The Rolle Canal

& Northern Devon Waterways Society

WINTER ISSUE February 2011

Winter Bulletin - February 2011

CONTENTS:

Front cover illustration:
North Devon Trading Motor Vessel 'Advance'.

Comments from the Chair

The shortest day is long past, the snow has finally gone and we are well into another year. Over the past 12 months the **RC&NDWS** has continued to flourish, gaining new members and working hard to fulfil its policy to interest, inform and educate the public about Lord Rolle's Canal through its programme of illustrated talks, exhibitions, guided walks and its on-going restoration work.

I take this opportunity to thank Dr. Hugh Reed for the fascinating and informative talk he presented on his family's business interests and home, at **Staple Vale** in Torrington, reaching back over 240 years.

The talk was very well attended by nearly 70 people despite it being a very cold and miserable evening outside. Hugh kept his audience fully engaged. His personal contacts with many of the local farmers attending led to some informative dialogue and insight into family business practices. His family is obviously held in high esteem by those who have had dealings with it.

Thanks are also offered to all those members and personal friends who helped make the **Sea Lock Open Day** such a successful occasion. Over 120 people attended and members of the RC&NDWS were kept busy guiding groups around the site whilst other volunteers organised parking, collected entry fees and served refreshments.

An unexpected but very pleasing spin-off of this event is an article featuring the Sea Lock restoration and Lord Rolle's Canal by Elizabeth Fowler and published in the February edition of Waterway World. Make sure you get your copy.

But what of this year?

Your society is actively engaged with the North Devon Area of Outstanding Beauty & Biosphere Service (NDAOBS) in conjunction with local land owners in seeking ways to raise funds to open new permissive footpaths along the course of the canal.

It is also hoped that an extensive programme of archaeological investigation can be undertaken on the site of the Inclined Plane and Wheel Pit, subject to the appropriate permissions being granted and the necessary funding being in place.

These very exciting developments are both great opportunities to raise the profile of Lord Rolle's Canal and make it far more accessible to all.

Some very interesting guided walks are being planned to sites and areas that have histories which parallel that of the Rolle Canal. These walks are open to all so let your friends know and come along with them.

Our AGM is planned for May 8th, rather later than usual but set to avoid clashing with Bank Holidays and the like. Once the formalities of the AGM are over an illustrated talk on 'Pentewan in the Past' is being presented by Mr R. Evans. This will be a wonderful introduction to the planned guided walk to that area the following weekend (Sunday May 15th).

You will have found 4 inserts inside this issue of the RC&NDWS bulletin:-

1. Formal notice of the forth-coming AGM

2. An application form to join the society. A copy will be included in every subsequent issue and is for you to pass onto any of your friends who may wish to join. Please spread the word!

3. A brief outline of the guided walks arranged for Pentewan and Ponts Mill and booking form. It is essential for planning that the committee knows in advance, how many people wish to participate.

4. The society is trying to minimize administrative time and costs, the production and posting of the bulletin being a significant expense. Sending the bulletin by email as many other societies do, would bring about a substantial saving. Please read and carefully consider this insert, returning it completed to the Membership Secretary.

Save yourself a little money and return all three completed forms in the same envelope!

Thanks for your time, AW.

**Apologies to Trevor Fordham. Should you be interested in acquiring any of the canal pictures produced by Trevor , please note that his email address is as follows:-*

trevor@judd-fordham.freeserve.co.uk not as published in the last bulletin.

