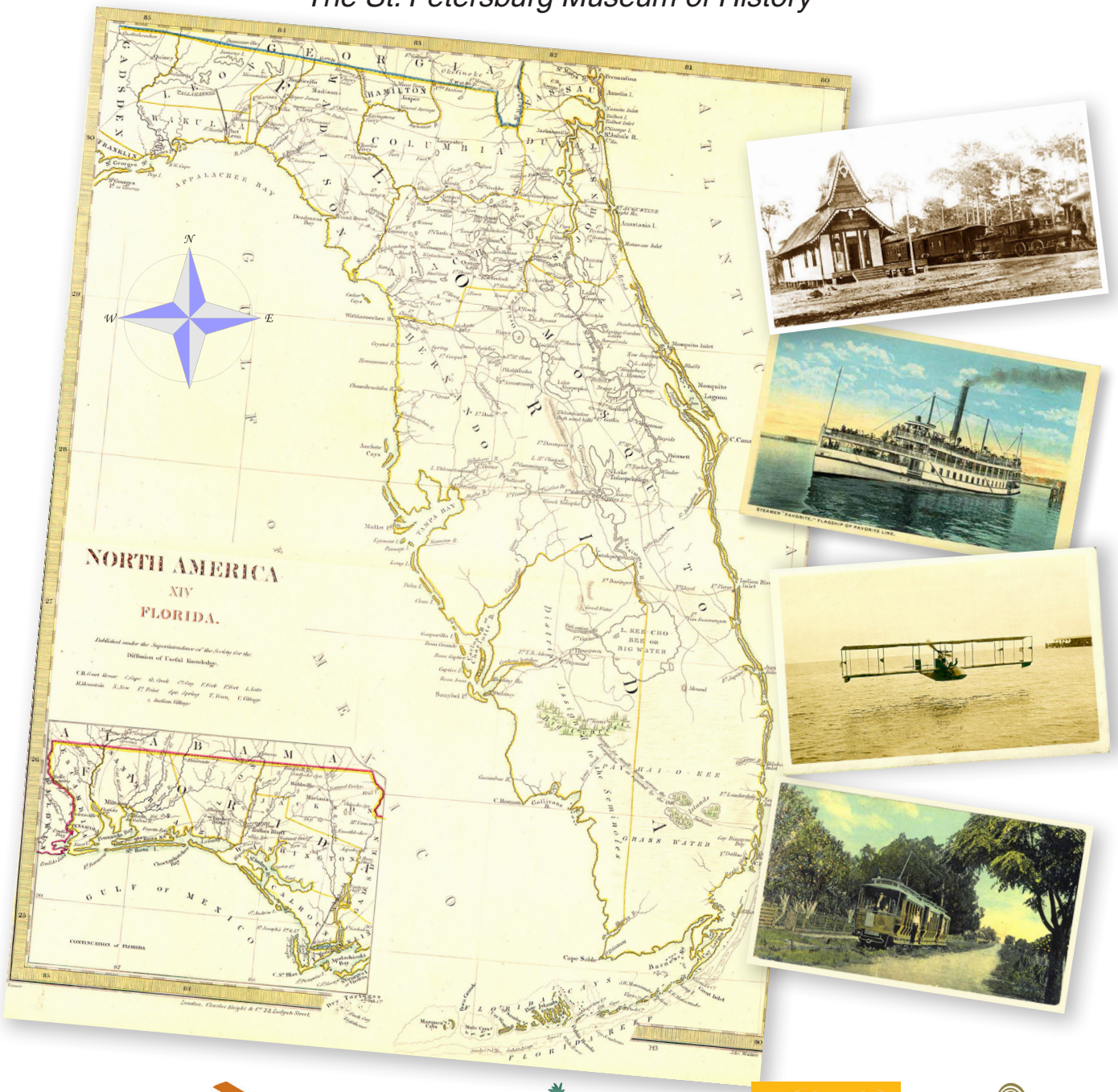
Transportation in Tampa Bay

4th Grade Lesson Plan

A Publication of
The St. Petersburg Museum of History



St. Petersburg Museum of History
Where Yesterdays Come Alive Everyday

Community Foundation of Tampa Bay
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Florida Humanities Council

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Table of Contents

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A publication of the St. Petersburg Museum of History

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Conceptual drawings, ship model and sails by Hermann Trappman

This project has been paid for in part by a grant from the Community Foundation of Tampa Bay and the Florida Humanities Council

COURSE OF STUDY

Grade 4 — U.S. Florida History and Geography

OBJECTIVES

1. To introduce students to the history of transportation in Tampa Bay.

2. To introduce students to modes of transportation used in Tampa Bay area before the arrival of the first Europeans to the present era.

3. To introduce students to the economic importance of transportation in Tampa Bay.

3. To offer students insights into how various modes of transportation worked.

SUGGESTED READINGS

John Cassidy
1985, *The Klutz Book of Knots*, Klutz, Inc., Palo Alto, California.

Olivia A. Isil
1996, *When a Loose Cannon Flogs a Dead Horse There's the Devil to Pay: Seafaring words in Everyday Speech*, International Marine/Ragged Mountain Press, Camden, Maine.

TIMEPOSTS

1989—Sunshine Skyway Bridge opens.

1969—Apollo 11, the first flight to the moon is launched from Kennedy Space Center.

1960—Howard Franklin Bridges opens.

1934—Davis Causeway opens across upper Tampa Bay. Renamed Courtney Cambell in 1948.

1924—Gandy Bridge spans 2.5 miles across Tampa Bay.

1914—Tony Janus flies the first scheduled commerical airline flight from St. Petersburg to Tampa.

1898—U.S. Naval fleet leaves Tampa Bay for war with Cuba.

1888—Peter Demens brings the first railroad to south Pinellas County, where the City of St. Petersburg will be founded.

1800s—Cuba Fishing Rancho are well established at Maximo Point and other places around Tampa Bay.

1750s—Scottish Surveyor and cartographer, George Gould, maps Tampa Bay.

1528—Pánfilo de Narváez sails into Tampa Bay on a caravel, bringing the first modern horses to North America.

pre-1500s—Native Americans travel in dugout canoes or by foot.

Modes of Transportation

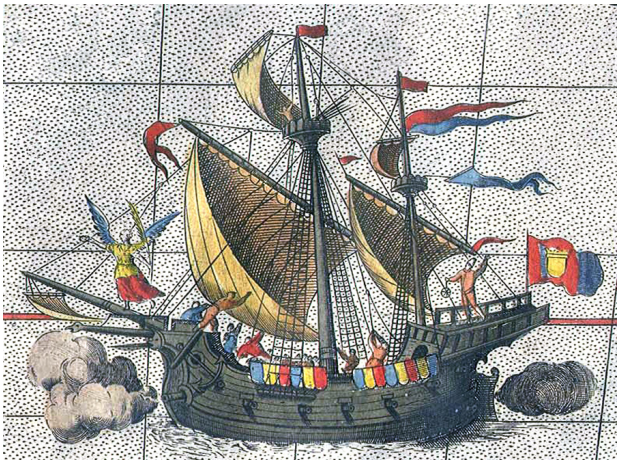
By Canoes

For thousands of years the people living in the Florida relied upon the coastal waters and rivers to travel long distances. The Tocobaga Indians skillfully carved out a tree trunk using fire and shell tools to build dugout canoes. Hundreds of these kind of canoes have been found in dried up lake beds and rivers around Florida over the years. In March 2011, archaeologists excavated the remains of a 1,000 year old canoe at Weedon Island.

By Ship

Until about 200 years ago, ships used wind power to move through the water. Wind power is a free energy source, harnessed by sails.

In the 1500s, Spanish explorers started coming to Tampa Bay looking for gold and slaves and to establish a city. They sailed here on wooden ships and every mariner had his idea of what kind of ship was the best for his particular situation. For example, the kinds of hulls had to be decided upon for their seaworthiness. Some ships were designed for deep sea sailing, while others were designed to ply coastal waters or to sail up rivers. The captain also had to choose the kind of sails to use. Sometimes he might choose to use lateen rigging for the sails, while at other times he chose square rigging, or he could choose both kinds of rigging. It all depended on the wind and the currents.



Square rigged Noa or Carrack

Pánfilo de Narváez aquired five **naos**—a.k.a. **carracks**—for his 1528 expedition to Tampa Bay. These were oceangoing ships, large enough to be stable in heavy seas, and roomy enough to carry provisions for long voyages. These ships were not easy to handle and were not designed for shallow waters. They would have to be anchored offshore in a deeper channel.

Life aboard these ships was not very safe nor comfortable. The cargo hold below the deck held supplies for the journey. They included horses, cattle, pigs, and chickens, as well as dry foods, water and wine. Sailors and passengers alike had to live, eat, and sleep on deck, which was awash with sea water during a storm. Because most passengers were not use to the sea, they were seasick for the first couple of weeks of what could be a journey of 4 to 6 weeks across the Atlantic ocean. For the priviledge of joining an expedition conquistadors paid nine ducats each. If they had enough money they could bribe a ship's carpenter to build them a makeshift shelter of wood and canvas to shield them from the sun and rain.

Food was cooked on an iron box on the deck. Meals consisted mostly of beans cooked in salt pork and hardtack, and a very hard kind of cracker that were often riddled with maggots. After a couple of weeks at sea, the water, which was stored in olive jars, would become stale and covered with green slime. Wine was added to it to try to make it drinkable, but it still very unpleasant. If a horse died on the journey, they might have a good meal of horse meat that day. Sailors were

known to catch rats that always plagued the ships—they roasted them, then ate them. When the seas were calm, they fished off the side of the boat to obtain another source of protein. For entertainment they played cards, told stories, and sang songs.

Another kind of Spanish ship to sail into Tampa Bay was a **caravel**, a light sailing ship developed by the Portugese in the late 1400s to explore the African coast. The *Nina* and the *Pinta,* ships that sailed on the Christopher Columbus expedition, were caravels.

The name caravel comes from a shipbuilding term "carvel," which refers to the smooth-sided wooden planks that were fitted edge to edge over a frame and sealed with caulking. These were more maneuverable than the noas. As it was smaller and had a shallow keel, the caravel could sail upriver in shallow coastal waters. When rigged with lateen sails, it was highly maneuverable. When square sails were used as well, it was very fast. Its economy, speed, agility, and power made it the best sailing vessel of its time. Its main drawback was its limited cargo space.

When Spanish Adelantado Pedro Menéndez de Aviles sailed up Tampa Bay on a moonless night in April of 1566, he was on one of six transitional ships called **brigantines**. The brigantine was a small ship carrying both oars and sails. Because it was a favorite of Mediterranean pirates, its name comes from the Italian word *brigantino*, meaning brigand or pirate.

Sailing ships are really wind machines. Where modern ships use engines to turn a propeller, sailing ships harness the wind. Over several thousand years, humans learned to use wind to drive boats and ships on rivers, lakes, seas, and oceans. Each of these bodies of water require their own unique designs of hull shape and sails. People living along the Nile River discovered that lateen sails worked the best for them. They still use a single mast with one sail.

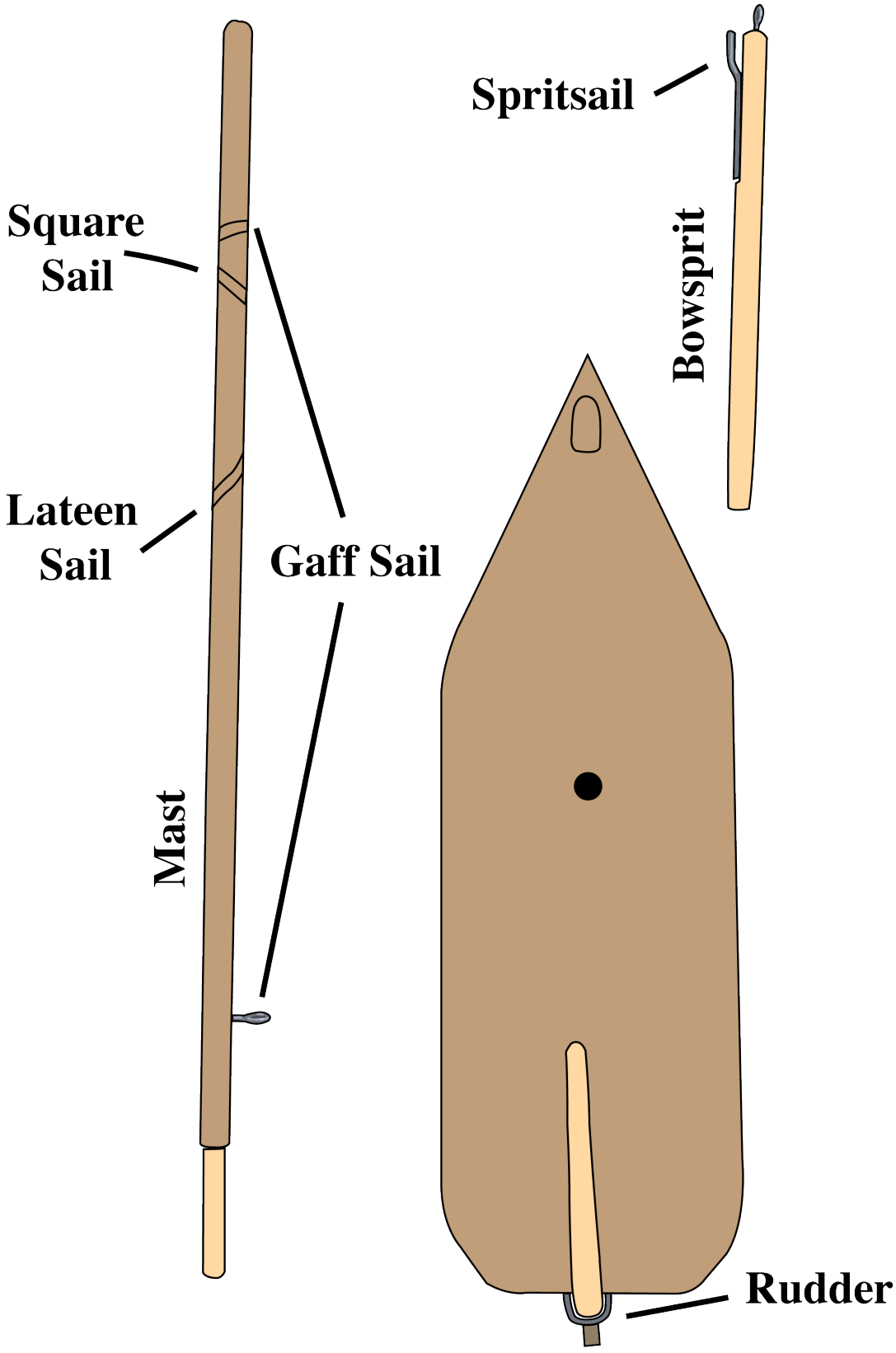
In coastal areas, folks used 2 masts and 2 lateen sails. As people experimented with sail designs, they found that square sails worked best on open water where they could get the wind behind them. When Columbus discovered America, most ships were designed for lakes, rivers, and seas. A new design was needed for oceans.

