

Historic Scotland podcast:

Series 2, Episode 4 transcript

Chapter 1

Sarah's intro:

Hello, hello, hello. It's Sarah. I'm so excited for you to hear this episode.

Remember, as an Historic Scotland member, you've got access to this exclusive member-only version, which includes some behind-the-scenes content at the end. Thank you so much for being a member. We had so much fun recording this one. I hope you enjoy it.

Hello and welcome to the Historic Scotland podcast. My name's Sarah MacGillivray. I'm an actor and writer with a passion for people, place and story.

Each episode we travel to a different site, chat to the people that live, work and take care of it and unearth its beautiful, haunting and surprising story.

Today we're at Kinneil House. We're chatting to Ian Shearer from Friends of Kinneil.

Chapter 2

00:51

Ian:

If this room was the drawing room and that was the fireplace, I like to think that Dr Roebuck and James Watt would have sat right here in front of the fire talking about this invention.

Sarah:

We're also hearing from Paul Rowlands who manages the site for Historic Scotland.

Paul:

It was left hollowed out for a number of years, a number of decades, which meant it was open to the elements, all the rain coming here, all the wind, which is why any paintwork, any woodwork in here is completely ruined.

Sarah:

And we're talking to an expert in industrial heritage, Mark Watson.

Mark:

This is a drawing that was developed for the patent specification, but then Watt had a brilliant idea, which was to produce no drawings at all in the patent, so that instead he describes an idea and then he could sue anyone who adopted the same idea, even if there were big differences in the physical appearance of their machines compared to Watt's.

Chapter 3

01:51

Sarah:

Kinneil House sits quietly on the edge of the Firth of Forth, just outside Bo'ness. From the front, it feels grand, but much of the house sits in a state of semi-ruin. This is a place that's been added to, pulled apart, repurposed, forgotten and rediscovered. And for a short but extraordinary period in the 1760s, it became a testbed for an idea that would change the world. Because it's here, in a forlorn-looking outbuilding, that a young inventor revolutionised the steam engine and thus sped up the Industrial Revolution. To help us understand Kinneil as a place and why it matters, we're going to hear from someone who knows it best. This is Ian Shearer. He's from Friends of Kinneil.

Should we go inside and talk about the history of the house?

Ian:

The house was originally built in the 16th century by the head of the Hamilton family. And he was Mary Queen of Scots' nearest cousin and he was her first regent. He was also the heir to the throne. Mary Queen of Scots was a baby born in Linlithgow. And if anything had happened to her, then he would have actually been King of Scotland in his own right.

After he stepped down as regent in the 1550s, he then built Kinneil House as his own royal palace. He was still heir to the throne. There was still a possibility that his family, the Hamiltons, might one day become the kings and queens of Scotland.

This room was his Presence Chamber. It's in a chamber where he would have received visitors, like a working meeting room, if you like. And it is still decorated with the original 16th-century wall paintings, which are considered the finest of any house in Scotland and some of the finest of any house in Britain. And interestingly, we call it the Parable Room, this room now, and that's because the paintings tell a story around the walls of the parable of the Good Samaritan from the Bible. And I just think it's really interesting that such a powerful man chose to have that story decorating the walls of his meeting room. I mean, try and imagine a modern prime minister or president or whoever having the story of the Good Samaritan as their inspiration around the walls of their office.

Sarah:

God, that's powerful, isn't it? Like powerful in a humble way. Yes, it's incredible.

Ian:

He was one of the most powerful men in Scotland in the mid-16th century. In later generations, they became an ever more powerful family, amassing huge wealth. This wasn't their main home, by the way. Their main home was in Hamilton, where they had Hamilton Palace. I don't know if you've heard of Hamilton Palace. It was one of the biggest private houses in Europe, in this country probably second only to Buckingham Palace and places like that. And it was very sadly demolished in the 1920s, despite the fact that it contained huge artistic treasures and amazing collections of furniture and paintings and all that sort of thing.

