

Alexander Brodie Galley Stove (Part 1 of 2)

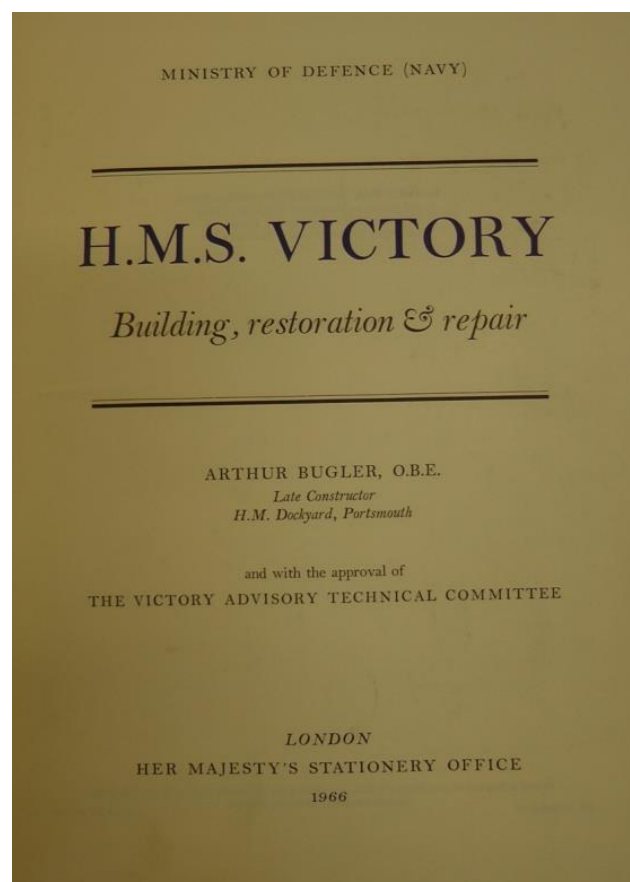
Originally it was thought that H.M.S. Fly would have had a Brodie galley stove, and initial research was undertaken. Further investigations revealed that this was not possible; Brian Lavery in his book "The arming and fitting of English ships of war 1600 - 1815" (Conway Maritime, 1987) writes, *"The Brodie stove began to replace the old type of iron firehearth in the 1780's. In 1781 the dockyard officers were ordered to buy no more 'firehearths of the old construction, as the Navy Board was 'intending to enter into a contract with Mr. Brodie for fire hearths of a new construction'."*

H.M.S. Fly was launched in 1776, so she was built with an 'iron hearth'.

Probably the most famous replica of the Brodie stove is on H.M.S. Victory - Portsmouth, UK. This was built as a 'non-working' mock up and presented to the Victory by Sir Philip Watts when the ship was restored to the Trafalgar condition, 1922-8 (Bugler p.78). An extract from Buglers book, "H.M.S. Victory, Building, restoration and repair" is displayed below. (Source - National Maritime Museum, Greenwich, London, UK)

Whilst the Brodie stove is not relevant to H.M.S. Fly, this information could be useful for modellers wishing to incorporate one into the appropriate model.

[The guidance notes for building the galley stove for H.M.S. Fly will be covered separately.](#)



THE GALLEY

The galley was restored on the middle deck forward to its Trafalgar state during the 1922–8 restoration. It is a small humble enclosure and, excluding the range, is only 6 ft. 2 ins. in length and 8 ft. 7 ins. athwartships; the only galley on board, it catered in a very limited way for both officers and men. The framework consists of four upright 8 ins. × 8 ins. corner posts worked between the middle and upper decks, fitted with panelled sides and 3 ins. × 6½ ins. sills and lintels. The forward end of the galley is open to the range front, and entrances are provided on each side. A simple bench is constructed across the full width at the aft end, 3 ft. high and 2 ft. wide, with three drawers and three cupboards providing a very limited preparing space.

Prior to 1781 naval cooking arrangements were very simple but on 24 May of that year the Navy Board ordered that no more fire-hearths of the old type were to be purchased, explaining that it was intended to enter into a contract with a Mr Brodie for the supply of fire-hearths of a new design. The Brodie stove (Plates 18 and 19) was adopted, and was used in the Naval service without competition until 1810 when the Lamb and Nicholson patent was introduced as an alternative.