Square sails were wonderful if the wind was from behind, (the stern) the ship. Sailors could turn the yardarms to catch a wind from many different directions as long as it was not from the front, (or bow) of the ship. For the best results, captains had to know where to find the right prevailing winds.

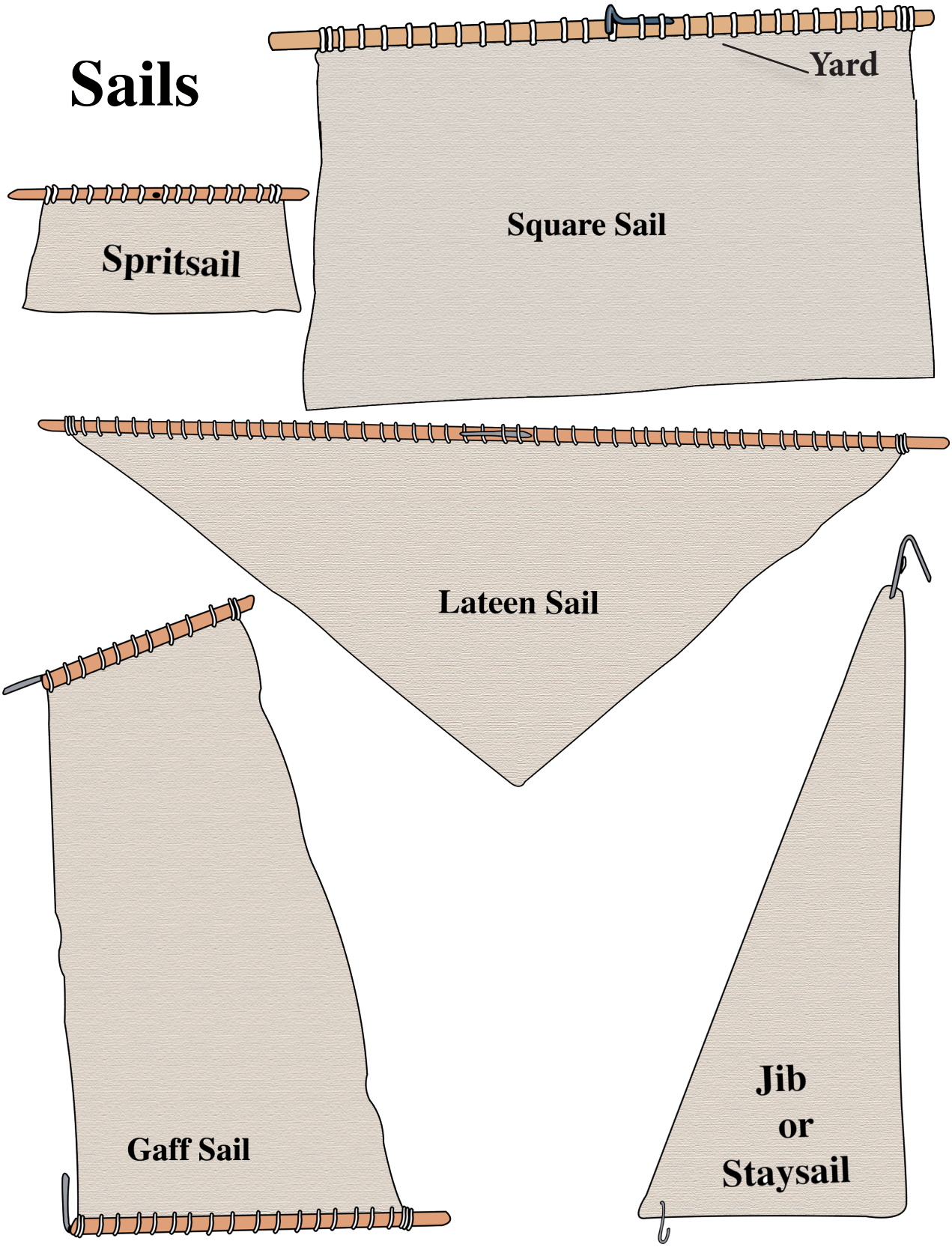
On his first voyage, Columbus had the lateen sails of the Pinta and the Nina changed to square sails when he arrived at the Canary Islands. Because the wind generally moves from east to west, below the Equator, Columbus had the winds behind him. For his return, his remaining two ships sailed north until they reached prevailing winds going from west to east**.**

Although the Pinta and the Nina did well in the Atlantic crossing, they were very small ships. As new ships were built to better handle the Atlantic crossing, square rigged ships became the standard deep ocean sailors. To take advantage of the wind, square rigged ships often carried more sail than just the square sails. They added a gaff sail, a jib or stay sail, and a spritsail to increase their speed and maneuverability. A fully rigged square sail ship could take advantage of a wider variety of wind directions in many kinds of weather.

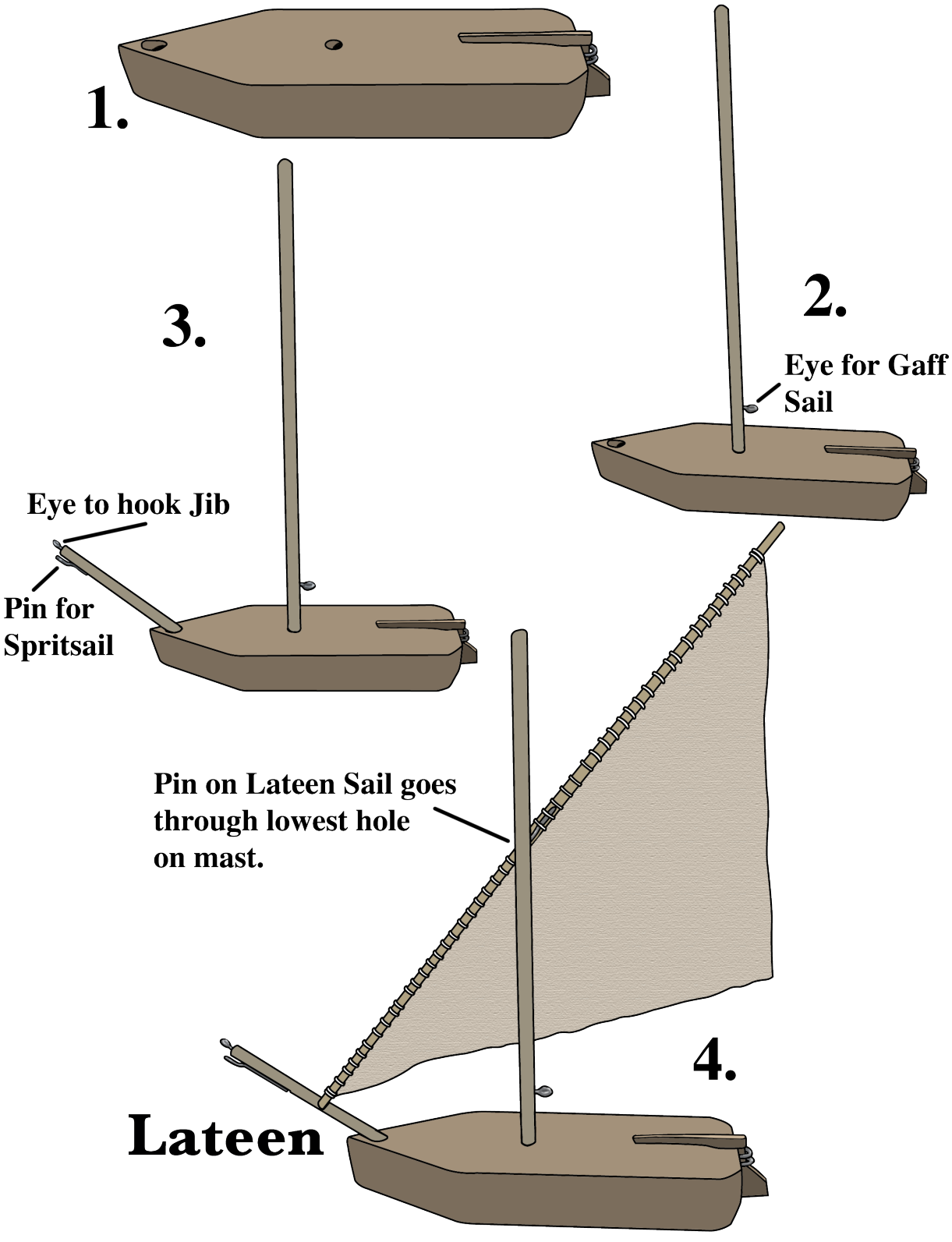
Model Boat Parts



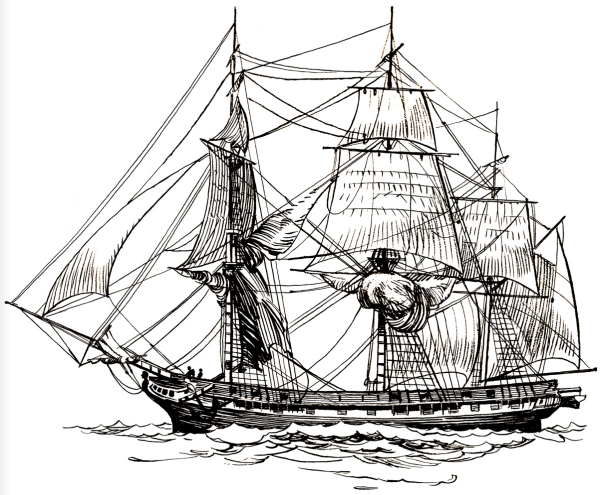
Sails


Yard
Spritsail
Square Sail
Lateen Sail
Gaff Sail
Jib
or
Staysail

Instructions for Model Boat



Seagoing Experiment



HMS Alarm

In the mid to late 1700s, when the British had control of Florida, their best cartographer was sent to map the Gulf Coast. One such cartographer was George Gauld, who sailed into Tampa Bay aboard a ship called the *HMS Alarm*.

> *See the toredo worm damaged piece of wood in the Museum in a Box*

HMS Alarm was a 32-gun frigate sent to the West Indies by the Royal Navy in 1761. For military purposes, her mission was to map the Gulf Coast of Florida. But she was also an experimental ship. The biggest problem with wooden ships was that they had to wage a constant battle against teredo woodworm and barnacle growth that damaged ships' hulls.

The *Alarm's* hull was sheathed in a thin layer of copper. When in contact with saltwater, copper produces a poisonous film, composed mainly of oxychloride, that the navy hoped would deter the marine creatures from attaching themsleves to the hull. Furthermore, as this film is slightly soluble it gradually washes away, leaving no way for marine life to attach to the hull. After two years of sailing in the warm waters of the Gulf, the ship was careened in order to see if the experiment worked. As it turned out the copper sheathing had protected the hull from the invasive teredo woodworms and barnicles. Satisfied that the experiment worked, the British Navy ordered copper sheathing on several of its frigates.

As the years passed, Cuban fishermen began to take over the fisheries that had been operated by the Tocobaga Indians. during the early part of the 1800s, Antonio Maximo and William Bunce had a well established fishing rancho, where Maximo Point Park is today.

The "Great Gale" struck the Pinellas Peninsula on Monday, September 25, 1848. The water rose to treetop level in low-lying areas and covered most of the land. When Maximo found his rancho destroyed in the storm, he left, never to return.

These fishermen used small boats called "smacks" to catch their fish. They shipped their salted, smoked, and dried mullet to Cuba and Spain in an early style of schooner called a "pinky," well known for its seagoing qualities and its ability to weather storms. The pinky gets its name from its uplifted or "pinked" sterned hull and had a schooner

rig. Used by the New England's and Atlantic Canada's fishing fleets prior to the American Revolution, it was also used in Florida.

