

Introduction to the Emmet Rocket Project

Quick Summary

The Emmet Project aims to research the history of the rockets built by Irish patriot Robert Emmet. This will involve researching accounts of the rockets recorded by Emmet's companions among the United Irishmen. However, a new approach will be to trace the evolution of the rockets from their origins, in the Indian states fighting the British in the 18th century, Mysore under Tipu Sultan in particular, then working backwards from the rockets built by the British which were inspired by Emmet.

Outcomes for the Emmet rockets, based on both historical studies of the records available and an engineering analysis using simulations, laboratory analysis and test flights:

- Engineering analysis to add a clearer picture of the people, sources, materials and techniques Emmet drew on
- Designs and computer models for description and for rebuilding the rockets
- Replicas of the rockets using 3d-printed plastics
- Replicas of the rockets in iron by hand or 3d printed from metal
- Static testing of the rocket components, including cases and propellant
- Flight tests of the rockets to prove the viability of Emmet's rocket designs for signalling and for use as artillery weapons

Background

The Emmet Project aims to highlight the history of the period when rockets built in Ireland were the most advanced in Europe and probably in the world. The team aim to want to rebuild and fly the Irish rockets prepared by the Irish nationalist Robert Emmet for his 1803 uprising against the British. This will help build Ireland's reputation for engineering and to give a history and legitimacy to Ireland's emerging rocket-builders.

The Emmet family, the veterans and historians of the United Irishmen have long argued that Emmet deserves the credit for inventing the first modern rockets in Europe: Mitchell R. Sharpe, an historian at NASA and at Auburn University, wrote in a 1970 academic article in the journal of the Military History Society of Ireland, about how Emmet's technical innovations meant that "the priority of having developed the technically improved war rocket that would be used throughout Europe for almost three-quarters of the century clearly belongs to Robert Emmet".



Robert Emmet Statue in St. Stephen's Green, Dubli

After Emmet's execution in 1803, a British politician, soldier and businessman, Sir William Congreve, who was responsible for Britain's gunpowder production as master of the Royal Laboratory, also an MP and a crony of King George IV, claimed the credit and the revenues from building and putting very similar rockets to use in Britain's wars. However, to help him do so, he had access to Emmet's rockets, his documents and employed some of the same craftsmen who were offered amnesty after the rebellion. Like a 19th century version of a modern tech oligarch, Congreve was also notorious as a fake-news merchant, having his paper shut down by a libel trial with a British admiral, and having at least four children out of wedlock with at least three women. He was on trial for stock fraud involving Ireland's only coal and iron mine at Arigna in County Roscommon when he died in 1828. A pair of family portraits painted of him his family hang in the National Gallery of Ireland. The Congreve family, after six generations, recently donated Congreve Hill estate and its gardens in County Waterford to the Irish nation.



<http://onlinecollection.nationalgallery.ie/objects/2451/portrait-of-captain-william-congreve-with-his-son-william>

Sir William Congreve as a child with his father General Sir William Congreve, depicted at the British victory over France at the battle of Quebec in 1759

Congreve is commemorated and his rockets displayed in museums such as the Smithsonian National Air and Space Museum in Washington DC and the Science Museum in London where the Indian and Irish rockets are not. Congreve is usually cited in academic work as the leading pioneer of rocketry in the 19th century. He also has a crater on the moon named in his honour. Although one of Ireland's most revered patriots, Emmet has had no such recognition for his scientific work.

Congreve's rockets are best-remembered for burning Washington DC in 1814, which is why the White House was painted in white, and for a later attack on Baltimore, Maryland. A lawyer who observed the attack in Baltimore wrote a poem, 'The Star-Spangled Banner', which is now the American national anthem. It includes a line about the 'Rockets' red glare' about the Congreve rockets fired by the British warships.



A VIEW of the BOMBARDMENT of Fort McHenry, near Baltimore, by the British fleet taken from the Observatory under the Command of Admirals Cockburn, & Cockburn, on the morning of the 13th Sept: 1813 which last 24 hours & drawn from Seabrook's shot on the night attempted to land by forcing a passage up the bay which were repulsed with great loss.

