

PONCE DE LEON INLET LIGHTHOUSE ILIUNINAADOONS 491 South Peninsula Drive • Ponce Inlet, Florida 32127 • vww.ponceinlet.org • vww.lighthouselocket.org • (380) 761-1821 • Lighthouse@ponceinlet.org

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Dear Members,

I hope this issue of *Illuminations* finds you well as we celebrate the arrival of the New Year. As many of you know, spring is one of the lighthouse and museum's most active times of the year as race fans and bikers come to enjoy Daytona's annual Race Week and Bike Week events and college students take a break from their studies to visit the area's sparkling beaches to soak in the Florida sun.

I would like to take this opportunity to thank those who contributed during the Preservation Association's 2018 Annual Ask Event and to its Lighthouse **Endowment Fund Drive throughout** the year. Thanks to their generosity, the Association was well-equipped to the answer the restoration and preservation needs of this important National Historic Landmark. Held in perpetuity, the Lighthouse Endowment Fund protects the Light Station by providing financial security for long-term preservation, operations, and museum growth. Cash, stocks, mutual funds and real estate are all donor options. Those wishing to donate to either the General Operating Fund or Lighthouse Endowment Fund may do so online at www.lighthouselocker.org or by phone at (386) 761-1821 ext. 10. Additional information regarding how you can support the light station can be found on the Association's main website at www.ponceinlet.org under the Support Us tab.

One of the most commonly asked questions' regarding financial contributions to the General Operating Fund is "How is my donation spent?" I am pleased to announce that many of those dollars were well used this past fall when the Association completed some much needed preservation and restoration work on the tower. The harsh Florida climate can take a toll on the lighthouse; especially its ironwork. Although protected by layers of urethane paint, the tower's metalwork remains highly susceptible to corrosion especially when its coatings have been worn down by wind, sand, and sun over time.

The Preservation Association mitigates this threat through ongoing preventative maintenance and by scheduling the cleaning, treatment, and recoating of the tower's interior and exterior metalwork in its entirety every ten years or as conditions warrant. I am pleased to announce that the lighthouse painting project discussed in the October issue of Illuminations was completed by Razorback LLC and Federal Masonry Restoration LLC this past October. You can read more about this important work in the feature article Lighthouse Iron, beginning on page 7.

The Ponce de Leon Inlet Lighthouse Preservation Association is not-for-profit 501 (c)(3) organization directed by a governing board. Per the Association's by-laws, the Board of Trustees is an allvolunteer group consisting of eleven Ponce Inlet residents drawn from the organization's regular membership who are committed to the mission to preserving and disseminating the maritime and social history of the Ponce Inlet Lighthouse. It is assisted in this effort by the Advisory Committee which is made up of like-minded individuals who are also drawn from the regular membership. Together, these two groups oversee the ongoing operations of the Ponce de Leon Inlet Lighthouse Preservation Association.

This past fall witnessed some changes within our governing body as Trustee Julie Davis resigned her position and moved to a vacancy on the Advisory Committee and Ed Davis was nominated and approved by majority vote to fill the Board vacancy left by Ms. Davis's departure. I would like to express my sincere thanks to all of the Association's Board of Trustee and Advisory Committee members for their continued service. We couldn't do it without you.

The Association's many successes over the years could not have been achieved without the continued support of its many members. I wish you all a wonderful new year. Thank you.

With Warm Regards,

Ed Gunnlaugsson

Ed Gunnlaugsson Executive Director Ponce Inlet Lighthouse

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ILLUMINATIONS is published quarterly by the Ponce de Leon Inlet Lighthouse Preservation Association, Inc.

Subscription is a benefit of membership in the Association. ILLUMINATIONS welcomes letters and comments from our readers.

REGULAR HOURS OF OPERATION

SEPT 4, 2018 - MAY 26, 2019 Open Daily from 10:00 Am until 6:00 pm (LAST MUSEUM ADMISSION SOLD AT 5:00 PM)

SPECIAL HOURS OF OPERATION

RACE WEEK 2019 EXTENDED HOURS FEBRUARY 8 & 9, 2019 (FRI & SAT) FEBRUARY 15 & 16, 2019 (FRI & SAT) FEBRUARY 18, 19, & 20, 2019 (MON - WED)

Open from 10:00 Am until 7:00 pm (LAST MUSEUM ADMISSION AT 6:00 PM)

SCHEDULED TOWER CLOSURES

JANUARY 21, 2019 (MONDAY) TOWER CLOSED FROM 5:00 PM UNTIL 6:00 PM MUSEUM AND GIFT SHOP OPEN UNTIL 6:00 PM (LAST MUSEUM ADMISSION SOLD AT 5:00 PM)

UPCOMING MEETINGS

JANUARY 21, 2019 (MONDAY) BOARD OF TRUSTEES AND MEMBERSHIP MEETING (OPEN TO GENERAL MEMBERSHIP)

MARCH 18, 2019 (MONDAY)

BOARD OF TRUSTEES MEETING (CLOSED TO GENERAL PUBLIC AND MEMBERSHIP) (LAST MUSEUM ADMISSION SOLD AT 5:00 PM)

TOWER CLOSED FROM 5:00 PM UNTIL 6:00 PM

MUSEUM AND GIFT SHOP OPEN UNTIL 6:00 PM

May 27, 2019 - September 2, 2019

BIKE WEEK 2019 EXTENDED HOURS

Open from 10:00 Am until 7:00 pm

(LAST MUSEUM ADMISSION AT 6:00 PM)

MARCH 14, 15, & 16, 2019

FEBRUARY 19, 2019 (TUESDAY)

(THURSDAY-SATURDAY)

Open Daily from 10:00 Am until 9:00 pm

(LAST MUSEUM ADMISSION SOLD AT 8:00 PM)

FEBRUARY 18, 2019 (MONDAY) BOARD OF TRUSTEES MEETING (CLOSED TO GENERAL PUBLIC AND MEMBERSHIP)

CLIMB TO THE MOON SCHEDULE

CLIMB TO THE MOON

JANUARY 21, 2019 (MONDAY) 5:30 рм - 7:00 рм FEBRUARY 19, 2019 (TUESDAY) 5:30 рм - 7:00 рм

MARCH 20, 2019 (WEDNESDAY) 6:30 рм - 8:00 рм

Journey to the top of the Ponce Inlet Lighthouse and experience this National Historic Landmark in all its glory. Join the Old Lighthouse Keeper on a personal tour of the lighthouse and lantern room before venturing out onto the gallery deck to enjoy breathtaking views of the Atlantic Ocean, Ponce Inlet, and neighboring scenic inland waterways.

