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## Stories from the Archives

### Hafod-Morfa Copperworks



*The Hafod-Mora Copper Works today*

You might look at the accompanying photograph of the decaying hunk of industrial machinery at an abandoned copperworks on the banks of the river Tawe in Swansea and wonder what on earth it has to do with Bolton?

This huge piece of machinery is a Uniflow steam engine which once powered the rolling mills of the Hafod Copper Works in Swansea. Its connection with Bolton is that it was made by John Musgrave & Sons at the Globe Ironworks in Bolton.

John Musgrave & Sons was founded in 1839 by John and his four sons. They manufactured winding engines and stationary steam engines which powered the collieries and textile mills of industrialized Britain. They also produced ironwork and secured the contract to supply the ironwork for the Kiev Suspension Bridge in the Ukraine and later expanded into cotton manufacture.

In 1910 they were commissioned by Hafod Copper Works of Swansea to manufacture a single cylinder Uniflow engine. This type of engine was the last major development in steam engine design and it improved thermal efficiency by greater expansion of the steam.

The Hafod Copper Works opened on the banks of the River Tawe in Plasmarl, Swansea in 1810 and by the mid 19<sup>th</sup> century they were the largest exporter of finished copper in the world. Despite having no copper ore sources the combination of a plentiful supply of coal for smelting and the development of the superior 'Welsh Process' of smelting meant Swansea was Britain's most extensive producer of high quality copper, which was in demand all around the globe.

By the end of the 19<sup>th</sup> Century it was more favourable for smelting to be carried out at source, so the smelting and finishing eventually ceased at the Hafod Works. In 1924 the Hafod works were merged with the adjacent Morfa Copperworks, and then the two were taken over in 1957 by Yorkshire Imperial Metals who continued in metal processing until 1980 when the site was closed.



*Image Courtesy of Swansea University*

Over the subsequent 40 years vandalism, theft and dereliction have left the buildings of this former powerhouse of industry and important engine in terrible condition. However, there are a group of dedicated and highly motivated people from Swansea Council, Swansea University and The Friends of Hafod-Morfa Copperworks who want to resurrect this historically significant site and to restore the Musgrave engine, which is thought to be the earliest surviving engine of its type still in situ.

This is where Bolton Archives comes in. Contact was made by Swansea engineer Tom Henderson in 2016 regarding the John Musgrave & Sons archive held in the collections at Bolton Library and Museum Service. He wanted to know if there were any drawings of the 1910 Musgrave Uniflow engine which might help them with a potential restoration project. A quick check of the 'Drawings' ledger recorded that there were.

## **The uncatalogued Musgrave Archive**

Unfortunately, whilst all the ledgers for the Company, the mill books, pipe books and the drawing registers had been fully catalogued many years ago, the drawings had not due to the scale and number of them. They had been rolled and wrapped in protective covering, but there were no identifying numbers or even idea of date to help pin down the drawings of the 1910 Uniflow engine.

