

# RML Newsletter round-up

April 2016

PREPARING FOR THE WORLD OF WORK

## A personal story, with Ivor's permission.

I have mentioned before Ivor's experience in growing up in his parents' pub where mental arithmetic was important. The prices for drinks were relatively straightforward but the total cost of a tray full of drinks - pints and half pints, bottled-beers, shandies, soft drinks and shorts - all had to be summed up verbally in front of a customer. This was mental arithmetic, on your feet, in public.

During quiet periods 'regulars' were always asking Ivor to explain different things, things geographical for example, but never anything political because that was very clearly out of bounds. On one occasion he was asked "Why is the sun up in the sky", so he used small and large circular metal trays to explain the relationship between the sun and the earth in the solar system. He demonstrated that when one was standing on the surface of the earth at our latitude then one was always 'looking up'. Ivor became well used to 'holding court' from behind the bar. The customers just encouraged him to talk. Now that was preparation for the world of work.

Ivor was never afraid of speaking to groups of people and as head boy in school he was frequently called upon to present gifts to guests or members of staff who were leaving.

Ivor was chairman of the school Literary and Debating Society during his last 2 years at Quakers' Yard. This required him to introduce topics chosen for debate as well as the main speakers and then control the discussion. On one infamous occasion the wife of the local MP was a guest speaker; both the MP and his wife were very strong socialists. After all this was Merthyr Tydfil, the constituency that voted Kier Hardy into the House of Commons in 1900 as the first labour MP. On the following day the lady complained that she had been given a bit of a rough ride and Ivor was rebuked in private by the headmaster; but only very gently, allegedly for condoning disrespect to a guest. The head master was a real friend who stocked Ivor up with writing materials that lasted him all through his 4 years at UCL; solid help in preparing Ivor for a new world in London. He also showed Ivor how to shake hands.

Ivor could have sat the equivalent of today's GCSE when he was 14 but the rules regarding age were changed and he had to wait three years, so he did his 'A' levels first. He never sat 'O' level



mathematics because he sat it at 'A' level. This delay did him no good really. By the time he was accepted in a university, without interview, and preparing to sit his 'A' levels for the second time, Ivor read that at UCL science students were advised to have passed physics at 'A' level. UCL was where he wanted to go so he stayed on an extra year and passed physics. All of this meant that he was a formidable 'tight head' in the school's front row in his last years at Quakers' Yard. Always competitive, he usually won at least half of the balls put in by the other team and this continued in his UCL days too.

Ivor's work experience in the summer break before he went up to UCL extended as far as working for John Laing Ltd building 'no-fines' concrete houses. When he went looking for work the Irish site foreman had asked him what he was, to which he replied "I'm a labourer". This was his first job interview, which he passed, he obviously looked the part. Within a few weeks Ivor 'graduated' from digging trenches into a small gang erecting the gable ends and chimney stacks on blocks of houses. The foreman had been keeping an eye on him. Ivor became expert at erecting steel shutters, ordering and handling concrete and filling wheelbarrows to overflowing with concrete, hurling them onto a diesel hoist then running up ladders, and delivering the barrows to where he then helped to fill the shutters. On Ivor's last day on site the foreman shook his hand and wished him the best of luck. He had gained eight weeks of solid work experience and earned a bonus. Ivor's brother helped him spend the money he had earned in a 'posh' gents outfitters, including shirts made to measure! Mum and dad were very proud.

Strangely enough it was whilst he was cycling home from the housing site that Marj waved to him every day as he passed her house. He waved back but never got off his bike. Marj waited until the following Easter before she got her hands on him, but that is another much longer story!

Kind regards

### **Idris the Caveman**

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April 2016

## VEGETATION AS AN ENGINEERING MATERIAL.

### "They spiled along the water-course with trunks of willow-trees"

The land - by Rudyard Kipling

I discussed the use of live willow in January of last year. This is the latest of my newsletters dealing with vegetation in a civil engineering world. The earlier ones, six so far including this one, have dealt with topics such as the reliability of vegetation, its establishment and its value as an element of a construction project. In this newsletter I am discussing the use of vegetation as an engineering material in more detail than I did previously.

Geological processes such as soil erosion can be imperceptibly slow or dramatically rapid and the latter case frequently involves man's interference as a geological agent. Soil erosion caused by uncontrolled moving water illustrates the point. Contrast this with the displacement of fine soil particles on slopes which is manifested as soil creep and can be extremely slow when vegetation provides protection and restraint. We have already discussed how plants protect the soil from surface flow and the impact of rainfall. Below-ground roots anchor plants and in doing so reinforce and restrain soils and yet allow the passage of ground water. Transpiration is also an important factor in a complex process through which nature has both created and provided these materials, but not for 'mean or no usage'.