Toast the setting sun with a sparkling beverage and enjoy delicious hors d'oeuvres by the light of the full moon with your significant other and friends. Offered only on the eve of each full moon, this special event is limited to 25 participants only. Tickets must be purchased in advance by calling Angel at (386) 761-1821 ext. 10. Prices are \$35 for non-members and \$30 for members.



KEEPER LISTINGS



The Connection Harvey & Connie Bach Ponce Inlet, FL (Endowment Fund Donor) In Memory of Earl Davis

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JANUARY 5, 2019, GIRL SCOUT DAY

SATURDAY, 10:30 AM – 2:30 PM

Calling all Girl Scouts! Spend the day learning about what it was like to work and live at the lighthouse. Although Ponce Inlet never had a female lighthouse keeper many other lighthouses did, including Abigale Burgess of Maine's Matincus Rock Lighthouse who was immortalized in the famous children's classic *Keep the Lights Burning Abby*. Discover their stories. This event is designed especially for Girl Scouts age 7 and older. Tickets may be purchased online at www.lighthouselocker.org. This special event is limited to 60 participants.

Travel back in time and discover the wild and woolly roots of stock car racing during the 15th Annual Beach Racing Day at the Ponce de Leon Inlet Lighthouse and Museum. See historic beach racing cars from the Living Legends of Racing and talk with drivers, owners, and mechanics who risked life and limb in pursuit of the checkered flag on the World's Most Famous Beach. Meet and listen to renowned authors Buz McKim and Eddie Roche as they discuss the history of auto racing and their respective books, *The NASCAR Vault: An Official History* and *Florida Motorsports Retrospective Pictorial*. Both authors will be onsite throughout the event to sign autographs and share their extensive knowledge with lighthouse guests.

Attention Ladies and Gentlemen... Start Your Engines! Join us at the Ponce Inlet Lighthouse and Museum and discover the fascinating story of this important National Historic Landmark as you explore the light station's structures and climb to the top of Florida's tallest lighthouse. Meet with William Lazarus, racing historian and author of *Sands of Time: The Definitive History of Beach Racing* as he shares his vast knowledge of beach racing with lighthouse guests at 2:30 pm. Mr. Lazarus will be available after his presentation to sign his book.

MARCH 8-10, 2019 / MARCH 14-16, 2018 BIKE WEEK AT THE LIGHTHOUSE FRIDAY - SUNDAY, 10:30 AM TO 2:30 PM / THURSDAY-SATURDAY, 12:00 PM TO 2:00 PM

Take a ride down South Atlantic Avenue to one of Bike Week's favorite destinations! Discover 130 years of maritime history as you tour one of the largest and best preserved light stations in the country. Climb 175 feet to the top of Florida's tallest lighthouse where spectacular views the World's Most Famous Beach, Ponce Inlet, and inland waterways await. As an added treat, special activities have been scheduled from 10:30 to 2:30 pm.

Visit with historic re-enactors and learn what it was like to live and work around the Ponce Inlet Lighthouse at the turnof-the-century. Join us for a creative lighthouse craft and participate in old time activities. Explore our historical exhibits and climb the tallest lighthouse in Florida.

Visit us online at www.ponceinlet.org to learn more about these and other upcoming scheduled events at the Ponce Inlet Lighthouse and Museum.

ATTENTION READERS: Unless otherwise noted, all scheduled events and activities at the Ponce Inlet Lighthouse are provided free of charge to participating guests with the price of regular admission. Additional information regarding scheduled events can be found online at www.ponceinlet.org under the Calendar of Events tab. Individuals wishing to learn more about these and other upcoming scheduled events may contact programs manager Mary Wentzel by phone at (386) 761-1821 ext. 18, or via email at mwentzel@ponceinlet.org.

Lighthouse Iron

Cast Iron and the Industrial Revolution

The use of iron as a building material is by no means a modern development. In fact, iron components have been employed in the construction of some of the world's most historically significant structures for more than two millennia, including the Greeks' use of H-shaped pins to align the marble blocks forming the walls of the Parthenon in the fifth-century B.C.E, and its use by the Chinese to erect the 50-meter tall cast iron Tianshu pagoda in the 7th century CE.

Although recognized as an important construction material by the Greeks, Chinese and many other early civilizations, the use of iron remained limited throughout antiquity and the middle-ages for several reasons including: the labor-intensive means of its production, limited availability, and high cost compared to that of timber, stone and brick.

This all changed in 1709, when an English Quaker named Abraham Darby perfected a method of smelting iron ore in a blast furnace fueled by coke rather than charcoal. Coke is the solid gray substance that remains after coal has been superheated in the absence of air to remove the tar, gases, and volatile compounds it contains. The coke-fired blast furnace allowed for the affordable mass-production of raw "pig" iron which could be melted down and poured into sand molds to produce cast iron.

Using Darby's new smelting technique, iron production in England rose from 12,000 tons in 1700 to more

than 28,000 tons by 1750. Capable of being formed into a wide variety of shapes and sizes, the demand for iron soared as nearly everything that could be made from this versatile material, was. Common cast iron products manufactured during this time included consumer, military, and durable goods ranging from tea kettles, gun barrels, and train rails to machinery parts, architectural ornaments, and pipes.

Iron may have taken the mid-1700s manufacturing industry by storm but its use in construction remained relatively unchanged. Having spent their entire careers erecting structures made of stone, brick, and timber, engineers of the time were reluctant to abandon the traditional building materials of old for something as new



Drawing of an early 18th Century coke-fired blast furnace developed by Abraham Darby

and untried as structural iron. However, this attitude began to change after a 110-foot long cast-iron bridge was erected across England's Shropshire River in 1781. Constructed by Abraham Darby's grandson, Abraham Darby III, the Iron Bridge was a marvel of modern engineering that demonstrated just how versatile this new medium could be.

