

Buck, State Engineer, and O. W. Monson, head of the Department of Agricultural Engineering at Montana State College, submitted to the Works Project Administration a proposal for a state-wide survey, recordation, and mapping of Montana's water resources. The project was approved, the state contributing \$41,930 of the \$218,125 initial outlay, and work began in February, 1940.<sup>48</sup>

The Montana Water Resources Survey is now 13 years old. Essentially a program of historical research, its workers investigate the origins of water-rights, dates of filing and construction, extent of appropriations, and present water uses. Too often the historical records in the county

<sup>48</sup> Montana State Engineer, *Water Resources Survey, Big Horn County, Montana* (Helena, 1947), Pt. 1: 4.

courthouses are lacking and the investigators must resort to interviews with the "old-timers". The records when gathered are assembled in the State Engineer's office where records and maps of the surveys are prepared and published county by county. To date these records have been published for 14 counties. When they are completed for the 56 counties, Montanans will have a unique record of their water-rights in a central office in Helena. Then it may be more obvious that some kind of centralized administrative system is needed to keep up-to-date the records assembled by the Water Resources Survey. The engineers may yet win their battle to provide Montana with a system of water-right records and regulations in harmony with those of neighboring states and provinces.

## LABOR MANAGEMENT PROBLEMS ON GEORGIA RICE PLANTATIONS, 1840-1860

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As a prelude to a detailed analysis of the subject, definitions of the economic practices, institutions, areas, and the period covered by the topic are appropriate.<sup>1</sup> Certain phases of the operation of 25,000 to 30,000 acres of tide-flow rice plantations in Georgia in the two decades before the Civil War will be examined. This acreage was distributed not too unevenly along the banks and on the islands of all five of the larger rivers emptying into the Atlantic Ocean along the Georgia coast. Some 6500 of these acres were on the Georgia shore and on the islands of the Savannah River. The total for the Ogeechee River area, lying nearby to the south, was about the same. Rice lands cultivated along the St. Mary's River, at the Florida boundary, possibly were somewhat greater in extent. The total comparable suitable lands along the banks and in the estuary of the remaining rivers, the Altamaha and the Satilla, was somewhat less, probably around 5000 acres each. In addition, it might be noted that more than 10,000 acres, located on the Carolina shore of the Savannah River, were also planted to tide-flow rice. A plausible argument can be made

for considering them as a part of the Georgia rice-growing area too.<sup>2</sup>

The comparatively limited acreage devoted to rice culture along the Georgia coast resulted from the unusual soil and water requirements of the industry. Lands had to be located above the salt-water-line on the banks or on the islands of fresh-water streams, but where the fresh-water level was definitely raised by each high tide at the mouth of the stream. The zone where these conditions occurred was seldom more than eight to ten miles wide. Likewise, an unusual combination of medium

<sup>2</sup> Figures on tide flow rice acreage are based on a lengthy memo dated 1860 in Louis Manigault MSS, Southern Historical Collection (hereafter referred to as SHC), University of North Carolina Library; on quotations from the 1840 and 1860 census by Robert F. W. Allston in *De Bow's Review*, 1: 332 (April, 1846); and C. Mildred Thompson, *Reconstruction in Georgia, Economic, Social, and Political, 1865-1872* (New York, 1915), 304. Census returns listed crops in total pounds. Thus, by estimating 45 pounds per bushel and 45 bushels of rough rice per acre, it was possible to arrive at the probable acreage devoted to rice culture. See Albert V. House, *Planter Management and Capitalism in Ante-Bellum Georgia* (New York, 1954), 22-23, for further discussion of this problem.

<sup>1</sup> This paper was presented at a joint meeting of the American Historical Association and the Agricultural History Society held at Chicago, Illinois, on December 30, 1953.

to heavy topsoil and a substantial clay subsoil was necessary for the best results.

