“PROCURE, PROPAGATE, AND DISTRIBUTE AMONG THE PEOPLE”:
THE INFORMATION SERVICES OF THE U.S DEPARTMENT OF AGRICULTURE,
1862–1888

BY

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DISSERTATION

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Prior to the establishment of the Department of Agriculture in 1862 and concurrent with its growth and development, farmers had myriad ways of sharing and communicating agricultural information. Some of that information was rooted in experimental practice but much of it was anecdotal and based on years of farming experience. The historiography of U.S. agriculture demonstrates that farmers both needed and used that information – information they created, circulated, and consumed in their work as farmers. The introduction of information work at the Department of Agriculture not only altered the kind and amount of information that farmers had access to but effectively sought to redefine who the “experts” were through the production and dissemination of the results of applied scientific research for agriculture conducted by scientists at the newly formed Department or work by others filtered through the institution and thus vetted by it. The vehicle for much of this information transfer was the Annual Reports of the Department of Agriculture. This dissertation is an historical examination of the development of the Department of Agriculture that looks specifically at its information functions from 1862-1888 – the period under the commissionership and before it was elevated to cabinet-level status. Using the Annual Reports of the Department of Agriculture to identify and examine those functions, I situate the information work of the Department of Agriculture within the context of the emergence of the modern state and American empire, industrializing capitalism, and the history of information.
For Lucy
ACKNOWLEDGEMENTS

Though this document has my name on it, it is far from an individual effort. Christine Jenkins guided me through this process with insight, perspective, and humor. She challenged me to dig deeper and think more expansively. Her enthusiasm for this project was infectious and the intellectual connections she made as well as her questions about my work provided insight and perspective that I greatly appreciated. She made my work better. I cannot thank her enough. I also want to thank my committee members: Alistair Black was generous with his time and advice from the outset; I am grateful to Dan Schiller for asking hard questions, offering good advice, and introducing me to the annual reports of the Department of Agriculture; Linda Smith never waivered with her support or her enthusiasm. I offer a special thanks to Melissa Cragin who served on my committee at the proposal stage.

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It is conceded on all hands that the farming interest is the basis of all other interests and the primary source of national prosperity. The outlines of the rise and decay of the Roman empire could have been written in the fields which environed the capitol as well as in her libraries amid historical records.

Report of Mr. Owen Lovejoy (IL) from the House Committee on Agriculture, February 11, 1862 (Congressional Globe)

[The American farmer] belongs to a class of citizens who hold in their hands five-sixths of the wealth of the country and its entire political power; and the hands which have wrought this wealth are able to defend the Constitution which makes us one people.

Isaac Newton, Commissioner of Agriculture, January 1, 1863 (Report of the Commissioner of Agriculture for the Year 1862, 14)

“Burn down your cities and leave our farms, and your cities will spring up again as if by magic; but destroy our farms and the grass will grow in the streets of every city in the country.”

William Jennings Bryan, Cross of Gold speech, July 9, 1896.¹

CHAPTER 1: INTRODUCTION

The second half of the 19th century was a period of dramatic change in the United States. The federal government was growing and building an economic and political infrastructure that asserted a national identity. Although we often associate this period with the growth of cities, industrialization, and factory work it is worth noting that, according to the U.S. census of 1840, more than half of the nation’s population was employed in agricultural work.² The growth in the number of farms in this period was staggering: “Between 1860 and 1890 the number of farms in the United States nearly tripled. Land under the plow rose from 407 million to 828 million acres,...” and was

¹ This speech, delivered by Bryan to the Democratic National Convention in Chicago in the summer of 1896 is attributed only to “that prairie avenger” by Bardolph in the preface to his book, Agricultural Literature and the Early Illinois Farmer.

² The census of 1840 was the first federal census to include agricultural statistics. Compiled by the Department of State the census for 1840, 1850, and 1860 include free and slave states as well as territories. Census figures show that the population of the United States nearly doubled between 1840 and 1860. http://www.agcensus.usda.gov/Publications/Historical_Publications/index.asp accessed April 10, 2012.
directly tied to westward expansion by the U.S. government. In 1862 there were 1.5 million farms averaging 200 acres and, in the 1860s, 80 percent of exports were the products of agriculture. Immigration, the growth of urban areas, industrialization, western expansion, emerging transportation and communications networks, and the Civil War each had profound impact on agricultural production. Many of the challenges associated with these changes centered on the need for larger crop yields, new types of crops, and new techniques to ensure soil health. Though there had been support and pressure for a federal agricultural agency for decades, it was not until 1862 that the Congress of the United States established the Department of Agriculture. The Department of Agriculture was established in the late spring of 1862 during the Civil War. It was the first executive agency created in a period in which the federal government begins to assert an expansive and authoritative role. This dissertation will demonstrate and discuss how the Department of Agriculture was, perhaps more than any other federal agency in the middle of the 19th century, a place where we can see evidence of the emergence of a modern state and the exercise of a central state authority leveraging information in various formats including seeds, plants, and statistics to assert and ground that authority. Throughout the mid and late 19th century, the Department of Agriculture was an arena in which the role and authority of the federal government and that of the states was contested and negotiated. In its work we can also see instantiations of an emerging infrastructure of empire intimately tied to a global market economy, with

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5 Historian Hal S. Barron (1997) in his study of the rural North after the U.S. Civil War calls the years between 1870 and 1930 “the second transformation, which was characterized by the centralization of the economy, the expansion of state power and professional expertise.” (10) Also at play for Barron is the emergence of a class of bureaucrats and managers – the new “middle class” – growth in consumer goods and the expansion of mass culture, and, finally, and perhaps most importantly for the purposes of this study, the growth of the power of the state and its expansion as empire. Barron’s focus is on the rural North. His “mixed harvest” refers to the ways rural values changed and adapted to a new consumer culture while at the same time demonstrating “continuity” with rural traditions.

6 Hereafter may be referred to simply as the Department.

7 The size and composition of the President’s cabinet grew slowly from Washington to Lincoln. War, State, Treasury, and Postmaster General, Attorney General, and Vice-President in 1789; Navy (Marine) in 1798; Post Office Department 1829; Interior in 1849; Agriculture in 1889.
imperial aspirations made possible in large part by the agricultural information it collected, produced, and distributed.

**Information Work at the Department of Agriculture**

Information work conducted by the Department of Agriculture focused on applied science and agricultural statistics intended to bolster a nascent market economy through increased efficiency and scale in agricultural production while also anticipating an end to the slave economy of the American South. The Department solicited and gathered information in the form of seeds, plants, and statistics from domestic and international sources. It generated, organized, and disseminated information that offered farmers information on new practices, new seeds and plants, and new tools that would result in increased crop yields and improve the efficiency of farm production.\(^8\) Statistical information from the Department of Agriculture allowed farmers and other stakeholders in the economy of agricultural production and circulation to anticipate future crop yields and demand, and manipulate prices and distribution.

The Department of Agriculture was established by an act, formally titled “An Act to Establish a Department of Agriculture” of the Thirty-Seventh Congress of the United States in its Second Session and signed into law by President Lincoln on May 15, 1862. The new agency’s duties were outlined in the first paragraph:

Be It Enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is hereby established at the seat of government of the United States a Department of Agriculture, the general designs and duties of which shall be to acquire and to diffuse among the people of the United States useful information on subjects connected with agriculture in the

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\(^8\) The seeds and plants were both information, too. In her book, *Trading the Genome: Investigating the Commodification of Bio-information* (New York: Columbia University Press, 2004), Bronwyn Parry argues “seeds became useful proxies” for plants. And, unlike botanical illustrations or descriptions, contained within them the information necessary for reproduction (70). See Kloppenburg (2004) and Schiller (2007) for more on plant biotechnology and the commodification of seeds and plant germ-plasm. In *First the Seed: The Political Economy of Plant Biotechnology, 1492-2000* (Madison, WI: University of Wisconsin Press, 2004), Kloppenburg looks specifically at the historical role of the state in agricultural research on seeds and argues that this work began as a public good.
most general and comprehensive sense of that word, and to procure, propagate, and distribute among the people new and valuable seeds and plants.

This legislation, which I will refer to as the “Organic Act,” gave the President authority to appoint a Commissioner of Agriculture “to acquire and preserve all information concerning agriculture which he can obtain by means of books and correspondence, and by practical and scientific experiments, (accurate records of which experiments shall be kept in his office,) by the collection of statistics, and by any other appropriate means within his power; to collect, as he may be able, new and valuable seeds and plants; to test, by cultivation, the value of such of them as may require such tests; to propagate such as may be worthy of propagation, and to distribute them among agriculturists.” The Commissioner was required to report to Congress annually on the progress of the Department, submit a financial report to account for money received and spent. He was also tasked by Congress with hiring a “chief clerk” who in turn hired, under the direction of Congress, “other persons, for such time as their services may be needed, including chemists, botanists, entomologists, and other persons skilled in the natural sciences pertaining to agriculture.”

At the heart of the mission of the Department of Agriculture was the acquisition, production, and dissemination of agricultural information. That information and the systems developed to gather, produce, and share it are the focus of this dissertation. The Department of Agriculture was the first federal agency to engage in scientific research and the collection, creation, and dissemination of new knowledge on a massive scale and it did so at a critical moment in the history of the United States between 1862 and 1888. As this dissertation will demonstrate, the need for reliable and “accurate” information was emphasized by commissioners of the Department of Agriculture in the Annual Reports of the Department throughout the late 19th century. The accuracy of that information served to rationalize agricultural production in an emerging global market

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10 Ibid., 388.
economy. That information also served to assert and then reinforce the authority of the federal government and its role as a source of resources and information critical to agricultural production in that growing market economy. The work of the Department of Agriculture and the systems of information that characterized it were integral to the transformation of agricultural practice, agricultural knowledge, and the agricultural economy in the United States. More specifically, the Department of Agriculture’s information work helped define, feed, and nurture that transformation. It was a prodigious collector, producer, and distributor of information that served complicated and complex purposes.

Methods and Sources
Defining the project and the resources
The project of this dissertation is to trace the history of information work and identify the systems of information collection, production, and dissemination at the Department of Agriculture during its first years as a federal agency. My research for it began at the National Archives and Records Administration (NARA) where I expected to find a paper trail of administrative records for the Department, from its founding in 1862 to its elevation to a cabinet post in 1889, that would shed light on its day-to-day functions and particularly how it worked to fulfill its mission “to acquire and to diffuse” and to “procure, propagate, and distribute among the people” agricultural information. After several weeks working in the archives and talking with archivists at NARA I realized that Harold Pinkett’s discussion of the status of the historical record for the Department still held true. Pinkett, the first African-American to be appointed archivist at the U.S. National Archives in 1942, was the first archivist to process the records of the Department of Agriculture. In an article focused on United States government work with plants published in the Journal of Agricultural History in 1955, Pinkett noted that the administrative record for the Department of Agriculture was “very incomplete” generally and especially so for the records pertaining to the Department’s work with plants and

11 An Act to Establish a Department of Agriculture reprinted in the Annual Report of the Commissioner of Agriculture for 1862. (n.p.)
seeds prior to the 1890s. Pinkett pointed to an earlier article in the same journal by another archivist working with the Department’s records at the National Archives, Guy A. Lee. Lee’s article was, in his words, “essentially a summary of a *Preliminary Checklist of the Records of the Office of the Secretary of Agriculture*” he produced for the National Archives in 1945. Pinkett noted that the Chief of the Agricultural Department Archives, T.R. Schellenberg, offered a critical note to Lee’s discussion of the Record sub-group for the Commissioner of Agriculture. Schellenberg suggests in a footnote in Lee’s article that researchers consult the personal papers of the commissioners to fill the significant “gaps” in the administrative record, “The records of the Department of Agriculture while it was administered by the Commissioners from 1862 to 1889 are very incomplete. Practically none of the official records of the Commissioners are extant, though the gaps in the documentation of the activities of the Department are partially filled by the records of various bureaus, particularly those of Chemistry, Entomology, and Plant Industry. Investigators interested in the careers of the Commissioners must perforce use the scattered papers in the custody of various historical societies. Among such papers, the existence of which is known, are those of Commissioners Horace Capron (1867-71) and William G. Le Duc (1877-81).”

I turned next to the Special Collections of the National Agricultural Library to evaluate the usefulness of Capron’s papers to this project. I soon realized that to follow Schellenberg’s advice would be a project beyond the scope and resources of this dissertation and decided on another path. It was at this point that this dissertation research took shape. Given the issues outlined above with the administrative record for the Department of Agriculture in this period, I turned to the Annual Reports under the commissionership (1862-1888). Because of the size of and information contained in each annual report, I restricted my study to the formal reports of the commissioners, the

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14 Ibid., 243.
15 The collection is a typed manuscript copy of Capron’s two-volume autobiography. Capron, Horace M. *Memoirs of Horace Capron* (1884). Special Collections, National Agricultural Library.
reports of the gardener, and the reports of the statistician.\textsuperscript{16} Between 1862 and 1888 there were seven commissioners.\textsuperscript{17} The position of gardener was one of the first appointments made by the first commissioner.\textsuperscript{18} Newton selected William Saunders for that post. Saunders was responsible for the collection, production, and distribution of plants and seeds and he stayed with the Department in that role for the full period of my study. I settled on the statistical work of the Department because it, too, was part of each Annual Report between 1862 and 1888.

The University of Illinois Library collection included a full run of the Annual Reports of the Department of Agriculture for the years under the Commissionership, 1862-1888. Those reports form a discrete and cohesive body of primary source material and government documents and publications that had not been previously used to identify and understand the information work and systems of information at the Department under the Commissionership. The Annual Reports proved to be rich in detail pertaining to what I am calling the information work of the Department.

In addition to these primary sources I examined newspapers (especially the agricultural press), monographs and journal literature on the emerging area of information history and the history and work of the Department in this period, relevant dissertations, and web-based resources that included the websites of the National Agricultural Library and the USDA to help establish the historical and intellectual context for my work.

\textbf{Information History and Information Studies}

There is a long tradition of historical scholarship in Library and Information Science but only recently has that come to include explicit and critical engagement with information

\textsuperscript{16} Even in the first years of reporting for the new agency its annual reports were hundreds of pages long and included formal reports, solicited essays, charts, illustrations, maps, and examples of correspondence both to and by the Department. I will discuss the annual reports as sources and evidence in Chapter Two of this dissertation.

\textsuperscript{17} Newton, 1862-1867; Stokes, 1867-1867; Capron, 1867-1870; Watts, 1871-1876; LeDuc, 1877-1880; Loring, 1881-1884; and Colman, 1885-1889. Their reports are discussed in Chapter Four of this dissertation.

\textsuperscript{18} I refer to this section at the Department of Agriculture in a few ways: “the Gardener” and by the section name as it appeared in the Annual Reports for the period of my study, “Superintendent of the Garden and Grounds.”
in society.\textsuperscript{19} I situate the history of agricultural information work at the Department of Agriculture in terms of that recent discussion and offer it as a contribution to what Toni Weller sees as “the bigger discourse” that acknowledges “information as a distinct historical subject . . . multifarious and complex.”\textsuperscript{20} The information work at the Department is best understood in terms of what Black and Schiller call systems of information situated in society and examined in terms of the historical circumstances “in which they originated and operated.”\textsuperscript{21} The society of the second half of the nineteenth century United States was one teeming with dramatic changes in communication and transportation technologies – the telegraph and the railroad – that were critical factors in the growth and development of agriculture work and production. The growing culture of reading and increase in production and distribution of books, newspaper, and magazines are also examples of systems of information emerging and changing in this period.\textsuperscript{22} By taking an approach that considers systems of information in this larger sense this dissertation is able to expand the discussion of the Department’s work to consider both its reach and scope and how it fulfilled its mission to “procure, propagate, and distribute” agricultural information to the people of the nation. This dissertation illuminates ways that information work in agriculture at the Department of Agriculture from 1862 through 1888 was a foundation on which the authority of the federal government was asserted.

**Limitations**

It has been clear to me from the outset that this research topic could be taken in a number of directions. Even without a traditional archival record for the Department of Agriculture from its founding in 1862 through 1888, the historical record is sufficiently rich and complex to uncover and weave stories that bring together people, places, and money in ways that contributed to our understanding of the work of the Department and

\begin{itemize}
\item \textsuperscript{19} See, for example, Mikki Smith and Christine D’Arpa, “What’s History Got to Do with It? Seventy Years of Historical Dissertation Research at the iSchool at Illinois.” Library Trends 65, no. 4 (2017 – in press) and, certainly, the regular bibliographies of the literature of American library history compiled and published by Edward A. Goedeken, since the early 1990s.
\item \textsuperscript{22} See Casper (2007) on the U.S. Census for an interesting discussion of illiteracy and the Census.
\end{itemize}
particularly what I am calling its information work. For the purposes of this dissertation I proposed to look at one set of resources that seemed to have not yet been examined with an eye to information work, the Annual Reports of the commissioners from 1862 through 1888. Those reports are an official and a cohesive record of the work of the Department. They served as one of the main ways the Department communicated its work to Congress and were available, free of charge, to a diverse public that included farmers, educators, scientists, and speculators and traders in agricultural information and products. The information in the Annual Reports re-circulated in various formats including newspapers and the agricultural press, at meetings and gatherings of agricultural societies in the United States and overseas, and at exhibits about agricultural progress at local, regional, and international fairs. The Annual Reports though published only once a year are long – between 600-800 pages. They presented a massive and unwieldy volume of literature to examine in a reasonable space of time. Further refinement was necessary to make the research for this dissertation a manageable project that could still result in interesting details leading to a meaningful analysis. For the purposes of this study I focus on the Reports of the Commissioners, Reports of the Garden and Grounds, and the Reports of the Statistician in the Department Annual Reports for 1862 through 1888 under the Commissionership and before the agency was elevated to Cabinet status in the Executive Branch of the U.S. Government in 1889.

The structure of the Department of Agriculture evolved and grew quickly adding a Library and Divisions of Chemistry, Entomology, and Botany by the end of the 1860s. In the 1870s there were new areas of work in microscopy, forestry, and the diseases of animals. In the decade of the 1880s, work branched out to include several divisions including veterinary, Forestry, Ornithology, Pomology, and Vegetable Physiology. A Bureau of Animal Husbandry was established in 1884 and the Office of Experiment Stations in 1888.  

23 From the outset the Department had an ambitious publication schedule much more extensive than just the Annual Reports required by the U.S. Congress. This included more frequent publications by the Divisions and Bureaus including a monthly statistical report. There were also publications of research conducted at the request of the

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23 See Appendix A: Overview of the Development of the Department of Agriculture, 1862-1889.
U.S. Congress. These publications are beyond the scope of this dissertation and do not inform my discussion.

A final caveat: given the paucity of available data, this dissertation is not a complete history of the United States Department of Agriculture during the period under the Commissionership, 1862-1888.

**Chapter Outline**

As discussed earlier in this Introduction (Chapter 1), this dissertation elucidates and analyzes the information functions of the Department of Agriculture as embodied in its Annual Reports for the period 1862 through 1888. It identifies and extracts evidence of systems of information as well as evidence of a system of grassroots or local communication and information sharing and evidence of an international exchange of agricultural information. It identifies some of the ways that work had an impact on the practice of farming and the economy of agriculture. In Chapter 2: Formation of the U.S. Department of Agriculture in the 19th Century, I situate historically the 1862 founding of the Department of Agriculture. I examine both the advocacy and the opposition to a federal agriculture agency by tracing some of the political, economic, social, and cultural factors and implications associated with a centralized federal agency responsible for collecting, producing, and distributing agricultural information to farmers and other agriculturalists. Chapter 3: Introduction to the Annual Reports of the Department of Agriculture, 1862-1888 introduces the Annual Reports of the Department of Agriculture as official government documents and political texts with rich and revealing narratives that can both illuminate and trouble our understandings of farming, government information work in agriculture, and agricultural science in the second half of the 19th century in the United States. In Chapter 4: The Reports of the Commissioners of the Department of Agriculture, I dig into the primary resources used for this dissertation, the first twenty-seven years of the Annual Reports of the Commissioner of Agriculture, 1862 through 1888. Specifically, I look at the reports of the commissioners of agriculture for each year and pose these three questions:
• What and how did the department fulfill its mission to procure, propagate, and distribute agricultural information?

• How did the commissioners present/represent that information in their Annual Reports to Congress?

• What was the cycle of information procurement, propagation, and distribution at the department? How did it change over the period of time I cover, 1862 through 1888?

Between 1862 and 1888 seven men served as commissioner of the agency, Isaac Newton, 1862-1867; John W. Stokes, 1867-1867; Horace Capron, 1867-1871; Frederick Watts, 1871-1877; William G. Le Duc, 1877-1881; George B. Loring, 1881-1885; Norman J. Colman, 1885-1889. The next two chapters look closely at the reports of two of the longest standing divisions at the new agency: The Superintendent of the Garden and Grounds (Chapter 5) and Statistical Division (Chapter 6). William Saunders, the Superintendent of the Garden and Grounds and the statistician, Jacob Richards Dodge, served in their respective positions for all or most of the period studied for this dissertation. The concluding chapter (Chapter 7) engages the political economic and geo-political reach and influence of the agricultural information work at the Department by positioning it in terms of the formation of the modern state in the United States and the expression of empire by the U.S. government. I conclude that final chapter by returning to my research questions and summarizing my findings. Finally, I discuss the significance of my findings, the limitations of this research, and I outline opportunities to expand and extend this work in future research.

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24 There were three statisticians at the Department of Agriculture from 1862 through 1888 but, as we will see, the work of that Division was associated with Dodge. The other two men to serve were Lewis Bollman and Charles Worthington. Their terms of service: Lewis Bollman (1863-1864), Jacob Richards Dodge (1865-1877), Charles Worthington (1878-1880), and Jacob Richards Dodge (1881-1888)

Introduction
Agriculture was not only at the center of the economy of the United States in the mid-19th century, it was stitched into the very fabric of consciousness and identity. Whether viewed in the contexts of the Jeffersonian agrarian ideal of the yeoman farmer working the land or of recent historical studies that argue the Jeffersonian ideal was more myth than reality, agriculture has been at the center of the politics, culture, and the economy of the United States from its founding. The character and future of agricultural practice and production, as well as what institutional structure and support would best serve agricultural advancement, were debated by politicians, farmers, the press, and members of agricultural societies. Farmers, gentlemen farmers, gardeners, diplomats, and scientists exchanged information about crops, weather, water, seeds, and farming tools and techniques; they shared plants and seeds, and cultivated networks of like-minded individuals at home and abroad with whom agricultural information was exchanged. A vibrant and widely read agricultural press, agricultural societies, and agricultural fairs served as forums for discussion, information exchange, advocacy, and political organizing. That system of agricultural information was rooted in local knowledge, informal networks, and collective experience.

Within the United States of the early 19th century there were organized efforts to identify, produce, and share agricultural information at various levels of society, from local communities to regional and state associations to national societies. There was also a vibrant international exchange of information and tools as well as discussion of best practices and standards for agricultural research.

See Hagenstein, Gregg, and Donahue (2011, 1): “historians like to point out that farmers have been enthusiastic participants in America’s growing market economy from the start, and therefore the ‘agrarian ideal’ of the yeoman standing free from the corruption of commerce might be better termed the ‘agrarian myth’. Eric Hobsbawm in The Age of Capital (1975) argues that the Jeffersonian yeoman is best understood as a “rural utopia in its most literal form – the free yeoman on free soil.” (Hobsbawm, 138) It was this sector of U.S. society in 1860 that asserted significant political power that helped form the Republican Party.
One of the earliest societies to support agricultural research was the American Philosophical Society. It was founded in Philadelphia in 1743 to address Benjamin Franklin’s challenge to “improve the common stock of knowledge” and advance the independence and development of the emerging nation in several areas including the promotion of scientific agriculture. The Massachusetts Society for Promoting Agriculture was founded in 1792 and began publishing semi-annually the *Massachusetts Agricultural Journal* in 1813. The Maryland Agricultural Society was established in 1818 and the Illinois Agricultural Association in 1819. The establishment of state agricultural societies followed: Ohio in 1846, Maryland in 1848, Virginia in 1877 to name a few. The island community of Martha’s Vineyard established its own Agricultural Society in 1859 and held its first livestock show in 1861. The U.S. Agricultural Society was established in 1852 in Washington, D.C.

Agricultural fairs, shows, exhibits, and contests were just some of the activities promoted and organized by state and local agricultural societies and served as places where the diverse set of agricultural stakeholders came together to share and discuss agricultural information. Many state agricultural societies collected statistics on the state of agriculture in their region. Much of this activity though local was connected to similar activities and organizations in Europe – particularly England, the Royal Agricultural Society of England in 1838, and Germany, which before unification in 1871 were regional. Historian Mark Finlay argues that state agricultural societies in the United States “looked to Europe for guidance” noting that in “1862, there were 15 experiment stations in the German states” and “about 80 such stations in 1887.” He also notes participation by agriculturalists from the United States in the International Congress of Farmers and Foresters in Vienna in 1873. International cooperation was evident not only in participation but also in the reports that emerged from that and similar meetings. By

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1862, American states active internationally included Ohio, Kansas, New Jersey, Iowa, North Carolina, and Connecticut.\textsuperscript{28}

In this chapter I situate the establishment of a new Department of Agriculture at the federal level historically and offer examples of both advocacy for and opposition to efforts to make the gathering, production, and distribution of agricultural information work (or science as it was often referred to\textsuperscript{29}) a responsibility of the federal government of the United States. I discuss how both advocates and opponents rooted their arguments in their understanding of traditional agricultural knowledge and the systems and tools of information and communication used and how that way of knowing and communicating carried forward into the systems of information developed at the Department of Agriculture.

**Funding by the National State for Agricultural Research in the United States Prior to 1862**

Agricultural research and information was recognized early as critical to the stability and growth of the nation. An early example of organized agricultural research by the state was conducted by George Washington in 1791 in the early years of his presidency. Washington, in response to an inquiry from “Arthur Young (of England),” developed and circulated a short survey to “several gentlemen, the best informed of the agriculture” regarding the state of agriculture in New Jersey, New York, Pennsylvania, Maryland, and Virginia. The survey requested information on soil quality; the amount of arable land, pasture, and woods; land cost including the percentage leased and associated cost; types of crops; prices for those crops; prices for both working and food livestock; and prices for iron.\textsuperscript{30}

\textsuperscript{28} Mark Finlay, “Transnational Exchanges of Agricultural Scientific Thought form the Morrill Act through the Hatch Act,” in *Science as Service: Establishing and Reformulating Land-Grant Universities, 1865-1930*. Ed. Alan I. Marcus. Tuscaloosa: University of Alabama Press 2015: 33-60. Finlay notes that the German stations were actually affiliated with and run by other countries but employed German-trained scientists.  
\textsuperscript{29} I prefer to discuss these efforts in terms of the idea of agricultural information rather than agricultural science as the latter requires a different sort of inquiry and discussion.  
The first Congressional appropriation for agricultural information work by an agency of the United States government was to the U.S. Patent Office in 1839. This came only three years after the Patent Office was established as a separate organization within the United States Department of State. The U.S. Congress allocated $1000 for the acquisition and distribution of seeds and plants, and for the collection and distribution of agricultural statistics. The latter were seen to have a predictive value by Patent Office Commissioner Henry Ellsworth in his report to Congress for 1839, “From data [from] so high a source, the Commissioner can safely predicate future calculations, and hopes to present to Congress such details of domestic products as will be of importance in financial estimates.” Yet, according to historian Earle Ross, the agricultural work at the Patent Office was “informally constituted” and often dismissed by the agricultural press as inadequate and the workers at the Department were seen as incompetent. It was not until 1849 when the Patent Office was moved under the newly established Department of

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31 The system of patents in the United States is based on article 1, section 8 of the Constitution which was adopted at the Constitutional Convention on September 5, 1787. It established the responsibilities and power of Congress. Point 8 of 18 reads: [Congress shall have the power] To promote the progress of science and the useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries. The first patent bill was passed in 1790 and authorized a board within the Department of State the power to issue patents. The Board members were the Secretaries of State and War, and the Attorney General. The Patent Act of 1836 established the Patent Office with a Commissioner, a small staff, and a dedicated building.

32 Henry Leavitt Ellsworth served as the first Commissioner of the Patent Office (1836-1845) and by all accounts had a strong personal interest in collecting foreign seeds and plants which he did through diplomatic and consular channels as well as the military, specifically the Navy. Historian Fred A. Shannon minces no words in describing the agricultural information work at Patent Office as Ellsworth’s “pet” (Shannon 1945, 270). In his report to Congress for the year 1837 he alerted Congress to the growing number of patent applications for “implements of agriculture” and urges Congress to invest in agriculture: “For commerce and manufacture, much has been done; for agriculture, the parent of both, and the ultimate dependence of the nation, much remains to be done. Husbandry seems to be viewed as a natural blessing, that needs no aid from legislation. Like the air we breathe, and the element of water, which sustain life, the productions of the soil are regarded by too many as common bounties of Providence, to be gratefully enjoyed, but without further thought or reflection” (Patent Office AR 1838, 5). Ellsworth’s focus was not limited to the mechanical tools of agriculture. He was aware of the value of new and hardy seed varieties and argued that the State had matured to a point that it “is able to supply its own wants, and will soon have a surplus for exportation” (Patent Office AR 1838, 5). Directed and sustained research in agriculture will, Ellsworth argued, “prove a great benefit to the husbandman and to the country” (Patent Office AR 1838, 6). patents to Congress offer a very limited glimpse at the system of agricultural statistics, and seed and plant collection by the Navy and diplomats of the United States government. But one does begin to see in Ellsworth’s reports evidence of how those working with or interested in agricultural information were positioning support for the formation of a federal agency devoted to agriculture.
the Interior that its agricultural work was systematized and documented.\textsuperscript{34} That year marked the first publication devoted to agricultural information work by the Patent Office.\textsuperscript{35} Between 1855 and 1861 the average appropriation was “about $54,000.”\textsuperscript{36} Criticism, internal and external, of how agricultural information work was managed by the Patent Office continued and with it a demand for a separate department responsible for agriculture. Agricultural societies (state, regional, and the national society) supported a cabinet-level Department of Agriculture. The agricultural press also supported an independent department.\textsuperscript{37} Efforts were made to include the voices of farmers and in 1859, the Commissioner of the Patent Office, Joseph Holt, brought a group of farmers together to form an “Advisory Board of Agriculture of the Patent Office.”\textsuperscript{38} Ross notes that Holt’s effort was met with suspicion by the U.S. Congress and resulted in cutbacks in

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\textsuperscript{34} The United States Department of Interior was established as one part of a reorganization and growth of the federal government triggered in large part by the physical expansion of the United States in the 1840s. Between 1845 and 1848, “the United States enlarged its domain by more than a million square miles, reaching nearly its present size between Canada and Mexico.” (Utley and Mackintosh, 1989)
\textsuperscript{35} The second part of the annual report of the U.S. Patent Office for 1849 “is devoted exclusively to the great and growing interests of Agriculture....” It sounded an alarm about the state of and future of agricultural production in the United States and expressed grave concern about the lack of knowledge and “discipline” among farmers in this country. (Patent Office AR 1849, 8) It expressed concern about the lack of action to share information “among its citizens” about the “true principles of tillage.” (Patent Office AR 1849, 9) But even the 80,000 packets of seeds distributed by the Patent Office and the “some two hundred thousand copies of agricultural papers and periodicals...which circulate in every State in the Union” are limited in their impact because they are not regulated by legislation. “Truthful statistics from the groundwork of all reform – of all progress. State legislatures must aid in this great work. If ‘knowledge is power’, ignorance is weakness; and the removal of this weakness is one of the highest duties of every republican government.” (Patent Office AR 1849, 12)
\textsuperscript{36} Ross (1946), 131.
\textsuperscript{37} The pages of the Chicago-based weekly agricultural newspaper, \textit{Prairie Farmer}, in the decades before the establishment of the U.S. Department of Agriculture include coverage of discussion in Congress about a separate Department. Two articles in late 1852 argue for a “simple and efficient” agency able to gather, process, and distribute agricultural information in a timely manner (September 1, 1852, 407-408). In December of the same year the \textit{Prairie Farmer} advocated for a federal bureau of agriculture on its front page. It pointed with disappointment to the status of agricultural work at the Patent Office, “we are three or four fifths of the people; and all admit that ours is the great interest of the nation; and we are represented in the machinery of our Government by a petty clerkship, located ‘in a celaar room’ of the Patent Office.” The article continues: With men of science, there is no question in regard to the utility of a department of Agriculture, in our Government; and the only weighty one, urged by politicians, is the fear that a department of the kind would degenerate into a party machine, in the hands of party politicians. This we can never permit; ours must be economical WORKING DEPARTMENT. The article argued that the Department’s staff should be hired based on their background in and knowledge of agricultural work and issues. (\textit{Prairie Farmer}, December 1, 1852, 535-536).
\textsuperscript{38} Ross 1946, 132; Gates 1965, 306.
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future appropriations. Other suggestions included a bureau of agriculture at the Smithsonian or a cabinet-level department of industry with bureaus of agriculture, manufacturing, and commerce. There were several unsuccessful efforts in Congress to move ahead with a separate agriculture department. Most of those efforts were defeated by Southern Democrats suspicious that the increased power of the federal government would challenge state autonomy and undermine their form of agricultural production based on slavery. It was not until the establishment of the Department of Agriculture in 1862 as an independent agency in the Executive Branch of the United States Government that there was a committed and organized role for the federal State in agricultural research and information collection, production, and dissemination.

A New Federal Agency – Department of Agriculture

Congressional legislation to establish a Department of Agriculture finally succeeded in a political and economic moment in which opportunity and necessity converged. The secession of the South began in large part as a reaction to the consolidation of Republican power in the 1860 election of Abraham Lincoln as President of the United States. South Carolina was the first to leave the Union in December 1860. In February 1861 six more

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39 This idea of including farmers is an important one and something we see in the work of the Department of Agriculture. It actively solicited information from farmers about the state of agricultural production in the United States.

40 Gates (1965) notes that despite the fact that the former head of agricultural research in the Patent Office, Thomas G. Clemson, was a strong voice for the elevation of agricultural research to independent status within the federal government, the Confederacy expressed no interest in an agriculture department. “The Southern Confederacy of Atlanta…said the bureau in Washington was a ‘stench in the nostrils of all good men in the South.’ It was expensive, its benefits, if any, were shared by few, it used tax revenues for the benefit of the few, its annual report as well as its seeds and plants were distributed for political effect….” (Gates, 305).

41 Greathouse 1898; Wanlass 1920; Weist 1923; Ross 1946; Rasmussen and Baker 1972; Hoffer 2007.

42 Ross (1946) suggests the formation of the Department of Agriculture was, in a sense, inevitable: “The war for the Union gave the occasion and opportunity rather than the impulse for the new agency. The determining influence came from the occupation itself, from its increasing needs and growing assertiveness. Humble and dubious as the new establishment appeared, its creation was basic in a continuous and fairly consistent national policy that reflected the successive stages of the American farming enterprise” (Ross, 129). Hobsbawm (1975) offers a more nuanced interpretation. He argues that the North had the upperhand in terms of economic power and that combined with the exclusion of slavery from the new territories of the West forced the South to situate itself against a “national government.” He concludes, “the North was in a position to unify the continent and the South was not” (Hobsbawm, 142).

Gates (1965) notes that Congressional opposition to an independent Department of Agriculture did not end with the secession of the southern states: “Critics feared that the supporters of the new department would push it up to Cabinet status and that it would ‘grow and become exorbitant in its demands upon the Treasury’” (Gates, 307).
southern states joined South Carolina and formed the Confederate States of America. By the end of May 1861 four more states withdrew from the Union. These actions tipped the balance of political power in Congress and on December 2, 1861 the U.S. Congress passed three acts directly related to the future of agriculture in the United States: The Morrill Act, the Homestead Act, and the Department of Agriculture Organic Act. The Morrill Act of 1862 allowed the federal government to donate public lands to the States to sell and use the profits to fund colleges for the “agricultural and mechanic arts.” The Homestead Act made public lands available for “settlement and cultivation.” The Organic Act established an independent Department of Agriculture whose “general design and duties...shall be to acquire and to diffuse among the people of the United States useful information on subjects connected with agriculture in the most general and comprehensive sense of that word, and to procure, propagate, and distribute among the people new and valuable seeds and plants.” It is worth noting that the act to establish the Department of Agriculture also authorized the commissioner to hire “chemists, botanists, entomologists, and other persons skilled in the natural sciences pertaining to agriculture.” In addition, the Pacific Railway Act of 1862 provided government subsidies for land to “aid in the construction of a railroad and telegraph line from the Missouri river to the Pacific Ocean, and to secure to the government the use of the same for postal, military, and other purposes.” This act supported the continued development of transportation and communication infrastructure built on the groundwork already laid by the Pacific Telegraph Act of 1860. The Pacific Telegraph Act authorized the U.S. Congress to seek proposals for the construction of telegraph lines for government use to “facilitate communication between the Atlantic and Pacific states.” These acts of Congress employed the information gained from government surveys of the North American continent. Together, they helped facilitate the development of a federal

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43 The order of secession: South Carolina (December 20, 1860), Mississippi (January 9, 1861), Florida (January 10, 1861), Alabama (January 11, 1861), Georgia (January 19, 1861), Louisiana (January 26, 1861), Texas (February 1, 1861 confirmed by a popular referendum on February 23, 1861), Virginia (April 17, 1861 confirmed by a referendum on May 23, 1861), Arkansas (May 6, 1861), Tennessee (May 7, 1861 confirmed by a referendum on June 8, 1861), and North Carolina (May 20, 1861).

44 The Act to Establish a Department of Agriculture was signed into law on May 15, 1862, the Homestead Act on May 20, 1862, and the Morrill Act on July 2, 1862.

45 Marcus and Lowitt (1990) also note that the “dynamic relationship between these three agriculture-related acts” has not been examined by scholars. (Marcus and Lowitt, 3)

government with both an expanding role and emerging infrastructure that encompassed education, transportation, and communication.

The geographic reach of the new Department of Agriculture was profound. In many of their reports to the U.S. Congress, the commissioners of the Department of Agriculture between 1862 and 1888 suggest that the Department’s publications, seeds, and plants reached more individuals in every state (if not county) than material from any other single organization in 19th century American life. Much of the rhetoric favoring a federal department of agriculture supported the idea that agriculture was essential to the nation's security and health, and that the federal government had a responsibility to support and promote progress in agriculture toward those ends. In the midst of a civil war, the first Commissioner of Agriculture, Isaac Newton, offered the U.S. Congress a world history lesson that called for peace and imagined a prosperous future for the United States, perhaps even the eternity that defied Rome. In his Annual Report to Congress he was emphatic that the power and prosperity of the nation rested on agriculture, “Agriculture furnishes the food of the nation, the raw materials of manufactures, and the cargoes of domestic and foreign commerce. It is the cause and the evidence of true civilization; for, when tillage begins barbarism ends, and the various arts commence.”

The ethos of the United States as a nation was and has continued to be intimately tied to a vision of agriculture and agricultural labor as essential to a healthy and vibrant democracy. Thomas Jefferson’s personal and political writings foreshadow Commissioner Newton’s points, which surface in political discourse even today. At a

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47 The U.S. Postal System is another example of the effective power and reach of the federal government. What distinguishes the Department of Agriculture from it are a few things including its outreach to collect information, the establishment of a centralized place for research and experimentation, and the dissemination of information in the form of publications, seeds, and plants. That said, the work of the Department of Agriculture could not have been done without the infrastructure provided by the U.S. Postal System and the Congressional franking privilege: “The 'bestseller' of the day received selective distribution, for Congressmen could please voters with book favors and thus the report was excellent political ammunition during election campaigns.” (Harrison 1961, 53)

48 AR 1862, 24. N.B.: I will refer to citations of material in the Annual Reports of the Department of Agriculture throughout this dissertation in this way.

49 In 1785 Thomas Jefferson wrote to James Madison, "It is not too soon to provide by every possible means that as few as possible shall be without a little portion of land. The small landholders are the most precious part of a state.” (http://www.monticello.org/site/jefferson/quotations-agriculture accessed January
time when agribusiness and factory farms dominate agricultural production, the ideal of
the independent farmer continues to permeate our collective identity as a nation. A close
look at agricultural practice today reveals conditions quite different from that ideal. The
late 19th century witnessed dramatic and fundamental changes in both the stakes and the
stakeholders in American agriculture and many of those changes carried into the 20th
century. At the heart of that change was the ability of the federal government to assert its
authority via a system of information transfer in the most productive and important sector
of the economy, agriculture.50

**Historiographical and Evidentiary Context**

Most accounts of the history of the Department of Agriculture have been written by
historians and other staff employed at the Department. In fact, for much of the 20th
century there was an Office of the Historian at the Department of Agriculture and these
official histories continue to form the basis for our general understanding of the
institution and its historical development. My research suggests that those historians had
access to a broad array of primary resource records and documents that were never
transferred to the National Archives or the National Agricultural Library’s Special
Collections.51 As discussed in the Introduction, the archival record of documents from the

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50 The information transfer cycle or information transfer system is a conceptual framework employed in
Library and Information Science (LIS) instruction and research. It asserts the dynamic nature of
information and is employed to identify and evaluate the stages of information production, dissemination,
and use. The system of information transfer is a ubiquitous concept in library and information science
scholarship stemming in large part from its focus on use and users. Its components begin with acquisition
(or procurement in the language of the Department of Agriculture in the 19th century) and embody a
dialectical and dynamic approach to understanding the life cycle of information that sees human agency as
fundamental in each stage. See Estabrook (2010, 3290).

51 In their short article, Marcus and Lowitt (1990) argue that the Department of Agriculture is like no other
agency in the U.S. government when it comes to telling its own history. It is one “self-consciously aware of
their past” (Marcus and Lowitt, 2-3). This may be part of the reason there is still no history of the
Department of Agriculture that critically examines its origins and work. Marcus and Lowitt acknowledge a
rich bibliographic body of articles and conference papers about the Department of Agriculture, but argue
that the “fundamental question as how and why the department came into being in 1862 and how and why
Department of Agriculture in its first decades is sparse. Indeed, according to Harold T. Pinkett, the archivist responsible for processing the records of the Department of Agriculture at the National Archives from 1942 to 1979 (with a leave during World War II), many of the Department’s official records from the 19th century were thrown out or lost. The truth of Pinkett’s claim about the lack of documentation for the Department of Agriculture in the period of my study, 1862 through 1888, is supported by my research at National Archives and Records Administration, the Library of Congress, and Special Collections at the National Agricultural Library.

Contemporary historians seeking to develop a more comprehensive institutional history of the Department of Agriculture are hindered by this lack of an archival record for the Department itself. In the face of such a dramatic loss of the administrative records of the Department of Agriculture, the Annual Reports for this period are a unique resource. Although they figure prominently in the historiography of the Department, no one has yet done a close and comprehensive reading of the reports themselves as primary source documents for the period under the Commissionership, 1862-1888. More significantly in the context of this dissertation, no one has looked at the systems of information and the department gained cabinet status in 1889” has not been addressed sufficiently and has “failed to produce a monographic literature.”

52 Harold T. Pinkett was one of the first archivists to process material related to the work of the Department of Agriculture after they were transferred to the new National Archives building when it was completed in 1935. In 1962, on the occasion of the hundredth anniversary of the Department of Agriculture, Pinkett wrote: “Foremost in any account concerning material now identified as early records of the Department of Agriculture is their scantiness, a scantiness perhaps unparalleled in the archival history of major Federal agencies.” Pinkett, H.T. (1962). “Early records of the U.S. Department of Agriculture,” American Archivist, v25, n1, pp. 407-16. See, too, Pinkett’s article for the American Historical Review (April 1964), “The Archival Product of a Century of Federal Assistance to Agriculture.” Pinkett was the first African American archivist at the National Archives and was active and respected in the field. Among his many memberships, the Cosmos Club of Washington, D.C. The American Historical Association’s Perspectives, 39: 8 November 2001(https://www.historians.org/publications-and-directories/perspectives-on-history/november-2001/in-memoriam-harold-t-pinkett#) includes a short article by Douglas Helms of the Natural Resources Conservation Service remembering Pinkett. Douglas Helms in his contribution on federal agricultural records in Farmers, Bureaucrats, and Middlemen found more supporting evidence: “Waldo G. Leland, an important advocate of establishing a federal archival agency, and his colleague, Claude H. Van Tyne, examined the early records of the Department of Agriculture and concluded in 1904 that the papers could 'hardly be said to possess any value for historical purposes.' In 1912, James Wilson, nearing conclusion of the longest tenure of any cabinet secretary, assessed the documentary remains of his and previous administrations: 'I think that not many papers of real historical value accumulate in the Department of Agriculture”’ (27).
agricultural information work at the Department of Agriculture from 1862 through 1888 as represented in its Annual Reports.

