

**AN INVESTIGATION OF THE EARLY
19th CENTURY PLATEWAY TRAMWAY
USED AT THE IRON ORE AND COAL
PATCHES BETWEEN WISEMANS
BRIDGE AND AMROTH.**



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INTRODUCTION

Over the last twenty years of collecting artefacts from the Industry of Coal and Iron Ore Mining in the Saundersfoot and Amroth districts, I have been trying to piece together pieces of a jigsaw concerning the early method of transporting coal and iron ore along and from the “patches” between Wisemans Bridge and Amroth.

In the late 1700s and early 1800s coal and iron ore was transported to Pembrey and Carmarthen by boat directly loaded from the beaches below the “patches”. Then in 1849 coal and iron ore was transported to the Kilgetty Ironworks via two tunnels from two of the main “patches” the Bridge “patch” and Crickdam “patch”. The dimensions of both tunnels are different, the Bridge tunnel although collapsed can still be measured fairly accurately and is approximately 6 ft wide and 6 ft high. The Crickdam tunnel although now no longer accessible can be seen in the photograph to be narrower than it is high. The difference in the two tunnels leads me to believe they were constructed at different times. A Hean Castle estate map of c1872 shows the two tunnels converging underground and exiting as one in the bank of the Wisemans Bridge caravan site. I have never seen this tunnel mouth so I am at the moment unable to say which of these tunnels was first to be built.



Left is the collapsed Bridge tunnel in 2006 and right the Crickdam tunnel in 1990.

The “patches” were areas of coal and iron ore workings between Wisemans Bridge and Amroth owned by different families and companies. There were a number of “patches”; Bridge “patch” was the closest to Wisemans Bridge, Lloyds or Rooksnest “patch”, Crickdam “patch” and The Burrows “patch” closest to Amroth village. Each “patch” employed from about 50 to 100 men, women and children.

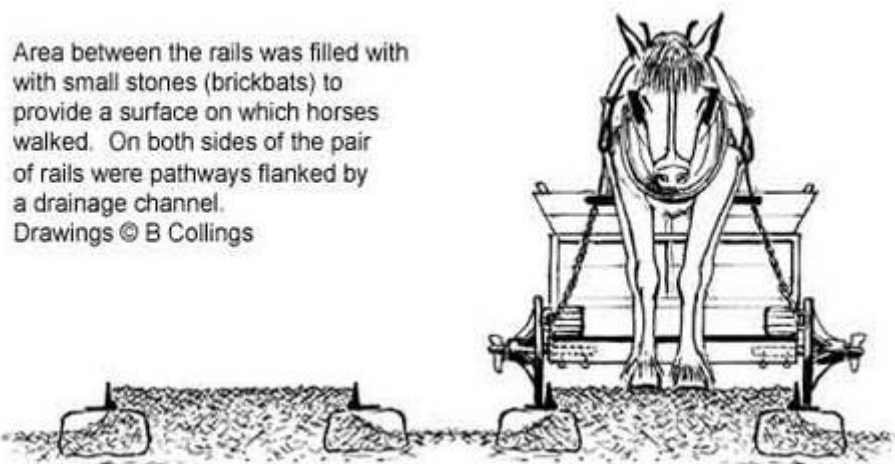
Iron ore and coal were dug out of the cliffs at beach level and further up the cliff face. Today you can still see the platforms where huge amounts of rock have been excavated away by hand leaving a series of steps in the cliff face.



The cliff face of Crickdam stepped from mining iron ore.
With the last few stones of Crickdam Cottage in the centre.

There is virtually no written evidence of how these “patches” were worked and how the coal and ore were moved across the base of the cliffs to their respective mine yards.

When I was a child in the 1970s I stayed with my grandmother during the school holidays at Hill House in Amroth. My brother and I used to live on the beach and I started finding stones with single holes drilled in them. Information given to me by my grandmother, who was born in Stepside but whose family had lived in Amroth since the 1740s, was that these stones were sleepers for a railway that ran across the beach. I liked those stories so made a mental note of what she had told me and that was that.



An illustration showing what the Plateway tramroad would have looked like.

After leaving school and starting work I started my hobby of collecting anything to do with the coal industry in the Saundersfoot area. Hence the retrieval of some of those stones I saw when I was a child; these became the first pieces of the jigsaw I have been trying to complete for over 20 years.

