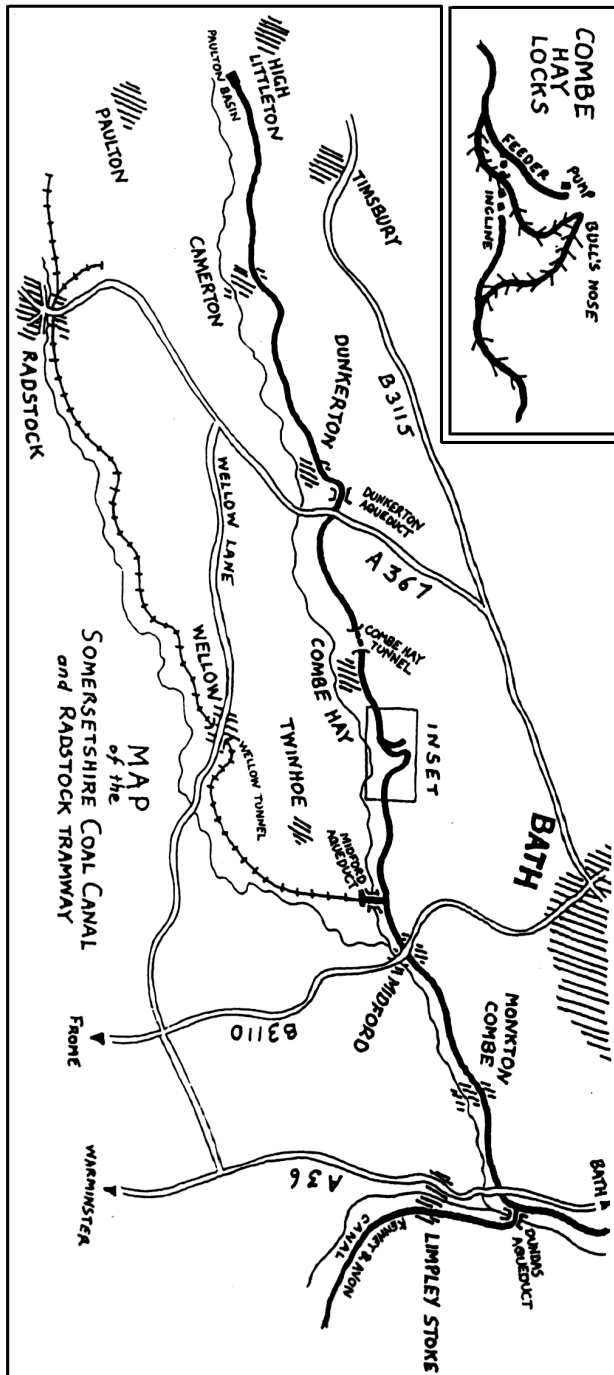


# WEIGH-HOUSE

THE MAGAZINE OF THE  
SOMERSETSHIRE COAL CANAL SOCIETY



Website: <http://www.coalcanal.org>



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The Somersetshire Coal Canal Society was founded in 1992 to:

'FOCUS AN INTEREST ON THE PAST, PRESENT AND  
FUTURE OF THE OLD SOMERSETSHIRE COAL CANAL'

The Society became a registered charity in 1995 and now has the  
Objects:

- 1) To advance the education of the general public in the history of the Somersetshire Coal Canal
- 2) The preservation and restoration of the Somersetshire Coal Canal and its structures for the benefit of the public

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Affiliated to the Inland Waterways Association N° 0005276

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### MEMBERSHIP FEES

(as at 1st June 2003)

£7.50 (Family / Individual) £5.00 (Senior Citizen / Student)  
£150.00 (Life) payable by lump sum or four annual instalments

Membership Application Forms are available from  
the Membership Secretary, **John Bishop**

73, Holcombe Green, Upper Weston, Bath BA1 4HY

☎ 01225 428738 *E-mail:* [membership@coalcanal.org.uk](mailto:membership@coalcanal.org.uk)

*Society Website:* <http://www.coalcanal.org>

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THE VIEWS AND OPINIONS EXPRESSED IN THIS MAGAZINE DO NOT  
NECESSARILY REPRESENT OR CONVEY THOSE OF THE SOCIETY

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if space is limited.

Please send articles and correspondence for the next edition of **WEIGH-HOUSE** to:

Adrian Tuddenham 88, Mount Road, Southdown, Bath BA2 1LH

☎ 01225 335974 *E-mail:* [editor@coalcanal.org.uk](mailto:editor@coalcanal.org.uk)

Sunday 5<sup>th</sup> October —10:00

**WORK PARTY — Location to be advised**

For further details please contact: *Derrick Hunt* ☎ 01225 863066

Thursday 16<sup>th</sup> October— 19:30

**SOCIAL EVENING — THE EARLY DAYS OF S.C.C. OPERATION**

by Patrick Moss

Meet: The Radstock Working Men's Club.

For further details please see website or contact: *Steve Page* ☎ 01761 433418

Sunday 19<sup>th</sup> October —10:00

**WALK — COAL MINING IN COLEFORD & VOBSTER**

Meet: The 'Kings Head' public house (please park elsewhere)

For further details please see website or contact: *Shane Gould* ☎ 07909 882470

## A NEW BENCH AT PAULTON DRY DOCK

The Kennet & Avon Canal Trust , Bradford on Avon Branch, has recently donated a canalside bench to the S.C.C. in recognition of our joining the family of canals undergoing restoration. The bench was installed by volunteers from the Canal & River Trust Work Party in a pleasant location overlooking the Dry Dock at Paulton.



**THE NEW SEAT AT PAULTON BASIN**

When the disturbance of the recent work in the area has settled down, it will give walkers a panoramic view of this historic site while they rest their weary legs. We are very grateful to the K&ACT for this practical demonstration of their support and encouragement for our restoration plans.

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## EDITOR'S NOTES

Following on from his interesting talk at one of our social evenings last Autumn about the inclined planes of the area around the S.C.C., Mike Chapman has been persuaded to elaborate on his brief references to the underground tramways that brought the coal from the working face to the bottom of the mine shaft. The result, starting at P.14, is a detailed explanation of this aspect of coal transport that we have never previously considered in these pages and is an excellent explanation of the various technical terms which the reader may come across when studying the subject.

