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CHRONOLOGY OF AIDS TO NAVIGATION

AND THE

UNITED STATES LIGHTHOUSE SERVICE

1716-1939

by

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Introduction

In contrast to the four other military services, the U. S. Coast Guard, besides being humanitarian-oriented, has an unique historical, administrative, and organizational lineage. Although the name of this Service is relatively new, its history dates back to the First Congress of the United States.

Alexander Hamilton, the first Secretary of the Treasury, recognized the need of a floating police service as part of the national fiscal organization and, in 1789, Congress passed an act regulating the collection of duties on vessels and imported goods. The following year, the construction of revenue cutters were authorized. The Service, however, had no statutory designation but was was variously known as "the system of cutters," "Revenue Marine," "Revenue-Marine Service," and even "Revenue Service" until the title "Revenue Cutter Service" found its first statutory use in an act passed in 1863.

In 1915, the "Life-Saving Service" was combined with the "Revenue Cutter Service"’ to form the United States Coast Guard. In 1939, the "Bureau of Lighthouses" was transferred to the U. S. Coast Guard and, in 1942, many functions of the "Bureau of Marine Inspection and Navigation" were transferred to the Service. This organizational evolution of the U. S. Coast Guard, as well as a brief history of the Service, is contained in "Coast Guard History", another article on the USCG Historian’s website.

Although by law the U. S. Coast Guard is a branch of the Armed Forces of the United States at all times, it operates in the Department of Homeland Security in peacetime and with the Navy Department in wartime.

The Aids to Navigation mission of the U. S. Coast Guard has a history dating back to the building and illumination of the first American lighthouse on Little Brewster Island in Boston Harbor in 1716. At first, because of the indifference of England, local or colonial governments had to shoulder the responsibility of making the waters safe for mariners. Following Independence, the newly created Congress of the United States created the Lighthouse Establishment as an administrative unit of the Federal Government on 7 August 1789. Before being transferred to and consolidated with the U. S. Coast Guard on 1 July 1939, it was known as the "Lighthouse Board" from 1852 to 1910 and afterwards as the "Bureau of Lighthouses" or the "Lighthouse Service."

This chronology, the first of its kind, is published by the U. S. Coast Guard for the information of all interested in lighthouses and other aids to navigation. Besides serving as a reference tool, it will also be a permanent witness to the dedication of the people, both past and present, who have participated in the type of activities described herein.

This chronology consists of a compilation of historical dates concerning what is now known as the Aids to Navigation mission of the U. S. Coast Guard. These appear in official records or have previously been set forth by various authors as factual. The purpose is to produce a brief factual chronological record delineating the evolution of this vital mission since its inception. This also includes the role of the Federal Government in this development, and the contribution of the U. S. Coast Guard and its predecessors to the creation of a highly sophisticated and technologically advanced system of aids to navigation.

While many were investigated, no claim is made that all possible sources have been used. The following ones have been utilized in compiling this chronology

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CHRONOLOGY

1716 (14 September) The Boston Lighthouse on Little Brewster Island in Boston Harbor, Massachusetts, which was the first lighthouse established in America, was first exhibited. (Putnam, p. 5; USCG, p. 33).

1719 A cannon was placed near the Boston Lighthouse on Little Brewster Island in Boston Harbor, Massachusetts, "to answer Ships in a Fog," thus making it the earliest fog signal established in the United States. (Putnam, pp. 5-6; USCG, p. 33).

1721 The New Orleans beacon built by Adrien de Pauger was "a beacon 62 feet high," but surviving records do not indicate "whether it was lighted or not." (Adamson, p. 190).

1746 The town of Nantucket, Massachusetts, built a lighthouse on Brant Point, on the western side of the entrance to Nantucket Harbor. (Putnam, p. 22).

1749 The Beavertail Lighthouse, constructed of rubble-stone and 64-feet high, was built on the south end of Conanicut Island at the entrance to Narragansett Bay. (Putnam, pp. 23-24).

1755 First mention of a brick tower that had been built on Tybee Island at the mouth of the Savannah River in Georgia. Although called a "lighthouse," it apparently served solely as a beacon until the necessary alterations were made and it was lit in 1791. (Putnam, p. 18).

1760 About this time, a lighthouse was constructed, probably of masonry, on the west side of the entrance to New London Harbor. (Putnam, p. 23).

1764 (11 June) The Sandy Hook Lighthouse, at the south point of the entrance to New York Harbor, was first lighted. Today, its octagonal tower, built by Mr. Isaac Conro of New York City with money collected by a group of New York merchants, is the oldest original light tower still standing and in use in the United States. (USCG, pp. 63-64).

1767 The construction of the Cape Henlopen Lighthouse, on the south side of the entrance to Delaware Bay, was completed, although a light may have been shown earlier than this date. (Putnam, p. 14).

1767 The Charleston Lighthouse was built on Morris Island, South Carolina, the first stone of the tower being laid on 30 May. (Putnam, p. 17).

1767 Buoys were mentioned in the records of the building of Cape Henlopen Lighthouse by the State of Pennsylvania, for the statement of expense showed that the two sets of buoys in the Delaware River cost 1,143 pounds. (Putnam, pp. 214-215).

1768 A lighthouse was constructed on Gurnet Point at Plymouth, Massachusetts. (Putnam, p. 24).

1771 The Portsmouth Harbor Lighthouse was built on the point at Newcastle, New Hampshire. (Putnam, p. 26).

1784 The State of Massachusetts built a wooden lighthouse at Great Point on the northeast extremity of Nantucket Island. (Putnam, p. 25).

1788 The State of Massachusetts built the Newburyport Harbor Lights, two small lighthouses on Plum Island at the entrance to the Merrimac River. (Putnam, p. 27).

1789 (7 August) An Act of Congress (1 Stat. L., 53), only the ninth law passed by the newly created Congress of the United States and the first one to make any provisions for public work,

created the Lighthouse Establishment as an administrative unit of the Federal Government, when it accepted title to, and joined jurisdiction over, the lighthouses then in existence, and provided that "the necessary support, maintenance and repairs of all lighthouses, beacons, buoys and public piers erected, placed, or sunk before the passing of this act, at the entrance of, or within any bay, inlet, harbor, or port of the United States, for rendering the navigation thereof easy and safe, shall be defrayed out of the treasury of the United States.' (Weiss, p. 2).

1789 Starting in this year, the jurisdiction over, and the maintenance of, lighthouses and other aids to navigation have been in the Federal Government, and these aids to navigation, supported by appropriations out of the general revenues, have been free to the vessels of all nations. (Weiss, p. 3).

1789-1792 During this period, the Secretary of the Treasury directed personally all the details of lighthouse work. (Putnam, p. 33).

1789-1795 The several States ceded to the United States all the lighthouses that had been undertaken by them. (Putnam, p. 32).

1789-1842 During this period, the supply and inspection of the lighthouses of the United States, as well as any new construction, were performed mainly by contract. Under this system, the contractors virtually administered the lighthouse organization and exercised wide discretion in performing their contracts. Sub-letting of contracts was also a common practice under this arrangement, so that, in many cases, those actually engaged in the lighthouse work were not directly responsible to the government. (Weiss, pp. 4, 6).

1791 The lighthouse on Portland Head, at the entrance to Portland Harbor, Maine, first started by the State of Massachusetts but ceded to the United States in 1790, was completed through appropriations made by the Congress. (Putnam, p. 28).

1792 The octagonal sandstone tower at Cape Henry at the entrance to Chesapeake Bay was lighted. The Cape Henry Lighthouse was the first one built by the United States, and Congress in its first appropriations for lighthouse purposes on 26 March 1790 included this project, one that the State of Virginia had earlier undertaken. (Putnam, p. 20).

1792 The records mention three floating beacons in the Chesapeake Bay, on Willoughby Spit, the Horseshoe, and the Middle Ground. (Putnam, pp. 216—217).

1792- 1802 During this period, the duty of directing the details of lighthouse work was given to the Commissioner of the Revenue, Treasury Department. (Johnson, p. 14; Putnam, p. 33).

1793 President George Washington approved a contract for a floating beacon with two masts and cages for the Delaware River at a cost of $264.00. (Putnam, p. 216).

1796 The lighthouse, first started by the State of North Carolina, at Bald Head at the mouth of the Cape Fear River was completed by the United States. (Putnam, p. 29).

1797 The Montauk Point Lighthouse, located near the edge of a high cliff at the east end of Long Island, New York, was built, being "the earliest lighthouse for which the American Congress made appropriations with the exception of those taken over from the colonies." (Snow, p. 104).

1797 In this year, "eclipsers" were installed on the Cape Cod Lighthouse, and "this was apparently the first use in this country of a light with an intermittent characteristic." (Putnam, p. 195).

1797 An Act of Congress provided for 16 buoys in or near Boston Harbor. (Putnam, p. 217).

1802-1804 During this period, the Secretary of the Treasury directed personally all the details of 1813 lighthouse work. (Putnam, p. 33).

1803-1804 The keeper of the Cape Hatteras Lighthouse was instructed to test porpoise oil as an illuminant. Although the first results proved favorable, subsequent tests revealed that it was not quite as good as sperm oil. (Holland, p. 24).

1807 As early as this date, the Secretary of the Treasury corresponded with the owners of the merchant vessel *Corlomonde*, just returning from Rangoon, relative to 5,000 gallons of "earth oil" (petroleum), which had been commended as the "best article known for burning in light-houses, making a very strong, clear, and bright flame, emitting at the same time a great volume of smoak." It is probably that then, as often since, the "great volume of smoak" prevented the use of the earth oil in lighthouses. (Johnson, p. 55).

1812 Crude parabolic reflectors were introduced in lighthouses in the United States, "together with a useless solid lens in front of the lamp. The lens was later discarded and subsequently more perfect parabolic reflectors were imported." (Putnam, p. 191).

