The World's Work - Feb, 1908.

THE PROVISION BOATS FOLLOWING THE ENGINEERS

AN AIR-LINE ACROSS THE EVERGLADES

A STEP IN THE RECLAMATION OF AN EXTENT OF FERTILE SWAMP-LAND AS LARGE AS THE BRITISH ISLES

BY

WILLIAM ATHERTON DUPUY

AFTER struggling for fifty-two days through the mud of the saw-grass solitudes of the Everglades, sleeping on the piles of grass that sometimes reach above the water-line, eating scant rations packed on their backs and cooked with difficulty over an oil lamp, a party of Government engineers has succeeded in running an air-line from the Gulf to the Atlantic through the most inaccessible portion of the Florida peninsula. This is the first step in the reclamation of 77,000,000 acres of the most fertile land in the United States —a region greater in extent than the whole of the British Isles.

The figure named covers only the swamp land east of the Mississippi that is readily reclaimable. In extent it equals the combined areas of Indiana, Illinois, and Ohio. It is greater than New England and New York combined, and its soil is rich with the sedimentary and vegetable deposit of the ages. It would provide forty-acre farms for 2,000,000 families—enough to relieve congestion and poverty in all the crowded cities of the country. Similar lands already reclaimed in New Jersey and New England are yielding $100 an acre every year and bring higher prices than any other land in the community.

The Government engineers have spent much time in working out a practicable plan for the reclamation of the Florida Everglades, which is the greatest single body of swamp lands in the country. The records of previous surveys were fragmentary and unreliable. As the first step in the undertaking, therefore, two young engineers—Mr. Lawrence Brett, of Kansas, and Mr. E. Wallace Chadwick, of Pennsylvania—were designated for the difficult task of running an air-line all the way across the glades, establishing levels and leaving bench-marks for those who might follow. Mr. J. O. Wright, supervising drainage engineer of the Department of Agriculture, had direct oversight of the undertaking.

The actual work was done in the late winter of 1906 and early spring of 1907, that time of the year being the dry season. The Everglades are then covered with less water than at any other time, and a surveying party is able to get a footing on the ground and the weather is sufficiently cool to make work possible.

The young engineers and their four assistants made the start from Brown's Store, a settlement on the west side of the great swamp. Opposite this point, sixty miles due east, as the crow flies, is Pampano, a similar settlement on the Atlantic coast. Between the two points is the desolation of a great waste, a region practically unknown to the white man but through the solitudes of which the lone

Photograph by Julian A. Dimock

AN EVERGLADE FIRE, PROBABLY SET BY HUNTERS

Seminole Indian now and again silently pushes his canoe.

Water covers the entire country during the rainy season. The waters of Lake Okeechobee, to the northward, extend in shallows far to the south when the flood-time comes, but gradually recede during the dry season, there being a difference of nearly three feet in its levels in the two seasons. At the close of winter, when the water is lowest, the heart of the Everglades is half land, half sea. There are shallow lakes, called "bonnet flats," with sluggish streams known as "leads" connecting them. Between these the land rises slightly above the water but it is a spongy muck where a man sinks half way to his knees at every step. There is the eternal landscape of saw-grass five feet high, broken occasionally by a scraggly tree.

For a trip into the Everglades the only way to transport provisions is by canoe, and even this method is at times impossible where it is necessary to follow an air-line and the streams have strange and unknown windings. The party started out with Seminole canoes, which were dragged by land where they could not be poled by water. Dried fruits and staples, oil for fuel, and blankets for beds made up the cargoes of three canoes.

Progress was slow in the face of the many difficulties that the party found. They rarely covered more than two miles in a day, often not more than a mile. When the day's tramping was over, much of the night was consumed in the preparation of the camp. It was impossible to build a fire, because there was rarely dry land upon which to build it or wood with which to make it. In these emergencies the oil lamp was used to cook the meals, but an "oil famine" soon began to threaten them. When supper was over, the problem of lodging was solved by cutting sufficient saw-grass to raise the blankets above the water-level. The structure when completed was known as a "'gator nest" because of its resemblance to the homes of the alligator, which were often stumbled upon. The contest between weariness and safety from dampness was often sharp, and it occasionally resulted in an exhausted man sleeping with his body half sunken in water. Mosquito-bars were used with more or less success in the effort to escape the vast swarms of mosquitoes.

