

Foreword:

Some years before I retired I gave thought to what I would like to do to fill my time and keep myself out of the kitchen. I decided that I would equip my workshop to a degree that I could undertake some serious model making. For as long as I can remember trains had a fascination for me so it was obvious that I should consider this aspect of modelling. Now some 15 years later with the ever increasing size of the models, I wonder if I may have been wiser to have taken up stamp collecting.

This is the story of how my hobby has fulfilled both my dreams and need to keep my hands active during my retirement years.

Perhaps it may inspire others to take up this fascinating and absorbing hobby.

Stephen G James
August 2002

Second edition:

Chapters 21 -25 have been added to cover the period after leaving Thames for Tauranga. Establishing a workshop in our retirement village and building of a further four locomotives is covered to bring us up to the end of 2008.

Stephen G James
October 2008

Miniature Trains - One Man's Dreams



1. How it all started.

It was only recently that I learnt that my fascination with trains started at the tender age of two. Our family lived at the small settlement of Midhurst a few miles north west of Stratford on the slopes of Mt Taranaki. My father was the headmaster of this small school, which was just off the main highway between Stratford and New Plymouth. Over the road was the railway, which linked all these Taranaki towns with New Plymouth. My oldest sister related to me recently, how one day I went missing. I was two years old at the time and a search was made to find Steve. The neighbours and all the family were called upon to find this wayward child. Eventually I was found sitting on the rail tracks, having crossed the main highway. I said, I was waiting for the Choo Choo. As rail was one of the main forms of transport trains regularly plied that route so no doubt I was rescued in time for some purpose in life.

I was the youngest child of a family of five children. Mum died when I was 13 months old and a widowed Aunty, Mrs Bartholemew, known to all of us as Aunty Bird, came and lived with our young family and virtually became mother to us all. It was a happy life. Dad's position, as a school teacher meant moving for his promotion. After several moves we eventually moved to Auckland. My older brother Bill, 10 years my senior was very good to me and put up with his young brother growing up. Bill was very good with his hands and eventually went into the building trade, became a cabinet maker and eventually with his wife owned a Funeral and cabinet making business in Wairoa. He was a very practical person and as far as I was concerned was a mentor and example for me to follow. To this end when I eventually reached 13 and secondary school age I headed off to Seddon Memorial Technical College to do a woodwork course. I was very successful with the practical subjects but academically not so bright. I achieved School Certificate with woodwork, maths and technical drawing as my main subjects. It was during the school holidays in December 1952 that Dad took our 1936 Chevrolet car in to "Schofields" the Chevrolet agents for repair. It was while there that I made the comment "This is the type of place I would like to work!" Dad, not one to waste time took me up on that and the result

Miniature Trains - One Man's Dreams

was that in January 1953, a few weeks later I commenced work at Schofield and Co as an apprentice motor mechanic.

I enjoyed the mechanical work and became competent with my hands doing extremely well in the trade exams. I enjoyed the machine shop and electrical work the most but got a good rounded training moving around the various departments. Just before completing my apprenticeship in 1957, I married Alison my wife. We lived at Glen Eden in Auckland's western suburbs and the easiest way to travel to work was on the train. At this time there were steam engines that hauled the trains. I travelled each day this way to New Market until I got a job in New Lynn. I had a couple of other motor mechanic jobs before I was accepted for training as an insurance assessor with the NIMU insurance company. This involved the assessment of accident damaged motor vehicles and accident investigation. While I enjoyed this work it did involve being moved to Te Awamutu and then on to Thames where we still live. By the time we arrived in Thames we had a further two children making six in all. It has become a great place to live and bring up our children but signs were out that another move was imminent. About this time I was given the opportunity to go into partnership in an electronic business in Radio and TV. While I had played about with radios and tape recorders I knew little about TV so embarked on an adult apprenticeship in radio and TV with my partner being the qualified journeyman and me being the apprentice within the firm of which I half owned. I did enjoy this work after the Insurance assessing. It meant we did not have to move and I was virtually my own boss. We did well in this partnership as it was at the time of Colour TV coming to N.Z. After 7 years my partner desired to move on so I purchased the whole of the business and with Alison we were now on our own. The family was growing fast and my oldest boy Bruce became interested in computer science at high school. This was the catalyst to steer my electronic knowledge in that direction and within a few years we sold the Radio and TV side of our business and became solely computer dealers and programmers. Software was difficult to find and there was little compatibility between brands. We did well with developing software for the Commodore range of computers and then later moved to the IBM compatible machines. I had reached my early 50's by then and was looking ahead to the day I might

Miniature Trains - One Man's Dreams

retire. It was during this period I mentioned to Alison that I should equip my workshop while I was still working so I could take up a hobby when I retired. I had always had some machinery, a small metal lathe, a drill press, a home made welder and a small saw bench and buzzer. I had made most of our children's toys including trains, tractor, jungle gym and a trampoline. I recalled that one of my friends had made a steam locomotive and thought that it would be an interesting project for me to take up in retirement. It was agreed that over the next few years I would equip the workshop with the necessary tools and purchase the castings to make my first steam locomotive when I retired. As it happened I was soon able to purchase a Myford Super 7 lathe which had previously belonged to another modeller and then the castings for a "Martin Evans Simplex" locomotive in 5" gauge. Needless to say the locomotive was well completed long before I retired, as were several others. The disease had got me and with the assistance and directions of the members of the Auckland Society of Model Engineers I was on my way in a most interesting and absorbing hobby.

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2. The Workshop.



The workshop showing, welding corner, milling machine, drill press and saw

some of the equipment I have to day is now over 50 years old. Many who were born prior to the war years hold on to older equipment and are reluctant to purchase new. The change from imperial measurements to metric and changing ones thinking in this area is not easy. I now use both measures and have been won over to metric nuts and bolts for most things.

Workshops vary in both size and content. As is often the case many smaller and less well equipped workshops produce the finest models. While I was a motor mechanic I was able to purchase a small Australian made Advance lathe. It was far from accurate but served

While it may be a dream to simply go out and purchase all the equipment for a home workshop it seldom works out that way. If for no other reason it is extremely costly and the wish list is never ending. Most workshops evolve over a period of time and even now



Workshop bench tidy for photographer.

Miniature Trains - One Man's Dreams

the purpose for making most of the children's toys, spinning armatures and the other odd small jobs required of it. This travelled with us from the Glen Eden days and was always one of the first things to be set up in any of my workshops.

When we moved to Thames. I soon set up a workshop in the wooden single car garage. As I had a company vehicle, it had to be garaged so room in the garage was somewhat restricted This did not stop me

from fitting in all the machinery I had, and further acquired over the next few years. For many years I worked on a dirt floor but later when it could be afforded this was concreted. Eventually I got a car port for the vehicle.

This workshop saw the birth of the first 8 locomotives I built. The family had grown up and were fast leaving home so our

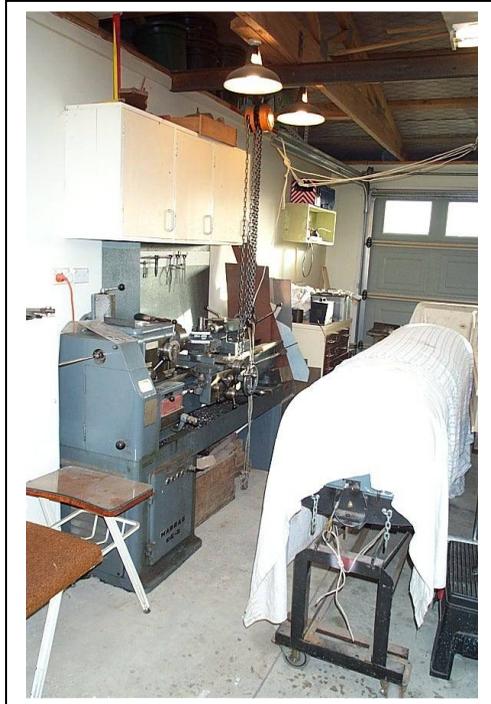
family cottage at Tairua was no longer being used as much. A decision was made to sell this cottage and use the money to rebuild the workshop and garage, do some fill work on our section, which flooded in the heavy rain and rebuild the kitchen and service areas of the house. The workshop was the first to be rebuilt and took the form of a triple car garage 10.5m by 7m. We partitioned off four metres to form a single garage for the vehicle and the rest was given over to become my workshop. This was raised above the flood level and the section filled, with over 100 cubic metres of fill. It was a huge undertaking. Part of the old workshop had to stay standing to house the machinery until the new workshop was completed. The day we moved the machinery the walls of the old workshop were removed we used a mechanical digger to move the two lathes, and the mill. They were hoisted off their old resting places, then moved into the



Myford Super 7 Lathe, grinders and compressor under the bench.

Miniature Trains - One Man's Dreams

new workshop. The big task of installing the equipment began, not to mention the reinstatement of our section with paths and fences. I was truly "set up", as one would say. I must mention here the patience of my wife Alison. She did eventually get her kitchen and renovations inside the house about 2 years later, much to her delight.



My large Mycor Lathe. Note train trolley with covered Locomotive.

Miniature Trains - One Man's Dreams



3. Simplex 2-6-0T "Lady Alison" 5"g

When I acquired my Myford Super 7 lathe, it seemed silly to let it remain idle! The copious Model engineering magazines I had acquired gave me many hours of reading. Through them, I found my first project. I settled on building Martin Evans Simplex Locomotive design. I suppose like many I was attracted to it by



"Lady Alison"

Simplex design by Martin Evans

the words "simplex". It was a misnomer and I later found out I could have embarked on simpler and easier designs. However the stage was set. Castings and plans were purchased from Australia.

As is often the case I sought advice after the stage of no return. It was not until I had the plans and castings in my possession that it even entered my head that it would be wise to consult the members of the Auckland Society of Model Engineers. I was welcomed by them and must give tribute to Dave Watts, an experienced and wonderful model engineer, who had patience with my many questions and gave timely advice. I really had no idea what I had undertaken but set to with enthusiasm. I had been told that some people could take many years to complete a steam locomotive. My projected time frame would have had it completed in weeks. This did not turn out to be the case.

I had acquired some machining and welding skills when training as a motor mechanic. These skills were soon honed up and put to good use. I had little trouble following the plans and machining the 101 parts that make up a locomotive. Each piece became a project and as each piece was completed it was put aside for assembly later. I have

Miniature Trains - One Man's Dreams

adopted this attitude to all the locos I have built and found that the overall job is not as daunting.

I do not intend going through the construction of each locomotive step by step as there are publications dedicated to that purpose. I want to share some of the joys and disappointments associated with this absorbing hobby.

During this time Alison found what the word "swarf" really meant. She still hates the little bits that come into the house. Anyway we are still married after 45 years showing she is a patient, forgiving lady.

With the wheels turned and quartered on their axles, (getting them in the correct position) the cylinders bored and valve gear fitted, progress was steady and things were coming together nicely.

It probably took about 12 months before I had a running chassis and was able, for the first time to see the wheels turn, by themselves, by using compressed air. The thrill of that occasion is incredible and made all the effort and remaking of parts, that just didn't turn out right the first time, worthwhile.

I don't want you to get the idea that all was just plain sailing. It was far from that, and my skills were very rusty at that stage. Many a time I would walk away from the workshop frustrated that some thing had not gone right. Looking back I think that I was too keen to "do", rather than think first.