LIME MORTAR - AN INTRODUCTION

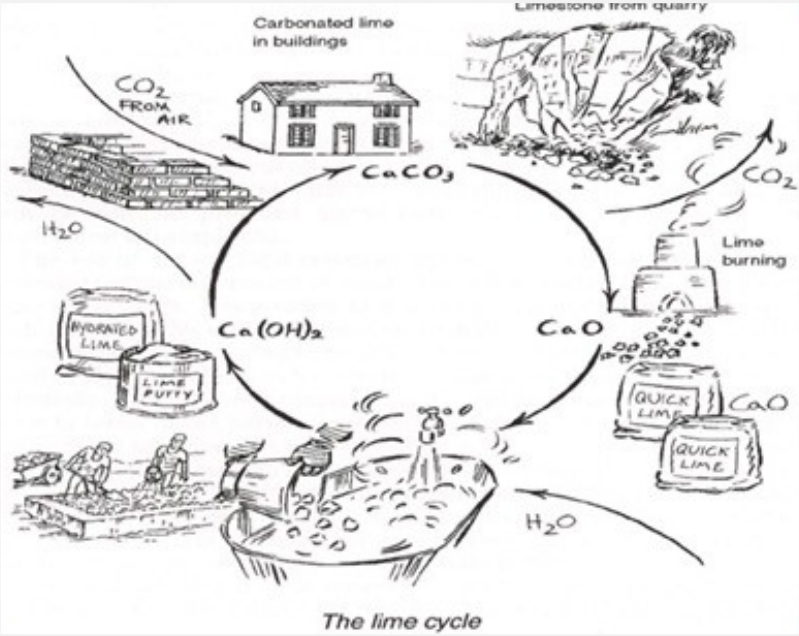
The first of a two-part article by Ray Patt

The most common raw material for making lime is limestone, which is one of the world's most abundant minerals, widely available in many countries.

Lime has been used as a binder for building for thousands of years.

There are two ways in which lime may be set, one by a slow combination with carbon dioxide gas in a process called Carbonation, or by combination with silicates and aluminates in the presence of water in what is called Hydraulic Set.

Most limes set to some extent by carbonation, which is the only way the purest limes gain strength. The hydraulic set is a property exhibited by limes which contain active impurities. When the proportion of these impurities are low the carbonation remains important, but for some limes the hydraulic set is predominant. Often what is needed is a combination of the workability of a good 'fat' lime and the advantages of a faster setting hydraulic lime in difficult conditions.



The lime cycle

Lime does not occur naturally but must be manufactured. In the manufacturing process the material passes through several stages as follows:

The raw material is calcium carbonate, which is usually quarried as limestone, but may also be found as chalk, coral rock, or shells. When this is heated in a kiln it undergoes a chemical change, giving off carbon dioxide gas and forming calcium oxide. This is commonly known as **quicklime** or **lump-lime.**

When quicklime is combined with water it changes to calcium hydroxide, commonly known as **slaked lime, hydrated lime** or often just 'lime'.

Pure limes will not set under water, so for building in wet conditions including hydraulic engineering works – bridges, dams, harbours and canal locks- special materials are needed. These are also of importance for use in specific locations where conditions are often damp or wet, such as foundations and work below ground in damp soils, in drainage, in construction adjacent to rivers, and as an external render in damp climates.

Nowadays cement is usually used for such work, but before cement was available it was found that certain limes could set under water and these are known as **Hydraulic Limes** because of their suitability for that sort of work. The chalks and limestones from which they are made contain fine clay materials which, when appropriately fired in the kiln, combine with lime to form active compounds.

The hydraulic properties will depend not only on the constituents of the limestone but also on the firing temperatures. At high temperature (around 900°C) the lime begins to sinter and cannot slake unless it has been finely ground up. When the proportion of clay is low, the hydraulic set is minimal and the lime can set in the normal way by carbonation. At the other extreme where the proportion of clay is very high, there may not be enough free lime to enable the lumps to break down on slaking, and these limes known as natural cements must be finely ground before water is added. They will set very quickly giving high strength. In between these extremes there is a wide range of possible materials for which classification was developed by the French engineer, Louis J. Vicat early in the 19th century.

Hydraulic limes not only have this extra power of setting, but are much stronger than non-hydraulic lime mortars. Thus they have often been used with the intention of giving non-hydraulic construction work extra durability, but they can lead to the same kind of decay problems as mortars containing modern

cements – undue stiffness and lower permeability which can allow soluble salts to cause damage to the masonry units rather than the more easily repaired joints.

Similar hydraulic properties to those described above can be achieved by adding certain pozzolans to a fat or air-lime mortar. These materials contain finely divided clay or similarly fine, material which have at some time been exposed to great heat. Examples are certain volcanic ashes such as the original Pozzolana (Ref. Wikipedia) from near Naples in Italy, the fly-ash known as PFA which is produced in coal-fired power stations, and brick dust prepared by crushing or grinding lightly burnt clay bricks.

