

REPORT OF BUCKINGHAM SMITH, ESQ., ON HIS RECONNOISSANCE OF THE EVERGLADES 1848).

WASHINGTON CITY, June 1, 1848.

HON. R. J. WALKER,  
*Secretary of the Treasury.*

SIR: Having made a report to you upon so much of the duties assigned to me by your instructions of the 18th of June, 1847, as related to the land offices of Florida, and other subjects, I have now the honor to submit the report of my reconnoissance of the Everglades, excepted from my former reports, to enable me to obtain additional information deemed important. \* \* \*

There is a faint tradition that the draining of the Everglades was contemplated and, indeed, undertaken a century or more since by either the Spanish Government or an association of Spanish subjects in Cuba, though abandoned perhaps on account of difficulties with the peninsula Indians. Some of the old maps seem to indicate something like cuts or canals from the Everglades to the waters emptying into the Gulf of Mexico; and during the late war with the Seminoles a canal was found on the northeastern border of Lake Flirt leading to the prairie of Lake Hicpochee and in the direction of Lake Okeechobee, a work, it is supposed, too considerable to have been undertaken by the Indians of Florida.

During the 21 years that Florida was a British province, from 1763 to 1784, surveys of the eastern coast were made by William Gerard De Brahm, Esq., an engineer officer of reputation in the service of that Government, and who was its "surveyor general for the southern district of North America." The official reports of these surveys and others of Georgia and Carolina have never been fully published, and, indeed, it has not been generally known in this country how far they had been perfected. \* \* \*

The Everglades extend from the southern margin of Lake Okeechobee some 90 miles toward Cape Sable, the southern extremity of the peninsula of Florida, and are in width from 30 to 50 miles. They lie in a vast basin of lime rock. Their waters are entirely fresh, varying from 1 to 6 feet in depth. Their usual level is, I am satisfied, more than 12 feet above that of the waters of the straits of Florida and of the Atlantic Ocean, but of course not so great above the Gulf of Mexico. As the Everglades extend southwardly from Lake Okeechobee they gradually decline and their waters move in the same course. They have their origin in the copious rains which fall in that latitude during the autumn and fall and in the overflow of Lake Okeechobee through swamps between it and the Everglades.

Lake Okeechobee is the reservoir of the waters of the Kissimmee River, which rises up the peninsula some hundred and odd miles, and of streams of minor extent, flowing into the lake from the country contiguous to it. It is of fresh water, said to be deep, and its average

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diameter is about 30 miles. It contains a few islands, each of them several acres in extent. Its location is given on the annexed map, prepared at the General Land Office.

The rim of the basin is of lime rock. The waters of the Glades are at different distances from the coast of the Gulf, of the straits, and of the ocean. On the eastern and southern sides of the peninsula they are within from 2 to 10 miles of the shores of the straits and ocean, while on the western side they are from 10 to 50 miles from the Gulf.

On the southern and eastern sides the lands between the basin and the coast are generally rocky, though tracts are found of limited extent that could be made fertile. Many small rivers or creeks empty into the bays and sounds on the southern and eastern sides. In wet seasons, when the basin is full, its waters find outlets over the low places in the rim and form rivulets running into the necks of the rivers; and there are instances where the waters of the Glades find subterranean passages to the sea.

On the eastern side, commencing at Cape Sable, are North Creek, Miami River, Little River, Arch Creek, River Ratones, New River, Snook Creek, and Hillsboro River, as is indicated on the map accompanying this report. Farther north are the Rivers Locahatchee and San Lucia, rising westwardly from their mouths, the former rising a few miles from Lake Okeechobee and outside the somewhat elevated lands that separate the lake from the extensive swamp of Halpatiokee, which supplies the waters of both rivers.

On the western side of the peninsula the coast is somewhat different. A cluster of low keys or mangrove islands (quite as correctly delineated on the map as they can be without an expensive and useless survey), the channels between which contain salt water, and the islands being of mud, upon which mangrove trees are thickly growing, extend from the Bay of Ponce de Leon, or Chatham, into White Water Bay, and inwardly farther north from about 5 to 25 miles from the Gulf. The waters of the Everglades fall into these channels by many small rivulets running over the margin of the basin into them, and in times of very high water in the Glades wide sheets of shallow depth are found rippling slowly through the dense shrubbery growing on the margin, which in this region is apparently of a more level surface than at other points.

The western rim of the Everglades, farther northward, deflects from the Gulf coast eastwardly until it comes near to Lake Okeechobee and the country contiguous to the Caloosahatchee, where it is due east from that coast about 50 miles. Between it and the coast on the west is the Atseenahoofa, or Big Cypress Swamp, which contains several hundred thousand acres of land, now useless to civilized man for any purpose. It can only be made valuable by draining the Everglades. Its waters are chiefly supplied from them by passageways, shallow, deep in mud, and often obstructed by dense thickets of shrubbery and vines and by large trees. From the character of its connection with the Glades in many places it may be considered a part of them. Several streams running into the Gulf have their sources in this swamp.

Commencing at Cape Sable and passing up the western coast are Shark River, Harney River, Chittohatchee, Delaware or Gallivans River, the two Caximbas Rivers, Corkscrew River, and Otsego River,

the two last emptying into Otsego Bay. They will be found described on the map with sufficient accuracy to enable a correct opinion to be formed respecting their connection with the Glades and the use that can be made of them in draining the Glades and the Big Cypress Swamp.

Farther north the Caloosahatchee finds its source some 90 miles from its mouth in the low lands outside of the western margin of Lake Okeechobee and in the swamp at the north end of the Everglades. It is, in fact, connected by sloughs of shallow depth with both the lake and the Glades at different points and receives supplies of water from both. It is supplied also by minor streams that drain the neighboring country and by Lake Flirt and Lake Hicpochee. The map indicates the old canal before spoken of to connect the waters of Lake Flirt and Lake Okeechobee.

The margin of the region of the Everglades nearest to the Caloosahatchee and Lake Okeechobee, as before described, is interspersed with sloughs and swamps, through which the waters of all, in wet seasons, mingle by shallow passages. More eastwardly the waters of Lake Okeechobee and of the Glades are said to be in like manner connected with the Lochahatchee, which receives also some of the surplus waters of the Halpatiokee Swamp, which extends up the coast some 50 miles, and being from 12 to 15 miles in breadth. The sources of the San Lucia are also toward the northernmost extremity of that swamp.

The geology of the southern portion of the peninsula of Florida is similar to that of the seacoasts of Georgia and South Carolina. Oolitic limerock, filled with the shells and corals of species that still exist, forms the great geological feature of the country. The rock is porous and susceptible of easy excavation. Exposure to air hardens it and renders it useful for building purposes. On the eastern side of the peninsula this rock shows itself through the thin coating of vegetable matter, or mud or sand, that ordinarily covers it; and it is also in detached pieces of different sizes, scattered above the ground. It contributes to the fertility of the soil, and being from its porous nature long retentive of moisture, affords sustenance to trees and plants in seasons of drought. The rim of the Everglades is generally of this character. Along the eastern verge of the Glades, and between them and the sea, there are spots of wet and black prairie land; there are also spots grown up in pine trees, the roots of which are imbedded in a dark soil of vegetable mold, lodged in the crevices and fissures of the rock; and there are tracts of what is called "dry hammock," covered with trees of various kinds growing in the same manner. Such land is more valuable for cultivation than any other part of the rim.

The same rock forms the bottoms of the openings through the rim of the Everglades to an unknown depth. It composes the floor of Biscayne Bay, of the other bays and sounds, and of the rivers along the coasts on both sides of the peninsula, and also of the basin of the Everglades. It belongs to the post-Pliocene formation of Lyell. The fossils are not very obviously identical with those in the rock of the Georgia and Carolina seacoast; but this arises from the effects of the different latitudes of the two regions upon similar living animals, of which the fossils are the remains.

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about 15 inches, and on the western side of the peninsula, at the Mangrove Islands, its rise was much greater than at any other place on the coast visited by me. At the mouth of the Caloosahatchee it is about 3 feet.

The rise of the land from the seacoast toward the Glades is manifest from the appearance of the banks of the rivers. At the mouth of the Miami the bank shows an elevation of from 2 to 3 feet above the water at the mouth of the river, to 12 feet or more at the head of the river. At this last point, within the distance of 150 yards the rise is 6 feet. Places exist where the rocky rim approaches the coast at a greater elevation than at the Miami, and on a level with the margin of the Glades, and at such places it is precipitous, 12 or 14 feet. This is the case a few miles to the north of the Miami. The vaulted rock across Arch Creek is 2 miles from the mouth, and above and below it the waters rush with great force through perpendicular rocks that, for 150 yards, overhang them on both sides the height of a dozen feet, and where the stream is about 15 yards in width.

