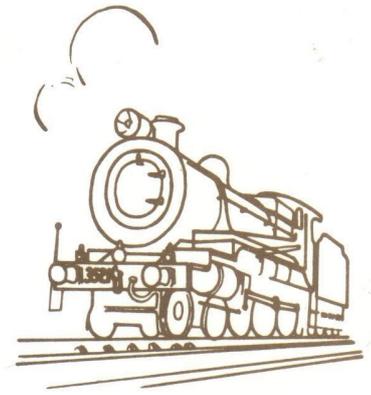


Sydney Live Steam Locomotive Society

Anthony Road, West Ryde, N.S.W.

'Newsletter'

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November 2018



Three trains passing on our October Running Day! On the elevated Garry Buttel and the B1 leads Simon and Simplex while on the inner Ross Bishop and Toneya start the uphill climb. Meanwhile guard David Lee passes between the two on the Outer Main.

August Running Day.

This was our last winter running day for 2018. It was rather cold to start and as the cloud rolled in with a chilly wind you needed to be well rugged up. There were a few spots of rain but fortunately not much more. The sun managed to get through the cloud cover late in the day to provide some warmth. Barry M and Graeme K were on hand very early to start the setting up for the afternoon's activity. The ground level points were checked by Mark G with help from Mike D and Barry M. Dennis O'Brien helped set up the ground level riding cars checking

brakes and cleaning down. We had a late morning tea with a birthday cake organised by Mick M to celebrate Barry Millner's 80th birthday. The August Newsletters were available for distribution and on display was Geoff H's "Speedy" chassis rolling very freely with the coupling rods fitted. Martin D had a relay rack for no. 7 signal on the elevated track and a jig he has made for forming the wire retainers. Ross B showed the cylinder block for the Fowler ploughing engine he is working on. David T had a piston valve, cross head and guide for his SA 620 class.

We just managed with the locomotive roster for the day.



Happy Birthday Barry! On the occasion of his 80th a cake was cut after a suitable sing song on the August running day.

On the inner main Warwick ran the WAGR V 1224 2-8-2 hauling the Pullman set. Geoff H was guard on this train for some time with David L and Ian T later taking turns. David T, after acting as photographer, took over driving



Zac driving Tony's 10 wheeler on the elevated while Tony acts as guard.

duties from Warwick. Ross B ran 0-6-2 "Tonya" on the green car set and Bruce H was guard.

On the outer main Ray L had C3281 leading pacific 2401 driven by Graeme K as train locomotive. They were hauling the blue set with Martin Y as guard. Late in the day John T arrived with the J class 2-8-0 and ran a two car train.

On the elevated Simon ran his 4-6-0 B1 leading Bernie with his 0-4-0 "Blowfly" on four cars and a van. They ran well all afternoon with Peter D having a turn at the regulator of the B1. The second train for the elevated had Tony with the 10 wheeler running train engine and Wayne with the 2-6-0 running pilot. Wayne was forced to take his locomotive back to loco with a steaming problem leaving Tony to continue with a reduced loading. Bill P, Mike D, Paul T and John L attended to guard and station duties. John L as well provided the afternoon tea service.

The signal box was operated by Mark G, Martin D and



Barry. There was one minor problem when a switch under a lever came loose preventing its correct operation. The matter was attended to and all operated as it should. The canteen was covered very well by Liz, Diane, Margo, Gai and Lee. The gate was looked after by Mick and Jo-Anne and there was a busy start with the queue out to Anthony Rd. This had been the first running day with the increased admission and ride charges!

Peter W was the ticket seller and reported 2579 tickets sold. This figure is lower than the August average but still good enough for a very good yearly total.

Ross Bishop and Toneya on the August running day.



Left Above: Ray Lee and 3281 lead Graeme Kirkby and 2401 on the outer main on the August running day.
Left Below: Wayne and the Baldwin leads the 10 wheeler driven by Zac on the elevated again on the August running day.
Above: David Thomas on V1224 starts to climb the grade!

Ada's smoke box and saddle and safety valves made by Warwick for the same locomotive. Simon showed some of the parts he has acquired for a "Doncaster". This was the late Don Young's design for the Gresley designed A3 Pacific in 5" gauge. Simon has mentioned that the standard of work completed is very high .