In his 'Essay on human understanding' John Locke wrote in the seventeenth century that '*Nature never makes excellent things for mean or no usage*'. For many years these excellent materials and processes that I have just mentioned have been ignored or put to mean usage by civil engineers. We have all become increasingly interested in things sustainable and environmentally friendly and so with some engineering functions in mind it is time to re-visit the excellent things that nature has created.

'Events' are important geologically as well as politically. Sudden events such as slope failures are a serious cause for concern and frequently involve the interaction between groundwater and soils. The removal of mature vegetation can trigger slope failure but the time interval between the two events can be prolonged, and the earlier one is often long forgotten and overlooked.

After failure, for whatever the reason, the engineer is required to restore stability. He can be confronted with an unstable and even a fluid situation, an over steepened upper slope, a potage of wet soil and vegetation at the base and a watercourse of one sort or another running through the middle. If the landowner is fortunate, access for machines and materials may not be a problem, otherwise accommodation works required just to gain access can be extremely difficult, expensive and environmentally damaging before the work of repair even begins.



**The repair** work can be composed of hard engineering such as sheet piles, reinforced concrete units or conventional retaining walls of masonry. These alternatives have been developed to deal with particular situations, all involve heavy engineering and significant disturbance of the site.

Live willow can reduce or even avoid these negative features of conventional engineering and provide an inner feeling of satisfaction on account of a job well done that has elements of sustainability clearly evident.

In his historical poem '*The land*', Kipling describes how *the 'aged Hobden'* whose family had known the land for centuries advised his lord on how to deal with a local erosion problem, '*Hev it jest as you've a mind to, but, if I was you I'd spile*' he said. So '*They spiled along the water course with trunks of willow trees*'. Using live willow as a restraining and supporting material has been long used in river training, and 'spiling' does offer many advantages with which today's engineer should become familiar. Live willow ranging in diameter from 100mm to 200mm, cut whilst dormant, will root or shoot depending on whether the material is buried in the soil or exposed to light and air. Whilst many trees have this ability I would say that willow is pre-eminent amongst trees in this respect and therefore favourite.



A combination of pollarded strong stakes and supple 'withies' can provide an effective short term solution in arresting further slippage and will re-establish long term slope stability as roots and shoots develop. Subject to a geotechnical report, stakes driven to depths of 1.0m or 1.5m will intercept surfaces of sliding and hence restrain shallow slips.

New terraces of a suitable soil and up to 900m high are supported by a combination of stakes and withies,

which produce roots and shoots. Small tracked machines can be of great help in pushing the stakes into the ground and then backfilling the terraces. Usually local material is ideal for backfilling the terraces which then provide the stable basis for a new vegetative cover. Installation takes place during dormancy, generally November through to March in the UK but the season can be extended by keeping the cut willow in cold storage.

Installation can be done entirely by hand where access for machines is impossible and accommodation works much reduced as a consequence. In some circumstances the impact of enabling works can be minimal. The work finds favour with most interested parties including landowners, insurers and environmentalists as well as the general public. Pollarding willow to provide the raw materials is not only sustainable it creates a useful cash crop for wetland farmers.

In the first year willow shoots up to 3.0m high will be produced and a maintenance visit by the installation team in the following 2 winters to trim and tie down the shoots is beneficial.

In most substrates in the first year the length of the longest root is significantly more than the length of the longest branch. The number of fine roots increases in the second year and therefore the average branch is longer than the average root after two growing seasons. In general there will be a greater number of roots than shoots attached to an individual willow but the quantity of shoot material will be bigger than that of the roots. The extent of aerial growth and root growth is closely related.



Maintenance work is simple to execute, and one must think in cycles of decades, even for willow. The ultimate situation would involve mature willows at 4.0m to 6.0m centres in rows along the slope. Within a few years consideration can be given to planting longer living species such as Oak, Beech or Alder for the very long term. Willows typically have a life of up to 40 years, and of course replanting more willows from cuttings is a simple process. Whilst these choices depend on the location, planning and creating patterns for the long term is a luxury that comes freely as part of the process. Having re-established control, and slowed down the course of events, day by day management is less of an issue than one might imagine in this kind of engineering.

