

CHAPTER IX

EXAMINATION OF THE DRAINAGE SCHEME

1. Mead-Metcalf-Hazen Report

In early March, 1912, the Miami Board of Trade, realizing the significance of the congressional investigation, invited the Moss Committee "and all critics who have not seen the Everglades to visit this district with a view to ascertaining the actual facts. . . ." ¹ The Board of Trade felt that the investigation had led to adverse criticism of the drainage works which might work great harm to the entire state; and, believing the project feasible, the soil adaptable to all branches of agriculture, and the climate unequalled, the businessmen urged the legislators to inspect the area before submitting their report to Congress.

Joe Hugh Reese believed the congressional investigation brought on by Frank Clark and others had been a healthy thing for all of Florida since it had made drainage no longer an issue, but a definite policy. ² T. E. Will, in an article on the history of the Everglades land owners' troubles, did not mention the investigation, but he did write that in the 'Glades slump of 1912 all the buyers

¹ 1912 Everglades Hearings, Number 14, 463.

² J. H. Reese, "Agricultural Opportunities in the Everglades," loc. cit., 4.

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deserted the market. The Trustees of the Internal Improvement Fund of Florida attempted to stem the tide of adverse criticism of the lands and the drainage project by appropriating \$1,000 to cover the expenses of a party of representatives of the press on a tour of the Everglades.⁴ The Trustees believed they had executed the laws of Florida in good faith in regard to the drainage operations. They felt that the adverse reports on their plans and work as well as on the value and fertility of the lands might be remedied in part if such a tour were sponsored by them. The party arrived in Jacksonville on April 12, 1912, and was accompanied on the trip through South Florida by Governor Gilchrist⁵ and other state officials.

³ T. E. Will, "Light on a Dark Subject," Ft. Lauderdale Daily News, April 1, 1931. "Its most important consequence for the board of trustees of the internal improvement fund and for the large landholders was that they found difficulty in attracting new purchasers, and that the funds with which they expected to finance the work of drainage were seriously depleted." F. P. Manuel, "Land Development in the Everglades," loc. cit., 12886.

⁴ I.I.B. Minutes, IX, 391-395.

⁵ Jacksonville (Florida) Evening Metropolis, April 22, 1912. Personnel of the party included Gilchrist, Comptroller William V. Knott, State Chemist Rufus E. Rose, Chief Drainage Engineer James O. Wright, Frank A. Hendry of LaBelle; W. H. Patterson of the Western Newspaper Union, Chicago; C. E. Moore of the Cleveland Plain Dealer; W. J. Elten of the Grand Rapids News; W. A. Wiley, syndicate writer of Baltimore; Berry Akers of the Des Moines Capital; W. L. Park, vice-president of the Illinois Central Railroad; Frank Adams, president, Barnett National Bank of Jacksonville; ex-Governor Jennings; Dr. Albert A. Murphree, president, University of Florida; Peter H. Rolfs, director, U. S. Experiment Station,

The furor did not die down, however, for in September, 1912, the Drainage Board accepted the resignation of J. O. Wright as chief engineer. He stated that he thought the drainage program had been divorced from politics, but that

During the last six months the Everglades has been the principal issue in a most bitter and acrimonious political campaign; it has been the subject of criticism and misrepresentation by the public press. It has been criticized by engineers and public men who have no interest in the work and who have never seen the Everglades. 6

The whole operation had been placed in a false light, Wright continued, and public confidence destroyed to such an extent that the future of the work was jeopardized. Wright told the Board that he had tried to do the conscientious thing, but had not accomplished the desired results and wished to be relieved of his duties.

In December, 1912, the former state engineer, having lost some of the exuberance he possessed before the Moss Committee the previous winter, explained that no part of the Everglades was sufficiently drained for occupancy or cultivation. He admitted that attempts had been made to engage in agriculture on lands adjacent to the canals and along

Gainesville, Florida; Dr. Lincoln Hulley, president, John B. Stetson University; Dr. T. E. Will, former president, Kansas State Agricultural College and former editor Conservation Magazine; and twenty others. "It is thought that the trip will give the newspaper representatives a good idea of the many advantages which can be found in the Everglades, which are rapidly being improved." Ibid.

6 I.I.B. Minutes, IX, 504-505.

Okeechobee's south shore, but maintained that such lands were subject to overflow since main outlets for water control of the lake had not been completed.

It will . . . be necessary to dig additional outlets, and put in a complete system of laterals, before the Everglades as a whole can be put in cultivation. No arrangement has yet been made for this work. 7

A footnote to the narrative of the Everglades land boom and succeeding collapse was the federal indictment of several dealers in 'Glades lands for using the mails to defraud the general public. Foremost in attracting attention were the investigations made of Richard J. Bolles, Jesse L. Billingsley, and other officials of the spectacular Florida Fruitlands Company in the Ft. Lauderdale land lotteries.⁸ The indictments returned by a federal grand jury accused

7 J. O. Wright, The Everglades of Florida: Their Adaptability for the Growth of Sugar Cane, 34-35. Wright subsequently formed an association with the Furst-Clark Company, contractors for the state drainage works, and appeared before the Trustees in their behalf in 1913. I.I.B. Minutes, X, 305.

