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## The Beginnings of Big Sugar in Florida, 1920-1945

by JOHN A. HEITMANN

**D**URING the past several years, the Florida sugar industry has been under the journalist's microscope and scrutinized as no other agricultural enterprise in America. If we are to believe the evidence presented in Alec Wilkinson's *Big Sugar*, or essays written over the past decade that appeared in *Forbes*, *George*, the *Nation*, and *Florida Trend*, one must conclude that Florida sugar interests are economically privileged and politically powerful, ruthlessly exploitative towards labor, and, to top it off, largely responsible for the environmental degradation of the Everglades.<sup>1</sup> During the 1980s the focus of the attack centered on the industry's use of imported temporary workers from the Caribbean, and the force of this critique peaked in 1989 with the publication of Wilkinson's *Big Sugar*, portions of which were serialized in *The New Yorker*. Wilkinson described workers living in

quarters [that] are cheerless and without privacy; the food they are served is not to their liking, they are frequently cheated by their employers, and they are constantly tormented by loneliness and by anxiety. . . . In the fields they wear aluminum guards on their hands, their shins, and their knees, as well as heavy boots on their feet. Even so, more than one in every three of them cuts himself or is cut by someone who has lost control of their knife, or wrenches his back, or suffers an attack of some kind in the heat, or steps in a rabbit hole and turns an ankle, or is bitten by fire ants or pierces his eye or eardrum with a sharp leaf of cane. . . .<sup>2</sup>

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1. Alec Wilkinson, *Big Sugar: Seasons in the Cane Fields of Florida* (New York, 1989); Phyllis Berman, "The Fanjuls of Palm Beach: The Family With a Sweet Tooth," *Forbes*, May 14, 1990, 56-60, 64, 69. Articles and other materials on the Florida sugar industry's labor relations include Joseph Mulligan, "Sugar in Okeechobee," *Win* 18 (May 1982), 16-20; U.S. House of Representatives, 98th Congress, 1st Session, *Job Rights of Domestic Workers: The Florida Sugar Cane Industry* (Washington, D.C., 1983); Charles H. Wood and Terry L. McCoy, "Migration, Remittances and Development: A Study of Caribbean Cane Cutters in Florida," *International Migration Review* 19 (1985), 251-77.
2. Wilkinson, *Big Sugar*, 4-5.

Widespread indignation over sugar industry labor practices proved to be short lived, however, for during the 1990s commentary shifted away from the working and living conditions of cane cutters toward questions concerning financial and moral responsibility for the contamination of the Everglades by agricultural chemical runoff from cane fields. The issue of how and how much "Big Sugar" was to pay culminated in a bitterly contested state referendum in November of 1996 in which the industry prevailed. Yet it was a pyrrhic victory, for the public still generally views Florida sugar producers as influence-peddling, unscrupulous elitists who have prospered primarily because of federal government subsidies that have resulted in the American consumer paying far more for table sugar than the world market price.<sup>3</sup>

The purpose of this article is not to explore "Big Sugar's" current public relations nightmare, however, but to understand the origins of the centralized growing and manufacture of sugar in Florida. Given the decidedly eighteenth- and nineteenth-century focus on the part of scholars studying topics related to the history of sugar, it should come as no surprise that the Florida sugar industry, a consequence of a post-World War I surge in prices and a simultaneous boom in land speculation, has been largely neglected by historians.<sup>4</sup> J. Carlyle Sitterson's enduring *Sugar County*, pub-

3. On the 1996 election, see John Greenwald, "Sugar's Sweetest Deal," *Time*, April 8, 1996, 34; Robert Craper, "The Sugar Kings," *George*, June 1996, 88-92, 126-28; Harvey Wasserman, "Cane Mutiny," *Nation*, December 9, 1996, 7; John F. Berry, "Sugar Coating," *Florida Trend*, December 1996, 98.

4. Recent studies on the history of sugar include Sidney W. Mintz, *Sweetness and Power: The Place of Sugar in Modern History* (New York, 1985); John A. Heitmann, *The Modernization of the Louisiana Sugar Industry, 1830-1910* (Baton Rouge, 1987); Francisco A. Scarano, *Sugar and Slavery in Puerto Rico: The Plantation Economy of Ponce, 1800-1850* (Madison, 1984); Louis Ferleger, "Farm Mechanization in the Southern Sugar Sector After the Civil War," *Louisiana History* 23 (Winter 1982), 21-34; Idem, "Sharecropping Contracts and Mechanization in the Late Nineteenth Century South," *Agricultural History* 67 (Summer 1993), 31-46; J. H. Galloway, "Tradition and Innovation in the American Sugar Industry, c. 1500-1800: An Explanation," *Annals of the Association of American Geographers* 75 (June 1985), 334-51; Idem, *The Sugar Cane Industry: A Historical Geography from its Origins to 1914* (Cambridge, 1989); Robert L. Paquette, *Sugar is Made With Blood: The Conspiracy of La Escalera and the Conflict Between Empires over Slavery in Cuba* (Middletown, Conn., 1988); Stuart B. Schwartz, *Sugar Plantations in the Formation of Brazilian Society: Bahia, 1550-1835* (Cambridge, 1986); Denis Noden, "Betabeleras: The Formation of an Agricultural Proletariat in the Midwest, 1897-1930," *Labor History* 30 (Fall 1989), 536-63; Teresita Martinez Vergne, "New Patterns for Puerto Rico's Sugar Workers: Abolition and Centralization at San Vicente, 1873-1892," *Hispanic American Historical Review* 68 (February 1988), 45-75; David Rich

lished in 1953, remains the only even-handed analysis of the history of the Florida sugar industry, and yet this work is extremely limited in terms of sources and critical perspective.

