

The PFR Stone Sculpture was commissioned by the United Kingdom Atomic Energy Authority (UKAEA) for the Prototype Fast Reactor opening in 1966. It's made of granite and now stands at the front of the Nucleus building.

The Latin inscription reads '*Out of Caithness—To the World*' and a series of Pictish symbols are used that are taken from the Ulbster Stone. It was designed to link the symbolism and mystique of the past with the present.



CAITHNESS SCIENCE FESTIVAL 2022

NUCLEUS

THE NUCLEAR AND CAITHNESS ARCHIVES

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CAITHNESS INVENTORS

Daniel Sinclair

Dane (Daniel) Sinclair was born in 1852 near Thrumster and was one of nine children. He is described as being a keen pupil and upon leaving school gained an apprenticeship in Glasgow with the Telegraph Department of the North British Railway. In 1875 he was selected to travel to Japan and some five years later left Japan decorated with the Order of the Rising Sun from the Emperor. By 1892 he was recognised as one of the leading telegraph engineers in the world and it was Sinclair who advised the Automatic Telephone Company in 1912 to purchase the Strowger patents and use this system in all the company's telephone exchanges. As Robert P. Gunn points out (in *Inventors and Engineers of Caithness*, p.29) "when you have to dial 999 in an emergency, you can think of Dane Sinclair whose invention has saved millions of lives."

Neil Leitch

Neil Leitch was born on the 18th November 1865 in High Street, Wick. He served an apprenticeship with John Milne, watchmaker and jeweller in Union Street, Wick. In 1890 he set up his own business in Francis Street and then in Bridge Street, Wick. The patent (no.13377 - shock absorbers) for "an improved means for preventing or lessening jolting in passenger and other vehicles, including cycles" was registered on 31st May 1897.

Donald Brown

Donald Brown is credited for being the first successful inventor of a braking system for motor vehicles and also registered patents for steel walls, brake blocks acting on drums, deflectable axle ends, metal floor and roof construction, ship's partitions, fishing cleats, bomb construction and projectiles, fishing floats, wall stays, windows and shutters and foraging dies.

NOTE While Robert P. Gunn claims Donald was born in Caithness (in his book), further investigation by Anne Fraser (Highlife Highland Family Historian and Genealogist) has revealed that he was in fact born in Newcastle, though his mother Jane MacLeod was born in Caithness. Our own investigations into the Dunbeath School Registers held here at Nucleus (as Gunn claims in his book that Brown attended this school) also showed no results for a Donald Brown.

ACTIVITIES

Research a famous Scottish invention and present your research. You can choose how you wish to present it

Include:

- Information about the Inventor
- The invention they created and what it is used for
- The impact their invention had on society

Come up with your own invention!

Think about how it would look, what it would be used for, how it would benefit society and what it would be called.

Present your invention in any way you like—you can include drawings and plans too!

Build a boat/ship that floats in water

Design and build a boat or ship using recycled or household materials. Make a diagram to explain how you'll make the boat. Test your design and make improvements if it needs them. Does it float? Is it durable and sturdy? Were the materials you used the right ones (waterproof)?

JAMES BREMNER



Portrait of James Bremner.
Image courtesy of Am Baile

THE GREAT EXHIBITION OF 1851

The Great Exhibition was held in London in 1851, to display all the wonders of the Victorian Age.

You can find out more about it at the links below.

<https://www.historic-uk.com/HistoryUK/HistoryofEngland/Great-Exhibition-of-1851/>

<https://www.bl.uk/victorian-britain/articles/the-great-exhibition>

James Bremner was a great Caithness inventor. He built ships, harbours and rescued shipwrecks. He was born in Keiss in 1784, and left to start a shipbuilding apprenticeship in Greenock when he was 16.

He loved Caithness though, and came back to start his own shipbuilding business at Wick Harbour. He also started to build harbours. He helped to finish Wick Harbour and built Keiss Harbour in a completely new way. Piers were often washed away in stormy weather, but Mr Bremner realised that laying big stones horizontally meant the waves tossed them about like pebbles! He began to lay stones vertically, wedged together, so the waves couldn't move them. He understood that rules for building at sea were different from rules for building on land.