Recent historical scholarship has engaged the history of the Department of Agriculture and agricultural information either indirectly or in terms of specific geographical regions, or agricultural products. Some interesting studies locate the significant changes in U.S. agriculture in the early 20th century rather than the 19th century. For example, Deborah Fitzgerald, in her book, *Every Farm a Factory: The Industrial Ideal in American Agriculture* (2003), looks at large wheat farms in the West and argues that an “industrial logic” radically transformed agriculture in the United States beginning in the 1920s. Critical to this change, according to Fitzgerald, was a system that “linked capital, raw materials, transportation networks, communication systems, and newly trained technical experts.”

Barbara Hahn’s study of bright tobacco, *Making Tobacco Bright: Creating an American Commodity, 1617-1937* (2011), – the main type of tobacco used in the production of cigarettes in the 19th century – examines the relationship between types of tobacco, the tobacco industry, and the regulation of tobacco as a commodity. In *First the Seed: The Political Economy of Plant Biotechnology* (2004), Jack Kloppenburg traces the social history of plant breeding. Though his work spans a much longer period of time than my study, his conceptual framework informs my work. He argues that the work of plant breeding began with farmers trading seeds from plants they cultivated as a “public good” but was transformed into a commodity that became a basis for the “accumulation and reproduction of capital.”

Kloppenburg looks specifically at the historical role of the state in agricultural research on seeds and the relationship of state-sponsored research to an emerging private sector seed business. Philip J. Pauly examines the history of horticulture in the United States in his book, *Fruits and Plains: The Horticultural Transformation of America* (2007). He argues that horticulture in the 19th century meant something analogous to what we now call plant biotechnology. Pauly suggests that the popular notion of an “individual untutored American plantsmen” was a myth and that there was in horticulture a network of stakeholders whose “activities fundamentally altered not only the vegetation, but also the economic activities, social relations, and common experiences of Americans.”

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53 Kloppenburg (2004, xvi).
United States from the mid-18th century to the late 20th century and argues that his focus on horticulture sheds new light on how we understand the history of the “environment, agriculture, science, art, and national development” in the United States. Agricultural history, history of science, and social and cultural histories of rural life form a significant portion of recent dissertations in history and related disciplines. None focus specifically on the information work or systems of agricultural information work at the U.S. Department of Agriculture in the second half of the 19th century. However, there are several that engage related topics.

There are a handful of studies that seek to either document or describe the Department of Agriculture but nothing that fully engages the work of the Department from the point of view of its information work via its own publications as government documents or publications and the systems of agricultural information it developed and exploited. Nor has there been any study that examines in detail the development of those systems of agricultural information in the Department of Agriculture’s first three decades. Adkinson focuses on systems of information and the policies that facilitated their development, but he takes a bird's eye view of the production of federal information and the government as a whole over a wide span of time. While interesting especially in respect to his foregrounding of the role of the library at the Department of Agriculture, his section on

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54 Pauly (2007, 1–2). One also sees evidence of a perspective sensitive to information history in some recent historical studies of colonialism and agriculture.  
the Department covers more than 100 years in two and a half pages and barely scratches the surface.56

Other scholarship focuses specifically on scientific research and policy in the federal government. The history of the Department of Agriculture is a key component in their analysis. Dupree (1980) and Rossiter (1975) focus on science rather than information per se. Dupree frames his study in terms of scientific research in the federal government and argues that government support for scientific research was an interest and commitment from the nation's beginning and “prominent in all periods of the nation's history. Indeed, before the rise of the universities, private foundations, and industrial laboratories, the fate of science rested more exclusively with the government . . . .”57 Dupree argues that federal legislation establishing a Department of Agriculture in 1862 was “a genuine turning point for science in the government.”58 The teaching and research environments of the land-grant colleges were also critical to agricultural research in the federal government. Dupree notes that those colleges became the “source of supply for the department’s personnel and its representatives in the states” especially later in the 19th century as the Department and its programs expanded.59 Rossiter is of the mind that nothing of significance happened in agricultural research in the United States until after 1890 when increased government funding and support in the form of the Hatch Act of 1887 supporting the development of regional experiment stations, increased funding for the Department of Agriculture in the 1880s, and the explicit support for agricultural colleges in the second Morrill Act of 1890. Rossiter argues that scientific research at the Department was hampered by the Department's focus on the needs of farmers rather than agricultural production.60 While these works do not directly address the research and

56 Burton W. Adkinson. Two Centuries of Government Information. Stroudsburg, Pa.: Dowden, Hutchinson & Ross, 1978. This absence in historical scholarship about the actual work of the Department of Agriculture is, no doubt, directly tied to the previously discussed absence of an archival record of administrative sources. I think, too, that the sheer size of the Department and its responsibilities contribute as well as the authoritative histories generated by in-house historians at the Department. The history of agriculture and especially the work of the Department in this emergent period beg for critical studies that get beyond and behind the dominant narrative.

57 Dupree (1980, 2)
58 Ibid., 151
59 Ibid., 182
60 Rossiter, 1979
work of the Department as information, they support my assertion that the Department of Agriculture in the late 19th century was a unique unit of the federal government. In my conclusion and discussion of further research I situate my work in reference to scholarship that seeks to understand the conditions and character of an emerging modern state and, specifically, how the agricultural information work at the Department of Agriculture helped legitimate the authority of the federal state. What these studies have in common is that each uses the early history of the Department of Agriculture to illustrate the development of the modern state and as, David Hamilton claims, “modern America.”61

Although the secondary sources do not focus on the agricultural information work and the systems of agricultural information at the Department of Agriculture, they offer historical context and interpretation. A close examination of the historiographical literature of the Department of Agriculture unveils a picture of how the history of the Department of Agriculture has been told – drawn from the official histories generated at the Department itself – and how inadequate that narrative has been for understanding the history of agricultural information work at the Department. Though many of these studies focus on the context of a larger thesis, they are critical to my research. They provide evidence that supports assertions about the growing power and authority of a modern centralizing state in the United States. The Department of Agriculture is not their primary focus but used as an example to illustrate their larger thesis. What they do not examine is the unique function and value of the actual agricultural information work mandated by the U.S. Congress and done at the Department of Agriculture, which was collecting, systematizing, and distributing agricultural information on an unprecedented scale – information directed to varied constituencies as authoritative and necessary to “progress” in agriculture.

I shift the focus to the systems of agricultural information acquisition, production, and dissemination and use three key sections of the Department’s Annual Reports to provide a more complete picture of the agricultural information work at the Department of

61 Hamilton (1990, 208)
Agriculture from 1862 through 1888. I offer a more nuanced understanding of the place and impact of agricultural research in the federal government during the second half of the 19th century. This dissertation makes explicit the evolution, scope, mandate, and impact of state-sponsored agricultural research, the systems of information the Department developed and upon which it relied to fulfill its mission.

**Research Questions**

Broadly speaking, this study uses the Annual Reports of the Department of Agriculture for 1862-1888 to understand how systems of agricultural information at the Department of Agriculture evolved and how they drove change in the practice and economy of agriculture in the late 19th century U.S. My research questions:

1. What were the systems of information developed at the Department of Agriculture between 1862 and 1889?
2. Looking specifically at the report of the commissioner of the Department of Agriculture that opened each Annual Report, I investigate the following questions: How did the Department of Agriculture from 1862 through 1888 understand its mission and contribution to scientific work supported by the federal government? What did the Department of Agriculture view as its essential mission in its early years? How did this change over time? The reports of the gardener and the statistician will be the frame for my approach to these questions: How was research of the Department of Agriculture prioritized and conducted? Who and what guided those decisions? How was the resulting information and new knowledge disseminated? To whom did it circulate?
3. What impact did the information work of the Department of Agriculture have on the practice of farming in the United States in the second half of the 19th century?
4. How did the information work at the Department of Agriculture help transform the political economy of agriculture in the U.S. in the second half of the 19th century and why does this matter?
This historical study analyzes, too, how the agricultural information work of the Department of Agriculture evolved and where it stood nearly 30 years later when the Department gained greater legitimacy, support, and a place in the President's cabinet. In many ways, this study is built upon an anatomy of the Annual Reports of the Department of Agriculture that seeks to make explicit how they embodied the systems of agricultural information work at the Department and how they served as vehicles for information transfer and communication of agricultural research and information.

This dissertation research is fundamentally historical in nature and draws on both primary and secondary resources. Given my focus on identifying and analyzing/understanding the systems of information work at the Department of Agriculture in its first decades, I found it useful to consider a paradigm from library and information science research, the system of information transfer. Conceptually the system of information transfer has framed much of the work in the field of library and information science and offers a powerful and significant conceptual framework for engaging my research to understand the systems of information work at the Department of Agriculture. The system of information transfer encompasses and illuminates the information responsibilities articulated in the Organic Act of 1862 that established a Department of Agriculture in the United States, “That there is hereby established at the seat of government of the United States a Department of Agriculture, the general designs and duties of which shall be to acquire and to diffuse among the people of the United States useful information on subjects connected with agriculture in the most general and comprehensive sense of that work, and to procure, propagate, and distribute among the people new and valuable seeds and plants.”

However, missing from the conceptual framework provided by the system of information transfer is an engagement with the issue of power. Political economy of information focuses on power and how it is mobilized for control that asserts authority and neutralizes or tempers resistance. Its explicit concern with questions that locate and analyze structures of power and those who hold, wield, and benefit from it adds depth to my

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62 Estabrook (2010, 3290)
63 AR 1862, 3-4
64 Mosco (2009) and D. Schiller (2007)
work. I will use the Conclusion of this dissertation to discuss these issues in more depth and with an especially keen eye to the ways information work at the Department of Agriculture in this period is an example of research and information provision by a federal agency as a public good.
CHAPTER 3: AN INTRODUCTION TO THE ANNUAL REPORTS OF THE DEPARTMENT OF AGRICULTURE, 1862-1888

Introduction

Government documents like agency annual reports and the reports of government surveys and expeditions had multiple uses and tangled intentions. Their narratives are often layered and speak to and serve multiple audiences. Annual reports are examples of the literature of organizations and they carry complex messages. The Annual Reports of the Department of Agriculture are a valuable resource for research on the information functions of the Department, the priorities of the federal government, and the institutionalization of scientific research and the centralized place for agricultural research in the federal government of the United States in the second part of the 19th century. Indeed, they have served as one of the primary resources for most histories of the Department due in large part to the meager archival record mentioned earlier in this dissertation. In the face of such a dramatic loss of documentation, the Annual Reports for this period serve a unique purpose. As discussed earlier, this dissertation uses the Annual Reports for the period of the Commissionership of the Department, 1862-1888, as its primary data source. The Annual Reports’ consistency in terms of publication and format, their length, the large size of the print runs as well as its geographic reach, whether distributed by the Department of Agriculture itself or through Congressional frank, makes them an essential primary resource for a study of this kind.65

Literary scholar Oz Frankel studied American and British annual reports including agricultural reports. Frankel argues that government annual reports are critical expressions of state authority, “nineteenth-century government reports were packaged,

65 The print run for the annual report in 1865 was 185,000 of which the Department of Agriculture was allotted 23,000; the balance went to members of the U.S. Congress, most notably the House with 145,000 in both 1865 and 1866. The only increases in 1867 were in the allotment given Congress (the House’s allotment jumped to 180,000 which may simply be due to the return of representatives of the southern states to Congress); Agriculture’s remained steady at 23,000. By 1888, 400,000 copies of the annual report were printed. Yet, as the Commissioner of Agriculture in 1880 reported, “The edition of our annual report is usually 300,000 and while larger than that of any annual book ever published, is not yet half large enough to meet the reasonable and pressing demand” (Harrison 1961, 53). See, too, Appendix C in this dissertation for a chart listing print runs and distribution within the federal government.
disseminated, and even consumed as books and could be found in libraries or purchased in bookstores. In fact, the antebellum public sphere was cluttered with annual and special reports...."

Hugh Richard Slotten's study of the work of the U.S. Coast Survey in the middle of the 19th century offers insight into how the information gained in the survey was politically positioned. Alexander Dallas Bache, the head of the survey, solicited public support for his work: “Bache actively worked to shape public opinion and synthesize the dialectic between the interests of science and those of society by publicizing or popularizing the activities of the Coast Survey.” The Annual Reports of the Coast Survey were not widely available but Bache managed to have the results of the surveys published in a timely manner and distributed them himself to newspaper editors, scientists, and influential people in communities where field research for the Coast Survey was conducted. Survey teams also made themselves and their work highly visible in public spaces. They used public squares as meridian markers and “erected temporary observatories on the grounds” of several state capitols. Slotten argues that in these ways Bache cultivated public support for public science. Were there similar tactics to build public support for the information work in the Department of Agriculture?

Form and Content of the Annual Reports of the Department of Agriculture

The Organic Act that established the United States Department of Agriculture in 1862 stipulated “the general duties and designs . . . shall be to acquire and diffuse among the


people of the United States useful information on subjects connected with agriculture in the most general and comprehensive sense of that word, and to procure, propagate, and distribute among the people new and valuable seeds and plants.” The Commissioner, appointed by the President with the approval of the U.S. Congress, was charged “to acquire and preserve in his department all information concerning agriculture” and to report on the Department’s progress to Congress, “He shall annually make a general report in writing of his acts to the President and to Congress, in which he may recommend the publication of papers forming parts of or accompanying his report, which report shall also contain an account of all moneys received and expended by him.” The United States mail served as a way for the Department to both receive and circulate information free of charge (up to thirty-two ounces).

The tradition of submitting annual reports to funders was not new either in government or the private sector. Those focused on agricultural work and scientific investigations or surveys follow a similar format that includes a report on money received and spent, which vary in degrees of detail, work conducted (often including the names of the people performing the work), findings from that work, recommendations, further work, and requests for continued support. The early reports of the Department of Agriculture are mixes of types of narratives including official reports, articles reporting on research or best practices by practitioners and other experts outside the Department, reprints of correspondence, histories of agricultural practice and products. They also include illustrations, maps, charts, and tables. Most Reports for the years I examined included on the back of the title page a copy of the Congressional resolution that stipulated the number of copies to be printed and the money allocated for that print job. I will discuss this aspect of the Annual Reports of the Department of Agriculture later in this chapter.  

Three Examples of Content from the Reports for 1865, 1876, and 1888
The Annual Report of the Department of Agriculture for 1865 is the first to have a Table of Contents in the series of years that I studied, 1862 through 1888. It is fairly

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69 See Appendix C of this dissertation for a chart synthesizing that information.
representative of the diversity of topics and types of authors for the first half of the period I cover. We see in these lists of articles some of the ways the Department of Agriculture drew on expertise from outside the staff of the Department, how it understood the range of relevant topics to agriculture in the United States, and some ways it engaged farmers and other correspondents as both providers and consumers of agricultural information.

The 1865 Annual Report includes the reports of the commissioner, gardener (and a separate report on the experimental farm), entomologist, chemist, and statistician, which make up less than one hundred of the nearly 650 pages of the Annual Report for that year. The report of the statistician is followed by thirty-six articles on topics including one on the agricultural colleges by the president of the college in Massachusetts, market gardens serving New York by a farmer in New Jersey, and several articles on specific crops including barley, potatoes in Ohio, peaches and other stone fruits; also articles on livestock including sheep, cattle, and pigs. There are histories of the onion, dairy farming in America, and a botanical history of sorghum. Articles with an international focus include cattle disease in Europe; diseases of grapes in Europe; a report on an exhibit in Paris of entomological research; and cattle farming in South America by a Methodist minister recently returned from mission in South America. Finally of note are articles offering best practices for keeping farm books; types of manure and best uses; the condition of the forests in the country; sorghum as a source for sugar; and instruction on how and what to feed farm animals, and how best to prepare that food. The Annual Report for this year ends with a list of donations to the museum of the Department of Agriculture and a report titled, “Meteorology of 1865.”

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70 The college is now the University of Massachusetts Amherst. French was trained as a lawyer, served as head of a local agricultural society, and was later appointed assistant secretary of the U.S. Treasury by President Grant.
71 “To supply a population of a million inhabitants daily, throughout the year, with fresh vegetables would, it might be supposed, require an immense tract of land. Such is not the case.” (AR 1865, 243)
72 The recurring theme of being economical in one’s approach to farming can be seen in this article by R.W. Stewart (identified only as from North Evans, New York). He writes, “A cursory survey of the business of agriculture will at once reveal the fact that the great effort of the farmer is to supply food for his animals, and that it requires more food to supply the animals kept in the United States than to feed its whole population.” (“Cutting and Cooking Food for Animals,” AR 1866, 396)
73 A.B. Grosh of the “Department of Agriculture” offers an introduction to charts showing high and low temperatures and amounts of rain or “melted snow” for a selection of towns in each state and territory of the United States. The information is “compiled from the monthly reports of nearly two hundred and fifty
By 1876 the number of division and bureau reports increased to six – gardener, statistician, botanist, chemist, microscopic investigation, and the entomologist who also reported on the museum in his position as curator. The report of the commissioner, Frederick Watts, opened the Annual Report. These make up about half of the 432-page volume with the report of the statistician alone being 184 pages of narrative and tables. The remaining pages are “Miscellaneous Papers” that include reports on the agriculture of Italy and Spain. The former is an extract from correspondence dispatched to the Secretary of State by the “Hon. C.C. Andrews, the minister of the United States at Stockholm” who concludes his observations of crops, farming techniques, wages, landownership, livestock, and cheese making in the north with this statement that suggests a deep knowledge of agricultural practice that extends beyond Italy and the United States, “I do not deem it my place to draw conclusions or to offer criticism with respect to the social and economic bearing of the facts and matters stated above. While they disclose some things contrary to our American notions, they also show two great merits in Italian agriculture: One is, that the Italians have the most complete system of irrigation in Europe, if not the world; the other is, that they do not, in Northern Italy at least, let the soil degenerate.”

The information about agriculture in Spain is in the form of “a letter from the legation of the United States at Madrid, under date of March 28, 1877, the minister plenipotentiary of the United States, Hon. Caleb Cushing, writes to Hon. William M. Evarts, Secretary of State, concerning the agriculture of that country.” Evarts demonstrates a bit more humility than his colleague reporting on agriculture in Italy. He includes information on

observers in more than thirty states and Territories of the Union, made to the Smithsonian Institute through this department.” Grosh writes, “The increased and increasing attention of agriculturalists to meteorology, as connected with the science and art of tilling the soil, is one of the gratifying signs of our times…. This present volume contains [information] which, it is believed, will quicken and strengthen a desire to use these tables, and to acquire more information in relation to the climatic peculiarities of our widely spread country…. Those who are led to acquire information will also become qualified to impart it.” (AR 1865, 571) He concludes with a request for corrections to any false information, “The department respectfully solicits information of any errors or omissions in this or former reports, that they may be corrected before any further use of these tables.” (AR 1865, 573)

74 AR 1876, 283
75 AR 1876, 287
climate, geography, crops, animals, and farming techniques and tools. He notes, too, some cultural differences including sources of milk, “I observe that the milk of goats and sheep, and even asses, as well as of cows, enters considerably into consumption at Madrid.” Cushing concludes by noting that few of the “objects of agricultural industry” in Spain are seen in the United States.

Other reports, authored and not, include one on the export of fresh meat to Europe from the United States; a response to an inquiry from the United States Secretary of the Treasury asking for information regarding a disease of livestock and whether it could be carried into the United States on imported hides; a review of mechanical “inventions for insect destruction;” progress reports on the thirty-nine land-grant colleges; and information from the annual reports of the boards of agriculture of individual states. One of several reports on the cultivation and production of jute is included in the Annual Report of the Department of Agriculture for 1876. Professor S. Waterhouse of Washington University in St. Louis writes that it was “the Department of Agriculture that first attracted my attention to this fiber, and the personal observations of a revisit to India have only confirmed my sense of its national importance.” It is worth noting that a recent dissertation in history includes a discussion of the flow of information about jute cultivation from the United States to India in the form of publications of the Department of Agriculture.

As more divisions and bureaus are added at the Department of Agriculture and its research in-house as well as its capacity for information work expanded, the number of individual articles on special topics diminishes both by necessity and policy as we will see in Chapter 4. This can be seen as an assertion with decided political and strategic components of the Department’s own authority on a growing number of topics related to

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76 AR 1876, 287
77 AR 1876, 288
78 AR 1876, 289
80 See chart of how the organization of the Department evolved at the end of this dissertation in Appendix A.
agriculture. In the Annual Report for 1888, the last year of my study, more than 650 of the total 700 pages are formal reports of sections, divisions, and bureaus of the Department of Agriculture: entomology, animal industry, chemistry, botany, vegetable pathology, statistics, ornithology, microscopic investigations, pomology, forestry, and the Seed Division. There is also a report by the director of the newly organized Office of Experiment Stations established October 1, 1888. One of the first actions by the director of that office was to start a library that would include, “station publications, which it hopes to make not only a complete collection of all the publications of the stations organized under national authority, but also of all those issued by the stations previously established in the United States.” The report on the agricultural experiment stations includes an article by the USDA historian A.C. True on the history of agricultural experiment stations in the United States. It concludes with a list of experiment stations by state listing host institution, name of the person responsible (often the president of the college), and date established. Most listed were affiliated with public institutions but a few, like the Bussey Institution of Harvard University, were organized by private universities.

The two articles that conclude the volume for 1888 are a “Report on Truck Farming” by James K. Reeve of Franklin, Ohio and an article with illustrations, “Ostrich Farming in America” by T.C. Duncan, M.D., Ph.D.: “‘A car-load of ostriches passed through this city yesterday’ was the first news to many citizens that the ostrich industry was invading our country.”

Though I focused my attention on the Reports of the Commissioners, the heads of Garden and Grounds and the Statistical Division, I did see ample evidence of correspondence to the Department of Agriculture from farmers and others interested in agricultural information and, less frequently, the Department’s response. The information coming into the Department of Agriculture from citizens, farmers, diplomats, merchants, and a

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81 The Hatch Act of 1887 made federal money available to the states to establish experiment stations that would be affiliated with land-grant colleges.
82 AR 1888, 537
83 AR 1888, 685
variety of agricultural and horticultural researchers took several forms. Some simply asked that seeds or plants be sent to them – some requests were quite specific and others more open to whatever the Department would distribute to that region of the country. Other examples of correspondence included reports by farmers and agriculturalists about crops, information on the performance of specific seeds acquired from the Department, soil conditions, best practices, or reports on their observations of agricultural practices in their travels. It is not surprising that I saw more examples of requests and information about plants and seeds given my focus on the Reports of the Superintendent of the Garden and Grounds.84

The Statistical Division, like many other Divisions at the Department of Agriculture, had volunteer correspondents who regularly administered or followed up on surveys from the Department and communicated the results to the Department. The range of participants in this type of activity was impressive but not surprising given the long tradition of farmers and scientists sharing information. And, while it may seem innocent and uncomplicated what peeks through these letters is a strong and urgent desire to identify and acquire seeds and plants (and other information) that would lead to healthier crops, larger harvests, and varieties with a hardiness to be transported long and longer distances that would bring bigger profit85. I will discuss this at more length and offer examples from the Annual Reports of the Department of Agriculture in the next chapter of this dissertation that examines the Reports of the Commissioners, 1862-1888.

**Production and Distribution of the Annual Reports**

The Annual Reports of the Department of Agriculture themselves reveal very little about how they were produced. We know from the 1862 Organic Act that established the Department of Agriculture that the U.S. Congress required the reports from the Department as evidence of the work the Department did, how it spent money allocated by Congress, and where it was successful in meeting its responsibility to “acquire and

84 That expectation of reciprocity in the form of reports on how seeds and plants provided to farmers and others by the Department of Agriculture performed is evident in the reports of several commissioners during this period.
85 There is also evidence of requests for seeds and plants by people interested in simply trying out new seeds and crops.
diffuse” agricultural information to the people of the United States. The main focus of most Commissioners of the Department of Agriculture for the period 1862-1888 was to persuade the U.S. Congress to designate more funding generally for the Department, finance larger print runs of the Annual Report, and secure more of those publications for the Department itself. The Department was the poor stepchild when it came to the number of copies of its own Annual Report it was able to secure for distribution. Of the total print run of 120,000 copies in 1862 the Department received 20,000. The total print run for 1865 increased to 188,000 but the Department’s share remained at 20,000. For the years 1869-1870 the print run increased to 225,000 with 25,000 for the Department of Agriculture. From 1879 to 1883 the print runs were up to 300,000 and the Department received only 30,000. Between 1884 and 1888 the print runs were at 400,000 and except for the year 1886 when the Department received 25,000 copies of the Annual Report its allotment remained at 30,000 copies. There seem to be no hard and fast numbers regarding the use and distribution of the Annual Reports by the Department itself. However, one sees in the reports and in histories of the Department of Agriculture evidence it provided them to citizens as requested, circulated them to scientists and educators in the United States and abroad, and promoted the content with the agricultural and regular press. The U.S. Congress, by all accounts I have seen, sent the Annual Reports to constituents when requested and also used them as political capital to gain favor in their home districts.

The Annual Reports of the Department of Agriculture were exceptional in the size of each volume (that is, the number of pages), the size of the print runs, and cost of printing. R.M. Kerr notes, “The largest edition, in book form, of any publication issued from the office [of the Public Printer for the United States] is that of the Agricultural Report, which for several years past has numbered 300,000 copies. The cost per copy of this volume, which usually is limited for convenience in handling to from 500 to 650 pages, is about forty-five to fifty cents.”\(^{86}\) Kerr writes earlier that the cost of producing a federal report or document after 1862 rarely “reaches $20,000, if the Agricultural Report be

\(^{86}\) R.M. Kerr (1881, 71)
excepted.” 87 Kerr’s 1881 history of the United States Government printing office has one of the few references I could find that discusses the labor involved with printing the Annual Reports of the Department of Agriculture, “An average hand-folder will complete in one day about 3,000 sheets. As an Agricultural Report has in it about 11,400,000 sheets, it would require about 3,800 days’ work of a single folder to put it in shape for gathering. Formerly there were from 200 to 250 girls employed on this work alone, but since the folding machines have been put in operation the number has been steadily decreasing, and now but little work of this character is done by hand. This work is all paid for by the piece.” 88

The United States Congress determined the size of the print runs for the Department of Agriculture’s Annual Reports. It was also responsible for the cost of printing the reports and at times explicitly stated limits for size, cost, as well as stipulating production copy deadlines to the Department of Agriculture. Most of the Annual Reports for the period of my study, 1862-1888, include a copy of the Congressional resolution stating the number of copies to be printed and in later years the amount of money allocated for printing. 89

The statement for the Annual Report for 1862 reads:

House of Representatives, March 3, 1863.

Resolved, That there be printed by the Superintendent of Public Printing, under the direction of the Commissioner of Agriculture, one hundred thousand extra copies of the report of the Department of Agriculture for 1862, for the use of this present House, and twenty thousand extra copies for distribution by that department. 90

With the Annual Report for 1877 the section is more formal, complete, and appears under the title, “Order to Print:”

87 R.M. Kerr (1881, 47)
88 Kerr (1881, 90)
89 The Annual Reports issued under Commissioner Frederick Watts are an exception and do not include a quote of the Congressional resolution stipulating either the number of copies to be printed or how they should be distributed. From what I can gather by looking at the Reports of the Public Printer and those of the Secretary of the Treasury, the appropriation by Congress for the printing of the annual reports of the Department of Agriculture were not counted as part of the Department’s budget. As best I can make out from the Reports of the Secretary of the Treasury for this period, it seems that because it was Congress making the request for the reports the funds were attached to Congress itself.
90 Report of the Commissioner of Agriculture for 1862. (n.p.)
Congress of the United States,  
In the House of Representatives, June 6, 1878.  

Resolved by the House of Representatives (the Senate concurring), That there be printed three hundred thousand copies of the Report of the Commissioner of Agriculture for 1877; two hundred and twenty-four thousand copies for the use of the House of Representatives, fifty-six thousand copies for the use of the Senate, and twenty thousand copies for the use of the Department of Agriculture: Provided however, That the number of pages of said Report shall not exceed six hundred.  

By 1888 this section in the Annual Report includes not only the print run and distribution numbers but also the amount of money allocated for the print job itself. The resolution also stipulates deadlines for copy – illustrations and text:  

[Public Resolution – No. 48]  
Joint resolution to print the Agricultural Report for eighteen hundred and eighty-eight.  

Resolved by the Senate and House of Representatives of the United States of America in Congress Assembled, That there be printed four hundred thousand copies of the Annual Report of the Commissioner of Agriculture for the year eighteen hundred and eighty-eight; seventy thousand copies for use of the members of the Senate. Three hundred thousand copies for the use of the members of the House of Representatives, and thirty thousand copies for the use of the Department of Agriculture, the illustrations of the same to be executed under the supervision of the Public Printer, in accordance with directions of the Joint Committee on Printing, said illustrations to be subject to the approval of the Commissioner of Agriculture; and the copy for the illustrations of said report shall be placed in the hands of the Public Printer not later than the twentieth day of December, eighteen hundred and eighty-eight, and the copy of the text not later than the first day of February, eighteen hundred and eighty-nine.  

Sec. 2. That the sum of two hundred thousand dollars, or so much thereof as may be necessary, is hereby appropriated, out of any money in the Treasury not otherwise appropriated, to defray the cost of printing said report.  

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91 Report of the Commissioner of Agriculture for 1877. (n.p.)  
92 The Annual Report for 1888 is 708 pages (not counting maps and illustrations/plates). There are 70 plates in this volume and a number are in color; the one map is also colored and has 5 vertical folds and one horizontal fold. When unfolded and fully open it measures 26 inches wide by 16 inches high, “Distribution and Severity of Potato Rot in 1885.”  
93 Report of the Commissioner of Agriculture for 1888. (n.p.) This could be read as response to concern expressed a few years earlier by the Public Printer of the United States, A.M. Clapp, in his Annual Report.
The prints runs for the Annual Reports of the Department of Agriculture increased gradually between 1862 (120,000 copies) and 1888 (400,000). The number of copies printed and their distribution between the House, Senate, and the Department reflects changes in the size of the United States Congress as the nation reconsolidated after the Civil War, new states were admitted to the Union and with those additional states and changes in population the composition of Congress changed via reapportionment based on the results of the decennial census as required by the Constitution of the United States and administered by the Department of the Interior from 1849 to 1902. According to the census for 1860, there were 33 states and 178 members of the U.S. House of Representatives. In 1878, there were 38 states with 293 representatives in the House of Representatives. In 1888, there were 38 states and 325 members of the House of Representatives. The census for 1860 established the population of the United States at just under 31.5 million (an increase of 35.6 percent from 1850); the census for 1870 put the population slightly over 38.5 million; the census for 1880 registered a population just under 50.2 million.

As I will discuss more in the next chapter of this dissertation, the commissioners of the Department of Agriculture for this period generally expressed a belief that the Annual Reports of the Department contained not just useful information but agricultural information essential to the economic health of the nation. There was some disagreement about how best to distribute the reports and some resentment in the Department of

to Congress, December 30, 1876. Clapp concludes his report with information on the printing of the agricultural reports for 1874 and 1875. He notes the print runs, the number of “cuts,” the labor required for “folding and pasting,” as well as the money allocated by Congress for both jobs. He writes that the money appropriated by Congress was “considerably less than the estimate” made by the printer using information from the House Committee on Printing in large part because the number of pages and number of illustrations exceeded what was anticipated. Annual Report of the Public Printer for 1876. Miscellaneous Document No. 24, 44th Congress, 2nd Session, United States Senate.

94 See Appendix C of this dissertation: Print Runs for the Annual Reports of the Department of Agriculture, 1862-1888 for a chart print runs and distribution of the Annual Reports.
95 United States Census Bureau, United States Department of Commerce. https://www.census.gov/history/www/programs/demographic/decennial_census.html
96 The number of senators for this period seems to diverge from the standard of two from each state due to vacancies and special elections.
97 United States Census Bureau, United States Department of Commerce. https://www.census.gov/history/www/through_the_decades/fast_facts/1880_fast_facts.html
Agriculture about the large number of copies that went to members of the United States Congress. Perhaps as interesting is the statement by R.W. Kerr of the Government Printing Office in his history of the first hundred years of public printing by the federal government of the United States. Kerr argues that distribution of government publications by Congress was not effective and he seems to suggest that centralizing distribution at the Printing Office itself would increase efficiency:

. . . no proper provision has been made for the dissemination of these costly publications. Congress orders a few thousand copies of these books, and Senators and Representatives distribute them to their constituents; but the probability is that the farmer, who would be most interested in the Agricultural Report, receives a work on Fossil Insects, or an Indian dictionary; while the scientific man, who could appreciate the real value of the books sent the farmer, is compelled to look for geological date in a treatise on trichineae in pork. If a system of distribution could be devised whereby books issued from the Government Printing Office could be sent to those, and only those, who are searchers in special fields of science to which the books relate, the real value and importance of Government publications would be greatly increased.

It is the law on the statute-books, however, which permits any person to subscribe for any Government publication issued under the authority of law.\textsuperscript{98}

\textbf{Information for the Public Good: The Circulation of the Annual Reports of the Department of Agriculture}

An informed citizenry and the free flow of information have historically been seen as cornerstones of American democracy. The rhetoric that circulated in the Congress during debates that led to the establishment of the United States Department of Agriculture in 1862 exposed what some might see as an exaggerated understanding of the role of agriculture in the health and stability of the nation. Representative Owen Lovejoy from Illinois and chair of the United States House of Representatives Committee on Agriculture was just one of several men in the government to evoke the glory and demise of Ancient Rome as he argued in support of the new agency: “It is conceded on all hands that the farming interest is the basis of all other interests and the primary source of national prosperity. The outlines of the rise and decay of the Roman empire could have

been written in the fields which environed the capitol as well as in her libraries amid historical records." But that regard for and awareness of the critical importance of a prosperous and growing base of farming and the vision about the role a federal agency could play in the securing and distribution of agricultural information proved to be an example of government working for the public good. The information work of the Department of Agriculture exploited resources and relationships to serve the best interests of the nation’s agricultural economy.

The Organic Act of Congress that established the Department of Agriculture in 1862 specifically required the Department to make the agricultural information it acquired and produced available to “the people.” Congress also stipulated that agricultural information coming into or going out of the Department “through the mails” could be sent “free of charge…not exceeding in weight thirty-two ounces.” While that directive accommodated small items, cards, and letters it would not cover most publications of the Department and certainly not the Annual Report. The Annual Reports of the Department of Agriculture were circulated via the franking privilege, which made it possible for members of the United States Congress to both send and receive “information … about the operations of the government and policy matters before Congress.” The franking privilege was embraced, criticized, amended, and revoked over the course of the long 19th century in particular. By most accounts the Reports of the Department of Agriculture continued to circulate via the Congressional frank even when criticisms of or restrictions to it were strong.

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99 Report of Mr. Owen Lovejoy (IL) from the House Committee on Agriculture, February 11, 1862 (Congressional Globe).
100 “An Act to Establish a Department of Agriculture” reprinted in full at the front of the Report of the Commissioner of Agriculture for 1862, page 3.
102 See, for example, the U.S. Senate history of franking on its website: “On January 31, 1873, the Senate voted to abolish the congressional franking privilege after rejecting a House-passed provision that would have provided special stamps for the free mailing of printed Senate and House documents. Within two years, however, Congress began to make exceptions to this ban, including free mailing of the
Conclusion

The Annual Reports of the Department of Agriculture from 1862 through 1888 were, as this chapter illustrates, much more than simply reports on the official work of a new and growing federal agency. The range of topics covered in addition to the more formal reports of the divisions at the Department is staggering in its breadth and scope and embodies an understanding of agricultural information and economy as complex and inclusive in ways not often considered. What we see over time is that the Department of Agriculture is experimenting with and refining what constitutes useful agricultural information and the Department’s role and responsibility to acquire, produce, and share this information with the constituency they were mandated to serve. In the next three chapters I will more closely examine and discuss the three areas of work at the Department of Agriculture that are the central focus of this dissertation – the Reports of the Commissioners, the Superintendent of the Garden and Grounds, and the head of the Statistical Division.

Congressional Record, seeds, and agricultural reports. . . .”
https://www.senate.gov/artandhistory/history/minute/Senate_Ends_Franked_Mail_Privileged.htm

Introduction
These next three chapters look closely at three sections of the Annual Reports of the Department of Agriculture for the period, 1862-1888 with an eye to identifying and understanding not just aspects of the agricultural information work at the Department of Agriculture but how those responsible for critical aspects of that work represented it in official reports of the United States government. The Department of Agriculture, from the outset in 1862, positioned its work in terms of a demand for information from farmers and its unique ability as a federal agency to satisfy that demand with authoritative and accurate information relevant to agricultural work. How it gained that authority seems to lay in its successful ability to fulfill the most basic aspects of its mission, to acquire and disseminate agriculture information through published versions of its Annual Reports to the United States Congress.

The first Commissioner of Agriculture for the United States, Isaac Newton, argues in his first Annual Report (1862) that farmers needed to put aside "primitive" ways and develop more "scientific" approaches. Newton wrote that [an] "essential condition to agricultural progress . . . is a more thorough education of the farmer in physical science, in political economy, in case, and general knowledge . . . to make him a thoughtful and intelligent citizen . . . the agriculturalist has too much at stake to be behind any in education and influence"\textsuperscript{103} because farmers as a class formed the great majority of citizens of the United States at that time and thus would inevitably influence policy. He saw farmers as functioning locally and argued that the Department would be able to mediate the information and experience of farmers and communicate it more broadly, "with the governments and peoples of all lands."\textsuperscript{104} As an agricultural country, Newton saw the

\textsuperscript{103} AR 1862, 19
\textsuperscript{104} AR 1862, 22
Department as fulfilling a "duty of the government" to get the best seeds and information to farmers because, "when agriculture prospers, all other interests prosper."¹⁰⁵

This form of rhetoric and its logic that puts agricultural progress as essential to national health and strength precedes the founding of the Department of Agriculture and is evident throughout the history of the United States. The Organic Act that established the Department of Agriculture in 1862 reaffirms this idea and ties it directly to the mission of the new federal agency, the Department of Agriculture. The idea is woven through all the Reports of the Department for the years of my study, 1862 through 1888.

The shared feeling evident in the first report of Isaac Newton, Commissioner of Agriculture in a newly created federal agency in 1862 and in the first report of Jeremiah Rusk, the first Secretary of Agriculture with a seat in the President’s Cabinet in 1889 was that a federal agency was more capable and efficient at gathering, producing, and disseminating agricultural information necessary to serve the needs of farmers and others invested in the products of American agriculture. Farmers, agricultural journalists, and agricultural societies were important political forces and viewed as partners as much as "customers" by the department. Accurate agricultural information circulated in a timely manner helped ensure progress in agricultural production which, it was argued, would result in more efficient production and distribution, higher crop yields, and more diverse and healthy crops. This, in turn, would insure and secure the stability of the national economy and thus the power and health of the nation globally.

It is interesting to note the way this outlook carried through the terms of the Commissioners of Agriculture as well as the report of the first Secretary of Agriculture, Jeremiah Rusk, the first man to serve a full term as Secretary of Agriculture following Commissioner Colman’s appointment. Rusk ends his first Annual Report to the United States Congress thusly:

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¹⁰⁵ AR 1862, 24
Great as are our crops in the aggregate, it must be admitted that our broad acres are not as prolific as they should be, and I am convinced that, with the aid that can be afforded to agriculture by carrying out to the full the purpose for which this Department exists, and thanks to the rapid growth of intelligence and the remarkable efforts at self-help among our farmers, the yield of every tillable acre in this country can be increased by 50 per cent. More than this will science, properly directed, enable us to accomplish, for millions of acres at present unproductive can, by its application, be rendered fertile. The great nations of Europe strain every effort to make science the hand-maid of war; let it be the glory of the great American people to make science the hand-maid of agriculture.  

Each Annual Report begins with the report of the executive in charge of the Department of Agriculture – the Commissioner – to the Department’s funder, the Congress of the United States. As we shall see, the Commissioners’ Annual Reports tended to focus on the Department’s hopes and aspirations rather than policy and most were noticeably short on concrete evidence or plans. The real defining characteristic of these reports is how each commissioner frames the work of the Department of Agriculture, a federal agency, as central to the progress and health (economic and political) of the nation.

In this chapter I examine the Reports of the Commissioners of the Department of Agriculture between 1862 and 1888. Each Annual Report begins with one and they serve as the official reports by the executive in charge of the Department of Agriculture – the Commissioner – to their funder, the Congress of the United States. As the reader will see in later chapters on the reports of the Superintendent of the Garden and Grounds and the Statistician at the Department, I cluster the reports by the term of each commissioner:

1862-1867 Isaac Newton (Newton died suddenly in June 1867. John Stokes, the chief clerk of the Department, assumed his duties until the appointment of the next permanent Commissioner in November 1867.)

1867-1870 Horace Capron

106 AR 1862, 18
1871-1876 Frederick Watts  
1877-1880 William G. Le Duc  
1881-1884 George B. Loring  
1885-1889 Norman J. Colman

The research questions guiding my reading of the Annual Reports of the commissioners for this chapter are,

- What do the reports indicate regarding the scope of the Department of Agriculture’s activities in meeting its mission?
- How did the commissioners present / represent that information in their Annual Reports to Congress?
- What was the cycle of information procurement, propagation, and distribution at the department? How did it change over the period of time I cover, 1862-1888?

**Commissioner Isaac Newton, 1862-1867**

The first commissioner of the new Department of Agriculture was by most accounts I have seen considered unqualified for and ineffective in his post as commissioner. Newton was from a prosperous family. He did not attend college and was not successful in business – farming or retail. Biographical sketches of Newton note that he became acquainted with President Lincoln via Lincoln’s wife whom he presumably met while delivering foodstuffs to the White House. He began government service in the U.S. Patent Office in 1861 as chief of the Agricultural Division and was appointed head of the new Department of Agriculture on July 1, 1862. Historical accounts in memoirs and the

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107 The Department’s status changed during the term of Commissioner Colman. In February 1888 the Department was elevated to Cabinet-level status. It remained in the Executive Branch but in February 1888 with a seat in the President’s Cabinet as Secretary of Agriculture. Commissioner Colman’s status changed and his last month of service to the Department was as the first Secretary of the Department of Agriculture. (Greathouse, 1898; 20-21)

108 In 1969, the USDA published *The Story of U.S. Agricultural Estimates*, which includes a short discussion of Newton’s background and some of the criticism leveled at him. The publication quotes an editorial, “Who is Isaac Newton” from *The Rural New Yorker* in August 30, 1862 which, barely two months after his appointment to head the Department of Agriculture, openly mocked Newton by suggesting “he was so illiterate his writings included such words as ‘lettis, shoogar, inons (onions) and sausgee (sausage).’” (1969, 19)
press suggest that many had their doubts about the ability of Isaac Newton to lead the new Department: “Thus the Department of Agriculture made its start in borrowed basement rooms – headed by a politically minded, bankrupt farmer, under a president who considered himself “no sort of a farmer.””

The Reports of the First Commissioner of Agriculture, Isaac Newton, 1862-1867

The First Annual Report, 1862

I will give more attention to this first Annual Report of Commissioner Newton and the first by the newly established Department of Agriculture in order to establish and outline the groundwork from which the work of this new agency began. This longer account also provides a sense of his rhetorical style and his political disposition. In his first Annual Report submitted to President Abraham Lincoln on January 1, 1863, Newton outlined priorities for the new Department:

1. Collecting, arranging, publishing, and disseminating, for the benefit of the nation, statistical and other useful information in regard to agriculture in its widest acceptation . . .

2. Collecting, from . . . our own and foreign lands, such valuable animals, cereals, seeds, plants, slips, and cuttings as may be obtained by exchange, purchase, or gift, with information as to their modes of propagation, culture, preservation, and preparation for market, and distributing the same throughout the country. Through our postal franking privilege at home, and our foreign ministers, consuls, merchants, missionaries, travellers, and the officers of our naval and merchant fleet, the government enjoys unusual facilities for carrying out this object.

3. Answering the inquiries of farmers and others on all matters relating to agriculture, at the same time stimulating inquiry, inviting discussion, and rewarding research by publishing agricultural statistics of the various States and sections of States in order to guard against the excess or diminution of given products, thereby saving much time, labor, and capital to farmers. And as this department has been created and is sustained for their benefit, they are earnestly invited to correspond with it in order that a proper selection of subjects may be afforded for publication.

