

Barbier, Bénard et Turenne (BBT) Lens Works Producers of Fresnel Lenses

Part Five

By Thomas Tag

This is a continuation of the story of the Fresnel lens makers. In this article the Barbier, Bénard and Turenne (BBT) Company in France is described from its beginnings as a Fresnel lens maker for the world market, to its final demise when it was broken up and merged into several other companies.

Barbier and Fenestre

(Pronounced: Bar-B-yea and Fu-ne-a-tra)



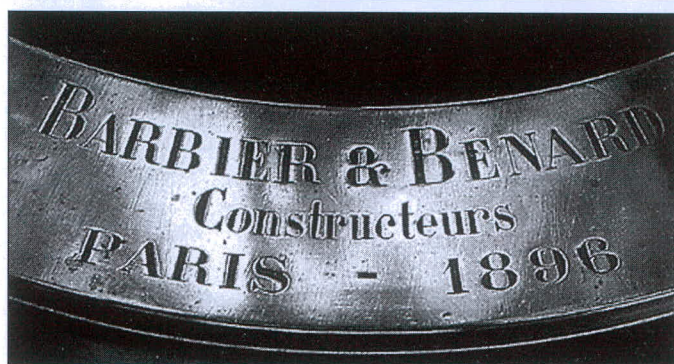
icolas Frédéric Désiré Barbier, known as Frédéric, graduated from the Ecole Centrale de Paris as an engineer. He formed a partnership with Monsieur Stanislas Tranquille Fenestre in 1860 and they created a company on October 6, 1862 to produce lighthouse equipment including Fresnel lenses, lamps,

clockworks and many other devices. The new company took the name of its founders, Barbier and Fenestre. A small factory was created in an outbuilding of the land owned by Barbier located at 82 Curial Street in the 19th district of Paris. By late 1862, the first products had been shipped and the outbuilding had grown into the head office as well as the manufacturing location of the company. Operations continued there for many years.



Left – Frédéric D. Barbier, 1834-1912. Right – Stanislas T. Fenestre, 1836-1887. Photos courtesy Thibault Turenne Collection.

Barbier and Fenestre became the third French manufacturer of lighthouse equipment then in operation, the others were Louis Sautter and Henry-Lepaute. The competition was fierce and the company soon recognized the necessity of manufacturing all of the constituent



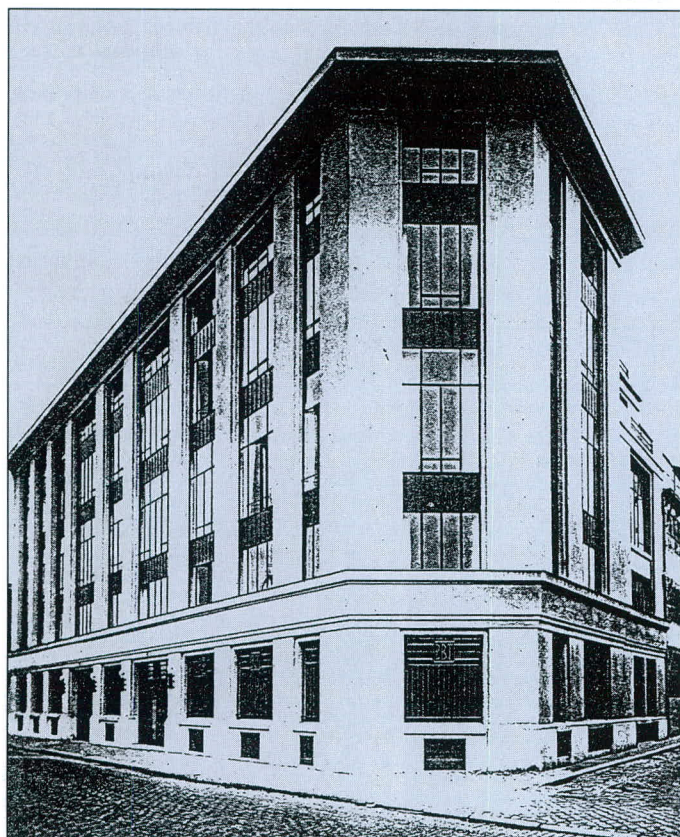
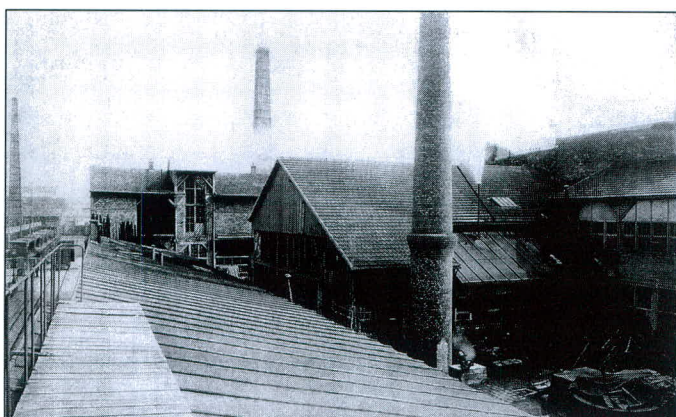
Top – F. Barbier name plate. Photo from author's collection.