1812 The first broad contract for the maintenance of lighthouses was made by an Act of Congress (2 Stat. L., 691), which authorized the Secretary of the Treasury to purchase Winslow Lewis' patent for a "reflecting and magnifying lantern" and to contract "with the said Winslow Lewis for fitting up and keeping in repair, any or all of the lighthouses in the United States or territories thereof, upon the improved plan of the reflecting and magnifying lanterns." (Weiss, p. 5).

1813- During this period, the duty of directing the details of lighthouse work was given to the 1820 Commissioner of the Revenue, Treasury Department. (Putnam, p. 33).

1813-1820 The first lighthouses on the Great Lakes were established at Buffalo, New York, at the "junction of Buffalo Creek and Lake Erie," and at Erie, Pennsylvania, on "Presque Isle, entrance of Presque Bay."(Putnam, p. 152).

1820 First mention of fog bells at lighthouses in the United States occurred, when an appropriation was made "for placing a bell near the lighthouse on West Quoddy Head," Maine. (Putnam, p. 228).

1820 About this time, spar buoys began being substituted for barrel buoys, because they had been found to be more reliable and much less expensive. (Putnam, p. 217).

1820 The first lighthouse was built at the mouth of the Mississippi River, on Franks Island, although "there appears to have been a temporary light on the blockhouse at Belize about 1817." (Putnam, pp. 113-134).

1820 The first lightship in the United States was stationed in Chesapeake Bay, off Craney Island, at the entrance to the Elizabeth River, near Norfolk. (Putnam, pp. 201-202).

1820-1852 During this period, the Secretary of the Treasury assigned the "care and superintendence of the lighthouse establishment" to the Fifth Auditor of the Treasury. (Putnam, pp. 38, 43).

1822 The French physicist, Augustin Fresnel, beginning in this year, lighthouse practice by developing a built-up annular lens comprised of a central spherical lens surrounded by rings of glass prisms, the central portions of which refract and the outer portions both reflect and refract in the desired direction the light from a single lamp placed at the central focus," (Putnam, p. 192).

1823 A lightship was stationed off Sandy Hook, thus being the "first outside vessel placed off the coast of this country." (Putnam, p. 60).

1825 A lighthouse was built at Fort Gratiot at the outlet of Lake Huron, being the first light to mark the passage through the St. Clair and Detroit Rivers. (Putnam, p. 153).

1827 "Congress enacted a bill to construct a lighthouse at Natchez, Mississippi. The light was never used and in 1835 a writer proposed that it should either be lit or used as an observatory." (Adamson, p. 304).

1831 (1 January) As early as this date, a contract was made to provide the Portland Harbor (Barcelona) Lighthouse on the south shore of Lake Erie in New York with natural gas "at all times and seasons" and to keep the apparatus and fixtures in repair at an annual coast of $213.00. (USCG, p. 65).

1832 "The first lighthouse on Lake Michigan was placed at the mouth of the Chicago River," being "located on the south bank just west of old Fort Dearborn." (Adamson, p. 318).

1835 A contractor, without bothering to obtain official approval from the Fifth Auditor of the Treasury, changed the Mobile Point Light from a fixed to a revolving light. (Weiss, p. 6).

1836 (23 July) A band of hostile Indians attacked and burned the Cape Florida Lighthouse. (USCG, pp. 16-18).

1837 The first lightship on the Great Lakes was stationed at the junction of Lakes Huron and Michigan. (Putnam, p. 153).

1837 (3 March) An Act of Congress (5 Stat. L., 181, 185) laid down certain restrictions, by providing that the construction of the large number of new lighthouses, lightships, etc., for which this law was appropriating the necessary funds, would not be begun until the Board of [Navy] Commissioners had examined the various projects and had reported to Congress those cases where the "navigation is so inconsiderable as not to justify the proposed works." The Navy detailed 22 officers to this duty and, before the end of the year, their recommendations resulted in the deferment of the construction of 31 lighthouses already appropriated for. (Putnam, p. 42; Weiss, p. 7).

1837 (30 November) Two early complainants as to the efficiency of the American lighthouses and the need for so many new light stations, E. and G. W. Blunt, publishers of Blunt's "Coast Pilot," submitted a statement to the Secretary of the Treasury, in which they argued that "the whole lighthouse system needs revision, a strict superintendence and an entirely different plan of operation." (Weiss, pp. 6-7).

1838 (7 July) Under the authority of an Act of Congress passed this date, the President divided the Atlantic coast into six, and the Great Lakes coast into two, lighthouse districts. A naval officer was detailed to each lighthouse district, a revenue cutter or a hired vessel was placed at his disposal, and he was instructed to inspect all aids to navigation, report on their conditions, and recommend future courses of action. (Johnson, pp. 16-17).

1838 After inspecting a number of lighthouses, naval officers submitted reports and recommendations, as a result of which the construction was deferred of 31 lighthouses for which appropriations had been made. (Putnam, p. 42).

1838 Congress made appropriations for the importation of two sets of lens apparatus. (Putnam, p. 42).

A fog bell operated by the tide, a float through tidal motion wound up a weight which drove the striking mechanism was installed at the Whitehead Lighthouse in Name. This "perpetual fog bell" remained in service for several years. (Putnam, p. 228).

1839 The first publication approaching what we know today as the Light List was Lighthouses, Beacons, and Floating Lights of United States issued by the Treasury. (Weiss, p. 91).

1839 "The first buoy in Lake Michigan was placed at the mouth of the Neenah River." (Adamson, p. 319).

1840 The first lighthouse tender of the U. S. Lighthouse Service was a sailing vessel, the former revenue cutter RUSH, which was transferred from the U. S. Revenue Cutter Service in this year. (Putnam, pp. 210-211).

1840 Prior to this date, the buoy work and supply of lighthouses was accomplished by contract, the chartering of vessels, or with the assistance of other government ships. This practice continued subsequently until the U. S., Lighthouse Service acquired sufficient tenders to perform the necessary functions. (Putnam, p. 211).

1841 On this date, gas made from rosin was being used at a light on the Delaware River. (Putnam, p. 189).

1841 A Fresnel lens imported from France was installed in the Navesink Lighthouse, this being the first time that a United States lighthouse was so equipped. (Putnam, pp. 61-62).

1842 (18 February) Apparently feeling some sort of change was desirable, the House of Representatives passed a resolution requesting the Committee on Commerce to make an inquiry into the expenditures of the Lighthouse Establishment since 1816, to explore the possibility of cutting down on expenses, to examine into the question of reorganizing the establishment and changing the method of superintendence, and also to ascertain whether the establishment should be placed under the Topographical Bureau of the War Department. (Weiss, p. 9).

1842 (May) The Committee on Commerce, as requested on 18 February 1842, made its report to Congress. It had found the operation and administration of the lighthouse work reasonably satisfactory, opposed the transfer of the Lighthouse Establishment to any other department, and recommended that permanent inspectors be appointed, so that they could, under the general direction of the Superintendent of Lights, devote their entire time to frequent examinations of lighthouses, lightships, buoys, etc. No congressional action, however, resulted from this report. (Weiss, p. 9).

Congress required that the site for a lighthouse on Lake Michigan should be surveyed and selected by the Corps of Topographical Engineers. (Putnam, p. 43).

1843 Carrying out Treasury Department instructions, J. W. P. Lewis, a civil engineer, inspected and reported on most of the lighthouses on the New England coast. Apparently, "this was the first instance in which an engineer had been employed in any important capacity in the Lighthouse Service." (Putnam, p. 42).

1844 An attempt to use a rosin gas as an illuminant was made at the Christiana Lighthouse, near Wilmington, Delaware, but was abandoned as impracticable within a year. (Johnson, p. 57).

1845 (3 March) The duties of the Fifth Auditor of the Treasury as Superintendent of Lights was first put on a statutory basis by an Act of Congress (5 Stat. L., 752, 762), which prescribed that "the Fifth Auditor of the Treasury, shall continue to superintend the several matters and things connected with the light-houses, beacons, buoys, and public piers, as heretofore, of the United States, and to perform all the duties connected therewith, under the direction of the Secretary of the Treasury, until otherwlse ordered by law." (Weiss, p. 4).

1845 (19 June) The Secretary of the Treasury had Lieutenants Thornton A. Jenkins and Richard Bache detailed from the Navy and sent abroad to procure information that might tend to the improvement of the lighthouse system of the United States. Subsequently, when the Secretary submitted the report of these two naval officers and asked that a board be appointed to consider thoroughly the matter of lighthouse improvements, Congress reacted as it had with previous reports, and no legislative action resulted. (Weiss, p. 10).

1847 (3 March) An item added to the lighthouse appropriation bill for 1848 (9 Stat. L., 175, 176) provided for "furnishing the lighthouses on the Atlantic coast with means of rendering assistance to shipwrecked mariners." This was the first appropriation by the national government for rendering assistance to the shipwrecked from the shore. (Smith and Powell, p. 25).

1847 An "iron boat" of four hundred tons with one lamp was placed on Merrills Shell Bank, Louisiana, despite the fact that lightships up to about 1877 were normally built of wood. (Putnam, p. 203).

1847 The construction of six lighthouses was placed under the Corps of Topographical Engineers. (Putnam, p. 43).

1850 (1 January) The light in the Minots Ledge Lighthouse was first shown. This lighthouse was the first one built in the United States in a position directly exposed to the sweep of the open sea. It and two keepers were destroyed in a great gale in April 1851. (Putnam, p. 74).

1850 (28 September) An Act of Congress (Stat. L., 500, 504) provided for a systematic coloring and numbering of all buoys for, prior to this time, they had been painted red, white, or black, without any special system. The act "prescribed that buoys should be colored and numbered so that in entering from seaward red buoys with even numbers should be on the starboard or right hand; black buoys with odd numbers on the port or left hand; buoys with red and black horizontal stripes should indicate shoals with channel on either side; and buoys in channel ways should be colored with black and white perpendicular stripes." (Putnam, pp. 217-218; Weiss, pp. 40, 110).

