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# Significant Lighthouses In Mediterranean Sea



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**ΠΤΥΧΙΑΚΗ ΕΡΓΑΣΙΑ**

**ΕΠΙΒΛΕΠΩΝ ΚΑΘΗΓΗΤΗΣ:  
ΠΑΝΑΓΟΠΟΥΛΟΥ ΜΑΡΙΑ**

**ΘΕΜΑ  
*Significant Lighthouses In Mediterranean Sea***

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<b>2</b>				
<b>3</b>				
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**Ο Διευθυντής Σχολής:**

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# 1. ABSTRACT

Historic Lighthouses constitute a significant part of Maritime Cultural Heritage and their study reveals much information regarding the evolution of navigational technology. The open fire of the first lighthouses that were constructed during antiquity in the dangerous passages of eastern Mediterranean, was gradually transformed to candles, oil lamps, acetylene lamps and finally the Fresnel optic system. The historic Lighthouses of nowadays are dated during the 18th and 19th century and in addition to their role as navigation aids, reflect all constructional achievements, since they had to be resistant to the extreme environmental conditions to which they were permanently exposed. Their simple architecture usually depicted the need of standardizing their characteristics, taking into account the inaccessibility of the areas to which they were located, the morphology of the subground, as well as the characteristics of their light (luminous range, focal height). They mainly concerned stone or brick masonry with lime based mortars and lime renders and plasters, while metallic beams and other connections have been also used for the construction. Nowadays, due to the technological progress, their significance as navigational aids has been depreciated and most of them have been abandoned. They confront severe pathology symptoms due to the extreme environmental conditions and the difficulties arisen during their preservation (lack of policy for the proper restoration and treatment as naval monuments, inaccessibility, high maintenance cost). In this paper, a survey of the cultural significance of Mediterranean Lighthouse is presented, giving more credit to Greek Lighthouses. All proposals are based on the contemporary principles of restoration and rehabilitation of monuments, since Lighthouses constitute a significant part of the common European Industrial Heritage and for their preservation, their proper maintenance is necessary.

## 2. INTRODUCTION OF LIGHTHOUSES IN MEDITERRANEAN SEA

A **lighthouse** is a tower, building, or other type of structure designed to emit light from a system of lamps and lenses, and to serve as a navigational aid for maritime pilots at sea or on inland waterways.

Lighthouses mark dangerous coastlines, hazardous shoals, reefs, and safe entries to harbors, and can assist in aerial navigation. Once widely used, the number of operational lighthouses has declined due to the expense of maintenance and use of electronic navigational systems. Before the development of clearly defined ports, mariners were guided by fires built on hilltops. Since raising the fire would improve the visibility, placing the fire on a platform became a practice that led to the development of the lighthouse. In antiquity, the lighthouse functioned more as an entrance marker to ports than as a warning signal for reefs and promontories, unlike many modern lighthouses. We are going to emphasize on these specific lighthouses.

Across The Mediterranean Sea:

- Lighthouse of Alexandria(Egypt)
- Marbella
- Cape St Vincent
- Livorno(Italy)
- Tower Of Hercules

## 2.1 Lighthouse Of Alexandria

Known as the Pharos, The Great Lighthouse of Alexandria, it is one of the Seven Wonders of the Ancient World. The story of the Pharos starts with the founding of the city of Alexandria by the Macedonian conqueror Alexander the Great in 332 B.C.. Alexander started at least 17 cities named Alexandria at different locations in his vast domain. Most of them disappeared, but Alexandria in Egypt thrived for many centuries and is prosperous even today. Alexander the Great chose the location of his new city carefully. Instead of building it on the Nile delta, he selected a site some twenty miles to the west, so that the silt and mud carried by the river would not block the city harbor. South of the city was the marshy Lake Mareotis. After a canal was constructed between the lake and the Nile, the city had two harbors: one for Nile River traffic, and the other for Mediterranean Sea trade. Both harbors would remain deep and clear and the activity they allowed made the city very wealthy. **Alexander died in 323 B.C. and the city was completed by Ptolemy Soter, the new ruler of Egypt. Under Ptolemy the city became rich and prosperous. However, it needed both a symbol and a mechanism to guide the many trade ships into its busy harbor. Ptolemy authorized the building of the Pharos in 290 B.C., and when it was completed some twenty years later, it was the first lighthouse in the world and the tallest building in existence, with the exception of the Great Pyramid. The construction cost was said to have been 800 talents, an amount equal today to about three million dollars.**

The lighthouse's designer is believed to be Sostratus of Knidos (or Cnidus), though some sources argue he only provided the financing for the project. Proud of his work, Sostratus desired to have his name carved into the foundation. Ptolemy II, the son who ruled Egypt after his father, refused this request, wanting only his own name to be on the building. A clever man, Sostratus supposedly had the inscription:

SOSTRATUS SON OF DEXIPHANES OF KNIDOS ON BEHALF OF  
ALL MARINERS TO THE SAVIOR GODS

Chiseled into the foundation, then covered it with plaster. Into the plaster was carved Ptolemy's name. As the years went by (and after both the

death of Sostratus and Ptolemy) the plaster aged and chipped away, revealing Sostratus' dedication.

The lighthouse was built on the island of Pharos and soon the building itself acquired that name. The connection of the name with the function became so strong that the word "Pharos" became the root of the word "lighthouse" in the French, Italian, Spanish and Romanian languages.