In the period under examination rice production in Georgia jumped from 13,000,000 pounds in 1840 to 52,000,000 in 1859. The yield for the earlier year was equal to 20 per cent of the South Carolina crop and that for 1859 was 45 per cent of the volume grown in the Palmetto state. Both figures reveal that Georgia's crop in those years ranked second in the United States. The decade of the 1850's especially saw the peak of production of Georgia rice, both in total crop and in bushels per acre, with the latter averaging as high as 50 in the year 1855.<sup>3</sup>

Georgia had its share of semi-marginal farmers or small-time planters who cultivated a few acres of rice, cotton, and corn with a labor force of less than 20 hands. But this study is concerned largely with operations on plantations ranging from 250 to 600 acres, with the median size in the neighborhood of 400 acres devoted to the tide-flow culture of rice. Highlands, hammock lands planted to provisions crops, woodlands, and the areas reserved for barns, slave cabins, and the living quarters of the owner quite often doubled the total acreage of the plantation. True, there were some plantations reported with as many as 1000 or 1200 acres of rice lands, but these frequently were divided up into two to four "plantations" of 300 to 400 acres each, and operated as separate units.<sup>4</sup>

Slave populations on these rice lands varied both in totals and in the ratio of hands to cultivated acreage. It was generally considered that one prime field hand was required for every seven acres planted. This meant that about 15 would be adequate for 100 acres and around 60 for the median size plantation of 400 acres. However, it should be recalled that sickness, pregnancy, youth, and old age usually prevented a planter from "fielding" much more than 50 per cent of his total slave population for heavy labor. Thus, the total number of slaves of all ages, capacities, and conditions on plantations with 400 acres devoted to rice would probably range between 110 and 130. Any planter who also had substantial highlands for provisions

crops might find it desirable to have a few more workers available.<sup>5</sup>

In the period under examination, rice Negroes cost from \$300 to \$500. Cleared rice lands were valued at \$80 an acre and uncleared swamps at \$40 an acre. Thus, the capital investment in land and slaves was considerable. If to these figures the cost of milling machinery, barns, and living quarters be added, as well as the value of subsidiary acres not devoted to rice, it becomes obvious that the total cash or credit required to become a rice planter in Georgia would be upwards of \$100,000.<sup>6</sup> A labor force of over 100, specialized production, dependence on prices of both supplies purchased and crops shipped out, reliance on middlemen for extensive services, and finally the need of a continuing flow of operating credit, all show that rice plantations in these years were a species of capitalistic enterprise.

In terms of their economic characteristics, tide-flow rice plantations had little in common with "His Majesty's Plantations" of the 17th and 18th centuries. Likewise, as economic institutions they should not be confused with the medieval manors of the 10th to the 14th centuries. Rice plantations in the Carolinas and Georgia had no guaranteed markets for their crops. With a gambler's prayer they sent the fruits of their agricultural production into a competitive market. Their goal was private profit, not national or local self-sufficiency. The fact that the field labor of medieval manors, mercantilist plantations, and capitalistic rice farms was tied to the land or owned by the planters is not a highly significant *economic* factor. True, fiefholders, operators, and owners of these types of agricultural production were drawn from the military, social, and political aristocracies of their eras, but this item also has little or no *economic* importance.

In recent years the term "planter capitalism" has been coined to describe the economic nature of plantation economy in southern United States in

<sup>5</sup> The ratio of one prime hand to every seven acres of rice land was recorded in Charles Manigault's Diary in 1844, Manigault MSS, SHC, University of North Carolina Library. This was confirmed by the records of numerous other rice plantations in Georgia.

<sup>6</sup> Slave and rice land prices are a synthesis of notations on the subject found in several manuscript sources including J. H. Couper MSS, SHC; "Elizafield Journal of Hugh Fraser Grant," in House, *Planter Management*, 254, 275; and most especially memos of Charles Manigault dated 1844 and January 1, 1845, in MSS Diary, Louis Manigault MSS, SHC.

<sup>3</sup> *Ibid.*, especially in Allston and Thompson.