Chapter 4

05:02

Paul:

My name is Paul Rowlands. I'm a Roving Manager for Historic Environment Scotland. In the 1930s, you're probably aware that the 1930s were not a very good time for historic houses. They tend to be ripped down if they were left in disrepair for a while. But as you can see, every floor in here is ripped out. The roof was ripped out, which was replaced by a HES. As you come around to the other part, the other pavilion here, you'll see the roof is missing off the top there as well. But on the last section, it's still there. And that's because they found the painted rooms, which are original with the house, which was built in the early 1550s.

Sarah:

OK, so we've just walked into the main entrance of Kinneil House.

Paul:

Might not have been there. We don't know where the original entrance was, but it's been the main entrance for some time.

Sarah:

OK, the one at the front.

Paul:

Yeah, that'll do.

Sarah:

You can see as you drive up. And we walked in and we're on like a wooden platform. And you go into what's quite surprisingly, like a really large, tall, empty area, 'cause all the floors

have been ripped out and it's quite exposed sort of cements and you can see the exposed foundations, almost foundations?

Paul:

Yes.

Sarah:

And the wood that would have held structures in place as well. And you can see like the sort of where the fireplaces would have been.

Paul:

This gold painting here, it's original with the house... above the windows here. So it kind of gives you an idea of the rich colours that would have been in this area. This would have been an entertainment area. It would have been where people dined, tapestries, rich reds, greens, golds. And if you come underneath here a little bit and look through there, you can still see some of the plaster that's left, some of the detail right at the top there. Can you make that out just through that top doorway there?

Sarah:

Yeah, sort of swirling patterns.

Paul:

Yeah, you can see that there. There are other examples of that in the building next to us. So you can check that out a bit more closely, but that allows you to see it as it was kind of in situ, compared to how now we've got it on display next door.

Chapter 5

06:53

Sarah:

The contrast between what's lost and what remains is stark.

Ian:

It had an internal demolition, but during that process, some panelling was peeled away from the walls, and these astonishing wall paintings were revealed. And it's at that point that the Inspector of Ancient Monuments came out, rushed out from Edinburgh one morning because he'd been tipped off that these paintings had been discovered. He came with the director of the National Gallery. They looked at these paintings and realised that it was going to be a great loss if the house was demolished. And from that point on, the house was saved and the paintings were restored.

During the demolition, this amazing ceiling had been taken away. This room was open to the sky. The roof was off. The whole building was being stripped, including the roof. So the rain was getting in here. And this original 16th century timber ceiling actually had to be recovered from the demolition contractor's yard in Glasgow. It had already been carted off. It was ordered that it be brought back and reconstructed like a general ceiling. And it's the only one that survives in the house because a lot of the other parts of the house, as you've seen, are totally ruined inside. If we just go out here.

Sarah:

It's a big house.

Ian:

This shows you what the demolition contractors in 1936 did. Very sadly, most of the house was stripped and that room that we've just been in probably was a bit like that with the roof off and things. You can see there was another ceiling there which was lost. This room would probably have been painted as well. This was a big outer chamber or hall of the original castle.

By the 18th century, this had become the drawing room, and there was a fireplace just there. And as I explained, the house began to be rented out to people, including the industrialist Dr John Roebuck. And he came to Bo'ness because he had started the Carron Iron Company in Falkirk and needed a place for him and his family to live. And it was he who rented Kinneil

House from the Hamiltons. And it was him that brought James Watt to come and work with him.

So if this room was the drawing room and that was the fireplace, I like to think that Dr Roebuck and James Watt would have sat right here in front of the fire talking about this invention that he wanted to try and develop. I don't think there's any other room in Scotland where you can say that James Watt was in this room talking about the steam engine and talking about his ideas. And there are no other buildings other than Kinneil House and the James Watt Cottage which survive in Scotland, which have such a direct link to the life of one of Scotland's most famous sons and inventors.

Sarah:

Yeah, I love that. Because it's almost like you can almost feel like, be lovely, your imagination totally goes straight there, doesn't it? With the fireplace and because you sort of have an understanding of how grand and beautiful it would have been from the other rooms, then it sort of gives you that.

Ian:

And I think we don't talk enough about one of the greatest periods of Scottish history, which was the Scottish Enlightenment and the scientists and thinkers and inventors of the late 18th century. We talk a lot about romantic figures like Robbie Burns and Bonnie Prince Charlie and Mary Queen of Scots and Robert the Bruce and all these people. But some of the people that had the most influence on the world were the figures of the Scottish Enlightenment. Dr John Roebuck himself is underestimated and underrated, I would say. He was a very, very significant person of the Scottish Industrial Revolution.