We had two trains running on the elevated. Tony K ran the 10 wheeler running train engine with John H and 2-8-0 "Nigel Gresley" as pilot. They ran very well all afternoon and when a lull in passenger numbers occurred late in the afternoon they stabled their cars and packed up. The second train was Simon and Simplex and Garry with the 4-6-0 "Impala". Bernie was guard.

On the ground level we had an unusual and special combination. "The Old Girl" was pressed into service and ran pilot engine with the heritage 2-8-2. Consid-



September Running Day.

We had been experiencing some unseasonable hot weather for September and there was a total fire ban in place for the Sydney metropolitan area. I cannot remember a total fire ban being declared so early in the spring, summer period. This was of no consequence for us as we have an exemption to operate on such a day. Simon had attended to the notifications needed.

Some of the early workers were Barry M and Dennis O'B cleaning ground level cars and brake testing. Graeme K was out with the blower clearing the tracks of leaf litter and Mark G was seen oiling the point mechanisms.

At morning tea we saw Andrew's Austere

Right Above: Martin, Mark and Barry control operations in the Signal Box.

Right: Bernie and Blowfly leads Simon's B1 driven by Peter D on the August running day.





Scenes from the September running day.
 Above: Simon and Simplex leads Garry and the B1 on the elevated.
 Left: Warwick on V1224, Scott on the Shay and Graeme with 2401 prepare their trains for the days running.
 Left Below: Scott and the Shay doing its stuff upgrade on the inner main.
 Below: Paul Taffa and the Old Girl leads Arthur and the heritage 2-8-2 roll downhill on the outer main.

Liz, Diane, Margo and Lee did a great job running the canteen while Peter W was our ticket seller. Glenn Scott was on the gate assisted by Jo-Anne. Neal B was track superintendant while the signal box was in the care of Mark G and Barry M. It was not as large a crowd as we often have at this time of the year and many trains had lots of spare seating.

October Running Day

The weather for this running day was very humid and hot with storms predicted for the afternoon. We were fortunate that the storms did not eventuate till well after 5.00pm. Barry M was first at the grounds followed by Tony K, Arthur and John, Mark and Gai and Graeme. At morning tea we saw a boiler for Evan’s Uranus and a cylinder block, they look to be well built. Andrew was casting his eye over the boiler. After morning tea three signal lamps were replaced by Warwick, Bernie, Mick and Mark.



ering when these locomotives were constructed their average age was even higher than the average age of our membership! Evan was driving the 4-6-2 and Arthur on the Mikado. Paul T and Peter D had a turn driving late in the afternoon. The second train was again the combination of Ray L and Graeme K with C3281 4-6-0 and 2401 4-6-2 hauling the blue set. Tony E was guard on this train.

On the inner we had WAGR V1224 with the Pullman set with David T acting as guard. There were a couple of bogies swapped over before running started. Their afternoon was cut short when a pin worked out from the lifting link but Andrew was able to substitute a coupling pin for the missing component and get back to loco. This says something for standardisation, it is a method that has got the V out of trouble before!



Duty Roster.

December J.Hurst, J.Leishman, J.Lyons, M Lee, J.Mulholland, M Yule, W Allison, A Kidson, N Woolley, B Perrin.

January R Bishop/N Bates, A Eyre, Jo-A Topp, R.Lee, Z.Lee, P.Taffa, J.Tulloch, P.Wagner, N Kane.

February M.Murray, A.Allison, W.Fletcher, M.Gibbons, B Hartwell, G.Kirkby, J.Noller, G.Scott, I.Tomlinson.

March E Lister, S Collier, G Buttel, B Millner, S Murray, G Tindale, P Brotchie, M Dumble, D Shirke.

Gate Roster. December. D Thomas. **January.** G Tindale. **February.** I Tomlinson. **March.** J. Tulloch
Track Superintendent: December. N Bates **January.** S Border **February.** David Lee **March.** M Murray

The elevated track had two trains running. James was down from Yeoval with the Z26 and ran pilot engine with Tony K and his 10 wheeler hauling the four car blue set with John L as guard. Gary B ran his "Impala" B1 4-6-0 with Simon and the 0-6-0 "Simplex". They also ran a four car train and Brian K was guard. Evan ran his Simplex with one car for a few laps, he did one extra lap making a young fellow and his mum very happy. Zac had a steam test on the B10 and then did some laps light engine.