The copper for the boiler was purchased. Having been told the procedure and requirements for testing I started to form the plates and assemble the boiler, getting the required checks at each stage. Finally the great day for pressure testing had come. I had arranged to go to Dave Watts residence for this to be done. Several bad leaks were detected and after Dave told me how to fix them, (Dave always told you how but left you to do the job) I went home disappointed, it had failed. It was not a big job to fix but it meant another trip back at a later date. That time it passed its hydraulic test with flying colours. Finally the locomotive was starting to look the piece and it was soon assembled and painted in a bright red with it's name plate on its side bearing the words "LADY ALISON". Named after my dear wife.

One thing I found out soon enough that having a locomotive is one thing but you do need something to sit on to drive it. Hastily a carriage was completed that would support the weight of two adults. With 20 feet of rails down the middle of the workshop and a flexible

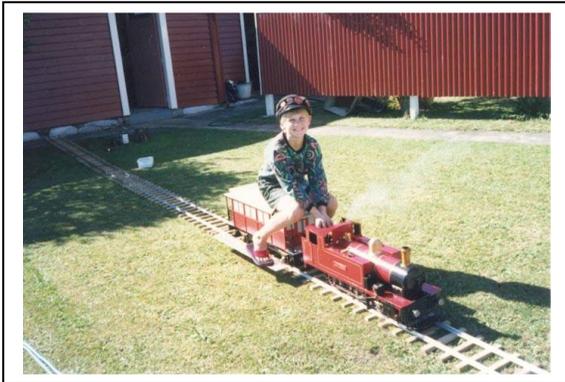
Miniature Trains - One Man's Dreams

hose from the compressor I was able to drive "Lady Alison" back and forth. I was so excited to find it would actually propel me along. I called Alison to the workshop to come and look and have a ride be it only a few feet. Obliging as she is she came promptly and began to enjoy the moment with me. Little did I know what was to happen. Alison was wearing a much favoured, dress. The skirt somehow went under the carriage wheels as we reversed down the short track. The dress was ruined and in shreds. I thought my modelling career was over as a very distressed and annoyed wife left the workshop. Yes we did start talking again.

The crowning moment for any locomotive builder is the first steaming. This followed soon after. It was a great sense of achievement to see your creation be able to burst into life. That was a great day.

I had joined the ASME by this time and regularly took my Locomotive "Lady Alison" to run at their Panmure track where some of the finer points of steaming and driving were learnt.

At home I had about 30 metres of portable track and often laid it out on the lawn to the joy of the local children. At the sound of the little train they would come and lean over the fence obviously wanting a ride. It was seldom a problem to oblige. It is however a wonder that there were not more car accidents outside our place as people couldn't believe their eyes seeing a steam train on our front lawn.



Grandson, Daniel, with "Lady Alison" on the portable track.

Miniature Trains - One Man's Dreams



4. BEJAX 2-6-0T "LADY WENDEL" 5'g

Hindsight is a great attribute. With the first locomotive under my belt I was soon hankering to build another. After all I had learnt so much building "Lady Alison" it would be a shame to waste all that knowledge. I had seen a beautifully made 0-4-0 Bejax locomotive at ASME built by Jim Mc Lean (Scotty). It was not unlike the Simplex but was locally designed by the Late Geath Creagh of Auckland. It was available in different wheel configurations. The castings and materials were all available locally so I purchased them in the 2-6-0 configuration. As it turned out it was a lot easier to construct than the Simplex. Whether that was because I had already built one locomotive, or the design, the construction went very smoothly.

Again the help of members of the ASME greatly assisted in the construction.

With the experience of the "Simplex" I decided that this locomotive could well do with a tender as well as the side water tanks. An ice cream carton holding the coal on the seat in front of you didn't appeal. I am not sure but think it may be one of the few side tank locomotives

hauling a water and coal tender. It proved a very reliable locomotive and again the joy did not diminish when steaming it for the first time. It was not unlike the Simplex in many ways but was always a better steamer.



One of the many trips to the ASME track at Panmure in Auckland.

Miniature Trains - One Man's Dreams

Beginners in the model engineering often balk at building their boilers. While care is needed and safety requirements strictly adhered to they are not as daunting as one is led to believe. Copper is a wonderful medium to work in. The way it can be coaxed into shape after careful annealing. Cleaned and fluxed well and with the appropriate heat it is a thrill to see silver solder flow into the joints. There is an element of skill required but I believe it is something most modellers can easily learn.

I have been fortunate to have the equipment to do the job and Oxy-acetylene is a great help in this respect.

Lady "Wendel" was named after my two daughters Wendy and Delwyn. Again this locomotive was used regularly at the ASME track where we attended as often as we were able to get to Auckland some 100k away.

I would like to add a cautionary note here about naming your locomotive. It can often be an emotional



"Lady Wendel" after it's repaint.

decision. In my case I used the names of the three most important ladies in my life. It therefore was not easy when the time came to dispose of these two locomotives and the more the sadder when the new owners not knowing the attachment and meaning of the name removed them. However that is the reality of life.

Miniature Trains - One Man's Dreams

Lady Wendel made several trips away with us. The most notable was a visit to the new Plymouth track. A pretty little raised track with a double loop. It was labour weekend, their open weekend. I had been having a great run for two days. Late in the afternoon of the second day the locomotive just seemed to seize. I had to remove her from the track. As running was almost over I loaded her back in the trailer. When I eventually got home I found one of the axle pump gland nuts had worked loose. This had locked things up. A simple retighten of the nut cured the problem.

My elder daughter Wendy and her husband John, were at this time teaching at the Weymouth School. We agreed to take "Lady Wendel" up for their gala. This meant transporting not only the train but the portable track sections. After a rather hair raising trip with the rails loaded on top of the trailer we eventually got the track set out on the tennis courts. It contributed a few dollars to the school funds.

As sometimes happens I was to get "Lady Wendel" back into my possession be it but for a few months. She became part payment in the sale of another locomotive I built later. I refurbished her and repainted her a bright yellow and she was later sold to an Auckland buyer and member of ASME.



Evening run at the new Plymouth raised track.

Miniature Trains - One Man's Dreams



5. EF 30157 Bo-(Bo)-Bo Electric **built as a Bo-Bo 7¼g**

The North Island main trunk line had recently been electrified 25kv between Palmerston North and Te Rapa. The EF locomotive was purchased for the purpose of utilising this section of track to its maximum. These locomotives of 3000hp were at the time the most powerful on the New Zealand railway tracks. With 6 axles all driven



First time out at MLS. Is the driver offering a prayer?

they could pull great loads. Their unusual design and looks appealed to me at the time and I thought they would be a great modelling project.

This took me off in a completely different direction for this was going to be a first. As far as I knew no other model of an EF had been constructed. It was a scratch project. Where do I start?

Te Rapa, just north of Hamilton, is not that far from Thames so armed with camera I arrived at the Te Rapa Locomotive Depot and meekly told them what I was wanting to do and could I please get

Miniature Trains - One Man's Dreams

some photos of an EF loco. As it happened I struck a very obliging supervisor who was interested in helping me and he soon collared one of the drivers to escort me to the nearest EF and assist me with answering questions. I took several photos of the locomotive and some very good close up photos of the bogies. I had a most interesting tour through the inside of the locomotive. After returning to the drivers tea-room, the drivers manual was produced. From it selected pages of the outline drawings were photocopied. A very happy modeller left Te Rapa that day.



EF in workshop prior to painting and detailing.

I had sufficient detail now from which to scale a model. I had decided that I would make this locomotive for $7\frac{1}{4}$ " gauge. It was about this time I was introduced to the Manukau Live Steamers and the larger gauge of $7\frac{1}{4}$ " appealed to me. I met up with David Giles who had a very nice EC electric locomotive and the power control and motors used in that seemed ideal for my EF. That settled I went about designing the bodywork and bogies. . As the wheel size on the model had to be sized for the axle speed from the motors I kept photocopy enlarging the line drawings until the wheel size was what

Miniature Trains - One Man's Dreams

I wanted. I did strike a problem. When I scaled the EF to the 7¼" gauge it was going to be some 9ft long and pretty hard to cart around. It was then I decided that I would take a bit of licence and leave out the centre bogie. In fact I think the proportions look better and still do today. The bogies on the EF are somewhat unconventional and have double springing. This makes for a very stable and nicely sprung bogie. I decided that I would follow the original design as far as possible by fabricating the bogies using 3mm flat steel welded and ribbed. I made patterns for the axle-boxes and had them cast in aluminium at the local foundry. Two 270watt Axion motors and worm drive gear boxes were purchased with a suitable electronic mobility vehicle controller. Within a few months the bogies were complete and really looked the part. Body work proceeded slowly with the shaped roof panel proving the most difficult to fold. This required a flat section to accommodate the pantograph and as I was gas welding I found it difficult to stop the panels bucking. Again hindsight is a great teacher. I now use 1.6mm steel for panels. It buckles a lot less when welding. (I still prefer gas welding.)

This locomotive boasted hydraulic brakes on both bogies. It was some time before I found that the front bogie brakes didn't work



Alison under control on No 1 bridge Thames Track.

Miniature Trains - One Man's Dreams

because I had omitted to drill a hole in the brake pipe T connector to connect the oil passage. For the brakes I used Holden Brake cylinders and a caravan master cylinder.

This locomotive is the only one I have built that I fitted dual voltage systems to. The motors were powered by two 105AH deep cycle batteries and the lights and horn by a smaller 45ah 12 volt battery.

Freshly painted in the NZR red and yellow, the debut run with EC 30157 took place at Manukau Live steamers track with family members aboard. While not an over powerful locomotive the 540 watts of power pulled 8 adults with ease.

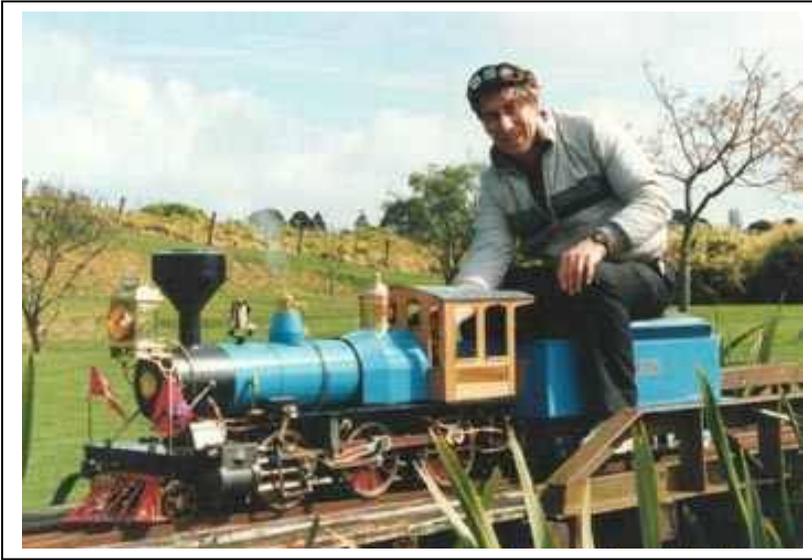
This locomotive gave Alison and me a lot of pleasure over the next months and few years. Being electric it was easy and clean to drive and Alison found she could handle it easily.