The only written information I can supply comes from Roscoe Howells book, Old Saundersfoot from Monkstone to Marros in which I supplied the photographs for it's present printing. In Chapter 3 Stepside and Wisemansbridge, Roscoe supplies us with tantalising snippets as to the age of the Tramway.

“The iron ore from Wisemansbridge is mostly associated with the ironworks opened at the Grove in the 1840s, but long before that, iron ore had been exported to Pembrey, where the harbour had been built in 1810, until the failure of Thomas Gaunt's iron company of that name, the effects of which were sold in 1840. The company, however, had certainly ceased to operate as early as 1833. The iron dug at the Patches was loaded into open boats, beached on the sand, by men and women carrying bags on their shoulders, up a plank at one side of the boat, across a plank, tipping the bag as they went, and then down a plank at the other side.”

“The individual Patches were about twenty yards apart and were usually worked by two men in each Patch who filled the rubbish, formerly into wheelbarrows, but later into wooden drams, then ran it over rails out to the tip and tipped it onto the beach about fifty feet below. All the iron ore, known as 'mine', found during the filling, was picked out and stocked in large beds or piles, 2ft 6inches in height, outside the Patch”

If Thomas Gaunt's iron company in Pembrey had ceased taking ore from the “patches” by 1833 this certainly meant that there was activity along the “patches” for many years before this date, especially if they were transporting iron ore from the “patches” into Pembrey Harbour in 1810. If this were so then the Tramway used at the “patches” certainly would date from the very early part of the 1800s if not the late 1790s when this type of Plateway was invented.

ARTEFACT DISCOVERIES



Stone sleepers from the beach at Crickdam and Burrows patches.

The first piece of cast iron I discovered in 1992 was near the now collapsed mouth of the Bridge tunnel. I had another piece of the jigsaw. I discovered that this was a piece of Plateway. A cast iron L section of tramway track 4 feet in length. After some research I was aware that this Plateway dates from the 1790s to about the 1840s, so pre dates the Saundersfoot Railway, which at first used fish belly cast iron rails, then later wrought iron rails.



Early Saundersfoot Railway fish belly track on the left and Plateway track on the right.

I set about trying to find out how the Plateway was fitted to the stone sleepers and found that when two pieces of Plateway were offered up end-to-end they needed a sleeper with two holes in to keep the ends from coming apart.

One day in 1997 I was with my father on a day trip to Cyfarthfa Castle, Merthyr and in one of the displays of the Crawshays Iron Masters I discovered a cast iron sleeper that was meant to fix the Plateway in position. I knew then this is what I had to find on the “patches”.



Left is a wooden template of the ends of Plateway and right a sleeper on display at Cyfarthfa Castle.

Meanwhile after a storm at Crickdam in 2001 I had discovered a new part of the jigsaw, a stone with a single hole in, but with a round rust mark on the stone as if there was a chair attached to the stone until quite recently. Could there be a cast iron chair that fitted the Plateway instead of a cast iron sleeper? (A chair is a cast iron fixing to hold track in place on a sleeper.)

During some building work at the back of Hill House, Amroth in 2004 a new size of Plateway was found. The Plateway I had found at Bridge “patch” was 3 ½ inches across; this new piece was 3 inches across. Another part of the puzzle. The larger 3 ½-inch Plateway had a rib underneath along its length to provide more strength to the L section but the smaller 3-inch size Plateway was flat along the bottom. Was the larger, strengthened Plateway a later modified version of the smaller one due to breakages under heavy loaded drams? Another different type of Plateway turned up during the conservation of the Grove Colliery buildings. This Plateway is the smaller 3-inch size and has flanges on one side of each end of the track but has no hole in the flanges like the Plateway found at the Bridge “patch” and Crickdam “patch”. The Plateway found at Grove is connected to a stone or wooden sleeper by a single pin driven through a slot in the ends. I have not found any evidence at the moment of this type of Plateway being used at the “patches” yet.



Found at the Grove Colliery the Plateway on the left was fixed to the sleeper by a single pin driven into the slot when they were placed end to end, as shown in the right hand picture.

