GROWTH INDUSTRY

FERTILIZER AND THE POLITICS OF AGRICULTURE ON THE GEORGIA COTTON BELT, 1840-1900

by

TIMOTHY JOHNSON

(Under the Direction of Shane Hamilton)

ABSTRACT

After the Civil War, newly available commercial fertilizers fed the soils of the southern cotton economy. As the largest fertilizer-consuming state in the country in the late nineteenth century, Georgia became the proving ground for America's emergent fertilizer industry. The shift in agricultural practice from local nutrient cycling to chemical-input agriculture occurred under the assumption that fertilizer would help bring order to a disrupted agricultural economy. Although fertilizers boosted crop yields, adopting fertilizer did not prove to be a cure-all for systemic problems in agricultural production. Fertilizers played a part in exacerbating farm debt, fomenting agrarian political unrest, and in redefining and expanding the role of the state government as Georgia's legislators created a state-level department of agriculture to regulate fertilizers.

INDEX WORDS: Fertilizer, History, Agriculture, Georgia, Cotton, Environment, Slavery, Soil, Agricultural improvement, Populism, Georgia Department of Agriculture, Guano.

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Every so often I meet a person who is either curious or bored enough to ask me what topic I have been studying in preparation of my Master's Thesis over the last two years. When I tell them that my research is on the historical importance of fertilizer, more often than not, they respond with a decidedly less-than-inquisitive, "Huh." Of course, once I explain to them that fertilizer has been responsible for increasing the population of the world many times over during the twentieth century, that it feeds the world while making its inhabitants hopelessly reliant on fossil fuels, more often than not, they are already in another room by the time my unsolicited harangue has run its course. However, this project would not have been possible had it not been for the helpful direction and encouragement of my advisers, colleagues, and from the support of friends and family members who have patiently listened to my tirades on manure, guano, muck, and phosphates, helping me to form these noisome materials into a worthy object of study.

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INTRODUCTION

In the cotton lands of Georgia in the years after the Civil War, a profound change took place. Under the slave system before the war, few Georgians had ever heard of commercial fertilizers, but by the late 1870s, farmers who were not using it were becoming part of a rapidly shrinking minority. As the nineteenth century turned into the twentieth, the farm population Georgia led the nation and the world in fertilizer expenditures, and farmers spread hundreds of thousands of tons of chemicals from distant sources onto their fields. Among observers from the northern United States and Europe, cultivators in the southeastern United States had earned a reputation as wasteful farmers, who "mined" the soil of its nutrients in pursuit of quick profits in lucrative cotton and tobacco markets. But in spite of this critical perspective, here were Georgians adopting a cutting edge approach to soil nutrition *en masse*. Somehow, the farmers in a region known as the antithesis of agricultural improvement had adopted a new solution to soil exhaustion on an unprecedented scale. Georgians were the first population in human history to become so thoroughly reliant on commercial fertilizer to feed their plants. Although Georgia's farmers had never been great practitioners of the high arts of mixed husbandry and local nutrient cycling, their adoption of new agricultural chemicals distinguishes them as the forerunners of the chemical-intensive agricultural system that continues today. Not only did fertilizer change agriculture, but its profusion also had a variety of deep impacts on the region's

entire social fabric—it led to the creation of the first state-level department of agriculture in the nation, it helped fuel an economic crisis, and it played a role in fomenting a political revolt in the 1890s. This project seeks to answer how this transformation occurred and what it meant.

But who cares about dirt? Today, in an era in which only two percent of Americans work on farms or ranches, to most of us, dirt is something that makes us unclean, that needs to be rinsed off our clothes and our cars. It is more important to wash our hands of dirt than to concern ourselves with its productive capabilities. But even though most of us do not profess to have much of a stake in the soil, modern scientists are quick to remind us that soil is among our most important, if underappreciated natural resources. In fact, thanks to twentieth-century fertilizer manufacturing processes, the modern agrochemical industry has pushed annual productivity to astounding extremes, feeding a global population explosion of a dizzying scale. The global food supply has become so inexorably connected with fertilizer, that when supplies are short, as they were in 2008, experts predict increased third world starvation and global economic crisis. To be sure, if eating is important to us, then soil fertility and our approach to regulating it is something that we must think about, and the origins of our fertilizer-fueled society demand attention.[1]

Yet, while the story of fertilizer is global in scope, this particular take on it is deeply rooted in a very specific place and time—in the red dirt cotton fields of the rural South. The red clays of the Southeast are an iconic symbol of down home living, leaving their ruddy hue on tire walls and the lyrics of country songs. Many nineteenth century southerners boasted that their soil was particularly rich, that the southern climate was

[1] Keith Bradsher and Andrew Martin, "Shortages Threaten Farmers' Key Tool: Fertilizer," *The New York Times*, April 30, 2008, A1.

perfectly suited to be the best cotton-growing region in the world. In fact, today, soil scientists tell us that the soils of the Southeast by and large belong to a class of soils called "Ultisols," a term that implies that their properties are the ultimate product of millennia of weathering; that, in fact, the soils have been made infertile by the very wet and temperate nature of the climate. Almost all of the soil nutrients useful to plant-growth in ultisols lay right at the surface, and once these soils are disturbed by cultivation, this thin layer of humus is quickly sloughed off by the forces of rain and wind. The red clay may be iconic, but it has never been nutrient-rich (at least during the human timescale), and southeastern farmers were quick to realize that fertilizer was an extremely powerful tool to make the best use of the soils that they had.[2]

But lest the reader fear becoming swept away in a muddy torrent of soil science and agrochemical data, the story of why the Southeast, and Georgia in particular, became the proving ground of the American fertilizer industry, has more to do with human stories than it does with geography alone. In fact, as all agriculture relates to human attempts at creating botanical order, the following also has a great deal to do with humans attempting to impose order on other humans. In Georgia, the transition from local nutrient cycling into the chemical-input era was synchronous with the emancipation of African American enslaved laborers and the transition to a free labor economy. Under slavery, planters had created what historian Mart Stewart has called "an equilibrium of social relations," a vision

[2] Daniel D. Richter and Daniel Markewitz, *Understanding Soil Change* (Cambridge: Cambridge University Press, 2001). Richter and Markewitz provide an accessible introduction to soil science of the Southeast, paying specific attention to historical human impacts on soil; Stanley Wayne Trimble, "Man-Induced Soil Erosion on the Southern Piedmont, 1700-1970." (University of Wisconsin, 1974); Carville Earle, *Geographical Inquiry and American Historical Problems* (Stanford: Stanford University Press, 1992); David T. Montgomery, *Dirt: The Erosion of Civilizations* (Berkley: University of California Press, 2007).

of paternalism that helped maintain the illusion of mastery over labor as well as the agricultural landscape. Emancipation, the newfound freedom of African Americans, and the subsequent loss of control planters experienced made this dual illusion even more transparent as white elites struggled to impose their own vision of order on the land and its inhabitants after Civil War. Fertilizer became a crucial tool in the project of restoring agricultural productivity, and in the minds of white elites, fertilizer was also understood as a way to bring order to what they perceived as a volatile and unreliable labor market. Georgia's state legislators created a state agricultural department to regulate fertilizers, hoping that government intervention might help create an agricultural regime that conformed to the expectations of elites and state-appointed experts. But among the regular farmers in the fertilizer-fuelled cotton economy, the new chemicals came to symbolize the unfulfilled promises of freedom and independence. Debates about the true value of fertilizer helped fan the flames of agrarian discontent when the Populist Party emerged in the 1890s. These radical agrarians called into question what independence meant in the changing context of the agricultural economy. Fertilizers were a critical part of this reorientation.[3]

[3] Mart A. Stewart, *"What Nature Suffers to Groe:" Life, Labor, and Landscape on the Georgia Coast, 1680-1920* (Athens: University of Georgia Press, 1996), 148. Stewart provides an excellent analysis of the human nature relationship in coastal rice culture, both before and after emancipation. On fertilizer in the Southeast, see Richard C. Sheridan, "Chemical Fertilizers in Southern Agriculture," *Agricultural History* 53, no. 1 (1979), 308; Rosser H. Taylor, "Fertilizers and Farming in the Southeast, 1840-1950," *The North Carolina Historical Review* XXX, no. 3 (1953); Rosser H. Taylor, "The Sale and Application of Commercial Fertilizers in the South Atlantic States to 1900," *Agricultural History* 21, no. 1 (1947). For a general history of fertilizers, see Richard A. Wines, *Fertilizer in America: From Waste Recycling to Resource Exploitation* (Philadelphia: Temple University Press, 1985).

In a very real sense, many Georgians imbued fertilizers with their own unrealistic expectations, operating under the belief that the new, unfamiliar products could wipe clean the past and transform their land and their society into something altogether new. To the extent that this transition was largely a matter of cultural perceptions, a purely economic assessment of the fertilizer industry would miss part of the story. Therefore this project incorporates the cultural implications of this practical change, rather than studying economic incentives alone.

Much of the evidence below originates from across the state of Georgia, but the eastern cotton belt of Georgia—the area of the Piedmont Plateau between Augusta and Macon, Georgia—is especially significant for a number of reasons. First, since the farmers of the eastern cotton producing counties of the state were among the earliest advocates of commercial fertilizer, the area yielded a rich source base relating directly to this change. Across the nineteenth century, inhabitants of the eastern Georgia cotton belt witnessed declines in population and soil fertility that related directly to the transient tendencies of cotton producers. A culture of agricultural reformers, especially in Hancock County, Georgia, developed in response to the signs of decline that accompanied outmigration. The strength of this reform impulse helped usher in the chemical-input paradigm, which in turn moved the inertia of cotton production back to the long-cropped soils of the area. Furthermore, the eastern cotton belt was also the home of a distinct political tradition within the state. In the antebellum period, the eastern cotton belt was a stronghold of Whig voters, and after the war, the area was the center of Populist fervor in the 1890s. Needless

to say, the eastern cotton belt provides an excellent case study of the interrelation between agriculture and political culture.[5]

Most of what follows relates to historical evidence from Georgia, but it is important to note that this case study has an international backstory. The fertilizer boom had intellectual roots that extended to Europe, largely owing to the pioneering work of two chemists—the Briton Sir Humphry Davy and the Prussian Justus Von Liebig. Davy's main influence on agricultural improvement came from his 1813 work entitled *Elements of Agricultural Chemistry*, which introduced chemical analysis to the study of agriculture. Davy's "humus theory," which argued that plants gathered chemical nutrients from the "vegetable mold" of decomposed plants, won many followers in the United States, especially in the Northeast. Davy's theories epitomized a "vitalist" perspective on the natural world, in that he perceived the procession of plant life as an economy of nutrients exchanged through living systems of decomposition and growth. Emerging as a critique of Davy, Liebig's works on organic chemistry in the early 1840s proved that plants did not need vegetable matter to grow, that they could be cultivated in a solution of chemicals—specifically Nitrogen, Phosphorous, and Potassium (N, P, K.) Liebig has been called the "father of the fertilizer industry" because he predicted that one day "fields will be manured

[5] On agriculture of the eastern Georgia cotton belt, see James C. Bonner, "Genesis of Agricultural Reform in the Cotton Belt," *The Journal of Southern History* 9, no. 4 (1943); James C. Bonner, "Profile of a Late Antebellum Community," *American Historical Review* 49, no. 4 (1944); Chester McArthur Destler, "David Dickson's 'System of Farming' and the Agricultural Revolution in the Deep South, 1850-1885," *Agricultural History* 31, no. 3 (July 1957); Eugene D. Genovese, *The Political Economy of Slavery: Studies in the Economy and Society of the Slave South* (New York: Vintage, 1965); J. William Harris, *Deep Souths: Delta, Piedmont, and Sea Island Society in the Age of Segregation* (Baltimore: Johns Hopkins University Press, 2001); Barton C. Shaw, *The Wool Hat Boys: Georgia's Populist Party* (Baton Rouge: Louisiana State University Press, 1984); C. Vann Woodward, *Tom Watson: Agrarian Rebel* (New York: The MacMillan Company, 1938).

with a solution…manufactured in chemical manufactories." Historians of science refer to Liebig as a "mechanist," who saw the process of plant growth through the prism of chemical analysis, in opposition to Davy's holistic perspective of vitalism. In other words, Davy favored feeding the soil itself for the benefit of the natural cycle, while Liebig saw the soil only as a vessel to deliver nutrients to plants, a repository of chemical inputs. Antagonisms between the theories of both of these scientists had deep impacts on agricultural thought throughout Europe, as well as among educated American agriculturalists, including some American cotton planters.[6]

Despite discomfort among some disciples of Davy, Georgians were among the first to make good on Liebig's chemical prophesy, as farmers there consumed the most imported fertilizers out of any state starting after the Civil War until the early twentieth century. In the process of adopting fertilizers, southern farmers became participants in an emergent global nutrient economy. Before the 1840s, all farmers had almost exclusively relied on local sources of soil fertility, whether by the slash and burn practice of swidden agriculture, or by the more involved methods of mixed husbandry, which cycled nutrients through animal manures, leguminous green manures, and field rotation. Before the Civil War, American cotton growers had, for the most part, relied on swidden agriculture to feed their plants. The young fertilizer industry made imported sources of soil nutrition easily available to consumers, thereby commoditizing soil fertility in a concrete way. The earliest

[6] Benjamin R. Cohen, *Notes from the Ground: Science and Agricultural Improvement in the Early American Republic*, Yale Agrarian Studies (New Haven, CT: Yale University Press, 2009), 83; Carolyn Merchant, *Ecological Revolutions: Nature, Gender, and Science in New England* (Chapel Hill: University of North Carolina Press, 1989); Montgomery; Margaret W. Rossiter, *The Emergence of Agricultural Science: Justus Liebig and the Americans* (New Haven: Yale University Press, 1975); Steven Stoll, *Larding the Lean Earth: Soil and Society in Nineteenth Century America* (New York: Hill and Wang, 2002).

fertilizer products to gain favor in the Atlantic world were nitrogen-rich Peruvian guanos, and for that reason, most farmers referred to all fertilizers as "guanos" well into the twentieth century. Other raw materials like phosphates also quickly became important sources of fertility, especially after fertilizer companies began mining phosphate beds near Charleston, South Carolina in the late 1860s. Manufacturers also used the byproducts of industrial operations like slaughterhouses as sources of plant chemicals as well. For example, the British chemist John Bennet Lawes developed a process to turn slaughterhouse bones into a valuable plant food called "superphosphates" in the 1840s.[7]

Although the fertilizers of the nineteenth century nutrient economy were all "chemicals" in the sense that they were sought for their specific chemical properties, they were almost all derived from "natural" sources. For example, as of 1900, 90% of all nitrogen fertilizer came from sources like guano, fish scraps, and cottonseed derivatives. It would not be until the early twentieth century when German chemists Fritz Haber and Carl Bosch would create a viable process of ammonia production that synthetic fertilizers would replace natural ones. Until that point, demand for fertilizers perennially outpaced rates of production. Thus, while the narrative of this project closely follows events in and around Georgia, the history of fertilizers in southern agriculture relates directly to a transnational exchange of ideas and commodities, and the participation of southern farmers within them.[8]

The project consists of three chapters, each of which looks at specific aspects attendant to the shift to a chemical-input agriculture. Chapter one focuses on the

[7] Montgomery, 183.
[8] Sheridan, 308; Vaclav Smil, *Enriching the Earth: Fritz Haber, Carl Bosch, and the Transformation of World Food Production* (Cambridge: The MIT Press, 2001), xv.

agricultural reform tradition of Hancock County, Georgia, where the man most associated with the birth of the southern fertilizer industry made his home. David Dickson was a cotton planter and a fertilizer merchant who made it his life's work to sell the concept of chemical fertilizer to southern cotton farmers. As a prominent businessman before and after the Civil War, Dickson's guano crusade won him the accolades of his contemporaries, and a fortune in profits. As the chapter shows, Dickson succeeded in selling fertilizer not only as a solution to soil exhaustion, but also as a remedy for the loss of labor control created by emancipation. Although the public scandal of Dickson's disorderly home plagued Dickson's legacy after his death, Dickson measured his own self-worth in terms of a mastery of both labor and land, which he demonstrated with the fertility of his fields.

Chapter two digs into the economics of the fertilizer boom in the late nineteenth century, examining the importance of a legal document called the "guano note," which helped finance the shift to chemical-input agriculture, while pulling farmers into an uncomfortable state of debt and financial dependency. Fertilizer promoters like David Dickson understood the chemicals as tools of labor control, and data shows that smaller tenants and owners of smaller farms bought much more fertilizer per capita than their wealthy counterparts. To poor farmers, fertilizer held tremendous promise, but they quickly discovered that signing a guano note held a greater prospect for economic hardship than for potential gain. As the chapter makes clear, the economic repercussions of fertilizer debt were not without significant political consequences. Debt and racial politics created tension in the postbellum cotton regime, and the guano note played a pivotal role in fueling the growing anxiety that erupted in political revolt of Populism in the 1890s.

Chapter three looks at the creation of the Georgia Department of Agriculture, which Georgia's state legislators formed in 1874. The department was charged with a wide variety of responsibilities aimed at improving the state's agricultural production, but the department's other duties were overshadowed by its role as a regulator of the fertilizer industry. This chapter asks why Reconstruction-era Georgia was the birthplace of the first fully-formed state department of agriculture in the United States, and finds the answer directly related to the state's position as the nation's leading consumer of commercial fertilizers. Paradoxically, even though the Georgia Department of Agriculture acted as a watchdog of the fertilizer industry, and many members of the department opposed the growing reliance on commercial fertilizers, the department's publications reveal the extent to which its activities reinforced the chemical-input paradigm among Georgia's farmers.

All three chapters of this project examine a major agricultural change in human terms. While much of the historical work on postbellum southern agriculture has focused on the play of economic forces on the region and its people, this project seeks an understanding of how a new agricultural practice changed—and was changed by—the lives of individual actors. Although economic incentives were an important force in the trend towards chemical-input agriculture, the fertilizer boom did not occur in a historical vacuum, and a variety of social and environmental components played into this transition. One of the recurring themes throughout all three chapters is the contested meaning of "independence" among agriculturalists of different social standing. With the potential of feeding nutrient-deficient land after a devastating conflict, fertilizer promised to help farmers secure a degree of independence by cultivating the soil with new expectations of its capabilities. However, even as farmers purchased fertilizer with the belief that it would

help them become more self-sufficient, in fact, the many ways fertilizer affected their lives and their farms revealed the extent to which dependence, debt, and interdependence were the watchwords of the cotton regime. Planters and wealthy farmers believed that fertilizer would help restore their deluded sense of an independence premised on the cherished patriarchy of antebellum times. Poor farmers found that even the beneficial qualities of fertilizer—including higher crop yields and accelerated plant growth—were effectively destroyed by the credit mechanism that allowed them to obtain the chemicals. Over time, government experts who regulated the fertilizer industry began to play an increasingly normative role in agricultural practices, effectually promoting the industry that it sought to oversee, even as some of the members of the department decried the woefully dependent state of the state's agriculturalists.

In other words, even if independence was a universally desirable object of the nineteenth-century American, the term's meaning was diverse and historically contingent. Fertilizer offered a panacea that fed the imaginations and the soils of Georgia's cultivators, all of who sought their own vision of stability in an unstable market, society, and landscape. As the following will show, independence may have been held up as the most desirable state of being in the agricultural regime, but the adoption of fertilizer reveals the extent to which the ideal of independence was at best a myth, and at worst a tool of repression.

Admittedly, soil fertility is but a single factor in the complex business of agriculture. But in the context of a society that measured its worth in terms of agricultural outputs, gaining a better understanding of its inputs can enrich our understanding of its culture. Furthermore, knowing as we do now the incredible role fertilizer has played since the nineteenth century by accelerating agricultural production and fueling population growth,

tracing this trend toward chemical dependency reveals that the transition was predicated on the messy material of human behavior, not by any law or principle. As the case of Georgia shows, even as chemical fertilizer promises abundance, this abundance has never come without serious costs.

CHAPTER 2

"TENANTS AT WILL"

DAVID DICKSON AND THE ORIGINS OF THE SOUTHEASTERN FERTILIZER BOOM

In November of 1885, the *New York Times* printed a short column noting the passing of David Dickson, a planter of Hancock County, Georgia. "Although little known personally to many of the citizens of his own county," Dickson was "famous as the most successful farmer in Georgia." Dickson "began to accumulate land when a young man," and with his "shrewd business sense," Dickson became "one of the largest planters in the state of Georgia."[1]

As a distinguished agricultural improver, David Dickson had made his name as a leading advocate of reforming agriculture in the South, growing bumper crops of cotton year after year on poor soil with the help of chemical fertilizers, while many less successful cotton farmers migrated west in search of fresh, fertile soil and fortune. Dickson prided himself on his "system of agriculture," a method of cultivation that combined strict management of labor with his own chemical and mechanical innovations. Dickson was well

[1] "David Dickson's Will," *New York Times*, November 16, 1885, 1. The main subject of this chapter is the David Dickson of Sparta, Georgia. There was another prominent agricultural businessman named David Dickson, who resided in Oxford, Georgia where he sold cottonseed. On the two David Dicksons, see "Cotton Seed and Fertilizer," *Southern World*, Jan. 15, 1883, 4.

known in the agrarian world as the first advocate of chemical fertilizer in the Cotton Belt, through his letters to agricultural journals and his published treatise on agriculture that saw multiple editions. Dickson believed that maintaining productivity of the land meant caring for it, and vice versa. To those who hoped to turn a profit growing cotton, Dickson simply suggested, "Keep your land in good heart." Of course, Dickson's idea of conservation placed at least as high a premium on mastering labor as it did on aspirations of natural stewardship—the actual implementation of keeping the land "in good heart" fell onto the shoulders of a servant class of African American laborers.[2]

It was not, however, Dickson's distinctive philosophy of conservation that landed him in the *Times* that day. Rather, the article focused on an irate group of Dickson's relatives contesting his will. Their anger was two-fold. First, their bequests were "but a small portion of the estate, which was worth $400,000." Adding insult to their injury, however, the "great bulk of [Dickson's estate] was bequeathed to Amanda Dickson, a colored woman, in trust for her mulatto children." In pursuit of their own vision of justice—and money—Dickson's white relatives contested the will on the grounds that Amanda Dickson's bequest was "illegal and immoral," not to mention "contrary to the policy of the state and of the law, and destructive and subversive to the interest and welfare of society." Although Dickson's wishes were quite explicit in his will, it rankled the white Dicksons to see the fortune pass to the child and grandchildren of Julia Dickson, one of David's former slaves and his lover. Once the contents of his will were made public, discussion of the "most famous farmer in Georgia" drifted from the sycophantic columns of the agricultural press to the broad scrutiny of a public scandal. The onetime icon of restored plantation

[2] David Dickson with J. Dickson Smith, ed., *A Practical Treatise on Agriculture,* (Macon, GA: J.W. Burke and Company, 1870), 209, 213.

productivity had become ensnared in a racial script all too familiar from antebellum years, but in a New South context.[3]

While the *Times* left out many details about Dickson's life, the article does bring into focus the contours of the two competing legacies that would shape scholarship on one of Georgia's most famous cotton planters, as well as perspectives on other wealthy planter elites more broadly. In the first half of the twentieth century, historians celebrated Dickson's legacy of reform and success as a farmer. Agricultural historians sang the praises of "The Prince of Southern Farmers." These historians ignored Dickson's racial transgressions and heralded his success as a beacon that "should be a shining light to every Georgia farm youth." They accepted at face value the image of a humble, industrious, and paternalistic planter that Dickson himself created in his contributions to agricultural journals. More recently, historians interested in race, gender, and law have reexamined the disputation involving Dickson's will and the life of his family, black and white. These historians see Dickson's family life as a window into the contested meanings of race and gender in the South.[4]

Between the divergent trajectories of these two historical perspectives, part of the Dickson story, and part of its broader historical significance, has fallen between the cracks. In recent years, scholars have examined the wider political implications of household relations in the nineteenth century. Although they are not in conversation with one

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[3] "David Dickson's Will"; Dickson Will Case, Hancock County Court Ordinary, July 6, 1885, GDAH.