The Brodie (Drawing xx) is believed to have been built partly in cast iron and partly wrought iron. The range consisted of two large boilers constructed between the main side plates over an enclosed fire box. A separate open fire was situated at the front of the range. In between the fires was built an oven that extended from side to side of the range, and fitted with a door at each end. It is estimated that the capacities of the boilers were about 150 and 100 gallons. The large Brodies were said to be designed to provide half a gallon boiler capacity for every man of the complement; the *VICTORY* did have other small stewing stoves. The enclosed fire heated the boilers and also heated the oven from the side and top.

The open fire at the front of the range was subdivided into three parts and each could be used separately. The top two fire bars hinged forward to form a surface upon which pots and pans could be balanced, and on either side of the fire within the lower part of the uptake were two gantries which were hinged to allow pots to be suspended from them and swung into

desired positions over the top of the fire. A hook arrangement was fitted to each gantry to provide three alternative positions for each. The lower 8 ins. of the uptake front plate was hinged to allow the pots on the gantry to be swung clear of the fire. In front of the open fire was an adjustable spit which could be fitted into any one of four vertical positions and could be moved up to 20 ins. from the fire front. A large tray was arranged on the deck under the spit to collect any melted fat that dripped from the roast.

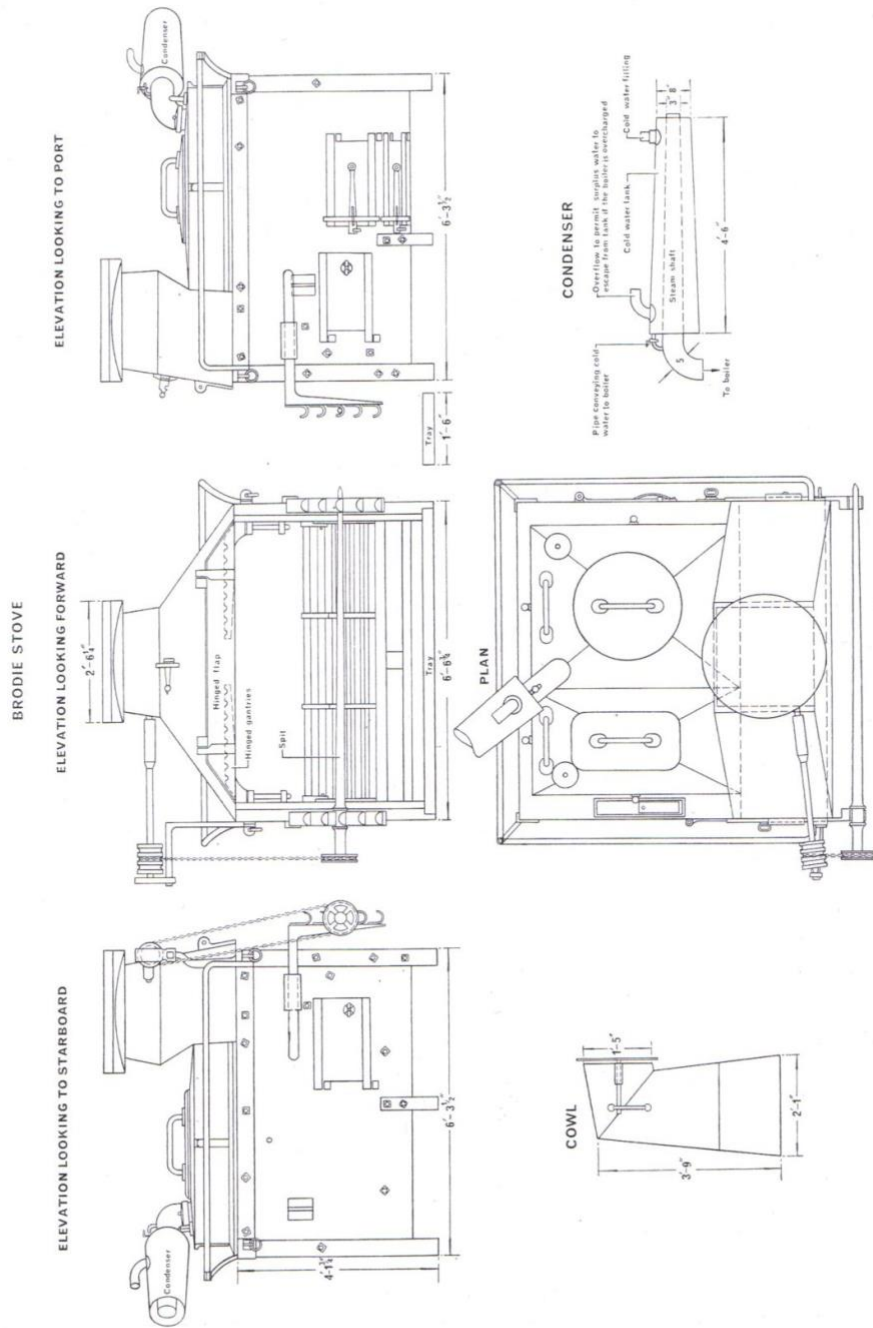
The spit was revolved by a chain passing over a pulley fitted on a horizontal shaft, which was assisted to rotate by the draught of the range in the uptake acting on vanes secured to the shaft. The spit was large enough to accommodate and roast a fair-sized carcass, such as a sheep, pig or large joint of beef. The boilers were able to produce large quantities of stews, boiled or steamed vegetables or puddings, in addition to large quantities of hot water. The uptake was about 12 ft. long and terminated in a cowl 4 ft. in height on the forecastle deck, the height being restricted by the sails. A cover plate was fitted on the end of the cowl and it could be adjusted to restrict the outlet. The funnel could be rotated and adjusted by hand to suit the direction of the prevailing wind. A condenser reputed to produce $1\frac{1}{2}$ gallons of distilled water per day was suspended from the deck above and could be used on either boiler. It is believed that the ship's surgeon had first call on the distilled water available.