I now had a few pieces of the puzzle but still needed to know how the Plateway was held in place. Then came the storms of January 2007. I went down on the Sunday after the first storm of the New Year and arriving at Crickdam was greeted by a scattering of metal fragments everywhere. I picked up screws, nails and pieces of wrought iron, then I picked up a large lump of iron and was confused as it looked like T section railway track, but a size I had not seen before. I put it on the top of a large stone and picked up a different shaped lump of metal. After looking at it for a couple of seconds I could see amongst the crust of many years of rust, a shape I thought I had seen somewhere before. Then it dawned on me I had found what I had been looking for during the last 9 years of searching the “patches”. I had found one end and a middle section of a cast iron sleeper similar to the one I had seen in Cafarthfa Castle in 1997. After getting it home and cleaning it up I found that it fitted the smaller 3-inch section of Plateway. I now needed to find a complete or near complete sleeper to give me the gauge of the Plateway.



On the left are the two pieces of sleeper found on the Sunday and right the piece found the next Saturday.

On the 18th January a storm hit the UK with 100 mph winds. Saturday the 20th I went down to Crickdam with my metal detector and located more sections of both sizes of Plateway. On the rocks nearby was a length of crusted rusty metal, I went over to it and found to my delight this was a near complete sleeper. After getting it home and cleaning it up I found that the end piece I had found the weekend before mated up to it exactly. The gauge of the 3-inch Plateway is 2 ft 10 inches.



The complete cast iron sleeper.

So the jigsaw is slowly coming together. All I have to do is find a chair that fits the single holed stones and a cast iron sleeper for the larger 3-½ inch Plateway. It may be that the chair and stone sleeper are for the larger section of Plateway. And I need to find a wheel now to finally complete the jigsaw puzzle. Hopefully it won't be another 20 years.

My next trip to Crickdam at the end of April yielded yet another stone sleeper but this time it still had its wooden plug in place. With the metal detector I managed to locate a lump of metal that had an odd shape to it. After carefully cleaning off the iron oxide crust, it turned out to be the central hole of a cast iron wheel with the stubs of two spokes still attached. The wheel possibly had four spokes, but a close inspection of the wheel centre doesn't seem to reveal there were four spokes. Maybe due to its condition being very barrelled with the action of the sea and stones I can't see the remains of the other two spokes.



A stone sleeper with its wooden plug still in place.



The cast iron wheel centre after cleaning.

After finding the wheel centre I made another trip the next day and scoured the area to the east of the blacksmiths forge and was rewarded with a number of exciting finds. The first machine casting came up. This was a surprise but with the type of work going on at Crickdam not unexpected. Then the most exciting find so far. I dug a lump of metal up and immediately recognised it as a hammerhead. This was the first tool I had found in this area. After cleaning at home it was revealed that the hammer had a metal handle that was held in by lead. Having visited a few old blacksmiths shops and noted that most of the tool handles are metal I would be happy in saying it was possibly a blacksmith's hammer.



The number of finds was surprising; the hammerhead was the best discovery.



The machine casting and hammerhead after careful cleaning.

More pieces of cast iron sleeper and Plateway were coming up and other unrecognisable pieces of metal were also now being found. The mining at Crickdam may have left virtually no written history behind but it has certainly started providing plenty of physical evidence of what was going on here nearly 200 years ago.

After a break through the summer, as the tides are low and don't bring up new artefacts out of the deeper layers of the shingle. I had a walk across the beach in August and found two more stone sleepers. One was rather large and so I decided to carry the smaller one back. Every time I do decide to carry something back it gets very heavy about half way back and I wonder what on earth I am doing it for!



The smaller sleeper in the left picture and I'm carrying it in the bag under my right arm. The larger sleeper was too big to lift.

A new year and 2008 starts off very wet and the third weekend in January I go out on a very wet day and only find a piece of underground rail badly corroded and a piece of cast iron cooking cauldron and get very wet for that privilege.



A piece of badly corroded underground rail and a piece of cast iron cauldron.

Needing to spend some time with the metal detector at Crickdam after the winter storms we had had was imperative. I managed to get out on the Saturday 20th and spend a few hours on a bright sunny but windy afternoon at Crickdam. The stones and shingle had shifted quite a bit since the previous year and I noticed areas that I had previously found artefacts had completely been cleared of shingle down to bare bedrock. I went back over the areas I had done the year before and was not disappointed when one of the signals from the metal detector turned out to be three quarters of a sleeper. There were a few more pieces of the centre sections of sleepers that came up. I have found two different sizes of the centre rail section; one seems to be a bigger more robust casting. Having found only pieces I cannot say yet if there are

two different gauges of sleeper. I need to find more bits of sleeper with the ends attached before I can say for definite.



