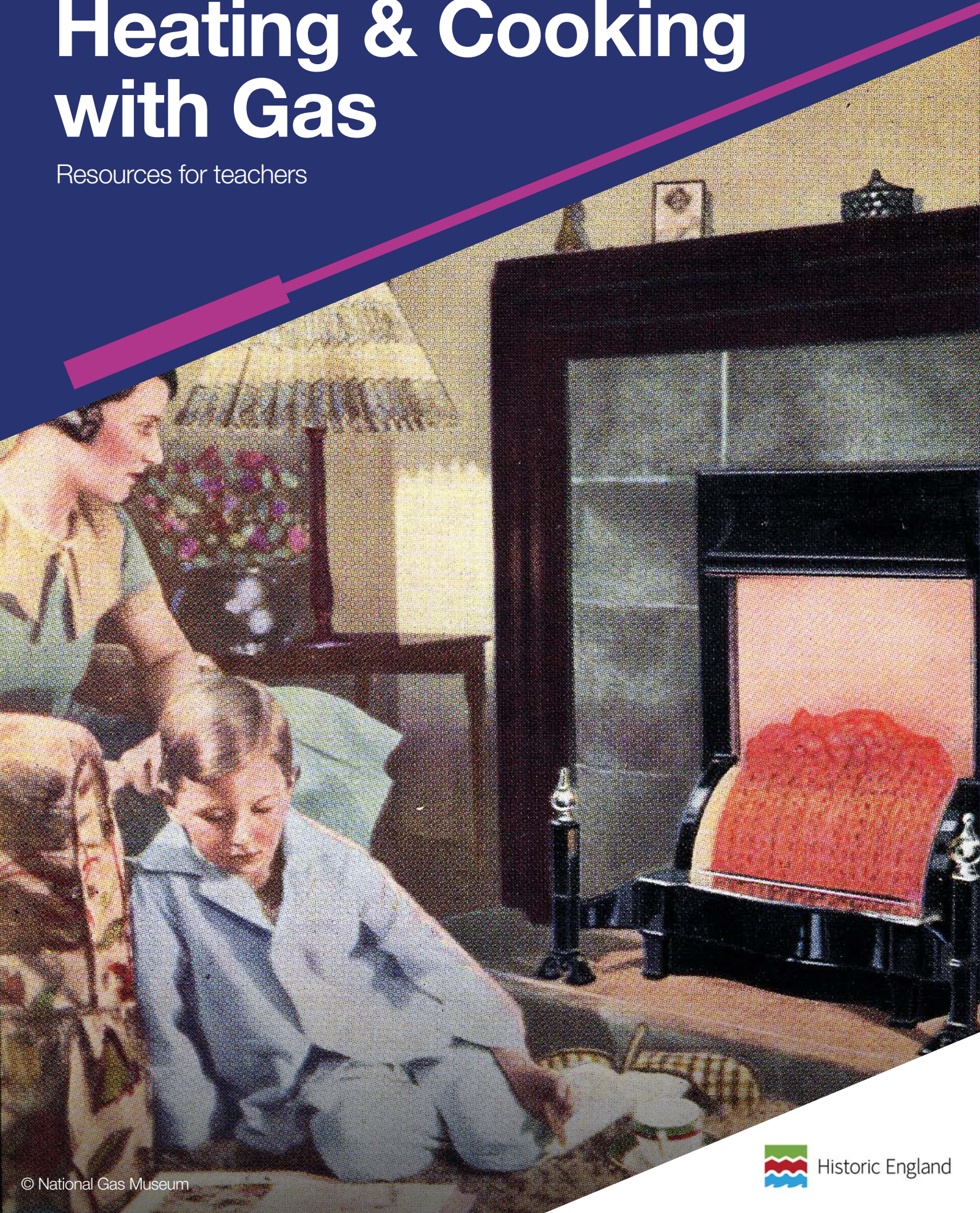


Gas

# Heating & Cooking with Gas

Resources for teachers





# Using the resource

National Grid owns, manages and operates the national gas transmission network in Great Britain, making gas available when and where it's needed all over the country. This resource is part of our series for schools, highlighting and celebrating how gas has lit our homes and streets and kept us warm for over 200 years.

