

Prior to 1789, during the colonial period, each colonial government determined the need for a lighthouse in their colony, financed its construction, and oversaw its operation. Twelve colonial lighthouses remained in the hands of the individual states throughout the period of confederation with additional lighthouses being erected. On August 7, 1789, President George Washington signed the ninth act of the U.S. Congress (1 Stat. 53) which provided that the states turn over their lighthouses, including those under construction and those proposed, to the central government. In creating the U.S. Lighthouse Establishment, aids to navigation became the responsibility of the Secretary of the Treasury.

Initially Secretary of the Treasury Alexander Hamilton reviewed contracts and the appointment of keepers before sending these documents to President Washington for his signature. In 1792 Hamilton turned over the administration of aids to navigation to the Commissioner of Revenue until Albert Gallatin became Secretary of the Treasury. Gallatin kept control of lighthouses for nearly all of his two terms in office when this responsibility went back to the Commissioner of Revenue. The Commissioner retained this duty until the office was abolished in 1820. At that time, Stephen Pleasonton, Fifth Auditor of the Treasury, was assigned the responsibilities of the Commissioner. The administration of lighthouses on the local level was done by the collector of customs.

For 32 years Pleasonton administered the U.S. Lighthouse Establishment and the number of lighthouses and lightships grew dramatically. In 1822 there were 70 lighthouses in the country. By 1842 the number had increased to 256 lighthouses and 30 light vessels. Ten years later that number had increased to 331 lighthouses and 42 lightships. Little technical progress was made during his administration. Once Pleasonton had adopted a way of operation or a technical development, he resisted changes or innovations. For example, when he assumed his new responsibilities, lighthouses were lit with the Argand lamp and parabolic reflector system. When French scientist Augustin Fresnel invented a lens in 1822 which produced a light infinitely superior to the system used in American lighthouses, Pleasonton resisted testing the new lens until forced to do so by Congress in the 1840s. After the highly successful test, the lens was not adopted in this country until the administration of aids to navigation was taken out of Pleasonton's hands and assigned to the U.S. Lighthouse Board.

For the last decade or so of his control of lighthouses, Pleasonton was under near-constant attack by shippers, navigators, chambers of commerce, and the Blunt brothers who issued the American Coast Pilot, the navigator's bible for sailing in American waters. They complained of the poor quality of America's lighthouses, especially the lights. In 1837 when Congress questioned the need for funding a large number of new lighthouses, a board of Navy commissioners was appointed to examine the sites of proposed lighthouses and see if these aids to navigation were really necessary. After careful study, the commissioners

recommended dropping 31 of the proposed lighthouses.

In the following year, Congress divided the country into eight districts including two for the Great Lakes. A naval officer assigned to each district examined the condition of current lighthouses as well as selected sites for new ones. The officers found that the condition of lighthouses ranged from good to terrible. Although they reported much faulty construction, an inadequate lighting system, and that many lighthouses were poorly placed, Congress took no immediate action. In 1838 Congress began to give the Army Corps of Engineers an increasing role in selecting the sites, constructing, and lighting lighthouses. An inventory was published and distributed to mariners in the form of an annual Light List.

Finally in 1851, complaints regarding the country's system of aids to navigation grew so intense that Congress ordered a sweeping investigation of the country's aids to navigation, and appointed, what we would call today, a "blue ribbon panel" to conduct the investigation. The panel consisted of distinguished military officers and civilian scientists; their investigation was broad and thorough, not only analyzing and criticizing the current state of aids to navigation, but also offering detailed recommendations to cure the problems. Surveys of ship's captains who sailed up and down the coasts were conducted. All findings were compiled into a report that made specific recommendations for improvements.

In 1852 Congress passed legislation (10 Stat. 119, approved August 31, 1852) to establish a Lighthouse Board that was essentially composed of those who had overseen the earlier investigation. The appointment of these experienced, knowledgeable men to the Board attracted others of similar quality to lighthouse duty, both on the board and in district offices. The country was organized into 12 lighthouse districts, each having an inspector (a naval officer) who was charged with building the lighthouses and seeing that they remained in good condition and that the lens was in operation. After a few years the inspectors became overloaded with work and an engineer (an army officer) was appointed to each district to tend to the construction and maintenance of lighthouses.

The Lighthouse Board moved quickly in applying new technology, particularly in purchasing and installing new Fresnel lenses and constructing screwpile lighthouses. The Board also oversaw the construction of the first lighthouses on the west coast. It was a difficult period for the Lighthouse Board, but it methodically went about getting its program started and underway. By the time of the Civil War, all lighthouses had Fresnel lenses.

The role of the local collectors of customs in connection with lighthouses declined. In time, all duties regarding aids to navigation were taken from them. The Board demanded that only those who could read were to be appointed as

keepers in order that they be able to read their written instructions. These instructions were detailed and covered everything possible about the operation of lighthouses, leaving little discretion to the keeper. The Board struggled to eliminate politics from its activities, and slowly the organization became a professional career agency, helped greatly by the Civil Service Reform Acts of 1871 and 1883. Keepers became civil service employees in 1896. Most important, the Board was constantly mindful of advancing technology and took advantage of new types of lighthouses, buoys, or fog signals, as well as improvement in lighthouse optics. Over the next five decades several advances in lighthouse construction technology took place including the development of the exposed screwpile lighthouses, exoskeleton lighthouses, waveswept interlocking stone lighthouses, iron caisson lighthouses, and breakwater lighthouses.