Inside the basin, near the heads of the rivers of the eastern coast, there are covers or indentations in the shore of the Glades about 2 miles in depth. The nearest point touches the margin of the rim where the waters of the Glades approach the heads of the rivers, and where these waters are about a foot in depth. There are within the coves, channels, converging to such point, and in which the waters are from  $1\frac{1}{2}$  to  $2\frac{1}{2}$  feet in depth. The shallow places between them are covered with mud and rank saw grass. There are also sinks or holes of water several feet deep. Near the head of Little River these sinks or holes have 6 feet or more water, and similar depressions near to the head of the Miami have 11 feet. Immediately east of them, and on the line where the waters of the glades fall into the heads of the rivers, over rocky passages of not more than 15 or 20 yards wide, and from 50 to 150 yards in length, the waters run through rapids scarcely a foot in depth. The fall of these rapids is, as before stated, upwards of 6 feet, and drains or canals could easily be cut at these points. But to draw off 4 of 5 feet of water in the Glades, such drains must extend several miles from the river into the basin. I refer to the map as exhibiting all the data on this point that I have obtained.

The distance in a straight line from the navigable waters of the Caloosahatchee to the Lake Okeechobee, it is estimated, does not exceed 15 miles, and on the eastern side it is believed that canals of similar distance will connect the waters of the lake with those of the Lochahatchee of more than 6 feet depth, and, with like waters in the San Lucia, and as to all three, it is certain the fall is sufficient for such canals.

To reclaim the Everglades and the Atseenahoofa and Halpatiokee Swamps and the lowlands on the margin of the Kissimmee River and its tributaries, and the other rivers emptying into Lake Okeechobee, this lake must be tapped by such canals running into the Caloosahatchee on the one side and into the Lochahatchee or San Lucia, or both, on the other, and cuts must also be made from the streams on both sides of the peninsula into the Glades. Besides, after the height of the waters in the Glades should be decreased, even as much as 5 feet, there will probably be a necessity for several drains through the

Glades and those swamps, by which the waters accumulating from the rains may be conducted to the ocean or gulf.

That the level of the waters of the Everglades is several feet above the level of the waters outside the peninsula is demonstrated to any intelligent man who visits that region, not merely by the facts I have stated, but he must observe that, on the eastern side, the effect of the tides is not perceived a short distance up from the mouths of the streams, and that above the influence of the tides there are, when the waters are high in the Glades, continued rapid currents of fresh water from them. I am informed that when the waters in the Glades decrease during the dry season the beds of these currents near the Glades become dry. The elevation from the sea to the top of the rim that encompasses the Glades, and which is but little above the surface of the waters in the basin, is as certain as if it had been ascertained with leveling instruments in the hands of an engineer. The general opinion on this point is fortified by that of several gentlemen, some of them officers of the Navy and Army, expressed in letters which I have appended to this report, and, in fact, by one of these letters I am informed that "a line of levels was run from the ocean to the Glades at the mouth of the Miami" by a scientific officer of the Army in 1840 or 1841, which proves the correctness of that opinion beyond all doubt. It is not probable that the elevation of the waters of Lake Okeechobee is much higher than that of the waters in the basin of the Glades; nor can the waters of the Atlantic rivers opposite the lake be much lower than the streams farther south; but it is not, in my judgment, necessary that the fact should be otherwise to establish the practicability of draining the Everglades. If the modes herein suggested are not pursued, some other, devised by a skilful engineer, can be adopted. The difference of the levels that I have stated (12 feet) of the respective waters is sufficient to enable the draining to be effected. But it is believed this difference is understated. It is the opinion of one of the most distinguished and intelligent military officers of the United States that the waters of the Glades, and of the lake, are much higher above the level of the sea.<sup>1</sup> The distance from the lake to the eastern coast of the peninsula is less than 40 miles in a direct line, and not exceeding 15 miles to navigable waters emptying into the ocean; and if the judgment of that officer be correct the favorable success of the undertaking can not be questioned. \* \* \*

As to the effect, so confidently predicted by many of superior intelligence and judgment in such matters to myself, that the draining of the Everglades of 4 or 5 feet of its waters will reclaim, for the profitable cultivation of coffee, sugar, tropical fruits, and other productions of tropical climates, large tracts of the present subaqueous soil of the basin and the lowlands of the Atseenahoofa and Halpatiokee Swamps; or for the successful raising of cotton, corn, rice, and tobacco the facts I may give as to the characteristics of those regions will perhaps be more satisfactory than the expression of my individual opinion. Unless the effect is as has been anticipated, at least partially, most of the region south of the northern end of Lake Okeechobee will remain valueless for ages to come. The borders of the Everglades and adjacent lands susceptible of profitable cultivation can not now sustain any very dense or very numerous population. The acquisition of the

<sup>1</sup> See Gen. Jesup's letter in appendix, No. 3, p. 56.

advantages and benefits I have adverted to, as resulting to the Union from such population being there, depends, therefore, on the favorable success of the project of reclaiming the lands mentioned.

The appearance of the interior of the Everglades is unlike that of any region of which I have ever heard, and certainly it is in some respects the most remarkable on this continent.

Imagine a vast lake of fresh water extending in every direction from shore to shore beyond the reach of human vision, ordinarily unruffled by a ripple on its surface, studded with thousands of islands of various sizes, from one-fourth of an acre to hundreds of acres in area, and which are generally covered with dense thickets of shrubbery and vines. Occasionally an island is found with lofty pines and palmettos upon it, but oftener they are without any, and not unusually a solitary majestic palmetto is seen, the only tree upon an island, as if to guide in approaching it, or as a place of signal or lookout for its former denizens. The surrounding waters, except in places that at first seem like channel ways (but which are not), are covered with the tall saw grass, shooting up its straight and slender stem from the shallow bottom of the lake to the height often of 10 feet above the surface and covering all but a few rods around from your view. The water is pure and limpid and almost imperceptibly moves, not in partial currents, but, as it seems, in a mass, silently and slowly to the southward. The bottom of the lake at the distance of from 3 to 6 feet is covered with a deposit of decayed vegetable substance, the accumulated product of ages, generally 2 or 3 feet in depth on the white sand and rock that underlies it over the entire surface of the basin. The flexible grass bending gently to the breeze protects the waters from its influence. Lilies and other aquatic flowers of every variety and hue are to be seen on every side, in pleasant contrast with the pale green of the saw grass, and as you draw near an island the beauty of the scene is increased by the rich foliage and blooming flowers of the wild myrtle and the honeysuckle and other shrubs and vines that generally adorn its shores. The profound and wild solitude of the place, the solemn silence that pervades it, unless broken by the splashing of a paddle of the canoe or light batteau, with which only can you traverse the Pahayokey, or by the voices of your "compagnons du voyage," add to awakened and excited curiosity feelings bordering on awe. No human being, civilized or savage, inhabits the secluded interior of the Glades. The Seminoles reside in the region between them and the Gulf. Except for the occasional flight of an eagle or a bittern, startled by the strange invaders of their privacy, or for a view of the fishes in the shallow waters gliding swiftly from your boat as it goes near to them your eye would not rest on living thing abiding in this wilderness of "grass waters," shrubbery, and flowers. Reflections upon the past history of the region around you, unbidden, force themselves upon the visitor to the interior of the Glades. On these islands, in ages that have long since passed away, the haughty and ferocious Carib cacique dwelt. He and his people were driven from their homes by more powerful people, who were in turn expelled by stronger foes. Here the daring and reckless buccaneer of later times came, after his cruise for plunder, to revel in safety upon his unhallowed spoils. Once in this secluded spot the Catholic missionary pursued the heavenly vocation of teaching the benighted pagan the truths of the gospel; and here he sealed his devotion to his God by yielding up his

life to the vengeance of the infidel savage. Part of these Glades are now in the allotted district of the wily and intrepid Arpiarka, the chief of those of his tribe that fought so fiercely and so obstinately in resisting the enforcement of the policy of the Federal Government of removing them west; and who finally succeeded in constraining the United States to abandon that policy and allow them to remain still longer on the hunting grounds and near the graves of their fathers. The recollection also that the sacred name of "Laguna del Espiritu Santo" was given to this region by the Spanish discoverers is not without influence upon the visitor. The effect of such visit to the Pahayokee upon a person of romantic imagination and who indulges his fancies on such subjects, it may be presumed, would be somewhat poetic. But if the visitor is a man of practical, utilitarian turn of thought, the first and the abiding impression is the utter worthlessness to civilized man, in its present condition, for any useful or practical object, of the entire region. A solitary inducement can not now be offered to a decent white man to settle in the interior of the Everglades. Some of the islands may be fertile, but their inaccessibility, except by small boats, and the entire isolation from society their residents would have to encounter, would deter most men (who did not desire to avoid their fellows either from misanthropy or fear of justice for crimes committed) from making the Glades their homestead.