**This resource primarily supports History at Key Stages 1 and 2 and the development of children's enquiry, creative and critical thinking skills. It includes:**

- Information for teachers
- Fascinating Did you know..? facts
- A series of historical images to help children explore the theme, with additional information and questions to help them look closer.

It can be combined with other resources in the series to explore wider topics such as:

- Energy
- Homes
- Victorians
- Jobs and work
- The industrial revolution
- Technology

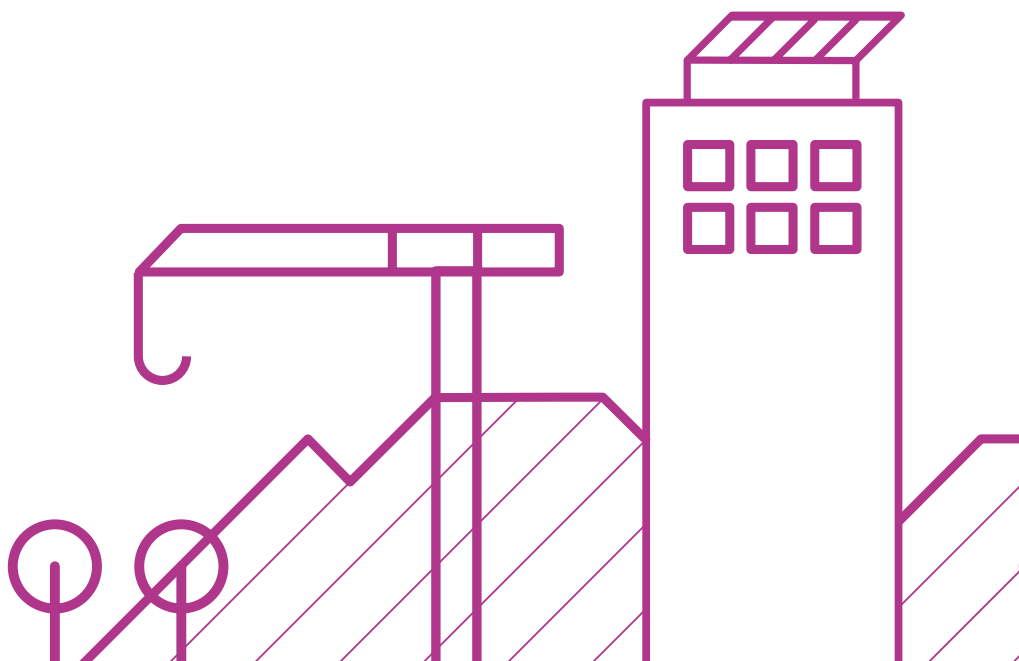
And used to support cross-curricular work in English, Technology, Science and Art & Design.

Project the images onto a whiteboard to look at them really closely, print them out, cut them up or add them to presentations, Word documents and other digital applications.

Our **Classroom activities** resource provides hints, tips and ideas for looking more closely and using the images for curriculum-linked learning.

## Resources in the series

- [Gas lighting](#)
- [Heating and cooking with gas](#)
- [Gas gadgets](#)
- [Gas – how was it made?](#)
- [The changing role of women](#)
- [Transport and vehicles](#)
- [Classroom activities](#)
- [Your local gas heritage](#)



## Heating & cooking with gas



# Information for teachers

### Gas cooking

Before the advent of gas, cookers were usually fired by wood or charcoal and included a chimney to carry away the smoke. The first commercially viable gas cooker was developed by James Sharp and went into production in the 1830s - at the very start of the Victorian period. Others soon followed, and by the early 1850s various designs were available. These cookers were made from **cast iron** and usually included an oven, grill and 'boiling rings'.