Inspite of all this there was something missing. Steam once again attracted me.



6. Phantom 2-6-0 NO.36 7¼g

For some reason, some locomotives appeal to the eye more than others. Whether it is the colour they are painted or the design or the way they steam it does not matter. David Giles the president of the Manukau Live Steamers, at the time, had designed the Phantom. It was a 2-6-0 7¼", American design that one would have expected to



Phantom 36 at MLS track on it initial trial run.

see about the late 1800 - early 1900's. With it's long cow catcher on the front and balloon spark arrester on the funnel and arrayed in its sparkling coat of yellow paint, with the Confederation flag on one side and the Canadian flag on the other one could not help but be captured with its design. It was while at the Havelock North Track that I really saw Dave's Phantom perform and that settled it for me. Castings for the wheels, cylinders and valve boxes were available so I was soon armed with the plans and castings. I had no. 4 locomotive underway.

Miniature Trains - One Man's Dreams

I found the 7¼" scale much easier but a lot heavier. The side plates were of 1/2" (12.5mm) thick, 6" (150mm) wide and over 1metre long. With two of these bolted together, they became quite a substantial chunk of steel to handle. I cut most of the steel for the chassis on a steel band saw. While it was slow it made a good job without buckling the plates. Likewise the connecting rods, coupling

rods and most of the valve gear was cut to a rough shape this way. I was fortunate to locate a short piece of hydraulic tube for the smoke box. During this construction period I was a regular visit to the local engineering works checking out their scrap bin for suitable materials. While the Phantom is a reasonably easy locomotive to build it does require a moderate level of skill. I don't always follow the drawings to the letter and when I see a short cut, or think I can make an improvement, I will adopt it. Sometimes it doesn't work out but most times I have



Phantom 36 on stand prior to painting.

found a bit of licence taken with design is a good thing. Some clubs have the word "experimental" in their title and I think that is good as it encourages us to try new things.

Phantom progressed at a good speed with an overall construction time of about 15 months. Many an evening was spent in the workshop. Again the boiler was a challenge but very satisfying to make. The first throat plate for the front of the fire box was rejected by the boiler inspectors as I had drilled one hole a bit close to another which would have meant the fire tubes were too close together. Whilst annoyed with myself I was impressed with the standards that were being required for the safe construction of the pressure vessel. The day came for me to make a preliminary hydraulic test of the boiler. This is done, by filling the boiler with water. The water is then pressurised to twice the working pressure. It so happened that my youngest son was watching. I was not impressed when he asked the question, "Making a new garden sprinkler Dad?" That situation was soon corrected and the finished boiler passed its hydraulic test. This boiler was not only much larger than the 5" locomotive ones it was very much heavier and something that needed care in handling when hot. Again it was invaluable to have on hand oxy- acetylene and the assistance of friends to get the extra heat at times. Cleaning the copper, between each process, involves pickling in an acid, usually sulphuric acid, (On later boilers I used citric acid with just as good results.) To do this I purchased a 77 litre plastic rubbish bin which allowed most of the boiler to be submerged.

The Phantom is a tender locomotive and the tender is also the driving seat. I had heard that it is often left until last to build the tender. Because the builder is so keen to try out the locomotive building the tender is often rushed. I decided to make the tender midway through the locomotive construction, or at least get most of it done before the locomotive was completed.

Most modellers know that some days things go better than others. One day I may feel like brass work so would make boiler fittings. Another day I would rather work on steel fabrications so would work on the tender chassis or the smoke box parts. As many skills are involved there is a great variety of work to suit the mood of the day. As previously mentioned I make every small job a project in itself so specific goals can be reached in short periods. It was no different in building the Phantom.

Miniature Trains - One Man's Dreams

It was just prior to building the Phantom that I acquired my larger lathe, an Indian Mycor. Powered with a 2hp motor and able to turn the Phantom wheels it was put to good use.

Eventually the day came for the wheels to turn under their own steam. The excitement was not diminished in spite of having experienced it twice before. This time however it seemed to be like a horse waiting to get out the gate.

I had become a member of Manukau Live Steamers. I remember the weekend that I went to Auckland to have the steam accumulation test done, it absolutely poured and it was obvious that running on the track would be curtailed for the day. Off to Dave's workshop where the Phantom 36 was set up on a stand and fired up. After a few small adjustments and enlarging the steam venting holes in the safety valves, the steam accumulation test was given the ok. I had my boiler certificate.

Soon after, the Phantom's first real run was performed on the MLS track. To my profound joy, and the family members who were present at the time all went well.

I had chosen a light blue livery with red and black trimmings. The cab was covered with timber strips and varnished. I simply called this locomotive "Phantom 36" thirty six being the boiler number given by MLS. It was great looking locomotive of which I was very proud.

About this time we formed the Thames Small Gauge Railway Society and Phantom 36 was one of its prime haulers over the early years of that society. I will tell of the development of that society in a later chapter and my involvement.

"Phantom 36" is now owned by a fellow member of our own club.



7. Phantom 2-6-0 "Mr Sandman" 7¹/₄g



Bob Sharman driving his Phantom "Mr Sandman" across No 1. Bridge Thames with a happy load of passengers.

After completing Phantom 36 my good friend and fellow model engineer Bob Sharman indicated that he would like to build a Phantom also. At the time Bob did not have any workshop facilities. I was happy to help him in the construction and use my facilities. With the knowledge gained in building the previous Phantom I was sure that the two of us could complete another in a much shorter time and with less effort. Both of us were still working full time so it was evenings and weekends that work would have to be done. We set aside several evening per week and limited ourselves to 9pm cut off. As my workshop is in a residential area we did not want to upset the neighbours too much. They proved to be very understanding. I received only one complaint that my electric welder interfered with the T.V.

Bob is a motor mechanic and well skilled to tackle such a challenge. We had a good rapour and tackled the tasks together. One of the more difficult tasks in building a steam locomotive or any

Miniature Trains - One Man's Dreams

locomotive with side cranks is quartering the wheels. This process requires getting all wheel sets identical and the wheels on each axle exactly in relation to those of the other axles. Various methods are used to do this. If one of the wheel sets is slightly out the coupling rods will bind and the wheels will not turn smoothly. Knowing the difficulties in doing this with Phantom 36 I devised a way of determining the coupling rod centres before the wheels and bearings were fitted to the axles by making an adjustable jig that would give the centres for each rod in turn. In actual fact this meant making the coupling rods prior to putting the wheels on the axles. It worked and what a great thrill to both of us the day we discovered that we could slide the rods onto the wheels and they turned without any sign of binding.



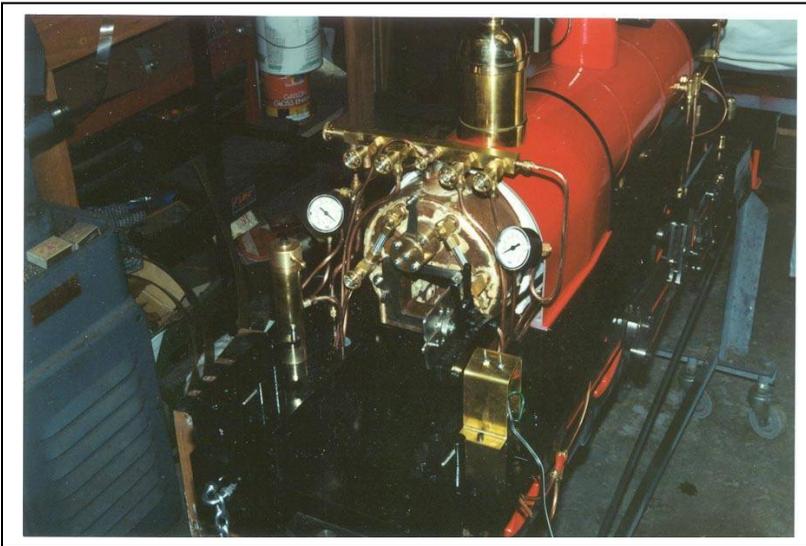
Bob Sharman drilling the chassis plates for "Mr Sandman"

Miniature Trains - One Man's Dreams

This truly was a joint effort. Bob was determined to have this locomotive looking the best it could be and his years of being a mechanic in the racing industry showed. This expertise flowed over to his Phantom. Machine marks were removed with a file, file marks were removed with emery paper and then the steel polished.

While I have always considered that I have a fair amount of patience, Bob had stacks more.

Between us we completed construction in about 8 months. Lessons learnt in constructing Phantom 36 paid off and we both stood proud the day we steamed Bob's Phantom for the first time and watched the wheels spin. Smoke belched, from the chimney stack and steam hissed from the relief valves. It was painted a bright red with black trim. The cab was constructed by gluing strips of wood to the steel backing of the cab. This made a very sturdy cab. Bob and Anne (his wife) had fulfilled their dream and this locomotive was duly christened "Mr Sandman". Bob and Anne kept "Mr Sandman" in immaculate condition. The paint work was cleaned and polished after each run and it always looked a pretty picture.

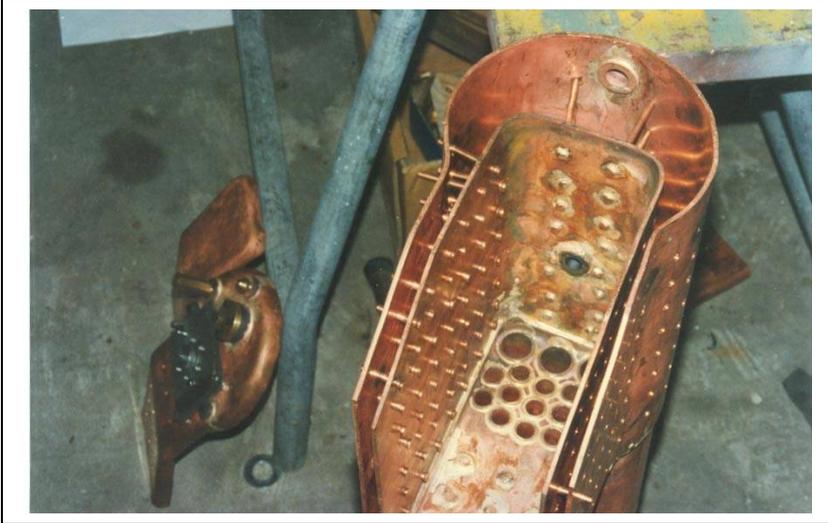


Back head of "Mr Sandman" Note the shiny brass work.

Miniature Trains - One Man's Dreams

I had enjoyed the construction immensely. Having the company while construction took place and by not having to pay for the materials was a bonus. In addition to the locomotive and tender we also built two ride cars and a suitable trailer to transport the train and ride cars together.

"Mr Sandman" regularly ran at the Thames track until Bob moved to Hastings and then joined Havelock North Live Steamers.



Copper boiler construction showing the shell and stays. The fire tubes can be seen at the end of the firebox.



8. Shunters 4 wheelers RATU - LINUS - SQUIB 7¼g

The Thames Small Gauge Railway society was formed in 1993 with a mix of membership interests. At that stage most of the membership were not modellers. This meant the Society was quite different in it's structure as it was made up of people mostly with a train interest and



RATU - LINUS - SQUIB the three 4 wheel shunters

not predominantly model engineers. This has made for a very friendly and open club which has not looked back over it's almost 10 year history.