Chapter 6

10:48

Sarah:

John Roebuck was originally a doctor of medicine.

Ian:

Unfortunately, he discovered he didn't really like sick people, which is no good if you're a doctor.

Sarah:

He also dabbled in chemistry, and his first major breakthrough was to invent the process to manufacture sulphuric acid. It was called vitriol at the time. That was huge and made him a lot of his wealth. Not long after, he founded Scotland's first big industrial enterprise, what would later go on to become Carron Company, one of the largest ironworks in Europe.

Ian:

That was started in 1759 by Dr John Roebuck and his partners. He needed somewhere to live nearer to that than East Lothian, so that was when he came, around about 1760, and rented Kinneil House, which was also useful because the estate came with a lot of coal. Bo'ness has this huge history of coal mining. There were a lot of coal works around here, and it was the coke that was needed to fuel the ironworks, and it was all connected. There was also iron ore around here, which was another important raw material. So that's why he came here.

Sarah:

Extracting coal from the ground in an area prone to flooding is, as you can imagine, a dangerous job. And a wet one. Lots of mines were prone to flooding. And if you have a flooded mine, you need a pump to get the water out. Are you starting to see where we're going with this? So, we have an incredibly wealthy businessman and an inventor on an estate with tonnes of land with a problem that needs solving. Steam pumps to extract water from mines already existed, but they were incredibly inefficient.

Ian:

But Roebuck heard about this young engineer in Glasgow called James Watt, who had an idea for a much more efficient type of pump, but it needed to be tested and developed. And so they say that James Watt came to Kinneil House and gave Roebuck a demonstration of a

little model of what he was thinking about on the dining room table somewhere in the house. Whether that's true or not, I don't know, but it's a lovely story.

Sarah:

It is, yeah.

Ian:

And Roebuck was this kind of visionary person who was able to see immediately that this had such potential. And he immediately decided to go into partnership with James Watt. He paid off James Watt's debts, which helped Watt, and backed him to come here periodically. Watt still continued to live in Glasgow.

Sarah:

Yeah, he was working there.

Ian:

He was working there. He had a shop there and he had other professional activities over there. But he would come here regularly and together they experimented to try and make an experimental engine and then to test it in the grounds of the house. And they did that for about six or seven years.

Chapter 7

13:49

Sarah:

We headed down the stairs, out the front of the house and off round to the right. Tucked just behind Kinneil House is a small outbuilding. This one also doesn't have a roof, but it's where history was made. Nowadays we call it the James Watt Cottage and if you didn't know it was there you could easily walk past it without thinking twice. This is the voice of Mark Watson.

He's the Deputy Head of Industrial Heritage at Historic Scotland, which to you and I basically means he knows an awful lot about the places where people made things: mills, mines, engines and workshops.

Mark:

It looks like a cottage because there's a door in the middle and two windows to either side on the front elevation. So it looks domestic and that might have been part of a ploy to make it just look like a gardener's cottage, something like that. But it had a very steep roof and it's a bit of a mystery as to why that was, but presumably Watt needed height, particularly for his inverted vertical engine, so that he could experiment with different ways of placing the machine over the boiler. But if you see in front of it, there is a very large iron thing, and that is a cylinder which is actually pre-dating the Watt technology.

So this cylinder here is what you typically find at a Newcomen engine at a coal mine in the middle of the 18th century and it came from Schoolyard Pit and it was when, as it says on that recreated plaque, 1946 is when the cylinder which had been left over at the back of the gas showroom in Bo'ness was then transported with some ceremony in 1946 and planted in front of the cottage to show the connection of the cottage or laboratory to steam power, but it was not a Watt engine, a much larger thing than you could actually fit in the cottage. But this was the inefficient steam engine, which was relying on atmospheric pressure to return the piston back to its place for then a new injection of steam to come in through the square hole at the bottom.

Ian:

Roebuck brought Watt here and together they built experimental engines. I think there were two prototypes, at least two prototypes that were tested here. Roebuck was able to help Watt to build the machine because he ran the ironworks. So it was the ironworks over at Carron that made the parts for the engine and for the experiments.