1850 (28 September) An Act of Congress (9 Stat. L., 500, 504) gave legal authority for the first time for the assigning of collectors of customs to lighthouse duty. Section 9 of this act authorized the Secretary of the Treasury to assign to any of the collectors of customs, the superintendence of such lighthouses, beacons, lightships, and buoys as he might deem best. The act also stipulated that no collector of customs whose annual salary exceeded $3,000 a year should receive any compensation as disbursing officer in the Lighthouse Establishment and, in no case, was the compensation of the collectors of customs for disbursements in the Lighthouse Service to exceed $400.00 in any fiscal year. (Weiss, p. 5).

1850 Brandywine Shoal Lighthouse, a screw—pile structure, was completed, being the first lighthouse in the United States to be erected by this method. (Putnam, p. 84).

1850 Iron buoys were probably introduced about this time, for an appropriation of this year provided for an iron can buoy at Little Egg Harbor, New Jersey. (Putnam p. 218).

1851 (17 April) The Minots Ledge Lighthouse, the first one built in the United States that was exposed to the full force of the ocean, was swept away by a storm with the lost of the two men manning it. (Snow, pp. 51-68).

1851 A board was appointed to make a general investigation of the lighthouse problem; "this preliminary board submitted an elaborate report of seven hundred and sixty pages, which led to the law creating the Lighthouse Board, which was organized October 9, 1852, and which administered the lighthouse work for nearly fifty—eight years." (Putnam, p. 43).

An air fog whistle and an air trumpet or reed horn were experimentally Installed at the Beavertail Lighthouse on the south end of Conanicut Island at the entrance to Narragansett Bay, the air compressor being operated by a horse. This was the first installation of this type in the United States. (Putnam, p. 24).

1851 About this time, fog bells rung mechanically were introduced, operated by a striking mechanism and weight, governed by a flywheel and later clockwork. Prior to this time, fog bells were generally small and rung by hand. (Putnam, pp. 228-229).

1851 The records mention buoy boats, which probably were in use to some extent in exposed positions. These buoy boats were stoutly timbered boats about 20-feet long and 7-feet beam, with mast 12-feet high carrying some sort of day mark. (Putnam, p. 2-8).

1852 (9 October) The Lighthouse Board, which would administer the lighthouse system until 1 July 1910, was organized. "This Board was composed of two officers of the Navy, two officers of the Engineer Corps, and two civilians of high scientific attainments whose services were at the disposal of the President, and an officer of the Navy and of the Engineers as secretaries. It was empowered under the Secretary of the Treasury to 'discharge all the administrative duties' relative to lighthouses and other aids to navigation. The Secretary of the Treasury was president of the Board, and it was authorized to elect a chairman and to divide the coast of the United States into twelve lighthouse districts, to each of which the President was to assign an army or navy officer as lighthouse inspector." (Putnam, pp. 43-44).

1852 The first tall tower on the dangerous stretch of reefs between Cape Florida and Key West, Florida, the Carysfort Reef Lighthouse, whose construction on the submerged reef commenced in 1848, was lighted. (Adamson, p. 180).

1852-1909 Each year during this period, the Annual Report of the Lighthouse Board was published. (Weiss, p. 90).

1853 Around this date, George G. Meade, then assigned to the Corps of Topographical Engineers andlater commander of the Union forces at Gettysburg, invented a lamp that the Lighthouse Board adopted and the Lighthouse Establishment used. (Holland, pp. 22-23).

1853 By this date, only five lighthouses in the United States were equipped with Fresnel lens. (Putnam, p. 193).

1854 As part of its efforts to improve the aids to navigation in the United States, the Lighthouse Board introduced the bell buoy. (Weiss, p. 15).

Alcatraz Lighthouse, located on an island in San Francisco Bay, was completed, being the first lighthouse on the Pacific Coast of the United States. (Putnam, p. 121).

1855 A cannon was placed at Bonita Point Lighthouse, at the entrance to San Francisco Bay, being the first fog signal on the Pacific Coast. It remained in use until 1857, when it was discontinued as being too expensive and not effective. (Putnam, pp. 125-126).

1855 The Lighthouse Board began replacing the expensive and unsatisfactory bell boats then in use with the recently introduced bell buoys. (Weiss, p. 40).

1855 The U. S. Lighthouse Service investigated the use of steam whistles as fog signals. (Putnam, p. 230).

1855 The Lighthouse Board made some unsuccessful experiments with various forms of petroleum. (Johnson, p. 55).

1856 Three fog bells were established, all in the vicinity of San Francisco, at Bonita Point, Fort Point, and Alcatraz. (Putnam, p. 126).

1857 (28 December) The light was first illuminated in the Cape Flattery Lighthouse, located on Tatoosh Is land at the entrance to the Straits of Juan de Fuca, Washington. "Because of Indian trouble it was necessary to build a blockhouse on Tatoosh Island before even commencing the construction of the lighthouse. Twenty muskets were stored in the blockhouse, and then the lighthouse work began." (Snow, p. 104).

1857 A 5-inch steam whistle was placed at the Beavertail Lighthouse in Rhode Island but, when not found to be very successful, was replaced by a reed horn and hot—air engine about nine years later. This steam fog whistle was the first installation of this type in the United States. (Putnam, pp. 24, 230).

1857 The U. S. Lighthouse Service obtained its first steam tender, the SHUBRICK, a side-wheel steamer built at the Philadelphia Navy Yard the same year. (Putnam, p. 127).

1858 (27 May) The first lighthouse tender on the Pacific Coast, the SHUBRICK, arrived at San Francisco. (Putnam, p. 127).

1858 A revised form of Lighthouses, Beacons, and Floating Lights of United States was issued by the Lighthouse Board. (Weiss, p. 91).

1859 (3 March) An Act of Congress (11 Stat. L., 423, 424) authorized the Lighthouse Board to use its own discretion in the discontinuance as necessary of such lighthouses as might become useless by reason of changes in commerce, alteration in channels, or other causes. (Weiss, p. 17).

1859 By this date, lenticular apparatus (Fresnel lens) had been installed in practically all the lighthouses of the United States. (Putnam, p. 193).

1860 (15 November) The light in the massive stone Minots Ledge Lighthouse, which was built on the original site of the one lost in 1851, was exhibited. Work on the new lighthouse was commenced in 1855 and finished in 1860. "It ranks, by the engineering difficulties surrounding its erection and by the skill and science shown in the details of its construction, among the chief of the great sea-rock lighthouses of the world." Putnam, pp. 74-75).

1861-1865 During the Civil War, the Lighthouse Establishment assisted the Union cause and its military forces in many ways, such as re-lighting as combat conditions permitted the more important light stations of the 164 that had become discontinued, placing special buoys, lights, and lightships to facilitate military operations, etc. (Weiss, p. 16).

1862 A bill to reorganize the Navy Department was introduced in the Senate, and one of the proposed changes was the transfer of the Lighthouse Establishment to the Navy Department. Subsequently, the Chairman of the Lighthouse Board, himself a Navy Admiral, submitted a report expressing the Board's unanimous disapproval of the proposed change. In the end, the bill failed, and the Lighthouse Establishment remained under the Treasury Department. (Weiss, pp. 16-17).

1864-1867 During this period, lard oil was adopted within the Lighthouse Establishment as the standard illuminant, replacing colza or rapeseed oil and sperm oil. (Conway, p. 32).

1865 From about this date onward, it was the custom of the U. S. Lighthouse Service to name its lighthouse tenders after flowers, trees, or plants. (Putnam, p. 212).

1865 The first steam propeller lighthouse tender, from all accounts, was the IRIS, purchased in this year by the U. S. Lighthouse Service. (Putnam, p. 212).

1866 By this date, most of the lights that had become discontinued during the Civil War had been repaired and re-lighted. (Weiss, p. 16).

1867 An Act of Congress fixed the average pay of the light keepers at not to exceed $600.00, and the law remained in effect unchanged for 50 years. (Putnam, p. 238).

1867 The Lighthouse Establishment first experimented with sirens as fog signals. (Conway, p. 41).

1867 The Lighthouse Board began numbering its lightships as a means of keeping better track of them. Subsequently, no matter how many times a lightship would be moved from station to station, it would still retain its number. At first, the lightship number had no relation to the vessel's age, for the Lighthouse Board simply began numbering from north to south. Over the years, however, chronological meaning became attached to the number of a lightship, because new vessels were given the next highest number not In use. (Holland, pp. 58-59).

1867 The first steam lighthouse tender on the Great Lakes, the HAZE, was purchased, replacing two sailing tenders. (LHB AR 1867, p. 43; Putnam, p. 153).

1868 (2 March) By Act of Congress (15 Stat. L., 249), the Lighthouse Board was "authorized, when in their judgment, It is deemed necessary, to place a light-vessel, or other suitable

warning of danger, on or over any wreck or temporary obstruction to the entrance of any harbor, or In the channel or fairway of any bay or sound." (Weiss, p. 111).

1868 The use of a siren as a fog signal was first developed in the United States, and the first siren fog signal was installed at the Sandy Hook East Beacon in this year. (Putnam, pp. 230-231).

1868 The Lighthouse Board examined the possible use of the light from the combustion of magnesium as a lighthouse illuminant but found that, despite its superb light-producing capabilities, its scarcity and high price precluded its adoption. (LHB AR 1868, p. 7).

1869 From this date on, with but few exceptions, the Lighthouse Service published a Light List each year. (Weiss, p. 91).

1869 The first lighthouses to be regularly equipped with steam whistles were those at West Quoddy Head, Maine, and Cape Elizabeth, Maine. The plant consisted of a boiler and an 8- or 10-inch locomotive type whistle, giving each minute a blast of eight seconds duration, being the most powerful type of fog signal devised up to that time. (Putnam, p. 230).

1869 The U. S. Lighthouse ServIce adopted a distinctive flag, which was triangular in shape, with a red border, and bore a blue lighthouse on a white field. The lighthouse tenders displayed this Service flag, in addition to the national ensign. (Putnam, p. 212).