8 New York Times, November 11, 21, 1913, December 7, 1913. It will be remembered that Bolles was represented in the suit brought by the trustees of his own company against him by former Florida attorney-general and I.I.F. counsel W. H. Ellis. 1912 Everglades Hearings, Number 20, 1019-1020. This suit, brought by the trustees of 12,000 purchasers, was settled on December 6, 1913, by allowing Bolles to retain \$1,400,000 paid to him by the Florida Fruitlands Company for Everglades acreage. The court ordered Bolles to proceed with the drainage of the lands and the company to withhold further dividends to the former until the work had been accomplished. The company maintained in its defense that the State of Florida had contracted, in the original sale of the lands, to complete the reclamation. New York Times, December 7, 1913.

Bolles and seven others of the sale of 180,000 acres of undrained and unsurveyed land to small purchasers for \$2,000,000 of which \$700,000 had been paid to the company under the sales contracts.

Some of the purchasers said their tracts were entirely under water, and could be reached only by boat. Company agents asserted that the State of Florida was under contract to drain the land, and that canals soon were to be dug and the land put in condition for cultivation. 9

Other indictments were brought by grand juries at Kansas City, Missouri, against officials of the Miami Everglades Land Company, the Everglades Plantation Company, and the Chambers Land Company for using the United States mails with intent of fraud.¹⁰ The indictments, charging Bolles and others in the Florida Fruitlands Company with fraudulent use of the mails in promoting 'Glades lands, were dismissed when

9 New York Times, November 21, 1913. The controversy was reopened by the disagreement between the members of the Florida congressional delegation and Florida officials over the drainage project, as the attorney-general of the United States had dismissed the matter in February, 1913, on the basis of having "not even a point for grand jury investigation." Ibid.

10 Ibid., December 10, 1913, November 27, 1914. Frank M. Perkins of the Miami Everglades Land Company was accused of writing and mailing a letter from Kansas City to John T. Joyce of Denver, Colorado, booming the Florida wet lands as consisting of muck soils which were shown by chemical analysis to be the richest in the world and which need not be fertilized for agricultural use. Perkins further stated that his company was associated with men of national reputation and that he would furnish Joyce with letters of introduction in case the latter desired to visit Miami and make a personal investigation of the company's lands. The prosecution charged that the described lands were undrained and unfit for cultivation. Ibid., December 10, 1913.

the evidence presented showed that the company and its officers were guiltless of fraud or fraudulent intent.¹¹

Brokers in Florida lands outside the Everglades, as well, were indicted for fraudulent use of the mails; "these indictments were published throughout the nation, particularly in those states from which a large number of settlers and large amounts of capital were being drawn."¹² A resulting panic among purchasers of lands saw many payments on sales contracts lapse, and the consequent failure to obtain funds was reflected in the State's inability to prosecute vigorously the operations of reclaiming the Everglades.

Further evidence of the doubt regarding the ultimate success of the Everglades reclamation project and especially as to whether or not the system of canals as outlined was sufficient to handle the drainage of the upper Everglades was found in a letter of instructions addressed to Daniel W. Mead,¹³ Leonard Metcalf, and Allen Hazen as a board of consulting engineers employed by the Everglades Land Sales

¹¹ New York Times, April 13, 1914.

¹² R. E. Rose, "The Swamp and Overflowed Lands of Florida," loc. cit., 130.

¹³ Daniel W. Mead was professor of hydraulics and sanitary engineering at the University of Wisconsin in 1912; Leonard Metcalf, of Boston, Massachusetts, was a consulting engineer on water supply and sewage disposal problems; and Allen Hazen was also a water supply and sewage disposal engineer located in Chicago, Illinois. Albert Nelson Marquis, Who's Who in America, VIII (1914-1915), 1590, 1611, 1072.

Company for a private investigation on July 23, 1912.¹⁴

Vance W. Helms, president of the company, directed the engineers to ascertain what amplifications of the state system, if any, would be required "to take care of the runoff from the 'Upper Everglades' as a whole and of the 70,000 acres owned by us."¹⁵ Helms directed the investigators to determine if it would be possible to dike the company's holdings on the north and west and thus render them independent of the remainder of the Everglades.

We desire the Board to furnish us with specific information as to the canals, laterals, ditches, etc., which should be installed by our company in order to properly drain our specific acreage, assuming that the canals to tide water will be installed. We desire the Board of Engineers to recommend such additional main canals and laterals as will be necessary for the purpose, and to designate the routes of such on maps to be submitted with the report. 16

In their letter of transmittal, submitted with their report, Mead, Metcalf, and Hazen notified their employers that they found the drainage of the Everglades feasible from

14 "Mead, Metcalf, and Hazen Report," 11-12. Through the courtesy of Fred C. Elliot, Secretary of the Trustees of the Internal Improvement Fund of Florida, the author was able to use a photostatic copy of this manuscript report in the Tallahassee office of the secretary. The citations are to this copy. During the winter of 1946, Arthur E. Morgan loaned the author a privately printed copy of the Mead, Metcalf and Hazen Report. So far as can be ascertained, Dr. Morgan's copy is the only one extant.

15 Ibid., 11.

16 Ibid., 12.

both engineering and financial points of view, but were of the opinion that the development must be a gradual one.