Schooners were used to transport cattle, sugar, cotton and tobacco. In 1848, shortly after the hurricane distroyed the fishing ranchos on the bay, James McKay of Tampa purchased a schooner he named the *Sarah Matilda* after his wife. He moored his ship at the military dock at Fort Brooke in the mouth of the Hillsborough River and shipped cattle to Mobile and New Orleans.

During the Second Seminole War 1836-1842, Lt. Henry Prince was stationed at Fort Brooke in what is now downtown Tampa. In his diary he mentions several types of ships that brought soldiers, supplies, and most importantly, letters and news from home. Revenue cutters, schooners, sloops of war, and the very first steamboats could be seen sailing up the bay to Fort Brooke.

On April 19, 1861, at the beginning of the American Civil War between the northern and southern States, President Abraham Lincoln proclaimed a blockade of the nearly 3,500 miles of coastal area in the south. The idea was to strangle the Confederacy into submission by preventing exports, primarily cotton, and the import of war materials such as muskets.

The US Navy carried out raiding parties from gunboats along the Florida coast. These expeditions could be as short as a few hours, overnight, or lasting up to almost a week away from their ships. Unlike the Army, the U.S. Navy was integrated. Almost every ship had African American sailors serving on board. Many of them had joined the navy in the North, while runaway slaves, called "contrabands" were taken on board in the South.

Reservoir Lake (now called Mirror Lake) once served as the water supply not just for St. Petersburg, but for the United States warships and transports carrying soldiers to Cuba during the Spanish American War. On June 15, 1898, the following message was published in the *Tampa Tribune*, about one of the ships that visited St. Petersburg: "When the *Cherokee* stopped here on Wednesday for water, about 1500 soldiers came into town and spent several hours, and considerable money here."

The reporter may have overestimated the number of soldiers, because according to historical records the *Cherokee* could carry 40 officers and 972 soldiers and crew. Many

of these transport ships at the time were chartered from private companies. The *Cherokee* was chartered from the William P. Clyde & Co. Line for $500 per day. She could reach a speed of 11 knots.

There was long line of warships waiting for orders from the War Department to proceed to Cuba that summer. The *Tampa Tribune* reported on June 5, 1898 that this was "Something Worth Traveling a Long Distance to Witness."

> "One mile of steamships lying bow to stern as close together as it is possible to place them is a sight that can be seen by visitors to Port Tampa at the present and is well worth a long journey to behold, for never has such an aggregation of ships been attempted before in this country.
>
> All of these steamships are lying in the canal by the side of the railroad dock. The canal is exactly one mile long and as the ships are now placed, the line extends from the shore end of the canal, to the end of the railroad dock and a second line of steamers half as long as the first is lying by the side of those that are made fast to the dock.
>
> For three years an immense dredge has been at work in this channel, and now there is 20 feet of water at the shore and 26 feet of water at the outer end of the canal. The work has cost about $2,000,000 and the other improvements at Port Tampa have cost at least $1,000,000, but without this enormous expenditure of money, Tampa would never have been made the base of operations of the war department, and Port Tampa would not have been selected as the port of embarkation for the United States army of invasion and occupation.
>
> All the improvements at Port Tampa have been inaugurated and carried by Mr. H. B. Plant, president, of the Plant System of railroads and steamboats."

Prior to 1914, travel from Tampa to St. Petersburg required a slow two-hour steamboat trip across Tampa Bay. One ship, the *Favorite* left the Hibbs Docks in Bayboro Harbor, picked up freight at the railroad pier, then boarded more passengers at at the Municipal Pier. She finally docked on the east Bank of the Hillsborough River close to what is now the Kennedy Bridge.

By Horse and Buggy

When St. Petersburg was first founded the only choices for land transportation were by horse, a horse and buggy or a mule and wagon over bumpy, sand swept unpaved roads.

A story in an 1898 issue of the *Tampa Tribune* reported that a carriage manufacturing company in St. Petersburg, owned by George Edwards, had been repaired and expanded to serve the community, demonstrating that horses still played an important role for transportaion at that time. But times were changing.

Horse and buggy traveling along a jungle path in early St. Petersburg.

Father and Son Bikes

By Bicycle

In 1870 the first all metal two-wheeled cycle appeared. Its pedals were atttached directly to the front wheel. The cycle had solid rubber tires and the long spokes of the large front wheel provided a much smoother ride than its an earlier model called “the bone-shaker.”

The front wheels became larger and larger as makers realized that the larger the wheel, the farther you could travel with one rotation of the pedals. You could buy a wheel as large as your leg length would allow. These bicycles enjoyed a great popularity among wealthy young men, as they cost an average worker six month’s pay.

Because the rider sat so high above the center of gravity, if the front wheel was stopped by a stone or rut in the road, or a dog suddenly ran in front of it, the entire bicycle rotated forward on its front axle, and the rider, with his legs trapped under the handlebars, was dropped unceremoniously on his head. Thus the expression “taking a header” came into being.

As the bicycle developed it soon became practical for the working man as transportation, and gave him a much greater flexibility for leisure. The bicycle is credited as the reason for “common-sense dressing” for women. Comfortable clothing replaced the corsets and bustles. In 1896, suffragette, Susan B. Anthony said that “the bicycle has done more for the emancipation of women than anything else in the world.”

By the 1890s, bicycles had become very popular in Tampa Bay. The national craze for bicycle racing found a home at the Belleview Hotel in Bellair, and at the turn of the century, six-day bicycle races and many other prominent national and internationally cycling events took place there.

By Railroad

Hamilton Disston, heir to one of the largest manufacturing companies of the time, purchased nearly four million acres of land in Florida, making him the largest landowner in the United States. Disston’s favorite tract of land was the 1,500 acres he owned across southwest Pinellas. He planned to build a new city, he called Disston City, where Gulfport is today. With three grocery and dry-goods stores, a post office, and the twenty-six room Waldorf Hotel, the first newpaper in the area, called *The Seabreeze*, the only thing missing from Disston’s dream was a railroad depot.

When the Orange Belt Railway failed to pay its bill for railway ties owed to lumberman and sawmill operator Peter Demens, he took over the company. As the new owner, he decided to extend the railroad to the Pinellas

Penisula on Tampa Bay.
Hamilton Disston offered Demens over 60,000 acres of land to bring the railway to Disston City. Demens wanted to extend the railroad all the way to Mullet Key, but Disston refused to give him the additional land. Although the booming town of Disson City seemed a far more logical place for the railroad depot at the time, Demens decided to located his depot in tiny Pinellas Village on land offered by John Williams.

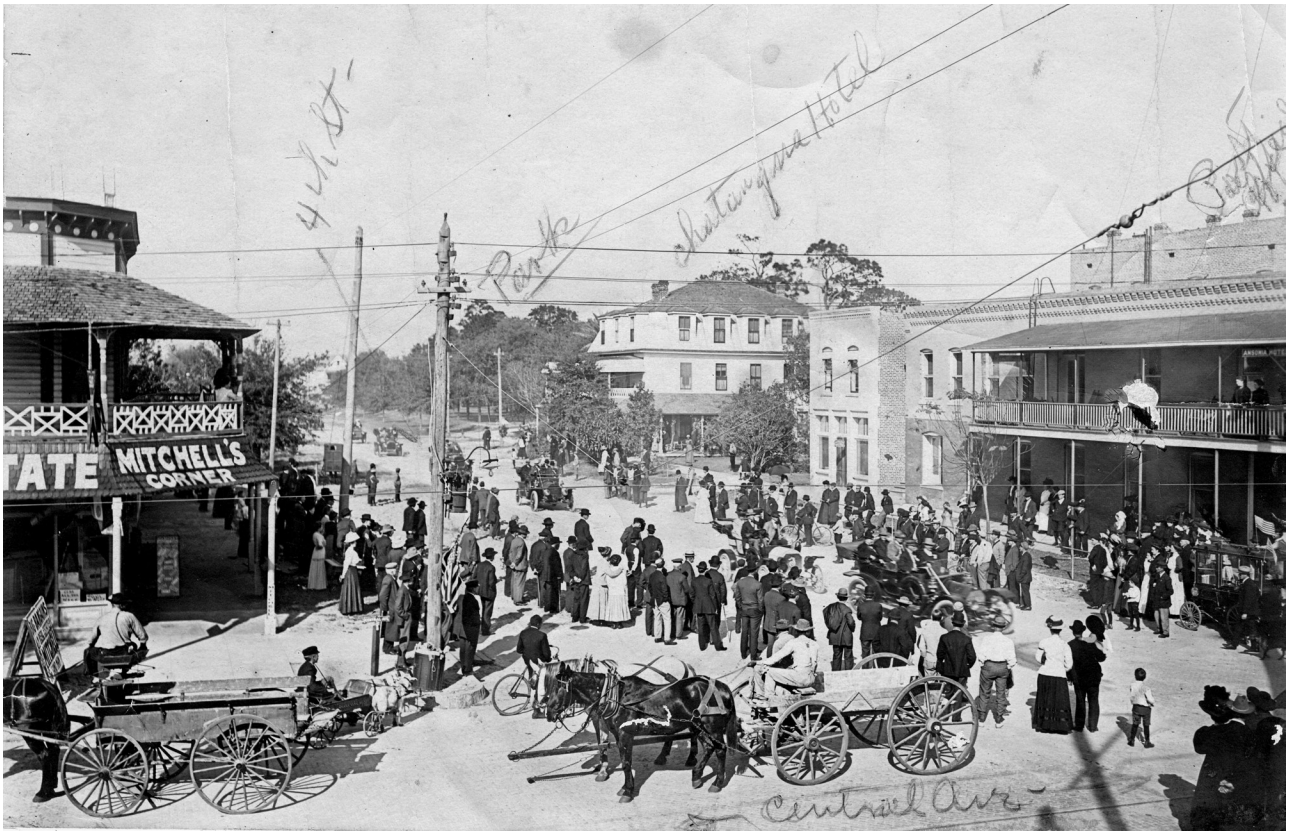
Work began on the railroad in 1887, and on June 8, 1888 the first train pulled into the station in southern Pinellas County, with a single passenger on board, a shoe salesman. As part of his agreement with Williams, Demens also constructed a pier long enough to accommodate vessels with a three-foot draught, a bathhouse on the pier, a train depot and the Detroit Hotel. To honor Demans the village was renamed for his home in St. Petersburg, Russia.

At first, rail service to Tampa was very slow. The trip began at the Atlantic Coast Line Station on 1st Avenue S. in St. Peterburg, with stops in Pinellas Park, Lealman, Largo, Clearwater, Sutherland (now called Palm Harbor), and finally at Tarpon Springs. There, passengers changed both stations and trains, boarding the Tampa & Gulf Coast to Odessa, Sulphur Springs, and finally Tampa. The engine rarely went over 20 mph and the sixty-four mile trip could take up to 12 hours.

By Automobile

St. Petersburg's first automobile was bought by Edwin H. Tomlinson in 1904. These early automobiles had no power windows, automatic transmission, four-wheel brakes, power steering, or air-conditioners, and most did not have self starters. They had to be cranked to start. Some of the roads between St. Petersburg and Tampa were covered with oyster shells, while deep ruts in the sand marked the rest. If someone dared to make the trip they would have to travel all the way around the head of the bay to get to Tampa. The first trip took three and half days to complete. The first driver to be arrested for speeding was Mott Williams, clocked at 18 miles an hour, ten miles over the speed limit at the time.

Orange Belt Railroad train with the Detroit Hotel in the background, 1890.



Most of St. Peterburg's residents turn out for the arrival of the first car owned by Edwin H. Tomlinson.

As automobiles caught on, roads began to be laid out and paved, and bridges built to connect different parts of the Bay area. Harrison Bros. Hardware opened the first gasoline station at the corner of Third and Central, while F. W. Ramm & Son became the first garage on First Avenue S. In 1906 A.W. Hicks was the first tourist to arrive in St. Petersburg by automobile. It took him fourteen days to drive from the "Motor City," of Detroit, MI.

By Trolley

In the late nineteenth and early twenty centuries, before the rise of automobiles, trolley line spurred the growth of the cities etching the paths to connect communities. St. Petersburg's first trolley line began operating in 1905, and it ran in between St. Pete and Gulfport. Contributing immensely to the development of both cities, trolleys provided an efficient and affordable means of public transportation for citizens, visiting businessmen, and tourists, although they enforced the racial segregation laws that prevailed at that time the south.

The *St. Petersburg and Gulfport Railway Company*, owned by Frank A. Davis opened its first trolley line on New Year's Day of 1905. Most of the lines ran down Central Avenue into Gulfport. Davis owned land in Gulfport and he hoped the trolley lines would help his real estate businesses. The trolley system quickly grew to more than twenty-three miles of track, most of which provided access to areas being developed by real estate prospectors. Despite the popularity of the trolleys, the *St. Petersburg and Gulfport Railway Company* had more than its fair

share of financial troubles and filed for bankruptcy in 1919. The citizens of St. Petersburg then voted to approve $250,000 bond that allowed the city to run the lines.

By the 1930s the use of trolleys was already declining due to the increasing number of people owning automobiles. However, during World War II, rationing of both gasoline and rubber limited the usefulness of automobiles in St. Petersburg, so everyone started using the trolleys again. Thousands of troops stationed in St. Petersburg for training took advantage of the trolleys to get around. This helped the trolleys survive the war years, and after the war was over, people once again preferred the freedom of automobiles to riding trolleys.

