



Johnny's Meccano Magazine

December 2018

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Fig 1. The completed project sounds exciting and looks positively electrifying.

A Theremin is an electronic musical instrument and they have been used by the Beach Boys, Led Zeppelin and even TV shows like Star Trek. Believe it or not it was first patented in 1928 by Leon Theremin from Russia. I saw a Theremin at the Monash University Open Day and I thought it would make a wonderful attraction at our Meccano Expo. Silicon Chip Magazine published a circuit for it and Jaycar Electronics had it available in kit form so I bought the kit and had it built in a few days. Unfortunately it didn't work at all. If you look closely at the PC board in Fig 3 you might notice one of the transistors is facing the opposite way to the rest. Satisfied I had found the problem, I swapped it and plugged it in again but still no joy. There was a faint sound that did indeed change pitch but it was barely audible. Two years of frustration followed with everything checked and rechecked, discussions with other electronic hobbyists and replacement of all the chips, but no luck.



Fig 2. The kit on my workbench ready to be built. A long saga awaits!



Fig 3. Brass rod antenna is 700mm long and has a part 136a Handrail Coupling on top.

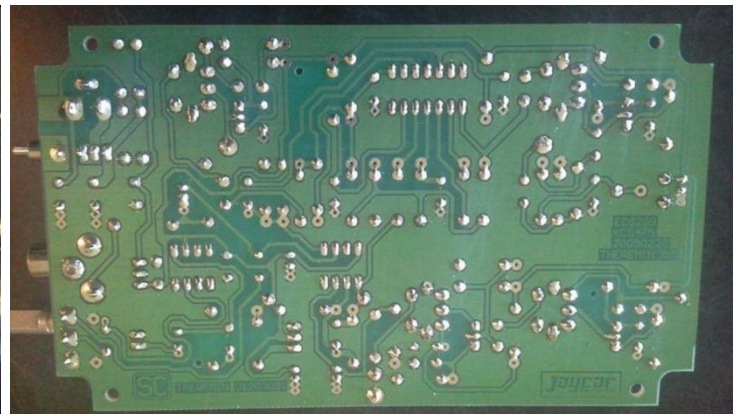
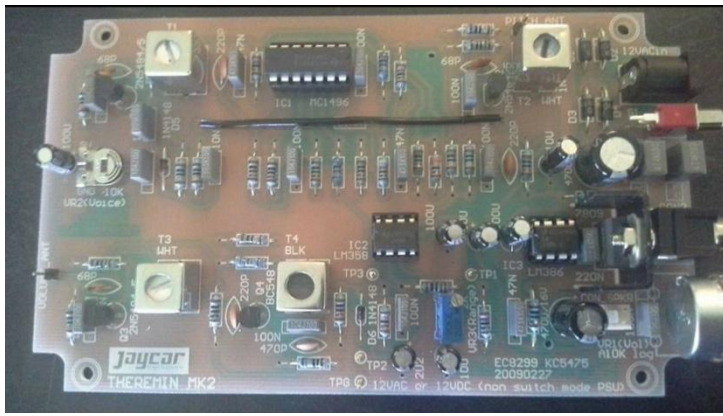


Fig 4. You may be able to see the transistor facing the wrong way between the white and black coils.

Fig 5. Soldering looks ok.

Two years after starting this project I was exhibiting Meccano at the Kyabram Vintage Machinery Expo when I saw Rodney Champness from Silicon Chip Magazine at the vintage radio display. After speaking with Rod I dragged the unfinished project out of the cupboard and set about testing all the test point voltages so I could email him for ideas. While I was adjusting one of the coils it suddenly sprang into life! Turned out the coil was faulty and a simple tap from the screwdriver temporarily resurrected it albeit only shortly. I replaced it and it was all working but the task of transferring it into a metal Meccano environment was still a formidable challenge. After several fails I emailed Silicon Chip and got an immediate response from John Clarke who was the designer of the kit. He explained a few tuning techniques in detail and offered some suggestions for which I am most grateful. The tuning process is so complicated I was relieved when I finally got it to work even though the volume adjustment range was too small. I managed to improve it somewhat with a steampunk look antenna comprised of part 24a Wheel Disks arranged in a zinc/brass pattern just to make it look more interesting. The steampunk look was completed with a coiled red wire on top which made it look like an electric chair! Stephen Jeavons from England is a big fan of Elektrikit Meccano models and I have always been attracted to his practice of winding solid conductor wire around a screwdriver to produce the coiled effect. Although the Meccano Theremin is not perfect, it's most entertaining and all the kids love it. I do pity the Meccanoboy who have to sit near it at the next expo though. Search for Meccano Theremin to see the video or use this YouTube link. <https://youtu.be/D8UzeBVABL8>



Fig 6. The thread is stripped.

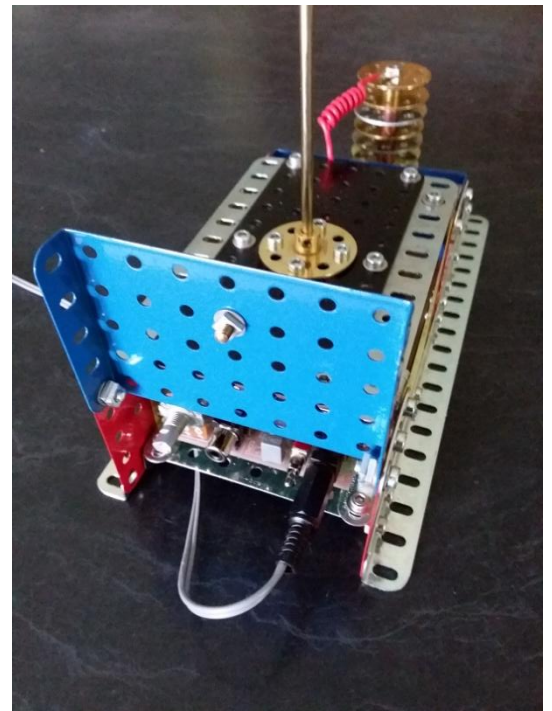


Fig 7. The side lifts up for access to the volume and on/off switch.