Various aspects of Paulton Basin occupy a sizeable proportion of this issue, but that is because they are currently occupying an equally sizeable proportion of the Society's activities. This is where our attention is currently concentrated and where we are planning to have our first section of restored canal. Paulton Basin also appears in our Diary Dates (P.21), as we are having an open day there on Sunday 15th June.

**ADRIAN TUDDENHAM**

## CHAIRMAN'S NOTES

As I write these notes the A.G.M. is drawing inexorably closer; time to reflect on what we have done and more importantly look forward to what we hope to achieve. In that context, during my time at the tiller so far, we have moved along way towards becoming a society that promotes the full restoration of the canal, whilst maintaining our interest in the history and archaeology that has always been our mainstay. In the latter regard, we should be proud of our contribution to the William Smith Archive, which has placed the Society and the canal before a new audience and will give us further opportunities to promote our cause.

On the restoration front we make progress slowly: this year at Dunkerton Parish Hall we made our first public presentation of an outline scheme, that was followed by similar presentations at Timsbury, Camerton and Paulton. Restoration isn't as straightforward as simply getting a J.C.B. and starting to dig from Paulton towards Dundas. In a few instances it really *is* nothing more than digging out the existing canal; but in many places, deviations and new structures will be required and we have yet to draw up the detail of what we are proposing at these locations. The fact there is so much to do won't prevent us from restoring the canal eventually, but with so few people having the necessary time and skills, progress is bound to be slower than we would like. More volunteers are needed to keep the project up to speed.

Looking towards the A.G.M., we say thank you and fond farewell to Tim Richardson this year. Tim was a recent addition to the Committee who has done much to advance our cause with landowners, B&NES and the William Smith Archive. Tim assures me he will continue to be active in the Society but, having moved to London, committee involvement is too much; we wish him well in his business venture there. John Bishop would also like to step down as Membership Secretary, so we would be very grateful if someone could volunteer to take on that job.

Patrick Moss

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## ANNUAL GENERAL MEETING

The next Annual General Meeting of the Somersetshire Coal Canal Society will be held on  
Tuesday 17th June 2014  
at the Radstock Museum, Waterloo Road, Radstock, commencing 7.30 pm.

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If you would like to raise a matter at the AGM there are several ways of doing it:

- 1) A matter for general discussion can be raised verbally from the floor at an appropriate time during the meeting.
- 2) A matter which requires a vote should be submitted in writing to a Committee member at least a fortnight before the meeting, so that there is time to provide printed copies at the meeting.
- 3) A matter which requires a vote which may change the Constitution should be submitted at least three months before the meeting, so that it can be published in WH so as to ensure that any member with an interest can attend the AGM.

In addition to the AGM, the Committee meets four times a year and is always happy to hear suggestions from members and discuss matters raised.

## DATES FOR YOUR DIARY — 2014

Sunday 15<sup>th</sup> June —10:00

**OPEN DAY — TIMSBURY, PAULTON & RADFORD**

For further details please contact: *Derrick Hunt* ☎ 01225 863066

Tuesday 17<sup>th</sup> June —19:30

**ANNUAL GENERAL MEETING**

For further details please contact: *Patrick Moss* ☎ 07736 859882

Sunday 6<sup>th</sup> July —10:00

**WORK PARTY — Location to be advised**

For further details please contact: *Derrick Hunt* ☎ 01225 863066

Sunday 20<sup>th</sup> July —10:00

**WALK — THE COMBE HAY INCLINED PLANE**

*Meet:* Layby near Bridge Farm, Combe Hay. BA2 7EE

For further details please see website or contact: *Derrick Hunt* ☎ 01225 863066

Sunday 3<sup>rd</sup> August —10:00

**WORK PARTY — Location to be advised**

For further details please contact: *Richard Hignett* ☎ 01793 855631

Sunday 17<sup>th</sup> August —10:00

**WALK — BATHAMPTON INCLINED PLANE**

*Meet:* Entrance to Hantone Hill housing estate off A36 Warminster Road, BA2 6XD  
(Please be considerate to the residents when parking)

For further details please see website or contact: *Mike Chapman* ☎ 01225 426948

Sunday 7<sup>th</sup> September —10:00

**WORK PARTY — Location to be advised**

For further details please contact: *Derrick Hunt* ☎ 01225 863066

Thursday 18<sup>th</sup> September— 19:30

**GUEST LECTURE — THE WILLIAM SMITH ARCHIVE**

*by* Dr. Kate Santry

*Meet:* Radstock Museum.

For further details please see website or contact: *Derrick Hunt* ☎ 01225 863066

Saturday 20<sup>th</sup> & Sunday 21<sup>st</sup> September — 09:00

**WORK PARTY WITH WATERWAY RECOVERY GROUP (B.I.T.M.)**

**Location to be advised**

For further details please contact: *Derrick Hunt* ☎ 01225 863066

Sunday 21<sup>st</sup> September —10:00

**WALK — BATH, THE S.C.C. AND WILLIAM SMITH CONNECTIONS**

*Meet:* Outside B.R.L.S.I., Queen Square, Bath. BA1 2HN

For further details please see website or contact: *Derrick Hunt* ☎ 01225 863066

## THE RALPH ALLEN CORNERSTONE MUSEUM

On the S.C.C.S. walk in January this year, we came across an interesting new building in Combe Road, Combe Down which was being built to house a museum dedicated to Ralph Allen and the local stone mining industry. This museum will prove interesting to many of our members because it plans to demonstrate techniques of stone mining, cutting and handling, similar to those which would have been used during the construction of the lock flight at Combe Hay, Midford Aqueduct and many other stone features of the S.C.C.

The volunteer staff are hoping to have the museum open by mid-July on Saturdays, Sundays and Mondays, 10:00-13:00 and 14.00-17.00; but please check on the website for up-to-date information.

<http://www.ralphallencornerstone.org.uk>

Ralph Allen CornerStone  
56, Combe Rd  
Bath BA2 5HZ

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### CAMERTON LOCAL HISTORY GROUP

A new local history group has been formed at Camerton, anyone interested should contact :  
Mrs Julieann Biggs, Court Barn, Camerton Hill, Camerton BA2 OPS;  
Tel: 01761 479 319; E-mail: [j.biggs192@btinternet.com](mailto:j.biggs192@btinternet.com)

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### I.W.A. MEMBERSHIP OFFER

A special introductory offer of a year's free membership is being made available to certain waterway users, including members of societies affiliated to the Inland Waterways Association. As the S.C.C.S. is an affiliated society, our members automatically become eligible. To take advantage of this offer, please send Katie Thomas your name & address and ask for an application form:

E-mail: [katie.thomas@waterways.org.uk](mailto:katie.thomas@waterways.org.uk)  
or: [newmembers@waterways.org.uk](mailto:newmembers@waterways.org.uk)  
Tel: 01494 783453

The Inland Waterways Association,  
Membership,  
Island House,  
Moor Road,  
Chesham.  
HP5 1WA

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### COAL FROM CAMERTON Revised and Enlarged Edition

Mike Chapman and Neil Macmillan have completely revised and much enlarged Neil's original publication to produce this new edition. We hope to review it in the next edition of Weigh-House. Published by Lightmoor Press at a price of £15, copies are on sale at Radstock Museum and at some local bookshops.