[4]Willard Range, "The Prince of Southern Farmers," *Georgia Review* 2, no. (Spring 1948), 92; James C. Bonner, *A History of Georgia Agriculture, 1732-1860* (Athens: University of Georgia Press, 1964); Kent Anderson Leslie, *Woman of Color, Daughter of Privilege: Amanda America Dickson, 1849-1893* (Athens: University of Georgia Press, 1995); Jonathan Bryant, "Race, Class, and Law in Bourbon Georgia: The Case of David Dickson's Will," *The Georgia Historical Quarterly,* LXXI (1987).

another, this work on household relations dovetails with contemporary studies in agricultural history in many important ways. Dickson's story demonstrates the centrality of the household as a social institution in rural society. Not only did the roles of husband and wife, parent and child, master and slave circumscribe power relations within the home, but these relationships also demarcated rights and privileges more broadly under the law.

Another important facet of Dickson's story is that it runs counter to certain demographic and economic trends in agricultural history. While antebellum settlement patterns in the Southeast show the interrelated trends of outmigration, land-intensive shifting agriculture, and cotton staple production, many of the planters of Hancock County, including David Dickson, sought to stem these socially and environmentally erosive forces. The desire of Hancock County's planters to protect their own power and prestige led them down a road of agricultural improvement, a trend of environmental conservation that also conserved the social relations that kept planters on top. While much of the scholarship on antebellum cotton relies on economic analysis, evidence from Hancock County underscores the critical role that cultural values played in leading planter elites like Dickson to cultivate agricultural reform as a means to an end. Selling fertilizer as a solution to the problems emancipation created for white elites after the war, David Dickson's career illustrates the durability of this mentality, which connected social order with an orderly agricultural landscape.

Among the community of planters, Dickson proved himself especially adept by thriving across the socially destabilizing transition of the Civil War. Before emancipation, Dickson built a reputation on the subtle mastery of paternalism, exercising a blend of manliness, restraint, and ingenuity, and winning the accolades of his peers. One only had to

look to his fertile fields and his well-stocked smokehouses for proof that Dickson's philosophy of management and proclivity for agricultural experimentation had paid. Dickson, it seemed, had turned an environmentally degraded landscape into a productive garden with his mastery of land and labor. However, the tidy image Dickson had constructed of obedient laborers happily adhering to his "system of farming" after emancipation belied the real challenges faced by former slaves and former masters in the postwar South, just as the modest, neatly-painted Dickson plantation home obscured the gaze of the white public into the planter's family life.

Aided by business acumen, financial resources, and the literature of agricultural improvement, Dickson pushed for an understanding and mastery of all that he saw around him: Plants in his fields, the dirt underfoot, and his African American laborers at work. Despite the degree of political and economic hegemony wealthy whites like Dickson were able to recover, conditions after the Civil War stifled the control they desired over labor and soil. More than any natural influence, the social disruption caused by emancipation would prove to be the most erosive force on Dickson's power. Dickson's success in the postbellum economy lay in marketing fertilizer as the panacea for these multifaceted issues of agricultural labor, social relations, and regaining mastery over the plantation landscape. Dickson remained a successful planter, but it was his venture into the fertilizer industry that won him the accolades of New South cotton planters and industrial boosters. By pushing fertilizer as a solution to the "labor question," Dickson sold a fictitious version of agricultural improvement that obscured the real problems of the cotton landscape rather than confront them.

There is no reason to sing a paean to Dickson, as did many of his contemporaries and many twentieth century historians. Rather, as a slaveholder, and later as a landlord and fertilizer merchant, Dickson's carefully cultivated public image as the withdrawn and humble farmer did not align with accounts of his disorderly home life nor his wide-ranging financial dealings. Nor is it possible to provide a complete biography, which would be an impossible task without Dickson's personal papers, the bulk of which have been lost. Dickson's life, which spanned the nineteenth century, offers an opportunity to explore the currents and crosscurrents of rural life on the fragile soil of the cotton kingdom, not only the physical characteristics of that place, but also the place as a social construction—where the physical world intersected with the social world. As the Dickson case suggests, however, the ruling class' ability to regain a semblance of control over land and labor did not transfer to their own homes.[5]

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At the dawn of the nineteenth century, would-be-farmers lured by the high price of cotton and cheap, abundant land flooded into the state of Georgia. Settlers cleared the forest, broke the land, planted their crops, and after the soil became unproductive or exhausted, many pushed farther west, lured by the promise of new soil and better prospects. Not everyone, however, was bitten by the westering bug. Many farmers who

[5] See Benjamin Cohen, *Notes from the Ground: Science and Agricultural Improvement in the Early American Republic*, (New Haven: Yale University Press, 2009); Steven Stoll, *Larding the Lean Earth: Soil and Society in Nineteenth Century America*, (New York: Hill and Wang, 2002); Edmund Ruffin, *Nature's Management: Writings on Landscape and Reform, 1822-1859*, ed. Jack Temple Kirby (Athens: University of Georgia Press, 2000), esp. the editor's introduction.

fared well in cotton cultivation expanded operations for commercial production, accumulated slaves and built fine homes; others continued to practice subsistence agriculture, focusing on the immediate needs of their own household. For the enslaved laborers who were unwilling participants in the settlement process, the movement of white slaveholders had devastating impacts on their lives. Relocation usually entailed the sale of human chattel and the torment of family separation, a process akin to a "second middle passage," as laborers were uprooted against their will. In this isolated and brutal frontier existence, the field became the site of production and the household became the main conduit of social life.[6]

David Dickson was born in January of 1809 into a modest home, surrounded by cornfields and forest, a short ride from the small town of Sparta, Georgia. An aerial view of Hancock County 1809 would have shown the native forest giving way in a haze of smoke to a patchwork of exposed fields. At the time of American settlement, the forest in Hancock County and much of the southern Piedmont of middle Georgia was a mixture of long-and shortleaf pines in sandy earth and low spots, and hardwoods, such as hickories and oaks, on ridges. While the swing of the axe and the planting of corn and cotton symbolized progress and civilization to white settlers, so too did it mark an abrupt and extensive

[6] Frederick Jackson Turner's landmark lecture delivered before the American Historical Association in 1893, "The Significance of the Frontier in American History," crystallized earlier thinking on the role of open land; his essay influenced the bulk of subsequent scholarship. A key intervention to Turner's work came from one his own students, Avery O. Craven, whose *Soil Exhaustion as a Factor in the Agricultural History of Virginia and Maryland, 1606 to 1860* dealt with the role of soil depletion in a specific context. Craven's work has inspired and influenced generations of environmental historians and historical geographers. Several more recent works have pointed to the ideology of Americans on the East Coast who saw the tendency of western migration as a threat to society in older states. In particular, see Stoll's *Larding the Lean Earth*. On the Second Middle Passage, see Ira Berlin, *Generations of Captivity: A History of African American Slaves* (Cambridge: Harvard University Press, 2003).

change in the local forest ecology, a change that would have long-term consequences in human settlement. The removal of the protective cover of the trees exposed the fragile soils to the erosive powers of the wind and rain, further exacerbated by the plowing and the cultivation of row crops. While many of the area's settlers would choose to continue westward in search of fresh new land, burning the forest for its soil-enriching qualities and to clear new fields, the Dickson home remained in the same place for the duration of David's life. From his earliest recollections, care of the soil weighed heavily on his mind.[7]

It is unclear whether Dickson's father owned slaves upon settlement. It is clear that as a child, David worked in the fields, helping to support his parents and twelve siblings. Later in his life, David Dickson would recount his youthful experiences, and claim that the fundamental problems in agriculture came into focus when he was just a plowboy. Dickson noticed that cultivating and hoeing corn had a damaging effect on the plant's root structure, a problem he would later address by inventing a specialized shallow sweep to clear weeds. More importantly, however, Dickson observed the productivity of fresh soil. Recollecting his youthful epiphany, Dickson noted that, "new land, full of mold, never baked, was always easily worked and would stand a long drought and a heavy wet spell." Dickson resolved that the key to success was "to keep all the land in the virgin state, as near as possible." Even as a child, it seems, Dickson perceived emulating the natural order as essential to the practice of agriculture.[8]

This anecdote is illustrative in a number of ways. On the surface, it reveals that the mature Dickson was conversant in theories of agricultural chemistry, especially those of

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[7] Maynadier, Gustavus B. and W.J. Geib. "Soil Survey of Hancock County, Georgia." (Washington D.C.: Government Printing Office, 1909), 553; Leslie, 34.
[8] Dickson, *A Practical Treatise on Agriculture*, 235.

the Briton Sir Humphrey Davy, whose "humus theory" posited that the use of compost was vital to healthy soil. Digging a little deeper, the anecdote of the agricultural boy-genius also reveals aspects of Dickson's self-image that he would cultivate throughout his life as a planter man of letters. At the forefront is the premium that Dickson placed on empiricism. By studying cause and effect in nature, Dickson opined, a careful and observant farmer could master his domain with nothing more than his own wit. In short, financial success was a matter of will. Poor soil was but an infirmity, and according to one of Dickson's fawning editors, Dickson's "genius readily devised a remedy." This was Dickson's origin myth as an agricultural reformer—a story he told about himself over and over, showing how Dickson attributed his value system to the peculiarities of his time and place. Beyond this, it also highlights Dickson's bounding faith in his personal ability to tame the natural world.[9]

It was not until 1845 that Dickson would acquire his own lands and set out to correct the errors he saw in agriculture. In the intervening years, Dickson worked as a merchant, outfitting the needs of the expanding plantation regime, building wealth and sharpening his business acumen. The analytical skills Dickson acquired by keeping meticulous records and accounts would come in handy in his later years, both in record keeping on his farm, and in his business enterprises. But for the time being, merchants and cotton factors like Dickson found the marketing end of the cotton market to be a fabulously profitable vocation.

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[9]Merchant, *Ecological Revolutions*, 206. The major American disciple of the "vitalist" humus theory was Samuel L. Dana, of Lowell, Massachusetts. His *Muck Manual for Farmers* was an influential text for American agricultural improvers, like Dickson; Stoll, *Larding the Lean Earth*; Dickson, *Practical Treatise*, 236.

Cotton production powered by black enslaved labor was the most lucrative trade in the United States in the first half of the nineteenth century, yet to many of the wealthier citizens of the Cotton Belt, the deteriorating physical condition of their province was the cause of increasing alarm. The initial wave of settlement that had transformed the country of Middle Georgia at the turn of the century was receding as the white population declined, and many headed to cheap unbroken land to the west. Fields that had been so eagerly cleared now lay fallow, eroding and overgrown with weeds and "poverty grass," like broom sedge. The specter of decaying plantation houses and gullied, abandoned "oldfields" loomed as frightful reminders of the tenuous relationship between society and a fragile environment.[10]

In an 1844 issue of the *Southern Cultivator*, a planter from Sparta described the process of abandonment: "The lands have been, by a succession of hard-cropping, shallow up-hill and down-hill plowing, and other imprudences, denuded of a large portion of the richest soil…We are now faced to one of three alternatives, either to be content with scant crops, poor returns for our labor and capital; and in the end with poverty; abandon our homes, and emigrate to the *far, far* west; or to commence, in right good earnest, the work of improving our lands." Fellow Hancock County resident Eli Baxter put it more succinctly: "We must revolutionize our system of agriculture, we must improve our lands, or we must abandon our homes." By 1837, when a group of wealthy farmers formed an agricultural society called the Hancock County Planters' Club, thousands had abandoned their homes already. As the chart below indicates, the county's white population had peaked at the

[10] Tuttle H. Audas,"Planters' Club of Hancock," *Southern Cultivator*, Feb. 7, 1844, 2, 3. APSO.

height of the land rush in 1800, while the enslaved population grew gradually until emancipation.[11]

Table 1: Population in Hancock County, 1800-1900

Year	White	Total Slaves	Free Black
1800	9,605	4,835	16
1810	6,849	6,456	25
1820	5,847	6,863	24
1830	4,603	7,180	37
1840	3,697	5,915	47
1850	4,210	7,306	62
1860	3,871	8,137	36
1870	3,645		7,672
1880	5,044		11,943
1890	4,739		12,410
1900	4,649		13,628

As the table above indicates, the nineteenth century was period of intense demographic change for Hancock County. The population of white residents peaked in the years of the Cherokee Land Lottery in the first thirty years of the century, when the state government ceded lands formerly held by Native Americans to white settlers. Many of these settlers brought or purchased black enslaved laborers who were unwilling participants of these demographic trends. The decline of the white population before 1860 indicates the role outmigration to fresh and cheap western land, while the population of enslaved and then free African Americans slowly grew over the century. Source: Historical Census Browser. Retrieved November 1, 2009, from the University of Virginia, Geospatial and Statistical Data Center: http://fisher.lib.virginia.edu/collections/stats/histcensus/index.html.

Economic historians have argued that "the internal logic of slavery" hampered the impulse of experimentation in agricultural practice and led slaveholders to choose the option of geographical expansion over permanence and stewardship. In defense of these economic arguments, evidence overwhelmingly supports them—slaves were portable wealth and labor resources, and the land from Alabama to Texas was abundant and cheap,

[11] A Middle Georgian, "Communications," *The Southern Cultivator*, April 3, 1844; 2, 7. 49, APSO. Eli Baxter. "Address Delivered Before the Hancock County Planters' Club, Nov. 3, 1813." *The Southern Cultivator*, January 4, 1844; 2, 2. 1, APSO.

enticing planters to migrate and reap the nutrients of fresh soil. The population data in Hancock County points to the demographic consequences of these forces. In that context, how can we understand the actions of the Hancock County Planters' Club, whose activities in the 1830s and 1840s encouraged others *not* to "abandon their homes," while advocating a sweeping effort to preserve the soil? A strictly economic explanation may not suffice.[12]

The Old World tradition of mixed husbandry—a system of agriculture that valued spatial permanence and nutrient cycling—had gained a foothold in the Northeast, but not in the slave states of the Deep South. Environmental historian Steven Stoll has argued that, "Nothing could have been as insidious to reform as the influence of slavery." In this regard, the reform efforts of the Hancock County Planters' Club were unusual in the antebellum cotton belt. Nonetheless, eighteen wealthy whites formed the group in 1837, "To advance the cause of Agriculture, and to improve the practice of Agricultural husbandry in the County of Hancock." First and foremost these men sought the "most eligible means of preparing and mode of applying manures to the exhausted fields of this county," and "the most efficacious methods of preventing the waste of soil by heavy falls of rain." To these ends, the Planters' Club formed committees to seek solutions to these problems, and they also sponsored lectures on such lofty subjects as the proper handling of manure. Just as James Henry Hammond of South Carolina had enlisted Virginian reformer Edmund Ruffin to survey the soils of Carolina, the Planters' Club also investigated the possibilities of local

[12] Gavin Wright, *The Political Economy of the Cotton South: Households, Markets, and Wealth in the Nineteenth Century* (New York: Norton, 1978),108; Genovese, *The political Economy of Slavery*, 124.

soil analysis for its members. To their disappointment, however, such a project proved far too costly.[13]

The Planters' Club promoted their activities in periodicals like the *Southern Cultivator*, especially their annual fair in Sparta, which awarded prizes for the most productive acres of cotton and corn, fattest hogs, and finest horses, among others. The Club required contestants to divulge their methods of cultivation, including their soil type, how much and what type of manure they used, and how much labor—slave or free—cultivated the crop. These fairs promoted productive agriculture within the county, and celebrated the ideals of permanence and profitable stewardship in a place where the social and economic fabric seemed to be disintegrating at a startling rate.

According to many accounts, the Planters' Club had succeeded in many of its goals. In the 1840s, Hancock led the state in cotton production, but the mode of production was also a point of pride. "The pursuits of agriculture have become not a mere business of dollars and cents—not a mere means…but a business of pleasure. In this way a degree of fixedness and stability has been imparted to our before roving population." By the 1840s, the Planters' Club received letters of inquiry from across the South, written by budding reformers inspired by Hancock's example. Protecting the soil, it seemed, could be a means to preserving the social order, and the way of life that white elites were fighting to keep intact. Other southerners recognized the value of conservation, so long as it served the interests of a propertied, slave-owning class.[14]

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[13] Hancock County Planters' Club Papers, Folder 2, GDAH; Stoll, *Larding the Lean Earth*, 158, 155; HCPC Papers, Folder 10, GDAH.
[14] "Address of R.P. Sasnett, Esq," *Southern Cultivator*, Jan 1846; 4,1; APSO.

A survey of the founding members of the Planters' Club reveals that these men were the apex of the local society—doctors, lawyers, and planters. Club members were the largest slaveholders in the community, and those who held the levers of power in their rural environment. Protecting the institution of slavery was central to preserving their place. As Peter Bardaglio has argued, slavery was the linchpin of the southern social order, not only in terms of the patriarchal domestic sphere, but also in society at large. Yet at the same time, as their tireless efforts towards self-aggrandizement through the Planters' Club demonstrate, maintaining healthy, productive soil was also essential to their vision. This impulse was also shaped by the physiocratic belief that the soil, rather than the factory, was the cradle of all wealth. Many of these planters were Whigs, who sought the economic benefits of internal improvements, but their outlook was also influenced by a reverence for place—both the physical character and the social world of their own place. Eli Baxter's fear that planters might have to "abandon their homes" struck terror in the heart of planter society. The household was the center of their world, both as a physical realm and as a social construction.[15]

Although David Dickson was never a member of the Planters' Club, by the 1850s, the Dickson name became synonymous with the Mecca of agricultural reform in Hancock County, if not the whole South. Contemporaries and twentieth-century agricultural historians have extolled Dickson's profitable career as a farmer. What seemed so exceptional about Dickson's success was that he had transformed poor land into some of the most productive cotton acreage in the state, and that he had done it by "his own wit,"

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[15] Bonner, "Profile of an Antebellum Community," 665; Peter Winthrop Bardaglio, *Reconstructing the Household: Families, Sex, and the Law in the Nineteenth-Century South* (Chapel Hill: University of North Carolina Press, 1995), xiv.

and his "system of agriculture:" Deep plowing, shallow cultivation, and the application of manures and commercial fertilizers. According to historian Willard Range, "the beauty of Dickson's revolutionary theories was that they worked. In 1845, after a fourteen-year stint as a merchant, having increased a $1,200 inheritance to $25,000, Dickson bought 266 acres of exhausted land, a few slaves, and began farming independently." His time as a merchant helped him hone complex bookkeeping skills, and a keen eye for business opportunities that would help expand his agricultural empire. Dickson had paid only fifty cents to two dollars an acre for his land in 1845, and in 1846 he claimed to be the first planter in the South to use Peruvian guano as a fertilizer, which he applied heavily. Within a span of 14 years a visitor to the Dickson plantation commented, "Truly he has and is producing the most wonderful results on pine land, much of which, a few years ago, was considered almost worthless." Dickson's fame lay in his mystifying ability to turn old soil into wonderfully productive farmland.[16]

But in a culture of men obsessed with soil fertility, other planters lauded Dickson for his role as an innovator, rather than for his financial success alone. Recognizing the value of guano and Dickson's system, in 1867 one contemporary argued that by introducing new sources of fertility before the war, Dickson was "entitled to the everlasting gratitude of the farmers of Georgia, and perhaps the civilized world." The application of imported nutrients was not a viable option in the antebellum heyday of the Planters Club, but as more railroads strung the rural Southeast into connection with a larger market after the war, the shipment of imported soil additives would begin to make economic sense. New ways of

[16] Range, "The Prince of Southern Farmers," 93; "David Dickson Dead," *Atlanta Constitution*, February 19, 1885, 2; One of the Party, "Hancock Farming—David Dickson, Again," *Southern Cultivator*, Nov. 1859; 17, 11. APSO.

thinking about the soil pioneered by European researchers began to circulate in the agricultural press and influence learned American farmers like Dickson. Not only could imported nutrients like guano enrich the soil but they could enrich those who sold the fertilizer. James Monroe Smith, a planter from Oglethorpe County, Georgia who would make a fortune off of fertilizer sales in the 1880s, alleged that "guano did not make Dickson, but Dickson made the guano market."[17]

Dickson was instrumental in opening the southern guano market, but what made guano so valuable? If the long-term effects of heavy rains were part of the reason that southern soils were so eroded and poor, even before cultivation, Peruvian guano was valuable precisely because it came from a dry place, where its rich nutrients had not been leached away by the rain. In the 1850s and 1860s, most imported guano came from islands off of the coastal desert of the Peruvian Atacama, where the aridity allowed for nitrogen-rich biota to survive in the droppings of coastal seabirds. Since nitrogen is the most important element in facilitating plant growth, the water-soluble ammonia of the guano was an exceptionally effective tool for increasing soil productivity. And having proven its value on his own lands before the war, after the conflict Dickson began to sell guano to other farmers who sought similar returns on their fertilizer purchases.[18]

That David Dickson became one of the most successful planters in Georgia is not in dispute: A cursory glance at Dickson's will reveals that at his death in 1885 he owned thousands of acres of land in Georgia and Texas, railroad bonds, and the debts of hundreds

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[17] *Premium List of the State Agricultural Society of Georgia*, 5 (Macon, GA: Daily Telegraph Steam Printing House, 1869), 38; E. Merton Coulter, *James Monroe Smith: Georgia Planter, before Death and After*, (Athens: University of Georgia Press, 1961), 29.
[18] Gregory T. Cushman, "'The Most Valuable Birds in the World': International Conservation Science and the Revival of Peru's Guano Industry, 1909-1965," *Environmental History* 10, no. 3 (2005), 478.

of individuals from sharecroppers to merchants. What the sketches above ignore is that while Dickson himself was a shrewd and calculating planter and capitalist, his "independence" and success was based on the strictly managed labor of others. This tension comes into sharp focus with a comparison between Dickson's image as a brag farmer and the facts of his home life.[19]

According to Dickson's system, a farmer needed only to follow a few rules of thumb in order to produce more and better crops, and to increase land values. Rather than pursuing a plodding course of agriculture, David Dickson stressed the farmer's obligation to understand and build upon natural laws. The editor of the *Southern Cultivator*, Daniel Lee, celebrated Dickson as an example of improved farming for other cotton planters, and published Dickson's writings as quickly as he received them. From his bully pulpit in the agricultural press, Dickson exhorted farmers to "study nature; trace all things from cause to effect, and effect to cause." However, in the light of man's God-given faculties for reasoning, he added that it was "Safest to add a little science, experience and art, to help old nature." These sentiments epitomize the tenets of what historian Benjamin Cohen calls the "Georgic Ethic." This ethos stressed the agrarian connection between human and landscape, a connection that trained the Enlightenment ideal of intellectual work on the improvement of agriculture. To this end, Dickson argued that a farmer's greatest tools were "quick perception," and "wise judgment, that seldom or never errs."[20]

Yet, while Dickson's system privileged the intellectual faculties of the plantation owner, it simultaneously denigrated the physical and intellectual capacities of his laborers.

