural Health Progress*, 5.

<sup>245</sup> *Ibid.*, 13.

<sup>246</sup> *Ibid.*, 15.

<sup>247</sup> *Ibid.*, 14-15.

<sup>248</sup> *Ibid.*, 9-12.

<sup>249</sup> *Ibid.*, 81.

Children were also taught home health habits such as taking baths often and brushing their teeth.<sup>250</sup> The first blue ribbon contest began in 1926 and continued after the demonstration left the county in 1928. The contest was so popular that there was a parade with all the children who won ribbons.<sup>251</sup> The Blue Ribbon Campaign created a normalcy of health in children and in the community.<sup>252</sup>

The construction of a health department was in the works during the demonstration. Funds were beginning to come in from locals, but there was not a large push. It felt too early to ask for larger funds from the locals when there was still work to be done. By 1927 it was felt that it was time to implement a tax so that the locals could start supporting their own local health. Within the first year there was a three-cent tax. The tax went up to five-cents in 1928 which increased the funds for health in different departments.<sup>253</sup> The nurses and staff were known as the “demonstration” from the start, but by 1927 this group was being referred to as the “health department.”<sup>254</sup> Once the Commonwealth Fund built the hospital in 1927, the group of members from the health department and the hospital were able to provide more services and activities on health.<sup>255</sup>

According to Mustard the end of the child demonstration showed “rural counties should, can, and will support a more adequate health service than they have hitherto been credited with desiring.”<sup>256</sup> Rutherford County showed that with considerable external

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<sup>250</sup> Ibid.,75-76.

<sup>251</sup> Ibid.,81-83.

<sup>252</sup> Ibid.,194.

<sup>253</sup> Ibid.,17.

<sup>254</sup> Ibid.,18.

<sup>255</sup> Ibid., 20-22.

<sup>256</sup> Ibid., 196.

funding, help from medical professionals and a public that supported public health that it was possible to establish a meaningful public health program. The hospital that the Commonwealth Fund built in 1927 was just the first building constructed that aided public health. In 1931, in reaction to the findings of the demonstration the Commonwealth Fund provided a model health department building. It was unique because it was one of the first permanent public health locations in a rural area. This building shows the importance in the 20th century for the need of public health in the rural South.<sup>257</sup>

There was a *Biennial Report of the Department of Public Health* in the state of Tennessee for the years 1933-1935. According to this report only a few counties had a full time county health department, and that was only if they were able to uphold it. This is just another reason why Rutherford County having the staff and buildings was so significant in the 1930s. There were only a few counties in the state that were able to have a health department.<sup>258</sup> This report also reflects that Rutherford county throughout 1933-1935 were either first or among the top three counties in the Blue Ribbon Programs, this indicated sustainability following the demonstration for the county's public health programs.<sup>259</sup>

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<sup>257</sup> West, *Tennessee's Historic Landscape*, 336.

<sup>258</sup> Williams, *Biennial Report of the Department of Public Health State of Tennessee*, 25.

<sup>259</sup> *Ibid.*, 35.

### Cases

With few vital statistics taken and little medical reports done on the county it is hard to know how long the disease was present. The State Board documented a total of 3 cases in 1909-1911 from Rutherford County.<sup>260</sup> Dr. Enoch H. Jones, a physician in Murfreesboro, saw his first case in 1910. A farmer came in suffering with what he believed to be a bad sunburn that in the past also had troubled him. Dr. Jones tried many treatments, but nothing seemed to work at first and the man grew worse. He eventually could not work because of how bad the disease had progressed.<sup>261</sup> Eventually he tried “...arsenic, iron and strychnia, pushing the arsenic to toleration.”<sup>262</sup> The patient seemed to get better with this treatment, but because he would run out of arsenic it would start to worsen again. The last check up that Dr. Jones conducted with the patient showed he was doing better. He recommended that he come back for follow ups, but the patient insisted that he did not need to come back.<sup>263</sup>

The Rutherford County Archives has two books that documented deaths in the county. Both books are sporadic in date range, and in no way document all the deaths in the county, but they hold valuable information in understanding Pellagra within the county. The first book spans from 1881-1882 and also includes dates from 1902-1912. This book only lists two cases of Pellagra where both men died in 1911 only three months apart.<sup>264</sup> This particular book, along with names, lists information such as:

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<sup>260</sup> Albright, *Biennial Report of the State Board*, 47.

<sup>261</sup> Enoch H. Jones, “Pellagra, With Report of a Case,” *Journal of the Tennessee State Medical Association* (Nashville: The Association, 1911), 98.

<sup>262</sup> *Ibid.*

<sup>263</sup> *Ibid.*, 98-99.

<sup>264</sup> Rutherford County, Tennessee, *Record of Deaths*, 1881-1912, 70-74.

occupations, age, race, marital status, and type of death with the date. Because Pellagra was not identified in the county until 1911 I also collected data on diseases of nutrition and diseases that could potentially be related to Pellagra. The data shows deaths of pellagra, stomach/bowel, hookworm, diabetes, summer complaint, and rickets in the collected data (See appendix). Though these numbers are not an accurate representation of the deaths in the county it gives an idea of what other diseases were occurring or could have been misdiagnosed when Pellagra was found in the county.