The reactivity of the pozzolans depends very much on their preparation and storage. For the best reaction the clays would be lightly burnt at say 600°C and be finely ground.

It was the Romans that developed the science of lime concrete using it in such structures as the Pantheon and many civil engineering projects such as aqueducts, bridges and reservoirs, although faced in stone or brick, they owe much of their strength and stability to a lime concrete.

Much of the science developed by the Romans for successful lime-concrete structures was lost until the 18th century, the growth of civil engineering programs in Europe for the construction of bridges, harbours and canals gave rise to an immense demand for hydraulic building limes. Extensive research was carried out into natural and artificial limes to meet this demand. By the beginning of the 19th century, lime concrete was once again being used prodigiously. The type of use was mainly restricted to the sum-structure of large buildings but never reached the technical level achieved in many of the outstanding engineering feats of the Romans.


Roman aqueduct in Nimes, France, built in 1st C. A.D.

(To be continued.)

***PART 2** of this article will be published in the next issue of the **RC&NDWS Bulletin**.*

A TIME WARP TO INDUSTRIAL MAYHEM - BLISTS HILL

Report by Anthony Barnes.

A long held desire to visit Blists Hill Victorian Village was at last realised during the autumn, when Julia and I managed to get away for a few days.
For those who are not aware of this marvellous bit of industrial heritage it lies just south-east of Telford and is set in the early 19th century

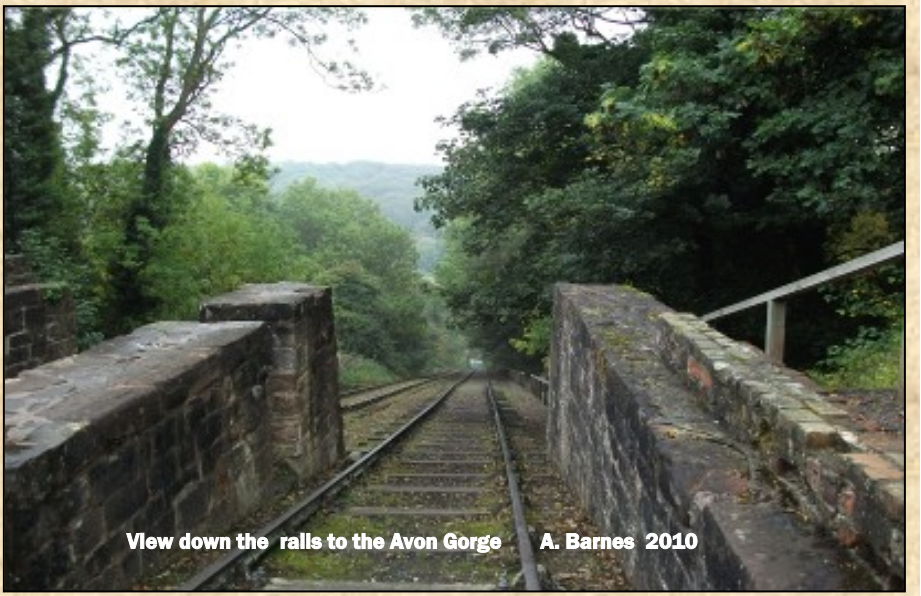
My main reason for going was to see the Hay Inclined Plane, which, at 207 feet, is one of the highest lifts in the country. I think the inclined plane on the Tavistock Canal at Morwellham is some 25 feet higher.

However, before reaching the canal in this fascinating period-village, visitors have to enter a stunning surround-sound projection of an operating blast furnace, complete with a drop-forging hammer which looks heavy enough to compact a Land Rover into a one foot cube in a single blow!

Whilst the building shudders at each blow spectators watch barely-clad workers drag red hot billets about the iron-works floor.

The whole show is an introduction to the site, which was at the heart of the Industrial Revolution. Iron and coal were both mined locally and remains of the furnaces and ancillary industry are still evident everywhere nearby.