From our contemporary vantage point, an examination of the organizational and technological roots of the Florida sugar industry between 1920 and 1945 reveals an early pattern of centralized power that was managerially delegated in a manner typical of the corporate practices of the day. But perhaps unlike their counterparts in the northern manufacturing states, these businessmen during the New Deal era were not completely opposed to "Big Government," for the federal government played a critical role in the industry by establishing favorable protective tariffs and subsidies and by guaranteeing production quotas. In addition, the federal government helped shape a labor system dependent upon so-called "H-2" migrant workers brought in for three months or more from the West Indies. The failure to mechanize cane harvesting during the 1930s and early 1940s precipitated a technological bottleneck (a limiting step in an otherwise very efficient system in cane sugar production), a task that engineering ingenuity could not effectively solve but government action could. Thus, as a result of a curious and unique mix of free enterprise and government bureaucracy, "Big Sugar" flourished in the decades after World War II not only because of its links to "Big Business," but also due to the positive intervention of "Big Government" at a critical stage in its development

The Everglades, a region surrounding and directly south of Lake Okeechobee, was to the late-nineteenth- and early-twentieth-century visitor a seemingly endless grassy glade infrequently broken with hammocks on which a few trees grew. Nearly impenetrable and certainly mysterious, attempts to reclaim the Everglades and cultivate sugar in its nitrogen-rich muck soil began in the

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ardson, "The Slave Trade, Sugar, and British Economic Growth, 1748-1776," *Journal of Interdisciplinary History* 18 (Spring 1987), 739-69; Barbara L. Solow, "Capitalism and Slavery in the Exceedingly Long Run," *Journal of Interdisciplinary History* 18 (Spring 1987), 711-38; Steve J. Stem, "Feudalism, Capitalism, and the World-System in the Perspective of Latin America and the Caribbean," *American Historical Review* 93 (October 1988), 829-73; John C. Rodrigue, "Raising Cane: From Slavery to Free Labor in Louisiana's Sugar Parishes, 1862-1880" (Ph.D. diss., Emory University, 1993); Rebecca J. Scott, "Defining the Boundaries of Freedom in the World of Cane: Cuba, Brazil, and Louisiana after Emancipation," *American Historical Review* 99 (February 1994), 70-102.

1880s. From the outset some envisioned that the “glades” held enormous promise for those who would dare to overcome its rather formidable physical challenges. Turn-of-the-century mentality dictated that the Everglades be subdued, populated, and used, rather than preserved, and these prevailing notions set the stage for the area’s development.<sup>5</sup>

By the late nineteenth century, federal initiatives were aimed at the region’s economic development. In 1892, during his campaign for national sugar production self-sufficiency, United States Drug Administration (USDA) chief chemist Harvey Wiley optimistically proclaimed:

There is practically no other body of land in the world which presents such remarkable possibilities of development as the muck lands bordering the southern shores of Lake Okeechobee. With a depth of soil averaging perhaps 8 feet, and an extent of nearly half a million acres, with a surface absolutely level, it affords promise of development which reaches the limits of prophesy.<sup>6</sup>

Wiley’s enthusiasm for the possibilities of sugar cultivation was not restricted to Florida, for he also had high hopes of maximizing the production of cane, sorghum, and beet sugar in Louisiana, Colorado, Kansas, Nebraska, Michigan, and California. But the very presence of USDA chemists in the Everglades in 1892 set the stage for future USDA involvement in the twentieth century, with the ultimate goal of converting a largely uninhabitable area into agricultural farmland. And while Wiley’s interest in sugar waned by the end of the nineteenth century, his clearly unwarranted optimism returned from time to time in the utterances of other “projectors” whose predictions of prosperity and large numbers of settlers can

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5. Early attempts to manufacture sugar in Florida are described in Michael G. Schene, “Robert and John Grattan Gamble: Middle Florida Entrepreneurs,” *Florida Historical Quarterly* 54 (July 1975), 61-73; Pat Dodson, “Hamilton Diss-ton’s St. Cloud Sugar Plantation, 1887-1901,” *Florida Historical Quarterly* 49 (April 1971), 356-69. Also see J. Carlyle Sitterson, *Sugar County: The Sugar Industry in the South, 1753-1950* (Lexington, Ky., 1953), 361-78.

6. United States Department of Agriculture, *Report of the Secretary of Agriculture, 1891* (Washington, D. C., 1892), 170.

be found in a rather extensive body of promotional literature published during the decades surrounding World War I.<sup>7</sup>

But the exploitation of the Everglades remained in the realm of wishful thinking, for until drainage districts were first established and surveys undertaken beginning in 1905 and 1907 respectively, little development could take place. Once the land was made usable, however, entrepreneurs with sugar cultivation and production on their minds rather quickly made their way to the region immediately south of Lake Okeechobee.

It is not surprising, perhaps, that one rather large contingent came from Louisiana's "Sugar Bowl," historically the center of cane cultivation in the United States and by 1910 a region experiencing a contraction in sugar planting and manufacture. Prominent Florida sugar industry pioneers—men like planter L. A. Bringer, Florida State Chemist Rufus E. Rose, and Southern States and Timber Director Jules M. Burguires—all drew upon previous experience in the Louisiana sugar industry and used it as a touchstone for their efforts in the Everglades.<sup>8</sup> Therefore, from the nineteenth century to at least the late 1920s, scientific and technical knowledge originating in Louisiana (and invariably Cuba, also) dominated the flow of expertise into the Florida sugar industry. This diffusion of technology was problematic, however, for while the application of tried and true methods was an initial cause for optimism and confidence, in retrospect it was ultimately disastrous. Technology transfer is rarely smooth, and the creation of a viable Florida sugar industry demanded new cane varieties, cultivation practices, and fertilizer requirements to accommodate Florida's unique climate

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7. Rufus E. Rose, *The Possibilities of Sugar Production in Florida* (Jacksonville, 1900); U.S. Senate, 62nd Cong., 1st Session, *Everglades of Florida: Acts, Reports, and Other Papers, State and National, Relating to the Everglades of the State of Florida and Their Reclamation* (Washington, D. C., 1911); J. O. Wright, *The Everglades of Florida: Their Adaptability for the Growth of Sugar Cane* (Tallahassee, 1912); *Sugar Cane and the Pinellas Peninsula Florida: A Combination Worthy of Investigation* (n.p., 1913); "Florida Must Become a Sugar Producing State; Because of World's Sugar Shortage; High Prices Coming," *The Florida Planter*, August 1919, 1; Malabar Sugar Company, *Florida Sugar Lands* (n.p., 1919); W. F. Blackman, *Sugar and Cane Syrup in Florida* (n.p., 1921).
8. Bringer, from a distinguished antebellum Louisiana sugar planter family, had worked closely with Hamilton Disston on the ill-fated St. Cloud Plantation during the 1880s and early 1890s. Burguires had been a founding member of the politically powerful Louisiana Sugar Planters Association in 1877 and was active as both a planter and merchant in New Orleans. See Heitmann, *The Modernization of the Louisiana Sugar Industry*, 79, 248.

and soil. Consequently, a technological system and organizational structure unlike any found in Louisiana, or for that matter, anywhere else in the western hemisphere, crystallized.

To be sure, northern capitalists and speculators also played a significant part in the story, and their interest intensified markedly with the conclusion of World War I, the lifting of wartime price controls, and the subsequent rise of sugar prices to nineteen cents a pound between 1919 and 1920.<sup>9</sup> And perhaps the Yankees' and midwesterners' most significant and distinctive contribution to the future development of the Florida sugar industry was their almost blind faith in technology— especially mechanization— in enhancing the efficiency of planting, cultivation, and harvesting operations. After all, the mechanization of the fields in the northern states had resulted in unprecedented agricultural prosperity; a similar approach had worked in the development of the sugar industry in Cuba, and there was no reason in the minds of these transplanted entrepreneurs that a comparable technological triumph could not be achieved in South Florida.