With the number of finds some have to be left behind for practical reasons. The photo on the right shows the artefacts I have to leave at Crickdam.



Cast iron sleeper.

A new Plateway type came up and it is one of the missing links to the stone sleepers with a single hole in. This is the first piece of 3-inch Plateway with a square end and fixing pin slot in the end I have found. This proves that this type of Plateway was fitted to some of the stone sleepers with a single hole in.



New discovery Plateway with square end and fixing pin slot. Shown in place in right picture.

I planned one more trip to Crickdam for the 1st of February as the week had been one of the stormiest for a long while and the forecast given for us was the best for the country everywhere else having snow. I thought this time I would concentrate my search to the start of the shingle beach past the bedrock which was immediately to the East of the Blacksmiths shop. Making my way to the shingle I spotted the first piece of metal, due to the south westerly and westerly winds we had had in the week it had helped strip the bedrock area of small shingle leaving a lot of bigger stone. Having a 5 minute scout around this area was rewarding as I found another 6 pieces of metal and not one of them was a piece I had left behind the previous week. This was a good start to find pieces of Plateway and sleeper without the metal detector was a positive sign as this meant that there had been a significant shift of shingle.



7 pieces of Plateway found on the surface without the metal detector.

I turned my attention now to the shingle patch of the beach. I started by searching the soft shingle and within two strides started hitting signals, two hours later a total of forty pieces of cast and wrought iron were uncovered in an area of only 5 metres by 5 metres. I was happy as the metal was coming out of the lower dirty shingle that meant it had been there for many years and had only recently been brought to the surface.



The area of shingle beach to the east of the Blacksmiths shop.



In one area between two big rocks less than a metre apart I dug up 9 pieces of metal.



The total number of finds was a surprise. Forty including one length of underground rail.

I now had to go through the finds and select the ones that would provide new evidence. I had found a couple of pieces of metal that were interestingly shaped and also the end of a cast iron sleeper that looked larger than the previous ones I had found.



Different shapes of iron.



New size of cast iron sleeper end on the left.

This cast iron sleeper end fits the 3½-inch Plateway and I have three and a half lengths of this size of Plateway and only have one complete piece of the 3-inch Plateway. More pieces of the larger size has survived I expect due to having being strengthened underneath with a rib running the whole length and being slightly thicker on each end than the 3-inch Plateway which is the same thickness along the whole length.

Also I had found the square end of a piece of 3-inch Plateway, with fixing pin slot that had a slightly different size of seating flange to help the Plateway sit on the stone sleeper without it tipping over.



3-inch Plateway with fixing pin slot and larger side seating flange (at the top of the picture).

Over the last few years, especially since the winter storms of 2006/7 and 2007/8 I have found a lot more evidence of the Plateway track that was used between Wisemans Bridge and Amroth, mainly at the Crickdam patch. This is only due to the nature of the erosion on the shingle beach at Crickdam.

There are three types of sleeper.

- A stone with a single hole drilled in it with a wooden plug to take the fixing pin.
- A cast iron sleeper that the 3-inch Plateway fits with a gauge of 2 ft 10 inches.
- A cast iron sleeper that the 3 ½ inch Plateway fits (gauge unknown at this time).

There are at least two types of 3 ½-inch Plateway.

- One with a square end and slot for pinning to a stone sleeper with no side-seating flange.
- One with an end locating lugs and side-seating flange with a hole in to fit the cast iron sleeper.

There are at least five types of 3-inch Plateway.

- One with a square end and slot for pinning to a stone sleeper with a low side-seating flange.
- One with a square end and slot for pinning to a stone sleeper with a high side-seating flange.
- One with end locating lugs and slot for pinning to a stone sleeper with a low side-seating flange.
- One with a square end with pin slot and side-seating flange with a hole in for fixing to a cast iron sleeper.
- One with a square end and side-seating flange with hole in for fixing to a cast iron sleeper.