The first prototype wasn't successful at all and ran into many difficulties. Watt then left and did other work like canal building. He was also a canal surveyor and he had to support his family by doing other work. But then he came back, and they had another go and built another prototype. And also, they decided to patent the invention. So, one of the most famous patents in the history of world technology is James Watt's patent for his new improved steam engine. And that was taken out together by these two people around about

1768, 1769. Roebuck helped to fund that. And Watt had to go down to Berwick-upon-Tweed or somewhere to sign the patent and get it registered.

Anyway, it was around about the same time that Roebuck and Watt decided that he needed a workshop built, a purpose-built workshop, to help to support the experiments. And one of the remarkable things is that there's a whole series of letters between them that survive and are like the documentary equivalent of a World Heritage Site. They've been recognised by UNESCO as having international significance.

This collection of letters is in Birmingham, and one of the letters describes this cottage, because Watt wrote to Roebuck on the 9th November 1768, and he said: "On considering the engine to be erected with you, I think the best place will be to erect a small house in the glen behind Kinneil."

And it had various reasons why it was here. One is that it was a secret location, it was hidden away, and they very much wanted these experiments to be done privately because there were other rivals who were trying to understand what they were doing, and there was a thing of industrial espionage, even in the 18th century, people trying to steal the idea, steal the invention. So this was a good place. It was hidden away from people. And the other reason, of course, is you've got the glen of the Gil Burn, which provided a water supply because for a steam engine, you need to create steam. So they ran a lade off the burn, higher up, and the water would have come down to a boiler just behind the cottage here, and that would have created the steam.

Mark:

Unfortunately, Roebuck didn't have as much money as Watt had hoped, so Watt had to keep on breaking off his experimentation here to go and do civil engineering surveying, the result of which is the Monkland Canal, also known as the M8, and the Caledonian Canal eventually ... he did the surveying for it but it was then finished by Thomas Telford in the early 19th century. And he was also looking at putting a canal through from Perth to Forfar, which was never realised. But that paid about two or three hundred pounds a year, which was a regular income but still not very much, so Watt was continually looking for more funding and that's what drew him eventually into a partnership with Boulton. Well Roebuck eventually went bankrupt. Maybe Ian can explain that.

Ian:

Unfortunately, John Roebuck, this great visionary, had over-extended himself in business with all these different enterprises. And there was also a banking collapse in the early 1770s, which hit a number of wealthy individuals. And he lost everything and went bankrupt. And it was at that point that Watt effectively had to pack up his experiments here. He packed up the experimental engine into crates and he had had some personal tragedy in his life around that time as well. His wife died and he had to decide what he was going to do and decided to go into a new partnership, not in Scotland, unfortunately, but down in Birmingham with another great industrialist called Matthew Boulton, who had a metal factory and many ideas for industrial development down in Birmingham.

And that was when the iconic partnership of Boulton and Watt was founded. And the Kinneil engine, as I say, it was put into crates and it was loaded onto a ship in the harbour in Bo'ness, taken down to London, where it was unpacked, and then transported to Birmingham. When Watt got there, it was reassembled, and that engine, that prototype, became the first ever James Watt engine to be got successfully running. Eventually, it did run successfully in Birmingham, and it was the first time that a James Watt engine was put to use inside Boulton's factory. It was used to pump water around the works, in Birmingham, but it was actually the Kinneil engine that did that and was the first James Watt engine to be put to industrial use.

Later on, Boulton and Watt perfected the technology. They modified it so that it wasn't just a pump – it also turned wheels and turned factory machinery. And that was the great difference of the Industrial Revolution, because as soon as you could do that, you could put machines to industrial use to make things. And Boulton and Watt made a fortune out of this technology.

Only a few decades later, engines started to be put to use to power trains and to power ships. The basis of Britain's military power was the Navy and steamships. And all of that arguably derives from Watt's technology and Watt's improvements to the engine, and also many other engineers who then mucked in and helped to develop the steam engine.

Mark:

Can I read a little quote from James Watt's letter to Dr Small, his friend in 1773, towards the end of the year, where he's building up to making the decision to move to Birmingham.