## NEW MEMBERS

The Society welcomes the following new members:

|               |                    |                     |            |
|---------------|--------------------|---------------------|------------|
| Mr. M. Clarke | Bath               | Mr. B. Workman      | Bridgwater |
| Mr. J. Weeks  | Uddington          | R. Iles & M. Stacey | Bristol    |
| Mr. A. Martin | Harrogate          | Mr. C. Hargreaves   | Bridgwater |
| Mr. D. Buck   | Peasedown St. John | Mr. G. Blacker      | Paulton    |
| Ms. S. Flint  | Bristol            | Mr. S. Ashman       | Chew Magna |
|               |                    | Mr. R. Hallworth    | Timsbury   |

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### DONATIONS

The Society wishes to express its thanks for the generous donations of the late Mrs. L. Edwards during the past year.

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### PAULTON DRY DOCK APPEAL

*The S.C.C.S. has reached an important milestone in its history. Following months of hard work at Paulton and Timsbury we have now had the opportunity to undertake an excavation of the dry dock to enable the entire structure to be revealed. There are very few examples of canal dry docks surviving from era of horse-drawn boats in the UK and therefore the Paulton Dry Dock is significant historically as a relic of 19<sup>th</sup> century transport and boat repair.*

The work was not particularly complex, but was beyond our usual resources, which meant that we had to employ a specialist contractor. Society members assisted with the work, which was completed quicker than we had anticipated; so the cost was kept down to £634.80, considerably below our original estimate. The society has temporarily drawn on its reserves to cover the cost of the project but we regard this as a loan and would like to recover some of these costs so that those reserves are available for other projects in the future. To pay for the excavation, the Paulton Dry Dock Appeal Fund has been set up to allow Members and other interested parties to make a donation towards the project costs.

If you feel that you would like to contribute towards the fund please follow the instructions on the Gift Aid form which is enclosed with this issue of Weigh-House. If donations exceed the sum required to fund this project, the excess monies will be used by the Society to fund other suitable projects in the future.

This is the first significant restoration project that the Society has undertaken and its completion represents an important milestone that provides a solid base from which to launch more ambitious plans for the canal, including restoration to navigation.

**Patrick Moss**  
Chairman

## THE DORSET & SOMERSET CANAL - A WALK FROM EDFORD TO COLEFORD

*The stretch of the Dorset & Somerset Canal between Edford and Coleford is probably the best-preserved section of the whole canal. On the morning of Sunday 16th March 2014 a dozen members of the S.C.C.S. turned up at the 'Duke of Cumberland' in Edford to explore this length of canal.*

The walk began by following a public footpath which took a slight detour around the garden of a house, but it soon regained the line of the towpath and almost immediately came into sight of a section of canal ditch which had escaped infilling. Unfortunately this happy state of affairs was not to last, because, after only a few yards, the canal bed once again disappeared under building waste. Worse was to follow because the path led past the lower edge of the former Edford Colliery which had later been used as a concrete works. Spill from the colliery tip, augmented by waste concrete products and the skeletal remains of various domestic and industrial appliances completely obliterated the line of the canal and the towpath for several hundred yards. The footpath wound tortuously up and down and around the various obstructions. On the uphill side a lowering cliff of rubble and debris overhung the path, but on the downhill side we looked out across a delightfully incongruous landscape of woody glades and marshy habitat which could have formed the backdrop to a Shakespearian play.



*Photograph: Watts collection*

### PACK HORSE BRIDGE OVER THE D & S CANAL AT EDFORD — Pre 1970

We regained the towpath as we headed eastwards towards Ham, and the dry ditch of the canal was still evident for much of that distance. Shortly after Ham, we came upon our first sight of the canal in water. Although shallow and swampy, it was quite clearly a canal and it led on to even better sections which wouldn't have taken much effort to make them navigable. After a little exploration of the uphill side of the canal, we discovered an intact leat, which still runs under the bed of the canal, carrying a local stream on its way to the Mells River. As we followed the deep cutting around Bullock's Hill, the

four low Wheels) –which run up and down the Guggs, the empty one going down and the full one coming up at the same time, which is pitch't down in the standing and loaded into the Bushell Baskets that come down the Pitt ...'. The Gugg '... is a common Road about 4 feet high and 55 yards long – Pitches abt.9 Inches in a Yard. In the Bottom lies Timber framed together down which are two Roads on four Rutts made for the Wheels of the Carts to run in so as to pass one by the other going up and down.'

At the bottom of this gugg (3) was a 'Twinway' (4) leading to a standing (5) at the top of a second gugg (6). The twinway is described as:

'... a common Road from the Bottom of the first Gugg to the Standing at the top of the Second about 4 feet high and 40 Yards long and nearly on the level. The 3-Bushell Carts that are wound up the Second Gugg are Drawn along here to the bottom of the first by a Man down on his hands and feet, bare, with a Cord round his Waist, to which is fastened a Chain that comes between his legs and hooks to the fore part of the Cart'. The Standing here was 'the same as 2', at the top of which the gugg '... pitches 1 foot in a Yard abt.40 Yards long, in other respect like 3'.