In the 1850s the Board prescribed color schemes for the buoys, as well as range lights and day markers; and the buoy system was standardized. Classification systems were also developed to mark the nation's waterways. Iron buoys were introduced to replace the more expensive copper-clad wooden buoys. The Lighthouse Board also began printing changes made in aids to navigation as a Notice to Mariners.

Several advances in the technology of fog signals were made during the 1850s. In 1851, an experimental air fog whistle and reed horn was installed at Beavertail Lighthouse at the entrance to Narragansett Bay, Rhode Island. At first this sound signal was powered by a horse-operated treadmill and later by an internal combustion steam engine. Around 1851, mechanically-rung fog bells were introduced. The striking mechanism was governed by a weight attached to a flywheel, and later internally run by clockworks. The strokes of the fog signals were timed deliberately to afford each signal a unique sound characteristic. The bell signal was gradually replaced by three variations of that instrument. The first was an ordinary locomotive whistle, enlarged and modified and blown by steam from a high-pressured tubular boiler. The second was a reed-trumpet, and in 1866 the third variation, a siren-trumpet. Although the fog bell signal was still used for warning vessels over short distances, other fog signals started to supersede the smaller bell signal. Bells were also used on buoys; later whistling buoys were invented by J. M. Courtenay and were first in use in 1876. The first gas-lighted buoy was installed in 1882. The gong buoy was invented in 1923.

In 1886, a new technology was tested in the illumination of the Statue of Liberty--electricity. The electrical lighting of the statute, under the Lighthouse Board's care from 1886 to 1902, marks the beginning of the "modern age" in lighthouse illumination. In 1900, the Lighthouse Board began converting lighthouses to electric service; however, because of the lack of direct access to power lines, the conversion came about slowly.

Over its 58 years of service, the Lighthouse Board accomplished all it set out to do, and passed on to its successor a first-rate agency, both in terms of personnel and aids to navigation. The Board had presided over an enormous increase in numbers of aids. By 1910 there were 11,713 aids to navigation of all types in the country. At this time, the Board had become cumbersome, and Congress wanting to give a civilian aura to the administration of aids to navigation, abolished the Lighthouse Board and created the Bureau of Lighthouses under the Department of Commerce (36 Stat. 537, approved July 27, 1910). The legislation authorizing this step referred to the bureau as the Lighthouse Service, and it is also known by that name.

The Board had hired a number of civilians and many of these experienced people took over the roles that the military officers had been playing. Though initially called inspectors, the civilian heads of the districts changed their titles to superintendent. Also at this time, the placement of aids to navigation along rivers had become the responsibility of the Lighthouse Service, and many of these aids were tended on a part-time basis by local citizens called lamp lighters and lamp attendants.

President Taft selected George R. Putnam to head the new bureau, and he had the title, Commissioner of Lighthouses. For 25 years Putnam headed the Bureau and during his administration, navigational aids saw a substantial increase and new technology, when appropriate, was incorporated into the Bureau's work, particularly in the area of electronics. Though the number of aids to navigation increased substantially during Putnam's reign from 11,713 to 24,000, mostly buoys and small lights, arguably two of his most significant achievements were the passage of the Retirement Act for lighthouse personnel in 1918 and the introduction in 1921 of the radiobeacon as an aid to navigation. This new technology permitted a reduction of over 800 employees during Putnam's 25 years as head of the bureau.

During World War I and the period following, several technological advances contributed to the automation of lighthouses, rendering human occupancy unnecessary. A device for automatically replacing burned-out electric lamps in lighthouses was developed and placed in several light stations in 1916. A bell alarm warning keepers of fluctuations in the burning efficiency of oil-vapor lamps was developed in 1917. In the same year, the first experimental radiobeacon was installed in a lighthouse. The first automatic radiobeacon in the United States began service in 1928. Radiobeacons are still in use today, although most have recently been decommissioned as improved electronic navigational aids have become available. An automatic time clock for operating electric range lights came into use in 1926, and by 1933, a photo electric-controlled alarm device had been developed to check the operation of the unwatched electric light. A lightship staffed by remote control was equipped by the Lighthouse Bureau in 1934. It

included a light, fog signal, and radiobeacon, all controlled by radio signals. A battery-powered buoy which gradually replaced the older acetylene buoys, was introduced in 1935. Because of the technological improvements mentioned above, and in particular the radiobeacon direction finder, the United States rose from sixth in shipping safety in 1920 to second in 1935, with only the Netherlands holding a better safety record.

Improvements in the road and highway systems provided better and more rapid means of transportation during the 1920s and 1930s. As a result of the improved roadways, the Bureau was able to better maintain aids to navigation, benefiting the service economically. The extension of electric lines into remote sections of the country provided a reliable power source for operating aids to navigation. By the 1920s and 1930s, the majority of light stations had electric service, reducing the number of staff necessary to operate the station. As ancillary buildings at many stations, especially shore stations, were rendered useless, the makeup of the light station began to change. In the 1960s, these various changes facilitated the eventual automation of all light stations, which led in turn to the surplus or demolition of many outdated, yet historic lighthouse buildings.

In 1935, Putnam was followed in the Commissioner's position by a career Lighthouse Service employee, H. D. King, a former district superintendent. But the new commissioner had but four years to serve; in 1939 the duties of the Bureau of Lighthouses was abolished by Reorganization Plan II of 1939, effective July 1, 1939, with functions transferred to the U.S. Coast Guard. Personnel of the former Bureau were given the choice of being brought into the Coast Guard through a military position or remaining as civilian employees. About half chose to remain civilians and about half went the military route.