There are two detailed descriptions made of the lighthouse in the 10th century A.D. by Moorish travelers Idrisi and Yusuf Ibn al-Shaikh. According to their accounts, the building was 300 cubits high. Because the cubit measurement varied from place to place, however, this could mean that the Pharos stood anywhere from 450 (140m) to 600 (183m) feet in height, although the lower figure is much more likely.

The design was unlike the slim single column of most modern lighthouses, but more like the structure of an early twentieth century skyscraper. There were three stages, each built on top of one other. The building material was stone faced with white marble blocks cemented together with lead mortar. The lowest level of the building, which sat on a 20 foot (6m) high stone platform, was probably about 240 feet (73m) in height and 100 feet (30m) square at the base, shaped like a massive box. The door to this section of the building wasn't at the bottom of the structure, but part way up and reached by a 600 foot (183m) long ramp supported by massive arches. Inside this portion of the structure was a large spiral ramp that allowed materials to be pulled to the top in animal-drawn carts. On top of that first section was an eight-sided tower which was probably about 115 feet (35m) in height. On top of the tower was a cylinder that extended up another 60 feet (18m) to an open cupola where the fire that provided the light burned. On the roof of the cupola was a large statue, probably of the god of the sea, Poseidon.

The lighthouse was badly damaged in the earthquake of 956, and then again in 1303 and 1323. Finally the stubby remnant disappeared in 1480, when the then-Sultan of Egypt, Qaitbay, built a medieval fort on the larger platform of the lighthouse site using some of the fallen stone.



It was constructed of a light-colored stone that was reinforced with molten lead. This would have protected the walls from crashing ocean waves (this also helped it to become one of the longest-standing monuments of the list of wonders). It stood in three levels: a lower square level with a strong core to provide support, an octagon-shaped center level, and a circular level on top. At the peak of the lighthouse was a mirror that reflected the light of the sun at day, and a fire was lit each evening. In the first century AD, the Pharos was believed to have become more than merely a navigational aid for sailing ships. Stories and legends claim that the lighthouse was used to set enemy ships ablaze in the harbor. Though many scholars refute this possibility due to technological limitations, recent experiments have shown that fires could have indeed been started using the reflective powers of the mirror and the sun (though probably not in as dramatic a fashion as reported by the ancients).

## 2.2 Marbella(Spain)

Marbella Lighthouse was originally built in 1864, stands at a whopping 29 metres tall and is situated surprisingly close to the boardwalk.

The lighthouse is situated just off one of the busiest beaches in Marbella, El Faro Beach, a popular spot due to its central location directly in front of the city centre. If you speak Spanish, you won't be surprised to learn that the lighthouse is on El Faro Beach, as "faro" means "lighthouse" in Spanish. The lighthouse stands right on the very steps to the beach and tourists can't fail to spot it. For those travelling to the beach by road, either the N-340 or the AP-7 (a toll road), will lead directly to it and is well signposted. Images of the lighthouse show its surprisingly central location.



The history of the Marbella area is research reveals that there has been a settlement in Marbella since Phoenician times and when the Romans were in charge, it was called Salduba. However, it was the Islamic rulers who built the castle and city walls and named it Marbil-la which triggered the origins of the modern city which stands today.

The Spanish claimed back Marbella in 1485 and it began to flourish and develop, reaching a population of 135,000 which it stands at today.

The lighthouse project which was designed by leading engineer of the day, Antonio Molina, was given approval to go ahead in 1861, being given a budget of 79,562 reales (the currency of the day).

Built in a spot 200 metres west of the town in a spot known as The Barronales, the Marbella beacon was first lit on 15 March 1864. At this time olive oil wicks were used and it had a range of 12 miles.

Improvements continued to be made in the lighthouse equipment until 1944, when it was finally converted to an electrical structure, with a 200W lamp.

The lighthouse is not simply a decorative structure; it's still in full working order and serves a functional purpose on the rocky Marbella coastline.

The light is now controlled by photoelectric cells, being both automatic and electric. The signal flashes twice every 14.5 seconds which can be seen at a distance of 22 nautical miles (41 km or 25 miles).

It's not currently open to the public, nor is it inhabited, but visitors can admire the impressive structure from the outside at close quarters.

The lighthouse is a traditional conical shape which was originally attached to the lighthouse keeper's cottage. It features two lamps of 1500 W, and despite being made from concrete, is an attractive landmark. The lamps are operated via a computerised remote control and the warehouse, engine room and workshop are situated in a separate building. The lighthouse currently stands right next to the boardwalk, as well as being adjacent to the beach, and the light flashes are carefully directed so they don't disturb any of the nearby residents.

## 2.3 Cape St Vincent(Portugal)

This cape is the southwesternmost point in Portugal. It forms the southwestern end of the E9 European Coastal Path, which runs for 5,000 km (3,100 mi) to Narva in Estonia. Approximately six kilometers from the village of Sagres, the cape is a landmark for a ship traveling to or from the Mediterranean. The cliffs rise nearly vertically from the Atlantic to a height of 75 meters. The cape is a site of exuberant marine life and a high concentration of birds nesting on the cliffs, such as the rare Bonelli's eagle, peregrine falcons, kites, rock thrushes, rock pigeons, storks and herons.