4. Testing, by experiment, the value of different agricultural implements and their adaptation to the purposes intended, as well as testing the value of cereals, seeds, and plants, and their adaptation to our soil and climate, before transmitting them to our farmers.

109 Ibid., 19
5. Analysis, by means of a chemical laboratory, of various soils, grains, fruits, plants, vegetables, and manures, and publishing the results for the guidance and benefit of agriculturists.
6. Establishing a professorship of botany and entomology.
7. Establishing an agricultural library and museum.\(^\text{110}\)

The body of his report is a rhetorical essay on the critical importance of agriculture to the health, welfare, and strength of a nation. Newton draws on that argument to make a case to the U.S. Congress for continued support for the new Department of Agriculture. He sees its mission as rooted in the information sharing practices common among farmers, agricultural societies, agricultural newspapers, and others interested in agriculture and agricultural research. He imagines the Department of Agriculture as an agency of the federal government that gains its authority by bringing the various interests of agricultural pursuits together to serve the nation:

I have dwelt thus at length on the history of agriculture, and on the conditions of agricultural progress in the United States, in order to show that a great national department of agriculture, enjoying the sympathy and co-operation of the government, of agricultural societies and publications, and of individual farmers, will most rapidly and certainly develop and strengthen these conditions, and thus augment the wealth, the prosperity, the permanency, and the glory of the republic. I hardly deem it necessary to attempt to convince our intelligent countrymen of the vast importance of such a department, inasmuch as whatever improves the condition and the character of the farmer feeds the life-springs of national character, wealth, and power. What agricultural societies and publications have done for single counties and States, this department should do for the whole country, but with a liberality, wisdom, and catholicity commensurate with the resources of the nation, the importance of agriculture, and the co-operation of individuals both at home and abroad.\(^\text{111}\)

\(^{110}\) AR 1862, 20. Newton acknowledges borrowing these seven goals from Judge Jesse Buel, an agriculturalist, agricultural reformer, farmer, and journalist from Connecticut. He served as president of the New York Agricultural Society twice. See Carman, Harry J. "Jesse Buel, Early Nineteenth-Century Agricultural Reformer." \textit{Agricultural History}, Vol. 17, No. 1 (January 1943). Carman writes on page 3: "Like Thomas Jefferson, he believed that the welfare of the Nation and the happiness of its people depended above all else upon agriculture. According to Buel,

There is no business of life which so highly conduces to the prosperity of a nation, and to the happiness of its entire population, as that of cultivating the soil. Agriculture may be regarded, says the great Sully, as the breasts from which the state derives support, and nourishment. Agriculture is truly our nursing mother, which gives food, and growth, and wealth, and moral health and character, to our country. It may be considered the wheel which moves all the machinery of society…"

\(^{111}\) AR 1862, 19-20
The report's narrative covers the finances of the Department of Agriculture for the year in very general terms and requests the appropriation for the next fiscal year more than double to $130,000 though even that, Newton suggests, is “a low estimate” given the responsibilities of the Department. He reports that more than 300,000 “packages of seeds and cereals” were distributed to members of Congress and “other persons throughout the Union.” The reach of the work of the new department is acknowledged by Newton and intimately connected to both the procurement and dissemination of information by it.

Newton tips his hat to the important contributions from the new states and territories of the United States, “A vast amount of labor has been performed in the department since its organization…. Information from every available source, both at home and abroad, has been laboriously sought for, and is now being obtained, which, in due time, when properly classified, will be disseminated, like the seeds, cereals, and plants, gratuitously. The mighty west, especially, has been foremost in this generous rivalry of agricultural exchange, both of products and knowledge.” 112 He also asserts a role for the Department’s information work outside the United States as well as the importance of procuring agricultural information, especially seeds and plants, from other countries for experiment in the United States, “this department, becomes a means of communication with the governments and peoples of all lands. It aims to provide samples of whatever American seeds, plants, &c., may be best suited to foreign climates and soils. It strengthens our friendly relations abroad and at the same time uses its official power and influence to obtain whatever may advance the agricultural interests of our own country.” 113

Newton discusses a few specific crops in his first report. Of particular note are sources of fiber like cotton, flax, hemp, wool, and silk. The scarcity of cotton and other crops associated with the American South is a concern of the Department as the Civil War continues. Newton writes, “This department will take early and active measures to induce farmers in Kentucky, Missouri, Southern Illinois, Indiana, and Kansas . . . to turn

112 AR 1862, 21
113 AR 1862, 21-22
their attention to the culture of this important staple.”114 He reports that the breeding and cultivation of “the ailanthus silk worm of China” has been successful in the United States. The silk is especially robust compared to the silk from the insect that feeds on mulberry trees. The ailanthus silk worm “will live and grow and spin its silk in the open air in most of the States of the Union, feeding upon the leaves of the ailanthus, hitherto regarded among us as a worthless, if not a noxious, tree.”115 The final crop mentioned by Newton is the opium poppy. He argues that the United States should experiment with cultivation in order to have more control over the end product, which, in its imported varieties is too often “adulterated.” For Newton, an indigenous supply of opium cultivated and harvested in the United States would like native grapes for wine production, “supply a pure article, and certainly such a result would be desirable, when the object is a medicinal agent so important and invaluable.”116

Newton closes his first report as he opened it with an appeal for continued support of the new federal agency based on the centrality of agriculture to the economy and future health of the nation. He contrasts the slow and deliberate pace of agricultural production with that of industry and manufacture, “Agricultural pursuits tend to moderate and tranquillize the false ambition of nations, to heal sectional animosities, and afford a noble arena for honorable rivalry. The acquisition of comparatively slow, but sure, wealth, drawn from and reinvested in the soil, develops health of body, independence and simplicity of life, and love of country; while the rapid accumulation of wealth, not by production, but by trade and speculation, is unnatural and unhealthful…. [it] substitutes selfishness for patriotism.”117 Agricultural work, Newton argues, is foundational to the nation. He uses the example of the Roman Empire and offers both caution and hope that the United States emerge victorious from the Civil War. It is worth recording here the final paragraphs of this first Annual Report of the new Department of Agriculture as it reflects and embodies the way the federal government and particularly the executive

114 AR 1862, 23
115 AR 1862, 23
116 AR 1862, 23
117 AR 1862, 24
branch of the president positioned agricultural work in relation to its role in wartime and peace:

Next after moral and intellectual forces, home and foreign commerce, manufactures, lines of intercommunication and agriculture, form the great arch of our national prosperity – agriculture being the keystone as well as the foundation of all. Agriculture furnishes the food of the nation, the raw materials of manufactures, and the cargoes of domestic and foreign commerce. It is the cause and the evidence of true civilization; for when tillage begins barbarism ends, and the various arts commence… When this fails, depression, panic, ruin, ensue. The surplus of agriculture not only allows the farmer to pay his debts and accumulate wealth, but also does the same for the nation. To increase this surplus, therefore, to develop and bring out the vast resources of our soil, and thus create new additional capital, should be the great object of the Department of Agriculture and of legislation. … Food, therefore, and next raiment, is the great central interest, around which all other interests revolve. ‘Grain,’ says Adam Smith, ‘is the regulating commodity by which all other commodities are finally measured and determined;’ and on this account grain-growing nations will ever command the precious metals and the respect, if not the fear, of mankind.

The United States are, and must always remain, an agricultural nation. For this the soil, the climate, the institutions of the country, and the age of the world, have peculiarly fitted them, and it is the duty of the government to take all possible measure to secure to the agriculturalists of America the fullest benefits of its ample resources.

…with peace and union restored, based on equity and freedom; with all the conditions of agricultural and mental progress fulfilled; with iron bands stretching from the pines of Maine to the Golden Gate; with the hum of factories on ten thousand streams, and swift-winged commerce flying to distant lands, what pen can sketch the possibility of this young giant of the west?

Old Rome, with all her elements of decay constantly at work, lasted nearly one thousand years, and carried her culture, civilization, and arms to a wondrous pitch of glory. May we not hope and devoutly pray that, taking warning from history and the signs of the times, our republic may so learn lessons of wisdom that, eradicating all destructive tendencies, she will fortify herself against decay, and become what Rome was not – eternal?\(^{118}\)

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\(^{118}\) AR 1862, 24-25. One wonders how this report was read and received by both Congress and the general public. To what extent is this rhetorical style typical of government reports at that time?
The Reports for the Remaining Years of Newton’s Term as Commissioner, 1863-1867

Newton’s remaining Annual Reports followed a similar pattern in terms of tone and content though we do see him begin to focus more directly on the matters at hand, that is, the work of the Department of Agriculture, without evoking lessons from the history of the Roman Empire. The reports each include information on seeds, plants, and crops that the Department is actively working with or interested in pursuing work on with an eye to contributing to the strength and health of the nation. The value of agricultural statistics collected, analyzed, and distributed by the Department is also discussed in each report by Newton. He reports on the distribution of seeds and plants by the Department of Agriculture and provides very basic information on the finances of the Department, that is, money allocated by the U.S. Congress, money spent, and any money remaining. As I will discuss, Newton offers information on the work of the Department and its operations including new divisions or areas of work but rarely mentions the addition of new personnel at the Department of Agriculture. He does acknowledge the roles and value of correspondents responsible for gathering and transmitting information in work for the Department. These include people in the field responsible for gathering statistical information as well as agriculturalists and government officials working overseas who gather foreign seeds and plants and other agricultural information and forward it to the Department in Washington, D.C. Newton was a strong advocate for weather and climate information falling under the purview of the Department of Agriculture. Two constants in his reports are, first, the critical importance of the Department and the relevance and power of its authority; second, the need for more support both in terms of money allocated and land for Department buildings and experiments with crops and other plants, bushes, and trees.

Excerpts from Newton’s reports offer evidence of both his priorities and the political quality of his rhetoric. In his report for 1863 Newton imagines vast changes in land ownership and agricultural labor in the American South after a Northern victory in the Civil War but only if the Southern States are able to “elevate labor to its true dignity, by
hiring instead of owning it.” 119 He sees new immigrants to the United States from Europe playing a significant role in the rebirth of agriculture in the South after the Civil War but only if free labor is valued, “Men who have been oppressed in the Old World . . . will not settle in the mild latitudes of the south, where labor is legally degraded . . . .” 120 He advocates strongly for continued efforts to improve the collection of agricultural statistics and find ways to distribute that information in a timely manner. He writes, “the events of the last two years, and the present condition of the United States, in themselves, and relatively to other nations, has wrought a thorough conviction that an absolute necessity existed in our country, so essentially agricultural, upon which other nations are so largely dependent for food supplies, and with which the interests of trade and commerce are so closely interwoven, that more reliable information must be obtained as to the supply, present and prospective, of the various crops which would be required to meet the demands of home consumption and for foreign export. To get the facts from which reliable estimates might be made, required my first attention after the organization of the department . . . .” 121

In his report on the work of the Department of Agriculture for 1864 Newton offers a picture of the labor necessary to gather the statistics for the Department, “The means used are circulars, addressed to correspondents in nearly every county in each State. They contain inquiries relative to the crops, as the season and its character require. The answers are given in tenths, increase or decrease, compared with a previous year. These correspondents have from three to five assistants in each county, to whom circulars are sent, who make their returns to the chief correspondent. This plan has been suggested by experience, which has most clearly shown that reliable information cannot be obtained by casual inquiries, or through casual correspondents.” 122 The correspondents for the Department were unpaid volunteers who gathered information on crops, crop yield, soil conditions, and other aspects of agricultural production as directed by the Department. We will see in later chapters of this dissertation more reference to the correspondents, the

119 AR 1863, 4
120 AR 1863, 4
121 AR 1863, 8
122 AR 1864, 6
material they used to conduct their surveys, and the methods that informed their work. It is worth noting that the Department of Agriculture was not the first agency to collected information in this way nor was it the first to collect agricultural information. The U.S. Patent Office before it used the same approach to gather agricultural statistics.

In 1865 Newton’s report includes several examples of the Department of Agriculture reaching out to agricultural information sources overseas, an awareness on the part of the U.S. Department of the status of state-sponsored agricultural research in Germany in particular, and an interest in the work with agricultural statistics provided by the U.S. Department of Agriculture by agriculturalists in Europe. Newton reports that he hired two “gentlemen of skill and intelligence, well known to be devoted to the interests of scientific and practical agriculture” to explore Europe and Asia for the Department. He notes the cost will be small and promises Congress that their reports will be included in the Department’s Annual Reports. He also describes the Department’s role at a world forum on insects held in Paris and hosted by the French minister of agriculture. Townend Glover, the Department’s newly appointed entomologist attended and was awarded a gold medal for his research on insects in America. Newton notes that Glover was absent from the Department for “nearly four months” but returned with examples of “silk cocoons and silk producing insects, together with prepared skins of animals and game birds” that could be introduced into this country.

An early example of the extent to which agricultural work at the federal level was situated in relation to similar activities supported by national governments in other countries is Newton’s discussion of agricultural experiment stations in Germany. In the context of discussing the new laboratory for the chemist at the Department of Agriculture, Newton points to Germany as an example of a government investing in agricultural experiment stations. The German agricultural experiment stations conducted,

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123 This third point is an example of Newton’s unsupported assertions but is worth quoting nonetheless. He writes, “I may here remark that this system of collecting, compiling, and publishing farm statistics is attracting the attention and eliciting the commendation of European nations, and that many of their most practical statisticians acknowledge freely its superiority over prevailing European systems.” (AR 1865, 7)

124 AR 1865, 4

125 AR 1865, 6
experiments that would serve the interests of the farmer. Like the experiment stations that would follow in the United States, these efforts in Germany included “travelling teachers” to reach out to farmers and share best practices based on the finding of scientists working at the stations.\textsuperscript{126}

Newton’s report for 1866 concludes with remarks that acknowledge some of the many contributors to the growing collections at the Department of Agriculture. Newton extends a thank you “to United States counsels in foreign countries for continued favors of great value to this department, and to express my appreciation of the courtesy of the Secretary of State in forwarding promptly the correspondence, official documents, and statistical data received from foreign sources. Similar acknowledgements are due to intelligent and public-spirited gentlemen of all portions of the country for their enlightened co-operation and disinterested services.”\textsuperscript{127} In his last Annual Report to the president, now Andrew Johnson, Commissioner Newton offers these thoughts, “In closing, I cannot repress the conviction that a new era is drawing upon the agriculture of this country, in which intelligence and progress will cheapen production and enhance the wealth and increase the happiness of the people.”\textsuperscript{128}

Some of the changes we see over the course of Newton’s term include a stronger focus on cattle and livestock, an evolving relationship between the surge in immigration to the United States and agricultural work and opportunities in this country,\textsuperscript{129} an awareness of the critical importance of understanding the diseases of plants and animals, insects as both beneficial and harmful, a determination to make the country more self-sufficient in terms of agriculture and the products made from agricultural goods like, for example, fabric and rope, the devastation wrought by the Civil War especially on southern

\textsuperscript{126} AR 1865, 7. It should be noted that this is before the unification of Germany which did not occur until 1871. The experiment stations were established under federal authority by the Hatch Act of 1887. See Alan I. Marcus, \textit{Agricultural Science and the Quest for Legitimacy: Farmers, Agricultural Colleges, and Experiment Stations, 1870-1890} Ames: Iowa State University Press, 1985, for more on the experiment stations in the United States.
\textsuperscript{127} AR 1866, 16
\textsuperscript{128} AR 1866, 16
\textsuperscript{129} Newton cites immigration numbers from reports on immigration at port of New York by the New York Commissioners of Immigration for 1863 – 146,519 and 1862 – 76,306. AR 1863, 4.
agriculture, the promise of southern agriculture produced with free labor after the war, an awareness of the role information from the Department could play to help rebuild agriculture in the south by introducing new crops and methods. The final report under Newton (1867) was written and submitted by the Chief Clerk John Stokes who was appointed Acting Commissioner after Newton’s death in office. Stokes points to tensions between rural and urban interests in the U.S. Congress, the detrimental effect of railroad monopolies on the movement of agricultural goods, and a growing political self-consciousness on the part of farmers in the United States. Newton was able to meet many of his initial goals. Under his authority, the Department of Agriculture grew to include divisions of research in entomology, chemistry, statistics; his first hire was William Saunders to serve as Superintendent of the Garden and Grounds. Saunders’ responsibilities included the acquisition of seeds and plants. During Newton’s tenure the Department of Agriculture gained both a library and a museum; the Department collected agricultural information at home and abroad and disseminated the results of its investigations and experiments widely; and, it was responsive to farmers and others in the United States and abroad interested in acquiring or sharing agricultural information. In these reports of the first Commissioner of the Department of Agriculture we see a newly formed federal agency charged with gathering and distributing a diverse and broad range of agricultural information struggle to assert its authority to the U.S. Congress as well as to the people and press of a nation in the midst of a Civil War. A Civil War that itself was taking a dramatic toll on the resources of the United States, Newton suffered acute sunstroke while examining the Department of Agriculture experimental farm and never fully recovered. He died in June 1867. The last reference to the growing political consciousness among farmers in the United States is most likely a reference to the National Grange of the Order of Patrons of Husbandry (or the Grange), which was founded in the United States in 1867 as a secret society. The Grange advocated for farmers in the face of growing monopolies in services and industries on which farmers depended, for example, railroad transportation. The Granger Laws as they are known sought to regulate those monopolies and the prices they charged farmers. The Grange was also an advocate for rural free mail delivery – a vital communication lifeline for farmers and agriculturalists in the United States. The Superintendent of the Garden and Grounds at the Department of Agriculture, William Saunders, was instrumental in organizing the Grange. Another founder of the Grange, Adam Grosh, would join the Department in 1867 as its first Librarian. One of the earliest histories of the Grange is by an historian who was later the second archivist of the United States, Solon J. Buck (appointed by Franklin D. Roosevelt), The Granger Movement: A Study Of Agricultural Organization And Its Political, Economic, And Social Manifestations, 1870-1880, n.d. The reports of William Saunders in his role as Superintendent of the Garden and Grounds are the subject of the next chapter of this dissertation.
nation especially its agricultural resources, agricultural labor force, and agricultural production. The Annual Reports are the political and popular vehicle the Department used to assert and to demonstrate its authority via the communication of agricultural information deemed vital to the health and progress of the nation.

**The Reports of the Second Commissioner of the Department of Agriculture, Commissioner Horace Capron, 1867-1870**

Horace Capron came to his position of Commissioner of the Department of Agriculture with experience as a farmer, working in cotton mills, and as a general for the Union Army during the Civil War. On November 29, 1867 President Andrew Johnson appointed Horace Capron as the second man to head the Department of Agriculture after Commissioner Newton’s death. In 1869, President Ulysses S. Grant reaffirmed Capron as Commissioner of the Department of Agriculture. Capron left the Department in 1871 to serve as a consultant to the government of Japan on agricultural issues and development.

**The First Report of Commissioner Horace Capron, 1867**

Capron’s first report dated May 5, 1868 was submitted to President Andrew Johnson just short of six months after Stokes’ report for 1867. Capron sets out his agenda immediately and it included a commitment to publish and distribute the Department of Agriculture annual report in a timely manner, “It is my intention hereafter to secure greater promptness in the publication of the report—a reform beyond my power to initiate in the issue of this volume, for which no preparation was made upon my

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133 Some of the details about Horace Capron’s early life are disputed by his biographers. Was he a successful farmer? What other work experience did he have? What qualified him for the position of commissioner? The Special Collections Division at the National Agricultural Library (NAL) holds an autobiographical memoir by Horace Capron the record for which includes short biographical information for him.

134 As noted earlier, upon Newton’s death Stokes served as Acting Commissioner of the Department of Agriculture for a few months before Capron took office.

135 The second part of Capron’s autobiography discusses his work in Japan, Memoirs of Horace Capron, Volume 2, Expedition to Japan, 1871-1875, Special Collections Division at the National Agricultural Library.
accession to the office, owing to the death of the former Commissioner.”

He points to progress in agricultural production as the result of increase in the amount of land for farming and the introduction of “the practical application of mechanical science in farm machinery.”

Capron notes the rate of growth in the value of farmland and the number of farmers between the census of 1850 and that of 1860 with the former nearly doubling and the later still the largest profession in the country. Capron uses the Department’s own crop estimates to support his claim that agricultural production during the Civil War not only met demand but also showed “fair progression, under adverse circumstances” in staple crops including corn, wheat, rye, oats, barley, buckwheat, tobacco, hay, and wool. He boasts of progress in agricultural production in the United States during the Civil War, “It has become the wonder of the world, that, during the period of a destructive civil war, the demands of consumption and waste should be fully met, and in many respects a steady advancement continued, even amid circumstances of discouragement, and with a manifest deficiency of labor. That this improvement is progressive is shown by careful estimates of the production of 1867, which present an aggregate increase of 10 per cent, over the valuation of the yield of 1866 and by the suggestive fact that the cotton production of the United States has again resumed its operation at the head of the cotton-growing countries of the globe.”

Capron also makes his case for the use of machinery in farming, arguing that new technologies will increase output, allow the sowing and harvesting of new types of crops (in particular, the sugar beet), and generally increase efficiency of agricultural operations.

This is the first Annual Report of a commissioner of the Department in the volumes I

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136 AR 1867, 1. In each of the annual reports and in the division reports for the period of my study we see concern expressed about the time it took to get the reports published and distributed. Part of the problem was production at the printer but sometimes we see issues of funding for printing, as well. Another variable was the firm belief on the part of the commissioners and division heads that information needed to be available to the stakeholders of agriculture as quickly as possible for it to be useful. This concern did result in the decision to issue monthly reports from the Statistical Division as well as requests from the statistician that correspondents submit their reports to the Department of Agriculture via telegraph.

137 The introduction of labor-saving machinery in agricultural work in the United States evolved in the 18th and 19th centuries. The 18th century relied on livestock for added power and hand tools. By the end of that century Whitney introduces the cotton gin and plows are made with cast iron. McCormick patented his reaper in 1834 and steel begins to replace cast iron as the material for plows and blades. Steam tractors are introduced in the 1860s. We also see improvement in threshers, seeders, and binding technology during the same period.

138 AR 1867, 2
have consulted that includes illustrations. Three plates – double cylinder engine (for steam ploughing), Fowler’s balance steam plough, and Fowler’s balance cultivator – are included in Capron’s report to support his section on the advantages of steam ploughing. In addition, Capron points to the way other major producers of agricultural products are enjoying good results from new farm machinery, “the Viceroy of Egypt is said to have in operation 200 sets of steam-ploughing machinery of the largest class, by means of which the recent remarkable increase in Egyptian cotton production has been attained and the quality of the fibre improved.” He also cites a report on steam ploughs by the Royal Agricultural Society (Britain) which concludes that yield, market return, and quality of the product were all increased as a result of using steam ploughs. The Royal Agricultural Society study, he writes, offers ample evidence for the United States (which at the time only had two steam ploughs in use) to introduce more steam ploughs into agricultural work, “The foregoing conclusions from the report of the commissioners are sufficient to invite greater attention to this interesting subject than it has hitherto claimed in this country.”

While Capron’s political rhetoric does not match Newton’s, he does repeat and reaffirm the idea that if the nation is to remain strong, it must strive toward self-sufficiency when it comes to agricultural products, “It should be the aim of a wise, industrial economy to encourage the gradual extension of the various interests of agriculture until everything consumed in the country, to the growth of which our various soils and climate are adapted, shall be produced on our own lands. The large accession to the number of free laborers in our country, and the rapidly-increasing intelligence and skill of our laboring population, together with the unprecedented immigration of the embodiment of hardy industry from other lands, are highly calculated, if properly regarded and directed, to give an accumulated efficiency to agricultural pursuits, and to render the present an auspicious period not only for the introduction of machinery into departments of business into which it could not formerly be extended, but also for employing unskilled labor in an increased variety of the pursuits of husbandry.”

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139 AR 1867, 5-6
140 AR 1867, 7
The information on crops in Capron’s first report was limited to silk, sugar beets, two new sources of fiber (Angora goats and ramie), and grape culture on the banks of Missouri River in Hermann, Missouri. Capron draws again on census figures for 1850 and 1860 as well as crop estimates for 1867 to argue that agriculture in the American South was on the rebound:

The complaints of [Southern] planters during the past three years that the days of cotton production were over, were the natural effect of discouragement and despondency; yet how baseless and unreliable they proved as a prediction may be seen by comparing with the figures for 1860, those for 1850 on one side, and those for 1867 on the other, by which it appears that the recuperation from 1865 is far more rapid than the increase from 1850.

As the shipments to Great Britain were 135,832,480 pounds in 1865, and 528,162,096 pounds in 1867, the increase has been 140 per centum per annum against 12 per centum per annum from 1850 to 1860. The trade for the first quarter of 1868 has been still more encouraging, this country having shipped more than two-thirds of the total British receipts, against one-half for the same period of 1866 and 1867, increasing in one year from 999,403 hundred-weights to 1,681,830 hundred-weights.  

Capron reports he ended the work of the experimental farm and turned the land over to the Department of Agriculture for new buildings. The land for the experimental farm was no longer sufficient for the needs of the Department in terms of crop experiments and the Department was in dire need of a building that could serve the work of the growing agency. He notes that the main building for the Department, which began construction in August 1867, should be ready to be occupied in September 1868. He also reports changes to “the mode and manner of the seed distribution” but offers no more information about the changes. He does offer the following numbers for seed and plant distribution, “The seed distribution of the year . . . amounted to 1,426,637 papers. Of this number 352,000 were distributed through members of Congress; 88,482 through agricultural and horticultural organizations; 164,953 to statistical correspondents; 299,975 to individuals; and 521,227 to the southern States, under special appropriation.

141 AR 1867, 13
He reports that the Propagating Garden and the Experimental Farm distributed 42,123 plants between January 1 and May 6, 1867.”

Capron concludes his first Annual Report with information on the work and finances of the Department of Agriculture. He notes, again, his commitment to increase the efficiency of how work gets done at the Department and restates his concern about the timeliness of publications. For Commissioner Capron, it seems clear that the Annual Reports gain their authority by the relevance and accuracy of their content and the timeliness of their production and distribution, “It is my desire to make this annual publication not only essentially valuable, but also more truly a report of official operations.”

Immediately following Capron’s official report as commissioner is a special report, requested by the U.S. Congress, on the condition of the Department of Agriculture. This report, dated January 13, 1868 and addressed to the Hon. Schuyler Colfax, Speaker of the House of Representatives, more closely resembles the Annual Reports of Newton as well as those of commissioners to follow. Capron is surprisingly frank and forthcoming about the changes he thinks necessary at the Department of Agriculture. One example is his discussion of the seed distribution program. He writes that he will need to fire a number of workers in the program to begin to deal with its overall inefficiency:

It is frequently a difficult matter, as it is an ungracious task, to institute any reform; for there seldom can be reform, which has for its object the advancement of the public interest, which does not, in some way, act oppressively upon private individuals. The Commissioner could not but feel the force of this in bringing about the particular changes determined upon, inasmuch as there was involved in them the deprivation of employment to quite a number of both sexes heretofore,

142 AR 1867, 14. There is no more information in the annual reports on the units of measurement for seeds.
143 AR 1867, 14. It is interesting to see in Capron’s report for 1869 another call by him to focus and streamline the annual reports on the work of the Department this time by reducing the number of articles by people not at the Department itself. He writes that refocusing the content on information work done at and by the Department exploiting all its resources will make the annual reports more authentic and will elevate the Department’s authority, “enhance its value and enlarge its usefulness.” (AR 1869, 14)
144 Oddly, no information about the relationship between these two reports is offered other than the request by Congress for a special report on how Capron found the operations of the Department less than two months after taking the post of Commissioner.
and for some considerable time, employed in the two branches of the department, known as the seed-room and experimental farm. The seed establishment had, practically, grown into a sort of fungus, of little value in itself, while it absorbed largely of the nutriment required to sustain the vital functions of the department. The experimental farm was to be classed under the same head, and liable to the same objections. These needed to be removed in order to give vitality to the system, The Commissioner felt compelled to stop these drains upon the resources of the department, which were without any corresponding benefit to the country.¹⁴⁵

Capron defends his actions in terms of the mission of the Department of Agriculture as mandated by the Organic Act of 1862 that established it:

By the terms of the act establishing the Department of Agriculture, its duty in this matter is “to procure, propagate, and distribute among the people, new and valuable seeds and plants.” Those seeds distributed under the law must be “new and valuable.” By the term “new” it is not to be understood merely that they are fresh grown, but that they are of a kind that has not been in use in the district or neighborhood to which they are sent; and by "valuable" it is to be understood that they possess some important quality above those of similar variety in ordinary use—as great productiveness, superior nutrition, more early or seasonable ripening, or some peculiar property which renders them worthy of being a gift from the nation to a neighborhood, including all the leading and most valuable cereal productions, such as wheat, corn, rye, oats, barley, &c. And, moreover, it is very desirable and important that the reciprocal obligations of the recipient of such seeds from the department be properly and practically understood: that they are not given to him simply as an individual, but that they are forwarded to him as a member of the community in which he resides, who is confidently selected by the department to co-operate with it by bestowing careful and intelligent cultivation upon the seed intrusted [sic] to him, distributing a portion of its surplus yield to other members of the community, and, where there are peculiarly interesting and valuable results, communicating the information to the department.¹⁴⁶

Only under these conditions, Capron writes, will the seed program achieve a meaningful level of efficiency that benefits agricultural production in the nation.

¹⁴⁶ Ibid., 18.
Capron proposes to abolish the experimental farm and establish in its place an arboretum attached to the propagating garden to display important shrubs, trees and plants and thus inspire visitors to do the same in their homes and towns. He calls for more careful accounting and attention in the work of all the divisions of the Department including the Garden, Statistics, Chemistry, and the Museum and argues that success hinges, too, on larger and more competent staff. In what is one of first and one of the few explicit references to labor at the Department of Agriculture, Capron urges Congress to amend the Organic Act with new legislation that allows for the following staff positions, “one statistician, one entomologist, one chemist, one assistant chemist, one superintendent of experimental garden, one assistant superintendent of experimental garden, one botanist, one superintendent of seed room, one assistant superintendent of seed room, one librarian, one disbursing and auditing officer, three clerks of the fourth class, four clerks of the third class, six clerks of the second class, seven clerks of the first class, five copyists and attendants on museum, one chief messenger, two assistant messengers, two workmen and six laborers.”\(^{147}\)

The extent to which Capron was able to meet these goals is hard to determine from the Annual Reports of the Commissioner and the two division reports I examine for this study. Historians working at the Department of Agriculture in the 20\(^{th}\) century list the total number of employees as nine in 1862 and ninety in 1869.\(^{148}\)

**The Reports for the Remaining Years of Capron’s Term as Commissioner, 1868-1870**

Capron served three more years as commissioner and though no new formal research bureaus or divisions were added at the Department of Agriculture, information systems and information work stand out in his reports especially in the exchange of agricultural information with institutions of other countries as well as domestic institutions. His report for 1869 offers a snapshot of the network for the exchange of agricultural information – print, plants, and seeds:

\(^{147}\) Ibid., 23.
\(^{148}\) See Appendix A for an overview of the organization and structure of the Department of Agriculture, 1862-1889.
The system of international exchanges recently adopted by the Department has been continued during the past year with gratifying success, and arrangements have been completed, in addition to those announced in my last report, with the governments of Brazil, Bavaria, Russia, Switzerland, and Honduras, the Horticultural Union Society of Berlin, Prussia; the Royal Society of Brussels, Belgium; the Royal Gardens of Madrid, Spain; the Horticultural Society of Bremen, Germany; the governor-general of Vilayet, Turkey; the Royal Meteorological Society, London; the Scottish Meteorological Society, Edinburgh; and the Agricultural Society of Sydney, New South Wales. Relations of exchange are now existing with nearly three hundred learned agricultural and industrial societies, chiefly European, but some of them in Asia, Africa, and South America. In nearly every case in which the proposition for exchange has been made, the response has been prompt and favorable. In many cases the societies, in addition to their own publications, have presented to the Department valuable works published by private parties. Several governments have also presented their publications upon agriculture and kindred subjects. During the year one hundred and three varieties of American tree seeds have been sent to the Botanical Garden, Melbourne, Australia; similar assortments to the royal Minister of Agriculture, Austria; to the Botanical Garden near London, England; and to the Botanical Garden, Madrid, Spain. To the Agricultural Society of Good Hope thirty-two packages of cereals have been sent; fifty pounds of American cotton seed to the Chinese government; one hundred and thirty packages of vegetable seeds to the Japanese government; and one hundred and thirty-four papers of American tobacco seed and eighty-six packages of cereals to the republic of Liberia, Africa. Donations of a similar character, for experimental purposes, have been received from the principal countries of Europe, from colonies of Great Britain, from Central and South America, from the Chinese and the Japanese government, and from the West Indies.149

During Capron’s tenure as commissioner one gets the impression from his reports that he prioritized the development of collections – books and specimens including plants, seeds, and insects. The library of the Department of Agriculture, which began under Commissioner Newton, was actively acquiring material and Capron reports it was “in receipt of all the prominent agricultural journals, both foreign and domestic, which of themselves will soon constitute a reference library of value.”150 The collection of specimens that made up the museum, Capron reports in 1868, was stabilized in new quarters after having suffered serious losses due to dampness and mold. Capron expressed his hope that the new space would invite “agricultural and horticultural

149 AR 1869, 12-13
150 AR 1869, 13
societies of the different States” to contribute samples “so that each may be fully represented at the capital of our national government.” The museum was meant to be available to researchers, agriculturalists, and the general public and had “already collected about fifteen hundred samples of foreign cereals and vegetable seeds…and the same quantity of native grains and seeds.” Capron was careful to establish the scientific value of the collection, “It should be understood that this is not intended to be a mere collection of beautiful, unique, or curious specimens, but a cabinet of reference, where the merits of each group may be shown, together with their uses, habits, and adaptability to various sections of the country.”

The arboretum on the grounds of the Department of Agriculture served a similar purpose, that is, to display the widest variety of plants, trees, and shrubs with special emphasis on those successfully growing in the United States but also a testing ground for “rare plants of practical uses” such as the cinchona tree – a collection the Department was engaged in building. In his reports for 1868 and 1870 Capron urges the U.S. Congress to fund research at the Department on the cinchona tree. He expresses his concern about the loss of “cinchona forests in the Andes” which he attributes to the “negligence of governments of Peru, Ecuador, and more Northern Andes states.” He suggests that the United States needs to intervene but offers no plan other than urging Congress to support the Department of Agriculture’s research on the cultivation of cinchona by allocating funds to establish a “cinchona plantation” at the Department. In 1870 Capron reports that England and France have established cinchona plantations. Quinine, Capron writes, is too important a product to allow cinchona trees to be cultivated by “private enterprise” arguing instead for “national plantations.”

Another area of development was the collection of insects, both beneficial and harmful, in the Department’s Entomology Division. That work is, Capron reports, especially urgent as evidenced by the increased number of inquiries provoked by “ravages of the

151 AR 1868, 10-11
152 AR 1868, 12. The bark of the cinchona tree is a source of quinine used to treat malaria.
153 AR 1868, 7
154 AR 1870, 8
cotton army-worm at the south, and the potato-bug and locust at the west.” People were writing to the Department for information on how to deal with insects that harm crops and reporting that insects were moving from native plants to cultivated crops. Farmers wrote to the Department for information about how to manage these insects; information on “their habits and the means for their destruction.” Capron reports the letters come daily and that many include insects “with details of the damage done” as well as techniques farmers tried to control. Each specimen is “figured by Professor Glover” (the entomologist) and added to the growing collection of “about one hundred and eighty plates, containing twenty to fifty figures each.”

A collection taking form in the Chemistry Division provides evidence of the expansive nature of agricultural research at the Department that included “an economic mineralogical cabinet, which will serve not only to illustrate the relation of soils to the parent rock, but will also form the nucleus of an industrial collection, illustrating the lithological riches of the country which are available for architectural and other art purposes.”

In this era of surveys and expeditions funded by and conducted for the U.S. government, Commissioner Capron laments that his Department is not in receipt of that type of funding and discusses the fact that due to lack of funds the newly formed Division of Botany at the Department of Agriculture must rely on donations of specimens from expeditions organized by other agencies and organizations including the Smithsonian. He notes, too, that scientists working at the Department of Agriculture, as well as others affiliated with it, contribute material from their personal explorations to help build its collections.

The seed distribution program at the Department is an interesting example of how the work of the Department of Agriculture in this period is built on the reciprocal exchange of information. In his report for 1868, Capron has this to say about the seed distribution work: “From every portion of the globe seeds and plants, and information as to their culture, have been successfully obtained, and the results promulgated through the annual

\[155\] AR 1868, 10
\[156\] AR 1868, 9
\[157\] AR 1869, 16
and monthly reports . . . The arrangements for an extended exchange with foreign countries of our valuable cereal and forest tree seeds . . . is viewed as one of paramount importance, and destined to add greatly to our national wealth."

He continues by making a case for some changes in the seed distribution program at the Department of Agriculture arguing that it needs to be “judicious” and suggests that need is “scarcely understood or appreciated.” When seed quality deteriorates crop yield is affected. A seed program administered by the Department of Agriculture and invested in by the U.S. Congress could stay on top of these and other issues and ensure adequate distribution of new seeds. We see in Capron’s report on the number and types of seeds distributed for 1868 evidence of the quantities, origins, and distribution of the Department’s seeds. Capron writes the “total number of packages and papers distributed, 592,398, which includes 32,127 sacks of winter wheat imported by the present Commissioner, as follows: To members of Congress, 223,672; to agricultural and horticultural societies, 98,861; to statistical correspondents, 86,391; to individuals on applications, 183,474.”

The types of seeds distributed by the Department of Agriculture in these first years reflect its interest in identifying plants that would contribute to a degree of self-sufficiency in terms of the products of agriculture of the United States and allow this country to have less reliance on imports. But by 1869 Capron is concerned about the effectiveness of the seed distribution program and particularly with the quality of seeds distributed and the ability to distribute seeds to places where they might actually produce crops. His report for 1870 states the number sent out and to whom, “The number of packages issued . . . 358,391, of which 133,043 were sent to members of Congress, 71,865 to agricultural societies, 71,400 to the corps of statistical correspondents, 7,960 to meteorological observers. The distribution includes seeds of cereals, grasses, hemp, jute, ramie, opium-poppy, sugar-beet, tobacco, sorghum, forest and shade trees, and many of the rarer species of plants oleaginous, edible, medicinal, and fibrous.”

158 AR 1868, 13
159 AR 1868, 13
160 AR 1868, 14
161 AR 1869, 17-18
162 AR 1870, 15. See Appendix B for a chart of seed distribution at the Department of Agriculture for selected years between 1865 and 1910.
Finally, the work of the Statistical Division figures prominently in Capron’s reports as commissioner of the Department. In fact, his report for 1868 offers insight and details about how work is organized in that Division, “The operations of the statistical division include the collection of the facts of agriculture in its widest range, from all the States and Territories of this country, and the gleaning of similar data, for the purposes of comparison and instruction, from European records of experimental science, transactions of societies, and official bulletins and publications. It involves the tabulation and systematic arrangement of this matter, and the publishing of condensations or deductions from it in a monthly report. The compilation, composition, revision, and publication of the annual volume is also intrusted [sic] to this division.”\(^{163}\) In his report for 1870, Capron writes that the Statistical Division has agents (correspondents) in 1300 counties of the United States who are actively contributing information to the Department of Agriculture to analyze and publish for distribution.\(^{164}\)

Though he never mentions his predecessor, we see in Capron’s discussion of the mission of the Department of Agriculture and its responsibilities in each of his reports evidence that he shares Commissioner Newton’s estimation of the importance of agriculture and farm work to the future prosperity of the nation. In 1868 Capron begins his report, “The interests confided to this department are those of an industrial class more numerous than any other, and upon whose labors, under the guidance and with the blessing of a Power that rules the year, depend the well-being and the very existence of the human family.”\(^{165}\) He continues by extolling the resources available in this country – soil, climate, labor, land – to achieve that prosperity, “The sphere of its operations is a territory unsurpassed for fertility of soil, and a climate favorable to the health and comfort of the husbandman and the fruitfulness of his toil. Its marvelous breadth of area invites the toiling millions of the world, offering to each family a farm and a home, with the added boon of citizenship,

\(^{163}\) AR 1868, 7
\(^{164}\) AR 1870, 9. It is interesting to compare the numbers of agents at the Department of Agriculture with those working for the U.S. Census. The latter, according to its website section called “Fast Facts” lists 4417 “enumerators” for 1860; 6530 for 1870; 31,382 for 1880; 46,408 for 1890. https://www.census.gov/history/www/through_the_decades/fast_facts/
\(^{165}\) AR 1868, 1
and asking in payment only a guarantee of improvement, and a share in the production of the bread of the nation.”\textsuperscript{166}

Capron urges the U.S. Congress, in his final report as Commissioner at the Department of Agriculture, for more support but he frames his appeal in terms that urge Congress to allocate funds at a level that would allow the Department to pay wages that would attract the best workers. He is direct in his appeal, “The field of labor is so broad, the objects of attainment so manifold, in aid of progressive agriculture and enhancement of its productive resources, that the limited means at the disposal of the Department appear inadequate to the great work at hand…. Its work demands a higher order of talent than the routine service of most public business; it requires a knowledge of the national economy, social science, natural history, applied chemistry, animal and vegetable physiology, and practical agriculture; and presents so broad a range of facts in each field of investigation as to demand the most active effort and the persistent industry. For such labor the most meager compensation only is offered, and it is found difficult to obtain an increase of suitable service, and impossible to remunerate properly that already employed which is found to be most efficient and reliable, while that which is practically useless for the purpose is offered in unlimited measure. A just and wise revision of clerical salaries would greatly increase the efficiency of the Department.”\textsuperscript{167} We will see later in this chapter that this type of appeal is included at the end of many of the Annual Report of each commissioner for the Department of Agriculture. The extent to which they were addressed is nearly impossible to determine from the information in the Annual Reports of the Department. This is another example of a question that could be fairly easy to address if there was an administrative record for the Department of Agriculture during this period.

\textbf{The Reports of the Third Commissioner of the Department of Agriculture, Commissioner Frederick Watts, 1871-1876}

\textsuperscript{166} AR 1868, 1
\textsuperscript{167} AR 1870, 9
Frederick Watts was appointed Commissioner of the Department of Agriculture by President Ulysses S. Grant in 1871 at the age of 70. Watts was born in Carlisle, Pennsylvania in 1801 and died there in 1889. He came to the Department with a diverse professional background. Watts studied law, served as judge, farmed, was a founder and served as the first president of the Pennsylvania Agricultural Society, served as president of the Cumberland Valley Railroad Company in 1841, served on the Board of Trustees for Dickinson College twice – 1828-1833 and 1841-1844, “organized the Carlisle (PA) Gas and Water Company” in 1854, and served as the first chair of the Board of Trustees for the newly established Pennsylvania State University in 1855. Watts was instrumental in the establishment of the University in his role at the Pennsylvania Agricultural Society and has been credited with being the driving force behind its establishment. He used his position at the Pennsylvania Agricultural Society to organize and advocate for a “college that would promote the application of scientific knowledge and methods to agriculture.”

The First Report of Commissioner Frederick Watts -- 1871

Frederick Watts brought to his work as Commissioner of the Department of Agriculture a long history of professional work in areas of agricultural production, advocacy, policy, and education. That experience is evident in his first Annual Report as Commissioner. He outlines priorities for the Department and provides insight into the operations of the Department. As with the reports by earlier commissioners at the Department of Agriculture, Watts begins his report for 1871 with his thoughts about the state of agriculture and its many stakeholders. He notes that the work of agricultural societies and the agricultural press were raising the political consciousness of farmers in the United States, “through the instrumentality of agricultural journals and the establishment of agricultural societies and colleges, farmers have been brought to discover that there is work for them to do outside the precincts of the farm. They seem to have been startled into a determined purpose to take their place in the race of the world’s progress, and to

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169 Pennsylvania State University website: https://www.trustees.psu.edu/timeline/index.html
assert for themselves a position which will enable them to keep pace with all others whose goal is success in life.” Watts sees in the mission of the Department of Agriculture as stated in the Organic Act that established the Department an important and distinct role for the Department “to encourage and aid in this new spirit of improvement.” He sees the responsibility conferred on the Department by the U.S. Congress as important, powerful, but also “almost undefined” given “the vast expanse of this field.” He is emphatic about the critical role the Department of Agriculture and the federal government, generally, play with regard to farmers, farming, and the interests of agriculture, “This is, perhaps, no occupation in life which so greatly needs the fostering care of the Government as that of farming. There is no principle of political economy, no question of public policy, no consideration of statistical facts, no new development of scientific knowledge, which does not come home to be measured in its influence upon the results of the farm. This Department, as I view it, has been established to care for those interests . . .” Commissioner Watts is careful to acknowledge that even given his vast experience and his passionate commitment to agricultural improvement he must allow for more time in the job to extend his suggestions for improvement.

