

# MECCANO MODELLERS ASSOCIATION

SYDNEY INCORPORATED

ESTABLISHED 1982

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NEWSLETTER 4.17 SEPTEMBER 2017

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## Great social treat at Garth and Frances's



Once again a very enjoyable meeting was held at the Lake Haven home of Frances and Garth Spurdle. Thirteen members and wives driven in Jonathan Stuart's heritage bus met eight others who came by car. Our hosts provided classic cuisine amidst much joyous conversation over lunch. Show and tell in Garth's garage followed before more discussions over afternoon tea. Over 14 models were shown.

## NEXT MEETING

**Saturday 30 September**  
*at the*  
**Veteran Car Club Meeting Rooms**

**134 Queens Road, Five Dock**

Please note the doors open at **Noon**.

All members are invited to bring:

- Model, mechanism or item of interest
- Notes on the above for Peter Stuart

No notes, no mention in the Newsletter.

- Pictures of same for Peter
- \$5 donation for hiring costs
- Nibbles for afternoon tea

Tea, coffee and milk will be supplied.

Contact Lee Squires 02 9498 2460  
for clarification of any queries.

The day marked John Thompson's 83rd birthday two days after Max Crago's 83rd. Cards expressing best wishes from all members were sent to these two founding members of our club.

Attendees included a new member Warren Tite, and other club members Jonathan Stuart, Peter Stuart, June Booker, Raymond Choi, Mike Holland, Chris Johnson, Laurence Langley, Warwick Lewis, Lee and Nancy Squires, Jon and Anna Thompson,

Murray Tulett, David and Robyn (wife) Taylor, Michael Links, John Shervington, John White, Keith Burston, Garth and Francis Spurdle, Apologies noted were, Max Crago, Nick Heinze, Tom Hughes, John Toohey.



New Member, Warren Tite

## Max Crago

Max has announced his retirement as editor of the club Newsletter. He intends keeping up with other club activities but he and Ann are downsizing their home to enjoy their continuing happy retirement so some of his more demanding activities have to be reduced.

As a foundation member Max authored the first club newsletter in March 1982 following the inaugural club meeting of November 1981. He has edited every edition of this vital organ since.

Some special tributes marking Max's service are being planned.

## Country Members' contributions welcome

Members, who cannot attend meetings, are invited to send articles, photos and descriptions of their models to the editor for inclusion in the Newsletter.

L.R. Squires  
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2072  
quires@ihug.com.au

## Invitation to Country meeting

The President of Murrurundi Rotary Club has invited us to show Meccano models to the residents of the district during their annual Model Rail Exhibition, 21-22 October 2019. We would be guests of Rotary. Rotary hospitality is assured: fuel, food and accommodation will be provided.

Murrurundi is 300km north on the New England Highway. We would need to arrange our own transport.

There is plenty of time to discuss and plan this opportunity to meet our own country members.

## Meeting dates for 2017

The following dates  
Open Weekend 2-3 September at  
Castle Hill, cancelled by MDC,  
possibly deferred to November.  
25 November 2017  
20 January 2018  
31 March 2018 (AGM)

*The venues will be announced ahead of need.*

## Keith Burston,



The picture is of the control system for the dockyard crane being built jointly by Chris Johnson and myself. It will allow the crane to be programmed with a sequence of operations to traverse, slew, luff and operate rope and hook or electromagnet on the end (to be decided). It currently uses an Arduino microprocessor for control although the overall system will have two, or possibly three. Although complete, the controller suffered a catastrophic failure due to a misconnection in the power line and now needs a lot of repairs.

## Mike Holland



Mike brought two aeroplane models, built from the Meccano Aeroplane Constructor outfits produced in the 1930's

The first is a reworking of the monoplane model he displayed at the January meeting, but now converted to a Super-marine racing seaplane.



The wheels have been replaced with floats, the longer nacelle installed, and the wings moved further back. It is nicely finished off with the nose cone from the Spitfire kit and a four-blade propeller that he made some time back for a previous model.

The second is a fairly standard biplane, but incorporates the No.2 clockwork motor.



