

# Tequesta:

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## Building The Overseas Railway To Key West\*

By CARLTON J. CORLISS

In my boyhood I was an avid reader of adventure stories, and one of the first impressions I gained of that far-flung chain of tropical islands which extends in crescent formation from Biscayne Bay to Dry Tortugas was from a lurid and exciting tale of pirates, buccaneers and smugglers who haunted that region and carried on their nefarious operations in the surrounding seas, the Bahamas and the West Indies.

The Florida Keys are indeed rich in romantic interest. Along these palm-fringed shores sailed the picturesque caravels of Spanish explorers and adventurers—Narvaez, De Vaca and De Soto—and the galleons which bore Cortez, Coronado, Iberville and Bienville on their history-making voyages of discovery, conquest and colonization.

During the Spanish occupation and on through Florida's territorial period, the numerous sheltered bays and inlets which dot this "Coast of Adventure" were familiar hiding places and rendezvous for "Brethren of the Coast" whose very names sent chills up and down the spines of honest mariners.

Historians searching for truth find it difficult sometimes to determine what is legend and what is history, what is fact and what is fiction. But of one thing there is no doubt—from the earliest days of American occupation in Florida an important center of activity in the Key country was the ancient Cayo Hueso ("Isle of Bones"), or Thompson's Island, known today as Key West.

Key West dates its growth as an organized community from the 1820's, and for a period of more than fifty years—until 1890—it was the most populous city in Florida.

\* A talk before the Historical Association of Southern Florida, Miami, April 7, 1953.

## EARLY RAILWAY ADVOCATES

Oddly enough, Key West was one of the first cities in the South to advocate a railroad. As far back as 1831, at the very dawn of the railway era in America, when there were fewer than a hundred miles of railroad on the North American continent, the enterprising editor of the *Key West Gazette* was suggesting a railroad linking the town with the mainland of Florida.

In 1835, while railroads were still in their infancy, the *Key West Inquirer* was urging that steps be taken to build a railroad. And in the 1850's, the first representative South Florida ever sent to the Congress of the United States—Senator Stephen R. Mallory of Key West—was pointing out to men of influence in Washington and elsewhere the advantages of extending a railroad to that “American Gibraltar.”

In 1879, the Jacksonville, Tampa and Key West Railroad was incorporated in Florida to push a line southward through the state.

The following year the Great Southern Railway Company was organized in Georgia to build a railroad to Key West, with plans for extending its service by steamship to all parts of Central and South America.

Then, in 1883, the distinguished Confederate soldier, General John B. Gordon, of Georgia, revived the railway project, and work on the Georgia end of the road was actually started.

In 1898, there was published in the *National Geographic Magazine* a prophetic article bearing the title “Across the Gulf by Rail to Key West.” This article gave a fairly accurate forecast of future developments and concluded by saying that surely a railroad to Key West would some day be built; and that it “would be one of man’s greatest achievements.” The author concluded with the question: “Who will be the Cyrus Field to undertake this mighty work?”

## HENRY M. FLAGLER, EMPIRE BUILDER

At that time the East Coast of Florida was being transformed into a winter paradise by one man—Henry M. Flagler. From Jacksonville southward for a distance of 366 miles, to the new town nestling here on the Miami River, were numerous villages and towns and cities which owed their beginnings and their growth to the opening of Flagler’s railroad.

We all know the story of how Julia B. Tuttle and Henry M. Flagler joined hands to bring the City of Miami into being and start it on its way

to becoming the fabulous metropolis and winter playground of today. The first train reached this city on the 16th of April, 1896.

Beyond the Miami River, 156 miles southward, lay Key West, then many times greater in size than Miami and possessing a harbor capable of accommodating some of the largest ships afloat. At that time and for years thereafter the maximum depth of Biscayne Bay was about twelve or fourteen feet. Key West, on the other hand, could accommodate vessels having a draft of thirty feet. It was the deepest harbor south of Norfolk.

Came the Spanish-American War and the American occupation of Cuba, followed by greatly increased trade and commerce with the Island Republic. Because of superior port facilities, Tampa, on the West Coast of Florida, became an important port of embarkation in connection with the war activities in the West Indies.