The fire box that fed the boilers was situated centrally under them. The oven situated between the fires was directly heated from the sides and top only, and this was sufficient to permit normal baking and roasting to be undertaken. The oven had about 10 sq. ft. of baking area and was capable of cooking as much as 80 lb. of bread per batch. This quantity does not seem much for the VICTORY's complement, but it should be remembered that the 1790 Provisioning Allowance allowed 'biscuit pounds, avoirdupois to every man serving, one every day of the week'. The range had a very large heat output, and despite the large number of gun ports, the fore part of the middle deck became very hot when outside temperatures were high; this part of the ship was no doubt popular when H.M.S. VICTORY was operating in the Baltic. The fuel consumption of the range was high and it is believed to have functioned efficiently on coal, wood or charcoal. About 50 tons of coal was carried mainly in the hold and timber was usually easily obtainable ashore.

The following table provides an interesting comparison with an Admiralty Pattern coal-fired 10A range that was in use by the Royal Navy up to the late 1930's. The VICTORY's complement was about 850 officers and men. The 10A range catered for 300 men.

VICTORY'S GALLEY	ADMIRALTY PATTERN 10A	
10 sq. ft. supplemented by the spit	<i>Baking area</i>	20 sq. ft.
250 gallons	<i>Boilers</i>	252 gallons
6 sq. ft.	<i>Hot-plate area</i>	$7\frac{1}{2}$ sq. ft.
6 ft. long	<i>Spit</i>	Nil

A better appraisal of the improvements that have been made to the galleys of the Royal Navy in the past 160 years can be made when it is known that the seamen's galley on a modern cruiser, designed for 800 men, would in 1964 be fully insulated and hygienically lined with



stainless steel and plastic, and would be provided with adequate supplies of boiling and hot water. It would have two large electric roasters, three deep electric fryers, two shallow fryers, two 60-gallon steam-boiling coppers, three 30 gallon steam boiling coppers, two sixteen-dish steam ovens, four 25-gallon steam kettles. Modern aids such as potato peeler, bacon slicer, mincing and mixing machine, pie machine, bread slicer, potato chipper, infra-red heaters and can opener would each have its place. An easily cleaned tiled or similar floor would be laid, hot air and steam would be removed by fan exhaust and supplies of trunked fresh air provided. A ready-use cool cupboard with its own cooling plant would be included in the equipment. The cruiser would also have an Admiral's or Captain's galley and also one capable of catering for seventy-five officers.

The Brodie stove was supplemented by stewing stoves and usually seven of these were carried in a three-decker such as the *VICTORY*. These stewing stoves were no doubt used for the burgoo or oatmeal porridge which was served for breakfast and about which so many derogatory words have been written. The old provisioning regulations laid down in Article 1, page 61 of *Admiralty Instructions* 1790, state that 'one oatmeal pint Winchester measure shall be allowed to every man serving in His Majesty's Ships on each Monday, Wednesday and Friday'.

From 1783 small portable stoves were also supplied for heating purposes, one for each deck, and these were undoubtedly often used for drying the wet clothes of the seamen. A year later, the galley funnel which previously had been fashioned of wood was made of iron. This of course refers to the portion above the weather deck and not the uptake of the range. Some species of timber do not burn easily, and it would be interesting to know what kind of timber was formerly used for the galley funnel and whether it was the practice to impregnate the timber with salts.