Mike had been searching for one of these motors for many years to complete his collection, and he recently found one on eBay at a reasonable price. This motor differs from the No.1 motor in that it has a shaft fitted with a contrate gear to drive the wheels, making the plane taxi along as the propeller spins. Unfortunately the motor did not come with the propeller shaft or the axle, so he had to make these. To add to the problem, the required gears are not standard Meccano, but have much finer teeth, and so he had to search for suitable gears. Anyway, he succeeded and now has a working model. Mike commented; "This was one of the most difficult models I have built, definitely not for children".

## Chris Johnson



I had been thinking of the designing the wheels and connecting rods for my A4 model from a Meccano book (It didn't come with any fancy mechanism). Then at Skegness I came across No 46256 "Sir William Stanier" designed and built by Bill Steele, illustrated by Anthony Els No 2 in the South African Meccano Model Series. While designed for O gauge i decided it would work for 1 gauge the which i had selected for the A4 model. I quickly built a prototype for the meeting widening the chassis for 1 gauge. It still needs more work, and i have to get the mechanism under the body work.....but I think it will work.



## Laurence Langley



350-ton hammerhead crane at the Norfolk, Virginia, Naval Dockyard. Built in 1940, 260 feet tall, to service gun turrets on battleships. Inactive since 2001, and threatened with demolition in 2013, it is still standing. Its twin in New York was demolished in the sixties. It is attractive as a model because of the octagonal tower. The motions use the R/C motors from the Tower Crane set.

## Warwick Lewis



John Thompson and Warwick, at the monorail

Monorail Car and Track. The monorail car, in yellow and zinc, was designed

by Warwick and has the following features:

- Dimensions: 13.5" long by 4.5" wide by 4.5" high (excluding reversing mechanism).
- Weight 1.4kg
- Removable body for accessing chassis, mechanism and battery box.
- Driving band from motor shaft obviates need for a clutch.
- The drive chain consists of a driving band on a rubber pulley on motor shaft to a 1.5" pulley, 15t pinion to 60t gear wheel, 19t pinion to 57t gear wheel, 14t sprocket to 36t sprocket on one of the axles that has a pair of 1.5" pulleys with tyres.
- Two pairs of the 1.5" pulleys with tyres and an 18t sprocket on their axles are connected to each other by sprocket chain and are centrally located to drive the car on the track.
- A pair of plastic 1" pulleys with tyres are located near each end and two similar pulleys each side on vertical axles hug the track for stability.
- Battery box for 6v motor has its switch connected to a lever that reverses the motor when the car reaches a stop at each end of the track.

The monorail track, in green, comprises numerous 12.5" angle girders including six in each cross-section, plus many 12.5" and 5.5" perforated strips for bracing. The track has no external bolts or nuts on the top

and sides and is based on a design by Keith Burston.

## John Shervington



John reports: “Since my report on 21/01/17 I’ve exhibited the Clock in our Annual Exhibition for which all Pointers and the Moon Globe were moving, albeit at an accelerated rate while the Clock was still under fine tuning. However, two segments toward the final output of the Tidal and Lunar Gear Trains persistently do not function. Both occur just before or just after the Correcting Differentials of both trains.

“Mathematically, I am now able to determine the exact reduction required for each Lunar Synodic Period and each Tidal Day as well as the progressive value of each progressive ratio. I even know the values of both trains that need to be subtracted from the penultimate of the progressive values. But understanding the

engineering behind a Differential driving its second half shaft in the opposite direction to that of its first half shaft using the formula “ $2c = m_1 + m_2$ ” I found challenging. To assist my understanding of gear trains capable of producing prime numbers and prime ratios I consulted Alan Partridge’s article “Differential gear trains for prime numbers and prime ratios” in Constructor Quarterly March 1989. Here he illustrates in Figures 2 and 3 the ratio 487:1, using the Factor  $487 = 486 + 1$  and secondly the ratio 397:1, using the Factor  $397 = 400 - 3$ . See an adapted combination of Partridge’s two Figures below within this report. Also Partridge uses the formula “ $2c = m_1 + m_2$ ” to illustrate how the above Factors can produce practical mechanisms for the Meccano Modeller by linking any two members of this formula with a gear train, using the remaining member as a driver and picking up the output “somewhere in the linking gear train”.