Of the practicability of abstracting 5 feet or more in depth of the waters from the basin of the Everglades and from the Atseenahoofa and Halpatiokee Swamps near the Glades by the means suggested I have given my opinion and the data on which it is founded. When the waters are thus abstracted, the deposit beneath them in the basin, generally from 2 to 3 feet in depth and sometimes more before the rock is found, will be left exposed and become dry. Whether it is of such character that without any admixture of loam or other soil it can be relied upon for the cultivation of anything can only be determined by actual experiment. This deposit is exceedingly light and when dry and broken to pieces becomes an impalpable powder. If it should be found to be a good compost, its speedy exhaustion and its liability when dry and exposed to the surface to be removed by the winds are obstacles to its extensive successful use in the cultivation of sugar, rice, tobacco, cotton, or corn that should be anticipated. But even then, that the basin may be advantageously appropriated to the rearing of tropical fruit trees and plants, by excavations if necessary in the rock of its bottom and filling them with the deposit and soil in their vicinity, I have little doubt; and that large tracts of fertile and valuable lands, adapted to the cultivation of any of the products named, can be reclaimed in the Atseenahoofa and Halpatiokee Swamps by the undertaking suggested, if properly carried out, I do not question. I do not hesitate also to state my conviction that the increased value of the lands thus reclaimed would equal the cost of such undertaking. Besides, by decreasing the waters of Lake Okeechobee 5 or 6 feet, hundreds of thousands of acres of the best bottom lands on the shores of the River Kissimmee and other rivers tributary to that lake (those on the Kissimmee extending the distance of 100 miles up that river) would be also reclaimed, and a large quantity northeastwardly of that lake may likewise be drained by proper canals, as suggested, connecting the lake with the ocean and lateral drains running into the prairies there situated. \* \* \*

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The Everglades are entirely below the region of frost, and the meteorological and barometrical statistics of different times within the last 80 years, furnished by several different writers, prove that the climate is as favorable to the cultivation of tropical fruits as that of any country between the twenty-eighth and twenty-fourth parallels of either north or south latitude. De Brahm, in his manuscript work, before noticed, has compendious tables which he calls "Ephemerides," containing useful information of this character, in relation to different points of the Peninsula of Florida. Dr. Perrine has furnished similar tables, and he states that most of the productions, natural to the tropical latitudes, can be best cultivated on the borders of the temperate latitudes, nearest the Equator; and experience verifies his statement. It is known that in China many productions, originally from between the Tropics, have become acclimated, and are reared successfully as high as the fortieth degree of latitude. \* \* \*

If the hopes indulged of the favorable success of draining the Everglades should be but partially realized; if the interior of the Glades, from the causes I have intimated, or others, should be proved, by the test of experiment, not to be adapted to the cultivation of sugar, cotton, rice, and tobacco, corn, sisal hemp, and the other most important products, specified in the documents and publications referred to; and the extensive region in the basin now subaqueous is, in consequence, as I have little doubt it can be, appropriated profitably to the growing of tropical trees and plants bearing fruits, as I have suggested, the result will still be highly beneficial to the Union, and, in my judgment, will fully compensate for the expenses incurred. If the large quantities of lemons, limes, oranges, bananas, plantains, figs, olives, pineapples, coconuts, and other tropical fruits, enumerated in the publications cited, now imported, at high prices, from the West Indies and elsewhere, could be supplied, or only in part supplied, from this region, it would be of no trifling advantage to the whole country. Such fruits could be shipped to any part of the United States in less time, in better preservation, and, of course, at much less loss, and cheaper than from any part of the world, and without the payment of any export or import duties. This region, it should not be forgotten, is the only section of the Union the climate of which is congenial to such productions in such degree that any expectation may be entertained of rearing them for shipment, and the only region that can be looked to as capable of rendering us to any extent whatever independent of other countries with respect to those productions. But if it should be ascertained that the more important staples of sugar, etc., before specified, can also be advantageously cultivated in south Florida, after this undertaking is finished, then, that the results must be of inestimable value to the whole Confederacy, will be so clearly manifest, as to render comment wholly superfluous.

Eminent statesmen and philosophers have, in estimating the services of individuals to their country and to their fellow men, advanced the opinion that he who causes two sheaves of wheat to grow where one only grew before, better deserves the thanks of his race than the author, the legislator, or the victorious general. The degree of merit awarded by them to the particular act first specified may be extravagant, but no one of sound moral judgment will, it is presumed, deny that the increase of the agricultural resources, and the promotion of the agricultural interests of a people already polit-



ically free, is the very highest service that can be rendered them, and most conducive to the preservation of their independence, prosperity, and happiness. The citizen, whether in executive or legislative station, or without either, who succeeds in making fit for cultivation, even if but partially, a region equal in extent to either of the three smallest States of this Confederacy, now as useless as the deserts of Africa, will earn a rich meed of praise from the people of Florida and of the Union. The Everglades are now suitable only for the haunt of noxious vermin, or the resort of pestilent reptiles. The statesman whose exertions shall cause the millions of acres they contain, now worse than worthless, to teem with the products of agricultural industry; to be changed into a garden in which can be reared many and various exotics, introduced for the first time for cultivation into the United States, whether necessities of life, or conveniences, or luxuries merely; that man who thus adds to the resources and wealth and independence of his country, who contributes by such means to the comfort of his fellow men, will merit a high place in public favor, not only with this own generation, but with posterity. He will have created a State. I feel that to be connected with the inception of a measure which, if carried out properly, will probably produce such results; to be identified, even in a secondary position, with the commencement of an undertaking that must be so eminently beneficial to my country, is a privilege of no mean consideration. \* \* \*

Though it is not anticipated that the draining of the Everglades, and the settlement of south Florida, and the cultivation of exotics of the kinds mentioned on the many thousands of square miles of land in that region, will change the destiny of the confederacy, or either cause or prevent any great revolution on this continent, yet, looking at the past incidents I have alluded to, it may, without extravagance, I think, be foretold that if anything approximating to the sanguine expectations of many intelligent officers and citizens are realized, in less than 10 years a new, independent State may be added to the Union, formed out of east and south Florida, dis severing the unnatural connection now existing between them and middle and west Florida, sections totally dissimilar in pursuits, interests, and habits from the former; and the enterprise, industry, and progressive spirit of our citizens of other portions of the Union, now led elsewhere, may be directed into channels equally profitable and more conducive to the peace, prosperity, and permanent happiness of the Union and the perpetuity of our republican institutions.

I have thus given to you all the information upon the subject submitted to my examination that I can furnish. Whether the undertaking which, if it succeeds as hoped, promises to be so eminently beneficial to the country should not be commenced forthwith, I submit to your patriotic and enlightened consideration. In my judgment the experiment is worth a trial.

I have the honor to subscribe myself, with high respect, your obedient servant,

BUCKINGHAM SMITH.

NOTE.—(a) Prof. Nicolet, in his sketch of the history of St. Louis, Mo., in page 92, Senate Document No. 237, printed February 10, 1841, second session Twenty-sixth Congress, says:

"Is it not surprising that during the 32 years that Spain had possession of upper Louisiana the province was never settled by native Spaniards, excepting the officers

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who ruled over it and a few fur traders? The inhabitants were French or the descendants of French from Canada or lower Louisiana; and the Spaniards have left no remembrances of themselves, saving their land register—no institutions, no works, not a single monument of public utility. Doubtless the golden treasures buried in the mountains of Mexico and of South America were too alluring to allow emigrants to be tempted from them and engage themselves in the labors of agriculture in the rich valley of the Mississippi. But taking a retrospect, when Spain was the greatest of maritime powers, when during the reign of Ferdinand and Isabella her navigators discovered new worlds, giving her an empire on which the sun never set; when the great armada struck terror in the bosom of the haughty Elizabeth, it becomes painful to think how ephemeral is the ascendancy even of the bravest and most prosperous nations, how truly rapid their decline and fall!"

#### APPENDIX TO REPORT OF BUCKINGHAM SMITH.

NO. 1.—EXTRACT FROM THE REPORT OF COL. R. BUTLER, SURVEYOR GENERAL OF FLORIDA IN 1847, TO THE COMMISSIONER OF GENERAL LAND OFFICE.

[See Ex. Doc. No. 2, first session 30th Cong., p. 155.]