The inner main was serviced by the two usual "big" locomotives. Warwick's WAGR V1224 2-8-2 with Andrew driving for most of the afternoon relieved late by Warwick. Mike D was guard. The other train was hauled by Ross with Fowler 0-6-2 Toneya and Steve B was the guard.

On the outer main Scott drove the Shay all afternoon and David L acted as guard. The second train on the outer saw "The Old Girl" in steam leading Graeme K with 4-6-2 2401. Arthur drove the "The Old Girl". They ran the Central West set with Bernie riding the guard's van. It was a fairly easy day as the crowd was not as big as we have had in the past. Some of the trains were running with plenty of spare capacity. Deven was gate keeper assisted by Jo-Anne while Peter W attended to the ticket sales. The total was 1428, much lower than the October average. Looking after the canteen we had Liz, Margo, Gai and Lee. Mick M was track superintendent and the

signal box was looked after by Mark, Martin and Barry. With the promised storm on the way running had finished about 4-45pm. John L reported that for the "westies" on their way home the lightning display was very impressive and the rain, when it came, very heavy.



Right; James and 2604 leads Tony and the 10 wheeler with John L as guard out of the elevated station.
Below: Bernie and Mark change a signal globe while Arthur and Graeme approach on the outer main.



Diary

- 24 November Members meeting 0900hrs
- 1 December Run for West Ryde Neighbourhood Centre and then members BYO everything Christmas Party in the evening.
- 14 December-Friday 5.30pm (D Thomas private run)
- 15 December Public Running Day
- 31 December New Years Eve Run (Monday)
- 8 January Directors Meeting 2000hrs
- 19 January Public Running Day
- 16 February Public Running Day and next Newsletter!
- 2 March Members Meeting 0900 hrs and Members Day!
- 5 March Directors Meeting 2000hrs



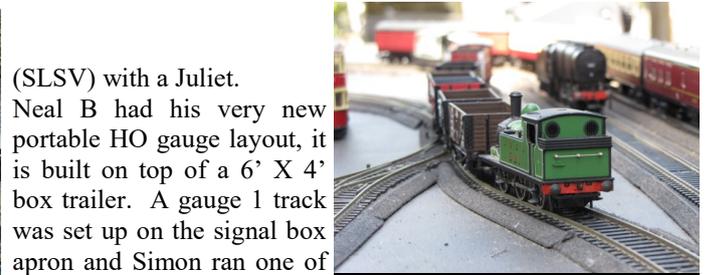
Evan and his Simplex on a single car on the elevated pass Bernie as guard on the outer main and Ross coming up the inner with Toneya on the October running day.

Small Gauge Weekend.

Setting up was carried out in the heat of Friday, a day with a total fire ban, the second in a couple of months. The crew did a great job, included were Tony K, Graeme K, Simon, David J, David T, Gary B and John H. Later Warwick and Wendy delivered some of the food for the two days. The grounds were well cleaned up and some banners were put up. Tony K opened up early on Saturday morning and it was not long before the first of the visitors arrived. There was a good display of small gauge models locomotives and rolling stock in the club house. A very fine O gauge "Flying Scotsman" from Gary Buttel and two steam powered gauge 1 C38 class locos owned by Warwick and Andrew. A collection of "Ellies" and some Bowman locomotives from Dennis O'Brien. David J displayed his HG van, now nearing completion, as well showing some of the jigs he used in its assembly.

Very soon there were locomotives out running with Steve Malone from Qld with a "Virginia" followed by Ray L with his 3½" C32. Gary B steamed his C36 and Max Gay had a very good run with C3830. Eventually Andrew steamed his "Austere Ada" and had the best performance from a 2½" gauge locomotive for some time. Also there was the Allison B2, Wayne's 34 class, James and Buffalo and Harry Ball

Arthur and the Old Girl leads Graeme and 2401 on the outer main on the October running day.



Neal's model railway.

(SLSV) with a Juliet. Neal B had his very new portable HO gauge layout, it is built on top of a 6' X 4' box trailer. A gauge 1 track was set up on the signal box apron and Simon ran one of his gauge 1 locomotives.

The canteen was looked after by Wendy, Sue, Mandy and Hana. The BBQ was cooked by Neal with assistance from Ian T, they did a great job. There were about 60 people on Saturday and 25 on Sunday. Visitors from Queensland, Victoria and New Zealand. Ben DeGabriel set up the Bolton Scale Models sales stand and Brian Carter had the AME stand.