1870 (15 July) An Act of Congress (16 Stat. L., 291, 309) directed the Lighthouse Board to mark all pierheads belonging to the United States situated on the northern and northwestern lakes, as soon as it was notified that the construction or repair of pierheads had been completed. (Weiss, p. 17).

1874 (1 June) The light was first shown at Spectacle Reef Lighthouse, located on a limestone reef at the northern end of Lake Huron, near the Straits of Mackinac, ten miles from land. The structure of this lighthouse was similar to that of Minots Lodge, and its construction was "a notable engineering work." (Putnam, pp. 154-155).

1874 (December) The first navigational light on the Ohio River was established at the foot of Grand Chain about 16 miles above Cairo, Illinois. (Adamson, p. 304).

1874 "The first lights maintained by the United States on the Western rivers were lights at Jefferson Barracks, near St. Louis, and at Twin Hollows, Missouri, in December, 1874, and later in the same month on the Ohio River." (Putnam, p. 164).

1874 An Act of Congress (18 Stat. L., 204, 220) extended the jurisdiction of the Lighthouse Board over the Mississippi, Missouri, and Ohio Rivers and provided "for the establishment of

such beacon-lights, day-beacons and buoys as may be necessary for the use of vessels navigating these streams." (Weiss, pp. 17-18).

1875 The first steam fog signal on Lake Michigan was installed at South Manitou Island Lighthouse. (Adamson, p. 319).

1876 Commencing in this year, libraries were introduced on all lightships and inaccessible off—shore stations with the Lighthouse Service. (Weiss, p. 80).

1876 Whistling buoys, invented in the United States by J. M. Courtenay, were first used. (Putnam, p.*219).*

1876 (14 August) An Act of Congress (19 Stat. L., 132, 139) provided that any person "who shall willfully and unlawfully injure any pier, breakwater, or other work of the United States for the improvement of rivers or harbors, or navigation in the United States, shall, on conviction thereof, be punished by a fine not exceeding one thousand dollars." (Weiss, p. 117).

1877 Kerosene came into use within the Lighthouse Establishment and, by 1885, it had become the principal illuminant. Prior to 1877, the leading illuminant was first sperm oil, then colza or rapeseed oil, and later lard oil. (Conway, p. 32; Weiss, p. 35).

1877 Up to about this date, lightships ‘In the United States were built of white oak and live-oak. (Putnam, p. 203).

1880 (16 June) An Act of Congress (21 Stat. L., 259, 263) provided that "masters of light—house tenders shall have police powers in matters pertaining to government property and smuggling." (Weiss, p. 113).

1880 The collectors of customs ceased to make lighthouse disbursements and, later, their other duties in connection with lighthouses were transferred to the Lighthouse Board. (Weiss, p. 6).

1881 (21 January) The light was first shown at Tillamook Lighthouse, located on a high, precipitous rock 19 miles south of the Columbia River entrance and one mile from the coast, surrounded by water over 100 feet deep and exposed to the sweep of the Pacific Ocean. (Putnam, pp. 129-132).

1881 The first lighted buoy used in the United States, an oil gas buoy, was established experimentally by its manufacturers near the Scotland Lightship, at the entrance to New York Bay; it was officially taken over by the Lighthouse Establishment in April 1884. (Conway, p. 56; Putnam, p. 219).

1881 Oil gas was first used in the United States for a lighted beacon. (Putnam, p. 189).

1881 Oil gas was first used in the United States for a lighted buoy. (Putnam, p. 189).

1882 (7 August) An Act of Congress (22 Stat. L., 301, 309) required all parties owning, occupying, or operating bridges over any navigable river to maintain at their own expense, from sunset to sunrise, throughout the year, such lights as may be required by the Lighthouse Service. (Weiss, p. 44).

1882 It was not until this date, beginning with Lightship No. 44, that United States lightships were regularly built of iron or steel. (Putnam, p. 203).

1882-1885 During these years, the Secretary of the Navy attempted to secure the transfer of the Lighthouse Establishment, together with the Lifesaving Service, the Coast Survey, and several other services to the Navy Department. This effort aroused such vigorous opposition on the part of the Secretary of the Treasury and the heads of the services involved that no action was taken, and no transfers were made. (Weiss, p. 17).

1883 The Navesink Lighthouse was the initial first-order one to use mineral oil (kerosene). (Holland, p. 91).

1884 The United States placed its first aids to navigation in Alaskan waters-14 iron buoys-in the spring of this year. (Putnam, p. 146).

1884 The Lighthouse Board introduced a uniform for male lighthouse keepers, as well as for masters, mates, and engineers of lightships and tenders, and made the wearing of both dress and fatigue uniforms mandatory. (Holland, p. 41)

1884 The Hell Gate Channel in the East River at New York City was illuminated by a powerful electric light on a 250-foot high iron tower. This attempt at the general illumination of a waterway somewhat similar to the idea of lighting city streets proved unsuccessful, and the light was removed within two years. (Putnam, p. 65).

1885 The Lighthouse Board reported that It had "at last succeeded in clothing all the male light-keepers, and the officers and crews of the lightships and the lighthouse tenders, in a neat, appropriate, and economical uniform, which the laborers employed as acting light-keepers are not allowed to wear. It is believed that uniforming the personnel of the service, some 1,600 in number, will aid in maintaining its discipline, increase its efficiency, raise its tone, and add to its esprit de corps." (LHB AR 1885, p. 12).

1885 Kerosene, which first came into use within the Lighthouse Establishment in 1877, had become the principal illuminant by this date. (Conway, p. 32; Weiss, p. *35).*

1886 (26 July) An Act of Congress (24 Stat. L., 148) authorIzed an increase in the number of lighthouse districts within the Lighthouse establishment, making the total 16. (Weiss, p. 18).

1886 The first use of electricity for lighthouse purposes in the United States "appears to have been the placing of an arc light In the Statue of Liberty" in New York Harbor. (Putnam, p. 188).

1886 Commencing in this year, officers and crews of lightships and lighthouse tenders became entitled to free treatment and care by the Public Health Service on the application of their commanding officers, an arrangement that did not become a formal agreement until 1913. (Weiss, p. 78).

1886-1902 The Statue of Liberty in New York Harbor was maintained during this period by the Lighthouse Board as an aid to navigation, electric arc lights being placed in the torch, (Putnam, p. 65).

1887 The first lighthouse in the United States built on a submarine foundation, with a caisson sunk in the sand bottom by the pneumatic process, was completed on Fourteen-Foot Bank. (Putnam, p. 85).

1888 Six electrically lighted buoys were used to mark Gedney Channel in New York Harbor. (Putnam, p. 188).

1888-1903 During this period, an attempt was made to maintain. buoys lighted by electricity to 1903 mark the Gedney Channel into New York Harbor, but were replaced with gas buoys because of expense and difficulties encountered. (Putnam, p. 220).

1889 An incandescent electric lamp was placed in Sandy Hook Beacon in New York Harbor. (Putnam, p. 188).

1891 A mechanism for revolving the lamps about the mast, so as to obtain a flashing light, was installed on a United States lightship, but was discontinued on account of difficulties. (Putnam, pp. 204-205).

1891 The first United States lightships with self-propelling power were constructed. (Putnam, p. 203).

1892 (20 October) After ten years of difficult and costly construction, the St. George Reef Lighthouse, built on a rock lying six miles off the northern coast of California, midway between Capes Mendocino and Blanco, was first lighted. (Putnam, pp. 135-137).

1892 Electric incandescent lamps were first applied to a United States lightship, on Lightship No. 51 stationed on Cornfield Point. (Putnam, p. 204).

1892 The first lightship on the Pacific Coast, Lightship No. ‘50, which was a sailing vessel built in San Francisco, was placed off the Columbia River entrance. (Putnam, p. 142).

1892 For the first time, the Lighthouse Establishment had to begin paying customs duties on certain articles of lighthouse supply not manufactured in the United States and previously imported duty free. (LHB AR 1892, p. 23).

1893 (23 August) "This was the first instance in the history of the United States Light-House Establishment in which a lightship has foundered at her moorings," reported the Lighthouse Board, when Lightship No. 37 was lost in rough seas at her station at Five Fathom Bank off the entrance to Delaware Bay**.** (Holland, p. 64).

1893 "An interesting buoy installation was made during the World’s Columblan Exposition at Chicago in 1893 when a line of thirteen electric buoys was placed in midchannel between the Chicago Breakwater Lighthouse and the World’s Fair Casino wharf to guide and separate water traffic." (Adamson, p. 319).

1895 A beacon light was established at Sitka, "which is stated to have been the first light placed by the United States on the Alaskan coast." (Putnam, p. 146).

1896 (6 May) President Cleveland placed the U. S. Lighthouse Service within the classified federal civil service. (Putnam, p. 238).

1898 During the Spanish-American War, no seacoast lights were extinguished or lightships removed, but changes were made at a number of harbors in the lights and buoys, an action made necessary by the minefields that were planted there. (Putnam, p. 213).

1898 Four lighthouse tenders, MAYFLOWER (SUWANEE), MAPLE, MANGROVE, and ARMERIA, were transferred to the U. S. Navy for service in the Spanish-American War. (Putnam, pp. 212-213).

1898 An electric arc lamp was installed in the south tower of the Navesink lighthouse, with a bivalve lens of the new lighting type. "This was the only primary lighthouse lighted by electricity in this country, and the only shore station having a plant for generating electricity." (Putnam, p. 62).

1899 (3 March) An Act of Congress (30 Stat. L., 1121, 1152) required that, whenever a vessel, raft, or other craft was wrecked and sunk in a navigable channel, it became the duty of the owner to immediately mark the sunken craft with a suitable buoy or beacon during the day and a lighted lantern at night. Previously, the Lighthouse Establishment had been authorized by Congress to place, when considered necessary, a lightship or other suitable warning of

danger on any wreck or temporary obstruction to the entrance of any harbor or in the channel of any bay or sound. (Weiss, pp. 45-46).