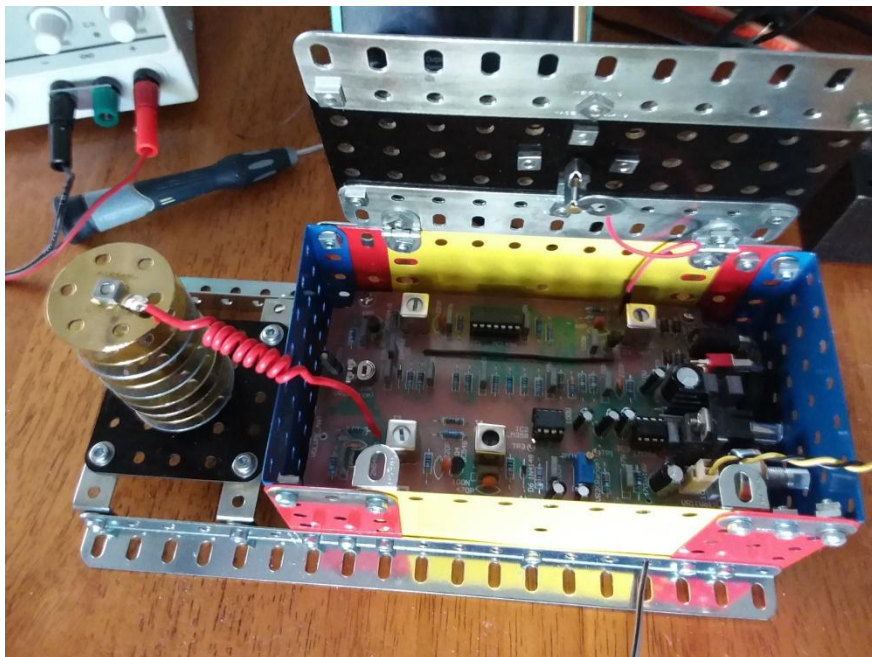
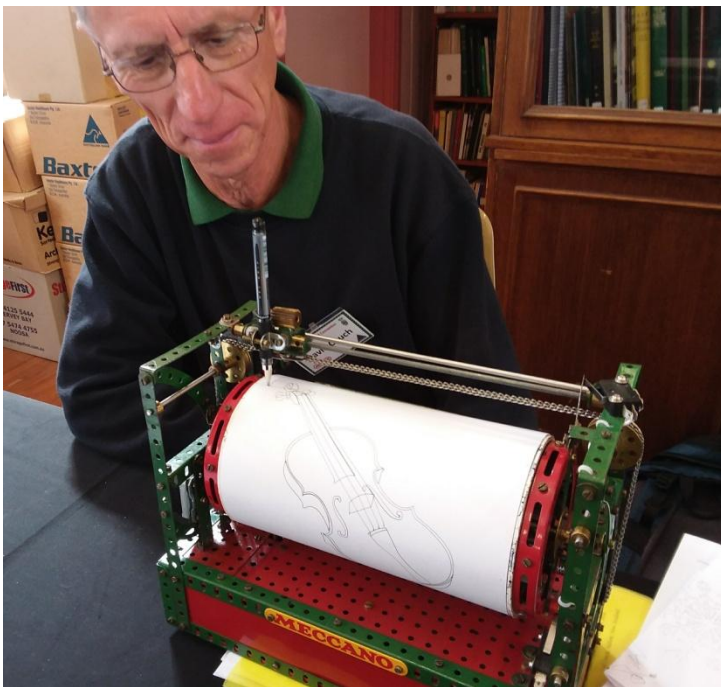


Fig 8. The lid opens to allow fine tuning.





More pics from the 2018 Melbourne Meccano Club Expo



David Couch from Nelson, New Zealand brought the drum plotter that he showed last year. However this year he had programmed it to draw pictures of cars, buildings, flowers, animals and other things. He handed out about fifty pictures to visitors. The pen is moved on the horizontal axis by a stepper motor and a loop of chain. The paper is attached to a drum which is rotated by a second stepper motor, giving movement on the vertical axis. A servo lifts the pen from the paper. The motors and servo are controlled by an Arduino microcontroller mounted in the base, with a program consisting of about 1800 lines of C++ code. The pictures are stored in a simplified SVG format on an SD card.

David has documented a lot of his Arduino knowledge on the NZMeccano site.

<http://www.nzmeccano.com/Documents.php?show=100>

<http://www.nzmeccano.com/Documents.php?show=102>



Jack Parsisson's Meccano Mechanisms Demonstrator was popular with the public. Jack has produced a model plan for this in Virtual Mecc. Free download from NZMeccano.

<http://www.nzmeccano.com/image-76474>



When your DeLorean needs Meccano parts

Model Engineers Expo. Melbourne 2018



This was an expo with a difference. We all brought along unbuilt models in boxes and spent 2 days building them. Most of the outfits were donated by Spin Master but Johnny had a Hudson Locomotive that had been under his bed for ages. He had it completed by the end of day two and everyone was impressed to see it running on the floorboards. Video on YouTube here...

<https://youtu.be/-kM7OXQ2nAA>

Anthony Burkitt (below) was a perfect example of determination and concentration as he battled to complete the Tower Crane in 2 days. He got close but not quite close enough.

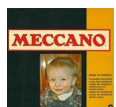


Jim Munro (above) built the new digger with hydraulics. He says it was a fun build but the hydraulics were ordinary. Ric Green (left) is one of our senior members but that didn't stop him crawling around the floor playing with his pull back Roadster car! Poor Johnny had to put up with all the dad jokes from the senior Meccanoboy's.



A few of my favourite things.

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on **facebook**
and



Alan Esplen's Meccano page <https://www.alansmeccano.org/>

NZMeccano <http://www.nzmeccano.com/>

Sydney Meccano Club <http://www.sydneymeccanomodelers.org.au/>

Melbourne Meccano Club <http://www.mmci.com.au/>

Tim Edwards <https://www.meccanoindex.co.uk/>

Canadian Blog <http://meccanomiscellany.blogspot.com/>

Roller Derby by John & Johnny

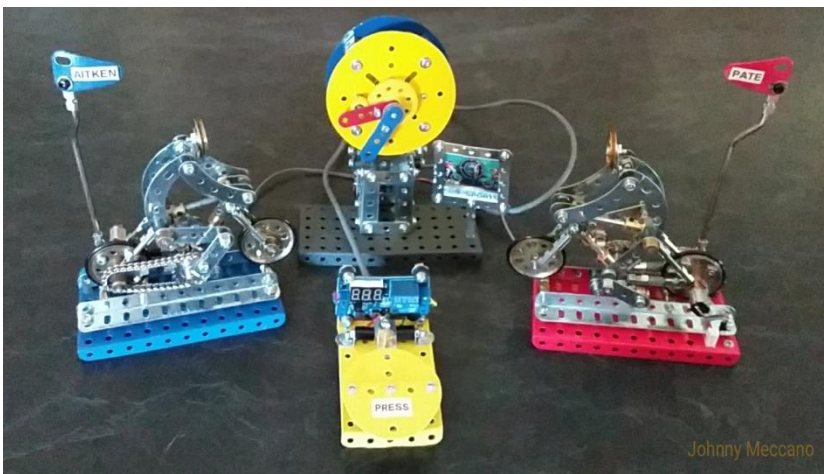


Fig.1 The Bicycle Roller Derby

Once Upon A Time there was roller cycling in Australia both at carnivals and on the TV sports shows. This model is based on the Wide World of Sports competitions that I remember with great fondness. It all started with an email from Graham Jost. Aware of my electronic tinkering he asked for a timer switch so that kids could push a button to make his Micro Peripherator run for a set time. I set about playing with touch switch circuits that were triggered by simply touching a metal strip. Most published circuits revolved around a 555 timer IC and I did have some success but in the back of my mind I kept thinking of a timer switch to make a bicycle run for a short time. Then I saw a countdown timer on eBay. It had a digital display and was programmable much the same as a watch. There are 3 buttons. You push and hold the 1st to enter program mode, each push of the 2nd button selects a different mode and the 3rd button changes the value. So it can be set to countdown anywhere from 1 second to 999 minutes. It's triggered by applying 12v to the trigger pin which turns the relay on until the countdown reaches zero. Now the project started to evolve and I searched for ideas for a bicycle with the intention of building two and recreating the Roller Derby.



Fig.2 The original sports show on Oz TV.