We were lucky with the weather, Sunday was a bit cooler. There were 5 locomotives running and all was packed up by about 4.00pm concluding a very successful week end.

Works Reports.

Elevated track.

Following the September running day Mick and John L had investigated the alignment of the elevated track at the carriage siding stub points. The locking post had moved towards the fence (east) and needed to move about 40mm to the west to restore the correct position. It was decided that an adaptor plate could be fitted under the base plate so we could have vertical and east west adjustment. Mick had arranged for Wayne to produce the plate and this was made available a few weeks beforehand and John L had given it a few coats of cold gal. Work started early on the Saturday morning following the running day as this gave us time with five Saturdays before the next running day. As well as removing the assembly the two beams to the south needed to be lifted and the opportunity was taken to remove the short section of track that ran into the track expansion joint. This gave us the chance to clean and oil the joint. The cement mortar was jack hammered to reduce its height and the old studs removed. New studs were positioned and these were set in place with a chemical setting adhesive. The following Saturday we started re-assembly and needed to have adjustment between both plates. Adjustments were carried out and the locking spindle now slides in and out very easily. On the

John L uses his jackhammer while Bill P protects his ears!





Left: Mick and John at work on the elevated stub point. Right: Barry and Simon excavate a rusted signal base in preparation of installation of a new stainless steel one.



first Saturday in October the track section was fitted back into the expansion joint and the final alignment adjusted. This was completed just before morning tea and soon after some of the 2½" gauge locomotives were on the elevated in preparation for the small gauge day. All was well and the alignment was much improved.

It was about nine years since support for the beam pivot needed adjustment having to go back towards the fence. Lionel and Arthur did the hard work with that, a very large tree root needed to be dug out and the footing pushed back to its correct place. If only we had ground penetrating radar to help us see what was under the surface causing that latest problem.

Ground level track.

Ongoing maintenance is continuing on our ground level track. Led by Warwick and Andrew sections are being lifted so that the foundation can be levelled as needed. Peter D and Paul B have been attending to track tie replacement with corroded ones being replaced with

stainless steel ties produced by Wayne. Many members have been involved assisting with this work.

Preliminary work is well underway for the signalling work for the pedestrian crossing into the centre part of the grounds between the GL tracks and a signal to protect the inner main past the Hawkesbury Bridge. This has involved considerable trenching and provision of some large diameter conduit and a drum of cable. A trench digger was hired recently to make some of this work easier. David L is leading this work with Peter W also involved. Other members have helped with the civil engineering side of the project.

Some of the rusted ground signal posts have been replaced by stainless steel ones fabricated by Warwick from material supplied by Martin Yule. Barry, Simon, Mike and Deven have assisted in this work. Meanwhile Bernie has carried on rejuvenating our post mounted signals with a high quality scrape back and repaint.

Grounds

With the dry winter growth has been limited but now following some rain and warmer weather everything will be set to have a growing spurt. The ground in front of the new char storage bins has been lowered. After spiking and John H checking the ph level sand and seed mix was spread out over the area and an automated sprinkling system connected.

Continued Page 10

Editorial

Well over forty years ago the Society took the steps to become a Co-Operative Limited Society. The reason for this move was to give the members of the Society a certain amount of protection if any claim was made against the Society or any individual member of the Society. Since then we have complied with legal requirements of a Co-op, providing a bit more work for our Treasurer.

But considering things our whole existence has relied on our own co-operative nature. That is how we have reached the position we are in at the present time. The Society has achieved a tremendous amount in the past 70 years and it has all been managed because we have all co-operated together to make things possible. As we move on there are plans for upgrading aspects of our grounds and while daunting I am sure they will be achieved! The spirit of co-operation is getting this Newsletter completed.

With the end of 2018 fast approaching, on behalf of the Society could I wish all members and friends best wishes for the Christmas season and a happy and healthy New Year.

John Lyons
Fill in Editor.

SCENES FROM Small Gauge



FROM THE e Weekend





Left Above: Mike Dumble reassembling track after formation correction. Right: Neal and David reassembling fishplates. Left: Paul doing the ground work while Peter with bar and Tony supervises the track panel upgrades.

Model Engineering Activities.