Cape St. Vincent was already sacred ground in Neolithic times, as standing [menhirs](#) in the neighborhood attest. The ancient Greeks called it Ophiussa (Land of Serpents), inhabited by the Oestriminis and dedicated here a temple to Heracles. The Romans called it *Promontorium Sacrum* (or Holy Promontory). They considered it a magical place where the sunset was much larger than anywhere else. They believed the sun

sank here hissing into the ocean, marking the edge of their world.<sup>1</sup> According to legend, the name of this cape is linked to the story of a martyred fourth-century Iberian deacon St. Vincent whose body was brought ashore here. A shrine was erected over his grave; according to the Arab geographer Al-Idrisi, it was always guarded by [ravens](#) and is therefore named by him [الغراب كنيسة](#) (*Kanīсах al-Ghurāb*, meaning "Church of the Raven"). King Afonso Henriques (1139–1185) had the body of the saint exhumed in 1173 and brought it by ship to Lisbon, still accompanied by the ravens. This transfer of the relics is depicted on the coat of arms of Lisbon.

The area around the cape was plundered several times by pirates from France and Holland and, in 1587, by Sir Francis Drake. All existing buildings—including the *Vila do Infante* of Henry the Navigator—fell into ruins because of the Lisbon earthquake of 1755.

The Franciscan friars who cared for the shrine stayed on until 1834, when all monasteries were disbanded in Portugal.

The present lighthouse is 24 metres (79 ft) high and was built over the ruins of a 16th-century Franciscan convent in 1846. The statues of St. Vincent and St. Francis Xavier had been moved to church of Nossa Senhora da Graça on Point Sagres 3 kilometers (1.9 mi) away.

This lighthouse, guarding one of the world's busiest shipping lanes, is among the most powerful in Europe (the most powerful being Phare du Creach on the French island of Ushant, off the coast of Brittany); its two 1,000 W lamps can be seen as far as 60 kilometers (37 mi) away.

Passing Cape St. Vincent has always been a challenge for vessels from the Levant, due to the confluence of the different regimes of wind and currents that occur there. For this reason, we have considered the need to point this site browsers.

In the sixteenth century, one of the obligations that the monks of the Convent Cape had, in exchange for the actual donation of houses and strength, was to maintain a beacon on the tower, "to rescue and guide those who come to Cape St. Vincent," as requested by Don Manuel I. The first lighthouse was definitely a fire protected and installed in the tower, as the earliest forms of maritime signaling devices, often maintained by fishing communities.

The gradual need to reach a greater distance was followed by technological development, and headlights utilize power increasingly powerful light. In 1819, Augustin Fresnel developed lenticular devices consisting of concentric prismatic lenses that allowed the rays of light refracted and irradiated in the prisms are assembled into a single powerful beam. Later focal length lenses were built, which means that the light beam sent arrive at a greater distance. These lenses of large aperture and short focal distance are the larger ones ever built, installed only about two dozen large coastal lighthouses worldwide.

The current lighthouse of Cabo de San Vicente is named after Don Fernando I. It was commissioned by Dona Maria II and in 1846 became operational, this fact was inscribed on a tombstone that says: " This lighthouse was built by order of Mrs. Dona Maria II and Dir of the Kingdom of the headlights is Brigadier General ACCP Furtado in October 1846. " For many years the lighthouse was abandoned and even reached a deplorable state. In 1897, given the precarious conditions of the lighthouse and the consequent low yield of the light, you started work on the dismantling of the existing flashlight, and were it made profound works of improvement and restructuring of the tower, which was amended and increased by 5.70 meters high.



The works were completed on March 25, 1908. The lighthouse became operational with the Fresnel unit which replaced the previous, apparatus or third-order reflection catóptrica only six mile range, which was used in the lighthouse Montedor in Vila Praia de Ancora. The device installed, a Fresnel lens with a focal length of 1330mm, is currently the largest

optical headlight headlights all that exist in Portugal and one of the ten largest in the world. It consists of three optical panels 8 square meters and 3.58 meters high, floating over 313 kg of mercury. The light source that was originally installed in this unit was a candlestick constant oil level with five wicks and later was replaced by incandescent lamps oil vapor . The optical rotation was made by a mechanism similar to the cuckoo clock . In 1914 it was placed a beep and in 1926 the lighthouse was electrified , connected to the mains for power . In 2001, installed a programmable device for optical rotation.



There are only nine Fresnel optical devices that operate worldwide . The lighthouse of Cabo de San Vicente is 28 meters high , with a range for air traffic over 86 meters high, and a range of horizontal distance for navigation of 32 miles. Since 1927 belongs to the Directorate General of Lighthouses , an agency of the Directorate General of the Maritime Authority Service at the Ministry of National Defence of the Portuguese Navy .