We find the present and projected system of canals, as provided by the State of Florida, totally inadequate to accomplish the drainage of the Everglades. We are of the opinion that the reclamation of your lands can best be accomplished by diking, ditching, and the construction of pumping stations by which the water may be drained from your lands. 17

The consultants found that to ascertain the amplification which would be necessary would require a large amount of study and investigation, together with extended observations and surveys, and they recommended that further studies be carried out by the State or others interested in the redemption of the wet lands.¹⁸

Mead, Metcalf, and Hazen reported that without attempting to analyze the plans of the drainage commissioners they

17 "Mead, Metcalf, and Hazen Report," 13. The three engineers convened at Jacksonville, Florida, on August 3, 1912, where they were met by H. H. Ralston, vice-president, and W. J. Kackley, a drainage engineer of the Everglades Land Sales Company, and J. O. Wright, chief drainage engineer of the Board of Florida Commissioners. The six men reached Ft. Myers on the fourth and were at Observation Island in Lake Okeechobee on the fifth. The party spent two days inspecting the Miami Canal, excavated twenty miles below the lake, and various gardens on the lake shore and islands. On August 7 they left the Bolles Hotel on Rita Island for the North Kew River or Ft. Lauderdale canal and Miami by way of Ft. Lauderdale. August 8-9 were spent in the Miami area and the party returned to Jacksonville on the tenth. August 11 was spent in various conferences and visits to federal engineers and weather bureau offices; the board finished its Florida work on August 12. Ibid., 18-22.

18 Ibid., 13-18.

felt that several conclusions could be considered fairly definite. The drainage of the Everglades was possible from an engineering standpoint and the increase in the value of the lands would more than pay the cost of reclamation. However, the excavations completed and the work projected in 1912 were entirely inadequate to drain the area. It would be financially inexpedient to attempt reclamation except as the lands could be settled, since the cost of complete reclamation would be prohibitive until the demand for lands was greater than in 1912. The magnitude of the agricultural possibilities of the Everglades would require a gradual readjustment of market conditions, transportation, and experimental work which in turn would involve much time, capital, and labor; hence the drainage work should be a progressive development with much of the work to be completed only after some of the lands had been drained and brought under successful cultivation.

These engineers held that it was apparent that private lands would not be effectually drained by the work then underway or projected by the State and, if such lands were to be drained, the work would have to be done by the landowners whose job would be especially difficult as most of the land had been sold in alternate sections. Complete reclamation would require the control of water levels in Lake Okeechobee

and the construction of more numerous drainage canals as the canals constructed and projected would benefit the lakeshore, but aggravate the flood conditions along the lower reaches. The Okeechobee control canals would have to be independent of the drainage of the Everglades and all canals would have to be increased in capacity with a prism below sea level at full discharge capacity.

In order to accomplish effective reclamation, Mead, Metcalf, and Hazen recommended that a thorough and comprehensive study be made which should include a systematic study of rainfall conditions, run-off and evaporation, rise and fall of Lake Okeechobee and of the discharge of the various lake outlets, experiments on the agricultural possibilities of the muck soils, relation of the water table to cultivated surfaces, requirements of land shrinkage and irrigation, and detailed examination of various canal routes from Okeechobee to tide-water.

To assist in the immediate reclamation of at least part of the private and public lands in the Everglades, they believed cooperation of the State was essential in the preparation of plans for progressive drainage, the passage of a sound drainage act, and in the exchange of lands to permit segregation of private holdings. As a final conclusion, it was suggested that the State devote its available resources

to the control of Lake Okeechobee, the enlargement of the natural outlets of the Everglades, the construction of additional outlets to the sea, and to the progressive construction of interior drainage canals. Mead, Metcalf, and Hazen made it quite plain that under the State plans for reclamation no formal notice had ever been given that the Everglades would be drained, but it appeared that the Trustees of the Internal Improvement Fund had been led to hope their plans might be sufficient and that the public had quite generally assumed this to be the case. The engineers found it inconceivable that some 20,000 to 30,000 purchasers of lands would have bought had they not presumed such to be their eventual
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circumstance.

The private engineers found that J. O. Wright in his 1909 report, published in Senate Documents, Number 89, 62 Congress, 1 Session, 1911, had not used available United States Weather Bureau statistics, that no South Florida stations data had been consulted, that his evaporation figures were wholly inapplicable under Florida conditions, and that his conclusions were unwarranted in the contemplated eight canals either by the information discussed or any other. Mead and his associates held that agricultural development in ten acre tracts was impractical and that the bulk of the Everglades would have to be developed in large tracts for

19 "Mead, Metcalf, and Hazen Report," 44.

citrus groves, sugar cane, or other produce for which the
lands might be adaptable.²⁰

The ultimate success of the Everglades project was given an overwhelming vote of confidence by these three men. The nurseries, gardens, and fields on Rita Island, Lake Okeechobee's shores, the Miami experiment station, and other developments along the edge of the 'Glades were proof of what the future held. Such agricultural developments would have to be accompanied by the erection of canning, sugar, and other factories as well as the facilities entailed by population growth, all of which under the best conditions must be slow. However, a warning was sounded against rapid drainage which might leave unsettled areas where fires could destroy the unguarded soil, which the board noted had happened in peat bogs in the North. It was pointed out that the logical plan for development would be along the eastern edge near centers of population and established transportation facilities.²¹ The engineers held that private endeavor, insofar as individual lands were concerned, would have to take up where the State left off; and

20 "Mead, Metcalf, and Hazen Report," 45-57. "It is unfortunate indeed for the State of Florida, for the land companies interested in the sale of these lands, and for the numerous purchasers of small tracts that the warning conveyed in the second Elliott revision of the Wright report was not promptly published by the Department of Agriculture and thus made available for their information." Ibid., 58.