"I am heart sick of this cursed country. I am indolent to excess, and what alarms me most, the longer the stupider. I see myself condemned to a life of business. Nothing can be more

disagreeable to me. I tremble when I hear the name of a man I have any transactions to settle with. The engineering business is not a vigorous plant here. We are in general very poorly paid. This last year my whole gains do not exceed £200, although some people have paid me very genteely. There are many more disagreeable circumstances I cannot write."

And that's probably a reference to the death of his wife, Peggy.

"In short, I must, as far as I can see, change my abode. There are two things which occur to me, either to try England or endeavour to get some lucrative place abroad."

And he had had previously been headhunted by emissaries from Catherine the Great. So there was that possibility, in which case his ideas would have been lost to Britain and Russia would have gained.

So he was at a crucial turning point and that's where Boulton came in and settled or acquired the debts that Watt had built up again and paid off Roebuck so that the patent... Roebuck's initial idea was just to have a patent apply in three counties and Boulton's idea was a much bigger one for all of England and also a patent for Scotland as well. He didn't think about Ireland so there were some rival steam engines were operating there early on and then Matthew Boulton incredibly managed to extend the patent right up to 1800, and that meant Watt became seen by many industrialists as an obstacle to the development of higher-pressure engines.

I think Watt maybe had had some sort of incident or two early in his career at Glasgow University, which made him think that high pressure was something highly dangerous and didn't want others to dabble in either. But it's the Cornish development of high-pressure engines which actually led on to steam locomotion as trains and on boats, which Watt probably was slightly concerned about and didn't want to be directly involved in doing that. But he retired in 1800 when the patent expired, and it was up to the sons of Watt and Boulton to carry forward the business after that point.

And it was only after 1800 that the two Soho Foundry and Soho Works in Birmingham were manufacturing engines. Before that, a lot of the, or right up to about 1790 anyway, it was the ideas. The detailed drawings were supplied by James Watt and Company, Boulton & Watt, to people who purchased the engines. And then Watt would obtain regular premiums, would be extorted from the owners of the engines, who would notionally pay the amount that they would save by using a Watt engine with a separate condenser as opposed to a more conventional atmospheric engine. And for that, Watt developed the term horsepower. So that was his idea, measuring it in terms of the amount of work a horse would need to do.

Ian:

You talked about horsepower, Mark, and of course another significant thing about Watt is that he gave his name to the worldwide unit of power, the watt, which is on every light bulb.

Mark:

Kilowatt.

Ian:

Yes, kilowatts, megawatts. I don't know when it was that that happened or how that... who agrees these things that somebody's name should be given to a unit of power? But in a sense, the work here is a symbol of power and machine power, standing on the site of Roman military power and a powerful gentleman of the 16th century who ran Scotland on behalf of the young Mary Queen of Scots.

So there's that whole theme about power here. And another theme that you have here is perhaps controversially about climate change, because, arguably, once the Industrial Revolution happened, more and more coal began to be consumed, more and more fossil fuels burned in engines.

It's interesting that we have a steam railway running through Kinneil Estate as well – the Bo'ness Steam Railway, which attracts thousands of visitors every year. It runs just down there. We can't hear it today, it's not running. Some people say that all of this gave rise to global climate change. And so that is a very, very relevant theme today. And again, this is part of that story too.

When Boris Johnson as Prime Minister came to Glasgow to come to the COP summit that was held in Glasgow, he gave a speech and he stood up and said, "here I am in the home of the doomsday machine", was a great Johnsonian phrase that he used. And the doomsday machine that he was talking about was because it was the birthplace of James Watt's engine. And he said that Glasgow was the birthplace of that.

Well, it was in a way because it was conceived in Glasgow, but he didn't mention Bo'ness and Kinneil, where the development work took place. But in a way this is where that doomsday machine began to be perfected here.

Mark:

But he made engines more efficient so it was also the birth of the idea of energy efficiency.

Ian:

Yes, it was paradoxical because it was an energy efficiency invention; it made the Newcomen engine more efficient, and yet what it led to was more and more engineering and more and more machines and more and more fossil fuel usage, and eventually that has had the devastating consequences arguably. Although Watt wouldn't have known that of course, and it's unfair to blame him for climate change, because he was an inventor doing what he did best, which was to invent.