Then, soon after the turn of the century, came the news that the United States Government was preparing to build the long-discussed Panama Canal. Statesmen, editors and businessmen were speculating as to the probable overall effect the canal would have on American industry and commerce. Flagler wanted his newly developed East Coast Empire to be in a position to share in the benefits, including the greatly expanded trade opportunities with Central and South America and the Pacific region—opportunities which inevitably would result from the opening of the Canal. As Flagler saw it, this could be accomplished in only one way—by carrying his rails to a deep-water harbor. This appears to have been the impelling factor in Flagler's decision to push the Florida East Coast Railway to Key West.

### FLAGLER'S DECISION

In the summer of 1902, Flagler engaged a group of young and hardy engineers and sent them into the region south of Miami to conduct preliminary surveys. Under the direction of Location Engineer William J. Krome, of Illinois, then a young man of twenty-six, surveys were made of possible routes through the Everglades to Cape Sable, with a view to bridging the Bay of Florida for a distance of thirty-three miles to Big Pine Key, thence to Key West over the chain of keys.

Another survey was made to The Narrows, dividing Biscayne Bay and Barnes Sound, thence across Key Largo to Turtle Harbor, where expensive terminal facilities would be necessary. After careful study, on the recom-

mentation of the engineers, both the Cape Sable and Turtle Harbor proposals were abandoned, and Mr. Flagler reached his decision to build the railroad over the Keys.

It is related that, with the engineers' reports before him, Flagler called in his vice president, Joseph R. Parrott, and asked him if he was sure the road could be built. He did not ask if it would be a profitable undertaking, but simply if it could be built from an engineering standpoint. Parrott is reported to have replied: "Yes, I am sure." Flagler's reply was: "Very well, then go ahead. Go to Key West." It was a momentous decision for any man to make. Henry M. Flagler was then in his 75th year. The East Coast of Florida, with its thriving cities and towns, was largely his personal achievement. At his age he might have rested on his laurels and spent the rest of his days basking in the sunshine of his Palm Beach home. It would seem that he could have been content. He had everything in life that a man could want—wealth, friends, recognition of a life rich in great accomplishments—but he felt that his job was not finished, and until it was finished, he was not content.

"Go ahead" was his decision. These simple words of Henry M. Flagler set in motion a chain of developments the like of which South Florida has never before experienced. The developments took the form of an epic struggle of man against natural obstacles, against the sea and the elements, a struggle unlike anything else in human experience. The titanic struggle began in 1904 when engineers staked their right-of-way through the Everglades and the swamps and jungles and shark-infested waters over the 128-mile route from Homestead to Key West. The struggle ended in 1916—twelve years later—when the last of the majestic concrete viaducts was completed to form the permanent structure—a structure which today carries the Overseas Highway across the Keys—a structure which has stood firm and unshaken against the onslaughts of wind and sea for nearly half a century.

#### ENGINEERS MEREDITH AND KROME

The man chosen to take general charge of the project was Joseph Carroll Meredith, who took up his work as chief constructing engineer on July 26, 1904. Meredith, an Indianan, was a noted bridge engineer, whose construction experience eminently qualified him for the stupendous undertaking. His latest project was the construction of docks at Tampico, Mexico, for the Mexican Government. Meredith was small of stature, but a man of great

energy, resourcefulness, determination and courage. He was intolerant of inefficiency or indifference. From early morning until late at night his every thought seemed to be of the railroad. He pushed himself relentlessly and ever sought to spur his assistants to greater efforts. But the pace was too much for him, and on April 20, 1909, after nearly five years of driving effort, with little time off from his labors, he died suddenly. Meredith was succeeded by his principal assistant engineer, William J. Krome, who, as you recall, had been in charge of the original surveys. No better man could have been found for the great tasks that lay ahead. Educated at the University of Illinois and Cornell University, Krome had spent several years on railroad engineering projects in Missouri and elsewhere before coming to Florida. Krome was a brilliant engineer and a tireless worker. Under his direction all obstacles were overcome and the work was carried successfully to completion.