21 Ibid., 88-94.

they emphasized the necessity of a sound State drainage act whereby property owners could act together in smaller units or districts.

The consultants held that the lands of the company by which they were hired could be rendered arable only by a combination of gravity flow and pumping. The engineers estimated a total subsidence of forty percent of the soil depth, with a possible minimum of thirty percent and a maximum of fifty percent; and a further possibility that continued cultivation might result in even more compaction.²²

Since the Mead, Metcalf, and Hazen Report was made for a private corporation and was never publicized, the facts that it contained did not reach a large audience. Even a private report, however, could not be kept completely out of circulation and it can well be imagined that the resignation of J. O. Wright as chief drainage engineer of the state's operations was a direct result. There is some chance that publication of the report of Mead and his associates might have

²² "Mead, Metcalf, and Hazen Report," 95-105. "Drainage by pumping has the merits of smaller cost installations, which are easier to enlarge, and have an operating cost largely dependent on the amount of rainfall . . . pumping systems are flexible in operation since they can be used for irrigation at no material increase of the fixed charges of the plant." The Mead, Metcalf, and Hazen Report suggested the drainage of the eastern part of the 'Glades by gravity and the western part by pumping. It was noted that the first costs of the gravity system were much higher than those of pumping. Ibid., 115.

led to the abandonment of the state's participation, which would have been a total loss to thousands of investors. Arthur E. Morgan believed that "The report of Mead, Metcalf and Hazen was a straightforward attempt to look the facts in the face, but it was largely neutralized by the report of Randolph, Leighton, and Perkins in 1913."²³

2. The Everglades Engineering Commission

Just before leaving the governor's office Albert W. Gilchrist wrote a lengthy letter to the Board of Trustees of the Internal Improvement Fund stating that during his four year term there did not appear in the minutes record of as much as one motion being made by him. But the chief executive listed some accomplishments of his administration and asked that the letter be spread on the minutes.²⁴

²³ Dayton Morgan Engineering Company, Report to the Board of Supervisors of Dade Drainage District on the Reclamation of the Everglades, 7. The Mead, Metcalf, and Hazen Report was reviewed in some detail in two of the nation's leading engineering journals. A reviewer in the Engineering News emphasized the shrinkage of the muck to a likely sixty per cent of the original altitude, and to a pumping system as the most likely method to be used in the Everglades. Engineering News, LXX (October 23, 1913), 835-837. Another reviewer gave the general background of the South Florida project, and severely criticised the Wright Report which had appeared in Senate Document 89, as well as the lack of an adequate drainage law in Florida and the policy of selling the muck lands in alternate sections. Engineering Record, LXVIII (October 25, 1913), 454-457.

²⁴ I.I.B. Minutes, X, 11-17.

Since a certain onslaught on the lands of the Trustees, it has been very difficult to sell any lands and it has been difficult, therefore, to finance the proposition. Those owing the trustees have found difficulty in paying the same. At this New York conference, the captains of industry and their representatives were anxious for the great work of the reclamation of the Everglades to be continued. They were unwilling, however, to pledge any money toward the continuation of the same unless there were some definite plans made by which they could see the final completion of this work. I suggested that the legislature of 1913 should pass a law, authorizing the trustees to bond for a sufficient amount of money to drain the Everglades. . . . That the amount of money derived from the taxes in the Everglades district be used with which [sic] to guarantee the interest and as a sinking fund, the lands also to be security for the bonds. 25

Park Trammell, Gilchrist's successor, found upon his inauguration that the Trustee-Commissioners were down to less than \$25,000 in cash. The revenue consisted only of drainage taxes since no lands could be sold "on account of the well organized opposition to the drainage of the Everglades." In

25 I.I.B. Minutes, X, 15. In the latter part of 1912 a syndicate from Holland was alleged to have offered the State of Florida \$8,000,000 for the remaining state interests in the Everglades. In January, 1913, William Jennings Bryan emphatically opposed the sale. "The state has gone far enough to demonstrate the feasibility of drainage, the only thing necessary being to cut enough canals to get the water off. . . . It is time to take the Everglades from the domain of speculation and deal with it as it is--a great reclamation project which needs only time and intelligence to convert this great area into a garden." Lake Worth (Florida) Herald, January 19, 1913, quoting Jacksonville Metropolis, clipping in Will collection.

26 R. E. Rose, "The Swamp and Overflowed Lands of Florida," loc. cit., 130.

his first message to the 1913 legislature Trammell stated that there had been marked progress in draining the Everglades, but that the enterprise had been embarrassed financially. The governor recommended a bill to allow the Trustees of the Internal Improvement Fund to set up one or more experimental farms which would add materially to the development of the state and enhance the value of all the lands in the area. He also asked for a bill to provide for the establishment of local drainage districts to enable private land owners to cooperate in the construction of lateral canals and local ditches to form an integrated system supplementing the main canals provided by the state.²⁷

During the first month of the biennial session of the legislature in 1913 the Trustees called a public meeting to consider ways and means for financing future Everglades reclamation. Various owners of land in the drainage district were invited to discuss the matter with the board.²⁸ The Trustees suggested the division of the Everglades Drainage

²⁷ Journal of the State Senate of Florida of the Session of 1913, 51-52.