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[19] Will of David Dickson, GDAH.
[20] David Dickson, "Observations on Manures," *Southern Cultivator*; May 1867; 25, 5; APSO; Cohen, *Notes from the Ground*, 27-37; Dickson, *Practical Treatise*, 99.

It is therefore irresponsible to tell the story of David Dickson's rise to prominence without first understanding the role of enslaved labor in its creation. First, despite claims by visitors to the plantation that Dickson treated his slaves kindly, other evidence counters this contention. When asked whether or not Dickson had whipped any of his slaves, a former slave testified after Dickson's death that he had whipped "most all of them." Also, Dickson sexually coerced at least one of his female slaves, Julia Dickson, when she was thirteen years old. David and Julia's daughter, Amanda, would become the main beneficiary of David's bequest after his death. The psychological implications of these abuses running through the plantation household were certainly beyond measure.[21]

Secondly, beyond these examples of outward abuse, it is also important to understand the role of household relations in the social structure of the antebellum South. David Dickson's image in the agricultural press as the "self-made" man of the soil rested on physical control of other people's labor, but it also relied on the narrowly-defined antebellum republican ideal of independence. The propertied white man's inclusion in the patriarchal and political system was premised on the exclusion of others, so-called "dependents," whose identities and rights were delineated by distinctions of race, class, and gender. In other words, the benefits of the independence claimed by men like Dickson and members of the Hancock County Planters' Club were grounded not only in the subservience and labor of others, but also by the categorical denial of full citizenship to those who lacked the right qualifications. The plantation household served as a microcosmic representation of these divisions in the society at large. The household was not a "private" space in any conventional sense, rather, relationships between husband wife, master and slave all

[21] Dickson Will Trial, Testimony of Matthew Dickson, GDAH; Nell Irvin Painter, *Southern History across the Color Line* (Chapel Hill: University of North Carolina Press, 2002), 17.

established roles that defined public political power. Even though Dickson never entertained political aspirations, his status within and outside of his own household remained unassailable until the arrival of federal troops in Hancock in 1864. The Civil War would profoundly disrupt this system of relationally determined political power, particularly as it undermined the system of coerced labor that supported his "independence."[22]

On the eve of the Civil War, Dickson enjoyed the fruits of a massive farming operation and he continued to accumulate capital, in the form of both land and enslaved labor. Owning 150 slaves in 1860, Dickson cultivated mountains of lint cotton, thanks in part to his heavy use of manures, most of which came from his stock: 300 cattle, over 200 sheep, 600 hogs, and 50 mules and horses. He also invested at least $10,000 in commercial fertilizers, mostly Peruvian guano, imported from the Chincha Islands to Baltimore. The abundant labor and capital under his direction gave Dickson the freedom to continually experiment with and improve upon his techniques without the fear of financial ruin, an obstacle that limited planters and yeomen of more modest means. Contrasting the dwindling white population of Hancock with its growing enslaved population at the brink of the national crisis, it is clear that the poor soils of the region were not particularly profitable for those who could not afford the labor and capital-intensive mode of farming advocated by Dickson and his fellow planter-improvers. The class tension between wealthy improvers and smallholding yeomen and tenants would reassert itself in the years

[22] Stephanie McCurry, "The Two Faces of Republicanism: Gender and Proslavery Politics in Antebellum South Carolina," *The Journal of American History* 78, no. 4 (1992), 1245-1264; LeeAnn Whites, *The Civil War as a Crisis in Gender: Augusta, Georgia 1860-1890* (Athens: University of Georgia 1995), 8; Laura F. Edwards, *Gendered Strife and Confusion: The Political Culture of Reconstruction* (Urbana: University of Illinois Press, 1997), 6.

following the war.[23]

Visitors to the Dickson plantation also commented on the comfortable home life in the planter's household. Although his peers often noted that Dickson rarely left his property, he loved to show off his operation and entertain guests. One visitor in 1859 described the plantation with great adoration: "After spending the night with [Dickson] we rose early in the morning…and rode, without stopping until 12 o'clock…and then not seeing half the crop. His fields being scattered over thirteen thousand acres of land, one day's ride is not sufficient to see his entire crop." After their tour of "the best average crop in Middle Georgia," the visitor offered a revealing peek into the Dickson home: "After our ride we were met by (I would like to have said a charming wife and interesting children). No; he has never married, but is passing his best years in, as some would be pleased to call it, single blessedness." After the midday dinner meal, a controversy "sprung up amongst the negro women, as to which had the likeliest baby…an appeal was made to the master, (between whom and all his servants the greatest familiarity exists)."[24]

This picture of the Dickson home is suggestive in a number of ways. First, in the visitor's eye, Dickson's prestige was assured by the productivity of his land; Dickson's commitment to experimentation and strict management made him seem a master of the soil. But in the home in the center of these fields, the visitor expressed some surprise that Dickson was not married in spite of his success. The absence of a wife in the plantation household was a peculiarity in the social milieu of the antebellum South, and the shadow

[23] H, "Notes on our Late Fairs," *Southern Cultivator*; Dec. 1859,17, 12, 366. For a discussion of the class-related implications of southern agricultural improvement, see Lynn A. Nelson, *Pharsalia: An Environmental Biography of a Southern Plantation, 1780-1880* (Athens: University of Georgia Press, 2007).
[24] One of the Party, "Hancock Farming—David Dickson, Again." *Southern Cultivator*; November, 1859; 17, 11. APSO.

cast by the missing white plantation mistress seemed at least a little troubling in the eye of the observer—something was amiss. Also lurking in the shadows during the discussion of the slave mothers and children was the presence of Dickson's house slave and companion Julia Dickson, and their daughter, Amanda America Dickson, who was ten years old in 1859. Though the visitor tellingly suggested that Dickson had the "greatest familiarity" with his slaves, Dickson's black family remained hidden in the penumbra of his agrarian glory, a sparkling reputation that he earned by trumpeting the material benefits of soil restoration.[25]

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As it was for most of the South, the Civil War was a time of monumental upheaval for the Dickson home. The Virginian "fire-eater" secessionist and agricultural improver Edmund Ruffin fired the first shot on Fort Sumter in April 1861. But by the end of the conflict Ruffin faced failing physical health, loss of wealth, and harbored "unmitigated hatred to Yankee rule…& the Yankee race." In 1865 he shot himself, and his son returned him to the soil he loved. So too was the War a time of loss and change for David Dickson, but despite considerable turmoil, Dickson would manage to adapt and even thrive in the postwar climate.[26]

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[25] David Dickson married a white woman thirty-seven years younger than he in 1871. The marriage created serious tension between Dickson's black and white families, but it was short-lived. Dickson's wife, Clara Harris lived with Dickson for two uncomfortable years until she died in 1873. For a more extensive discussion of this relationship, see Leslie, *Woman of Color, Daughter of Privilege*, 66-69.

[26] Jack Temple Kirby, ed. *Nature's Management*, xiii.
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Emancipation upset methods of labor control and management of the soil. For Dickson, like other landowners, reconstructing a system of agricultural production necessitated a negotiation with the realities of the postwar scene. The elimination of slavery, the institution around which southern life was organized, also disrupted the centrality of the plantation household as a microcosm of southern life. As white elites struggled to reassert control over freedmen, African American families sought to establish their own families and households. Not only did new laws reflect these changes—like the legalization of marriages for former slaves—but the creation of new households on individual plantations also decentralized the nucleated cluster of dwellings that had once stood in the shadow of the plantation house. In the light of these changes, the illusion of mastery over labor and land that slavery had helped to reinforce quickly faded.[27]

Dickson did not fight in the war. Instead he raised provisions for the Confederacy and watched the home front in relative tranquility, for a time. The Confederacy and the Union each did their part to diminish some of Dickson's $500,000 fortune. First, Dickson provided the Confederacy with four hundred bales of cotton, as well as other provisions, for most of which he never received any remuneration. Later, General Sherman's army passed through southern Hancock County in 1864, whereupon they burned grain and three hundred bales of Dickson's cotton, destroyed many of his farm implements, and relieved him of fifty-five of his mules. Most importantly, Sherman's retinue liberated all one hundred and fifty of the women and men and children who had hitherto been Dickson's property. Whether or not these individuals decided to follow the liberating forces or remain on the farm was up to them, but if they stayed on the land, they would continue to

[27] Charles S. Aiken, *The Cotton Plantation South since the Civil War* (Baltimore: Johns Hopkins University Press, 1998), 48.

work for David Dickson. Emancipation and the end of the war had, in the words of historian Gavin Wright, changed Dickson from a "labor lord to a landlord." As the owner of 8,000 acres in 1867, he was a large landlord indeed.[28]

Dickson was determined to rebuild his farming operation from the rubble of the war. Yet how could he restore the fields in the new climate of the post-war economy? With laborers freed—or as Dickson and his contemporaries said, "demoralized"—how could they be induced to continue farming without the legally and physically coercive system of slavery? Dickson, like many others, hoped to institute a system of contracted gang-labor, where the planter exerted essentially the same control as he had under slavery. Time and experience ultimately showed that African Americans rejected this system out of hand; black families demanded a degree of autonomy they had not received under slavery, and sought to reconstitute their families and work as they saw fit. Over time, planters grudgingly accommodated the new system of farming on "shares," as planters assumed the roles of landlords and creditors.

Emancipation also posed another problem for Dickson. Even though Dickson's land ownership continued to increase substantially after the late 1860s, how could he ensure that those who worked his lands were tilling the soil according to the dictates of his beloved "system of farming" to keep the soil productive and healthy? After losing much of his livestock to the war, and with the smaller family-sized farming units of sharecropping, how would it be possible to distribute the tonnage of manure so critical to maintaining soil stability? Would the depletion of the soil be an environmental consequence of the erosion

[28] "David Dickson Dead," *Atlanta Journal*, February 19, 1885; Gavin Wright, *Old South, New South: Revolutions in the Southern Economy since the Civil War* (Baton Rouge: Louisiana State University Press, 1986), 17.

of power caused by the war? David Dickson answered all of these questions with the same answer: Fertilizer, by the boxcar.

Across much of the South, the cotton crops in the three years following the Civil War were tremendous failures. Many planters argued that the failure of southern farms to bounce back to pre-war levels of production was not simply the inevitable result of a devastating conflict. White elites referred to the disruption of control as the "labor question," the answer to which, they believed, lay in finding a new way to control black labor as they had before the war. In a stroke of cruel irony, white southerners laid the blame for slow economic recovery at the feet of the freedmen. Thus, whites were able to exonerate themselves from the shame of loss while simultaneously reestablishing their dominant status by taking every opportunity to point out the ways that freedmen disrupted the stability of the old agricultural order. As one solution to the labor question, many whites saw black displacement as an opportunity to replace African American labor with foreign immigrants. New Orleans magazine editor and statistician J.D.B. De Bow predicted monumental change. "The South must throw her immense uncultivated domain into the market at a low price, reduce the quantity of land held by individual proprietors, and resort to intelligent and vigorous measures at the earliest moment to induce an influx of population and capital from abroad." Some planters even suggested shipping freedmen "back" to Africa. Emancipation had forced slaveholders to release slaves from bondage, yet the experiences of freedmen showed that white male heads of household were more than willing to relinquish their financial obligations to former slaves. Slaveholders had once touted this material support as the cornerstone of beneficent paternalism.[29]

[29] *De Bow's Review* "After the War Series," New York: De Bow's, 1866, 8.

In spite of efforts to drastically restructure the southern political economy as espoused by pundits like De Bow, most white elites clung to a vision based on the patriarchal authority that had made them masters of their domains in the antebellum era. However, a number of factors challenged the elite vision of a return to a nearly autarkical position in their place. The main challenge came directly from black laborers, who seized upon their newfound right to marry and establish their own households. A common trend among African Americans was the withdrawal of women from field labor. While masters had made female field labor compulsory under slavery, after the war, many women withdrew to undertake household labor, as men directed crop cultivation. As historian Laura Edwards has suggested, for both whites and blacks, the implications of these new labor arrangements became an embattled site of power relations in daily life. Just as blacks sought personal control over their own family lives, whites sought new ways to reclaim authority over those who labored on their land. Household relations continued to define status and privilege after the war as they had before, but in new ways. The physical and political disaggregation of the plantation complex into individual family units had profoundly changed this dynamic.[30]

If the end of the war and the attendant establishment of black citizenship signified a troubling erosion of power for all southern cotton planters, to those men like Dickson whose devotion to improvement required continuous oversight and close management, the loss of labor control stung that much more. The opening passage of Dickson's georgic opus bemoaned the changes wrought by the loss of labor control, which Dickson feared would erode his beloved soil. Once upon a time under slavery, he wrote that "the larger the farm,

[30] Edwards, *Gendered Strife and Confusion*, 24-65.

the more economy there was" because of the division of labor, "but now it would be different." Dickson recalled the days when he rotated crops on a five-field system, planted peas as green manures, and collected animal and home manures to supplement his fertilizing guano applications. With fields divided into smaller, family-run plots out of sight of the plantation house, the scale and intensity of cultivation that Dickson remembered before the war was no longer possible. The assertion of black familial autonomy threw a monkey wrench into Dickson's agrarian machine.[31]

Dickson's land remained his own, but it was not as simple as it had once been for Dickson to tinker and experiment with his soil, as was his wont. After the war, Dickson's writings reveal that even he, who claimed a special gift for managing laborers, was losing his grip over the way his land was cultivated. Time and again he griped about the loss of female and child labor to the sharecropping system. According to Dickson, "One-half of the women and children are absent, housekeeping, idling, and other things. Under the slave system, the women and children were the mainspring of cotton raising." Furthermore, he agonized at the loss of control of methods of cultivation, which prevented scientific farmers like him from "Carry[ing] the improvement plan to the extent that is desirable. The laborers are unwilling to do as deep ploughing as is required—to purchase as much fertilizers as will pay profit." In Dickson's view, the newfound legal and institutional legitimacy of the black family presented a direct threat to his own aspirations of profitable stewardship. Dickson believed that men were "but tenants at will, and have no right to use the soil in a way to destroy its capacity to maintain the present population, and its future increase." For reformers like Dickson, who measured a man by the height of his muck pile

[31] Dickson, *Practical Treatise*, 21.

and the size of his cotton harvest, the erosion of soil and mitigation of management precipitated a sense of foreboding, not to mention a serious crisis of identity.[32]

To help reclaim power over his land, and in rebuttal to disciples of De Bow, David Dickson suggested a solution from a characteristically ground-up perspective. From the pages of the *Southern Cultivator*, Dickson harangued those who would import foreign labor about the desirable qualities of fertilizer and improved cultivation techniques. Along with improved farming implements, including Dickson's special shallow cultivating plow, Dickson swore that the restorative combination of guano, bones, salt and plaster, could work in concert as a labor saving formula. He marketed his concoction as the "Dickson's Compound." According to Dickson, fertilizer, unlike a sharecropper, was "self-sustaining; it is punctual in payments; never repudiates or asks an extension of [credit]; wants no stay-laws or military orders; pays promptly…improves the crops; makes the laborers more cheerful and willing to work," and most importantly, "it enables you to work freedmen, when they would bring you in debt without it." In short, fertilizer was a panacea for all of the problems southern planters faced during Reconstruction—if they could not keep slave labor, fertilizer could be their saving grace. Furthermore, Dickson believed that although families of sharecroppers could not guarantee profitable crops without strict oversight, the productive powers of fertilizer could act as a form of insurance for planters by promising higher outputs. Even if the labor of sharecroppers was, as Dickson asserted, "not of good character," planters still relied on their labor. But unlike the "demoralized" labor of

[32] *Ibid*, 86-87, 213.

sharecroppers, planters could still exert a modicum of control over their labor and the land with fertilizer.[33]

It was no accident that Dickson ramped up his advocacy for commercial fertilizers after the war. The disintegration of the labor system under slavery and the fragmentation of the large plantation into smaller units rented by individual families had also made it difficult to collect and distribute the volume of stable manure necessary to dress all of the fields. Also, since individual families generally did not have sufficient livestock or labor resources to distribute manure, landlords like Dickson, as well as merchants, could sell pre-mixed fertilizers that required less labor to spread, even if they were relatively expensive. Thus, the disruption of the war had accelerated the transition of Dickson's farm from a system of nutrient recycling to a system of resource exploitation that would become one of the touchstones of American agriculture by the twentieth century.[34]

Dickson considered himself a champion of agricultural reform, but even though the application of guano was a revolutionary new technology, it was a markedly less-comprehensive approach to maintaining soil fertility than the system of farm management that he put forth in his agricultural writings. Dickson's contributions to the *Southern Cultivator* were presumably intended for an audience of like-minded paternalistic planters; in these missives, Dickson sung the praises of book farming, suggested the financial benefits of careful labor management, and offered detailed descriptions of costly experimental plows. For the formerly enslaved and other less-wealthy white farmers, their role as fertilizer consumers was infinitely more important to Dickson than their command of soil conservation. Fertilizer consumers needed not concern themselves with the

[33] *Ibid*, 141, 29, 88.
[34] On the transition from manure to chemical soil additives see Wines, *Fertilizer in America*.

mysteries of agricultural chemistry nor the design of experimental plows, they had only to buy the product to please Dickson and his enterprising associates. And applied by itself fertilizer offered only a short-term fix for soil exhaustion, rather than putting forward a program of agricultural improvement. In essence, fertilizer fundamentally obscured the necessity for other approaches toward soil conservation by commoditizing soil fertility.

More than anything else, selling the *idea* of using fertilizer to other Georgians became Dickson's business. In 1867, farmers in Hancock County spent $40,000 on imported fertilizers—guanos, South Carolina phosphates, and ammoniated super-phosphates—half of the total amount expended in the entire state. According to the records of his Augusta, Georgia cotton factor, Dickson himself purchased $3,000 worth of guano that year alone. To help spread the guano gospel and expand his business, Dickson adapted a monetary metaphor to explain the complexities of agricultural chemistry. "We may consider that the land is the bank—lime, phosphoric acid and potash are the specie (gold and silver) to do business on. Carbon and ammonia are the currency, which is greatly in excess of the specie capital—at least ten to one. The more specie you have in the bank, the more currency you can control, and the greater the amount of deposits." In essence, Dickson was channeling the inorganic chemical theories of the Prussian chemist, Justus von Liebig, albeit in financial terms that were appealing to the incipient sensibilities of New South agriculture. Most farmers lacked a technical understanding of the specific chemical needs of their soils, not to mention the capital to put these theories to work. Nonetheless, in spite of a poor cotton prices and agricultural depression, fertilizers would gain an

increasing foothold in the Georgia economy, and the rest of the eastern Cotton Celt. In this process, Dickson played no small part.[35]

A survey of Georgia agriculture in the late nineteenth century shows that fertilizer was fast becoming a fixture of the annual planting cycle well outside of Dickson's native Hancock. By the end of the nineteenth century, Georgia led the nation in fertilizer expenditures, with other southeastern states following closely behind. The adaptation of fertilizer use grew in tandem with the emerging credit-fueled agricultural regime during and after Reconstruction.

When David Dickson itemized the debts due to him for his will, in July 1884, he listed more than 120 debtors in "bad" or "doubtful" standing. Dickson's economic advantage allowed him to reclaim even more of the power he had lost over his place by turning his laborers into debtors. As one of the main creditors in his county in the 1870s and 1880s, even if Dickson could not directly oversee field labor, many of his debtors still toiled in Dickson's service on an annual basis. This financial power allowed Dickson to sell fertilizer he had mixed according to his own specifications, thus enabling Dickson to exercise control over the chemical inputs into the soil. Dickson also used his fame to market his compound in newspapers and agricultural journals, cashing in on his renown while increasing his potential for investment. Although he could not control his land to the degree that he once had, Dickson adapted well to the postwar agricultural economy. Ironically, Dickson's public projection of success neatly obscured the details of his family

[35] Willard Range, *A Century of Georgia Agriculture, 1850-1950* (Athens: University of Georgia Press, 1954), 121-122; Account Book, 1867, Stephen D. Heard, 1758-1889, Stephen D. Heard Papers, SHC; Dickson, *Practical Treatise*, 108; Merchant, *Ecological Revolutions*, 207.

life. Dickson could only hope that his cotton could grow thick enough to block the view into his plantation house from the road.[37]

From the fields, a view into the Dickson home was clear enough, and Dickson's employees were not as content as he often suggested. Although African American families had escaped the yoke of bondage, post war credit structures made it painfully clear that familial autonomy did not translate into financial independence. Furthermore, with the rise of the Ku Klux Klan and other forms of extralegal violence threatening those blacks who would challenge the authority of the local white power structure, even everyday acts of resistance could carry devastating consequences. Despite the threat of violent reprisal, legal or extralegal, in 1870 a group of armed black individuals set fire to Dickson's largest gin house. The blaze destroyed the building along with its machinery, cottonseed, and lint cotton belonging to Dickson and his tenants. Regardless of the exact motivations on the part of the arsonists, it is reasonable to interpret the act as a direct challenge to Dickson's power and authority, an act performed all too close for comfort to Dickson's household.[38]

Shocked by the arson, and more than a little deluded by his belief in the mutually beneficial nature of paternalism, Dickson attributed the cause of the conflagration to the machinations of outside agitators. As he wrote, "The negroes here say that the Yankees and home radicals tell them to organize, kill and burn, to suppress the Ku Klux." Dickson did not believe that a personal grudge against him could have sparked the fire. Instead, he balked at the notion that his own tenants could have acted out in such a way. Dickson clung to an antebellum faith in the paternal relationship, yet at the same time he still believed that planters "must have absolute control over the laborer," that "every farmer should

[37] David Dickson Will, GDAH.
[38] Leslie, 75.

teach his laborers his art." That Dickson still felt landowners had an obligation to oversee tenants with an eye towards the paternalistic management of the slavery era indicates that he had still not fully come to grips with the agency that African Americans had claimed for themselves. Perhaps the fire was a reminder that he had not.[39]

In spite of such challenges to Dickson's position of authority, in his final years David Dickson was still very concerned with maintaining a positive public image amongst his neighbors and in the press. In the summer of 1880, for example, the Atlanta *Sunny South* printed an article detailing an act of kind paternalism performed by Hancock's "big hearted nabob." On a warm day when the cotton crops were laid by, Dickson "gave his friends some rare sport by breaking his pond dams and allowing the boys to gobble up the fishes." Although the fish in Dickson's pond would have "yielded him a handsome revenue, with the noble spirit which characterized a big heart like his, he preferred that his friends enjoy it and reap the benefit of the fish to be caught and the pleasure of a social reunion with them." Dickson's gesture to some of his white neighbors was a social event, a way to express kindness to members of his community who may have had their own issues with him. One way to interpret this event is a redistribution of the largesse Dickson had cultivated and shored up by his own attempt at mastering his land. As he had done with fertilizer, Dickson had built up the wealth of his land in the pond, and publicly offered his success as an act of generosity to those around him. In this case, as with sharing the benefits of guano, it seemed that winning the favor of his white neighbors was a useful way for Dickson to keep them in his debt to the extent that they did not meddle in his personal affairs.[40]

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[39] *Ibid*, 63; Dickson, *Practical Treatise*, 40.
[40] A.M. DuBose, W.A. Buckner, G.P. Culver, S.W. Roberts, *et al*. *Sunny South*, June 19, 1880, 4.