Leaving the 'blast furnace', we walked through the Victorian village with its shops, school and small industries to the canal which runs along the top of the village, and eventually to the inclined plane.


View down the rails to the Avon Gorge A. Barnes 2010

The boats used on the Shropshire Canals were rectangular wooden tubs. To operate on a railed, inclined plane the tubs were floated into position over a wheeled cradle, chained down and then hauled up or lowered down the rails. This system has the advantage of having secure, permanent fixing of the drawing chains to the cradle, instead of a temporary fixing to the tub boats, and the cradle wheels being in permanent contact with the rails.

The Hay Plane was built at the end of the 18th century and became operational in 1791. At first it was powered by horses but within two years a steam engine was installed, allowing boats to be pulled up without the need for a counterbalancing load. The whole operation was staffed by only four men, and a boat could be shifted from top to bottom within four minutes. The plane connected the canals at the top and bottom of the hill for the movement of iron ore and coal in one direction and finished goods in the other. It remained in service until 1894.

The Shropshire Canal at the top of the plane experienced a lot of trouble through a series of leakage problems. It is always a problem on embanked canals


Cradle dock at the top of the Hay Inclined Plane, *A Barnes 2010*

apparently, so maybe we should be a bit more cautious about planning to refill the Furzebeam section of the Rolle Canal with water .

Although the main reason for our visit was the Plane, the rest of the industrial museum more than warrants a visit in its own right. From the money exchange into old pennies, (which allow purchases in old money) to the early squatters cottages, which, if one could stay for seven years would belong to you, the village is populated by enthusiastic and very authentic volunteers, who really do get the atmosphere right. There are many old crafts still being practiced, although there were no volunteers for the dentist or doctor's surgery.

The blast furnaces have been partially restored, and next to them the museum is constructing a new inclined plane which will give rides down from the top level to the bottom, where the village green hosts a fairground.

For those of a non claustrophobic disposition, there is a train going into the old mine workings. We can thoroughly recommend a visit with a guarantee to interest almost everyone and anyone.

Not to be taken literally! A.B. 2010

TRAINS AND BOATS AND *Inclined* PLANES?

(Apologies to the New Seekers!)

or an alternative title -

From One Sea Lock to Another

Having been invited to the wedding of friends, who also happened to be Waterway Recovery Group leaders who've worked on the 'Sea Lock' of Lord Rolle's Canal, Hilary and I decided to take a few days off and follow a scenic route to the hotel in Bath where the ceremony was to be held.

We duly set off in our caravan on the first leg of our 'slight' diversion and headed via Telford's Heritage Route (A5) to a campsite in Snowdonia. Having just arrived at the site in Beddgelert we were somewhat startled by the loud hoot from a steam locomotive on a narrow gauge railway line which we discovered running alongside the campsite only a few metres from where we were set-up.

We had already planned an excursion on the Snowdon Mountain Railway but now we had another rail journey to experience.

Having spent a couple of days touring around the base of Mount Snowdon to get a feel of the area we set off early one morning to catch a train to the summit. The weather during the previous two days had been clear and bright but this morning was somewhat cold and damp. When we arrived at Llanberis Station we were quite surprised by how busy it was despite it being late September and the school holidays well over.

The train of engine and two carriages each carrying 54 passengers was sold out.

Departing at 10.30am we were about to ascend the 3, 560 feet (1,085mtres) on a rack and pinion line built in 1869. With the engine at the rear, the train set off working its strenuous way up the mountainside in places at a 1 in 5 gradient.

We finally arrived at the very recently rebuilt visitors centre at the summit. Here contractors were still walking around the outside of the building wearing 'hi-viz' jackets and safety harnesses, carrying lengths of scaffolding. Sadly for us the cloud level was very low and we saw nothing of the spectacular views that can be seen from there which was disappointing but such is mountain life!

Outside the visitors centre a cold and wet wind was howling past (lucky contractors!) so after a cup of coffee inside we re-joined the train ready for its return journey.

The cloud lifted slightly as we descended and from the train we were able to watch local farmers rounding up their mountain sheep, whilst driving quad bikes – a sign of the times!