Middle – Barbier & Bénard Stamping on Lens Frame. Photo from author's collection.

Bottom – Barbier, Bénard et Turenne name plate. Photo courtesy Hans Helge Staack.

elements for a complete lighthouse, including the tower, lantern, clockwork and other equipment, to assure that all of the elements within the lighthouse worked together flawlessly and were of the best possible construction. Providing the complete design package also assisted Barbier & Fenestre in selling its products to lighthouse services around the world and have a product line that could meet and surpass its competition.

Barbier and Fenestre produced its first lens for America, a Fourth order fixed lens for the South West Reef lighthouse in 1862. This was followed by more than 435 additional lenses delivered to the United States Lighthouse Service over the next fifty years.



Top – 82 Rue Curial Factory in 1903; above in 1933. Photos courtesy Thibault Turenne Collection.

Barbier and Fenestre first began to look into the development of lenses with a larger focal length in 1872 at the request of John R. Wigham in Ireland. Wigham needed a long focal length lens (bigger than the First order) to allow his 108-jet gas burner to deliver the most light to the horizon. Some five years later, in 1877, Wigham went to Barbier and Fenestre and was shown the first drawings of his proposed Hyper-radial lens. However, Wigham did not have the political power to get his Hyper-radial lens design actually produced, because the Commissioners of Irish Lights were not able or willing to fund this costly new design. Finally in 1885, Thomas Stevenson, Engineer of the Northern Lighthouse Board in Scotland, suggested that a larger lens would be useful with the new, larger oil burners being designed by James Douglass for the Trinity House in England. Stevenson and Douglass had political power and both the French and English lens manufacturers were soon given official orders for the Hyper-radial lens. F. Barbier was the first lens manufacturer to pro-

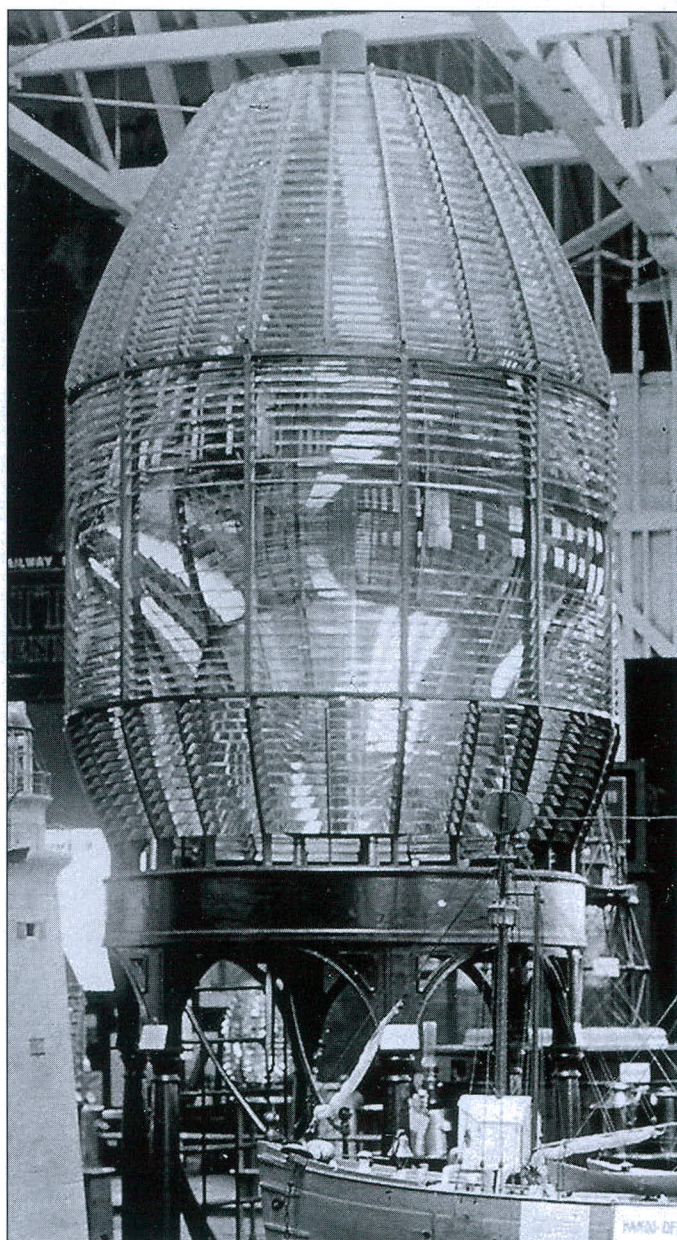
duce a Hyper-radial lens panel in late 1885 for the trials then going on at the South Foreland Lighthouse. In all they are thought to have produced nine Hyper-radial lenses. It produced the only Hyper-radial lens used in America, a fixed lens at Makapu'u Point, Hawaii.