If David Dickson could still win the favor of the press, his dream of conserving both his power over his laborers and his soil did not come to fruition to the degree that he had once envisioned. Yet in spite the erosion of power set in motion by war and emancipation, Dickson was able to rebuild a fortune and spread his ideas on fertilization in a time of untold change. Upon his death, the *Sparta Ishmaelite* eulogized Dickson in extravagant terms, claiming that he "revolutionized the farming system of this section," and also that "he made no effort to force his methods of agriculture on others, but it followed as the natural logic of events."[41] Despite Dickson's and other planters' struggle to come to terms with the autonomy of the black household and its ensuing setback to agricultural improvement, "the natural logic of events" led Dickson and later countless other farmers across the South to begin using chemical fertilizers on an extensive basis. Dickson's story shows that these new chemical inputs were something of a compromise between an older era of strict oversight and a new epoch in which the individual family units of agricultural workers claimed their own space, and sought to manage themselves and work on their own terms. White elites had been forced to yield considerable power during the Civil War, but the story of David Dickson's will affirms that despite a host of challenges, wealthy, white, males had recovered their place at the zenith of privilege and power under the law. Considering the context, it is not surprising that the contestation of Dickson's will hinged on a question of household relations, freighted by the legacy of slavery.

[41] "Mr. David Dickson," *Sparta Ishmaelite*, February 25, 1885.

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David Dickson died of natural causes in his home, in February 1885. His family buried him according to his wishes, in the garden of his home in an unpainted pine box, with a white silk handkerchief over his breast, a gold toothpick in his hand, a pen knife in his pocket, in a new suit, with no shoes on, with his left arm across his chest, and with his right index finger pointed down—perhaps as a sign of reverence to the soil. The peculiarity of Dickson's burial instructions warranted much less concern among his family than did his will, which left the majority of his landholdings, stocks, and property to his two grandchildren, hopefully "without any interference from any quarter." To Dickson's white family, the bequest of a fortune to a family descended from Dickson's former slave, Julia, was nothing short of an outrage.[42]

Dickson's white relatives contested the will on the alternative grounds that it was not his genuine will, that Dickson was not of sound mind and memory when he wrote the will, that Dickson had been "induced to make said will under undue influence and improper control exercised over his mind by Amanda Dickson," or that "said will is in its scheme its nature and tendencies illegal and immoral, contrary to the policy of the state and of the law, and destructive and subversive to the interest and welfare of society." The contestation of the will and its multiple appeals became a protracted inquiry into Dickson's credibility and capacity.[43]

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[42] Savannah *Morning News*, February 23, 1885; New York Times, "David Dickson's Will; *Sparta Ishmaelite*, "Mr. David Dickson."; David Dickson Will, Page 5, GDAH.
[43] Dickson Will Case Transcript, GDAH.
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Perhaps what is most fascinating about the will contest is that it turned on the question of whether or not Dickson had lost control of his own household after the war. If, as the objectors reasoned, Dickson had fallen under the influence of his black servants and did not control his own home, then he could not have been of sound mind when he wrote the will, thus making the document void. Whether or not Julia and Amanda Dickson exercised "undue influence" over their white patriarch was the heart of the matter. Lawyers for both sides called in a slew of Dickson's former employees and family members privy to his home life to gain an understanding of daily life therein. When the lawyer for the objectors asked if "Since emancipation [Dickson had] controlled everything around his place," a black witness named Joe Brookins testified that, yes, Dickson had. Dickson had kept Julia on as a housekeeper, but had "He controlled her just like he did before [under slavery]?" Brookins replied, "Yes sir, so far as I could see."[44]

Witness after witness attested to Dickson's strong will and intelligence, even though the lawyers for the objectors alleged that Dickson had been "living in an open state of adultery with a negro woman, that he had a child by her, [and] was hugging and kissing her negro children." Sparta resident Henry Harris asserted that David Dickson "was one of the best intellects of the state, he didn't ever cultivate his mind, he was not an educated man…I think he had the strongest will of any man I have ever known, I don't know of a man of a stronger will or one more determined to carry out his own plans and ideas." Julia Dickson may have "carried the keys" around the plantation house, but as a black woman, few were

[44] Joe Brookins for the Caveators, Ibid.

willing to testify that she had exercised undue influence over one of the most prominent men in the state of Georgia.[45]

In his ruling, Superior Court Judge Samuel Lumpkin asserted that "Under the laws of Georgia a person of color is entitled to the same civil rights as a white person," and that "they may take devises of property just as white persons." When Judge Lumpkin, and later the State Supreme Court ruled in favor of the will, Amanda Dickson's right to claim her inheritance was assured. As a result, Amanda America Dickson became the wealthiest woman of color in the state of Georgia, if not in the nation. In truth, however, while as a technical legal matter this was an affirmation of civil rights, as a factual matter, what was really at stake was whether or not an accomplished white man had lost control of his home, and fallen under the influence of individuals who most white Georgians perceived to be of an inferior class of people. Dickson did not run his household in a way that polite society approved, but nevertheless, his status and power held up, even in death. That Dickson's white family apparently had never challenged how David Dickson managed his home while he was alive also illustrates that white society was willing to turn a blind eye to the misbehavior of such men as Dickson.[46]

David Dickson's social trespasses were that much easier for other white elites to ignore, especially among those who stood to profit from the sale of fertilizer. Not only had Dickson's foray into the guano business made Georgia's agriculture more productive, but it had also transformed the state's farmers into consumers on an unprecedented level. While this commercial contribution underscores the image of Dickson as businessman, it casts doubt onto whether Dickson was, as he asserted, truly concerned with "agricultural

[45] Henry Harris for the Propounders, Ibid.
[46] Dickson Will Case Transcript, 164.

improvement." To be sure, Dickson had demonstrated his own capabilities as a reform-minded planter by creating a landscape of abundance through strict management of land and labor. But what had he given to others? Dickson's agricultural treatise blasted those who could not become independent through cautious farm management and hard work, but commercial fertilizer was the only aspect of his holistic "system of farming" that was financially viable for poor, struggling farmers. Dickson prized experimentation, self-reliance, and thoughtful management among those of his own race and social standing, but to those like his former laborers he offered only a new commercial product that he was all too happy to sell—a product that yearly multiplied the list of debtors in the Dickson plantation book as surely as it built up the planter's wealth. Dickson's independence, onetime premised on the dependence of slaves, now found a new basis on the dependence of his debtors. It is to the lives of these fertilizer debtors that we now turn.

CHAPTER 3

"I CAN'T LIVE AT HOME IN THIS WORLD ANYMORE"

GUANO NOTES AND THE LANGUAGE OF DEPENDENCE

During the height of the fertilizer boom in the 1870s, for men in the guano business like John N. Robson, it must have felt like an entire lifetime was lived in the months of January, February, and March. For these three months, Robson, the Charleston, South Carolina agent of the Baltimore-based Soluble Pacific Guano Company, was engulfed in a flurry of activity related to sales, collections, and promotion of fertilizers. As a jobber, Robson was the go-between for the company managers up North, merchants around the Southeast who peddled guano, and the farmers who bought fertilizer directly from him. Robson's business spanned westward from Charleston into Georgia, serving clients on the long-cultivated soils of the eastern Cotton Belt, many of whom had been inspired to try commercial fertilizer by practical farmers like David Dickson. Robson's papers show that demand was so great in the 1870s that the manufacturer could not fill the orders that arrived each day. In February of 1870, the Adair Brothers merchants of Atlanta sent word requesting that Robson ship additional guano on top of their order of 317 tons, because they had customers across Georgia demanding it "by the carload." In 1872 alone, the Adair Brothers moved over 1,000 tons of guano. Meanwhile, company representatives from

Baltimore expressed discomfort that Robson had failed to collect on $930 worth of guano debt from the previous year's sales. Needless to say, the fertilizer business was booming.[1]

Amidst the mountain of correspondence he left behind, Robson's papers also include notes and letters from the occasional farmer who sought to barter country produce for guano—requests that evoke an older era in juxtaposition with Robson's high-volume interstate trade. But despite such proposals, merchants had a specific instrument for securing payment for fertilizers from their cash-poor customers. Starting in the 1870s, landlords and merchants began to use legally binding liens on crops to protect their investments in farmers. Special liens for fertilizer were called "guano notes," and by cosigning, farmers promised to deliver a portion of their crops to the merchant as payment. Merchants across the southern states filled their ledgers with thousands of these notes, but despite their ubiquity, they have been strangely absent from historical analysis.[2]

On one hand, guano notes were contractual financial instruments. They were a critical component of the crop lien system that extended credit to poor farmers and protected the financial interests of the lender, whether a merchant, a landlord, or a fertilizer manufacturer. In this respect, the notes were imbued with a tremendous gravity, especially to farmers who often had to waive their right to a homestead exemption to procure fertilizer—meaning that their material possessions and home acted as surety in the case they failed to produce a specified grade and quantity of cotton. The homestead

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[1] John N. Robson, Correspondences, Folder 1, John N. Robson Papers, Duke.
[2] Ibid. On the advent of the crop lien in southern agriculture, see Harold D. Woodman, *New South—New Law: The Legal Foundations of Credit and Labor in the Postbellum Agricultural South* (Baton Rouge: Louisiana State University Press, 1995). Rosser Taylor discussed the role of credit in fueling the fertilizer boom, but guano notes were a minor part of his analysis. To my knowledge, no historians since the 1950s have looked at guano notes, nor their implications.

exemption law was intended to ensure that no debt could divest a family of their most essential property, namely their home, tools, implements, and personal effects; in essence, the material basis of their agrarian independence. But in the farmer's attempt to increase the productive capacity of the soil, by signing an homestead waiver, the farmer had no recourse if the promised benefits of the guano did not come to pass. Thus, guano notes legally exempted manufacturers and other lenders from risk, while, for farmers, they amounted to something like a gamble, hedged against the productive potential of a quantity of commercial fertilizer.

In another respect, these notes made it possible for even poor farmers to become part of an emerging global nutrient economy. Often the fertilizer attained by a guano note represented an end to local solutions of soil fertility, whether the slash and burn approach of shifting cultivation, or more sophisticated methods of fertilizing, such as crop rotation or mixed husbandry. As more farmers signed guano notes, whether they recognized it or not, they became consumers of products pulled in by an ever widening net of nutrient sources. Between the many implications of signing a guano note, and the risk involved in growing a crop, these legal documents serve as potent symbols of the commoditization of soil fertility in the political climate of the postbellum Cotton South: The sheer abundance of guano notes signifies the growing dependence on imported fertilizers in the agricultural regime.

But the agroecological reorientation that commercial fertilizer fostered also had a number of unanticipated consequences, not the least of which was a psychological one, specifically, a diminished position of independence. Environmental historians have shown the extent to which the power structure of the social world circumscribed the physical environments in which postbellum southerners lived. As these scholars have argued, legal

efforts to limit access to usufruct resources including hunting and fishing rights or the grazing rights of the open range cut along lines of race and class. White elites sought to maintain a tight grip on laborers, and they found that limiting access to natural resources was one way to cut off rural southerners black and white from the modicum of independence gleaned from common lands. Forage, fish, fowl, and game had helped farmers feed and clothe their families locally, enabling them to "live at home," and limit their reliance on imported goods. The contractual obligation to plant cotton and obtain fertilizer, on the other hand, had the opposite effect of decentralizing farmers' reliance on local nutrient resources. In this sense, fertilizer helped make cotton monoculture possible with imported nutrients, fostering a new orientation for farmers as both fertilizer consumers and exporters of raw materials in the international market. In this process, a growing number of white farming families began to inhabit the "embarrassing" state of dependence that had been traditionally associated with racially based enslavement before emancipation. Increasingly, the exalted ideal of independence and "live at home" agriculture became the exclusive province of white elites, excluding poor farmers on both sides of the color line. Ironically, many of these same white elites built their independence on the sale and heavy application of fertilizer, which cut against their principled stance of living at home.[3]

By helping to extend credit to a cash-poor agricultural economy, guano notes made it possible for fertilizer to become a mainstay of cotton culture in the Southeast. But unlike

[3] See for example, Steven Hahn, "Hunting, Fishing, and Foraging: Common Rights and Class Relations in the Postbellum South," *Radical History Review* 26 (1982), 37-64; Scott E. Giltner, *Hunting and Fishing in the New South: Black Labor and White Leisure after the Civil War* (Baltimore: Johns Hopkins University Press, 2008).

other crop liens, which provided access to land and farming implements in exchange for crops, the guano note offered the promise of making something new out of the soil, transforming dirt into something more productive than it had been—a prospect that was alluring to both the grower and the landowning class, who both sought to coax maximum financial benefits from the land. A look at the role of this legal document and the shadow it cast over southern farmers reveals intimate connections between the environmental constraint of soil exhaustion and the political economy of the postbellum South. The guano note may have bolstered soil fertility, but it meant debt and dependence for poor farmers. The state of continuous debt stung even more as white elites berated farmers for adhering to the stipulations of their guano notes, and producing mountains of cotton lint even as its price bottomed out. Sifting through forgotten piles of guano notes in merchants' files gives fresh perspective on the changing environmental attitudes and escalating political unrest that accompanied the document's proliferation.

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The extent of the fertilizer boom in the Southeast after the Civil War is astounding. What had been a nearly unknown remedy for soil exhaustion before the Civil War became in a matter of years one of the largest expenses on southern farms starting in the 1870s. Census data show that Georgians purchased $4.3 million of fertilizer in 1879, and $5.7 million in 1889, leading the nation in both instances. The State of Georgia monitored all fertilizer Georgians bought, and inspectors counted 48,000 tons sold 1875, and 412,000 tons in 1900. From the perspective of fertilizer manufacturers, to say that fertilizer was a
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growth industry is an understatement. But most Georgians were farmers. And as farmers, every sack of fertilizer purchased was the object of careful consideration and calculation. While the dizzying volume of fertilizer sales shows a groundswell of support for commercially prepared fertilizers from a statistical standpoint, it is important to remember that on the ground, the decision to purchase and apply fertilizers resulted from the choices and individual conditions of individual farming families.

One such farmer was Benton Miller, who lived in the plantation belt outside of Sandersville, Georgia. Before the Civil War, Miller owned a farm where he worked and managed three enslaved laborers. As a man of more modest means than his landed neighbors like David Dickson (from whom Miller occasionally purchased livestock), Miller spent his days in the fields, and his own labor was critical to keeping his farm in order. Miller's journals show that he kept close tabs on his operations from day to day, accounting for what was planted and the labor costs involved with each of his seven fields. Each spring, Miller and his "hands" devoted time to preparing the fields for cotton, corn, and garden crops.

Readying the fields involved many different approaches to feeding the plants. On his "no. 5 field," which Miller described as an "old field," Miller and his bondsmen hauled out logs and burned them to unlock some of the nutrients stored in the trees and return it to the ground. In another field, Harry, one of his slaves "went to busting out [the] middle of the cotton rows with a scooter," while Clark put in "manure and carried the cart home in the evening." Miller also used cottonseed as compost, put deep into the furrow where he hoped it would "rot" and provide nutrition to the soil without germinating and posing a problem later in the season. By May, after the cotton was cultivated to remove weeds,

Miller proudly wrote, "my cotton crop is clean. I have got a very good prospect for a crop." His years of good crops would soon be interrupted by the Civil War.[4]

In the late 1850s, Miller, like many of his neighbors, probably considered his field preparation and system of shifting fields a satisfactory one, but an analysis of his preparations indicates that he and most other cotton producers were not putting back into the soil what was lost in cultivation. All cultivated soils lose fertility by harvesting nutrient-extracting plants, by leaching, and by erosion. Miller's three-pronged approach to feeding the plants gave some fertility back, but probably not enough to sustain profitable harvests over time. For example, while burning logs on the field would have released some phosphorous and potassium, burning trees did not replace nitrogen in any significant amount. On the other hand, cottonseed contained some nitrogen, but since it was not processed or thoroughly composted, its nutritional potential was not immediately available. Manures were a good source of fertility, but unless preserved in a covered area, rainwater leached away their potential benefits. Furthermore, since Miller did not terrace nor plant cover crops, which served the dual purpose of restoring nitrogen and preventing erosion, Miller's fields were most likely prone to "washing," and suffered from a serious nitrogen deficiency. While Miller had a few profitable years before he went to fight in the Civil War, even his relatively involved system of preparation would most likely not have allowed him to continue farming on the same fields in a profitable way for more than a few years.[5]

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[4] Benton Miller, "Benton Miller Farm Journal, 1858-1877," Benton Miller Collection, GDAH. For more on Benton Miller, see Harris, *Deep Souths*.
[5] Richter and Markewitz, *Understanding Soil Change*, 119.

Miller's journals do not reflect his time fighting in the war, but in 1875, he resumed his farm journal, and continued his account of farm life, with a few major changes. The largest change was the emancipation of his laborers, who had been integral to his farming operation before the war. Their emancipation meant that Miller lost money as his laborers were no longer valuable property, and in their capacity as laborers. Miller resumed farming on a twenty-one acre plot of land that he partially owned and partially rented to African American families. Miller was no longer a labor lord, but a landlord—albeit a modest one. Although Miller reaped the benefit from the labor of his tenants, he expressed frustration when their families chose to leave his farm. In April 1878, for example, George Spights and his family left the Miller farm during planting season. Although Miller had paid Spights advances of meat and flour to stay on "the balance of the year," his departure left Miller "in a bad fix." For the Spights family, however, their mobility was a critical tool in the agricultural economy.[6]

In Miller's abbreviated financial capacity, he, like other southern farmers, had to seek new strategies to make ends meet, not the least of which was fertilizer. Starting in 1875, Miller began purchasing nitrogen-rich guano, spending $4 on 100 pounds that year. Apparently pleased with the results, he spent $15 on guano in 1876. Considering that Miller spent $24 on paying his farm laborers in 1876, this was no small cost. His journal reflects some of the different ways that farmers who had not used chemicals before adapted the new product. During the spring of 1876, Miller had his tenants spread the stinky, powdery guano into the cotton furrow by hand, probably shaking the guano out directly from the sack. The next year, Miller rolled his cottonseed in guano before planting,

[6] Harris, *Deep Souths*, 35; Miller Journal, April 8, 1878, GDAH.

and also distributed the guano with his seed drill. Miller eventually purchased cones for applying the guano evenly into the furrow, along with two "back bands," which were used to help the farmers carry the guano around on their backs. Miller continued to use local materials as compost, such as cottonseed, manure, and even oak leaves, but after he started using fertilizer, he had committed to the new practice for good.[7]

Miller used a greater quantity of fertilizer each year, and he soon lacked sufficient funds to purchase the guano at cash prices. Therefore, in 1877, Miller signed a guano note, promising 46% of his lint cotton at the end of his season in exchange for two tons of guano up front. In so doing, Miller had made the fateful jump not only from the cost-efficient and labor-intensive practice of gathering local materials for soil nutrition into the global nutrient economy, but also into the credit economy by signing a crop lien. By extension, Miller was also pulling his tenants into both.

At first blush, emancipation and the subsequent realignment of labor that occurred on Miller's farm and across the South appear to have little to do with the decision to begin using fertilizer. It seems simple enough that with the advent of new railroads and the opening of new sources of raw materials like the Carolina phosphate beds and Pacific guano islands, commercial fertilizers became readily available around the 1870s, and in turn, their use became prevalent during that time. Yet, at the same time, the integration of fertilizer into farm practice was no coincidence of temporality. On the plantation belt, fertilizer use mushroomed precisely because of the disintegration of large plantations into small family-based operations, and because the new materials provided much-needed fertility to the soil. Although the resistance of former bondspeople to gang labor initially

[7] Ibid.

incensed former masters, many landowners soon realized that the family units that farmers preferred were especially susceptible to economic pressure. From the landowner's perspective, not only was fertilizer more effective and potent than the manure that individual families could muster with limited livestock, but fertilizer also fit neatly into the emergent system of credit and farm tenure. It did not require livestock, and it required less labor to distribute. An expressive member of the Georgia Agricultural Society spoke of the arrival of fertilizers with respect to labor in 1878: "Had it not been for the use of fertilizers when the war ended, I do not know what we would have done. With the labor we had, with exhausted soil, embarrassed as we were, like a ship going to pieces and no small tempest lying upon us, the use of fertilizers was the plank with which we got to land." The new credit economy of the crop lien laid that plank in place.[8]

From its historical origins, the crop lien was not intentionally created as an insidious legal apparatus. Rather, as historian Harold Woodman has shown, state legislators passed crop lien laws in the late 1860s "for the encouragement of agriculture." Rather than creating the laws as instruments of economic oppression, as they quickly became, at first they served an immediate need to help fund the springtime costs of cultivation against the future security of the crop. In their earliest forms, lien laws allowed farmers to "shop" for more favorable liens between their landlord and local merchants, including the fertilizer salesman. As signing an annual contract for the use of the land and the implements became increasingly common across the Cotton Belt, the decision to use fertilizer or not became a part of the annual contractual ritual.[9]

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[8] Mr. Repast, *Transactions of the Georgia State Agricultural Society*, Atlanta: James P. Harrison and Co., 1878, 473.
[9] Woodman, *New South, New Law*, 6.