The engineering staff of Chief Engineers Meredith and Krome included Division Engineers William Mayo Venable, who for many years has been prominently identified with the Blaw-Knox industries of Pittsburgh; P. L. Wilson, who later had charge of important construction projects in the Miami area; J. Ernest Cotton, Miami's first director of service, and most recently project engineer of the City of Miami; Col. Clarence S. Coe, the first city manager of Miami; Grier R. Smiley, later chief engineer of the Louisville & Nashville Railroad; Bridge Engineer R. W. Carter; Division Engineers H. L. Cook, James H. Cox, William A. Glass, now head of the Water Department of the City of Miami; Henry H. Hyman, Southern district manager, Florida Power and Light Company; E. R. Davis, J. Max De Garmo, F. B. Dunn, J. G. Frost, LeMoyne Harris, A. L. Hunt, R. L. Langford, M. E. Malone, H. S. Moreland, B. A. Parlin, W. C. Taylor, H. O. Weiss, and Capt. G. W. Payne.

Among the many Floridians, now living, who were identified with the project, in addition to those mentioned above, are: J. D. Ingraham, assistant general passenger agent, Florida East Coast Railway, Jacksonville; James Weston Dunaway, of the Moore Furniture Company; Frank J. Pepper, of the real estate firm of Pepper & Cothren; J. Merlin Spaulding, real estate operator; R. F. Archibald, J. Jack Wentworth, Miami; Charles ("Gunner") Morgan, of Spanish-American War fame; W. R. Hawkins, Oak Hill; Elbert A. Frosher and Anton Waldin, Homestead; Al. Lindgren, Goulds; Cleveland McGowan, Pigeon Key; Harry Bracken, Ed. Goehring, Ed. Strunk, Frank Bentley, Harry M. Baker, John J. Kirchenbaum, R. F. Spottswood, John M.

Spottswood, G. R. Steadman and James B. Sullivan, Key West; G. M. Higgs, West Palm Beach, and C. ("Tub") Williams, of Miami and Hollywood, California.

Prominent among the South Floridians no longer living who were identified with the construction, in addition to those already mentioned, were: M. F. Comer, Capt. Ed. H. Sherran, Calvin E. Oak, Gilbert Meredith, Alva K. McMullen, T. F. Whitten, Henry W. Gibbons, Leonard Spaulding, B. A. Deal, and Richard Ring, of Miami; Barney Waldin, Lawrence Bow and J. F. Free, of Homestead; Fred Barrett and C. D. Kittredge, of Fort Lauderdale; and Judge E. R. Lowe, of Tavernier.

It is my good fortune to have been employed in the office of Chief Construction Engineers Meredith and Krome from the beginning of 1909 until August, 1914, through the most active period of construction. Until the spring of 1909 the chief engineer and his staff occupied offices on the Terminal Dock in Miami. Then the offices were moved to Marathon, and that remained the headquarters of construction operations until the project was completed. Our first office in Marathon was on a quarterboat, but we moved to a new office building on its completion in the summer of 1909.

### PROGRESS OF CONSTRUCTION

In the limited time at my disposal this evening, I shall not attempt to describe in detail the route over which the road was built or many of the technical problems with which the engineers were confronted. There are engineers in Miami and present this evening who are far better qualified than I am to discuss the technical aspects of the construction. I can touch on only a few high spots.

After leaving Florida City, two miles south of Homestead, the route traverses about nineteen miles of everglades to Jewfish Creek, thence it traverses some twenty-nine islands before reaching the island of Key West. Because of the formation of these islands, the route crosses forty-three bodies of water ranging all the way up to seven miles across.

Construction commenced from Homestead southward in the summer of 1905, and in December, 1907, the rails reached Knights Key, eighty-three miles below Homestead. Here, in Knights Key Channel, a large dock, reached by a long wooden trestle, was nearing completion. Knights Key Dock was opened February 6, 1908, and passenger train service was extended southward to that point on the same day. For the next four years, until



the road was completed into Key West on January 22, 1912, this was an important terminal where trains from the North met the Peninsular & Occidental Steamship Company's ships plying to and from Havana, Cuba. During that period, Knights Key Dock was a port of entry, with customs officials in charge. It had a post office also. Over Knights Key Dock travelled many of the distinguished people of the times en route to and from Cuba. Today, not a vestige of the dock is to be seen.