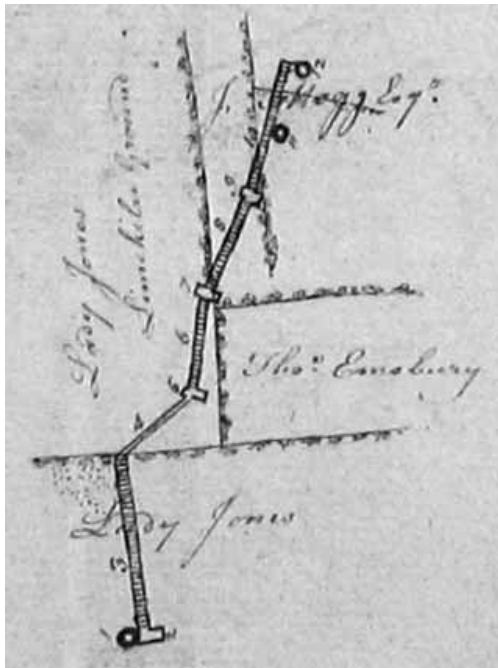
At the bottom of the gugg (6) was a standing (7), followed by a 55-yard gugg (8), another standing (9), and finally a 55-yard gugg (10) in which there were two shafts:

'... abt half way down on the righthand side is a new pitt (11) sunk down into the Little Vein ... 9 Yards deep'. At the very bottom of this gugg (10) was another shaft (12), '... A Pitt abt.11 Yards deep where the Coal is drawn up from the Little Vein by a Windlass in Baskets and there pitch in a Standing and loaded into the 3-Bushel Carts that come down the Guggs'.

All these features are recognisable, although the guggs here were not self-acting and should therefore be classed as 'dipples'. The rails in the gugg were still made of wood at this stage, but by 1801 this mine was connected to the S.C.C. by an iron tramway, and it is likely that iron rails would have been adopted below ground soon after. It is noticeable that all the coal is coming from deep workings in the 'Little Vein', reached by sinking extra shafts. This suggests that the seam above, the 'Great Vein', which lies only 12 yards above the Little Vein, had already been worked out to the dip. There are no large drift-roads here, and even on the level twin-way the guss and crook had to be used for hauling the carts. Below the Little Vein there were further seams in this series, the 'Middle', 'Slyving', and 'Lower Little' veins at a further total depth of 70 yards, but they may not have been reached, as Mearns pit was abandoned in 1817 and the works transferred to 'Woody Heighgrove' nearby.

Smith mentions sixteen men and five or six boys at work here, but is silent about other matters which would be of much interest. There does not seem to have been any particular means of ventilation in this pit, although the second shaft to the Little Vein may have been sunk to help circulation of air below. Also, there is no mention of drainage, but his other notes contain a plan of a drainage adit in this neighbourhood called the 'Bromhill Level', which presumably came from 'Brombles Pit' nearby, also known as 'Allen's Paddock' (or by S.C.C. members as 'Fred Wedlock's House'). Except for an atmospheric pumping engine at New Tynning Pit installed about 1791, many of the pits in this area were being provided with adits for drainage, one of considerable length running from the Timsbury coalworks to Radford Bridge. This is another subject that needs further study, but for the time being must wait 'for another day'.

Mike Chapman



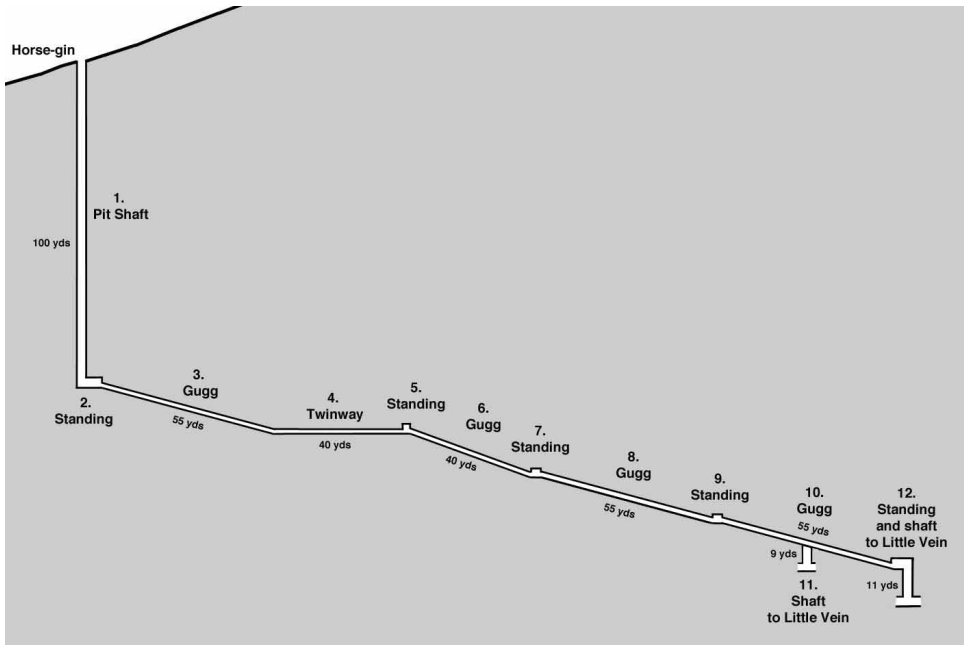
At the bottom of the shaft was a 'Standing' (numbered 2), and a 'Gugg' (3). The standing is described as:

'... a place by the side of the Bottom of the Pitt at the top of the Gugg, abt. 8 or 10 feet high, where is fixed a Windlass (turn'd by Men) with a large Balance wheel on it round the Axle of which coils two Ropes to the ends of which are hook'd two 3-Bushell Carts (on



**Left: PLAN OF MEARNS PIT** from Wm. Smith's survey notes. The 'heading' shown here, numbered according to his notes, appears to be moving north, under land belonging to Thomas Amesbury ('Emsbury') and Jacob Mogg, who were involved in other mines a few hundred yards to the east in Timsbury parish.

**Below: MEARNS PIT IN SECTION** based on Wm. Smith's sketch.



towpath rose to a height of 15 feet above the canal, which was now completely full of water.

Coming out into open country, we could look across the valley of the River Mells at a very unnatural landscape, known locally as 'gruffy ground', which had been thrown up into folds (i.e. 'groovy ground') by the early coal miners. According to Robin Atthill, this valley contained the remains of hundreds of 'bell pits'. We were fortunate to have Shane Gould with us to explain the bell pit mining system and to describe some recent evidence which suggests, contrary to the assertions of previous historians, that these may have been connected with each other underground at the very earliest stages of mining development. Below us in the valley were the significant remains of mills and their leats, but we did not visit them, despite our curiosity, because they are on private property.