Many other pieces of metal have been found including underground rail, unidentifiable pieces of cast and wrought iron and the recognisable pieces such as the hammerhead, wheel centre, machine casting, and also part of a caldron. I must not forget the stone sleepers I have collected at least 6 over the years but have seen many more on the beach over the last 20 years, which I have been unable to salvage.



Two views of a large piece of unidentified cast iron possibly a water boiler.



A very worn Charles II fourpence 1670-1684 found in the shingle at the top of the beach at Crickdam. One of a few 17th century coins found on the beach between Amroth and Wisemans Bridge.

Storms in the first weeks of June disturbed the shingle and stones at Crickdam to the extent that cast iron was visible amongst the rocks. Two pieces of cast iron were noticeably different from pieces I had found before. On the 8th June having only a few minutes to search around as I was with my family I came across a length of U shaped cast iron. The dimensions are very similar to the Plateway and from the concretion of coal dust and pebbles along one edge of the U channel, points to the possibility of it being another type of Plateway track, with the clear side being where the wheel would run.



Possible U channel track.
Found 8 June 2008



Another stone sleeper.

I found the second important piece of cast iron on the 30th June, which was so different from all the rest of the artefacts I had found so far. I had to spend some time on researching what it was. From its immediate shape I had an idea what it may be but needed to do some enquiring before making too much about it just in case I was wrong.

It has always been said by many local people that the ruined walls up on the cliff outside Crickdam Tunnel was a blacksmith's workshop. At this moment in time I have found no written evidence for a blacksmiths workshop at Crickdam.

Most iron and coalmines had to have a blacksmith working at the mine to mend things and sharpen tools; it was one of the most important jobs at the mine as a blunt mandrel wouldn't be able to cut into the coalface.

The shape and size of the artefact is quite unusual and after some research I was able to identify it.

A blacksmiths forge works on the principle that air is blown into the small coals of the hearth to create enough heat to soften iron and on other occasions to melt softer metal in a crucible. The air is usually blown into the hearth by a set of bellows worked either by an apprentice or by the blacksmith himself. The air is blown into the side or back of the hearth low down so that the coals are heated equally through the hearth. A sacrificial item known as a tuyere made of cast iron is built into the stonework or brickwork of the hearth and the nozzle of the bellows fits into the cone of the tuyere. The square section that is built into the hearth is usually quite thick, as it has to endure constant heat for fairly long periods of time. Modern tuyeres are water-cooled.

I have at last found physical evidence that there was a blacksmith's forge at Crickdam.



Unidentified cast iron object.

Found 30th June 2008

Identified as a Tuyere from a blacksmiths forge.

Wet and windy weather and rough seas over the weeks of October and the beginning of November made me think of what was occurring on the foreshore at Crickdam. A break in the weather and with the tide being out in the day on Sunday 16th November gave me the chance to go back to Crickdam. At a first glance the area around Crickdam looked quite different. There had been a lot of movement of shingle and small stone but on closer inspection it looked as if all the big stones had been brought to the surface, which is not a good sign as that usually means the metal is a lot deeper down. I had a quick search using my eyes only and that proved the metal was all buried as I only found one item, which was a large threaded nut.



The foreshore strewn with large stone.



Large threaded nut found with eyes only.

I spent the first few minutes with the metal detector searching below the cliff with the Blacksmiths forge above me and found nothing. Walking back to where I had deposited my rucksack and search bags I had a loud signal next to a large boulder. Setting about uncovering the object was easier than I thought as I had visions of it disappearing under the boulder. Luckily the object came into site quickly in the shingle and I was astounded at what I was looking at. I had thought I knew I had worked out all the different types of track, sleepers and chairs I should be looking for. What was staring at me out of the hole I had dug was something I hadn't bargained on. I had dug up a chair that didn't match any of the tracks I had found so far.



From under a boulder appears another jigsaw puzzle.



This chair doesn't fit any of the Plateway found so far.

I have to search through the Crickdam collection of Plateway to see if there is anything that matches the chair.

Carrying on searching I moved over to where I usually find a good selection of artefacts. After an hour of searching I had only found three other artefacts. The first was the end of the small size cast iron sleeper. The second artefact, a piece of Plateway about half a metre long, which I had to leave behind due to the weight of the other artefacts I had to save.



Small size cast iron sleeper end.



Plateway with a side flange with a hole in.