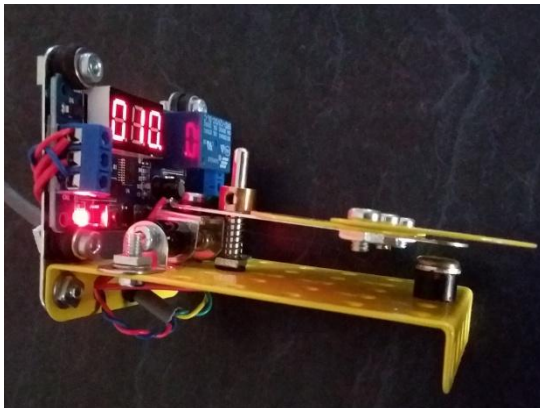


Fig.3 Countdown timer uses an Elektrikit stud

The PC board is mounted on part 23c Rubber Pulleys as there's simply no room to drill holes on the board. The hinged strip with the part 214 Semi Circular plate is insulated from the base by putting heat shrink on the bolts and using 4mm plastic washers. When pressed, the strip hits the Elektrikit contact stud at the front. The threaded pin in the middle is insulated in the same way and has a compression spring to return it after being pressed.

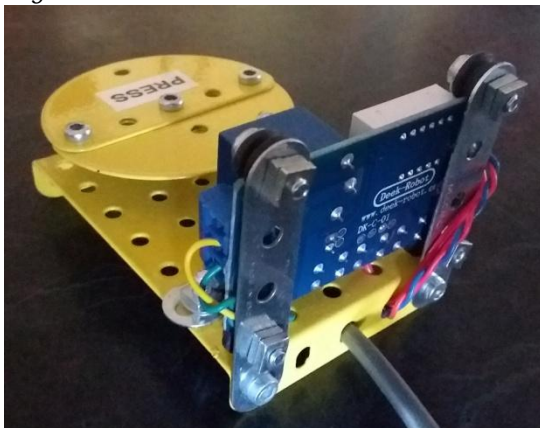


Fig.5 The PC board mounted on Rubber Pulleys.

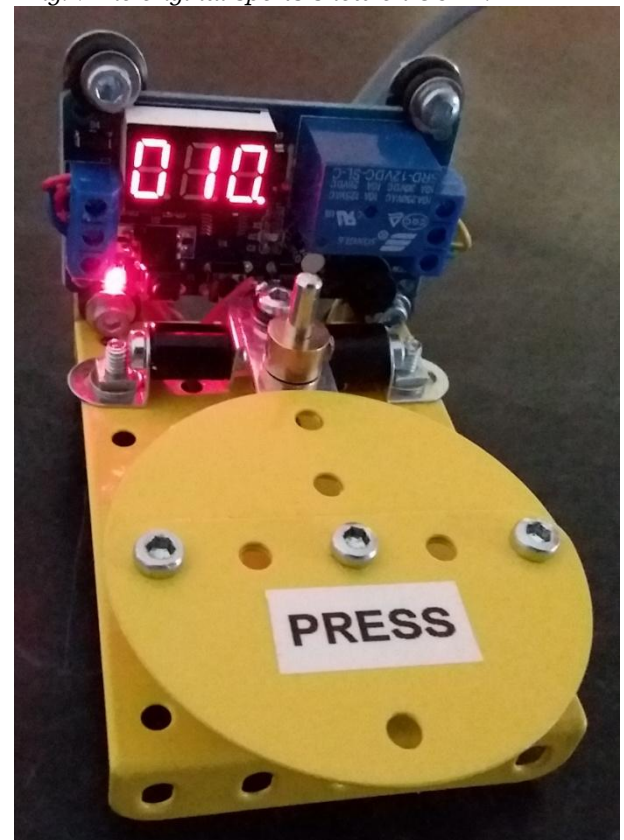


Fig.4 The touch pad needed to be obvious.

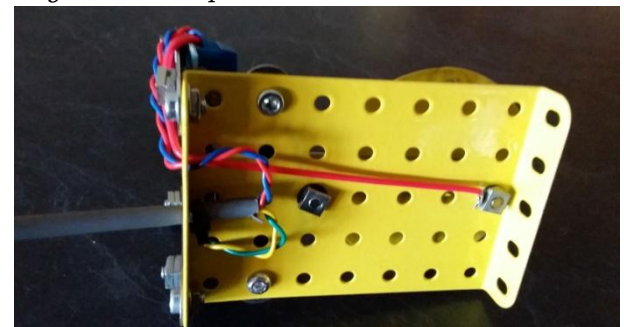


Fig.6 Plastic washers and heatshrink on the bolts for insulation.



Fig.7 Spacers keep the chain tight

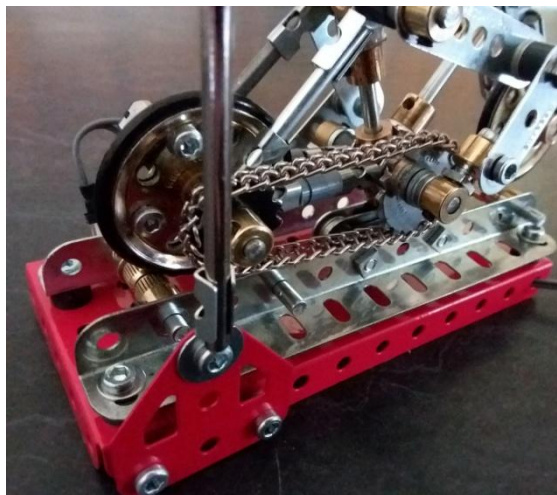


Fig.9 Pivot Bolts and collars for cranks

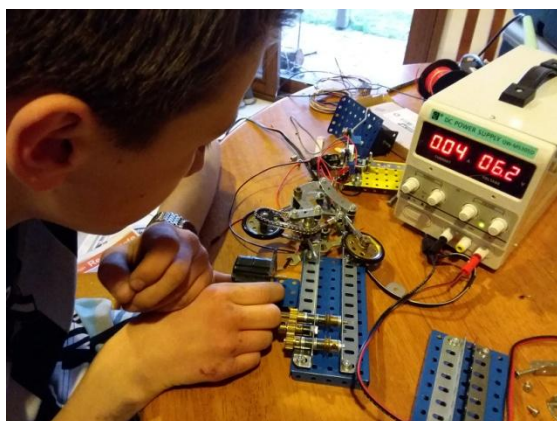


Fig.11 The 1st of many rebuilds. The motorised rollers wouldn't turn the wheels. They slipped.



Fig.13 The gearbox housing fits inside.

Now the timer was working I started looking for ideas for a bicycle and Graham Jost's model of Pedalling Pete looked good but it was too big. I used the idea of curved strips for his arms and back, then set about designing something smaller starting with part 21 Pulleys which were 1 1/2". This presented a host of problems the first being the front sprocket size. The 18t Sprocket was the largest I could fit but it didn't have holes to fit the pedals. Part 179 Screwed Rod adaptors were used for cranks but this was later improved by using Pivot Bolts with Collars. See figures 9 and 10. Numerous attempts to put a motor on the rollers failed because the bicycle tyres kept slipping. The tiny N20 geared motor directly driving the rear wheel worked a treat though. We were getting nowhere with the part 23a Pulleys and they didn't really look like rollers so Rob Kirk in England suggested using broken bosses from those yellow plastic pinions. The N20 motor was anchored to the base unit with a Fishplate bolted to the motor's mounting bracket. I was thinking of better ways to mount it, perhaps on the bicycle frame itself, when it suddenly occurred to me that the part 212 Rod/Strip Connector could be turned around and the folded edges of the rod section would prevent the motor from turning on itself. I was now planning to drill tiny holes in the rod/strip connector to mount the motor when I also realised that the motor could be anchored into a boss on the wheel and so a bush wheel was added to the pulley to provide bosses on both sides. To make the bicycle removable a 2-way header pin and socket was added for the power.