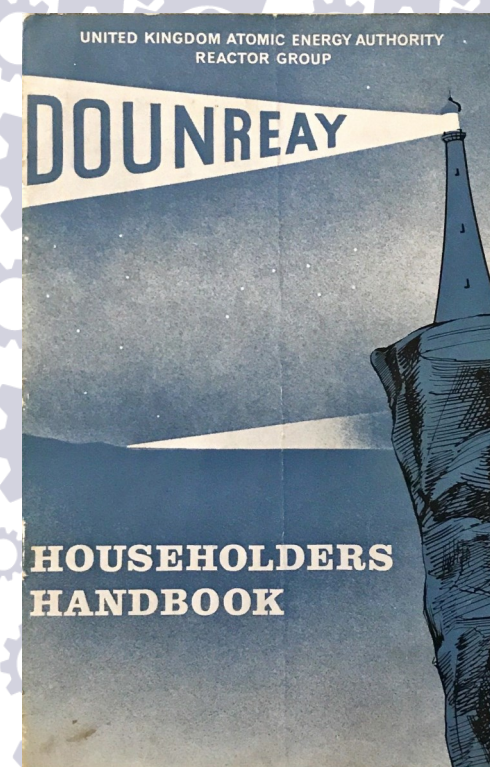
As well as building boats, Mr Bremner was excellent at raising shipwrecks. He used whatever materials were to hand, once using the timber that was on board a wrecked boat to make a raft to float the boat back to Wick Harbour.

The most famous wreck he refloated was the steamship the *SS Great Britain* in 1847. It was the largest ship in the world. Lots of engineers had already tried and they were stunned that a man without formal education had succeeded where they had failed.

As Mr Bremner had to work in difficult conditions, he often had to invent new methods and equipment for each job. He displayed some of his inventions at the **Great Exhibition** of 1851. These included his patented method of harbour building, suspension crane and plans and equipment he used to raise the 'Great Britain'.

DOUNREAY HOUSEHOLDERS HANDBOOK

A copy of the Dounreay Householders Handbook (P879/4) was given to everyone who was allocated an 'atomic house' by the UKAEA. It gave detailed advice on things like local schools, how often the bins were emptied and instructions on how some of the features of the houses worked, like this example of a tap below.

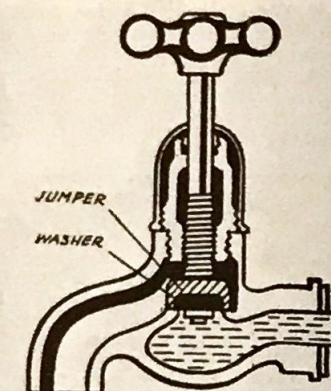


Have a look around your house and see if you can draw a diagram or some instructions on how something works for someone who's never been there before.

TAPS

HOW THEY WORK

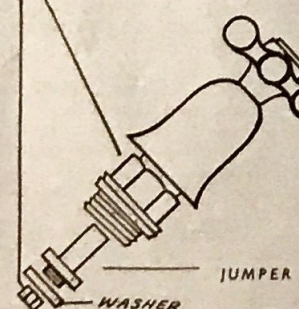
When turning off, spindle rotates downwards in tap body pressing washer down on to seating. When turning on, spindle rotates upwards. Water pressure forces jumper up, except in hot taps where jumper is fixed to spindle.



IF THE TAP DRIPS WHEN TURNED OFF or makes hammering noises when partly turned on FIT A NEW WASHER,

HOW TO RE-WASHER A TAP

- (1) Turn off the stop-cock.
- (2) Open tap fully until the water is run off.
- (3) If the tap is fitted with a cover, unscrew it to expose the nut.
- (4) Hold the tap firmly and unscrew the nut with a spanner.
- (5) Remove the head of the tap.
- (6) Unscrew this nut and remove the old washer.
- (7) Fit a new washer of correct type and tighten the nut securely.
- HOT WATER—Rubber composition.
- COLD WATER—Composition or leather.
- (8) Replace jumper and head of tap and tighten with spanner. Screw down the cover.
- (9) Turn the tap off, and the water on and check that it works properly.