I now ask your attention to the Everglades, which can not be surveyed without first being drained. You will observe, from the diagram map accompanied, that the surveys have been extended around a large portion of them, and I am led to believe that, if drained, a region of valuable land would be reclaimed and rendered very productive; but being interior and without any navigable stream flowing from them, a question arises whether the draining of them by the United States would not conflict with State sovereignty; and if Congress should so determine, might not a grant, for specific purposes (making roads and building bridges to facilitate intercourse), be made to the State of Florida of one moiety, in a definite form, conditioned that the State authorities cause them to be drained at the State's proper cost and within a given period, of which I believe them susceptible. The United States would thus realize, for survey and sale, the other moiety, and the State acquire a valuable fund for the purposes above stated, after meeting the expenses of draining, and thus would be opened a large fertile surface for the habitation of man, cultivating sugar and tropical fruits extensively thereon.

NO. 2.—LETTER OF GEN. JAMES GADSDEN, OF SOUTH CAROLINA, TO HON. R. J. WALKER, SECRETARY OF THE TREASURY.

WASHINGTON, D. C., May 4, 1847.

DEAR SIR: At the request of Hon. Mr. Westcott, of Florida, stating at the same time that it would be acceptable to you, I take the occasion of expressing an opinion favorable to the practicability of draining the Everglades and, with them, by same process, most of the lowlands and prairies forming the basin of the upper St. Johns River.

In the years 1823 and 1824 I was engaged in defining the Indian boundaries, under the treaty of Fort Moultrie, and at the same time in examining into the practicability of a road from St. Augustine to Cape Florida.

In the surveys and examinations connected with the performance of these operations, I was forcibly struck with the fact of the elevation of these regions above the level of the sea, and which had been supposed to be submerged, forming lakes, impenetrable swamps, and lagoons.

The elevation of the Everglades and prairies of the St. Johns above tidewater proved the capability of their being drained, while the inlets along the coast and the number of small rivers and creeks, which at seasons relieved the overflowings of the interior basin of Florida, showed that by deepening these natural outlets at their heads and multiplying the number of parallel and artificial cuts at favorable points the whole country, at times submerged, might be reclaimed and brought into profitable cultivation. If I did not advert to these views in a report made at that early period to the Department of War, I have subsequently mentioned them in conversation, and, I think, at one time gave publicity to them with some details through the columns of a newspaper.

The subject is one of great public interest, in my estimation, and merits investigation, for should the basin of the interior of southern Florida be susceptible of reclamation it will open to the United States the only portion of her territory capable of

competing with tropical latitudes in all those productions which enrich them. I write in great haste and would, if desirable, when more at leisure, enlarge on the views herein so briefly conveyed.

Respectfully, your obedient servant,

JAMES GADSDEN.

HON. R. J. WALKER,  
*Secretary of the Treasury.*

NO. 3.—LETTER FROM GEN. THOMAS S. JESUP, QUARTERMASTER GENERAL, TO  
HON. J. D. WESTCOTT, JR., UNITED STATES SENATOR.

WASHINGTON, *February 12, 1848.*

MY DEAR SIR: In reply to your inquiry whether it would be practicable to drain the Everglades in south Florida and what would be the advantages, political and military, of that measure, I have to remark that I entertain no doubt of the practicability of the measure.

From my own observation, when commanding the army operating in that country 10 years ago, as well as from reports made by and information derived from intelligent officers who operated near and who explored the Everglades and the large lake (Okeechobee) north of them, I have no doubt both the glades and the lake are from 30 to 50 feet above the level of the sea in the most violent storms. The practicability of draining both I take for granted. As to the expense, that can be determined only by accurate surveys. The effect of the measure would be to reclaim many hundred thousand acres of valuable land, without including the bed of the Everglades, now subject to inundation for several months in every year. The Kissimmee River is the outlet of Lake Tohopekaliga, and connects that lake with the great lake Okeechobee. It is a sluggish stream, bordered by a large body of as rich lands as any in the South, which it inundates to a vast extent during the rainy season. Were the surface of the lake and the Everglades lowered, those fine lands would be reclaimed and would soon be converted into as valuable sugar plantations as any in the world. The hammocks in this part of the country are all extremely rich and would all soon be converted into sugar plantations. The swamps are generally peat swamps, which, if drained, would soon be converted into olive, lime, and orange plantations and would be cultivated by a numerous white population, which would be interposed between the sugar plantations, cultivated by slaves and the free blacks of the West Indies. This, in a military point of view, would be highly important and add greatly to the strength and security of the South.

To protect our valuable and growing western and southwestern commerce, we must command the communication between the Atlantic and the Gulf of Mexico. This can be done only by fortifications on the Florida Keys, combined with war steamers; to support those fortifications we require a numerous population in their rear.

One of the effects of reclaiming the inundated lands of south Florida will be to give us this population, whose labors will render us as independent of the West Indies, as regards most of the tropical products, as their presence will protect us from the influence of the policy adopted in the British Islands.

You must take these crude and hasty remarks for what they are worth; for, pressed as I am by official engagements, I can do justice neither to the subject nor to myself—I have not time, even, to read what I have written.

I am, most respectfully, your obedient servant,

TH. S. JESUP.

The Hon. J. D. WESTCOTT, JR.,  
*Senate United States, Washington.*

NO. 4.—LETTER FROM GEN. WILLIAM S. HARNEY, UNITED STATES ARMY, TO BUCKINGHAM SMITH, ESQ.

WASHINGTON, *January 23, 1848.*

DEAR SIR: I cheerfully comply with your request to state to you, in this form, my knowledge of that region of your State called the "Everglades," and my judgment as to the feasibility of draining them, and as to the mode of draining them, and the benefits that would ensue therefrom.

During the late Seminole War I was repeatedly in the Everglades and on the rim or margin at different points, and crossed it from Miami to Shark River. It is a vast, fresh-water lake, of shallow depth, from 60 to 90 miles in length, and from 25 to 50 miles in width. Its general depth is from 2½ to 6 feet of water, over (say from

2 to 6 feet of) soft mud, or vegetable deposit. It is interspersed with thousands of islands, from a quarter of an acre to several acres in area and generally having a few trees on them. Water grasses of several feet in height above the water cover its entire surface, except in a few channels or where there are small ponds of water with sand bottom from 3 to 5 feet deep. There are no trees in the waters of the interior of the Everglades, but the margin of the "Glades," running out about on an average 1 mile, is full of fine cypress trees. The Everglades are supplied with water, in my opinion, from two sources: First, the rains that fall in it; second, from the lake Okeechobee, lying on its northern extremity and separated from it by a very narrow strip of grass swamp. This is proved by the fact of which I have been informed, and of the truth of which I am satisfied, that in seasons of drought the water in the Everglades is very much diminished, and its fall in such seasons corresponds to the fall in the adjacent lake. The lake is a deep reservoir for the rains that fall on the eastern, northern, and western sides of it for many miles (the country for some distance depressing as its shores are approached). On its northern side it receives all the waters of the Kissimmee River and its tributaries, rising over a hundred miles farther up the peninsula and being the natural drains for that distance for the whole region, except that contiguous to the sea and gulf coast, or the River St. Johns, and the lakes at its source.

The bottom of the Everglades, below the deposit I have mentioned, is of lime-rock, common in that region, and its general level, I am fully satisfied, is several feet above the level of high water in the Gulf of Mexico on the west, or the Straits of Florida on the east and south—a few miles only distant from the rim or margin, for 50 or 60 miles from its southern extremity. Of the practicability of draining them I have no question. That such work would reclaim millions of acres of highly valuable lands, now utterly valueless because incapable of use, I have no doubt. My plan for doing the work would be to dig a large and deep canal from Lake Okeechobee into the Caloosahatchee River on the west side and a like canal from the lake to the head of the Loxahatchee River on its east side, and smaller canals from the Glades through the river into the head of the Ratonos, Little River, Arch Creek, Miami, Shark River, and other outlets on both sides of the peninsula. I am satisfied these canals and drains once opened the Glades will become dry; I am also convinced these canals could be easily kept open by the water running through them. Of the cheapest mode, and of the cost of such undertaking I can not pretend to make an accurate estimate. The two chief canals would not probably be more than 10, or at the outside 15, miles in length each, 30 feet wide, and from 5 to 15 feet deep; and the others need be but small drains or ditches of from 3 to 5 miles in length. No person can say with positive certainty what the soil of the Everglades when drained would or would not produce; but it is my opinion it would be the best sugar land in the South and also excellent for rice and corn. But if not, it could at any rate in that latitude be made valuable for the raising of tropical fruits, and it is the only region of the present United States in which they can be raised. Its being made susceptible of cultivation (and instead of being as now a waste of waters fit only for the resort of reptiles) would be a happy epoch for Florida. I do not know of a project that I regard as more calculated to benefit the country than this, if successful. If it does succeed, it affords the Union just the kind of cultivable land that is wanted to render us to a great extent independent of the West Indies. If it does succeed, in less than five years that region will, I have no doubt, have a population of a hundred thousand souls and more. Our coast in south Florida is now extremely exposed in time of war. This population would protect it and afford security to the whole commerce of the western country passing along its shores. It would also tend to the security of the entire southern portion of the Union in an eminent degree. But it is not necessary for me to advert to these considerations. This letter is already tedious, and I close it with the assurance that

I am, respectfully, your obedient servant,

WM. S. HARNEY,  
Colonel, United States Army.