To characterize the relationships between landowners and merchants and landless and smallholding farmers in the Cotton Belt involves troublesome generalization. Even without the social organization of slavery, the color line remained pronounced, which along with antagonisms based on class and landholding status, conspired to make the postbellum Cotton Belt a complex and socially contentious environment. Merchants and landlords watched farming practices with a critical and interested eye, hoping to receive high returns on their liens, while farmers sought to farm and live according to their own dictates. Whites reacted to black freedom with resentment that ranged from mistrust to extralegal violence. The agricultural economy was at the same time intimate and adversarial, and all parties perceived a good crop as a temporary relief from the tension. And in this light, it is easier to understand why fertilizer seemed favorable to almost everybody. With fertilizer, everyone stood to grow more and better crops, and, hopefully, make more money.[10]

Since, in theory, fertilizer would help grow a better crop, landlords and renters often shared the cost of the fertilizer, most likely because owners did not want to shoulder such a large cost that would also stand to benefit the renter. The experience of Nathan Joeday Newsom, of Washington County, Georgia, supports this. In a daybook dated 1885 that detailed Newsom's experience of having sharecroppers and tenants, Newsom wrote that in his experience, "where you can get families who have their own labor, the half system is by far the safest and the best, making them pay for half the bagging and ties and guano bill," along with keeping up the fence. It seemed to make sense that if the sharecroppers were to reap the benefits of half the crop, so too should they foot half the guano bill. Of course, in

[10] On the intimacy of rural southern culture, which often defies presuppositions regarding racial conduct during segregation, see Mark Schultz, *The Rural Face of White Supremacy: Beyond Jim Crow* (Urbana: University of Illinois Press, 2005).

the situation of croppers who lacked cash, they would have had to sign a guano note, while if a landlord had cash, he would have bought fertilizer at a cheaper cash price without fear of losing any property if any debt remained at the end of the year.[11]

Mary Edmondson and her sons owned a farm in Putnam County, where as many as fifteen families farmed on shares in the years after the Civil War. The Edmondson plantation account book indicates a tendency among the families to purchase more guano over time. Starting in 1874, the sharecroppers purchased guano directly from the Edmondson family, but as more of the sharecroppers started using fertilizer, starting in 1877, they borrowed cash to pay freight expenses for the fertilizer, indicating that they had signed guano notes with a merchant, and lacked the initial cash that fertilizer dealers demanded. As with Newsom's arrangement, the Edmondsons also received half of the cotton each family grew. The growing tendency of Edmondson's sharecropping families to incorporate fertilizer indicates that the farmers saw the fertilizers as a useful addition to their yearly cycle. Furthermore, that some families had no guano expenses evidences that in this particular arrangement, the sharecroppers had a choice as to whether or not they would put guano in their furrows.[12]

Perhaps those who resisted using fertilizer were wiser than they realized. By signing a guano note, landless farmers were tethering themselves to two different liens upon their crop, thereby significantly reducing their chances at profiting at the end of the year. In the case of families living on the Edmondson land, before signing a guano note,

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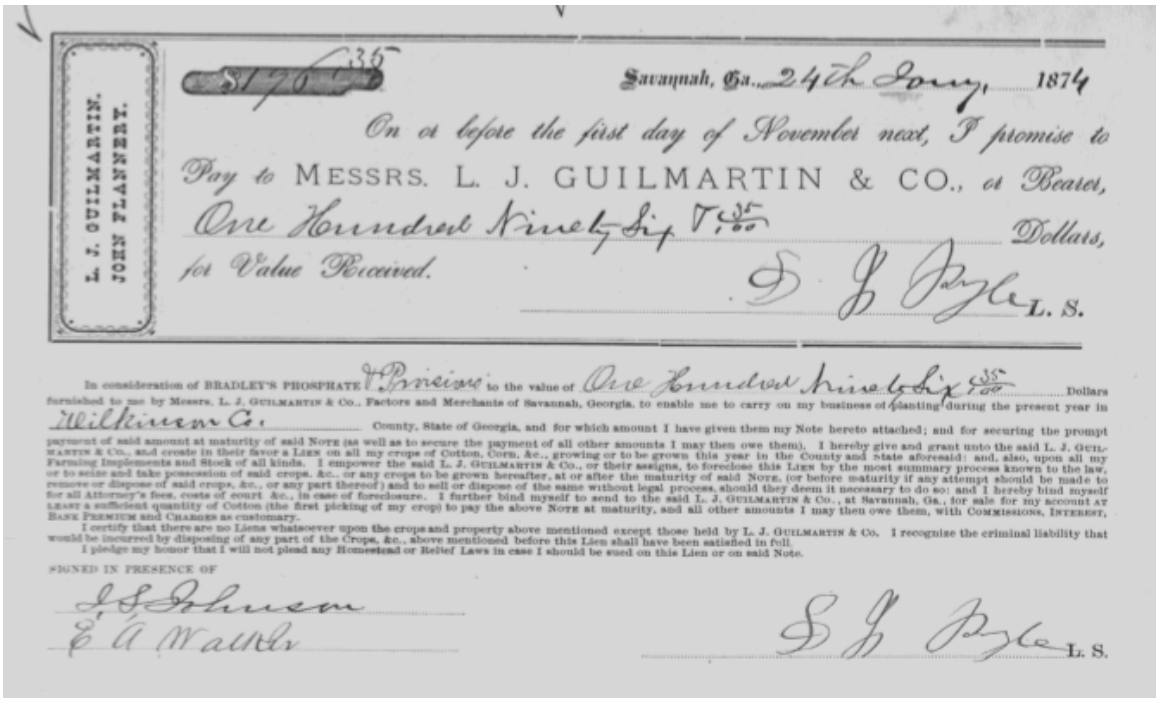
[11] Nathan Joeday Newsom, "Plan, Experience of Farming of N.J. Newsom, 1885," Nathan Joeday Newsom Papers, UGA.

[12] On the shared expense of guano, Enoch Marvin Banks, *The Economics of Land Tenure in Georgia*, Studies in History, Economics and Public Law (New York: The Columbia University Press, 1905); Mary (Polly) Edmondson, "Negro Account Book, 1874-1882," Edmondson Papers, GDAH.

they had already made a contract with the landowner that made the croppers liable "for all damage to tools and property," not to mention that they had been charged to be "industrious, polite, and faithful in all duties," with the additional threat that "rations will not be issued to hands loitering about." Many of the families signed these contracts with an "X." If these vague threats against "undesirable" behavior were not enough, for those who bought fertilizer the language of guano notes tended to be significantly more grave and binding.

Fertilizer manufacturers drafted guano notes with an eye towards guaranteeing profit. In the 1870s and 1880s, between 75 and 85 percent of all fertilizers were purchased "on time," as credit prices were called in the era. Therefore, manufacturers seized on all available tools to get returns on their promissory notes. According to a British traveler named Edward King, the guano note was "a formidable document. It engages not only the growing crop, but in many cases the household goods, if the crop fails, and sometimes the unlucky wight who has a poor crop on his few acres finds himself in danger of a practical eviction." Unlike landlords, whose liens could only be levied on crops or personal property, fertilizer merchants were able to assess a lien on land, as well. Although Georgia's 1877 homestead exemption law prevented the forced sale of land to meet the demands of creditors, guano notes almost always included a waiver of homestead exemption rights in order to receive even a small volume of fertilizers. Thus, even as fertilizers promised the benefit of much needed plant food, acquiring them entailed an extreme financial gamble.[13]

[13] Edward King, "The Great South: Electronic Edition.," (Chapel Hill: University of North Carolina, Chapel Hill, [1875] 2002), 517. [accessed 7/1/2010].



L. J. GUILMARTIN.
JOHN FLANNERY.

$170.35

Savannah, Ga. 24th Sept. 1874

On or before the first day of November next, I promise to Pay to MESSRS. L. J. GUILMARTIN & CO., or Bearer, One Hundred Ninety Six 35/100 Dollars, for Value Received.

S. J. Byle L. S.

In consideration of BRADLEY'S PHOSPHATE & Potasse to the value of One Hundred Ninety Six 35/100 Dollars furnished to me by Messrs. L. J. GUILMARTIN & Co., Factors and Merchants of Savannah, Georgia, to enable me to carry on my business of planting during the present year in Wilkinson Co. County, State of Georgia, and for which amount I have given them my Note hereto attached; and for securing the prompt payment of said amount at maturity of said NOTE (as well as to secure the payment of all other amounts I may then owe them), I hereby give and grant unto the said L. J. GUILMARTIN & CO., and create in their favor a LIEN on all my crops of Cotton, Corn, &c., growing or to be grown this year in the County and State aforesaid; and, also, upon all my Farming Implements and Stock of all kinds. I empower the said L. J. GUILMARTIN & Co., or their assigns, to foreclose this LIEN by the most summary process known to the law, or to seize and take possession of said crops, &c., or any crops to be grown hereafter, at or after the maturity of said NOTE, (or before maturity if any attempt should be made to remove or dispose of said crops, &c., or any part thereof) and to sell or dispose of the same without legal process, should they deem it necessary to do so; and I hereby bind myself for all Attorney's fees, costs of court &c., in case of foreclosure. I further bind myself to send to the said L. J. GUILMARTIN & Co., at Savannah, Ga., for sale for my account AT LEAST a sufficient quantity of Cotton (the first picking of my crop) to pay the above NOTE at maturity, and all other amounts I may then owe them, with COMMISSIONS, INTEREST, BANK PREMIUM and CHARGES as customary.

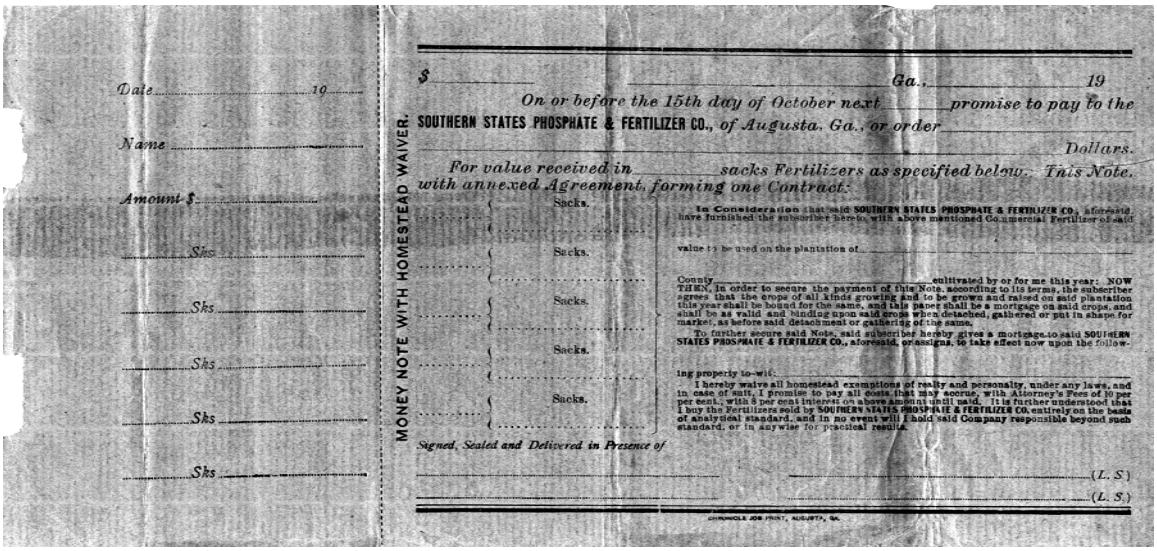
I certify that there are no Liens whatsoever upon the crops and property above mentioned except those held by L. J. GUILMARTIN & Co. I recognize the criminal liability that would be incurred by disposing of any part of the Crops, &c., above mentioned before this Lien shall have been satisfied in full.

I pledge my honor that I will not plead any Homestead or Relief Laws in case I should be sued on this Lien or on said Note.

SIGNED IN PRESENCE OF

J. S. Johnson
E. A. Walker

S. J. Byle L. S.



Date ..... 19 .....

Name .....

Amount $.....

..... Sks .....

..... Sks .....

..... Sks .....

..... Sks .....

..... Sks .....

MONEY NOTE WITH HOMESTEAD WAIVER.

$ ..... Ga., ... 19

On or before the 15th day of October next ..... promise to pay to the SOUTHERN STATES PHOSPHATE & FERTILIZER CO., of Augusta, Ga., or order .....

..... Dollars.

For value received in ..... sacks Fertilizers as specified below. This Note. with annexed Agreement, forming one Contract:

..... (Sacks. .....
..... (.....
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In Consideration that said SOUTHERN STATES PHOSPHATE & FERTILIZER CO., aforesaid, have furnished the subscriber herein, with above mentioned Commercial Fertilizers of said value to be used on the plantation of .....

County ..... cultivated by or for me this year: NOW THEN, In order to secure the payment of this Note, according to its terms, the subscriber agrees that the crops of all kinds growing and to be grown and raised on said plantation this year shall be bound for the same, and this paper shall be a mortgage on said crops, and shall be as valid and binding upon said crops when detached, gathered or put in shape for market, as before said detachment or gathering of the same.

To further secure said Note, said subscriber hereby gives a mortgage to said SOUTHERN STATES PHOSPHATE & FERTILIZER CO., aforesaid, or assigns, to take effect now upon the following property to-wit: .....

I hereby waive all homestead exemptions of realty and personalty, under any laws, and in case of suit, I promise to pay all costs that may accrue, with Attorney's Fees of 10 per cent., with 8 per cent interest on above amount until said. It is further understood that I buy the Fertilizers sold by SOUTHERN STATES PHOSPHATE & FERTILIZER CO. entirely on the basis of analytical standard, and in no event will I hold said Company responsible beyond such standard; or in anywise for practical results.

Signed, Sealed and Delivered in Presence of

..... (L. S.)

..... (L. S.)

CHRONICLE JOB PRINT, AUGUSTA, GA.

FIGURES 1 and 2. The above are two examples of fertilizer promissory notes that were commonly called "guano notes." The top example, dated 1874, is from a Savannah Merchant who marketed Bradley's Phosphate to customers. The note indicates that the cosigner also bought other provisions on credit, along with fertilizer. The bottom note was intended exclusively for the sale of fertilizer. Both notes required the cosigner to waive their right to the homestead exemption, meaning that failure to fulfill the contract could result in a loss of real estate by forced sale. Announcements of such "sheriff's sales" were regular fixtures in the pages of rural southern newspapers in the late nineteenth century and into the next. Images courtesy of the Duke University Special Collections Library, and the Hargrett Rare Book and Manuscript Library, UGA, respectively.

The political and economic implications of the guano note are an important, if underexplored aspect of the postbellum cotton regime. At the same time, it is important to pause and consider the environmental changes that these notes helped facilitate. As fertilizer merchants could barely keep enough goods in their guano houses and guano notes fell off of their pads like leaves from the tree, the credit-purchased fertilizers set in motion some major changes in the Cotton Belt landscape. From above, maps based on cotton production data between 1859 and 1899 show an eastward shift in cotton production into the region where farmers bought the most fertilizer. This trend was a 180 degree turn from the antebellum trend of western migration towards cotton areas around the Mississippi and eastern Texas. Cotton was the most profitable crop, and the only commodity granted—as one politician put it—"the dignity of collateral" in the Cotton Belt economy. Thus the decision to purchase fertilizer on credit was a decision to plant cotton, and the decision to plant cotton led to more fertilizer use.[14]

Although most poor farmers in all parts of the South would eventually face the binding economic implications of the guano note, their reasons for using fertilizers were not always the same. In the traditionally smallholding Upcountry region, as well as the "wiregrass region" of Georgia's coastal plain, historians have implicated fertilizer as a causal factor in pulling "safety first" subsistence farmers into tenancy and the international commodities market, a shift that led to dispossession, depression, and soil erosion, among many other consequences. Fertilizer served a special purpose in the cooler Upcountry because it had the effect of speeding plant growth, facilitating cotton cultivation in the

[14] Martin J. Calvin, "Pleading Failure of Consideration in the Matter of the Purchase of Guanos on Time: Non-Negotiable Notes : A Speech Delivered in the Georgia House of Representatives July 14 and 15, 1887 by Hon. Martin V. Calvin of the County of Richmond, 1887," Pamphlet Collection, Duke; Wright, 56.

region's shorter growing season. Since Cotton has a very long growing season that often lasted from March until December, the effect of accelerated germination was particularly beneficial. As one farmer from the Upcountry wrote of fertilizers in 1880, "they make a climate."[15]

In the old Cotton Belt, however, the soils had long been extensively planted in cotton and corn, and in many places were already eroded and depleted of soil nutrients by the 1870s. In 1875, an observer took stock of the geographical implications of soil exhaustion in Georgia: "The chief difficulty in Georgia is that it is an old state, with worn lands, whose near neighbors, Mississippi, Arkansas and Louisiana, invite its people to come and take possession of new and fertile soils, where they need no manures, and can get greater returns for their labor." Yet in the ten years that followed this assessment of exhaustion-induced outmigration, fertilizer seems to have helped transform Georgians' perspectives on their soils. Under the direction of Eugene Hilgard, the leading American expert on soils at the time, the United States Census conducted an in-depth study on American cotton production. According to Hilgard, by 1884, Georgia followed only Mississippi with respect to cotton production despite its history of taxing cultivation, but Georgia's "high position is due, not to natural advantages," like Mississippi's rich alluvial earth, "but to better cultivation of the soil, the use of fertilizers, and the thrift of its population." Georgia had a lower yield of cotton per acre and per capita than Mississippi, but it had a larger population

[15] See for example, Steven Hahn, *The Roots of Southern Populism: Yeoman Farmers and the Transformation of the Georgia Upcountry, 1850-1890* (New York: Oxford University Press, 1983); Roger L. and Richard J. Sutch Ransom, *One Kind of Freedom: The Economic Consequences of Emancipation* (Cambridge: Cambridge University Press, 1977). On erosion, see Trimble, *Man-Induced Soil Erosion*. Eugene W. Hilgard, *Report on Cotton Production in the United States*, 1884. Vol. 2., 431.

cultivating cotton. In Hilgard's opinion, Georgia's "natural disadvantages" were recouped by the growing number of farms and farmers and their use of fertilizer.[16]

Although fertilizer was increasing yields and opening new areas to cotton cultivation, many educated agriculturalists observed the growing reliance on chemical fertilizers with disapproval. As a traveler from England, a nation with a strong tradition of agricultural improvement, Edward King illuminated some of the major critiques of postbellum cotton production in his travel narrative in 1875. According to King, "the use of fertilizers, once so utterly discarded, is now producing the most remarkable results. But the planters in all the surrounding country give but little attention to a rotation or diversity of crops, so that any year's failure of the cotton brings them to financial distress, as they depend entirely upon the outer world for their supplies." Even as farmers reaped record-breaking harvests, they were either ignoring or abandoning the practices of crop rotation and local nutrient cycling, and furthermore, the exalted position of cotton in the market helped pinch out the acreage devoted to producing home supplies. As a result, farmers had to rely on imported fertilizers and foods to sustain themselves. In the language of the time, the perceived problem was that farmers were not "living at home."[17]

Among white elites, by the 1880s, living at home had come to symbolize both the financial independence that cotton planters had achieved during slavery, as well as the sole solution for the ills of the debt-driven one-crop cotton economy. In a nostalgic piece reflecting on the former glory of Hancock County, in 1886 an author writing under the initials "H.L.M." of the *Atlanta Constitution* shared accounts of white farmers who had

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[16] Charles Nordhoff, *The Cotton States in the Spring and Summer of 1875* (New York: D. Appleton & Company, 1876), 107, 7; Hilgard, *Report on Cotton Production*, Vol.1., 7.
[17] King, *The Great South*, 348.

restored some of the area's tarnished glory by living at home. Examining the racial overtones of their perspectives reveals the paradox that the philosophy encapsulated. According to the article's author, in the halcyon days of slavery, "Hancock County was filled with prosperous farmers. There were no liens or mortgages. Smokehouses and cribs were full. On any farm at any season a ham and a leg of mutton, a roast of beef, poultry, eggs, milk could be had for dinner." Striking a sad note, the author added, "Most of that is changed. It is now tenant and part of the crop. It is liens and mortgages. The negroes were tickled with this. The farmers who protested were forced into the system." Yet some farmers had turned their fortunes around after the war by adhering to strict home economy, by producing their own supplies and not signing guano notes. For example, one Ed. E Pounds produced his own grains and sold them to his neighbors, thereby supplementing his cotton profits. According to H.L.M, Pounds was exempt from "the embarrassment of liens and mortgages and a conscious sense of dependence." According to this perspective, dependence and debt were, by association, the rightful inheritances of black laborers, who were supposedly "tickled" to live in debt. White debtors, on the other hand, were "embarrassed."[18]

As more white farmers fell into debt, living at home became the refrain of white agrarians. In 1887, one member of the Interstate Convention of Farmers averred that, "of all the evils that afflict this Southern [sic] country the worst is a want of determination on the part of the individual that he will raise his own supplies and will not depend on the North or the West or anybody else for the food he demands and his tenants demand." By the same token, these same critics never failed to heap praise upon farmers who were able

[18] H.L.M., "Successful Farmers: Men Who Tickle the Soil for Wealth," *Atlanta Constitution*, January 12, 1886, 4.

to profit by their own economy, living at home on capital-intensive farms above the fray of the credit economy by standing on the shoulders of those who lived within it. Increasingly, capital-intensive planters who branded themselves as the prophets of the "live-at-home" mentality became the darlings of the press, offering their own farming practices as proof that farmers needed only to economize their own labor and study practical farming in order to remain profitable.[19]

After David Dickson, farmer businessmen Farish Furman and James Monroe Smith came to epitomize the emergent ethic of capital-intensive live-at-home in Georgia. Like Dickson, both farmers boasted that they had humble backgrounds, having turned worn soils into productive gardens, which, according to them, had been accomplished by personal wit and economy. Ironically, while both had touted self-reliance as the cornerstone of their success in profitable farming, both were businessmen first and foremost, each making profitable forays into the manufacture of fertilizers. Their wealth was built on mountains of guano notes, promising payment on fertilizer that undercut the possibility of living at home for poor farmers, while propping up the reputations of these wealthy men as prophets of the live-at-home ideal. Furthermore, the rhetoric of and about these brag farmers reveals the extent to which conceptions of race, and increasingly class, permeated the discourse of planter elite with respect to the agricultural regime. The perceived ills in farming practices among poor farmers were construed as faults in character, rather than the consequences of a system of iniquitous power relations that elites were all too happy to maintain.

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[19] *Proceedings of the Interstate Convention of Farmers* (Atlanta: Jason P. Harrison & Co. Printers, 1887), 41.