Although flag-stones were fitted under the galley stove, the ranges and stoves did constitute a fire hazard, but the ships were always very crowded and an outbreak of fire was unlikely to go unnoticed for very long.

The Brodie stove in the *VICTORY* is built of timber and is a non-working mock-up. It was presented to the *VICTORY* by Sir Philip Watts when the ship was restored to the Trafalgar condition, 1922-8.

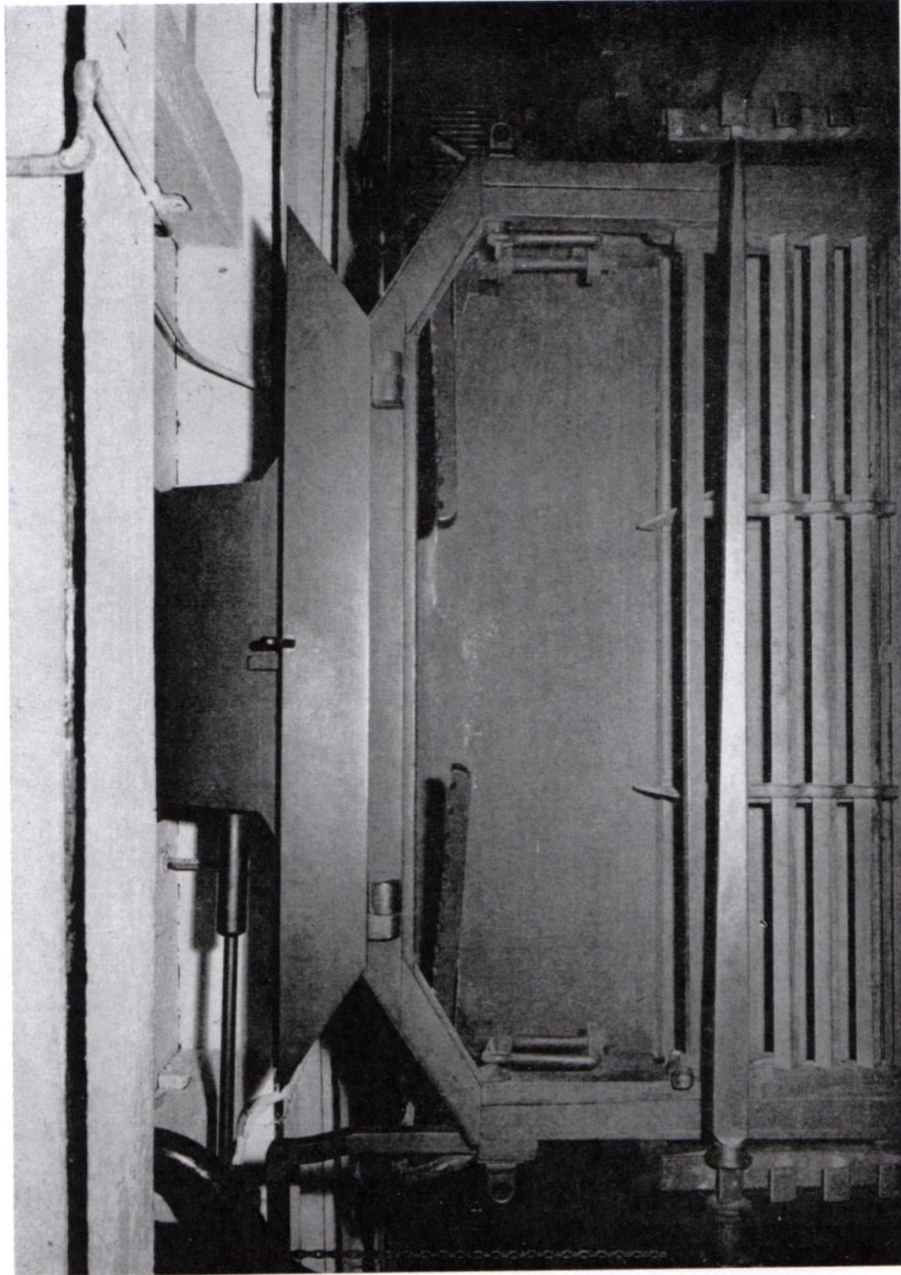


Plate 18: Brodie stove showing fire bars, spit, and hinged gantries

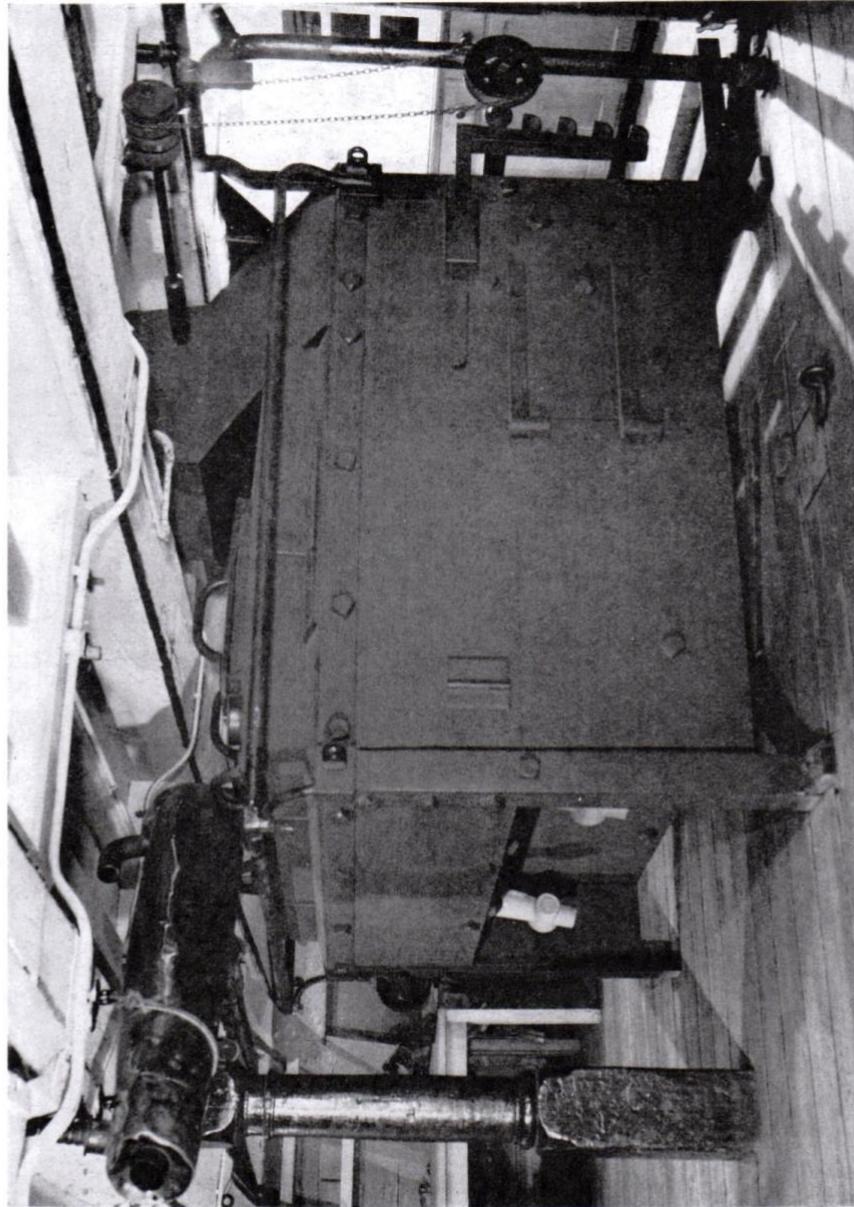


Plate 19: Brodie stove with condenser at the fore end and chain for rotating spit at aft end

The following link gives a general description and history of the Brodie stove, and information on Alexander Brodie; there is also a link to the original patent transcription.

<http://www.uwf.edu/fpan/mardigras/artifacts/brodie/>

Whilst researching information concerning the Brodie stove, the expression, 'Modelling for God' (http://davesconfederacy.blogspot.co.uk/2011_07_01_archive.html) was encountered. Some of the topics that have been covered on this site, and those that will be covered in the future, perfectly fits this expression.

H.M.S. Fly is an excellent model without the 'excursions' of 'Modelling for God', so the question could be asked, "why do it?" For this author it is a challenge in modelling, and if shared, makes it even more rewarding. The stove is an excellent example, and when completed very little of it will be visible within the forecastle. A glimpse may be seen through the gun ports, or an open door to the forecastle, yet there will be much detail in the building. This author believes that it is these glimpses, which fuels the imagination, and realism is added to the finished build of any model.

Lloyd Matthews - March 2014 ©