This promoted the growth and we now have a good cover of fresh grass. While the spiker was available David J ran it over a few other places where it was needed. Tony K has been keeping all the mowers in good order and they will have plenty of work to do soon. Mike D has been sanding and repainting the buffer stops, they do look good. Bernie is continuing to make progress with the repainting of the ground level signals. His work is making the place look very fresh. Simon gave the ticket office garden a good prune and clean up and the garden now looks very good. David T continues his garden work as well keeping everything looking attractive. Before the small gauge day got underway David and Tony K were busy clearing some fallen branches in our public entrance walk way. Sheila and Martin have continued their work on the club house garden, they have made great improvements to its appearance.

On display at the small gauge weekend James displayed among other things an “Ellie” tram car built in three days, just to see if it could be done! It also provided James with something to practise his lining skills so he can make a good job of completing the painting of his Z12 class. This loco is fitted with a very nice Baldwin tender and we have seen some photos of the painting now well underway. David J is making very good progress completing his HG van, it made an impressive display on the small gauge week end. Paul B continues to display beautifully finished components for his NSWGR “O”class locomotive. The last piece we have seen was a connecting rod. David T has shown parts for his SA 620 class. We have seen the almost completed reversing lever for John L’s 0-8-2 Avon-side tank. John followed the example of Jim L with his 10 wheeler where the notches allow forward, mid gear and reverse!

Below: James gives Mike some instruction on 12 class operation. Right: Andrew prepares his 2½” gauge Austere Ada.



MAGYAR VASUTTIORTENETTI PARK

David Thomas

Definitely not British! Pointy, high pitched boilers, no splashers, very industrial! But yes, standard gauge.

Last year I had the opportunity to visit the railway museum in Budapest which is located a few kilometres out of the CBD. Access is by normal suburban trains that make a special stop at Vasutmuzeum Station at weekends only.

My visit corresponded with the tenth Garden Railway Celebration. The display occurs annually and is held in one of the original loco depot buildings. It comprised commercially made European style gas-fired locos (mainly German steam locos), running on a fairly simple

circular layout with a few sidings. Loco boiler pressure was 3 bars. Water levels were periodically topped up using pump-action plastic bottles and no engine had axle pumps. Gauge 1 American style diesel locos ran on a second circuit, complete with miniature scale buildings. Another a juvenile layout had Lego electric locos and was decorated with Lego buildings. Also in this building was miscellaneous railway paraphernalia such as loco builders' plates, signs and signalling equipment.

Outside there was a 7¼" track that wound through the museum grounds, passing through the main visitor area, lawns, treed areas and cafes. Three or four trains were running at any time, mostly steam, and were of similar capacity to trains run at SLSLS. The oldest loco was said to be about 100 years old, although it took 50 years to make! I was told the boilers were made to a German (TUV – Technische Überwachungsverein Koln) inspection code. The tracks were laid on the ground with no ballast and had well-spaced sleepers bolted to concrete blocks.

The museum comprised the original loco depot included two turntables, one with a roundhouse, the other in the open. The roundhouse contained an assortment of carriages, a diesel loco and the only working steam loco on the day. Some of these exhibits were moved into the open for static display during the day.

The open "roundhouse" contained the permanent static steam loco exhibit, with engines arranged sequentially from oldest to modern, from quaint vintage 0-6-0s to large 4-6-4s and 2-10-0s. All were decidedly European in appearance, often with little attempt being made to "beautify" their lines, at least by British, or even American standards. One loco made in 1934 was unusual in having a water tube firebox fitted to a standard barrel. Its secret was given away by the external downcomers that connected the barrel to the lower header of the firebox where a throatplate would have normally occurred.

The day was very popular with families who mainly enjoyed the miniature railways, food stalls, riding on a horse-drawn carriage, or in the cab of a small 2-4-2T steam loco. This charged up and down the sidings (about 300 m each way) most of the day. It was surprising that up to seven people, including infants, were permitted to ride in the cab. A mainline diesel loco took over the shuttle for a little while in





the middle of the day. I was told that a modern 4-8-4 runs on special trips further afield on most months. Another paying ride that was popular was two circuits on the roundhouse turntable. Maybe the RTM could try this if allowed by WorkCover! Visitor safety was limited to a couple of strands of wire along the sides of the turntable and a removable single wire at each end. Likewise, the 7.25" gauge track was not fenced, apart from at the loading area, and this was probably largely to ensure passengers paid their fare! Although this museum is basic by York or Mulhouse museum standards, it is well worth the visit if you ever go to Budapest.