But no matter how ingenious and relatively efficient these new cookers were, they all suffered from the practical problem of the gas flame tainting the flavour of the food. The problem was solved in 1855 with the invention of the aerated 'Bunsen' burner. Now gas could burn with a 'clean' flame. Gas cookers were still relatively expensive though and, despite this important advancement, it wasn't until the introduction of the **pre-payment meter**, in 1880, that gas cooking really took off. By putting a little extra into the gas meter each month, the cooker could be delivered on credit and paid for or rented over a period of time – a sort of early version of Hire Purchase, or Interest-free-credit.

The design of gas cookers stayed relatively unchanged until the beginning of the 1900s. Gradually, enamelling was introduced which made cleaning much easier and fitted the new, 'hygienic' concept of the modern kitchen. Their rounded corners and hidden hinges made them more streamlined and they could be designed in different **patterns** and colours. The popularity of gas cookers received a major boost when the thermostat was invented in 1923, allowing the temperature to be controlled – a revolution in domestic cooking.

Cookers today are still modelled around the same basic design as when they first emerged in the 1800s: one or more ovens, a grill and a set of burners (hob). But they are now usually lit by an electronic ignition, have automatic timers for the oven and an extractor fan to take away fumes.

### Gas heating

Space heating by gas was introduced in the 1850s. Before this, most houses were heated by coal or coke fires. The main challenge was to find a material which would transmit enough heat from the gas flame to warm a room. The first heaters imitated coal fires heating asbestos and, later, ceramic materials.

Around the same time, **radiators** were also being developed. They were installed in wealthy Victorian homes, but didn't really take off in Britain until the early 1900s. They were initially run by steam, rather than hot water.

Coal remained the preferred fuel for heating most homes and other buildings until well into the 20th century. A major advancement came when the convector gas fire was introduced in the 1950s. This enabled lost heat which previously escaped up the flue to be used to heat up the room by means of a heat exchanger.

By the end of the 1970s, gas-fired central heating became widespread, replacing individual fires and heaters in most homes. Some of the first gas central heating systems worked by blowing warm air around the house through ducts rather than via hot water radiators.

## Hot water

Before the invention of the water heater, householders heated water in a container on the stove or above an open fire. This was then used to fill the sink, bath or wash tub. In the 1850s, a **bath** fitted with a gas burner underneath one end of the tub was introduced, which would heat cold water straight from the tap. But this was time consuming – the water could take up to an hour to heat up.

In 1868, Benjamin Maugham invented the **Geyser** or ‘Copper’ as it became known, which heated the water as it flowed into the bath. It consisted of a large copper cylinder inside which streams of water were heated by the rising hot gasses from rows of gas jets in the base. Although this amazing device provided instant hot water, it could also be extremely dangerous. There was no temperature regulation and no flue, which meant dangerous fumes could escape - a window needed to be kept open to avoid potential asphyxiation. They could also be noisy, going off with a bang when the burners became clogged.

Geysers and water heaters were used well into the 20th century, with different designs making them safer and more efficient. Today, the combi-boiler provides instant hot water in a similar way, but without the need for a tank, piping it directly to taps all through the house.



## Did you know?

- ◆ Alexis Soyer, the Victorian celebrity chef, promoted the use of gas for cooking, using it to cook huge celebratory meals for Royalty and to cook in his soup kitchen to prepare food for the poor.
- ◆ Coal gas was very poisonous so you had to be very careful when you used it and switched off your cookers or heaters.
- ◆ Modern natural gas is not poisonous but gas leaks are still dangerous as they can cause explosions – because the gas is colourless and odourless, a harmless gas called mercaptan is added to make it smell so you know when you’ve left the gas on. Some people say it smells like rotten eggs!
- ◆ Some of the early gas appliances combined more than one function, such as a **fridge** topped with gas rings for cooking and a **washing machine** which doubled up as a dishwasher.

## Did you know..?

To test whether a customer's cooker was working properly, gas companies would send someone out to bake a cake in it. If the sponge didn't rise, the cooker was fixed or replaced.