Beginning in 1919 a host of these promoters began to organize sugar growing efforts in at least three different areas of Florida, but the most significant ventures took place in or near the Everglades. For example, the Malabar Sugar Company, led by self-described "practical sugar planter" Bernard Crafton, offered three thousand acres at \$500 per acre in Brevard County. The firm's prospectus claimed that "cane now growing there shows a sugar content greatly in excess of Cuban, Hawaiian, or Louisiana Cane."<sup>10</sup> Compensating for overhead and depreciation, Crafton confidently, yet in his mind conservatively, predicted that once the enterprise was underway, earnings of over 33% on common stock could be expected. Supporting these claims, state chemist Rose, a vigorous and long-time promoter of sugar culture in Florida, asserted in 1919 that

At no time, in my opinion, has there been offered a greater opportunity for the investment of capital in a legitimate and staple agricultural business, than is offered now to the farmers and capitalists of Florida in the establish-

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9. See George H. Salley, *A History of the Florida Sugar Industry* (n.p., [1982]), 11; *Glades County, Florida History* (Moore Haven, Fla., 1985), 37-38; "Ten Acres of Cane Yield 4,000 Gallons of Syrup and Return Profit of \$3,000," *Miami Herald*, December 11, 1921, newsclipping in "Industry— Sugar" file, Florida Collection, Dade County Public Library, Miami (hereinafter DCPL).

10. Malabar Sugar Company, *Florida Sugar Lands*, n.p.

ment of modern economical sugar plantations and factories, as well as in the establishment of modern mills for the production of standardized cane syrup.<sup>11</sup>

And while many others waxed optimistically over the richness of the muck soil without having any real understanding of the complexity of sugar cane plant nutrition or soil chemistry, so too W. F. Blackman, speaking at the 1920 annual meeting of the American Association for the Advancement of Science, sang the praises of the abundant supply of cheap labor needed for the harvest without recognizing that labor markets, like the weather, can be fickle. Blackman stated:

It is only in the harvesting of the cane that a large amount of hand labor is required. We may have some difficulty at this point; but the harvest fortunately extends from early November in northern Florida to late spring in the south, so that labor can be shifted from one region to another. Moreover, a large amount of migratory labor has in recent years been attracted to the State for the picking and packing of citrus fruits . . . it ought to be possible if the need should arise, and if the effort were properly organized, to bring into the state a multitude of "hands" from the North where agricultural operations are largely suspended during the winter, for the cane harvest.<sup>12</sup>

Those who established the modern Florida sugar industry and gave it its initial shape had an unrealistic sense of the quality of the land in terms of fertilizer requirements and ready supply of harvest labor; these critical shortcomings were minimized and overlooked during the 1920s and 1930s when environmental restrictions were lax and rural labor plentiful. These two vulnerable areas proved problematic in the 1980s and 1990s when readjustments in terms of workers and pollution became far more costly and disruptive. With the industry gaining considerable momentum in terms of capital invested and technical and scientific expertise applied after 1920, there seemingly was no turning back.

In the wake of all this post-World War I promotional activity, initial attempts to cultivate and manufacture sugar on a commercial scale began in 1920 in Moore Haven and Canal Point, adjacent to

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11. *The Florida Planter*, August 1919, 15.

12. Blackman, *Sugar and Corn Syrup in Florida*, n.p.

Lake Okeechobee, and most notably (from a public relations standpoint) on a large scale seventeen miles northwest of Miami on the Miami Canal. On some 75,000 acres adjacent to the canal, the Pennsylvania Sugar Company (Pennsuco), a Philadelphia sugar refiner, began planting Louisiana cane and erected a sugar mill that was previously in operation in Texas. Acreage and operations expanded steadily between 1922 and 1924, and from the beginning the firm was committed to mechanizing field operations. Custom-made plows cleared the virgin saw grass, tractor-drawn disc harrows prepared the soil for planting, and the use of dozens of Fordson tractors, Caterpillars, and Model T Fords equipped with wide rims made it possible to deal with most routine planting and cultivation tasks using a minimum of manual labor. But machines often sunk when the land was soft, and thus mechanization had its limitations, particularly during harvesting, when men rather than machines were called for. Consequently Pennsuco hired on a seasonal basis a substantial number of African Americans from North Florida and Georgia for cane cutting.<sup>13</sup>

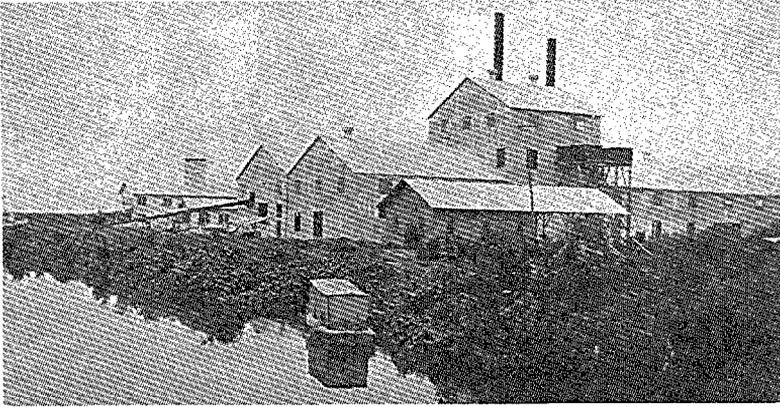
Despite the corporate rhetoric claiming that Pennsuco had initiated "a new epoch in the industrial and agricultural history of the East Coast of Florida" and its introduction of many innovative practices, the venture rather quickly proved to be a dismal failure, the consequence of imperfect understanding of the chemical effect of copper sulfate on the muck soil and the government's inability to provide adequate drainage for the area under cultivation. Indeed, by the late 1920s Pennsuco abandoned its cane project despite all of the initial fanfare and enthusiasm, and shifted to the planting of potatoes, carrots, beets, radishes, onions, and other crops until all efforts ceased with the onset of the Great Depression. Yet despite Pennsuco's short life span and limited impact upon the local economy, a strand of continuity existed between it and its successors in the South Florida Everglades, for the firm's emphasis on mechanization along with a reliance upon migrant labor for the harvest also characterized the operations of the Southern Sugar Company and the United States Sugar Corporation.<sup>14</sup>

Concurrent with the so-called "Pennsuco experiment," local efforts among Florida legislators to create an Everglades Agricultural Experiment Station were successfully underway. The Florida

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13. Sitterson, *Sugar Country*, 365-66; William A. Graham, "The Pennsuco Sugar Experiment," *Tequesta* 11 (1950), 27-50.