Oil companies pushed to replace electric vehicles with gas driven ones, and in October 1947, St. Petersburg City Council voted to phase out the streetcars for buses, despite the objections of Mayor Bruce Blackburn. The trolleys succumbed to the recommendations of city planners to replace them with buses that were considered to be a more efficient mode of transportation. On May 7,1949, the last trolley in both the St. Petersburg and Tampa Bay area drove around with signs that said, “Rest in Peace,” “Retired for Progress,” and “Not Dead, Just Retired.” Since that time buses became the city’s public transportation.

Today the Pinellas Suncoast Transit Authority (PSTA) is the public transit provider in Pinellas County, with more than 13.1 million passenger trips in 2010. There are 191 buses serving 5,159 bus stops on 37 routes in Pinellas County, including two express routes that travel to Tampa. On September 20, 2010, the first of the Pinellas Suncoast Transit Authority’s new, fuel-efficient hybrid SmartBuses hit the road. During the first year of operation, these hybrids cut their fuel costs in half. These buses also cut air pollution by reducing the amount of nitrogen, carbon monoxide, particulate matter and hydrocarbons released into the air.

This photo of a street in St. Petersburg shows horses and buggies being passed by a new electric trolley.

The Bridges

Gandy

In 1922, George S. Gandy hired promoter Eugene M. Elliott to attract investment in his bridge across Tampa Bay. Gandy sold enough stock to finance the bridge, which cost $1,932,000. Bridge construction began in September 1922 and it opened on November 20, 1924. Sixteen visiting state governors and several foreign dignitaries attended the opening ceremony. During George Gandy's speech, he stated; "The bridge is built!"

The steel and concrete bridge spanned a distance of six miles, making it the longest automobile toll bridge in the world at that time. The bridge reduced the distance between Tampa and St. Petersburg from 43 to 19 miles. A toll was charged to cross the bridge at 75¢ for the automobile and driver and 10¢ for each additional passenger. The bridge stopped collecting tolls on April 27, 1944, after it was seized by the Franklin D. Roosevelt administration. On December 23, 1945, a federal jury awarded The Gandy Company $2,383,642 in compensation for the property, plus $100,000 in interest.

By 1947, state Sen. Raymond Sheldon described the bridge as "outmoded, too narrow, and a traffic bottleneck." In 1956 a second slightly higher, fixed span was added to the Gandy Bridge to serve westbound traffic. The first span then served eastbound traffic until 1975. The second bridge remained in use until February 1997.

Courtney Campbell Causeway

The Causeway was commissioned by the owner of a local dredging company, Ben T. Davis, in the late 1920s to provide a more direct link between Tampa and Clearwater. The only current land route at that time required travelling over 30 miles around the northern shore of Tampa Bay, through the community of Oldsmar. His proposal was granted and work began in earnest in 1927 and continued off and on as Davis' dredging company ran out of other work to do. During construction, one of the original bridge spans was destroyed by a hurricane.

Costing $900,000 in total, the Davis Causeway was opened on January 28, 1934 with 25¢ toll per car. In 1944, the federal government seized the Davis Causeway as part of America's war effort, paying its previous owners $1.1 million and transferring ownership to the state of Florida.

In 1948, the Davis Causeway was renamed for Courtney W. Campbell, a Clearwater Beach resident, U.S. Representative, and member of the Florida Road Board who spearheaded efforts to ensure the needed

A caravan of travel trailers crossing the William Dean Skyway bridge.

repairs and beautification of the Causeway. In 2005, the Causeway was designated as an official scenic highway by the State of Florida.

Howard Franklin

Named for the man who proposed it, Tampa businessman Howard Franklin, the bridge opened in April 1960 and carried four lanes (two lanes in each direction separated by a short, narrow barrier). The bridge and approaches cost $16 million.

Because of the bridge's design, including its lack of emergency shoulders, it proved to be dangerous. Accidents were common on the bridge, and traffic backed up on both sides, while ten people had been killed. This lead to local nicknames like "Frankenstein" and "The Car-Strangled Spanner". In 1962, a steel-reinforced tapered concrete barrier was installed "to prevent cars from hurtling the median and crashing into oncoming traffic."

Planning for a larger-capacity bridge began in 1978. Original plans ranged from a large, multi-lane suspension bridge to two parallel bridges with the central span reserved for high occupancy vehicle lanes. As traffic projections increased, it was clear that the new bridge would need to handle at least eight lanes—four in each direction. By 1987, it was decided that a parallel, four lane span would be built. Plans were also made to rehabilitate the older bridge after the new bridge opened.

Construction began on the new span in 1988. The new $54 million southbound span was opened to traffic in 1990. The older bridge was then closed, rehabilitated, and reopened in 1992. The older northbound span is shorter and has a steeper hump than the newer southbound span.

Sunshine Skyway

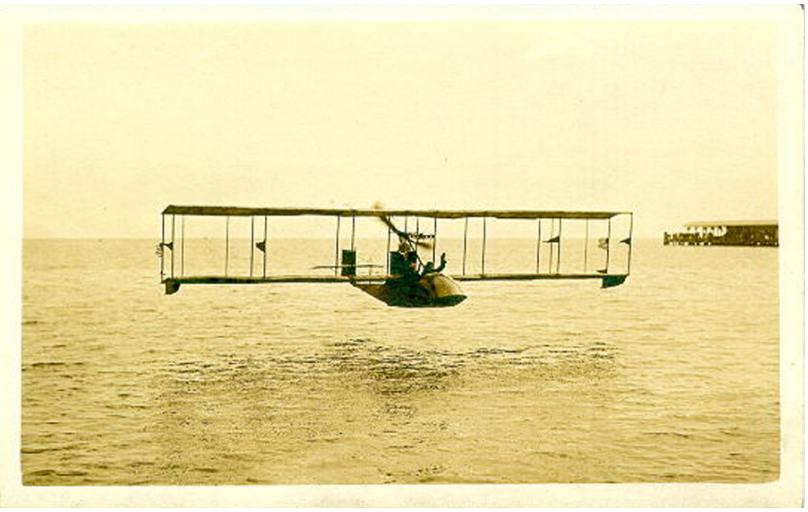
The original span of the *William Dean Sunshine Skyway* connecting St. Petersburg and Manatee County opened in 1954. A second span was added in 1971. The bridge links St. Petersburg in Pinellas County with Terra Ceia in Manatee County, but it passes through Hillsborough County waters.

On the morning of May 9, 1980, the freighter *Summit Venture* was about to pass under the Sunshine Sky Bridge on its way to pick up a load of phosphate. The visibility was practically zero and it was too late when the pilot realized that the ship had strayed off the main channel. He ordered the anchors dropped and the engines full astern, it was too late. The ship crashed into the bridge.

Thirty people were killed when the *Sunshine Skyway Bridge* collapsed, 26 were passengers on a Greyhound bus. Six cars and one pickup truck also plummeted from bridge. The only person to survive the fall was the driver of the pickup, Wesley MacIntire.

After the collapse, a new *Sunshine Skyway* was built using a different design. The new bridge is much sturdier and is designed with a 4.1 mile long cable-stayed main span. In a better location for ships, now its pilings are surrounded by bumpers called "dolphins" that serve to protect it in case a ship goes astray again. In 2005 it was renamed *Bob Graham Sunshine Skyway Bridge.*

The *Travel Channel* rated the *Sunshine Skyway Bridge* #3 of its "Top 10 Bridges" in the World.



A replica of the *Benoist XIV, shown here,* flown by Tony Jannus on January 1, 1914 is on display at the St. Petersburg Museum of History.

By Airplane

On December 17, 1903. Frank and Orville Wright were the first to successfully power and sustain heavier-than-air human flight. Although not the first to build and fly experimental aircraft, the Wright brothers were the first to invent aircraft controls that made fixed-wing powered flight possible.

In 1913, Florida businessman Percival Fansler approached some St. Petersburg businessmen with a proposal to use Benoist flying boats for “a real commercial line” over open water between St. Petersburg and Tampa.

Impressed by the record-setting overwater flight made by pilot Tony Jannus the business community agreed to provide financial support for the creation of an airline service connecting the two cities. On December 17, 1913, on the 10th anniversary of Wilbur and Orville Wright’s historic first airplane flight, the businessmen signed a contract with Benoist to provide airplanes and crew for two daily round trips across Tampa Bay. They called it the St. Petersburg-Tampa Airboat Line — the world’s first scheduled airline.

On January 1, 1914, an excited crowd of 3,000 gathered at the downtown Municipal Pier on 2nd Avenue North, to watch the history-making takeoff at 10 a.m.. Flying only a few feet above the surface of Tampa Bay, Jannus piloted the twenty-three minute inaugural flight of the pioneer airline’s Benoist XIV flying boat biplane.

The mayor of St. Petersburg, Abram C. Pheil was a passenger on that first flight. At a fare of five dollars, it was the first time tickets were sold to the general public for point-to-point scheduled air travel. The Benoist reportedly reached a maximum speed of 75 miles per hour during the flight. Other reports say that Jannus flew over the Bay at an altitude of less than 50 feet. Upon the airboat’s arrival in Tampa, the Tampa Tribune reported, “a crowd of two thousand was waiting...Messrs. Jannus and Pheil bowed and smiled”.

A regular schedule of flights began to depart St. Petersburg every day, except Sundays at 10 a.m. and 2 p.m.. Return flights left Tampa at 11 a.m. and 3 p.m. After the first flight of the Benoist, Jannus dropped his flight goggles and broke the glass.

Ten-year-old Judy Bryan, ducked under the ropes holding the crowd back and asked Tony if she could keep them. Not only did Tony agree to let her keep the broken goggles, but he also removed a brightly lettered Benoist pennant and gave it to her. Today the goggles, pennant, and a full-size working replica are on permanent exhibit at the St.

Petersburg Museum of History.

The airline operated two Benoist airplanes. They were thirty-six feet long with a wingspan of forty-five feet. Tony Jannus and his brother, Roger, were the pilots of note, although others did fly on occasion. In the weeks that followed Jannus made at least two regularly scheduled round trips a day between St. Petersburg and Tampa. For three months the Airboat Line kept its schedule with astonishing regularity. Only about seven days were missed due to weather or repairs. Regular flights were suspended in May, when the tourists went up north again. The cost of a passenger ticket was five dollars each way and five dollars for each one hundred pounds of freight. This was not as cheap as it seems. Five dollars in 1924 is worth approximately eighty-five dollars today.

To get from St. Petersburg to Tampa it took two hours by steamboat, six hours by automobile, or twelve hours by train, whereas the airboat line only took about twenty minutes.

The Birth of National Airlines

Twenty years after the start of the St. Petersburg-Tampa Airboat Line, Ted Baker opened *National Airlines* in St. Petersburg in 1934. Baker's "hometown" airline had three *Ryan* monoplanes each capable of carrying six passengers.

At first, *National Airlines* flew between St. Petersburg and Daytona Beach, with stops at Tampa, Lakeland, and Orlando. By 1980, the airline had an international air network of 29,000 route miles serving 41 cities, plus Great Britain, France, Germany, the Netherlands, and Switzerland.

Johnny Green

Johnny Crittenden Green was born in Galatin, Tennessee in 1888. Even as a child he was adventuresome and a daredevil. His first claim to fame was as a motorcycle and automobile racing driver in Nashville, Tennessee. He was the first to fly over Chattanooga's Lookout Mountain and the first in aviation to make a night flight.

In 1913 Johnny Green moved to Miami to experiment with hydroplanes. He was intrigued, and fell in love with hydroplanes and, purchased the latest seaplane, the Curtis F-boat, in kit form. The first one he built he named *Betty* after his wife.

Johnny Green came to St. Petersburg in 1915 and took over Tony Jannus' St. Petersburg-Tampa Airboat Line. He erected a fairly large, but frail hanger on St. Petersburg's waterfront alongside the Municipal Pier. Behind the hanger he operated the "Green Lantern" nightclub.

Before America entered the First World War, Johnny Green began assembling seaplanes shipped by rail to St. Petersburg. They were then flown by army pilots to the Navy bases in Pensacola, Miami, and Key West. In 1916 he enlisted in the air service, training naval cadets to fly at the Great Lakes Naval Station. Later he was sent to Key West as a civilian inspector.

While Johnny was away, a man by the name of Jack McGee brought his Curtis Gull to St. Petersburg and used the St. Petersburg-Tampa Airboat Line hanger for his flights.

After the war, Johnny returned to find his seaplane *Betty,* which he had stored in Tampa, had burned. He bought his second Curtis Gull, which he named *Sunshine* after the state of Florida.

The destructive hurricane of 1926 all but wiped out St. Petersburg's waterfront. It also destroyed Johnny's hanger and seaplane

"Sunshine". In 1928 Johnny moved his operations to the newly opened Piper-Fuller Airfield. Later, he expanded his business by opening a workshop along a small sandgrass strip south of the Gandy Causeway, which had opened in 1924, just east of the present day dog track.

Johnny Green bought two Eagle Rock biplanes and established a charter mail, express, and passenger service from St. Petersburg to other cities in Florida. Johnny maintained a mail and package delivery between St. Petersburg and Pass-a-Grille, Clearwater, Tarpon Springs, Bradenton, and Tampa. From his new location Johnny also assembled and sold Eagle Rock biplanes, gave flight lessons, and flew sightseeing trips around Tampa Bay. One of Johnny's flight students was George Haldenan, who later became famous for many flying feats, including his attempt to make a trans-Atlantic flight in 1927.