<sup>4</sup> These statements are based on the memo in the Louis Manigault MSS listed in Note 2 above; the J. H. Couper MSS, SHC, University of North Carolina Library; and on knowledge acquired by the writer during the course of a personal inspection of abandoned rice plantations in the Altamaha River area in 1941.

the 19th century.<sup>7</sup> This is a happy phrase which facilitates analysis of the economic realities of these enterprises and also makes possible comparison with other forms of free enterprise activity such as commercial or industrial capitalism. Since the operations of these types are well known, it is possible to discuss the topic in the vocabulary of 20th century American industrial production. In fact, it may be claimed that labor management problems on Georgia rice plantations in the years 1840-1860 generally did not differ greatly from those which today confront the owner-manager of a small battery manufacturing establishment with 100 or so employees. Labor management in both situations may be defined as "the arrangement of operations and working conditions so as to provide for the most efficient and economical use of the labor force."

It is obvious that the owner-operator of a Georgia rice plantation did not have to worry about the possibility of a strike by his laborers, or the necessity to bargain collectively with their union, or the threat of their disappearance to work for high wages at a hydrogen bomb defense plant located a few miles up the Savannah River. But he was required to perform all of the functions which have been delineated as the responsibility of management in the handling of labor today. These included selection (acquisition), training and classification, supervision through channels of authority and responsibility, planning of work schedules and the flow of production supplies and materials, discipline and discharge of misfits, and finally, morale, health, old age security, and general working and living conditions. Although the planter may not have had the benefit of extensive charts or tables of organization to assist him with his problems and may have been relying largely on common sense, experience, and the lessons learned from neighbors and predecessors, yet he soon came to learn that those planters who turned in a superior performance in these areas of employee relations and management increased the chances of the continuing success of their enterprise. Those who fell down badly in several of these categories had taken a long step towards foreclosure by the factor, and failure. It should be obvious that opportunities to sit on broad verandas sipping mint

<sup>7</sup> Louis Hacker, *The Triumph of American Capitalism* (New York, 1940), 280-321, contains an excellent discussion of planter capitalism. See also Francis B. Simkins, *The South, Old and New, A History 1820-1947* (New York, 1947), 33-54.

juleps would be infrequent for the younger planters. Only in their declining years, after they had trained a collection of sons, sons-in-law, and nephews to take over the reins of management, would it be possible for older planters to spend many hours in such pleasant recreation and contemplation.

It was not a simple matter to acquire an adequate number of prime field hands for labor on rice plantations. One of the most widely accepted maxims of the rice coast was that slaves who had been raised in the environment of cotton, tobacco, or even most sugar plantations, could not adjust easily to living and working conditions on a rice plantation. This was doubly true of those who had been softened by service as "town house slaves" in urban areas. Life on rice plantations was quite isolated for both blacks and whites. In the summer, the owner and his family never slept on the plantation. They moved to summer quarters, located far enough from the river swamps so as to be free from the threat of malaria. This left only the overseer "on the place" after dark, and even he was not always at hand. Hence, the slave population was required to develop a species of group self-discipline under the leadership of their drivers, who acted as sub-foremen by day and keepers of group discipline by night. Thus, rice Negroes were not happy to have their ranks disturbed by the addition of new members who did not readily understand "the customs of the service."<sup>8</sup>

Diet also was a problem for non-rice slaves who found themselves on rice plantations. Rice, the basic crop of the plantation, often was also the chief item in the food of the slaves. This food is not a staple element in the American diet today, but most of the rice Negroes not only accepted this fare, but preferred it and became disturbed when it was not available.<sup>9</sup> It is not difficult to understand that cotton or tobacco Negroes might find considerable difficulty in adjusting to such food.

Rice plantation labor operated under the "task system."<sup>10</sup> Those laborers who did not have a

<sup>8</sup> House, *Planter Management*, 10, 102, 105-06, 110; and Ulrich B. Phillips, *American Negro Slavery* (New York, 1918), 255.

<sup>9</sup> Phillips, *ibid.*, 255, and Albert V. House, Jr., "Deterioration of a Georgia Rice Plantation During Four Years of Civil War," in *Journal of Southern History*, 9: 109 (February, 1943).