Chapter 8

29:55

Sarah:

With all this invention and innovation taking place at Kinneil and spilling out across the nation, I asked Ian if he would consider the house to be something of a birthplace in the Industrial Revolution.

Ian:

There are lots of places that claim to be the birthplace of the Industrial Revolution or the cradle of the Industrial Revolution and that's perhaps an overused phrase and you couldn't say that this was where the Industrial Revolution began because, well, for lots of reasons. First of all, the idea that James Watt had was done in Glasgow. The story is that he went for a walk one day in Glasgow in 1765. His idea, the idea was conceived in Glasgow, but it was certainly developed and tested. This was the laboratory. You could say this was one of the crucibles of the Industrial Revolution, maybe like an industrial vessel where you do experiments. And that took place here. And we get visitors who come here from very unexpected places like China and countries in Asia, where they still study James Watt much more than we do in Scotland. In our native Scotland, he's not taught much in schools now. But visitors come here and say, well, where is it that James Watt did his experiments on the steam engine, which changed the world? And it arguably is that significant.

Sarah:

So obviously you have so much here. So there's James Watt's cottage, there's the Antonine Wall, and there's also this incredible Kinneil House with these beautiful paintings and history there. What do you think draws people to the Kinneil House estate? Is it one of these or a combination? And do you think that matters at all which one it is that's drawing people in?

Ian:

People come to Kinneil for all sorts of reasons. And it has all these different layers of history in one place. I've always thought that arguably the most significant thing of all that happened here is James Watt's experiments. But not everyone would agree with that, or not everybody knows the story well enough to know that that is the case.

But if they come here, this is a very, very unusual spot, because you've got a Roman World Heritage Site under our feet, you're standing next to an astonishing 16th century ducal palace, with a 17th century walled garden, large walled garden, just next to us over there. Just over the bridge is the lost site of a medieval village and the ruins of the 12th century Kinneil Church, which is just through the trees. And then here you've got the 18th century story of the Industrial Revolution. And I just think, how many places are there where you could have all of those things standing where we are right now? It is incredible.

I think if this were some other countries like America or various other places, there would be a gigantic visitor centre here telling the story and recreating some of the experiments that James Watt did here, because it is that significant. And a lot of people overlook it because it's just four bare walls. It doesn't look like much.

After Watt left here, it became a wash house, unbelievably, and even a cow byre. And the roof, it had this very steep roof, I've got a picture of it here, which collapsed in the early 20th century. A bit like Kinneil House, the walls were then stabilised, and it stands there looking a little bit forlorn, overgrown by trees, but its story is incredible.

Chapter 9

Sarah:

So often when we talk about the Industrial Revolution, we imagine smoke, noise and speed. And as Mark and Ian have reflected, that's certainly a consequence of the thinking and tinkering that took place here. It's just sort of hard to imagine standing in the quiet of the grounds. Today, children use James Watt's cottage as a playground. Dog walkers were strolling past as we were recording, very aware of us, but less so of the building that shaped the centuries that followed.

To me, Kinneil is a reminder that history happens everywhere. This place shaped the people who lived and worked here, and they in turn shaped the world far beyond it.

This has been the Historic Scotland podcast.

It was produced and edited by Adam Stoner. I'm Sarah MacGillivray.

Next time, I'm exploring Smailholm Tower. Nestled in the Scottish Borders, it fired the imagination of a young Sir Walter Scott. I'm exploring the landscape that shaped his storytelling and discovering some remarkable dolls that bring the characters of these ancient ballads to life. See you then.

Chapter 10

35:08

Adam:

Hey, my name's Adam. I'm the producer of the Historic Scotland podcast. Thank you so much for sitting with this episode. I hope you enjoyed it and, as you know, these episodes cannot happen without you.

Thank you so much for being a Historic Scotland member. This entire episode was so fascinating to record. We did it in January. We were at Kinneil House and the whole episode takes place within the grounds.

Sometimes when we record these though, we end up with bits that we don't use, with bits that we can't put into the episode because we're trying to tell a story that might span hundreds of years or, you know, in the case of James Watt, his entire lifetime and condense it into something that's, you know, about 35 minutes or so. This is one of those examples.