In the 1880s, Barbier and Fenestre bought the exclusive European rights to the Courtenay Whistling Buoy from J. M. Courtenay in America. It produced variations of the Courtenay buoy for more than fifty years.

Barbier et Cie.

(Pronounced Bar-B-yea)

Stanislas T. Fenestre died in 1887 and the company name was changed to Barbier et Cie. They also used F. Barbier on their name plates during this period. Note: Nicolas Barbier apparently did not like to use the name Nicolas and mostly used only his second initial 'F' or Frédéric. The company remained at 82 Rue Curial in Paris.



Makapu'u Point hyper-radial lens by F. Barbier. Photo from author's collection.

Barbier and Bénard

(Pronounced Bar-B-yea and Beh-nar)

Barbier et Cie. was short lived. Frédéric Barbier had four daughters and his daughter Louise married Joseph Bénard in 1890. Monsieur Bénard joined the firm and the company name was changed to Barbier and Bénard by early 1894.



Left – Joseph Bénard 1865-1944, right – Paul Turenne 1869-1944. Photos courtesy Thibault Turenne Collection.

Barbier, Bénard et Turenne (BBT)

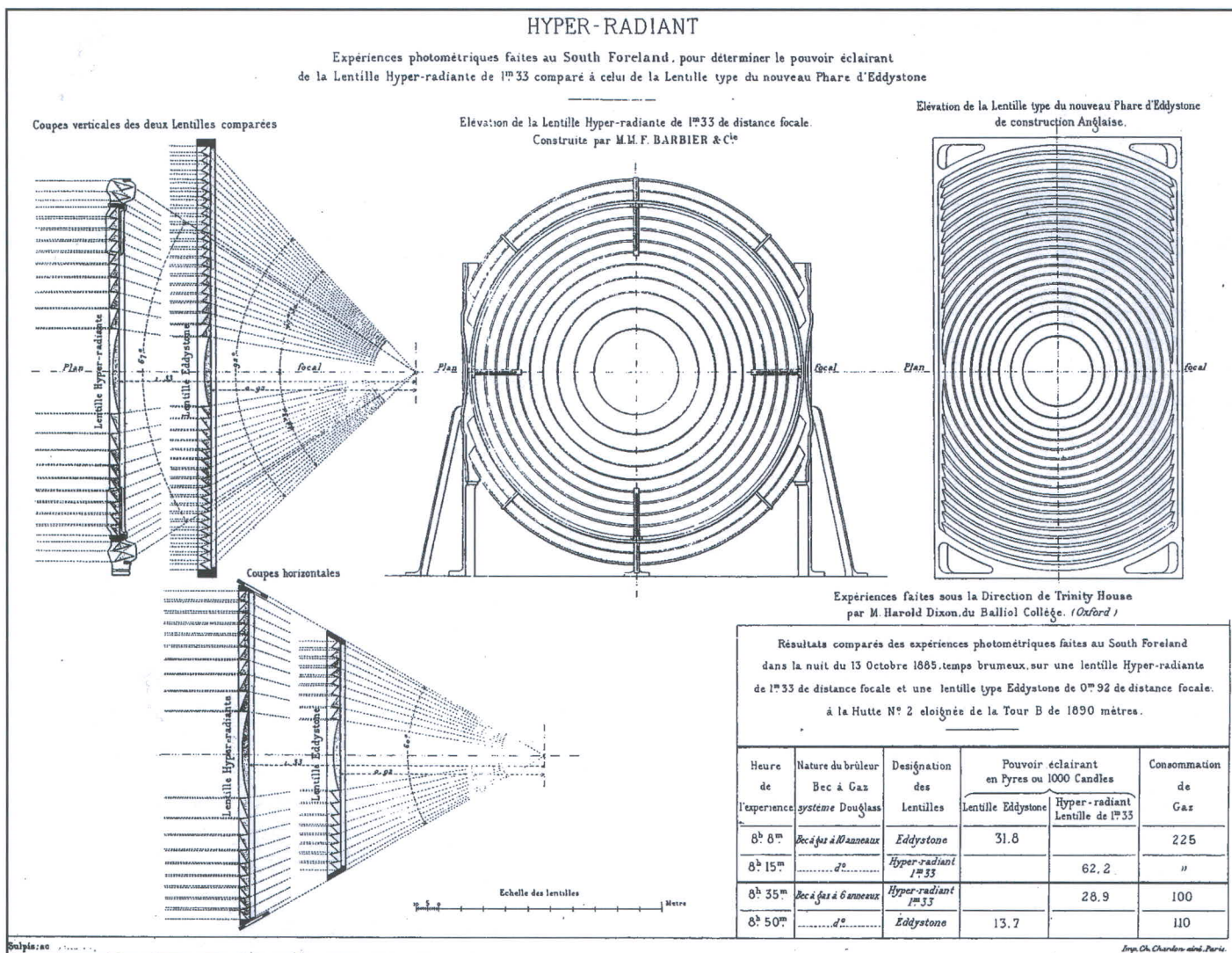
(Pronounced: Bar-B-yea, Beh-nar and Two-renn)