14. Graham, "The Pennsuco Sugar Agreement," 48.



Sugar mill at Canal Point, Florida (1922). *Photograph courtesy of the Florida State Archives, Tallahassee.*

legislature passed an act in 1921 for such a facility along the banks of the Hillsborough Canal in Palm Beach County, approximately four and one-half miles from the south shore of Lake Okeechobee, where a modest laboratory was to be constructed, along with a barn. Initially the surrounding land was drained, a well sunk, and forty acres cultivated, and by 1924-1925 the annual working budget of the station amounted to more than \$26,000. The focus of the early scientific studies at the Everglades Station centered on the chemical properties of muck soils and fertilizer requirements for a variety of crops and plant varieties; soil nutrition had been an important problem for those who did the pioneering work at the Pennsuco site, as it would be to those seeking to develop lands more to the north and west.<sup>15</sup>

By 1925 vibrant and substantial expansion and economic development had spread well beyond the immediate vicinity of Miami to

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15. On the early history of the Everglades Experiment Station, see P. H. Rolfs, Director of the University of Florida Agricultural Experiment Station, open letter, December 23, 1911; Chapter 8422 (no. 47), "An Act for the Establishment of an Agricultural Experiment Station or Stations in the Everglades of Florida," (1921); Trustees of the Internal Improvement Fund and Board of Commissioners of the Everglades Drainage District, "Report on Proposed Agricultural Experiment Station," November 7, 1921; and "Working Budget, Everglades Experiment Station, 1924-25," all in Institute of Food and Agricultural Sciences Branch Stations, Field Laboratories, Research and Education Centers, Records and Correspondence, 1917-1971, microfilm edition, reel 4, Public Records Collections Series 95, P. K. Yonge Library of Florida History, University of Florida, Gainesville.

include lands immediately south of Lake Okeechobee. This second important sugarlands region, some fifty miles west of West Palm Beach and encompassing the towns of Pahokee, Canal Point, Belle Glade, Clewiston, and Moore Haven, became for a time the focal point of the flamboyant entrepreneurial schemes of Bror G. Dahlberg, president of the Chicago-based Celotex Corporation. Born in Sweden in 1881, the son of an artist, Dahlberg immigrated to the United States with his family as a child, and after his father's premature death, supported his mother by pulling the rope of a freight elevator at age thirteen. Possessing diligence and drive, young Dahlberg worked his way up the ladder to chief rate clerk for the Northern Pacific Railroad, and then went into business for himself collecting railroad claims. After moving on to the paper business where he rose to vice president and general manager of the M&O Paper Company, Dahlberg took an entrepreneurial leap in 1921 by organizing the Celotex Company, a manufacturing operation with its first plant located in Marerro, Louisiana. The Celotex process converted waste bagasse (processed cane that had already passed through the rollers and had little commercial use) into a tough, fibrous building material with several immediate construction uses. Celotex became an instant hit, and plant capacity was increased several times, but the lack of spent cane in Louisiana due to the appearance of the devastating cane mosaic disease led Dahlberg to look elsewhere for his supply of raw material. And thus crystallized Dahlberg's interest in South Florida, where he integrated his operations and became involved in the global sugar business.<sup>16</sup>

In retrospect, it is somewhat surprising that Dahlberg was not more cautious in his involvement in this Florida sugar venture, not only because his efforts were in the wake of Pennsuco's well-publicized troubles, but also because of rapid changes in the international sugar market at mid-decade that were contributing to a glut of sugar on the market and consequently extremely low prices. Nonetheless, Dahlberg, eager to expand his agro-industrial empire beyond Louisiana, accepted at face value a most glowing report by consulting engineers Smith and Ames in June 1925, one that pre-

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16. On Dahlberg, see *National Cyclopedia of American Biography*: Vol. C (New York, 1930), 327-28; Sitterson, *Big Sugar*, 368-70; Alfred Hanna and Kathryn Hanna, *Lake Okeechobee* (Indianapolis, 1948), 308-10; for an obituary, see "Man Who Developed Florida Sugar Empire Dies at 73," *Tampa Morning Tribune*, February 22, 1954, newsclipping in "Industry-Sugar" file, Florida Collection, DCPL.

dicted \$100 per acre per year profits on land that was already being drained by government agencies.<sup>17</sup> The consultants concluded that Everglades muck soil was rich in nitrogen and phosphoric acid, and slightly deficient in potash; most importantly, it possessed a high level of organic matter, so that once drained, bacteria could flourish, and the region's "fertility will be established, practically forever."<sup>18</sup> With soil so fertile and the expense of fertilization so minimal, Smith and Ames prophesied yields of forty tons of cane per acre, remarkable to say the least, since the average annual yield of Cuban and Puerto Rican fields never exceeded half that amount. The Smith and Ames report had influence beyond that of a technical nature, for the firm's experience had been gained while consulting for the Cuba Cane Sugar Corporation, and consequently it suggested the imitation of a Cuban organizational model consisting of a large central grower and producer supplemented by a very small number of independent growers as the Florida industry's starting point.<sup>19</sup> Interestingly, this arrangement took root in the 1920s and 1930s and, despite changes in leadership, continues to thrive.

The glowing Smith and Ames report was further substantiated by USDA field studies conducted at a small station established in the mid-1920s at Canal Point. A number of varieties of cane planted there in 1927 in small scale field trials attained heights of between fourteen and twenty-four feet, possessed thick stalks, and contained an average percentage of sugar of over twelve per cent. The Canal Point trials pointed to yields of between forty and fifty tons of cane per acre, leading Congressman S. Wallace Dempsey to remark:

Sugar cane is now being grown to a greater height and larger sugar content than any other area of the world and better than in the Island of Cuba.

Great as is the importance of producing our own sugar, of equal importance is the manufacture of Celotex from the stalks of the sugar cane after the juice is removed.

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17. Smith and Ames, Consulting Engineers, "Report on the Proposed Cane Sugar Development on the Lands of the Sugarland Development Company Situated Southwest of Lake Okeechobee, Florida," typescript, June 1925, P. K. Yonge Library.

18. *Ibid.*, 6.

19. *Ibid.*, 12-17.