On digging the third artefact I was quite surprised as I started to uncover it, as it was quite unusual in shape compared with what I have found in the past. I dug down onto what I thought was a curved piece of cast iron. I wiped the shingle off it with my fingers and photographed it then went to move it. It was stuck, as it was jammed under a big rock. On closer inspection it had a flange around the back of the curve and I carefully cleaned all the shingle off it and eased it out from under the rock. I looked at the shape and after cleaning it off at home have come to the conclusion that this

may be a fragment of a wheel. There seems to be a broken spoke on the inner face of the curve. Some early dram wheels were very flat and had different shaped centres for the axel. There are no bolt holes on the flange so I don't think it is the end of a steam or water pipe. A little more research is needed on this piece before coming to a conclusion of what it is.



An unusual shape appearing out of the shingle.



After cleaning there seems to be a broken spoke on the inner curve.



An example of flat Plateway dram wheels.

This was the worst day for finding artefacts I have had for a while, but I did find another stone sleeper, which I photographed and left behind.



Another stone sleeper with a single hole in it.

After a break of a few weeks I decided that the Christmas holiday would be the ideal opportunity for a good search for new artefacts. I thought after the last time I would just go and have a look at the state of the foreshore at Crickdam before carrying my metal detector there again. Saturday December the 27th was a cold, frosty and sunny day the breeze was from the East and made the eyes water when looking towards Amroth. I arrived at Crickdam at about 9.30am and immediately noticed that there was a marked difference in the foreshore from the last time I had been in November.

There was a significant lack of stone and a lot of bedrock was showing in areas I had never seen before. I also noticed that there were stones I had seen before now exposed down to their full depth. In other words at least an 18-inch depth of stone had been removed by the sea in places.



The large stone in the centre of the left photo is fully exposed to its full depth.

I walked over to where I usually searched and I immediately saw the first couple of artefacts. For the next two and a half hours I walked up and down the shingle picking artefacts ranging from unrecognisable pieces of cast and wrought iron to recognisable pieces of Plateway.



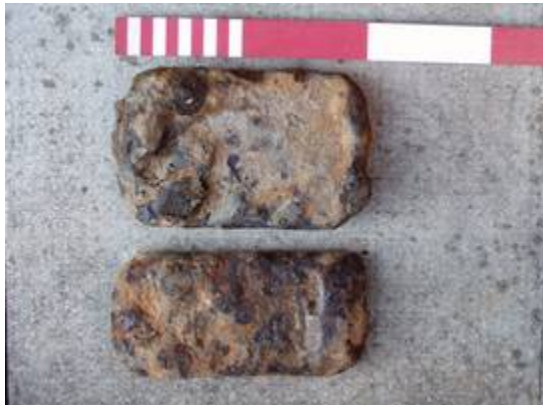
This sight greeted me everywhere, cast iron artefacts were strewn across the foreshore.

I collected everything I could see placing it all on a large exposed piece of bedrock and was surprised when I finally counted up all the pieces of metal I had found. There were over 60 artefacts altogether. Ranging from Plateway of the various types already

recorded, sections of the two known types of cast iron sleepers and various wrought iron pieces including a chisel. The one piece of Plateway, which was new to me, was the last piece to be found. I think this piece is part of a set of points or part of where the drams are loaded onto the Plateway.



Over 60 artefacts were found without using a metal detector.



Left; Two cast iron sleeper ends. Right; A chisel and curved wrought iron artefact.



This is either part of Plateway points or where the drams are pushed onto the Plateway.

A lot of the artefacts that I had picked up were heavily encrusted with iron oxide and shingle, one piece of Plateway I actually had to prise off the bedrock in association with other smaller pieces of cast iron that were stuck fast. This means that these pieces have spent a long time buried in the shingle sitting on top of the bedrock. The shingle has significantly been reduced in thickness and very quickly. Had I not gone to Crickdam this day I would have probably not seen as many larger pieces of track as they would undoubtedly have got smashed into smaller pieces as each tide came in and went out over the winter months. I have no idea how much longer I will be able to find artefacts here at this section of the “Patches” as the make up of the foreshore here at Crickdam seems to be changing rapidly, faster than I have seen in the last 10 years. After having had such success without the metal detector on Saturday I decided I would go to Crickdam again with it. So Monday 29th December dawned grey, windy and even colder than the previous two days. I got down to Wisemans Bridge at 9.30 am and nearly got back into the van as the wind was nearly intolerable. I got everything ready and hiked off down the beach heading into the eye watering Easterly gale. Halfway to Crickdam I started noticing differences in the foreshore where I had walked only two days previously. I was hoping that the 60 plus pieces of metal I had collected and left in one spot hadn't been scattered to far away from where I had left them or this was going to be a nuisance, as I would be finding them all over again. I was just coming up to the cove prior to the cove that the Crickdam Tunnel was located when I noticed the stone and shingle had been ripped off the bedrock leaving the lower rusty looking stones that usually stay on the bottom of the shingle all scattered around the foreshore. On closer examination I spotted a rusty piece of metal. My heart leapt into my mouth, I instantly recognised the shape of this artefact, it was a cast iron wheel.