I was approached by two members about the possibility of building them small locomotives that would be suitable for hauling passengers. Again Dave Giles had designed a 7¼" gauge 4 wheeler



**Tui driving RATU as it comes into
Grahamstown station Thames**

electric shunting type locomotive to which one could adapt various body designs to their own liking. Using 600W 24v EMD motors and worm drive reduction these were unusually powerful and reliable locomotives. After pricing the cost of materials I agreed to build two of these.

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All I required was for the costs to be covered so a start was made on these two locomotives. The simple outside frame chassis enclosed the two axles, coupled by chain. The motor and worm drive sat below the floor pan. Under the bonnet were housed two deep cycle batteries. In the cab



Alison driving LINUS with a happy load of children at Thames.

area an electronic controller. While the mechanics and electronics of each locomotive was identical the body shapes differed so gave each one their own identity.

This was the first time I had built two locomotives together at the same time and gave some satisfaction to see them both develop. These two locomotives are still owned by their original owners and have seen many kilometres of travel on the Thames and other tracks hauling many satisfied passengers. They are quite capable of pulling two ride cars and have a reasonable life out of a single charge of the batteries.

I have always had great support from my wife Alison, although I wondered if it would continue after the damaged dress mentioned earlier. Not wanting to be left out, I suggested I build Alison a similar locomotive that would be hers. It was decided that it would be slightly different and instead of coupling the axles with a chain we used coupling rods. Alison's back gives her trouble and sitting on a ride car for any length of time was not on so we made a special ride car with a seat and back support for the driver. The 0-4-0 shunter was duly completed and given the name "Linus" after Linus from the Peanuts characters.

The ride car at first caused some derision from some perfectionists but we have noticed that more comfortable seats are now quite common on a lot of other locomotive drive cars. Alison has been able to participate in driving and "Linus" has been used regularly on the Thames track.

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These three locomotives have not only done great duty at Thames but have visited many of the other tracks in New Zealand. They have been easy to manage and reliable.



RATU and SQUIB under construction and unpainted.

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9. HST 125 Bo Bo. Petrol Hydraulic 7¼ g "Sting"

In the 1970's the HST (High Speed Trains) were introduced to the British rail tracks. They are a smart looking train diesel powered and designed to travel at speeds up to 125mph. I take it that is how they became called the HST 125. Again I had no plans to work from but managed to obtain outline drawings and photos off the internet. These were scaled for a 7¼ gauge model. It was to be my first venture into the hydraulic driven locomotives. I was rather keen to power this locomotive with a diesel motor and obtained a 5hp single



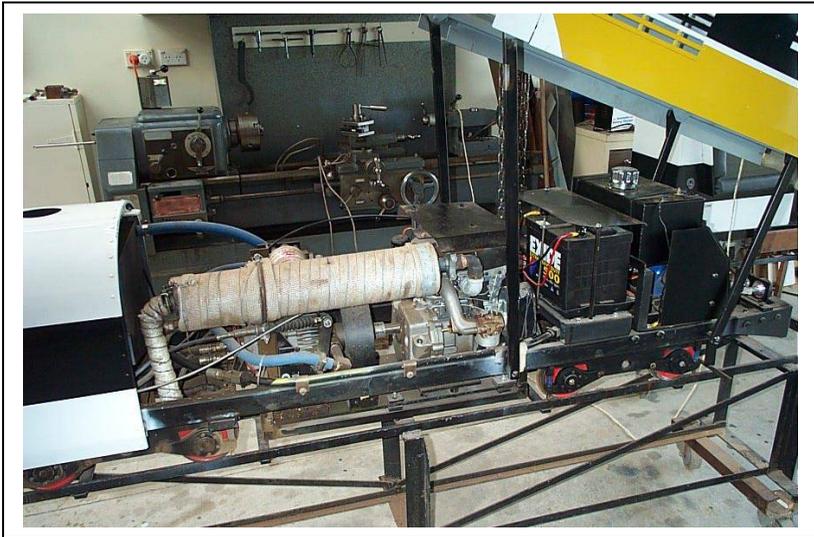
HST125 on the MLS track about to enter the station tracks.

cylinder diesel motor with electric start. This was coupled to an Eaton variable displacement hydraulic pump, which was coupled to two hydraulic motors in the bogies. Some licence was taken with scaling the model to accommodate the mechanics. Fortunately tests were done prior to me completing the body shell and it was found that the motor didn't produce its power until revving at over 3000 rpm. And when full power was required to move off the diesel

Miniature Trains - One Man's Dreams

billowed black smelly fumes that made me very unpopular. It was obvious that I had completely miscalculated the power needed, so I discarded the diesel motor in favour of a petrol motor, an expensive mistake. This posed a new problem.

The chassis was complete and the hydraulic pump was fitted. What motor would fit into the space that the diesel came out of? After much searching it was discovered that with minor modifications to the inlet manifold and resighting the petrol tank a 10hp Techumceh Motor would fit and line up for a direct drive to the pump. All that was needed was about 25mm of packing under the base. The motor was duly fitted and turned out to be the ideal match for the pump and power required. For most running it was able to be set at a fast idle and speed controlled by the variable displacement pump.



Front of the body raised showing Motor and battery. The hydraulic pump unit is hidden by the muffler. The rear hood covers the oil tank. Note the swinging arm axle mounting.

The body work was rather a challenge due to the compound curves of the nose cone. I decided that this would be best built with fibre glass. I had never done anything like this before so I sought advice from the experts who willingly told me it would be "a piece of cake"!

May be for them. Following their instructions I made a mould from timber and chicken mesh over which I placed layers of paper machie and plaster of Paris. This gave me something close to the shape I wanted and with much sanding, filling, cutting, and more sanding got it to a stage I could start laying on layers of fibre glass cloth and resin. A sticky mess but it soon resulted in close to the shape I wanted. Back to filing, grinding and sanding. Then more filling until a nose cone was formed to a thickness of about 3mm. It was then popped off the mould. Windows were cut out and perspex moulded to shape using gentle heat from the welding torch to bend it. After painting the result was quite pleasing. I now find that I would have

been better to have made a plug, from it a mould and then cast the nose cone in the mould. Perhaps next time.

The rest of the body was made of steel panel. One new feature of the design was the whole front portion of the body was hinged in a cam shell fashion that was able to be lifted clear of the motor and pump for servicing and fuel top up.

A suitable driving seat and control unit trolley was built. From the driving position three controls were at hand, Vacuum brake control, motor speed control and the hydraulic pump variable displacement and reverse control.

I did have one embarrassing moment with this locomotive



The three control levers. Left brake, centre throttle and right forward/reverse hydraulic control

when I took it to Manukau Live Steamers for their open weekend. As it was quick and easy to get on the track I was one of the first locomotives out. Fortunately there was not a lot of traffic about. I

Miniature Trains - One Man's Dreams

had just passed through the tunnel on the mountain track when I came to a grinding halt. On inspection I discovered the rear hydraulic motor had dropped down and was lodged under the rear bogie. It was with quite some difficulty, we got the loco back to the station. I discovered the 4 holding cap screws on the motor bracket had fallen out. No damage had been done. New cap screws were found by the MLS members and were fitted. I was back on the track within the hour. Had I never really tightened those screws? I may never know Following this incident and repair this locomotive proved to be very powerful and reliable. It was regularly used on our Thames track until sold to a member of the Lower Hutt Model Engineers.



10. EC 09 BoBo Electric 7¹/₄g "Omega"



EC9 in all it's splendour. Note the air tanks on the front and rear and how the bogies extend from under the body frame.

One of the first railways constructed in New Zealand was the Christchurch Ferrymead tramway. The deepwater port of Lyttelton was over the steep Banks Peninsular Port Hills and cargo was trans shipped to Ferrymead by barge over the dangerous Sumner Bar into the Heathcote river Estuary. A tunnel was under construction through the Port hills to alleviate this danger and give direct access to the port. In 1867 the tunnel was completed fortunately with dimensions for a broad gauge railway to pass through. Although the government decreed that all further rail developments were to be in 3' 6" narrow gauge this was laid at 5"6" gauge. For some years steam trains were used through this 1.5 mile long tunnel but the discomfort for drivers and passengers alike was extreme. Electrification was completed by 1929 and six 1500v DC English Electric BoBo locomotives were ordered. Electrification was no problem as the tunnel dimensions were adequate thanks to them being made to provide for the broad gauge line. These electric locos ceased running in 1970.

Miniature Trains - One Man's Dreams

Again the expertise of David Giles was called on as he had produced plans for a 7¼" scale EC. The designation EC was from the fact that they were Electric Christchurch locomotives. In fact these locomotives only once left the Christchurch vicinity when the railways were short of hauling power at Otira, after an accident with the "EO's", and that for a short time only.

As Dave's design could accommodate two motors it was decided to fit two 600w 24 motors and worm drive reductions. These with four 105 AH batteries created a very powerful and useful locomotive.

These motors were controlled by two 4QD 70 amp controllers in tandem. This was a good arrangement where by the two controllers track each other via the same control.

This locomotive gave new challenges. The bogies extend beyond the chassis at each end with small platforms on each bogie. Rather awesome, seeing the bogies outside the chassis, following the track while sitting behind, and driving the locomotive. With the overhead double pantograph and square lines of the body the appearance is rather unusual. Two pressure tanks are mounted on each end on the cab fronts.



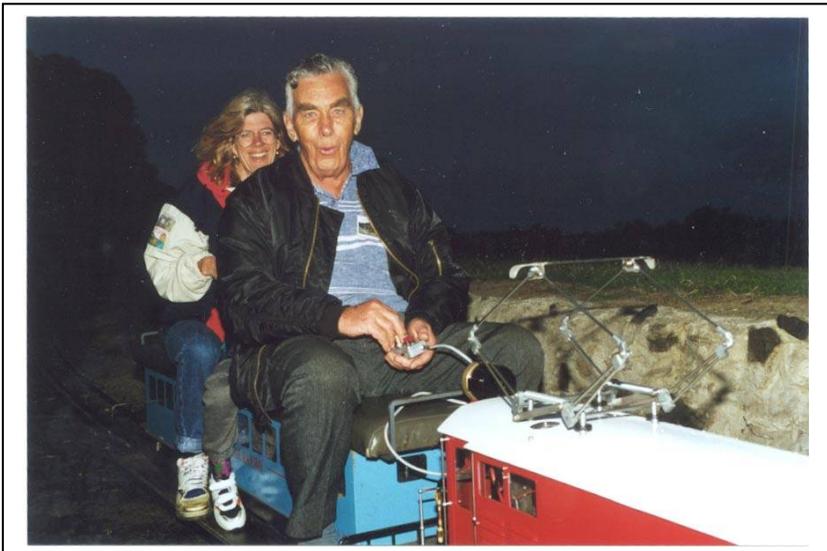
Gerry Whineray one of the founding members of TSGR driving the EC across the points leading into the station at Thames

Miniature Trains - One Man's Dreams

I wondered just how I would achieve a smooth curve for the roof panel, as it was nearly 1.5 metres long. Fortunately Prices foundry (famous for their foundry, engineering works and locomotive construction) are just down the road. Their large boiler plate rollers soon rolled the required curve. I wondered at the time how many boiler plates had been rolled by that machine.