On leaving the station we wandered across Llanberis to visit the National Slate Museum which proved to be extremely interesting. I wished that we had more time to spend there. I had a go at splitting slate using a cold chisel and club hammer which was far more difficult than our guide/demonstrator made it look. Even today all Welsh slate is still cut and split by hand.

The other steam line we had planned to travel on was the Ffestiniog Railway which runs from Portmadog to Blaenau Ffestiniog.

In 1806 William Alexander Madocks constructed a model town on reclaimed land overlooking the Glaslyn Estuary. Completed in 1811 the town was originally named Tremadadog and was intended to be the last staging post of a picket route from London to Ireland. Established in 1832 the Ffestiniog Railway is now the world oldest independent railway; built originally to bring slate down from the mountainside quarries. It opened to passengers in 1865.

Running across the man-made sea-defence known as The Cob the traveller is treated to spectacular views of the estuary on one side and inland across marshes full of wildlife to the distant workings of massive slate mines. This delightful little line wends its way slowly ascending the hills until terminating at Blaenu Ffestiniog. After a brief stop at this station the train returns to Porthmadog.

When opened in 1836 all 'down' trains were worked by gravity. 'Up' trains were horse-drawn. The horses, now replaced by a number of different steam powered engines, rode back down in the free-wheeling wagons . This beautifully restored and carefully maintained line is an absolute gem.


Ffestiniog Railway.
Train approaching Porthmadog Station.

Our last journey by train during this visit was on the Welsh Highland Railway, boarding the train at a halt conveniently situated at the back of our caravan site. Once aboard we headed inland to the present end of the line, Pont Croesor, just short of Porthmadog. From here the train returns to Beddgelert and runs on, skirting the base of Snowdon, to terminate not far from the gates of Caernarfon Castle. The total length of this journey is 22miles and takes the best part of 2¼ hours from end to end. The scenery is breath-taking, the Glaslyn Gorge spectacular and for those interested in steam-powered railways this whole line is a real treat.

Moving ever north and even further from our ultimate destination we stopped for a while at a site on the edge of Loch Lomond. We had been told that the Crinan Canal was a joy to behold so we made a bee-line for it and were not disappointed. This 9 mile stretch of canal links the Sound of Jura at the Crinan Sea Lock, negotiating 15 locks to enter Loch Fyne at Adrishaig, traversing the Kintyre Peninsula. It was a bright sunny and calm day by the entrance to the Crinan sea lock but at the Adrishaigh sea lock it was cold, very windy, the sea was angry and waves were breaking over the harbour wall. This clearly illustrated the value of the canal

short-cutting the perilous sea journey to the Western Isles that voyaging around the Kintyre Peninsula otherwise required. We intend to have a more leisurely visit to this beautiful canal in the future.

We couldn't leave Scotland without seeing one of the most modern, innovative and efficient examples of canal engineering in Europe – the Falkirk Wheel. The inclined planes and boat lifts brought into being by our Victorian forebears are masterful works but it is very satisfying that British engineering is still world class and the Falkirk Wheel shouts this aloud. This is truly a wonderful structure, raising and lowering boats from a basin feeding the Forth & Clyde Canal 25 metres to the Upper Union Canal smoothly, quickly and effortlessly using only the amount of electrical power required to boil 8 electric kettles and wasting less than a litre of water with each lift. How's that for efficiency?


Crinan Canal Sea Lock

I can only describe this device as truly stunning!

Journeying south we stopped briefly near Chirk. From here we were able to walk sections of the Ellesmere Canal which is now called the Llangollen Canal and is a branch of the Shropshire Union Canal which connects with the Montgomery Canal. We walked along a bit of this canal as well. Confused yet? I am!

From Chirk, where there is the Darkie Tunnel (1200 feet long) and the Chirk Aqueduct, we walked a length of the Llangollen Canal bravely crossing the Pontcysylite Aqueduct (Hilary isn't very good with heights!) This wonderful bridge, which took from 1795 to 1805 to construct, stands 120 feet (39 Metres) high on 19 stone piers, stretches for 1000 feet (307 metres) and carries the canal in a cast iron trough. We walked this stretch to its beginning where it is fed by the River Dee at the Horseshoe Falls. We eventually returned to Chirk somewhat weary and footsore having just managed to catch the last bus of the day.