Celotex provides a building material for the building of homes at less cost and better in many respects than any other building materials— and every state in the Union will share in the benefits derived from the manufacture of Celotex from sugar cane.<sup>20</sup>

Resoundingly optimistic in the wake of the Smith and Ames study that predicted that he “can ultimately become the greatest and most profitable Cane Sugar Producer in the world,” Dahlberg and his associates, incorporated as the Southern Sugar Company, purchased additional acreage and a food products firm located at Canal Point. By 1926 approximately 35,000 acres were in the process of being cleared for cultivation.<sup>21</sup>

The sad story of Dahlberg’s Southern Sugar Company during the next four years will not be recounted in detail here. The hurricanes of 1926 and 1928, subsequent widespread flooding, unexpected problems in the fields and sugar house, extremely large capital investment start-up costs, and labor difficulties all contributed to the firm’s 1930 receivership and 1931 reorganization. And despite Dahlberg’s close ties to the Republican Party, drainage and flood protection programs proved inadequate, as the vital cooperation between business interests in need and the responsible authorities never took place.<sup>22</sup> But despite the miscalculations, errors in judgment, reversals due to natural disasters, and eventual bankruptcy, the Dahlberg era was significant to the future of the Florida sugar industry, for the foundations had been laid for an industry that was highly organized by managerial and cost accounting controls, and largely shaped by scientific and technical expertise. Indeed, a sustained momentum in terms of capital investment and the engagement of technical expertise had occurred in the Everglades, and those who followed— or hung on after Dahlberg’s per-

20. Quoted in *Operations of the Southern Sugar Company, May 1928*, 13.

21. Smith and Ames, *The Story of the Southern Sugar Company*; January, 1929 (n.p., 1929), n.p.

22. Dahlberg’s political maneuvers are sketched in the “Flood Control in Florida #1” file, R. V. Allison Papers, P. K Yonge Library. See newsclippings “Dahlberg Lays Blame on Politics,” *Miami Herald*, September 30, 1928, and “Levees Demanded By Sugar Planter,” *Miami Herald*, September 29; 1928. See also F. L. Williamson to B. G. Dahlberg, March 3, 1928, and E. C. Cole to Gilbert A. Youngberg, October 30, 1928, in file 1; B. G. Dahlberg to F. L. Williamson, November 22 1928; F. L. Williamson to Samuel L. Drake, November 24, 1928, and S. L. Drake to F. L. Williamson, December 7, 1928, in file 2; and Bror G. Dahlberg to Major General Edgar Jadvin, January 24, 1929, in file 3

sonal setback— would capitalize on the experiences gained during the Southern Sugar Company era.

In a manner unprecedented in the American sugar trade, Dahlberg hired an array of experts who became involved in almost every significant aspect of the business, both before and after receivership.<sup>23</sup> For example, executive vice president Jules M. Burguires, chief engineer P. Alexander Poche, manager William Calderwood Hanson, and supervising engineer H. E. Fridge had all cut their teeth in the sugar business while residing in Louisiana and had acquired extensive practical experience there; operating vice president Percy Glenham Bishop and chief construction engineer William G. Ames previously had held responsible positions in Cuba, as had a number of other important staff members; mechanical engineer N. C. Storey served as superintendent of mechanical maintenance for the Panama Canal for five years; in charge of the design of water control construction projects was Henry A. Bestor, a graduate civil engineer originally from Illinois with extensive plantation experience in Honduras, Guatemala, Costa Rica, and Venezuela as well as Cuba; and scientists R. V. Allison and Benjamin Bourne, both with research university doctorates, were state experiment station employees before joining the Southern Sugar Company. Gradually the application of this expertise led to profitable results. Between 1928 and 1930 cane under cultivation increased five fold to twenty-five acres and the Clewiston Mill's capacity was expanded from 1,500 tons per day to 4,000. Field operations were extensively mechanized: the company purchased 144 crawler tractors, 408 cane wagons, 13 cultivators and 4 locomotives. As pointed out in a 1929 auditor's report

Most of the work on the Southern Sugar Co. plantations is done by efficient machines. No horses or mules are used. The equipment used has been designed especially to meet the conditions necessitated by rich, light muck soils. All tractor equipment has extra wide treads . . . calculated to carry a maximum load. . . .<sup>24</sup>

23. Biographical sketches of many of these key figures can be found in Joe Hugh Reese, *Opening the Nation's Sugar Bowl* (Clewiston, Fla., 1929), n.p. See also Lawrence E. Will, *A Cracker History of Okeechobee* (Belle Glade, Fla., 1977), 282-90.

24. American Appraisal Company, "Report," typescript, August 26, 1929, P. K. Yonge Library.

Indeed, the operation had become so complex that plans were laid in August 1929 to reorganize operations into numerous semi-autonomous divisions encompassing approximately 2500 acres, each with its own 5,000-ton sugar house, field and transport machinery, supervisors, and labor force. Each of these divisions were to be responsible to a central administration and served by a research department located at headquarters.<sup>25</sup>

Complexity was also the case with the muck soil that was the source of much of the initial optimism during the mid-1920s and that was by the end of the decade far better understood both physically and chemically. Contrary to the Smith and Ames Report of 1925, by 1929 researchers at the Everglades Experiment Station discovered that the soil in many locations was not nearly as rich in major plant nutrients as once thought. Once the first nine inches of the soil was removed, successive layers were discovered to be deficient in both potash and phosphoric acid, thus necessitating the addition of much higher applications of super-phosphate than originally planned. Furthermore, plant scientists were baffled by the inconsistent response of cane varieties to phosphate fertilizers, as the test plants were often found with burnt leaves. Essentially, soil conditions varied greatly from one location in the Florida sugar bowl to another. Unfortunately much of the progress made in this important area would be destroyed by a storm in August and a hurricane in September 1928, natural disasters that would also fatally wound Dahlberg's financially precarious Everglades venture.<sup>26</sup>

Despite the use of mechanized equipment, agricultural chemistry, crop variety experimentation, and extensive soil drainage engineering, Dahlberg's company went into receivership in 1930, the result of high costs coupled with a plunge in the world sugar price. Interestingly enough, the drive to mechanize field operations had been extended to the harvest, as Dahlberg had responded to a labor crisis during the 1929-1930 harvest by buying the patent rights to a novel machine and requisitioning fourteen of these devices in August 1930. Designed by Australian inventor-entrepreneur Ralph Falkiner, these modified 1919 Horry Harvesters began practical trials in the muck soil of the company in December of 1930. Although these experimental harvesters cut over 150,000 tons of

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25. *Ibid.*, 7-14.