To BUCKINGHAM SMITH, Esq.

NO. 5.—LETTER FROM LIEUT. COL. S. H. LONG, TOPOGRAPHICAL ENGINEERS, TO  
HON. J. D. WESTCOTT, JR., UNITED STATES SENATOR.

PITTSBURG, February 7, 1848.

SIR: I have perused with interest and satisfaction the several papers you did me the honor to exhibit for my inspection in relation to the Everglades of your State.

Although I have never had an opportunity of visiting that part of the country, yet from the documents above mentioned and from conversations with several intelligent

gentlemen who have explored the Everglades I have obtained much authentic and valuable information in regard to the character and aspect of the district of country designated by that name.

The main body of this district appears to be situated between  $25^{\circ} 31'$  and  $27^{\circ}$  of north latitude, and between  $80^{\circ} 30'$  and  $81^{\circ} 15'$  of west longitude from Greenwich. Its extent from north to south is about 100 miles, and its average width from east to west about 50 miles. It is bounded on the north by Lake Okeechobee, which may be regarded as an extensive water sheet covering a portion of the Everglades and holding it in a state of constant submersion, and on the east, south, and west by a sort of rim or margin, elevated a few feet above the common level of the included district and of the circumjacent country. A profusion of insular tracts of greater or less extent and of elevations about equal to that of the rim, or a few feet above the common level of the district, are scattered in every direction over the surface of the district.

With the exception of these insulated tracts and the rim with which it is bounded the entire district is subject to periodical overflows of water to the depth of 2 or 4 feet during the rainy season, which usually prevails from August or September to February or March of every year. These overflows are supposed to have their principal origin in the country northward of Lake Okeechobee and to be brought down to the lake through the channel and valley of the Kissimmee River.

The entire district embraces an area of about 5,000 square miles, nearly one-half of which, agreeably to the best information I can obtain, is susceptible of drainage, and when thus reclaimed would present fields of vast magnitude adapted to the cultivation of sugar, rice, and numerous tropical products of great value. The method of drainage that has been proposed and recommended is as follows, viz:

First. A spacious canal or drain leading from Lake Okeechobee westward, through the valley or pass of Caloosahatchee River to the Gulf of Mexico;

Second. A similar canal leading from the same lake eastward, through the valley of Lochahatchee River to the Atlantic Ocean; and

Third. Numerous drains of much smaller size leading across the rim and communicating, respectively, with one or more of the numerous rivulets that rise in the vicinity of the rim and empty into the Gulf of Mexico and Atlantic at various points along the coast of Florida.

It is believed by many that the two large canals first mentioned will amply subserve the purposes of drainage; but should they prove inadequate that the desired end may be effectually attained by means of the smaller drains mentioned in the third proposition.

The practicability of draining the Everglades must of course depend on the elevation of Lake Okeechobee and of the Everglades themselves above the level of the high tides in the ocean. This elevation is supposed to be from 12 to 20 feet. The difference of the levels alluded to, so far as I can learn, has never been determined by instrumental surveys. Its accurate determination should unquestionably precede any attempts to accomplish the object in view.

By means of the two canals connecting Lake Okeechobee with tidewater, together with a lock in each (if found necessary) of suitable dimensions to admit small coasters and steamers, it is supposed that a line of continuous navigation may be opened entirely across the isthmus of Florida from the Atlantic to the Gulf of Mexico. In case the locks should be found expedient and proper they should be accompanied by spacious waste weirs or sluices and perhaps flood gates in order to afford a full and free discharge of water from the lake, etc.

The portion of the Everglades believed to be susceptible of drainage in the manner herein contemplated embraces an area of at least 1,000,000 acres, and the cost of drainage, surveys, etc., included, it is also believed, will not exceed \$300,000, or 30 cents per acre.

The benefits likely to result not only to the State of Florida, but to the United States generally, are incalculable. These advantages will manifest themselves not only in giving great value to lands now entirely waste and useless, but in adding an incalculable amount of the choicest and richest products to the means of subsistence and to the comforts of human life. An early appropriation to the amount above mentioned, viz, \$300,000, is deemed advisable and is hereby most respectfully recommended. I have the honor to be, sir,

Very respectfully, your obedient servant,

S. H. LONG,

Lieutenant Colonel, Topographical Engineers.

Hon. J. D. WESTCOTT, Jr.,  
United States Senate.

No. 4.—Letter

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NO. 6.—LETTER FROM MAJ. J. D. GRAHAM, TOPOGRAPHICAL ENGINEERS, TO HON. J. D. WESTCOTT, JR.

WASHINGTON, *March 1, 1848.*

SIR: Having considered the very interesting and important subject of draining the submerged district of country within the State of Florida known by the popular name of "the Everglades," I cheerfully say that I fully concur in the views and opinions expressed in the letter of Lieut. Col. S. H. Long, of the Corps of Topographical Engineers, addressed to you from Pittsburg, under date of the 7th of February ultimo.

I will only add that in my opinion the drainage should be effected through the channels of rivers already communicating with the sea. This would be done by artificial canals made to draw the water from "the Everglades" into the head branches of these rivers.

I am, very respectfully, your obedient servant,

J. D. GRAHAM,  
*Major, Topographical Engineers.*

HON. J. D. WESTCOTT, JR.,  
*United States Senate.*

NO. 7.—LETTER FROM CAPT. J. McCLELLAND, TOPOGRAPHICAL ENGINEERS, UNITED STATES ARMY, TO HON. J. D. WESTCOTT, JR., UNITED STATES SENATOR.

WASHINGTON CITY, *February 25, 1848.*

DEAR SIR: In reply to the inquiries made by you a few days since, in regard to the character of the Everglades of Florida, the nature of their soil and of that of the country in their vicinity, and of the possibility of draining them, I give you with pleasure the following information obtained by me in the course of an expedition to them and the Big Cypress Swamp against the Seminole Indians in January, 1841:

After leaving the Caloosahatchee River at a point about 30 miles above its mouth, we traversed a prairie in a southwesterly direction, and at the distance of 25 miles reached the north side of the Big Cypress Swamp. Our direction was then changed to the east, and, after marching a distance of 30 miles, we reached the west side of the Everglades. We observed that the prairie had been overflowed and that the water had receded to the Everglades, showing a descent toward them. The soil of the prairie is a rich limestone, rocks of which were visible in many places. The surface of the ground was covered with a rich coat of grass, the best evidence of fertility, and the soil of the hummocks, with which the prairie is interspersed, can not be exceeded for richness. It is to be presumed that as the prairie when overflowed is part of the Everglades that the character of their bottom corresponds with that of the prairie in composition and fertility.

The overflow of the country west of the Everglades is caused by the rush of water from Lake Okeechobee first to the Everglades, and the slowness of its escape to the Atlantic causes it to spread westward, so that by draining the Everglades you would secure from inundation this rich prairie, and in all there would be reclaimed in the Everglades a tract of the richest sugar and cotton land of 2,700 and in the prairie 800 or 900 square miles; and by the means used for effecting your purpose a canal 12 miles in length, from the lake to the head of Caloosahatchee, and another, say, from 10 to 18 miles long, from the lake to the head of the Lochahatchee, you would obtain a water communication (canal and river) between the Atlantic and Gulf, and at a cost probably not more than three or four hundred thousand dollars, depending upon the dimensions adopted for the canals and other drains, but certainly inconsiderable compared with the great benefit to be derived from the expenditure.

The Everglades were traversed in various directions during the campaigns against the Seminoles, and the description given of them by the officers engaged in the expedition agree that "they are interspersed with islands in every direction, varying in size, but all having a rich soil and luxuriant growth upon them."

In the course of the year 1840 or 1841 I was informed by the late Capt. J. R. Vinton, Third Artillery, that he had run a line of levels from the Atlantic Ocean to the Glades, and found their elevation above it from 10 to 15 feet. This was taken at Fort Dallas, at the mouth of Miami River, which empties into Biscayne Bay. The height of Lake Okeechobee must be considerably greater than this.

I am, very respectfully, your obedient servant,

J. McCLELLAND,  
*Captain, Topographical Engineers.*

HON. J. D. WESTCOTT, JR.,  
*United States Senate.*

NO. 8.—LETTER FROM COMMANDER L. M. POWELL, UNITED STATES NAVY, TO HON. J. D. WESTCOTT, JR., UNITED STATES SENATE.

WASHINGTON, March 1, 1848.