Farish Furman wrote that, "The true secret to my success lies in the character of my compost. I insist upon furnishing each crop with a manure that contains every element necessary to that crop." According to Furman, his system of mixing manure with phosphates, German kainit, and guano allowed him to harvest three bales of cotton per acre on "old land" that he said had been covered with scrub oak and pine when he had purchased it. Considering that most Georgia cotton lands produced about one half bale per acre at the time, his astronomical—and probably exaggerated—yields quickly won the attention of the press and other farmers. Through the 1880s, Furman received letter upon letter begging him to divulge the secret to his success. In response, Furman started a fertilizer company, selling a mixture of chemicals that he promised would bring similar yields to those farmers who would buy it. Henry Grady ran a front-page article in the *Atlanta Constitution* announcing the opening of Furman's Atlanta guano works in November of 1883. Furman was pleased to discover that it was "impossible to supply the demand" for his products "though carloads were unloaded nearly every day." Furman's fame as an agricultural improver helped catapult him into a major player in the fertilizer industry—the foundation of his "independence" was the dependence of farmers on his fertilizer.[20]

Much like Furman, James Monroe Smith saw himself as a disciple of David Dickson's system of farming, and took the ideal of living at home to expansive ends. Smith's sprawling "Smithonia" plantation east of Athens, Georgia—the largest farm in the state—consisted of over 20,000 acres, with 10,000 acres in cultivation any given season, with 500 head of cattle fed by cottonseed meal processed at his steam-powered cotton gin (also the

[20] Hilgard, *Report on Cotton Production*, Vol. 2., 59; Clipping from LeConte and Furman Family Papers, SHC.

largest in the state). Fertilized by the manure of his cattle and fertilizer processed and marketed from his own on-site factory, Smith's lands yielded large cotton crops every year. Like Dickson and Furman, Smith claimed that his profits emanated from careful management of home-produced supplies. By recycling the by-products of his cotton gin and his livestock, Smith claimed that the interdependence of different agricultural commodities could make the land profitable, and a poor farmer into a rich man. For all of his rhetoric of the self-made man, however, Smith also was arguably Georgia's most enthusiastic devotee of convict labor. Smith owned camps across 12 different Georgia counties that were run entirely on the labor of convicts, most of them African American, whose services were secured at the measly rate of $11 a year, who were sent to work in gangs under the threat of the whip and the rifle. The editors of the southern press and twentieth-century historians such as E. Merton Coulter lionized Smith as living proof that careful management of local resources could make cotton-farming pay, making him a pillar of independence. In truth, however, it was Smith's reinstatement of a labor system similar to slavery that made him one of the richest farmers in the South. Smith's live-at-home independence survived only by maintaining the illusion that an "inferior" race depended on his benevolent paternalism. His "independence" depended on dependants.[21]

The spatial and environmental implications of local businesses like Smith's outfit were also significant. As planters and businessmen consolidated financial resources to build steam-powered ginneries, cotton presses, and fertilizer mixers at the end of the nineteenth century, they helped usher in a number of changes in local agricultural life. For example, the construction of large cotton gins throughout the cotton belt replaced smaller,

[21] E. Merton Coulter, *James Monroe Smith: Georgia Planter, Before Death and After.* (Athens: University of Georgia Press, 1961), 17, 24.

animal-powered gins that had long been fixtures on individual farms and plantations. After smallholding Greene county farmer Walter Wray lost his home gin to a fire in the 1870s, he felt as though he was "doomed to destruction." His misfortune meant a costly loss of property as well as a diminished sense of independence. After the fire, he would have to work out arrangements with a neighbor, and he would eventually have to pay for the use of a local mechanized ginnery, thereby increasing his production costs. Furthermore, since regional ginneries often doubled as cottonseed oil refineries, these facilities also had the unanticipated effect of decreasing the quality and variety of cottonseed available to farmers. Marketers of cottonseed and individual planters had carefully saved cotton cultivars selected for singular traits throughout the nineteenth century, but the commoditization of cottonseed processed at large gins effectively destroyed the tradition of biodiversity. This centralization of ancillary cotton industries built the fortunes of men like James Monroe Smith, while making farmers more reliant on materials and services that they had once either sought elsewhere, or provided for themselves.[22]

To small farmers, watching men who had been wealthy for most of their lives claim that anyone could enjoy similar success by "living at home" must have been deeply frustrating. Not only were these elite farmers deemphasizing the role of capital in financing their endeavors, yet by marketing fertilizer (including fertilizer made from cottonseed), elites were effectively turning the notion of living at home on its head. First, rather than encouraging farmers to rely on local materials, selling fertilizer led farmers to use agricultural chemicals from distant sources. This in and of itself did not prevent

[22] Walter Wray, "Daybook, 1871-1890s," Walter Wray Papers, GHS; Alan L. Olmstead and Paul W. Rhode, *Creating Abundance: Biological Innovation and American Agricultural Development* (New York: Cambridge University Press, 2008), 129.

farmers from producing their own foodstuffs—thereby lessening their dependence on outside supplies—but the signature of a guano note did. This was the second way that fertilizer sales stifled the ideal of living at home. Guano notes required cotton as collateral, and if a farmer wanted to optimize his chances of making good at settling up time, he had to plant as much cotton as possible. As James Monroe Smith's biographer, E. Merton Coulter, wrote of Smith's use of guano notes, Smith always "amply protected himself" from a cosigner's default on payment for a load of guano. For example, Smith "took a mortgage on all the crops raised on the farm, and 'a spotted cow, name[d] Rose" of a Greene County farmer in 1889, in exchange for five sacks of fertilizer. The surest way to prevent foreclosure and to keep Rose at home in Greene County was to plant cotton, rather than corn, or truck crops.[23]

The bitter irony of the live-at-home philosophy may have been lost on many poor cotton farmers because they had more pressing concerns. If the discomfort of entering into debt in the spring for fertilizer did not cause enough dismay, discovering, that fertilizer was not a sure-fire way to produce more and better crops was agonizing for many farmers. Since soils have a wide variety of chemistry and structure, and different varieties of fertilizers did as well, adding fertilizer without close attention to local particularities did not always meet the needs of the soil to help increase yield. Part of the problem was that farmers did not have a way of knowing the specific composition of the land they tilled. This fact vexed scientific farmers and agricultural specialists who were in the process of refining soil analysis in the late nineteenth century. Edmund Pendleton, the Terrell Professor of Agriculture at the University of Georgia, wrote that "while much has been accomplished

[23] *Ibid*, 30.

empirically, it has been done imperfectly, and at a heavy cost. Thus while the agricultural art has brought millions from the soils of the South, it has been at the sacrifice of the principle, rather than the interest." But common farmers had limited or no access to the emerging field of soil science, save the application of fertilizer, which farmers applied with the hope that it would transform worn soil into productive land. And when it did not, the consequences were disastrous.[24]

As one family of black tenant farmers in Hancock County discovered in 1894, even relatively heavy fertilizer application could not guarantee a good crop. Jenny and Henry Heath wrote to their landlord in great distress: "We thought we would make 30 bales [of cotton], but will only make 15—used 8 tons of guano on the place." Because their corn crop had fared better than the cotton, they pleaded that the landlord would accept corn for payment rather than cotton. Two years later, the Heaths asked their landlord Mary Camak whether they could plant less cotton, since the land produced such low yields and its cultivation had brought them deeper into debt. However, in the cotton-driven economy, it is doubtful that the landlord, a widow living in Athens, Georgia who had never met the Heaths face to face, would have made such an exception. Fertilizer merchants who sold the guano were also loath to accept any substitutes for cotton or cash as payment.[25]

A fertilizer merchant from Warrenton, Georgia, named George Howard continually appraised his clients' characters, calculating their abilities to deliver on their debts. Howard seldom assessed the characters of his debtors as anything better than "a thief and a liar," "a scamp," "a moccasin." He often judged them "unworthy of confidence," or that

[24] Edmund M. Pendleton, *Textbook of Scientific Agriculture with Practical Deductions* (New York: A.S. Barnes & Company, 1875), i.
[25] Letter from Jenny and Henry Heath to Mary Camak, October 29, 1894, Camak, "Sharecropper Correspondences, 1870-," Camak Family Papers, UGA.

they would "not do to trust." Such was the tenor of the merchant-debtor relationship. Howard oversaw such a rigorous trade in the spring months that he often slept in his store. In the fall, he collected on his debts, and helped oversee evictions and sheriff's sales on farmers who did not raise cotton of a sufficient quantity or quality to pay off guano notes. In November of 1885 Howard had the sheriff sell the personal property of an evicted tenant family. The month before, Howard seized a tenant's crop and mules. In response, the tenant rode off and sought the legal advice of a lawyer named Tom Watson to try to get his possessions back. As more farmers defaulted on fertilizer payments, a groundswell of anger against the guano note came to a head. With a well-established record as a friend to poor farmers, the country lawyer, Tom Watson, would become a leader of the emergent Populist movement in the 1890s.[26]

In 1886 a representative from Sumter County named Wright Brady introduced a bill in the Georgia House to amend the law on guano notes, which would allow for farmers to "plead a failure of consideration in the purchase of guanos on time." Georgia already had a state-run system for inspecting fertilizers established in 1868. But rather than set his sights on the state inspection system—which will be discussed at length in the next chapter—Brady proposed a legal recourse that would allow farmers to seek reimbursement if the guano they purchased on credit did not appreciably improve their crop. As one supporter of Brady's bill argued, "the farmers are forced to purchase [fertilizer] on the recommendation of a man whom they have never seen, and who himself never saw the guano he recommends. Farmers cannot obtain credit unless they sign a waiver note, and waive everything except their wife and baby; and dealers would require

[26] Ibid; George W. Howard, "Farm Diary, 1885," George W. Howard Papers, UGA.

those waived if they could." Although many legislators argued that guano notes were an essential legal tool in the operation of the state's agriculture, others recognized the financial bind they had helped create. Of course, as their actions indicated, few of Georgia's farmers were willing to forgo the potential benefits of fertilizer, and by and large, farmers fixed their contempt on the guano note, rather than the guano itself.[27]

The Brady bill, as it was called, passed in the state House of Representatives on July 21, 1887, only to be killed in the State Senate. It reemerged again over the following two years, though it never passed. The debates among Georgia's legislators and farmers reveal some of the fault lines that were forming among Georgia's voters. While some saw the bill as potentially alleviating the financial burden of farmers by challenging the credit system, the threat of a bill that would hurt the profitability of the fertilizer industry rankled many others. Martin J. Calvin, a representative from Richmond County—home to one of the largest fertilizer manufacturing and distribution hubs in the state—enumerated a variety of reasons why the Brady Bill would undermine the farmers' own interests. First, Calvin argued that the bill was written under the false assumption "that guanos sold and used in Georgia have failed to produce satisfactory results." Since prominent Georgians considered the fertilizer industry as a bright spot in the state's limited industrial sector—there were nineteen fertilizer factories in Georgia and 139 fertilizer companies doing business in state in 1887—industrial boosters were quick to hurl epithets at Brady's bill, calling it "class legislation," meaning that it sought privileges for a few at the expense of the common good.

[27] "The Brady Bill," *Atlanta Constitution*, July 22, 1887, 5; "The Brady Bill," *Atlanta Constitution*, July 19, 1887, 2.

In 1887, some Georgians proposed a statewide boycott on fertilizers, though there is no evidence that it went beyond localized efforts.[28]

Sensing that Brady had touched a nerve among Georgia's farmers, white elites regrouped and fought the bill with all their might. Some argued that the bill would hurt farmers' credit with fertilizer companies, since manufacturers would likely freeze credit, knowing that farmers could easily renege on their guano note. Others made the observation that fertilizer was but one variable in the complex causal matrix of agricultural production, subject to countless environmental factors from weather to soil quality, not to mention the individual practices of the farmer, for which many felt the manufacturer should not be held accountable. If the bill passed, the farmer whose crops had been injured by something other than fertilizer "had an inducement to perjure himself," as one fertilizer manufacturer said. Reverting to the question of labor, Martin Calvin provided an interpretation reminiscent of David Dickson's perspective on the relationship between labor and fertilizer: "Twenty years of controllable labor without fertilizers gave an annual average of 2,669,914 bales, while with twenty years of free labor, practically uncontrollable, the annual average was 4,115,616 bales." Calvin, like many other critics of the bill, viewed the economy and the labor market through a lens of racial bias. From this perspective, fertilizer was not only a remedy for the soil, it was a solution to perceived flaws in the characters of Georgia's farm labor. Like many other white elites, Calvin

[28] Martin J. Calvin, "Pleading a Failure of Consideration in the Matter of the Purchase of Guanos on Time," 1887, Duke; "The Brady Bill," *Atlanta Constitution*, July 22, 1887, 5; "Brady's Bill Discussed," *Atlanta Constitution*, January 2, 1887, 6.

believed farmers' main flaw was that they desired to control their own labor rather than live under the managerial hand of wealthy landowners and businessmen.[29]

As the Brady bill debate indicated, agrarian discontent was beginning to spill over into the political realm. While legislators debated the pros and cons of reforming guano finance law, a new agrarian fraternal order called the Farmers' Alliance began to make waves in Georgia in 1889. The Alliance was a secret society, mostly limited to Christian white men that advocated for farmers' interests through collective action and education. Creating a state Alliance exchange was a central goal for Farmers' Alliance members, who sought to circumvent the credit market by buying supplies in bulk. Since guano was a hot-button topic at the time, local Alliances responded to fertilizer companies in a number of ways. For example, the Brooks County Alliance published a notice in the *Southern Cultivator* denouncing "the present price of guano as extortion," urging "Alliance men throughout the South to do without guano rather than purchase it at the present price." The Lowndes County Alliance "resolved not to buy guano unless they [could] get it at reduced terms." In an 1889 Georgia Department of Agriculture circular, farmers from Greene, Screven, and Lincoln counties all reported that Alliance farmers were saving compost and manure in lieu of costly guanos. These forms of collective action were empowering to farmers who felt as though they had been swept into an uncomfortable position of dependency in the credit market.[30]

Through their efforts to provide agricultural education, the language of living at home pervaded Alliance activities. Since dependency, and more recently, debt, had become

[29] "The Brady Bill," *Atlanta Constitution*, August 17, 1889, 8; Calvin, "Pleading a Failure of Consideration."
[30] "Alliance Notes," *Southern Cultivator*, January 1889; 47, 1.

traits that white farmers associated with their black counterparts, the push among white Alliance members to extricate themselves from the credit economy through living at home took on new meaning. Fixating on the state of dependency that accompanied cotton monoculture, the *Atlanta Constitution* ran articles on the activities of prominent Alliance men. The Alliance led the push for agricultural reform anew, encouraging "farmers to pull from the old ruts of one crop—all cotton and no corn—and make every adjunct of the farm (how many there are) a source of profit." Diversifying the crop would help bring up cotton prices by checking the runaway overproduction in the market, and help farmers feed themselves at the same time. If farmers could break out of their "rut," then Georgia's farmers would become "the most independent class of people on the face of the globe."[31]

Yet for poor farmers, black and white, a lack of cash as well as racial bias prevented them from seeking the cost advantages of Alliance cooperation. The poorest farmers lacked sufficient funds to pay Alliance dues, let alone pay for goods from the Alliance Exchange. As for black farmers, racism blocked their entry, nor did the small membership of the "Colored Farmers' Alliance" have access to local Alliance stores, or the State Alliance Exchange in Atlanta. But for all poor farmers in the credit market, breaking out of the cotton rut was no simple matter of sowing different seeds. With their names on crop liens and guano notes, farmers were in a despondent cycle similar to that of Sisyphus, rather than a behavioral rut.

As cotton prices bottomed out in 1892, and the more radical elements of the Farmers' Alliance began to strike out in their own direction, elites continued their misguided call for live-at-home independence, continuing to blame debt-burdened farmers for their reliance

[31] "Not One-Crop Men," *Atlanta Constitution* June 14, 1891, 3.

on imported foodstuffs and their singular focus on cotton. As political tensions in Northeast Georgia reached a boiling point, the Athens *Banner* showcased James Monroe Smith's brilliant farm management as proof that others could follow his example. Smith, it seems, had perfected a system of "interdependence of cotton and hogs," in which the leftover cottonseed meal from his gin served as feed for his swine. While other farmers struggled to feed themselves, "Col. Jim Smith" treated his visitors to "a load of nice country cured hams." Concerning the recent political agitation of the Populists, the editor added, "If all the farmers could do this there would be no trouble and no third party."[32]

Perhaps the reason that the third party—usually called the Populist Party—held such great promise for poor farmers was because it had its own vision of "interdependence," a vision that recognized that, acting as individuals, farmers lacked the necessary leverage to extricate themselves from their financial woes. Working as an interest group to combat the forces of "combination" of capital and monopoly, Populist leaders advocated cooperative measures that transcended the cooperative solutions of the Farmers' Alliance. First and foremost, Populists urged farmers to vote together. The "Populist vision" called for government ownership of railroads, along with the creation of a system of subtreasuries that would provide a secure system of banking and marketing that would give farmers leverage in seeking just prices for their produce. To this end, Populists recognized that if the railroads could provide the farmers fair freight rates, the false economy of living at home would become a thing of the past. And like foodstuffs for people, fertilizers produced more efficiently in distant locales and shipped at lower freight

[32] "Interdependence of Cotton and Hogs," *Athens Banner*, October 25, 1892, 3.

rates might end the guano note's reign of terror.[33]

A great many obstacles conspired to keep the Populists from achieving political success and making good on their vision in the 1890s, but their perspective on national and global commodities markets merits consideration. While moneyed interests in Georgia tended to fault poor farmers for problems in the cotton economy, Populists pointed to larger systemic causes of farm debt. Not immune from the exceptionalism that has accompanied so much southern political thought, Georgia Populist Tom Watson suggested that "with all of our improved means of transportation the south ought to be benefitted by the possession of a natural monopoly of a climate adapted to the production of cotton, and that under proper and natural conditions we should raise the cotton and the west the greater portion of the grain." If farmers in the Midwest produced corn and wheat more efficiently and the South continued to raise cotton, a division of labor aided by the railroad made sense. "But until we smoke out the monopolists who steal the product in transit," Watson added, "We had better raise our own supplies." Living at home, then, was understood as a temporary solution until the jubilee day when the injustice of railroad monopoly was ended, once and for all. Until that day, the crop lien and the guano note would remain fixtures of rural life.[34]

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[33] For an excellent treatment of the Populists and their vision of national agricultural interdependence, see Charles Postel, *The Populist Vision* (New York: Oxford University Press, 2007).
[34] Tom Watson, *The People's Party Paper,* January 28, 1892.
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In 1900, the United States Census Office reported that Georgians spent more money on fertilizer each year than any other population in the nation. Nationally, the smallest farms had the highest expenditure per acre on fertilizers, while the largest farms had the lowest. Farms operated by tenants and sharecroppers spent the most on fertilizers of any class of farmers, and cotton cultivators spent the most out of any crop culture. Knowing that farmers purchased the majority of fertilizers on credit, it becomes clear what a large part that the guano note played in making the switch to chemical-input agriculture possible.[35]

Of course, even though fertilizer offered a promising solution for the problem of soil exhaustion, as the fine print of the guano note made clear, the only way that most farmers could procure fertilizer effectively eviscerated its promised benefits. This unfortunate reality was only made worse by the rhetoric of elites, who faulted impoverished farmers for their debt and dependence in this vicious cycle. Farmers had incentives to grow ever more cotton even as the cotton market became inflated by overproduction. The elite farmers who sold fertilizer and processed cotton, on the other hand, won accolades for an "independence" gleaned by skimming the cream of the dependent cotton-producing tenant.

Like the elites of the time, many modern historians have faulted poor farmers for the consequences of the negative feedback loop that was the postbellum cotton economy. Looking at the toll exacted on the land, for example, historical geographers and environmental historians leveled accusations that farmers practiced "land-killing" methods of cultivation, that they sought profit above all else. While the eroded soils of the Southeast

[35] United States Census, *Agrictulture*, 1900. Vol. 1., cxlii.

tell a story of mismanagement with longstanding consequences, to characterize postbellum cotton culture as generally "backwards" would be a mistake.[36]

To be certain, the southern cotton economy wrought havoc on the lives and lands of southern farming families—but to call it "backwards" insinuates that farmers were in some way atavistic, even though the agricultural regime at the time resembled nothing that preceded it. Rather, it seems clear that although farmers were by and large worse off for it, they were participating in a new—even modern—era of agriculture for their time. For one, southeastern cotton farmers were the first to embrace agrochemicals in any meaningful way. Furthermore, as the rhetoric of the Populists indicates, many farmers were comfortable with the concept of staple crop production, and understood themselves as participants in a national and global commodity exchange that broke with the celebrated independence of live-at-home agriculture. Although many rank and file farmers were comfortable with this new condition of regional interdependence, some members of the Georgia Department of Agriculture, as we will see, had their misgivings.

[36] For a recent example of this persistent perspective, see Ted Steinberg, *Down to Earth: Nature's Role in American History, Second Ed.* (New York: Oxford University Press, 2009), 101.

CHAPTER 4

REGULATING CHEMICAL CONSENSUS:
THE FIRST THIRTY YEARS OF THE GEORGIA DEPARTMENT OF AGRICULTURE
1874-1904

In 1874, Thomas P. Janes took office as the first commissioner of the newly created Georgia Department of Agriculture (GDA). The Georgia General Assembly had created the Department of Agriculture and the position of Commissioner of Agriculture to gather statistics and to distribute practical information to assist the state's farmers. With an initial budget of $10,000, the commissioner's myriad duties were as diverse as establishing a seed bank, overseeing a geological survey, and enticing "desirable" (read "white") immigrants to settle in Georgia. By far the most expensive and important duty charged to the department, however, was the rigorous enforcement of a law created in 1868 "to protect the Planters of Georgia from imposition in the sale of fertilizers." Although the Lincoln administration created the United States Department of Agriculture in 1862, and other eastern states had formed state-appointed Boards of Agriculture, Georgia's was the first state-level department of agriculture in the nation. And more than anything else, the widespread use of fertilizer in Georgia led to its creation.[1]

[1] *Annual Report of the State Department of Agriculture*, (Savannah, GA: J.H. Estill, 1878), 10, 9; *Acts of the General Assembly of the State of Georgia*, 1868, 1874.

When Janes assumed his new role, his disdain for fertilizer use clashed with his position as a guardian for fertilizer consumers. In spite of his sworn duty to guarantee that fertilizer sold in Georgia was pure, in the first *Annual Report* of the department, Janes took exception to the rapidly growing adoption of fertilizer on Georgia's farms. He insisted that "the injudicious use of high-priced fertilizers has been a fruitful source of loss and embarrassment; and I regard the motive which prompted that indiscreet use and abuse, as more to be deplored than any loss which it has yet entailed." The "motive" Janes so forcefully decried was the willingness of Georgia's farmers to ignore cheap, local sources of fertility and the practice of recycling these nutrients through the process of mixed husbandry. As elite advocates of agricultural improvement had long promoted local solutions to the problems of soil fertility, the willingness of the many to accumulate debt for fertilizer seemed perilous. Even though his appointment called for him to oversee fertilizer inspection, to Janes, commercial fertilizers seemed like a costly, shortsighted remedy to an old problem. However, by the turn of the twentieth century, the Georgia Department of Agriculture had transformed into a bureacracy that not only regulated, but actively promoted heavy fertilizer application to Georgia's farm population. What had changed since the days of Thomas Janes?