1899 The "first wireless messages to be sent and received between ship and shore on the east coast of the United States exchanged between operators aboard the S. S. Ponce and on Navesink Tower. The New World's wireless premiere was staged earlier at San Francisco lightship when one message was sent repeatedly from ship to shore." (Adamson, p. 130).

1900 (12 April) An Act of Congress (31 Stat. L., 77, 80) extended the jurisdiction of the Lighthouse Service to the noncontiguous territory of Puerto Rico and adjacent American waters. (Weiss, p. 18).

1900 The tall-type can and nun buoys were introduced during this year for use in important positions, "the buoys being designed to stand much higher out of the water and thus furnish a mark easier to pick up, as well as much better resisting displacement by running ice." (Putnam, p. 218).

1900 (1 May) The Lighthouse Board took charge of the Puerto Rico lighthouses. (Putnam, p. 168).

1901 Radio communication was experimentally established on the Nantucket Lightship. (Putnam, p. 207).

1902 (1 March) The first regular light stations in Alaska were established at Southeast Five Finger Island and at Sentinel Island, both on the main Inside passage between Wrangell Strait and Skagway. (Putnam, pp. 146-147).

1902 A beacon equipped with a generator for producing acetylene gas from calcium carbide was placed on the Mobile Channel, thus being the first United States use of acetylene gas for lighthouse purposes. (Putnam, p. 189).

1903 (14 February) An Act of Congress (32 Stat. L., 826, 827) that created the Department of Commerce and Labor provided for the transfer of the Lighthouse Service from the Treasury Department to the newly created one, thus allowing the Secretary of Commerce and Labor to succeed to the authority vested in the Secretary of the Treasury under the existing legislation. (Weiss, p. 18).

1903 (18 June) Alaska's first coastal lighthouse, Scotch Cap Lighthouse, located near the west end of Unimak Island on the Pacific side of Unimak Pass, the main passage through the Aleutian Islands into the Bering Sea, was lit. (Holland, p. 192).

1903 (1 July) The Lighthouse Board, along with other activities having to do with navigation, was transferred from the Treasury Department to the Department of Commerce and Labor. (Putnam, p. 46).

1903 (28 December) An Executive Order extended the jurisdiction of the Lighthouse Service to the non-contiguous territory of the Hawaiian Islands. (Weiss, p. 18).

1903 (29 December) An Executive Order extended the jurisdiction of the Lighthouse Service to Guantanamo, Cuba. (Weiss, p. 18).

1903 Compressed acetylene dissolved in acetone was first used at Jones Rocks Beacon, Connecticut, and South Hook Beacon, Sandy Hook, New Jersey. (Putnam, p. 189).

1904 (8 December) An Executive Order extended the jurisdiction of the Lighthouse Service to the noncontiguous territory of the Midway Islands. (Weiss, p. 18).

1904 The U. S. Lighthouse Service conducted tests of an acetylene gas buoy, in which the gas was generated in the buoy body by the action of water on calcium carbide. (Putnam, p. 220).

1904 The Nantucket Lightship was permanently equipped with radio communication, thus making her the first United States one to have this capability. (Putnam, p. 207).

1905 (13 May) An Executive Order extended the jurisdiction of the Lighthouse Service to the noncontiguous territory of Guam Island. (Weiss, p. 18).

1905 (3 July) An Executive Order extended the jurisdiction of the Lighthouse Service to the noncontiguous territory of the American Samoan Islands. (Weiss, p. 18).

1906 The U. S. Lighthouse Service first began employing submarine bells as fog signals. (Putnam, p. 234).

1906 Two acetylene gas buoys were placed in service, but the U. S. Lighthouse Service later suspended the use of buoys of the self-generating type because of various difficulties and dangers encountered in their operations. (Putnam, p. 220).

1908 (14 May) An Act of Congress (35 Stat. L., 160, 162) delegated to the Lighthouse Board the duty of caring for and maintaining the anchorage buoys previously placed by the United States in the harbors of New York and Philadelphia. (Weiss, p. 18).

1908 The last of the sailing lighthouse tenders, the PHAROS, was dropped from the U. S. Lighthouse Service rolls. (Putnam, p. 212).

1908 A fleet of six vessels assigned to lighthouse duty on the Pacific Coast, the tenders SEQUOIA, MANZANITA, and KUKUI, and Lightships Nos. 88, 92, and 93, made the voyage from New York to San Francisco in 124 days. (Putnam, p. 145).

1910 (17 June) An Act of Congress (36 Stat. L., 534) abolished the Lighthouse Board and created the Bureau of Lighthouses to have complete charge of the Lighthouse Service. This law constituted the organic act under which the Lighthouse Service operated thereafter. (Weiss, p. 20).

1910 (1 July) The Lighthouse Board was terminated, its place being taken by the newly organized Bureau of Lighthouses. (Putnam, pp. 46-47).

1910 (l July) Under the Organic Act of 1910, Mr. George R. Putnam and Mr. John S. Conway took office as the first Commissioner of Lighthouses and first Deputy Commissioner of Lighthouses, respectively. (Weiss, p. 21).

1910 (1 August) Alaska was designated as a separate lighthouse district, with a district office and depot established at Ketchikan for directing operations. (Weiss, p. 24).

1910 (December) Under the Organic Act of 1910, Mr. H. B. Bowermand and Mr. E. C. Gillette took office as the first Chief Constructing Engineer and first Superintendent of Naval Construction, respectively. (Weiss, p. 21).

1910 A buoy operated by compressed acetylene gas dissolved in acetone was placed at the Ambrose Channel Entrance, New York and, later, this type of lighted buoy gained general use in the United States. (Putnam, pp. 220-221).

1911 (25 March) The Treasury Department directed the keepers of U. S. Coast Guard Stations to keep a lookout through the beach patrol for stray buoys washed ashore along the coasts, to secure such buoys when it could be done without interfering with their regular duties, and to report their discovery or action to the nearest representative of the Lighthouse Service. (Weiss, pp. 47-).

1911 A new type of oil-vapor lamp was developed during Fiscal Year 1911, which was believed to be "an improvement on existing lamps of this character, as it gives a greater candlepower per unit of oil used and practically does away with the carbonization of the oil, which has been a defect of previous types of oil-vapor lamps." USUIS AR 1911, p. 15).

1911 During Fiscal Year 1911, sirens were tried in place of whistles for fog signals on lightships and, although not materially increasing the range, they were "considered superior because of the distinctive sound produced and the decreased consumption of steam." (USLHS AR 1911, p. 16).

1912 (January) The publication of the monthly Lighthouse Service Bulletin, which described principal events in the Service of interest and importance to officers and employees, was commenced. (SECCOM AR 1914, p. 108).

1912 The Lighthouse Service took steps during Fiscal Year 1912 "to encourage American glass manufacturers in the production of lighthouse lenses, which have heretofore been purchased abroad. Experimental lenses have been ordered, and when completed will be given a service trial. A considerable economy in cost is expected." (USLHS AR 1912, p. 13).

1912 To promote efficiency and friendly rivalry among lighthouse keepers, a system of efficiency stars and pennants was established during Fiscal Year 1912. "Keepers who have been commended for efficiency at each quarterly inspection during the year are entitled to wear the inspector's star for the next year, and those who receive the inspectors star for three successive years will be entitled to wear the Commissioner's star. The efficiency pennant, being the regular lighthouse pennant, is awarded to the station in each district showing the highest efficiency for a year, and may be flown during the succeeding year." (USLHS AR 1912, pp. 7-8).

1912 During Fiscal Year 1912, the Lighthouse Service installed a uniform system of inspection, introduced a new system of boat keeping and reporting, revised the methods of keeping the general accounts in both the Bureau of Lighthouses and its district offices, all of which resulted in a uniformity in methods of control, integrated the Service, and facilitated the maintenance of vessels and other equipment at a proper standard. (Weiss, p. 22).

1913 (8-10 November) The second instance of a lightship foundering on station occurred, when Lightship No. 82 was lost off her station on Lake Erie about 13 miles southwest of Buffalo, New York, with the loss of her entire crew of six men. (SECCOM AR 1914, p. 115).

1913 The Bush Bluff Lightship (No. 97), Virginia, was fitted with a new system of electrical signal light. "It consists of one parabolic silvered reflector mounted upon a compound pendulum and revolved by an electric motor to show a flash every 10 seconds. The light is furnished by a concentrated tungsten filament incandescent lamp of 30 candlepower, fixed in the focus of the reflector, and gives a flash estimated at about 80,000 candlepower. The current for the operation of both the lamp and motor Is furnished by storage batteries, which are sent ashore for recharging at convenient Intervals. This is the first installation of a signal light of this character in the world." (USLHS AR 1913, p. 23).

1913 The Lighthouse Service adopted an improved marking of the lightships, thereby lessening the danger of an approaching vessel mistaking one lightship for another. Hereafter, the names of the lightships were to be simplified, thus permitting the distinguishing word for the vessel to be painted in very much larger letters, which could be read at a much greater distance. (USLHS AR 1913, pp. 6-7).

1914 (February) For the first time in the history of the Lighthouse Service, a conference of lighthouse inspectors was held. (SECCOM AR 1914, p. 106).

1914 A first-class, tall-type nun buoy, weighing 4,200 pounds and painted red, white, and blue and decorated with stars on a blue field, was placed in Baltimore Harbor on the spot where the British man-of-war MINDEN rode at anchor when Frances Scott Key wrote the song that became the national anthem. (Adamson, p. 165).

1914 A new Brandywine Shoal Lighthouse was completed, being the first of its type of construction in the United States "It is built of reinforced concrete, and the foundation is an unprotected cylindrical pier thirty-five feet in diameter, resting in eight feet of water upon the heads of seventy-four pine piles, which were Jetted into the shoal so that their heads were one foot above it. The reinforced-concrete pier, weighting 225 tons, was built on shore, and was launched, floated to the site, and sunk in position. It was secured upon the wooden piles by twelve reinforced-concrete piles, each weighing four and one half tons, which pass through pockets in the outer shell of the pier. Above this pier is a concrete dwelling, circular in plan, surmounted by the lantern." (Putnam, pp. 84-85).