This achievement was soon followed by a major breakthrough in the manufacturing of wrought iron on an industrial scale called "puddling." Developed by Henry Cort in 1783, this process turned pig iron into wrought iron by superheating it inside a reverberating furnace to remove its contaminates and then drawing



The 17th Century Cast Iron Bridge still stands today.



puddling roller mill developed by Henry Cort.

collapse. Although tragic, events like these helped develop a better understanding of how best to utilize the material in structural ways.

Real world examples such as this taught the engineering community that cast iron was well-suited in situations involving heavy vertical loads due to its rigidity and high compression strength, but a poor choice in circumstances requiring flexibility and high tensile strength due to its hard brittle nature. Conversely, wrought iron was found to be an excellent option when conditions called for a strong, flexible material due to its malleability and high tensile strength, but a poor choice for load bearing applications because of its low compression strength and tendency to bend. Where one performed poorly the other excelled. Used together, both worked very well. By they the end of the 18th century, cast and wrought iron had become preferred building materials the world over.

the purified red-hot iron directly onto a set of grooved rollers that fashioned it into bars. Together, these two major advances heralded in a new age of construction that fully embraced the use of iron as both a structural and ornamental material.

Realizing iron could be used for more than nails, pins, and reinforcing rods, engineers began exploring its full potential in earnest. However, lacking the metallurgical knowledge and testing facilities of today, builders often discovered the advantages and limitations of cast and wrought iron through trial and error, sometimes with disastrous results. In 1847, a bridge made with cast iron girders suddenly collapsed into the Dee River in Chester, England, as a train was crossing it, killing seven of the passengers onboard. Investigations into the mishap found that the cast iron beams that supported the bridge had cracked, resulting in its



The Dee River Bridge collapse in 1752 taught engineers an important lesson about the limitations of cast iron.

Iron Lighthouses

The manner in which a lighthouse was constructed typically reflected the contemporary architectural aesthetic and engineering practices of its day. Nineteenth century lighthouses were no exception. England pioneered the use of iron in lighthouse construction in 1803 with the completion of the world's first cast iron tower near the entrance to Swansea Bay in southern Wales. The entire structure was cast in a foundry in sections and then transported to the building site where it was quickly reassembled by a small group of workers. The success of this project demonstrated that cast iron lighthouses were not only economical, but far easier to erect (and when coastal conditions warranted - disassemble and move) than their masonry counterparts.

By the mid-1840s, iron towers were being used not only in England, but throughout the British Empire. Completed in 1846, the cast iron 117-foot tall Gibbs Hill Lighthouse was fabricated in England and then transported to Bermuda where it was assembled atop a tall hill. It remains in operation to this day.



Constructed in 1865, the Whiteford Point Lighthouse is England's oldest surviving cast iron lighthouse.



Erected in 1844, the cast iron Gibbs Hill Lighthouse was fabricated in England and then exported to Bermuda.

The use of cast iron in lighthouse construction was not limited to Great Britain. Other countries followed England's lead and built cast iron lighthouses of their own including Norway, France, Spain, and the United States. In 1844, the US Congress authorized the construction of the nation's first cast iron tower on Long Island at the entrance to Massachusetts Bay. Completed in 1844, the Long Island Head Lighthouse was constructed of iron rings cast by the South Boston Iron Company. The Boston Globe described the completed project in detail.

"The tower is twelve feet in diameter at the base, and six feet at the top. It is furnished with an iron deck, projecting on the outside so as to furnish a walk round the lantern twenty inches in width finished with a railing. The lantern is made of upright wrought iron bars to receive the glass, having sixteen sides of four feet by sixteen inches, and is surmounted by a cast iron dome or roof, making the whole height thirty-four feet. In the center is a cast iron pipe, extending from the bottom to the summit, which serves as a smoke flue for the stove, and around which winds a circular stair case of cast iron."

The Long Island Head Lighthouse was heralded as a great success and several more towers of similar design soon followed, including the Juniper Island Lighthouse in 1846, the Biloxi Lighthouse in 1848, Brandywine Shoal's screw pile light in 1850, and the Point Bolivar and Matagorda Island beacons in 1852.

The editors of Scientific American were impressed and wrote of the many advantages of using cast iron in both the fabrication of towers themselves and the creation of the foundations on which they were built. Appearing in the October 30, 1852, edition of the journal, the article "*Iron Lighthouses*" stated: "The employment of iron in marine structures forms an important era in respect to its use for lighthouses. The great expense and difficultly heretofore experienced in forming foundations of stone for lighthouses in and banks [sic], and in yielding soft places, have been overcome...indeed, the

>> CONTINUED ON NEXT PAGE

IRON LIGHTHOUSES (continued)



Completed in 1844, the Long Island Head Lighthouse marked the entrance to Massachusetts Bay. It was America's first cast iron lighthouse.

employment of iron, enables our marine engineers to build lighthouses in situations where it would be utterly impossible to build stone towers."

Although viewed by many as the wonder material of the time, cast iron did have its limitations. The hard, brittle metal did not fare well when subjected to the bitterly cold temperatures, crushing ice flows, or impact of towering waves that assailed northern lighthouses on an annual basis. Although wrought iron tie-rods and braces could help offset these inherent weaknesses, environmental conditions sometimes precluded the use of cast iron as a suitable building material. This important fact was clearly illustrated in 1851, when the Minot's Ledge Lighthouse erected outside Boston Harbor in 1850 collapsed during a violent storm, taking two of its keepers with it. Designed by Captain William H. Swift of the US Topographical Engineers, the original Minot's Ledge Lighthouse was a cast iron structure perched atop nine cast iron pilings sunk into the submerged rocks below. Although based on sound engineering principals, Capt. Swift had

made several grave mistakes when designing the structure. He had underestimated the power of the rough seas that frequented Massachusetts' coast; overestimated the strength of the tower's pilings; and miscalculated the performance of cast iron girders in such extreme conditions. In essence, the Minot's Ledge Lighthouse was doomed before it ever left the drawing board.

While far from ideal, the lessons learned from tragedies like the loss of the Minot's Ledge beacon added greatly to the engineering community's understanding of structural iron and how best to employ it in future lighthouse designs.

The subject of using cast and wrought iron in lighthouses was addressed at length in the US Light-House Board's 1852 report to Congress regarding the condition of the US Light-House Establishment and nation's aids to navigation system. Although acknowledging that cast iron towers were often the best choice for remote locations where masonry construction was not feasible, the study clearly stated that towers made of stone or brick were structurally superior to those of iron. When a tower could be constructed of masonry, it should be, with iron playing only a supporting role.