The second book to document the death in the county ranges between 1925 and 1938. The types of information that is documented within it is name, age, race, cause and death date, and the district that the person died.<sup>265</sup> The data collected from this book was on pellagra, skin infection, malnutrition, diabetes/ diabetic coma, and rickets (See appendix) While the primary reason to collect data was to find Pellagra it was important to note other nutritional or potentially connected diseases because of their possible relation to Pellagra deaths in the county. This book contained 27 deaths of Pellagra; most of these deaths were documented in district 13 of the county. Of the 27 deaths 17 of them were women with 10 of them were White and 7 being Black. The women were in age ranges from 30 to 84 .There were 10 men whose deaths were documented as dying of Pellagra 5 of which were White and 5 were Black, and the men's age ranges were from 47 to 81.<sup>266</sup>

The first death of Pellagra in the county to appear in the *Record of Death* Book was August 26, 1911 while he was a patient at the county farm. From the record it says

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<sup>265</sup> Rutherford County, Tennessee, *Record of Deaths*, 1925-1938.

<sup>266</sup> Ibid.

his death was recorded by Dr. D.C.Huff and the patient was 70 years old.<sup>267</sup> The next death was on November 12, 1911 of a man named Edward (Edgar) Miller. From the death book, it says that Edgar was 29 years old, worked as a clerk, and was originally from Milton, Tennessee.<sup>268</sup> Edgar Miller's death made it to the newspaper and the headline read "First Victim of Pellagra"<sup>269</sup> He was not the first to die with the disease as there was the case from the county farm, but it is possible that his case is considered first to be examined and known publicly. Miller's case, because of the mention in the newspaper, holds much information on his personal life and his fight with Pellagra. Instead of being taken to an isolation hospital, he was held in isolation for many weeks in a house in the county. In the house, he had to be watched because the Pellagra was affecting his mental health and he was at risk of causing himself harm.<sup>270</sup> The treatment of Miller within this isolated house goes beyond extreme measures. He was in the later stages of the disease and the county officials did not know what exactly to do.<sup>271</sup> He was not just in a house they had him chained to the floor within it.<sup>272</sup> No county institution would take him including the asylum, jail, and the county farm. Because people believed that pellagra was contagious at that time the public wanted him out of the city.<sup>273</sup>

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<sup>267</sup> Rutherford County, Tennessee, *Record of Deaths*, 1881-1912, 70

<sup>268</sup> Ibid.,74-75.

<sup>269</sup> "First Victim of Pellagra ." *Unknown* , n.d. Accessed February 2020.

<sup>270</sup> Ibid.

<sup>271</sup> "Case Of Pellagra Arouses Murfreesboro," *Chattanooga Daily Times*, Aug. 15, 1911. <https://newscomwc.newspapers.com/image/605517077/?terms=case%20of%20pellagra%20arouses%20murfreesboro&pqsid=1IR0qEC7JkYpK9IF0EyZWw%3A1180000%3A1047017102&match=1>.

<sup>272</sup> Ibid.

<sup>273</sup> Ibid.



number of cases.<sup>277</sup> Through Dr. Mustard's data put together there were several diseases that were in the county in high numbers during the time of the demonstration. Pellagra was on that list but only 54 deaths in Rutherford County from 1924-1928 were documented in their data.<sup>278</sup>

### **An Examination of Rural Life**

Studying Pellagra goes beyond medical text and vital statistics. While those sources can show where and to what extent the disease affected the area, they do not always give a proper view of the struggles that people were experiencing and the fight for health that was going on within communities. It is unknown how many people suffered from Pellagra, because the numbers do not show the true existence of the disease especially when considering cases that might have been mild.<sup>279</sup> It is easy to point a finger and blame poverty for Pellagra, but what does that truly mean? Elizabeth Engelhardt explains the haunting southern history that is found in "Starved, bleeding, sometimes voiceless, occasionally profoundly vocal, the pellagrins and the mill culture that created them exposed cracks in the southern food and gender story."<sup>280</sup> This study requires an understanding of the people, why they exist in the situations they were born into, and how many diseases were able to thrive in these locations.

The history of health is interwoven with the culture of the people it affected, and this was not their fault; the 20th century brought difficult changes with it. The societal norms and politics that Pellagra survived through were also vital pieces of the puzzle.

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<sup>277</sup> Mustard, *Cross-Sections of Rural Health Progress*, 127.

<sup>278</sup> *Ibid.*, 212.

<sup>279</sup> Engelhardt, *A Mess of Greens*, 124.

<sup>280</sup> *Ibid.*, 168.

The progressive era which lasted from 1890 until the 1920s brought many changes societally in women's rights and in the understanding of health and community necessities.<sup>281</sup> It also revealed access or the lack thereof to food, and this became a part of southern identity and was used to shame people about their living conditions.<sup>282</sup> Mary S. Hoffschwelle explains in *Rebuilding the Rural Southern Community* that reformers joined the push for new changes in health and home and tried to get rural women to take charge in their communities. This was done through things such as home economics and getting women involved with changes done through their children's school.<sup>283</sup> Hoffschwelle's work looks at how rural reform was a large debate of its time due to the reformers' belief that there needed to be extreme measures of change to the south. Country people, however, did not let them implement all of their changes and made sure that they were vocal about what types of things they were not comfortable with.<sup>284</sup> Many women were not on board with the changes that were being pushed by associations and reformers. Considering they were not completely opposed to change, "They adopted new ways of living when the proper combination of reform agitation, local needs, personal aspiration, and economic circumstances came together in their families and communities."<sup>285</sup> The changes were personal to their communities and tended to vary in reasoning based on race. Though there were moments that country people did not want to fall under the reformers control, it also gave African Americans opportunities to have better resources

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<sup>281</sup> Ibid., 53.