Kind regards

Ivor

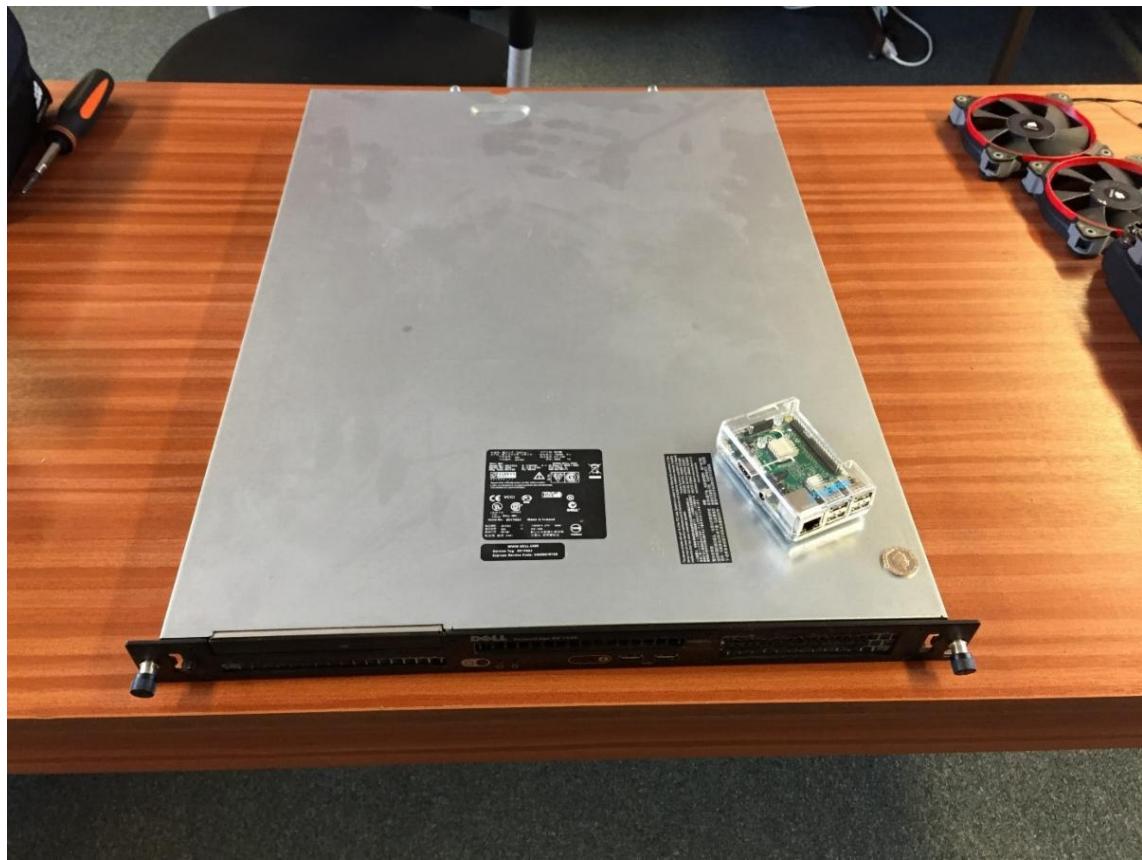
Managing Director  
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## TIMES CHANGE

### Today you can sensibly buy cheap and buy twice.

As we move to virtualise our server installations, we have just retired a Dell server that we bought in April 2004, it having served us faultlessly, 24x7, for nearly 12 years. Looking back to the invoice, it cost us a fair penny or three, and apart from occasional maintenance to clean it of dust it has been left to do its business - serving internal websites to the company, scanning emails for viruses and other duties. Hefting it out of our rack and upstairs to the room where we work on our computers makes you appreciate how well it has been engineered, and how much smaller and lighter its replacement is. In fact the old server's twin, acting as our router, was retired many years ago and that server's replacement was itself replaced a few months ago by a [RaspberryPi](#), a computer about the size of a credit card and costing £25. In this case we would say that we have now bought cheaply and did actually buy twice – we have a second RaspberryPi as a cold backup that can be switched on and plugged in to carry out its duties within a couple of minutes, should the first RaspberryPi fail.



Above is a RaspberryPi sitting atop the server it replaces, with a 20p piece for scale.

We bought our first computer in 1984 when it cost more than the annual salary of the operator using it and we spent 10% of the purchase price on annual maintenance. It had 10 megabytes of storage. 32 years ago we were told "["You'll never fill it"](#)". We were back with the supplier after a few months asking for more storage.

Times have changed, oh yes indeed they have. We like to invest regularly and properly in our IT infrastructure, you may have read in an earlier newsletter that we build our PCs so that they suit our

needs directly. When we are challenged to tackle a scheme that is out of the ordinary, such as building a database of historically-interesting sites across the Republic of Ireland, we can and do deliver.

Speaking of Ireland, Murphy's Law applies to IT just as anywhere else and investing in more expensive components such as high grade capacitors on motherboards can really make the difference between reacting to a horrible disaster for a company – say losing their main server and having to rebuild the network over days or weeks – and replacing kit in an orderly and sensible manner, with no down time.

Incidentally our QA auditor has advised us that we should hold our back-ups not just off-site but off-line too. We will deal with this before he comes around for the next review.

Kind regards

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