Paul Turenne joined the firm in 1897. He married another of Barbier's daughters, Lucie, in 1901. The company then became known as Barbier, Bénard & Turenne. The three letters (BBT) were first used in 1901, although the complete company name, Barbier, Bénard et Turenne, continued to be used on the company's lens stampings and name plates. As the years passed, the letters BBT came to symbolize the firm and its products. An interesting side note is that the French lighthouse authorities often referred to BBT as La Bebe, which means "the childish" in French.

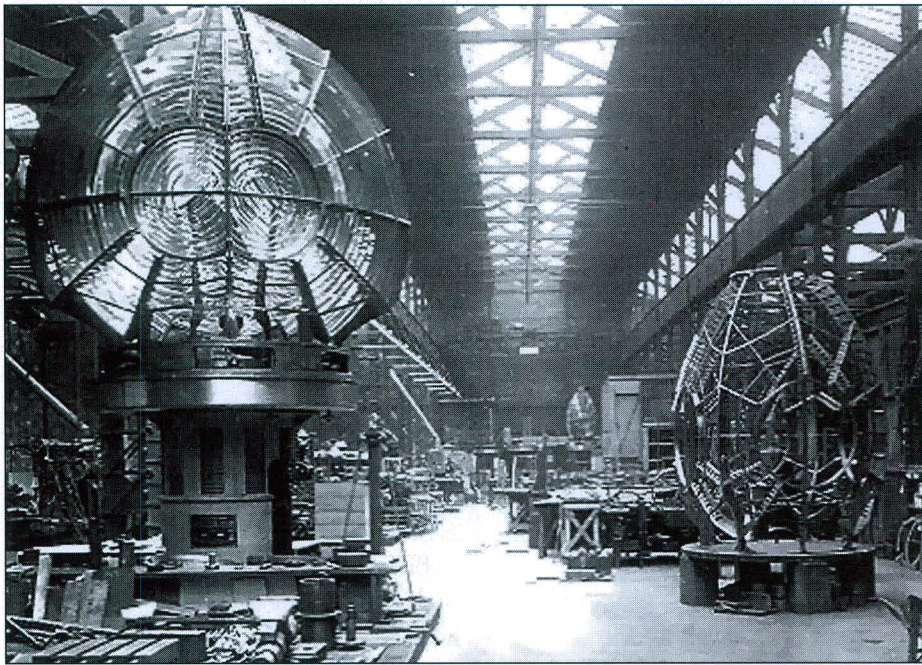
A second factory was created in 1907 at Blanc-Misseron in the north of France, producing metal and mechanical parts. This was the largest of the BBT factories and had over