The original iron-pile Minot's Ledge Lighthouse collapsed into the sea during a violent storm outside Boston Harbor in 1850.

"Iron, (cast, wrought, or rolled,) plain, corrugated, or ornamental, may be often very usefully and economically employed in light-houses, for stairs, galleries, railings, doors, shutters, door and window frames, and for joists, flooring, partitions, &c [sic]. But the materials most extensively used in light-house towers of the best construction, or those from which we are to expect the greatest strength and durability, are brick and stone."

To put it simply, the Light-House Board determined that with

IRON LIGHTHOUSES (continued)

the exception of those locations where geography and coastal conditions prohibited the use of masonry, future lighthouses should incorporate all three materials in its design. Brick and stone would provide the tower's wall with the structural integrity it required; cast iron would be used in the manufacturing of prefabricated components that could assembled onsite including the staircase, lantern and watch rooms, and exterior decks; and, wrought would be used for the railing systems as well as the straps, rods, and hardware that tied the tower together. (Author's note: Copper and brass were also considered and used, but in minimal quantities.)



The second Minot's Ledge Lighthouse was a masonry tower that utilized both cast and wrought iron in its design.

The Ponce (then Mosquito) Inlet Lighthouse's watch room is a prime example of how the US Light-House Establishment incorporated the board's recommendations into its lighthouse designs. Located directly atop the masonry tower, the tower's watch room is made of cast iron, brick, and wrought iron. It was constructed by initially bolting eight cast iron plates together to form a 16-foot diameter cylinder commonly referred to as a drum. A two-foot thick brick liner was then installed directly behind the drum to reinforce the brittle cast iron plates and increase the watch room's load bearing capacity. The tower's lantern room was then assembled directly atop the finished watch room using wrought iron bolts, brackets, and tie-down rods to lock the entire assembly together.

Preserving Lighthouse Ironwork

Completed in 1887, the Ponce Inlet Lighthouse is a red brick tower capped with a black lantern room. Described as the most beautiful and best proportioned tower in the Sixth Lighthouse District, the lighthouse soars 175 feet above the Florida coast and contains tons of cast and wrought iron components. Fabricated by the Philadelphia based I.P. Morris Company in 1884, the lighthouse's lantern room, watch room, and gallery deck are accessible via a spiral staircase manufactured by Phoenix Iron Works.



Ponce Inlet Lighthouse watch room.

Lighthouses are subjected to some of the harshest conditions on earth. How well a lighthouse stands up to the natural elements depends on the quality of maintenance it receives. Reports filed between 1889 and 1938 indicate that the Ponce Inlet Light Station remained in good condition, with damaged woodwork constituting the majority of repair requests. The tower's railings, decks, stairs, and

other cast iron components experienced little deterioration thanks to the vigilance of its caretakers.

The lighthouse remained in stable condition until 1952, when automation of the light eliminated the need for resident keepers. No longer manned on a full-time basis, the tower quickly fell into a state of disrepair. The once meticulously maintained ironwork quickly corroded and keepers' dwellings were vandalized. In 1970, the beacon itself was extinguished. The light station was declared surplus property in 1972 and rumors

began to circulate regarding demolition of the facility itself.

Alarmed by the light station's deteriorating condition, a group of concerned residents petitioned the Town of Ponce Inlet to acquire the abandoned facility from the Department of the Interior in an effort to preserve it. The Town agreed with the stipulation that a non-profit be formed to assume full responsibility for the station's restoration



Cutaway elevation plans of the Ponce Inlet Lighthouse

and operation. The petitioners agreed and the Ponce Inlet Lighthouse was officially transferred to the Town of Ponce Inlet

FEATURE ARTICLE

IRON LIGHTHOUSES (continued)

on June 2, 1972. The Preservation Association was founded a few weeks later and plans were quickly developed to address the worst areas of deterioration throughout the light station. This included the tower's corroding iron work.



Although once meticulously maintained, twenty years of neglect had caused the lighthouse to fall into a state of disrepair.

Commonly referred to as rust, corrosion is the deterioration of a metal as a result of chemical reactions between it and the surrounding environment. Corrosion can manifest itself in several ways. Thoroughly addressed in the National Park Service's Historic Lighthouse Preservation Handbook, the four most common forms of corrosion associated with lighthouses include oxidation, galvanic, general, and pitting.

- Oxidation- A chemical process in which oxygen atoms bond to iron forming a new compound called iron oxide. As with all forms of corrosion, iron oxide weakens the chemical bonds within the metal itself and compromises its physical integrity.
- Galvanic An electrochemical action that results when two dissimilar metals react together in the presence of an electrolyte such as water containing salts or hydrogen ions. The severity of galvanic corrosion is dependent upon the difference in potential between the two metals, their surface area, and the span of time in which the corrosion remains untreated.
- General Attack Also known as uniform attack corrosion, general attack corrosion is the most common type of corrosion and is caused by a chemical or electrochemical reaction that results in the deterioration of the entire exposed surface of a metal. Ultimately, the metal deteriorates to the point of failure.
- Pitting Pitting is one of the most destructive types of corrosion, as it can be hard to predict, detect and characterize. Pitting is a localized form of corrosion, in which either a local anodic point, or more commonly a cathodic point, forms a small corrosion cell with the surrounding normal surface. Once a pit has initiated, it grows into a "hole" or "cavity" that takes on one of a variety of different shapes.

Deprived of proper maintenance for nearly twenty years, the Ponce Inlet Light Station was in a state of extreme disrepair when it was transferred from the Department of the Interior in 1972. The Association tackled the worst areas of deterioration with a partial restoration of tower's gallery deck and lantern room 1982. A full restoration of the lighthouse followed in 2000. Costing over one million dollars to complete, this extensive multi-year project addressed the tower in it's entirely from the tip of its lightning rod to the brick apron surrounding its base. Work included the full restoration of the tower's interior and exterior ironwork, inner and outer brick walls, and the lantern room. Completed in 2001, the tower was officially reopened in November, 2001.



When left untreated, corrosion can have a disastrous impact on historic lighthouses.