Below: This photo is of the 2-6-2 loco with a water tube firebox. The shape of the tubes in the crown shows that they are attached to an upper drum/header that extends from the top of the barrel. The brick arch is partly removed to show the firetubes.



SOME ASPECTS OF CHURCH BELLS AND BELLRINGING

Bill Perrin

For much of my life, when I should have been learning how to use a lathe and mill, I have been instead a church bellringer. Ringing changes on bells rung in the English full circle tradition is challenging both physically and mentally. It certainly took up much of my free time for many years. I continue to ring, as part of a team of 8 or 10, for weddings and church services most weeks.

There are several technical aspects to bellringing which might be of interest to the readers of this newsletter. The casting and tuning of bells is of interest to the metallurgist. The hanging and control of the bells is in the domain of the mechanical engineer, albeit somewhat arcane. The ringing of changes appeals especially to computer nerds and mathematicians.

1. The making of bells

Bells have been around for millennia. We are talking here of bells whose weight is measured in cwt and tons rather than pounds and ounces. And a ring of bells of this sort will normally comprise any number of bells from 6 to 12. They are generally made of bronze (Appx 80% copper and 20% tin with a few trace element thrown in.) and are consequently quite expensive. In the 1850s Vickers of Sheffield patented a method for casting steel bells. Steel being much cheaper than bronze, these were popular for about 10 years and several sets were installed. However the tonal quality was lacking and, worse still, they rusted and the note changed. Few rings of steel bells exist these days though one of the last is in the redundant church at Maitland Park in the Hunter Val-

ley. This set has retained some semblance of normality by having been kept painted.

Having been cast in one-off moulds, bronze bells generally need to be tuned, especially if they are to form part of a diatonic ring (as is traditional in the English style). In the past this was done by chipping bits out of the bell with chisels and the like. These days it is done on a large vertical mill with continuous computer analysis of the various harmonics. Generally speaking, the larger the bell, the lower the note.

The heaviest extant bell in the world stands sadly in the Kremlin. Cast in 1735 and weighing in at 185 tons, it was damaged in a fire at the time of casting and an 11 ton chunk sits alongside. The heaviest bell in use was cast as recently as 2000 in China. Named "The Bell of Good Luck", it weighs 114 tons and is hung in a pagoda in Henan Province. Bells of this size are sounded by hitting them on the lip, the bell itself not moving.

The heaviest bell rung in the English tradition, where bells turn full circles in the control of one person, weighs a little over 4 tons. It is the tenor (largest) bell in the ring of 12 bells at Liverpool Anglican Cathedral, U.K.

2. Hanging the Bells for Full Circle Ringing.

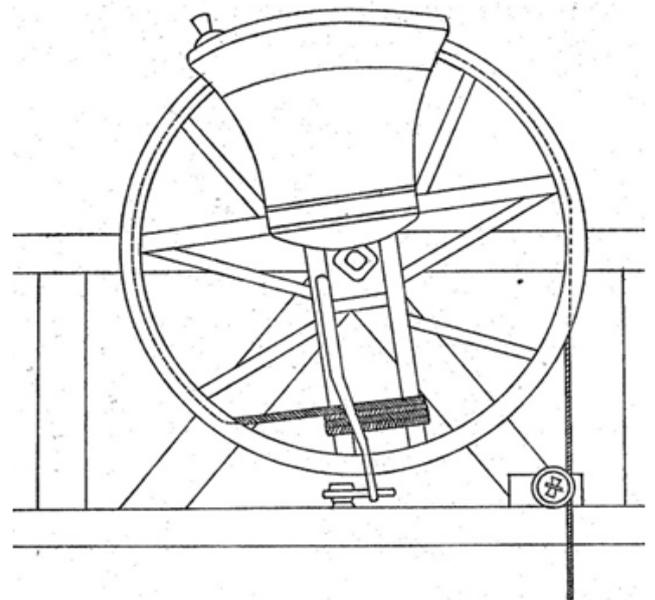
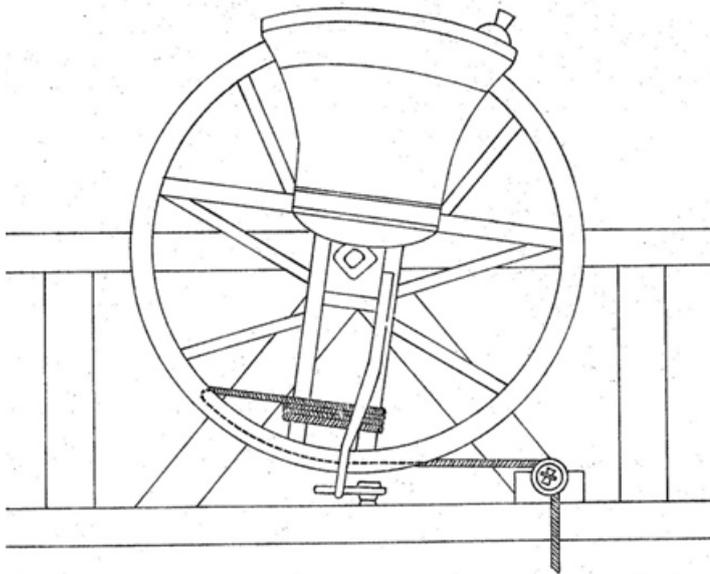
Most bell sounding throughout the world is done either by random swinging of the bells or from a keyboard controlling hammers which hit stationary bells. In the English tradition, bells are rung full circle with one sound per turn. It thus