The bombardment of Fort McHenry

Anne Brown Military Collection at Brown University

<https://repository.library.brown.edu/studio/item/bdr:237563/>

Museums in the US, including the Smithsonian's National Air and Space Museum, showcase Congreve and his work and ignore both Emmet and the Indian rockets that he learned from, as do the Science Museum and the Royal Artillery Museum in Britain and the other museums in Europe. A search by the project team has not found any commemoration here in Ireland of Emmet's rockets either, and the history does not seem commonly-known at Trinity College Dublin, in Ireland or anywhere.

Project Outline

To give proper proof of Emmet's role, the project will look to rebuild and to fly his rockets. The project will make models of Emmet's rockets based on the earlier Indian war rockets and the British Congreve rockets based on Emmet's designs. Some can be for display, but both plastic and iron replica rockets could fly with modern hobby rocket motors or using the original gunpowder propellant to prove that they work as described by the eyewitnesses.

For the first time ever, the Irish public should be able to touch and see Emmet's rockets. Technical and academic audiences should be able to see the evidence that the rockets were built and flew as described by the eyewitnesses. Emmet's reputation should gain from publicising his scientific work and that of Ireland, like Sputnik for the Russians and Apollo for the Americans, or SpaceX for Elon Musk, should grow along with it.

The Irish space industry is preparing for the first space launch from Irish soil with SUAS, Enda Kenny's new spaceport venture, Ireland is contributing to the new shared European launcher
Emmet Project White Paper
[Peter Nolan, peter.nolan@gmail.com](mailto:peter.nolan@gmail.com)
Version 0_7, 20 October 2025

project and SpaceX has set up corporate headquarters here, all activities that fit with the historical successes of Emmet and Congreve.

The Congreve rockets are a big story on any American Independence Day celebration on July 4th, but next year, 2026, on the 250th anniversary, in particular, the rockets and their Irish origin should be of interest to Americans.

Researching the Evolution of the Technology

Documentary research so far focuses on the papers in the British archives, largely held by the military in the form of the museums of the Royal Artillery, despite Congreve not having been a member. The Congreve family, British government archives and private collectors also hold relevant records. The problem in researching Emmet's contribution is that Congreve had an overpowering commercial and political incentive to remove any mention of the Irish rebels from the records so that he would be able to patent the technology and persuade the British government to adopt it.

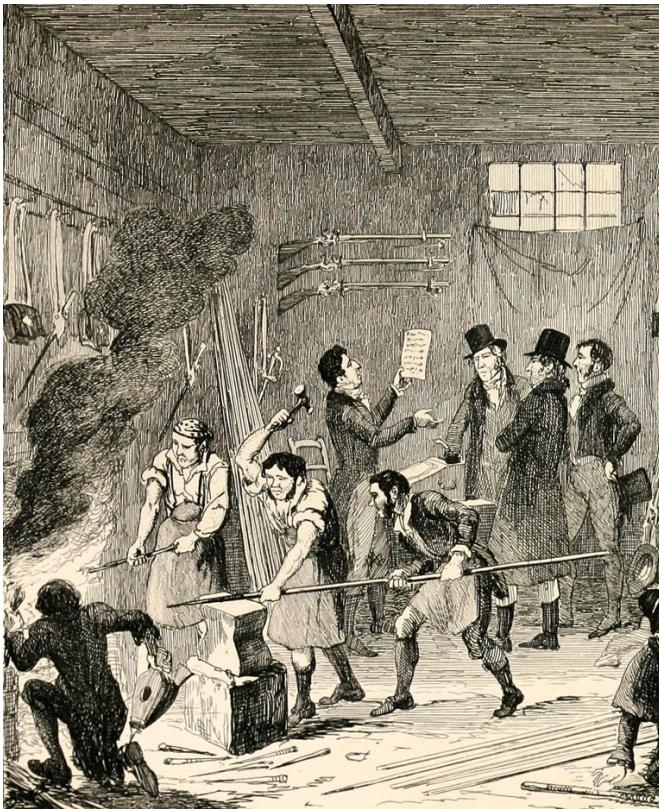
One biographer of Emmet, Professor Patrick Geoghegan of Trinity, thinks that he took the idea from Robert Fulton, an American working in Paris. Alternatively, Emmet may have adapted the Indian designs from Irishmen who had worked with the British East India Company. That neither the Americans nor the French researched or built rockets until seeing Congreve's ones in action and reverse-engineering captured examples would argue against Fulton as the source of the design.

