

ROAD BUILDING IN THE EVERGLADES

Tremendous Difficulties Faced in Making Road Through Big Cypress Swamp.

PART OF THE DIXIE HIGHWAY

Less Than Twenty-Five Inhabitants on Million-Dollar Stretch Known as the Tamiami Trail—Opens Up Paradise for Motorists and Hunters.

Miami, Fla.—It is to be regretted that great and daring projects of construction when completed cannot tell the story of difficulties met and overcome, instead of presenting the smooth finished appearance too often taken as a matter of course by the casual observer, without a thought as to how it was brought about. This is going to be the case of the Tamiami trail, a greater part of which is over the Dixie highway, now being constructed through the Everglades of Florida. The road will extend from Tampa on the west coast to Miami on the east, and when completed in 1918 will represent a total outlay in excess of one million dollars. Approximately \$750,000 has been appropriated and work is under way, so that its ultimate completion is absolutely assured.

Large bridge projects have been provided for at the crossing of the Manatee river at Bradenton and across Charlotte harbor at Punta Gorda. Of the total mileage of 276.9, the stretch from Punta Gorda to Miami, representing a mileage of 188.9, has been incorporated as a part of the Dixie highway. This is the most difficult part of the construction, as a greater part of it is through the Everglades.

Tremendous Difficulties Ahead.
With the exception of the completion of the bridges at Bradenton and Punta Gorda, a well-graded road, with a large part of the mileage surfaced, will be provided from Tampa to Marco early in 1917. Some additional funds are needed to surface the road in Lee county. The highway from Marco to Miami, a distance of 83 miles, will probably require the greater part of the year to complete, on account of the tremendous difficulties to be overcome in building through Big Cypress swamp. An interesting fact connected with the construction of this extreme Southern cross-state highway is that on the entire distance from Marco to Miami there are less than 25 inhabitants, and these are mostly Seminole Indians. Leading out of Miami the Tamiami trail will extend for 24 miles west without a curve or an angle.

The contractors are now battling against the story of months spent in battling against terrific odds in the muck and water of the Everglades as they go, by sowing grass seed along the embankment of the highway. Property owners are dotting the roadside with palms and other tropical trees and foliage, so that by the time tourists can travel this great highway across the state, only canals, small lakes and rich fertile fields will be in the foreground, where once existed an impenetrable jungle with water, muck and mud underneath.

Some idea of the "bigness" of the task of building a road through the Everglades may be obtained from a graphic account of his struggles on Big Bend, furnished by Capt. K. B. Harvey, who has the contract for 55 miles of the trail from Fort Myers to Marco. "There are no rules in the book," says Captain Harvey, "to fit the proposition offered by Big Bend. It was a case of 'It's up to you, fight it out.'" It was scrub mangrove and grass muck. Think of the leaves on the trees shaking and trembling, and the whole mass of muck and mud for hundreds of feet in each direction quivering and shaking like a mass of jelly with each vibration of the dredge engine. Then think of putting a 40,000-pound engine across. Well, I put it over, but came out wild, frantic and gray-headed. It takes every nerve one has and can borrow, with muck and mud underneath 12 feet deep, and changing the slightest mistake or error of judgment would make a buried and tangled wreck of 40,000 pounds of steel and machinery. Try it, and see what sleepless nights are."

In answer to the question of how he did it, Captain Harvey said that he tried plank and log cribbing, but this was too uncertain and treacherous. Then brush mats were made and piled up four feet high, the track laid on them and the machine forced over the brush mats. "These mats," said Captain Harvey, "were often washed down in the muck until the track layers would have to fish to their shoulders in the mud to get out the rails and cross ties."

For Hunters of Big Game.
The tourist who travels this road, as he will be able to do as far as Marco in 1917, will miss the thrills of the battle with the Everglades. The first travelers may see the brown bears, wild cats and other denizens of the jungles, which frequently come within 200 yards of the workmen to satisfy their curiosity as to what new creatures have come to disturb their solitude. Aside from entering to the desire of the motorist to explore the much-talked-of Everglades, view the wonderful scenery, and provide a vast hunting preserve accessible to hunters of big game, the counties involved had a tremendously big commercial idea in

TRYING TO KEEP RIFLES CLEAN



In the mud of the battlefield it is no easy matter to keep the rifles clean. These English soldiers are doing their best under the circumstances.

view in planning and carrying through the construction of the Tamiami trail. Lack of drainage as well as inaccessibility makes dormant and worthless hundreds of thousands of acres in the Everglades, which experts claim contain the most fertile soil to be found in the world. The construction of the Tamiami trail removes both of these obstacles. The methods employed in excavating for the canal and throwing up the rock marl and other material for the roadbed, and depositing the unsuitable material, such as decayed vegetable matter and muck, on the other side is best described in Captain Harvey's own words:

Furnishes Some Variety.
"Every conceivable kind, character and condition of road building is found in the first ten miles north from Marco. Cypress strands underlaid with bowlder and bedrock; pine ridges of bowlder and ridges of the hardest of hardpan, sand banks of clay of several different colors, rock ridges outcropping on the surface; cabbage palmetto land; scrub buttonwood; prairie land flooded in the rainy season; flat-woods land, saw-grass land, marsh-grass land, soft-blue marl and shell land; all varieties of mangrove land; swamp land; tide flats; tide lands one to two feet under water at high tide, bog lands, mud holes; muck ponds, creeks, rivers, bayous and channels, more combinations than any spot on earth to give a contractor a run for his money.

"Hand labor was out of the question and impracticable, so it became a very serious problem as to how to handle the proposition with the varying conditions intermingled. A land dredge machine was decided upon and although it is a long ways from perfect, it has answered the general purpose fairly well. It is of steel beam construction, weighing some 40,000 pounds. It has a cubic yard dipper. It straddles the canal and runs on its own tracks and by its own power. The steel rails are in four foot sections and pinned at the ends with a flexible steel coupling on a 3-inch thick 3-by-3 oak cross ties, enabling it to run over uneven ground. The tracks are 29 feet apart. Thus a canal source 24 feet wide and 12 feet deep can be dug if desired. In this instance the width

of the canal in most places depends on the amount of material desired for the road bed. An even depth was carried with an idea of drainage.

How Work is Done.
"We began cutting through the swamp, dumping the mass of marl, sand, etc., to one side. This dump is leveled down to grade and surfaced by hand with big heavy hoes and shovels. Through Williams Island jungle, which was truly a jungle in every sense of the word, a mass of trees of all kinds and sizes; thousands of switches, poles, brush, ferns, all woven together with bamboo rattan and other vines. Perhaps several hundred would be chopped off at the ground before the mass would fall, so that it could be chopped apart with brush axes. When it is understood that the clearing had to be done at the contract price of \$44 an acre, it can readily be seen that the contractor had to run like the devil for his money. Some stretches could not be cleared for three times the price.

"The finished road bed is 18 feet wide. It is 1 1/2 to 1 slope with 6-inch crown and 3 feet berm. The contract for the island part and part of the mainland was 24 cents per cubic yard. A contractor bidding at these prices and under such conditions is skating on thin ice."

In removing the big rock ledges and rock strata wherever encountered explosives are used. As the major portion of the material to be taken out is soft, the big bucket on the dredge is able to do all of the excavating down to bed rock. When the rock bed, as thrown up by the dredge, has stood for 30 days and so thoroughly dried and settled, the contractor's forces go over it with pick and shovel, leveling down a little above grade to allow for rolling. The subgrade will be rolled with a roller weighing seven tons or more, and any depressions are brought to an even surface. After the subgrade has been completed a rock surface to the depth of 12 inches is put on and rolled. The rock is then scarified, graded and rolled. Twenty-four-inch culverts are to be placed about every 600 feet. In Dade county at every mile station a 20-foot spur road, as a turnout, will be provided.

and "bits" on the average ship are too light and inappropriately made for careful and safe handling of ships by the canal authorities.

"On account of danger to the lock gates resulting therefrom, the Panama canal reserves the right," the new sailing directions announce, "to deny passage to ships having inadequate chocks and bits as described herein, until suitable equipment can be installed at the terminal ports."

Explaining this subject further, the new canal regulations state:

"Experience has demonstrated the fact that most of the chocks and bits are too light in construction, and that the chocks in particular should not only be made heavier and stronger, so that their jaws may stand a vertical strain, but that they should be of a permanently closed pattern and not be made with open jaws. Bits should be sufficiently strong to withstand the strain of a 1 1/2-inch (diameter) wire line with a pull of 50,000 pounds, and be firmly riveted to the decks, and if necessary where the deck is of wood or light plating, they should have an under deck plate, or be secured between two deck frames."

The attempts to injure shipping at sea by explosives in among the cargo has made the canal officials strict in applying the regulations for ships known to carry highly inflammable cargoes. The new edition of the official sailing directions provides that "vessels carrying explosives or highly inflammable cargoes should so notify the governor and obtain permission before they will be allowed to enter the canal. In requesting permission for such vessels to transit the canal the character and approximate amount of explosives should be stated, the ports of departure and destination, name of ship and party to whom consigned. This may be done by mail or cable. In general permission will not be refused, but these precautions are taken to safeguard the Panama canal. . . . Vessels carrying explosives consigned to ports beyond the canal zone will not be allowed alongside the wharves while such explosives are on board."