On the 106-mile route between Jewfish Creek and Key West, the route tranverses 37 miles of water, nearly all of which is open sea. About twenty miles of the line were bridged by the construction of fills or embankments, and 17.17 miles were bridged by concrete viaducts and concrete-and-steel bridges. All told, there are thirty-seven permanent structures of this kind—twenty-nine concrete viaducts, six concrete and steel structures, and three drawbridges. (A fourth drawbridge, built at Indian Key Channel, was removed many years ago.)

### MAJOR PROJECTS

The most important projects of all were Long Key Viaduct, Knights Key-Moser Channel Bridge, commonly called the "Seven-Mile Bridge," Bahia Honda Bridge, and the Key West Terminal.

Long Key Viaduct, the first great bridge to be built, presented many formidable problems, some of which were unique, unprecedented, the solution of which taxed the ingenuity of the engineers. The experience gained from this project proved to be of great benefit in the construction of other bridges.

Long Key Viaduct is a reinforced concrete structure. It consisted originally of 180 fifty-foot arches, to which 42 35-ft. arches were added before the road was opened, bringing its total length up to 11,958 ft., or 2.15 miles.

In October, 1906, during the construction of Long Key Viaduct, a severe tropical hurricane swept over the Florida Keys and wrought great destruction to plant and equipment, as well as to the completed embankments at exposed points. Many pieces of floating equipment employed on the Long Key project were sunk or otherwise destroyed; others were badly damaged. The quarter-boat (No. 4) on which about 150 men were housed broke away from its mooring and went to sea, where it was buffeted by high winds and mountainous waves until it went to pieces, scattering the men over a wide area of storm-swept seas. About 100 of the men were lost; others were picked by passing ships from one to four days after the storm had abated and were



carried to ports as far distant as Liverpool, England. One ship, the "Alten," rescued twenty-four of the men and took them to Savannah, Georgia. All men who were rescued were brought back to the project to relate their experiences and to resume their work.

One of the most dramatic incidents of the Long Key disaster was the case of a father and son. When quarter-boat No. 4 went to pieces, miles from land, the two men, desperately hoping to save a trunk containing cherished family possessions, took it overboard with them, and for hours in the storm-swept seas they clung to the trunk—one at either end. For a time it served as a life preserver, but for some reason one was finally forced to let go his grip, and he disappeared beneath the waves. The other struggled to retain the trunk, but was finally forced to let it go. After the most harrowing experience, each one was rescued by a passing ship. Each was taken to a different port. For several days each supposed the other had drowned. We can well imagine the joy of father and son when they were finally reunited.

It was out of such human experiences as these that the great work took form and was carried to completion. Although the incident just related was perhaps more dramatic than many, nevertheless a day never passed during the years in which the railroad was under construction without its incidents involving human life, without its narrow escapes, its joys or its sorrows, without its excitement, its thrills, and without some seemingly insuperable difficulty overcome, some undertaking successfully accomplished, or without some new problem to challenge the ingenuity and resourcefulness of the builders.

### THE SEVEN-MILE BRIDGE

The longest of all structures is the "Seven-Mile Bridge," commenced in 1909 and completed in 1912. This bridge consists of 335 80-foot and 60-foot deck plate girder spans of steel, resting on concrete piers, a concrete viaduct one-and-three-quarters mile in length, consisting of 210 53-foot arches, and a drawbridge 253 feet in length. Altogether, the bridge contains 546 concrete foundation piers—far exceeding the number in any other bridge in the world. Each of the piers in the main structure rests on bedrock as much, in some places, as twenty-eight feet below the water line.

This was the most costly structure of all to build, and it presented many formidable engineering problems.

During the construction of this bridge, two severe hurricanes—one in September, 1909, the other in September, 1910—interrupted the work and

wrought great damage to the floating equipment and some damage to the structure itself. During one storm five deck-plate girder spans, which had not been securely bolted into place, were blown from the bridge into the sea. (Curiously, a keg of nails perched on the edge of the bridge was not blown off or even shaken from its position.)