1915 (3 March) An Act of Congress (38 Stat. L., 926, 928) provided for cooperation between the Lighthouse Service and the Forest Service in the management of the forest land on lighthouse reservations. (Weiss, p. 47).

1915 "In order to facilitate assignment of employees from one lighthouse tender to another, as the interests of the Service require, the Department authorized the regarding of all appointive positions on tenders as in the Lighthouse Service at large, instead of on the particular vessel, as was formerly the case. This will greatly lessen the number of papers required to be prepared when vessels are transferred from one district to another." (USLHS AR 1915, p. 10)..

1915 The use of the diaphone for producing air fog signals, which was invented in Canada, was first introduced in the United States. (Putnam, p. 231).

1915 The Lighthouse Service conducted tests on spar buoys made from logs cut on lighthouse reservations on the Great Lakes, finding that the quality of the timber was good and effecting "a considerable saving in cost." (USLHS AR 1915, p. 15).

1915 In order to facilitate the landing of supplies and mail at certain isolated Alaska stations, line—throwing guns, similar to those used by the Coast Guard, were installed as part of the station equipment during Fiscal Year 1915. Experiments were also made concerning the use of

this device on board lighthouse tenders, for passing lines to other vessels in heavy weather, (USLHS AR 1915, p. 15).

1915 The Lighthouse Service made experimental installations of temporary unwatched gas lights for winter use at certain isolated stations on the Great Lakes, permitting the keepers to leave under safer conditions and at the same time giving service to belated mariners after the close of the regular navigation season, (USLHS AR 1915, p. 15).

1915 The Lighthouse Service made a test of a new method of signaling under water by means of a patented device known as an oscillator at a lightship during Fiscal Year 1915. (USLHS AR 1915, p. 15).

1916 (28 August) An Act of Congress (39 Stat. L., 536, 538) provided that "light keepers and assistant light keepers of the Lighthouse Service shall be entitled to medical relief without charge at hospitals and other stations of the Public Health Service under the rules and regulations governing the seamen of the merchant marine." (Weiss, p. 78).

1916 (29 August) A naval appropriations act (39 Stat. L., 556, 602) provided for the first time the mobilization of the Lighthouse Service in time of war by authorizing the President, "whenever in his judgment a sufficient national emergency exists, to transfer to the service and jurisdiction of the Navy Department, or of the War Department, such vessels, equipment, stations and personnel of the Lighthouse Service as he may deem to the best Interest of the country." (Weiss, p. 25).

1916 (25 September) The beginning of lighthouse work in the United States was commemorated, when a bronze tablet was unveiled at the Boston Light Station on the 200th anniversary of its establishment. (SECCOM AR 1917, p. 168).

1916 During Fiscal Year 1916, the first flashing acetylene lights in the river districts were established on Keokuk Lake, Mississippi River, above the dam at Keokuk, Iowa. (USLHS 1916, p. 5).

1916 Two semaphore signals, the first of their kind employed in the Lighthouse Service, were installed in the Livingstone Channel, Detroit River, Michigan, for the purpose of assisting vessel masters in obeying a War Department navigation regulation that required a time interval of not less than five minutes between downbound vessels using that channel. (USLHS AR 1916, p. 9).

1916 During Fiscal Year 1916, standard power boats were designed and built for use at various island stations in the Great Lakes and, after a season’s service had proven to be good sea boats and well adapted for the use intended. (USLHS AR 1916, p. 9).

1916 During Fiscal Year 1916, the Lighthouse Service developed and placed in use at several light stations a device for automatically replacing burned-out incandescent electric lamps. (USLHS AR 1916, p. 8).

1916 The Lighthouse Service was investigating the sale of light and buoy lists at a nominal price in cooperation with the Superintendent of Documents and the Division of Publications of the Commerce Department. (USLHS AR 1916, p. 6).

1917 (11 April) With the outbreak of World War I, the President issued an executive order transferring 30 lighthouse tenders to the War Department, all subsequently being assigned to the Navy Department, and 15 lighthouse tenders, four lightships, and 21 light stations to the Navy Department. One more tender was transferred on 31 January 1918, making a total of 50 vessels and 1,132 persons. The War Department used those assigned to it in mine—placing operations, while the Navy Department used those assigned to it in laying submarine defense nets during the war and in removing these defenses after the war. Other duties performed by these vessels were placing practice targets, buoys to mark wrecks of torpedoed vessels and other marks for military purposes, as well as being employed on patrols and special duty assignments. (Weiss, p. 26).

1917 (12 June) An Act of Congress appropriated $300,000 to enable the U. S. Coast Guard to extend its telephone system to include all Coast Guard stations not then connected, and to include the most important light stations that then had no means of rapid communications. (SECCOM AR 1917, p. 169).

1917 (20 July) An Executive Order extended the jurisdiction of the Lighthouse Service to the noncontiguous territory of the American Virgin Islands. (Weiss, p. 18).

1917 The United States constructed a lighthouse on Navassa Island, an uninhabited island about two miles long, which lies between Cuba, Jamaica, and Haiti, in the main passage to Panama. (Putnam, p. 171).

1917 A thermostat, designed to warn keepers by ringing a bell when undue fluctuations occurred in the operation of oil-vapor lamps, was developed by the Lighthouse Service and issued to a number of light stations during Fiscal Year 1917. (SECCOM AR 1917, p. 174).

1917 A new type of post lantern with an automatically occulting light, designed within the Lighthouse Service, was tested, giving "promise of furnishing an improvement." (SECCOM AR 1917, p. 174).

1917 The first experimental radiobeacon was set up, thus paving the way for the later widespread use of radio in ship direction-finding. (Adamson, p. 130).

1917 To insure future uniformity, a standard form of map and instructions for the surveys of lighthouse reservations was prepared and issued during Fiscal Year 1917. (SECCOM AR 1917, p. 173).

1918 (3 March) By Act of Congress (18 Stat. L., 928), the protection afforded the aids to navigation maintained by the United States government was extended to those established and operated by private individuals. (Weiss, p. 46).

1918 (20 June) An Act of Congress (40 Stat. L., 607, 608) changed the designation of Lighthouse Inspectors, who were in charge of the 19 lighthouse districts, to that of Superintendents of Lighthouses. (Weiss, p. 57).

1918 (6 August) The first American lightship to be sunk by an enemy submarine, Lightship No. 71, was lost on her Diamond Shoals station, her crew taking to their boats and reaching shore without injury. (USLHS AR 1918, p. 8).

1918 As a measure of economy, the Lighthouse Service adopted during Fiscal Year 1918 the use of cotton towels in place of the linen ones previously used. (USLHS AR 1918, p. 13).

1918 For the first time, an Act of Congress provided retirement benefits for persons in the field service of the U. S. Lighthouse Service, including light keepers and lightship personnel. (Putnam, p. 239).

1919 (22 March) The Acting Secretary of the Treasury advised that light keepers and the officers and crews of vessels were not entitled to the benefits of the Public Health Service free of charge after retirement. (USLHS AR 1919, p. 18).

1919 (30 June) By this date, the Coast Guard, as part of its coastal communications improvement program authorized by Congress in 1917, had installed telephones at 139 light stations. USLHS AR 1919, p. 16).

1919 During Fiscal Year 1919, the Lighthouse Service installed radio equipment on 32 lightships and 16 lighthouse tenders, bringing the number of such vessels so equipped to 40 and 23, respectively. (USLHS AR 1919, p. 16).

1920 (22 May) An Act of Congress, which provided a system of general retirement for the civil employees of the U. S. Government effective 21 August 1920, benefited those employees of the Lighthouse Service who were not covered by the retirement law of 20 June 1918, which provided retirement for certain classes of employees in the Lighthouse Service. (USLHS AR 1920, p. 12).

1920 (20 October) The Superintendent of the 5th Lighthouse District inspected the aids to navigation "in New River Inlet and Bogue Sound, N. C., by hydroplane in two hours, which would have required at least four days by other means of travel, owing to the inaccessibility of the aids inspected." (USLHS AR 1921, p. 13).

1920 During Fiscal Year 1920, a "light, tall type, METAl cone buoy, designed to replace wooden buoys which were subject to damage by ice, etc., had been developed for use in shoal water channels, and has proven efficient." (USLHS AR 1920, p. 14).

1920 A revision of the uniform regulations authorized light keepers and depot keepers to wear sleeve insignia to indicate length of service in the Lighthouse Service. (USLHS AR 1920, p. 13).

1921 (1 May) The first radio fog signals in the United States were placed in commission at Ambrose Channel Lightship, New Jersey; Fire Island Lightship, New York; and Sea Girt Light Station, New Jersey. (Weiss, p. 38).

1921 (1 July) A system of longevity increase of pay, after six months' service for the unappointed members of the crews of Lighthouse Service vessels, was introduced for the first time as a means of maintaining "a more efficient personnel on these vessels." (USLHS AR 1921, p. 11).

1922 (November) The Lighthouse Service participated In the marine show at the Grand Central Palace in New York City, with an exhibit featuring some of the interesting apparatus used in the Service. (USLHS AR 1923, p. 12).

1922 To avoid the danger of a confusion of sounds when a bell buoy was placed too close to an existing bell buoy, a gong buoy was designed, which works on the same principle as a bell buoy but which gives an entirely different sound. This gong buoy was placed on station and proved satisfactory. (USLHS AR 1922, p. 15).

1922 During Fiscal Year 1922, acetylene lanterns, previously only acquired by purchase from the manufacturers, were made at the General Lighthouse Depot at a considerable saving. (USLHS AR 1922, pp. 15-16).

1922 A special type of lighted and bell buoy, having an automatic striking mechanism operated by compressed carbon dioxide, and weighing 18 tons when fully equipped with illuminating and fog-bell apparatus, was designed to relieve Tail of the Horseshoe Lightship In the 5th Lighthouse District. (USLHS AR 1922, p. 15).