## 2.4 Livorno(Italy)

The Middle Ages are usually referred to as a dark period in history, but that it is not completely true. In those centuries the arts started to flourish, which led to the era of the Renaissance. Painting, poetry, architecture, and the beautiful Gothic cathedrals are examples of this era. Also, many

lighthouses were erected along the coasts of Italy in the same era. The towers erected by the Roman conquerors along the coasts of Italy, France, and South England have now disappeared, with a few exceptions. Italy was not yet a nation, but it was divided into many small regions, and every town having a harbor had its own light. The lighthouse of Livorno is one of them, and it has a long history. Around the year 1200 the town of Pisa, not far from Livorno, was one of the most important four Seafaring Republics of its time, together with Genoa, Venice, and Amalfi. They were all fighting among themselves. At the same time, they had a good fleet of commercial ships and were all trading inside the Mediterranean Sea and as far as the Oriental coasts where they could find precious silk and fine spices. Pisa is not really by the sea. It lies on the Arno, a navigable river, and in order to defend the town, a tower was built in Porto Pisano at the mouth of this river. But soon sea erosion and the sand made useless both the harbor and the light. After this, around 1200, a new lighthouse was erected on the Meloria rocks, four miles off the coast, as a sentinel and an aid to navigation, to prevent wrecking on those dangerous rocks. That was enough for the times, but in 1284 the fleet of the Republic of Genoa fought against the fleet of Pisa in front of the Meloria rocks. Genoa not only defeated Pisa but also destroyed the lighthouse. A new lighthouse was built in 1598 by the Grand Duke Ferdinando I de' Medici, a strong family ruling Florence and later all Tuscany, including Pisa. But the lighthouse was demolished during a storm. A third one was erected in 1712 under the reign of Cosimo III de' Medici, and it is still standing but not working. This tower has a very distinct shape: it is made of four pillars joined by a Gothic arch over which stands the tower itself. It was built this way to let the waves pass between the pillars. It was not until 1867 that a red metal tower, 20 meters high, was located near the historic lighthouse to mark this dangerous spot. The appearance of the first Meloria light is not known. There are no records of it, but it should have been a stone tower, like most of the period, lighted by a wooden or oil fire on top, with a glass lantern. The medieval glass was thick and dull. The glass was necessary to protect the light from the wind and needed continuous cleaning because of the salty mist. It is certain that the keepers were monks, the only ones able to live in such a lonely place and who received provisions and fuel for the light by boat. The last keeper was friar Galgano of the

Augustinian order to whom the authorities allowed 120 liters (about 25 gallons) of oil every three months. But he was not allowed to fish, as the oil was not to be used for cooking, but only for the light.

In the 14th century, from 1303 and 1305, the Republic of Pisa decided to erect a new and bigger lighthouse near the small medieval village of Livorno, its own possession, on a rocky corner at the west low side of the entrance of what was at the time a natural harbor. It was a moment of peace among Pisa, Genoa, and Florence, so there was time to think about the erection of a monument, which took time and money. Here is another mystery. How much did construction cost? But after such a long time, many wars at that time and a war in more recent times, ancient documents are no longer traceable. A genial sculptor and architect, Giovanni di Nicola Pisano was called to design the lighthouse, which was soon called Greater Lantern. He followed the building of the lighthouse step by step. First a polygonal base was built with 13 sides. On top of this was a tower, finished with a fortified terrace, and then a second tower, a little smaller, also finished with a fortified terrace, and then the lantern. At the lower stage of the smaller tower, there were the keeper's quarters and storage rooms. The lighthouse appears to be made of two conical sections, but it is really made of seven cylinders that are placed one upon the other, having diameters slightly decreasing up to the top. This gives the illusion of a curvilinear taper of great effect. The stones for the whole construction were taken from the nearby cave of San Giuliano and taken to Livorno with a great deal of hard work. At the base there is a small entrance door, on top of which was engraved the cross symbol of the town of Pisa, which later was suppressed and replaced by the lily of Florence when the de' Medici family also ruled Pisa. Inside there was a wood ladder that, in case of danger, could be taken off; so the tower was also a fortress. Many black rocks were put at the base of the lighthouse to protect it from the rough sea. The lantern was lighted at first with oil lamps, and then with the passing of time, the system of illumination was changed to compressed fuel oil. In 1841 a first-order Fresnel lens was installed and lit with acetylene gas. Finally, the tower was electrified at the end of the 1800s. Nowadays the light is automatized, lighted by a 1,000-watt halogen bulb. There are no more keepers living inside. Unfortunately, there are no records of the keepers who managed the light, so this story also is lost. When finished, the tower was considered such a

great expression of the human genius that it was admired by the great poet Dante Alighieri, who wrote about it in the fifth chapter of the Purgatorio book in his poem *La Divina Commedia* with these words: “Sta come torre ferma che non crolla—giammai la cima per soffiar di venti” (“Stands like firm tower that the summit does not fall when the strong winds blow”). In fact this lantern faced six stormy centuries until it met defeat at the hands of man, as we will see later. Another poet, Francesco Petrarca, praised the Greater Lantern in his poem *Itinerario Siriaco* (Syriac Itinerary) as “validissima, dal cui vertice ogni notte la fiamma indica ai naviganti il più sicuro lido” (“the most valid, from whose top every night the flame shows the sailors the safe shore”). Another writer, Goro di Stagio Dati, in his book *The Florentine Chronicles* mentions the tower as “one of the best jobs made by the whole Humanity,” and so did many other writers and poets of the same and later centuries. The great astronomer Galileo Galilei used to make his experiments on the top of the tower.

The lighthouse of Livorno was also impressed in some gold coins, which are still preserved in the Civic Museum of Pisa. Pisa started again to fight, first with Genoa. Around 1406 the town lost its power as a Seafaring Republic after a war with Florence, and it became a possession of the de’ Medici family, who bought the town and harbor for 100,000 florins. Cosimo I de’ Medici, a great ruler, realized that Livorno was in a strategic position to become a very important channel of trade in the Mediterranean Sea for Florence, which was inland and was a growing town expanding its traffic all around the known world. So he ordered many works in the harbor to make it more efficient. And the lighthouse was still standing. In 1583 the Grand Duke of Tuscany, Ferdinando I de’ Medici—who, as already mentioned, had ordered a new lighthouse built on the Meloria rocks—made major changes in the harbor, building at the base of the lighthouse a dock yard and a quarantine station for the seamen coming from the Mediterranean and Oriental coasts where there could have been epidemic diseases. It is said that the job was completed in only

five days, because 5,000 men were put to work.