Fig.8 Pedalling Pete by Graham Jost

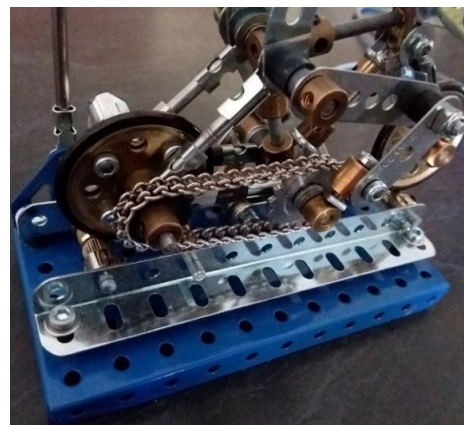


Fig.10 Screwed Rod Adaptors for cranks

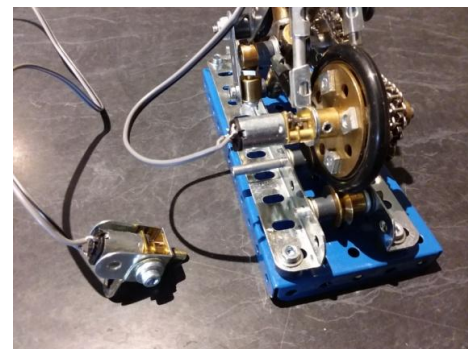


Fig.12 The tiny N20 geared motor is mounted without bolts by using folded edges of the Rod/Strip Connector to stop the motor turning on itself. It is locked in place by the boss on the bush wheel.

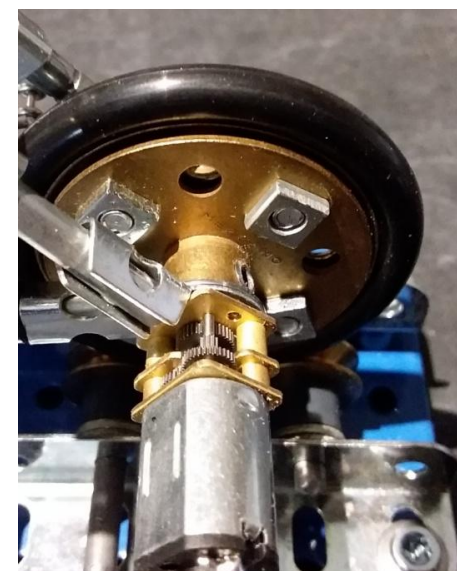


Fig.14 Motor locked in place by boss on the Bushwheel.

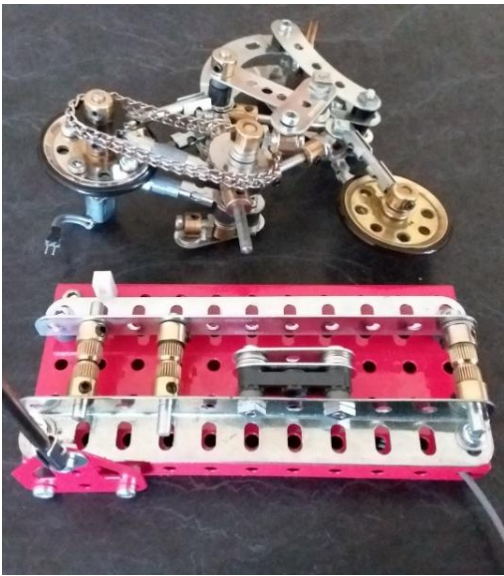


Fig.15 The 3 hole strips must be the exact distance apart to secure the rod.

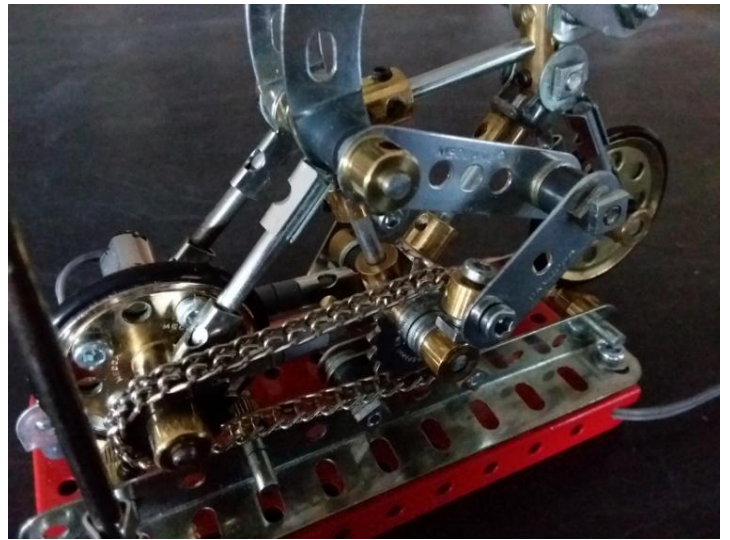


Fig.16 The Fork Piece touches the Coupling.

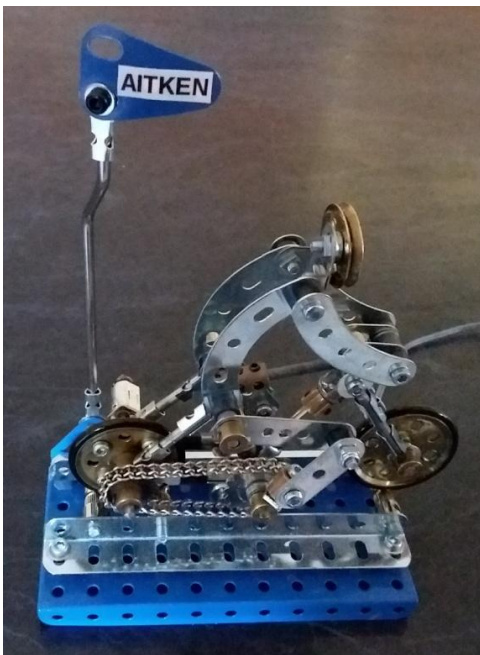


Fig.17 Blue bike has part 179 Screwed Rod Adaptors for cranks.

In figure 16 you can see the part 116a Fork Piece is touching the coupling. This is the maximum angle so careful adjustment is required to ensure the rod from the bottom bracket to the headstem is not at too steep an angle. Both bicycles can be easily lifted off the roller. There is a short rod protruding from the bottom bracket coupling that slides in-between a pair of 3 hole strips in the base unit. They must be exactly the correct distance apart to let the rod move. This allows the bicycle to move up, down, forward and backwards but not sideways. I found that 2 standard washers and 2 thin washers were just right. The blue bike was named after Olympic Gold medallist Brett Aitken and the red bike is World Champion Stephen Pate. Both great Aussie cyclists!