<sup>282</sup> Ibid., 168-169.

<sup>283</sup> Mary S. Hoffschwelle, *Rebuilding the Rural Southern Community: Reformers, Schools, and Homes in Tennessee, 1900-1930* (Knoxville: University of Tennessee Press, 1998), 28-29.

<sup>284</sup> Ibid., 1.

<sup>285</sup> Ibid., 2.

in places such as the school system that gave them more empowerment.<sup>286</sup> Reformers only began to see results of change in rural communities when the information was presented in demonstration fashion.<sup>287</sup> Even with the reform efforts, pellagra continued on during the Great Depression because of the persistence of nutrition related health issues.<sup>288</sup>

From a modern perspective, it can be hard to imagine what an early 20th century Rutherford County may have looked like. Through the genealogical records, stories can be found, and the more that I think I know the more I realize how complicated the story truly is. From locals and even those curious from far away, I have learned the stories of families who lived on the streets I walk daily. Some of these stories are full of pride for southern culture while others speak volumes of the injustices of people of color and realities of living in poverty. Through studying Pellagra, more has to be done than to examine mortality reports. There are other attributes that contributed to ill health in the county.

Through “Impressions of Rutherford County,” a Commonwealth Fund report of 1924, insights may be gained about the local schools, housing, and community organizations.<sup>289</sup> This survey was conducted to understand what kind of problems occurred before the work of the Commonwealth Fund could be conducted. The rural county was experiencing issues in employment as well as in housing, and this caused

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<sup>286</sup> Ibid.,10-11.

<sup>287</sup> Ibid.,30-31.

<sup>288</sup> Engelhardt, *A Mess of Greens*, 169.

<sup>289</sup> Commonwealth Fund: Child Health Demonstration, “Impressions of Rutherford County,” Box 3 Folder 39, Rockefeller Archive Center,1-4.

many hardships that were not easy for locals to admit to.<sup>290</sup> Within this study, it was shown that both men and women were working; this also included women who had young children that still needed nursing. They would cut out time to go home and feed the children within their work day. It was also found that due to financial difficulties, in some cases, homes were shared by more than one family.<sup>291</sup> It was apparent that housing was becoming a large issue in the county during the 1920s, because 49% of the homes were being rented. This number was higher than counties nearby such as Cannon and Williamson.<sup>292</sup> When it comes to the quality of homes found within the county, there happens to be a variety with the best having lights and access to radio. There were also some that were described as being “smaller comfortable farm houses”<sup>293</sup> that were considered newer with good lighting and ventilation throughout the house.<sup>294</sup>

Not everyone in the county had the same luxuries and there was also a large population living in older homes that did not abide by sanitation standards that were becoming popular at the time.<sup>295</sup> Many homes did not have sanitary measures to prevent disease such as no privy or screens on their windows; these issues resulted in large amounts of pests such as flies invading their living spaces.<sup>296</sup> These homes were considered inadequate to the surveyor, because they lacked space, windows, and makeshift installation created from newspapers.<sup>297</sup> Some of the older homes had only a

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<sup>290</sup> Ibid.,4.

<sup>291</sup> Ibid.

<sup>292</sup> Ibid.

<sup>293</sup> Ibid.

<sup>294</sup> Ibid.

<sup>295</sup> Ibid.

<sup>296</sup> Ferguson, “Pioneer Nursing In Tennessee,” 4.

<sup>297</sup> “Impressions of Rutherford County,” 4.

few rooms and an area for cooking. Many family members would share a bedroom, and it was not rare to see many familial generations living together in both White and Black homes.<sup>298</sup> The surveyor went into great detail explaining some of the older homes and the people that he interviewed; the surveyor explained that there were many difficulties that he encountered during the visits. With homes that did not have electric lighting, the surveyor would have a child hold an oil lamp or park his vehicle close to the home to use the lights from his vehicle in order to comfortably document the family's history and general information.<sup>299</sup> The surveyor saw many of these housing issues near the pencil factory and within low income farming districts.

The surveyor noticed a number of issues plaguing Murfreesboro in the area surrounding the pencil factory; tenant farmers across the area found themselves split into multiple categories. "Poor whites" working as tenant farmers (those who farmed land and paid percentages to landlords) found themselves categorized as either transient or non transient depending upon their duration within a certain agricultural setting.<sup>300</sup> The surveyor then speaks differently of Black tenant farmers stating that they often purchase old, decrepit lands of landlords to start their own "farm colonies" made up of other Black peoples within the area.<sup>301</sup> The surveyor does also mention an area he refers to as "Murfreesboro 'Slums'" from a relatively derogatory perspective of disrespect.

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<sup>298</sup> Ibid.

<sup>299</sup> Ibid.,5.

<sup>300</sup> Ibid.

<sup>301</sup> Ibid.,7.