As we followed the towpath, we suddenly were aware that the opposite bank of the canal seemed a long way away. We had come to a 'winding hole', where the canal was widened to allow boats to turn. At this point a discussion ensued on the source of the puddling clay which was used in vast quantities to waterproof the canal. Our Chairman, Patrick Moss, explained that local clay was dug out and used whenever possible, being 'borrowed' from surrounding land. Long before the canal was ready to open for commercial traffic, it could be temporarily flooded and used by contractors' boats to transport this heavy and bulky material to the construction sites. Sadly this was our last sight of the canal in water before Coleford, as the next section was completely infilled and obliterated.

Passing the site of the former Greyhound Inn, we made our way down the hill to see the famous Coleford "uckyduck". It was explained to us that this curious name was derived from the local pronunciation of the word "Aqueduct". The massive two-arched structure seemed somewhat over-engineered for the narrow canal which it carried; we measured the width at the base of one the supporting pillars and found to our surprise that it had been made 32 feet wide but would only have carried 7 foot wide boats.

Anyone who wants more information on "The Canal That Never Was" will find it in "The Dorset & Somerset Canal" by Kenneth Clew or on the website of the Dorset & Somerset Canal Society:

<http://www.dorandsomcanal.org>

Derrick Hunt

## RESTORING THE SOMERSETSHIRE COAL CANAL INCH BY INCH

The S.C.C.S. has set up The Inch Fund to encourage people to sponsor the restoration of an inch of canal. Each inch will have a dedication plaque set into the kerb or handrail alongside the footpath as a permanent memorial. So many years hence, when your great grandchildren walk the restored canal, they will be able to find which inch you helped restore.

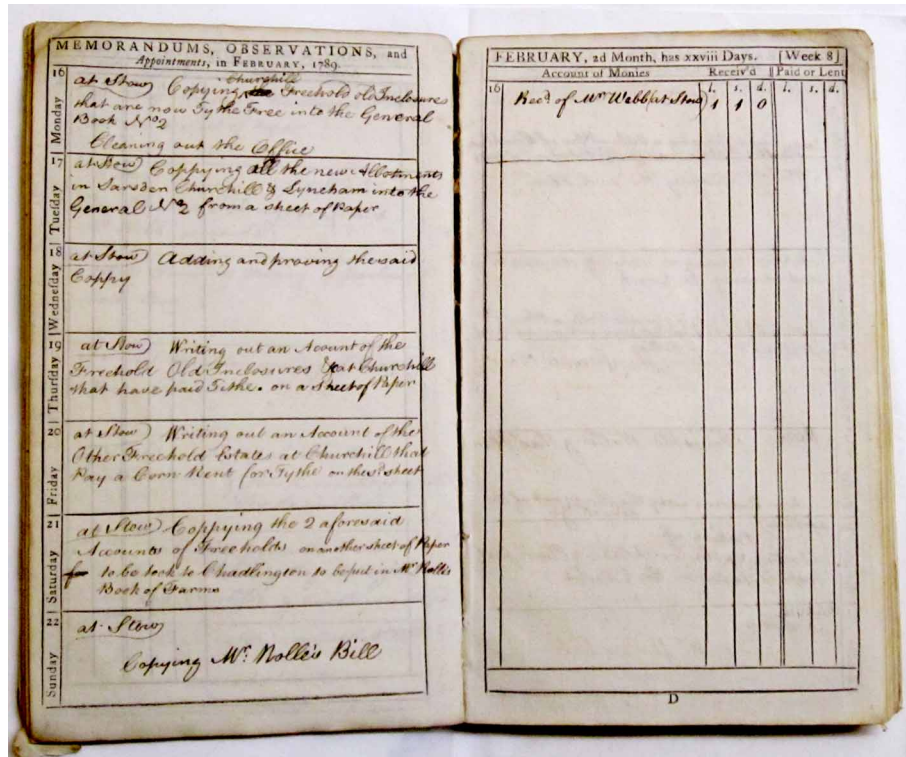
Each inch costs £10 to cover the cost of materials, based on the work done on other canals. We have set up a separate website and have already started receiving donations from as far afield as the Orkney Islands. The plaques will be 3D printed and six inches wide.

If you would like to dedicate an inch (or more!) please go to the website - <http://www.inchfund.co.uk> - and follow the links.

## VISIT TO WILLIAM SMITH ONLINE, February 2014

The Somersetshire Coal Canal Society is participating in the William Smith Bicentenary in 2015, this is to celebrate William Smith's map of 1815 which has pride of place on the staircase of the Geological Society in Burlington House, Piccadilly, London.

William Smith is sometimes known as the "Father of Geology" because of his understanding of the order of geological strata. His theories were developed while he was working on the building of the Somersetshire Coal Canal. As the two branches were taking ten-mile slices through the terrain it enabled him to predict where the different geological strata would appear in each branch and gave him the confidence for his ambitious plan to map the geological strata of the entire country, a feat which he achieved single-handedly with remarkable accuracy.



A PAGE FROM ONE OF WILLIAM SMITH'S DIARIES

William Smith left his copious notes and diaries to his nephew John Philips who became a noted Geologist in his own right and was instrumental in the founding of the Oxford University Museum of Natural History, which upon his death received the William Smith archives. These archives included his diaries, which have been the source of most historical research over the last 150 years, and a huge cache of letters and notes which have never been properly analysed.

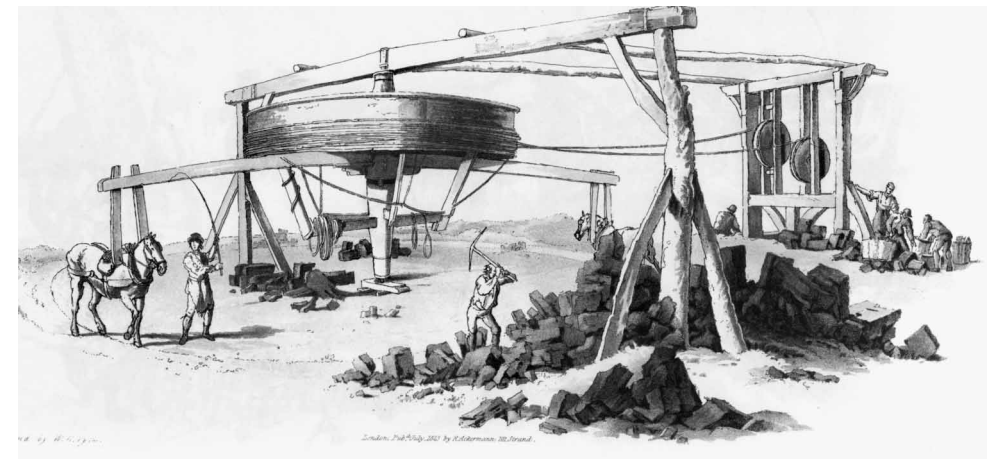
Tubs not only carried more coal than the corves, but up to 15 could be marshalled into horse-drawn trains. Trains were later hauled by a winding engine at the pit bottom using an endless rope system known as 'main and tail', but ponies still performed a useful function up to the closure of the last pits in Somerset in the 1970s.