Mark is one of the most incredible people I think I've met. He is so knowledgeable and so passionate. And kind of spur of the moment, after we had finished chatting at Kinneil House, he was desperate to show us something. So we all jumped in the car and drove maybe 10 minutes down the road to a nearby park. We pull up.

First of all, there's a replica of the Bridgeness distance slab there, which is part of the Antonine Wall that Ian was talking about. We could see this structure off in the distance. I'm going to describe it for you. It's made of sandstone. It looks sort of like the top of a church tower, if you were going to kind of take that off and put it on the floor. And then as we were looking at it, in front of it and to the right was a pit shaft – big, massive, circular; again, sandstone-capped, filled pit shaft. And Mark was telling us that in all of the maps, in the first edition maps, it is listed as Dovecot, and the shaft is listed as Old Pit. And so you would think, looking at that kind of information, it's a done deal, but one of the things that I found really interesting from doing this podcast, is that it's never quite a done deal.

Mark:

However, there are a number of things wrong with this theory and there are a number of things that Historic Environment Scotland gets wrong because it is on our list of buildings of historical architectural interest as a doocot, a dovecot, that was converted to an engine house for a coal mine. However, it's fairly obvious for a number of reasons that in fact it was built initially to pump out the shaft which is placed here, and you can see that we're right, the engine house is perfectly sited to do that pumping. You can just about make out the outline there of a slot, which would be... If you see about three feet in from the left there's a vertical line, so that is where the beam of the pumping engine was and it projected out to be placed above here and it was subsequently converted to a doocot after this engine house went out of use. And the dimensions are right, but it has some strange features, such as the two great arched openings there.

So what are they, is the question? And the answer is that the very earliest Newcomen atmospheric engines had the cylinder placed on top of the boiler. So the cylinder would be quite high up, supported by wooden cross beams, and the boiler was known as a haystack boiler because it's shaped like a haystack and it was circular. And it had to be slotted into place through these big arches and the diameter of it would project out to either side. If you're building a doocot, the last thing you'd want is enormous openings because that is the route that the rats and the squirrels and the pine martens would take to get at the pigeons. So it isn't ideally suited to use as a pigeon loft or doocot, but there are some brick later features inside, which are the nesting boxes, when it was subsequently converted to a

doocot. And the other thing that makes it look like a doocot is that it's a mono-pitch roof and with a lectern type of doocot – that's a lectern, as in a church or a school – the mono-pitch always faces south because then the warmth of the sun would come in and make it nice and cozy for the pigeons. But that is a later alteration, so originally it would have gone up to be the same height on both sides, with a standard form of roof and the beam would have come out of there. The other end of the beam would be connected to the cylinder standing above the boiler and possible that these cylinders were initially made of copper, not iron, because there wasn't an iron industry pretty much in this area until 1759.

The date for this is supposed on the John Konefsky database to be 1725, which would make it the oldest Newcomen engine house, not only in Scotland but surviving in the world. The earliest Newcomen engines were mostly erected by a family called Potter and, if it's 1725, then it's very early, but there were a number of shafts and pits in Bo'ness, so it's not absolutely certain that this is it, but it does seem to be of the early form. So incredibly early and earlier than the two that were previously thought to be oldest in Scotland, which were in Ayrshire.

Sarah:

Chronologically, can you tell us where this was?

Mark:

This is 1725. It would have been operating for 30 to 40 years and have been causing problems to the Carron Iron Company, which was using the coal that was produced here. And so this is one of the problematic atmospheric engine houses which Watt would have come to see when he was assisting Roebuck.

Adam:

I think it just goes to show you, doesn't it, that we are constantly interpreting and reinterpreting history. And what we think today might not be what we think tomorrow, might not be what we think in 100 years' time. And I think that's fascinating and for me one of the kind of key learning things that I've discovered doing this podcast.

Again, thank you so much for listening. Thank you so much again for being a Historic Scotland member. There are loads more episodes that you can go back and listen to. Please

do. And there are still episodes this season to come as well, including a couple recorded at the farthest reaches of the country, which I am so excited for you to hear.