# 1 Gas bath

(c. 1850)

Baths fitted with a gas burner underneath one end of the tub were introduced in the 1850s. Although this meant the bath could be filled directly from the tap, without the need for heating it first on a stove, the design was not entirely successful: the water could take a very long time to heat up – not to mention the potential for burnt bottoms!

## Look closer

- ◆ What is this bath made from?
- ◆ Can you see where the gas is piped in?
- ◆ What do you think might have happened if you got into the bath before turning off the gas burner?





2

# Copper Geyser (c. 1930) advert for Ewart's Geysers (c. 1910)

The Geyser or 'Copper' as it became known, heated water instantly, as it flowed into the bath or sink. It consisted of a large copper cylinder inside which streams of water were heated by the rising hot gasses from rows of gas jets in the base.

Although this amazing device provided instant hot water, it could also be extremely dangerous. There was no temperature regulation and dangerous fumes could escape – the label on this one advises the user to *Open door or window when at work to avoid potential asphyxiation*. They could also be noisy, going off with a bang when the burners became clogged.

Geysers were first used in the 1870s and could still be found in some homes in the 1960s.

## Look closer

- ◆ Why do you think 'instant' hot water was such a welcome invention in the Victorian times?
- ◆ Can you see how the water is being heated?
- ◆ How is hot water heated in your home?







**HOT WATER INSTANTLY NIGHT OR DAY.**



# **"EWART'S" GEYSERS**

QUICKEST AND CHEAPEST METHOD OF

## **Hot Water Supply for all Purposes.**

The name "EWART" guarantees an Experience from 1834—GET EWART'S.

**DELIVERY FROM STOCK.**

**EWART & SON Ltd., 346, EUSTON ROAD, LONDON, N.W.1.**

3

# Early sink heater

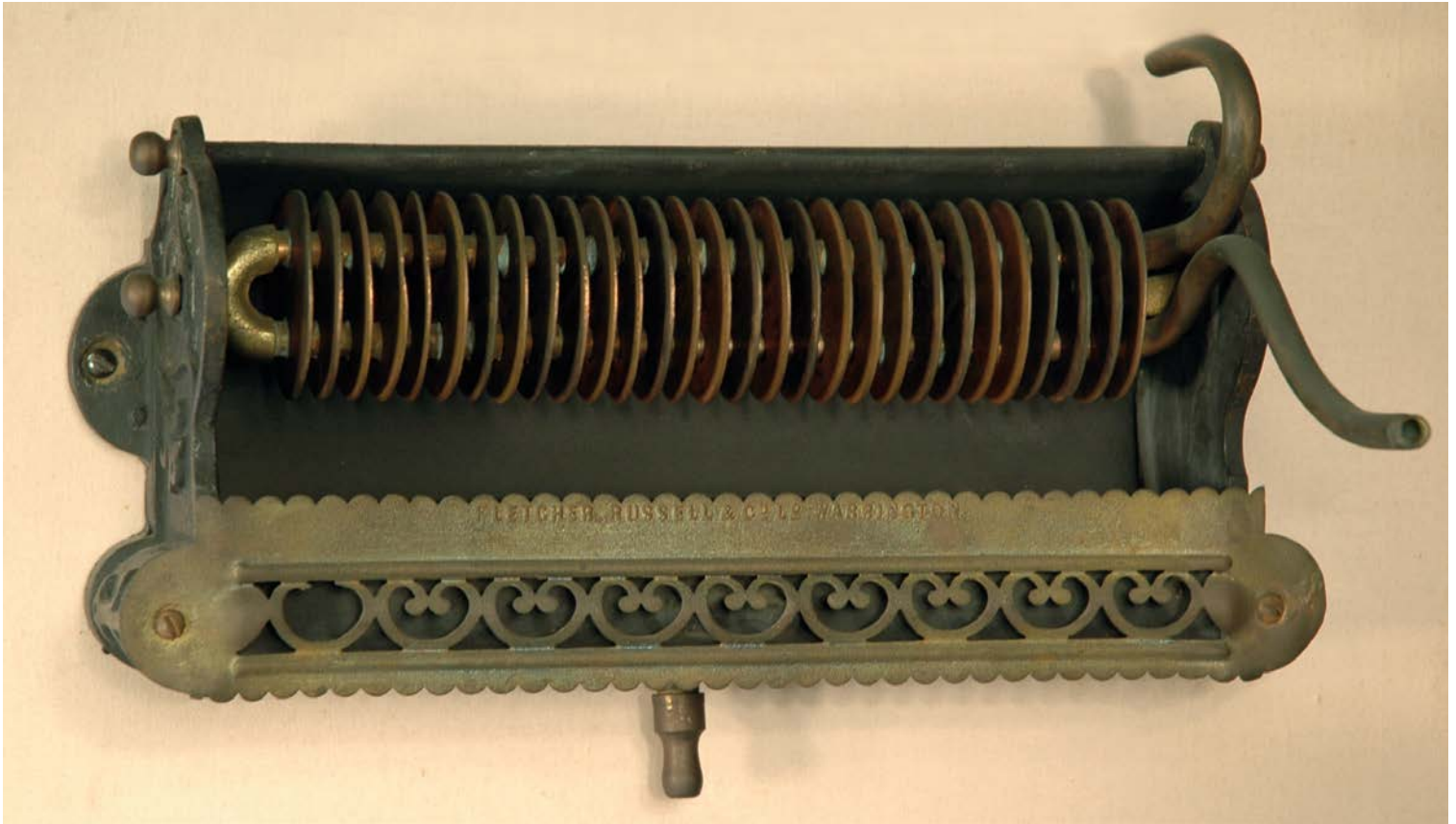
(c.1890)