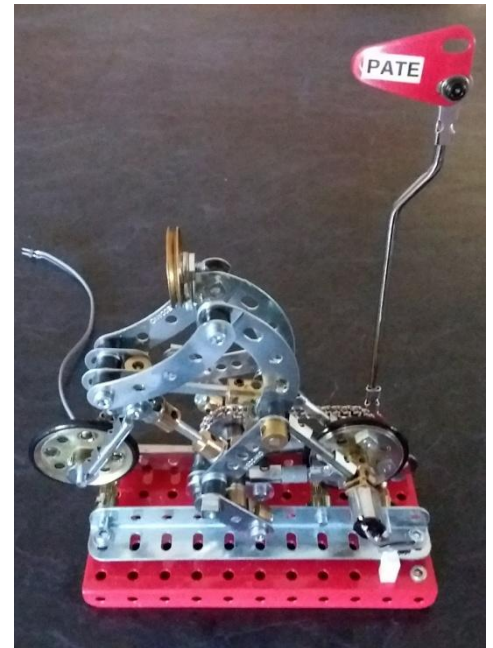


Fig.18 Red bike has Pinion Bolts for cranks and is faster than the blue bike.

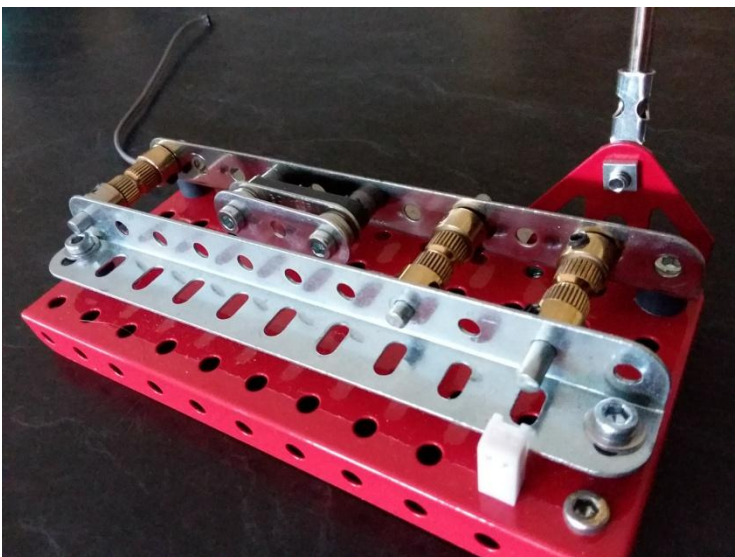


Fig.19 The white plug is a 2 way header socket.



Fig.20 The shape looks ok despite the thigh bone being longer than the shin bone.

The lap timer is made up of 2 dials with the red pointer moving in sync with the red bike and the blue pointer in sync with the blue bike. The synchronization is achieved by wiring the bicycle motor in parallel with the corresponding motor on the lap timer. To add the winner/loser factor, I have surreptitiously added Pulse Width Modulators to each pointer's motor. For some reason the blue bike is faster than the red bike, so the speed of either bike can be varied by tweaking the potentiometer on the matching PWM.

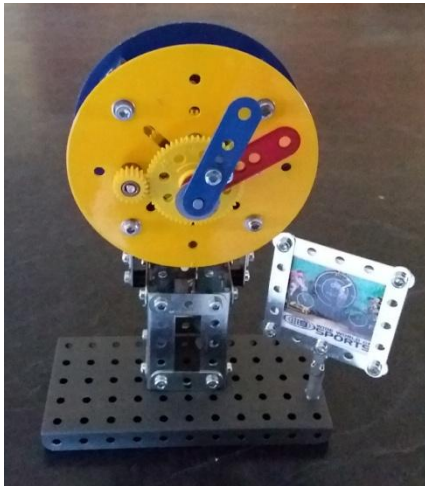
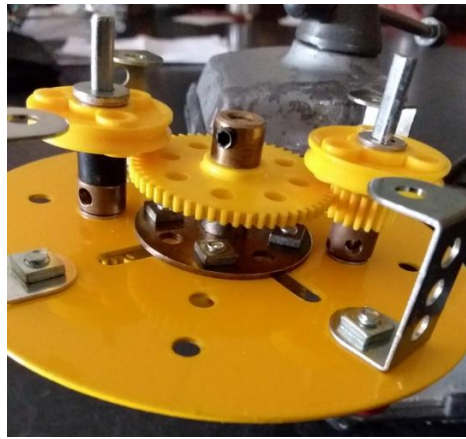


Fig.23 The sign adds realism.

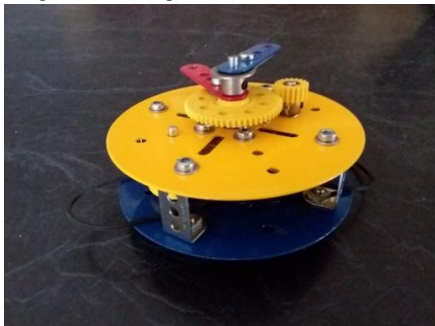


Fig.24 Tight clearances.



Fig.25 Motors mounted on Fishplates.

Fig.22 Red hand mounted on 57t Gear. Blue hand mounted on a Crank.

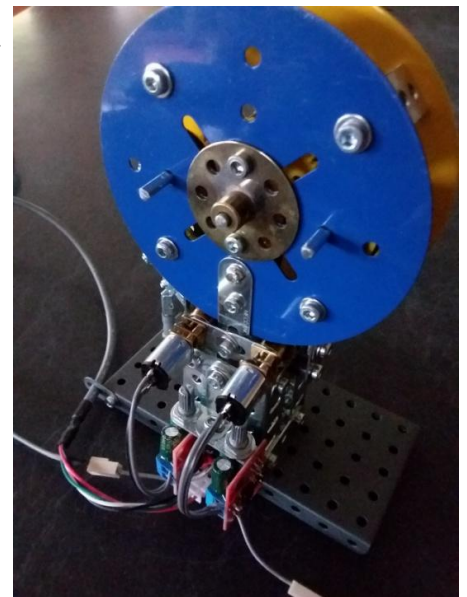


Fig.26 PWMs have no knobs and are mounted on a 3 hole strip.

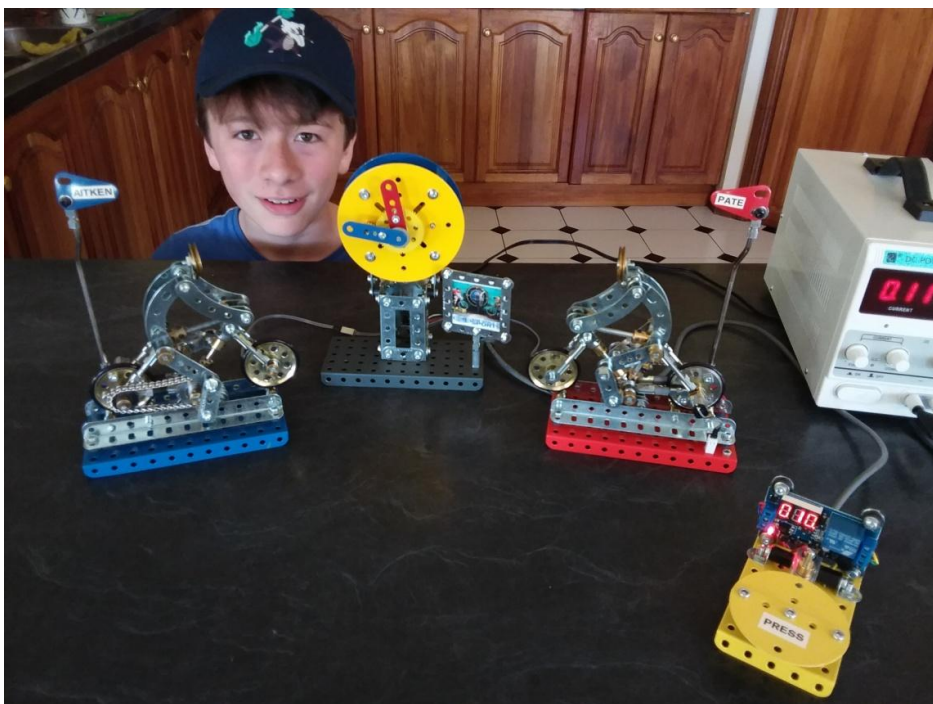


Fig.27 The happy Meccanoboy.