Detailing a locomotive can make such a difference and I took extra pains to put as much detail as practicable on this locomotive without losing its versatility and ruggedness. At the time I believe it was the fourth built off Dave's plans and EC7, EC8 and EC12 numbers were used I chose to designate mine as EC9. It was given the name "OMEGA" as it was commissioned on the track on the last day of the millennium.

This became a very popular locomotive among our society members and many still say it was one of the best to both drive and handle that we have had. Reluctantly I sold this locomotive at a later time to continue my quest for the ultimate. It is now owned by a private track owner and one of our country members.



A night run with EC9. Neil Whisker at the controls

Miniature Trains - One Man's Dreams



11. DH 2839 Bo-Bo shunter 5" gauge "Deborah"

The DH locomotive is a shunting locomotive used at the Westfield railway Yards in Auckland. Six of these General Electric U10B locomotives were purchased by NZR from General Electric Company of Erie Pennsylvania, in 1978. These locomotives were designated as heavy duty shunting locomotives. Although they were purchased mainly for main line shunting in Auckland they were used on occasions on the commuter trains in the Auckland region.

An article about the rebuilding the DH in a NZ Rails magazine caught my eye. The headstocks had been redesigned for shunter safety and it looked a great locomotive to model.

It was about this time I began having trouble with my heart and was



Trans Rail DH in the workshop soon after the painting had been completed. The HST is in the background.

diagnosed for heart surgery. So it was decided that I would make this project a 5" scale one. I had been having difficulty transporting the larger locomotives and hauling trailers about was no longer a bright idea. This proved to be a wise decision as I had not long started on this loco when I was admitted to Waikato Hospital after a bad

weekend and under urgency. Within a few days I had a quintuple artery bypass operation on my heart. This occurred on 8th December 2000. For some months the building of my health took priority but the workshop was a great attraction and incentive to get well.

Prior to this forced interruption I had almost completed the bogies for the DH and a fair amount of the panel work. I had been fortunate to locate and purchase two 400w EMD 24v motors however these had to be coupled to the wheels some way. The club locomotive



DH power bogie. Shows the motor mounted vertically through the trunion and pivot.

purchased a short time before had an unusual method to get the drive to the axles by using angle grinder gear box with the shaft through the bogie pivot. Having a burnt out angle grinder I approached the local electrical shop and in their discards found another identical angle grinder. This gearing gave me a reduction of approximately 3.2 - 1 from the angle gears. With a further 2 -1 reduction by chain drive to the axles it seemed about right. I was able to mount the motors vertically and using the EMD rubber couplers connected the motors directly to the angle grinder motor shafts that I had modified and mounted appropriately. These drives have proved to be very reliable and although one is a little noisy when decelerating it does give an authentic gear wine and you slow down.

After a break following the operation it was real therapy to be able to get back into the workshop even if it was only for short periods. I have always adopted the policy that a little done each day however small brings the end closer. Surprisingly things came together quite quickly.

Most modellers requiring a piece of equipment that's either too expensive to buy or cannot buy will make it. During the construction



This view shows the louvers that a special punch was made to form.

of the DH I found that I needed to make some small louvers for the side panels. These could not be purchased in a suitable size so I made a press die and pressed them myself. Although I made a driving car in 5" gauge I seldom use it and prefer to pull a 7¼" ride car especially when on a ground level track. This has been a much admired locomotive and at the time of writing is still in my possession.

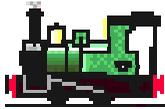
While still being cautious as far as my health is concerned I have found the workshop has been a great

rehabilitation exercise.

One weekend while in Auckland I called with the DH at the ASME track and found the two locomotives on duty struggling to cope. I soon had the DH unloaded and ran 3 hours continuously helping with the passenger hauling. It is a great little loco!

Recently she has named "Deborah".

Miniature Trains - One Man's Dreams



12. DXR 8007 CoCo "Dexter" Thames Small Gauge Railway Locomotive

The Thames Small Gauge Railway, over its developmental years has been very reliant on members, locomotives and rolling stock. The club had purchased an electric loco a few years ago but it was



Trans Rail DXR before being lifted onto the trailer for transporting to the club track

decided that another club locomotive was needed. I mentioned previously, the membership is made up mainly of people with a railway and train interest but few with modelling or engineering experience.

I therefore undertook to build a suitable locomotive and the decision was made to build a model of the Trans Rail DXR in 7¼" gauge.

The DXR locomotive is the most powerful diesel/electric of the Trans Rail fleet. It was developed from the DX which previously was only exceeded in power by the EF electric locomotives. With the development of the single person manning of trains the cab designs left a lot to be desired so a development team was commissioned to

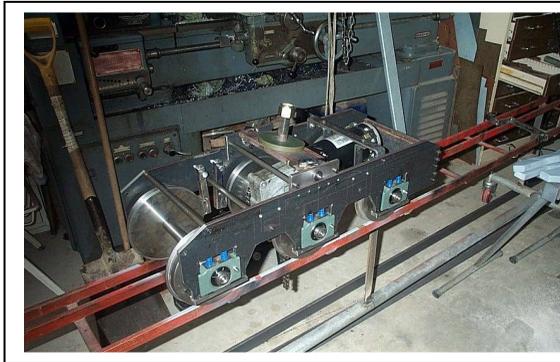
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create a universal cab design. Drivers, engineers and management combined their thoughts and came up with a new design for single handed manning and for easier driving. This experimental cab was fitted to a modified DX. This was further upgraded in both power and gearing modifications to make it even more powerful than the EF electric locomotives. This was designated the DXR, the R being added for rebuild.

This meant our model would be 3 metres in length 600mm in height and 480mm wide and nearly 500kg.

Power was to be provided by six 12v deep cycle batteries. The estimated cost of materials was \$10,000.00, using two 1000w EMD 4 brush 24v motors, powering all wheels and two electronic controllers running in tandem. Full vacuum braking was to be provided.

The locomotive was to be easily serviced by club members.



DXR Bogie Motor below trunion and Brake cylinder mounted at right hand end.



DXR platform, shows battery well.

The club was regularly putting aside monies for the construction of this loco and we were fortunate to have grants from various charities of nearly \$4300.00, so a start was able to be made. This was heavier construction than I really wanted to undertake. I had however recovered

sufficiently from my heart operation and also installed a chain block

Miniature Trains - One Man's Dreams

in the workshop on an overhead rail. It was used many a time during the DXR Construction. A start was made on the bogies. Wheels were turned creating copious amounts of swarf. Interestingly this swarf was later used by my daughter and her friends, for floral art work. The bogies looked quite impressive as parts were added and braking on all wheels was fitted. The chassis pan was folded from 2mm electro-galvanised steel in two sections. These were joined on a sturdy angle iron chassis. The well that was formed where the fuel tank and normal battery box on the DXR are placed, were made into a well where 4 of the six batteries could fit. This lowered the centre of gravity considerably.



Built up cab structure for the DXR.

As the DXR cab is made up from several flat sections it was not difficult to construct, from 1.6mm steel and weld together. For easy access, to all the mechanical and electrical bits and pieces, the body panels are hinged on each side. Within the bowels of this

locomotive, is a sound generator, constructed by my good friend Ted Barnes of Inglewood. This gives the locomotive an authentic diesel sound with an idling engine at rest and increasing speed as power is applied. Within the sound generator is an electronic diesel horn sound. A hinged and balanced top allows easy access to the batteries and electronics for maintenance.

I am not sure what spurred me on but by October 2001 the DXR was ready for the track. It has proved a reliable, popular and good hauler

Miniature Trains - One Man's Dreams

of passengers. Recently the club voted that it be named "Dexter" which seems quite appropriate.



13. EC9 5" Bo-Bo Electric "Lucy"

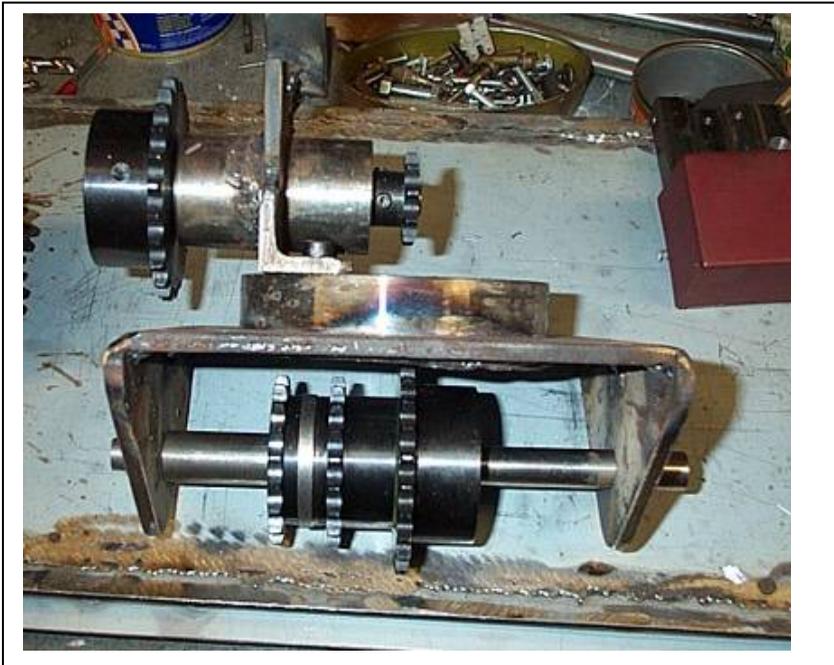
Some time ago a neighbour purchased a Toyota bus and converted it into a motor home. The air conditioning unit from the bus was removed and from it came two 24v fan motors. Each of these motors are rated at approximately 400 watts. As these motors were surplus to requirements they were passed on to me to see if they would be suitable for a locomotive. Another challenge that could not go unanswered.



"Lucy" 5" EC9 nearing completion

Miniature Trains - One Man's Dreams

I had always been sorry that I sold my original EC 9 in 7¼" gauge. This time I was limited to a total length of 1.5 metres, for transportation. When I took the 7¼" sizes and reduced them by one third that problem was solved. Now the challenge arose, how was I to get the drive to the wheels? After much thought and time spent at the drawing board I decided that chain drive reduction would get the wheels turning at the correct speed and be relatively easy to build. I had on the DH driven the wheels through the bogie pivot, so why not mount the motor on the pivot above the chassis and the chain drive could go through the pivot to the bogie below. With the pivot 105mm diameter with a 100mm hole this was no problem.



**The chain drive goes through the trunion to the bogie below.
Both axles are driven from the double sprocket on the left**

Miniature Trains - One Man's Dreams

Building it in the smaller scale posed a few problems especially as considerable room above the chassis is taken up with the motors. Because of the constraints of space this locomotive uses a single 4QD controller and two 65 AH batteries.

Hydraulic brakes, which are operated by a lever, from the rear driving position, have been fitted to all the driving wheels. A single ammeter monitors the current draw.

The pantographs were an interesting project. The knuckles are machined out of aluminium bar and the rods are stainless steel. To get the appropriate sizes the drawings were reduced on the photo copier from the 7¼" scale drawings.



Hydraulic braking system with steel shoes and Holden wheel cylinder.

Handrails on this locomotive make all the difference. The supports were machined from brass using a form tool made from an old file.