Tuning at Whitechapel Foundry (1950s)



Tsar Kolokol, Moscow



takes typically 2 or 3 seconds for each sound. The bell is controlled by a rope attached asymmetrically to the bell wheel. The skill of controlling the bell takes several months to learn and longer again to be a proficient member of a team with perfect timing. Gravity does most of the work but the skill of the ringer and some effort is required to make minor adjustments so that each bell sounds at exactly the correct instant as part of the cascading sound.

The bell can be rested near the vertical using a piece of wood, called the stay, protruding from the top of the bell. In the diagrams above, the stay is the slender curved shape. This rests against a slider which in turn rests against a solid stop block. When the bell is in motion, the slider is free to move between two stop blocks, placed so that the bell can rest on either side of the vertical. (The slider mechanism is not well detailed in these diagrams.) The bell is then free to rotate about 370 degrees between its two stop positions

The position of the rope and its action is of interest. The bell ringer will be in the room below the bell. (S)he will control the rope which can be seen passing over a ground pulley at the bottom of each picture. It is fixed to the wheel after passing through a hole in the wheel's floor (the garter hole). The rope is seen as a dotted line inside the wheel, resting on the wheel's floor in an open rectangular channel.

From the position in the first diagram (handstroke) a pull down on the rope will firstly bring the bell to the vertical and then, once the bell has passed its top point, gravity will ensure that it turns a full circle, winding up the rope as it goes. With a bit of a pull on the rope as it goes past the top-point (called the balance point), the bell will finish up at the second position with a lot of rope wound around the wheel. Typically the rope at position two is two metres higher in the room below than at position one. The bell will make one dong as it slows down and the clapper, freely swinging on a rigid shaft inside the bell, catches up with it. The ringer now pulls down on what is left of the rope downstairs and the bell returns to its original position, unwinding the rope as it goes. A second dong occurs just as the bell stops again. Everything is then back to where it started and the process can start again.

There is considerable technique required to pull the rope at the right time and with the right strength for the bell to sound at exactly the right instant amongst 7 or more other bells doing the same thing.

These days most bells are hung on ball bearings and do not need too much effort. However, with up to 12 such bells ringing at the same time, considerable thrusts are experienced by the building in which the bells are housed. For example the 12 bells at St Mary's Cathedral have a dead weight of 7 tons and if they are all swinging in the same direction at the same time there could be a lateral thrust of 14 tons against the side of the tower. The steel frame in which the bells hang is designed so that half the bells swing north-south, the others east-west and to spread such forces out over large areas of the walls. Most bell towers wobble a little bit while the bells are being rung.

3. Ringing the Changes

Having mastered the control of a bell and ringing rounds successfully (ie evenly sounding down a scale), the interest for many comes in the ringing of changes. Because of the mechanism and the times of rotation, bells rung in this style do not lend themselves to tunes in the normal sense. Instead change ringing involves ringing the bells in different orders. It is coded through numbers. Eight bells sounding an octave, down the scale, is denoted 12345678 and this change is called "rounds". The 1 refers to the lightest bell (called the treble bell) and the 8 to the heaviest bell (the tenor).