### BAHIA HONDA BRIDGE

The third great bridge is between Bahia Honda and Spanish Harbor Key. Known as the Bahia Honda Bridge, this structure is 5,055 feet in length. It consists of 13 through truss spans each 138 feet in length; 13 through truss spans each 186 feet in length, and one span 247 feet in length, as well as nine deck-plate girder spans, each 80 feet in length. Here the channel is 24 feet deep at low tide—the greatest depth encountered at any point along the route. For this reason a different type of construction was adopted; namely, through truss spans, which enabled the foundation piers to be spaced farther apart than could be done with the deck plate girder type or the concrete arch type of construction.

### KEY WEST TERMINAL

At Key West, a major project was the construction of the terminal site, which involved reclaiming 240 acres of land from the sea by the dredging process. This required the shifting of many millions of cubic yards of material and the construction of thousands of feet of retaining walls. While this project was getting under way, the commandant of the Naval Station took steps to halt the work on the ground that the Navy might some time want to use the bay area from which the mud was being taken for target practice, in which case shallow water would be desirable. Mr. Parrott, then president of the railroad, assured the Navy Department that if the mud were ever needed, the railway company would return it to its original location. Interestingly enough, the Navy now occupies the terminal area which the railroad made.

Another major project at Key West was the construction of a permanent pier 1,700 feet in length, 134 feet in width, to accommodate large ocean-going vessels.

A third project at Key West was the construction of ferry slips, by the aid of which freight and passenger cars were for many years loaded on ferries, transported across the 90 miles between Key West and Havana, and placed on tracks in Cuba without breaking bulk.

The Key West-Havana ferry service was established January 8, 1915, about three years after the railroad was opened to Key West, and continued to be operated regularly until the disastrous hurricane of 1935, when all operations on the Key West Extension ceased.

### SEVERAL UNIQUE FEATURES

The construction of the Key West Extension was in several respects unique in the annals of railway building. In fact, nearly everything about the project was unlike anything ever before undertaken and called for great ingenuity and many improvisations on the part of the engineers.

The project was unique in its geographical location—upon a chain of coral reefs across wide expanses of open water, every mile of which was exposed to the fury of the hurricane.

It was unique in the extent to which all materials and supplies used in the construction had to be brought from points hundreds or thousands of miles distant.

All fresh water for use of locomotives, steamboats, and other water craft, stationary engines, as well as water for washing, bathing, cooking and human consumption, was unobtainable on the Keys and had to be hauled long distances over land and water to the construction sites.

Never before or since has a railway construction project of such magnitude been so completely dependent upon watercraft. Never before had a railway construction project of such magnitude been carried to completion with as little animal-drawn or motor-driven equipment. In the early days of construction, a few mules were employed on the grading work. Aside from that, not a horse or a mule or a wagon or a motor car was employed in the construction between the mainland of Florida and Key West.

The Key West Extension was unusual at least in the fact that it was built almost exclusively by railway company forces, without the aid of contractors.

### MATERIALS BROUGHT LONG DISTANCES

Materials of every sort known to construction work were necessary. Thousands of tons of cement; miles of reinforcing iron; miles upon miles of heavy deck-plate girders and fabricated steel; and shiploads upon shiploads of cement, gravel, crushed rock, coal and other supplies had to be brought

to the project from long distances. At the height of construction there was never a time when steamships or four-masted or five-masted schooners with construction materials were not unloading cargo at some point in the construction zone or on the high seas bound for the project. Because of lack of docking facilities at some points, many of these ships anchored off-shore and their cargoes were unloaded on lighters and towed to points where needed.

The magnitude of the undertaking may be better understood when it is pointed out that each of the huge piers in the main channels of the Seven Mile Bridge required a mixture of sand, gravel, cement and other materials equal in bulk to the cargo of a five-masted schooner.

Numerous shiploads of German cement were required. All cement used below the high tide line was of German manufacture, brought to the project direct from Germany. Cement for that part of the structure above the water line was of American manufacture, most of it brought in ships from a plant in New York State. Sand and gravel were brought in ships from points as far distant as Chesapeake Bay and crushed rock from points as far away as the Hudson River.

Great quantities of lumber, piling, crossties, and bridge ties used in the construction came from northern Florida and southern Georgia.

Steel for the bridges and rails for the tracks came from Pittsburgh and other steel manufacturing centers. Large quantities of food for the workmen were supplied by Chicago packing houses and other sources many hundreds of miles distant.