700 employees. The products produced at this location included lens frames, all styles of lamps, clockworks, lanterns and buoys. Blanc-Misseron also produced equipment for use in mines, chemical companies, and the aggregate business. It performed all of the work with metal casting, shaping, and assembly and later it specialized in facilities for the separation and production of various industrial gases. At the same time, the smaller factory in Paris with 250 workers became dedicated to the construction of Fresnel lenses and other lighthouse optical equipment. BBT purchased all of the glass used in its Fresnel lenses from Saint Gobain Glass in a preformed, although rough, state and then did the final polishing and assembly operations in its Paris factory.

BBT chose to concentrate on one group of products at each of its factories. This allowed each factory to customize training and increase the skills of workers and permitted dedicated machinery at each location.



The first Hyper-radial lens panels made by Barbier & Fenestre that were used at the South Foreland Trials. Drawing from Author's Collection.



Above – Inside the BBT Factory Rue Curial.

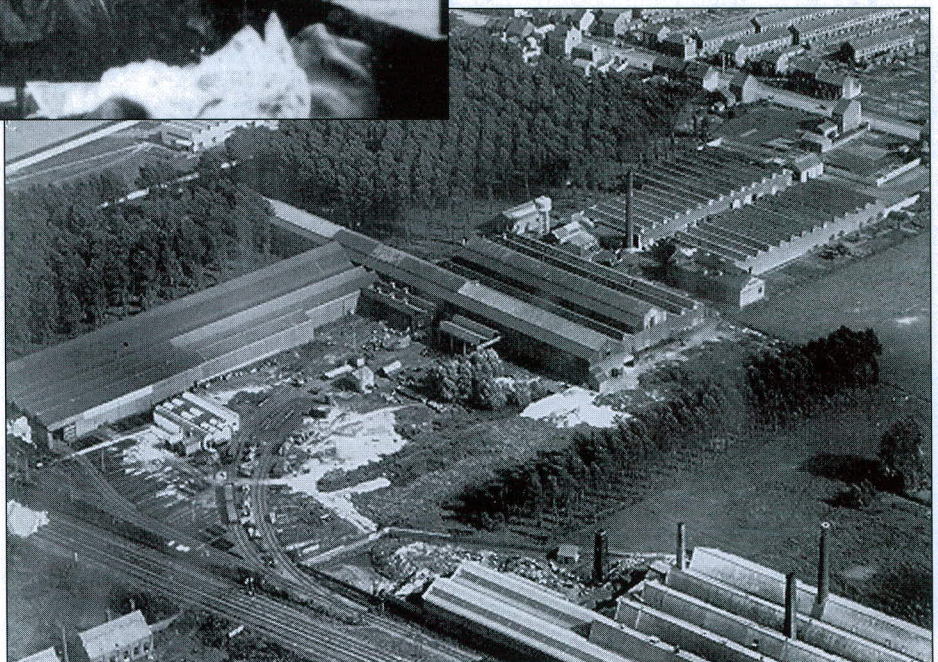
Below – Incoming glass inspection and selection in Paris. Photos from author's collection.



In 1918 the Société Anonyme des Anciens Etablissements Barbier, Bénard et Turenne was formed. This was the legal equivalent to the formation of an American corporation.

In 1921, a third factory was added at Aubervilliers, known as La Commanderie, which employed over 300 workers who constructed motors for the rotation of the lenses and for rotation of the parabolic mirrors used in beacons and spotlights. This factory also produced sound detectors for the French Army used to locate airplanes, it produced oxygen gas for many uses.

In 1928, BBT bought SIEGH, the International Oil-gas Lighting Company. The combined company produced dissolved acetylene at the Blanc-Misseron factory and other gases that BBT sold for maritime lighting.



Barbier, Bénard and Turenne factory at Blanc Misseron. Photo courtesy Thibault Turenne Collection.

By about 1930, more than two hundred special glass grinding machines were employed in the Paris factory to cut and polish the lens prisms and dioptric elements for lighthouses. Forty other machines constructed by BBT were used for the shaping of Mangin Mirrors having a diameter up to 2.5 meters that were used in searchlights and aero beacons as well as in lighthouse illumination.