The first two chapters explored the role of fertilizers in relation to the "labor question" white southerners faced in the wake of the Civil War, examining how fertilizers became central to restoring agricultural productivity in the postbellum agricultural regime. Georgians made commercial fertilizers a cornerstone of their agricultural life and economy simply by purchasing them in tremendous quantities. Like Thomas Janes, many agricultural reformers did not agree with the expanded role of fertilizer in the state's

agriculture, but in spite of their protests, fertilizer had become as regular a fixture on the farm as a plow. While it would be an overstatement to say that the GDA was responsible for causing this trend, it seems very unlikely that the state of Georgia would have created the first state department of agriculture when it did had it not been for the real and rhetorical importance of fertilizer in resuscitating the state's economy. In an era when ersatz guanos scandalized the agricultural press, Georgia's legislators were willing enough to regulate these new, untested products. Creating a state level agricultural department, on the other hand, was a much more embattled and divisive issue.

In spite of a turbulent early history and an ongoing fight for resources, by 1904, the GDA survived its first thirty years. Over time, the GDA would spend money and political capital enforcing the fertilizer inspection law, a project that initially pitted government officials against fertilizer manufacturers, and in the process, raised questions about the nature of scientific knowledge, and its proper place in agriculture, the law, and governance. A survey of the GDA's publications during its first thirty years reveals that regulating fertilizers became, above all else, the *de facto* purpose of the department. The bulk of departmental activities related to inspecting and improving the quality of products of a rapidly expanding new industry. Fastened to every bag of fertilizer sold in Georgia, the GDA's inspection tags offered a "guaranteed analysis" of fertilizers, providing a sense of security for the consumer. Yet the publications also uncover the extent to which members of the GDA sought to improve the lot of Georgia's farm population in ways unrelated and even antithetical to the use of fertilizers. The department helped inform Georgians about best practices in every aspect of agrarian life. In circulars sent by mail and published in every major newspaper in the state, the commissioner and his staff offered information

backed by experimentation and the empirical evidence of farmer correspondents.

How Georgia created the first state department of agriculture reveals some unexpected facets of Reconstruction-era politics in the South. That Georgia's state legislators created a regulatory body while federal troops oversaw local affairs defies some historical preconceptions about the period. Perhaps even more surprising, however, is how the GDA's primary duty as fertilizer inspector ensconced scientific expertise into the operation of state government. Under the auspices of the state chemist, the GDA played a crucial role in legitimating a mechanistic, chemical-input perspective among Georgia farmers. In carrying out the complex task of "protecting planters of Georgia from imposition"—that is, fertilizer fraud—the GDA championed this view of agricultural practices, even though the perspective challenged the ideals of careful farm economy that had long been the refrain of Georgia's established improvement farmers, including many members of the department. Over time, the GDA assumed an ever-greater share of inspection and regulatory responsibilities, including the inspection of oils and foods. The GDA staked out a role as a consumer guardian peddling chemical solutions as it would continue to do into the twentieth century.

Fertilizer manufacturers were understandably concerned with the state inspection law, and they worked to try to undermine the efforts of the regulators. Yet this was not just a contest for authority between the rapidly growing fertilizer industry and the new class of government chemists. Instead, these two groups, though at odds in certain respects, were both working within the same scientific paradigm. Explicitly (in the case of the manufacturers) and implicitly (in the case of government chemists) these two groups reinforced the legitimacy and value of agricultural chemicals. Although members of the

GDA initially advocated mixed husbandry to the state's farmers, over time their efforts to protect farmers as fertilizer consumers overshadowed their former role as champions of social improvement through thrift and economy. The tension between the vitalistic approach to soil building and nutrient cycling and the mechanistic approach of chemical inputs was more significant within the department itself than it was between the department and fertilizer manufacturers. By the first days of the twentieth century, however, Georgia's farmers were voting with their guano notes, and the new fertilizer era had trampled the long-held agrarian ideal of local nutrient cycling. The chemical-input era of American agriculture had begun in earnest, with the blessings of the state chemist and the Georgia Department of Agriculture.[2]

Scholarship examining the relationship between government and agriculture during the late nineteenth century has largely focused on state institutions that became federally-funded, such as the state experiment stations created by the Hatch Act of 1887, and the cooperative extension program, created on a national level by the Smith-Lever Act in 1914. These were landmark pieces of legislation, but their emphasis in the historiography has overshadowed the crucial role of state and local institutions as vanguards of a new agricultural order. The case of Georgia shows how an improbable state-level institution born out of Reconstruction helped usher in an era of government sponsored-science that became prevalent during the twentieth century.

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[2] Alan I. Marcus, *Agricultural Science and the Quest for Legitimacy: Farmers, Agricultural Colleges, and Experiment Stations, 1870-1890* (Ames: Iowa State University Press, 1985). Marcus explores the tension between the growing fertilizer industry and state agricultural chemists in his excellent study of the birth of state experiment stations. For work on the divide between vitalism and mechanism in science and agriculture—views most commonly related to Sir Humphrey Davy and Justus von Liebig, respectively—see Merchant, *Ecological Revolutions*, and Rossiter, *The Emergence of Agricultural Science*.

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In 1870 a farmer from Marietta, Georgia named William K. Smith sent a letter of inquiry to the *Southern Cultivator* regarding farm management. Smith described himself as "a young farmer just commencing life," and as a result, he admitted that he was "entirely dependent on neighbors for instruction as to the proper way of farming." Smith was wondering how to best make use of some swamp mud, or "muck," on his property to add to his fields for the next year. The problem was, his neighbors disagreed about the most effective way to unlock the nutrient potential of his muck. One neighbor told him to "mix [the muck] with stable manure," while another suggested that he should compost it with cottonseed. Smith supposed that mixing in potash with the muck would be the best approach, but he did not know how many bushels of potash to add to a "two-horse load of muck" before he spread it onto his fields.[3]

In chorus with most other readers and contributors to agricultural journals like the *Southern Cultivator* at the time, Smith swore by the economy and nutritional value of locally available materials to restore soil, averring that experience had taught him that it was "*very poor* pay to use, on our poor lands, commercial fertilizers alone." Though they may have been useful as an additive, Smith believed in the gospel of nutrient cycling, and he measured his soil inputs the same way he measured his outputs, in standard quantities based on the market for farm produce. The editor of the *Cultivator* supported Smith's perspective, suggesting that composting, "say four bushels of potash to a two horse load of

[3] Wm. K. Smith, *Southern Cultivator,* 28, 6 (1870), 325.
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muck" would probably do the trick. In so doing, he was also affirming Smith's hesitancy about chemical fertilizers.[4]

The small farmer's disinclination to try fertilizer is understandable. Although a few wealthy planters, including David Dickson, had incorporated Peruvian guano into their yearly crop cycles before the war, the proliferation of new chemicals, mixtures, and fertilizer brands available in 1870 were still unfamiliar to most farmers in the southeastern states. Even though merchants and some farmers cast fertilizer as a foolproof panacea capable of improving any soil, skeptics demanded "ocular evidence" of a product's value before they adopted an unfamiliar practice. Local knowledge was valued over the professed universality of scientific agriculture. In spite of the endorsement of brag farmers like David Dickson and James Monroe Smith, in the early 1870s, most tillers of the soil clung to traditional practices of localism, relying on muck, manure, or rotting cottonseed in their furrow, if they fertilized at all.[5]

Even if a farmer was willing to try fertilizer for the first time, questions about its proper use often remained unanswered. Many consulted the merchants who had sold them the guano for answers about fertilizing, for example, inquiring about their proper application or how much to use on specific types of soil. Aside from such practical questions, fertilizer merchants also received letters that begged for some form of quality assurance. Since mail, telegraphs, and railroads had exponentially expanded the pace and range of commerce and communication since the Civil War, farmers whose traditional ways of business involved face-to-face dealing craved, at the very least, written affirmation

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[4] *Ibid*.

[5] On the relationship between local practice and the universal knowledge of science, see Cohen, *Notes from the Ground: Science and Agricultural Improvement in the Early American Republic*, 11, *passim*.

that the fertilizer was as good as newspaper advertisements claimed it was. In the absence of scientific inspection, farmers developed colloquial methods of fertilizer analysis—seeking out certain aromas, tastes, or other telltale signifiers of quality at the merchant's store. A guarantee of quality was especially important when suspicions of guano fraud ran rampant as they did in the late 1860s.

Fertilizer manufacturers were quick to acknowledge that consumers needed some form of quality assurance to help move their products. In 1868, chemist N.A. Pratt wrote a pamphlet promoting the agro-industrial potential of the phosphate beds near Charleston, South Carolina. As the resident chemist for the Ashley River Phosphate Company, Pratt identified the need for legislation to establish some "fixed standard of excellence" to deter swindlers and win over consumer trust. Furthermore, Pratt maintained, such a standard would "necessitate the appointment of a chemical inspector, charged with the inspection of every cargo or lot offered for sale in this market." The same year, Georgia passed the nation's first fertilizer inspection law, quickly followed by the other long-cultivated eastern states of Maine, Connecticut, and Massachusetts. Georgia's law closely conformed to Pratt's suggestion.[7]

Georgia legislators passed the 1868 inspection law to "protect the planters of this state from imposition in the sale of fertilizers." It was intended as an assurance of quality for skeptical farmer consumers, to deter suspicions of fraud, and create a standard chemical analysis of the products. To these ends, the law called for the appointment of a state chemist and fertilizer inspectors in Augusta and Savannah—the main points of entry

[7] N.A. Pratt, *Ashley River Phosphates: History of the Marls of South Carolina and of the Discovery and Development of the Native Bone Phosphates of the Charleston Basin* (Philadelphia: Inquirer Book Job Print, 1868), 6; Rossiter, 158-159.

into the state by rail and water. Inspectors were instructed to examine every ton of fertilizer that entered the state, upholding the standards of the new state chemist, collecting a fee of fifty cents per ton inspected from manufacturers. Section Two of the law mandated the inspectors to mark each lot with a tag or a stamp indicating the product's chemical value, thus verifying their quality. Fertilizers that did not attain the chemical standard were to be banned from sale in the state. The members of the General Assembly who passed the law did not realize it at the time, but Section Two would be extremely difficult to enforce, and its execution would deeply affect the tenor of agricultural policy in the state.

The 1868 inspection law raises some questions. For example, how and why did Georgia pass such a regulatory law during the political turmoil of Reconstruction? Georgia was under the aegis of federal control in 1868, and the Freedman's Bureau remained a strong presence within the state, and across the nation. White southerners tended to face the continued federal presence with a cold eye. Northerners with an interest in the cotton market also had their scruples. A New York cotton factor who called himself a "close observer of the cotton crop," pointed to the "interference" of the Freedman's Bureau as well as the "small quantity of fertilizers used…by farmers" as limiting factors in cotton production. According to the factor, "the rations of bacon and corn that are being distributed by these selfish and unprincipled agents of the Government will lessen the crop of cotton by many thousand bales." Not only did emancipated laborers have less incentive to work for their food by growing cotton, but, according to the cotton factor, they were also adverse to "collect the ordinary plantation manures, as they were required to do under the old system of farming. In their vanity of *ideas* they have ever discarded the conception of

scientific agricultural application of manure." Like many southerners, this northern observer divided the blame for the lagging economy equally at the feet of northern "interference" and black "indolence." And, like many white southerners, he saw fertilizer as a partial solution to the labor question.[8]

Furthermore, in 1868, the vast majority of fertilizer manufacturers and importers (with the notable exception of the South Carolina phosphate industry) were based north of the Mason-Dixon line. Members of the incipient southern fertilizer industry expressed disdain that southerners spent millions of dollars in support of northern enterprise. The manufacturer of Barry's Commercial Fertilizer begged "the Planters of Georgia, and the South," to give southern manufacturers "some share of that exuberant patronage that has been bestowed on Northern Preparations [of fertilizer]." Thumbing his nose to northern industry, the manufacturer added that, "If all things be equal, we should occasionally do good to those who do *not* hate us." Thinking in these terms, it is reasonable to suspect that planters did not have any qualms with heavily regulating an industry, which, at the time, operated largely on northern soil. Furthermore, in the immediate aftermath of the war, southern politics were still dominated by white elites who thought of themselves as an agricultural people. Unfortunately for Colonel Barry, it was not until the emergence of a more robust southern fertilizer industry backed by strong New South rhetoric that southerners began to complain that the inspection law stifled local businesses.[9]

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[8] Cotton Factors Messr. Easton & Co., New York, "Experiment Being Developed: Cotton Cultivation Diminishing, Diversification of Pursuits Essential to Restore the South," *Georgia Weekly Telegraph*, July 10, 1868, 8.

[9] Advertisement for "Barry's Commercial Fertilizer, Concentrated," Advertising Ephemera Collection, "Fertilizer," Duke.

The inspection law is also understandable in the context of a tradition of legislation that existed long before the Civil War. By 1868, American lawmakers already had demonstrated a trend of protecting the public against the interests of large businesses—especially on the state and local levels—in spite of a persistent myth that the nineteenth century was an era of unfettered free-market capitalism. In this sense, the regulatory aspect of the inspection law was neither exceptional, nor without precedent. What was unique about the inspection law was that its language addressed a particular class of citizens, specifically those who had been dominant before the war: planters. Georgia's planters saw a number of political and environmental threats to "redemption" and a restoration of their hegemony, including the strictures of the federal government under Reconstruction, the newfound freedom of formerly enslaved laborers, and the destruction wrought by the war on valuable cotton crops. Commercial fertilizer was a new tool in the project of restoring agricultural productivity, and many planters recognized its potential to wrench more value out of exhausted and infertile lands. If fertilizer could reinvigorate stalled agricultural production, then planters would be able to return to business as usual, enjoying the financial and political benefits of high cotton prices that much faster. Passing as it did in September, Georgia's planters expected reliable, high-quality fertilizers in time for spring planting in 1869. Chemical analysis would help to ensure the quality of a costly product. The law passed in the General Assembly with very little debate, and even less commentary from the press, which indicates that the law received widespread support.[10]

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[10] William J. Novak, *The People's Welfare: Law and Regulation in Nineteenth-Century America* (Chapel Hill: University of North Carolina Press, 1996). Fertilizer manufacturers had been regulated before the 1868 Georgia law, albeit for different reasons. Those living downwind of manufacturers complained about the odors that the factories discharged. Earlier laws took on this aspect, rather than the chemical composition of the products. See

However, many planters believed that the inspection law did not go far enough. Fertilizers were an issue of ongoing inquiry among members of the Georgia State Agricultural Society. According to one member of this elite planter interest group, fertilizer was a subject "second in importance to the great question of labor only." At the February 1869 convention, the GSAS formed a committee to "invoke the aid of the state," in "cheapening Peruvian guano." It was not enough that the state chemist and his inspectors employed scientific analysis to allay fears of fraud, and many felt the need for a regulatory body to rein in the high price of imported plant nutrients. Members of the convention also discussed methods of reducing and regulating rates of freight for fertilizer shipped into the state to help reduce overall costs.[11]

Aside from the costs of fertilizer, however, some of Georgia's wealthiest farmers were also preoccupied with larger systemic problems. Facing dwindling farm values, a perceived lack of efficiency and economy among farmers, and the attendant management woes of the racially freighted "labor question," concerned groups such as the GSAS felt that any state-controlled agricultural body needed to enlist sophisticated analytical methods in its efforts to aid agriculture. To this end, the GSAS called for the creation of a "State Statistical Department of Agriculture." If the well-publicized success of planters such as David Dickson had demonstrated anything, it was that the hunger for information about practical farmers was great. But rather than focusing on the systems of individual farms, the GSAS believed that a broad picture of farm practices around the state could better serve the diverse interests of Georgia's farmers. Other agricultural interest groups, such as the

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Wines, *Fertilizer in America*, 9; *Journal of the House of Representatives of the State of Georgia*, 1868.

[11] *Premium List of the State Agricultural Society of Georgia*, 37, 63.

Georgia Patrons of Husbandry (or State Grange), which formed in 1872, also championed the creation of a state department of agriculture.[12]

At the behest of the GSAS and the Grangers, in 1874, the General Assembly passed a law creating the Georgia State Department of Agriculture. Unlike the 1868 inspection law, however, the creation of a state department of agriculture was a much more divisive topic among members of the Georgia General Assembly, having only passed by a margin of one vote. In 1874, lawmakers also proposed amendments to the inspection law on fertilizer that would make it more effective, and the new department of agriculture was to see the changes out . Although members of the General Assembly supported the creation of an improved inspection law and rejected attempts to repeal the 1868 inspection law, the House of Representatives initially shot down the creation of a department to collect agricultural statistics of the state, as well as the appointment of a state geologist to help oversee a state geological survey.[13]

The law intensifying fertilizer inspection passed by a wide margin, and it encompassed a number of substantive changes to the 1868 law, including larger financial penalties for manufacturers who broke the law by selling uninspected goods. The law also enumerated specific chemical values that products had to meet, and it made it easier for consumers to get access to the results of the chemical analysis by funding their publication in circulars. But why was this regulatory law less contentious than the creation of an agricultural department? For one, by 1874, fertilizers had already become a major factor in the state's agriculture, and many Georgians credited fertilizers as a driving force in pushing

[12]Thomas P. Janes, "Georgians in the Cotton States Agricultural Society-Dr. Janes' Remarks," *Atlanta Weekly Constitution,* July 27, 1875, 2.
[13] *Journal of the House of Representatives of the State of Georgia* (Atlanta: J.H. Estill, 1874), 68, 485.

cotton production beyond prewar levels. As for the department, many regarded it as an unnecessary expense that could drain the state's meager budget. After all, why was it necessary to create a department of agriculture just as fertilizers were helping the state get its agricultural productivity back on track?[14]

Unlike the fiscal conservatives who did not want to spend money on a state department of agriculture, members of the state agricultural society in the General Assembly resolutely believed that the role of statistics and improved farming methods were imperative to improving the livelihood and productivity of the state's farm population. Members of the GSAS were conversant in national and international literature on agricultural improvement, and hoped to follow the example of northern and European scientific farmers, who had begun to incorporate agricultural research into government policy. With sufficient votes from an agricultural interest group that saw promise in agricultural improvement, the General Assembly formed the nation's first state department of agriculture, naming a vice president of the GSAS as the first commissioner of agriculture. Greene County planter Thomas P. Janes took the helm of an unprecedented institution in the state with a very ambitious agenda. The GDA was to perform three distinct functions: creating a state statistical handbook, promoting crop diversity, and performing and publishing the results of fertilizer inspections.[15]

In fulfillment of its first role, the GDA was charged to create a "hand-book" of the state that combined a statewide agricultural census with a geological survey and a soil survey. This comprehensive text was intended as a reference book for Georgia's farmers and as a promotional document for potential immigrants to the state. The handbook provision also

[14] *Acts of the General Assembly of the State of Georgia,* 1874.
[15] *Annual Report of the State Department of Agriculture*, 1878, 5.

allowed for the Commissioner to publish and distribute other information deemed useful to farmers. Although the GDA successfully oversaw the production of a *Handbook of the State of Georgia* in 1876, the final product was much more concerned with encouraging immigration and state boosterism than it was with providing information useful to the farmers of the state. The bulk of the department's regular publications related to crop circulars and fertilizer inspection reports were intended for Georgia's own farmers, rather than immigrants. Nonetheless, the GDA would continue to produce occasional promotional documents such as the *Handbook* into the twentieth century.

The second main task of the GDA was to encourage agricultural diversity to help break Georgians of their cotton addiction by promoting the financial potential of other cultures. This was to be done through the distribution of seeds, and the dissemination of information about wool production, dairying, and other hitherto underdeveloped commodities in the state. To this end, the GDA produced occasional circulars to try to break the fixation on cotton, and to encourage farmers with current trends in scientific agriculture. The department's seed-bank never materialized, however, due to budgetary shortcomings.

The matter of fertilizer inspection significantly overshadowed the other roles of the department. Despite the uneasiness the commissioner expressed about the department's regulatory role, the young state chemist H.C. White espoused an unbounded faith in the value of agricultural chemicals. In spite of the improvers' calls for economy and husbandry, White reported that only fifteen percent of Georgia's farmers saved stable manure for their fields in 1875, while they had spent $2.5 million on fertilizer. White lamented that until the GDA's creation, Georgians had learned about the costly business of fertilizer quality only

"by severe experience groping in the dark." In 1875, White and his staff inspected over 48,000 tons of fertilizer, encompassing 112 different brands—finally putting teeth into the 1868 inspection law—and widely publishing the results. With the growth of the market and the industry, the chemist's office worked long hours to inspect all of the different brands and varieties that sold in the state's depots, markets, and stores. White's hope was that any farmer would know the exact value of the fertilizer he purchased to his crop.[16]

The Georgia General Assembly refined or updated the procedures and standards of the inspection law almost every year, but the process changed very little over time. If a manufacturer wanted to sell a product in Georgia, it first had to pay a fifty-cent tax that funded the inspection process. Then the manufacturer had to affix a "Guaranteed Analysis" tag listing the chemical value of the fertilizer to plants according to the company's chemist in compliance with the standards of the state chemist in each of the three main plant nutrients: Ammonia (Nitrogen), Phosphoric Acid (Phosphorous), and Potash (Potassium).[17] If the product was up to the state standard, then the manufacturer had to submit a five hundred pound sample of the fertilizer to the inspector. Once the inspector had checked for uniform quality of the product entering the state or at the factory, he put his mark of approval on the tag, and the manufacturer was free to market the product. Meanwhile, the inspector would send the sample he had collected to the state chemist's office, where the chemist would check to ensure the chemical value of the fertilizer in his

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[16] White, *Annual Report of the State Department of Agriculture,* 1875. As to the exact source of White's data, the statistic regarding fertilizer is probably more reliably accurate than that on manure, since almost all of the fertilizer sold in state was tagged by the Department, while the manure data came from respondents to GDA circulars; *ibid*, 37.