Fig.21 Pulleys on Tri-Axes.
The blue pointer is mounted on a Crank that is fixed to the centre Rod which passes through the yellow plastic 57t Gear Wheel, the bush wheel and is finally fixed to another 57t gear behind the yellow Circular Plate. The red pointer is bolted to the 57t Gear which is then driven by the 19t Pinion. Similarly, the 57t for the blue pointer is driven by another 19t Pinion behind the Plate. To save space, both Pinions have tri-axes to allow the use of part 22c Bossless 1" Pulley with triangle hole. Both Pulleys are driven by 100RPM N20 geared motors the same as the bicycles. To allow the pointers to be reset, pulley belts are used. There are 4 motors, one for each bike and one for each hand on the lap timer.

Throughout the model I have used header pins and sockets for all the electrical connections. The finished model creates great interest as it can be operated by the public and it has the element of competition. The countdown timer that triggers it has been carefully designed to make it quite obvious that you press the yellow circle. It is also kid-proof and can be smashed with a fist without causing damage. Although the race results are predictable I have added a quasi-random element by hiding the PWM controllers out of sight and the potentiometers have no knobs. If one bike keeps winning the speed can be covertly altered just as a handicapper can even things up in a real race. There is a short video at <https://youtu.be/jJMyNPzAyJk> or just simply Google Johnny Meccano youtube Roller Derby.

Dandenong (Melbourne) Show

Nov 10-11



Pictured above from left to right are Chris Curnick, Maria & Jack Van Dongen, Ric Green and our beloved Mary & Graham Jost.

The Melbourne Meccano Club motley crew presented themselves with their typical aplomb at the Dandenong Show which is a quintessential Australia affair showcasing the talents of local butchers, bakers and candlestick makers.

Behind the Meccano display you can see knitting, artwork from local schools and even the junior school cake decoration competition under glass. And all in a corrugated tin shed!

Just look at the size of Jack Van Dongen's Tower of Terror! The chairs full of dolls are lifted up on all four sides then dropped. To the foreground is another of Jack's impressive fairground attractions, Music Trip, and again the little girl dolls feature prominently. They seem to be Jack's trademark. To the rear you can see another ride that's a smaller version of the Zipper. Joe Attard from Malta once visited Australia and was so impressed with the Zipper that he built it in Meccano. Jack Van Dongen has made his own version based on Joe's intricate model but it's not quite ready for public display at shows. It's such a difficult model to make and trying to emulate Joe Attard's build is no easy task, so what you see in the background is nothing compared to what's to come. To see both Joe and Jack's Zipper models just Google "Meccano Zipper" or copy this YouTube link to see my video of Jack's prototype which is still under development.

<https://youtu.be/mf82Dlxvg9M>





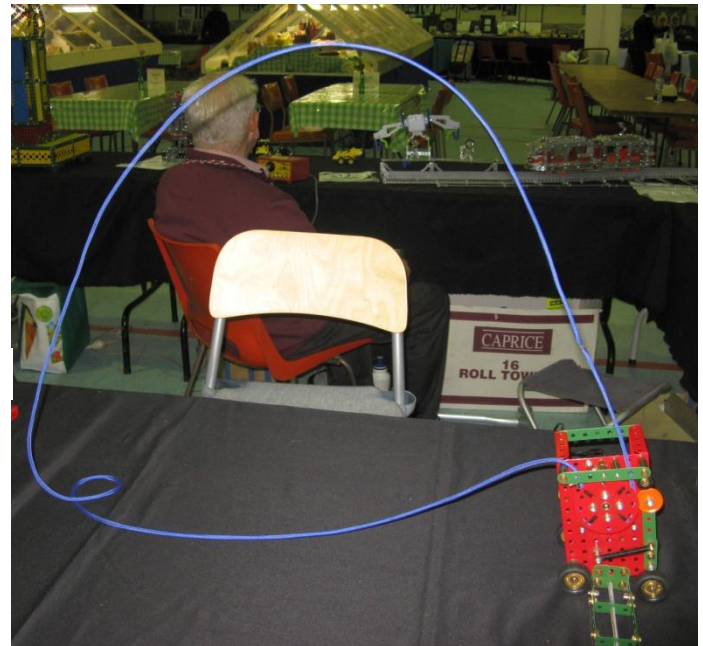
Mary Jost cutting the paper for the Nightingale Meccanograph



Notice to Melbourne Meccano Club members. See you at the Bri Phi for our club meeting on Sunday December 9th 2018.

As usual the sales tables start at 1pm with the Show & Tell at 2pm.

Bring a plate to share. It's nearly Christmas so I want to see chocolate and other festive treats!



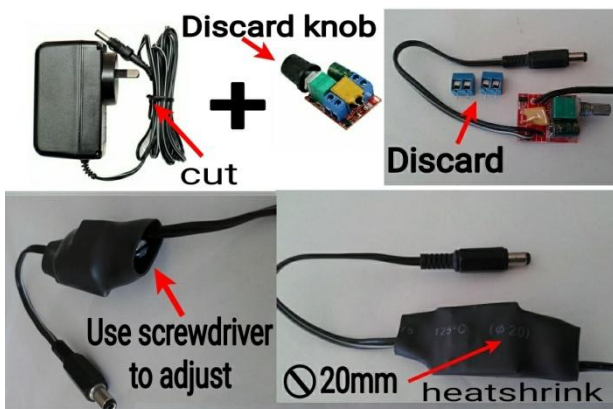
Graham Jost entertained the crowd with his newest creation called the Chaotic Rope. The children were mesmerised to see the rope spinning in mid air.

Graham writes....

“The details of this attention-grabbing model are courtesy of Craig Longhurst of the UK. My build is a very close copy of his in all respects, even down to using 4 mm Paracord for the rope. I tried to persevere with the drive from a modern Meccano 6-volt motor, but found it was just not up to the task of flinging the outgoing rope high into the air, a feature which makes this model particularly appealing. I have substituted a more powerful high-speed motor of unknown origin to save the day. It works very well!”



Pictured left is Jack Van Dongen's fairground attraction called Music Trip. This ride features in most Australian shows and is very popular with the schoolkids who hold their arms up and scream while their friends on the ground take photos of them to share on Instagram.



Pulse Width Modulated power supplies

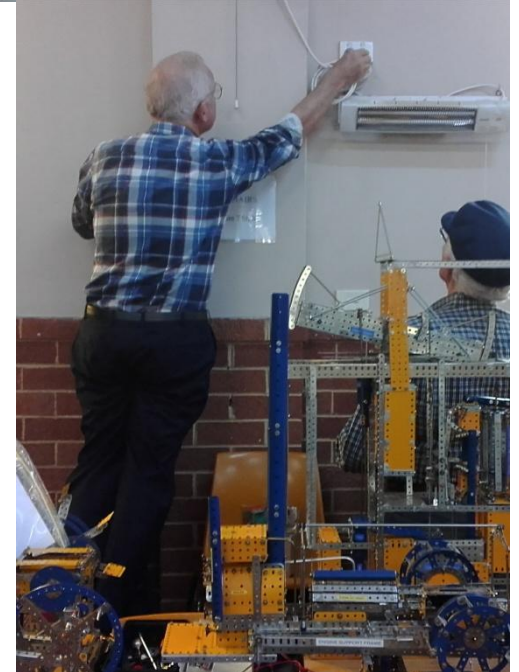
There's a lot of buzz around at the moment with these nifty little speed controllers. They work by providing adjustable pulses of power rather than changing the voltage to control the speed of a motor. Some Meccanoboy's use many plug packs with various voltages but if you put one of these in line as shown left, one plug pack will suit everything. They operate from 3-35v and 5A.