In 1934, BBT bought the Krauss Company from the Leica Company in Germany. Krauss had been founded in 1882 and was a well known maker of binoculars and microscopes. BBT formed a subsidiary company with the name BBT-Krauss, which continued to produce the former Krauss products along with a number of military and aviation optical products.

In 1935, another factory was created at Nazelles, France that took over all operations from the Paris factory for the grinding of glass for mirrors used in searchlights, for the optics of lighthouses, and for lighting devices used in hospital operating rooms. It also performed the machining of large precision metal products such as mercury bath castings and other elements of Fresnel lens pedestals. This plant also manufactured pressed glass lenses for buoys and other lighting devices. By this time the Paris factory was reduced to final assembly of Fresnel lenses, laboratories for research in electronics and sound, and the main office and sales function of the company.

In the 1960s the company was producing electronic equipment such as RADAR and infrared sensors for the military, mining and mineral handling equipment, and optical instruments for use in medicine.

Around 1965, the last large Fresnel lens had been produced at BBT. BBT was the last French manufacturer of classic Fresnel lenses, but continued production small buoy lenses and began production of acrylic lenses at this time.

In 1968, BBT was formally split into two companies: BBT - Paris, which operated the factories in Paris, Nazelles and Aubervilliers and BBT - Valenciennes, which operated only the Blanc-Misseron factory.

On December 26, 1976 the glass grinding and polishing plant at Nazelles burned to the ground and the BBT production capability was dramatically reduced.

In 1981, CIT ALCATEL, a French conglomerate, bought BBT and began to split up the various parts of the company. It discontinued the navigation aids business and in 1984 it began to look for a buyer for this segment. A year later, the French Minister of Marine requested that part of the French Government's export activities in the area of navigation aids be privatized. This was accomplished by forming a new company named GISMAN, which absorbed the French Government operations and the navigation aids business of CIT ALCATEL.

The new company's head offices remained at 82 Rue Curial in Paris and in 1990 the company became Samtec-GISMAN, which still produces navigation buoys. In 2001, Samtec-GISMAN, moved its offices west into Brittany and the operations in Paris moved to 85 Avenue de Neuilly, which became a sales office only.

Barbier, Bénard and Turenne Lens works through time.

Frédéric Barbier forms partnership with Stanislas T. Fenestre in 1860

Stanislas T. Fenestre forms partnership with Frédéric Barbier in 1860

The partnership results in the formation of the firm Barbier & Fenestre in 1862

Stanislas T. Fenestre dies in 1887, firm becomes Barbier and Co.

Monsieur Bénard joins the firm in 1890

Firm becomes Barbier and Bénard in 1894

Monsieur Turenne joins the firm in 1897

Firm becomes Barbier, Bénard and Turenne in 1901 and begins use of the initials BBT

BBT becomes a corporation in 1918

BBT is purchased by CIT ALCATEL in 1981

BBT is merged into GISMAN in 1985

The Nav-aids portion of GISMAN becomes Samtec-GISMAN in 1990



BBT Blanc-Misseron lantern. Photo from the author's collection.

BBT also owned a number of subsidiary companies and had licensees across the world:

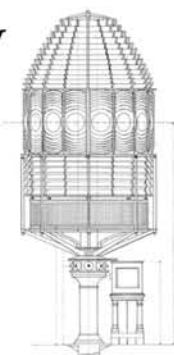
BBT Corporation in America - 1928
Scialytic Corporation in America - 1928
Industrielle Borraine (IB) in Belgium - 1928
Technical Lights and Equipment (TLE) in England - 1930
Segnalamento Marittimo ed Aero (SMA) in Italy - 1945
Beaconing Optical Precision Materials (BOP) Canada - 1948
Micronal in Brazil - 1954
Alumbrado BBT in Spain - 1964



BBT Blanc-Misseron lantern single-wick Lamp. Photo from author's collection.



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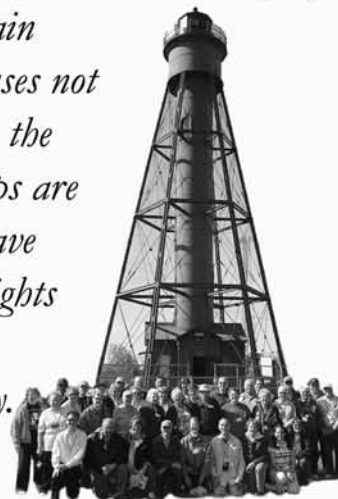
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