IRON LIGHTHOUSES (continued)

Nearly a decade later, the tower's interior ironwork remained in excellent condition thanks to the Association's annual preventive maintenance plan. However, eight years of exposure had begun to take its toll on the tower's exterior iron work. Attacked by rain, salt, and wind-blown sand, the cast iron's protective finish had slowly eroded away. Minor pitting, flaking, and surface rust began to appear on the underside of the gallery deck and its support brackets. Although normally addressed with a little cleaning and a fresh coat of paint, the underside of the gallery deck and upper portions of the

lantern room could not be treated without specialized equipment and training.

The Association addressed these issues in 2010 when it hired H.I.S. Painting Inc. to attend to these hard-to-reach areas. Using a swing stage suspended from the top of the tower, H.I.S. employees examined the underside of the gallery deck and its support brackets and began the tedious task of grinding, sanding, and needling them back to non-corroded metal.



A full restoration of the Ponce Inlet Lighthouse was completed in 2002.

The exposed iron was then treated and a coat of zinc primer applied. Two coats of moisture-cured urethane soon followed. Based on the performance of the protective coatings applied in 2001, lighthouse staff projected that the process would need to be repeated approximately every ten years and planned accordingly.

Routine inspections in 2018 revealed the time had come to repaint the tower's ironwork once again. The Preservation Association hired Razorback LLC to complete the important project. Based in Tarpon Springs, FL, Razorback had developed a well-earned reputation as one of the nation's premier lighthouse painting companies from its work on other towers in the southeast including those in St. Augustine, Jupiter Inlet, Cape



Executive Director Ed Gunn and Director of Operations Mike Bennett inspect the lantern room cupola and vent ball in 2010.

Florida, and St. Simons Island. Razorback's contribution to the restoration of the Boca Grande Lighthouse factored greatly

in the Barrier Island Parks Society's receipt of the Florida Trust for Historic Preservation's Outstanding Achievement in Historic Preservation Award in 2018.

Working closely with Ponce Inlet Lighthouse staff, Razorback's owner Anthony Houllis executed the Association's ironwork preservation plan. Work began in mid-September and took four weeks to complete. Addressing the tower's metalwork in its entirety, this comprehensive plan was accomplished in 5 phases.

Phase 1: Tower Interior - Levels 1 through 8

The cleaning, repair, and recoating of all metalwork associated with the tower's spiral staircase leading from ground level to immediately below the service room, the counter-weight well, main entrance inner and outer door frames, and tower window frames and security grates.

Phase 2: Tower Interior - Levels 9, 10, & 11

The cleaning, repair, and recoating of interior metal work found in the tower's service room, watch room, and lantern room including all staircase components, deck plates, moldings, window frames, bulkheads, cornices, hatches and grates, cross members, roof supports, etc.

Phase 3: Gallery Deck

The cleaning, repair, and recoating of all cast and wrought iron components associated with the tower gallery deck including the drum, deck plates, support corbels, railing system, cornice, and safety cage.

Phase 4: Lantern Room Exterior

The cleaning, repair, and recoating of all metalwork associated

with the exterior of the lantern room including the widows walk, railing system, window frames, vents and drains, mounting hardware, cupola, vent ball, and lightning rod.

Phase 5: Tower Windows

The exterior cleaning, repair, and recoating of the tower's ten windows and air vents.

The Association addressed corrosion issues with the lantern room's 16 tie-down rods immediately after Razorback finished. Originally installed in 1887, these important wrought iron

bars marry the lantern room to the top of the brick tower. Years of exposure to the harsh coastal climate had corroded these

>> CONTINUED ON NEXT PAG

FEATURE ARTICLE

IRON LIGHTHOUSES (continued)



Accessing the top of the tower via a lift stage, Razorback LLC employees clean, treat, and repaint the underside of the gallery deck and its support brackets.

rods resulting in a condition called "rust jacking" and the creation of hairline cracks in the masonry walls that surrounded them. Also referred to as "rust burst," rust jacking occurs when wrought iron or steel expands and delaminates during the corrosion process. This phenomenon can cause significant damage to structures made of masonry or concrete if left untreated.

Federal Masonry LLC, a Baltimore-based company specializing in the restoration

of historic masonry structures, was hired to remove the brick work surrounding the tie-down rods and treat them as needed. Work began in mid-October and took approximately two weeks to complete. Masons exposed the wroughtiron and removed the layers of corrosion with grinders and chipping hammers. The clean metal was then treated with a rust inhibitor followed by a coat of protective zinc primer and two coats of moisture-cured urethane. The tie-down rods

were resealed within the watch room's masonry liner after they were restored using historic bricks dating from the same time period as the tower.

Restoration is one of our organization's most important responsibilities. Charged with the management and operation of the Ponce de Leon Inlet Light Station since its acquisition by the Town in 1972, the non-profit



With the lantern room tie down rods exposed for the first time since 1887, Federal Masonry employees could address the corrosion issues that had caused hairline cracks to form in the watch room masonry walls.

Ponce de Leon Inlet Lighthouse Preservation Association has successfully transformed what was once an abandoned facility threatened with demolition into what is widely regarded as the best preserved and most authentic light station in the country. Designated a National Historic Landmark in 1998, the Association's success in achieving its mission would not be possible without the ongoing support of its members and donor base. For that we thank you.



Federal Masonry Inc. employees (from left right) Nabie Lebagnonon, Gnimdou Adoki, Melvin Banegas-Maradiaga, Juan Ingrassia, and forman Jonathan Leonor.

Those wishing to learn more about the Association may do so online at www.ponceinlet.org. Additional information regarding lighthouse preservation and restoration may be found on the National Park Service's website at www.nps.gov



The Ponce de Leon Inlet Lighthouse today.



Astronomer and Keeper discuss the Night Sky

The Ponce Inlet Lighthouse had a very busy fall season with many activities for people of all ages. A fabulous night was had by all at our annual Museum at Night held on October 12th. This year we partnered with the Museum of Arts and Sciences for a night of stargazing with Curator of Astronomy Seth Mayo and Planetarium Coordinator Jason Schreiner. The weather was perfect for the event and at 7:27 pm, right on cue, the International Space Station was visible for 5 minutes for all to see. Guests

to the event were able to view the night sky through the amazing Cassegrain reflector telescopes that Seth and Jason brought with them from MOAS.

