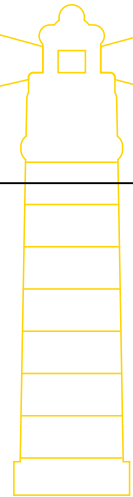


# The Great Light



**The GREAT LIGHT is a lighthouse optic and is an irreplaceable part of the world's maritime heritage. It tells the story of applied science and engineering. Titanic Foundation has championed the project to help secure its future. The optic belongs to the Commissioners of Irish Lights and is on loan to Titanic Foundation until 2116.**

The GREAT LIGHT stands as a monument to demonstrate the advances in technology over time. The lens panels for this optic were made in 1887, at the height of lens design and manufacturing of lighthouse optics. These were the very first Hyper-Radial lenses to be installed in a lighthouse, in the world. That lighthouse was on Tory Island, Donegal. Later, between 1924-28 the optic was split to make another optic for Mew Island Lighthouse, off the Co. Down coast. Here its great light shone until it was replaced and removed in 2014.

After 1913, such massive lenses stopped being made and over time the ability to make this highly specialised glass has been lost. This optic is therefore irreplaceable. With so few made, and so few left, it is internationally important.

The history of the optic gives us an insight into the passion and commitment of many scientists and engineers, like Augustin-Jean Fresnel and John Richardson Wigham, who developed innovative solutions to provide the best light for lighthouses to save lives at sea.

Ireland is an island nation and will continue to need engineers and scientists to work on innovative solutions to provide safety at sea.

**The education sheets are a summary of key elements of the history of the Great Light.**

## Learning Objectives

- 1 Understand the historical significance of the Great Light, how a lighthouse optic rotates, refracts and magnifies light to produce a beam of light and how and why the light 'flashes'.
- 2 Explore the properties and uses of different materials used to make the optic.
- 3 Discover the changes over time for the Great Light, from Tory Island to Mew Island and then to Belfast, together with changes in lamps and fuels.
- 4 Appreciate the role of the inventors and engineers: Augustin Jean Fresnel, John Richardson Wigham in the story of the Great Light and that invention was driven by trying to solve problems.
- 5 Understand the role of lighthouses, Irish Lights and the position of Mew and Tory Island lighthouses.
- 6 Discover the role and skills of Lighthouse Keepers.

The information sheets are a summary of key elements of the history of the Great Light. It is a long and amazing story so we have provided some additional web based references, original drawings and additional articles that can be found at [greatlighttq.org](http://greatlighttq.org)

# The Great Light

## How can I use the Information?

There are many ways the story of the Great Light can be used in the curriculum. Here are a few ideas. You can also visit [www.greatlighttq.org](http://www.greatlighttq.org) for further information and resources including personal stories of lighthouse keepers, and original drawings of the lighthouses and optic.

### SCIENCE AND TECHNOLOGY

Light, Lenses, energy sources, energy transfer – light and movement, different materials chosen for their properties, circuits. Search for 'lighthouse science for schools' for more examples.

### MATHS

Shapes – size and weight of the optic, the measurements of the glass lenses, hexagon, degrees – 8 lenses covering 60 degrees, use of data to create tables/bar charts such as candle power and fuels, lens sizes, calculating how many metres in 30 nautical miles.

### ICT

How to build an automatic lighthouse.

[www.minecraftguides.org/automatic-lighthouse](http://www.minecraftguides.org/automatic-lighthouse)

### HISTORY

Lighthouse keepers, and history of lighthouses.

Ship wrecks on the Copelands:

[www.irishwrecksonline.net/Lists/BelfastLoughList.htm](http://www.irishwrecksonline.net/Lists/BelfastLoughList.htm)

### ART

Lighthouses, the sea. The following website has great images of Lighthouses

[www.abduzeedo.com/amazing-pictures-lighthouses](http://www.abduzeedo.com/amazing-pictures-lighthouses)

### ENGLISH

Poems and stories about lighthouses – including Longfellow's famous poem, the Lighthouse, and a more modern one by Sinéad Morrissey, Belfast's Poet Laureate.

Plays - Grace Darling, daughter of a lighthouse keeper. A Script with eight characters.

<https://d3ddkgxe55ca6c.cloudfront.net/assets/a/7d/40/grace-darling-266636.pdf>



### GEOGRAPHY

Mew and Tory Islands, the location of Hyper-Radial optics around the world, the location of Great Lighthouses of Ireland  
[www.greatlighthouses.com](http://www.greatlighthouses.com)

### SAFETY AT SEA

It is important that young people know how to be respectful of the sea. RNLI;  
[www.rnli.org](http://www.rnli.org)

### ADVANCED BACKGROUND READING

Hyper-Radial Lenses

[www.uslhs.org/hyper-radial-lenses](http://www.uslhs.org/hyper-radial-lenses)

The Fresnel Makers

[www.uslhs.org/fresnel-lens-makers](http://www.uslhs.org/fresnel-lens-makers)

Lighthouse Lamps Through Time

[www.uslhs.org/lighthouse-lamps-through-time](http://www.uslhs.org/lighthouse-lamps-through-time)