Albert Whitted

Local pilot, Albert Whitted flew for the U.S. Navy in World War I, and opened the first commercial airport in St. Petersburg.

Albert too, was something of a daredevil. When flying down the Mississippi River to deliver mail he would fly under arched bridges leaving only a few feet of clearance. Back in Florida he had a trick he loved to perform for crowds: he had an assistant place a page of the *St. Petersburg Times* in the water just off the Pier. Pilot Whitted would then circle the paper in his seaplane, the *Silver King*, finally banking the aircraft, then steaming down to cut the paper in half with the bottom edge of his pontoon. His flying skills were such that he never damaged a plane performing this trick.

Albert Whitted went to Pensacola where he built a five-passenger airboat named the *Falcon* in his father-in-law's barn, assisted by his nephew J. Brent Watson. This plane was the commercial carrier that would expand Albert Whitted's business.

One of Albert's theories on aircraft proved fatal. He believed if a propeller came off in flight, it would pitch above and clear the aircraft. Instead on August 19, 1923, a propeller came off the *Falcon* and tore into a wing, sending the plane with the pilot and four passengers into Pensacola Bay. There were no survivors. Albert Whitted Airport was named in his honor in 1923.

Navigation

Navigation is the art of getting from one place to another, safely and efficiently. Whenever you find a store in a mall or walk home from school, you are using the tools of the early navigators. But what if you found yourself in a place you didn't recognize, such as out in the middle of the ocean?

For thousands of years, people around the world have named the four directions as North, East, South and West. The ancient travellers began to adopt sunrise for East and sunset as West, and the direction from where different winds blow as North and South. They named the directions in between the four cardinal directions; North East, South East, South West, and North West, making a total of eight directions. Then they named the directions between those direction North North East, South South East and so on, until there were 16 directions. When drawn on maps and charts they became known as a Compass Rose.

The most important question on a ship of exploration was *how do we get there?* It was the navigator's job to answer it. Proper preparation and attention to detail are important.

On the Panfilo de Narvaez expedition, Diego Miruelo, who had been to Tampa Bay in earlier years was chosen to be the ship's pilot or navigator. Unfortunately, it seems he was not very good at it. In his account of what happened on the journey, Nunez Cabeza De Vaca wrote,

> At this time the Governor arrived with a brigantine he had purchased in Trinidad, bringing along a pilot named Miruelo. He had taken him because he said that he knew, and had been at, the River of Palms and that he was a very good pilot of the entire north coast [of the Gulf of Mexico]. He also left on the coast of Havana another ship which he had purchased, along with Alvaro de la Cerda as captain, with forty men and twelve horses. Two days after the Govemor's arrival we set sail with four hundred men and eighty horses in four ships and one brigantine. The pilot whom we had just engaged took the ships through the shoals called Canarreo, so that the following day we ran aground. And there we remained for two weeks, with the keels of the ships often high and dry. Finally a storm from the South flooded the shoals so much that we were able to leave, but not without great danger.
>
> Having departed from there and arrived at Guaniguanico, we almost perished in another storm that overtook us. We encountered another storm at Cape Corrientes, where we spent three days. After this we rounded Cape San Antonio and sailed with contrary winds until we were twelve leagues from Havana. The following day, as we were about to enter Havana, a wind from the South blew us away from land. We crossed toward the coast of Florida, sighting land on Tuesday, April 12, and sailed along the coast of Florida. On Maundy Thursday we came upon a bay along that coast at the head of which we saw several Indian houses and habitations.

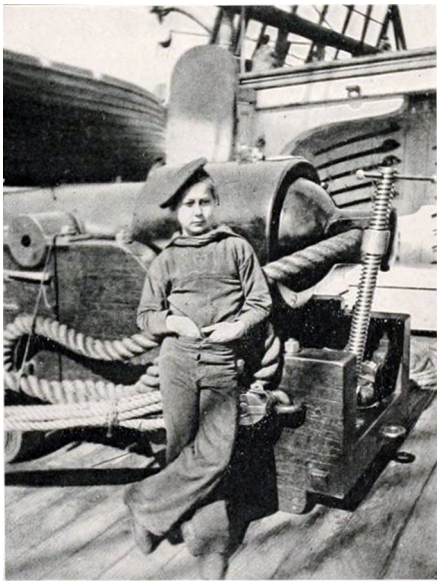
As they sailed along the coast toward the Bay of Espirto Santo, now called Tampa Bay, it seems Miruelo missed the mouth of the bay. He took the ships into a much smaller bay which we call Boca Ciega Bay. The reason he missed the bay was that when he had been there before, he probably took his coordinates from inside the bay. That would have made him think that the mouth of the bay was further north than it really was.

Boys of the Sea

The crew of a ship was made up mainly of men, although women did travel and work alongside men throughout the centuries. During the 16th century through the 19th centuies, it was considered normal for an eight to twelve year old boy who was poor, to begin his working life aboard ship. Boys in rural communities worked on farms, while boys near the coast went to sea on fishing or merchant ships.

In Spain, during the early 16th Century many of these boys had been abandoned or orphaned when their fathers had gone to the Americas and never returned. Some begged on the streets while others turned to stealing to survive. But if a boy had a family connection, he might find work on a ship. As he learned his trade, he could work his way up the ranks to becoming a master mariner or even a captain—that is, if he survived all the dangers of being at sea.

While on board, ship's boys or cabin boys learned seafaring skills and worked as servants for the captains and officers (including boatswain, gunner, carpenter and cooks). After they had worked for around five years, they were considered able seamen and were entitled to a wage or prize money from the riches they found in the Americas.



A Powder Monkey on a US Union Ship

In the British Royal Navy, boys who wanted to become officers often went to sea at 11 or 12 years old, but they still had a little education before they joined a ship. Their duties at sea were the same as those boys who had no education. The captain of the ship was responsible for their education, as well as their training. Often, the rest of the ship's crew felt the need to take on a fatherly role and tried to educate the boys (even though most ordinary seamen could not read or write). In 1756 the Marine Society was established to recruit orphans and poor boys to the Royal Navy by offering clothes and other personal possessions. The boys were also fed, housed and taught to read and write. Seamanship was taught to the boys, although most of their seafaring education was learned on the ships.

In 1862, during the American Civil War in the Tampa Bay area, the crew of the *U.S.S. Tahoma* took on Christopher Whitehurst (13) and his brother Winfield (10) after their father John was killed by Secessionists.

Duties performed by a boy on a merchant or naval ship ranged from being a servant to a fully active sailor. He helped the cook in the galley and carried buckets of food from the galley to where the ordinary seamen and passengers ate. He had to run from one end of the ship to the other carrying messages. He became familiar with the sails, lines and ropes and the use of each in all sort sorts of weather. He would sweep and scrub the decks, coil up ropes for rigging, loose and furl the light sail and stand watch. Sometimes on a small ship, he was even allowed to take the wheel and steer the ship.

Boys were used as powder monkeys to provide gunpowder for the cannons. Because this put them in the line of fire, many boys were killed or maimed during battle. Boys climbed the masts to help with the sails or watch for other ships and land. Falling from the mast to the water or deck below usually resulted in death.

Lesson 1:
Transportation, Then and Now

Objectives:
1. Students will be able to identify the characteristics of various modes of transportation used in Tampa Bay
2. Students will be able to compare and contrast transporation systems.

Materials:
1. Article: ***Modes of Transportation***
2. PowerPoint: ***Transporation: Tampa Bay 1500s to 2000s***
3. Highlighters
4. Large chart or construction paper

Websites:

Sunshine State Standards Benchmarks:
SS.4.A.1.1, SS.4.A.1.2, SS.4.A.3.1, SS.4.A.4.1, SS.4.A.4.2, SS.4.A.6.4, SS.4.A.9.1, SS.4.G.1.1, SS.4.G.1.2. SS.4.G.1.4, LA.4.1.4.3, LA.4.1.6.1, LA.4.1.6.2, LA.4.1.6.3.

Activity 1:
1. Show the PowerPoint presentation ***Transporation: Tampa Bay 1500s to 2000s.***
2. Form students into work groups and give each group a copy of the *Modes of Transportation* article.
3. Ask each group to create a venn diagram based on the *Modes of Transporation* article.
4. Have them highlight the various kinds of transportation in the article. Give each group a piece of construction or chart paper to work their venn diagrams.
5. Students should show how each mode of transportation is similar and what makes them different.
6. Have students identify any additional modes transportation used today.
7. Ask students to share their findings with the entire class.

Lesson 2:
Who's Who of Transportation in Tampa Bay

Objectives:

1. Students will be able to identify the the people who played important roles in transportation and the changing face of transportation in Tampa Bay area over the years.

Materials:

1. Article: ***Modes of Transportation***
2. PowerPoint: ***Transporation: Tampa Bay 1500s to 2000s***
3. Copies of the quiz in page 23.
4. Pencils.

Sunshine State Standards Benchmarks:

SS.4.A.1.1, SS.4.A.1.2, SS.4.A.3.1, SS.4.A.3.7, SS.4.A.6.3, SS.4.A.3.7, SS.4.E.1.1.

Suggested Activities

Activity 1:

Have students form groups to read the article: ***Modes of Transportation.***

1. Assign a different mode of transportation to each group.
2. View powerpoint presentation with students.
3. Hand out copies of the Transportation Quiz
4. Students will try to identify at least 5 of the people discussed on the list.

Activity 2:

1. Divide the Students into 2 groups
2. Assign each student in group 1 an sheet of paper on which a name of one of the people is written.
3. By asking questions students in Group 2 will try to guess who the students in Group 1 represent.

Transportaton Quiz

- ❑ Tony Jannus
- ❑ George Gauld
- ❑ Edwin H. Tomlinson
- ❑ Pedro Menéndez de Aviles
- ❑ Antonio Maximo
- ❑ Albert Whitted
- ❑ George Gandy
- ❑ James McKay
- ❑ Christopher Whitehurst
- ❑ Peter Demens
- ❑ F. A. Davis
- ❑ Panfilo de Narváez

1. Who built the first bridge across Tampa Bay?
2. What was the name of one of the Cuban fishermen who used a small boat called a smack to catch fish in Tampa Bay?
3. Who visited Tampa Bay in 1528, aboard a noa, also called a carrack?
4. Who built the first trolley line called the *St. Petersburg and Gulfport Railway Company*?
5. Who transported cattle in the "pinky" style schooner called the *Sarah Matilda,* to New Orleans?
6. What was the name of the boy who worked as ships boy on the *U.S.S. Tahoma* during the American Civil War?
7. Who built the *Orange Belt Ralway*?
8. Who was the first person to fly an airplane across Tampa Bay?
9. Who mapped Tampa Bay for the British Navy on board the *HMS Alarm*?
10. Who cut the *St. Petersburg Times* newspaper in half with the bottom edge of his pontoon?
11. Who owned an *Orient*, the first car in St. Petersburg?
12. Who sailed into Tampa Bay in 1566 aboard a kind of ship named for Pirates?

Lesson 3:
Building a frame for a Wooden Ship

Wood, the living structure of trees, becomes a miraclulous material in the hands of the great craftsmen who built the wooden ships. Their knowledge and understanding of wood transformed it into hulls which flexed with the pounding surf of the deep oceans. They designed shapes which would glide through the water with the least resistance. They designed wind machines with masts that held the sails. Some ships could travel at speeds equal to modern diesel powered cargo ships. They built them to withstand the pounding of cannon balls and the wreckage of war. Ship carpenters built masterpieces of human engineering, and in the towns where they lived, they turned their skills to building wonderful houses.

When the United States was a young country it needed to build up a fleet of ships-of-war for its new navy. Since Florida was one of the places it could get wood for hulls and masts expeditions were sent along the coast to mark trees that could be used for shipbuilding. Live oaks and pines were plentiful in the early part of the 19th century. Each oak had to be studied for just the right shapes that would serve for all the hundreds of pieces that went into building a wooden ship.

Objectives:

1. Students will be able to identify the parts of trees used for building wooden ships

Materials:

1. Article: ***Modes of Transportation***
2. PowerPoint: ***Transporation: Tampa Bay 1500s to 2000s***
3. Copies of pages 22 and 24.

Websites:

TampaBayShip Model Society
http://www.tbsms.org/contact.html

Nautical Terms
http://en.wikipedia.org/wiki/Glossary_of_nautical_terms

Sunshine State Standards Benchmarks:
SS.4.A.1.1, SS.4.A.1.2, SS.4.A.3.1, SS.4.A.3.7, SS.4.A.6.3, SS.4.A.3.7, SS.4.E.1.1, LA.4.1.4.3, LA.4.1.6.1, LA.4.1.6.2, LA.4.1.6.3, MA.4.A.1.2., MA.4.A.2.2, MA.4.G.5.3.

Suggested Activities:

Activity 1

1. Students may work on this either alone or in groups.
2. Give each student or group a handout of pages 23 and 25 page entitled, *Parts for Building a Ship*.
3. Ask students to identify the parts with the templates on their sheets.
4. 5. If the templates are enlarged they can be used as cutouts. Students may want to go outside and find oaks that could be used for shipbuilding.

Activity 2

1. While it is not necessary for students to know all the parts illustrated, for an additional activity they may want to understand what each part represents on a ship. Students may want to choose a part and do research to see if they can identify what it is.

Activity 3 - Extension

1. Invite a representative from a local yacht club, ship model club, or boat building business to discuss shipbuilding in the classroom.