That evening, while visitors stargazed, climbed the tower, and the made rainbow viewers, a large owl perched itself on the sill of one of the top windows of the tower. At first, the owl seemed intrigued by the

unusual presence of people at his Lighthouse at night. But alas, the night predator's real interest was in the occasional bat darting back and forth, making their fleeting shadows against our dramatically lit brick giant. The great owl, after some careful planning, quietly left its perch to pluck an unsuspecting bat out of the sky. We forget sometimes that when the sun goes down and the museum is closed, the lighthouse remains a place of activity even in the darkness of night.

The Ponce Inlet Lighthouse hosted its 11th annual Fall Homeschool Day on November 15, 2018. This year's event explored what life would have been like for keepers and their families, as birds from all over the North America flocked to Florida during their annual migration. Students learned about game warden Bart Pacetti, a Ponce Park resident who traveled far and wide to find and bring bird poachers to justice. Developed in partnership with Ponce Inlet's Marine Science Center, this special program explored not only the history of the lighthouse but also the unique



W. Va., were on South Feach, just below Mosquito Inlet. Trey had noticed a launch, the Uno, pass beaded North. A little later they heard shots and looking up saw the flock of gentle, trusting pelicans which have become so tame from being undisturbed, flying in all directions, fleeing for their lives. Alas' it was too late for some of them, for the Dupont boys, John and Julien. of St. Augustine, had fired fleadly loads of shot into the flock, killing outright as

Bird Poachers Arrested



Don Chalfant

ecosystem in which it is found.

What happens along Florida's coast each year is truly amazing. In the fall, billions of birds migrate from one section of the earth to another. They travel from state to state, country to country, or hemisphere to hemisphere. In the spring, they turn around and do it again. For our fine-feathered friends, the world is indeed a place without borders. We invited Mr. Don Chalfant to the lighthouse to better understand the migration patterns of birds and how these mass movements impact the world around us.

Born and raised in Pittsburgh, PA, Mr. Chalfant's passion for birdwatching was born shortly after he retired from a 34-year career as an elementary school teacher. Like every birder he knows, Don is quick to state that he wishes he would have started birding sooner. Mr. Chalfant is among the nation's elite birding experts. He has birded in every state and off the coast of every sea in this hemisphere. Now a resident of New Smyrna Beach, Don hosts a weekly walk and talk about his passion, inviting people of all ages to stroll with him as he explains what he and they are seeing and hearing. The Ponce Inlet Lighthouse Preservation Association would like to thank Don Chalfant for taking the time out of his busy birding schedule to share his joy and admiration for birds with our homeschooling families.

Wonderful offerings such as these would not be possible without the dedication and hard work of our volunteer corp. They are the heartbeat of the museum's programs department. The Preservation Association is always looking for individuals interested in accepting the challenge and becoming a lighthouse volunteer. Those wishing to join are encouraged to contact programs manager Mary Wentzel by email at mwentzel@ponceinlet.org or by phone at (386) 761-1821 ext. 18. You can also learn more about volunteering opportunities online at www.ponceinlet.org.

FROM THE REGISTRAR



1803 Spanish land grant survey of Samuel Williams' 3,200 acre estate on the Halifax River now located in downtown Daytona Beach.

William H. Williams: Pioneer Lighthouse Keeper

William H. Williams was one of four sons sired by a true Florida pioneer. Born in either Georgia or North Carolina near the turn of the eighteenth century, William Henry Williams journeyed to Florida with his parents, Samuel and Ana Maria Williams, and his uncle Wm. Williams, in 1803. Generous Spanish land grants made possible by the Royal Order of 1790 offered land in Florida to foreigners willing to swear allegiance to Spain and convert to Catholicism. Samuel and Wm. Williams soon established large plantations along the Halifax and Hillsborough (now Indian) Rivers.

Samuel Williams was granted 3,200 acres approximately ten miles north of Mosquito (now Ponce) Inlet in exchange for his oath of loyalty. Stretching west from the river bank, this large plantation was located between Bay Street and Wilder Avenue in the heart of present-day Daytona Beach. Aided greatly by slave labor, Samuel Williams cleared vast tracks of virgin forest to create fields for the cultivation of a variety of crops including rice, cotton, and sugarcane. The cut timber was used to construct a manor house, service buildings, and

slave quarters. Goods and equipment were transported between the river and fields via a system of plantation roads, the longest of which connected Williams' home on the west bank of the Halifax to his rice fields near present-day Campbell Middle School. Renamed around the turn of the century after the son of Daytona founder Matthias Day, this historic roadway is now known as Loomis Avenue, the city's oldest thoroughfare.

Fifteen miles south of the Orange Grove Plantation, Wm. Williams established his own estate on 2,200 acres situated between the Hillsborough River and Turnbull Creek. Although considered expansive by today's standards, Williams felt that the land grant was insufficient for his needs. Hoping to rectify the situation, he petitioned the Spanish government for additional lands in 1804, claiming he possessed too many slaves for only 2000+ acres. The Spanish approved his request and granted him an additional 2,020 acres on the St. Johns River which he named Spring Garden. Leaving three of his brother's sons (including

William H. Williams) to manage his New Smyrna estate, Wm. Williams dedicated himself to the cultivation of the new land grant which would later be renamed Deleon Springs.

William, Abner, and William Henry Williams became the sole heirs of the Spring Garden and New Smyrna plantations following their uncle's death 1808. The brothers continued to manage the two estates for the next four years, dividing their time between the two locations until 1812, when ongoing regional conflict, Indian attacks, and the Patriots War compelled them to leave Florida. Forced to abandon their New Smyrna plantation and leave Spring Garden in the care of a half-blood Seminole named Burges, the three brothers would not return to east central Florida for nearly a decade.

Samuel Williams died in 1813. Although specifying that his four sons should inherit the Orange Grove Plantation, his widow petitioned the Spanish government for control of her late husband's estate. With the aid of a prominent St. Augustine lawyer named Joseph M. Hernandez, Ana Maria Hill secured her claim in 1817. Aided by Hernandez's already considerable wealth, the Orange Grove Plantation underwent a period of intense improvement. The estate was added to Hernandez's considerable land holdings when he and Anita married a few years later.



This 1830 territorial survey confirmed the Spanish Land Grant awarded to the heirs of Wm. Williams at Spring Garden (now Deleon Springs).