²⁸ I.I.B. Minutes, I, 138-142. Among the land company representatives present were Pearl Wight, Maurice Stearn, Edgar Stearn, and George F. Bensel of the Southern States Land and Timber Company; Walter F. Coachman and D. R. McNeil of the Consolidated Land Company; Sidney Harrison of the Model Land Company and Florida East Coast Railway; W. S. Jennings representing V. W. Helms of the Everglades Land Sales Company, Everglades Land and Sugar Company, and Everglades Land Company; and E. J. L'Engle of both the Consolidated and the Southern States Land and Timber Companies.

District into zones, with lands in the zones to be assessed for drainage taxes in proportion to the benefits received. On April 21, 1913, the group held an evening meeting and after a long discussion of the amount of assessment per zone, the creation of a new drainage district, and bond issues, the Trustees adopted two motions. The first motion directed the counsel to draft a new bill for the district and to make provisions for a \$6,000,000 bond issue.²⁹ By the second motion it was agreed to color lands, on a map of the district, nearest the canals with a red color, those within five miles a blue color, and to leave the remainder uncolored; to assess the first group fifteen cents per acre for the first three years, eighteen cents per acre for the next three years, and twenty-five cents an acre thereafter; and to assess the other groups on a similar but lower scale.³⁰ The Trustees directed the attorney general and the board's counsel to contact Dillon, Thompson, and Clay, New York bond brokers, on the subject of floating the issue and the technicalities to be included in the proposed bond bill.

House Concurrent Resolution Number Eight of the 1913 legislature requested the Trustees of the Internal Improvement

29 I.I.B. Minutes, X, 140.

30 Ibid. W. S. Jennings, representing the V. W. Helm companies, asked the Trustees not to place the highest rates of assessment on the private lands near such canals as his companies were developing at their own expense. Ibid.

Fund to furnish that body with a detailed statement of the condition of the work of reclaiming the Everglades. The governor and his associates on the board submitted a detailed report on May 8.³¹ The Trustees brought the legislature up to the date of April 1, 1913, on the progress of the operations. Under the Furst-Clark contract approximately 177 miles of main canals had been partially completed, and 21 miles of smaller canals averaging 40 feet in width and 5 feet in depth had been excavated. Prior to the beginning of that contract on July 1, 1910, the Trustees had excavated approximately 44 miles of main canals. The total drainage expense of the I. I. Trustees to April 1 was approximately

³¹ Journal of the State Senate of Florida of the Session of 1913, 443, 905-918. On May 29, 1912, the I. I. Trustees were granted a permit by the United States War Department to lower the level of Lake Okeechobee to sixteen feet above sea level although the United States reserved the right to require the closing of all gates allowing outflow from the lake in order to insure the lowest level not falling below that height. I. I. B. Minutes, IX, 443-445; 1912 Everglades Hearings, Number 22, 1103-1104. In a speech in October, 1926, Governor John W. Martin blamed J. O. Wright for lack of foresight in drawing the federal government's attention to a matter over which the government had claimed no previous suzerainty, "but as a result of this they forthwith laid strong hands on the lake for navigation purposes and since that time the drainage board has had to contend with rules and regulations laid down by the United States as to lake levels, some of which were impossible to comply with if the drainage were to proceed." Address of John W. Martin, Governor of Florida on the Everglades and the Drainage Problem, West Palm Beach, Florida, October 28, 1926, 5.

\$2,150,000 which had been wholly derived from drainage taxes and sale of swamp and overflowed lands of the Fund, "and no part thereof has been paid by general taxation upon the people of the state, nor from the General Revenue Fund."³²

The Trustees entered a minute discussion of their financing of the works of reclamation. They related that there had been little difficulty from 1906 to 1912 because of good prices for land and the collection of the drainage tax after 1910. The problem the Trustees presented the legislature was one of finding ways and means for handling the crucial financial situation facing the Everglades project in 1913.

32 Journal of the State Senate of Florida of the Session of 1913, 906.

Cost of Drainage in Everglades Drainage District
From September 21, 1905 to July 1, 1910

Four dredges	\$ 224,512.72
Operating dredges	389,972.73
	<u>\$ 614,485.45</u>

Under Contract from July 1, 1910
to April 1, 1913

Excavation	\$1,402,656.39
Locks	75,294.54
Engineer, office, survey inspection, other expense	59,233.31
	<u>\$2,152,669.69</u> [sic]

Receipts Paying for Drainage Work

Drainage tax @ 5¢ per acre	\$1,063,067.16
One-half of Belles' 500,000 acre sale	491,370.00
Other land sales by Trustees	598,232.53
	<u>\$2,152,669.69</u>

The plan suggested to the legislators by the five state officials was two-fold; first, graduated drainage taxes on the district's lands according to the benefits received from the drainage facilities; and, second, the issuance of bonds to be secured by the drainage tax on the lands of the district which would also provide a sinking fund to retire the bonds. The Trustees reported that such a measure, incorporating these two ideas, had been prepared and would be submitted to the legislative body.³³

The stewards of the Florida wet lands advised the legislature that the results of the drainage works were not yet up to expectations but that the operations were still incomplete. Crops grown along canal banks and the driest parts of the Everglades had proven the worth of the lands. It was true that there had been considerable damage from the overflow of "unusual rainfall,"

³³ Journal of the State Senate of Florida of the Session of 1913, 910-912. "It may be said in connection with the various criticisms which seemed to have so greatly injured the project that those who have visited the operations and those who were familiar with the lands in the territory in question have been confident that the drainage could be accomplished and that the land was unquestionably very rich and productive, and therefore quite valuable. . . . The thousands who know nothing of the land, however, and the possibility of its reclamation have become very distrustful on account of the agitation." Ibid., 908.