These sink heaters were available from the end of the 1800s and used well into the 20th century. As the water flowed in and around the pipe at the top, it was heated by the copper discs which, in turn, were heated by the gas burner below. The hot water then flowed out and into the sink.

## Look closer

- ◆ What is the water heater made from?
- ◆ Why do you think the strip along the bottom is decorated?
- ◆ How good do you think these were at getting the water really hot?
- ◆ Can you think of ways that they might have been dangerous? How might they have been made safer?





National Gas Museum

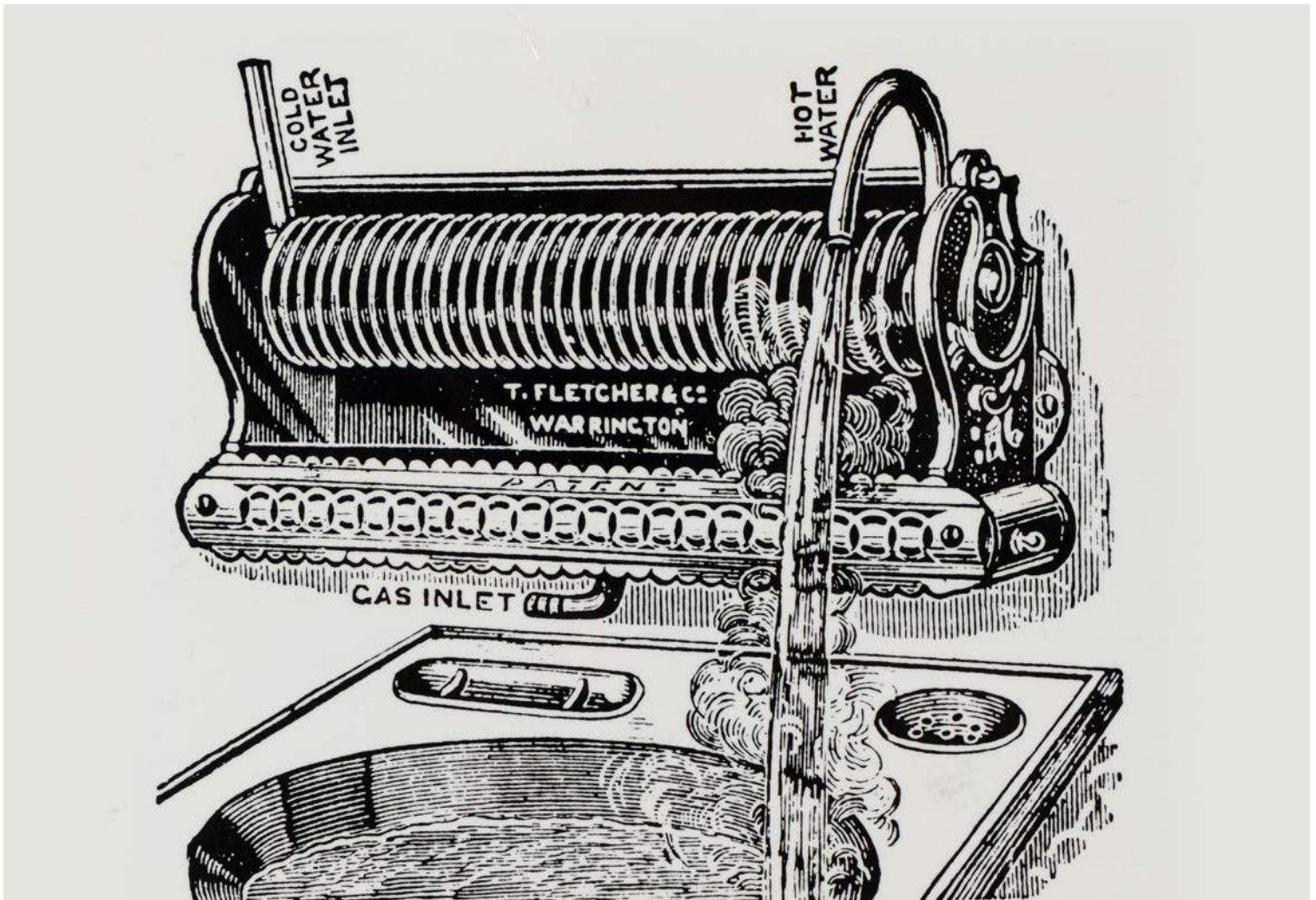


Photo: Luke Unsworth | National Gas Museum

4

# The Main cast iron cooker

(c. 1890s)

Cast iron gas cookers were first produced in the 1830s. In the 1850s they were modified so that the gas flame could be aerated (like the blue flame in a Bunsen burner), which stopped the food from being 'tainted' by the gas (which could make it taste a little odd). The cast iron made these cookers very heavy and difficult to clean.

They also had no temperature control, but like some modern ovens today, the top rack would get hotter than the bottom, meaning food could be cooked at slightly different temperatures, if you were clever! These cookers were very expensive to buy and most people rented them from their local gas company, for a few pence per week.

## Look closer

- ◆ Why do you think the cooker is made of iron?
- ◆ Why do you think the handle is made of wood?
- ◆ What might you cook in the slot at the top?





5

# Governor General cooker

(c.1930)

From the 1900s, enamelling was introduced to cooker design. Not only did this make them easier to clean, but also meant they could now be produced with different colours and patterns.

In the 1920s, electricity was becoming more and more popular. To try and encourage people to keep using gas, makers of gas fittings made increasingly attractive products for the home. Items decorated with Chinese patterns or made in the Chinese style (Chinoiserie) which had been extremely popular in the 1600s and 1700s among the elite of society, became desirable once again in the 1920s and 30s.

The enamel on this cooker is decorated in the style of the Willow Pattern, which had been a popular decoration for crockery (or 'china') in Britain since the late 1700s – and still is today.

## Look closer

- ◆ What different things can you see in the pattern? How many can you find?
- ◆ Do you like this pattern? Why? Why not? Have you seen it anywhere else?
- ◆ What do you think the rack at the top of this cooker would be used for?