The Falkirk Wheel.

Working our way further south we eventually stopped at a small site just outside of Bradford-Upon-Avon. From here we enjoyed a boat trip from the newly refurbished Brassknocker Basin, along the Somerset Coal Canal and onto the Kennet & Avon Canal, crossing the Dundas Aqueduct and back. Later we visited The Boat Yard at Trowbridge

on the Kennet and Avon owned by the bride and groom, now Mr & Mrs S. Collins. Unsurprisingly Spencer the groom, was there in his working overalls despite his wedding being less than a couple of hours away!

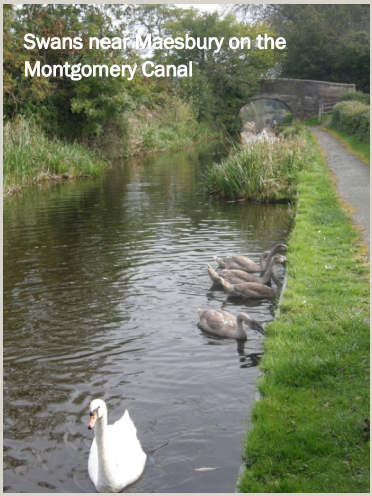
After travelling nearly 2,500 miles over nearly 4 weeks we finally arrived back home thoroughly 'train and canalled-out'.

We really enjoyed the wedding as well!

Report and pictures by Adrian Wills.


The Pontcysylite Aqueduct.


The Llangollen Canal


Swans near Maesbury on the Montgomery Canal


Boating on the Somerset Coal Canal .

DOWN THE CUT

Dates for your diary of forthcoming events and other bits.

FEBRUARY **Monday 7th** RC&NDWS committee meeting.

MARCH **Sunday 12th** **IWA Westcountry Branch AGM**
10.30 meet at the Sandygate Inn
11.00 Guided walk along sections of the Stover Canal, followed by lunch.
14.30 AGM at the Kingsteignton Community Hall, followed by an illustrated talk on the Stover Canal. The meeting will conclude with a closing address by a representative of the IWA.

APRIL **Saturday 2nd – 17th** **'The works of James Green'.**
The **RC&NDWS** with the **Bude Canal & Harbour Society** and **Bude Canal Trust** present a joint exhibition of pictures, maps and text about this celebrated engineer.
The Gallery, The Castle Heritage Centre, Bude.

MAY **Sunday 8th** **RC&NDWS ANNUAL GENERAL MEETING**
Details as on enclosed leaflet
Guest Speaker Mr R.Evans – 'Pentewan in the Past'.

Sunday 15th Guided walk around Pentewan,
10.00 Meeting at Village car park
12.00 to 13.30 - Lunch at the Ship Inn, Pentewan,
14.00 to 16.00 - Luxulyan Valley (Ponts Mill) meeting in Luxulyan car park.