At the end of ten days the line had been pushed eighteen miles into the swamp, the

THE ENGINEERS WHO RAN THE LINE
Messrs. Brett and Chadwick, of the U. S. Department of Agriculture

oil supply was exhausted, and the party was living on uncooked food. A return to the starting-point for new supplies was made by the entire party, three days each way being consumed by the trip. With fresh supplies in the canoes, the line was then pushd on; this was the last view of the west side of the peninsula.

At the 25-mile mark, it was found impossible to carry the canoes farther, for there were no more "leads" running to the eastward. Two men walked eastward for half a day and found no water that would float the canoes. With the greater part of the journey yet ahead of them and a month already spent in the saw-grass, it was decided to carry upon their backs the supplies, bedding, and oil for the remainder of the trip. With these additional burdens to carry as they worked, the advance was even slower than before.

THE PARTY READY TO START

HAULING A BOAT OVERLAND WHERE THERE WAS NO "LEAD"

But the party pushed the air-line forward and established levels so long as there was a handful of rice or a piece of bacon left; but when twelve miles more had been covered there was nothing to eat and the undertaking was far from complete. Then the line was temporarily deserted and a run was made for the Atlantic side—Pampano and food.

This run involved probably the greatest hardships of the undertaking. The men were already exhausted from want of sufficient food and rest. They had been so long in the water that their feet were blistered and swollen, the discomfort having been accentuated by poisoning from "wampee," a plant similar to the Indian turnip. The swamp here became more difficult to cross, for the "leads" were deeper and the ground was more boggy. In many places it was necessary for the men to carry their blankets and mosquito-bars high above their heads while they waded in "leads" up to their chins. In other places the ground was so boggy that they were forced to lie flat and crawl or roll to keep from sinking so deep in the mud that they would be unable to extricate themselves.

"THE LONE SEMINOLE INDIAN"

The exhausted party finally struggled from the swamps up to the strip of higher land that runs along the eastern shore of Florida, and soon found their way into Pampano and secured food. After three days' rest the return was made to the line and it was finally brought out. The engineers had established a new standard of endurance and perseverance in the Government service.

With this air-line as a starting-point, 30,000 square miles of swamp-lands in Florida may now be reclaimed and eventually converted into a garden of productiveness. It is sufficiently above the level of the sea to make it drain readily if the outlets are opened up. Lake Okeechobee is itself twenty-two feet above the sea and can be largely drained. There are no difficult engineering problems to overcome; it is only necessary to cut through a rim of rotten limestone that extends along the Atlantic coast and thus make a natural outlet. Then will remain the simple work of making ditches to tap the interior, or else the same result will be accomplished by developing the natural arteries.

Swamp lands in the other states offer similar difficulties, but on a smaller scale. The Dismal Swamp in Virginia is fifteen feet above sea-level, and Lake Drummond, its chief body of water, is half artificial. A canal leads from this lake through a lock and is several feet below its level. A removal of this lock would do much toward draining the great swamp.