I had in fact started this locomotive prior to building the DXR for the TSGR but as I had not then decided on some of the features put it aside and did not take it up again until I had completed the TSGR ride cars.

I have tried to standardise the hand controls on all the electric locomotives. While they are not interchangeable because of using different controllers they all work in the same way. A rotary control controls the speed with an automatic return to zero. The horn, and

Miniature Trains - One Man's Dreams



Pity there are no overhead wires!

reverse switch are also on the hand piece. The hand piece is connected by cable to the locomotive giving flexibility for the drivers seating.



14. Passenger ride cars

A locomotive is of little use if it has nothing to haul especially if the driver is relying on the passenger cars for their seating also. At last count the number I have built has exceeded 20, three of which were for 5" gauge and two have been dedicated drivers ride cars. A very good and reliable ride car, was designed by David Giles and this design although varied a little has formed the basis of many of the ride cars I have constructed. The main feature of the design is every wheel rotating independently on its own bearings. This reduced friction considerably. One problem encountered with any ride car in our gauge is the springing. To get this to be ok for both loaded and unloaded ride cars is not easy. Too heavy a springing, and they will not track when light. Too light a springing and they will not track when heavily loaded. There are many theories and ideas to fix this problem but it really is caused by the weight of ride car ratio to load weight being far too high.

After completing the DXR we became aware that we did not have enough ride cars. At this time the AME magazine came out with a



Various ride cars at Thames track

design used by one of the Australian clubs and had proved very successful. It was made using the full length of a sheet of 1.6mm steel. This was folded to shape to form the body. This gave a ride car length of 2.4m over our other cars of 1.8m.

These not only looked good, but had a good report. I was commissioned by the club to produce a prototype for appraisal.

While I made a few modifications to the bogie design to fit materials available in New Zealand and what I thought were some

improvements, they basically were built to the design as published. The prototype proved very successful so I was commissioned to build 3 more. Again we were fortunate to have had a grant of \$3000 toward them from the local community trust so we were able to proceed.



**Bogie trunions and side plates
ready for assembly.**

Again the workshop was bathed in swarf from turning the 24 wheels. It is one thing building one ride car but doing another three at once was a big undertaking. I must say they came together in reasonable time and the local Toyota car plant sponsored the painting of them. The painting really finished them off in style and will stand the wear and tear of time. Folding of the panels was contracted out.

When we brought these new ride cars on to the track we found severe trouble with them derailing on certain parts of the track especially when loaded. Why was the first one ok and these others which we had made pretty much identical giving trouble? The generosity of the local motor reconditioner had been exploited for the springs. What we did not realise that it needs only slight variation on the diameter of wire they are made of to alter their compression value. After some sleepless nights and much thought and experimentation we found that the springs on the 3 new ride cars were too light and compressed with just half the weight of No 1 ride car. Unfortunately to get 12 equal and stronger springs meant we had to buy them new. Thanks to Holden V6 vehicles the valve springs proved to be just right. These ride cars have now been in use over 6 months and prove their worth each running day.



15. Jiggers and other bits

This would not be complete without mentioning the three jiggers I have constructed and the work trolley. Hand jiggers have been a very real part of the NZ rail scene. Some time ago between locos I built a 7¼" hand jigger. While

it was successful we found it got little use and became a bit of a nuisance on the track holding up the revenue earning trains. I had it only a short time and sold it to one of our members who has a private track. More recently one of our members, Tui requested that I build a jigger to entertain her grand children. With the

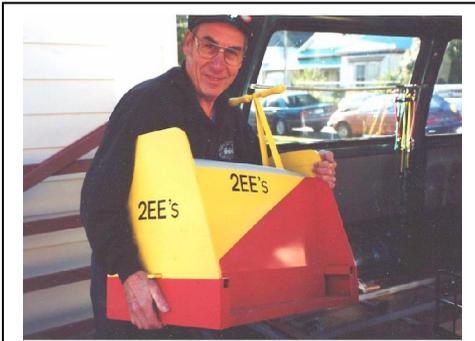
experience of the first one under my belt I designed and completed it in a few weeks. For some reason it became very popular, perhaps

because the children were a few years older.

The construction of this became a feature in the AME magazine. Another jigger I constructed used the wheels and chassis, slightly modified, from a discarded 5" electric shunter. I had a spare surplus 300W 24v motor and reduction drive so fitted it up with two batteries and controller. This was able to convey



Work Trolley with Petrol Generator.



A jigger for Tui. Thus the appropriate name

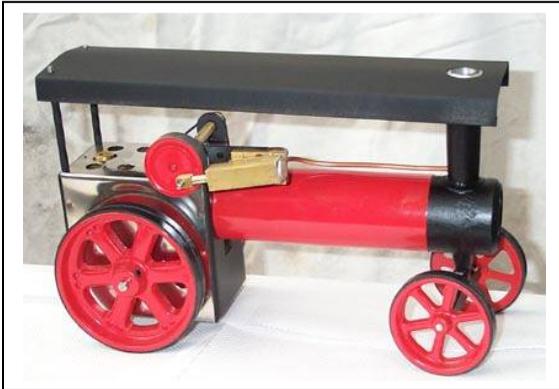
Miniature Trains - One Man's Dreams

one adult or two children around our track. This I have sold.

When we were carrying out maintenance of our track it was always a big job getting the power generator to the site from the station. I had a spare set of castings for tender bogies and a set of wheels so soon put them together with a frame and mounted the generator on top with a suitable carry box for tools and equipment. This has proved invaluable when welding at the extremities of the track. It is usually shunted with one of the locomotives to where it is required.

I have not been involved in a lot of modelling outside the locomotives so when the International Convention for 2002 came up with a traction engine challenge I thought it would be a personal challenge to enter. Palmerston North Club provided a set of castings and within limitations the rest was left to you.

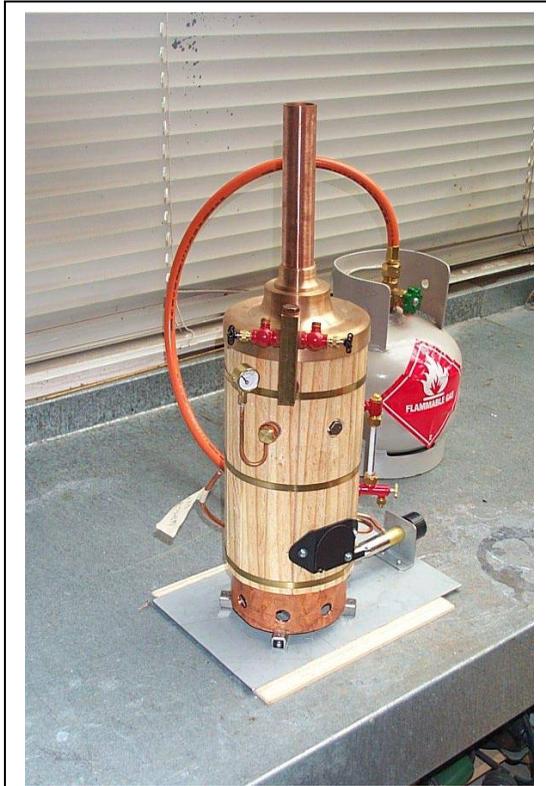
Ten models were constructed from the castings. When we fired up at the convention disaster struck. I had spilt meths' on the ground and put the whole thing on fire making quick work of the rubber drive belt and damaging the paint. My pride was thus dented.



**Traction Engine entered in Convention
traction engine challenge 2002**

Miniature Trains - One Man's Dreams

A friend who is a keen modeller of the Stuart steam engines required a source of steam to run his creations. I undertook to build one for him. It was a vertical boiler, which I completed over a period of a couple of weeks. While it was not a difficult job it was a new challenge especially as he wanted it to be fired with LPG. A small camp cooker was sacrificed to get a suitable burner. It holds about 1 litre of water and takes about 5 minutes to come up to steam.



LPG fired vertical boiler made for friend

As at this time I have received the plans for the "Les Moore Memorial Challenge" Steam crane challenge for the 2004 Model Engineering Convention I now have the boiler completed.



Crane Boiler ready for fittings



16. Club Locomotive - Henschel overhaul



Henschel prior to the club purchasing, at Havelock North.

This locomotive was purchased a few years ago when it was realised that it would be good to have a club locomotive available at all times and not totally rely on the members generosity. With the station complete we now had suitable storage. Many members do not have their own locomotives and relied on the members to allow them to drive theirs.

This locomotive is of unusual design and was built by the Late Graham Brogden and the late Dave Osborne of Havelock North. It's design was German from the Henschell locomotive works.

It was purchased from the estates of these gentlemen after being idle for a year or so. When purchased it was powered by a 5 hp petrol motor driving an alternator. This system charged two deep cycle batteries, which fed 24 volts to four Sinclair 12 volt 250 watt motors. These drove via V-belts to the drive system and on to the wheels. We found the petrol motor was close by the driver who sat within the confines of the locomotive body. As we wanted this loco to be as simple as possible to handle, we decided to fit extra batteries and discard the petrol motor. This has proved to be a wise decision. The

Miniature Trains - One Man's Dreams

gearing was quite low and the V-belts (two per motor) were fighting each other so we decided to re gear and fit chain drives to replace the V-belts.

Henschel has proved it worth in popularity and as a good work horse. Following the completion of the new ride cars it seemed appropriate to give it a complete overhaul and repaint. Axle bearings were replaced, vacuum and hand brake were fitted and the wiring was completely replaced with more adequate weight wire. This is a solidly built locomotive that holds the track well. Henschel is now back on the track once more earning it's keep and looking splendid in its new coat of paint.



Sereena Burton at the controls of newly painted Henschel. Two of the new ride cars are in tow.



17. Thames Small Gauge Railway Society Inc

Since the inception of the Thames Small Gauge Railway in 1993 I have been privileged to be the president. Three model engineers, the Late Alan Bott of Paeroa, Gerry Whineray (then living in Thames) and myself were encouraged by the manager of the new Goldfields Centre to make overtures to the Mayor to see if a suitable area would be available for us to construct a miniature railway. While Goldfields Centre could not give us financial support they gave us moral support and in fact helped us in our approach to the Council. The idea was received with some enthusiasm but many reservations as to whether we could make a go of it. Thames is a small town of



A pretty view of the station and track with the Pohutakawas in bloom on a December morning.

between 7500 and 8000 people and most other tracks are in the cities and some of those are struggling. A meeting was called to gauge interest in the idea and over 30 people showed an interest. The Thames Small Gauge Railway Society Inc was formed and I was

Miniature Trains - One Man's Dreams

elected president. So began several years of hard work, deputations to community board meetings, raising money and convincing the community we were serious.

Although there were some objections and fears we would frighten away the birds on the foreshore, the Community Board gave us a 2 year lease on a section of the Brown Street reserve. We had this period to prove ourselves. A small dual gauge track of 137 metres was constructed. It had one set of points leading to a loading ramp and a passing loop. Mostly second hand track was purchased. This had to be dismantled and re welded to our 5" and 7¼" gauges. By this time we had recruited some other members and about 20 stalwarts dug, ballasted, laid, welded and set up the small kidney shaped track. Eventually the track was joined and we were able to show off our pride and joys to the public and give rides. We had several steam trains available at that time and ran regularly each Sunday afternoon. The gazebo was erected, picnic table put up and tea and coffee was provided to the members from thermoses.