Returning to the Halifax area following the United States' acquisition of Florida in 1821, William H. Williams settled on a portion of the old New Smyrna plantation. Like many other land owners of that time, William may have accumulated considerable debt as a result of the high cost associated with running a plantation. Although it is not known, financial hardship may have forced Williams to sell his one third share of the Spring Garden Plantation to an associate from Georgia named Joseph Woodruff in 1823.

Continuing to manage his New Smyrna plantation, William H. Williams became active in local politics and fathered several children with his wife Fanny throughout the following decade. Dual appointments as a Justice of the Peace and Notary Public for Mosquito County between 1833 and 1835 made him one of the county's first professional public servants, an occupation he would continue to pursue for many years.

FROM THE REGISTRAR



Artist's rendition of the 1835 Mosquito Inlet Lighthouse as it would have appeared on the south side of Mosquito Inlet.

Appointed Keeper of the Mosquito Inlet Lighthouse on March 10, 1835, William H. Williams sold his property in New Smyrna and moved both his family and servants to the small light station situated on the south side of Mosquito Inlet. Designed and built by Winslow Lewis, the poor quality of the lighthouse and surrounding buildings quickly became evident. Williams wrote his supervisor in St. Augustine on numerous occasions and their ongoing correspondence quickly generated a lengthy list of building flaws that brought the integrity of its chief designer into question. Williams was preparing to correct these discrepancies when a violent storm struck the inlet on October 21, 1835.

Serving on a grand jury in St. Augustine at the time, Williams soon learned of the storm's impact on Mosquito Inlet. Upon returning, he found the light station in a state of near devastation. In a letter penned on November 4, 1835 to John Rodman, Superintendent of Lighthouses in St. Augustine, Williams writes "I returned to Mosquito and found myself a beggar having lost everything in the house, my wife and children narrowly escaping with their lives. Where the house stood is now a beach, the tide flowing over the spot where it formally was. The Lighthouse is standing but in a very perilous way foll by the fart high tide on N.F. wind."

and it is more than probable that it will fall by the first high tide or N.E. wind."

Homeless and fearful for his family's safety due to growing tensions between the U.S. Government and Seminole Indians, Williams moved his family 50 miles north to St. Augustine where his stepfather, Florida Militia General Joseph Hernandez, had offered him a home to live in. Despite the distance, Williams retained his position as Keeper of Mosquito Lighthouse and continued to pursue approval for emergency repairs until the outbreak of the Second Seminole War in December, 1835, put his plans on hold. Left to weather the elements in its damaged state and subjected to continued beach erosion, the Mosquito Inlet Lighthouse finally collapsed on April 23, 1836.

The Second Seminole War had a devastating effect on Northeast Florida's growing agricultural industry. Seminole warriors under the leadership of Coacoochie (the Wildcat) raided plantations and white communities throughout Mosquito County. Many settlers were killed in these attacks and those that survived were forced to abandon the homesteads they had worked so hard to build. Those that survived were forced to seek refuge in more densely populated areas like St. Augustine or Jacksonville. Never one to run from a fight, William H. Williams joined a band of citizen soldiers from Hillsborough and Halifax River areas called the Mosquito Roarers to combat the actions of the hostile Seminoles.

Serving as a lieutenant under the command of Major Benjamin Putnam, William H. Williams participated in many battles during the Second Seminole War including the Battle of Dunlawton in which he earned some notoriety. Lieutenant Williams was one of the men under Putnam's command when he came ashore at Dunlawton Plantation on January 17, 1836. Hoping to surprise a band of Seminoles who were rumored to be in the area, the soldiers soon found themselves outgunned and outflanked with their backs to Halifax River. Knowing that escape was the only option, Major Putnam ordered his men to their boats.



Ruins such as those at the Bulow Plantation State Park are fascinating reminders of the Halifax area's violent and tragic past

Lt. William H. Williams, in a final act of defiance, turned his backside to the approaching Seminoles and dropped his trousers before heading to his boat. The response from the enemy was immediate. All the fire from the Seminole warriors seemed to turn in his direction as his trousers hung about his ankles and a spent musket ball found its mark. One can only assume that the pain suffered as a result of the ensuing wound was as great as that suffered upon his ego with the subsequent retelling of the event in the days to come.

The Second Seminole War would continue at one level or another until 1842. Seven years of conflict had left the territory in shambles. One unknown reporter wrote of the war, "the whole of the country south of St. Augustine had been laid to waste, not a building of any value was left standing and all has been burnt to the ground."

Although decimated by Seminoles, Mosquito County emerged from the ashes as settlers returned to their old home sites and started to rebuild. With peace and stability once again restored, the question of statehood became a heated topic of debate. William H. Williams, always the public servant, was elected to represent Mosquito County in the Florida Legislative Council which had been tasked with writing the first Florida Constitution, a necessary step towards petitioning for statehood.

William H. Williams continued his long tradition of public service in the years that followed. He remained a Representative of Mosquito County until 1842 when he was voted out of office. Filing a claim for 160 acres along the Hillsborough River, Williams moved back to New Smyrna in 1843 and began all over again. With the help of slave labor, 40 acres of land were cleared for cultivation and a new home for his wife and 5 children erected. In 1845, he was elected to serve as the first sheriff of East Orange (now Volusia) County. William Henry Williams died six months later. He was buried in his family's cemetery, a stone's throw away from his childhood home.

VOLUNTEER OF THE QUARTER: DEBBIE SOBIEN

Committed to the ongoing preservation and dissemination of the maritime and social history of Ponce de Leon Inlet Light Station, the Lighthouse Preservation Association relies heavily on its volunteer corps to achieve its ongoing mission. Made up of men and women from within the local community, this dedicated group of individuals delivers

the vast majority of the museum's educational programs. Offered free of charge to both onsite visitors and in schools throughout Volusia County schools, these important offerings promote public awareness and appreciation for this important National Historic Landmark.

Each quarter, the Preservation Association recognizes a docent who exemplifies the spirit of volunteerism. We are pleased to recognize Debbie Sobien as this issue of Illumination's Volunteer of the Quarter.