### William Smith's Colliery Survey

Even before the arrival of the Coal Canal, most of these features, including railways, were already well established in the North Somerset coalfield, as recorded by none other than William Smith himself. Although Smith had been brought to this area by Lady Jones of Stowey to survey her landed estates, including some in High Littleton where she was also Lady of the Manor, in 1792 she directed him to carry out a survey of a coal mine on her land there, 'Mearns Pit', opened about 10 years earlier, in which she was entitled to royalties or 'free share'.

Smith's surviving notes and drawings made during this survey, now kept in the Oxford University archive, contain a useful description of the mine layout he encountered, starting with the winding mechanism, commonly known as a 'horse-gin' or 'whimsey', for raising the coal from the 100-yard deep pit shaft (numbered 1 in his notes and drawings);

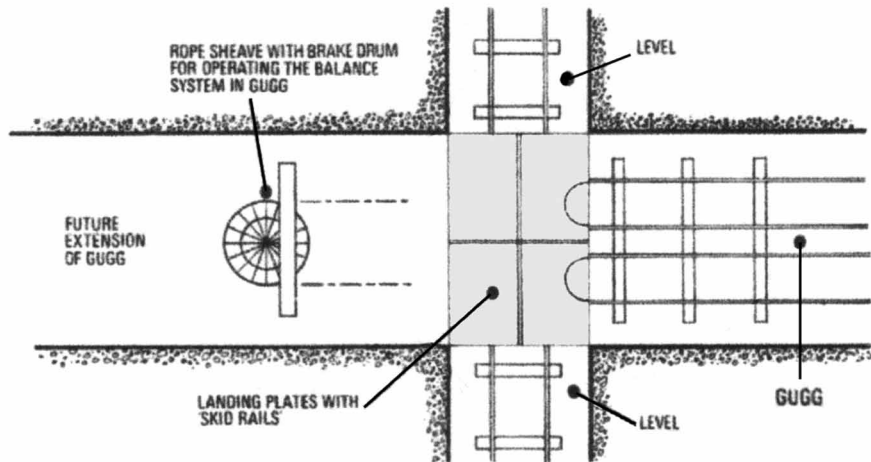
'... the Coal is landed by a Machine turned by a Horse which consists of a large upright Axle (and braces) on the upper part of which is fixed a Drum wheel having a rim or Board on its upper and lower edges projecting out, and another round the middle which divides it in two parts, round which coils two Ropes running over two Rollers and two little Wheels. Just over the Pitt, to the ends of these two Ropes, the Baskets (called Bushells) are hooked on, and as the empty one goes down on one Rope, the full one comes up on the other to the top, when the full one is unhook'd at Top and the empty one at Bottom. The Horse turns and drives the Machine the contrary way which lets down the empty one and draws up the full one as before and so on alternately'.



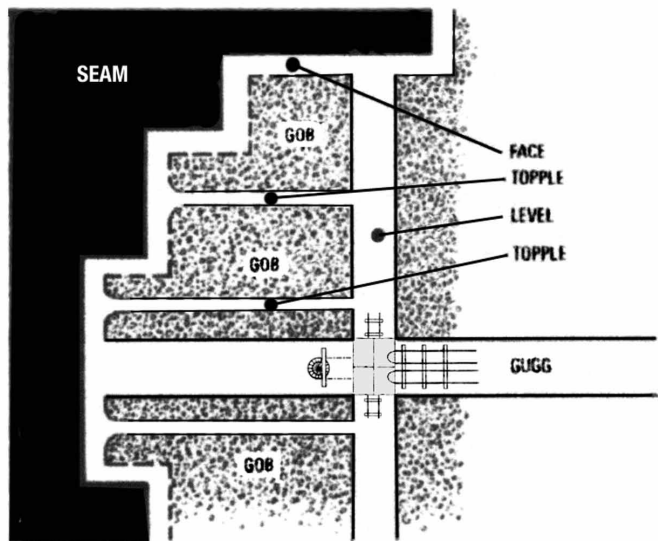
A HORSE GIN OR WHIMSEY

This illustration, from W.Pyne's *Rustic Vignettes for Artists and Craftsmen*, 1808, is a somewhat idealised example, operated by two horses. The one at Mearns would have been smaller with a single horse, but the features shown here otherwise agree well with Smith's description.





**PLAN OF THE LANDING AT THE HEAD OF A GUGG WITH LEVELS RUNNING INTO IT**  
 Tubs would be run onto an iron 'striking plate' with skid rails where they were twisted to align with the gugg rails before being connected to the gugg rope



**A TYPICAL COAL MINE LAYOUT**

The stippled areas are where the coal seam has already been worked out in blocks, the empty space left behind being known as the 'gob' or 'goaf'. The gob would eventually be allowed to collapse under the pressure of the surrounding strata, as indicated on the right side of the diagram where no workings are shown, but the gugg, levels and topples near the coalface had to be kept open, and were protected from collapse by 'pack-walls' on each side constructed of waste material brought down by shot-firing to provide sufficient head-room.



**A PREVIEW OF THE WILLIAM SMITH ONLINE WEBSITE**  
*Left to right: Sarah Joomun, Kate Santry, Richard Fox, Tim Richardson.*

The William Smith Online project intends to remedy this by making the William Smith archives available for anyone to research online. The first stage, of scanning a large number of notes and letters, has now been completed and the website opened to the public on his birthday, March 23rd 2014. It is now up to the public to transcribe all the scanned documents so that in the future anyone will be able to search for them on line.

A few weeks before the opening an enthusiastic group from the S.C.C.S. visited the museum and were treated to a display of the key artefacts in the collection. This group not only included most of the William Smith experts of the S.C.C.S. but also representatives from the BRLSI and John Morton, who has written a book on William Smith. Pride of place was the maps, the 16 sheets which make up England and Wales bound into a large book. The colours are exceptionally vibrant, a witness to the book being rarely opened in two centuries. We were also shown one of his diaries, quite small with equally small handwriting, and some of his sketches and letters. Kate Santry, the Collections Manager and her assistant Sarah Joomun were in constant conversation as the S.C.C.S. members showed the results of their own research over the last two decades, and the event created a relationship that should prove beneficial for years to come. S.C.C.S. members have been passing new information to the O.U.M., and Kate Santry will be giving a talk in Radstock in September.