### Food Sources

Studying the history of a disease provides insight about the community and overall setting. What makes studying Pellagra so unique is that it also brings on an examination of food due to its existence as a disease brought upon by nutrient deficiency. This study could not be completed without an understanding of what sorts of foods were eaten or were inaccessible in Rutherford county. To finally end Pellagra's hold, it took changes in ideas of health and nutrition that started in communities. The treatment plans go beyond using brewer's yeast as treatment but also includes women coming together through groups such as tomato clubs.<sup>302</sup> Southern women were able to shape their homes and health through passing on information on home economics in schools and the work of demonstrations.<sup>303</sup> This history is extensive and for this research it will be used to show how women were adapting to changes of the 20th century through food.

In Murfreesboro "In the decade between 1910 and 1920, a child was believed to have "caught" pellagra by eating too much corn bread."<sup>304</sup> Throughout the south, cornbread did not always have a positive reputation based on information from progressive reformers of the time. The food became tangled with the image of poverty and bad health.<sup>305</sup> It didn't help that in many states such as Tennessee, doctors were convinced that Pellagra was caused by eating corn products. The problem was not based on the amount eaten, but was supposedly from corn that carried germs because it was

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<sup>302</sup> Engelhardt, *A Mess of Greens*, 127.

<sup>303</sup> Hoffschwelle, *Rebuilding the Rural Southern Community*, 104-105.

<sup>304</sup> Rebecca L. Smith, "History of Dilton." *Rutherford County Historical Society*, (Publication No. 9, 1977), 47.

<sup>305</sup> Engelhardt, *A Mess of Greens*, 51-52.

diseased.<sup>306</sup> There were many theories about cornbread and pellagra, but at the end of the day, it was versatile and used little cookware to make which made it a staple food.<sup>307</sup> During the early 20th century, Hodge and Jordan published a cookbook for Murfreesboro, Tennessee. In the book, it states “It is essential to know just what to cook and the best manner in which to prepare what is desired to be cooked before the best results can be gotten.”<sup>308</sup> This book is 101 pages and has a variety of items such as breads, vegetables, and deserts. One of the last sections in the book has a whole list of recipes to cook for the sick.<sup>309</sup> Within this book, there is also a recipe for Tennessee Cornbread “One Pint meal, one cup buttermilk, a small teaspoon soda, one teaspoon salt, one tablespoon lard, mix well, make into small pones and bake quickly.” It is unknown what made them choose that exact recipe considering it only contains 5 ingredients; however, it was likely thought to be more accessible. Cook books are a product of their time, and this showed what was thought to be done within a kitchen. It set a standard for women and the products and appliances that she should be using.<sup>310</sup> Based on these ingredients these were items that were thought to be obtained within the area for use at home. Standards for cooking were not only found within cook books they were also being published in newspapers. A Tennessee health bulletin published in the newspaper stated:

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<sup>306</sup> “Pellagra Commission Disbanded For Winter.” *Chattanooga Daily Times*, Nov. 2, 1911. <https://newscomwc.newspapers.com/image/605600570>.

<sup>307</sup> Engelhardt, *A Mess of Greens*, 60.

<sup>308</sup> “Tennessee Cornbread” Recipe, *The Hodge & Jordan Cook Book*, ( Murfreesboro, Tennessee), 1.

<sup>309</sup> *The Hodge & Jordan Cook Book*, ( Murfreesboro, Tennessee: Private, c.1900), 99-101.

<sup>310</sup> Engelhardt, *A Mess of Greens*, 177-178.

Pellagra—Poor food, bad cooking, wrong kind of food cause pellagra. Poor food makes poor blood. When the blood is pure you catch disease. Have your girls taught cooking at school. Good food, good cooking- a sure road to god health. Peas, beans, eggs, clean milk, mustard and turnip greens, corn bread. Kept clean and well cooked are makers of good blood.<sup>311</sup>

Pellagra brought shame on the food choices that people had. This Tennessee bulletin seems to insinuate that the idea of bad blood comes from foods that are not up to a specified standard; people who have Pellagra, do not know how to cook or are not hygienic. It also alluded to home economic classes for girls and how that education could bring a more godly image to the family. The list provided of recommended foods were not always accessible to people of lower income. During health visits in Rutherford County, public health nurse Maud Ferguson noticed that many families of lesser means did not have gardens thus making their diets less versatile. Because many of them were transient laborers, they did not feel confident in the prolonged upkeep. In some of these same homes, milk was hard to keep around for children, because there was no way to properly store it.<sup>312</sup>

The history of food in the south can show many of the struggles that rural people faced, but there are also instances of betterment of the lives of rural women and girls. Canning became an important way that girls were able to develop skills within their community and reap the benefits educationally and financially.<sup>313</sup> Home demonstrations and clubs were avenues that women and girls were elevated socially in ways they had never been before. When the clubs first began they were primarily focused on white girls,

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<sup>311</sup> “Health Bulletin Distributed Here.” *Nashville Banner*, May 2, 1918.  
<https://newscomwc.newspapers.com/image/604694492>.

<sup>312</sup> Ferguson, “Pioneer Nursing In Tennessee,” 4.