ROAD BUILDING

JUST OF ROADS AND BRIDGES

Construction Expenditures Have Increased Nearly Fourfold in the Past Twelve Years.

(Prepared by the United States Department of Agriculture.)

Expenditures for the construction of roads and bridges in the United States have increased nearly fourfold in the past twelve years, while a greater and greater proportion of the amounts expended have come to be paid out under state supervision. At the same time there has been a marked decrease in the proportion of contributions to road building in the form of statute labor. These facts are brought out by statistics recently compiled by the office of Public Roads and Engineering of the United States department of agriculture.

The total length of public roads in the United States outside the limits of incorporated towns and cities was about 2,452,000 miles on January 1, 1916. Of this, about 277,000 miles, or 11.3 per cent, were improved with some form of surfacing. The mileage of surfaced roads has been increasing at the rate of about 16,000 miles a year, and in 1915 approximately one-half of this increase was made under the supervision of state highway departments. In addition these departments supervised the maintenance of nearly 62,000 miles of main and trunk-line roads.

The increase in expenditures for road and bridge work in the United States has been from approximately \$80,000,000 per year in 1904 to about \$282,900,000 in 1915, an increase of more than 250 per cent. The expenditure of state funds during this same period increased from about \$2,500,000 to more than \$53,000,000. In addition, more than \$27,000,000 of local funds was spent under state supervision in 1915, bringing the total road and bridge expenditures managed by the states to \$80,514,000. This amount is greater than the total expenditures for roads and bridges from all sources in 1904.

The growth in importance of the state highway departments has been rapid. The first of these agencies was created in 1891 in New Jersey and now some form of highway department exists in every state except Indiana, South Carolina and Texas. Since their inception these departments had expended to January 1, 1916, an aggregate of \$285,350,825 in state funds for road and bridge construction, maintenance, and administration. They had constructed over 50,000 miles of roads in co-operation with the states. More than 40,000 miles of these roads were surfaced.

The falling off in the value of road work performed by statute and convict labor was from \$20,000,000 in 1904 when the total road expenditures were \$80,000,000, to about \$15,000,000 in 1915 when the total expenditures had grown to \$282,000,000. This was a reduction from 25 per cent of the total in the former year to less than 5 1/2 per cent of the total in 1915.

An increase in the use of better and more expensive types of roads also is shown by the recently compiled statistics. This development has been due in large part, to the great increase in automobile traffic. It is estimated that there are now approximately two and a half million automobiles in use on the roads of the country, or one car for every mile of road. This present motor traffic is in excess of traffic of all sorts 12 years ago.

The cash road and bridge expenditures of the United States averaged only \$28 per mile of rural roads in 1904. In 1915 this average had grown to \$109 per mile. New Jersey led all other states both in 1904 and in 1915, with \$221 and \$475 per mile respectively. Nevada made the least expenditure in both years—\$3.72 per mile in 1904 and \$17 per mile in 1915.

GOOD ROADS AND FARM AUTOS

Where Better Highway Spirit Has Brought Results, Greater Farm Prosperity is in Evidence.

In Georgia, as elsewhere, wherever there is a county with a good roads record; where the good roads spirit has brought permanent results in a thoroughgoing, working system for the maintenance of a county's roadways, greater farm prosperity is in evidence, and the automobile and the auto truck are in demand. And under such conditions there will be an increasing demand for them.

A prosperous Georgia farmer said recently that, working on the line of greater farm efficiency, progressive farmers are extending their farming operations so as to include every help that science and invention can afford, no matter what the cost.—Atlanta Constitution.

Millions for Arkansas Road.
Road work projected in Arkansas from October 1, 1915, to October 1, 1916, was 1,330 miles in length, at an estimated cost of \$5,006,753.87, according to announcement by W. B. Owen, state highway commissioner.

Conserve the Straw.
Don't burn the straw. If anyone tells you that Hessian fly harbor in the straw tell him that it isn't so. The fly remains dormant in the first joint of the stalk and even burning the stubble doesn't get them all.

NATIONAL CAPITAL AFFAIRS

Rare Chinese Books Now in Congressional Library

WASHINGTON.—There is a Chinese library in Washington which ranks third among the Chinese libraries of the Western world, a library which contains more than 40,000 volumes of Chinese printed books, and 10,000 volumes in other Asiatic tongues, according to Dr. Walter T. Swingle of the Library of Congress.

The Chinese library in question is part of the Library of Congress, and is known as the Chinese collection of that institution.

"We have not only one of the largest and probably the best arranged collections in Western countries, but are fortunate in possessing many very rare or very valuable works which would be highly prized even in China," declared Doctor Swingle. "An exhibition recently prepared at the library shows Sung, King, and Yuan dynasty prints, and two early Ming prints, printed before 1450 A. D. Some of these works are of great interest, being editions supposed to have been lost even in the Orient.