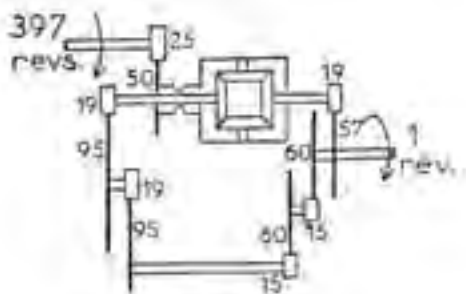
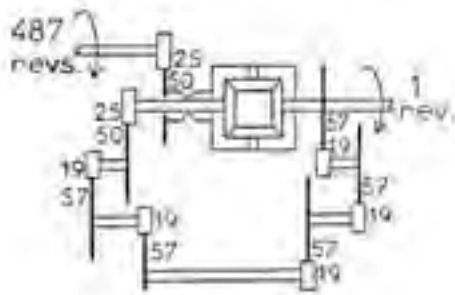
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“Differential theory states that the average of the two outputs from the half axles is equal to the input:  $c = (m_1 + m_2) / 2$  or  $2c = m_1 + m_2$  where  $c$  = the input to the crown wheel of the differential cage and the two outputs are  $m_1$  and  $m_2$ . Feedback from  $m_1$  is added to the output  $m_2$ . If the cage and feedback are moving in the same direction then addition should occur. If the cage and feedback are moving in the opposite direction, then subtraction should occur. In general, writes John Nuttall on 27/07/17 through “[Spanner@mail.austprem.org.au](mailto:Spanner@mail.austprem.org.au)”, counting the number of gear-pairs will

assist in determining whether the half-shafts turn the same way or opposite ways: an odd number of meshing pairs reverses the direction and an even number does not.

“My friend, Peter Murtagh, has produced a Meccano Model of Partridge’s Figures based on simplified gear ratios.

In both gear train layouts of Murtagh’s Model there are two 1:2 reductions giving feedback of 4. The Subtraction layout (still under construction) will show an attempt to obtain a subtraction outcome to satisfy the formula  $3 = 4 - 1$  where 3 is the input  $c$  and  $m_1$  gives a feedback of 4 to output  $m_2$ . So the final output should be 1.



(Note the 3 input is halved before feeding to the cage where it is doubled to become  $2c$ .) Then in an addition outcome (presented today) two chain

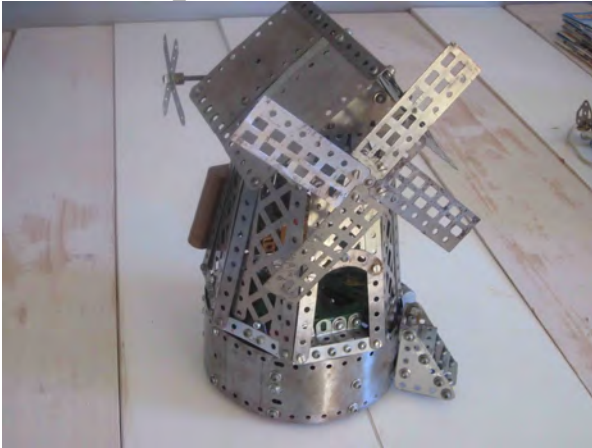
reductions (so no reversal) are used. Photo Addition shows the attempt to obtain an addition to satisfy the formula  $5 = 4 + 1$  where 5 is the input  $c$  and again  $m_1$  gives a feedback of 4 to output  $m_2$ . So  $5 = 4 + \text{output } m_2$ , which is the same as output  $m_2 = 5 - 4$  i.e., the final output should be 1. (The two gears are still visible in this photo but, here, they are superfluous as the large gear is not connected to any output as will be the case for the Subtraction layout.)