Anyway, this changed the appearance of the lighthouse, which was now enlarged at the base by the new buildings, which were still standing by the early 1900s, but now have all disappeared. The development of the harbor went together with a major town-planning of Livorno, whose original plan was designed by the architect Bernardo Buontalenti, who encircled the town with pentagonal-shaped walls. A major change in the traffic of the harbor was made by a law of March 16, 1565, to control the collection of maritime customs. The departing ships had to stay in line along the wharf, and the loading of cargo was made from smaller boats whose loads were strictly controlled by the custom authorities to make sure the right duties were paid. In 1587 Ferdinando I de' Medici changed Livorno into a free port, which attracted many commercial vessels from everywhere, increasing the traffic. In these centuries, Livorno was also a military harbor, and the lighthouse saw the Medicean galleys leaving to chase into the Mediterranean sea the dangerous Saracen pirate ships that in these centuries were attacking and plundering the Italian coasts. By the time of the last of the de' Medici family, in 1736, Livorno had obtained the qualification of town and had more than 30,000 inhabitants, a great harbor, and a lighthouse that was the oldest along the coasts of Italy, older than the tower of Genoa, built in 1543. In 1737 the dynasty of Lorena started to rule Tuscany. The first ruler was the Grand Duke Francesco I, who enlarged the harbor, which attracted ships from everywhere and became more and more a strong trading center both for

goods in transit and in storage, owing to the port's security, provided in part by its lighthouse. This dynasty ruled for more than a century, during which the town was occupied by French, Spanish, and English troops, but survived anyway. It was only in 1860, after the independence wars, that the history of Livorno became part of the history of Italy, a newborn nation, and the tower was inserted into the list of the Italian lighthouses with the number 1896. Now we have to fly through the centuries, and arrive at a sad moment in our history. It was WWII. In 1943 the German troops occupied the north of Italy, while the American armies came up from the south. Rome was already free and Florence was nearly so. The harbor and the town of Livorno had been bombed many times by the Americans, but the lighthouse did not suffer any damage. Anyway, its light had been extinguished for a long time to avoid the possibility of a landing near the harbor. It came time that the German troops decided to flee from the Americans, who were drawing nearer. But before leaving, the Germans went to the ancient lighthouse and committed the most terrible insult that could have been made to such an ancient monument. On July 19, 1944, they destroyed it with a charge of dynamite to the foundations, and the old tower collapsed. For centuries it had faced different rulers and the forces of nature, but in a short time it succumbed to a group of men. The ruins were left in place, as nobody wanted to remove them until the mid-1900s when the population of Livorno wanted its lighthouse again, not a new one, but "their lighthouse." The chairman of the local Chamber of Commerce and Industry of Livorno, Mr. Graziani, in 1952 opened a public subscription that in short time reached two million lira, a lot of money for the time, for the reconstruction of the lighthouse. Additional money was found, and work started in June 1954, ten years after the destruction. The job was carried out by the Ghezzi company which, with great faith in what they were doing, followed the original plans of 1303 of Giovanni Pisano, employing 90 percent of the original material and, when missing, using new stones taken from the original cave of San Giuliano. In two years the tower was ready, and the new lighthouse of Livorno had the same appearance as the old one. It was a miracle. On September 16, 1956, there was the great opening of the lighthouse in the presence of the whole population, as well as higher Italian officials, among them the president of the Italian Republic, who then was Mr. Giovanni Gronchi. A plaque was placed at the foot of the

tower to remember the event, and a few years later the lighthouse became a national monument. This majestic and elegant tower was back to life to stand, we hope, for some more centuries. My visit to the lighthouse was for me a great and exciting event. After special permission from the Navy—in Italy all the lighthouses are managed by the Navy and are considered military precincts and not open to the public—I entered the small door on top of which still stands the Medicean lily that was replaced in its original place. The wooden ladder does not exist anymore, and I started to climb the 224 stairs to reach the 11th floor at the top together with an old keeper, no longer at work, who was helping me. The tower lies at latitude 43°32'36"North and longitude 10°17'43" East and is 52 meters high, including the lantern, above sea level. The spiral stone staircase, 70 centimeters wide, is cut into the thickness of the internal wall and reaches first the inferior fortified round terrace, 80 centimeters wide, on top of which stands the second, smaller tower. At this floor there was the big room for the keepers and the storage. Now, on a table, are on display ancient tools used by the keepers in past times. Going up the stairs I saw small openings, also cut into the thickness of the wall, which allowed a view of the sea on one side and the country on the other side. In the space in the middle of the circular stairs, I could see the ancient weights of the clockwork system that in the past were used, attached to two chains, to manually rotate the lantern. Every few hours the keeper had to wind the system, as the lantern could not be stopped. It works now with a rotating optic that flashes four times every 20 seconds. Its beam can be seen for 24 miles. The plan of the lighthouse of Livorno as it was in 1841. From *The Book of the Italian Lighthouses* 1876. Arriving at the end of the stairs it was possible to reach the second terrace and then, after a few metal steps, the lantern room where the view was unbelievable, from the sea to the whole town. I was thinking back to the ancient times, when at the foot of the tower sailing ships of every kind were arriving and leaving with their loads of precious goods. The keeper showed me the page of an ancient log from the date of October 5, 1818, recording something strange that was seen from the tower: a vessel was burning outside the harbor. Men were sent in a boat by the port authorities to give help, but when they arrived they found a steamer coming from Naples, whose name was Ferdinando I, that ejected from its funnel a lot of smoke. It was the first steam boat ever seen.