Not surprisingly, given his role in the founding of Pennsylvania State University, Watts offers his thoughts on agricultural education. He is confident the land-grant colleges will become places farmers feel confident sending their “boys” to be trained in the scientific knowledge necessary for progress in agriculture, “I claim that the agriculturists of the country shall have a place where their youth may be imbued with the light of science, and thus fitted for agricultural life.” Watts argues for collaboration between the new agricultural colleges and the Department of Agriculture in order to “produce the most profitable information.” That collaboration is, according to Watts, a key component of success in agricultural information work and education. The latter must also include a requirement for “compulsory labor of at least twelve hours a week” by students. Watts sees the Department serving as “the nucleus around which may be collected the knowledge of inventions, statistics and rare facts, new and improved seeds and plants, to

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170 AR 1871, 1
171 AR 1871, 2
172 AR 1871, 2
be disseminated, distributed, and experimented upon by the instrumentality of agricultural colleges.” Assuming that collaboration’s success, Watts sees a positive effect on the country as a whole, “felt throughout every vein and artery of our common country.”\textsuperscript{173}

Watts next turns his attention in his first Annual Report as Commissioner at the Department of Agriculture to the conditions of the states of the American South noting that agricultural practice in those states had not reached the level of productivity and progress as agriculture in the North. Limiting crops to cotton and tobacco for many years resulted in the depletion of the soil to a dangerous extent. Watts writes that he will look for ways for the Department of Agriculture to help improve agricultural work and production in the South, “to find out whether their implements, and especially their seeds, may not be greatly improved; and how, in the distribution of seeds and plants, we may reach those to whom they may profitably be sent.” He will, he writes, introduce grasses, other fodder crops like clover, and fiber crops like flax to the southern States.\textsuperscript{174} A significant portion of the report for 1871 is devoted to the new commissioner’s impressions of and hopes for the Seed Distribution program at the Department of Agriculture and the Department’s program for the international exchange of seeds. Watts discusses the seed distribution program in his introductory remarks noting that farmers, in their correspondence with the Department, as well as the head of its seed program both “impress my mind with the immense benefit” the seed distribution program has on agriculture in the country. But Watts, like other commissioners at the Department, expresses his concern about the quality of the seeds as well as how and to whom they are distributed, “It would be far better to put a half or whole bushel of seed into the hands of one conscientious and careful person that to divide the same quantity among ten or twenty.”\textsuperscript{175} His report on the status of the program for the exchange of seeds with

\textsuperscript{173} AR 1871, 3
\textsuperscript{174} AR 1871, 4-5. Watts mentions flax in the context of his report on the work of the Division of Horticulture at the Department of Agriculture which was conducting experiments with it and found it could be adapted to areas found in some of the Southern United States.
\textsuperscript{175} AR 1871, 4. In his report on the work of the Seed Division, Watts includes a chart showing that more than a third of the total seeds distributed were allotted to Congress (the House and the Senate). Of that total, members of Congress received more than 88% of the total tobacco seed, more than 93% of the total opium poppy seed, and almost half the total wheat seeds distributed. (AR 1871, 10)
institutions and individuals outside the United States is more optimistic. Watts reports that the exchanges were resulting in the introduction of new and valuable seeds that were added to the Department’s collection and were otherwise hard to come by at a reasonable cost through “ordinary channels or trade.”176 In exchange, seeds from the U.S. Department of Agriculture were sent to the Royal Botanic Gardens at Kew, Edinburgh, and Glasnevin; the Royal Dublin Society, the Horticultural Society of Bremen as well as the Royal Minister of Agriculture at Berlin; botanic gardens in Melbourne, Portugal, and St. Petersburg; the University of Christiana in Norway; the Kingdom of the Netherlands; the Swiss government via the counsel general for the United States; and the ministers for agriculture in Austria and Hungary. Commissioner Watts reports that the Department learned that many of the seeds it sent to foreign nations “in which the ruder systems of agriculture prevail” were successfully cultivated. That success provoked inquiries from those governments that expressed interest in gaining additional assistance with information on best practices for farming and new types of farm machinery especially examples that would afford relief for and more efficiency in farm labor.177

On the other side of the exchange, the Department of Agriculture received seeds and plants from Kew, Melbourne, Austria and Hungary. Watts reports that the Department was able to acquire seeds and plants from South America, Europe, Asia, and Hawaii thanks to the efforts of “our ministers and counsels.” He notes the Department of Agriculture established, in 1871, “correspondence . . . with the ministers of agriculture of the South American governments . . . for the purpose of effecting exchanges of the agricultural and other useful products of those countries which are known to be prolific of numerous medicinal and other economic plants.” The South American correspondents, Watts reports, were in Brazil, Ecuador, Venezuela, Nicaragua, Mexico, Guatemala, and Colombia. Exchanges also continued with China and Japan and a new relationship established with “the colonial governments of Jamaica . . . the colonial secretary having

176 AR 1871, 8.
177 AR 1871, 9
promised a donation of over three thousand plants of the cinchonas, embracing all the varieties.”

Watts reports that the Library at the Department acquired 1064 volumes bringing the total to 6012 volumes. Many of the new acquisitions came to the Library via the Secretary of the Interior and most of those were “public documents.” The collection continues to grow, too, thanks to exchanges with “agricultural and scientific associations of the world” whose publications, Watts notes, are hard to come by in the United States. He reports the collection of reports by state agricultural societies is nearly complete and twenty years deep, and that it came at no cost to the Department of Agriculture. He reports, too, the Library is developing a catalog of the material it holds to make the collection more accessible.

At the end of his introductory remarks to the full report Watts argues for a different approach to getting the information in the Annual Reports distributed. He expresses concern that the Annual Report, in particular, is too often delayed making the information far less useful to farmers and other stakeholders in agriculture. He writes, “I regard . . . the mode of distribution of our annual report as very objectionable. Indeed, in my judgment, it should not be published at all, but should be entirely superseded by the monthly reports which it is now the practice of the Department to issue.” If the U.S. Congress prefers not to make that change, Watts urges it to change the way the annual reports of the Department of Agriculture are made available to the public, “I suggest that a much smaller number . . . be delivered for gratuitous distribution, and that the greater part of the edition be deposited with the Public printer, to be sent to all persons who would order the books and pay their first cost and postage for delivery . . . . The daily applications for this book . . . convince me that thousands would gladly pay so small a sum to obtain that which they so much desire to have.” Watts ends his introductory remarks to his first Annual Report with the recognition that he still had much to learn and

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178 AR 1871, 9. Watts writes in his section on the Statistical Division that it does a good job of “the editing and issue of all the publications of the Department.” (AR 1871, 9)
179 AR 1871, 8
180 AR 1871, 4-5
admits to not having been at the Department of Agriculture long enough to have a full sense of its operations and potential but he does recognize its power. He also notes that he has “not yet been able to devise the ways and means by which these powers may be most profitably exercised for the public good.”

The Reports for the Remaining Years of Watts’ Term as Commissioner, 1872-1876

The condition of the farmer, the nation, and the role and responsibility of the Department to both is a recurring theme in the Annual Reports of Commissioner Watts. His reports for each year begin with some reference to the idea of the farmer as “isolated” or in need of information to more efficiently and effectively conduct himself but Watts also frames that need as one only the Department of Agriculture can adequately address. The Department is, he argues, in the unique position of providing information to help the farmer do a better job which in turn increases the health and well-being of the nation and all its people. Watts sees the role of the Department as rooted in its charge by Congress when established, that is, to acquire and diffuse agricultural information in its many forms. In 1872 Watts is careful to acknowledge he is new to the job but still forceful about what he sees as the relevance of the work of the Department, “A single year’s experience at the head of this Department convinces me of its importance as an executive branch of the Government. There is none other whose relations to the whole people of the country are so intimate and so constant. The several divisions of the Department are in their operations and uses so naturally connected with the diversified pursuits of practical life, that they cannot fail to greatly aid and give a right direction to the farmer, the gardener, the merchant, and the miner, in all those points of interest which concentrated knowledge is enabled to impart to those whose means of information are limited to the narrow sphere of their individual operation.” Watts continues, “we must not fail to watch, learn, and carefully examine whatever may promise to add to the sum of that

181 AR 1871, 5
182 In his report for 1874 Watts writes about the farmer more directly, “The isolated situation of the farmers affords them few opportunities of keeping step with the rapid march of the world’s progress, and any aid which can be given them by this Department is as strongly marked as it is appreciated.” He concludes his opening paragraph, “The Counsel, advice, and information of the Department are cheerfully given to all persons who apply for them on any subject which pertains to the business of agriculture.” (AR 1874, 5)
183 AR 1873, 3
human happiness which springs from the carefully cultivated earth.” He concludes by asserting, “It behooves this Government to be foremost in teaching those lessons of progressive, practical, and scientific agriculture . . .”

In 1873 the Commissioner also discusses the role of the Department of Agriculture, “The progress of events connected with the administration of this Department during the past year has served to exemplify, not only its practical usefulness, but its appreciation by the people, and especially those who are interested in the pursuits of agriculture. The planters and farmers of the country seem to recognize this Department as a sentinel upon the watch-tower of agricultural interests; to mark whatever new ideas and principles may be developed in the minds of men upon the subject; and to discover and procure such new and useful seeds and plants as may enable them to keep pace with agricultural progress throughout the world.” He notes that the Department is especially well positioned to respond to the needs of a growing population in the “Western States.” He points to support from Congress as fundamental to the Department’s ability to work effectively to support agricultural improvement, “It is through this influence that the successful experiences or useful discoveries of any part of the world are communicated to our own people, whereby they are enabled immediately to profit.” But, Watts cautions, something must be done to address the problems that beset the publication and hence distribution of the Annual Reports of the Department of Agriculture. If the reports are not printed and distributed immediately they lose not only their timeliness but the Government (and the Department), Watts argues, becomes “further removed from the attention of the people” it serves.

In his remaining Annual Reports, Commissioner Watts continues to draw attention to the potential for the agricultural education at the land-grant colleges as well as the opportunities presented by collaboration between them and the Department of Agriculture. The narrative for his report for 1872 addresses the issues directly and in it he

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184 AR 1873, 3
185 AR 1873, 5
186 AR 1873, 6
187 AR 1873, 6
makes a point to highlight what he sees as an important role for the Department in those relationships, “It is gratifying to know that these institutions [land-grants] appreciate the effort the Department makes to co-operate with them in the promotion of a knowledge of scientific agriculture, and promise to communicate promptly all facts which may be developed by experiment or otherwise, and which, through it instrumentality, may be published for the information of the whole people. The monthly publications which emanate from the Department, and which are widely circulated among the agricultural journals and farmers of the country, keep them advised with regard to all valuable facts, or even plausible theories, which tend to enlighten the public mind on agricultural subjects . . . . Vermont. And at the beginning of his report for 1872 he extends the scope of the collaboration to include organizations and individuals, “There is no other duty which devolves upon me so acceptable, so agreeable, and withal so profitable, as the correspondence which I have sought with agricultural colleges, societies, and individuals respecting improvements in the modes of cultivation and experiments in its practical operations.” The remaining Annual Reports under his commissionership each include special reports on the agricultural colleges as well as illustrations of the buildings at the colleges.

The number of correspondents affiliated with the Statistical Division of the Department of Agriculture during Watts’ term as commissioner continues to grow and his reports reveal some details about how the work of the division was conducted. In his report for 1872 he writes that the Division “is engaged, through the instrumentality of perhaps six thousand agents, collecting current agricultural statistics, and utilizing all the statistics of governments, associations, and corporations, foreign and domestic, so far as they relate to rural economy and tend to the advancement of American agricultural interests; and this information is published periodically, whereby the farmer is duly informed as to the amount of products, the merchant as to their probable value, and the mechanic as to the . . . .

188 AR 1872, 4
189 AR 1873, 6
190 The illustrations include: AR 1871, Columbus Ohio; AR 1872, North Georgia Agricultural College, the Illinois Industrial University, and the Female College at Wisconsin; 1874, California, Arkansas, Hampton (VA) colleges; 1875, Michigan and Minnesota; 1876, Alabama, Missouri, Texas, and West Virginia.
cost of living.”191 Watts reports in 1873 that the Statistical Division has correspondents (each with a “board of assistants, selected from the most intelligent and public-spirited farmers”) in 1600 counties “which include nearly all of much importance in production.”192

Watts’ report in 1874 on the work of the Statistical Division is worth quoting at length for the insight it offers into how he perceived its value and authority:

> The Statistical Division of this Department is the only point in the country where is concentrated reliable information as to the condition, prospects, and results of the cereal, cotton, and other crops, by the instrumentality of four correspondents in each county of every State; this information is gathered at stated periods of each month, carefully studied, estimated, tabulated, and published for the benefit, as well of the farmer and planter, as of the merchant and manufacturer who deal with their products; whereby all legitimate parties are protected from the rapacity of the speculator, who deals most profitably upon fabricated reports. When we consider the sources of this information, composed of thousands of minds of various shades of sanguine and dispirited temperament, and of extensive and limited knowledge, and when we add to this the varying seasons of heat and cold, wet and draught, the degree of accuracy which characterizes the estimates of final results is truly wonderful. Such is the effect produced by this information upon the markets of the country that it is most carefully guarded up to the moment of its publication to the world at large.193

By 1875 Watts is highlighting the work of the Statistical Division by demonstrating the value of the information it makes available to agricultural stakeholders. He urges Congress to invest more resources in its work, “I know of no branch of the public service in which so much is accomplished with so small an expenditure. It is literally true that nine-tenths of the labor performed is gratuitous, that of our correspondents being entirely uncompensated, except by the reports of the Department and seeds sent them for experiment.”194 In his final report as commissioner, 1876, Watts expresses deep concern about the ability of the Statistical Division to continue to function effectively without an increase in appropriation given increased demand for its work, “Our Statistical Division,

191 AR 1872, 5
192 AR 1873, 11
193 AR 1874, 7
194 AR 1875, 10
which I look upon as the most important to the interests of the country, has been almost
destroyed for want of an appropriation to supply it. The whole sum appropriated to this
division is only $10,000, which is not quite sufficient to pay for the clerical work, leaving
nothing for collecting agricultural statistics and compiling and writing matter for
monthly, annual, and special reports. In consequence of which, and the want of a
sufficient appropriation for printing, the monthly reports cannot be published longer than
November, and the articles which make up the annual report cannot be procured at all,
unless it be the pleasure of Congress to make a further appropriation.”195

The status of the Library at the Department of Agriculture figures prominently in the
Annual Reports by Commissioner Watts. He offers information on the size of the
collection, how the collection is being built as well as its collecting priorities, and the
space it has at the Department. In his report for 1872 Watts writes, “The Library of the
Department is peculiarly an agricultural one, in which are collected the published
discussion and studied wisdom of learned men on agriculture. This is turned to a most
profitable account by all those whose duties in the Department require their investigation
into agricultural subjects.”196 Watts reports in 1873 that the Library collection has
reached approximately 6000 volumes and that the “boards of trades of the chief cities of
the Union have presented complete sets of their reports” for inclusion in the Library
collection. The Library collection, he writes, is used by clerks and “indispensable for
reference in conducting [the Department’s] large correspondence.”197 Items in the
Library’s collection were acquired by donation, purchase, and exchange with institutions
both foreign and domestic. The exchange program, according to Commissioner Watts in
his report for 1874, “seems desirable to all parties” and brings to the Department of
Agriculture “the reports of the leading agricultural, pomological, and meteorological
societies of the world.” The Department exchanged its publications including the Annual
Report with both domestic institutions and foreign.198 Though Watts reports that the year
1875 was a particularly good one in terms of adding material to the Department’s Library

195 AR 1876, 9
196 AR 1872, 5-6
197 AR 1873, 11
198 AR 1874, 12
collection via exchange agreements with “foreign countries and societies,” he offers no numbers. In 1876 material acquired at the International Centennial Exposition in Philadelphia was added to the Library at the Department of Agriculture and new exchange agreements made.

Wood and timber were in great demand in the United States in the mid 19th century as it expanded its territory, built new cities and towns, and developed transportation and communications infrastructure to support that expansion. Commissioner Watts was especially concerned about the need to ensure the preservation of the nation’s forests and forest land. That concern did not develop into policy but one sees in the Annual Reports of Watts a growing awareness and move in that direction. In his report for 1872 he offers nothing more than a proposal that the U.S. Congress attend to the preservation of existing forests and ensure trees are planted on the prairies and all public lands. He implores the Congress to take action noting, “The importance of this subject demands immediate attention.” In his report for 1873 he suggests the Botanical Division at the Department of Agriculture include forest trees of the United States in its collecting priorities. Watts adds that such a collection would be important to exhibit as part of the Centennial Exposition marking the 100th anniversary of the founding of United States coming up in Philadelphia in 1876. Watts argues the task of preserving forests and the resources from them is one best done by the government and urges the U.S. Congress to add it to the mission of the Department of Agriculture and not allow it to be done “by any private individual.”

In his first report in 1872, Watts expresses reservations about the efficiency of the seed distribution program of the Department. Throughout his term as Commissioner he continues to include strong criticism in his reports of the seed program and particularly how seeds were allocated for distribution – especially the amount of seed claimed by members of Congress. Watts was careful to include in most of his reports a chart showing

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199 AR 1875, 12
200 AR 1876, 7
201 AR 1872, 7
202 AR 1873, 10
the breakdown for the distribution of seeds in terms of quantity, type of seed, and to whom the seeds were distributed. The bulk of the seeds distributed were common vegetable and flower seeds. Crop seeds like wheat, tobacco, rye and others were distributed in smaller quantities but a much higher percentage of those seeds went to Congress rather than agricultural societies, individuals requesting seeds from the Department, or correspondents of the Department. Those seeds were valuable as economic crops as opposed to vegetable seeds used mostly for local consumption and flower seeds which were mostly ornamental. In 1871, one third of the total seeds distributed by the Department’s program went to members of both houses of Congress.\textsuperscript{203} By 1873, the total share to Congress had dropped to 24.8%. The distribution by type offers some insight into which seeds were considered more valuable as political capital. That year Watts reports Congress received 24.8% of the total seed distributed but the percentages of particular types of seed is important to see: 22% of the total vegetable seeds and the total wheat seeds; 43.7% of oats; and 83.3% of the tobacco seeds.\textsuperscript{204} Watts reports in 1874 that members of the U.S. Congress received 30% of the total seeds distributed by the Department’s program but, more interestingly, Congress claimed 87% of tobacco seeds and 98.4% of rye seeds that year. Watts writes the Department of Agriculture kept extensive records to document distribution, “In the distribution of seeds, a careful account is kept of everything issued by the Seed Division, with full address of parties to who sent, and names of varieties as far as practicable . . . .”\textsuperscript{205} The distribution total and percentages are skewed for 1875 because of a special allocation by the U.S. Congress for the Department to purchase and distribute seeds to states in the nation ravaged by locust.\textsuperscript{206} By 1876 the amount of seed from the program filtered through Congress had reached 41.9% of the total seed distributed by the Department’s program. The largest percentages of seeds that went to Congress were 36.7% of the vegetable seeds and 91% of tobacco that year.\textsuperscript{207}
The Department of Agriculture in the Annual Reports during Watts’ tenure as commissioner is painted by Watts as a dynamic hub of information coming into it and going out of most of its divisions. A great amount of the information is tied to an army of unpaid agents or correspondents for the Department. They work as volunteers but they do receive from the Department of Agriculture copies of the Annual Reports as well as a portion of the seeds and plants distributed by the Department. In 1875 the Department had 5000 correspondents working with its Statistical Division but in 1876 the number reported by Watts in his Annual Report was down to 3000. Watts reports in 1875 the Department received inquiries from “all parts of the country.” Information of all types was acquired by the Department of Agriculture or donated to it. Correspondence and inquiries from farmers sharing and requesting information about seeds, plants, best practices, harmful insects, new diseases of plants and livestock are mentioned throughout the Annual Reports for Commissioner Watts’ term at the Department of Agriculture. In the report for 1875 Watts quotes from correspondence sent to the Department to acknowledge receiving seeds to help replace those lost in the plague of locusts, “The seed is most acceptable, for it relieves me from a state of hopelessness; but it cannot do me half as much good as it does to know that we have a Government that cares for her distressed people.”

The Reports of the Fourth Commissioner of the Department of Agriculture, Commissioner William Gates Le Duc, 1877-1880

208 In his report for 1876, Watts notes the following examples of inquiries and other correspondence: In the Chemical Division: “Inquiries are constantly made from all parts of the country on chemical subjects, most of them pertaining to agriculture, but many of them asking for analyses of minerals and other substances which have no connection with it. The former are carefully attended to, while the Department uniformly declines to investigate any subject which is not of interest to the agriculturalist” (AR 1876, 11); Botanical Division received “a considerable correspondence . . . from all parts of the country.” Watts reports that duplicate plants were distributed to colleges and that the “division has been making preparation to exhibit specimens of all the forest-trees of the country” at the National Centennial Exhibition (AR 1876, 11); and at the Entomological Division, the “Grasshopper infestation and destruction of crops has prompted large number of inquiries to the Division.” (AR 1876, 11)

209 AR 1875, 10
210 AR 1876, 15
211 AR 1875, 7
212 AR 1875, 8
William G. Le Duc was born in 1823 in Ohio where he grew up and went to school. After he graduated from Ohio’s Kenyon College in 1848 he studied law and shortly after passing the bar moved to Minnesota (Territory) in 1850. The biographical note for his papers held at the Minnesota Historical Society reports that he “worked in railroad and bridge development” in St Paul. He moved to Hastings, Minnesota seven years later, in 1857, where he “was involved in numerous development enterprises, including the manufacturing of flour from Minnesota spring wheat.” After serving in the Union army during the Civil War he returned to farming in Minnesota. By most accounts I have seen, Le Duc struggled with his finances. The *Baltimore Sun* reported in August 1913 that Le Duc was named in the will of the wife of an old friend and that she, Mrs. Julia Lorillard Butterfield of New York City, left him $100,000. The newspaper noted, “Le Duc, 90 years old, of Hastings, Minn., ascends from poverty to a position of comfort.” President Rutherford B. Hayes appointed Le Duc to head the Department of Agriculture in 1877.

Commissioner Le Duc, like his predecessors, was critical of the seed distribution program at the Department of Agriculture as ineffective and indiscriminate. He argued that the Department of Agriculture should be distributing only “rare and uncommon” seeds and that the Department did not have the authority to freely distribute seeds that could be

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214 “Wealth comes to him at 90: Gen. William Le Duc is left $100,000 in woman’s will,” *The Baltimore (MD) Sun* newspaper. August 16, 1913, page 1.
215 The finding aid for the collection of Le Duc’s papers held at the Minnesota Historical Society offers more insight into his work and life. It suggests that some of the Department of Agriculture’s administrative records for Le Duc’s term as commissioner may have left the Department with him. The finding aid lists a significant amount of material relevant to those interested in his years as commissioner at the Department of Agriculture. They are listed in the inventory of his Papers along with quite a significant amount of personal, financial, and family records – 61 cubic feet. Among what appear to be records from his term as commissioner at the Department of Agriculture are four “Agriculture scrapbooks” covering the period of his commissionership, an undated “volume” titled, “Statistical correspondents,” two “Visiting books” (Washington, D.C.) for the years 1879-1880 and 1880-1881, and many “Diaries.” William Gates Le Duc: An Inventory of His Papers at the Minnesota Historical Society. Manuscripts Collection. Catalog ID number 001731688. URL for the finding aid, http://www2.mnhs.org/library/findaids/01177.xml The scrapbooks listed in the finding aid seem to be another example of one popular way people documented their lives in the late 19th Century United States. Ellen Gruber Garvey notes in her 2013 study of 19th Century scrapbooks, *Writing with Scissors: American Scrapbooks from the Civil War to the Harlem Renaissance*, the relationship between scrapbook-keeping and increased access to news via newspapers. Scrapbooks were used, she argues, to create personal narratives that both documented and re-tell events.
purchased from “seedsmen.” Yet, according to one of the in-house historians for the Department of Agriculture in the late 19th and early 20th centuries, Charles H. Greathouse, and evident in Le Duc’s Annual Reports, the Department of Agriculture under Le Duc did distribute “common seeds” with a special allocation to distribute seeds to regions of the country that suffered particularly devastating agricultural losses due to locust infestation. Le Duc’s department sent “2,333,474 [seed] packages, of which 943,530 went to the district ravaged by grasshoppers.”216 Those states and territories were Nebraska, Minnesota, Kansas, Iowa, Montana, and the Dakotas. Concerned that the work of the Department of Agriculture was not sufficiently supported by the U.S. Congress, Le Duc took the opportunity of his Annual Report to demonstrate that point to them. A consistent feature of Commissioner Le Duc’s Annual Reports is that he included with his financial reports information about how appropriations to the Department of Agriculture compared to other agencies of the federal government. According to Greathouse, he was also a strong advocate for more land for experimentation and argued for experimental farms in each State. Le Duc also seemed to recognize the importance of the Department of Agriculture’s Annual Reports with his insistence there be an index to the Annual Reports.217

The First Report of Commissioner William Gates Le Duc – 1877
Le Duc’s first Annual Report is date November 15, 1877 and is addressed to the President of the United States. Its length is consistent with the reports of his predecessors at 18 pages. Drawing on the statistical reports and estimates produced by the Department, Le Duc begins his report for 1877 stating that he “anticipate[s] an unusually favorable harvest” based on information from “correspondents to the department”. While this is good news he cautions that the country must focus on achieving self sufficiency in terms of agricultural products. He writes, “we may not hope to take that rank among the producers of the world to which we are entitled until we have exhausted all efforts to produce within our own borders, and as a result of our own industry, everything now imported from other nations, which can be obtained from the careful cultivation of our

216 This information is also in Le Duc’s Annual Report for 1877, 17-18.
217 Greathouse (1898), 15-18.
own productive soil, which, extending through so many climes, with its wonderful
diversity, offers unparalleled opportunities for the agricultural industries of a self-
sustaining, prosperous, and happy nation.”218 Le Duc grounds his claim in evidence from
that year’s Statistical Report of the Department on imported goods which lists staples
“that can and ought to be produced in the United States.” These include coffee, eggs,
paper-materials, tea, rice, wool, sugar, molasses, and a variety of fruits and nuts totaling,
$236,295,981. He writes that sugar is the highest to “absorb capital; retard industry, and
depress the commercial prosperity of the country.” As we will see in his later Annual
Reports, Le Duc expresses concern that “we are paying to foreign producers nearly a
hundred millions of dollars annually.”219 He notes that because the United States is not
producing its own sugar it is still supporting slave labor in Cuba from whom the U.S.
imports sugar and tobacco in large amounts with no reciprocity. He seems sensitive to the
moral issues of slavery but his central focus is to help move the United States toward a
self-sufficient economy. He imagines future farm production in the United States in this
way: “The great West will purchase the domestic sugars of the Gulf States or California,
and pay in flour, whisky, corn, pork, stock, and mechanical implements. Pennsylvania
will buy, and pay in coal, iron, and petroleum. The New England States will pay in
clothing, shoes, hats, jewelry, cutlery, and other products of their skilled mechanical
labor; and the distribution of the 200,000 tons of sugar over this broad land, every year,
will give active employment to an army of common carriers and middlemen.”220

At the end of his 1877 report on the work of the Department of Agriculture, Le Duc
describes the agricultural challenges faced by farmers in the United States, particularly
the exhaustion of arable soil for farming. In particular, he points to the Mississippi
Delta’s vulnerability to flooding and, in his report, states with great emphasis,
“Individuals, corporations, counties, and States have exhausted themselves in fruitless
efforts to protect these lands from overflow, and to restrain the Mississippi within its
proper boundaries and navigable channel.” He continues by arguing that responsibility
for a remedy rests not at the local level because of the critical importance of agricultural

218 AR 1877, 5
219 AR 1877, 6
220 AR 1877, 7
production to the nation, “It is a national work, for a national purpose, and, as it seems to me, a national duty at this time to take in hand and push to a speedy conclusion the re-establishment of the broken levees, and the making of such provision for their maintenance as shall permanently secure the valuable industries that will immediately reoccupy the lands now subject to overflow, and for this reason alone abandoned.” It is interesting to see that as conscious as Le Duc was about labor for sugar crops, he shows no signs that he is aware of the reports of his predecessors on the prohibitive cost of labor for tea cultivation, harvesting, and production.

In contrast to earlier commissioners’ reporting style, Le Duc’s approach was systematic and straightforward. He summarizes and offers comments on the reports submitted to him by the heads of the divisions at the Department. He begins by reviewing and highlighting the important work of the Superintendent of Gardens and Grounds, which Le Duc refers to as, The Division of Horticulture and Arboriculture. He writes that it “is one of the most important of the component branches of the department, and contributes materially to the benefits which the public derive from its workings. The laying out of the grounds, the establishment of an extended arboretum, and the cultivation of exotic plants have progressed as the means and the land within the control of the department have allowed. The propagation of plants for distribution is exclusively confined to those species and varieties which are of economic value, those of merely ornamental interest being increased only to the extent necessary for the decoration of the grounds.” Le Duc also discusses the work of the Department of Agriculture on “exotic plants” as an especially important area of plant research because of the economic value of these plants, each of which he describes as essential to the self-sufficiency in agricultural production To this end, Le Duc outlined as a goal for the Department:

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221 AR 1877, 7-8
222 AR 1877, 9
223 AR 1877, 9. The Division of Horticulture and Arboriculture is a name that I had not previously seen in the annual reports of the Department of Agriculture nor in any organizational information about the structure of the Department. It is one of a number of examples of the many variations in names and naming of the divisions at the Department of Agriculture in the annual reports and in historical accounts of the agency.
The collection of economic exotic plants also awaits completion. As it now stands, it is the most complete of its kind in the country, containing many plants that cannot be duplicated here. It exhibits the various food, fiber, varnish, gum, and medicine yielding plants of note, and furnishes material for physiological, pharmaceutical, historical, and other educational purposes, to those who desire such assistance.

Collections for agricultural institutions are furnished when desired, so far as duplicates can be made available, and of such species as are considered worthy of introductory trial. With a view to their commercial value in this country, extensive numbers are propagated and distributed in localities where it is presumed they will succeed.224

The collection of indigenous and foreign trees by the arboretum on the grounds of the Department of Agriculture under Commissioner Le Duc is another example of the research conducted at the Department.

One sees in Le Duc’s report narrative some of the descriptive and organizing inconsistencies of the Annual Report for 1877 as a whole. The table of contents lists reports of the commissioner, Superintendent of the Gardens and Grounds, the Chemist, the Entomologist and Curator of the Museum, and the Statistician. Yet, Le Duc reports in his narrative on the work of the Botanical Division (established at the Department in 1868). No explanation is offered for why there is no official report from the head of the Division, George Vasey who served as the second Chief Botanist from 1872 to 1893.225 It is especially curious given the importance Le Duc attaches to the work of the Division. He reports that the Botanical Division’s work to build an herbarium is progressing and its further development is a priority. Most of the specimens come to the herbarium via government “scientific surveys” though he notes that the Department of Agriculture did buy “a collection of some 600 species of the plants of Southern California and Arizona.”226 He also reports that the Centennial Exposition in Philadelphia in 1876 was an opportunity for the Department to acquire specimens from other exhibitors who, in turn, were quite interested in taking home examples of “native forest woods” exhibited in

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224 AR 1877, 9.
225 According to a short biography by the USDA, Vasey trained as a medical doctor, was a member of John Wesley Powell’s Colorado expedition in 1868, and he was a founding member of the Illinois Natural History Survey. http://www.usna.usda.gov/Education/Vasey.pdf
226 AR 1877, 11
the display by the United States. He lists foreign institutions that received forest wood specimens. These included the Royal Botanic Garden at Kew (England); the Imperial Botanic Garden at St. Petersburg (Russia); the National Museum of Rio de Janeiro in Brazil; the Colonial Museum in Melbourne, Australia; the “Tokio Museum, Tokio Japan;” the Adelaide Museum in South Australia; and the Portuguese and Spanish governments. Samples also went to institutions in the United States including Harvard University; St Louis Academy of Sciences; Yale Scientific School; Cornell University; Illinois Industrial University; the Park Commission of Baltimore; Wesleyan University in Bloomington, Illinois; a professor of botany at Yale University, a normal school in Pennsylvania, as well as “several packages to individuals.”

Le Duc reports that the Entomological Division at the Department of Agriculture found “no new insects especially injurious to vegetation” during the year. The insect collection on display at the Department grew with the “addition of two or three small collections, principally from the West.” The Division received inquiries from “foreign government and private individuals in foreign lands” about several insects especially destructive to grapes and potato crops. He also reports that work began on “cataloguing the specimens” from the Centennial Exhibition. There had previously not been a catalogue but Le Duc notes that with the increase in the size of the collection on display in the museum, “a catalogue becomes a necessity.”

The work of the Department’s Chemical Division included analysis of bat guano from the southern United States, the chemical composition of American and Sicilian sumac, and, the ever-important search for a reliable source for domestic sugar production, the sugar content of beets.

Le Duc stated that the “demand for information” including the crop estimates from the Department’s Statistical Division, by “members of Congress, boards of trade, agriculture, and rural and technical writers has been met as fully as possible with this lack of

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227 AR 1877, 1
228 AR 1877, 11-12
facilities.” But, as we see in Le Duc’s summary, the work of the Statistical Division was on track:

1st. The record and tabulation of foreign and domestic statistics of agriculture, derived from national and State departments and the various grades of rural societies and experimental schools.
2d. The collection of statistics of distribution of the products of agriculture, the current price of such products in primary markets, and the cost of transportation and exchange.
3d. Statistical analysis of such information and deductions illustrative of the causes or change in production, its economic tendencies, and comparative profits.
4th. An original crop-reporting system, including a corps of correspondents or reporters in the principal counties.

The Department of Agriculture received special funding to distribute seeds to areas of the country where crops were devastated by locusts and grasshoppers. The plague of insects was especially concentrated in the Plain States and did millions of dollars of damage to crops between 1873 and 1877. The insects were finally wiped out by a snowstorm in the spring of 1877. Le Duc’s report on that effort offers some insight into how the Department understood (or perhaps, represented) the value of its work, some background on the scourge, and the challenges still ahead for farmers and scientists alike and is worth quoting at length:

The distribution of a miscellaneous assortment of seeds to the farmers on the frontier, whose crops were destroyed by the locust or grasshopper, was of the greatest benefit to those poor and destitute people, who were thus enabled to remain on their farms, and to secure enough of the fruits of the earth to eke out a living until the terrible scourge had passed away, or another season had arrived with better hopes of successful culture. In the planting of trees, and the consequent increase of insectivorous birds, as well as in the ingenious devices which have been adopted by the farmers of Minnesota and Kansas the past year,

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229 AR 1877, 15
230 AR 1877, 14
231 “In the summer of 1877, the grasshoppers left just as quickly as they had arrived. An April snowstorm damaged many of their eggs, which encouraged farmers to redouble their efforts to destroy the grasshoppers. The surviving grasshopper eggs hatched, but by August, the grasshoppers had flown away. Many attributed the end of the grasshopper plague to divine intervention, since Governor Pillsbury had proclaimed April 26 a day of prayer, after receiving many requests to do so.” Grasshopper Plagues, 1873–1877. Created by R.L. Cartwright for MNOPEDIA (http://www.mnopedia.org/event/grasshopper-plagues-1873-1877) a web-based project of the Minnesota Historical Society. Last modified: April 29, 2015
the most efficient means will be found of keeping under control a pest which has been more terrible than “an army with banners” since history has had a record. Perhaps the earliest account of any appearance of the grasshopper west of the coasts of Europe or Africa is that given in the History of Jamaica, by Sir Hans Sloane, in which a life-size drawing is given of the locust or grasshopper that fell on the deck of a vessel many leagues from land. The insect here described was of a species now known as the Barbary locust, and was larger than that which has ruined so many of the farmers of the West during the past five years, and the ravages of which, we may expect, will be repeated from time to time until the knowledge and ingenuity of our people shall master the secret of their birth and habits, and control the breeding-grounds, or destroy the predaceous hordes before they can have time to work fatal mischief to the crops.\textsuperscript{232}

As we have seen, the distribution of seeds was a major activity of the Department of Agriculture stemming directly from its mission found in the Organic Act that established the Department in 1862. Le Duc, for his part, continued the seed distribution work but, as we see in this his first report, expresses concern about the quality and types of seeds distributed by the Department. He is also critical of the haphazard nature of distribution. He argues for a more strategic approach for seed distribution, one that stops sending out common vegetable and flower seeds, and matches seeds to regions where they can be grown. He is concerned that seeds are sent to any applicant without proof they have the knowledge and resources to use them effectively. The results, he writes, range from misuse of government resources to outright “fraud” and he suggests the Department needs to develop policies that get “new and valuable and improved varieties of seeds” to farmers capable of running and recording experiments and sending the results back to the Department. He wants to see the distribution of seeds from the Department of Agriculture go to “agricultural associations and colleges and permanent correspondents and agents of the department, and to such individuals as were known to be agriculturalists.”\textsuperscript{233} It is not clear from the Annual Reports that Le Duc was successful in changing the seed distribution strategy at the Department. In fact, Greathouse suggests there were very few changes to the seed distribution program under Le Duc’s term as commissioner and the

\textsuperscript{232} AR 1877, 16
\textsuperscript{233} AR 1877, 18
seed distribution charts in the remaining Annual Reports by Le Duc show no obvious changes.\textsuperscript{234}

Finally, Le Duc draws the attention of the U.S. Congress to what he sees as serious and critical inequities in terms of money appropriated for the Department of Agriculture. He appeals to Congress with the following:

It is shown by a recent statement made from the records of the Treasury Department that the total expenditures of the Department of Agriculture from 1839 to 1877, inclusive, amount to $3,366,114.37. From this amount should be deducted $100,000 appropriated in 1867 for the purpose of enabling the Commissioner of Agriculture to erect a department building, and the further sum of $50,000 appropriated for the printing of the Annual Reports of the department for the years 1872 and 1873, and erroneously charged to the current annual expenses of the department for those years. Deducting these two items from the above amount, and it leaves the sum of $3,210,114.37 as the aggregate amount appropriated during the existence of the government for the promotion of agriculture. The utter insignificance of this sum becomes apparent when compared with the amounts appropriated for the maintenance of other departments of the general government…. When it is remembered that the last census established the fact that one-half the population of the United States is either directly engaged in agricultural pursuits, or is wholly dependent upon them for support, this sum becomes still more insignificant as an appropriation for fostering and promoting so vast an interest.\textsuperscript{235}

To support his argument, he includes a chart with the following funding information for 1877: Treasury was almost $15 million, War Department $7.3 million, Postal Service $5.9 million (Post Office Department was $568 thousand), Indian Affairs $5.1 million, Department of State $1.2 million, Justice Department $386 thousand, and Department of Agriculture $175 thousand.\textsuperscript{236} The expenditures of the Department for the fiscal year 1877 show salaries at approximately 33% of the total budget, the collections of statistics at nearly 5%, the purchase and distribution of seeds at nearly 32%, Experimental Garden 2.45%, Museum and Herbarium just under 1%, the Library and Laboratory each just shy of .5%, printing and binding 4.4%, postage just shy of 2%.\textsuperscript{237}

\begin{footnotesize}
\begin{enumerate}
\item[234] Greathouse (1898), 16
\item[235] AR 1877, 20-21
\item[236] AR1877, 21
\item[237] AR 1877, 20
\end{enumerate}
\end{footnotesize}
Le Duc concludes his first report with a plea to the U.S. Congress to fund work on a “general and complete index to the thirty-seven volumes of the Annual Reports of Agriculture” from its time at the Patent Office (1838 and 1841-1861) continuing as a department from 1862 to 1876.238

The Reports for the Remaining Years of Le Duc’s Term as Commissioner, 1878-1880

The beginning of Le Duc’s 1878 report as Commissioner of the Department of Agriculture reflects his pride in the success and progress of agricultural production in the United States noting how the “bountiful yield of nearly all of the diversified objects of our agriculture” is in stark “contrast of condition of our people with a portion of the inhabitants of the great Chinese Empire, where hundreds of thousands have perished miserably because of the failure . . . of the rice crop.”239 That same pride and optimism is found in his report for 1880, “During the four years of your administration now drawing to a close our farmers have rejoiced in the realization of higher rewards for agricultural labor than during any other continuous four years in our history. They have been years of exceptionally good crops of all the different staples grown either for home consumption or export; and as the European nations to whom we look for a market have during the same period failed, from disastrous seasons, to harvest the usual quantity of farm products, a steady demand at good prices has existed for our entire surplus of wheat, corn, cotton, meats, and dairy products.”240

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238 AR 1877, 22
239 AR 1878, 5. It worth noting that Le Duc’s report for 1878, his second, is longer than others both in its formal narrative which is 39 pages but also because he includes more than 30 pages of tables of information on the import, export, consumption, tariffs, and cost of several crops he argues need to be cultivated and produced domestically. These include tea, coffee, and various sources of and potential sources of sugar. He orients his reader to the section and notes the source of some of the information is from outside the Department. (AR 1878, 41-76) Also attached to his report is an appendix which offers detailed information on the productive outcome of crop seeds distributed by the Department. These include wheat, corn, garden and flower seeds, oats, rye, barley, potatoes, buckwheat, cotton, amber sorghum, sugar beets, fruits, forest tree seeds and shrubs, tobacco, and tea. Finally, Le Duc prepared a 5-page section called, “Prefatory to Reports of Heads and Divisions.” The section serves as a supplement and discusses information from the divisions that because of the cycle of funding from Congress and the print schedule for the annual reports reflects work done between the time of the official division reports and publication. Topics include sugar research and tannin sources and tanning. (AR 1878, 91-95)
240 AR 1880, 5
Le Duc points to the intricate networks woven to make up the economy of agriculture in the United States, “These unprecedented crops . . . have afforded constant and profitable occupation not only to the farmers but to the manufacturing and commercial classes, as well as to the great transportation companies whose trains and fleets have had uninterrupted and remunerative employment.”

He suggests that the “unusually prosperous condition” of agriculture in this country is evidence the United States is “pre-eminently the agricultural country of the world.” He suggests that this information should be obvious to all who look at the reports of the Department and wonders why its work is not more vigorously supported, “The casual readers and the most indifferent student of statistics cannot but be struck with the large proportion that agricultural products . . . bear to the total exports of the United States; and every man of intelligence in pondering the fact must stand amazed that the agricultural interests of the country have not received more attention in State and national legislation.”

Though not a new area of emphasis for the commissioners of the Department, Le Duc does a good job of utilizing the statistical work of the Department to make his case.

Identifying alternate and economical sources of sugar was a recurring theme and clear priority for Le Duc during his term as commissioner. These included sugar beets, sorghum, and maize. He opens the report for 1879 with a proclamation about sugar research and predicts the work of the Department of Agriculture in this area will result in the successful cultivation and production of sugar “one of the most important, expensive, and indisputable requisites of modern life” from various sources other than cane in this country and “it can be produced in quantities sufficient to meet any demand” and can be grown profitably by both large and small farming operations, “Reporting progress as the result of the efforts of this department in this direction, it is not too much to say that the success attending the manufacture of cane-sugar from sorghum and maize will mark the year 1879 as an important epoch in the agricultural progress of our people.” He is especially buoyed by “a specimen of well granulated sugar made from sorghum, and exhibited at the Minnesota State Fair.” He also notes that as far as he is aware the very

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241 AR 1880, 5
242 AR 1880, 6
“first stalks of sorghum ever grown in this country . . . were planted by the Curator of the Botanical Gardens. This seed was obtained from Paris, as was also the seed which the Agricultural Department first distributed in the year 1856.” These early experiments with sorghum yielded limited results until the Division of Chemistry at the Department began experiments in 1877. Le Duc reports, “This inquiry has been patiently and carefully followed from the season of 1877 to 1879, and the results have been eminently satisfactory…. It is sufficient to say in this place that the value of the work done during the past year by this division can not be overestimated.”