<sup>10</sup> Ulrich B. Phillips, *Plantation and Frontier, 1649-1843*, vols. 1 and 2, *A Documentary History of American Industrial Society*; John R. Commons, ed. (10 vols., Cleveland, 1910-11), 1: 117, quoting "Rules on Rice

specialist's rating and duties were taken to the scene of their day's labor by a driver who assigned tasks to each hand. When the completed task was inspected by the driver, the worker was through for the day. Laborers from other types of plantations who had been closely supervised and pushed under the gang system seemed lost without such control and often were poor operatives under the comparative freedom of the task system.

These differences between rice and non-rice Negroes meant that new hands usually were acquired from other rice plantations. Some were being sold off because they were misfits or trouble-makers. Others showed up in the labor market, when estates were broken up in the process of settlement. Still others became available when the topsoil of some rice lands lost their productive capacity due to excessive oxidation, overplanting, or extensive salt water damage. The medium and larger rice plantations were able to provide a goodly proportion of their new workers through natural increase. A sampling of Georgia rice plantation records reveals an average of five births per year for every 100 of total slave population.<sup>11</sup> These new arrivals did not all survive until the day when they were ready for field duty, yet their appearance provided a partial solution to the problem of "acquisition and selection" of a labor force.

Training and classification of the abilities and duties of the various members of the labor force was not made on the basis of a battery of aptitude and psychological tests. All training was designed to produce the maximum number of prime field hands for full duty in all tasks involved in the year-round routine of the plantation. Prime field hands (both men and women) were those who could accomplish the assigned task in a normal working day of nine or ten hours. Boys and girls aged ten to fourteen and some women were rated as one-quarter, one-half, or even three-quarters of a prime hand. It was sometimes possible to increase the number engaged in field work by classifying some as "hoes." This implied that although all were not capable of extremely heavy work such as excavation for ditches, canals, and banks, or for clearing new swamp-land, yet they could be expected to perform a full day's labor at the less arduous tasks.<sup>12</sup>

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Estate (1856) of P. C. Weston, South Carolina," as published in *De Bow's Review*, 21: 38-44 (January, 1857).

<sup>11</sup> "Elizafield Journal" in House, *Planter Management*, 252-60.

<sup>12</sup> *Ibid.*, 53.

Nearly all hands were put to the test of field duty from the age of ten on. These lacking in skills or vigor were assigned to a variety of specialized jobs such as bird-minders to drive away the May-birds. Others were labeled as rat-catchers, some of whom showed such genius and perseverance that they caught as high as 4,500 in a season, at the rate of 30 to 40 per day.<sup>13</sup> They operated with the help of trained rat-curs who routed out and killed the rodents. Other specialists were assigned as watchmen in the yard and as guards for the cattle and other animals, both day and night.

The trunk-minders and mill operatives were very special specialists. Their duties called for some mechanical skill and a smattering of understanding of the principles of practical engineering. The trunk-minders were assigned special flat-boats to enable them to move rapidly over the extensive water system of the plantation. The mill-workers were considered so competent and reliable that on occasion overseers were forbidden by the owners to interfere with mill operations in any manner whatsoever.<sup>14</sup> Some plantations also were staffed with highly skilled carpenters, woodworkers, and mechanics of various types, who were the elite of the yard and house Negroes. Other slaves were, of course, assigned to household duty and personal service for the family. Among those so classified usually there was to be found both a midwife and a head nurse who presided over the hospital for Negroes.<sup>15</sup>

All of the labor force was kept busy at all times, with the assigned tasks designed to provide a maximum of efficiency and productivity. Pronounced rivalries existed between the house, yard, and field Negroes, and there was little shifting from one category to another. The overseer and the manager, agent, or owner continuously evaluated and reclassified the members of the labor force, as varying situations, abilities, and bodily vigor suggested. This continuing operation called for common sense, skilled observation, and good judgment.

Any productive process which uses the sweat and skill of considerable numbers of dependent laborers must provide for adequate supervision of operations, step by step. This is especially true of any system which relies heavily on human energy and only incidentally on machines. The culture of rice was of this type but it also was affected by the

<sup>13</sup> MSS Diary, Memo of C. Manigault dated 1844, Manigault MSS, SHC.