MY DEAR SIR: I have read with great interest the papers submitted by several officers familiar with the topography of southern Florida, touching your proposed plan for the drainage of the great basin of the Everglades, and, without presuming to offer an opinion as to the expense of so great an undertaking (great in its results, I mean), I may be pardoned if I express my entire conviction of its practicability—an opinion formed in 1837, when I first viewed the Everglades, and not changed upon a subsequent partial exploration.

I have entered the Glades from several points on the eastern coast of Florida, and never failed to find a decided current between the tidal water level and that of the waters of the lake, the rivers, heading in the Glades, obstructed at or near the junction by rapids, or as at the Miami by a pretty fall of 15 or 20 feet.

This surely indicates a level to the bottom of the basin of the Glades, when the known depth, a foot or two at most, is considered much above the level of tide water, which strips the question of thorough drainage of its most imposing difficulty.

Again, the margin of the Everglades, wherever I have viewed it closely—as, for example, where the waters of the lake break through it and form the sources of the eastern rivers—is composed of a ledge of limestone, which crops out and makes a rim to this shallow but extensive basin. I have seen this formation at different points, and, from the uniformity of its geological features, do not doubt that it is characteristic of that portion of South Florida known as the Everglades—the Okeechobee included, which is only the deepest and least obstructed part.

A knowledge of this fact indicates the remedy for the second difficulty to be encountered in the proposed work. If mere drainage of the waters be desired only, a bountiful Providence has already pointed out the way, and has partially accomplished it. The surplus waters of the great lake have, at several points, and by the nearest route, worn down the narrow rocky girdle and opened a deep and ample channel beyond it to the sea. We have only to follow up the work, and break down the barrier to the proper level at these natural outlets to empty out the basin.

Should the bottom of the Okeechobee Lake be found, on survey, to be below the necessary level for drainage merely, so much the better. A canal or cut, from the head of one of the rivers on the eastern side, would connect the lake with the Atlantic Ocean, and, in conjunction with the taps made into the wall of the great basin farther south, as at the Miami, Arch Creek, Ratonos, New River, etc., would open a navigation to the interior and effect the desired drainage.

The results of such a work as this are beyond mere speculation. A vast extent of fertile lands which, if not within the Tropics actually, have truly a tropical climate to mature the products of the soil, would be reclaimed to the use and enjoyment of man.

I am, dear sir, yours, faithfully,

L. M. POWELL,  
Commander United States Navy.

Hon. J. D. WESTCOTT, Jr.

NO. 9.—LETTER FROM LIEUT. C. R. P. RODGERS, UNITED STATES NAVY, TO HON. JAMES D. WESTCOTT, JR., UNITED STATES SENATOR.

WASHINGTON, February 14, 1848.

SIR: During my three years' service in Florida, I traversed in canoes the greater part of the Everglades, and became familiar with their peculiarities and character; but, as nearly six years have elapsed since I last crossed them, and as I have not in Washington my notes of the expeditions in which I shared, I fear that the information I can give you may seem somewhat meager. The map of Florida published in 1846 (a copy of which you have kindly furnished me) will give a good idea of the extent of the Everglades and an approximate idea of the position of their most important islands.

The Everglades seem a large basin of limestone, covered with pure fresh water, varying in depth from 6 inches to 5 feet; the rock, in many places bare, is generally covered with a pure vegetable deposit, producing a growth of rank, useless grass. Vast plains covered with this grass make up the greater portion of the Everglades. Innumerable islands are scattered over these plains, varying in extent from a few yards to many acres, and covered with a black soil of no great depth, but of remarkable richness. These islands are shaded by large trees of various kinds, and, where cultivated, appear to have amply rewarded the labors of the Indian husbandman. They seem to be

constantly increasing in size, and may be observed in every stage of formation, from the first gathering of soil around the roots of a few mangrove bushes, to the island covered with lofty trees, cultivated fields, and the villages of its Indian inhabitants. I have never visited the portions of the Everglades which approach Lake Okeechobee, and therefore will express no opinion as to the probability of their waters being drawn from the overflow of that lake. I can remember no spring in any part of the Everglades, nor do I think that the fall of rain would supply the water which is continually pouring itself into the sea through the numerous rivers on both sides of the peninsula.

The freshness of these rivers, the rapidity of their currents at all seasons, taken in connection with the shallowness of the Everglades, abundantly prove that the bottom of these Glades is considerably above the level of the sea. It may be well for me to state, in conclusion, that after observing the climate of the Everglades at every season, I consider it one of the most healthy in the world.

I am, sir, very respectfully, yours,

C. R. P. RODGERS,  
*Lieutenant, United States Navy.*

Hon. JAMES D. WESTCOTT, Jr.

NO. 10.—LETTER FROM A. H. JONES, ESQ., UNITED STATES SURVEYOR, TO BUCKINGHAM SMITH, ESQ.

ST. AUGUSTINE, EAST FLORIDA,  
*November 12, 1847.*

SIR: In reply to your letter of inquiry upon the practicability of draining the Everglades, together with other questions connected with the same subject, I have to state that two years' professional labor as a Government surveyor in the country bordering the Everglades upon the Atlantic side have rendered me well acquainted with its peculiar characteristics.

The scene of my operations has embraced the headwaters of the St. Johns River and the country extending from Jupiter Inlet to Lake Okeechobee, thence south to the lower end of Lake Worth.

At the time of "working up" the country included between the Okeechobee and the Atlantic my instructions compelled me to extend my lines as far into the Everglades as was practicable, the whole being bounded on the west by the Everglades or the distance of 25 miles.

So far as I have understood the instructions given by the department to govern you in your reconnoissance, the most important facts to be ascertained are:

First. To discover whether sufficient fall exists between the Atlantic, the Gulf of Mexico, and these Glades to make their drainage practicable.

Second. To ascertain the sources of the vast volume of water that periodically accumulates in the Everglades.

Third. If sufficient fall is found to effectually drain them, whether the quantity and quality of land capable of being reclaimed will guarantee the propriety of incurring the expense.

In answer to the first inquiry, I know of no actual level ever having been taken of this country, and am, therefore, only governed by an experience of five years as an engineer upon the canals of Pennsylvania and Ohio in stating my belief that a fall of at least 12 feet will be found upon a proper examination with instruments.

The numerous rivers that have their rise in the Everglades have a strong and permanent current until they meet tidewater. The savannas that intersect each other through the pine woods extend from the rim of the Everglades to the Atlantic, thereby affording a vent also for the escape of the surplus water during the rainy season where the Everglades are overflowing.

The accumulation of water originates from two causes, viz: The actual fall of water over this wide extent of swamp land in the rainy season, which usually begins in May and continues until the last of June, and sometimes longer. It is also a reservoir into which flows all the surplus water of the surrounding country that falls for 50 miles north. The water that accumulates in the Kissimmee prairies and Tohopekaliga Lake find a vent through the Kissimmee River into Okeechobee Lake, thence into the Everglades. This lake is a magnificent sheet of fresh water, having an extent of 40 miles north and south and a width of 20 miles. It has no regular outlet to the ocean or Gulf, but looms south, gradually losing its borders amidst the saw-grass marshes of the Everglades, and is thereby proved to be an important auxiliary in keeping them constantly overflowed.

In relation to the quantity and quality of land capable of being reclaimed, I, of course, can only speak of such portions as I have examined. I never heard or read of so vast an accumulation of decayed vegetable substance as is found in the north-



eastern section of the Everglades. I frequently extended my lines for a mile or two into them when closing my township corners; and when placing posts and making embankments around them I have thrust my Jacob's staff (measuring 5 feet) with all ease up to the top—even then, apparently, not striking the under strata of sand or rock. Throughout the whole distance examined by me this extraordinary deposit of decayed vegetable substance existed, the whole being covered by a very high and thick growth of saw grass. This high grass is known to be of annual growth, so that in the course of time, if nature be allowed to take her own way, the marsh must eventually fill up from the continued decay of so vast a top growth. As it is now, however, it strikes the eye like the outcrop of creation, where nature has as yet only been half made up.

The most certain plan to be adopted effectually to drain this large extent of swamp land would be to connect Lake Okeechobee with the Miami River by means of a ditch running through the heart of the Everglades, since that lake, as before stated, is the great reservoir that constantly supplies the surrounding lowlands with water. The fall properly made use of to inundate the surrounding swamp at the proper season would furnish the largest extent of valuable rice land that could be found in the United States.

Ditches simply running across the pine ridge from the rim of the Everglades to the ocean would not be sufficient; they must extend into the heart—tap the principal fountain—to make the drainage constant and sure; otherwise the accumulation of water in the rainy season would still exist and the undertaking prove abortive.