In 1878 Le Duc reports that the Department of Agriculture added pearl millet and teosinte, as well as new types of sugar cane to its investigation for alternative sources of sugar. He writes in his Annual Report that he was not yet successful in acquiring a “considerable quantity” of “a new variety” of sugar cane seed from “Tampico” but reports receipt of “some of the best varieties” from Japan sent by “our correspondent” there. Cane sugar seeds were also received from the Sandwich Islands and Brazil thanks to “Dr. T.G. Richardson of the State University of Louisiana.” The teosinte seeds were acquired from a company in Paris, France. Le Duc also reports that he “was compelled to seek the aid of farmers in the vicinity of the city [the District of Columbia]” to find land to run sugar experiments because the Department had insufficient land to run them.

The section of Le Duc’s 1879 report on the work of the various divisions at the Department provides a number of examples of the global reach of the Department in terms of information acquisition and sharing. The Entomology Division, he reports, sent representatives from the Department going out into the field and, too, employed local

243 AR 1879, 5-7
244 AR 1878, 7. A quick search for Dr. Richardson finds some of his correspondence in the History of New Orleans collection at the LSU Special Collections. He was a medical doctor in New Orleans.
245 AR 1880, 8. Teosinte or teosinte is “a wild grass in the Poaceae family that includes the species Zea mays (in addition to other wild grass species: Z. diploperennis, Z. perennis, and Z. luxurians.). Z. mays encompasses several subspecies: ssp. huehuetenangensis, ssp. mexicana, ssp. parviglumis and others. Zea mays ssp. parviglumis is most likely the ancestor of maize (Zea mays ssp. mays). Teosinte and maize are different subspecies of the species Zea mays, but maize, as a result of domestication, has been selected by humans over thousands of years to have more kernels, bigger cobs, more rows of kernels, and exposed kernels that are more edible.” From website for the Paleontological Research Institution in Ithaca (NY), http://maize.teacherfriendlyguide.org/index.php/what-is-maize/what-is-teosinte
people in its investigation of the plague of locusts that affected a broad section of the country, “Whenever, during the year, word has been received of any insect irruption of particular interest, an assistant has been sent to the spot to make observations, or a local observer has been employed, to insure a thorough investigation of causes and a more intelligent suggestion of remedies.”

Le Duc’s discussion of progress in silk culture offers insight into how the work of the Entomology Division was conducted and its scope, “During the latter part of last winter, twenty ounces of imported silkworm eggs, the majority from Japan, and the rest purchased from reliable French dealers, were distributed among some fifty persons desirous of commencing silk culture. The reports so far received seem to demonstrate, beyond a doubt, the possibility of the successful culture of silk in almost every part of the country. Unskilled persons have, with the help and advice of the department, in nearly every instance brought a large proportion of the worms successfully to the spinning point.”

Le Duc also takes the opportunity to alert the President and the U.S. Congress to the challenges that an increased workload pose to staff at the Department of Agriculture and how that affects the ability of the Department to fulfill its mission, “The correspondence of this division has increased greatly during the past six months, and it is entirely beyond the power of the clerical force of the division to give that prompt attention to inquiries upon the subject of insects injurious to agriculture that come from all parts of the country.”

The Statistical Division, Le Duc reports in 1879, also experienced “a very large and rapidly increasing correspondence, both foreign and domestic.” The number of correspondents has reached more than 4000 who “have been selected with an eye to their intelligence, experience, and general fitness for the duties which devolve upon them. Most of their communications consist of replies to queries propounded by the department.” It is worth quoting at length his description of what happens next:

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246 AR 1879, 15
247 AR 1879, 14
248 AR 1879, 14
These are first verified by the statistician by comparison with the most reliable data attainable from other sources, then classified and arranged in the tabulated form which the numerous accompanying tables present. Those relating to the growing crops are first compiled for issue in the Monthly Bulletin of the department. This is prepared by this division and widely disseminated through the mails and through the daily and weekly press, which are furnished with early copies. These crop reports, and, indeed, all the statistics of this department have become necessary not only to the producing agriculturists, but also to the middlemen and consumers, and under the untiring and careful supervision of the statistician and his painstaking assistants, are becoming noted for that accuracy which should characterize all statistical work. The labor involved is not only arduous, but of an intricate character. It requires discretion, judgment, and experience. It cannot be intelligently performed by novices, nor will it do to intrust [sic] it to those of careless or negligent habits, because slight errors in the calculations might prove injurious to some of the most important interests in the country. A liberal increase in the force of this division is very desirable. Each addition to the list of correspondents adds to the labor of this division and also augments the value of the crop reports in accuracy and reliability.  

Le Duc reports in 1879 that the Department will begin to calculate the value of labor in addition to its regular categories of statistical analysis and estimates because labor is, he argues, a critical factor in evaluating agricultural production, “As the value of farm lands is largely dependent on the price of labor for their productive cultivation, the average wages of labor becomes an important factor in successful agriculture as well as in the present and prospective money value of farms. It is clear that the taxes on an unproductive farm would soon consume its value. As production is impossible without labor, the cost of the latter becomes a vital point with the agriculturist.”  

Le Duc offers this interpretation of the “tables” of the Statistical Division at the Department of Agriculture and discusses the value of the information on farm labor they contain:

His tables afford much general information useful to the thoughtful farmer in the handling and marketing of his crops. The average-price table, showing the difference in value between the market nearest his farm and in New York, Philadelphia, Baltimore, and Boston, acquaints him with the average cost of transportation, insurance, and commission from the point of production to that of consumption. The wages table is very instructive. It shows that ordinary farm-labor commands most in New England, where education is universal, and the laborers are consequently intelligent. This advance may be considered a premium

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240 AR 1879, 16  
250 AR 1879, 16
on intelligence. In the South and West, while farm-labor is lower, being generally uneducated, that of the intelligent mechanic is considerably higher than it is in New England. This again may be considered a premium on educated labor where that commodity is scarce. A careful examination of the wage-tables and of the price-list of breadstuff and provisions in the different sections of the country will enable laborers to determine where toil is best rewarded, after deducting the cost of subsistence.

Le Duc’s reports on the work of the Botanical Division for 1879 and 1880 offer insight of how its work is conducted and why it is important in his discussion of botanical specimens received by the Department via foreign exchange. In 1879 Le Duc writes,

are arranged, verified, and classified by the botanist of this division; duplicates are distributed to State agricultural colleges and other institutions of learning . . . . This botanical collection has also a special scientific value. It is the custom of all enlightened countries to collect at government centers specimens of the productions of the country . . . . These museums and herbariums bring together a vast mass of material which men of science investigate and classify, and add to the stock of human knowledge.

It is hardly necessary to say that it is the duty of the government to advance the interests of education and science; and assuredly there is no other department of the government where botanical science can be more appropriately fostered and cared for than the Department of Agriculture. Here is the place where information respecting every vegetable production of our vast country should be obtainable. Among the thousands of visitors to the national capital are those who are interested in education and science, who will gladly avail themselves of the opportunity here offered to examine productions of the entire country and foreign states."

With a tip of his hat to the possibilities of cooperation between the land-grant colleges and the Department of Agriculture, Le Duc writes that he sees a role for the Department in agricultural education in colleges by the provision of specimens – domestic and foreign.

The Library at the Department of Agriculture gets only a brief mention in Le Duc’s report for 1880. He urges the U.S. Congress to allocate more funds to support the development of the Library and the acquisition of “books and periodical literature

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251 AR 1879, 18
252 AR 1879, 19
253 AR 1879, 20
necessary to the scientists of various divisions, to say nothing of the many valuable works which, properly found on our shelves, would be interesting to the general reader.” The collection of “7,000-8,000 volumes,” he writes, needs to be more carefully catalogued and it should be expanded to “contain many more, and it should especially embrace every book that has ever been published on agriculture.”

The distribution of seeds by the Department is a constant concern of Le Duc’s. In his report for 1879, Le Duc gives his readers a short description of the work involved with seed distribution: “Through the four thousand regular correspondents and through information obtained from other citizens of the different counties, as well as from the prize lists and reports of county and State fairs, lists of the best farmers, numbering at the present time from ten to twenty in each county, regardless of political faith or anything else but their standing as farmers, have been obtained and entered in our books, and to some of these individuals, as well as to the agricultural societies in those counties, new and valuable seeds adapted to the localities are sent for experimental purposes.”

In his final report for 1880, he again expresses concern about the equity and effectiveness of how seeds are allocated for distribution. He offers his readers in Congress a summary of distribution that shows a bit less than half of the total seeds for distribution in 1879 going to members of Congress – the Senate and the House – 759,679 of the total 1,581,253 packages. Agricultural societies received 17,444, statistical correspondents of the Department received 139,729, granges got 355,452, “special farmers” 127,644, and “miscellaneous applicants” 181,305.

Le Duc’s term as Commissioner was also marked by challenges with diseases of cattle and other animals for which the Department of Agriculture received a special appropriation of $10,000 in 1878. He reports on the economic effect this has on exports of swine in 1879, “Millions of dollars are involved in this trade, but it is not alone the heavy losses annually sustained by our farmers that should claim our attention in a consideration of the subject. The fact of the existence of a terribly destructive disease

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254 AR 1880, 33
255 AR 1880, 21
256 AR 1880, 19
among the swine of this country has already reached many European markets, and our salt and smoked meats have been prohibited entry and sale at ports where the business has heretofore been remunerative.”

Le Duc ends his Annual Report for 1879 with a list for the U.S. Congress on the “immediate necessities of the department.” He points to several areas that need to be addressed in order for the work of the Department of Agriculture to continue to succeed and grow:

1. A lab properly outfitted with equipment and people.
2. 1000 acres for an experimental farm; 5 experimental stations in different regions of the country, “one in California, one in the interior of the continent . . . , one in Texas, one in Florida, and one in New York above the latitude of Albany.”
3. More money for the grounds and gardens . . . at least $15,000 total
4. More money for the museum . . . at least $5000
5. Renewed support at $10,000 for research on animal disease
6. Renewed support for research on harmful insects . . . at least $10,000
7. $6,000 more for forestry work

The research work of the Department of Agriculture was not the only area that needed more attention and funding from the U.S. Congress according to Le Duc. In his report for 1880, he offers evidence of the inadequate working conditions for some people at the Department. He writes specifically about the working conditions in the folding room at the Department. He reports on the cramped basement space and notes these poor conditions are not limited to the folding room, “As in the seed division the air here is exceedingly foul and unwholesome.” He argues for a new building as the only way to adequately address the issues noting, “No system of ventilation can sufficiently remove the impurities of the atmosphere in so confined a space contiguous to boilers and machinery.”

**The Reports of the Fifth Commissioner of the Department of Agriculture, Commissioner George B. Loring, 1881-1884**

257 AR 1879, 24
258 AR 1879, 28-29
259 AR 1880, 20-21
Dr. George B. Loring served as the fifth Commissioner of the Department of Agriculture. He was appointed in 1881 by President James A. Garfield. Loring grew up in Massachusetts and attended Harvard College (1838) and Harvard Medical School (1842). Loring was trained as a physician and was appointed postmaster for Salem, Massachusetts from 1853-1857; he served in the Massachusetts House of Representatives from 1866-1868, the Massachusetts Senate from 1873-1877, and the United States House of Representatives from 1877-1881. Loring left the United States Congress to focus on “scientific farming and politics,” according to Greathouse. The biographical note for Loring’s papers held at the Peabody Essex Museum’s Phillips Library list him as the founder and president of the New England Agricultural Society in 1864 and he served as the Society’s president until 1890 just one year before his death in 1891. Loring was an active member of the Society representing its members at national meetings and conventions where he crossed paths with earlier commissioners of the Department.

The First Reports of Commissioner George B. Loring, 1881 and 1882

The Department’s Annual Reports for 1881 and 1882 were published in one volume, which included a report from the commissioner for 1881 and another for 1882. However, the volume contained only one set of reports of the divisions or bureaus of the Department. These included the Entomologist, Gardens and Grounds, the Botanist, the Chemist, and the Statistician. The Reports of the Commissioner of the Department appear at the front of the volume for 1881 (dated November 25, 1881) and at the end of the volume for 1882 (dated November 20, 1882). The commissioner’s report for 1881 and his report for 1882 are listed in the Table of Contents for the volume as “Report of the

260 Greathouse, 16. Biographical information is from Info from the biographical notes for his papers held at the Peabody Essex Museum’s Phillips Library Digital Collections, George Baily Loring (1817-1891) [Bailey or Baily?] Papers http://phillipslibrarycollections.pem.org/cdm/ref/collection/p15928coll1/id/2882

261 See for example, The Miscellaneous Documents of the Senate of the United States for the Second Session of the Forty-Second Congress (1872) report on and proceedings of the National Agricultural Convention called by Commissioner Watts in 1872 and held in Washington, DC to discuss the relationship between the agricultural colleges, state agencies and societies, and the Department of Agriculture. The National Convention brought together, at the invitation of Commissioner Watts, representatives of the agricultural colleges, State agricultural societies and boards of agriculture, and State horticultural societies. https://books.google.com/books?id=SKgFAAAAQAAJ
Loring’s introductory paragraphs to his first report as Commissioner of the Department contain the first evidence I see in the reports of commissioners of planning at the Department. Loring writes, “When I entered upon my duties . . . I found the work for the season, both regular and special, elaborately laid out by my predecessor. Provision had been made for investigating the agricultural condition of the Pacific coast; for continuing the work on the artesian well in Colorado; for proceeding with the experiment in the cultivation of the tea plant; for concluding the investigation into the manufacture of sugar from sorghum; for observations on the existence of pleuro-pneumonia and other contagious diseases of animals both in this country and in those English ports to which American cattle are exported; for continued examinations in to the necessities and opportunities of American forestry; for tests of textile fibers, both animal and vegetable; for a scientific investigation of the habits of insects injurious to vegetation and of the best methods of destroying them; and for the usual work of the various divisions of the department.” And, later in his introduction, Loring is careful to note he “endeavored to conduct all experiments . . . in the spirit of an investigator and not in the spirit of an advocate.”

One gets the impression from his reports that Commissioner Loring was an active administrator at the Department of Agriculture. He reports in several places that he sent workers from the Department on what sound like fact-finding trips. These included Superintendent of the Garden and Grounds William Saunders whom he sent to South Carolina to gain a firsthand account of experiments with the cultivation of tea plants. Loring reports that he arranged for “a thoroughly scientific and practical commission, appointed with great care and provided with instructions obtained from Major Powell . . .” to explore, with special funding from the U.S. Congress, the feasibility of an artesian well in Colorado. Loring also reports that he also sent a “veterinary surgeon” to England to consult with them about cattle diseases and “exact condition of American

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262 AR 1881-1882, 3
263 AR 1881, 5
264 AR 1881, 5
265 AR 1881, 6
266 AR 1881, 6
267 AR 1881, 16-17
cattle landed in” British markets. We learn from Loring’s report for 1881 that he, too, travelled outside of Washington, D.C. to gather information on the condition of agriculture in the country. He writes that he “considers it my duty to visit various important agricultural sections of the country where I could not only witness the exhibited results of the farmers’ industry, but could also obtain an opinion of the general condition of agriculture and the popular expectations of the department. I have been especially desirous of ascertaining the sources whence the department obtained its statistics and crop returns, and the estimate put upon these reports by those interested in them. He visited several states to see firsthand how the Department’s seed distribution was working. He reports, “For these observations, I have visited New England, Illinois, Wisconsin, Pennsylvania, Virginia, South Carolina, Maryland, and Georgia.” Loring’s reports indicate that he considered these trips a success, “I have found the agricultural mind of the country active in its desire to obtain the best knowledge, and to examine and test all the best methods; and I have been especially impressed with the vast opportunities which this department possesses for aiding the development of our vast resources, and for accumulating and distributing information up on the great cluster of industries upon the successful prosecution of which the prosperity and power of our country depends.”

Loring reports that he also used his office to bring agriculturalists together in what he called “delegate conventions, composed of representatives of the State societies and the colleges founded on the land-grant of Congress, to meet in Washington in January next, and have assigned to each convention one of the following topics . . . : Agricultural education; animal husbandry; Horticulture; Cereals and Grasses.” Loring also called together “cotton planters” and notes in his report that he attended an exhibit on southern agriculture and was quite impressed . . . enough so that he requested that exhibitors send their material to the Department “for proper arrangement and public observation.” In 1882, according to Greathouse, Loring was able to persuade Congress to increase its appropriation to $80,000 for statistical work at the Department of Agriculture. Loring

268 AR 1881, 6
269 AR 1881, 6.
270 AR 1881, 6-7
271 AR 1881, 7
272 AR 1881, 8
writes in his report for 1882, “The design is by establishing a permanent system of
efficient and prompt collection of current statistics to be able to present instantly and
accurately the current changes in crop areas and conditions and in the production of
breadstuffs, meats, industrial products, and the results of agricultural labor.” However, if
we look at the paragraph just before it we learn even more about the impact of the
increased funding from Congress, “A plan for completing and perfecting the system of
crop-reporting, for which appropriation was made at the last session of Congress, has
been put into operation, with initiatory results which promise success. It includes the
appointment of State statistical agents, each at the head of a corps of reliable and
judicious correspondents, who make simultaneous return, on the first of each month, both
to the agent and the department. The agent is further charged with any special
investigation that may from time to time be required, and with the collection of results of
local experiment, and any valuable facts illustrating the progress of agriculture.” The
additional allocation allowed the Department to expand and refine its statistical work.
In his report for 1882, we see evidence of increased awareness by the Department of
Agriculture of international agricultural statistics. Loring clearly wants the Statistical
Division of the Department to identify, collect, and distribute agricultural information
about U.S. exports and foreign interest in agricultural goods of the United States. This is
another example of the scope and geographical reach of the work of the Department
expanding during Loring’s term. He writes in his Annual Report, “In view of the
influence of foreign demand on prices, and of the great volume of exportation of certain
products, notably of grain and “provisions,” it has been deemed advisable, necessary
even, that an effort should be made to give early information to American farmers of the
prospective requirements of the foreign trade.” Loring reports that to meet this need,
“an agency has been establish in Europe…with headquarters at London, at the office of
the consul-general.” The agent assigned to that office reported, according to Loring, that
he received “the co-operation of officers of the State Department and our diplomatic
service. Much is expected of this agency in the future in accurate reports of crop

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273 AR 1882, 689
274 AR 1882, 667
prospects, valuable statistical exchanges, and miscellaneous information of value to this department and the agriculture of the country.”

Loring concludes his introduction noting the Department fulfilled a request from the U.S. Congress to collect, and publish monthly, statistical information on freight rates: “The changes of rates on principal agricultural products and farmers’ supplies have been given for all the through east and west trunk lines, the Pacific roads, and great north and south railway systems, and lake, river, and coast lines of steamers. Not only the through rates, but an immense array of local rates for groups of minor points in all parts of the country, have been accurately presented. Special rates for certain products sent to various points, including live stock, cotton, rice, &c., have been promptly published for the information of farmers who wish to seek the best markets and forward their products with an intelligent view of the cost of shipment.” This addition to the mandate by Congress for the Department of Agriculture is an example of an ability to both identify and adjust to changing needs in terms of what counts as relevant information for agricultural production.

The Reports for the Remaining Years of Loring’s Term as Commissioner, 1883-1884
Loring opens his report for 1883 with the assertion that he plans to continue to cultivate strong relationships between the Department of Agriculture in Washington, D.C. and agricultural “associations and institutions” around the country. He also states explicitly that he will bring the knowledge and experience those organizations have to bear on the work of the Department of Agriculture by both soliciting information from them and accepting information they send to the Department. Loring praises the level of engagement from these stakeholders, “To every call of the Department for information and advice, the colleges and societies have responded promptly and liberally.” He reports that representatives of many of those organizations travelled to Washington, D.C. at the request of the Department to discuss the condition of agriculture and agricultural

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275 AR 1882, 667
276 AR 1882, 667
277 AR 1883, 3
production, and to exchange information. He reports they “presented a large amount of valuable information upon the practical questions of agriculture, and the various methods of imparting agricultural instruction, and of improving the social condition of the American farmers,—a carefully prepared and elaborate report of which has been issued by the Department.”

Loring’s introductory remarks to this Annual Report for 1883 also refer to the continued need to collect from “competent agents, who have furnished from actual observation and from extensive correspondence a vast amount of interesting and useful facts, from which it is believed important conclusions may ultimately be drawn.”

Loring offers only a few sentences for his introductory remarks in his last report, 1884. He notes that the amount of work at the Department of Agriculture has grown and that most of that increase is in the work of the Statistical Division. He reports on the newly established (in 1883) representative of the Department in London responsible for collecting agricultural statistics of European nations and mentions the “ten thousand correspondents . . . in this country, who are constantly furnishing the materials for the statistical estimates of the Bureau.” Loring expands on this later in the section of his report about the work of the Statistical Division:

The rapidity of agricultural progress and the local irregularities of its movement tend to increase its difficulty and diminish its accuracy; on the other hand, a growing public appreciation of its importance is a means of higher efficiency, as well as its surest guarantee.

The field work of this branch of the department service is obviously a matter of observation, comparison, and estimate, and not an actual count of a census. The swift changes of the alternating seasons must be summed up with instant clarity; their effects on ultimate production must be discounted with practicable closeness before the crops are matured. An accurate report of a harvest as soon as it is gathered is stale news for the public or interested buyers. It is the aim of the Statistician to keep abreast of the expectations of the day in instantaneous crop reporting. There are nearly ten thousand selected observers in the ranks of the reporters to the Department and to the State agents, who are selected with

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278 AR 1883, 3
279 AR 1883, 3
280 AR 1884, 5
reference to their judgment and means of local observation. They are officers of
agricultural societies, or men of mark in agricultural experience and general
intelligence. Their accuracy and reliability are manifestly enlarged with increasing
experience. This is attested by their returns, which exhibit greater unity and
reasonableness of statement from year to year. Formerly the averages of returns of
yield per acre were uniformly too high; now they approach a figure that is nearer
the test of actual measurement. The prevalent custom of averaging the actual
results of the harvest, as in the case of thrashers' records, is one means of aiding
the public judgment of what an average really is. There are many evidences of a
better understanding among farmers of the value and necessity of agricultural
statistics to themselves, to the consuming masses, to political economy and the
science of government.\footnote{AR 1884, 9}

The reports for 1883 and 1884 show a consistency of attention to crop estimates as seen
in the reports of earlier commissioners at the Department of Agriculture. Loring’s report
on the work of the Botanical Division for 1883 offers this insight into one way its
collections grew, “During the year past numerous and important additions have been
made both to the herbarium and botanical library. A number of zealous botanical
collectors have been engaged in exploring the vegetation of the new and undeveloped
portions of our country, with the result of increasing our knowledge of the flora of those
regions and bringing to light many new and interesting species.”\footnote{AR 1883, 5.}

Loring, in 1884, notes the Botanical Division worked to expand the collection in the Department of
Agriculture’s herbarium by “contributions, exchanges, and purchases.” He reports, “One
large box of botanical specimens has been received from the Museum of Natural History
of Paris, France. One box containing over 800 specimens has been forwarded to the same
institution. Also, one box of 800 specimens has been sent to the Royal Herbarium of St.
Petersburg, Russia, and other packages to prominent specialists in Europe and this
country.”\footnote{AR 1884, 11} The agricultural colleges “and other institutions of learning” are sent
duplicate specimens by the Department. Loring lists the “Perkins Institution for the
Blind” in Boston as a recipient of “one box” of specimens and, too, “one box to P. H.
Dudley, esq., New York City.”\footnote{AR 1884, 11}
Toward the end of his reports for 1883 and 1884, Loring, lists information on special publications of the Department of Agriculture for the year, a chart on the distribution of seeds by the Department, and appropriations to and disbursements of funds by the Department by Congress. His reports on the special publications show that the Statistical Division, for each year, has highest print runs with more than 170,000 volumes printed in 1883 and 108,000 volumes for the Statistical Division special reports in 1884. The seed distribution reports show that members of the U.S. Congress received the great majority of the total seeds distributed for both years. The top three budget lines for each year were “salaries” (1883: 102,580; 1884: $127,640), “collecting statistics” (1883: $80,000; 1884: $80,000), and “purchase and distribution of seeds” (1883: $80,000; 1884: $75,000).

The Reports of the Sixth Commissioner of the Department of Agriculture,
Commissioner Norman J. Colman, 1885-1888

The last commissioner of agriculture for the United States was born in New York State but moved with his parents to Kentucky. Colman studied law at the University of Louisville in 1849. He moved to St Louis, Missouri where he was elected to local political office, started an agricultural newspaper, joined the State Legislature, and finally, after the Civil War, served as Lieutenant Governor of Missouri. An historian of magazines in the United States, Frank L. Mott, wrote, “Colman’s Rural World was founded at St Louis under the name of the Valley Farmer in 1848, to be edited for half a century by Norman J. Colman . . .”

Colman was appointed Commissioner of the Department of Agriculture in 1885 by President Grover Cleveland and served as the head of the Department until 1889. He left the Department after serving as the first Secretary of Agriculture for only a few weeks. His position was not confirmed by the U.S. Senate and in March 1889 he left the post.

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285 AR 1883, 12-13
286 AR 1884, 16-17
287 In 1883, the Statistical Division issued 14 special reports; in 1884, the Division issued 9 special reports.
288 The Department financial reports are on page 16 for the 1883 report and page 18 for the 1884 report; the reports on seed distribution are on page 15 for 1883 and page 18 for 1884.
only a few days after Cleveland’s term as president ended. Beginning in 1885 and 
continuing through his term as commissioner of the Department, Colman convened, by 
invitation, the various stakeholders of agricultural research and education in Washington, 
D.C. Alan I. Marcus writes, “Colman spearheaded a joint effort with the state land-grant 
colleges and experiment stations to promote cooperation between the USDA and the 
colleges and to secure federal funding for the state experiment stations. In the view of 
Colman . . . , collaboration among the growing scientific research programs of the 
colleges, experiment stations, and the USDA promised a rapid expansion in the nation’s 
agricultural research.”

The First Report of Commissioner Norman J. Colman – 1885
As we have seen with all of the commissioners, each used his first report to the U.S. 
Congress to demonstrate his knowledge of the condition of agriculture in the United 
States and, some also offered a hint of their priorities for the Department of Agriculture. 
Colman was no exception. His introductory remarks offer this assessment, “This 
Department has in its charge the interests of an industrial class far more numerous than 
any other in the country. With a territory of such breadth, a climate so varied, a soil so 
generous; with a continuous stream of agricultural immigration pouring into our borders; 
with the constantly increasing advantages derivable from improved skill and ingenious 
labor-saving appliances, there is necessarily a corresponding enlargement of production. 
This renders necessary a wise distribution of crop areas, the introduction of new products, 
and an increased supply of those products which at present are notably insufficient to 
meet the growing demands of home consumption. One of the most important of these is 
sugar—an article of prime necessity. The development of an industry which combines 
agriculture and manufacture is slow and difficult; yet the progress made in the 
Department's experiments during the past season, as gauged by actual results, looking to 
the increased production of sugar within our own borders, is more positive and 
satisfactory than hitherto, and promises ultimately the highest success.”

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290 Marcus, Alan I., ed. 2015. Science as Service: Establishing and Reformulating American Land-Grant 
291 AR 1885, 5
Colman, like his predecessors, acknowledges the broad reach of agriculture in the United States and reiterates a commitment to develop domestic crops and production that result in greater self-sufficiency for the nation. He introduces a theme that is threaded through his entire service at the Department, cooperation and collaboration between agricultural research and educational institutions. For Colman, that kind of cooperation was necessary for progress in agriculture. He saw the role of the Department of Agriculture as critical to success. The Department would leverage its authority as a federal agency to secure funding from the U.S. Congress for education and research in agriculture at the local level which the Department would then be the beneficiary of in terms of results and dissemination to a larger audience. His appeal to Congress is direct and emphatic, “No suitable provision, however, having been made by the National Government for any extended practical experiments in this direction, it is respectfully submitted that the Department should have full authority and ample means to avail itself of the peculiar advantages offered by these endowed institutions, in order to test, in a manner and on a scale sufficient to determine all questionable points, the adaptability of new and rare seeds to the various sections of our country. Surely the opportunity to use these fully-equipped experimental farms for the benefit of their respective localities and of the country at large should not be lost.”  

In his report for 1885 Colman writes of his effort to bring these constituencies together and, specifically, that he invited representatives of the land-grant colleges and the state agricultural research stations to Washington, D.C. in July of that year to discuss his plan and he reports, “The result of that meeting was most gratifying. All sections of the country were represented, and throughout its deliberations there was a manifest desire to co-operate with the Department in its efforts to develop systems which should better unify results of experiments and reports upon them.”

Colman adds that he had already taken steps to make that work possible at the Department of Agriculture, “I have endeavored, with my very limited means and force, to organize a branch in this Department to take charge of the returns from these colleges and

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292 AR 1885, 7
293 AR 1885, 6
stations, and to collate and distribute the information obtained for the benefit of all interested parties.”

Colman then turns, in his Annual Report, to the work of the various divisions at the Department. Included in the work of the Chemistry Division was an effort to bring together representatives of the professional society of chemists to explore areas for cooperation with the Department of Agriculture including efforts to standardize research methods, “Perhaps the most important work of a miscellaneous nature was that done in connection with the Association of Official Agricultural Chemists, whose labors have led to the adoption of uniform methods of analysis for commercial fertilizers throughout the United States.” He also drew their attention to critical research to help identify food products that were adulterated, “By invitation of the Department the last meeting of the association was held in Washington, and action was taken relating to the enlargement of the scope of the work of the organization so as to bring it more in harmony with the investigations of the Department relating to the adulterations of food.”

In his summary of the report of the Department of Agriculture’s Entomologist, Colman reports that the Entomology Division issued several special publications including reports on injurious insects currently affecting regions of the country like locusts and the elm-leaf beetle. He also reports the Department has expanded its work with a special appropriation from the U.S. Congress to include economic ornithology with special emphasis on the “interrelation of birds and agriculture, an investigation of the food, habits and migration of birds in relation to both insects and plants.” Also of note is Colman’s short section in his summary of the work of the Entomology Division his decision to send an agent of the Department to Aurora, Illinois to establish a research station charged with investigating bees and agriculture. He argues the Department acted in response to a critical need, “In response to an evident want a station has been established, in charge of a competent agent, at Aurora, Ill., for purposes of experiment in regard to apiculture. The objects are: To secure the introduction and domestication of

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294 AR 1885, 7
295 AR 1885, 11-12
296 AR 1885, 13
such races of bees as are reported to possess desirable traits and characteristics; to prove by experiments their value to the agriculturist of the United States, and their adaptation to our climate and honey-producing flora; to make experiments in the crossing and mingling of races, and endeavor to secure the type or types best adapted to the uses of our beekeepers; to make experiments in the methods of artificial fertilization; to test the various methods of preparing bees for winter; to study the true causes of diseases yet imperfectly understood, and the best methods of preventing or curing them, and to obtain facts as to the injury to fruit by bees.”

Colman’s summaries of the reports of the work of the other Divisions at the Department of Agriculture are focused and concise. He highlights the work of each in terms of how its work increased practical knowledge about agriculture. Of particular interest to this study is his report on the Statistical Division. He offers this picture of its work, users, and products:

The branch of the Department service under the direction of the Statistician has met the public demand for co-ordinated fact and systematic statement, during the past year, in response to requests from heads of Departments, Senators and Members of the House, officials of foreign governments, boards of trade and chambers of commerce, agricultural and industrial societies, authors, editors, and others. The necessity for comprehensiveness and completeness in statistics, as well as accuracy is more appreciated as popular intelligence advances and culture broadens.

The printed reports of the statistics of agriculture during the year include 708 pages of monthly issues, and 147 of the Annual Report, a total of 855 pages. The aim has been in these reports to give practical and useful information, plainly and concisely, avoiding as much as possible fragmentary and inconclusive statement.

He also offers this information about work the Statistical Division is doing in the U.S. and in Europe:

297 AR 1885, 13
298 AR 1885, 14
The crop-reporting system, which has been in operation twenty years, and has
been adopted by several States and by some European governments, consists of
boards of observation and report in over eighteen hundred counties of the United
States, comprising nearly all of the developed territory of the United States. A
parallel or duplicate work, for the purpose of verification and for special local
investigation, is carried on through State agents. The foreign work, under the
direction of an agent in London, who is connected officially with the Department
of State, has been improving in efficiency and breadth during the past year. This
was undertaken at the urgent request of representatives of western agri-
culture, to obtain advance information concerning European products with which ours come
in direct competition. The need was emphasized by the incompleteness and
fragmentary character of unofficial information relating to foreign crop
prospects.299

This report suggests that Colman had an eye on enlarging the scope and work of the
Department of Agriculture by adding new divisions and thus expanding and
institutionalizing agricultural research to new areas. In his summary of the Report on
Garden and Grounds for 1885 he urges the U.S. Congress to provide support for a new
“superintendent or agent” whose work would focus on pomology.300 He concludes his
report for 1885 with this plea to Congress, “In conclusion, I beg to represent that the
Department of Agriculture, growing in importance and usefulness as our agricultural
population increases, and its wants and necessities multiply, should obviously be a
progressive institution, in order to keep pace with the increasing demands made upon it.
It is for the legislative branch to determine how far its importance shall be recognized,
and with what powers it shall be clothed to enable it to partially meet the obligation
which a country always owes to its agriculture.”301

The Reports for the Remaining Years of Colman’s Term as Commissioner, 1886-1888

Colman’s Annual Reports for 1886 through 1888 follow a pattern similar to his first
report in 1885. He is quick to call the attention of Congress to the progress in agriculture
in the United States – progress facilitated by the work of the Department of Agriculture
and defined by the nation’s ability to sustain itself and produce for export. In 1886, he

299 AR 1885, 14-15
300 AR 1885, 17. In 1886 the Department added a Division of Pomology.
301 AR 1885, 31
draws on agricultural statistics to show that progress noting increases in wheat, corn, and cotton production. He writes, “For every pound of meat and gallon of milk in 1856 there are three in 1886, and more than four times as many pounds of wool. It is no idle boast that this country produces more than half the cotton of the world and three-fourths of the maize.” Colman notes the diversity of crops, strong yields and their resulting “unexampled cheapness.” The United States is, he argues, “the best-fed nation on the globe.” Americans, he reports, consume more meat than Europeans; excess fruits “tax the power of home consumption” and the excess goes to feed animals; and reports a regular surplus that the US uses to supply “the deficiencies of other countries, still shipping about two-thirds of our cotton, one-fourth of our wheat, and one-fifth of our pork products to foreign countries, and ever ready to enter any door of profitable consumption that opens to receive the surplus of our manufactured products of agriculture.”

The reports of the Statistical Division figure prominently in Colman’s reports for 1886-1888. They are often framed in terms of the continued critical need for federal support for state agricultural experiment stations as essential partners in the work of the Department of Agriculture. In 1886, he reports, there were nine stations – four in the East/Northeast, two in the Midwest, and two in the South: “These are all distinctly independent institutions, with their own organizations, and supported by State appropriations or special tax. Some, however, are located at State agricultural colleges, and officered by the college professors. These stations differ greatly in their organization, facilities, and work.” His discussion of experiment stations in his report for 1887 is framed in terms of the distribution of and experiment with seeds from the Department of Agriculture. He argues for Department oversight and a system of information exchange that includes seeds from the Department to the Stations with results shared with the Department in a timely manner. In his report for 1888, Colman discusses agricultural experiments stations, agricultural colleges, and the role of the Department of Agriculture with direct reference to the passage of the Hatch Act of 1887 which, like the Morrill Act of 1862,
earmarked federal funds to establish agricultural research institutions at the State and local levels. The Hatch Act made $15,000 available to state agricultural colleges – the land-grant colleges – to establish agricultural experiment stations.  

Colman writes, “The present is an auspicious time for this undertaking. In the history of no nation before have there been such a thirst for knowledge on the part of the great masses of the people, such high and just appreciation of its value, and such wide-reaching, successful, and popular schemes for self-education; never before has the great agricultural public been so willing and indeed so anxious to receive with respect and use with intelligence the information which science offers; never before has science had so much to give. The prospects then for this, the largest scientific enterprise in behalf of agriculture that any government has undertaken, are full of promise, notwithstanding some manifest dangers which lie in the way of its progress.” And he is careful to caution, “The greatest danger, that of political interference and manipulation, needs to be carefully guarded against.”

Colman sees a role for the Department of Agriculture in that effort, “The Department of Agriculture can aid the experiment stations in their relations to each other, in their use of the results of experimental research, and in their connection with the agricultural public. To be first among the stations the Department should be the servant of them all. It should exercise not dictatorship, but leadership. Its influence should be powerful in bringing the stations together in co-ordinating their work; in making the fruits of other research and experience, past and present, at home and abroad, available to them, in prosecuting lines of pioneer research which will in a measure relieve the stations of a difficult but necessary task, and enable them to apply their energies more fully and successfully to the study of the questions which bear directly upon the practice of agriculture; in collating, condensing, and distributing their results, and in helping to carry the practical outcome to the farmer in a form in which he will appreciate and use it.”

Colman was a steady and strong advocate for agricultural experiment stations and, as we see in his reports to

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306 The Morrill Act of 1862 awarded federal land to the States to sell and use the proceeds to establish the land-grant colleges.
307 AR 1888, 9
308 AR 1888, 10. Colman sees the work of the agricultural experiment stations as especially important for the “working people” of the U.S. and Europe for whom food costs more than half of what they earn. He notes, too, a general lack of understanding by these “working people” about food production. (AR 1888, 13)
Congress, he used his position as Commissioner of the Department of Agriculture to organize support for their establishment and federal funding.

We also learn in Colman’s reports for 1886-1888 of steady growth in the Statistical Division’s army of correspondents. In 1886, he reports they “represent 2,300 counties, four in each county;”\(^{309}\) in the conclusion to his report for 1888, Colman thanks “the officers, employés, and ten thousand correspondents of the Department.”\(^{310}\) He expands the work of the Department of Agriculture in other ways including recommending to Congress that the Department be responsible for establishing and running a “system of signaling by cannon, from central stations, to announce the approach of storm, flood, or frost. It seems to be the general belief among planters and farmers that such central stations could be established at the post-office or other place under Federal control . . . .”\(^{311}\) In 1887, Colman reports he hired illustrators at the Department, “skilled draughtsmen and an engraver” noting the informational value of illustrations, “A single illustration, covering but a small part of a page, will often bring a subject clearly before the mind of man, where many pages of text and of figures would fall far short of making the vital point easily comprehended. The illustrations prepared by the Department appear in its various reports, and, so far they are of incalculable value.”\(^{312}\)

Overall, one gets the impression from Colman’s reports as Commissioner of the Department of Agriculture of an agency head actively, strategically, and, unlike most of his predecessors, effectively positioning the Department to gain further recognition and support.

**Conclusion**

The research questions guiding my reading of the Annual Reports of the commissioners for this chapter were,

\(^{309}\) AR 1886, 22  
\(^{310}\) AR 1888, 50.  
\(^{311}\) AR 1886, 41  
\(^{312}\) AR 1887, 41
• What and how did the Department of Agriculture fulfill its mission to procure, propagate, and distribute agricultural information?
• How did the commissioners present / represent that information in their Annual Reports to Congress?
• What was the cycle of information procurement, propagation, and distribution at the department? How did it change over the period of time I cover, 1862-1888?

The Annual Reports of the Commissioners of the Department of Agriculture reveal consistencies of mission but also the personal priorities of the men who headed the agency. The consistencies include close attention to the Congressional mandate for the new agency in the Organic Act that established the Department in 1862; an understanding of agricultural production as foundational to the health and prosperity of the nation; systems of information work that engage and rely on a diverse community of informants and contributors, domestic and foreign; an early realization that for the Department to succeed in providing practical information to farmers and the other stakeholders of the agricultural economy, the Department needed to develop systems that not only brought information into the Department that was relevant and timely but, too, they had to develop effective vehicles for communicating and disseminating information on its work in a manner that insured the usefulness and relevance of it to farmers and others.

The Department of Agriculture’s work expanded as their understanding of what counted as relevant areas of research in agricultural production became apparent. Those changes were often emerged from the information sent to the Department in the form of letters of inquiry and letters requesting help and information from farmers battling destructive insects, poor soil, seeds that would not germinate or seeds with low yields, cattle and other livestock suffering from disease, and any number of other issues that confronted farmers. Changes were also triggered by world markets that, for example, closed their doors to U.S. exports fearing the spread of diseases from live cattle, meats, and hides. The desire for self-sufficiency in terms of agricultural production and manufacture was another driving force that influenced the work of the Department of Agriculture under the Commissionership. Many of these issues and much of the work of the Department was
not new. It drew on ways that farmers and the agricultural community broadly defined had long gathered and shared information. What we see in the reports of the Commissioners in this period is a strong sense that only a federal agency devoted to collection, research, and dissemination of agricultural information could effectively serve the interests of individual farmers and, as importantly, those of the nation. We see in these Annual Reports, too, the struggle of each commissioner to secure a greater understanding of and appreciation for the important role of the work of the Department by Congress, the agricultural press, agricultural stakeholders, and the public. The Organic Act of 1862 established the Department and suggested its role but the authority it presumed for agricultural research by a federal agency was a constant struggle. The reports of the Commissioners of the Department of Agriculture make that painfully clear. I will discuss these points and address the questions I brought to bear on my reading of the Commissioners’ Reports more closely in the final chapter of this dissertation.

Introduction

William Saunders was one of the first appointees at the Department of Agriculture and had the longest tenure of any of the superintendents in the 19th century – 1862-1889. His term covers the entire span of the period of my study of the Department. According to an obituary for him that appeared in American Gardening, Saunders was born in Scotland but spent his youth at the College of Madras (India) studying divinity. Saunders’ interest in horticulture was, according to the same obituary, ignited by watching the gardener at the college and when Saunders returned to London he further developed his skills working at Kew Gardens and later in Germantown, Pennsylvania. Saunders designed a number of estates including that of Johns Hopkins. He served as the commissioner of parks for the city of Washington, D.C. and he designed Gettysburg and the Lincoln Monument in Springfield Illinois as well as the Rosehill Cemetery in Chicago. His colleagues at the Department of Agriculture credited him with bringing “some of the most choice varieties of fruit” to the United States during his tenure at the Department of Agriculture. Saunders’ work in horticulture before his appointment in 1862 at the newly established Department of Agriculture resulted in an extensive network of colleagues and contacts that spanned the globe.

In addition to his research and various administrative duties at the Department, Saunders was active in promoting horticulture and farming and was one of several employees at the Department of Agriculture responsible for the founding of a fraternal organization with a mission to promote the interests of farmers, the Order of the Patrons of Husbandry or National Grange in 1867 in Washington, D.C. The obituary for him that ran in the New American Gardening, September 15, 1900 obituary page 616 (the year Saunders died). For Saunders’ education see Harding (1947), p. 27. The Grange is a fraternal organization with significant traits and rituals one associates with a secret society. It was founded in 1867 to promote the interests of farmers. Its programs included efforts to facilitate cooperation among farmers in the purchase of farm equipment and supplies, grain storage facilities, and the formation financial institutions as alternatives to established banks. It is interesting to see how the current organization characterizes its founding. From the Grange website: Our Roots. The Founders. On December 4, 1867 in a small Washington, D.C., building that housed the office of William
*York Times* offered this assessment of his career and life, “Each tree and flower was planted under his personal observation and was watched with solicitude and criticism, the results going to the country he was serving in the reports embodying the judgment of a man devoted to his work and unwilling to accept any proof except that of actual experimentation…. The life of this valued public servant was unselfish. He gave to the Government and people his best days and his ripest knowledge and experience. He received back the blessings of those who appreciated his work. Beyond a modest salary he realized no material reward. He who had contributed to the enrichment of thousands never learned to cultivate private fortune.”