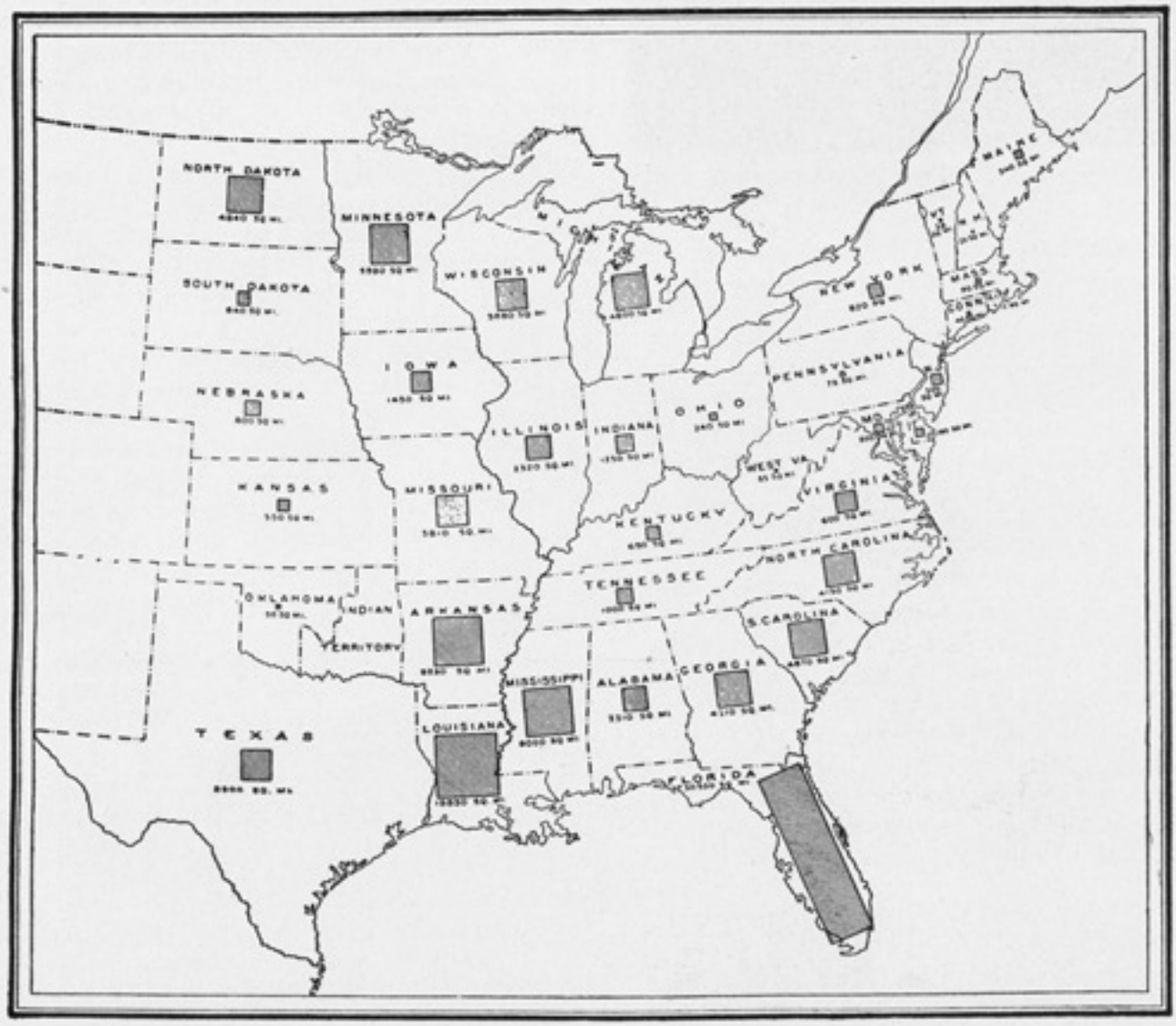
Salt marshes in many sections along the Atlantic seaboard have been reclaimed by private enterprise. The Newark meadows are to be converted into town lots by means of a dyke and an arrangement of automatic tide-gates to be installed under the direction of the Government engineers and financed by the neighboring city of Newark, N. J. This piece of work will be made an object lesson to show the possibilities of salt-marsh reclamation, and many communities are expected to follow the example. Long Island has already completed much of this kind of reclamation, and so has Massachusetts. The prosperity of Holland rests upon just such work. As a financial investment, the reclamation of these lands pays manyfold,

at the same time the mosquito nuisance is done away with and the health of the whole community benefited.

There is no doubt that the whole question of the reclamation of the swamp lands of the United States will be urged upon Congress at this and at subsequent sessions, until it is finally accomplished. There is no difference of opinion on the part of the engineers who have investigated the conditions; their recommendations are unanimously in favor of immediately pushing the work. It is not considered necessary to place the undertaking in charge of a special division like the Reclamation Service, for the engineering plans are nowhere difficult and may be handled readily by the Department of Agriculture. Swamp drainage is currently regarded as purely an agricultural function.

DRAINAGE OF PRIVATE LANDS

Practically all the lands that will be affected by drainage are already privately owned, and the expense of reclamation will naturally be assessed against their owners. Such was the plan followed in the reclamation of arid lands privately owned, and the results are so favorable that there is no question of practicability. It has been proposed that this plan be supplemented by an offer on the part of the Government to take the bonds of any given community which proposes immediately to reclaim its swamp-land under the direction of the Government engineers.



MAP SHOWING THE AREAS OF SWAMP AND OVERFLOWED LANDS IN THE STATES EAST OF THE ROCKY MOUNTAINS