[17] These nutrients were the nineteenth century equivalent of what is now referred to as the "NPK" paradigm among soil scientists. Around 1900, fertilizers began to have a numerical values corresponding to these elements.

laboratory. If the chemist found that the fertilizer was up to standard, he would publish the chemical value of his results in a GDA Fertilizer Inspection Report. If the chemist found the material to be below the state standard of value in any of the three nutrients—less than ten percent soluble phosphoric acid, for example—then he would ban its sale in the state and put it on a blacklist of banned fertilizers.[18]

The GDA also relied on feedback from farmers to try to ensure that their inspection system worked. For example, if a farmer bought fertilizer that bore an inspection tag, but suspected that his particular batch of fertilizer was deficient, he could send a sample of the fertilizer in a corked and wax-sealed bottle to the state chemist. In 1883, the Webster County Grange along with merchants from Cuthbert, Georgia sent in samples of "Gilt Edge Guano" for inspection, and H.C. White found that the chemical value of the guano was significantly below the value his office's sample had tested. The commissioner at the time, J.T. Henderson, published a circular banning the sale of the Gilt Edge brand, and advised anyone who had used the guano that they were under no legal obligation to pay for it. The public condemnation of a fertilizer brand could mean bankruptcy for a manufacturer while at the same time helping to establish the credibility of the GDA's inspection system. A farmer from Point Peter, Georgia, attested to the value of the inspection system, reporting that he had not purchased, "nor heard of any worthless Guanos since the Agricultural Department was organized, which was not the case before."[19]

By the early 1880s, among the states that had fertilizer inspection laws, Georgia was known as the most stringent. Speaking to the effectiveness of his office's efforts, H.C. White reported "as evidence of the credit which our system of inspection enjoys abroad," fertilizer

[18] J.T. Henderson, *Annual Report of the State Department of Agriculture*. 9.
[19] Henderson, *Ibid*.1883, 72; Mr. Withcer, in *Annual Report,* 1881, 140.

buyers in other states demanded the "Georgia standard of inspection." Yet, as more states passed laws, fertilizer manufacturers became frustrated by the different chemical standards and the cost of taxes between states. A secretary from the Southern Fertilizer Company bemoaned an 1877 North Carolina law that levied an inspection tax on fertilizers, claiming that "grave doubts exist about the constitutionality of the new special tax."[20]

Both manufacturers and some state chemists recognized that the discrepancies between chemical standards and laws between states were problematic. In 1880, commissioner J.T. Henderson called for a meeting in Washington, D.C., to try to set uniform procedures and standards of analysis among analytical chemists. This meeting initiated a long debate between state agricultural chemists and manufacturers, and led to the formation of an organization that would become the Association of Official Agricultural Chemists. The state chemists excluded chemists employed by manufacturers from their ranks, as they tried to smooth discrepancies in analytical methods from state to state in the name of protecting consumer interests. In 1883, the manufacturers responded in kind by forming the National Fertilizer Association, which would become a powerful lobby for the protection of fertilizer manufacturers, and an opponent to the authority of the Association of Official Agricultural Chemists.[21]

In the battle between the state chemists and those of the manufacturers, the USDA came down on the side of state chemists. At the 1885 gathering of the Association of Official Chemists, national commissioner of agriculture Norman J. Colman stressed the importance of government science as a safeguard against industrial graft, professing that in

[20] White, *Annual Report*, 1881, 76; John Ott to B.G. Pulliam and H.T. Connolly, April 18, 1877B.G. Pulliam and H.T. Connally, 1875-1877," Puliam Connolly Papers, Duke.
[21] Marcus, 42-57.

the fertilizer business, "the road to riches seems not to be in the path of honesty, but in the great highway of rascality." However, as heated as the debate had become for scientific authority between industry and government, both parties were propping up the legitimacy of commercial fertilizers in their own ways. Manufacturers and government scientists may have taken issue with the specifics of regulation and matters of cost, but both privileged the chemical-input paradigm over the ideal of nutrient cycling—after all, agricultural chemistry was the bread and butter of both parties, albeit for different reasons. Over time, manufacturers even began using the Georgia State Chemists' analysis in advertisements.[22]

Yet this professional turf war was far removed from Georgia's farms. When it came to fertilizer back home, the biggest concern was its cost. In spite of the GDA's role in preventing fraud, a great deal of the department's literature continued to mourn the growing role of agricultural chemicals on Georgia's farms from an economical standpoint. In 1882, a year when the GDA inspected over 125,000 tons of fertilizer, Commissioner J.T. Henderson made light of the fact that, "The cotton crop in 1882 brought $35,000,000, of which $5,000,000, or one seventh of the whole, was expended on fertilizers." To help defray the cost of fertilizer, the GDA began to advocate composting stable manure with chemicals like acid phosphates, since manures lacked the phosphorous most soils needed to support growth. Department circulars shared the compost formula of the Milledgeville brag farmer Farish Furman, who mixed phosphates and German kainit with compost and cottonseed (and also marketed his own brand of fertilizer). The GDA also widely

[22]Department of Agriculture (U.S.) Division of Chemistry, *Methods of Analysis of Commercial Fertilizers--Proceedings of the Association of Official Agricultural Chemists; September and 2, 1885* (Washington: Government Printing Office, 1885), 23. For the use of state chemical analysis in fertilizer advertisements, see, for example, Wando Phosphate Company, "Advertisement," *The Weekly Constitution* January 30, 1883.

distributed a circular extolling "The Philosophy of Composting," which roughly followed Furman's formula.[23]

In the act of promoting a hybrid of husbandry and modern agricultural chemistry, the leadership of the GDA was slowly but surely tightening its embrace of the chemical-input perspective. To contextualize the shift to fertilizers from the economy of nutrient cycling, the department's R.J. Redding explained that "the principle which justifies the use of stable manure, ashes, cotton-seed and other familiar forms of fertilizers, is precisely the same as that on which the use of commercial fertilizers is based." Instead of applying the local materials of plant ash and manure, Redding explained, "we now go to the islands of the ocean, and into the bowels of the earth, to bring to our aid the excrements of birds (guano), the fossil bones of extinct animals, agricultural salts, etc., each of which abounds in one or more of these valuable elements." These materials were simply concentrated, commercial presentations of the same elements as before. Science was improving the quality and efficiency of fertilizers through analysis and regulation. But to what extent did the GDA's activities influence consumer behavior?[24]

To be sure, the GDA did not set in motion the fertilizer revolution in Georgia. Farmers had purchased guano and superphosphates years before the department's inception, often inspired by prominent system-farmers like David Dickson. However, it is clear that over time, the department, and therefore the state government, became an influential conduit of chemical solutions to agricultural problems. The department's circulation was strong. For example, in 1895 forty-eight newspapers with over 30,000 subscribers published GDA

[23] J.T. Henderson, *Annual Report*, 1883, 11*;* J.T. Henderson, "Compost Formulas," *Southern World*, December 15, 1882, 3.
[24] R.J. Redding, "Agricultural Department," *Southern World*, Feb. 1, 1882, 2.

materials. The GDA also mailed all of its publications to 225 Georgia newspapers and to 6,450 private citizens, individually. But the one place that farmers were certain to see the impact of the GDA was on the sacks of fertilizer they purchased. Each bag carried an official stamp of approval and a chemical valuation.[25]

Beyond the inspection system, which was designed to keep the content of plant food high, the state chemist also sought to use his position to drive chemical prices down. Since his appointment, H.C. White had assigned "Relative Commercial Values" to chemicals in different fertilizers. These values were ostensibly an attempt on the chemist's part to contextualize his analysis to show that a farmer would get his money's worth. The GDA routinely claimed that their inspection system drove down fertilizer prices, for example, by boasting that Georgia's farmers had "a higher grade of fertilizers, and at lower prices than any other state in the Union." University of Georgia professor Edmund M. Pendleton, however, challenged the idea of relative commercial values on two main points. First, Pendleton was an advocate of free trade, believing that the law of supply and demand obviated the need for a complex inspection system. Humbug guanos, he suggested, would not survive long in an unfettered marketplace because no one would buy them. Of course, this analysis is fraught by the nature of agricultural chemicals in the yearly cycle. Since farmers could not know that their fertilizer was effective until the growing season was over, an unregulated market would allow farmers to learn that they had purchased bad product only by wasting a great deal of time and money by its use. Without the aid of governmental regulation, such a "free market" would allow manufacturers to peddle bad

[25] R.J. Redding, *Annual Report of the Georgia Experiment Station*, 1888-1895, 224.

products unchecked.[26]

Secondly, as a professor of agriculture at the state agricultural college, Pendleton challenged White's unflinching faith in chemical theory on the grounds that practice was a better litmus of a fertilizer's value. Pendleton had warned White of "the delicate ground upon which he was treading," but White persisted in his quest to reduce fertilizer prices by creating a hierarchy of commercial chemical values. Pendleton contended that analytical chemistry was still a young discipline in which scientists could not agree. Beyond that, even if chemists could perform analysis in a consistent manner, the specifics of place and environment were too great to affix universal commercial values to specific chemicals. "Fertilizing," according to Pendleton, "depends largely on soils, crop and weather, and as these vary from place to place and from year to year," only the "results of experience" could dictate the value of chemicals, "and then only in a general and probable manner." From Pendleton's view, the field was where a chemical's value could be determined, not in the laboratory.[27]

Pendleton, however, overlooked the GDA's fertilizer soil tests, which were just the sort of applied test he had called for. Starting in 1876, the GDA had farmers from all counties of the state report on the type and quantity of fertilizers they used on their crops, publishing the farmer experimenters' results. The rationale behind this practice was that these directed experiments could demonstrate which types of chemical mixtures were

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[26] E.M. Pendleton, "On the Valuation of Commercial Fertilizers," *Southern Planter and Farmer* 39, 12 (1878), 672.

[27] The idea for relative commercial values originated with Harvard chemist Samuel L. Johnson, whose tests on superphosphates had proven the value of the material in the 1850s. In that decade, when fertilizer fraud accusations ran rampant, Johnson assignment of fiscal values to chemicals was intended as a way to eliminate fraud. See Rossiter, *The Birth of Agricultural Chemistry*, 150-151; Pendleton, "On the Valuation of Commercial Fertilizer," xxii, 672-676.

effective on different local soils, and give farmers outside the Department a voice in the GDA's publications. Commissioner Henderson characterized the soil tests as "nothing more nor less than experiments asked of nature." Farmers reported what methods worked for them, noted which fertilizers were the most profitable, and debated practical issues, like when the optimal times to fertilize were, or whether the common practice of rolling cotton seed in fertilizer before planting was effective.

Participants in the field tests were sharply divided in the debate between compost and chemical approaches. T.N. Delany of Cherokee County cited his experience, observing that "compost gives much better results on poor soils than commercial fertilizers, and is more economical on any soil." S.A. Freeman of Talbot County, on the other hand, contended that compost had other costs, noting that "the great difficulty attending the use of compost is the weight in putting it out," adding that "one neighbor who has manure strewers, (being able to afford them) uses it altogether in place of guano." If collecting and spreading compost were as economical as many claimed it was, "a great deal more would be used," Freeman added.[28]

The results of the fertilizer soil tests did not reveal consensus about the better economy of using compost or fertilizer. Many farmers believed in mixing both, but almost all agreed that they were an expensive investment that created debt, and an incentive to plant ever more cotton. It appeared that Georgia had become "cotton crazed," according to a farmer from Troup County. "Everything is sacrificed to make cotton pay high prices and usurious rates of interest, an extra effort to make and buy more fertilizers to make more cotton." As a visual illustration of this problem of debt, he observed "no perceptible

[28] *Publications of the State Department of Agriculture*, 1881, 81; T.N. Delany and S.A. Freeman in *Annual Report*, 1884, 387, 393.

improvement in building up this county in the way of new houses, barns, or stables." With soil tests, the GDA had given farmers a forum for information exchange and discussion, but a great deal of their input expressed concern for the condition of farming in the state. With the passage of the Hatch Act in 1887, which funded state agricultural experiment stations, the GDA discontinued the fertilizer soil tests, thus silencing this forum of discussion.

Despite some lingering doubts, fertilizer sales kept growing. Nothing could have been more pleasing to the manufacturers, who reported "a growing tendency to expand, indicating a steady widening of the markets; and, hence, progress in rational farming." Twenty years before, few planters would have agreed that using fertilizer was synonymous with "rational farming," but by the 1880s, the GDA and the consumers largely had come around to the manufacturers' view.[29]

In what amounted to a campaign for the further intensification of fertilizer use, in 1888 the GDA started regularly publishing the lectures of French agricultural chemist George Ville in serial format. A stalwart disciple of Prussian chemist Justus von Liebig, Ville's lectures stressed not only that chemical fertilizers were the key to success in farming, but also that the use of manure was an outmoded and useless practice. In 1843, Liebig had pioneered the concept that the chemicals plants removed from the soil had to be restored, whether by compost, manure, or chemicals. Liebig also predicted that well-proportioned chemical mixtures would eventually take the place of organic matter in feeding plants. Once the agrochemical industry had made good on Liebig's prophesy Ville followed Liebig's prediction to its logical end. According to Ville, "the present condition of agriculture demands a free use of chemical fertilizers and system of farming that produces

[29] A. De Ghequier, *The Fertilizer Movement During the Season 1884-1885 and the New Law of Alabama* (Baltimore: The National Fertilizer Association, 1885), 3.

the most profit from the use of them." Now that the fertilizer industry could provide the nutrients that plants needed with pre-mixed fertilizers—often called "complete fertilizers," since they were intended to meet all of a plant's nutritional needs—it was now the farmer's responsibility to exploit this development for maximum profit by the "*permanent importation* of chemical fertilizers." In Ville's estimation, cost and labor inputs devoted to livestock were holdovers of a fading era, only a "pretended necessity." In other words, if manures lacked phosphorous and ammonia, it was simpler and less costly to apply superphosphates and guano. By repeatedly publishing Ville's paeans to commercial fertilizers and chemical-intensive agriculture, the GDA had unequivocally come down on the side of the mechanistic, chemical-input paradigm.[30]

Still, a few skeptics continued to question the general use of fertilizer because it betokened an abandonment of the bedrock agrarian principle of local nutrient cycling. At an 1887 gathering of farmers from across the South in Atlanta, South Carolinian C.C. Law bemoaned the fact that fertilizers were "mere shadows of a departed virtue." Rather than putting their faith in either the fertilizer manufacturer or the state inspectors, Law advised farmers that "it may be of interest to know something of those virtues that first led our farmers captive to strange gods, and caused them to forget their own domestic dunghills." The exalted place of fertilizer in the agricultural marketplace was blinding farmers to the simple principles of farm management, and holding them "captive" to the "strange gods" of chemical theory. By Law's estimation, in its role as regulator and promoter of fertilizers, the GDA was not serving the interests of the farming class, but instead breeding ignorance about how to make the most out of locally available nutrients. Regarding the burgeoning

[30] *Annual Report of the State Department of Agriculture*, 1889, 95.

role of government agencies in shaping agricultural practices, Law poetically added, "I can but express the opinion that the touch of politics in agriculture brings with it contamination even to the dung heap."[31]

The GDA also faced criticism for its role in promoting fertilizer from some of Georgia's legislators. State senator Wright Brady begged to know whether guano was "so sacred that no jury in Georgia is honest enough to pass upon its merits?" Brady suggested that the connection between inspection and industry was so cozy that "instead of calling the bureau the department of agriculture it should be called the bureau of guano." In support of Brady's charge, in 1894, the GDA distributed a pamphlet on the benefits of potash that had been printed by a Washington D.C. fertilizer manufacturer, the German Kali Works. Commissioner Henderson wrote that "the above firm supplied me, free of all charge, 10,000 copies of the pamphlet, the title page printed as directed by me," and the GDA distributed the publication as one of their own. Such friendly associations between the fertilizer interests and the regulators gave ammunition to the critics of GDA's role as a consumer guardian. Even though the department worked continuously to report bad products and try to reduce fertilizer prices, the GDA's association with the fertilizer industry led many farmers to believe that the GDA was not fulfilling its duties. In 1890, a legislator from Cherokee County expressed his distrust: "God pity the man who applies to the department of agriculture for information." Representative Brown also alleged that the department would send inspection tags and new fertilizer sacks to merchants that held products left over from the year before. With the belief that the department would put their stamp on old or uninspected fertilizer, Brown asserted that the GDA was "unworthy of

[31] "The Brady Bill," *Atlanta Constitution*, Jul. 19, 1887, 2; Law, *Transactions from the Interstate Convention of Farmers*, 58-59.

confidence." For others, the mere mention of guano and its attendant debt were enough to dismiss the department's value. In the long agricultural depression, even the regulator appeared to be an enemy of the consumer.[32]

In spite of a growing sense of distrust among the public, by the 1890s the state chemist's office was taking on an ever-larger role as a regulator of chemicals as it decreased its performance of other duties. Fertilizer sales and inspection remained at a high volume, but reached a temporary plateau in the grinding economy of the 1890s. During this period, the state chemist took on other regulatory responsibilities. In 1889, the GDA began inspecting cottonseed meal, a byproduct in the processing of cottonseed oil that farmers used as a cheap, albeit less nutrient-rich alternative to chemical fertilizers. The GDA inspected lamp oil, patent medicines, and eventually the state chemist John McCandles lobbied for a pure food and drug law. Citing the success of chemical analysis in regulating fertilizers at a meeting of the Georgia Dairymen's Association in 1903, McCandles called for a law "drawn both by the chemists who are to execute it as well as the legislators who are to pass it, which will give pure food to our bodies as well as pure food for our soils." Referring back to the success of Georgia's fertilizer inspection system, the progressive impulse to prevent adulteration in other consumer products was a natural and easily understood transition. The impartiality of science could once again work for the protection of the consumer and to protect the credibility of business. While the department's initial agenda had included a wide set of responsibilities, by 1904, the GDA had become, in essence, a regulatory institution ideologically committed to chemical-input agriculture.[33]

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[32] "The Brady Bill"; Annual Report of the Georgia Experiment Station, Bulletin No. 9, 1890, 157.
[33] *Publications of the Georgia Department of Agriculture*, 1904, 267-268.

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On a state level, the GDA anticipated the close connection between government policy and agriculture of the twentieth century in at least one important way. In its first thirty years, the GDA did little in the way of extension work, nor did it help provide financial stability for farmers by aiding marketing or providing subsidies as the USDA eventually would. Rather, due to its early role as the regulator of agricultural chemicals, and by the continued process of fertilizer inspection, it became a conduit of chemical solutions for agricultural problems. Embedding an agricultural chemist who wielded the force of the law into its structure, the GDA provided a technical basis for the practice of fertilizer application that had been so important to restoring the state's agriculture after the Civil War. Over time, the department advocated the use of early chemical pesticides, such as Paris Green and London Purple in the 1880s, and it would encourage the use of other pesticides leading up to the arrival of the boll weevil in Georgia in 1921. Eventually, it would recommend the use of chemical defoliants that took the place of the hoe. Fertilizer inspection had begun the long transition to chemical-intensive agriculture that continues to this day. And in the rising tide of agricultural chemicals, the dissenting voice of the nineteenth century agricultural reformer was drowned.
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CHAPTER 5

CONCLUSION

In 1900, fertilizers had become central to American agriculture, and even as they became more prevalent, experts told farmers that they were still not using enough. Part of the problem was that fertilizer was expensive, but also that fertilizer production rates could not meet the demand. The reason for this shortage was that the most important element to plant growth, nitrogen, was almost exclusively derived from limited natural sources. Peruvian guano reserves had effectively crashed in the late 1870s. Although other sources of reactive nitrogen were available, including the nitrogen that leguminous crops produced, chemists sought a synthetic process to make the most abundant element in the atmosphere eliminate the greatest limitation on plant growth. After other chemists had searched for a century, in 1909, Fritz Haber discovered a viable way of producing nitrogen-rich ammonia, and Karl Bosch turned Haber's discovery into a large-scale industrial process. The Haber-Bosch process made fertilizers cheaper, easier to produce, and more effective than ever before, and many credit their process with enabling the global population to jump from two billion to over six billion people. Fertilizer changed the world.

Even before the development of the Haber-Bosch process, however, farmers in the Southeast had already become accustomed to the process of putting fertilizers into their soil, regardless of the fertilizer's source. As the preceding three chapters have shown, this

transition occurred as a result of a number of codependent factors: environmental, cultural, and economic. By 1900, fertilizer found its way into almost every furrow in the eastern Cotton Belt, and most farmers could scarcely recall a time in which fertilizer had not been a major part of the annual cycle of planting, cultivation, and harvest.

When fertilizer arrived, it carried with it a great deal of promise for the disrupted state of agriculture after the Civil War, and David Dickson proved that the new products could make fields more productive as they turned Georgia's farmers into consumers. However, the promise that fertilizer carried—or the hope that people invested into it—did not come to pass in the ways farmers had imagined. In spite of the belief that fertilizer could somehow bring order to the labor market, as white elites had hoped, farm values plummeted, average farm sizes shrank, and fewer and fewer farmers owned the land they tilled, even as fertilizer expenditures steadily climbed among small and landless farmers. Among the poor farmers in the cotton economy, fertilizer was increasingly associated with debt, dependence, and the impersonal forces of capital and monopoly. However, it had also played a part in reorienting the farmers' sense of place in the agricultural regime, forcing farmers to reconsider their roles as consumers and producers within an ever expanding net of agricultural commodities. The Populists recognized that "living at home" was not a realistic path to achieving financial independence. At the same time, the rise of commercial fertilizers also made farmers increasingly dependent on a new class of government experts, not to mention a growing class of fertilizer salesmen. Fertilizers helped usher in a new period of government regulation and involvement with agriculture, but its solutions involved more chemicals, which many farmers equated with more debt and displacement. Although fertilizer had helped fuel an explosion of cotton production after the war, it

certainly had not helped farmers achieve the vaunted state of independence that they had been led to believe was their rightful inheritance.

As the nineteenth century passed into the twentieth, many of the same problems continued to plague southern agriculture, even as major global changes were underway. One surprisingly durable historical thread that held strong was the extent to which cultural inflections shaped the way many people understood the agricultural landscape. For example, at a meeting of the Southern Fertilizer Association in 1917, a speaker from the Farm Service Bureau delineated connections between erosion, civilization, and race, making an explicit connection between environmental degradation and racial denigration that would have resonated with David Dickson's rhetoric from the late 1860s. Speaking to a hall of fertilizer salesmen, J.N. Harper alleged that, "No country has ever remained permanently wealthy after its soils have become depleted and infertile." He asked his guano note-toting audience, "How many of you gentlemen here can remember in your boyhood days the flourishing condition of certain communities that have today gone down because the soil fertility has been allowed to decline?" Harper spoke of "once flourishing communities" that, because of a lack of fertilizer use, "had passed into the hands of negroes," implying that infertile soil and black skin shared some innate connection. On the other hand, Harper also spoke of poor communities that had been saved by fertilizer alone. Preaching to the choir, men like Harper could get away with such a vein of analysis, but to any farmers present, it would have been obvious how much was left out of the story.[1]

Fertilizer never turned out to become the panacea its early promoters had promised

[1] Southern Fertilizer Association, *Southern Fertilizers: Science of Manufacturing, Selling, and Economic Use of Fertilizers in the South. Addresses before the Southern Fertilizer Salesman's Meetings, October 15-20, 1917.* (Atlanta: Southern Fertilizer Association, 1917), 83-84.

it to be, especially to those who had hoped that the fertilizer might hold the key to their own independence. The benefits of fertilizer seemed to outweigh its drawbacks, and for this reason, farmers continued to consume fertilizer at the behest of landlords, merchants, government experts, and by their own volition. To see dark-green leafy growth spring up from the hard-cropped and eroded soils of the Cotton Belt inspired hope that a new era of prosperity and harmonious social relations would follow the plow. To be certain, fertilizers helped usher in a new era in agriculture, after them came a period of capital-intensive farming, a greater integration of technical expertise, government aid and involvement, and tighter connections with the global and national economies. Nonetheless, none of these changes brought to bear the ideal of agrarian self-reliance that had been the nineteenth-century American dream.

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APSO: American Periodical Series Online

Duke: Duke University Special Collections Library, Durham, NC

GDAH: Georgia Department of Archives and History, Morrow, GA

GHS: Georgia Historical Society, Savannah, GA

SHC: Southern Historical Collection, University of North Carolina, Chapel Hill, NC

UGA: Hargrett Rare Book and Manuscript Library, University of Georgia, Athens, GA

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