<sup>313</sup> Engelhardt, *A Mess of Greens*, 83-84.

but later Black girls would participate and take leadership positions within the canning clubs.<sup>314</sup> White reformers chose to turn their heads at the work that was occurring in Black communities, but despite that, there were multiple successful programs; many of these programs had to rely on the funding of the General Education Board, because the governmental administration of the time did not seem to care to invest in the health of African Americans.<sup>315</sup>

In 1910, Marie Samuella Cromer from South Carolina established the first tomato canning club after attending a meeting she had heard about Dr. Seaman A. Knapp's work with boys' corn clubs and the benefits they had within the communities. She had wondered why there wasn't agricultural club work like that for girls where they could benefit and learn life skills.<sup>316</sup> Knapp was from the midwest, but his work took him across the west and into the southern states; his work set the stage for programs that would be taken over by the U.S. Department of Agriculture and the national extension service.<sup>317</sup> Before the work of Cromer, his methods were used primarily with men and boys but were now being used to teach rural girls. Women from different southern states saw the progress of the clubs and joined Cromer in promoting Tomato clubs, such as Virginia Moore in Tennessee.<sup>318</sup> She did more than promote canning clubs, but was also involved in creating early 20th century women's organizations in Tennessee. Many of these groups

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<sup>314</sup> Ibid.,90.

<sup>315</sup> Hoffschwelle, *Rebuilding the Rural Southern Community*, 108.

<sup>316</sup> Engelhardt, *A Mess of Greens*, 84.

<sup>317</sup> Elizabeth Engelhardt, "Canning Tomatoes, Growing 'Better and More Perfect Women': The Girls' Tomato Club Movement." *Southern Cultures* 15, no. 4 (2009), 79. <http://www.jstor.org/stable/26214242>.

<sup>318</sup> Ibid.

focused their attention on cooking and homemaking, but underneath the information they were attempting to change the values of rural women.<sup>319</sup> In 1912, Moore and O.B. Martin, who was known as the “canning expert of the United States Department of Agriculture at Washington”<sup>320</sup> came to Rutherford County. During their time present, they hosted a demonstration on tomato canning at the state Normal School. This event was said to bring people from over 14 counties in the state and piqued the interest of the school’s principal R.L. Jones.<sup>321</sup> With the help of Jones, a girls’ Tomato Club would be created in Rutherford county at the school and girls who joined would manage a tenth of an acre of their own.<sup>322</sup>

The tomato canning clubs were part of a larger movement that was aimed at keeping rural people on farms; targeting children to learn more about agriculture and how they could be a part of change was the goal. For example, the Boys’ Corn Clubs were created in response to the boll weevil agricultural problem.<sup>323</sup> It also became apparent that work outside the farm was becoming necessary to live and Tomato Clubs were a way to bring money into the community and were a reliable food source.<sup>324</sup> The girls who participated in the clubs were young (around the ages of 12-16) and learned skills that

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<sup>319</sup>Hoffschwelle, *Rebuilding the Rural Southern Community*, 30.

<sup>320</sup> “Miss Moore Goes To Murfreesboro.” *Nashville Banner*, May 29, 1912.  
<https://newscomwc.newspapers.com/image/604549974>.

<sup>321</sup> Ibid.

<sup>322</sup> Ibid.

<sup>323</sup> Naomi Rosa Scott, “The Tomato Club Girl and the Rural School.” *Industrial Arts*, Volumes I-II. (January-December 1914), 104-105.  
[https://books.google.com/books?id=XLvmAAAAMAAJ&pg=PA257-IA106&dq=tomato+canning+clubs+in+tennessee&hl=en&newbks=1&newbks\\_redir=0&source=gb\\_mobile\\_search&sa=X&ved=2ahUKEwiguKXRqP76AhU7m2oFHeJZCVoQ6AF6BAgIEAM#v=onepage&q&f=false](https://books.google.com/books?id=XLvmAAAAMAAJ&pg=PA257-IA106&dq=tomato+canning+clubs+in+tennessee&hl=en&newbks=1&newbks_redir=0&source=gb_mobile_search&sa=X&ved=2ahUKEwiguKXRqP76AhU7m2oFHeJZCVoQ6AF6BAgIEAM#v=onepage&q&f=false)

<sup>324</sup> Ibid.

went beyond their school education. It gave them opportunities to travel, earn money of their own, and plan better futures for themselves to continue their education.<sup>325</sup> After the Smith-Lever Act in 1914, the canning clubs transformed into what is now known as 4-H clubs. These clubs included both boys and girls between the ages of 10-21 with focus on both agriculture and home economics.<sup>326</sup>

Even with the many different clubs and demonstrations that taught people about nutrition and expanded their diets, diseases like Pellagra still lingered because poverty still remained. This isn't to diminish the successes of groups like the Tomato clubs, but it is important to note that even with community education on what types of foods were deemed healthier, people still struggled. Each decade brought different changes, and by the 1930s talk of vitamins were beginning to circulate in public knowledge. In a Tennessee newspaper, it mentioned that there were “anti-pellagra” foods that contained vitamin D, but because of the Great Depression it was hard to keep those foods in circulation in everyday meals. The Depression created economic problems as food was made scarce and started a subsequent rise in Pellagra.<sup>327</sup> It was commonly recommended that if families did not have access to a variety of foods that to keep Pellagra at bay, one would utilize the famous red food, the tomato. It was encouraged to keep canned tomatoes as well as brewers yeast if the disease was spotted.<sup>328</sup>

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<sup>325</sup> Ibid., 104-106.