Earlier books on fireworks and rockets written by Europeans were also widely available in Europe at the time also, to which Emmet, an avid seeker of literature on weapons and tactics, would have been able to find in libraries and booksellers.

The Indians had, by 1780, been attacking the British with war rockets, scattering infantry and panicking horses, defeating forces including those of the future Duke of Wellington, the Dublin-born Arthur Wellesley.

Their key innovation seems to have been to replace the paper casings of the Chinese and European models with iron, making possible much greater range, speed and size with gunpowder projectiles. Examples, including both simple rockets and one with a sword attached, were taken back to Britain to private collections and museums. Indians embraced the history, with President, A. P. J. Abdul Kalam, himself one of the country's leading rocket scientists, writing and lecturing on the rockets and their manufacture and visiting the examples on display in Britain: "The question continued to haunt me - How Tipu Sultan would have led to the world's first war rocket? What environment was responsible for the birth, of such a technological innovation in our country?"

Emmet designed and had a sympathetic Dublin gunsmith build his rockets, then had the United Irishmen fill them with gunpowder in a workshop near St. Patrick's Cathedral. His plan was to use these as signals between his forces in different parts of Dublin at the Port, Inchicore and Dublin Castle during the uprising and would also be fired to hold off British troops and horses in the narrow streets of the city centre.



Emmet and the United Irishmen making pikes, guns and other weapons, in a workshop in the Liberties in central Dublin, from a newspaper illustration soon after the uprising

Emmet successfully tested the rockets in Ranelagh and Irishtown, now central districts, but then semi-rural areas outside the city, but the uprising was suppressed by the British before he was able to use them. In the aftermath, his unused rockets were taken by authorities and craftsmen who had worked with him brought to London to work with Congreve.

Project Activities

0 Project Launch

The first publications from the project will be with the media, to share the story with potential volunteers and sponsors. Events, including the celebration of Robert Emmet on the anniversary of his execution on 20 September, or American Independence Day on 4 July, will make this topical.

Emmet Project White Paper

Peter Nolan, peter.nolan@gmail.com

Version 0_7, 20 October 2025

Kick-off meeting: Online Zoom call for volunteers, followed by others with potential individual sponsors

1 Artefact research will involve gathering technical drawings measuring historical examples, either from existing publications or measuring these again with modern scanning

2 Design Modelling will generate accurate computer files for animation and for CAD files of artefacts should be the Congreve rockets in the UK and US and for the Indian rockets available in Britain and in India. These should be made publicly-available also under permissive licensing.