There will be a number of William Smith Bicentenary events in 2015 which will be mentioned in a future edition of Weigh House. However we are already part of the national event and we hope that in 2015 many more people will understand the importance of William Smith, surveyor of the Somersetshire Coal Canal, and his map that changed the world.

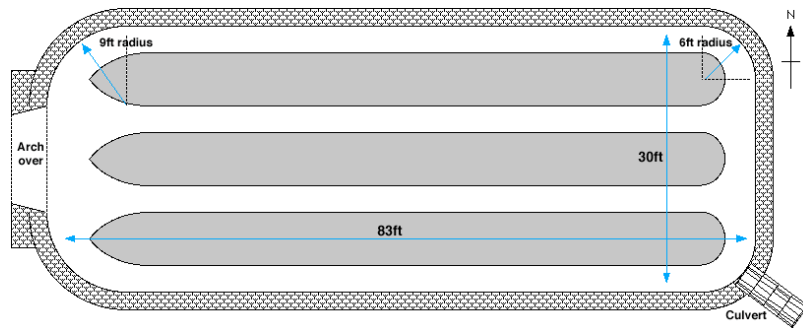
**Tim Richardson**

<http://www.williamsmithonline.com>

## EXCAVATING PAULTON DRY DOCK

When John Ditcham and Jasper Crabbe began digging a drainage ditch two years ago in the area of Paulton Dry Dock, little did they realise what it would lead to. They discovered the top of a wall, which further hand excavation showed was far bigger than anyone imagined. When a mini-excavator was brought in, the outline of the dock walls gradually became apparent and we soon realised that we had a major discovery on our hands.

The initial discovery of a wall was made in the south-eastern corner of the dock in the area of the culvert. The tops of the western wall and the northern wall were the next to be uncovered, but at that stage we had no idea of the depth of the structure. When Richard Hignett dug down by hand to find the floor in the south-eastern corner, he also discovered an indication of a drainage culvert which had been purposely blocked with hard-packed clay and debris. The mini-digger was used to investigate the line of the culvert and discovered that it appeared to have been deliberately caved-in.



SKETCH PLAN OF PAULTON DRY DOCK

For our first true restoration project we chose to clear out and rebuild the culvert, so as to improve the drainage of the dock and make further excavation easier. Richard Hignett constructed the first arch rings and a later Waterway Recovery Group work party completed the job. Meanwhile the mini-digger was used to dig a trench in front of the southern wall, followed up by Richard Hignett with a shovel, carefully uncovering the face of the wall. At this point, torrential rain caused the Cam Brook to rise and flood the excavations through the newly-cleared drainage culvert. This explained a mystery which has been puzzling us: we noticed that the culvert had been fitted with grooves for stop boards at the discharge end, whereas it would have been more usual to fit them at the dry dock end. Those boards weren't to retain water in the dock when boats needed to be floated, they were to prevent the Cam Brook from flooding the dock and putting it out of action.

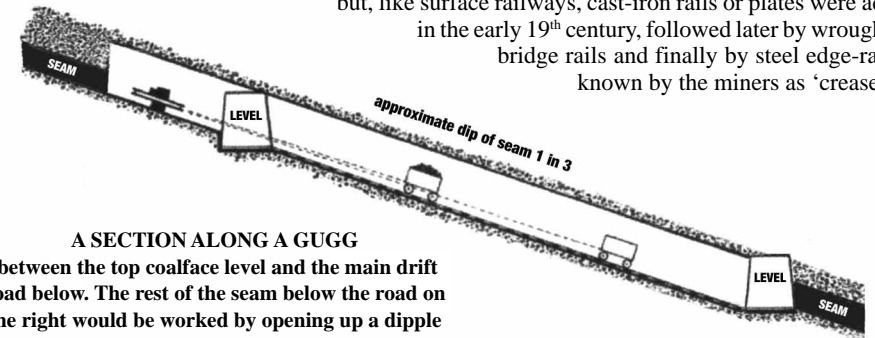
The floor of the dock appeared to be paved with random setts and, from its depth below the surface, we were able to make an educated guess at the volume of infill which needed moving to clear out the whole dock. We estimated the cost of engaging the services of tracked excavator with driver and a couple of dumper trucks, which could be driven by volunteers to save some of the expense. Although this project was not directly contributing to the re-opening of canal navigation, we decided to go ahead with it because of the huge local support it generated for restoration in general. It also gave us the opportunity to test out the organising and planning skills which we were going to need for later phases of the restoration.



THE GUSS AND CROOK

his waist attached to a short chain and S-shaped hook which ran back between his legs to a fastening on the putt - a rudimentary but effective device that could still be found in use in a few Somerset pits up to the 1930s. Its main purpose in descending the topple was to prevent the putt from running away, and on very steep inclines a static rope had also to be fixed at the top for the carting boys to hitch on to.

As the coalface moved further away from the main road, time was saved by enlarging one of the topples to form a self-acting inclined plane with two lines of rails known as a 'gugg', to which further 'levels', 'tweenways', 'putt-roads' and topples could be connected. This was operated in the usual way with a brake drum fixed in a 'landing' or 'standing', an enlarged space or at the top of the gugg, around which an endless rope allowed full waggons to descend under gravity and draw the empties back up. The term 'gugg' was also applied locally to inclines above ground, such as the S.C.C. incline from the Somerset Inn down to Paulton basin, or from the Camerton and Greyfield pits up to their land-sales depôts. Originally the rails were made of wood but, like surface railways, cast-iron rails or plates were adopted in the early 19<sup>th</sup> century, followed later by wrought-iron bridge rails and finally by steel edge-rails, all known by the miners as 'crease'.



A SECTION ALONG A GUGG

between the top coalface level and the main drift road below. The rest of the seam below the road on the right would be worked by opening up a dipple with a windlass to bring the coal up.

In the case of coal worked 'to the dip', this was more difficult, as the coal had to be hauled up to the main road against gravity. Branching passageways known as 'dipples' gave access to the coalface below, but here two carting boys were needed to haul the putts up the slope, one pulling and the other pushing - a slow and even dangerous job if the putt got out of control. As a result, the dipple was quickly provided with rails, so that waggons could be used instead, winched up by a hand-windlass or 'crab'. This was one of the earliest devices below ground to be operated by powered machinery, initially by steam, but later by compressed air or electricity.