IN COLD WATER TAPS THE JUMPER IS SEPARATE AND CAN BE LIFTED OUT. IN HOT WATER TAPS THE JUMPER IS FIXED IN THE SPINDLE AND MUST NOT BE SEPARATED

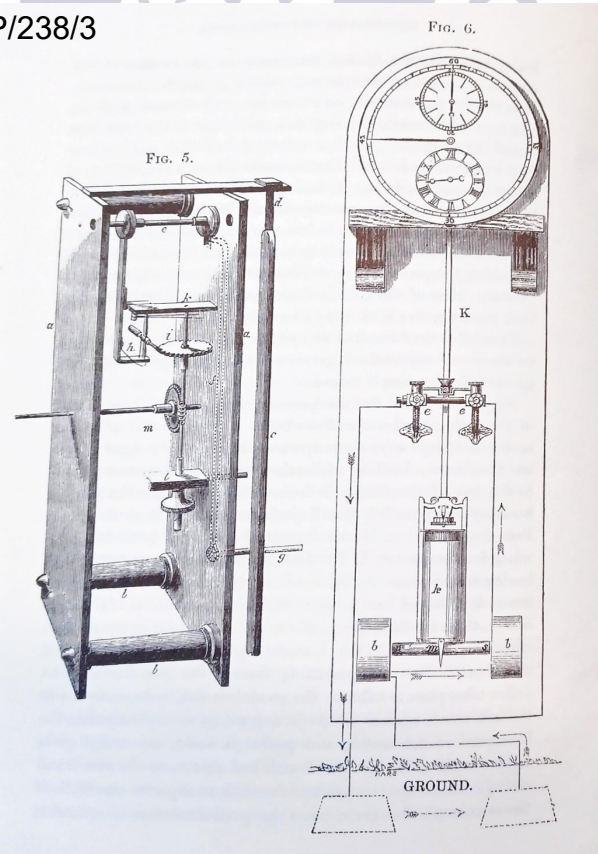
Caithness Inventor ALEXANDER BAIN



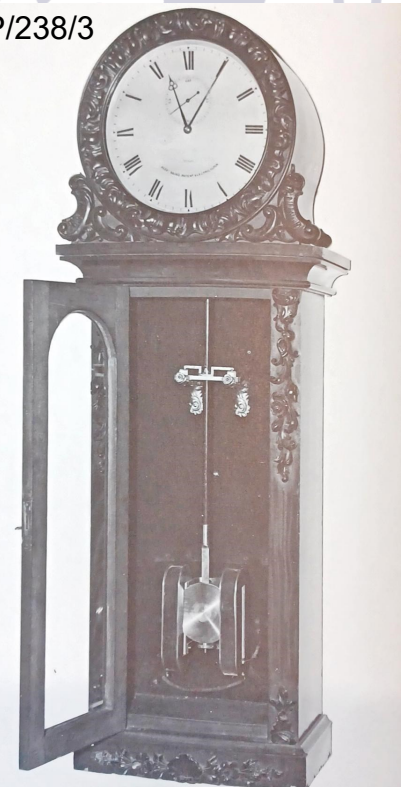
Alexander Bain is one of the best-known Caithness inventors, and he was granted a great many patents during his lifetime. He was born in Watten in 1810 and first apprenticed with a watch and clockmaker in Wick. During his apprenticeship he attended a lecture on electricity held in Thurso, and the subject fascinated him.

Despite having a reputation as a day-dreamer and being described as 'sleepy-headed', he went on to invent the electric clock, electric printing telegraph, earth battery, typewriter ribbon, the facsimile machine, insulation for electric cables and the optical measure for spirits, still in use today.

C/P/238/3



C/P/238/3



Bain electric bracket clock from the collection of the Museum of Vintage & Veteran Cars, Edinburgh. (Copyright J. H. Farr)

ACTIVITIES

Communication

Daniel Sinclair and Alexander Bain were great inventors who both designed innovative forms of communication.

HOW MANY OF THESE FORMS OF COMMUNICATION HAVE YOU USED?



- ☐ Phone
- ☐ Computer
- ☐ Letter/ card
- ☐ Sign language
- ☐ Radio
- ☐ Scan / Fax

Make
Your
Own

Walkie-Talkie

WARNING!
Adult Supervision
Required

What you will need...

A hammer and nail

2 x clean tin cans (ideally the same size) with their labels removed

Scissors

A long piece of string

Instructions:

- 1) Find a grown up to help you!
- 2) Take the 2 clean tin cans and make sure the lids have been removed.
- 3) Be sure not to leave any sharp edges! If there are some, use thick tape (like electrical tape) to cover the rim.

- 4) Make a small hole in the bottom of each can using the nail and hammer. It is best to get the grown-ups to do this bit.
- 5) Now take a long piece of string. Thread the string through the hole in each can, and tie a knot in each end so it can't pull back through the hole.
- 6) Now hold the cans so that the string is taut. As one person speaks into a can, the other listens in the other can.