“Sending input to the crown wheel attached to the differential cage is used by McCall in his Trimming Differential. Here feedback from the crown wheel and  $m_1$  goes, via  $m_2$ , to the Correcting Differential. His Correcting Differential has input to  $m_1$  and feedback mentioned before from the Trimming Differential to the crown wheel and  $m_2$  of the Correcting Differential. Note that, in this case, the crown wheel is attached to the  $m_2$  output, whereas in the Trimming Differential its crown wheel is attached to the input  $m_1$ . The two layouts of gear trains in the Murtagh Model were constructed to use the Trimming arrangement to parallel Partridge’s two examples where the addition is input ( $c$ ) of  $487 = 486$  ( $m_1$  feedback) + 1 ( $m_2$  output) i.e.  $487 = 487$ , and the subtraction is input of  $397 = 400$  ( $m_1$  feedback) – 3 ( $m_2$  output) i.e.  $397 = 397$ .

With this basic understanding and its application to Differentials, I can start to carry out the fine tuning of McCall’s Astronomical Clock Mk II and eliminate malfunctioning in the

identified segments toward the final output of the Tidal and Lunar Gear Trains with their Trimming and Correcting Differentials”.

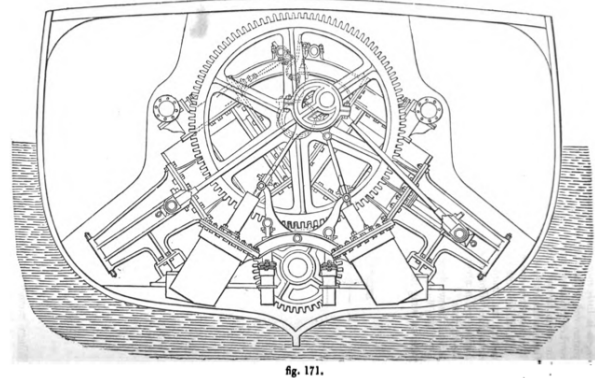
## Garth Spurdle



Garth reports: “At the Glenbrook meeting I showed my Dutch Windmill in nickel finish. Mike Holland was particularly taken by the 1927 5-1/2 inch braced girders being used as side panels. They also complemented the 1927 nickel windmill sails. Mike asked me did the tower rotate on the base. When I said ‘no’ he asked would I mind if he made a replica. Unfortunately there has been some serious health issues in Mike’s family so I made this conversion for our July get-together. I also revamped my 1958 Leyland Comet with Ezy-Bilt mild steel nuts and bolts, but now painted with etch primer and 1970’s Meccano Blue. I think the colour-coded bolt heads add to the overall effect”.

## Lee Squires

Lee exhibited his Double Geared Marine Steam Engine of 1844.



When propulsion of ships by screw propellers began to take over from Paddle wheels around 1836 engineers were faced with the problem of re-orientating engines to suit an output shaft set low in a ship and at right angles to more highly set paddle wheel shafts. They naturally tried to adopt existing marine engines and so geared engines played an immediate role in this transition.

Designs for paddle wheel engines were re-arranged and compacted but engineers were reluctant to increase piston speeds higher than 200 fpm (1 m/s) so as screw propellers required much higher rotational speeds than paddle wheels, cogged gear trains were used to connect power to the propeller shaft in the early period of transition. The air pump drives had to be modified to avoid being knocked to pieces at the higher speeds required for screw propellers. Messrs Scott and Co. of Greenwich reduced this and other speed related problems in a design illustrated in my model of their double-g geared marine steam engine.