<sup>14</sup> Phillips, *Plantation and Frontier*, 1: 124.

<sup>15</sup> *Ibid.*, 119.

vagaries of mother nature in terms of temperature, floods, birds, and plant diseases. Tremendous damage could be visited upon the crop if the decisions as to planting, watering, or harvesting the rice were not made at the proper time or not promptly implemented when made. As one authority has said, "Every grower must in practice be his own rice doctor or have none at most times."<sup>16</sup> This resulted in each planter usually acting as his own superintendent of production. If, however, his continued presence on the plantation was not possible or probable, a manager or agent exercised general supervisory control and made the fundamental decisions. But even such personnel functioned within the framework of meticulous instructions and standard operating procedures provided by the owner.

The general operational regulations for rice plantations were, on occasion, set forth even in the contract between the planter and his overseer. These established the limited nature of that worthy's authority, practices, and responsibilities. Hence most overseers must be considered as executive assistants not as deputy managers. They, in turn, passed on instructions to Negro drivers, who saw to it that the orders of the overseer were carried out. Good drivers were hard to come by. These subforemen or first sergeants had to be able to manage their fellow slaves, largely through their natural powers of leadership. Their authority was practically non-existent, but much was expected of them. They supervised the work of from 25 to 40 field hands in all the varied tasks of the plantation. Most rice plantations in Georgia had at least two such drivers and the larger establishments still more.

A considerable volume of literature is already in print pointing out that the planter's lady was the supervisor of the household slaves.<sup>17</sup> She also was expected to administer medicines to the sick among the labor force and see to it that the Negro hospital was operated effectively. Yard specialists usually worked without direct, contact supervision, but were responsible to the overseer generally.

All students of economic specialization are aware that a low unit cost of production can best be achieved when labor and machinery can be employed at a maximum consistent with the danger of undue deterioration. On rice plantations this meant that the labor force must be used for the production of rice primarily and only secondarily to grow food

and provisions. The overhead investment represented by the cleared rice fields, the extensive water system, and both the original and continuing cost of a slave labor force all dictated this practice. True, in some years the cost of food was so high and the price of rice so low that, in retrospect, the planter might wish that he had raised more provisions for his labor force than was customary. Each planter knew, however, that if he adopted a policy of devoting an undue proportion of his land and labor to provisions for his force, he would be sacrificing the advantages of economic specialization and making little progress on the problem of reduction of unit costs.

The availability of appropriate lands for production of provisions was another factor in the picture. Only those planters who possessed highlands, or hammock lands, could raise provisions profitably since rice lands with their fairly heavy top-soil were not well suited to the growing of roots and other clean culture crops, such as corn. Georgia rice planters in some years planted as high as one-quarter of their total cultivated areas to provisions for their hands. They thus raised most of the slips, pease, and roots consumed by the slave population.<sup>18</sup> In years when rice was priced very low on the market, they may have fed more homegrown rice than usual to the Negroes. Whatever the policy in any given year the planting, cultivation, and harvesting of provisions were never allowed to interfere with the requirements for the cultivation of the primary crop: RICE.

The task system was the yardstick designed to produce effective performance and also serve as a convenient standard for the measurement and estimate of the labor requirements on various projects. The usual task was one-quarter of an acre, a square 105 feet on a side. This standard was expected regardless of whether the work was trenching, hoeing, cutting the rice crop, or tying and carrying off the bound sheaves to the flatboats for transportation to the yard. The limits of this task were seldom altered either up or down, except under the stress of very unusual conditions. Six hundred sheaves or 12 bushels of rough rice per day was the usual standard for threshing with the flail stick. Six hundred cubic feet per day were required when excavating for ditches and canals. This figure was reduced somewhat if the project involved the clear-

<sup>16</sup> E. B. Copeland, *Rice* (London, 1924), 54.

<sup>17</sup> Phillips, *American Negro Slavery*, 323.