It's all hand to the job. Laying the original 137m track in the Brown Street reserve Thames



18. Station and permanent track



Open Days are held on the 3rd weekend of May each year. Visiting Locomotives from Auckland and Palmerston North about to leave the station

When the two years were almost up we approached council with plans to extend the track along the Brown Street foreshore, build a station and steaming bays, turntable and the associated track. The area designated for the station was to be about centre of the dog bone shaped track in a rather low swampy section of the reserve. I think the Community board was impressed with our enthusiasm and saw we were serious with our proposal. Permission was granted to proceed and a 20 year lease was given the society to use the land.

Raising of funds and sponsorship became a major task as we had raffles, put on old time dances, had garage sales and pestered the local businesses to give us some financial support. Applications were made to community trusts and the Lotto Grants Board for funding to build the station. Many people came to our aid and from the drawing of the station plans, to materials and labour. We had a tremendous

Miniature Trains - One Man's Dreams

response. There was one big issue that arose and that was the fact we were in a heritage area. The Community Board had brought in planners for the whole area and although they fully supported the railway insisted the station be built in heritage design. We were fortunate to gain the help of my son-in-law Terry Koumakis who is an architectural draughtsman so this really posed no problem when he came up with an acceptable design. The station building was under way at the beginning of 1996. It took almost 12 months to complete. Donations of timber, concrete blocks, other materials and labour from tradesmen was sought and given freely. Members pitched in and the ladies provided the refreshments. By January 1997 we had started to lay some track around the station when disaster struck. Combined with an extremely high tide cyclone Drena struck the firth of Thames. The embankment on which the Brown Street reserve sits is the old rail track bed between to old Grahamstown Station in the North and the Shortland Station at the South of Thames. This runs alongside the firth which is a very flat tidal estuary. The station was about 12 metres from the edge of the



The flooded track after cyclone Drena in January 1997

Miniature Trains - One Man's Dreams

embankment. At 8am the water topped the embankment and with a westerly wind the waves started to encroach on the station area. The station was sand bagged and fortunately the tide turned as the water rose to the first step level. Fortunately we did not get the station flooded but the whole area was a disaster site. Many of the residents nearby were flooded. Our ballast had been washed out. The council engineers decide there and then to construct a bund along the foreshore, about 500 metres long, to stop further water flowing into the area. Working through the day and the next night trucks dumped tons of rock along the front of the station constructing the 600mm high bund. We hastily lifted our newly laid tracks. We were somewhat devastated.

Good however came out of it. Any further progress was curtailed for another six months while the bund and sea wall were completed. Our track was repositioned on the inside of the bund to the south and climbed up onto the bund as it travelled north. This ended up giving us a more interesting track with a small rise to the bund top.

Hands had not been idle as in the meantime prefabrication of 3 metre rail lengths proceeded in my old workshop. I think I personally



The last few sleepers are laid to join the track.

Miniature Trains - One Man's Dreams

constructed over 120 sections.

With the aid of task force workers the track bed was dug and ballasted. With the extra help we soon linked up with our existing track and started to use the 600 metre south section of the new line. This unfortunately meant turning the locomotives after each run until we came up with the idea to put a locomotive at each end of the train. Fortunately a hydraulic single ram car hoist had been procured and had been installed as both a turntable and a hoist to lift vehicles off trailers and to the steaming bays.

By the end of the year we had started on the building of the track north of the station. We had discovered that it was easier to weld the sections of track in place and to this end were joining 3 six metre sections together. There are approximately 60 sleepers in such a section and this involved 180 welds. I had been doing quite a lot of the welding when my back said "NO MORE." I was diagnosed with sciatica. It could not have come at a worse time. However other club members stepped in and while I watched impatiently took over the



The Mayor Alasdair Thompson cuts the ribbon at the official opening of the track in 1998.

Miniature Trains - One Man's Dreams

track laying. By March 1998 the northern loop was complete. We had previously completed two bridges over a rather swampy piece of ground and we could now make a complete circuit of the track. With other minor additions we planned the official opening in May of that year. It was a grand occasion with the local band present, 25 visiting locomotives from other clubs around the country. The mayor cut the ribbon and the track became officially open after nearly six years of hard work.

It is fitting that I pay tribute to those who worked hard and consistently over those years to make this dream come true. Some of the older members although limited in their physical ability nevertheless were consistently enthusiastic and helped as far as they could.

Over the following years' the track has had turn out's added, extra sidings and a wooden storage tunnel built between the two bridges on the northern loop. The 16.5 metre, curved wooden tunnel has proved invaluable for storing our ride cars. Two tracks enter the station building from the northern end and give us storage for our club locomotives.

One of the features of our track are pohutakawa trees that on the southern section overhang the track. Due to the bund being constructed our track had to be sited under these trees. While beautiful this does cause some problems with track maintenance. The nature of these trees is such that they shed small twigs throughout the year and while many of the twigs simply break under the wheels of the trains, many are big enough to derail the carriages. Vigilance is needed when driving. Another problem is with the tree roots that are under the track. Over the 4 years we have noticed places of growth and the track forced up due to these roots. As these trees are protected care is required in any cutting of branches or roots.

Miniature Trains - One Man's Dreams



19. Train Goes to Church

At 18 I became a committed Christian and my life has centred on this commitment. My church has played a big part in my life. As a lay preacher this has involved taking the occasional service. One family service I was asked to take the message.

I have always considered illustrations with actual things gave good impact. At the time I was still in possession of the Simplex locomotive. A suitable section of rail was laid across the platform at the front of the church and "Lady Alison" with her ride cars was placed on the track.

It is quite amazing how great an illustration that little locomotive was as I used similarities to living the Christian life to the facts of running a locomotive.

The outline of the message was as follows:

1. I built "Lady Alison" I know all about her, love her and put every piece together. Because of that if anything goes wrong with her I am the best person to ask how to fix her. God made us and knows all about us so when anything goes wrong in our lives He is the best person to go to find help with our problems.
2. Before "Lady Alison" is able to be of any real use, other than just to look at, there are some things I must do with her. I must fill the boiler with water to make steam. I must get some coal in the fire box and make a fire to heat up the water. I must take an oil can and make sure all the joints and bearings are well lubricated. God in the same way helps Christians by filling them with knowledge of Him from His word, by lubricating their lives through prayer and by filling them with the fire of His Holy Spirit to empower them.
3. Because I know so much about "Lady Alison" I am the best person to drive her. I will take care of her, not drive her too fast and will keep her clean and remove the clinker from the fire box. God is the best person to take charge of our lives for He knows how to take care of us

Miniature Trains - One Man's Dreams

and when we do wrong. He will forgive and cleanse us from sin when we confess it to Him.

4. "Lady Alison" was made to work hard and serve others by pulling her carriages and taking people for a ride. Sometimes she struggles when on an up hill climb and other times coasts down hill with ease. Life is like that as God made us to serve firstly Him and then others. Sometimes it is hard but the rewards are great.
5. When I am driving "Lady Alison" I need to let her know when to go and when to stop. I needed to make sure "Lady Alison" obeys the signals. Red lights tell her to stop and the green lights tell her to go. She needs to pay attention to what I tell her with the levers. God s needs to tell us when to stop so we don't get into trouble and what it is right to do. He shows us in His word how important it is to do what is right and honest and listen to His commands.



"Lady Alison" on the platform of St James Church in Thames for family service illustration.

I have enjoyed the occasional preaching engagements. It has allowed me to illustrate in a practical way my faith and Love of Jesus Christ.

20. Where to from here?

At 66 years I can still look forward to a few more years. I would like to build a Quorn Cutter Grinder and a hot air traction engine. No doubt I will be called upon to do small jobs for friends. Who knows what then. Perhaps stamp collecting will seem a good idea.

At the time of publishing this book Alison and I are getting ready to move to Tauranga. This will mean saying good bye to the workshop and consolidating some of my machinery into a smaller area. I will leave with no regrets of the wonderful times I have spent in my Thames workshop and will continue my modelling, though it will be, on a smaller scale. Our present trains will go with us and no doubt in due course will be seen plying the tracks of the Tauranga Model Engineering Club.



Miniature Trains - One Man's Dreams

The following sections were written after moving to Carmel Country Estate Tauranga, where we have resided for the past 4 years



21. Tauranga

In March of 2003 we moved to Tauranga in the lovely Bay of Plenty. After a few weeks of flatting we moved into a Unit at Carmel Country Estate Retirement Village. Prior to leaving Thames I had sold most of my workshop machine tools as at that stage saw no possibility of accommodating them at the village. As it was I had a small alcove built into the garage to accommodate a workbench and a small lathe. The village was still in the developmental stages and on the property was an old cow shed that some of the residents were using for storage. I managed to find a small space there to store one of my trains while the DH was able to be stored in the garage of our unit.

It did not take me long to acquaint myself with the Tauranga Marine and Model Engineering Club who have a multi-gauge track in Memorial Park where they run their trains each Sunday. It was easy to integrate with this club as I had known several members previously.

It was not long before I started to miss my Thames workshop and although I acquired a small lathe it was not very satisfactory working in the attached garage. I did a bit of pottering at home and enjoyed running my two 5" locos Ec09 "Lucy" and the DH "Deborah". The village developed very quickly and it was not very long after we came to it that the Community Centre buildings started. This is a complex to cater for the needs of the village residents and incorporated in the plans was a lovely large workshop area in the basement.

The management gave several of those interested, the job to set out the workshop. Two woodworking benches and a metal working bench were constructed. While several bits of machinery were acquired by the management we were allowed to bring our own equipment into the workshop and set it up. This was like a green light for me and several others.

The workshop now has a large saw bench, Drill press, Metal and Wood Lathes, band saw, metal cut off saw, electric welder, vertical milling machine and several other items of machinery donated or privately owned. For some reason I seemed to be placed in oversight of the workshop and this has worked well. Several of the village men

Miniature Trains - One Man's Dreams

use the workshop on a regular basis. Originally the workshop for
woodwork and engineering was one of the same. With the dust
problem from the timber it was soon found necessary to divide the
engineering area off with a suitable partition and doors.

Another spin off was that the swarf has less of a chance of getting
into our unit much to Alison's delight.

With this in place it was all I needed to start building train Number
14.



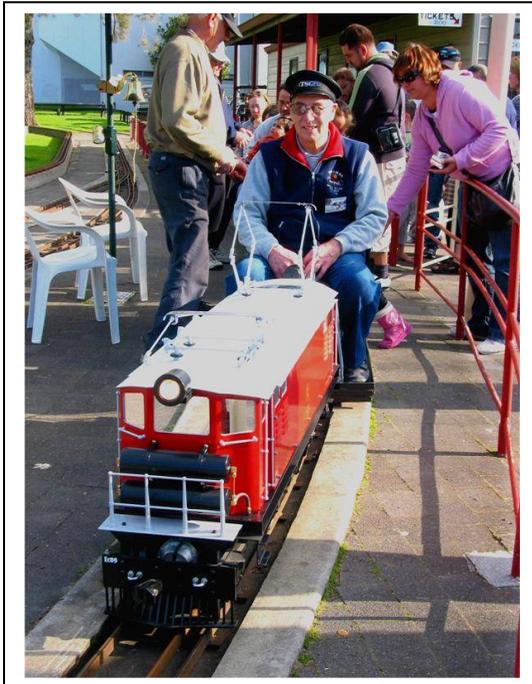
Carmel Country Estate Engineering Workshop



22. EC09 7¼” Gauge “Jesse”

I was always sorry that I had parted with my previous 7¼”g EC. It was a nice locomotive in appearance and to drive with ample power. There is always some sort of attachment with the locos one builds especially when they have given good service and stood the test of time. I even think Alison sometimes has regrets when they are sold to finance the next one.