"Besides these early works dating from the twelfth century, the same exhibit contains material illustrating the three largest books in the world.

"These are: 'The Great Ming Encyclopedia,' which took the equivalent of 8,000 years' work in compilation; the 'Imperial Encyclopedia,' the largest printed work made up by order of the Manchu emperor, Ch'ien Lung, from 1773 to 1782, and including all the principal works in the Chinese language."



How President Wilson Obtains Wanted Relaxation

FOR the last few months there has been a great mystery about the White House. It has to do with one of the means which the president employs to relax from his presidential duties. This form of amusement is nothing more than the good old game of pool, or, speaking in more polite terms, pocket billiards.

When the conditions are normal at the White House the president has two means of relaxation other than playing billiards. He takes great delight in reading poetry aloud. The other form of amusement is the reading of detective stories. There is a government employee in Washington who considers it his special duty to keep the president supplied with the latest detective stories. President Wilson does not believe it wise to keep the midnight oil burning. Therefore, the hours of 11 o'clock usually finds him in bed. More often it is before 11 o'clock that he retires. This is necessary because of his early rising.

The following sign could properly be posted upon the door of the White House offices:

"Office hours, 5 o'clock in the morning until 10:30 o'clock at night."
Usually the president's afternoons have been given over to recreation, which may be golf, or motor rides. Mrs. Wilson is generally his companion in both. The motor trips are usually over by 6 o'clock, so there is ample time to prepare for 7 o'clock dinner. Most of the president's evenings have been devoted to work.

Plan Made to Treat "Postmastering" as a Business

PLANS by which the present method of presidential appointment of postmasters will be abolished and appointments made instead under the civil service are under consideration by the post office department. If Mr. Burleson's idea is made law it will take away from members of congress their influence in the selection of postmasters and remove from politics a subject of patronage the country over. Among many members of congress there is a strong sentiment for the law.

The department, it is said, has been handicapped in some of its progressive measures because postmasters were chosen for their popularity rather than for their business ability.

The plan proposed would make postmastering a business which a man must first qualify for before receiving an appointment. It would make possible the promotion of a postmaster from a small office to a larger one, and instead of installing a postmaster for a four-year term to remain in one place he would be installed in the office he is best fitted for. If it were found that a postmaster serving in an office with receipts of \$10,000 was qualified to serve in an office with receipts of \$100,000 he would be in line for promotion to such an office.

By this method the service, it is declared, would be improved and at the same time would be placed on a business basis and economies realized. The proposed change would affect 9,192 postmasters, the number now appointed by the president. Of these 567 are first class, 2,212 second class, 3,413 third class.

Talented Sculptress Makes Bugs for Government

PERSONALITY and achievement unite to make of Mrs. Mica Zesta Heidemann one of the most interesting figures in the galaxy of gifted women of the capital city. Of Danish birth, she studied sculpture under the ablest masters of Europe, and has created some remarkably skillful portraits in bronze and marble.

But it is not for her art statues and portrait busts that Mrs. Heidemann has achieved distinction in governmental circles, but for her wonderful models of bugs, of which she has made so many that she has forgotten the names of half of them.

Under her talented fingers the bugs are marvels of art. They are made on a gigantic scale. Some are wondrously beautiful, while others, in their magnified ugliness, are hideous beyond compare.

Modest in the extreme, Mrs. Heidemann refused to see anything extraordinary in the unusual and clever samples of her art that are everywhere in evidence in her charming home at Forest Glen.

"Usually I make only the bad bugs," Mrs. Heidemann explained, "the ones that are injurious to health and to the crops of the farmer and fruit grower. Never are any made for just their beauty or their good qualities. And they are of necessity made so scientifically as to be of value educationally. These models are used very largely in the agricultural colleges to impress upon the students the character of the insects and bugs of various kinds that prey upon the grains, fruits and vegetables and cause destruction of crops. Sometimes there are insects that combat such pests, and I make them, too.

"The models of the bugs must be large enough so that the tiniest insect represented is seen in as much detail as if it were being observed in life under a strong glass."

Asked of what material she made her bugs, Mrs. Heidemann replied: "Anything and everything. Of course, I have a composition which is my real secret, but the rule that guides me in choosing materials is to make them lifelike; so all sorts of materials are used. I study the bug, and anything that will make the big model look just as it looks in life, I use. After the drawing is made to suit me, then a skeleton must be made for permanency to build upon.

"Into the construction of this go also many things, according to the nature of the insect—wire, metals, wax, hairs, thread, silk, celluloid, glass, rubber, plaster of paris, leather, several special kinds of gauzes, silvery powder and the composition; and the first thing you know the bug is done. Yes, it is tedious work; always weeks, sometimes months, are required in making some of the more difficult ones."