<sup>18</sup> House, *Planter Management*, 48; Crops Record Book, 1818-30, and Summary of Crops at Hopeton, 1827-41, J. H. Couper MSS, SHC.

ing of new land for cultivation.<sup>19</sup> Such labor was very heavy and, contrary to the practice of some sugar plantations in Louisiana, was always performed by Negro labor.<sup>20</sup>

The normal labor force was often supplemented by hired labor from neighboring plantations when new land was to be cleared. Prices for such labor varied from \$18 per month for short periods to \$70-\$100 per year. Occasionally, planters hired out some of their slaves for labor on local internal improvements, such as the Brunswick-Altamaha canal in Georgia.<sup>21</sup> One planter in the Savannah River area contracted to refrain from planting for one year and use his entire labor force to construct a floodwall or breakwater to protect the rice lands of the region. His price for this project was \$20,000, which was paid for cooperatively by the owners of adjacent plantations.<sup>22</sup>

Strictly speaking, such peripheral subjects as morale, health, old age security, and procedures for disciplining the slaves probably should be considered as problems of the slavery system and not as slave labor management questions. This differentiation is based on the belief that the legal rights inherent in the ownership of slaves and the myriad procedures for controlling such property are separate and distinct from the problems of managing such labor to provide for maximum economic productivity.<sup>23</sup> Yet today such "fringe benefits" and security guarantees have become a part of the labor bargain as the result of government intervention, dynamic labor leadership, and paternalistic capitalism. Increased productivity per man has usually been achieved by a labor force in which satisfactory solutions have been found in those areas of human relations. Georgia rice planters generally recognized the economic desirability of providing for the welfare and control of their slaves. Programs to produce such contented and healthy laborers were designed with

great care. Many planters thought them so significant that they included detailed descriptions of such practices in their contracts with overseers.<sup>24</sup>

In addition to limited hospital care and home medication, most planters had contracts with local doctors which provided for a species of "group health medical care" for the entire slave population at the rate of \$1.50 per head per year. Pregnant women and lying-in mothers were relieved from most field labor duties. Some planters worked their laborers for only five and one-half days a week and used the Saturday afternoon hours as a penalty period during which slothful workers had to work out their demerits. All provided for no Sunday work except during harvesting and other emergencies. During the six to eight weeks harvesting period, everyone on the plantation was busy from dawn to dusk, if the condition of the crop demanded it.<sup>25</sup> Extensive holidays after the completion of harvesting and also at Christmas were the general practice. Extra rations, sometimes in the form of semi-fancy goods appeared for such celebrations. Many planters allowed their laborers to plant small garden patches which they worked after the completion of their daily tasks. Slaves were often given the opportunity to earn a little cash money in their spare time by hand manufacturing such wood products as shingles which they sold to the planters. Old age security was furnished by keeping over-age slaves busy with a variety of simple duties as semi-pensioners.<sup>26</sup>

Each plantation had a stringent code for the disciplining of slaves who malingered, were trouble makers among their own people, or generally failed to perform as expected. Punishment varied from confinement in the jail of the nearest town to as much as 50 lashes for serious transgressions. Those failing to respond to continued efforts at rehabilitation were sold off, if possible. The basic principles underlying these slave regulations were summarized effectively by a Carolina planter as follows:

<sup>19</sup> Slave List and Plantation Notes, Mackey-Stiles MSS; and Slave Record Book, C. Manigault MSS, both in SHC.

<sup>20</sup> J. Carlyle Sitterson, *Sugar Country* (Lexington, 1953), 66.

<sup>21</sup> Slave List and Plantation Notes, dated March 4, 1845, Mackey-Stiles MSS, SHC. See also "Elizafield Journal" in House, *Planter Management*, 289.

<sup>22</sup> Louis Manigault to C. Manigault, February 25, 1854, Louis Manigault MSS, Duke University Library.

<sup>23</sup> This thesis is described in some detail by Alfred H. Stone, "Some Problems in Southern Economic History," *American Historical Review*, 13: 779-97 (July, 1909).

<sup>24</sup> Phillips, *Plantation and Frontier*, 1: 109-30.