Debbie Sobien moved to Port Orange, FL, with her parents Leah and Lyle Hardman in 1959 when she was only four years old. "My father was looking for work at the time and we had an aunt who lived in Florida," said Debbie. The family purchased a home in the recently established housing development of Portona. "The border between Port Orange and South Daytona was right in my back yard," Debbie smiles. Though it is hard to image, Port Orange was so small back in the 1950s that only one elementary school was needed to serve all of its children. After graduating from Port Orange Elementary, Debbie moved on to Mainland Jr. /Sr. High School where she earned her diploma in1975.

Debbie met her future husband Tom while working at a Steak & Shake on A1A. Although famous for its rolling waitresses, Debbie was quick to clarify that she did not serve food on skates while working at Steak & Shake. Tom and Debbie married shortly after they graduated from high school. Debbie gave birth to their son Thomas III thirteen years later in 1988.

As a senior in high school, Debbie had an opportunity to participate in a career program that provided her the opportunity to work for Volusia County Schools as a student clerical assistant. The position became permanent and for the next 20 years Debbie worked in the Media Services Department. "During that time, I was a clerk and later promoted to manager of the book lab," Debbie said. "My dream had come true...I had always loved books." The Book Lab processed books and audio visual materials for all of Volusia County Schools including typing all the catalog cards."



Debbie Sobien as Abbie Burgess

Debbie received her Bachelor's degree in Liberal Arts and Media Sciences from University of Central Florida in 1992. She continued working with Volusia County Schools as a media specialist and was named Teacher of the Year at Chisholm Elementary in the 1990s and then again at Port Orange Elementary in 2014. Debbie and Tom retired after

> their son graduated from college. When Thomas III's career took him across the globe to China to teach, Debbie and Tom saw it as an opportunity to embark on a trip of a lifetime. They traveled to all the major cities in China, enjoyed experiencing a new culture and spending time with their son. They have had many other adventures since.

> As a lighthouse volunteer, Debbie can often be found giving tours, assisting with craft activities, or assuming the persona of the historic lighthouse

heroine Abbie Burgess. Immortalized in the famous children's book *Keep the Light Burning Abby*, Abbie Burgess was left in charge of the Maine's Matincus Rock Lighthouse when her father, Principal Keeper Samuel Burgess was forced to row to shore for some much needed supplies. Not long after his departure, a ferocious storm descended on the rocky island on which the lighthouse was located, making it impossible for him to return. With no one to help her, the 16 year old Abbie single-handedly kept the light burning atop the lighthouse for more than 21 days, saving countless sailors in the process.

When asked what she likes most about volunteering at the lighthouse and portraying important figures from the past Debbie replied, "I enjoy learning and making history come alive." A love for learning is the sign of a gifted teacher and Debbie is one of the best. When she isn't volunteering at the lighthouse or off having a grand adventure with her husband, Debbie spends her time working for American

Education First (EF) Homestay program where she teaches junior Chinese students ages eight to thirteen. We are extremely proud to have Debbie Sobien as our January, 2019 Volunteer of the Quarter.



Tom and Debbie Sobien in Urumqi, China

JOIN THE PONCE DE LEON INLET LIGHTHOUSE PRESERVATION ASSOCIATION

A GENERAL ANNUAL MEMBERSHIP INCLUDES:

- Free admission to the museum and lighthouse during regular hours of operation
- 10 percent discount in the museum gift shop and online store
- One subscription to The Light Station quarterly newsletter
- Invitations to special events
- Volunteer opportunities

MEMBERSHIP CATEGORIES:

General	\$20
The benefits listed above for one individual	

- Senior..... \$10 • All privileges of General Membership for one individual 62 years or older
- Student...... \$10 • All privileges of General Membership for one individual 12 years or older with a valid student identification
- Family..... \$40
 - · All privileges of General Membership for the immediate family • Immediate family is limited to one or two adults and your children under age 18. Grandchildren are not eligible.
 - You will be issued one membership card for each parent, and each card will list the names of your children.
 - · Child under 12 must be accompanied by an adult

Please complete the entire form to enroll, or join online at www.lighthouselocker.org.

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PONCE INLET NANTUCKET SWEATER

Proclaim your love for the Ponce Inlet Lighthouse with this comfortable poly/cotton blend crew neck Nantucket Sweater featuring an embroidered image of the Ponce Inlet Lighthouse along with its name. Available in gray or white in sizes small through XX-Large. Please indicate desired color and size when ordering.

Item #: 3842 Price: \$31.99 (+S&H) (Sizes Small - X-Large) \$32.99 (+S&H) (Size XXL)

BOGO!! PONCE INLET LIGHTHOUSE BEACH TOWEL

SAVE 50%! Enjoy sunny spring days on the beach or pool deck with this custom 30"x60" Ponce Inlet Lighthouse microfiber beach towel featuring a full color image of the historic Ponce De Leon Inlet Lighthouse.

Item #: 4059 Price: \$14.99 (+S&H) Wow!! THAT'S ONLY \$7.50 EACH!



LIGHTHOUSE UMBRELLA

Keep the raindrops from falling on your head this spring while proclaiming your love of lighthouses with this high quality nylon umbrella with telescoping handle. This eye-catching umbrella folds neatly into a convenient size that will fit into most shoulder bags and backpacks.

Item #: 2479 Price: \$20.99 (+S&H)

PONCE INLET LIGHTHOUSE COASTER SET

Avoid damaging water stains on your furniture with this beautiful set of four coasters featuring a colorful collage of lighthouse images including the exterior of the tower with the inlet in the background, the interior spiral staircase, and a close up of the lighthouse lantern room.

Item #: 1276 Price: \$19.95 (+S&H)





CUSTOM PONCE INLET LIGHTHOUSE HOODED SWEATSHIRT

Keep warm on chilly spring nights with this lightweight hooded pullover featuring the name of the Ponce Inlet Lighthouse and the year the Light Station was founded in 1887. Available in blue, grey, and red in sizes small through xx-large. Please indicate desired color and size when ordering. Add \$1.00 for xx-large.

Item #: 4282 Price: \$23.99 (+S&H)

The Ponce de Leon Inlet Lighthouse Gift Shop specializes in unique lighthouse and nautical themed gifts for people of all ages. Our wide selection includes clothing, house wares, toys, and collectibles. Customers may also shop online at LIGHTHOUSELOCKER.ORG. Please contact the Gift Shop at (386) 761-1821 ext. 21 or via email at gifthop@ponceinlet.org for more information.



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Chase the chills away with this wonderful throw blanket featuring the historic



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