<sup>326</sup> “The Home Demonstration Agent,” U.S. Department Of Agriculture Bulletin (July 1951), 15 <https://naldc.nal.usda.gov/download/CAT87791369/PDF>.

<sup>327</sup> “Hollowell Believes Depression May Aid Spread Of Pellagra.” *The Bristol Herald Courier*, Nov. 3, 1932. <https://newscomwc.newspapers.com/image/585772449>.

<sup>328</sup> Ibid.

The Commonwealth Fund brought many improvements to Rutherford County health, but even their efforts could not keep all diseases from taking over. By 1937, the Rutherford County health department health officials were able to dedicate their time to more preventative medicine. Health officials like Kathleen Logan, the supervisor of nursing service, still strived to keep community women involved continuing the community outreach that began earlier in the decade before.<sup>329</sup> Logan met with the Women's Club and used maps and slides to give them an idea of health challenges that were still occurring in the county and what measures were being taken to fix them.<sup>330</sup> She painted the picture of what homes visit trips looked like for county nurses by stating "Sometimes the road led over rocky creek beds, or rough country roads to the home of a tuberculosis patient; or to a family of eight or more afflicted with pellagra; or again it was to a well-kept but crude home where an expectant mother needed care."<sup>331</sup> Logan stressed that the county had high rates of Tuberculosis and Pellagra and also struggled to help soon to be mothers. It was difficult to address some of these issues, but the health department was taking measures to prevent them. There was no Tuberculosis sanitarium, so the Rutherford county hospital took measures to help the problem with new treatments. Health officials helped as many mothers as possible even though they were not fully equipped to.<sup>332</sup> With Pellagra treatment, it was a different case. Although it could be treated, people had to take measures to ensure they had the right foods. Logan

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<sup>329</sup> "Miss Logan Conducts Club Members On Public Health Nurses' Routes." *The Daily News-Journal*, Apr. 27, 1937.

<https://www.newspapers.com/image/358918621>.

<sup>330</sup> Ibid.

<sup>331</sup> Ibid.

<sup>332</sup> Ibid.

gave another example of the Pellagra problem by mentioning another family who had the disease and had just lost three children. The health departments planned to help with more than just nutrition education, as the Red Cross gave seeds to the department to give out to families so they could grow their own foods.<sup>333</sup> Promoting families to grow gardens actually began in 1927 in response to people who had experienced flooding, and they continued to give out seeds into the 1930s.<sup>334</sup> Because Pellagra remained prevalent into the late 1930s, it was evident that it was not going to be easy to get rid of, and even with the cure, it still remained because poverty could not be ignored and people would continue to struggle.

### Conclusion

To what extent was Pellagra affecting Tennesseans in the 20th century? Is it possible to obtain a better understanding of Pellagra and its effects through a micro history of a singular rural county? There is no doubt that Pellagra existed in the twentieth century in Tennessee. There is undeniable proof in the many people that suffered from the disease and through the documentation of those lost in the fight with it. There were many efforts in the medical field to study and stop the spread of the disease that occurred all over Tennessee. I was first inspired to study Pellagra when I came across the disease in the Rutherford County *Records of Death* books. I did not realize at first the many twists and turns it would take in order to prove its existence. Both Elizabeth Etheridge and Daphne Roe in the 1970s, brought coverage to Pellagra that until that point had little to no modern studies present.<sup>335</sup> These were the first two books that I came across, and I

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<sup>333</sup> Ibid.

<sup>334</sup> Etheridge, *The Butterfly Caste*, 196.

<sup>335</sup> Etheridge, *The Butterfly Caste*, and Daphne A. Roe, *A Plague of Corn*.

quickly took note that there were many states they were not able to cover in their books, and Tennessee was chief among those states. I found myself in a situation where I knew covering the history of Pellagra in the whole state would be an impossible mission.

By studying Pellagra, on a county level it gave the opportunity to look at what was happening all around the state, but it also allowed there to be specific focus on how a rural county combat a disease such as it was. Because of the influence found at the Commonwealth Fund in Rutherford County, it resulted in the county becoming a prime area for a narrowed focus due to the fact that the documentation it has is very unique. For the same reasons that the Commonwealth Fund found the county a perfect fit for a demonstration, the location also provided a cornucopia of knowledge for those who could unearth it through their own research. It has been over 30 years since research on the Commonwealth Fund within the county has been conducted. Both Mary S. Hoffschwelle and Carroll Van West's research on demonstration work and the built environment of the Commonwealth Fund provided a great foundation to explore a disease such as pellagra in the county.<sup>336</sup>

Finding cases in Rutherford County could not be done in merely one place and took many sources to track down instances where the disease was present within the state or the county. These numbers often hid in death books, newspapers, and in early documentation of county health. Relying solely on the death books would not yield enough evidence and often took exploration in living conditions, food, and the documentation of public health officials. Through the efforts of the community and the

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<sup>336</sup> See Hoffschwelle, "Organizing Rural Communities for Change," *Rebuilding the Rural Southern Community* and West, "A Sense of Permanency,".

advent of public health activities moving towards change, such as the Blue Ribbon project and the Tomato Canning Clubs, a positive outlook toward progressive era reform was now possible. Despite this, Pellagra was in Rutherford County early in the 20th century and remained in the area for decades; in Tennessee, it affected the lives of people who lived in urban as well as rural conditions. The difference can be seen in how each location handled the disease and documented it. It is unknown how many cases escaped without being documented or how many were documented incorrectly.