## Peter Stuart

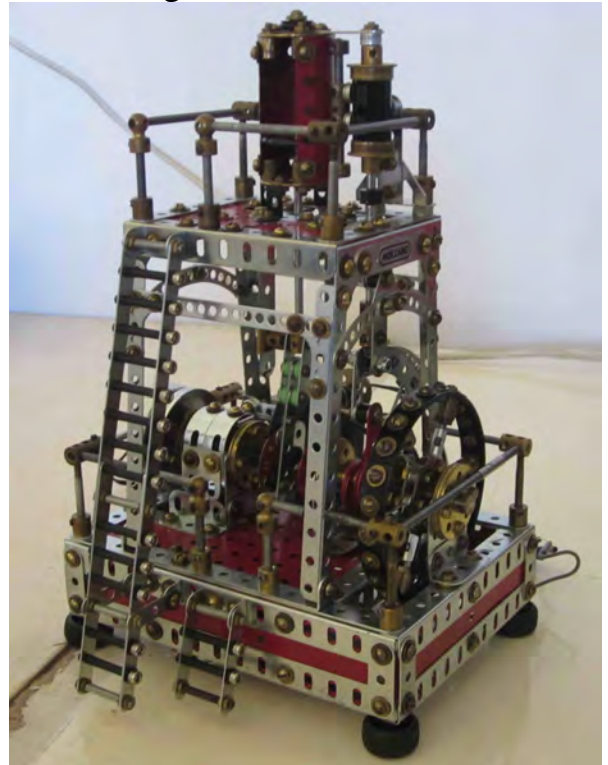


Peter gave a presentation on speed control of AC induction motors which are the most common motor in the world. He made the point that these types of motors run at a constant speed regardless of load. The speed is determined by the frequency of the electrical supply, which is fixed. The only way to vary the speed is to use an electronic Variable Frequency Drive (VFD) and Peter demonstrated one of these. For some reason VFD's are known as inverters which is a great misnomer because nothing is inverted! Peter said that he hoped he would never see an induction motor on a Meccano model because the motors are only made to operate from mains voltages.

## Murray Tulett



Murray showing a turntable made of Metallus 47-hole flanged rings with a “spider” using Meccano 0.75” flanged wheels. 47 holes is a curious, and useless number as Marklin made a similar ring with 48 holes.

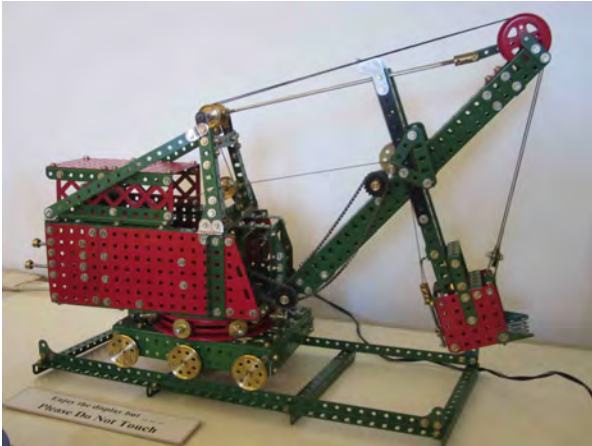


### Stationary Vertical Steam Engine

This was inspired by a similar engine built recently by Lee

Squires. Murray's engine has a cut-away steam cylinder to show the piston in action, valve gear with variable cut-off and reversing, plus a built-up flywheel containing 142 parts.

### Steam Shovel



This is an iconic model shown many times in Meccano literature, and of course other folk in our club have built versions of this Steam Shovel. Murray constructed his own interpretation, based on a couple of photos, and with some modifications from those photos. All the mechanism is there, however the model is very heavy and the drive is a bit overwhelmed by its task. So now the Steam Shovel is a static model only.

### Square-Rigger Sailing Ship

This is one of the three models of the TinTin series brought out by Meccano four or five years ago. Murray bought the kit at that time, but has built the model only recently. His delay was due to not wanting to use the parts as intended in the model plans. Some parts were to be severely bent, which is against his principles, so construction had to wait until he finally made his own substitute parts out of scrap metal,

which he didn't mind bending. Construction was quite difficult; Murray tried to achieve improvements by departing from the plans in a couple of areas. There were also some inconsistencies between the cover 'photo' and the detailed instructions. One can appreciate why children prefer to build in Lego rather than these recent offerings from the owners of Meccano. However, on the positive side, the model is quite striking and attractive.

### **John White**



Hook Shot Ball Machine from VEX Robotics; a kit from Australian Geographic.



Mobile Road Front Crane. John made a rough design from a better model which he made some time ago. From Meccano Set 4-7, in yellow blue and silver.

Editor's comment: simple models are popular at public exhibitions.

## **Ian Wright**



Ian brought a collection of Meccano Magazines for inspection.

## **Meccano Magazines**

Max Crago is looking for a home for his collections of Meccano literature. Contact Lee Squires for details of how much space is required.

## **Toy Traders Surplus**

Since the surplus was advertised in January many items have been sold, raising over \$600 for the club.