Of particular importance to my study is that during Saunders’s tenure as Superintendent of the Propagating Garden, the Department of Agriculture secured seeds and plants from various parts of the world. As I will show, that process exploited formal and informal networks including the diplomats, plant explorers, and the U.S. Navy. Specimens were both specifically requested by the Department and offered unsolicited. While there is little evidence in the Annual Reports that this work was systematic it is clear that it was strategic emphasizing the need for proper conditions for successful cultivation (climate, soil, weather) and with an eye to the economic impact of a new crop in terms of yield and heartiness. Saunders’ reports describe how that material was processed using the laboratories, gardens, farms, and greenhouses at the Department of Agriculture to determine best practices in farming, identify quality seeds and plants, and develop effective farming techniques for different parts of the country and new territories. During his tenure the Department introduced new fruit and vegetable plant species and varieties of significant economic importance to American agriculture including the seedless navel

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Saunders, Superintendent of Propagating Gardens in the Department of Agriculture, the Order of Patrons of Husbandry, more commonly known as the Grange, was born. Here, sitting around a plain wooden table, a group of seven earnest men, planned what was destined to become a vital force in preserving and expanding American democracy. They were all men of vision—they had faith in God, in their fellow man and the future. The Seven Founders of the Order of the Patrons of Husbandry were: Oliver H. Kelley, William Saunders, Aaron B. Grosh, William M. Ireland, John R. Thompson, Francis McDowell, John Trimble, assisted by Caroline Hall, who was later named an honorary 8th founder of the Grange. 
<http://www.nationalgrange.org/about-us/history/>

315 *The New York Times*. September 14, 1900. (accessed online)
orange from Brazil in 1873. Saunders envisioned the Department of Agriculture as a center for research and testing of seeds and plants coming into the country via formal and informal channels and in his reports encouraged people to send samples to the Department for testing, “The efforts of the Department would be greatly strengthened...and its area of usefulness vastly expanded, if all who were possessed of new or rare seeds and plants would co-operate by transmitting samples for investigation. Many persons throughout the country occasionally receive plants and seeds from distant correspondents, and, not having facilities for their proper cultivation, they are consequently lost. It would be highly advantageous for the Department to encourage the reception of such favors, have them carefully noted, their merits properly investigated by competent cultivators, the result made known to the donors, and such disposition made of them as would be considered most advantageous.”

While there are gaps in his formal reports for the years 1862-1888 his work is often referenced by others in their reports. It is also worth noting that for many of the years for which there is no formal report Saunders was serving as a representative of the Department of Agriculture to the various international exhibitions including the International Exhibition of Arts, Manufactures, and products of the Soil and Mine or Centennial Exposition in Philadelphia in 1876. Periodically, we see a section of the Annual Reports that reports on seed testing at the Department. I examine those as well.

**Systems of information work**

The agricultural information work of the Department was discussed and shared in the Annual Reports. Seeds and plants themselves constitute types of information and the research resulting from their testing as well as the dissemination of those results and recommendations by the Department are elements of systems of information work. The

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316 This is another area where accounts of how work happened at the Department of Agriculture was, perhaps, more complex than one sees in the annual reports. Saunders did not travel to Brazil but facilitated the introduction of the orange which was first introduced in the U.S by an American woman who was traveling in Brazil.

317 AR 1862, 542.

318 The exchange of agricultural information (including plants and seeds) at international exhibitions is more evidence of the geographic scope and reach of the Department of Agriculture’s work.

319 For more on the informational aspect of seeds and plants see Kloppenburg and Parry.
acquisition, propagation, and distribution of seeds and plants were critical aspects of agricultural information work mandated by the U.S. Congress for the Department of Agriculture. The new agency inherited collections and systems of work from the U.S. Patent Office. We see in the Annual Reports of the Department of Agriculture how it struggled to bring order to and systematize that information work began at the U.S. Patent Office. We see in the Report of the Superintendent of the Garden and Grounds evidence of that information work from its contributors and its users. This is especially evident in the correspondence from farmers and others and the more formal responses to the circulars (surveys) sent out by the Department. The Annual Reports include examples of what was active and steady correspondence from farmers, gardeners, and horticulturalists. Many requested seeds and plants. Others offered information about their successes or failures with various crops or reported on the general conditions of agriculture. We also see evidence of an expansive network of information exchange among a diverse set of players. The venues included journals, conferences, and correspondence; the types of information included scientific reports, crop yields, informal observations, as well as plants and seeds. Saunders’ reports show the ways in which this new agency, charged with establishing the federal government as an authoritative and effective resource in agricultural research and practice, drew on the legacy of informal information / knowledge practices by directly soliciting a wide range of information from farmers and horticulturalists, and exploiting informal and personal relationships with other “scientists” situated in institutions that included botanical garden, agricultural societies, and other state agencies here and abroad or independent researchers working on their own.

The Annual Reports and the Superintendent of the Garden and Grounds – 1862-1888
The new Department of Agriculture was called upon to acquire, propagate and distribute not only new seeds and plants, but also information about agriculture. Land and facilities for growing plants and seeds, for experimentation and testing, and for processing for distribution were each critical aspects of infrastructure necessary for success at the new Department of Agriculture. The grounds of the Department of Agriculture on what is now
the National Mall were the first laboratories for experiments with seeds and plants. Plant and seed propagation and research was space-intensive work that required land and laboratory facilities.

The following analysis organizes and examines the Reports of the Superintendent of the Garden and Grounds, William Saunders, in clusters defined by the term of office of each commissioner of the Department from 1862 through 1888. I am especially interested in identifying references to agricultural information work, evidence of the perceived importance of that work, and evaluation of the effectiveness of it. I look for patterns and progressions within the term of each commissioner and conclude this chapter with a discussion of what we learn about the information work and systems of the division from the Reports of the Superintendent of the Garden and Grounds between 1862 and 1888.

Terms of the Commissioners of Agriculture
1862-1867 Isaac Newton (Newton died suddenly in June 1867. The chief clerk of the Department, John Stokes, assumed his duties until the appointment of the next permanent Commissioner in November 1867.)
1867-1870 Horace Capron
1871-1876 Frederick Watts
1877-1880 William G. Le Duc
1881-1884 George B. Loring
1885-1889 Norman J. Colman

These first years of work were framed in large part by the Civil War. Though the new Department had money and space and a clear charge, the focus of the federal government

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320 The Department’s status changed during the term of Commissioner Colman. In February 1888 the Department was elevated to Cabinet-level status. It remained in the Executive Branch but in February 1888 with a seat in the President’s Cabinet as Secretary of Agriculture. Commissioner Colman’s status changed and his last month of service to the Department was as the first Secretary of the Department of Agriculture. (Greathouse, 1898; 20-21)
was on the war and the city of Washington, D.C. reflected that priority in both its manner and its physical make up. For example, what we now see as the National Mall was a muddy pen that held livestock for the war effort. That sense of chaos carried into the transfer of responsibility and materials to the new agency. Seeds and plants were a large portion of the material transferred to the new Department and one of Saunders’ first projects was to secure land and laboratory space for the work of his division at the Department of Agriculture. The narratives of his first reports are a mix of frustration and focus. It is clear that he came to the Department with extensive experience, a clear vision of what he wanted to accomplish, and an understanding of the resources he would need to succeed. In fact, the very first publication of the new agency was a treatise on agricultural research and the state by Saunders.\(^{321}\) His sense of purpose and responsibility is clear in that publication. Included in the materials transferred from the agricultural laboratory at the Patent Office were plants and seeds, which Saunders found useless because essential data about the provenance and the types of seeds and plants had not been recorded by those working with them at the Patent Office, “no books or papers of records have been placed in my hands, consequently I have no means of determining the sources from which many of the plants have been obtained . . . . We are thus, also, left in ignorance of the objects for which many of the plants have been cultivated.” Saunders uses the example of the collection of native grapes plants to illustrate his frustration, “A large portion have only numbers attached, and all efforts to discover the reference to these numbers have been futile, consequently they are of no value either for distribution or propagation.”\(^{322}\)

In his first report, it is clear that Saunders’ chief goal was to bring order to the chaos he inherited. He discusses the “objects and aims of the Experimental Garden” and reiterates his priorities for his work that first appeared in the 1862 publication, \textit{Catalogue of the


Plants, Bulbs, Tubers, etc., for the Distribution of the U.S. Propagating Garden with a Report of the Objects and Aims of the Garden:

1. To procure and encourage the transmission of seeds, cuttings, bulbs, and plants from all sources, both foreign and domestic, for the purpose of testing their merits and adaptation in general, or for particular localities of this country.
2. To procure, by hybridizing and special culture, products of a superior character to any now existing.
3. To ascertain, by experiment, the influences of varied culture on products, and the modifications effected by . . . pruning and other manipulations....
4. To investigate . . . the various maladies and diseases of plants, and the insects that destroy them.
5. To provide ample means for thoroughly testing samples of all seeds and other contributions that may be received.
6. To cultivate specimens of the various hedge plants, and exhibit their availability for that purpose.
7. To cultivate a collection of the best fruit trees and plants...so as to compare their respective merits.
8. To plant a collection of choice shrubs, adapted for decorating gardens and landscape scenery.
9. To erect glass structures for the twofold purpose of affording the necessary facilities for cultivating exotic fruits and plants and to furnish examples of the best and most economical modes of constructing, heating, and managing such buildings.323

In order to succeed, Saunders argued for better facilities that would allow for controlled experiments and sufficient and proper storage for its seeds and plants. His training in horticulture is especially evident in the list but the Annual Reports reveal that he was able to translate that experience to agricultural practice in the United States, its commercialization, and increased scale as I will discuss later in this chapter.

323 Report of the Superintendent of the Garden and Grounds attached to the Department of Agriculture (for the year 1862), p. 541-542. It is worth noting that Saunders is credited with authoring the first publication to come out of the new Department. Catalogue of the Plants, Bulbs, Tubers, etc., for the Distribution of the U.S. Propagating Garden with a Report of the Objects and Aims of the Garden was a small pamphlet in which he introduced these nine points and elaborated on their meaning and purpose in relationship to the work of the agency. It was produced at the request of Commissioner Newton in a memo dated, October 10, 1862: “You will please furnish to this department, at your earliest convenience, a list of the plants that are ready for distribution, together with any suggestions that may occur to you tending to increase the efficiency of the garden under your care.” (Page 3)
What we see in Saunders’ reports under Commissioner Newton (1862-1867) is a decided focus on identifying ways to increase efficiency in propagation, cultivation and diversification of economic plants grown in the United States. Saunders envisioned the Department and particularly his section of the agency as a center of and clearinghouse for seeds and plants coming into the country through a variety of sources: “The efforts of the Department would be greatly strengthened . . . if all who were possessed of new or rare seeds and plants would co-operate by transmitting samples for investigation. Many persons throughout the country occasionally receive plants and seeds from distant correspondents, and, not having facilities for their proper cultivation, they are consequently lost. It would be highly advantageous for the Department to encourage the reception of such favors, have them carefully noted, their merits properly investigated by competent cultivators, the result made known to the donors, and such disposition made of them as would be considered advantageous.”

In 1863, William Saunders issued his report not as the Superintendent of the Garden and Grounds but under the title, Superintendent of the Experimental Garden. By that time, he reported, the garden was six acres of land and though it was meant to serve as a laboratory for experimentation via “cultivation of specimens . . . in order to test their comparative merits,” Saunders, however, declared it “altogether inadequate.” Saunders’ vision for the role for the Department is evident in the second paragraph of the Report for 1863. He observes the many varieties of “agricultural and garden seeds” in a commercial seed catalog and advises, “No one desires, neither is it necessary to cultivate all of these; it is…of much more importance to know which are the best and most suitable for the purpose required . . . Possessed of such information the buyer could make his purchases understandingly . . .” The reports for 1863 and 1864 have little to offer in terms of

324 Economic, as it relates to plants or crops in agriculture, can be best understood in terms of economic botany. The Field Museum describes that work on their website: “Economic botanists explore the interface between people and plants to describe the cultural uses of plants, explain the origin of specific useful plants and develop strategies for the sustainable use of plant resources.” Economic plant products is a phrase with origins in the 19th century that helped distinguish cultivation for pleasure and personal use from crops that had a broader impact on human lives – whether for food, building materials, or raw materials for manufacture. http://www.fieldmuseum.org/science/research/area/focus-economic-botany

325 AR 1862, 542

326 Report of the Superintendent of the Experimental Garden (AR 1863, 547)
advice about particular varieties of plants and seeds. Saunders focused his narrative on techniques of propagation and cultivation including grafting, pruning, and root management. His Annual Reports for this period suggest that most of experiments took place in the controlled environment of the glass structures including a new “orchard house.”

It is evident that he was still frustrated with the lack of support for adequate facilities and how that limited the effectiveness and value of his work. Without sufficient space at the Department of Agriculture he could not run experiments on a scale that would allow for meaningful comparisons, he began to look at how plants could be adapted to new environments. He reported growing dwarf fruit trees in “wooden troughs in the open air” in 1863 and suggested this might provide sufficient protection to allow varieties to grow in otherwise unfriendly climates. Later he reported on the advantages of careful pruning and the bending of branches in order to increase the production of fruit trees. But, his techniques were all labor intensive and seemingly not applicable to the changes underway in agricultural production. His discussion of soil research and fertilizers, too, seems to focus on techniques that are very labor-intensive: “good management of . . . soils demand that they should be surface-stirred after every heavy rain.” However, there is also evidence that his recommendations presupposed crops planted in wide rows to accommodate machinery that could perform the required stirring. Only two crops are mentioned as cultivated for research in the Annual Report for this year: 100 varieties of native grapes, “all of which are believed to be properly named,” and 48 varieties of strawberries.

In his introduction to the 1864 report Saunders responds to critics who suggest the garden has limited contributions to make and cautions that time and patience are necessary when it comes to agricultural experimentation. He seems to anticipate the agricultural experiment stations and extension activities of the Department later in the 19th century and argues for the establishment of “experimental grounds in various localities, under the auspices of State and local agricultural and horticultural societies” to complement the

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327 Saunders suggests this type of cultivation might work well in cities (AR 1863, 551).
328 AR 1863, 551 and 553-554
329 AR 1863, 556-557
330 AR 1863, 548-549
work of the Department of Agriculture in Washington, D.C. He continues, “such gardens would be valuable appendages to agricultural colleges, presenting attractive and interesting studies, and collection facts of great local as well as general values.” He offers reports on pears, strawberries, gooseberries, and grapes and refers to a project to build a glass house for tropical fruit. The first evidence of a successful crop grown at the Garden is in Saunders’ report for 1864. Two short paragraphs document the details of an experiment growing gooseberries, which, he reported, “fruited in great perfection for several years.” Readers were given the varietal names of the successful gooseberries and told that the roots were left alone, the plants sheltered from wind but not sun, pruned back in the fall, and fertilized with manure before their dormancy in winter.

Until 1865, the reports for work in the garden suggest that only fruits and berries were grown, with grapes, strawberries, and stone fruit predominated. The report for 1865 marks a turning point for Saunders. He notes insufficient support and inadequate facilities but he is more assertive about what the garden can and should do to contribute to agricultural knowledge and practice in the United States. He evokes the idea of a “national garden” and argues that to be complete it would need to have at least one of every variety of “hardy fruits” so that it could be a “living museum . . . of great value for reference.” The garden’s value, according to Saunders, would be proven only if it was a complete and comprehensive collection of specimens, “a national garden . . . should preserve specimens of all, in order to assist in the identification of sorts, and also exhibit the progress made in their improvement.” Also evident in the report for 1865 are more explicit references to principles of scientific method and the need for others to attend to what was learned from experiments using that method “When a fundamental principle is once determined and understood, operative details are suggested, and from them the best practical mode of application is readily deduced.”

331 AR 1864, 605
332 AR 1864, 607
333 AR 1865, 13
334 AR 1865, 18
The first and only formal report for the Experimental Farm followed the Report of the Superintendent of the Garden and Grounds in the Annual Report of the Department of Agriculture for 1865. George Reid reports that he was “appointed to take charge of in September.” There is no reference as to who supervised it prior to 1865 though it is clear that it was used as an experimental farm. Yet, it seems to signal a significant shift of focus or addition to the work of the Department. The crops associated with the farm were more specifically economic and agricultural – grains, sorghum, potatoes, grasses, corn, beans, clover, and even goats – as were the activities which included seed saving, experimentation with methods of seed broadcasting, and crop yields. Reid described each crop and the many varieties for the report but noted, too, that he lacked information given how recently he had acquired this new responsibility. What we do learn is a bit about the process of work for testing seeds and plants that includes seed saving “for further experiment.” Reid lists the sources for many of the seeds and plants tested at the Experimental Farm in 1865 and the large number of varieties – 95 of winter wheat seeds, for example – are included in his report in a way that makes clear the long reach of the Department in terms of the acquisition of new seeds and plants that might be adaptable as economic crops in the US and its territories. One example is this comment by Reid on potatoes from Scotland, “Forty-three varieties of potatoes are being tested. Eight of them

335 Greathouse (1898) writes that Commissioner Newton took “possession of the land at Twelfth and B streets SW, and started the experimental farm. His son, Isaac Newton, Jr., was placed in charge of this work.” Page 11.

336 From the Library of Congress guide to economic botany: Economic plants are defined as being useful either directly, as in food, or indirectly, as products we use or that enhance the environment. Plants are essential to life on earth; they produce the oxygen we breathe through photosynthesis and provide much of the food we eat. Some species provide medicines and promote healing, others are used for insect control or to conserve water. Plants with dense root systems prevent soil erosion and those with brightly colored flowers attract pollinators. Plants have been used to control body functions and fertility, to poison, and to make clothing, paper, and rubber. http://www.loc.gov/rr/scitech/tracer-bullets/economic-botanytb.html#intro. Also, http://www.mbgnet.net/sets/rforest/plants/econ.htm refers to economic plants as commodities or cash crops and http://www.ars-grin.gov/~sbmljw/introd.htm ARS describes as “plants of commercial importance.”


338 He reports on wheat (95 varieties), spring wheat (6 types), rye, oats, barley, rice (4), sorghum (4), peas (70 varieties), beans (13 long stem; 22 named-kidney beans and 5 without names), pole beans (6), timothy (3 acres; 53 varieties with one from Australia), cabbage (18), savoys (4), lettuce (14), onion (13, 36 varieties from Japan were a disappointment because only half germinated), cucumber, endive and radishes from Vienna, tomatoes (those from London “are the best” and their seeds were to be saved “for further experiment”), potatoes (43 with 8 from Scotland), melon (“upwards of 30 kinds of cantaloupes and watermelons”), pumpkins and squash, tobacco from Turkey and its seeds “carefully saved, and will be distributed from the department.” (AR 1865., 28-32).
are directly from the celebrated growers of seedling potatoes, viz., Messrs. Paterson & Son, Dundee, Scotland . . . . These all have great reputations in their native country, but time will develop what they will do here. They look very well and appear to yield good crops here also. The other varieties are very promising and are likely to turn out well. When they are gathered, the ground will be measured, and the quantity produced of each may be ascertained.”

Earlier Reports of the Superintendent of the Garden and Grounds simply mention the role of foreign representatives as sources for seeds and plants. Reid’s report on the work of the experimental farm at the Department is the first to identify actual sources. Other sources of seeds include rice from Japan; sorghum from China; various grains from Russia, Prussia, Poland, and England; 50 varieties of potatoes from Germany; nearly 80 varieties of peas mostly from Europe; approximately 30 varieties of onion from Japan; Portugal, Spain and Italy; cucumbers, endive, radishes from Vienna; tomatoes from England; potatoes from “celebrated growers” in Scotland; melons from Spain, Argentina, China and Russia; and tobacco from Turkey. Many of these seeds were for crops new to the Department.

One begins to see the results of four years of research in Saunders’ report for 1866. Enough time has passed that he is able to report on sustained experiments with strawberries, grapes, raspberries, pears, and China grass. He recommends varieties of each fruit and tips for proper care from propagation to cultivation and harvest. There is also evidence in his reports that Saunders visited farms and that he responded to direct inquiries from citizens – gardeners and farmers – concerned that they cannot grow crops from seeds obtained from the Department of Agriculture, “The department is in the frequent receipt of letters, wherein the writers complain of their inability to raise plants from the seeds distributed by it, as well as those procured from other sources. The cause of failure is at once attributed to the quality of the seeds, and the source from whence

339 AR 1865., 32. Non-native sources for seeds and plants for 1865 include: Germany, Crimea, England, Spain, Russian, Japan, China, Australia, Turkey, Poland, and Argentina.
340 AR 1865, 26-27
341 AR 1865, 31
they were obtained is denounced for sending out a bad article.” 342 This is the first direct and substantive reference to this type of correspondence that I saw in the sections of the Annual Reports I looked at for this project. It is not clear that the letters to which Saunders refers are from farmers. Saunders is quick to defend the quality of the seeds distributed by the Department of Agriculture. He points out that each type of seed is tested at the Department and that the problem must be that the seeds were “improperly managed” by the planter, gardener, and farmer. 343

In his report for 1867 Saunders reiterates his vision for the garden and offers this assessment, “Although progress in some particulars has been slow, yet development of these objects is constantly kept in view.” Among the challenges, he lists: insufficient resources (human and material) and the prioritization of propagation and distribution work resulted in less time and fewer resources for experimentation, “The great amount of time and labor necessarily occupied in the propagation and distribution of from 40,000 to 50,000 plants yearly should also be noted in connection with what may be considered the more legitimate objects of the garden. The distribution is especially an absorbent, on account of the number of packages required in dividing these plants into lots of from 6 to 20 each, and the work of labeling and mailing . . . .” 344 Saunders notes how this work draws the attention of the Department of Agriculture at a time when it should be concentrating on seasonal work in the Garden illustrating a tension between different aspects of the Department’s mission – propagation (experimentation) and distribution. The progress to which Saunders refers includes a new glass house for “exotic fruits,” an orchard house that “continues to give good satisfaction,” the continued success with cultivation of native grapes “under glass.” He also presents a plan for the grounds of the Department of Agriculture at Newton’s request – an arboretum. He points to Asa Gray’s Manual of Botany 345 as an authoritative resource for identifying appropriate trees and plants and states that this sort of collection is a “long-felt want of this country” and argues for its place in the Department as equivalent to “any other museum of natural

342 AR 1866, 31
343 AR 1866, 23
344 AR 1867, 24
345 A series of editions of Gray’s Manual were published beginning in 1848. There was a 1867 edition though Saunders does not give more than author and title.
history…presenting a school of instruction that will largely tend to advance our progress in the knowledge of vegetable physiology, and furnish a strong incentive to botanical studies.” He imagines it as a living and growing collection able to incorporate new varieties of plants, especially those he read about in the Pacific Railroad Survey Reports, which “reveal a vast number of plants and trees, few of which have as yet been introduced to cultivation. It is hoped that efforts may be made towards gaining a more intimate knowledge of the botany of the western States and Territories, and living plants secured and placed in the arboretum.”

This early report by Saunders acknowledges the importance of on-the-ground observations by farmers and shared these observations through a variety of means including the agricultural press. Though Saunders does not identify how he came to the following information it is clear that it had an impact on his thinking about grape culture. In his report on a field trip to explore grape cultivation and climates in the vineyards in New York State (Lake Erie and Steuben County), Ohio (Cincinnati), and Missouri (Hermann), Saunders recalls and reprints correspondence from 10 years earlier, “Mr. Silas McDowell, of Franklin, Macon county, North Carolina, directed attention to the ‘Belt of no frost, or Thermal belt,’ on the slopes of the southern Alleghanies [sic]. Various communications were published by Mr. McDowell, which attracted notice at the time. Convinced that these observations were of great value, and directly applicable to our subject, it may not be out of place to quote from the more recent of these letters.”

The Report of the Superintendent of the Garden and Grounds, 1867-1870 – Horace Capron, Commissioner

The reports for these years read like progress reports on experiments of plants and seeds and lack some of the commentary about resources and funding seen in his reports for the first few years. Information on propagation at the Department includes a range of plants including tropical fruits, currants, strawberries, raspberries, pears, shrubs, forage plants, fiber plants like ramie and flax, grasses, eucalyptus, tea, and the ever-present comparison

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347 AR 1867, 29
of native and foreign grapes. Native (existing states including South Carolina in 1868; Missouri and Mississippi in 1870 and territories, Utah in 1868), and foreign sources for a number of crops including grapes from Australia and the United States counsel at Damascus, raspberries from a United States Marshal in Japan, Italian rye seed, tea from Japan, China and Assam [India], grasses from France, and flax from New Zealand.

Saunders reports on progress, too, with the arboretum noting in his report for 1868 that nearly seventy-five percent of the plants and trees on his initial list had been acquired and that while still incomplete the collection rivals those “to be found in any country.” In 1869, he offers the following classification for plants in the collection, “dye, gum, sugar, fiber, oil, and medicinal” signaling the economic character of the collection. The report for 1870 opens with a coded illustration of the arboretum plantings and the Department grounds. The latter includes: stables, four glass houses (tropical fruit, semi-tropical fruit, grapes, and one for “other utilizable plants”), a gate-house, experimental orchards and test plots, roads and walkways. For the arboretum collection he reports, “valuable additions are constantly being received, and the collection is already of great variety and interest.”

In the report for 1870 Saunders notes that plants for the grounds were hard to come by from commercial sources so the Department of Agriculture exchanged plants with “scientific institutions and botanic gardens in foreign countries.”

The Report of the Superintendent of the Garden and Grounds, 1871-1876 –
Frederick Watts, Commissioner

The official reports by Saunders for this period are few. He submitted one for 1871 and one for 1876. We learn from the Reports of the Commissioner and the 1876 report by Saunders that his focus shifted to prioritize his work as the representative of the

348 AR 1868, 118
349 AR 1868, 79-80
350 AR 1868, 122
351 AR 1869, 91
352 AR 1870, 17
353 AR 1870, 16
354 AR 1870, 15
Department of Agriculture (and the Executive Departments of the U.S. government) to the International Exhibition held in Philadelphia in 1876.\footnote{Also known as the Centennial Exhibition or International Exhibition of Arts, Manufactures and Products of the Soil and Mine, it was the first World’s Fair held in the United States. Several sources argue that the Exhibition served as an opportunity for the United States to demonstrate its role as a world power. Exhibits promoted industry, education, and progress. An Agricultural Hall featured and demonstrated the latest farm equipment and included “forty-two acres of farm and livestock exhibits.” There was also a Horticultural Hall. (Encyclopedia of Greater Philadelphia entry, Centennial Exhibition, 1876 by Stephanie Grauman Wolf, senior fellow at the McNeil Center for Early American Studies, University of Pennsylvania. Copyright 2013, Rutgers University http://philadelphiaencyclopedia.org/archive/centennial/)} Saunders reports in 1876 that the “duties have been somewhat arduous, but I have not permitted them to interfere, except when altogether unavoidable, with my daily duties in the Department.”\footnote{AR 1876, 73}

Aside from an accounting of some of the crops tested under his watch, Saunders, in his report for 1871, offers an early evaluation of the exchanges of seeds and plants by the Department of Agriculture with similar institutions in other countries. This “system of exchanges,” he reports “is now proving of great value in enabling the Department to secure plants that are rarely to be found for sale in commercial establishments.”\footnote{AR 1871, 102} He also acknowledges the critical role of “representatives of the [U.S.] Government who are stationed in foreign countries” and their willingness to acquire seeds and plants requested by the Department, “With few exceptions these representatives have promptly responded to inquiries relating to vegetable productions, and have exerted themselves to fulfill the wishes of the Department, both in the introduction of new plants of value and interest and in furnishing useful information relative to cultivation and other matters of special importance.”\footnote{AR 1871, 102} He points to a few specific examples of plants and seeds from foreign sources that have proven valuable to the Department’s collections and helping that collection be more complete. These included oranges, cinchona, and eucalyptus. Foreign sources of seeds and plants include Russia (a source of rhubarb which Saunders discusses how to grow from seed); the West Indies, Africa, and China (notes that ginger could be a successful crop in the American South and describes how to make ginger jam); chicory from Europe now growing in the United States as almost a weed in some places;
Saunders notes that it is used for coffee, salad, and describes how it had been grown on ships and that it was used as fodder for cattle and hogs.\textsuperscript{359}

The report for 1876 has a decided focus on economic plants noting that information on these crops is in “frequent demand” but Saunders is quick to bemoan the lack of understanding on the part of those requesting specimens of regional, geographic, climate requirements for specific crops. Crop reports for 1876 include coffee, rubber plants (India), cinchona, eucalyptus, olives (Europe, especially Spain), persimmons (Japan), vanilla, mate (Paraguay), tea (China).


Saunders’ reports for the period under Commissioner Le Duc, 1877-1880, continue that same content and pattern of reporting that highlights certain crops and methods currently under experimentation at the Department of Agriculture. He also refers with much more frequency to earlier experiments at the Department and is clearly trying to establish authority for that work by noting its continuity, history, and progress. Saunders rarely explains how he selected these examples from the many experiments at the Department (as evidenced by reports variously called “tests of Department seeds” or “experiments with Department seeds”). He sometimes frames his choices in terms of public interest in a seed, plant, or farming method but he is not consistent and, given Saunders’ strong views about what should be grown where, by whom, and how, it seems fair to suggest that the choices he makes in terms of reporting are political. That is, directly tied to his efforts to elevate the work of the Department and particularly the work in his division.

For example, in this section from his 1878 report on progress with the cultivation of native grapes Saunders is clearly highlighting the results of experiments at the Department and arguing that progress in grape culture would be greater if information from the Department was more widely accepted as authoritative:

\textsuperscript{359} AR 1871, 107-109
In some of the earliest reports of the Department of Agriculture the statement was dwelt upon that the greatest obstacle to complete success in grape culture could be referred to the deterioration of the plants consequent upon the injury they sustained from mildew on the leaves. This explanation of failure was not generally considered as conclusive. Both grape growers and authors of treatises on grape culture, especially the latter, usually referred failures to some other cause or causes, which were expressed by the phrase "improper treatment," and this was considered a sufficient answer to all inquiries regarding failures.

The main cause of failure has been frequently pointed out, and from time to time the department has published lists of those varieties best adapted to general culture, as also those which require special localities, and further experience has borne conclusive evidence of the value and accuracy of these reports. It was distinctly shown, and it is now clearly admitted, that the distinguishing feature of a good grape climate is that where there is an entire absence of mildew on the foliage or on the fruit of the vines.360

In his opening remarks for the 1877 report, Saunders criticizes the U.S. Congress for what he sees as insufficient appropriations for “the maintenance of the grounds, and for the purposes of propagating plants” by reporting necessary reductions in employees in his division. The direct result was a decrease in the number of plants distributed. He reports “many thousands had to be abandoned.” Other areas of work that suffered due to lack of funding included new acquisitions for the arboretum and especially the aquatic plants planned for the lake. Continued work on the lake, he notes, “will be prosecuted from time to time, as leisure offers opportunities from more pressing operations.”361 Saunders reports that testing of Russian apples introduced to the Department “several years ago” is inadequate. He argues that the adaptability and heartiness of these apples and other crops can only be determined by planting and testing in various regions of the country. He concludes, “happily there is no lack of fruit-growers who are willing to make such experiments, and as soon as results are ascertained and reported, they will be published for the benefit of all.”362 Saunders lists some of those other crops as well as additional topics for research by the Department. They include Chinese tea, acclimatization of plants, eucalyptus for which Saunders offers several pages of information from a paper read, in 1874, at the Royal Society of Victoria and “published in the official catalogue of

360 AR 1878, 197
361 AR 1877, 47-48
362 AR 1877, 48
the Commissioners to the Centennial Exhibition for Victoria, Australia.” Similarly, his report on oranges is a long excerpt from “a valuable paper by John R. Jackson, of Kew, which appeared in the ‘Garden’.” He includes reports on “Pyrethrums as insect-destroyers,” a variety of chicory, and jute. His report for 1877 includes information on several sources of oil including sesame for its oil and medicinal qualities; ground-nut and tarweed and includes a chart borrowed from the noted French chemist, Jean-Baptiste Boussingault, which provides further evidence of Saunders’ connection to agricultural research outside the United States.

The Reports of the Superintendent of Garden and Grounds for 1878 and 1879 have similar content and focus. In the 1878 report, Saunders launches right into his crop reports for that year foregoing any introductory remarks. The focus again is on economic crops with most of his attention given to grape culture. Some of the other crops he mentions are tea grown from seed (China, Japan, and Assam tea origins), coffee beans from Liberia, Japanese persimmon which his division has experimented with for years and now has ten named varieties some of which are hardy in “Northern States,” figs which are generating a lot of interest among growers in the north, and apricots. In his report for 1879, Saunders’ remarks offer some evidence of how the work in Garden and Grounds was accomplished and some information about priorities and research results:

The distributions for the year have aggregated to the number of one hundred and ninety-five thousand plants of various kinds, but almost wholly of those having economic value, as the olive, Japan persimmon, tea, coffee, cinchona, orange, lemon, fig, grape, strawberry, &c. Fully seven-eighths of these plants were distributed by mail, involving much labor in their preparation for this mode of transportation.

Estimating these plants at the very low price of 5 cents each, they would represent a money value of $9,750, a sum considerably above the amount of the appropriation allowed for labor for propagating, and for keeping the gardens and grounds of the Department in order, which includes 25,000 square feet of glass structures well stocked with plants and 40 acres of ground, much of it kept as

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363 AR 1877, 56
364 AR 1877, 65
lawn and flower-garden, with numerous walks and drives, together with collections of grapes, strawberries, and other hardy fruiting plants, all of which require much labor and attention for ordinary care and keeping.\textsuperscript{365}

There are no published reports from Superintendent Saunders for 1880 though the Report of the Commissioner includes information about the Garden and Grounds. Neither is there a seeds report. There is, however, an interesting 29-page section called Department Correspondence that offers information about the acquisition and distribution of seeds and plants at the Department, “The correspondence of the department is one of the most distinguishing features of its operations, embracing as it does the current information of the progress of agriculture at home and abroad, an interchange of seeds, &c., with foreign governments and individuals, and inquiries as to such new and valuable seeds as the department may have for distribution and trial, and particularly as to the most approved methods of culture. The department, while it has availed itself of such opportunities of obtaining information as this correspondence has afforded, has freely, and as fully as was practicable, responded to the various inquiries. This correspondence has been held, not only with the regular and numerous corps of reporters, and with agricultural societies, and with individuals in every section of the country, who make occasional calls for information and advice, but with foreign governments, United States consuls, and other persons in foreign countries who are accustomed to solicit information from the department in relation to agriculture and kindred topics, as the result of experience in this country. We subjoin a few notes from this correspondence, which are of general interest.”\textsuperscript{366}

The Report of the Superintendent of the Garden and Grounds, 1881-1884 – George B. Loring, Commissioner

Saunders’ reporting for Loring’s term as Commissioner (1881-1884) is extremely uneven. To be fair the Department Annual Reports for 1881 and 1882 were published in one volume. Saunders had one formal report in that volume and one in the Department’s Annual Report for 1883. Loring’s report for 1884 mentions the work of the

\textsuperscript{365} AR 1879, 359-360
\textsuperscript{366} AR 1880, 609
Superintendent of the Garden and Grounds but there is no report from Saunders in the Department’s Annual Report for that year. Saunders has no prefatory remarks of note in his report for 1881-1882. Instead he launches right into his reports on a selection of crops noting again the frequent letters to his division of the Department of Agriculture requesting information, seeds, and plants. This is the first time he explicitly frames his selection in reference to that correspondence which, he notes, is concerned with the “adaptability of various tropical and semi-tropical plants for cultivation in Southern Florida and Southern California” and he cautions “it may not be well to pronounce too decidedly, in advance of practical tests, in regard to the successful culture of any tropical product.”

The crops he discusses take their origins across a wide range of global regions including Asia, Central and South America, the Caribbean, and from some parts of Southern Europe, the Middle East and Africa. They include the tamarind tree, cherimoyer fruit, sweet sop, bromeliad, Paraguay tea tree (mate), the chocolate-plant (cacao), turmeric, Sicilian sumac, Japan varnish tree, Lee-Chee tree, Sago palms, aloes, clove tree, Chinese tallow tree, chayote, cork tree, camphor tree, cinnamon tree, nutmeg tree, allspice tree, bayberry tree, arrow-root, cassava, pistachio, terebinth tree (turpentine), black pepper, and vanilla. Most are economic plants like the orris-root which, he notes, “In its fresh state the root is extremely acrid, and when chewed, excites a pungent heat in the mouth which lasts for some time. It loses this when dry, and exhales a delightful violet fragrance, which makes it useful in scenting toilet and sachet powders.”

He notes that fences were needed to protect Department of Agriculture experimental crops from wild life and packs of stray dogs in Washington, D.C.; experiments with economic plants, requests for seeds and plants “received almost daily” but without an awareness of their lack of adaptability to those climates/regions, the critical need to experiment on crops “in climates where no protection is required” in order to understand them fully and “render them fit for field culture.” These were all key points in his report.

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367 AR 1881-1882, 215
368 AR 1881-1882, 229
for 1883 as was his concern for the continued lack of funding support for the work of his Division. He opens his report with concern for both the decreasing amount of land available to the Department and the vulnerability of the experimental plots, “the exposed condition of the grounds since the removal of the fences, and their proximity to the city, renders it impracticable to protect fruits from being pilfered or destroyed before they ripen, so that comparative tests cannot be obtained. Another evil consequent upon insufficient protection is the depredations of animals, especially dogs, which during their nightly visits displace and scatter labels, break plants, and commit havoc which cannot be repaired. Under these conditions it is not possible to preserve accuracy in the names of plants or cuttings, except those which are kept constantly under glass.”

In the Annual Report for 1883 what I have been referring to as crop reports in Saunders’ previous reports is a section in his report called, Cultural Remarks. The reports for this year include grapes, potato-rot, the management of orchards and where to best situate them, the glazing of greenhouse roofs, raspberries, root-pruning trees, hedges, draining lands, and flower pots. Two reports caught my eye one on lawns and the other on seed-saving. The former suggests that research by the Department of Agriculture helped to inform the development of lawns and golf courses that were gaining popularity at this time. For the latter, Saunders discusses the pros and cons of farmers and gardeners saving seeds noting that “as a general rule it is cheaper, in the long run, to buy seeds than to attempt to save them” because of how hard it is to insure the authenticity of the future crop. He writes, “It is one of the great arts in seed raising to keep varieties true to their descriptive peculiarities . . .” He concludes on a recurring issue and stance, that is, reports of bad seeds are less about the seeds supplied than how they were handled and sown by the farmer or gardener.

369 AR 1883, 181
370 AR 1883, 182
372 AR 1883, 195
373 AR 1883, 196
The Report of the Superintendent of the Garden and Grounds, 1885-1889 – Norman J. Colman, Commissioner

For the term of Commissioner Colman (1885-1889), the Superintendent of the Garden and Grounds, William Saunders, submits only three published reports 1885, 1886, and 1887. The Department of Agriculture’s Annual Reports for this period include extensive reports on seeds in the form of the Report of Chief of Seed Division, William M. King and the Report of the Pomologist, H.E. Van Deman. Each of those reports focus on plants and seeds.

The form and content of Saunders’ reports change in these years in some significant ways. The report for 1885 is the closest to earlier reports with a short introduction in which Saunders bemoans the lack of sufficient land for experiments by the Department. He also reports on a selection of crops. In his opening remarks, Saunders writes about his work “preparing exhibits” about the work of the Department of Agriculture for expositions in Cincinnati, Louisville, and New Orleans. He reports that the exhibits were opportunities for “presenting, as far as practicable, the operations of the various divisions of the Department and their relations to the industries represented.”

In his report for 1886 Saunders offers no introductory remarks. He reports on orange culture and notes his “recent visits to Florida, in the interest of the Department have enabled me to acquire some knowledge of the climate, soil, and productions of that State. . . .” The tone of the section on the orange suggests Saunders is sharing his personal observations and conclusions. His narrative also includes references to recent publications by horticulturalists thus demonstrating his knowledge of the literature of horticultural cultivation. He ends this section with an interesting statement about how consumers are aware of qualities of various fruits and will expect “choice named kinds . . .

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374 Note that my study ends with the Annual Report of 1888 as the last one submitted before the Department of Agriculture was elevated to a position in the President’s Cabinet in 1889.
375 The Report of the Pomologist ends with stunning illustrations of fruits – six full-page color plates and 3 black and white plates. (Between pages 652 and 653 of the Report of the Commissioner of Agriculture for 1887.)
376 AR 1885, 33
over those . . . gathered indiscriminately from groves of seedling trees and whose uniformity cannot be guaranteed.”

His report for 1887 departs significantly from his previous reports and in ways that are especially interesting considering the focus of this dissertation. By this time Saunders has worked at the Department of Agriculture for twenty-five years. Saunders decides to use the space allotted him in the Annual Report to respond directly to “official correspondence of the Department…referred to the Superintendent for consideration and reply” noting that many of those inquiries have shared interests and yet, “as far as the Department is concerned, reach only the individual addressed.” He writes that he “selected the following from the many similar communications, with a view to lessen repetitions . . . .” The correspondence he responds to on the next eighteen pages include inquiries for seeds and plants, requests for information about specific insects, a request for advice on soil management, another request for “description and sketch of the Lotus plant of Egypt,” advice for growing a lawn, report on progress of a “camphor tree received from the Department six years ago” that flourished but did not seem to produce; also requests for gum, opium, coffee, and ramie. The requests come from people in Florida, Maryland, Delaware, South Carolina, New York State, New York City, Iowa, Georgia, Virginia, Kansas, West Virginia, California, Texas, Missouri, Pennsylvania, North Carolina, and Oregon. The initials for the name of the person making the request and their location are included along with their question and Saunders’ answer. One example from “C.E. of Liberty County, GA” concerns the opium poppy, “I have reason to believe that the opium poppy will do well here, and would try it if I had enough seed of the right variety to make a plantation of several acres. Can you furnish seed or procure it for me at my expense?” The answer Saunders provides is long and discusses climate, soil, and proper techniques for planting the seeds. He concludes with the following information:

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377 AR 1886, 691
378 AR 1887, 673
379 AR 1887, 676
It is highly improbable that it can be profitably produced in this country, as may be gleaned from the details of collecting the juice.

When the seeds pods are properly matured the milky juice is obtained by making incisions in the pod with small lancets. This requires great care, so that the incision is not made through the entire substance of the pod: the surface only is scarified. The cutting being performed in the afternoon, the opium is allowed to exude and remain on the pod till next morning, when it is scraped off, drop by drop, and thus collected in a small cup. Successive incisions are required to secure complete exudation.

It is thus seen that the process is slow and tedious, and it is stated that the average pay of the operators does not reach 10 cents per day.

The factory operations in preparing the article for commerce are also tedious and complicated, involving much manual labor, which is cheaply procured in Asiatic countries.380

It is interesting to note Saunders’ frustration with the number of requests for seeds and plants from people who do not consider whether they have the proper climate and soil conditions for those specimens.

Conclusion

The Organic Act of 1862 that established the Department of Agriculture explicitly directed the new agency to focus a significant portion of its work on seeds and plants. The specific language of the Organic Act on this aspect of the agency’s mission reads, “Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled. That there is hereby established at the seat of government of the United States a Department of Agriculture, the general designs and duties of which shall be to acquire and to diffuse among the people of the United States useful information on subjects connected with agriculture in the most general and comprehensive sense of that word, and to procure, propagate, and distribute among the people new and valuable seeds and plants.”381

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380 AR 1887, 678
381 The full text of the Organic Act was reprinted in the Report of the Commissioner of Agriculture for the Year 1862, the first issued by the new agency. (The emphasis is mine.) Page 3.
It is clear that Superintendent Saunders was wholly committed to fulfilling this mandate of Congress. We have seen in his first report a measure of his commitment to meeting those goals outlined by the U.S. Congress and, in fact, expanding and elaborating on them, in what became the first official publication of the Department of Agriculture. In it Saunders identified a detailed set of priorities for the Division of Gardens and Grounds at the Department. The timing of this publication and the level of detail it offers suggest Saunders had given a great deal of thought to this work even before the Organic Act established the Department of Agriculture in 1862.

As this chapter has shown, his reports for the full length of my study, 1862 to 1888, offer further evidence of the experience and background he brought with him to his role as the first Superintendent of the Garden and Grounds. He not only had a plan but a network of professional colleagues and informants in the United States and abroad. He called on that network to identify and contribute seeds and plants for experimentation, exhibition, and preservation in, for example, an herbarium and a national arboretum as part of the agency’s grounds on what is now the National Mall in Washington, D.C. Culling the information from the reports of the gardener I identify some patterns in terms of crops/plants/seeds that raise questions about goals and priorities of the plant and seed research and its place in the development/advancement of farming/agriculture in this country. One example is the strong and persistent focus in his reports on efforts by his division to establish a viable native grape industry as one way to reduce the quantities of grape products imported – not just wine but also tannin used for curing animal hides. What we also see is a system of information production and exchange that extended beyond the states and territories of the United States and was global in its reach in terms of both acquisition and distribution of seeds, plants, and research reports. Those efforts drew on formal and informal networks of agricultural research and researchers outside of the Department of Agriculture and outside the U.S. Some of those connections were personal, but many were professional conducted via correspondence/letters, journals, institutions, societies, expositions. They are further evidence of the Department’s interactions with diverse publics and its global reach. However, we do not learn much in the way of details about agricultural and horticultural research in other countries.
The reports of the gardener lack the rhetorical style and power of those of the commissioners but one still finds in them evidence of the challenges faced by the new Department in terms of funding and support as well as purpose/mission. They reveal little about the community of scientists or staff at the Department of Agriculture and even less about the culture of the work and workplace. They do offer some insight into the scale of correspondence from farmers and other stakeholders in agriculture as Saunders shares examples of both inquiries and reports from people who correspond with his division at the Department.