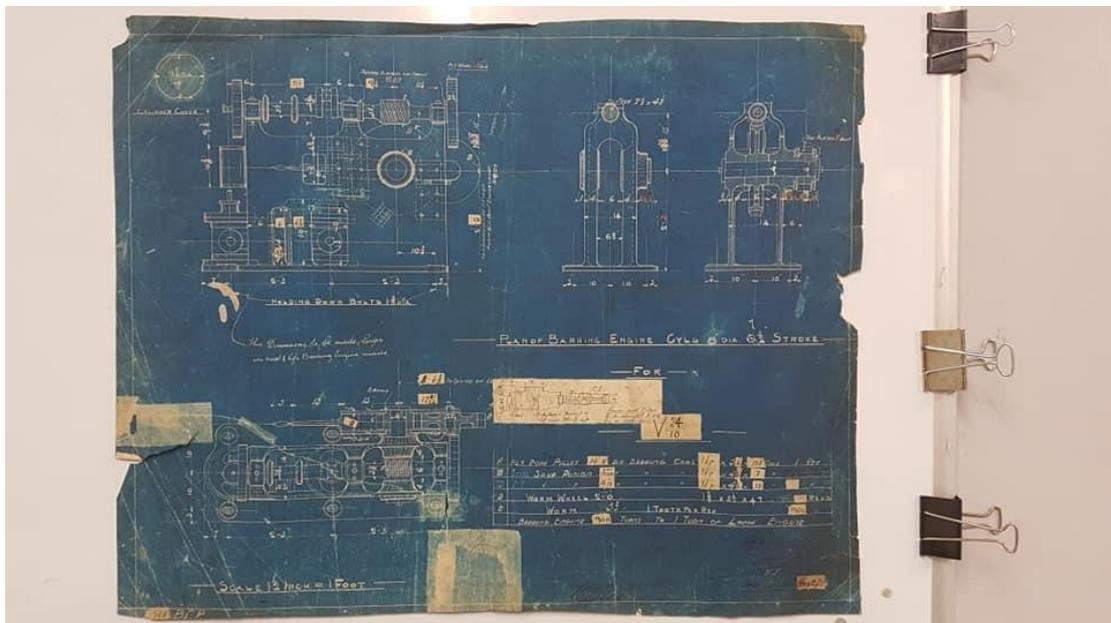


*Drawings from the Musgrave Archive*



A group of volunteers from The Friends of Hafod-Morfa Copperworks made several visits to the archive with Tom, their most recent being in March of this year. They were exceptionally dedicated, knowledgeable and enthusiastic volunteers who trawled through thousands upon thousands of drawings. It was hard, physical and grubby work but it paid off, they found, and were able to photograph, over one hundred drawings that could potentially help them with their restoration project.

*A volunteer working on a drawing*



*Blueprint drawing for a barring engine*



Bolton Archives is looking forward to watching the progress of their incredible project, with a sense of pride that this old Bolton built engine had such a significant role in the Welsh copper industry that it is deemed worthy of restoration.

*The Friends of Hafod-Morfa Copperworks with items from the Musgrave Archive*

FRIENDS OF HAFOD MORFA COPPERWORKS  
 BOLTON LIBRARY ARCHIVES  
 MUSGRAVE ENGINEERING DRAWINGS RECOVERY

- PEOPLE INVOLVED = 11
- WORKING DAYS = 67
- WORKING HOURS = 376
- DRAWING ROLLS RECOVERED = 257
- DRAWING SHEETS RECOVERED = 30,500 GM
- PHOTOGRAPHIC DRAWINGS = 116
- MUSGRAVE ENGINE DRAWINGS = 57

3/3/2020

You can find out more about the Hafod-Morfa Copperworks here:

<https://www.musgraveengine.com/>  
<https://www.facebook.com/pg/TheMusgraveEngine>  
<https://twitter.com/copperhistories>  
<https://hafodmorfacopperworks.com/>

You can get in touch with the Friends of Hafod-Morfa Copperworks here:

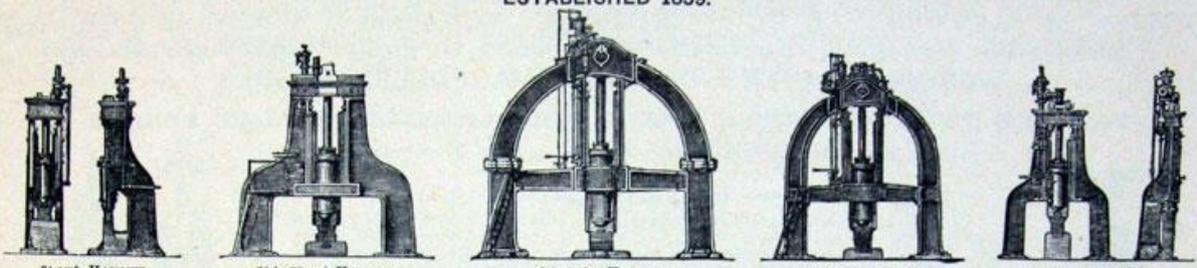
[hafodmorfacopper@gmail.com](mailto:hafodmorfacopper@gmail.com)

You can find out more about the John Musgrave & Sons archive here:

<https://discovery.nationalarchives.gov.uk/browse/r/h/61154780-2655-4e77-bd04-7b373588894a>

JAN. 5, 1866.] ENGINEERING.

**JOHN MUSGRAVE & SONS,**  
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*Image courtesy of Grace's Guide*



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