26. "Report of the Everglades Experiment Station for the Fiscal Year Ending June 30, 1929," 10-18, in Public Records Series, reel 4.

cane between 1931 and 1933, they were mothballed after extensive evaluations showed that they were prone to mechanical difficulties resulting in an improper cutting of the cane. With losses of more than ten percent, these devices proved to be far more expensive than initially anticipated. At five times the wages of a black field hand per unit of cut cane, Falkiner's mechanical harvester, despite design modifications and improvements, was a disappointing remedy to a technological bottleneck. The unique muck soil of the Everglades produced cane that was not strongly rooted and thus easily damaged during the cutting process. Furthermore, since the highest percentages of sugar in cane were found in the lowest portion of the stalks, cutting close to ground level was imperative if excellent extraction efficiency were to result; yet ground conditions made it nearly impossible for the machine to remain fixed and stable while cutting and stripping the cane of its leaves.<sup>27</sup>

In short, while planting and cultivation had been made dramatically more efficient and sugar house operations extracting the sugar from the cane taken to a high degree of chemical and engineering efficiency, the engineers involved in the Florida industry painfully discovered that cutting cane remained a task fundamentally no different than when practiced in the eighteenth century. Consequently human effort in the fields during harvest remained the only viable option to those in Florida during the 1930s and 1940s.

Between 1930 and 1931, amidst bankruptcy proceedings and the mechanical harvester trials, a complex set of negotiations took place between Dahlberg and Charles Stewart Mott concerning the future of sugar cultivation and manufacture in the area surrounding Clewiston. Mott, millionaire vice president of General Motors from Flint, Michigan, took control of the ailing Southern Sugar Corporation, restructured it, and renamed the company the United States Sugar Corporation. By all accounts Dahlberg and his

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27. On the trials of the mechanical harvester, see Fred L. Williamson, "Diary, 1930-1935," January 20 and 21, 1930, January 8, 9, 11, 12, 14, 21, 1931, and May 7, 1931, in box 29, Manuscript Collection, P. K Yonge Library; Geoff Burrows and Clive Morton, *The Canecutters* (Melbourne, Australia, 1986), 64-69; *Reorganization of the Southern Sugar Company, Plan and Agreement Dated April 1, 1931* (n.p., 1931). See also "Cane Harvester Machines," January 15, 1932, and "Cost of Harvesting Cane with Falkiner Cane Harvesters," (1933?), both in United States Sugar Corporation Archives, Clewiston, Florida. In addition to Falkiner's, at least two other competing designs existed in the 1930s. See "Cane-Cutter?" *Time*, October 10, 1938, 50, and "Machine to Harvest Sugar Cane," *Scientific American*, June 1939, 376.

co-investors were big financial losers in the affair, and Mott, who injected substantial capital into the venture at a crucial juncture, charged business associate Clarence Bitting with the responsibility of making the sugar operation pay. During the next two decades Mott stayed behind the scenes while Bitting, described by one Cuban observer as the “brains” of U.S. Sugar, transformed a stumbling enterprise into a model of agribusiness long before the term was first applied by the Harvard Business School in 1955.<sup>28</sup> Bitting, a Philadelphia accountant with previous experience managing a large Mississippi cotton plantation, implemented rigorous cost controls, supported scientific research and engineering efforts, and formulated paternalistic policies in dealing with the harvest labor force.

Ever cognizant of the power of scientific research within the business organization and an advocate of the use of chemurgy to diversify operations, Bitting authorized the construction of new research facilities in 1933. The payoff to this visionary strategy was almost immediate, not only in short-term operating profits that exceeded \$1 million annually by 1936, but also because of Dr. Benjamin Bourne’s discovery of cane variety F31-962, an innovation that had profound long term consequences for the Florida industry.

Bourne’s studies on plant diseases like Ring Spot and his investigations of the effects of freezing temperatures on sugar cane resulted in the development of a disease-resistant variety bred specifically for the conditions of the Everglades and that would be planted in two-thirds of the fields by 1938.<sup>29</sup> In keeping pace with these agricultural innovations, the efficiency of processing raw sugar improved dramatically.

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28. On this transitional period, see *Reorganization of the Southern Sugar Company, Plan and Agreement Dated April 1, 1931*; T. Williamson to Mr. Kurtz, July 1, 1931, both in R. V. Allison Papers; Hanna and Hanna, *Lake Okeechobee*, 310; *Miami Daily News*, February 20, 1937. On the early history of U.S. Sugar, see Joseph J. McGovern, *United States Sugar Corporation: The First Fifty Years* (n.p., 1982), 1-8.

29. B. A. Bourne, “Studies on the Ringspot Disease of Sugarcane,” *Bulletin of the University of Florida Agricultural Experiment Station* 267 (May 1934), 3-76; Idem, “Effects of Freezing Temperatures on Sugarcane in the Florida Everglades,” *Bulletin of the Florida Agricultural Experiment Station* 278 (1935), 3-12; Idem, “Sugar Cane Varieties in Florida,” *Facts About Sugar* (December 1940), 23-27; “John Tiedtke Historical Narrative,” typescript, February 2, 1984, in possession of author.

## THE BEGINNINGS OF BIG SUGAR IN FLORIDA

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Table 1<sup>30</sup>

Harvest Season	Total Cane (1000 Short Tons)	Yield Per Acre (Short Tons)
1931-32	300	22.4
1932-33	432	33.4
1933-34	483	32.6
1934-35	433	27.6
1935-36	496	34.5
1936-37	585	34.0
1937-38	664	33.0
1938-39	907	36.4
1939-40	746	35.5
1940-41	959	32.1
1941-42	944	30.7
1942-43	648	30.6
1943-44	699	25.7
1944-45	780	28.8
1945-46	1,041	33.2

To enhance milling operations at Clewiston Bitting hired R. J. B. Scharnberg, a German engineer who had developed a reputation in Cuba as a leading technologist. Scharnberg's design innovations in milling and clarification were rapidly introduced in Florida, and by the time of his unexpected death in 1940, the U.S. Sugar Corporation's 7,000-ton-per-day sugar house was recognized as the largest and most efficient single tandem mill in the world.<sup>31</sup>

Unlike Dahlberg, Bitting fared much better in gaining federal government dollars to support corporate sugar growing efforts in the Everglades, although he refused to admit this publicly. And it was Bitting who boldly broke with the Louisiana cane industry politically by the mid-1930s knowing full well that Louisiana interests would work hard to gain federal subsidies for all producers, even those anti-big government advocates who dominated developments in Florida. According to one 1938 account published in New Orleans, Bitting was quoted as stating that "[w]e tried to be sepa-

30. U.S. Department of Agriculture, U.S. Crop Reporting Board, *Sugarcane by States, 1909-1959* (Washington, D.C., 1962), 8; Fred Meyers, ed., *The Louisiana-Florida Sugar Manual 1957* (New Orleans, 1957), 215.