## 2.5 Tower Of Hercules(Spain)

The Tower of Hercules is in fact a lighthouse, but one whose origins and physical existence date back to Roman times. The lighthouse stands on an elevated headland a short distance from the center of A Coruna city and its oldest sections date back 1900 years to the Roman occupation that expanded across most of Europe. It is still used for maritime signaling, hence it is testimony to the elaborate system of navigation in antiquity and it provides an understanding of the Atlantic sea route in Western Europe. The tower faces the Atlantic Ocean and stands approximately fifty seven metres (over 180 feet) high and literally looks like it has occupied this spot forever. Impressive is a word that can be quite adequately used to describe the "Torre de Hercules", it is massive, dominates its prominent position and becomes ever larger the closer you get to it. Visiting the tower is free and there is a large car park just below its sea facing site from which you walk two or three hundred metres to the lighthouse itself. If you want to enter the tower, climb its stairs and walk around its open turret there is a charge, but the panoramic views are spectacular and give you a great perspective on A Coruna and its

surroundings. It is definitely a "must see" tourist attraction of la Coruna.



The history of the Tower of Hercules involves a combination of myth and fact. The story that most would like to believe is that the mythical hero Hercules fought with, and eventually vanquished, a giant known as "Geryon". At the end of his battle, Hercules buried the giant's head and decreed that a town be built on that spot and so the Roman city of "Brigantia" (now A Coruna) came to be. Later the city became known as "Crunya". An alternative tale, this time a Celtic/Gaelic one from a much later period suggests that, from the top of the tower the land of Ireland could be seen and that the Galicians then travelled to Ireland and inhabited it. Obviously neither of the above are true.

In reality the Tower of Hercules has probably existed in some form or other from the second century onwards and inscriptions on the foundation base refer to a Roman engineer called "Sevius Lupus". References are also made to the Tower of Hercules as early as 415AD in

written texts.



It is highly likely that the original tower had an external access ramp and burned a wood fire, but in 1788, under the rule of King Carlos IV, a three year project was undertaken to build an enclosing facade around the structure and that is what can be seen now. Today, the tower is the oldest fully functioning lighthouse in the world and also a symbol of A Coruna that is synonymous with the province and appears on its heraldry. The architectural integrity of the property, in the sense of a structurally complete building, and its functional integrity are satisfactory. While the authenticity of the central Roman core is certain, the authenticity of the

building only makes sense when judged from the point of view of a technological property that has required numerous renovations and functional adaptations.

### 3. LIGHTHOUSES OF GREECE: AEGEAN ISLANDS

This page covers lighthouses of the many Greek islands of the central and eastern Aegean Sea. These islands fall into three broad groups. First, the Cyclades include a large number of smaller islands north of Crete and southeast of Athens. Second, there are the larger islands lying off the Turkish coast in the northeastern Aegean, including Lesbos, Chios, and Samos. Finally, the Dodecanese Islands include the large island of Rhodes and many smaller islands of the southeastern Aegean. The Cyclades and Dodecanese were formerly prefectures within the region of the South Aegean; Lemnos, Lesbos, Chios, Samos, and Ikaria are regional units (counties) within the region of the North Aegean. Crete has a separate page. The Sporades, islands located in the northwestern corner of the Aegean, are included on the Northern Greece page. Kithera and Antikithera, located at the southwestern entrance to the Aegean, are included on the Southern Greece page. The modern Greek nation is a relatively recent creation. After several centuries of rule by the Ottoman Turks, southern Greece won its independence in a bitter struggle during the 1820s. The new Greek nation controlled the Cyclades, but none of the other islands of the Aegean. They were added at various times, as indicated in the notes below for the different island groups.

The Greek lighthouses network is among the largest, most extensive and best organized in the world. With this scale, with so many islands and island groups, needed a marine lighting system for safe navigation. The usefulness of the development and operation of lighthouses seen from the great social work that: It contributes decisively to maritime safety guarding lives and floating means to steer the ship in the right paths and safe approach to ports. For each navy, "lighthouse" means hope, optimism and certainty of her route. It helps to avoid any destruction on 'accident or pollution of the marine ecosystem known to have devastating effects on coastal areas, tourism, fisheries and economic activity in general areas. The lighthouse keeper and Faroploia by their mission and their capabilities, officials collected shipwrecked vessels or towed unruly informing and assisting the competent authorities.

Finally, the importance of the presence of the lighthouse keeper in border areas has been and remains extremely important. The daily hoisting of the flag and the space control monitors are paramount national service.