Parts for Building a Ship

A. Knee of the head

B. Support of catt

C. Futtocks aft

D. Knee

E. Toptimbers

F. Main transon knee

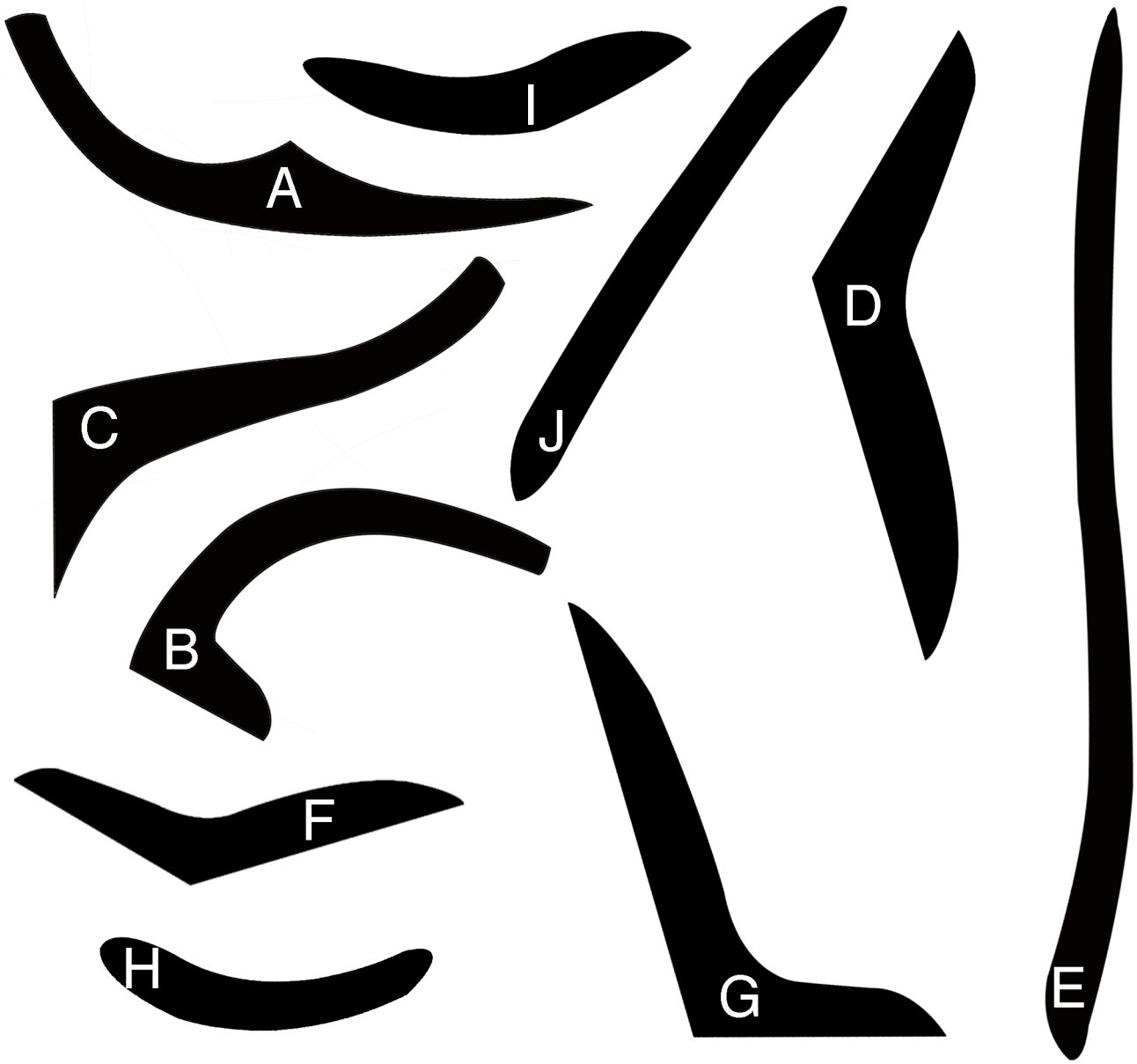
G. Knee

H. Futtlocks forward

I. Brestholds

J. Main transom

Parts for Building A Ship



Lesson 4:
Make a Sun Compass

Objective:

1. Students will learn how people navigated their way around before technological advances like compasses and GPS devises were invented.
2. Students will learn a simple method of making and using a sun compass.

Materials:

1. Straight sticks about 2-3 feet long.
2. Pebbles, small sticks, or shells, to use as markers.

Websites:

1. Simple Sun Compass: www.youtube.com/watch?v=kS5ZEBYdpc&feature=related
2. Navigate by the Sun: www.youtube.com/Watch?v=Cycm CFb6VU&feature=related
3. History of Navigation: http://boatsafe.com/kids/navigation.htm

Sunshine State Standards Benchmarks:

SS.4.A.1.1, SS.4.A.1.2, SS.4.A.3.1, SS.4.A.3.7, SS.4.A.6.3, SS.4.A.3.7,

Suggested Activity:

1. Read the article on *Navigation* on page11.
2. Watch the videos about how to make a simple sun compass.
3. Go outside on a sunny day, form students into groups of two or three and give each group a stick.
4. Place a stick about 2 to 3 feet long in the ground to make a shadow pole.
5. Mark the end of the shadow cast by the shadow pole with a small stone or shell. (West marker)
6. Wait 40 minutes and place another small stone or shell at the end of the second shadow. (East marker)
7. Draw a straight line from the first stone to the second stone.
8. Place your left foot just behind the first marker and your right foot just behind the second marker. You will be facing north.

Lesson 5:
THE MODEL SAILING SHIP

Square rigged clipper ships could move along at 20 knots per hour, the same speed as modern tankers and container ships. The problem is that the clipper ships can only carry so much cargo and keep up their speed.Wind powered just cannot keep up with increased weight. With growing fuel costs, ships in the future might use alternate energy sources like solar power and wind power in addition to fossil fuel (diesel). These types of would become hybrids, just like some modern cars.

Objective:

1. Students will learn about the importance of:
   a. wind power in moving a ship along
   b. the basic types of sails
   c. how setting sails enhanced a ship's performance.
2. How to determine how fast a ship moves through the water.

Materials:

1. Article: ***Modes of Transportation*** section on ships
2. PowerPoint: ***Transporation: Tampa Bay 1500s to 2000s***
3. Artifact: Model Ship with Sails

Websites:

http://sailing-ships.oktett.net/square-rigging.html
http://nabataea.net/sailing.html
http://www.zurqui.com/crinfocus/paper/airplane.html
http://boatsafe.com/kids/033199kidsques.htm
http://boatsafe.com/kids/bramp1099.htm

Sunshine State Standards Benchmarks:
SS.4.A.1.1, SS.4.A.1.2, SS.4.A.3.1, SS.4.A.3.7, SS.4.A.6.3, SS.4.A.3.7, MA.4.A.1.2., MA.4.A.2.2, MA.4.G.5.3.

Activity 1:

1. Review section of ***Transporation: Tampa Bay 1500s to 2000s*** that deals with sailing ships.
2. Show students the square, lateen, and gaff rigged sails in the Museum in a Box.
3. Demonstrate how each sail attached to the mast.
4. Students may wish to look at the suggested websites for more information about how sailboats sail.

Activity 2:

1. Explain to students that ships and airplans measure speed in knots.
2. Hand out copies of the table on page showing how knots and miles per hour equivalents.
3. Ask students to convert the following knots to miles per hour:
   - Clipper Ship: 20 knots
   - Transport: 11 knots
   - Pinky Schooner: 7 knots
4. If it took the *Favorite* steamship 2 hours to cross Tampa Bay how fast was it going in knots?

Lesson 6:
Make a Paper Airplane

Objective:
1. Students will learn the history of flight in the St. Petersburg area.
2. Students will learn to make an aerodynamic paper airplane.
3. Students will understand "knots."

Materials:
1. Article: ***Modes of Transportation***
2. PowerPoint: ***Transporation: Tampa Bay 1500s to 2000s***
3. DVD: ***Tony Jannus American Aviator***
4. 8.5 x 11 sheets of paper

Websites:
Build the best paper airplane in the World. Advanced Instructions.
http://www.zurqui.com/crinfocus/paper/airplane.html

Sunshine State Standards Benchmarks:
SS.4.A.1.1, SS.4.A.1.2, SS.4.A.3.1, SS.4.A.3.7, SS.4.A.6.3, SS.4.A.3.7,

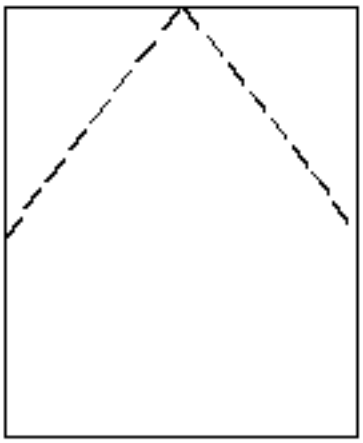
Suggested Activities:

Activity 1:
1. Read section on ***By Airplane*** in ***Modes of Transportation,***
2. Review powerpoint ***Transporation: Tampa Bay 1500s to 2000s*** that covers airplanes.
3. Give each student a piece of paper.
4. Have students follow instructions for creatng a simple paper glider.
5. Line students up in small groups to throw their airplanes, seeing which glider flies the futherest.
6. If there is time, students may create the advanced style glider shown on page 33 or on the website listed.

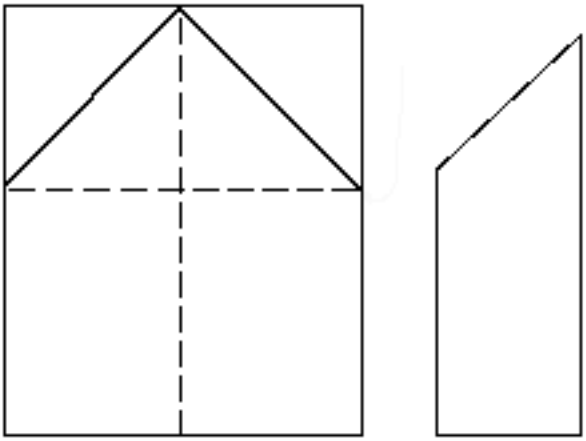
Activity 2:
1. If it took Tony Jannus 20 minutes to cross Tampa Bay how fast was the *Benoist* flying in knots?

Make a Paper Glyder 1

1. Fold down upper two corners.

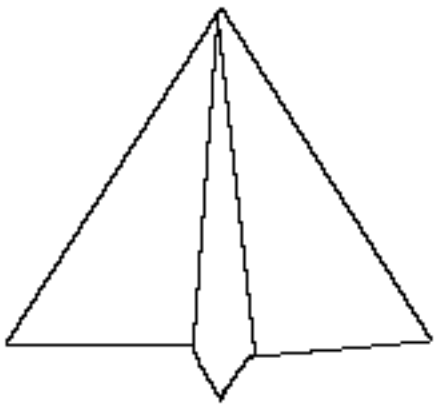


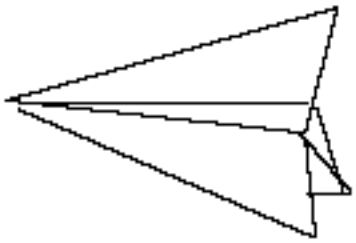
2. Fold Paper in half-length wise.



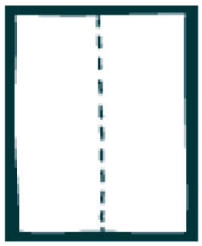
3. Take outer two corners and fold like this:

4. Your glider should look like this

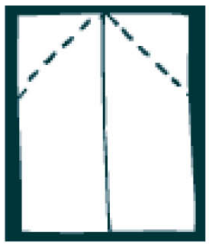




Make a Paper Glyder 2

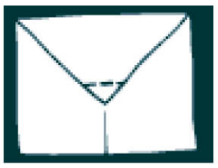


1. Fold a sheet of paper in half lengthwise. Unfold so that the crease is 'valley' side up.

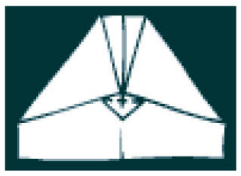


2. Fold the top corners down to the center fold.

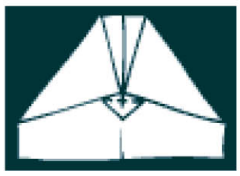
3. Fold the tip down.



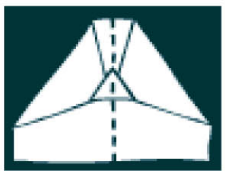
4. Fold about one inch of the tip up; unfold.



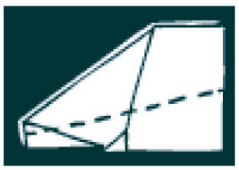
5. Fold the top corners down to the center fold so that the corners meet above the fold in the tip. (Note that the top—the nose of the plane—should be blunt.)



6. Fold the tip up. This is the Nakamura lock.



7. Fold the entire plane in half so that the tip is on the outside.



8. Fold the wings down. Trim and fly!

Lesson 7:
Travel Time across the Bay

Objective:
1. Students will learn times it took for various modes of transportation to get from St. Petersburg to Tampa.
2. Students will learn to make use of Google Maps or MapQuest to find out the time it takes to travel from St. Petersburg to Tampa today.

Materials:
1. Article: ***Modes of Transportation***
2. Copy of **Map of Tampa Bay** on page 34.
3. Paper
4. Color Pencils or crayons.