The amount of good valuable land that could be thus reclaimed might exceed a million of acres, suitable to the growth of two of the most important products of southern agriculture, viz, sugar cane and rice. The extent of country adapted to their successful growth is limited in the United States, and it behooves our Government whenever it is in her power to adopt such measures as are best calculated to advance and encourage their cultivation.

The practicability of draining the Everglades is, then, a subject of vast importance not only to the prosperity of Florida but the interests of the whole southern country would receive an impetus in its successful accomplishment.

I do not hesitate to pronounce in its favor and would recommend an early and more thorough examination with instruments in order to obtain true scientific results.

Respectfully, yours, etc.,

A. H. JONES.

To BUCKINGHAM SMITH, Esq.

NO. 11.—MEMORANDA FROM S. R. MALLORY, Esq., COLLECTOR OF CUSTOMS OF THE UNITED STATES AT KEY WEST, TO B. SMITH, Esq., 1847.

KEY WEST, September, 1847.

The Everglades, extending from Jupiter Inlet on the east to the Caloosahatchee on the west, and from 30 to 50 miles wide, are no more than what their Indian name, Pah-hay-okee, denotes, viz, "Grassy water." This immense grassy plain, covered in the wet season—i. e., from July to January—with an average depth of 26 inches water. Large fields of dense saw grass shooting up from 3 to 5 feet in wet, and from 6 to 8 in dry, seasons render the effort to penetrate it difficult at all times and impassable in very dry seasons. Canoes or very light narrow boats are the proper means at all times. The Everglades have never been topographically surveyed or even carefully examined, though many persons have penetrated and crossed them. In all charts that I have seen, distances in them are overrated, which, I suppose, is the result of the labor and difficulty employed in getting through them, as compared with the time consumed, and also by the fact that a haze, produced by the constant and great evaporation, always hangs over them and gives objects the appearance of increased distance. The earth upon which these fields of saw grass grow is a blackish mud, in places from 2 to 8 feet deep, but frequently only 18 inches or two feet, and the bottoms of the small gulleys or channels through which voyagers are compelled to pass are in almost all cases the hard, white limestone, against which the oar or pole sounds ringingly, and rebounds. These channels, as a general rule, are from 4 to 6 feet deep, but many are found for short distances to be as deep as 10 feet. The Everglades are studded with many islands, among which the two Pine Islands, from 4½ to 7 miles south of the south branch of New River and Sam Jones Island off Arch Creek, are good specimens. To visit these islands, and all others in the Glades in the wet season, is to find but small pieces of land free of water; but in the dry season ten times the surface, perhaps, is exposed. I have always found that the ridges and beds of

saw grass were dense about these islands. On Sam Jones Island very rich hammock is found on its north side and where live oaks of immense age and size may be found. These islands generally contain more or less rich land. The Everglades on the west and north are fringed with cypress swamp, in which they run in wet seasons to a depth of from 20 inches to 3 feet; and back of these swamps the pine land lies, down to the vicinity of the seaboard on the eastern coast. A cane grass, of which cattle are very fond, grows in abundance at the margin of these Glades between the pine and cypress lands. The piny woods are very rocky, the growth usually smaller than that of Alabama, Georgia, or Carolina, and the wood very knotty and pitchy, excellent for tar.

In the neighborhood of New River, upon all its forks and branches, and between its two principal arms, there is much good land lying in small detached parcels and upon which tropical fruits will readily grow; the cocoanut, lemon, and lime have been successfully tried. This, just about New River, is a fine country for a man with small means, say three or four hands, who wishes to be independent. The woods and streams abound with game and fish, frost is rarely seen, the country grows profusely, and its preparation is a bagatelle. The most indolent man I ever knew prospered there. New River bar may be crossed in 4½ feet and at times more water. I have seen two large steamboats 7 miles up. It runs parallel with the seacoast in a direct line and separated from the sea only by a ridge of land from 75 to 250 yards wide for 5 miles and then branches off, the best branch being the left or south one, along which Fitzpatrick and Cooly were located with others. Cooly's hammock on the right side of this branch is good land. The left side of this 5-mile stretch of New River is bordered by salt-marsh land from one-fourth to three-fourths of a mile wide. This land is worth an examination, as it is said to be rich. The pine woods are covered with the saw palmetto, and contain many ponds, low grounds, in which the water during the wet seasons collects. In all the streams emanating from the Everglades, from Jupiter to the Miami, rapids are found near their junction with the Glades. These rapids are nothing more than water, running at about 7 knots in wet seasons over the elevated ledges of rocks, which there form the bottom, and are about from 9 to 28 inches deep. The land in the cypress swamps here appears to be neither rich nor deep, being apparently but pure silex with an admixture of sediment. The good land of all this country on the east side of the Glades (the west shores have never been examined), that which is always above water and such as would invite the cultivator, from Jupiter to Key Biscayne Bay, lies in small bodies and is in small proportion to the poor land. A few good spots are found at the hunting ground 12 miles below the Miami. It is a very easy matter to go from New River to the Miami and thence to Shark River on the west coast through the Glades. An Indian may be procured at Fort Brooke, Chico, who can be relied on, for a small reward. But little fish or game can be found in the Glades, and no Indians live there.

Whether sound policy and expediency, keeping in view the expense and the lands to be reclaimed, dictate the attempt to drain these Everglades; and whether it be possible to accomplish it to any considerable extent are questions which a careful examination of the lands and streams, a knowledge of the quantity of water falling per annum, and a connected system of levels can only adjust or solve. I am not competent to express a valuable opinion; but I have been in the Glades and about them, from Jupiter to the Miami, much. I have ate of its fish, drank of its waters, smelt of its snakes and alligators, and waded through its mud to my middle for weeks, and am au fait upon all these, besides possessing some little acquaintance with its mosquitoes and horse flies, both of which can be recommended. I have also, together with a friend, taken soundings with poles, marked for the purpose, from our boats for miles and miles; all of which labor might as well have been expended in surveying the moon. Dr. Lightner, my friend, was engaged in the botany of Florida (a fertile field), and was also anxious to establish or refute the practicability (not the policy) of draining the Glades. My own impression is that large tracts of the Glades are fully as low as the adjoining sea, and can never be drained; that some lands around the margins may be reclaimed by drainage or by dyking, but that it will be found wholly out of the question to drain all the Everglades. As the country now is, healthy and mild, with its good lands in small parcels, with water at hand anywhere for irrigation, I think it offers inducements to small capitalists, men with from 1 to 10 hands, to go there and raise fruits. Fruit will grow well there.

S. R. M.

## NO. 12.—EVERGLADES.—EXTRACTS FROM MANUSCRIPT OF JOHN LEE WILLIAMS, ESQ.

The Pay-hah-o-kee, or Grass-water, extends from 25° 36' nearly to the 27° of north latitude, or about 120 to 130 miles long, and 70 miles at its widest part. It is bounded on the south by large islands, which separate it from the Florida Keys; on the west by small islands and the Big Cypress Swamp; on the north by Pine Islands and the Lochahatchee Swamp; and on the east by large islands, which separate it from the Atlantic. It is a large basin of water sprinkled with small islets, overgrown with saw-grass from 4 to 6 feet high. The average depth of water is from 2 to 4 feet, but cut up with many meandering channels of open water, sometimes not more than 1 foot wide, and in other places spreading into small ponds. In these channels have been discovered deep round holes of clear water. Whether these are springs or sinkholes is unknown. They, however, abound with fish and turtle, and sometimes, though rarely, they are haunted by the manatee or seacow, a large, shy amphibious animal. One of these animals was taken by Col. Harney which weighed 800 or 900 pounds and had a skin three-quarters of an inch thick. They yield a large quantity of valuable oil and their bones are an excellent substitute for ivory. The Everglades are based upon the soft limestone rock which we have before described as the substratum of the whole territory. Its elevation above the tide has not yet been accurately leveled, but is believed to be full 20 feet. The grass is so thick in some places as to prevent the passage of canoes or boats. Generally speaking, however, the grass is much more sparse. Many of the islands are but little above the level of the water; but some of them are from 2 to 3 feet high, with a soil as rich as any that can be formed. Others are more sandy. The principal timber on most of the rich islands is liveoak, wild fig, papaya, and cabbage palmetto, thickly festooned with a great variety of vines. All the islands are surrounded with dense grass circles, from 100 to 500 yards wide. Boats can only approach the outward edge of this circle. A circle of mangroves is often formed inside of the grass. The Indians cultivate the inside of the islands only, leaving a border of liveoak and wild fig, which are very ornamental trees. The wild fig is, by the Spaniards, called havi. It is a little fig about the size of a kernel of corn—a perfect fig in miniature. In their fields they plant corn, pumpkins, tobacco, squashes, melons, and lima beans in abundance. Coconuts, plantains, bananas, and sweet potatoes are found on some of the islands. It is very probable that coffee would grow here, as frost never reaches these islands. Chitto-tus-te-nug-gee, or Snake-warrior, \* \* \* took possession of an island about 20 miles west of Little River; had procured to be cleared about 20 acres of first-rate land; built upon it two small towns, and drew to it, from Sam Jones's men, near 60 inhabitants. About 3 miles west of Chittos Island is situated Tuscones. It is inhabited by an Indian family, who have erected a few houses and cultivated some small fields of corn and cane. The island cultivated and usually inhabited by Sam Jones is about 20 miles west of Tuscones. It is about half a mile long, but not quite so wide. It had three villages and as many hunting grounds. Attached to this are many smaller islands, all cultivated for provisions, but no houses. Narrow channels of water separate them from each other. The old chief is said to have here 70 warriors, many of them with families. Most of these islands swarm with fleas, cockroaches, and mosquitoes. A great many islands were found near there highly cultivated; but it is not probable that one-tenth part of the islands have ever been visited by the whites. On the southern route from the Miami River, and about 40 miles from that stream, there is a beautiful island called Hocomothlacco. Around this island there is a circle of grass, or mud, 400 yards wide. It is highly cultivated with provisions. Seven miles north and northwest of this lies Efanoc-co-qu-chee. This is not cultivated, but has some cleared land on it. It is used as a kind of caravansary or stopping place for boats on their route across the Big Cypress. Six miles northwest is Co-chok-o-ne-ha-jo. This island is cleared and cultivated. It is near the center of the Glades. Six miles farther is In-tas-kee, a large island inhabited and richly cultivated. From this island the current passes to the east; after passing it the current sets to the southwest. This circumstance gives credence to a statement made by a respectable gentleman who resides near the border of the Glades, and who has often visited them. He states that not far from the center of the Everglades there is an immense spring rising from the earth, covering an extent of several acres, and throwing up a large quantity of water with great force, and supplying the Everglades with all the water flowing through them. This is rendered somewhat probable, as the Lake Okeechobee receives two large rivers (the Kis-sim-mee and Thloth-to-popko-hachee), without any apparent outlet. The northeast part of the Everglades terminates in the Loxahatchee Swamp.