<sup>25</sup> This was also the rule along the Carolina rice coast as shown by *Rice Planter and Sportsman, The Recollections of J. Motte Alston, 1821-1909*, Arney R. Childs, ed. (Columbia, 1953), 47. This source also indicates that the holiday which followed the completion of harvesting was so strenuous that "hardly a corporal's guard was fit for duty for some days thereafter."

<sup>26</sup> This paragraph is a synthesis of items found in a variety of sources including: MSS Diary, Memo by C. Manigault, dated April 15, 1845, SHC; "Elizafield Journal," in House, *Planter Management, passim*; and Phillips, *American Negro Slavery*, 263-66.

1. Never threaten a negro.
2. Never show passion before them.
3. Always keep your word to your slaves.
4. Have no favorite.
5. Do not be betrayed by good behavior to relax your discipline.
6. The way to keep him honest, is therefore not to trust him.<sup>27</sup>

In summary, it may be said that the labor management problems on Georgia rice plantations (1840-1860) were not simple. Neither were they exactly like those of cotton, tobacco, and sugar planters. They correspond in many ways to those facing the owner-managers of small industrial enterprises today. These problems were attacked

<sup>27</sup> *Southern Agriculturist*, 15: 533 (October, 1842).

with intelligence, perseverance, and courage. The fact that the legal basis of their labor system was eventually wiped out by war and constitutional amendment should not lead us into the fallacy of thinking that these planters were failures as economic entrepreneurs and managers. We should not allow our antipathy towards the slavery system to pervert our evaluation of Negro labor, whether free or slave. The obvious imbalance of the total economy of the southern plantation area was probably, until recent times, the greatest weakness of that society. Within the limitations of their resources and economic status, southern planters, especially Georgia rice planters, turned in a good performance in labor management well over a century ago.

## PLANTS, PROBLEMS, AND PERSONALITIES: THE GENESIS OF THE BUREAU OF PLANT INDUSTRY

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The Bureau of Plant Industry had its genesis many years ago in the agricultural needs of the country.<sup>1</sup> An attempt will be made here to review briefly the problems and personalities operating through the years which made the creation of the

<sup>1</sup> This article is based on a talk given at the 50th anniversary seminar of the Bureau of Plant Industry, Soils, and Agricultural Engineering, October 24, 1951. In addition to the sources hereafter cited, the author has used data from F. W. Powell, *The Bureau of Plant Industry, Its History, Activities, and Organization* (Baltimore, 1927), and from unpublished documents given to him by B. T. Galloway. Although this account, because of space limitations, is confined to the story of the Bureau of Plant Industry, it is understood that during the period under review similar steps to establish agricultural research institutions were under way in the states. These activities, spurred on by the passage of the Hatch Act (1887) and the Adams Act (1906), culminated in the present agricultural colleges and experiment stations of the several states. The building of these institutions and their co-operative relationships is a story in itself. An authoritative account of this parallel development of state and federal agricultural research facilities will be found in A. C. True, *A History of Agricultural Experimentation and Research in the United States*, U. S. Department of Agriculture, *Miscellaneous Publications* 251 (July, 1937).

bureau inevitable. Agricultural problems have existed in all countries and in all ages and the United States has not been an exception to this rule. The extent to which such problems have been solved has largely determined the stability and permanence of the country involved. In its half century of existence the Bureau of Plant Industry has abundantly justified the faith of its founders by contributing substantially to the solutions of many of these problems and thereby to the agricultural progress of this country.

The Bureau of Plant Industry as such commenced operations on July 1, 1901, as one of the tetrad of bureaus, including Forestry, Chemistry, and Soils, established under the authority of the appropriation act of March, 1901, later confirmed by an act of Congress on June 3, 1902.<sup>2</sup> The bureau was formed by the consolidation of five divisions which had been in operation for varying lengths of time, namely: Vegetable Physiology and Pathology, Gardens and Grounds, Pomology, Agrostology, and Botany. During the first year of the Bureau, Seed and Plant Introduction, Congressional Seed Distribution, the experimental work with tea, and the management of the very re-

<sup>2</sup> U. S. *Statutes at Large*, 31: 922, 926; *ibid.*, 32: 303.