31. Harry T. Vaughn, "Clewiston: Largest Raw Sugar House in the United States," *Facts About Sugar* (December 1940), 28-32.

rated from Louisiana— We believe we are a much more efficient sugar producing area than Louisiana has ever been— We don't like to be associated with them."<sup>32</sup>

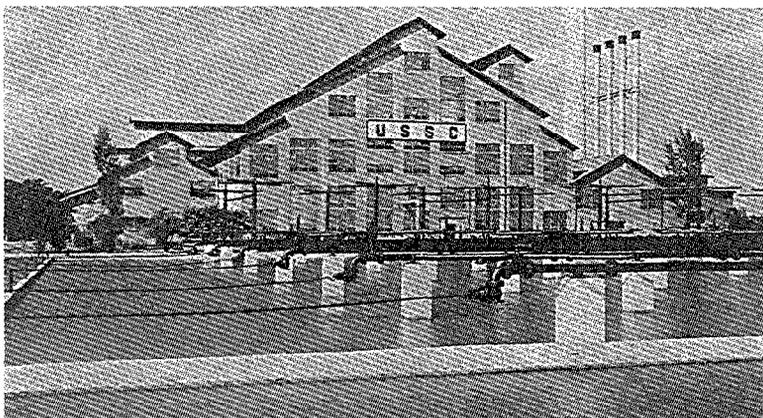
Bitting also declared war on the Cuban industry, thus alienating the two cane sugar areas that had provided much of the technology and expertise to the Florida industry during its formative years of the 1920s and early 1930s. Chafing under quota restrictions that limited Florida producers to only six percent of the domestic market, and knowing full well that the industry could grow and manufacture much more (particularly if the Cuban allocation was reduced), Bitting represented a new group of "sugar farmers" with roots in the Northeast and connections to Wall Street and General Motors. Playing "hardball" with sugar interests from Louisiana and Cuba, as well as with the federal and local governments, Bitting pressed every advantage. Bitting even purchased superior processing equipment from the same Cuban interests that he would simultaneously criticize for attempting to gain preferential treatment in the American marketplace.<sup>33</sup> Bitting vehemently argued that American sugar policy to Cuba was intimately linked to the latter's continued instability, and that until the cord was cut, Cuba would remain a resentful and politically immature ward of Uncle Sam.<sup>34</sup>

Contrary to his public remarks, Bitting owed much of his success to federal programs. For example, under New Deal auspices the U.S. Army Corps of Engineers completed flood control and drainage projects, and perhaps just as significantly sugar producers received lucrative subsidies to curtail acreage under cultivation. The Sugar Act of 1937, successor to the Jones-Costigan Act, fixed federal guidelines for fair and equitable wages for labor and provided Bitting with the incentive to involve smaller growers at the periphery of U.S. Sugar's centralized operations so as to curry political and public favor. Bitting may have been philosophically opposed to federal subsidies, and the Florida industry was definitely

32. "The Florida Sugar Industry," *The Sugar Bulletin* 16 (February 1, 1938), 1-2.

33. Juan De Dios Tejada Y Sainz, *Azucar En La Florida* (Havana, 1941), 28-29.

34. Clarence R. Bitting, *Some Notes on Cuba* (n.p., 1941), n.p.



The United States Sugar Corporation mill with water cooling tank (c. 1930s). *Photograph courtesy of the Florida State Archives, Tallahassee.*

restricted in terms of future acreage expansion, but in the end he made the most of it politically and economically.<sup>35</sup>

In 1939 Bitting took the lead in organizing the Florida Cooperative Sugar Association, thus involving independent growers in a working relationship with U.S. Sugar's Clewiston mill. The association made rules and regulations and provided instructors and inspectors to improve the methods of sugar cultivation among the group's membership.<sup>36</sup> Thus, Bitting diversified the Florida sugar industry's structure so that it would no longer be seen as simply the

35. The politics related to sugar during the 1930s are extremely complex and could easily be pursued as a separate historical topic. An important contemporary survey is John E. Dalton, *Sugar: A Case Study of Governmental Control* (New York, 1937), 184-87; Salley, *History of the Florida Sugar Industry*, 14; *The Public Papers and Addresses of Franklin D. Roosevelt: Volume III, The Advance of Recovery and Reform, 1934* (New York, 1938), 86-90, 221; *Fourth Annual Report, United States Sugar Corporation* (June 30, 1935), 9 and 14; *Sixth Annual Report, United States Sugar Corporation* (June 30, 1937), 10-14, 31-34, Hanna and Hanna, *Lake Okeechobee*, 313. The periodical literature of the era contains frequent references to sugar and politics. For example, see "Program that Worked: Jones-Costigan Prescription," *Business Week*, June 1, 1935, 32-33; "Reversing the New Deal for Sugar," *Review of Reviews* 89 (March 1934), 22, 54-55; Howard Florance, "Analyzing Sugar Companies," *Review of Reviews* 91 (June 1935), 42-47; "Sugar Battle Royal," *Business Week*, May 8, 1937, 32.

36. *Organization Agreement of Florida Cooperative Sugar Association* (n.p., n.d.).

United States Sugar Corporation to its growing number of enemies and critics. This rather superficial move (the number of independent growers amounted to about eight white men) had surprisingly significant political ramifications. Henceforth, Senator Claude Pepper became a friend of the industry and gave it vigorous support to increase industry acreage quotas from 30,000 acres in 1934 to 79,000 in 1945. The extremely small number of independents were not the sturdy farmers that were supposedly to benefit from this kind of support, but rather speculator-entrepreneur types like John Teidtke. Originally from Toledo, Teidtke began buying drainage district lands in 1936, and a year later purchased tax defaulted properties at ten to twenty percent of their value.<sup>37</sup> Thus, unlike the twelve thousand Louisiana farmers involved in cane culture in the late 1930s in Florida a mere handful of relatively sophisticated and select independent growers worked in close conjunction with U.S. Sugar. All parties concerned had strong, overriding mutual interests and all drew from the same pool of migrant labor during harvest season.

Most certainly the labor costs incurred during the harvest season posed perhaps the most formidable ongoing challenge to Bitting and the United States Sugar Corporation. Past experience with Falkiner's machines proved that the technology of the day was not feasible in the Everglades: the heavy machines simply sank in the muck soil, and only in the sandy borderlands region around Moore Haven were these devices even remotely viable. As the 1930s unfolded, the percentage of labor costs relative to total growing and harvesting costs rose steadily, from 29% in 1932-33 to 32% in 1934-35 and finally to 35.6% in 1939-40, statistics that surely did not escape the scrutiny of the penny pinching Bitting.<sup>38</sup>

Throughout the period Bitting made sure that the company organized its recruiting efforts in Alabama and Georgia, running special trains from these states to Clewiston at the beginning of the harvest. In addition, Bitting substantially reduced annual labor turnover in the cane fields by creating a paternalistic system in

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37. On Claude Pepper and his support of the Florida sugar industry, see "Florida State Department of Agriculture," *Future Possibilities in Florida* (Tallahassee, 1945), 130-33; "Narrative of John Tiedtke."