1922 During Fiscal Year 1922, a readjustment was made of pay scales on vessels of the Lighthouse Service on the Atlantic and Pacific coasts and the Great Lakes and a system of longevity pay for all officers was introduced, (USLHS AR 1922, pp. 12-13).

1923 A submarine oscillator was placed on the Nantucket Shoals Lightship. (Putnam, p. 234).

1923 The first Service application of a hygroscopic controlling device for fog signals was made at the Lambert Point Fog Signal Station, Virginia, in connection with a 1,000-pound bell and electric fog bell striker. (USLHS AR 1923, p. 14).

1924 (23 April) A tube transmitter for radio fog-signal stations, developed to take the place of the spark transmitters in use, was placed in service on the Ambrose Channel Lightship and proved successful. (USLHS AR 1924, p. 1).

1924 (1 July) An adjustment of the compensation of vessel officers in the Lighthouse Service was made effective in order to bring the pay of these positions more nearly on a level with that of similar positions in the U. S. Shipping Board, the Lake Carriers Association, and other shipping interests. (USLHS AR 1924, p. 6).

1925 (4 March) An Act of Congress (43 Stat. L., 1261), for the first time, provided for disability retirement within the Lighthouse Service. (Weiss, p. 77).

1925 (27 February) An Act of Congress authorized the purchase of rubber boots, oilskins, etc., for the use of personnel while engaged in lighthouse work requiring such equipment. Actually, this legislation simply confirmed an existing practice. (USLHS AR 1925, p. 6).

1925 (27 February) An Act of Congress repealed the law providing a ration allowance for keepers of lighthouses and increased their salaries correspondingly. This change was not only advantageous to the light keepers, but also simplified office work. (USLHS AR 1925, p. 5).

1925 (12 June) The Lake Huron Lightship radio fog signal was placed in commission, being the first signal of this kind on the Great Lakes. (USLHS AR 1925, p. 1).

1926 (22 Hay) An Act of Congress extended the benefits of the Public Health Service to apply to light keepers located at isolated points, who previously had been unable to avail themselves of such benefits, and made provisions for medical supplies and hospital services for the crews of the vessels of the Lighthouse Service, including the detail of medical officers. (USLHS AR 1926, p. 5).

1926 (14 July) The first radio beacon established in Alaska, at Cape Spencer, was placed In commission. (USLHS AR 1927, p. 3)

1926 (1 October) An airways division, headed by a chief engineer, was set up as a part of the Lighthouse Service, its work covering the examination of airways and emergency landing fields and the erection and maintenance of aids to air navigation. (USUIS AR 1927, pp. 1, 6).

1926 During Fiscal Year 1926, the Lighthouse Service installed an automatic time clock for operating electric range lights. (USLHS AR 1926, p. 5).

1927 (1 March) A system of broadcasting weather reports by radio on four lightships on the Pacific coast was put into effect. (USLHS AR 1927,p. 3).

1927 The Kilauea Point Lighthouse on the northernmost point of Kauai Island, Hawaii, was the first landfall made in the first flight by airplane from the Pacific coast of the United States to the Hawaiian Islands, being sighted from the air at a distance of 90 miles. (USCG p. 24).

1928 (2 March) The Lighthouse Service began a new system of publishing at Detroit, Michigan, local notices to mariners for the Great Lakes and connecting waters. (USLHS AR 1928, p. 9).

1928 During Fiscal Year 1928, the first radio beacon in the United States, automatic In operation, was completed by the Lighthouse Service and was in satisfactory operation. (USLHS AR 1928, p. 5).

1929 (February) A representative of the Lighthouse Service attended the meeting of the technical committee for buoyage and lighting of coasts, of the League of Nations, held in Genoa, Italy, and took part in its deliberations. (USLHS AR 1929, p. 2).

1929 (May) The first synchronized radio beacon and air fog signal, the latter an electric oscillator, was put into commission at Cape Henry, Virginia. (USLHS AR 1929, p. 5).

1929 (July) Official representatives of the Lighthouse Service attended an International Lighthouse Conference, the first ever held, in London, Great Britain. This conference, attended by representatives of 24 countries, was informal, its purpose being the exchange of information and the discussion of problems affecting lighthouse systems. (USLHS AR 1930, p. 7).

During Fiscal Year 1930, a new accounting system, designed by the General Accounting Office, was Installed in the Lighthouse Service headquarters office, as well as in the 12th and 15th Lighthouse Districts. Within a year, eight Lighthouse Districts were using this new system and, by 1932, all of the districts were using it. (USLHS AR 1930, p. 7; USLHS AR 1931, p. 6; USLHS AR 1932, p. 5).

1930 (18 June) An Act of Congress provided "for the transfer of the old lighthouse at Cape Henry, Va., to the Association for the Preservation of Virginia Antiques." (USUIS AR 1930, p. 8).

1930 (24 June) An Act of Congress provided "that light keepers and vessel officers and crews, who during their active service were entitled to medical relief at hospitals and other stations of the Public Health Service, may be given such relief after retirement as Is now applicable to

retired officers and men in other branches of the Government service, under joint regulations to be prescribed by the Secretary of the Treasury and the Secretary of Commerce."' (USLHS AR 1930, p. 7).

1930 During Fiscal Year 1930, the Lighthouse Service sent an exhibit, consisting of a large map of New York Harbor showing the aids to navigation, a model of Kilauea Point Lighthouse in the Hawaiian Islands, and a number of mounted photographs, to the Seville Exposition, receiving a diploma of honor award for this service. (USLHS AR 1930, p. 7).

1930 During Fiscal Year 1930, all obsolete spark transmitters on lighthouse tenders were replaced with the latest type tube or modulated continuous wave transmitters, in compliance with the 1927 International Radio Conference. (USLHS AR 1930, p. 5).

1930 DurIng Fiscal Year 1930, the Lighthouse Service tested a new type of die—lock chain for lightship moorings with satisfactory results. (USLHS AR 1930, p. 6).

1931 By this date, all of the equipment in operation at the radio-marker beacons had been fitted for radio-telephone transmission, as well as for marker-beacon operation. (USLHS AR 1931, p. 3).

1931 Since the Service tests had proved satisfactory, the Lighthouse Service put in use on several lightships the new type of die-lock chain for mooring. (USLHS AR 1931, p. 5).

1931 During Fiscal Year 1931, an adjustment of the limits between the13th and 15th Lighthouse Districts was made in order to make the boundaries of these districts correspond with those of the Army Engineer districts, Accordingly, the limit of the 15th Lighthouse District was extended to Grafton, Illinois, to include the Missouri River. (USLHS AR 1931, p. 6).

1932 The 2nd Lighthouse District completed an improved type of boat for delivering bulk kerosene between the tender and the light stations, thus reducing time of delivery. (USLHS AR 1932, p. 6).

1933 (1 March) In the interest of economy and efficiency in administration, the 13th and 14th Lighthouse D_1 stricts were consolidated with the 15th Lighthouse District, and the aids to navigation on the entire Mississippi River system were placed in charge of a civilian lighthouse engineer as superintendent, relieving the Army engineers heretofore detailed for that duty. The offices at Rock Island, Illinois, and Cincinnati, Ohio, were to be discontinued, and all the river work was placed under a single office at St. Louis, Missouri. (USLHS AR 1933, p. 99).

1933 (30 June) The airways division, which had been conducted as a division of the Lighthouse Service, but *under* the administrative supervision of the Assistant Secretary for Aeronautics,

Department of Commerce, was separated from the Lighthouse Service. (USLHS AR 1933, p. 97).

1933 (1 July) Narragansett Bay was transferred from the 3rd to the 2nd Lighthouse District. (USUIS AR 1933, p. 99).

1933 The Lighthouse Service made an extended test and demonstration on Lake Michigan of mobile radio beacons for the avoidance of collisions, with favorable results. (USLHS AR 1933, p. 98).

1933 During Fiscal Year 1933, range lanterns using compound lenses and

4-volt miniature lamps developing 11,000 candlepower and operated on primary cells with photronic cell control were placed in service. (USLHS AR 1933, p. 98).

1933 During Fiscal Year 1933, a photo-electric-controlled alarm system was developed by the Lighthouse Service for checking the operation of an unwatched electric light. (USLHS AR 1933, p. 98).

1934 (15 May) Lightship No. 117, occupying the Nantucket Shoals Station, in a dense fog, was struck by the steamship OLYMPIC and sank on station with the loss of seven crewmembers. (USLHS AR 1934, p. 107).

1934 The Lighthouse Service equipped a lightship for remote control by radio of all facilities, including light, fog signal, and radio beacon, for use as an unwatched aid. (USLHS AR 1934, p. 104).

1934 By this date, conversion of Pintsch gas buoys to acetylene had been practically completed throughout the Lighthouse Service. (USUIS AR 1934, p. 105).

1934 With a view to more effective conduct of the engineering work of the Lighthouse Service, modification was made in the organization of the technical staff. Accordingly, all branches of the engineering work of the Service were coordinated under a Chief Engineer, Lighthouse Service, in the Lighthouse Bureau in Washington, D C (USLHS AR 1934, p. 106).

1934 The Lighthouse Service carried out experiments to determine the practicability of allowing second- and third-class nun buoys to remain on stations in the Great Lakes during the winter. The damage suffered from running ice in a test of over 80 buoys of these types was found to be negligible. (USLHS AR 1935, p. 117).

1935 (1 May) By Department of Commerce authority, a readjustment of the boundary between the 3rd and 4th Lighthouse Districts was made, by which certain aids to navigation in

the approaches to Delaware Bay, including Overfalls Lightship, were placed under the jurisdiction of the 4th Lighthouse District. (USLHS AR 1935, p. 118).

1935 During Fiscal Year 1935, the Lighthouse Service adopted a uniform method of marking the intra-coastal waterway, particularly that portion extending south from Norfolk, Virginia. (USLHS AR 1935, p. 117).