### 3.1 Antikythera Lighthouse

On the southernmost cape of Antikythera is the Lighthouse of Cape Apolytaras. It was built in 1926, and is a noteworthy monument of modern architecture. It can be reached only by ship from the sea or on foot: there are footpaths to the lighthouse from Katsaneviana and Galaniana. The lighthouse, manned by lighthouse-keepers from 1926 until 1987, was subsequently left unmanned. In 2004, the Ministry of National Defence decided to renovate the structure and the lighthouse keepers returned, giving new life to this important monument. But this lighthouse has a lot of information to be unveiled, regarding a Russian officer:

One of the more fascinating relics associated with the legendary Nicolas Filosofov, the imperial Russian naval officer who ended his life as keeper of the Antikythera lighthouse, is a mysterious decoration in the shape of a gold and enamel cross depending from a crowned monogram. A photograph of the decoration was included in the calendar devoted to the Admiral by the Commune of Antikythera in 2009, and according to the caption it is “probably a medal dating from his service with the Foreign Legion”. If one thing is more certain than another, it is that the medal has absolutely no connection with the French Légion Étrangère.



The blind-stamp document which forms the background to the photograph lends a further layer of confusion to the mystery, since while it does indeed refer to a decoration, it's the wrong decoration. The text circling the blindstamp is in old-fashioned Russian and reads ПЕЧАТЬ ИМПЕРАТОРСКАГО ОРАЕНА СВЯТІЯ АННЫ – “Seal of the Imperial Order of Saint Anna”. The medals of this order, which

commemorated princess Anna Petrovna, daughter of Peter the Great, were indeed often awarded to members of the imperial household and their courtiers, which means that it might well have been at some point been acquired by Filosofov, perhaps even after the revolution. Unfortunately, the Cross of Saint Anna bears no resemblance whatsoever to the one illustrated!

There is in fact nothing about the decoration to suggest Russia. The inscription on the cross, “GUD/OG/KON/GEN”, is not in Cyrillic lettering and is certainly not Russian; if anything, it sounds Scandinavian. The real clue is the monogram, which consists of the entwined capital letters ‘C’ and ‘R’, with the Roman numeral ‘IX’ between them. The crown above the monogram suggests a regnant monarch, while the ‘R’ stands for either Rex or Regina; in other words, the decoration is associated with a monarch whose name began with a ‘C’ and who was the ninth of his dynasty to bear that name. Only one person fits the bill during the time period in question: King Christian IX of Denmark, who reigned from 1863 to 1906.

That clue was enough to identify the decoration as a Knight’s Cross of the Danish Order of the Dannebrog, while the inscription “Gud og Kongen” translates as “For God and King”. The identity of both the decoration and the recipient were formally confirmed by a letter from the Danish Royal Historiographer, Vingaard Jensen Knud Jesper, dated 29/3/2016: *“I am pleased to confirm that, according to our books, [Nicolas Filosofov] was awarded the Knight Cross of the Order of Dannebrog on the 19th of October 1903. He was then titled Lieutenant in the imperial Russian navy. No motivation for his decoration is mentioned in our books.”* But why and for what reason might a then relatively obscure Russian Naval Lieutenant have been presented with a Danish decoration in 1903? This was in fact a period of very warm and close relations between the courts of Denmark and Russia, for the emperor Nicolas of Russia was the grandson of Christian of Denmark. From the time of Nicolas’ childhood, the entire Russian imperial family would spend the summer as guests of his grandparents in the Danish royal palaces, a habit they kept up almost to the eve of the 1914 war. We know that the visit of summer 1903 was a particularly splendid one. It is therefore more than likely that Naval Lieutenant Filosofov was present on that occasion as part of the imperial entourage, possibly in the largely ceremonial role of one of the emperor’s ADCs; as such it would have been perfectly in accordance with the formal protocol and exchange of decorations current at the time for him to have been awarded the Dannebrog Cross. The event itself is no doubt of minor significance. Nevertheless, it illuminates the largely unknown early life and career of

Nicolas Filosofov, while it also confirms the hitherto unconfirmed speculation about his family's elevated social status in pre-revolutionary Russia.

### 3.2 Kavos Papa Lighthouse

The Lighthouse of Kavos Papas is situated on the southwestern cape of Ikaria. This UNESCO registered Cultural Heritage site belongs to the Greek government-Lighthouse Service of the Greek Navy.



Built between 1886 and 1890 by the French Company of Lighthouses during the Ottoman Empire, it lights one of the most difficult passages in the central Aegean, between Mykonos and Ikaria. It became operational for the first time on 20 May 1890 and joined the Greek lighthouses network on April 9, 1915 shortly after the Balkan wars. For many years, the lighthouse beam was generated using an oil burning system. In 1933, it began to operate with bulbs filled with petroleum vapor. The internal mechanism of the lighthouse is characterized by a clockwork system of rotating gears upon which is integrated the lightbeam..

During the Second World War, the lighthouse was converted into a garrison of the Italian Army and suffered damages in battles. The lighthouse was re-opened in 1945 with the temporary installation of an automatic acetylene torch, while work began on repairing the damage. The repair work was completed in intervals during 1949, 1958 and 1979, with the installation of new lighting equipment.

In 1980 the lighthouse was converted into an electric lighting system but kept the former oil system as a backup, until October 2000, when it was fully automated. The lighthouse beam height is approximately 75 meters and is visible from 25 nautical miles. The beam interval is a single

sweeping white flash every 20 seconds. The height of the cylindrical tower is 11 meters and access to the top is via an internal staircase of 32 stone and 21 metal stairs.