38. *Fourth Annual Report of the United States Sugar Corporation, 1934-35*, 18; *Tenth Annual Report of the United States Sugar Corporation, 1940-1941*, n.p.

which housing, schools, and recreation were all United States Sugar Corporation responsibilities. Of these nearly four thousand plantation employees, close to forty percent were migrants and Bitting confidently described them as "well trained, efficient and contented. . . ." <sup>39</sup> What is unclear from Bitting's numerous pamphlets on U.S. Sugar operations, however, is to what degree migrant field hands were treated and paid differently than those who stayed year-round in Clewiston and took on the tasks of cultivation and planting in addition to harvest work. To be sure Bitting took pride in the condition of the company's regular manual workers, but did this paternalism extend fully to the temporary workers of the 1930s and 1940s? Certainly cane cutters, whether full-time U.S. Sugar employees or migrant workers, were well trained, for the company used the methods of Frederick Winslow Taylor to analyze cane cutting motions, teach proper techniques to laborers, and implement a piece-rate system. <sup>40</sup>

In a very real sense Bitting did not completely extend his ideas on human efficiency in the workplace to cane cutting. Curiously, in contrast to U.S. Sugar's intensive research efforts to develop cane varieties and improve the efficiency of every physical and chemical operation in the sugar house, in-house efforts to develop mechanical harvesters and build on the Southern Sugar Company field trials of the early 1930s were not pursued. Perhaps Bitting saw cane cutting as a task for a group whom he might have classed as "sub-human," those people who in the past had traditionally performed manual labor and had neither the ability nor the ambition to go beyond it. Thus harvesting was intimately linked to a rigid Darwinian social structure. Bitting wrote that

There are many share-croppers and tenants who do not have either the ability or the desire to operate their own property; these people would be much better off as farm workers on a large operating unit. . . . We all know numerous laborers, croppers and tenants upon whom would be perpetrated a most ghastly joke if they were sit upon a farm

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39. Clarence R. Bitting, *Sugar and the Everglades* (Clewiston, Fla., 1937), 27.

40. Clarence R. Bitting, *The Fruit of the Cane* (Clewiston, Fla., 1940), 28.

of their own through government assistance; . . . the tragedy would be human failure.<sup>41</sup>

With the coming of the wartime economy and labor shortages, Bitting's supply of these "human failures" dried up, and in 1942, undoubtedly facing a harvest with far fewer hands, United States Sugar once again considered using Falkiner's mechanical harvesters. After a half-hearted set of trials, however, the company drew upon a new pool of migrant labor, this time looking to the West Indies. As the result of a 1943 agreement between the United States and British-controlled Bahamas, Jamaica, Barbados, St. Lucia, St. Vincent, and Dominica, farm workers from these islands were imported to replace those who had migrated north to work in the war industries. Thus, rather than place a high priority on innovation and labor-saving devices with regard to cane cutting, Bitting followed a traditional solution that kept workplace social structure intact, although minor managerial inconveniences related to control of the work force had to be dealt with.<sup>42</sup>

This "H-2" labor program, sanctioned and bureaucratized by the federal government by the 1952 Immigration and Nationality Act, remained in place through the 1980s, despite the enormous strides made in the postwar period in agricultural engineering and cane harvester design. If the sugar grower could demonstrate to the Department of Labor that a local labor shortage existed, and that these alien workers would cause no economic hardship to Americans similarly employed, the Immigration and Naturalization Service would authorize the recruitment of a specific number of workers from the Caribbean through the British West Indies Central Labor Organization. The number of migrants swelled in the early 1960s, particularly after acreage restrictions in the Florida in-

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41. *Ibid.*, 27. My perceptions of Bitting's ideas on where cane cutters fit in society and in the plantation agribusiness society of the 1930s is in large part shaped by my extensive reading of a rather curious list of sources published by Bitting in his *Bibliography on Sugar* (Clewiston, Fla., 1936). I took this bibliography as Bitting's reading list on the industry, and it contained numerous works on contemporary sociology and race relations that may well have guided Bitting in formulating his and U.S. Sugar's labor policies.

42. See Jo Marie Dohoney, "Wages of Cane: A Study of Temporary Foreign Labor Importation in the U. S: The case of West Indian Cane Workers in Florida" (master's thesis, Michigan State University, 1984).

dustry were dropped and the importation of Cuban sugar into the United States subsequently halted following the Cuban revolution.<sup>43</sup>

In short, during the 1960s and 1970s all the power of modern agricultural science was harnessed to improve soil fertility, reduce insect crop destruction, and minimize weed control. But the traditional cutting of the cane remained a back-breaking, grueling task for the thousands of West Indians imported for the harvest season. Labor and student activism in the early 1970s did not stop the industry from continuing this practice.<sup>44</sup> Astonishingly, however, and according to several of the independent growers, only the threat of a widespread AIDS epidemic in the Clewiston area during the mid-to late-1980s brought the sugar interests to a decision to see the advantages of mechanization in a new light. Very suddenly cost gained a different meaning, and traditional labor and social arrangements were no longer seen as immutable. With neighboring Belle Glade having the highest incidence of AIDS in the United States, an innovative Florida sugar industry shed the last relics of its plantation legacy and moved to adopt mechanical harvesting methods, not because of external developments, but because of a perceived internal public health threat.<sup>45</sup>

In conclusion, the Florida sugar industry's recent difficulties with both labor and the environment have a long history, indeed going back to the industry's origins in the 1920s and 1930s. The consequence of an entrepreneurial vision created in a world where the exploitation of cheap labor was common and concern over the environment minimal, the industry developed and flourished due to strong leadership, skillful financial and political maneuvering, and considerable support from the federal government. As much a reflection of the times as its leaders, the sugar industry has played an important part in the development of South Florida in the twentieth century, and the question now is whether or not as a centralized agribusiness competitive in a global marketplace it will remain a fixture in the region's future.

43. Wood and McCoy, "Migration, Remittances and Development," 255-56.

44. Ralph W. Kidder, *From Cattle to Cane* (n.p., 1979), 73. *Miami Herald*, September 24, 1972; "UFW Union Organizing," *Miami Herald*, November 15, 1972; "Machines Expected by 1977," *Miami Herald*, April 4, 1973; "Sugar Cane Workers Get a Raise," *Miami Herald*, August 22, 1974, newsclippings in "Industry-Sugar File, 1970-77," DCPL.

45. Author interviews with several independent growers, including John Tiedtke and Bob Beardsley, in May 1990, Orlando and Clewiston, Fla.