Websites:
www.Mapquest.com
www.Googlemaps.com

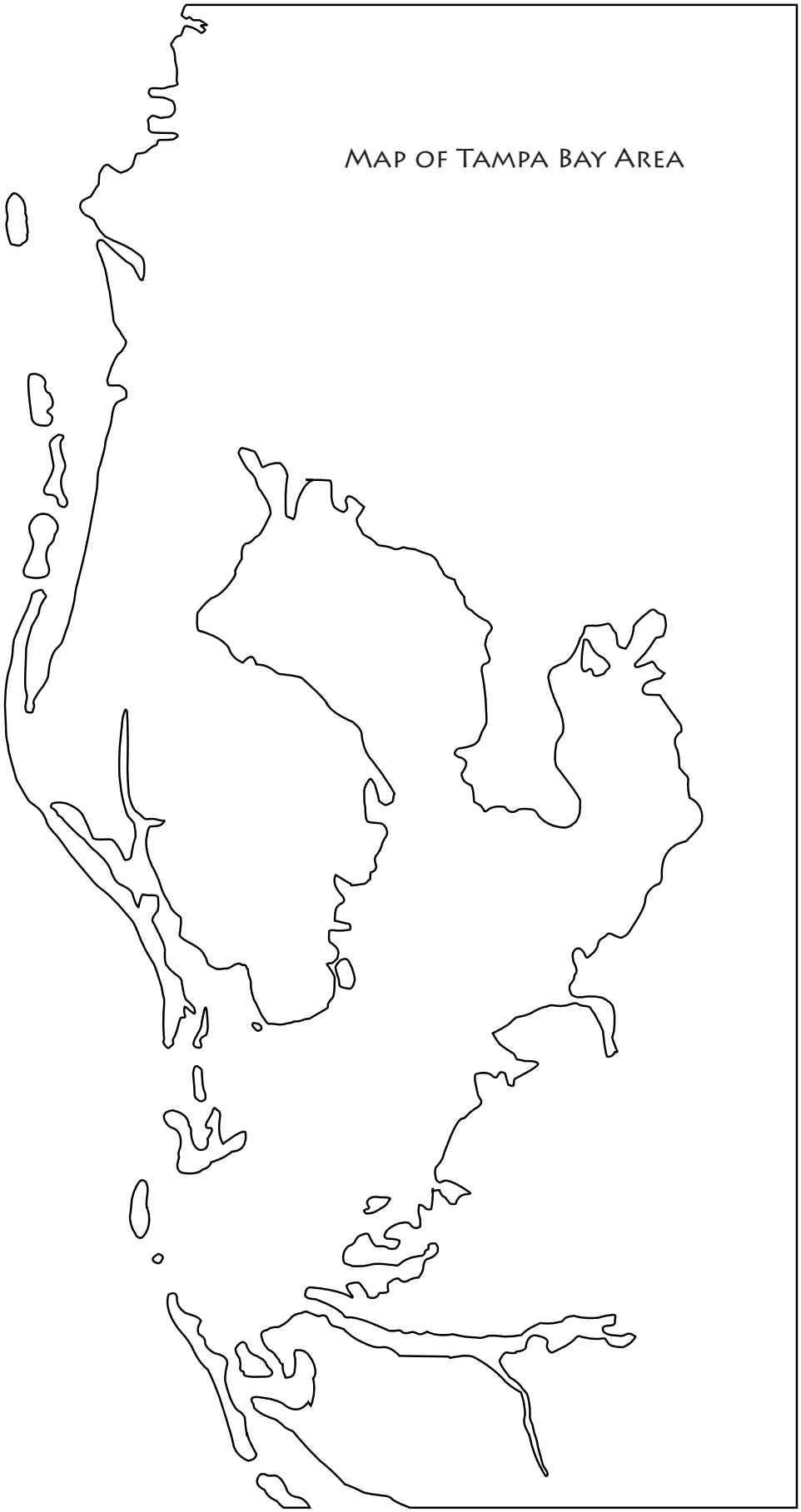
Sunshine State Standards Benchmarks:
SS.4.A.1.1, SS.4.A.1.2, SS.4.A.3.1, SS.4.A.3.7, SS.4.A.6.3, SS.4.A.3.7,

Suggested Activities:

Activity 1
1. Review section on ***Modes of Transportation.***
2. Hand out copies of map on page 35 to students.
3. Ask students to locate where St. Petersburg and Tampa are on the map.
4. Students may compare the different routes from St. Petersburg to Tampa that each mode of transporation would take based on the readings.

Activity 2
1. Form students into work groups of two or three.
2. Have students write down how much time it takes for each mode of transportation to get from St. Petersburg to Tampa.
3. Have students research on Mapquest.com or Googlemaps.com to find out how long it takes for their family car to drive from the City Hall in St. Petersburg to the City Hall in Tampa?

Map of Tampa Bay Area



Lesson 8
Woodworms and Careening

Careening a sailing vessel is the practice of beaching it at high tide. This is usually done by exposing one side or another of the ship's hull for maintenance and repairs that are below the water line. In the warm waters of the Gulf of Mexico and the Caribbean, ships had to be careened often to remove barnicles, toredo worms, rot and mold from the hull. Planks which were too damaged were replaced and the hull was coated with a layer of sulfur, tar, and tallow to help slow down the growth of sea animals which could destroy the ship. This also left them vunerable to attack.

Authorites trying to capture pirates would often wait to strike during the ship's careening, when their ship was positioned out of water.

The first evidence of careening in Florida waters was in 1513 when Juan Ponce de Leon careened his ship in Pine Island Sound, Charlotte Harbor.

Objective:

1. Students will discover some of the dangers of a wooden boat.

Materials:

1. Article: ***Seagoing Experiments*** on page 6.
2. PowerPoint: ***Transporation: Tampa Bay 1500s to 2000s***
3. Artifact in Box: Toredo Worm Wood
4. Paper
5. Pencils

Sunshine State Standards Benchmarks:

SS.4.A.1.1, SS.4.A.1.2, SS.4.A.3.1, SS.4.A.3.7, SS.4.A.6.3, SS.4.A.3.7, LA.4.3.1.1, LA.4.3.1.2, LA.4.3.1.3, LA.4.3.2.1, LA.4.3.2.2, LA.4.3.2.3, VA.4.C.1.1.

Activity:

1. Read students the story ***Seagoing Experiements.***
2. Show slides of toredo worm and the careened ship in powerpoint.
3. Show students the wormwood artifact from the Museum in a Box.
4. Ask students to discuss the problem of toredo worms.
5. Ask students to write a story about pirates careening a ship.
6. Students may illustrate their stories. (optional.)

Lesson 9:
Talk Like a Sailor

Objective:

1. Students will understand and use some seafaring language that continues to be used in modern times.
2. Students will employ one or more of these figures of speech in writing a skit.

Materials:

1. Book: ***When a Loose Cannon Flogs a Dead Horse There's the Devil to Pay***
2. Paper
3. Pencils

Sunshine State Standards Benchmarks:

SS.4.A.1.1, SS.4.A.1.2, SS.4.A.3.1, SS.4.A.3.7, SS.4.A.6.3, SS.4.A.3.7, LA.4.3.1.1, LA.4.3.1.2, LA.4.3.1.3, LA.4.3.2.1, LA.4.3.2.2, LA.4.3.2.3, TH.4C.1.1, TH.4.C.3.2, TH.4.1.1, TH.4.H.1.1.

Activity:

1. Pick out age-appropriate seafaring words or expressions as explained in the book.
2. Have students select a phrase and use it in a sentence.
3. After students have learned some of the words or expressions, have them form work groups.
4. Students will work together to write a short skit about their life at sea.
5. When the skits are complete, have students perform the skits for the rest of the class.

Lesson 10:
Tying Knots

Objective:

1. Students will learn the basics of tying knots and what each knot can be used for.

Materials:

1. Lengths of rope 3 to 4 feet long
2. Book: ***The Klutz Book of Knots***
3. Illustrations of different knots

Sunshine State Standards Benchmarks:

SS.4.A.1.1, SS.4.A.1.2, SS.4.A.3.1, SS.4.A.3.7, SS.4.A.6.3, SS.4.A.3.7.

Website:

www.animatedknots

Activity:

1. Introduce students to various kinds of knots used by different trades that could be useful to them in their daily lives.
2. Demonstrate knots you will be using:
   - Bowline
   - Clove Hitch
   - Two Half Hitches
   - Square Knot
   - Sheet Bend
   - Constrictor Knot
   - And just for fun, the Incredible Magic Loop
3. Introduce knots one at a time. Allow students time to practice them until they are comfortable tying them.

VOCABULARY

Altitude - the height of an object or point in relation to sea level or ground level

Bow or Prow - the most forward part of a ship and its surrounding parts. In old naval parlance, the prow applied to the battery of guns placed in the fore gun-deck.

Bowsprit - a pole (or spar) extending forward from the ship's prow.

Buggy - a light, horse-drawn vehicle for one or two people, with two or four wheels.

Careen - turn (a ship) on its side for cleaning, caulking, or repair. Tilt; lean over

Cargo - goods carried on a ship, aircraft, or motor vehicle.

Ducat - a gold coin used as a trade coin throughout Europe that is valued at about $45 in today's money.

Compass - an instrument containing a magnetized pointer that shows the direction of magnetic north.

Hybrid - a thing made by combining two different elements; a mixture.

Knot - a. (nautical) a unit of speed equal to one nautical mile which is approximately 1.151 miles per hour
b. a fastening made by tying a piece of string, rope, or something similar.
c. a particular method of tying a knot: *you need to master two knots, the clove hitch and the sheet bend.*

Provisions - supplies of food, drink, or equipment, especially for a journey.

Spritsail - a sail extended by a yard set under a ship's bowsprit.

Ties - a wooden or concrete beam laid transversely under a railroad track to support it.

Transport - take or carry (people or goods) from one place to another by means of a vehicle, aircraft, or ship.

Rudder - a flat piece of wood, metal, or plastic hinged at the stern of a boat or ship for steering.

Spar - a thick, strong pole such as is used for a mast or yard on a ship.

Yard - horizontal spars used with square sails.

PLACES TO VISIT

ST. PETERSBURG MUSEUM OF HISTORY
335 2nd Ave NE
St. Petersburg, FL 33701
(727) 894-1052
http://www.spmoh.org

ST. PETERSBURG YACHT CLUB
11 Central Avenue,
St. Petersburg, FL 33701
(727) 822-3873
http://www.spyc.org

DUNEDIN HISTORICAL SOCIETY MUSEUM
349 Main Street
Dunedin, FL 34697
(727) 736-1176
http://dunedinmuseum.org

HERITAGE VILLAGE
11909 125th Street N.
Largo, FL 33774
(727) 582-2123
http://www.pinellascounty.org/heritage

TRANSPORTATION

Lesson Plan and Activities Agreement

ST. PETERSBURG MUSEUM IN A BOX

REPLACEMENT COSTS	RETURNED:	YES	NO
Model Ship with			
Hull	$25	____	____
Mast	$25	____	____
Bowsprit	$25	____	____
Rudder	$25	____	____
Set of 5 Sails:			
Lateen	$25	____	____
Sqauare	$25	____	____
Gaff	$25	____	____
Sprit	$25	____	____
Jib	$25	____	____
Sample of Wormwood	$10	____	____
Cross-section of rail	$ 5	____	____
Cord for tying knots	$ 5	____	____
Books/CDs/DVDs			
The Klutz book of Knots	$19	____	____
When a Loose Cannon Florgs a Dead Horse There's the Devil to Pay	13.00	____	____
CD of PowerPoint, Lesson Plan and Script	$ 15	____	____
DVD - Jannus: American Aviator	$ 10	____	____

Date Checked Out: ___/___/_____ Date Returned: ___/___/_____

Name of School:_____

Contact Person:_____Title _____

Address: _____ City: _____ Zip:_____

Phone: _____ Cell: _____ Email:_____

Grade ____4 and/or ____ 5 No. of Students Served: _____Visiting Presenter? ____Yes ____No

If yes, what date? ___/___/_____ Time(s): _____ Fee(s): _____

By signing this agreement, _____agrees to return the
Name of Borrower

St. Petersburg Museum in a Box in good condition and to replace any missing or broken pieces. Box returned in good condition: ____Yes ____No Approved by: _____
St. Petersburg Museum Representative

Transportation in Tampa Bay

Script for Teachers

Slide 1:
This lesson covers Transportation in the Tampa Bay region over thousands of years from the canoes used by prehistoric Indians through our modern 21st century vehicles.

Slide 2:
For thousands of years the people living in the Florida relied upon the coastal waters and rivers to travel long distances. The Tocobaga Indians skillfully carved out a tree trunk using fire and shell tools to build dugout canoes. Hundreds of these of canoes have been found in dried up lake beds and rivers around Florida over the years. In March 2011, archaeologists excavated the remains of a 1,000 year old sea-going canoe at Weedon Island.

Slide 3:
Until about 200 years ago, ships used wind power to move through the water. Wind power is a free energy source, harnessed by sails. In the 1500s, Spanish explorers started coming to Tampa Bay looking for gold and slaves and to establish a city.

They sailed here on wooden ships and every mariner had his idea of what kind of ship was the best for his particular situation.