. . . but no one who has had experience in planting in the Everglades, as far as we are aware, has for one moment questioned the fertility of the land. A similar injury to crops, due to overflow conditions, has occurred not only in the Everglades but in other parts of the State and in other parts of the country. 34

The Trustee-Commissioners felt that no large amount of territory would be free from damage by excessive periods of rainfall until the canals then under contract, including the new Palm Beach Canal, had been completed, and that even then "other canals will be necessary."³⁵ In order to ascertain the full needs of the district the Trustees and the Drainage Board had completed three months negotiations with the J. G. White Engineering Company of New York, "an engineering firm of national reputation," relative ". . . to making a report upon a system of main canals necessary for the entire territory embraced within the Everglades. . . ." ³⁶

Lastly, these five state officials believed that the Everglades and other wet lands of Florida would have gone to the railroad and other land grant corporations had it not been for the initiative of previous Boards of Trustees to

³⁴ Journal of the State Senate of Florida of the Session of 1913, 909.

³⁵ Ibid., 910.

³⁶ Ibid. ". . . within the past week an agreement has been perfected whereby a commission of engineers composed of Isham Randolph, Marshal O. Leighton, representing the J. G. White Engineering Corporation and Edmund T. Perkins have been engaged by the Drainage Board. . . . The gentlemen composing this commission are recognized as the highest and best authority on drainage in America."

carry out the provisions of the federal swamp and overflowed land grant act of 1850. Railroad land grant acts for more than five million acres were unsatisfied in 1906 which would have taken all of the land then held in the Internal Improvement Fund if Broward had not entered on the reclamation program. The Trustees noted that the State owned 1,200,000 acres in the Improvement Fund and 160,000 acres in the School Fund in 1913.

If this land is only worth \$10.00 an acre in its present condition, the State is \$12,000,000 better off than it would have been had not drainage been undertaken, and the school fund is \$1,600,000 better off, as its land has enhanced this amount. 37

In accordance with the wishes of Governor Trammell and the four members of his cabinet comprising the Trustee-Commissioner Board the 1913 session of the legislature enacted five drainage measures into as many laws. Under Chapter 6453, Laws of Florida, 1913, the legislature authorized the Trustees of the Improvement Fund to borrow money for drainage purposes in reclaiming lands granted the state under the federal act of 1850 and to issue promissory notes, be sued, transfer obligations, and to make loans to the Board of

37 Journal of the State Senate of Florida of the Session of 1913, 914.

Drainage Commissioners. Chapter 6454 authorized the Board of Drainage Commissioners to borrow money and to apply the drainage tax assessed on lands in a drainage district to re-
 pay such loans in almost the same words as Chapter 6453.³⁹

Chapter 6456, Laws of Florida, 1913, reestablished the Everglades Drainage District creating a board of commissioners with authority to assess taxes, borrow money, issue bonds, and

. . . with all the powers of a body corporate including the power to sue and be sued by said name in any court of law or equity, to make contracts and to adopt and use a common seal and alter the same at pleasure. . . . 40

Further, the act empowered the Commissioners to exercise the right of eminent domain, and set a differential or zone scale on all of the lands of the district. Lands held by the Trustees of the Internal Improvement Fund were made subject to the taxes imposed and these officials were authorized to pay such taxes from any funds in their possession, derived from land sales or otherwise.⁴¹ Finally, seven sections of the act authorized the issuance and redemption of coupon bonds to the extent of \$6,000,000 but not

³⁸ Acts and Resolutions Adopted by the Legislature of Florida at the Fourteenth Regular Session under the Constitution of 1885, 125-126. Hereinafter cited as Laws of Florida, 1913.

³⁹ Ibid., 127-128. Both acts were to be valid by sections should any section be determined unconstitutional in the courts.

⁴⁰ Ibid., 131-132.

⁴¹ Ibid., 132-160.

more than \$1,500,000 could be issued in any one year.

Chapter 6457 amended some nine sections of the General Statutes of Florida, and conferred about the same authority on the several boards of county commissioners of the state as had been given in Chapter 6456 to the Everglades Drainage District officials.⁴³ Chapter 6458 related to the creation, organization, and maintenance of drainage districts for the purpose of protecting swamp, wet, or overflowed lands, and was the answer of the legislature to the governor's request for an act enabling local or sub-drainage districts to be established throughout the state.⁴⁴

By April, 1913, the demand for a public engineering examination because of the ". . . continued criticism of the undertaking, denial of the correctness of the surveys and estimates, and of the agricultural value of the lands when drained . . ." reached realization when the Trustee-Commissioners contracted with the J. G. White engineering outfit to organize a board of engineers to be known as the Florida Everglades Engineering Commission consisting of Isham

⁴² Laws of Florida, 1913, 165-168. The Treasurer of the State of Florida was made legal custodian of any bonds issued by the drainage district, was authorized to pay the interest on such bonds, and directed to set up a sinking fund of two per cent annually of the amount of bonds outstanding.

⁴³ Ibid., 180-183.

⁴⁴ Ibid., 184-227.