Just search ebay for mini DC PWM motor speed controller.

Sydney Expo

28 April 2018



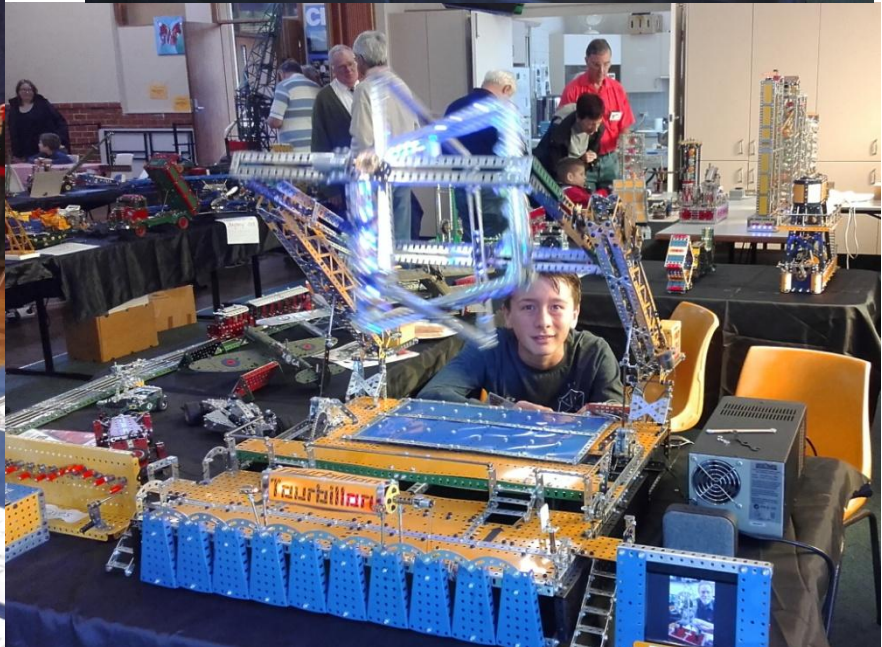
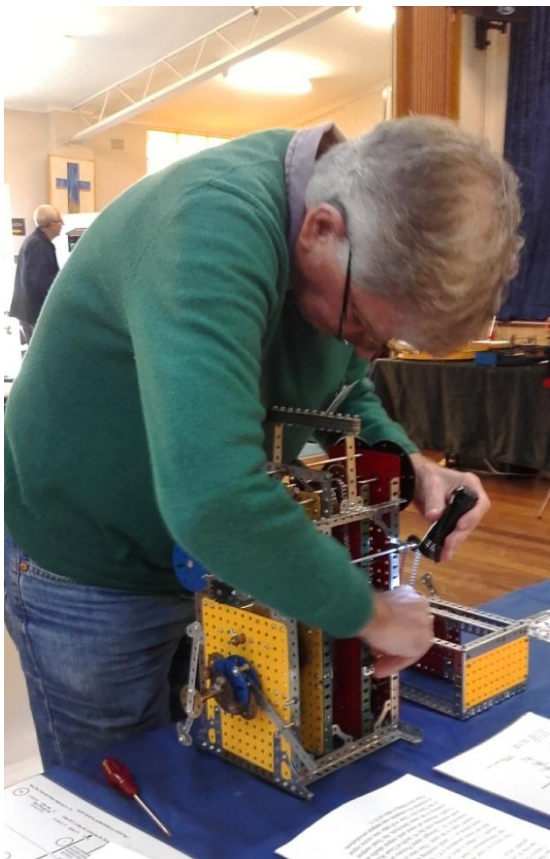
Get ready boys...

Graham Jost sent an email to the exhibitors asking for interest in the Sydney Expo and mentioned a cheap hotel near the venue for \$95. The price of the accommodation sealed the deal and so we made our booking and in the wee small hours of Friday morning we set off for the new and unknown horizons of Sydney. Johnny's eyes lit up when he saw the hustle and bustle of the big city and my eyes lit up when I saw the cost of parking! Never mind, we'll check out the city later and so we arrived at our humble lodgings at 2pm. After checking in at the Parkway Hotel in Forestville we headed off to Manly in search of cheaper parking, but it wasn't much better than the CBD, so we reluctantly parked and caught the ferry across the harbour to the city, cruising past the Opera House and the Harbour Bridge. Lovely! After visiting Hobbyco we journeyed back to the hotel and met Doug Trounce, Mario Moszczyński and of course Graham and Mary Jost for dinner. Saturday morning we arrived at the hall to set up at 8am and there was the usual fuss of finding power points that worked and figuring out why that model was working perfectly just last night but now was stubbornly resisting all efforts to operate in the cold hard light of day with all these people looking on. And indeed there were lots of Meccanoboy as well as the lovely church people who had struck up a deal with the Sydney Meccano club, MMASI, to host the exhibition in return for the gate takings and the opportunity to sell food and drinks. Win Win. Brilliant!



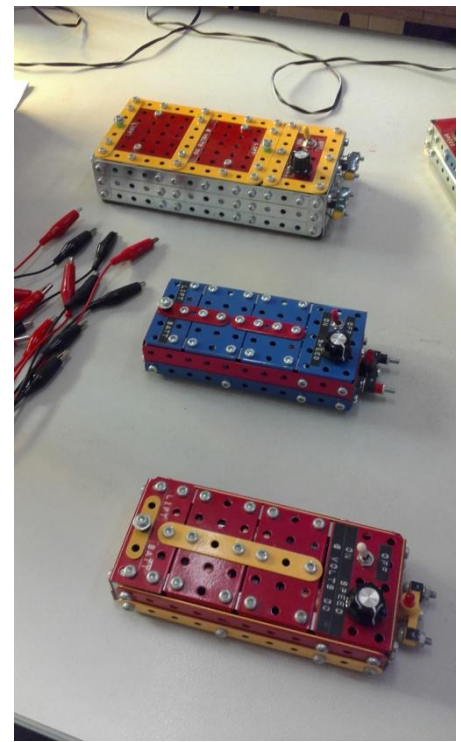


The rain continued to drizzle down until the very moment the doors opened to the public then at precisely 10am the sun came out and the excited crowd poured in. There were smiling faces all around as the Meccanoboy stood proudly beside their models and the children shrieked with glee at the entertaining novelty of the mysterious Meccano which is quite foreign to children these days. Our Sydney hosts were outstanding with their organisational skills as well as the quality of their models and their joyful interaction with the crowd. Some of the Sydney members even sat down at the piano to provide additional entertainment! The Tourbillon had some teething problems after its rebuild but they were easily fixed. John Shirvington was struggling with his clock as it didn't want to move the date mechanism but it was still ticking away and the time was working, so we had a bit of fun trouble shooting it to no avail.