Shingle stripped from the bedrock exposing a dram wheel.

I carefully wrapped the wheel in a plastic bag and put it into my rucksack, it was heavy but not too heavy to carry. On getting to Crickdam I noticed a gully that I had walked passed many times before had had a lot of shingle stripped out of it and so I quickly glanced up it towards the cliff and immediately noticed the tell tale sign of

rusty cast iron. My immediate thought was I hadn't seen this shape before and I went to investigate, as I was looking around I noticed another three or four pieces so put my bags and detector down and started clearing shingle from around the first piece of cast iron. I thought I had seen most things to do with the Plateway that had been left behind by the miners but what I uncovered next was quite a mystery.



The gully stripped out and the first objects to be uncovered.

In total I uncovered 4 oblong solid cast iron blocks about 8 inches long and two 16-inch oblong cast iron blocks with slots in each end. The most interesting artefact was a mysteriously shaped piece of cast iron. These pieces had been buried for a long time and I would say on their condition that they are associated with the same period as the Plateway.



Some of the blocks of cast iron I found and the mystery object.

So far I hadn't turned the metal detector on to find anything. I left the artefacts where they were as there were very few people about and went over to the Plateway finds spot and immediately noticed more shingle had disappeared and all the artefacts I had previously collected were scattered everywhere. The sea had been a bit rougher than I had hoped the previous couple of tides. I started doing a quick scout around for pieces of visible cast iron and at once picked up a sleeper end that I hadn't found on the Saturday. I knew then there were new artefacts mixed up with the old ones. I had spent about half an hour collecting as much as I could, finding a couple of new interesting artefacts when I spotted the second wheel. This wheel was larger than the first one and although half of the wheel was missing I could tell it was an early style of dram wheel. I now have track, sleepers, wheels and many other artefacts including the evidence for a blacksmiths forge at Crickdam.



The second wheel photographed where it was found, note the curved shape on edge.



The wheel measures approximately 18 inches in diameter (450mm).



Larger type sleeper end and other artefacts including a bent brass bolt.



The mystery cast iron object with scale.

CONSERVATION

Iron conservation is the biggest problem I have. Once the artefacts have been taken out of their marine environment the pieces of cast iron and wrought iron begin to bleed iron chloride. This is mainly due to the constant soaking in salt water, the salt slowly absorbs into the crystalline structure of the cast iron and into the fibrous structure of the wrought iron. Then when the artefact is exposed to air the salt absorbs water vapour out of the air and the metal surface starts to ooze droplets of iron chloride. Wrought iron is the metal that suffers the most as its fibres begin to delaminate due to the oxidation within the metal itself and it literally blows apart. Cast iron due to its crystalline structure fairs a little better but tends to blow pieces off the surface as the oxidation occurs within small cracks of the artefact.

I have tried to keep the relative humidity low in the storage of these artefacts to minimise deterioration and have slowed the process down slightly by using air-drying apparatus. A relative humidity of 15% being the best to completely slow corrosion down is virtually impossible to the layman and can only be achieved in museum conservation laboratories. But to get it down to 20% would be the ideal. I have also been experimenting with electrolysis with the wrought iron artefacts with some degree of success, but still have a long way to go in perfecting this solution with the lack of time and funding being the main problems.



The wrought iron hammer head after electrolysis and drying, and before being treated with tannic acid and coated in red lead and metal paint to prevent air getting to the metal.



Lacquering also prevents air getting to the artefact after electrolysis.



Part of the Industrial Saundersfoot collection.