Randolph, chairman, Marshall O. Leighton, and Edmund T. Perkins.⁴⁵

One anonymous writer declared:

It will be difficult to discover a more emphatic lesson of the importance of a thorough study of rainfall and runoff in drainage and irrigation than is afforded by the work upon which the State of Florida has embarked. It is evident that the canal system which is under construction there is wholly inadequate for its purposes, and that its deficient capacity is due to inadequate preliminary engineering investigations. 46

The writer went on to state that the result of such a blunder had been to involve Florida in "something approaching a land scandal" and "to lead many thousands of people to invest in swamp land in the belief that it was ready for market gardening."

45 R. E. Rose, "The Swamp and Overflowed Lands of Florida," loc. cit., 131. The Randolph Commission agreement was signed and became effective on April 30, 1913. E.D.D. "Minutes," I, 155-160. W. S. Jennings and P. A. Vans Agnew had appeared before the Board of Trustees on April 22 representing the J. G. White Company of New York, and again on April 28 when they were accompanied by Isham Randolph. I.I.B. Minutes, X, 142-143, 151-153. The articles of agreement called for a survey, of not more than six months duration, to make a complete and comprehensive examination of the area and its watershed, with the best methods of drainage, specifications for canals and other works, and a thorough coverage of the estimated costs of the proposed system. Ibid., X, 153-159. "The report to be prepared by the engineers recently employed will take into consideration the work already accomplished and carry with it recommendations as to future operations." Journal of the State Senate of Florida of the Session of 1913, 910.

46 Engineering Record, quoted in New York Times, November 1, 1913.

It is a striking commentary on public and private business methods that the first thorough preliminary study of the Everglades problem was made for the private land company which is now going ahead to protect its lands and those it has sold according to the plans of its engineering advisers. Later the state awakened to the situation, determined to follow the company's example. 47

Randolph, Leighton, and Perkins set up their headquarters in Miami on May 3, 1913, and proceeded with their contracted examination of the Everglades. Leighton undertook the hygrometric investigations, while Perkins supervised the surveying and mapping operations. The first secretary of the commission was George C. Pierce, who served for six weeks and was succeeded by George B. Hills, who had previously⁴⁸ been in charge of one of the survey parties. The finished

47 Engineering Record, quoted in New York Times, November 1, 1913.

48 The Randolph commission was guaranteed \$7,500 for reports and surveys, and \$27,500 for their total expenses. I.I.B. Minutes, X, 154. Isham Randolph, civil engineer, had served as chief engineer of the Chicago Sanitary District and supervised the construction of the Chicago Drainage Canal. In 1905 he had served on the Panama Canal Commission under appointment by Theodore Roosevelt and later accompanied Taft to the Panama Canal as an advisor in 1908. "The name of Isham Randolph attached to any enterprise was a guarantee of honesty, integrity and technical efficiency." Burr Arthur Robinson, "Isham Randolph," Dictionary of American Biography, XV, 359-360. Marshall Ora Leighton had been chief hydrographer of the U. S. Geological Survey, 1906-1913; he had been a consultant on the U. S. Inland Waterways Commission and several New Jersey flood commissions. Edmund Taylor Perkins, civil engineer, was topographer in the U. S. Geological Survey 1885-1902, in the U. S. Reclamation Service, 1902-1910, and president of E. T. Perkins Engineering Company since 1910, and president, American Reclamation Federation of the National Drainage Congress. A. N. Marquis, Who's Who in America, XV (1914-1915), 1398, 1838.

report was turned over to the Internal Improvement Trustees on October 25, 1913, and was printed as United States Senate Document 379, 63 Congress, 2 Session, after having been submitted for this purpose by Senator Duncan U. Fletcher of Florida.

The Florida Everglades Engineering Commission concluded that the drainage of the Everglades was entirely practicable and could be accomplished at a cost which the reclaimed land would well justify. The solution of the drainage problem was found to be dependent on the disposition of the waters entering Lake Okeechobee, principally from the north. "In our judgment the Everglades can best be relieved of this servitude by diverting the flood waters through a canal of adequate capacity occupying the shortest practicable route to the Atlantic Ocean or an outlet thereof."⁴⁹

With the Okeechobee flood waters diverted, the problem of draining the lands south of the lake would then be reduced to the proper provisions for carrying off the precipitation upon the Everglades by adding to the main canals traversing the territory. It was recommended that the lake control canal be excavated on the shortest course from Okeechobee to the south branch of the St. Lucie River and that the cost of this canal, two hundred feet wide and twelve feet deep, be

49 Senate Documents, Number 379, 63 Congress, 2 Session, 5.

apportioned for: (1) control of Okeechobee's level for land drainage and flood storage; (2) twelve foot navigable channel; and (3) water power of primary capacity of 5,000 horsepower. The commission estimated the total cost of this canal, lock system, and power plant at \$2,500,000.⁵⁰

We have encountered the idea, which if not generally prevailing, is, at least entertained by a large number of intelligent citizens of Florida to the effect that the problem of draining the Everglades cannot be solved by progressive steps. . . . 51

This view the engineers held to be erroneous in that the drainage work could proceed only as fast as there was need for those areas as homesteads or useful agricultural production. The three drainage specialists noted that the system of canals, North and South New River, Miami, Cypress Creek, Snake Creek, Snapper Creek, Hillsboro, Palm Beach, and Caloosahatchee, had been excavated or were in the process of excavation or contracted for, and contemplated the reclamation of a greater portion of the Everglades in the immediate future than would probably be justified by the demand for new lands.