Recurring themes in Saunders’ reports over the course of his work as Superintendent of the Garden and Grounds include regular reports on the meager resources allotted by the U.S. Congress for his work; the need for and value of collections of seeds and plants of the United States and those from other countries that would thrive in the United States; agricultural production as the foundation for the health of the nation; a concern for high quality seeds and plants for research, curation, and distribution, identifying the best and most suited plants and seeds for the various growing regions of the United States; research on economic and medicinal plants like cinchona, coffee, tobacco, and tea; the urgent need to test seeds and plants in local or regional settings best suited for those crops; and a high level of engagement with the public from whom his section received a large volume of correspondence on a regular basis. Evidence of Saunders’ frustrations are also evident in that he was quick to complain about inquiries for seeds and plants that failed to understand the soil and climate conditions necessary for a crop. He also expressed considerable annoyance when those who received the seeds they requested reported back to the Department that they failed to germinate or failed to yield a good crop.

As the country expanded in terms of territory and population the demands put on the work of the Department of Agriculture grew. Advances in scientific research resulted in new specialties in agricultural research. With that growth, we see new and more refined areas of work at the Department. Many of those new divisions did work that was
previously under the purview of the Superintendent of the Garden and Grounds.
Examples include divisions of chemistry, entomology, botany, and forestry. Still, the
Annual Reports demonstrate that William Saunders remained a significant force in the
growth and development of the Department of Agriculture under the commissionership.
He exploited his existing networks and established new relationships with colleagues in
the United States and abroad and used those networks to bring new plants and seeds to
the Department of Agriculture for analysis and experimentation with the purpose of
identifying those that would be best as crops in the United States and its territories.
CHAPTER 6: THE REPORTS OF THE STATISTICIAN, 1862-1888

Introduction

Prior to the establishment of the Department of Agriculture in 1862 as the federal agency responsible for collection, research, and distribution of agricultural information, such work (collecting and disseminating information about crops, crop yields, acres farmed, prices, etc.) was part of the agricultural information work at the United States Patent Office. Agricultural statistics were collected as part of the United States Census from its beginning in 1790. The census was conducted every ten years as stipulated by the U.S. Constitution, and United States Marshals were responsible for conducting the census and providing the supplies needed to record the data collected, “From 1790 to 1820, U.S. Marshals conducting the census were responsible for supplying paper and writing-in headings related to the questions asked (i.e., name, age, sex, race, etc.). In 1830, Congress authorized the printing of uniform schedules for use throughout the United States.”

In 1820, the United States Census began to include questions aimed at identifying the number of people in the United States engaged in agricultural labor, “including slaves.” The U.S. Census for 1840, included a section dedicated to agriculture and agricultural work. The census for 1850 included two sections of questions relating to agriculture: Section 14 and Schedule No. 4 – Productions of Agriculture for 1850. The

382 Measuring America: The Decennial Censuses From 1790 to 2000. September 2002. Report Number: POL/02-MA(RV), U.S. Census Bureau. https://www.census.gov/library/publications/2002/dec/pol_02-ma.html The fieldwork required for conducting the census was a huge undertaking in terms of geography, time, and the logistics of collecting, recording, and submitting information. U.S. Marshals were a prudent choice as agents of the census given that they were stationed in each judiciary district of the country. According to a report issued by the U.S. Government Accountability Office, Appointment and Qualifications of U.S. Marshals, “The U.S. Marshal Service was created by the first Congress in the Judiciary Act of 1789. U.S. Marshals were placed in each federal judicial district and were given broad authority to support the federal courts and to carry out all lawful orders issued by judges, Congress, and the President. Early duties of U.S. Marshals included taking the census, distributing presidential proclamations, protecting the borders, and making arrests.” http://www.gao.gov/assets/100/91786.pdf

383 Ibid, 6. The instructions for administering the census for 1870 cautioned census workers to “be very careful to distinguish between farmers and farm laborers.” (16) Digitized versions of the historical census of agriculture for the United States – from 1840 – are available online via the Mann Library at Cornell University, http://agcensus.mannlib.cornell.edu/AgCensus/homepage.do;jsessionid=0C021FD1DDF481E91CE49FF8F179FE0
former gathered information about the number of acres, and people employed in agriculture and the latter, with overarching categories of “livestock” and “produce,” solicited more detailed information than in previous years. Those additional categories evolved into the crop and livestock reports we see in the work of the Department of Agriculture for the period of this study, 1862-1888.\footnote{The Seventh Census of the United States, 1850. An Appendix. J.D.B. DeBow, Superintendent of the Census. 1853. See, Forms Used in the Census Office section, xiv and xii.} The agricultural statistics published by the U.S. Patent Office and the Department of Agriculture’s reports on agricultural statistics were drawn from what was essentially historical data collected by the United States Census every ten years. The timeliness and usefulness of historical census data was an early concern of the Statistical Division at the Department of Agriculture. We will see later in this chapter the remedies to that problem proposed and instituted by the Statistical Division at the Department of Agriculture.

As I noted in the previous chapter on the information work of the Superintendent of the Garden and Grounds, of particular importance to my study is to identify in the Annual Reports the methods, tools, and techniques used to fulfill the Department of Agriculture’s mission to acquire and distribute agricultural information. In the case of the Annual Reports of the Statistical Division of the Department of Agriculture I was interested in seeing if the reports offered information on the systems and processes developed and employed by the Division; how the information was acquired and disseminated; who did that work; and ways collecting priorities and strategies changed over time.

The work of the Statistical Division as represented in the reports submitted to the commissioners by the Statistician each year for the Department’s Annual Report suggest that its work was more systematic than the work at Garden and Grounds. The Division inherited systems and processes for the collection and distribution of agricultural statistics employed at the U.S. Patent Office beginning in the late 1830s. The first reports from the Statistical Division of the Department of Agriculture relied on information gathered as part of the decennial United States Census and used that historical census data to show evidence of changes in agricultural production including the conditions of
the soil, the amount of land tilled, crop yields, and crop prices. The Department also developed a deep and diverse network of information sources and resources for its work. Examples from the Annual Reports demonstrate that those networks relied on a process that exploited formal and informal networks, institutions, and individuals. Included in those networks were diplomats, explorers, field agents in all the states and territories of the country, as well as other agencies of the U.S. government. The Department itself identified specific information it required or found useful and used its networks of agents and correspondents to gather that information and send it back to the Division for analysis, publication, and distribution. The reports of the Statistician between 1862 and 1888 describe how data was collected, processed, and disseminated.

Systems of information work
The agricultural information work of the Department of Agriculture was described and shared in its Annual Reports. As I have discussed earlier in this dissertation, the data gathered, analyzed, and disseminated by the Statistical Division constitute one form of agricultural information the U.S. Congress tasked the new agency with collecting and distributing. The analysis and presentation of the data as well as its interpretation and its distribution by the Division, are examples of systems of information work at the Department of Agriculture during the period of this study, 1862-1888. The acquisition and analysis of statistical information about the state of agricultural work and production were critical aspects of agricultural information work at the Department. The new agency struggled to develop more efficient systems that would result in the information it collected and analyzed reaching farmers and other stakeholders in agriculture while it was still relevant and useful. We see in the Statistical Division reports evidence of that information work, who contributed, and who used it. This is especially evident in the correspondence from farmers and others and in the more formal data collected by volunteer correspondents of the Department of Agriculture using surveys or circulars sent out by the Statistical Division. It is also evident in the narrative sections of the reports of the Statistical Division.

385 Black and Schiller (2014).
The Annual Reports include examples of an active and steady correspondence from a constituency that included farmers, gardeners, and horticulturalists. Many requested seeds and plants. Others offered information about their successes or failures with various crops or reported on the general conditions of agriculture. We also see evidence of an expansive network of information exchange among a diverse set of players. The venues included journals, conferences, and correspondence; the types of information included scientific reports, crop yields, informal observations, as well as plants and seeds.

The Reports of the Statistician for 1862-1888 reveal some of the ways this new agency, charged with establishing the federal government as an authoritative and effective resource in agricultural research and practice, drew on the legacy of informal (indigenous or local) information / knowledge practices. It directly solicited a wide range of information from farmers and horticulturalists and independent researchers. The Statistical Division also made effective use of existing informal and personal relationships with other scientists and agriculturalists working in botanical garden, agricultural societies, and other state agencies both here and abroad or independent researchers.

**The Statisticians**

The Statistical Division was established at the Department of Agriculture in 1863. Between 1863 and 1888 three men served as the statistician for the Department of Agriculture. Their service is best seen in the Annual Reports they authored: Lewis Bollman (1863-1864), Jacob Richards Dodge (1865-1877), Charles Worthington (1878-1880), and Jacob Richards Dodge (1881-1888).³⁸⁶

Lewis Bollman was appointed as the first statistician for the Department in the spring of 1863 shortly after the Statistical Division was established at the Department. Bollman was a farmer in Indiana before coming to the Department where he served as the first head of the Statistical Division at the Department of Agriculture for approximately three

years. The Annual Reports for his years as Statistician indicate that he followed the examples set by the statistical work on agriculture at the Patent Office. The second man to serve as the head of the Division was Jacob Richards (J.R.) Dodge. He came to the new agency in 1862 from the U.S. Patent Office where he worked as a clerk and had a hand in the collection of agricultural statistics. Dodge first served as the editor of the Annual Reports and was responsible for the publications of the Department. He became the head of the Statistical Division at the Department of Agriculture in 1867. Dodge served in those capacities until June 30, 1879 when he left the Department to head the agricultural section of the U.S. Census. He returned to the Department of Agriculture in July 1, 1881 to resume his position as head of the Statistical Division, which he held until 1893. Among Dodge’s many tasks were extending and refining the practice that began with agricultural statistics work in the Patent Office prior to the establishment of the Department of Agriculture in 1862. The Commissioner’s 1864 Annual Report described the value of agricultural statistics in his letter to the U.S. Congress, “These estimates are also published in the reports of this department, and by the information thus made public the commerce in farm stock and their products is regulated, and the farmer’s attention is timely directed to a decrease or over-production of any one of them. Heretofore an evil in our agriculture, was over-production, occasioned by a casual demand from abroad; but the tables of this department like the regulator of the steam-engine, will do much to prevent either a deficiency or its opposite.”

The Annual Reports of the Statistical Division for the period from 1862 through 1888 are filled with tables of numbers drawn from varied sources including the U.S. Census and surveys administered by the Department of Agriculture itself. The Statisticians and each Commissioner were careful to point out the value of statistical information for agriculture. It is critical to place this commitment to and value for agricultural statistics in the historical context of the development of statistics. In his book, The Rise of Statistical

Greathouse writes that Dodge wielded significant influence as Statistician from the outset. Dodge left the Department to head the Census in 1879 in large part because he and Commissioner Le Duc had significant disagreements. Charles Worthington wrote the annual reports for the Statistical Division for 1878 to 1880 and in each identifies himself as the Statistician according to the annual reports of the Department of Agriculture. It may be that Dodge had to serve out the fiscal year but that Worthington was the appointed head of the Division and thus responsible for the Division report for 1878.

AR 1864, 8-9
Thinking, 1820-1890, Theodore Porter argues that the use of the term “statistics” is associated with a “great explosion of numbers” in the early 19th century. It had a dramatic impact on the organization and expression of knowledge by the expectations it “placed on people to classify things so that they could be counted and placed in an appropriate box on some official table, and more generally its impact on the character of the information people need to possess before they feel they understand something . . . .”\(^{389}\) Porter distinguishes “political arithmetic” from statistics, which was tied to both scientific thought and philosophical theory interested in explaining natural and social phenomena. The former, political arithmetic, was more directly used by or for the state's centralizing bureaucracy and its use of information to control. The latter, statistics, became associated with science and assertions about natural law locating truth in something outside the state. The statistical work of the Department of Agriculture grew under Dodge in the same period that Porter suggests a transition from political arithmetic to statistical work concerned with variation, but not yet at the point of demonstrating causal relationships and measuring probability.\(^{390}\)

What evidence do we see in the Annual Reports of the Statistical Division at the Department of Agriculture of how and why statistical work evolved at the Department? What was the significance of its work? What kind of information did the Division collect, process, and distribute? What influences were there on statistical work at the Department of Agriculture – social, cultural, economic, and political? What were the characteristics of the system(s) of information it generated? Do we see in the Division Reports any evidence of challenges to the authority of the Department's agricultural statistics? These are questions I brought to my reading of the Annual Reports of the Department of Agriculture’s Statistician under the Commissionership, 1862-1888.

The Annual Reports of the Statistician by the Term of Each Commissioner, 1862-1888

\(^{389}\)Porter (1986), 11.
\(^{390}\)Porter (1986), 3. In his chapter on the origins of statistics, Daniel Headrick (2000) suggests that statistics were used in the U.S in the early 19th century to promote moral reform. Examples include temperance campaigns, the importance of religious and moral instruction for the “poor,” and the pervasiveness of prostitution and the negative effect it had on society. (Headrick, 79)
The following analysis organizes and examines the Reports of the Statistical Division of the Department of Agriculture in clusters defined by the term of office of each commissioner of the Department between 1862 and 1888. I looked at each report of the Statistical Division and noted a great consistency of focus. I cover the full range of years, 1862-1888, but use this chapter to highlight areas of significance or divergence in the work of the Division. I am especially interested in identifying references to agricultural information work in the reports for the Statistical Division, evidence of the perceived importance of that work, and evaluation of the effectiveness of it, as well. I look for patterns and progressions within the term of each commissioner and conclude this chapter with a discussion of what we learn about the information work and information systems of the Statistical Division from 1862 through 1888.

Terms of the Commissioners of Agriculture:

1862-1867 Isaac Newton
1867-1870 Horace Capron
1871-1876 Frederick Watts
1877-1880 William G. Le Duc
1881-1884 George B. Loring
1885-1889 Norman J. Colman

The Report of the Statistician, 1862-1867 – Isaac Newton, Commissioner

I devote more attention to the reports of the Statistical Division for Newton’s term as commissioner for two reasons: first, because these are the first years of work at the Department but, also, because we see in the reports for these years the emergence of systems for the collection, analysis, and dissemination of agricultural statistics.

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391 As noted previously in this dissertation, Commissioner Newton died suddenly while still in office in June 1867. The chief clerk of the Department, John Stokes, assumed his duties as commissioner until the appointment of the next permanent Commissioner in November 1867.
392 The Department’s status changed during the term of Commissioner Colman. In February 1888 the Department was elevated to Cabinet-level status. It remained in the Executive Branch but the change in status meant the Department had a seat in the President’s Cabinet, the Secretary of Agriculture. Commissioner Colman’s status changed and his last month of service to the Department was as the first Secretary of the Department of Agriculture. (Greathouse, 1898; 20-21)
The first report of the Statistical Division of the newly established Department of Agriculture was for 1862. It was called, “Reports and Tables of Agricultural Statistics,” and was not signed by the Statistician, Lewis Bollman. Historians of the Department suggest Dodge, who came to the Department in 1862 after having worked with agricultural statistics as a clerk at the Patent Office, submitted that first report. The content and format of the report followed the example set at the U.S. Patent Office. It included information and estimates about crops, yield, prices, and acreage for 1859 and 1862 based on the returns for the United States Census for 1860. The author, Dodge the editor of the Annual Reports of the Department, begins his 42-page report with four short paragraphs to orient the reader, “The census returns for 1860 having been published, it is due to agriculture that at the earliest moment the returns of the principal agricultural products should be republished in the Annual Report of the Department of Agriculture. The reports accompanying the tables have been prepared in the hope that they would serve to give greater interest in the tables. Any inaccuracies which may be found, must be attributed to the yet imperfect manner of collecting statistics, and to want of time and means for verifying them.”

Dodge continues by offering context for the report and its comparisons of agricultural production for the “loyal” and the “disloyal” states:

The agriculture of the United States, either as to its amount or the variety and importance of its productions, is without a parallel. The changes it is undergoing, and the causes producing them, cannot but be deeply interesting to all, but more especially to the manufacturing and commercial interests, the prosperity of which is so completely dependent on the progress of agriculture.

The reader will see that these tables give the agricultural statistics of the loyal and disloyal States separately. The year of the rebellion followed that in which these statistics were taken. This fact, therefore, naturally suggested the utility of exhibiting their absolute and comparative progress, that the world might judge how far this rebellion was justified by any want of prosperity in the south, indicative of grievances that demanded redress.

The object of this article is to show the vastness of American agriculture, the changes it is undergoing, the causes of these changes, and the progress made by the loyal and disloyal sections of the Union in their agricultural industry. That

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393 AR 1862, 546
object will be best accomplished by a brief consideration, separately, of the leading products of our agriculture.\footnote{AR 1862, 546}

Subsections of this first report of the condition of agriculture in the United States as demonstrated by data collected by the U.S. Census include: Animal Stock of the Farm; the Corn Crop; Wheat—its Production and Exportation; Tobacco—its Increase and Foreign Trade; Cotton and Wool; Sorghum Molasses and Sugar (this includes a section on imports of each product between 1856 and 1861); Hay Crop; Destruction of the Soil; Domestic Manufactures (fibers); and the Influence of Railroads upon the Value of Farms; Farming Implements and Machinery. The subsection of the Statistical Division’s report, the influence of manufactures upon agriculture, the agriculture, manufactures and commerce of the United States has additional subsections that include: The relative profit of agricultural labor, the mutual dependence of all states, prosperity of the southern states – the rebellion). The statistical tables for agriculture in the report for 1862 include: 1860 population of loyal states (22 million) and population of disloyal states (9 million), agricultural production of “loyal” and “disloyal” states for 1840, 1850, 1860 both detailed tables and a summary, The Collection of Statistics, principal crops for 1862 with yield per acre, acreage planted, average prices by (loyal) state, total value by state, summary by (loyal) state shows value at 736 million with 51 million acres sown.\footnote{AR 1862, 588}

This first report also includes a special report on agriculture in California. Dodge expresses concern that many were not convinced of the value of agricultural statistics and he notes that California is one of the few states that fully participates in the collection of agricultural statistics for the Department. The state, “exhibits a juster regard for statistical information than any other State.”\footnote{AR 1862, 574} He introduces the section on the agriculture of California with a few short paragraphs in which he discusses the importance of statistical work and, too, popular distrust for it. Dodge offers the example of Scotland, which had a tradition of collecting agricultural statistics. He points to one necessary condition for statistics of agriculture to have authority, that is, that every state contribute to the

\footnote{AR 1862, 546}
\footnote{AR 1862, 588}
\footnote{AR 1862, 574}
agricultural census. He quotes the Duke of Argyle, president of the Highland Agricultural Society of Scotland, on how collecting agricultural statistics for just one part of a country compromised their value, “in England at least, there is a very great prejudice against statistical information; and I believe that there is a sense of the comparative inutility of collecting it in one part of the country when it is not done over the whole country, and the impossibility which every government has hitherto found in insisting upon that information being collected in England, has been one of the causes which have led this society to drop the collection of these statistics. I do not wonder at it. It was a circumstance of very great discouragement, because the value of statistics depends upon their completeness, and if you have not statistics for the whole island, undoubtedly the utility of the statistics you have gathered is very much impaired. Nevertheless, I cannot help expressing the hope that the time is not very far distant when these prejudices to which I have referred, which do not exist in Scotland, will be overcome in England, and that, under the guardianship of the law, a complete system of agricultural statistics will be organized for the whole kingdom.”

This is just one of several references in the Department’s Annual Reports to demonstrate a keen awareness of and engagement with similar work in other countries (especially those in Europe) as well as the lessons the new Department could learn from those colleagues.

Dodge uses the example of California to discuss what he sees as the limitations to a decennial census of agriculture conducted as part of the larger census for the United States. He identifies limitations both in terms of timeliness and the type of information collected. Dodge offers these observations and concern, “A portion of the agricultural statistics of the whole country is taken every ten years by the general government; but it

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397 AR 1862, 574
398 Dodge concludes this section on the agriculture in California with discussion of the unique challenges of agricultural production in that state that turn on issues of land ownership: The great body of California lands not sold are those reserved from sale as mineral lands. The policy of the government is to prevent them from being absorbed by speculators. This is a just policy, for it favors the laboring classes, and the welfare of these should ever be regarded. Whether the laborer is a miner or a farmer is immaterial; he should not be subjected to the capitalist. But as fast as these lands are exhausted of their minerals, they should be surveyed and disposed of to the actual settler. From this rapid consideration of the agriculture of California, it will be seen that the chief danger to it lies in the accumulation of its best farming lands in the hands of a few proprietors under the Mexican grants [that established ranchos intended to be used as pasture]. The power to remove this evil is with the legislature of the State. (AR 1862, 597)
has reference less to the improvement of agriculture than to the assistance of commerce. It is simply an inventory of the leading crops and of the chief items of agricultural investment. It does not aim to unfold our vast internal commerce, by showing the cost of market transportation and in what sections the crops are consumed. The relation of the different parts of agriculture to each other, to manufactures and commerce, is but imperfectly and very generally exhibited. A political consequence of this was the attempted usurpation of cotton. At what expense to the farmer these crops are produced; at what cost to the soil; what are the errors of our agriculture, its difficulties, its hardships, its wrongs—all such matters are neither directly nor indirectly a purpose or an accomplishment of our decennial statistics."

Dodge reports that the Department of Agriculture sent out its own inquiries in an effort to construct more meaningful and timely statistical information about the condition of agriculture in the United States. The inquiries from the Department took the form of surveys sent, “to every county in the loyal States, making inquiries relative to the prices of agricultural products in them and the average yield per acre of the leading crops. He issued others, during the summer and fall months, to make known the monthly condition of the crops, their amounts, &c. The medium, for communicating the knowledge obtained through the latter to the public, was monthly reports, and the following tables will show the statistics obtained in answer to the first circular.” Anticipating a change in the frequency of the agricultural census that came in the first decades of the 20th century, Dodge asks, “Could the several States and the general government be induced to adopt a uniform and thorough system of taking agricultural statistics but once in ten years—the States every fifth year of this period and the general government every tenth year—the basis thus furnished would be sufficient for this Department, through its regular correspondents, to derive correct information of all matters embodied in this system for the remainder of the years of the decade.”

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399 AR 1862, 574
400 AR 1862, 574-575
In his first report as the statistician for the Department of Agriculture for the year 1863 and dated August 1864, Lewis Bollman writes that the approach to the collection of agricultural statistics at the Department is based on a plan offered by Orange Judd, editor and owner at the American Agriculturalist.\textsuperscript{401} Judd’s plan, Bollman notes, while useful also had considerable limitations in an American context, “To Mr. Judd belongs the credit of giving definite shape to a plan for the annual collection of the statistics of the crops, by which their amount could be approximated to sufficiently near for all practical purposes. His plan is virtually the same as the Prussian, and it is the one adopted by this department. The details, however, have been much changed by it, and made applicable to almost every matter belonging to agricultural production.”\textsuperscript{402} Bollman outlines a list of priorities that reveal some of the systems the Division and the Department were developing to ensure accurate and meaningful information was both collected and disseminated:

1. The collection of agricultural statistics showing the condition and amount of the crops at brief intervals, monthly or bi-monthly, as the interests of agriculture demand.
2. The collection and arrangement of such statistical matter as exhibits the commerce, both foreign and domestic, in the leading agricultural products: that, having the tables always at hand, and understanding from them the influence of this commerce on prices, the farmer may intelligently direct his labor to the culture of such crops as the statistics indicate will be most in demand.
3. The collection of information on all subjects connected with the advancement of agriculture. This information is obtained through circulars issued to

\textsuperscript{401} Judd grew up in New England where he graduated from Wesleyan College (CT) in 1847. He was a powerful player in American agriculture in the 19\textsuperscript{th} century. He became the owner of the agricultural newspaper, the American Agriculturist (also referred to as the American Agriculturalist) in 1856. The Wikipedia entry for Judd is surprisingly complete and the citations accurate and useful. The entry also confirms information found in Bollman’s report for 1863 (587) that under Judd’s direction, the newspaper developed a system for collecting agricultural statistics via surveys sent to its subscribers. The paper then published that information. The biographical entry continues, “His success helped make American Agriculturist into one of the leading agricultural journals in the nation, going from a circulation 1,000 in 1856, to over 100,000 in 1864…. [Judd] would stay there [at the paper] until 1881, alongside being the agricultural editor of the New York Times from 1855 to 1863. He became the principal member of the firm Orange Judd and Company, located in Chicago, which focused on publishing agricultural and scientific books….from 1870 to 1873.” It is interesting to note that like Commission Frederick Watts (1871-1877), Judd was president of a regional railroad company in the late 1860s.
https://en.wikipedia.org/wiki/Orange_Judd

\textsuperscript{402} AR 1863, 589
correspondents, in which inquiries are made as to the condition and amount of the various crops, and also of the causes of success or failure.

4. In order to accomplish the foregoing objects it became indispensably necessary to publish a monthly report. This was done during the summer and fall of 1863, after which it was changed to bi-monthly, because returns of the circulars could not be had in time for a monthly.\textsuperscript{403}

Bollman also offers this observation about the perceived audiences for the statistical reports: how it was collected and how it was useful, “Through these reports the condition and amount of the crops have been laid before the country quickly, that the grower of and the trader in agricultural products might base commerce on them by the law of supply and demand; and their influence has everywhere been acknowledged as beneficial to both, and not less so to the consumer. They have been distributed to correspondents, who reply to the circulars, and to their assistants; to agricultural societies; to members of Congress, and to all persons desiring them.”\textsuperscript{404} Bollman’s report shares the general focus and format of the statistical report that preceded it and those that followed. He compares the way the Department of Agriculture collects statistical information on the state of agriculture with similar efforts in England and Prussia.\textsuperscript{405} His reports on estimates of agricultural crops, acres farmed, agricultural prices and the value of crops, and livestock

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\item\textsuperscript{403} AR 1863, 579
\item\textsuperscript{404} AR 1863, 580
\item\textsuperscript{405} Bollman reports that in England, “…this nation, where agriculture has attained such high perfection, no mode of ascertaining its product, established by law, exists. The farmers of England oppose it, whilst those of Scotland favor it. Attempts have been made in Parliament to establish one, but as yet unsuccessfully. Their only result has been to elicit the reasons of this hostility of the English farmers, which, so far as we have seen them, are refuted by experience here.” (AR 1863, 581) Bollman continues his criticism of the English approach, “The plan as seen in these extracts has great objections. After reading all the returns, who can tell their result? They convey an impression that the crops are good, but how much above or below a standard, or a normal, or an average crop, no one can tell. They are too prolix, although as much condensed as the plan will allow. For the forty counties of England they would require thirty-two pages of the size of those of this report. For the United States they would demand a large volume, which would be read by not more than one person in a half million of our population. Nor does this plan institute a comparison with the crop of any preceding year. These objections do not obtain to the plans adopted in the United States or Prussia.” (AR 1863, 584)

His report for Prussia offers this assessment: “This nation has a department of agriculture, presided over by a secretary. In its operations agricultural societies act as an aid to the department. They meet together and make up an annual report of the crops. We have no knowledge of the means adopted by them to collect the information they embody in their report…. Their estimates…are comparative, and the standard of comparison is one hundred, representing an imaginary normal crop. As no census has ever been taken there of the number of bushels produced in any one year, the comparison must always be with this imaginary standard; nor can their returns be reduced to bushels, as there are here, for want of a basis which such census would furnish.” (AR 1863, 584)
\end{itemize}
in the “loyal” states compare numbers for 1862 and 1863. Bollman includes “tables of the exports of the principal agricultural products of these States [loyal states of the U.S.], their prices at New York and in England; the receipts and shipments of them at the two principal centering points – New York and Chicago – and their prices in these cities.”

We see reflected in Bollman’s introductory remarks, the scope of the focus of the Department in terms of what information it deemed especially critical to collect and disseminate to farmers and the other stakeholders for agricultural production in the United States.

The Annual Report for 1864 offers more insight into the extent of professional contact between the Department of Agriculture and governments in Europe. The Annual Report for 1864 includes a special section by Dodge that sits just before the Bollman’s report on the work of the Statistical Division for the year. Dodge’s contribution, “Consular Correspondence,” not only offers evidence of Dodge’s interest in and influence on statistical work at the Department of Agriculture but also demonstrates a global reach and community for the development of agricultural statistics, “A system of correspondence with our consuls abroad, designed to elicit information concerning the character and condition of foreign agriculture, and to procure an exchange of industrial statistics, has been initiated by the Department of Agriculture. . . . [T]he consuls have generally manifested, not only a willingness, but a decided interest, and some-times enthusiasm, in their efforts to render this service as valuable as possible. Much of this matter, though useful and indispensable to the office, is not of a character to spread upon the pages of the annual report.”

The report of the Statistical Division for 1864 strays little from the established format and content but does explicitly address the relevance of the Department’s expansive definition for what counts as agricultural statistics:

Although some of these statistics are financial and commercial, rather than Agricultural, yet they should not be separated, for the present mode of raising the

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406 AR 1863, 579-580
407 AR 1864, 564-565
revenues of the government gives rise to legislation affecting the interests of the farmer, and the statistics showing the operation of laws should not be withheld from him.

The farmer, too, is interested in the foreign trade of the country…it is this foreign trade that relieves the home markets from the surplus production which would weigh down domestic prices, and thereby fixes the standard of home values, it must never be regarded with an anxious interest by every agriculturist. 408

The Annual Report for 1865 includes the first report of the Statistical Division to be publicly acknowledged as the work of Dodge and his first as the Department of Agriculture’s Statistician. In his opening remarks, Dodge cautions his readers and tempers their expectations citing his short time as head of the Division. He also directly contradicts Bollman’s inclusion of financial and commercial statistics noting, “I have not enjoyed the advantage of a supervision of all the data employed in estimates of crops and stock, but have used all of such material that was deemed essential to a condensed summary for the year, and have prepared concise statements of kindred facts originating in other departments of the government, and used such other reliable, though unofficial, material as seemed best adapted to my purpose. I have excluded commercial and financial statistics as subjects not strictly within the province of the statistical division . . . ”409

It is worth noting that this is the first Annual Report to include the Report of the Statistician toward the front of the volume. Given this is Dodge’s first official report as the Statistician for the Department of Agriculture and his role as editor this may not be a coincidence. As with Bollman’s reports, the bulk of the statistical report is made up of tables and charts. The first set of charts show crop estimates for the year, 1865, by state and by individual crop and showing total amount of yield; average yield per acre; number of acres for each crop; value per bushel or pound; total value. Dodge offers a short explanation of each set of charts. There are charts for livestock, tables drawn from the census of the United Kingdom showing cattle; table showing livestock totals in a number of other countries including U.K., Russia, Sweden, Prussia, Holland, Belgium, France,

408 AR 1864, 564-565
409 AR 1865, 54
and Spain. Dodge concludes his first report with a short report, Sheep Killed by Dogs (and the loss to agriculture).  

**The Report of the Statistician, 1867-1870 – Horace Capron, Commissioner**

The introduction to the Report of the Statistician for 1867 is worth quoting at length as it exemplifies Dodge’s rhetorical style and his values:

In my report upon the facts of agriculture for 1866 there appeared, amid much that was prosperous and cheering, a few circumstances that were discouraging and unpropitious. The wheat harvest, for the third consecutive year, had proved deficient; the corn crop had been injured by early frosts, and other farm products were variable in their yield and value; in the south it was as yet uncertain who would work and who would play, and cotton suffered from years of neglected culture, and was worked at too great expense for labor and supplies. There were everywhere too many consumers and too few producers. Young and old, black and white, flocked to the cities, all hoping to obtain large returns from little effort, and the natural result was an increase in prices of meats, bread-stuffs, fruits, and vegetables, which were still more enhanced by speculators, hucksters, and the whole race of middlemen, in their effort to obtain more for selling than farmers were allowed for producing the prime essentials of subsistence.  

Dodge concludes his report for 1867 with a statement alerting the reader to a separate section in the volume on the “condition and prospects of southern agriculture.” In the report for 1867, Dodge reports it was a better year than 1866 and reviews the same set of categories we see in earlier reports: basic crops (corn, wheat, rye, oats, barley, buckwheat, potatoes, tobacco, cotton, and hay), comparisons by year, exports and imports, totals and broken down by state. He also reports on livestock, domestic sugar production, wool and woolens, agricultural exports. He includes a long section on land values by state and concludes it with a summary showing the percentage of increase or decrease since 1860. The states showing increased land value were in the north and west; those showing decreases in land value were the southern states.  

**The Report of the Statistician, 1871-1876 – Frederick Watts, Commissioner**

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410 AR 1865, 73  
411 AR 1867, 77  
412 AR 1867, 128  
413 AR 1867, 119
The report for the Statistical Division of the Department of Agriculture for 1871 is, at 56 pages, the longest section in the Annual Report for that year. The content and format follow the same pattern as previous reports of the division covering crop reports and estimates, land tilled, crop value and prices, livestock, etc. The section on crop estimates offers information about how the division conducted its work, the challenges it faced and the inaccuracies that resulted. Dodge expresses his concern about the increased challenges posed to a national census in a country growing in terms of territory, population, manufacture, and commerce, “In view of the fact that no national census was ever known to agree closely with a State enumeration, and that repeated efforts by the same authority do not reach precisely the same results, it has seemed little less than temerity to attempt to estimate the varying yields of crops from year to year. Infallibly close approximation, in every instance, is, indeed, impracticable. Local statisticians find it difficult to estimate accurately for a single State; with all the States and Territories included, the distances augmented and areas for examination enlarged, the problem becomes far more difficult of solution. Were the fluctuations of production less marked, it would be easier to calculate the effect of change-producing causes. The minor crops are quite too variable for any mode of estimating that does not require at least a partial census. The extent of this fluctuation, even in the principal crops, is not generally appreciated . . . .” He also suggests that the rate of growth in newly admitted states to the Union and the precarious situation of the southern states makes the collection of accurate information for both difficult:

There are other elements of difficulty peculiar to this changing, growing country. New States spring into existence; young States are creating new counties and peopling most densely those already existing, oftentimes with such rapidity that the more observant citizen is unable to calculate with accuracy the rate of growth. The returns of one year, therefore, fail to cover the area or the population represented by those of the next. In States like Kansas or Nebraska, this difficulty is almost insuperable.

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414 Dodge’s role as editor of the annual reports for the Department as a whole is evident in the Table of Contents for 1871. The section of miscellaneous papers in the annual report is preceded by a Report of the Editor, J.R. Dodge.

415 AR 1871, 15-16
In the South, where the changes of five years had almost obliterated important industries, and the memories of reporters in 1866 failed to make accurate comparisons with the census year 1859—where the changes of the labor system and the losses of a fearful civil war gave a gloomy tinge to the most deliberate effort of the judgment—the case was worse. Still, results have been comparatively successful wherever our system has been fully in operation, and especially with regard to the principal products.\textsuperscript{416}

Dodge is careful to express strong confidence in the Statistical Division’s methods and goals, note its limitations, but assert the accuracy of Department agricultural statistics compared to those collected by individual states. He also notes the inconsistency of the returns between the two efforts. The examples he gives of differences in the statistics collected provide evidence of his concern for accuracy, “While our plan has only been in partial operation for the latter half of a decade, its success, wherever our lists of correspondents have been complete, have been sufficient to show its superiority to any undertaken by individuals or associations. It has proved in some instances, in fact, to be more reliable than a state census. In Minnesota, where the returns received (by my predecessor) were, at first, very incomplete, and the estimates widely at fault, the wheat crop of 1869 was placed at 19,000,000 bushels; the United States census made it 18,866,073 bushels; while the State returns (assumed to be authoritative in their accuracy) gave only 17,660,467. In Illinois, without aid, year after year, of State returns or local estimates whatever, except our own, the wheat estimate was 29,200,000 bushels, while the census exhibit was 30,128,405. The crop of corn varied by a small percentage of difference, and the numbers of cattle and horses were almost exactly those of the census. Yet, in minor products, in newer or distant States, and with less complete arrangements, wide discrepancies have sometimes occurred.”\textsuperscript{417}

An interesting final sentence to this section alerts the reader to the report of the Statistical Division on farm animals. The Division’s count includes livestock kept in urban and rural areas, which is different from how the 1860 Census counted farm animals. This is another example of the Department’s more expansive idea of what should be counted as relevant to the agricultural economy of the nation, “The estimates of farm animals, in the

\textsuperscript{416} AR 1871, 15-16
\textsuperscript{417} AR 1871, 16
following tables, are intended to include those kept in cities; the census enumeration includes only animals on farms....” Dodge discusses this distinction later in his report for 1871. In a short paragraph, “Horses and Cattle not on Farms,” he writes, “The census returns of domestic animals include only those on farms. No provision is made for enumeration of horses, cattle, or other animals kept for work, milk, or for fattening, in cities, or those in transitu by rail or otherwise to the feeder or butcher.”

For Dodge the limitations of the U.S. Census as an effective way to collect agricultural statistics is a recurring theme. He includes in his report for 1871 a short discussion of the census of 1870. He reports that the timeliness of the collecting for that year and, especially, the fact that the Statistical Division at the Department of Agriculture received “advanced sheets of the agricultural tables” of the census were important factors that allowed the Division to include more timely information in its report for 1871. Dodge, who later leaves the Department of Agriculture to head the U.S. Census, does not hesitate to point out some of the ways in which the collection of statistical information by the census is inefficient and problematic, “It is no fault of General Walker [head of the U.S. Census] and his assistants that the enumeration was left in charge of officers with duties entirely foreign to this work, to be accomplished by crude methods devised for the first general enumeration undertaken by the Government, and to exclude some of the most essentially important schedules, such as area in the different crops, which is the first point secured in European enumerations, and in some cases has been the only one. The enumeration was taken under the law of 1850, as slightly amended, after the failure of a general bill for taking the census of 1870.”

He is careful not to blame the head of the census, Superintendent General F.A. Walker, and he lets readers know he has the general’s ear, “The Superintendent, in accordance with my earnest solicitation, divided the ‘unimproved’ land, making separate schedules for ‘wood land’ and ‘other unimproved,’ by which, for the first time, can be shown

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418 AR 1871, 16
419 AR 1871, 54
420 AR 1871, 45
421 AR 1871, 45
approximately the extent of area in forest.” Dodge concludes the report for 1871 by noting the information included for that year is incomplete, “The publication of this volume is made this year too early to include the usual record of agricultural exports of the fiscal year. Much other matter has been deferred, either from lack of space or incompleteness of data; and a portion of the statistical work of the year will be found in the report of the editor.”

Dodge is a strong and vocal advocate for the work of the Statistical Division and agricultural statistics throughout his years as Statistician at the Department of Agriculture. His advocacy takes various forms in different venues including the agricultural and mainstream press, meetings and conventions, and the pages of his reports as Statistician. His introduction to the report for 1876 is one example:

The advance of the world in industrial invention and social science has demanded increased activity in statistical investigation, and greater accuracy and breadth in statistical statement. The progress of nations in beneficent legislation and good government has been found dependent upon the work of the statistician. The profit of the tradesman and the thrift of the farmer are greatly affected by the accuracy of the information upon which the business operations of each are based.

The intelligent farmer is beginning to learn that misrepresentation of crop prospects, in the interest of higher prices, meets with but temporary and partial success, followed by revulsion and disaster.

He continues,

It is conceded that the Government has an interest and a stake in the enlightenment of laborers, agricultural and mechanical, the makers of the wealth and conservers of the prosperity of the country, for their guidance in production in kind and quantity required and for their protection against the pirates of trade. The revenues of the Government, as at present secured, depend upon the ability of the masses to consume the products of native and foreign industry; and the prosperity of the nation is involved in the welfare of the industrial classes. Even monarchical governments see the necessity of aiding industry by technical, agricultural, and industrial education; by commissions for scientific and statistical investigation; in brief, by doing for the producers collectively what they have no means or

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422 AR 1871, 45
423 AR 1871, 68
sufficient inducement for doing individually, or even by organized association. Millions annually are spent for such purposes by France, Austria, Italy, and other European governments. Reports of investigation bearing on the interests of labor are multiplied annually, greatly to the advancement of industry and human happiness.

Dodge challenges the U.S. Congress to support efforts to collect and publish “international crop reports…and the prompt exchange of current statistics” by the participants of the International Statistical Congress and argues that the U.S. Department of Agriculture should be leading that work.\textsuperscript{424}

Dodge also uses the section of his 1876 on crop estimates to further convince the U.S. Congress of the critical nature of the work of the Statistical Division at the Department of Agriculture. He argues that the investment in terms of the appropriation of funds is greatly exceeded by the use and usefulness of the information provided by the Division to farmers especially as compared to the cost and limitations of the decennial census, “The national census, costing millions once in ten years, is more a series of minor estimates than an actual enumeration, so far as crops are concerned.” Dodge asserts the value of estimates and in his effort to persuade Congress to offer more support he gives readers some details about how the Division does its work, the state of that practice, and the labor it involves:

What are our facilities for such work? Meager enough in some respects, costing a mere trifle in money, but involving gratuitous work of thousands of earnest men. We have a board of statisticians in each county, trained for the work of comparison with former areas in specific crops, with the normal condition of the plant of each from month to month, and ultimately with the result in quantities produced. These returns are scanned, and any obvious error corrected before recording. The records are made by the counties as reported, summed up and averaged, and such averages corrected by a duplicate record, in which the differences in productive value of the counties is considered. The corrected result stands as an average, not inevitably of the whole State, but of such portion, half or two-thirds, or whatever area is reported of the entire State.

Now, these men are fallible and may err in judgment. If their exact figures are taken, and made to cover unreported areas as well, and their errors are annually

\textsuperscript{424} AR 1876, 87-88
 piled on errors, the cumulative inaccuracy might become something utterly, if not monstrously, unreliable. What is done next? Here is where all routine arithmetic, all ordinary clerical effort, is found unavailing and worthless. There are now tests to be applied by which errors are eliminated; first, by comparison of results of separate returns made at different times, as changes in acreage tested by returns of quantity produced, rate of yield per acre, etc. When discrepancies are found, they must be reconciled by an investigation of the local circumstances affecting the result, the history of the season in the monthly returns of condition, returns of prices as a valuable indication of increased or decreased supply, the various existing causes of local changes in cropping, and outside data from State or other reports.425


The Report of the Statistical Division for 1877 begins with no introduction and instead launches right into “Crop Estimates of 1877.”426 Dodge offers crop estimates data for corn, wheat, oats, barley, rye, buckwheat, potatoes, cotton, and hay for the entire decade 1870-1877.427 Later in the report are the state-by-state tables of crop estimates for the same crops, save cotton. As with earlier years, the reports for the Statistical Division include state-by-state information on livestock. In the report for 1877 Dodge includes a section dedicated to information on rice production, and a long section on flax and flax products. Dodge references his report on agricultural exports in the Annual Report for 1862 and reports that sort of information continued to be collected after 1862: “In the Report of Agriculture for 1862 a compilation from the official reports was made by the undersigned of the distinctively agricultural exports of thirty-seven years. A similar compilation and analysis has been continued since, until the record extends to fifty-two years.” Exports, Dodge reports, “are divided into five classes: Animals and their products, breadstuffs, cotton (including its manufactures), wood, and miscellaneous products. necessarily the extension of raw materials, as manufactured meat-products, lumber, vegetable oils, must be considered, and the direct manufacture of a single and uncombined product of the farm, to render it available for exportation, was deemed for this purpose an agricultural product.”428

425 AR 1876, 89-90
426 AR 1877, 149
427 AR 1877, 149-156
428 AR 1877, 184
The Statistical Division report for the year 1877, as in earlier reports, consists of topical sections with tables and charts that are introduced with a short narrative. Some examples of information included in the report for 1877, “Market prices of Farm Products” by month;\(^{429}\) “Livestock Markets” “receipts and shipments” for New York, Boston, Baltimore, Cincinnati, and Chicago;\(^ {430}\) “pork-packing” by season – summer and winter packing, by year, by U.S. city and, oddly, “Canada.” Dodge, as editor of the Annual Reports, is still including in the Annual Report of the Department of Agriculture a section, “Miscellaneous Papers” that follow the Statistical Division report. These articles total more than 350 pages and account for more than half of the content. The last paper for 1877 is titled, “European agricultural statistics.”\(^ {431}\) It includes details on how that work is conducted in Britain, “The statistical returns of Great Britain are made annually by the officers of the inland revenue department, and tabulated and published in the statistical department of the Board of Trade under the direction of the superintendent and statistician, B. Giffen, esq. The annual returns are now made on the 4th of June instead of the 24th, and are presented to the public about the 21st of August. The main features of these returns are the areas in crops and the numbers of farm animals. The number of “holdings” or farms is given, and in recent years inquiry has been made concerning allotments, or small holdings of laborers— from one to five acres, and also those of less than one.”\(^ {432}\)

Information on agricultural production in Germany is broken down into regions for 1867-1877 and shows, Dodge reports, affinity with methods used by his Division: “The official crop returns of Germany are substantially upon the same basis as those made to the Department of Agriculture in this country, especially the reports of condition of growing crops. The returns of harvested crops, instead of comparing with the preceding, the percentage of a fall or normal crop is given, not an average crop, as in ten years there are few crops coming up to 100, which is the normal or unimpaired crop.”\(^ {433}\)
In his first report as Statistician for the Department of Agriculture in 1878, Charles Worthington echoes some of the concerns expressed by Dodge in the Annual Reports he authored. These include insufficient support from the U.S. Congress, issues with the timeliness of information in the decennial census, and the difference in results between the returns of statistical information collected for a state census compared to that of the U.S. Census:

The importance of statistical information of agriculture is conceded by all who have given thought to the subject, and has attracted the attention of scholars since the remotest ages, still the difficulty of finding persons who are capable and willing to furnish reliable estimates, the limited amount of appropriation, the lapse of years from one census to another, and the apathy of so many of the States in regard to their own statistics, all tend to make the most careful estimates at times inaccurate.