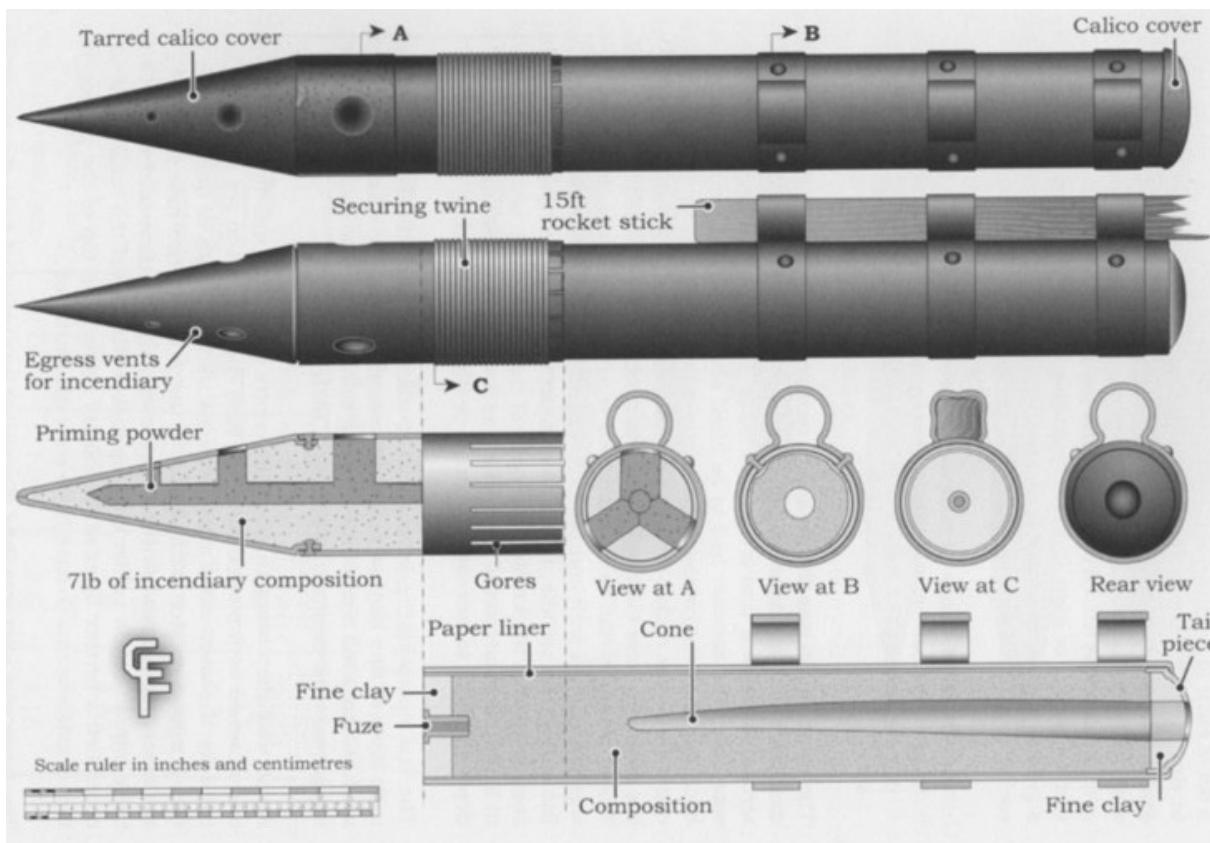


Diagram of the Congreve rocket with an incendiary warhead as used by the British in the war against the United States. This model is 3.75 inches in diameter and 3.32 feet long (9.5cm by 101.2cm) and had a range of up to 3,200 yards (2,926m). Diagram and figures from Carl E Franklin, British War Rockets of the Napoleonic and Colonial Wars 1805-1901, Staplehurst: Kent, 2005

3 Rocket Research Together with crafts experts, historians and technologists, the design of the Emmet model replicas will be chosen. The basic shape is known and the propellant simple gunpowder, other details we have to make informed guess about based on the Indian

and British rockets and contemporary published research that would have been available to Emmet at the time.

4 Rocket Design will create detailed animation and design files for the Emmet rockets, incorporating what is already known and the designs in several models, to be distributed to and by the sponsors, with manufacturing for each example to follow:

4.1 Plastic replica, 3d printed in a grey metallic colour to mimic iron and suitable for display,

4.2 Plastic model, 3d printed, probably with PETG, to mimic the shape of the Emmet rocket and to fly like one, put using a modern APCP cartridge in place of gunpowder, with an inert packing to make up the difference in weights

4.3 Iron replica, 3d printed in soft iron, suitable for ornamental display, to be distributed to and by the sponsors

4.4 Manufacturing Model Made in iron, based on the techniques described in the historical documentation and our best guesses, to replicate the Emmet rocket using the historic techniques

4.5 Iron model, 3d printed in soft iron, to mimic the shape of the Emmet rocket and to fly like one, again using a modern APCP cartridge

4.6 Historic model - using the iron model, 3d-printed for consistency, but capable of being flown with the historic compressed gunpowder propellant.