Through the social history of Pellagra it proves that the disease was not only a mystery in the 20th Century for scientists and physicians; it also slipped through the cracks of the collective poverty line found between rural and urban areas. Through the works of health official in places such as Nashville<sup>337</sup> and Knoxville<sup>338</sup> these large cities in Tennessee had many well documented cases of Pellagra, but even they often had trouble. The cities despite having high levels of poverty had hospitals at their disposal during the many outbreaks of the disease. By including their influences in this study, issues focused on race relations became a topic of interest. Black doctors in Tennessee had a large impact on the study of Pellagra and provided documentation of African American communities that are not discussed in Pellegrious studies.

Because early Rutherford County did not have the same medical resources as the cities, this made documenting Pellagra difficult. Though this study only gives a handful of examples of Pellagra found in the county, there was still work being carried out.

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<sup>337</sup> Jobling and Petersen, "The Epidemiology of Pellagra".

<sup>338</sup> H.M. Green, "Report from the Pellagra Commission of the National Medical Association."

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Through the works of Enoch Jones, a Murfreesboro doctor, it can be seen that there was growing concern for the disease in the 20th century, and this information was shared with other Tennessee doctors.<sup>339</sup> It is possible to say that Rutherford County did not have many cases of Pellagra, but with the rise in cases as documentation from the demonstration became available and considering the poor conditions described, it seems unlikely that that would be the case.

It is my hope that this micro history of a Tennessee county clearly shows that there is still much work to be done when it comes to not only Pellagra, but also to the history of disease related to nutrient deficiencies in the area. Through my research on Rutherford County I was able to show that Pellagra existed in the county and that there were reforms in public health in progress. To prove this theory, I had to search outside of the county for the larger effects of the disease thus leading to the conclusion that this would necessitate future study. Studies on the state or even portions of the state including multiple counties or cities might tell more about the effects of the disease. It would also be interesting to do a study on how diseases like Hookworm and Tuberculosis could connect to Pellagra. It is abundantly clear that the disease that puzzled the minds of the 20th century is still buried in the records of numerous states that still have yet to be researched as thoroughly as they deserve.

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<sup>339</sup> Enoch H. Jones, "Pellagra, With Report of a Case," *Journal of the Tennessee State Medical Association* (Nashville: The Association, 1911).

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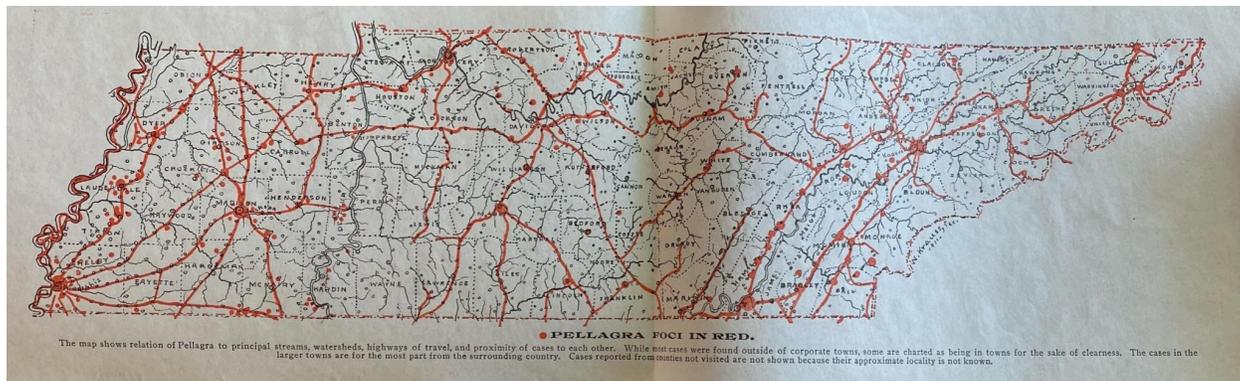


Figure 1: Map of Pellagra in Tennessee<sup>340</sup>

<sup>340</sup> William Krauss, Byrd S. Rhea, and J.C. Brooks. *Pellagra: A Report Upon 316 Cases of this Disease* (United States: n.p., 1911), 1

## Appendix

### Collected Data

The data collected are deaths found in the county *Record of Death* books. I documented people who died of pellagra and other related diseases (nutrient deficiencies or diseases with similar symptoms). The data tables come from two different books one is from 1881-1912 and the other is *1925-1938*.