In fact, the national census never agrees with the State returns. Discrepancies and differences always appear.\(^{434}\)

The form and focus of this report by Worthington are essentially the same as the reports of both Bollman and Dodge. We see his voice in a short section that precedes the charts and tables on the condition of farm animals in the United States as well as an assertion by example of the importance and relevance of information from the Department:

In many of the States, in pastures usually covered with snow, grazing was uninterrupted throughout the winter; and even from the more northern States few reports were received of disaster to cattle from the severe cold and violent storms so prevalent in those high latitudes.

As a further result of the open winter, lung disease, epizootic, and similar disorders, were almost unheard of; and what is more important the gestation of all animals was more general and the offspring better developed. From this one fact the farmers and stock raisers of the country may learn, if they do not already know, that they will always find their account in keeping their breeding animals in a thriving, healthy condition, not overfat, but pinched at no time by hunger, nor left to shake unsheltered in the blasts of winter and the no less chilling winds and rain of early spring.\(^{435}\)

\(^{434}\) AR 1878, 257
\(^{435}\) AR 1878, 271
Worthington begins his discussion of sugar production by reviewing the changes in the United States. He notes that in 1860 the United States raised “more than one-half of the sugar it consumed.” In 1878 sugar production had fallen considerably and consumption increased so that less than 15% of sugar consumed in this country was raised here. In his discussion of sugar production in Louisiana, Worthington points to the danger posed by flooding should the levees on the Mississippi fail. Another example of an awareness by the Department of the ways infrastructure affects agricultural production.436

In his report on the production of hops for 1878, Worthington writes that the Statistical Division solicited, via circular distributed by its correspondents, information from hop producers outside of the state with the most consistent and highest hop production, Wisconsin, “The department instituted an inquiry in regard to the crop of 1878 by sending circulars to correspondents in the leading hop-producing counties of the Union. The result showed a reduced acreage for 1878, with the assured prospect of a still heavier reduction for 1879. The following extracts of correspondence will show the local aspects of this industry….“437 He reports that results indicated a fall in hop production and Worthington notes that at the same time overseas demand waned. Citing a source for agricultural estimates in England, Worthington notes that hop production there was experiencing similar problems.438

Worthington reports on the exports of the products of U.S. agriculture by amount and by country purchasing them. The products of live animal exports listed included: cattle, hogs, horses, mules, and sheep; “dead animal matter” included: bacon and hams, lard, pork, lard-oil. There are separate itemized tables for exports of beef products which, Worthington reports, “constitutes over 30 per cent of our last annual export of animal matter.” These include: fresh beef, salt beef, butter, cheese, condensed milk, tallow, glue, hides, neat’s-foot oil, candles, and varieties of leather.439

436 AR 1878, 275
437 AR 1878, 277
438 AR 1878, 279
439 AR 1878, 292-293
The final section in his report focused on agricultural statistics for the year in the United Kingdom and France and compares crop estimates, livestock, yield per acre with that of the United States. In every crop estimate category the United States far exceeds the UK except for the production of barley. The total yield for potatoes in the two nations is quite close. This difference is even more pronounced with livestock where the numbers for the United States are significantly higher in all categories except sheep.

Worthington concludes his first report as Statistician at the Department of Agriculture by noting increased demand from all constituencies including the U.S. Congress for statistical information from the Department and locates that demand in a desire for progress in production, “It is the province of agricultural statistics to measure the extent of our resources; to contrast the actual with the possible in our production: to estimate the effect of overproduction in the diminution of prices and to mark the progress of science in its application to the business of the cultivator and aid the ruralist in keeping pace with such progress.” He is also careful to note that the small staff size of the Division makes the fulfillment of the Division’s responsibilities challenging, “The clerical force employed in this division consists of the statistician, one assistant, and five clerks, engaged in tabulating and computing the returns, a force totally inadequate to a proper and thorough investigation of many matters of great and increasing interest.”

The report for the Statistical Division of the Department of Agriculture for 1879 opens with news about changes in the decennial census that will affect the Division and draws attention to the number of volunteer correspondents working for the Division – now at 4000:

In the estimates submitted great care has been given to the compilation from the returns made by some four thousand correspondents; they comprise representatives in two-thirds the counties of the whole country, and while it is not claimed that they are exact as to the whole, it is claimed that they are for the proportion they represent, and experience yearly shows that the portions not

440 Worthington reports that the numbers for the French wheat estimates were taken from “L’Economiste Francais.”
441 AR 1878, 317-320
442 AR 1878, 20
represented hold about the same conditions of increase or decrease as those reported.

The area sown or planted in the different crops of this country has never been taken by any previous census, but I am happy to state that the omission of former investigations is to be remedied in the census to be taken in 1880, and arrangements have been made for a full and complete enumeration of the acres planted in each principal crop. With this additional light on the subject there is assured in the future a more complete and accurate estimate than was possible in the past.  

This report generally follows the same pattern and plan as those before it. One sees mention of new types of crops including peanuts and cranberries but the overall format and focus does not stray from earlier reports of the Division. In the section of his report on land values, Worthington notes the Department’s interest in assessing the awareness among immigrants of the availability of land from the government. He concludes that, given the limitations of the recordkeeping by the General Land Office in Washington, the agents of the Department would not identify that information via circular or survey.  

Again, his report on the exports of the United States gives a sense of the reach of agricultural products and crops and, according to his report remained steady, “The export to the United Kingdom about maintains its former proportion; that of France, Germany, Holland, and Belgium has increased, while the rest of Europe declines. British North America has slightly increased its ratio, while all other countries of the world have fallen off. The United Kingdom takes nearly all our hops and oil-cake, and all our cotton-seed. France takes nearly half our export of alcoholic spirits, using it largely to qualify her wines. Germany takes the largest proportion of our leaf-tobacco and starch. Most of our ginseng is sent to Hong-Kong where it is sold to the Chinese in the interior. There is a decline in this export, as the stock of this raw material in the country is running short.”  

The section of the Annual Report of the Department of Agriculture on European agricultural statistics for 1879 includes a report on Australian agricultural production. The tables for the section show agricultural statistics for an increased number of countries

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443 AR 1879, 127
444 AR 1879, 148
445 AR 1879, 167
including Russia, Germany, Romania, Egypt, Canada, Spain, Austria. Even Worthington’s report on sugar production titled, “Sugar crop of the world” suggests an increased awareness and a more diverse market. He reports that the world’s sugar supply is estimated to be nearly 5 million tons but he is careful to acknowledge the countries “inaccessible to investigation” including China, Japan, Spain, Mexico, and “British India.” The number of countries he does cover is impressive and includes most of the countries of the Caribbean, Brazil, Peru, “Java,” Australia, the Sandwich Islands, and “Manila.” He reports the sugar production totals for the “world” in 1878-1879 at more than 1.5 million tons of beet sugar and more than 4.5 million tons of cane sugar. The state of Louisiana, he adds, produced 100,000 tons of cane sugar of the US total of 110,000 tons.446

Worthington concludes his report for 1879 by returning to the question of the value of agricultural statistics collected and distributed by the Department of Agriculture and the diverse set of users of that information, “In conclusion I would remark that in addition to the monthly report on the condition of crops made by this division there have been many investigations and compilations made for members of Congress, agricultural societies, and boards of trade, which, although of a public character and value, are not published, for want of space, in this report.” 447

The Report of the Statistician, 1881-1884 – George B. Loring, Commissioner

With the appointment of George B. Loring as Commissioner in 1881, Dodge returns to the Department of Agriculture and his post as the Statistician. He holds the position of head of the Statistical Division through the period of my study (1888) until 1893 when he finally retires from the Department of Agriculture. The reports follow the same patterns in terms of content and form and Dodge also continues to provide readers with information about how the work of the Statistical Division is conducted.

446 AR 1879, 184-185
447 AR 1879, 185
In his introductory remarks for the report for 1881, Dodge again challenges the U.S. Congress to increase support for agricultural statistics work. He informs them of progress in crop reporting in Germany.\(^{448}\) In the section of his report on the wheat crop for 1881, Dodge again helps his reader understand how the work of the Statistical Division is conducted and he interprets and summarizes the information in the charts and tables:

The average weight of the crop is slightly increased, scoring the highest point for several years, 58.5 pounds per measured Winchester bushel. The record for the crop of 1886 was 58.4; for 1885 it was 57 pounds; for 1884 it was 58.3 pounds; and for 1883 it was 56.9 pounds. This makes an equivalent of 445,047,538 bushels of 60 pounds each.

In fixing the averages for States, estimates have been received from three sources: (1) from county correspondents, (2) from State agents, (3) from millers. In most cases there was a reasonable agreement. Where discrepancies occurred, they were harmonized in accordance with the history of crop conditions affecting quality. The millers have the best opportunity to test weights, and if they know how their takings compare with the body of wheat of all grades, their judgment is entitled to preference; they do not always agree, however, in their estimates.\(^{449}\)

The reports from correspondents in the field as well as information from state and local agencies are referred to with some frequency by Dodge. In his report on flax seed for 1887 Dodge notes a change in where flax seed producers, in what is now the American Midwest, take their seed to be processed. Previously, flax seed harvested in the Midwest was largely processed at mills in Ohio, Indiana, and Illinois. Dodge offers the following as an explanation, “Chicago, Saint Louis, and Milwaukee are the great flaxseed markets and our correspondents generally speak of their products as going directly or indirectly to these great marts. There are scattered through the producing region numbers of local oil-mills, which take a portion of the crop without the expense of long shipments, but the bulk of the crop finally reaches some of the great central markets. In Ohio, Indiana, and Illinois mills which formerly consumed a considerable portion of the local grown seed have been compelled to go out of the business on account of the refusal of farmers to grow it for them, and for others yet running it is only grown by cultivators to whom the

\(^{448}\) AR 1881, 577
\(^{449}\) AR 1867, 543
mill-men lend the seed for sowing, the planters taking too little interest to preserve their own seed.” 450

In the conclusion to his report for the Statistical Division at the Department of Agriculture for 1883 Dodge writes that the number of volunteer correspondents working on gathering information for crop reports is “about eight thousand…reporting from more than two thousand counties.” Dodge also provides information about who these agents are, “A parallel and supplementary work is carried on through statistical agents representing each State and Territory. These agents are executive officers of State official systems of crop reporting in the States where such work is organized, thus combining the State and National organizations, and unifying and perfecting the work.” 451 Dodge continues to draw the attention of his readers and especially the U.S. Congress to the state of agricultural statistics work in Europe and notes the placement of an agent of the U.S. Department of Agriculture in London to monitor crop reporting.

The Report of the Statistician, 1885-1889 – Norman J. Colman, Commissioner
The reports for the period of Norman Colman’s term as Commissioner of the Department of Agriculture closely follow patterns established in the earlier reports. I turn to the final report for the period of my study as both an example of some changes that emerge in terms of the degree of detail and an expanded focus for more refined information in terms of the agricultural production of other countries. In his report for 1888, Dodge begins by noting it is his twentieth year as the Department’s statistician. He reports that demand for and use of the output of the Division have both increased and are clearly valued, “The year has been one of great activity. The usual range of effort in domestic and foreign statistics has been traversed. The records of foreign official and other investigation have been materially enlarged during the year, and facilities for international comparisons have been much increased. The long-continued fiscal discussion during the last session of Congress made heavy demands upon this branch of the service. The legislator of the

450 AR 1887, 549
451 AR 1882, 423
present day relies much upon the aid of statistics in the prosecution of his work, and has available a treasury of facts not attainable by the statesmen of the former generation."\textsuperscript{452}

In his report for 1888, Dodge comments at length on the system of crop reporting work at the Division defending the work and the workers, and offering some details about how it is done:

The crop-reporting branch of the service, which includes a corps of county correspondents and their assistants, State agents and their assistants, and a foreign agent connected with our consular system, has somewhat extended its territory and enlarged its work. The county correspondents now number 2,331, their assistants are fully three times as many, and the State agencies have a large list of correspondents. Altogether over twelve thousand persons are connected with the work of statistical investigation. The State agencies are relied upon for duplication of the principal work of the county correspondents, for comparison and verification, and neither result is authoritative as against the other, but any discrepancies are adjusted with reference to consistency and probability. The State system, though useful and necessary, especially for local and special investigation, has as many separate heads as there are States, possessing different degrees of efficiency and value in experience, and therefore lacks unity and equality in accuracy. The Statistician consequently finds the regular corps of reporters an invaluable resource as a balance-wheel. It is found that the agents of greatest skill and experience agree more closely with our direct returns than do those of less experience. Even if there were but one system of returns, that of State agents and their correspondents, their work would be so various in mode and result as to be unequal and chaotic, without the direction, revision, and control of one central head. There may be forty local assistants, but not forty independent statisticians. \textsuperscript{453}

Dodge ends his introductory remarks by engaging the issue of whether correspondents of the Statistical Division should be paid. He argues they should not because they could not be paid well-enough for the work they do and lower pay would attract less competent workers. His argument prefigures the idea of extension agents as agricultural educators and representatives of the Department of Agriculture in the field. He also argues for an approach to hiring correspondents that gives priority to their knowledge and their commitment by linking the work they do to an idea of the service for the public good.

\textsuperscript{452} AR 1888, 405  
\textsuperscript{453} AR 1888, 405
“Shall correspondents be paid? The idea has been frequently suggested, and the work is of sufficient importance to warrant a generous outlay. The unpaid service, for utility and practical value, possibly outranks other lines of expenditure which have amounted to many millions in recent years . . . . It is certain that there would be a scramble for the hundred dollars, under this plan, and almost equally certain that a most incompetent and self-seeking individual would secure influential indorsement, and render the responsibility of appointment a difficult and thankless burden, and the result in many instances, however careful and honest the effort, an inferior and unprofitable selection, The present plan is to obtain the services of the most observant farmer of the best judgment, of greatest promptness, who is willing to serve in a great corps of agricultural educators for the public good, and the especial illumination of the district which he represents. The best is none too good, and whatever the politics, religion, age, sex, or condition of one clearly entitled to this distinction, that person is the one, and the only one, that is wanted for county correspondent.” 

The experience and knowledge necessary to be a good correspondent for the Division is a theme that is repeated in a number of Dodge’s reports.

The information in the report of the statistician for the Department of Agriculture for 1888 follows, in terms of format and basic content, that of earlier reports. However, we do see in this report more detailed attention to agricultural production in other countries. One example is the dedicated section on agricultural production of Japan which, Dodge reports comes from, “Publications of the Bureau of Statistics of Japan, prepared under the direction of S. Ishibashi, are acknowledged. A statistical annual is published and a condensation is issued in Japanese and French for foreign circulation. This nation exhibits remarkable enterprise in statistics, setting an example to some of the European States that are scarcely as progressive in this direction.” Some of the other examples of international agricultural statistical reports that appear as dedicated sections in the report of the Statistical Division of the Department of Agriculture include agricultural production in Egypt, another on Australia and surrounding countries. Dodge reports that

454 AR 1888, 406
455 AR 1888, 454
the information used for both Egypt and Australia was taken from “official reports.” In the case of Egypt we learn the source is a “French summary.” Where previous information for India or France would be included in a chart with other producing nations, we see in this report separate sections, for example, The Distribution of Land in France drawn from the French agricultural census for 1840, 1852, and 1862 and 1882, and the Wheat Crop of India where the numbers are only identified as coming from “the official statement of area and product.”

Conclusion
The reports of the Statistical Division during the Commissionership at the Department of Agriculture, 1862-1888, are on average, the longest in the Annual Reports of the Department. The bulk of the information they offer is conveyed in charts, tables, and graphs with each carefully interpreted for the reader. But the information about how the work was done, who did it, and why it was significant is found in the textual aspects of the reports of the Statistical Division. Like the reports of the commissioners in their narrative reports, the Statistician used those opportunities to introduce a table or chart to call attention to the condition of agricultural statistical work at the Department and internationally. Dodge, in particular, made a point of drawing the attention of the U.S. Congress to the successes and the missed opportunities due to insufficient funding. He provided readers examples that illustrated both in ways that he clearly thought would garner greater support for the work. His examples were often the condition of agriculture in other countries as seen in the agricultural statistics of that country.

The basic methods used for collecting agricultural statistics – historical data like the census and surveys that looked at types of crops, yields, soil and climate conditions, prices – were not new techniques nor new categories. Farmers took note of that kind of information and exchanged it informally; the agricultural press in the 18th and early 19th centuries did the same but with the addition of making it available to a bigger community by publishing it. Institutions and agricultural societies were attentive to the need for that

456 AR 1888, 459-460 and 464-469
457 AR 1888, 469-471
458 AR 1888, 472
same type of information. The agricultural statistics work conducted at the U.S. Patent Office followed in the same manner and with the same focus. The newly established Department of Agriculture was aware of these traditions and examples and, in particular, expanded on the model for statistical work done in the U.S. Patent Office. Guiding those efforts was recognition by the Statistician that agricultural statistics were useful to agricultural production and the economy of the nation only if they were both accurate and timely. It is clear from the Reports of the Statistical Division that the Department of Agriculture was keenly aware of similar efforts by private and government agencies both domestically and overseas. It is also clear that Dodge, Bollman, and Worthington recognized the value of the information in crop reports of other countries. Dodge in his role as Statistician was an advocate for common standards in agricultural statistics internationally and he felt strongly that the Department of Agriculture should be the leader in efforts to realize that goal.

One sees in these reports of the statisticians a genuine interest in gathering and sharing information that would be valuable to farmers – agricultural producers. Having a sense of market value, current prices, and the amount of grain, for example, on the market helped farmers make informed decisions about production, harvest, and transporting to market. Accurate and timely information could help protect them from speculators both in the domestic market and an emerging global market. We see in these reports evidence the Department of Agriculture worked deliberately and self-consciously to establish its position as the authoritative provider of agricultural statistics/information not just in the United States but internationally.
CHAPTER 7: CONCLUSION

Introduction

This dissertation examined the Annual Reports of the Department of Agriculture from its founding in 1862 through 1888, the year before it achieved status as an executive agency with a seat on the President’s Cabinet. I focused my research on questions that sought to identify and understand the agricultural information work done at the Department as mandated by the U.S. Congress in the Organic Act of 1862 that established the Department. These government documents, the Annual Reports, are unique resources for historical study about the work of a newly formed federal agency, the Department of Agriculture. My close and critical reading of them demonstrates not only the centrality of agricultural information to the economy of the United States in the second half of the 19th century, but also that agricultural information generated and circulated by the Department of Agriculture was a key and powerful way the federal government asserted its authority and the idea of a nation and modern state during an especially turbulent and formative period in the history of this country.

As I discussed in this dissertation, I first turned to the National Archives and Records Administration and the National Agricultural Library’s Special Collections but the absence of an administrative record for the work of the Department during this period forced me to rethink my sources and methods. I decided to use the Annual Reports of the Department as my primary sources. The Annual Reports were mandated by the Department’s funder, the U.S. Congress, as the formal and official documentation of the work done at the Department. They were also circulated broadly to the public (particularly farmers and other agriculturalists). They are different from more traditional archival resources like agency memos, work orders, logs, and informal and official correspondence in significant ways, not the least of which is that they come with a narrative. Instead of being simply reports or records of the Department’s activities, their purpose – to communicate the work of the Department to multiple constituencies – suggested they would be a rich and useful primary source. It was no surprise that they proved to be less straightforward than the administrative records one associates with
archival material related to government work. As texts, they presented a political and self-interested rhetoric to wade through written in language filled with historical and religious allusions.

I began this research with conflicting expectations. The language of the Organic Act of 1862 that established the Department of Agriculture, as well as the little I had seen of the reports themselves, suggested that the information work at the Department was driven by a sense of a common purpose: striving to improve agricultural methods and tools to secure a strong agricultural economy and thus, a healthy and strong nation. There were also glimmers of evidence that the research output of the Department – its publications including the Annual Report, seeds, plants, illustrations – was offered as a public good to the nation and particularly to agricultural producers. That valuing of the people was also evident in the ways the Department engaged farmers and other agricultural stakeholders in the collection of agricultural information.

I expected to find in the Annual Reports the voices of a privileged class of people. The commissioners, the gardener, and the statisticians were well-educated and they came to the Department with backgrounds as political leaders and advocates especially in local agricultural societies. They were focused on agriculture as a national issue and thus interested in developing methods and tools that would increase agricultural production. I expected to see in the reports of the commissioners and the heads of the Department’s divisions distinct self-interest as well as distrust and disdain for farmers as a class of workers; I thought I would find evidence of an agency directed by people who felt their responsibility was to instruct an ignorant agrarian class that was tied to old methods, resistant to change, and working for its own sustenance and survival with little regard for the nation and a growing national market. I expected I would see evidence that the Department of Agriculture and the U.S. Congress saw the role of the federal government as responsible for directing the work of agriculture by asserting its authority in the daily lives of farmers without acknowledging the practical knowledge of a class of people who made up nine-tenths of the working population of the country.
While there was evidence of some of these tendencies and interests in the Annual Reports for the period from 1862 through 1888, the Department drew on a long tradition of communication and circulation of agricultural information found in the agricultural press, horticultural science (domestically and internationally), and agricultural societies and fairs. We see the tools and systems of information developed by the Department emerging from those models reworked to put the Department at the center but with the farmer as a valued partner. We also see how the Department of Agriculture refined and adjusted those models and methods in ways that allowed it to assert its own authority via the accuracy and timeliness of the information it distributed to farmers and other stakeholders domestically and to agriculturalists and the governments of a number of other countries.

I developed a set of research questions in order to focus on the Annual Reports themselves. I realized, too, that I needed to understand not only the mandate for the Department of Agriculture from U.S. Congress but also the Department itself and how it understood that mandate and executed its work. I was not always able to find in the texts of the Annual Reports sufficient evidence or discussion to answer those questions to my satisfaction. I revisit my original research questions below and discuss the information the Annual Reports provided and where the Reports proved to be a limited information resource.

**Research Questions Revisited**

1. What were the systems of information developed at the Department of Agriculture between 1862 and 1889?

Information work at the Department of Agriculture was at the very core of the mandate from the United States Congress when it established the agency in 1862. It advised the new agency to “acquire and diffuse” agricultural information that included research based in chemistry, entomology, statistics, and propagation of seeds and plants. The Act also required the new Department to actively “procure, propagate, and distribute” seeds and plants, themselves agricultural information. The areas of information work at the
Department quickly expanded to include, for example, botany, forestry, animal diseases and husbandry, ornithology, and pomology.

The Annual Reports offer clear evidence that the systems of information developed at the Department drew on traditional methods of information sharing and experimentation used by farmers and other agriculturalists including seed and product sharing, discussion about trends in the weather, soil health and ways to maintain its vitality, and market prices for crops. That traditional network included farmers, the agricultural press, various organized societies, and county and state fairs. The Annual Reports of the Department of Agriculture from 1862 through 1888 offer evidence of a federal agency using those same methods and resources in ways that expand the scope of the information network to include, in their own words, “every county” in the country but also the governments and research universities of a number of other countries. What is especially important about how those systems of information collection and distribution evolved and functioned is the consistent and concerted effort by the Department of Agriculture to place itself, as an agency of the federal government of the United States, at the center of the work in a practical sense but also in terms of its role as the authority for agricultural information in the second part of the 19th century. We see in the information work of the Department of Agriculture a particularly strong example of the ways information and systems of information are firmly rooted in social, political, and economic interests.

2. **Looking specifically at the report of the commissioner of the Department of Agriculture that opened each Annual Report, I investigate the following questions:** How did the Department of Agriculture from 1862 through 1888 understand its mission and contribution to scientific work supported by the federal government? What did the Department of Agriculture view as its essential mission in its early years? How did this change over time?

As discussed in Chapter 4 of this dissertation, each commissioner presents his annual report to the U.S. Congress with reference to the mandate outlined in the Organic Act that established the Department in 1862. One sees a consistency of mission across the 27 years of leadership at the Department of Agriculture from 1862 through 1888. From the
outset one sees in the reports of the commissioners a clear expression of the importance of the information work of the Department of Agriculture. That importance is framed in historical and religious references that see strong agricultural production as a critical foundation to any nation’s health and economy.

The extent of that work as seen in the reports of the commissioners was from the beginning more than just a domestic enterprise. The people who worked at the Department of Agriculture drew on their professional networks of colleagues and associates both domestically and internationally and clearly saw the economy of the United States as intricately tied to the ability for the nation’s agricultural producers to create a supply that would satisfy not just the nation but produce strategic crops for export in a world market.

The Reports for this period demonstrate both a criticism of and appreciation for farmers by the commissioners. The Department’s approach portrayed farmers as incapable of understanding the wider implications of their work and the products of agriculture, as a class of workers tied to old ways that could not meet the needs of a growing nation. The reports convey a strong belief on the part of each commissioner that the federal government and the Department of Agriculture in particular were the obvious source for accurate and authoritative information about best methods, tools, seeds, and plants. Though that information offered by the Department to farmers and other stakeholders in agricultural work was essentially practical it was presented as more accurate and useful because it was the product of more rigorous experimentation and analysis. We see in the Reports of the Commissioners a growing awareness of the necessity for local and regional agricultural research. The Department cultivated partners including educators and researchers at the land grant colleges and later the state and regional agricultural experiment stations but, as it did with farmers, the Department continued to understand and assert its role as the obvious and critical center for managing and distributing that information.

Change at the Department seemed to evolve and grow almost organically from its early practices and its original mandate. One example from the work of the Statistical Division
is the very early realization that reports written and distributed annually would not meet
the need for timely and accurate agricultural statistics. In addition to the production of
monthly statistical reports, we see in these reports evidence of a regular and significant
body of supplemental reports by that Division. The lists of supplemental publications by
the Department when included in the report of the commissioner were overwhelmingly
associated with the Statistical Division. Changes over time in the distribution of seeds
and plants were also deliberate and made with reference to the Organic Act mandate to
identify, acquire, and distribute new and rare seeds and plants. One sees in the reports of
the commissioners in the 1870s and 1880s increased frustration with members of
Congress who expected the Department to be their source of common flower and
vegetable seeds that they could use as political capital with their constituents.

A consistent and growing concern expressed by each commissioner during this period
was directed at the U.S. Congress. Funding from that body was never considered to be
sufficient and the reports offer evidence of the inadequate infrastructure in terms of
buildings, land, and money for the collection, analysis, and distribution of information it
deemed as essential to progress in agriculture. That struggle with Congress was not just
about the allocation of resources to the Department but also about the authority and role
of the Department in the federal government.

3. The reports of the gardener and the statistician will be the frame for my approach to
these questions: How was research of the Department of Agriculture prioritized and
conducted? Who and what guided those decisions? How was the resulting information
and new knowledge disseminated? To whom did it circulate?
One sees in the Annual Reports of both the gardener and the statisticians a strong
commitment to meeting the mandate for the new agency as stipulated by the U.S.
Congress. As reflected in his Reports, the gardener focused his efforts on identifying and
documenting native plants as well as new and rare plants that could be of economic
interest to the United States. Those specimens were, for the most part, received by the
Department of Agriculture from others – professional associates and diplomats – and not
the result of field work by members of the Department. The Department continued the
practice of receiving plants and seeds as well as narrative accounts of agricultural practice in other countries from diplomats and other travelers with formal and informal ties to the government of the United States. There were several long-standing sources of seeds and plants including the consular corps, the U.S. Navy, and government-funded research expeditions in North America and abroad. To what extent was the acquisition of new seeds and plants planned? The sections of the Annual Report of the Department of Agriculture that I examined for this research offer little evidence to address this question with any authority. We do learn that common flower and vegetable seeds were purchased from private seed companies for distribution by the Department and by members of the U.S. Congress. We also see in the distribution charts for seeds patterns that suggest certain types of crop seeds were targeted for distribution and experimentation in regions of the country where that crop was needed or traditionally grown (for example, grass seeds to the states with open range livestock). We also see evidence new seeds and plants sent to regions and climates where they were most likely to grow or had a history of growing (for example, new types of tobacco seed distributed to farmers in the Carolinas).

The Reports of the Statistical Division offer greater insight into how relevant information was identified and how it was gathered. These reports differ significantly from those of the Superintendent of the Garden and Grounds in length as they includes pages of detailed charts comparing crop yields, market prices, export volumes over several years and often decades. Why certain crops were tracked is never explicitly stated or discussed. An educated reader does see patterns that suggest, for example, a focus on animal feed crops, grasses for grazing livestock, and grains and fiber crops for export. One also sees evidence of increased yields for crops like wheat, sugar beets, feed corn, cotton, and various sources of fiber each discussed in the Annual Reports as crops essential to the nation’s self sufficiency in terms of basic agricultural products.

As discussed earlier, the distribution of seeds and plants and the publication and dissemination of reports of agricultural statistics form a significant part of the narratives of both the report of the gardener and those of the statistician. The agricultural information produced by the Department of Agriculture had myriad consumers. Members
of the U.S. Congress received the bulk of that information (be it seeds or printed matter) and the reports of the commissioners suggest it was used as political capital by legislators with their constituencies. But, we also see in the Annual Reports systems of information transfer that use the resources of the federal government to circulate agricultural information as a public good. Agricultural information came to the Department in several ways. It was directly solicited in the form of surveys conducted by correspondents or agents of the Department. Seeds and plants distributed by the Department were sent with a request that the recipient share information about how those seeds performed with the Department. In each instance, the vehicle for moving information from the field to the Department and back out again was usually the U.S. mail. The Department was quick to recognize the need for timely crop reports and had its agents use the telegraph to communicate information from the field to the Department. Seeds, plants, and printed matter were distributed by the Department of Agriculture free of charge as a public service. The distribution of that information from the Department was understood as critical to continued progress in agriculture and necessary for the growth and health of the nation. That exchange of agricultural information from the field to the laboratories and workrooms of the Department of Agriculture and back out to farmers is a critical example of what distinguishes the work of the Department from other federal agencies at the time. The U.S. Census gathered information and made it available and the U.S. mail facilitated the circulation of information, but only the Department of Agriculture exploited a system of information collection, production, and distribution that engaged diverse constituencies in ways that viewed them as essential partners in that network. That effort resulted in an expansive network that both fed information to and consumed information from the Department of Agriculture. The scope and geographic reach of that information work in the second part of the 19th century cannot be overstated.

4. *What impact did the information work of the Department of Agriculture have on the practice of farming in the United States in the second half of the 19th century?*

The Annual Reports shed little light on this question. What we do learn from the Annual Reports of the Department of Agriculture is that many farmers, agriculturalists, citizens, and members of the U.S. Congress began to turn to and expect useful, timely, and
relevant agricultural information from an agency of the federal government. How that information was used and the extent to which it changed the tools, methods, and products used by farmers was not evident in the sections of the Annual Reports I examined. However, one does see in the correspondence to the Department of Agriculture, which is reprinted in several of the reports of the Superintendent of the Garden and Grounds and the Statistician, evidence of interest in acquiring and experimenting with new types of crops as well as an awareness of the importance of sharing information about propagation, soil health, and farming methods with a wider audience as afforded by the Department of Agriculture.

5. How did the information work at the Department of Agriculture help transform the political economy of agriculture in the U.S. in second half of the 19th century and why does this matter?

The information work at the Department of Agriculture focused on the collection and dissemination of practical information that would help facilitate changes in agricultural practice to better serve a growing nation with significant interests outside its own (expanding) borders. Farming and agricultural work relied on transportation and communication infrastructure to bring supplies to the farm and move products from it. We see in the Annual Reports some evidence of awareness at the Department of the need for a strong federal government that would regulate not just transportation and communication but the self-interested speculation associated with a market economy in order to protect agricultural production and thus the foundation of the economy of the nation.

We can see in the Department’s focus on the identification what it called the best seeds and plants a push to move farmers and farm production toward crops with high yields for an expanding market. It would seem that such an effort would result in changes in the size of farms and the diversity of crops over time. However, I saw no evidence to suggest this was a desired outcome by the Department nor any suggesting the size of farms grew that crop diversity diminished. This is not to say that it did not happen but rather that
there was no evidence in the Reports that I examined that it was a direction the Department sought for agricultural production in the United States.

Limitations
The major limitation of this study of the 1862-1888 Annual Reports of the Department of Agriculture is also its greatest asset. Because there is no known administrative record of the Department for this period, I turned to the Annual Reports as the best available primary source. The reports present a surprisingly complex and nuanced picture of the information work at the Department of Agriculture from 1862 through 1888. As formal and constructed narratives, they carry and convey more than administrative records of daily work, such as a ledger, a set of memos, or even formal correspondence. Each report, from the commissioner or from a division head, is written with at least one audience in mind, the U.S. Congress. Unlike archival records, these Annual Reports have a consciously developed message for that audience. However, they also convey more nuanced and often subtle narratives that reveal relations of power within the Department as well as between professionals working at the Department and their peers outside the agency. In terms of the focus of this research, the Annual Reports of the Commissioners helped me both understand and situate the work of the Department of Agriculture in historical and social and political contexts. These include a nation ravaged by a Civil War; growing economic tension as the nation shifted from a rural focus to an urban and industrial focus; a massive rise in immigration; and the development of critical transportation and communication infrastructure by private interests that both facilitated and served territorial expansion by the United States.

Future research
The research accomplished with this dissertation offers unique and valuable information about the information work at the Department of Agriculture from 1862 through 1888. The approach I took to this work is essentially that of identifying and describing the anatomy of a critical historical resource that has not been carefully examined by historians interested in understanding information in society. Historians, myself included, can use this work as the foundation for research into the ways the information work at the
Department of Agriculture directly contributed to nation-building and the formation of the modern state in 19th century United States. The Department’s consistent assertion of its authoritative role and its expansive understanding of what counted as agricultural information place it at the center of the transformation of the United States after the Civil War and through significant social change that too often is narrowly seen as attributable to immigration and industrialization. This reading of the Annual Reports of the Department of Agriculture suggests that the relationship between agricultural development and industrialization is more complex than commonly discussed and is intertwined in significant and necessary ways that call for further research and examination. This research into the Annual Reports of the Department of Agriculture from 1862 through 1888 also points toward a series of questions that seek more information and analysis about the role of the Department of Agriculture – and particularly its information work – in the U.S. nation and society that emerged from the turmoil of the 19th century. This turmoil included the Civil War; the promise and failure of Reconstruction; and the ongoing struggles for the civil and human rights for women, workers, ethnic immigrants, and free and emancipated African Americans.

Conclusion
My research suggests that this information work at the Department of Agriculture was very practical in its orientation. During this period, 1862 through 1888, the United States fought a civil war that had an economic impact that cannot be overstated.\(^{459}\) The economy of the United States in the 1870s was unstable at best and in crisis for a good part of the decade. The Department focused its energies on efforts to develop systems that would allow them to identify, process, and disseminate information to a large and varied constituency. Its primary focus was on strengthening the agricultural economy by educating farmers; providing them with information on best practices, new methods and tools; identifying and distributing hardy seeds and plants that would result in increased crop yields. The Department estimated crop yields and prices at market; it collected information about agricultural production in counties in an effort to anticipate

\(^{459}\) See, for example, Nell Irvin Painter’s Introduction to her study, *Standing at Armageddon: The United States, 1877-1919.*
opportunities for exports and identifying competition. Dual goals of both the Department and the federal government were national self-sufficiency in terms of food and the crops like wool, cotton, corn and other feed and grazing crops, for the nation at home; and, managing and developing hardier crops and larger yields that would strengthen the nation’s economy via exports in an increasingly competitive global market. Despite the significant barriers and challenges to U.S. agriculture at that time, my research suggests that the information the Department of Agriculture procured, propagated, and distributed was instrumental in the stability and health of the nation and served to establish the authority of the federal government in a vital area of the economy during a particularly turbulent and unstable period of U.S. history.
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### APPENDIX A: OVERVIEW OF THE DEVELOPMENT OF THE DEPARTMENT OF AGRICULTURE, 1862-1889

<table>
<thead>
<tr>
<th>Date</th>
<th>Units</th>
<th>Appropriations</th>
<th>No. of Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>1860</td>
<td></td>
<td>$40,000</td>
<td></td>
</tr>
<tr>
<td>1862</td>
<td>Establishment of the Department</td>
<td>1862 $64,000</td>
<td>1862 9</td>
</tr>
<tr>
<td></td>
<td>Disbursing Office</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Superintendent of the Propagating Garden</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Division of Chemistry</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Library</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1863</td>
<td>Division of Entomology</td>
<td>1863 $80,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Division of Statistics</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Fibre Investigation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1864</td>
<td>Analysis of Soils</td>
<td>1864 $199,770</td>
<td></td>
</tr>
<tr>
<td>1865</td>
<td>Division of Botany</td>
<td>1865 $112,304</td>
<td></td>
</tr>
<tr>
<td>1866</td>
<td>Division of Microscopy</td>
<td>1866 $167,787</td>
<td></td>
</tr>
<tr>
<td>1867</td>
<td>Division of Botany</td>
<td>1867 $199,100</td>
<td></td>
</tr>
<tr>
<td>1868</td>
<td>Division of Botany</td>
<td>1868 $279,020</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1869 $172,573</td>
<td>1869 90W</td>
<td></td>
</tr>
<tr>
<td>1870</td>
<td>Division of Microscopy</td>
<td>1870 $156,440</td>
<td></td>
</tr>
<tr>
<td>1871</td>
<td>Division of Microscopy</td>
<td>1871 $188,180</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1872 $197,070</td>
<td>1872 100</td>
<td></td>
</tr>
<tr>
<td>1873</td>
<td>Division of Microscopy</td>
<td>1873 $202,440</td>
<td></td>
</tr>
<tr>
<td>1874</td>
<td>Division of Microscopy</td>
<td>1874 $257,690</td>
<td></td>
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<tr>
<td>1875</td>
<td>Division of Microscopy</td>
<td>1875 $321,079</td>
<td></td>
</tr>
<tr>
<td>1876</td>
<td>Division of Microscopy</td>
<td>1876 $249,120</td>
<td></td>
</tr>
<tr>
<td>1877</td>
<td>Forestry Investigations</td>
<td>1877 $194,636</td>
<td></td>
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<tr>
<td>1878</td>
<td>Investigation of Animal Diseases</td>
<td>1878 $198,640</td>
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<td></td>
<td>1879 $206,360W</td>
<td>1879 93W</td>
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<tr>
<td>1880</td>
<td>Forestry Division</td>
<td>1880 $198,361</td>
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<td>1881</td>
<td>Forestry Division</td>
<td>1881 $275,460</td>
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<td>1882</td>
<td>Forestry Division</td>
<td>1882 $363,011</td>
<td></td>
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<tr>
<td>1883</td>
<td>Veterinary Division</td>
<td>1883 $456,396</td>
<td></td>
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<tr>
<td>1884</td>
<td>Bureau of Animal Husbandry</td>
<td>1884 $416,641</td>
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<tr>
<td>1885</td>
<td>Section of Ornithology</td>
<td>1885 $655,930</td>
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<tr>
<td>1886</td>
<td>Division of Ornithology and Mammalogy</td>
<td>1886 $677,973</td>
<td></td>
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<tr>
<td>1887</td>
<td>Division of Pomology</td>
<td>1887 $657,641</td>
<td></td>
</tr>
<tr>
<td>1888</td>
<td>Division of Vegetable Physiology and Pathology</td>
<td>1888 $1,027,219</td>
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<tr>
<td>1889</td>
<td>Secretary of Agriculture at Cabinet-Level</td>
<td>1889 479W</td>
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</tbody>
</table>

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APPENDIX B: SEED PACKET DISTRIBUTION BY THE DEPARTMENT OF AGRICULTURE, 1865-1910

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Packets</th>
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<td>1865</td>
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</tr>
<tr>
<td>1870</td>
<td>350,000</td>
</tr>
<tr>
<td>1880</td>
<td>1.5 million</td>
</tr>
<tr>
<td>1890</td>
<td>5.5 million</td>
</tr>
<tr>
<td>1905</td>
<td>36 million</td>
</tr>
<tr>
<td>1910</td>
<td>60 million</td>
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</tbody>
</table>

Information included here was culled from the annual reports of the Department of Agriculture.

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461 Information included here was culled from the annual reports of the Department of Agriculture.
APPENDIX C: PRINT RUNS FOR THE ANNUAL REPORTS OF THE DEPARTMENT OF AGRICULTURE, 1862-1888

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>House</th>
<th>Senate</th>
<th>Department of Agriculture</th>
</tr>
</thead>
<tbody>
<tr>
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<td>120,000</td>
<td>100,000</td>
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<td>1865</td>
<td>188,000</td>
<td>145,000</td>
<td>17,000</td>
<td>20,000</td>
</tr>
<tr>
<td>1866</td>
<td>188,000</td>
<td>145,000</td>
<td>20,000</td>
<td>23,000</td>
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<tr>
<td>1867</td>
<td>220,000</td>
<td>180,000</td>
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<td>20,000</td>
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<tr>
<td>1869</td>
<td>225,000</td>
<td>180,000</td>
<td>20,000</td>
<td>25,000</td>
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<tr>
<td>1870</td>
<td>225,000</td>
<td>150,000</td>
<td>50,000</td>
<td>25,000</td>
</tr>
<tr>
<td>1871*</td>
<td>255,000</td>
<td>180,000</td>
<td>50,000</td>
<td>25,000</td>
</tr>
<tr>
<td>1877</td>
<td>300,000</td>
<td>224,000</td>
<td>56,000</td>
<td>20,000</td>
</tr>
<tr>
<td>1878</td>
<td>300,000</td>
<td>224,000</td>
<td>56,000</td>
<td>20,000</td>
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<tr>
<td>1879</td>
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</tr>
<tr>
<td>1880</td>
<td>300,000</td>
<td>214,000</td>
<td>56,000</td>
<td>30,000</td>
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<tr>
<td>1882**</td>
<td>300,000</td>
<td>214,000</td>
<td>56,000</td>
<td>30,000</td>
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<tr>
<td>1883</td>
<td>300,000</td>
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<td>56,000</td>
<td>30,000</td>
</tr>
<tr>
<td>1884</td>
<td>400,000</td>
<td>300,000</td>
<td>70,000</td>
<td>30,000</td>
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<tr>
<td>1885</td>
<td>310,000</td>
<td>200,000</td>
<td>80,000</td>
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<tr>
<td>1886</td>
<td>400,000</td>
<td>300,000</td>
<td>75,000</td>
<td>25,000</td>
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<tr>
<td>1887</td>
<td>400,000</td>
<td>300,000</td>
<td>70,000</td>
<td>30,000</td>
</tr>
<tr>
<td>1888</td>
<td>400,000</td>
<td>300,000</td>
<td>70,000</td>
<td>30,000</td>
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</tbody>
</table>

The print runs and allotment as reported at the front of each Annual Report.

* 1863-1864, 1868, and 1872-1876: information on print runs is not available
** 1881-1882 printed together in one volume

By the mid-1880s the cost of printing was approximately $200,000.