As was usual I set about obtaining suitable motors and ended up with two 1000w 24v EMD 4 brush motors with worm drive reduction. These are controlled by two Dynamic controls DS100 controllers with power supplied from 4 x 6volt 210ampere hour batteries.



EC09 at Tauranga waiting loading

Miniature Trains - One Man's Dreams

Having been through the procedure before, construction was reasonably quick. There was considerable interest created amongst the Carmel Country Estate residents in this locomotive's construction..

I added the extra luxury of having vacuum engine brakes, separately controlled from the hand control box and a hand brake.

The body paintwork was powder coated to give a fine paint finish. As powder coating is done at 180 deg C some of the smaller glued parts had to be finished by spray painting.

In all construction took about 6 months. I was well pleased with the result. While this is a bigger locomotive and required some seat removal from our vehicle to transport to the track it is nice to know that the extra power is there when needed.

As a result both the DH "Deborah" and the EC09 "Lucy" were sold to new owners.

Deborah is now the main locomotive at a commercial operation north of Auckland and Lucy has gone to Auckland.



23. Prices Shunter “Big Yellow”

The Tauranga Club locomotives have had a lot of use and were starting to show their age with frequent maintenance needed and breakdowns holding up the regular running. It is a busy track and regularly will take 600 rides plus on a Sunday run.

The club had been in the process of building a “Prices” 6 wheel Shunter. Progress was rather slow so my offer, in a weak moment, to complete the project was accepted. Most of the chassis and running gear was in place. An 11 hp motor had been purchased and it was proposed that this drive an EATON 7 hydrostatic drive. Due to the size of the motor and other various constraints I decided to modify and reverse the control end of the loco. This meant that the motor was behind, instead of forward of the EATON drive. These drives have a habit of overheating and avoiding the motor heat flowing onto is essential.



“Big Yellow” Ready for the track

A few changes were made to the gear ratios of the drive chain and provision was made for a vacuum pump for brakes. A separate alternator was fitted.

While the outline roughly represents the “Prices” shunter it departs considerably as the wheels are interconnected by chains and not side

Miniature Trains - One Man's Dreams

rods. The body has been designed to fit over the mechanics and the end result is quite a pleasant looking locomotive.



Big Yellow controls

I fitted out the driving end with a gated control lever for which forward and reverse control is obtained, hand brake, train brake control, Hydrostatic Dump valve control and instrumentation. This loco is now in regular use at the track.

I recall having done a test run of the chassis at the track and after transporting “Big Yellow” in our vehicle a strong petrol smell was evident. It did not impress Alison at all and thereafter “Big Yellow” was transported on a trailer.



24 . 7¼” Gauge Steeple Cab Loco. LUCIDA”

In any model engineers workshop bits and pieces seem to accumulate over the years. While I was contemplating my next project I realised I had a couple of decent sized motors that could be used for another electric loco. Coupled with the idea of making a simple to build 4 wheel workhorse I was soon over the planning stages and cutting steel. I had decided that this would be a steeple cab shunter with an imitation pantograph . The batteries accommodated in the centre cab section and the motors mounted vertically front and rear in the forward and aft sections. As a departure from making my own axle boxes I opted to use modified UCT2 bearing housings used for take up bearings.



“Lucida” ready for its first run at Tauranga

The locomotive was completed over a period of 12 months and in spite of it’s smaller size and being only 4 wheeler it became a regular hauler on the Tauranga track.

Miniature Trains - One Man's Dreams

The Steeple cab locomotive was powder coated in a burnt orange which is not unlike the real thing

I learnt the value of building out of robust and strong materials when one day having returned from a run at the track I unloaded “Lucida” onto its stand. How, I left it unchecked, with brake off, I do not know. We heard a loud crash from the garage and found the loco had run forward, off the stand and onto the floor on its side. Fortunately no damage other than a bit of cosmetic damage was sustained. A valuable lesson was learnt that day,

It is perhaps not one of the most attractive locomotives I have completed and I doubt if Alison would have given it any prizes. In spite of that it was awarded the Norm Decke Memorial prize at the Tauranga open weekend 2006.



With three ride cars on tow the locomotive is hauling a happy crowd of passengers at Tauranga



25. EW 1803 in 5” Gauge “Ruby”

In October 2006 I embarked on what probably has been my most ambitious and challenging project, other than the steam locos, the building of an EW electric articulated locomotive. In actual fact this was prompted by a friend making such a suggestion and who was also thinking of building such in 7¼” gauge.

Because of size constraints I chose to build mine in 5” gauge which has been a wise decision as it is over 2.5 metres long.

These locomotives were introduced to the NZR rail tracks in 1952 in the electrified Wellington area. The Tawa deviation had been opened and with two substantial tunnels the need for more powerful electric locomotives was obvious. Seven 1340kw, Bo-Bo-Bo articulated EW locomotives built by the English Electric Company were ordered. With all axles driven these were the most powerful locomotives on the NZR network at the time. With driving compartments at both ends, no turning of the locomotive was required.



Wheels , Axle-boxes and Motors for EW

When I started I had only some outline drawings and photos to go by so drew up plans of the bogies to the 5” scale.

Construction was started in October 2006 by turning the twelve 120mm diameter wheels, planning and designing the bogie frames to resemble the real thing and having the frame sections laser cut.

A building platform and rail was constructed and soon progress was evident as the bogies came together. At that stage the springing

Miniature Trains - One Man's Dreams

requirements were not fully known and this eventually worked out to require 4 leaves of spring steel 1mm thick x 12 mm wide for each axle.

It was decided that 2 of the three bogies would be powered by a chain reduction drive, by four 18a 24v motors mounted above the platform and driving by chain through the bogie trunion pivot. The un-powered centre bogie was fitted with a vacuum brake.



The three bogies showing how motors are mounted

The floor pans were formed out of 2mm mild steel plate. It is upon these that most of the electrical components are mounted.

Four 100ah 12 v batteries provide power for the motors. These are wired to supply 24v to the motors.

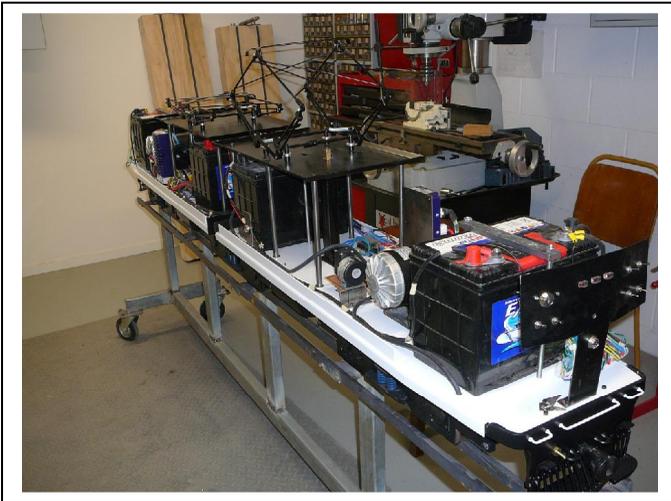
The under floor air tanks have been reproduced and two are used for vacuum tanks for braking. For this purpose a small industrial 24v vacuum pump was purchased, this supplies vacuum for the locomotive. Braking and pantograph operating vacuum is drawn from this supply.

Miniature Trains - One Man's Dreams

Pantographs are mounted toward the middle and rear of each section. These are on suitable platforms which span one of the two batteries in each section.

The pantographs were pieced together from machined sections of brass which were then silver soldered together, and powder coated matt black.

Power is supplied to the wheels from the two coupled 24v motors which are controlled by two Dynamic Controls Rhino 110A controllers. These are controlled by a quadrant on the hand control.



Battery and pantograph platforms

Braking vacuum is supplied from the tanks to the appropriate brakes via a solenoid valve to apply or release the brakes as appropriate.

Twin two tone 24v horns are fitted in the front section.

The body sections were produced from a plug manufactured from custom wood. The shape was formed with the custom wood and a suitable mould was created from the plug. From this two identical body sections were moulded. The windows and other openings were later cut and formed in the mouldings eventually ending up with two identical sections.

Miniature Trains - One Man's Dreams



Painting is complete and awaiting its debut run.

The rear section houses the control panel and now is the driving end for the model. It has the various switches housed in the window openings.

Through the centre window are two current indicators for each motor sets and a battery condition meter. Below these is a vacuum gauge indicating vacuum in the reserve tanks.

An 8 pin socket in the centre of the rear section connects the hand control which has the speed control quadrant, two speed controller status lights, horn button and two brake switches for locomotive and train braking.

A suitable digital speedometer is fitted and is mounted behind the rear pantograph and may be removed for safe keeping.

In the rear of each section there are battery isolation switches which are switched off when charging the batteries or when transporting the locomotive. Motor isolation switches are under each controller and are accessed only by removal of the body section.

Miniature Trains - One Man's Dreams

The front and rear sections are electrically connected by a 14 pin plug and socket, and pneumatically connected via a 3/16" vacuum hose.

The rear section is provided with a wind down jockey wheel set that lifts the rear section ball joint off its pivot and allows transporting the locomotive in two sections. In operation the jockey wheels disappear behind the vacuum side tanks.

In operation the two sections are joined by a set of bellows which cover the gap between the two units. These were kindly sewn by my daughter Wendy and add to the general authenticity of the locomotive.



**Ready for the inaugural run on turntable at
Tauranga**

Miniature Trains - One Man's Dreams

While the locomotive is quite capable of pulling 3 ride cars it is a little light on its feet when fully laden so the load is generally restricted to two ride cars. Given the name “Ruby” all in all this is a very attractive locomotive.



EW 1803 at Hamilton track 2008



26. EO 45 in 7¼” Gauge “ELMO”

Deciding to build the EO was made easier with the encouragement of my good friend Ted Barnes. Ted has a private railway at Inglewood and a 7¼” gauge EO locomotive he built some years ago. These locomotives were used for many years on Otira tunnel part of the Midland line between Arthurs Pass and Otira. Five of these electric locomotives were used, usually triple headed through the electrified 12km 1-33 grade, tunnel as bankers for the coal trains from the west coast before being mothballed. More recently 3 were refurbished for use on the Wellington suburban electrified commuter trains and sporting the new Kiwi Rail livery.



EO Bogie showing motor and drive train

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Each bogie has a driving motor coupled to the wheels via a combination of gears and chains. The locomotive is powered by two 350W 24v motors and controlled by a Dynamic Controls Rhino Controller.



The right hand side of the bodywork showing ventilation louvres and high windows

Body work was laser cut and fully detailed inn the current livery of Kiwi Rail. While this loco is. The loco was completed in October 2010 in time to run at the Tauranga Club open weekend in November.

Miniature Trains - One Man's Dreams



Open weekend at Tauranga 2010 EO 45 sets off on another round of the track with a happy load of customers