There are various rules to the "game" of change ringing. The first is determined by the mechanics of the bells which determine that there must be somewhere between 2 or 3 seconds between dongs on a particular bell. So the first bell in one change cannot easily become the last bell in the next change. For the last bell to become the first would be physically impossible. So bells are only allowed to move one position in either direction between changes. Differences between consecutive changes is effected by swapping any number of adjacent pairs of bells. So for example 13245678, 12354768,

12354768, 21436587, 21354768 are all possible changes which could be rung after 12345678 but the change 12345876 would not be allowed as 6 and 8 have both jumped 2 spots.

Subsequent changes can be made but always following this rule that only adjacent bells can swap between rings. For example a “touch” of 16 changes is shown below, constructed by a simple pattern.

12345678	Every ring starts from rounds
21436587	All adjacent pairs swap
24163857	The internal pairs swap, first and last bells not moving
42618375	All adjacent pairs swap
46281735	Internal pairs swap...
64827153	And so on.....
68472513	
86745231	
87654321	Here the bells ring in reverse order
78563412	
75836142	
57381624	
53718264	
35172846	
31527486	
13254768	
12345678	We have got back to rounds

If you draw a line through the path of the 1, you will notice that the treble bell started as the first bell, gradually made its way to become last bell and then “hunted” down to be first again. The same would be true of any other numbered bell, except they started in different places on this “path”.

This bit of ringing, 16 changes, would take about 45 seconds to ring so needs to be extended since normal bursts of ringing generally take at least 5 minute. This is achieved by changing the place arrangements at the end. Having attained the change 13254768, rather than swap the internal pairs which returns it to rounds, the 1 and 3 lie still and the other pairs swap. This achieves the change 13527486, from which the whole process starts again. It will repeat 7 times, giving 112 changes and will then finish in rounds after about 5 minutes. All change ringing starts and finishes in rounds.

The above is the simplest way of ringing changes on 8 bells and is called Plain Bob Major. By varying the pattern of places made, innumerable different “methods” are possible (and many such have been published and rung). To ring changes evenly requires that each ringer can control their bell accurately and know the method thoroughly. This is not learnt by numbers but by learning the line traced out by a bell through the changes, as described above. As before, the line for every bell (except the 1) is the same but starting in a different place. The 1 just goes front to back to front repeatedly. The line for the other bells has “dodges” in it. I challenge you to draw out the line for Plain Bob Major.

4. Conclusion

Ringing different methods on different sounding bells in different places (mainly churches but not always), is an art and science attractive to many who have tried it but a mystery to the uninformed. If ever you hear bells cascading in change ringing, feel free to find your way to the belfry. Ringers are always very keen to explain their hobby and to show you around.

You might be interested to watch (part of) a youtube clip at <https://www.youtube.com/watch?v=pugRM2Nsnyo> or just google “Youtube Birmingham ringers at Liverpool”. This shows the top UK band from Birmingham Cathedral ringing the bells of St Nicholas, Liverpool, UK where the tenor bell weighs a little over 2 tons (which is being rung by the chap in the blue shirt.) This is ringing of the highest standard on a very musical set of 12 bells. There are rather a lot of “rounds” at the start before they go into changes ringing a method called Pudsey Surprise Maximus. I appreciate that ringing is more of a participatory sport than a spectator sport but several aspects of this clip might interest you.

The closest “tower” to the West Ryde grounds is at All Saints Church on Victoria Rd, North Parramatta where there are 8 bells with a tenor weighing 500kg. Both cathedrals in the city have large, heavy sets of 12 bells though they do not always have enough people to ring them all. Should you be interested in visiting a ringing session or seeing a set of these bells, then let me know and I can arrange something.

Below: Simon and John restoring the resculptured landscape!





The Friday morning of the Hornsby Model Engineers Birthday Run was almost exclusively SLSLS locomotives operating! Above Andrew captured this scene of 3609 ready to go with greens signals while below Warwick has taken this steamy scene of 3609 and Garry's 3658 double heading out of the siding.



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Web Page Address: <http://www.slsls.asn.au>

Public Running Day is the **THIRD** Saturday in each month from 1.30pm. Entry is \$4 adults, \$2 children. Rides are \$2 each.

To ride on the trains, enclosed footwear must be worn.