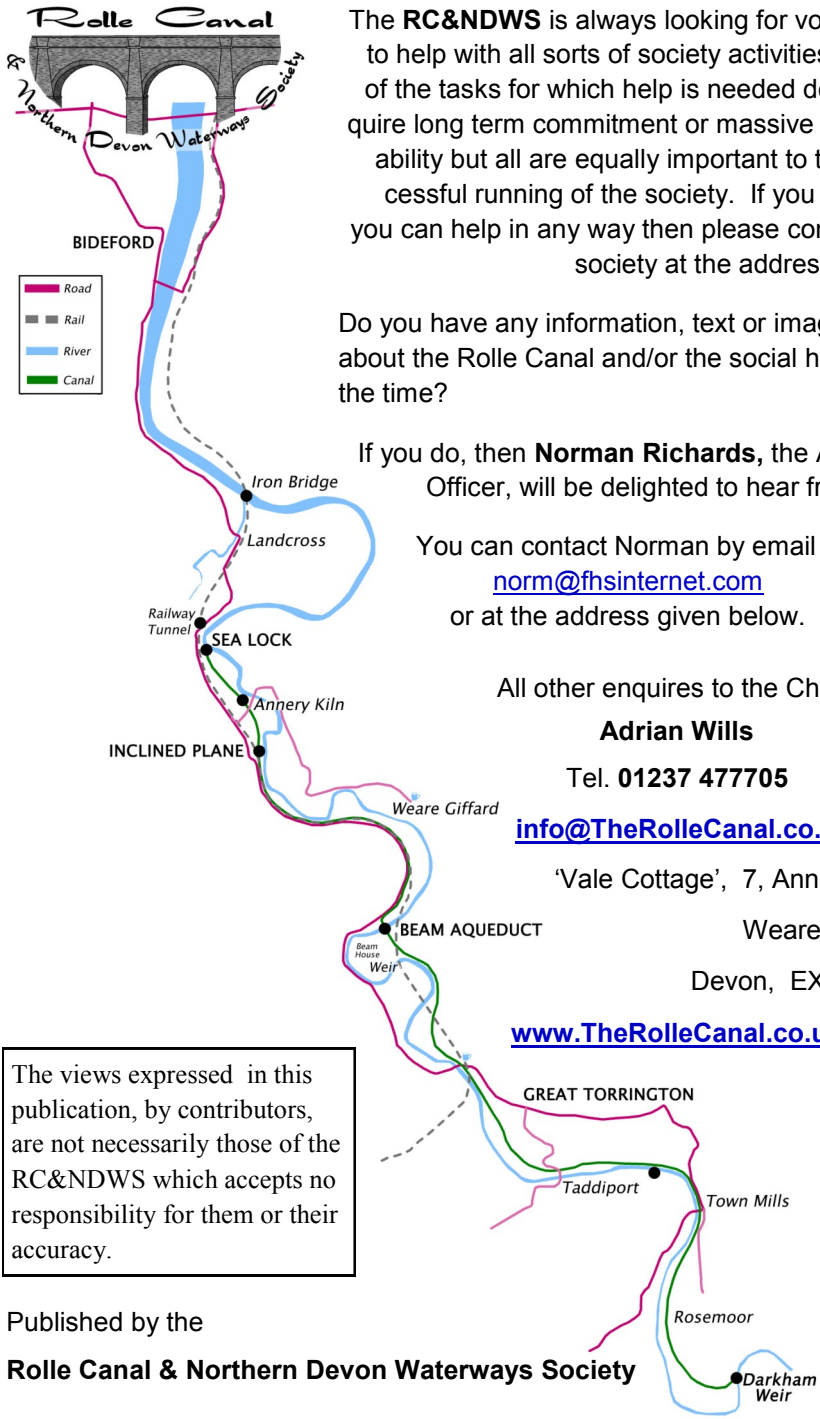
In the next issue of the Bulletin:

'Lime mortar an introduction' - The second part of Ray Patt's fascinating article on the chemistry and usage of lime mortar.

'A small cottage in the country' – Norman Richards researches one of Lord Rolle's family homes - **Stevenstone House.**

'Last of her kind' – Adrian Wills reports on the plight of the **North Devon Trading Motor Vessel 'Advance'.**

Dates for visits to Haytor Granite Tramway and the Kelly Mine still to be agreed.



The **RC&NDWS** is always looking for volunteers to help with all sorts of society activities. Many of the tasks for which help is needed do not require long term commitment or massive physical ability but all are equally important to the successful running of the society. If you feel that you can help in any way then please contact the society at the address below:

Do you have any information, text or images about the Rolle Canal and/or the social history of the time?

If you do, then **Norman Richards,** the Archives Officer, will be delighted to hear from you.

You can contact Norman by email :-
norm@fhsinternet.com
or at the address given below.

All other enquires to the Chair:

Adrian Wills

Tel. **01237 477705**

info@TheRolleCanal.co.uk

'Vale Cottage', 7, Annery Kiln,

Weare Giffard,

Devon, EX39 5JE.

www.TheRolleCanal.co.uk

The views expressed in this publication, by contributors, are not necessarily those of the RC&NDWS which accepts no responsibility for them or their accuracy.

Published by the

Rolle Canal & Northern Devon Waterways Society