Take a look at the 1930s [glass lampshade](#) in the [Gas Lighting](#) resource for another example of gas fittings in the Chinese style.







6

# The Cannonlux combined gas cooker and refrigerator unit

(1959)

This extraordinary appliance includes a small gas oven and grill in the top compartment and a fridge at the bottom – complete with ice compartment. It was designed as a space-saving unit for bedsits and other small living spaces of the time. The device on the left-hand side is a pilot light – a tiny flame which was constantly lit and used to light the burners.

## Look closer

- ◆ What do you think the red and green controls were for?
- ◆ Is there anything about this unit which makes you think the bottom compartment is not an oven – like most other cookers designed like this?
- ◆ What do you think the rack at the top was used for?







# Cast iron gas fire

(1800s)

Early gas fires, like this one, tried to imitate coal or logs. It was lit by a simple burner, made up of copper tubes and would have used more gas than a modern boiler which can provide central heating for an entire home. Early gas fires had no flue to take away dangerous fumes and had to be used in well ventilated rooms. Luckily Victorian houses were well-known for being draughty!

## Look closer

- ◆ What sort of home might have included a fire like this?
- ◆ Do you think this fire would have been safe?
- ◆ How could it be made safer?





8

# Combined space heaters and boiling rings

(c.1900)

These units both combine a space heater with a boiling ring. The heater at the top is portable and has a gas ring on the top. The one at the bottom has a boiling ring hidden behind the doors in the top, when the doors are carefully opened, the ring slides forward - great for boiling a kettle in a small space.

## Look closer

- ◆ Do you think these heaters look safe? Why? Why not?
- ◆ How could they be made safer?
- ◆ Can you see where the gas would have been piped in?







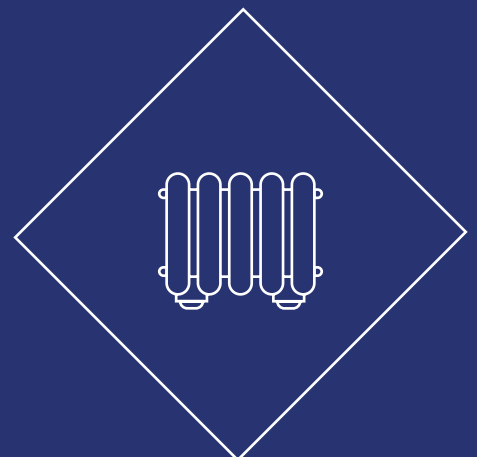
# Radiator

(c.1890s)

In this early gas radiator, each of the metal tubes was heated by a gas burner in the base. The heat would then radiate outwards from the tubes and from the grill at the top. The legs at the bottom made sure the floor didn't get too hot.

## Look closer

- ◆ What can you see written at the bottom of the radiator? Why do you think this was important?
- ◆ Can you see where the gas would flow into the radiator?
- ◆ Why do you think it is brightly coloured and decorated?
- ◆ How is this different to modern radiators?







10

# Pre-payment gas meter

(c. 1890s)

Gas meters measure the amount of gas being used by a household or workplace, so that gas companies can charge their customers the correct amount.

When the first gas meters were introduced in the mid 1800s, the customer would pay in arrears, after the meter had been read. This meant that the gas companies needed to be careful to ensure their customers were financially secure and credit-worthy.

The pre-payment gas meter was invented in 1870 by T. S. Lacey. Now, the householder could pay for the amount of gas they wished to (or could afford to) use in advance, by putting coins into the slot. This was a major development, making gas available to ordinary working people. And by paying a little extra each month, they could also buy appliances such as cookers, renting or paying for them over a period of time.

The money in the meter was a tempting target, and gas companies continued to design new and more robust models and systems – including tokens and cards – to thwart would-be thieves.

## Look closer

- ◆ Can you see the coin slot?
- ◆ What do you think the dials are for?
- ◆ How easy do you think it would be for a thief to steal the money from this meter?