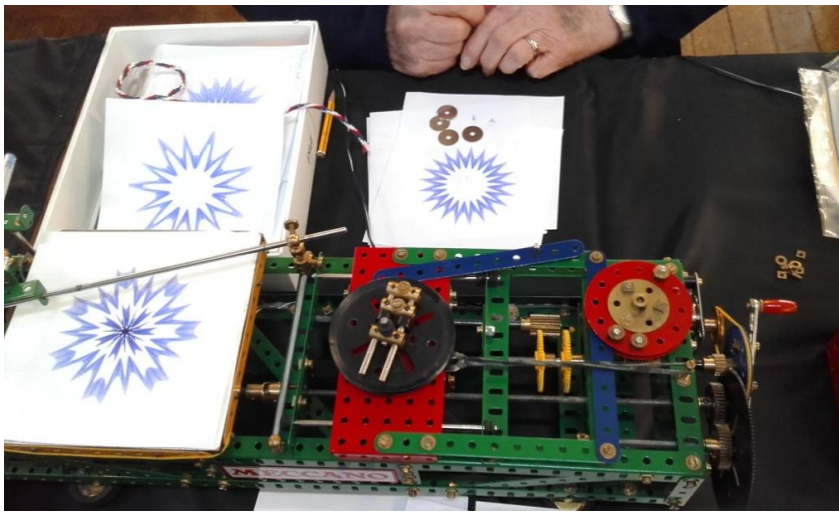




Murray Tulett Blocksetter Crane



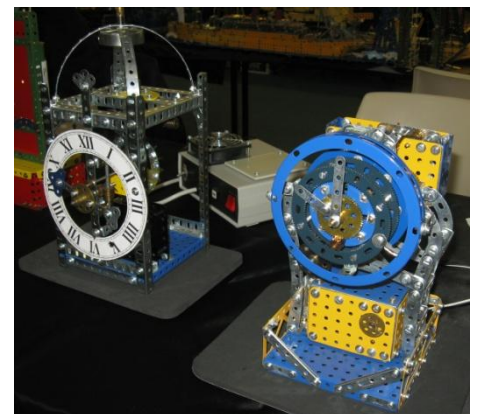
Doug Trounce Battery Boxes



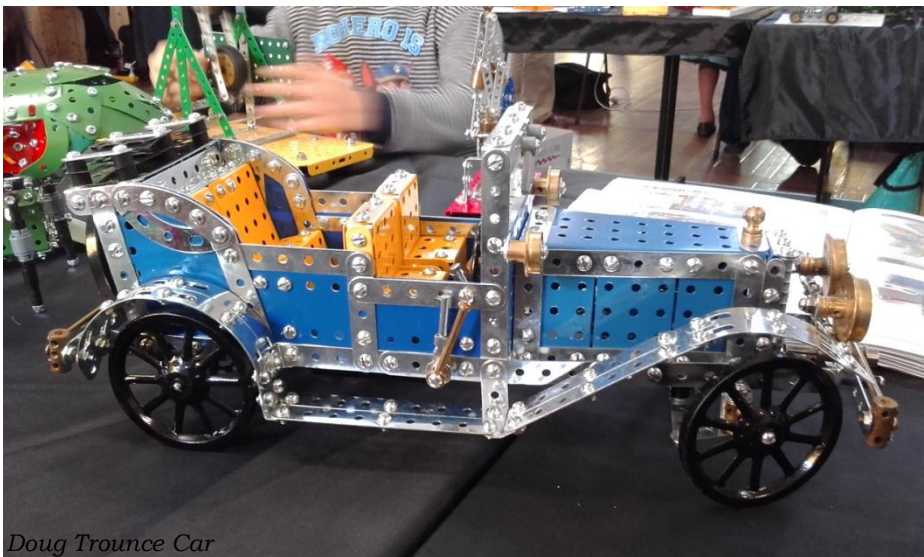
Graham and Mary Jost had an unusual problem with the Meccanograph. It was running as smooth as a Swiss watch but then it started getting jerky. The whole mechanism was stuttering and the pen was tipping over. While I was looking at the mechanical aspects Graham saw the bigger picture and quickly determined that the pen was continually passing over the centre and had gradually drilled a hole through the paper. Now every time the pen passed over the centre it got stuck in the hole! This was quickly fixed by changing the length of the driving arm so that all future drawings had a blank circle in the centre. The drawing with the hole was put aside and the perfect drawings were laid out for the public to take home as souvenirs. One little girl however insisted that the damaged drawing was the one for her. After much animated discussion, the pattern was finally carried off by a very determined 3-year-old, for whom NO other pattern would do!



Doug Trounce Beam Engine



Mario Moszczyński Clocks



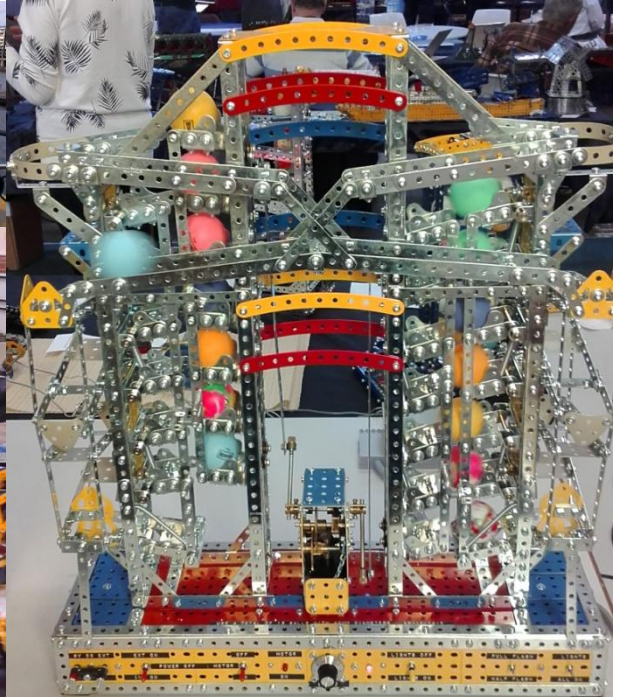
Doug Trounce Car



Graham Jost Braider



After all the fun and excitement of the 10 'till 4 expo, the camaraderie continued at the Forestville RSL Club. Jim Osborne was there, having moved up from Melbourne, and Bill Hassett made the long drive from Adelong to attend the expo so the MMCI was well represented. We returned to our hotel to discover that they have a disco once a month and tonight was the Jimmy Barnes tribute so it was fortunate that we were so tired we drifted off to sleep despite the doof doof from the disco and the people sitting outside our door smoking, drinking and talking. Then we were woken at 4am by the tumultuous cacophony of trucks unloading for the Sunday morning market. There were even tables surrounding our car. I guess that's to be expected in \$95 Sydney pub accommodation, so through bleary but satisfied eyes, we headed home with sweet dreams of the wonderful Sydney club and their awesome models. Although there was no first prize, I'll go out on a limb here and say that Doug Trounce's ball roller is still firmly etched in my mind as one of the most intriguing models I have ever seen. As the ball rises up, the carrying mechanism changes its angle and tips them out onto the next level. They step their way up to the top where they're released to roll across to the other side where they begin to step their way up again. The crossover requires precise timing. You can see a short video of it by following the youtube link below the photo.



Doug Trounce Ball Roller
Video >> <https://youtu.be/pqtcvvpAgBk>

John White Funicular Railway