It would have been much better to provide for an orderly progression of reclamation in accordance with the demand and with due regard to

⁵⁰ Senate Documents, Number 379, 63 Congress, 2 Session, 6. The novel feature of the hydroelectric plant would "return to the drainage district an income that will contribute largely toward the future maintenance of the drainage system." Ibid.

⁵¹ Ibid., 7.

market conditions and transportation facilities. The existing works and the conditions of land ownership and settlement, seems not to be such as to necessitate an earnest effort to reclaim in one continuous project and with the greatest possible expedition all the lands south and southeast of Lake Okeechobee between the Miami Canal, the proposed West Palm Beach Canal and the eastern boundary of the drainage district. 52

Motivated by this philosophy, the commission endeavored to plan a scheme of reclamation to provide adequate main canal drainage for the territory as outlined in the above quotation. The proposed system embodied in the Randolph plan was an amplification of Broward's original excavations under the Bolles agreement. For the control of Okeechobee's level the commission urged the large cut from the lake to the St. Lucie River. For the drainage of the Everglades east of Miami Canal, the following additional main drainage cuts were suggested: (1) a canal between West Palm Beach and Hillsboro Canals leading into the Hillsboro Canal; (2) a canal between North New River and Hillsboro Canals leading into the Cypress Creek Canal; (3) a canal between North New River and Miami Canals leading into the Snake Creek Canal; (4) the enlargement of Snake Creek Canal from a secondary to a primary cross-section; (5) the enlargement of Cypress Creek Canal from a secondary to a primary cross-section; (6) a canal from the Allapattah Flats to the St. Lucie

52 Senate Documents, Number 379, 63 Congress, 2 Session, 12.

Canal; (7) Indian Prairie-Fisheating Creek Canal; (8) and 53 thirteen other secondary canals between larger main canals.

The Randolph plan envisaged the drainage of approximately 2,000,000 acres, of which 400,000 lay outside the district, at a cost over and beyond the work done to October, 1913, of roughly \$8 an acre. The plan was all-inclusive and arranged for the complete reclamation in the area noted. It was further recommended that canals should be equipped with both locks and stop-logs, so that in cases of unusually high water the canals could be used to supplement the St. Lucie control canal in lowering Lake Okeechobee. Randolph and his colleagues recommended that laws be enacted to require the maintenance of the canals and that local landowners be required to maintain all laterals through or adjoining their property. It was further recommended that the commissioners of the drainage district bear the need for and costs of maintenance in mind when setting the size of their assessments.

The Randolph Report recognized subsidence in muck soils as a factor to be considered in their reclamation, but felt it

53 Senate Documents, Number 379, 63 Congress, 2 Session, 12-14. "The present canals will, as a part of a broad comprehensive system, be worth to the State every dollar that they have cost. They are there to serve a useful purpose in the great scheme of reclamation upon which the State has embarked; a scheme which has only to be carried to completion to make fertile fields of a watery waste and a populous land where now no man dwells." Ibid., 7.

a relatively minor problem, setting total shrinkage under eight inches above the water table.⁵⁴ Upon reclamation the engineers believed that a suitable number of dredges in constant operation would be required unless the district revert to the swampy conditions of 1913. These examiners believed that when completion of an Okeechobee-St. Lucie canal had become assured, the federal government would recognize the cut as a link in a practicable waterway across Florida, provided without cost to the United States; and would

. . . proceed to improve the channel from Lake Okeechobee to the Gulf via the Caloosahatchee River, with depth equal to that which will obtain in the Okeechobee-St. Lucie Canal; thus providing an aid for marine commerce the need for which has been felt for generations past. 55

It was unfortunate that 1913 was a dry year since many of the observations and calculations made by the commission were based on low water. Had 1913 been a very wet year, the

54 Senate Documents, Number 379, 63 Congress, 2 Session, 63. Randolph, Leighton, and Perkins urged that "Patient and continuous study by the State's officers, and especially by the farmer, must proceed for a generation. . . . This Commission in its goings about the Everglades has gathered from old residents and from apparently reputable observers and experimenters more contradictory information about muck than the commission's members have confronted about any other subject in all their professional lives." Ibid., 42-43.

55 Ibid., 67. The main differences between the Wright plan of 1909 and the Randolph plan of 1913 were the control canal for Okeechobee's waters and the amplification of the canal system to provide for the run-off of precipitation on the Everglades. Both plans depended on gravity for drainage and irrigation.

report would in all probability have made allowances for larger flood stages than are found in the document. The water power suggestion was the most questionable aspect of the report in view of the head and continuous flow which would have been needed for a hydro-electric plant. Furthermore, Lake Okeechobee had never reached an eleven foot stage within the memory of man, and it was supposed by these engineers that the Kissimmee River would supply a steady and continuous flood for waterpower use.

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56 Randolph later read a paper on his Florida experiences before the Franklin Institute of Philadelphia, Pennsylvania, in which he pointed out that "We recommended that the development should only proceed so fast as to keep ahead of actual demands of population." Randolph commented that vendors of Everglades land had appeared to be sharks, but that the real estate men had assurances of drainage which "were made by officials who were ill advised and too optimistic." Journal of the Franklin Institute, CLXXXVIII (July, 1917), 60-61. For reviews of the Randolph Report, see Engineering News, CXXI (January 15, 1914), 146-148, and Engineering Record, LXXIX (January 24, 1914), 119-120.