Case #	Age	Occupation	Cause of death	Date of death	Sex	Race	Marital status	Place of death	Page #
1	34	House wife	Stomach	6/28/1909	F	W	M	Murfreesboro	14
2	7 months	N/A	Stomach	7/26/1908	M	B		Murfreesboro	14
3	13	N/A	Stomach	6/13/1909	F	B			14
4	8 months	N/A	Stomach	6/26/1909	F	B			15
5	56	N/A	Stomach	7/12/1908	M	W	M	Murfreesboro	16

								o	
6	37	N/A	Stomach	6/17/1909	F	W	M		16
7	5	Child	Stomach	2/13/1909	F	W			20
8	2	Child	Stomach	3/20/1909	F	B			20
9	20	House Keeper	Stomach	8/24/1908	F	B			23
10	1	N/A	Stomach	7/28/1908	F	W			25
11	28	N/A	Hookworm	11/25/1909	F	W	M	Smryna	29
12	59	Farmer	Stomach	6/27/1910	F	W	M		31
13	7 months	N/A	Bowel Trouble	6/15/1910	M	B			34
14	2 months	N/A	Summer Complaint	1910	F	W			34
15	65	N/A	Bowel Trouble	10/16/1909	F	W	M		36
16	1 month	N/A	Stomach Trouble	03/08/1910	F	B			39
17	44	Carpenter	Acute Mania and Stomach Trouble	12/16/1909	M	W	M		39
18	60	House Keeper	Stomach	4/29/1910	F	W			40
19	73	Farmer	Chronic Diarrhea	6/17/1910	M	W			43
20	74	Farmer	Stomach Trouble	8/31/1911	F	W	M		52
21	34	House Keeper	Diabetes	12/06/1910	F	W			56
22	74	Farmer	Stomach Trouble	8/31/1911	F	W	M		58
23	77	Gun Smith	Stomach Trouble	12/28/1911	M	W	M		58

24	5 months	N/A	Rickets	6/1/1911	F	W			59
25	64	House Keeper	Diabetes	07/06/19 11	F	W	M		60
26	9 months	N/A	Summer Complaint	9/10/191 0	F	B			63
27	70	Farmer	Pellagra	8/26/191 1	M	W			70
28	29	Clerk	Pellagra	11/12/19 11	M	W			74
29	3	N/A	Summer Complaint	1912	M	B			80

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Case #	Age	Cause of Death	Date of Death	Sex	Race	District #	Page #
1	47	Pellagra	6/2/1930	M	W	13	2
2	46	Pellagra	07/29/1930	F	W	13	2

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3	60	Pellagra	07/08/1931	M	B	25	3
4	53	Pellagra	4/15/1926	M	B	11	12
5	84	Pellagra	4/20/1929	F	B	4	14
6	10	Skin Infection	9/24/1933	F	B	13	18
7	16 day s	Malnutrition	7/30/1936	M	W	4	21
8	44	Pellagra	7/28/1927	F	W	21	38
9	49	Pellagra	02/01/1934	M	W	13	41
10	86	Diabetic	1/18/1927	M	W	3	53
11	1	Rickets	03/06/1929	F	B	2	53
12	71	Diabetic	07/08/1932	F	W	13	54
13	45	Cerebral pellagra	8/25/1936	F	W	13	56
14	8	Diabetic	11/05/1927	M	W	6	77
15	3 mo nth s	Malnutrition	09/21/1936	F	W	6	94
16	1 mo nth s	Malnutrition	2/10/1938	M	W	2	99

17	70	Pellagra	11/04/1925	M	W	22	105
18	30	Pellagra & TB	07/18/1931	F	W	13	109
19	Infa nt	Malnutrition	10/11/1932	M	W	13	110
20	73	Diabetic	1/18/1933	F	W	13	111
21	1 mo nth	Malnutrition & TB	6/16/1935	F	W	7	112
22	14	Diabetic	01/28/1935	M	B	13	129
23	49	Pellagra	05/03/1927	F	W	11	135
24	34	Pellagra	9/10/1927	M	B	13	136
25	1 day	Malnutrition	11/15/1932	F	B	5	144
26	33	Pellagra	10/30/1926	F	B	4	153
27	47	Pellagra	9/18/1930	F	B	13	154
28	61	Pellagra	6/30/1927	F	W	13	165
29	58	Pellagra	4/4/1930	F	B	15	167
30	37	Pellagra	3/30/1927	F	W	19	187
31	5 mo nth s	Malnutrition	10/12/1927	M	W	3	187
32	81	Pellagra	9/1/1930	M	W	13	188

33	51	Diabetic	3/24/1933	F	W	3	189
34	68	Diabetic Coma	4/22/1936	M	W	13	190
35	62	Pellagra	7/25/1926	M	B	20	193
36	5	Rickets	11/20/1926	M	W	15	193
37		Pellagra	12/11/1927	F	B	13	193
38	60	Pellagra	9/20/1929	M	W	13	193
39	52	Pellagra	12/12/1929	F	B	20	194
40	65	Pellagra	12/11/1928	F	W	13	210
41	72	Pellagra	07/13/1930	F	W	13	211
42	53	Pellagra	7/22/1930	F	W	13	222
43	60	Pellagra	7/19/1933	F	B	20	223
44	16 day s	Malnutrition	10/17/1934	F	B	20	223
45	50	Diabetic	8/10/1938	F	B	13	224
46	58	Diabetic	11/1/1927	M	W	16	238
47	77	Diabetic Coma	1/2/1930	M	W	13	240
48	67	Diabetic Coma	6/16/1930	F	W	13	240
49	59	Pellagra	8/19/1930	M	B	13	240
50	74	Pellagra	7/19/1933	F	W	9	242
51	74	Diabetic Coma	1/20/1937	M	W	13	245
52	61	Diabetic	9/20/1933	F	W	4	266

53	74	Pellagra	10/07/1934	F	W	13	267
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Data Collected From Rutherford County, Tennessee, *Record of Deaths, 1925-1938*<sup>342</sup>

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