1935 After an extensive test of equipment in several Lighthouse Districts and much consideration, an arrangement of flashing-light characteristics to indicate the purpose of buoys was placed in general operation throughout the Lighthouse Service. (USLHS AR 1935, p. 114).

1935 Following a conference between officers of the U. S. and Canadian Lighthouse administrations, identical principles of radio beacon operation were adopted by both and, within a year, these principles had been mad "completely effective as regards these aids in United States waters$_6$" (SECCOM AR 1936, p. 111).

1936 The Service's annual report for this year made the claim that the "Lighthouse Service is perhaps the most extensively decentralized agency of the Federal Government, less than 1 percent of a total personnel of about 5,000 persons being located at the seat of government," (SECCOM AR 1936, p. 109).

1936 Using funds provided by the Public Works Administration, the Service built a lighthouse depot on the Inner harbor Navigation Canal at New Orleans, Louisiana, thus permitting the discontinuance of the less conveniently located Port Ends Depot about 100 miles below New Orleans. (SECCOM AR 1936, p. 121).

1936 A battery-operated electric solenoid-operated fog bell striker of the clapper type was experimentally installed at the Peshtigo Reef Light Station on Lake Michigan. (SECCOM AR 1937, p.111).

1936 "A large type of lighted whistle buoy has been fitted with a superstructure of aluminum alloys. The reduction in weight permitted by the use of aluminum has made it possible to increase the height of the superstructure, giving greater elevation and range of visibility to the light. This buoy is being tested at a point off Charleston, SC" (SECCOM AR 1936, p. 113).

1936 During Fiscal Year 1936, "Lighthouse Service radio engineers have designed and constructed improved radio beacon equipment, including new types of transmitters and transmitter exciters for modernizing older type radio beacons." (SECCOM AR 1936, p. 113).

1936 A program of systematic improvement of secondary fog signals both ashore and afloat, was instituted, primarily to replace the some 140 fog bells at light stations that were still being struck by gravity—driven clockwork mechanisms, (SECCOM AR 1936, p. 111).

1936 By this date, "simplified signal timers, to replace the older synchronizers and signal controllers at a considerable saving in costs, have been designed and are in successful operation at several stations. These timers are clock-controlled and are self-connecting. They control the timing of the main light, the fog signal, and the radio beacon, and provide for the synchronization of the radio beacon and the sound-in-air signals for distance-finding purposes." (SECCOM AR 1936, p. 113).

1937 (1 January) Effective this date, the dividing point between the 6th and 7th Lighthouse Districts on the east coast of Florida was moved northward from Hillsboro Inlet to St. Lucie Inlet. This change was made in connection with the development of the trans-Florida waterway through Lake Okeechobee so that the entire waterway would be under one jurisdiction. (SECCOM AR 1937, p. 113).

1937 During Fiscal Year 1937, a Lighthouse Service officer at the Lazaretto Depot in Baltimore, Maryland, conducted a series of tests, seeking an improved type of minor light structure suitable to the bottom conditions found in the Chesapeake Bay area and at the same time resistant to the overturning action of heavy ice. (SECCOM AR 1936, p. 112).

1937 The initial installation for the broadcasting by radiotelephone of Notices to Mariners regarding aids to navigation of the Lighthouse Service was established at Sault Ste, Marie, Michigan. By cooperative arrangement, this station would also be available. for the broadcasting of weather forecasts and for other emergency items of importance, such as ice conditions, wrecks, derelicts, etc. (SECCOM AR 1937, p. 109).

1937 By this date, there were 1,644 more flashing lights than fixed lights in service, and the Lighthouse Service was continuing its policy of changing oil-burning fixed lights to flashing or occulting lights using acetylene or electric illuminant. (SECCOM AR 1937, p. 110).

By this date, the spreading development of highways was providing the Lighthouse Service with a rapid means of transportation, and it had taken advantage of the improved local roads by increasing its use of motor trucks for servicing aids to navigation, particularly in emergencies, with resulting economies as well as improved service. (SECCOM AR 1937, p. 110).

1937 By this date, the continued extension of commercial electric power lines even into the remoter sections of the United States had placed within the reach of the Lighthouse Service a reliable source of energy for the operation of signals at an increasing number of lighthouses in many parts of the country. (SECCOM AR 1937, p. 110).

1937 During Fiscal Year 1937, a 375 millimeter duplex lantern was designed for use on a single-masted lightship. (SECCOM AR 1937, p. 111).

1937 Experiments to test the use of remote control apparatus for fog signals by means of a modulated light beam were made, using the compressed-air fog signal at Point Chehalis Range Light Station, Washington, and the fog (bell) signal at Old Point Comfort Light Station, Virginia. (SECCOM AR 1937, p. 111).

1938 (29 March) By an Executive Order of this date, President Roosevelt enlarged substantially the number of "personnel in the Lighthouse Service who are subject to the principle of the civil service," which allowed advancement in the Service solely on individual merit. (SECCOM AR 1938, p. 123).

1938 (18 June) The first low power, unattended "secondary" radio aid to navigation was established at St. Ignace, Michigan. (SECCOM AR 1938, p. 123).

1938 (24 June) Under an Executive Order of this date, "about 35 positions of steward on lighthouse tenders were brought under the classified civil service." (SECCOM AR 1939, p. 119).

1938 Within a year of the experimental broadcasts made at Sault Ste. Marie, Michigan, the Lighthouse Service's program for the broadcasting of marine information by means of radiophones had been expanded to five additional radiophone broadcasting stations on the Great Lakes, as well as such broadcasts from Key West, Florida, and New Orleans, Louisiana. (SECCOM AR 1938, P. 126).

1938 During Fiscal Year 1938, battery powered electric-solenoid-operated fog-bell strikers of the clapper type, which were in field service at two locations, had proved efficient. (SECCOM AR 1938, pp. 127-128).

1938 "Developmental service installations of apparatus for the remote control of fog signals by means of a modulated light beam, have continued to function at one Pacific coast station and at one Atlantic coast station, with satisfactory results." (SECCOM AR 1938, p. 128). The Lighthouse Service Radio Laboratory completed during Fiscal Year 1938 the developmental work on a high-power radio beacon amplifier, on ultrahigh frequency radiophone equipment, and on a calling unit to increase the efficiency and reliability of radiophone circuits. (SECCOM AR 1938, p. 128).

1938 By this date, the development of "a buoy radio beacon transmitter was largely completed, and preliminary field trials started." (SECCOM AR 1938, p. 128).

1938 (1 February) The Lighthouse Service Radio Laboratory was moved from the shops of the lighthouse depot in Detroit, Michigan, "to the Lazaretto Lighthouse Depot in Baltimore, Md.,

where a building had been constructed providing more adequately for this important branch of the work of the Service." (SECCOM AR 1939, p. 120).

1939 (30 June) "The total personnel of the Service as of June 30, 1939, was 5,355, consisting of 4,119 full-time and 1,156 part-time employees, the former including 1,170 light keepers and assistants; 56 light attendants; 1,995 officers and crews of lightships and tenders; 113 Bureau officers, engineers, and draftsmen, and district superintendents and technical assistants; 226 clerks, messengers, janitors, and office laborers; 157 depot keepers and assistants, including watchmen and laborers; and 482 field-force employees engaged in construction and repair work." (SECCOM AR 1939, pp. 123-124).

1939 (30 June) "At the end of the year, the total number of lighthouse tenders was 65, of which 64 were in commission and I was out of commission and advertised for sale. Of the vessels in commission, 42 were steam-propelled, 18 had diesel engines, and 4 had Diesel-electric drive. The average age of the fleet of tenders is *19.52* years. There are 10 tenders, aggregating 8,535 tons, 35 years of age and over. Thirty lighthouse tenders are equipped with radiotelegraph; 38 with radio direction finders; and 55 with radio-telephones." (SECCOM AR 1939, p. 124).

1939 (30 June) "Lightships were maintained on 30 stations during the year. At the close of the year, the total number of lightships was 43, which included 9 relief ships and 4 ships out of commission." (SECCOM AR 1939, p. 124).

1939 (30 June) "The total number of aids to navigation maintained by the Lighthouse Service at the close of the fiscal year was 29,606, a net increase of 849 over the previous year." (SECCOM AR 1939, p. 115).

1939 During Fiscal Year 1939, the North Channel Radio beacon Buoy No. 10, the first radio beacon buoy to be placed in service in the United States, was established in Boston Harbor, Massachusetts. (SECCOM AR 1939, p. 115).

1939 (1 July) Under the President's Reorganization Plan No. 11, made effective this date by Public Resolution No. 20, approved 7 June 1939, it was provided "that the Bureau of Lighthouses in the Department of Commerce and its functions be transferred to and consolidated with and administered as a part of the Coast Guard. This consolidation, made in the interest of efficiency and economy, will result in the transfer to and consolidation with the Coast Guard of the system of approximately 30,000 aids to navigation (including light vessels and lighthouses) maintained by the Lighthouse Service on the sea and lake coasts of the United States, on the rivers of the United States, and on the coasts of all other territory under the jurisdiction of the United States with the exception of the Philippine Islands and Panama Canal proper." Plans were put into effect, "providing for a complete integration with the Coast Guard of the personnel of the Lighthouse Service numbering about 5,200, together with the

auxiliary organization of 64 buoy tenders, 30 depots, and 17 district offices." (SECTREAS AR 1939, p. 107).

1939 (7 July) On this date, "the Lighthouse Bureau went out of existence and its personnel moved themselves and their equipment to Coast Guard Headquarters from the Commerce Department building. Thus did lighthouses return to Treasury, the department they had been part of for so long." (Holland, p. 38).

1939 (7 August) "Suitable observance of the one hundred and fiftieth anniversary of the Lighthouse Service was called for by a joint resolution of Congress, signed by the President on May 15, which was known as Public Resolution No. 16. By this resolution the week of August 7, 1939, was designated lighthouse week." (SECCOM AR 1939, p. 121).