### 3.3 Chania Lighthouse

The lighthouse of Chania differs from others of its time and cannot be classified in any standard lighthouse category. The architecture reminds one of a **minaret**, and it does not include a lighthouse keeper sleeping quarters, given the fact that it is located in an inhabited area. It is 21 metres high, its beam could reach a distance of 7 miles, and it is one of the **oldest lighthouses of Europe**, if not of the entire world. Its foundations were laid by the Venetians on natural rock, circa between 1595 and 1601. Many of its characteristics remind one of the local, **Venetian** architecture. The material used for building the city walls was also used for the construction of the lighthouse, which has an octagonal base, a 16-corner middle section and another, circular section. The original Venetian lighthouse was built around the late 16th century to protect the harbour. A chain could be connected from the base of the lighthouse to the fortress of Firkas in order to close the harbour.



During the Turkish occupation the lighthouse fell into disrepair and was eventually rebuilt between 1824 and 1832 in the form of a minaret. The modern lighthouse is often referred to as 'Egyptian' because it was built

during a time where Crete was occupied by Egyptian troops who were supporting the weakening Ottoman Empire against the rebellious Cretans. The base of the lighthouse is still the original Venetian base although the Lion of St. Marc which was carved there has long gone. The 'Egyptian' lighthouse was leaning badly due to bombings during WWII and earthquakes but it was extensively renovated in 2005 and now looks as good as new. The lighthouse is located at the end of a long mole that protects the Venetian harbour from the sea. It is well worth walking all the way to the end of it as you get splendid views from the harbour. Unfortunately the lighthouse itself is closed so you can't go up the tower.

### 3.4 Grand Piston (Megalo Emvolo)

The lighthouse in Grand Piston of Thermaikos Bay was built in 1864 by the French Company of Lighthouses. The height of the tower is 10.5 meters and the height of focal plane is 32 meters. Located on the edge of the Naval Base of the Navy in Angelochori Thessaloniki and works with the beacon located on the opposite side of Thermaikos at the mouth of the Axios. Included in the Greek lighthouses network afterwards the Balkan Wars of 1912-13. The lighthouse was built by the French Company of Ottoman Lighthouses. He was made of solid brick, like the chimneys of the first industrial buildings in Thessaloniki. Before him, on the rocky coast, the period 1883-1885, German engineers built forts, after ordering the Ottomans. Then operated with fuel oil. After the First World War he joined the Greek lighthouses network. In German Occupation turned him into Pillbox, because of its strategic position on the hill in front of the entrance of Thermaikos Gulf. Beside him stands another of the five aft concrete they made then the Germans. This resulted to cause the bombardment by Allied planes that heavy lavosan monument and stopped operation. But in 1948, the lighthouse was repaired and reopened. This time it was for the fuel acetylene and passed to the automation era. In 1963 the lighthouse passed the era of electricity and light dawned the night at a distance of 17 nautical miles. But the session was brief. In 1998 it was designated a listed monument newest industrial heritage.



The lighthouse is one of the 21 lighthouses offered hospitality executives navy and their families during the summer vacation. The lighthouse is manned by a lighthouse keeper. It has 1 bedrooms with a total of beds 4 double beds, kitchen, bathroom. The water features are of benefit. The condition of the building is very good, the surroundings are good, but not ideal for swimming. The distance from residential area is 0.5 km. And the road is passable by car. The lighthouse has a TV, fridge, oven and the necessary utensils.

### 3.5 Lighthouse of Fykiotrypas

The lighthouse monument Fykiotrypas exemplifies lighthouses in the northern Aegean and the coast of Asia Minor, one of the few surviving, made during the eighth decade of the 19th century, in order to facilitate the approach to the port of Mytilene and the navigation in the Strait between Lesvos and Asia Minor coast. It is a small building, a total of about 25 square meters, situated at the extreme point of the island where the ancient Mytilene was built, on a sloping rock with petrified form stranded vessel. With panoramic views to the north, east and south of the lighthouse Fykiotrypas is another hallmark of Mytilene. For this purpose and presented to dozens of postcards of Mytilene before the liberation of the island and beyond. He has also painted and Theophilos Hadjimichael. The Culture Ministry declared monument.



During the Nazi occupation it was used as a military outpost. And is also a monument of national resistance in Lesbos since the Nazi occupiers put the corpses of the executed militants in sacks with a large stone, and after the tide brought them to an adjacent German motorboat or requisitioned fishing and flying (!) In the sea off "Fykiotrypas". After the Civil War until the mid-1960s, on the site of the lighthouse housed the System Seascout Group of Mytilene. Since the mid-1960s and for reasons mostly defense shield in the region, the lighthouse was delivered to the Army, but the Scouts of Mytilene always related to space. Indeed, the summer of 1974 and after the Turkish invasion of Cyprus, scouts helped in a very short time conversion of the lighthouse military outpost. After 1974 and for many years, the lighthouse of Fykiotrypas used as a military outpost as the time conditions and defense needs imposed until the mid-1980s, for reasons that had to do with the inertia of the building, it can abandoned. The lighthouse was recently repaired with financing the current general secretariat Aegean and Island Policy. Already not the local Scout movement, funded by the prefectural authorities of Lesbos and the general secretariat of the Aegean and Island Policy Ministry of Infrastructure, Transport and Networks, turned the lighthouse building in "green" building. Individually ie energy, using renewable energy sources (solar arc) and cistern rainwater to meet cleaning needs, the lighthouse of Fykiotrypas.

## 4. Web Cobsulted

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