## No. 13.—EXTRACTS FROM LETTER OF GEORGE MACKAY, ESQ., UNITED STATES SURVEYOR, TO BUCKINGHAM SMITH, ESQ.

FLORIDA, December 6, 1847.

SIR: In compliance with your request, to furnish you with such data as I may possess in relation to the practicability of draining the Everglades of Florida, I must refer you to other communications that I have made on the subject, and can only say that, without a proper survey or examination, no certainty can be arrived at as to the extent of the fall of water or the feasibility of effective reclamation.

Although I executed the public surveys upon the eastern margin of these Glades and extended the township lines into them every 6 miles for nearly a hundred miles, yet so different were the observations and conclusions attending the termination of each of these lines, it was with much difficulty and, indeed, not until I had completed the whole survey, that I formed an opinion that a large portion of them might be drained. They may be divided into north and south Everglades, distinctive in their general character, as may be readily discovered in traversing their rim or shore. In the region southwest of the head currents of the Miami River, when the rainy season had made the water superabundant, I observed that there were currents and counter currents running in every direction, frequently quite rapid, and in the dry season I found that the course of these currents was, owing to numerous rock basins, in many instances perforated with holes in the bottom like a colander, into which these currents poured and disappeared; and in the pine woods, between these Glades and the Bay of Biscayne, may often be heard the rippling sound of running water, and frequently, in the fissures of the rock, it may be seen at from 6 to 8 feet below the general surface of the ground; and there are springs in the midst of the bay, where, by very indifferent means to shut out the salt water, pure fresh water has been raised 3 or 4 feet above the surface of the ocean; taken in connection with the falls of the Miami River, which came under your immediate observation, together with the facts of the difference of elevation between the Gulf of Mexico and the Gulf of Florida, and that there are large rivers running into both gulfs, and that the waters generally in the Glades do not rise above 20 inches, no reasonable man can doubt a considerable fall of water to the ocean. Passing from these southern Glades, which have generally a rocky surface or foundation, to the head currents of New River, large islands, extending to the westward, covered with a variety of timber, by their continuous succession seem to be a sort of barrier or terminus of the rocky Glades. Here begin the groves of cypress upon the rim or margin, and a more general uniformity of surface and depth of water throughout. Here also begins the appearance of regular channels, which seem to have been cut off from their confluence with the ocean by the cypress groves extending across and forming an impassable dam for several miles.

There is a point in this region which appears to have been one of the main outlets of the basin, which must have commenced damming some centuries ago, and by a succession of rains and droughts so filled it up with decayed vegetation that whenever the water rises above a certain height it rushes through the cypress, or falls generally over the margin like a flowing bowl, and passes, by way of the lagoons, to the sea. This is, perhaps, the most interesting point that I can bring to your notice. A broad channel, about  $1\frac{1}{2}$  miles wide, with fresh-water grass, evidently filling up, commences directly underneath this cypress dam, and has its outlet into Hillsboro and New River Lagoons. After passing Snook Creek, and still farther north, the pine woods and the Everglades are more intimately associated for several miles, when the cypress again commences and continues without interruption, with one exception, to the Okeechobee. This exception is a channel of considerable magnitude, communicating about midway of Lake Worth, but now grown up with cypress or filled with saw grass, yet the waters seem still to find some passage to Lake Worth, which is fresh water, extending along parallel with the sea, and at many points not more than 30 yards distant, having a discharge into the Ebtchatchee and Jupiter Bay.

I was forcibly impressed with the peculiarity of the southern Glades—a vast rock of interstices and partitions, something in the form of a honeycomb—the interstices or cells, filled with soil, saw grass, or water, are barren, and varying from 1 acre to 20,000 acres or more, the partition varying from 1 chain to 1 mile wide, barren, with islands of trees, traversable with canoes in high water, and upon horseback in low water, the whole presenting the most romantic view of grass, prairie, and water, with gems of islands of rare timber and shrubbery.

Very little can be known of the north Glades. They are uniformly saw grass. It is impossible to penetrate them with canoes in high water, and in low water they are so generally boggy it is impossible to explore them on foot. They are universally bespangled with myrtle and willow and coesplum clumps of bushes.

On the subject of the settlement of the islands of the Everglades, I saw nothing that indicated civilization, excepting upon a small island at the head of the Miami River, where are to be seen the fallen walls of a stone building, broken earthenware, and bottles of a shape I have never before seen, and of an age I will not venture to determine.

I am, sir, very respectfully, your obedient servant,

BUCKINGHAM SMITH, Esq.

GEORGE MACKAY.

NO. 14.—EXTRACTS FROM LETTER OF MAJ. W. H. CHASE, UNITED STATES ARMY, CORPS OF ENGINEERS, TO HON. J. D. WESTCOTT, JR.

WASHINGTON, August, 1848.

MY DEAR SIR: I have read the letters and memoranda which you placed in my hands relating to the Everglades of Florida.

These papers, authorized by engineers, surveyors, and other observers, can not fail to be interesting to those who have given thought to the subject.

The opinions of all these are almost unanimous as to the practicability of draining this portion of Florida. By taking these opinions, then, and adding to them my own observations made at and near the Miami River, I can not fail to arrive at the conclusion that a system of drainage, adopted after a careful survey had been made of the country, would result in reclaiming, perhaps, 1,000,000 acres of land, a part of which would be suitable to the culture, not only of the great staples of cotton, sugar, rice, and tobacco, but possibly of coffee, and certainly of most of the tropical fruits.

With the exception of a single line of levels run by Capt. Vinton, of the Army, no accurate measurement on this score has been made, so that the heights of the basin above the Atlantic, expressed in the various estimates, are entirely conjectural.

The line of levels, however, run by Capt. Vinton, showing the elevation of the Glades to be some 10 feet or more higher than the sea, is surprisingly coincident with the opinions expressed by the various writers on the subject, affording, in this way, much encouragement for the prosecution of systematic surveys, by which the truth may be brought out.

I will not dwell here upon the great advantages that would accrue to the United States in general, and to the State of Florida especially, if the drainage of the Everglades could be effected; and I will content myself by saying that the strategic positions in the Florida Straits would be relieved at once of the only disadvantage they labor under could the southern portion of Florida be brought within the pale of cultivation, for ample supplies of every possible description required for the food of an army would then be drawn thence without hindrance from an enemy.

In the event of success, while the States in which the land lays would be amply remunerated, the United States would be doubly so by increased productions, not only in quantity, but variety. Indeed, it might then be claimed that nothing that any other climate produced could not be produced within the limits of "the present United States."

I am, very truly, your obedient servant,

WM. H. CHASE.

The Hon. J. D. WESTCOTT, JR.,  
Of the United States Senate, Washington.

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