Slide 4:
Due to its lighter weight and thus higher speed, the Portuguese lateen-rigged caravel was a boon to sailors. Early caravels generally carried two or three masts while later types had four masts. Towards the end of the 15th century, the caravel was occasionally modified by giving it the same rig as a carrack with a foresail, square mainsaill and lateen mizzen, but without the carrack's high forecastle or much of a sternpalace, which would make it unweatherly.
In this form it was sometimes known as caravela redonda (a bulging square sail is said to be round, redonda, in the Iberian tradition). It was in such ships that Christopher Columbus set out on his expedition in 1492; The Santa Maria was a 600-800 ton carrack (same as: nau) which served as the flagship, and the Pinta and the Nina were smaller caravels around 150 tons.

Click
The carrack was the state of the art ship in late medieval shipbuilding. A carrack or nau was a three- or four-masted sailing ship for use in the Atlantic Ocean. It had a high rounded stern with a large aftcastle, forecastle and bowsprit at the stern. It was first used by the Portuguese (its creators), and later by the Spanish, to explore and map the world. It was usually square-rigged on the foremast and main mast and lateen-rigged on the mizzenmast.

The advantage of a lateen-rigged vessel (top right) is that it is far more maneuverable than a square-rigged vessel. The disadvantage of the lateen rig is that it is slower than a square rig because its sails cannot catch as much wind.

Therefore, Spaniards often re-rigged their vessels when they ventured across the Atlantic, where square sails can take advantage of the constant wind and the lateen sails could be used in coastal waters.

But these larger, full-rigged square-sailed ships could not always be sailed with the precision necessary for inshore surveying in unknown waters.

Slide 5:
When Spanish Adelantado (governor) Pedro Menéndez de Aviles sailed up Tampa Bay on a moonless night in April of 1566, he was on one of six ships called brigantines.

Click
Early Spanish brigantines were two-masted sailing ships were rigged with square sails on the foremast and main mast, with the addition of square topsails. Because it was a favorite of Mediterranean pirates, its name comes from the Italian word brigantino, meaning brigand or pirate.

Slide 6:
A ship of the line was a type of naval warship constructed from the 17th century through the mid-18th century. It was the culmination of a naval tactic known as the line-of-battle, in which two columns of opposing warships would maneuver to bring the greatest weight of broadside guns to bear. Since these engagements were almost invariably won by the heaviest ships carrying the most powerful guns, the natural state of progression was to build the largest, most powerful sailing vessels at the time.
The most common size of ship of the line was the the “74,” named for its 74 gun), originally developed by France in the 1730s, and later adopted by all battleship navies.

A 18th century frigate referred to ships which were usually as long as a ship of the line and were square rigged on all three masts (full-rigged), but were faster and had lighter armament. They were used for patrolling and escort. In the definition adopted by the British Admiralty they had least 28 guns, on a single deck.

The HMS Alarm mapped Tampa Bay in the 1700s and was also the first to have a copper sheathed hull.

Slide 7:
Because of damage by rot and toredo woodworms, ships had to be either put in drydock or careened in order to clean them and to make repairs. Careening left them vulnerable to attacks by the enemy. Pirates could be captured while their ship was careened.

Click
Toredo woodworm

Click
Toredo woodworms can destroy a Wooden Ship in just a few years.

Slide 8:
Two-masted pinkies had gaff-rigged with sails on two masts with a jib sail on the foremast to the end of the bow-sprit.

Click
The Josepha (right) was a fishing schooner owned by Jose Caldez, a Cuban fisherman working in Charlotte Harbor, in the 1830s.

Pinkies were generally smaller vessels from which men fished over the side, but were known for their weather worthiness and seaworthiness. A gaff-rigged sail has four corners but is narrower at the top than a square sail. In 1846, James McKay of Tampa purchased a pinky he named the Sarah Matilda after his wife. He docked his ship at the military dock at Fort Brooke at the mouth of the Hillsborough River and shipped cattle to Mobile and New Orleans.

Slide 9:
A smack was a traditional boat used by fishermen off the coast of England and the Atlantic coast of America for most of the 19th and early 20th centuries. Until recently fishing was a major industry in Tampa Bay.

Slide 10:
USRC Jackson was one of 13 revenue cutters of the Morris-Taney Class to be launched. Named after Presidents of the United States and Secretaries of the Treasury, revenue cutters were the backbone of the American Navy for more than a decade. The cutters were designed to fighting pirates and privateers, to capture smugglers and to operate with naval forces. The USRC Jackson cruised along the Gulf Coast during the Second Seminole War to discourage smuggling operations and to assist distressed shipping. Besides observing the activities of the Indians as she cruised along the shore, she inspected other revenue cutters and their stations as well as the lighthouses she passed. USRC Jefferson could also be seen sailing up the bay to Fort Brooke during the war.

Slide 11:
Ships sailing into the bay during the Seminole War, brought, soldiers, supplies and most importantly letters and news from home. Revenue Cutters, schooners, sloops of war, and the very first steamboats could be seen traveling to and from Fort Brooke.

Steamboats of this time period may have looked like this picture painted in 1837 of the USS Illinois.

Click
Steamboats were so important to Florida's development that one is on the state seal.

Slide 12:
On 26 November 1861, USS Sagamore received orders to report to for duty as part of the East Coast Blokading Squadron which patrolled the waters off the coasts of Florida. The Sagamore's first encounter with the enemy came at Apalachicola on 3 April 1862. Armed boat crews from it and the Mercedita captured the city without resistance.

Click
In 1862, during the American Civil War in the Tampa Bay area, the crew of the USS Tahoma took on Christopher Whitehurst (13) and his brother Winfield (10) after their father John was killed by Secessionists.

Slide 13:
Top photo of the US Helena, Gunboat. Bottom Photo of the Military transports waiting in the bay for orders to load up soldiers and to depart for Cuba. A reporter at the time wrote, “One mile of steamships lying bow to stern as close together as it is possible to place them is a sight that can been seen by visitors to Port Tampa at the present and is well worth a long journey to behold, for never has such an aggregation of ships been attempted before in this country.”

Click
Right photo: Reservoir Lake, renamed Mirror Lake by Katherine Bell Tippets in 1910, supplied fresh water to the naval ships departing for Cuba.

Slide 14:
Prior to 1914, travel from Tampa to St. Petersburg required a slow two-hour steamboat trip across Tampa Bay.

One ship, the Favorite left the Hibbs Docks in Bayboro Harbor, picked up freight at the railroad pier, then boarded more passengers at at the Municipal Pier. The steamer Favorite was the flagship of the Favorite Line. The steamer Manatee was another.

The H. B. Plant (top right) also brought passengers across the bay to the Municipal Pier.

Slide 15:
Horses were first introduced to the Tampa Bay area back when the first Spanish expedition arrived on our shores. Indians, who had never seen such a large animal before, were terrified of its might and its speed.

However, horses would become the main means of land transportation for hundreds of years. Left, Re-enactors demonstrate Spanish Pase Fino Horses at Desoto National Memorial in Bradenton. Top right, a horse pulls a plow to break ground for the foundation for La Plaza Theater at the corner of Central Avenue and Fifth Street in 1912. A team of horses pull a wagon during World War II, because rationing meant there was no gas to run city buses.

Slide 16:
Mules and oxen pulled carts, wagons and plows. Many families depended on their, horses, mules or oxen for transportation just like you do your family car today.

Click
John Donaldson was the first African American man to settled in lower Pinellas Peninsula after the Civil War. He hauled his vegetables in a wagon pulled by an ox to sell to locals residents.

Slide 17:
Bicycles started to find their way into the Tampa Bay area in the early 1880s. Its pedals were attached directly to the front wheel. The cycle had solid rubber tires and the long spokes of the large front wheel provided a much smoother ride than the
earlier model called “the bone-shaker.”

The front wheels became larger and larger as makers realized that the larger the wheel, the farther you could travel with one rotation of the pedals. You could buy a wheel as large as your leg length would allow. These bicycles enjoyed a great popularity among wealthy young men, as they cost an average worker six month’s pay. But as they became more affordable bicycles began to replace the horse as a popular mode of transportation.

Slide 18:

When the Orange Belt Railway failed to pay its bill for railway ties owed to lumberman and sawmill operator Peter Demens,

Click
took over the company. As the new owner, he decided to extend the railroad to the Pinellas Peninsula on Tampa Bay.

Click
Hamilton Disston offered Demens over 60,000 acres of land to bring the railway to Disston City. Demens wanted to extend the railroad all the way to Mullet Key, but Disston refused to give him the additional land. Although the booming town of
Disston City seemed a far more logical place for the railroad depot at the time, Demens decided to located his depot in tiny Pinellas Village on land offered by John Williams. Work began on the railroad in 1887, and on June 8, 1888 the first train pulled into the station in southern Pinellas County, with a single passenger on board, a shoe salesman. As part of his agreement with Williams, Demens also constructed a pier long enough to accommodate vessels with a three-foot draught, a bathhouse on the pier, a train depot and the Detroit Hotel. To honor Demens the village was renamed for his home in St. Petersburg, Russia.

Slide 19:
This map shows the route that the train took from Monroe Station to St, Petersburg. Notice that Pinellas County was still a part of Hillsborough County. Pinellas became a separate County in 1912.

Slide 20:
This is a copy of the daily schedule for the Orange Belt Railway. The left hand column shows the South Bound Train from Munroe Station near Enterprise to St. Petersburg. The right column show the North Bound Train from St. Petersburg to Munroe Station. The train ran everyday but Sunday. It also says the train waits indefinitely at the St. Petersburg Wharf until the steamer Mary Disston arrived.

Slide 21:
By 1914 F.A. Davis had laid electric trolley tracks throughout south Pinellas carrying passengers from St. Petersburg to Gulfport and Jungle Prada.

Slide 22
Crowds gather at the corner of Central Avenue and 4th Street in St. Petersburg as the first car rolls down the street. St. Petersburg's first automobile was bought by Edwin H. Tomlinson in 1904.

These early automobiles had no power windows, automatic transmission, four-wheel brakes, power steering, or air-conditioners, and most did not have self starters. They had to be cranked to start. Some of the roads between St. Petersburg and Tampa were covered with oyster shells, while deep ruts in the sand marked the rest. If someone dared to make the trip they would have to travel all the way around the head of the bay to get to Tampa. The first trip took three and half days to complete.

Click

Check out the little goat cart on the corner.

Slide 23:
F.W. Ramm and Son was the first automobile repair shop in St. Petersburg and was located at the northwest corner of 2nd Avenue South and 2nd Street. Noticed the sandy roads.

Click
The first gasoline powered bus came to town in about 1912 when St. Petersburg Streets were beginning to be paved with bricks.

The first driver to be arrested for speeding was Mott Williams, clocked at 18 miles an hour, ten miles over the speed limit at the time.

Slide 24:
Paula Ramm Williams driving her 1910 Roadster.

Rollin and Florence Potter traveled from New York to Florida in this car in 1928.

Slide 25:
Cars began to be seen on the streets of St. Petersburg along side trusty old horses and carriages.

In a few short years, streets were crowded with automobiles and the horse and buggy era was over.

Slide 26:
Construction began on the Gandy Bridge in September 1922. Top left - African American workers are supervised by a white man on a horse as they cut a path through the woods to the shore on Tampa Bay.

The road was then filled in with shells mined from nearby Indian mounds. The Bridge was six miles long with a span that lifted to allow boats through. Back then it had toll gates at each end of the bridge where 75¢ for the driver and 10¢ per each additional passenger was collected.

Slide 27:
The Courtney Campbell Causeway was originally called the Davis Causeway when it opened on January 28, 1934. In 1948, the Davis Causeway was renamed for Courtney W. Campbell, a Clearwater Beach resident, U.S. Representative, and member of the Florida Road Board who spearheaded efforts to ensure needed repairs and beautification of the Causeway was completed. The toll was 10¢.

The Courtney Campbell Causeway was originally called the Davis Causeway when it opened on January 28, 1934. In 1948, the Davis Causeway was renamed for Courtney W. Campbell, a Clearwater Beach resident, U.S. Representative, and member of the Florida Road Board who spearheaded efforts to ensure needed repairs and beautification of the Causeway was completed. The toll was 10¢.

Howard Franklin Bridge opened in April 1960 and was Named for the Tampa businessman who proposed it. It had four lanes (two lanes in each direction separated by a short, narrow barrier). Because of the bridge's design, including its lack of emergency shoulders, it proved to be dangerous. Accidents were common on the bridge, and traffic backed up on both sides, while ten people had been killed. This lead to local nicknames like "Frankenstein" and "The Car-Strangled Spanner".

Slide 28:
The Sunshine Skyway Bridge was called the William Dean Bridge,

Click
but after the center span collapsed because of being struck by the freighter Summit Venture on
May 9, 1980, the new bridge was called the

Click
Bob Graham Sunshine Skyway Bridge.

Slide 29:

In 1913, Florida businessman Percival Fansler approached some St. Petersburg businessmen with a proposal to use the Benoist flying boats for "a real commercial line" over open water between St. Petersburg and Tampa.

Click
On January 1, 1914, an excited crowd of 3,000 gathered at the downtown Municipal Pier on 2nd Avenue North, to watch the history-making takeoff at 10 a.m..

Click
Flying only a few feet above the surface of Tampa Bay, Jannus piloted the twenty-three minute inaugural flight of the pioneer airline's Benoist XIV flying boat biplane.
Click
Tony Jannus lands successfully.

For more information on Tony Jannus and the Benoist, view the DVD; Jannus, American Aviator.

Slide 30:

The End
A production of Neily Trappman Studio

Click
for train

Click
for airplane