4.7 Static tests will be used to test the rocket engine performance and compare the modern with the historic propellants

4.8 Flight tests will be used to test the range, flight characteristics and likely accuracy of the models

5 Documentation

5.1 Academic Work - The historical research would already be close to that needed for a university essay, and the complete work would likely cover enough for several academic articles or postgraduate theses encompassing the disciplines of engineering, Irish history and history of technology.

5.2 Print Media - Coverage of the research results, the sponsors and the events should be released to pre-approved media outlets for the key audiences as well as online

5.3 Video Media - Some documentary-makers are already interested in filming the project as it proceeds. Some events, particularly flight tests, should be filmed to available for Irish broadcast and online

5.4 Museums A museum space such as the TCD Science Gallery or the National Museum at Collins Barracks should exhibit the project

As a principle, every museum now showing a Congreve rocket, including the Science Museum and Royal Artillery Museum, the Smithsonian and others, should also get a poster and an Emmet rocket model to display alongside it.

Project Plan

Timeline

Documentary research - Ireland and UK - TBD

Sponsor search Ireland and UK TBD

Artefact research UK and India TBD

[To be discussed]

Event dates

4 July 2025 - American Independence Day

23 July 2025 - Anniversary of Emmet's Rebellion in Dublin

20 September 2025 - Anniversary of Emmet's execution in Dublin

17 March 2026 - Saint Patrick's Day

4 July 2026 - American Independence Day

Project Sponsors

Sponsors to be approached include:

The Emmet family, a number of whom live in Wicklow, have supported commemoration and several generations have written on Robert Emmet, including his rocket work

The Congreve family, own a number of sample rockets and support work in London by the Science Museum, the Royal Artillery Historical Trust and others. Two the most famous Congreve family portraits hang in the National Gallery of Ireland. The family recently gifted the Mount Congreve estate and gardens in County Waterford, home to six generations of the family, to the Irish state for public use.

Irish Universities, Trinity, being Robert Emmet's college should particularly be interested, as they expelled him for being in the United Irishmen.

Emmet Project White Paper

Peter Nolan, peter.nolan@gmail.com

Version 0_7, 20 October 2025

Industry groups of the space industry, manufacturers, services companies and owners, precision manufacturers and the inward investment and science-funding and engineering professional bodies get a promotional opportunity for this, SUAS, Enda Kenny's Irish spaceport especially.

The **Irish Defence Forces** sponsor historical work, displaying artefacts including historical rifles and equipment, vehicles and restoring the artillery gun that fired the first shots of the Irish Civil War in museums in Ireland. Given the Ordnance Corps' role in regulating explosives in the Republic of Ireland, work with gunpowder will likely need to be approved, supervised or even done directly by them.

For **Irish-Americans**, 'Did you hear the one about the Irish rocket scientist' sounds like the start of a joke. Besides enhancing Ireland's reputation, the story of Emmet's rockets highlights their role in contributing to America. The Emmet family have long been prominent in the US, his brother being New York Attorney General, the family later as politicians, artists, lawyers and one of many families who have served notably in the American military, one even winning the Congressional Medal of Honor in the 19th century. For this project, an illustrator is redrawing the most famous caricature of a drunken violent Irishman by the cartoonist Thomas Nast, as an Irish rocket scientist instead.



Caricature of an Irish-American, by Thomas Nast from Harpers' Weekly, 1871

<https://thomasnast.com/cartoons/the-usual-irish-way-of-doing-things/>

Emmet Project White Paper

Peter Nolan, peter.nolan@gmail.com

Version 0_7, 20 October 2025

Resources

Volunteers would be welcome to join.

Cost should be under Euro 10,000, which I will likely fund myself until sponsors step in.