Many miles of temporary wooden trestles were erected to carry the railroad across channels while the permanent structures were being built. Many others were constructed to reach marl deposits and to provide docking facilities.

Altogether, 35 miles of temporary wooden trestles were built during the construction period. Besides, large quantities of piling were used for foundation piers, docks, anchor piles, and so on. At least 70,000 units of piling were used in the construction.

Fender piling for the piers at Key West were of jucaró wood—a dense, mahogany-like tree that grows in Cuba. Jucaró is more impervious to the toredo and other destructive water insects than are most woods.

When the amphibious character of the project is considered, it is obvious that a huge fleet of all kinds of watercraft had to be brought into service.

Indeed, far more watercraft than land vehicles were employed. These consisted of eight stern-wheeled steamboats, most of them brought from the Mississippi and Ohio rivers; three tug boats, two sea-going steamers, at least sixty power launches, large and small, twelve dredges, eleven pile drivers, eight concrete mixers for over-water work, two traveling concrete mixers for work on land, ten traveling excavators, eight derrick barges, 150 huge lighters or barges, about fifteen house boats and quarterboats, catamarans, a compressor barge, a floating machine shop, a floating blacksmith shop, covered supply barges, pump barges, and innumerable skiffs, rowboats, pontoons, and miscellaneous water equipment.

On land, there were locomotives, supply cars, freight cars, locomotive cranes, mechanical dump cars and earth spreaders. The care and maintenance as well as the protection of this huge fleet was in itself a job of vast proportions.

#### THE PROBLEM OF LABOR SUPPLY

From the inception of the project, a major problem was that of obtaining satisfactory engineers and construction men for supervisory purposes. These men were drawn from all parts of the world, and they were selected with great care. Many of them had been employed on other great construction projects and were accustomed to handling men.

Equally difficult was the problem of obtaining ordinary and skilled and unskilled labor. Advertisements were inserted in northern newspapers; recruiting agencies were engaged in New York, Philadelphia and other cities, and in a period of five or six years, at the height of construction, upwards of 40,000 different men were brought from New York and other distant cities to the project. Yet at no time did the total construction force exceed 5,000 men. Some men worked for years without interruption; many others worked only a few months; still others but a few days.

Early in the construction period a group of Italians was recruited in New York and sent to Jacksonville by ship, thence to Miami by rail. From this point they were to be sent by stern-wheeled steamboat to the Keys. But the men thought they had already come to the end of the earth. They took a look at the weather, which was a bit rugged, then they looked at the old stern-wheeler, and then they proceeded to stage a mutiny. Refusing to go a foot farther, they vociferously demanded that the company return them to New York. Chief Engineer Meredith went among them and sought to reason

with them. But the angry men swarmed around him, and when it appeared that they were on the verge of committing some act of violence, he gained their attention and assured them that no man would be employed against his will—that everyone of them would be returned to New York. That was done. Although many Italians were later employed on the project, no more Italian labor was recruited en masse in New York for the Key West Extension.

One of the largest groups of laborers, and some of the most dependable workers, came from the three British islands of Grand Cayman, Little Cayman and Cayman Brac in the Caribbean Sea. Each year, mostly in January, hundreds of these men came in their own vessels—the type commonly used in the fishing and turtle trades. These “Caymanders,” as we called them, worked steadily with rarely a day lost until about two weeks before Christmas each year. Then they would quit, almost to a man, take to their boats and go home to spend the holidays with their families. A mixture of British and West Indian, many of these Caymanders had sandy complexions, red or blonde hair, and not a few had Negroid features. Two-thirds of them bore one of three surnames—Jackson, Sands or Eubanks. They were good workers and excellent watermen.

Hundreds of Spaniards from Northwest Spain and the Minorcan Islands in the Mediterranean Sea were employed as common laborers; others as boat calkers, boat builders, carpenters, and the like. They spoke only Spanish. Nearly all of these Spaniards, as well as the Caymanders, came from and returned to their native lands without touching foot on the mainland of the United States.

The most numerous groups of all was made up of the common “skid-row” variety of American transients, recruited chiefly in New York and shipped to the Keys with the understanding that they would reimburse the railway company for their boat transportation to Jacksonville or Key West. A great many of them were “down-and-outers,” representing just about every occupation and profession.