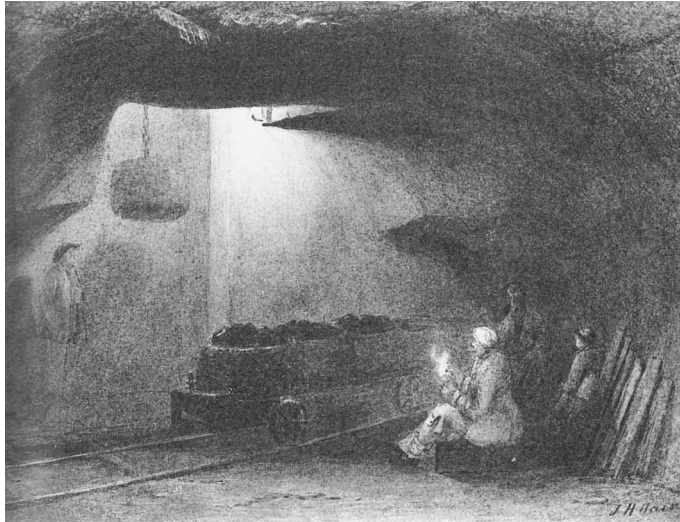
In the early days, coal arriving at the main roads was loaded into wicker baskets known as 'bushells' or 'corves' mounted on rail carriages ('wreath carts') which were then pushed along the level by 'twin boys' ('tween boys') to the pit bottom. Here the bushells were attached to the pit rope and raised to the surface like a string of onions. Although the Rev. John Skinner mentions the use of asses for towing the carts at Camerton by 1803, it was not until after the 1860s that pit-ponies imported from Scandinavia were introduced on a large scale by James McMurtry in the Radstock pits. By this time pit shafts were being equipped with cages and guides which could carry wheeled tubs to the surface without reloading.

## EARLY UNDERGROUND COLLIERY HAULAGE

A novel feature of the canal age (and of the S.C.C. in particular) was the sudden and widespread appearance in the landscape of numerous railways, railroads, inclined planes and the like which carried coal and other materials down to the waterway. Occasional use of rails had been made even in antiquity, but it was their general adoption below ground in coalmines throughout Europe in later times which gave rise, in the north of England, to this new application on the surface.

Rails were certainly in use in mines in this country by the late 17<sup>th</sup> century as the demand for coal began to increase. Beside the advantage of easier movement over resistant surfaces, rails also solved the problem of steering wheeled vehicles in confined spaces in almost total darkness. With the only illumination coming from a candle in the miner's cap, even a wheelbarrow was effective with a groove cut in the mine floor.

Naturally, records of early mining haulage are not easily found — nor easy to interpret. Besides regional differences in terminology and dialect, methods varied from one coalfield to another, dependant on local geological conditions — from the best, where the seams were thick and level with few faults — to the worst (*i.e.* in the North Somerset Coalfield) where the seams were thin (here called 'veins'), steeply pitched (sometimes even vertical), with many faults. In addition, new terms had constantly to be adopted as improved techniques were introduced.



**A 'STANDING' AT THE BOTTOM OF A MINE SHAFT  
with a 'wreath cart' (apparently a four-bushell cart)**  
*From an illustration of a mine shaft in the north of England, c.1840.*

### Coal Mining Terminology

Nevertheless, certain aspects were common to all coalmines. The over-riding feature in most mines was the 'dip' or pitch of the coal measures, which meant that coal had to be extracted up or down a slope. From the base of the shaft a level 'drift road' or large passage with rails was generally driven horizontally through the seam, but from here the coal on each side had to be mined either upwards, 'to the rise', or downward, 'to the dip (or deep)'. Leading up to the 'topside' coalface, small sloping passageways known in Somerset as 'topples' (or 'toppos') were turned off from the drift road, through which the coal, loaded onto small sledges or 'putts' carrying 1½ cwt at a time, could be let down controlled by 'carting-boys' or 'veerers'. Because the seams were rarely more than 2ft thick, it was uneconomic to make the roof of the workings more than 4ft high, which meant that the carting boy had to go on all fours, towing the putt behind with his 'guss and crook'. This was a loop of rope worn around



*Photograph: David Fearn*

### EXCAVATING PAULTON DRY DOCK — April 2014

Digging a hole was only half the problem, we also needed to find somewhere to put the spoil when it had been dug out. Immediately to the North of the Dry Dock, there is a section of canal embankment that has been weakened in the past by flooding, by banking the spoil up against the crumbling retaining wall, we could reinforce it and help to preserve it, whilst disposing of many tonnes of excavated material. Planting it with grass seed would help to stabilise it and give a tidy appearance to the site. The final clearance of the floor had to be done by hand, to avoid disturbing the thin layer of stones that formed the working surface. The majority of the floor is now exposed, but a final wash-down to clear away the mud will eventually be needed.

While all this was going on, work was also progressing on the arch which originally crossed the dock entrance. The stop plank points on the arch abutments were replaced with cast concrete blocks and railway sleepers were donated by a local landowner. Another landowner, who is a retired mason, set about re-pointing the surviving stonework. He then moved on to rebuilding the arch abutments while a third landowner cleared the area with a mini-digger in preparation for a civil engineering survey. We were very lucky to engage the services of Roy Sutton, the honorary civil engineering surveyor of the Inland Waterways Association. He spent a day in the area and has prepared a professional report which we can use to plan the rebuilding of the arch itself. Because it is officially crossed by a public footpath, we have to be certain it will withstand any loads placed upon it for many years to come. At some time in the future we shall also have to provide a crossing point for the footpath at Terminus Bridge, so the experience of building this bridge will serve us well. All this, and many future plans, will require financing, so the Society is gearing up to raise the necessary funds [See P.5 for information on how to contribute].

To show how far the Dry Dock and arch have progressed, we are planning an open day on Sunday 15<sup>th</sup> June at Paulton Basin. Parking has been made available at Radford Mill Farm (*not* Radford Mill) giving a pleasant walk to Paulton Basin along the stretch of canal which we intend to restore next. If you want to find out more, this is the opportunity to put your questions to members of the Restoration Sub Committee.



**PAULTON DRY DOCK AFTER EXCAVATION**