A record was kept of occupations and professions represented by these men, so that persons of special skills could be located if and when needed. The list included lawyers, doctors, pharmacists, sculptors, preachers, artists, actor, salesmen, teachers and about every other profession and occupation imaginable. All of the men started as laborers on the roughest kind of work, such as shoveling coal, sand and gravel, unloading ships, pushing wheelbarrows, building embankments, drilling and blasting rock, and so on.

On pay day, many of them would quit and go on a spree that often lasted several days. When their money was gone they would sober up and return to work. Others would quit, return to New York by boat, spend a few weeks there, and return under a new contract.

Florida and Bahama Negroes were found to be excellent workers in certain jobs, such as clearing and grading land and shoveling coal, gravel and sand, but they, too, were likely to quit whenever they had a few dollars coming to them.

In spite of the care taken to select only men fitted for the work, much trouble was experienced with incompetents and with those who hired out with no other idea than to get a trip to Florida at the railroad's expense. Out of this attitude grew a peonage charge which resulted in a Federal indictment of the engineers in charge. These charges received highly sensational treatment in the press. When, after hard fighting, the railroad succeeded in bringing the case to a trial, the result was a verdict of acquittal. At the same time the court rebuked the prosecuting attorney for wasting its time with a charge which had so flimsy a foundation.

### THOSE PESKY MOSQUITOES

One of the most vexing of all problems connected with the construction of the Key West Extension was the presence of mosquitoes and sand flies. Sand flies were most disagreeable at a certain season of the year. Mosquitoes, however, seemed to be with us the year around. All camps, as well as offices, mess halls and other buildings in which men lived or worked had to be screened. Great quantities of pyrethrum powder and numerous smudge pots were burned. They helped temporarily, but they did not halt the breeding process, and the blood-hungry mosquitoes made life a torment for the workmen. Indeed, it is safe to say that mosquitoes drove more men to quitting the job than any other cause. One year a hurricane swept across the Keys and filled all fresh water pools with salt water during mosquito breeding season. Greatly to our relief, we had no mosquitoes for several months after the storm.

During the period of construction, three severe hurricanes swept over the Keys—in 1906, 1909 and 1910. In the 1906 storm, as already mentioned, the greatest damage was done and the greatest loss of life occurred at Long Key. The hurricanes of 1909 and 1910 also inflicted great damage to plant and equipment, as well as to exposed stretches of embankment.

The engineers and supervisory forces had profited from the storm of 1906, and, as a result, were able to save much of the equipment. Refuge canals were dredged at sheltered points in readiness for the storms, and on receipt of hurricane warnings the floating equipment was moved from the construction sites to these canals and kept there until the danger had passed.

In the 1909 storm the tug boat "Sybil" capsized in Bahia Honda Channel, resulting in the loss of 13 lives. The only surviving member of the crew was later found unconscious on the embankment under an over-turned wheelbarrow, several feet above the surface of the water. He was never able to tell how he got there.

Although the 1910 hurricane was probably the worst of the three—and was described by natives as the worst in history—the engineers and foremen, profiting from past experience, kept the damage to plant and equipment at a minimum. Only one life was lost on the entire project.

Damage wrought by hurricanes and precautions which were taken to protect against the blows had the effect of delaying completion of the work for two or three years and added millions of dollars to the cost.

In each hurricane several steamboats, barges and other floating equipment were sunk and much time and energy was given to restoring them to serviceable condition. The steamboat "Columbia" was sunk at least two times to my knowledge and restored in both instances, apparently as good as before.

After the severe storm of 1909 it became apparent to the engineers that the coralline limestone rock then being used to protect the embankment was not adequate to perform that function under severe conditions. In numerous instances blocks of stone and other material then being used to protect the embankment were washed out to sea, leaving huge gaps in the embankment. It was discovered, on examination, that wherever marl had been placed on the embankment, the road had withstood the storms without serious injury. Even the marks of the clam-shell and orange-peel buckets were visible on the marl after the storm had abated. The engineers then decided that marl was the answer to their problem. Several marl deposits were located up and down the Keys; trestles were built out over these deposits; dredges were brought in, and Goodwin dump cars were employed to carry the marl to exposed parts of the embankment. The marl thus dumped contained sufficient moisture to run off gradually, forming a rather smooth beach-like



protective coating. Altogether, millions of yards of marl were deposited over the exposed areas of the embankment. Thereafter, hurricane tides washed over miles of exposed sections of track without doing serious damage.

### FRESH WATER A PROBLEM

As already indicated, one of the greatest problems of all was that of obtaining fresh water. Not only did water have to be fresh, but it had to be pure; otherwise it might lead to sickness and epidemics. Efforts to locate fresh water at various points on the Keys were unsuccessful. A geologist was engaged, deep wells were driven at several points, but without success. Consequently water had to be hauled from the mainland and distributed to all points where needed for the use of locomotives, stationary steam engines, cooking and human consumption. Water requirements for a single month ranged up to 4,500,000 gallons. This was equal to 700 carloads a month.

In the early stages of construction the water was towed from Miami to the Keys by steamboats. Later it was taken from Manatee Creek, in the Everglades; still later from deep wells near Homestead, and shipped to the Keys in cypress tanks on flat cars—two tanks to a car—each car holding about 7,000 gallons. At Marathon and other points water was transferred from railway cars to tanks on barges, six tanks to a barge, and then towed by steamboat to the numerous construction sites and camps below Marathon.

### KEY WEST CELEBRATION

The greatest day in the history of the Florida Keys and in the life of Henry M. Flagler was January 22, 1912. As planned weeks in advance, Chief Engineer Krome and his men brought the construction of the line to a sufficient state of completion to enable trains to operate through to Key West. On that day, Henry M. Flagler rode into Key West on a special train, accompanied by scores of distinguished guests, and there, on his arrival, was given the greatest ovation of his life.

Key West had declared a 3-day holiday to celebrate the occasion, and it seemed as if the entire population was present to witness the arrival of the first railway train most of them had ever seen and to welcome the man who had made it possible. In a brief speech Mr. Flagler, then in his 83rd year, said with a full heart, "Now I can die happy. My dream is fulfilled."

A few months later, Florida's great benefactor passed to his reward, and in cities and towns up and down the East Coast, from Jacksonville to Key West, flags drooped in mourning, and at many points schools and churches paid tribute they had never before paid anyone, tolling their bells for the man who had done more than any other for that part of the state.

### THE FINAL BLOW

The railroad to Key West continued in operation for a period of twenty-three years until finally, on Labor Day, 1935, one of the most destructive hurricanes that ever visited the Florida Keys inflicted severe damage to many miles of embankment—not, however, to the great steel and concrete bridge structures which form the vital part of the project.

At that time the nation was in the throes of a great depression. The Florida East Coast Railway was in receivership. Economic conditions had undergone a marked change since Flagler decided to build the road to Key West. Improved highways, automobiles, motor buses and trucks had become important factors in transportation. Seagoing car ferries, operating between New Orleans and Havana, had seriously affected the flow of traffic over the Florida East Coast Railway. Trade with Cuba was at low ebb. These, and other factors had so greatly changed the picture that the decision was reached to abandon the road south of Florida City rather than to spend the money necessary to restore it to workable condition. Consequently that part of the road was sold to the State and converted to the Overseas Highway.

### A RAILROAD STORY

While we may regret the passing of the railroad, we must remember that this is still a great thoroughfare of travel and communication and is helping to accomplish the development of Florida which Flagler envisioned and which was so close to his heart.

If Flagler's aim was to create homes and employment opportunities for the people, then his efforts were immensely successful. The Florida East Coast Railway and its offspring, the Overseas Highway, stand as monuments to the memory of that great man, as symbols of his indomitable courage and his faith in the future of this good land.

The Overseas Highway is a part of our American heritage, a part of America's exciting railroad history. Its story is in the main a railroad

story. The hundreds of thousands of motorists who travel over the highway each year may be told how many millions it cost to build, but they will never know its cost in terms of sweat and backaches, toil and blood, and of human lives; they will never know how many men were swallowed by the sea or otherwise perished in the 12-year struggle to lay the foundations and erect the structures of steel and concrete upon which the highway rests—structures which have stood unshaken against the onslaughts of wind and water and hurricane—year after year—decade after decade—and which stand today—nearly half a century after completion—as solid and as firm as on the day they were built.

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