These items remain to be disposed of for the benefit of the club:

- Kits of modern models, some are incomplete.
- Four 4-foot robots assembled with extra parts.
- Assorted parts for various modern models. Some may be useful for Standard Meccano models.
- A set of construction manuals and catalogues from 1990 to 2013.

They are currently stored in my garage at Gordon.

Contact: Lee Squires 029498 2460



## Planetary Gearing Possibilities

by Peter Stuart

Modellers who have experimented with planetary gear trains will have found there are limited ratios available when using standard Meccano gears. Using the well-known 3-1/2" ring gear (p/no. 180), the experimenter soon finds there are only two arrangements of sun and planet gears which will mesh with the ring gear's 95 internal teeth. These are:

**19T sun and 38T planets;**

**57T sun and 19T planets.**

By using gears from the extended range, available from some parts suppliers (see below), two other arrangements are possible:

**45T sun and 25T planets;**

**55T sun and 20T planets.**

Use of the newer 2-1/2" ring gear (p/no. 180a with 57 internal teeth) allows the use of:

**19T sun and 19T planets;**

**27T sun and 15T planets.**

While searching through textbooks or the internet, for formulas to calculate ratios, modellers will also notice that it is usual for there to be three-planet gears shown in the diagrams because this arrangement is common industrial practice. Three-planet configurations appear at first sight to be impossible when using only standard Meccano gears; two planets being the only number which will fit. This is not entirely true because amongst the first two configurations above is one which will accommodate three planets. It is **19T sun and 38T planets**. The advantage of a three-planet configuration is that it gives smoother running. It is more fiddly to set up though. Part no. 109b Faceplate with six slots is useful for positioning the planets at the required 120 degree spacing. See below for suppliers.

A knowledge of how to calculate whether a particular arrangement of sun and planet gears will accommodate three planets is useful. All that is necessary is to add the number of teeth in the sun gear to the number of internal teeth in the ring gear, then determine if the sum is evenly divisible by the number of planets; in this case three. Try it with the 19T sun gear and 95 internally toothed large ring gear, mentioned above.

### FOR SALE

Entire Meccano collection  
of  
Dave Thom  
Set 10 with 4-drawer cabinet.  
Set 9 in plastic bin.  
Loads of Parts neatly bagged  
List available on request.  
Prices negotiable.  
Mary Thom 9419 5851  
ALSO: Mary is holding a  
Garage Sale to clear Dave's  
workshop equipment, tools  
and hobby collections  
2/9/2017  
8:30am to 2:30pm  
35 Darling St, Roseville

Armed with this knowledge and a list of standard and extended range gears, it is possible to search for more three-planet configurations. The following comply:

3-1/2" ring gear with three planets:

**19T sun and 38T planets;**

**55T sun and 20T planets.**

2-1/2" ring gear with three planets:

**27T sun and 15T planets.** (with minor slotting of holes in a Six-hole Bush Wheel, p/no. 24b.)

It is also possible to assemble four-planet gear assemblies using standard and extended range Meccano gears. The following arrangements will work:

3-1/2" ring gear with four planets:

**45T sun and 25T planets;**

**57T sun and 19T planets.**

2-1/2" ring gear with four planets:

**19T sun and 19T planets;**

**27T sun and 15T planets.**

Astute readers will have noticed that a 27T sun and 15T planets in a 2-1/2" ring gear is particularly interesting as it can be assembled with 2, 3 or 4 planets!

All of the above extended range gears and Six-slot Faceplates are available from Meccano Spares and Ashok.

### **Next Group Model.**

Chris Johnson...the man who likes to put the "vice" in Vice President writes:

"To all,

I have found this model from Peter Goddard from the UK. It is a giant block setter crane...about 12ft long. Peter will help us with pictures etc.

What I am looking for is expressions of interests to be on the team to build this model. It is a good model for a team as it can be broken down into many parts, both structural and mechanical.

I am looking for about 8+ members who would be willing to give up time and perhaps help with the financing of building of this model.

Good home required by Max  
for his  
**MECCANO MAGAZINE  
COLLECTION**

The years range from 1934 to  
1941 size 280mm x 210mm.  
Wartime issues, 1942 to 1960,  
size 206mm x 140mm  
1961 to 1972, size 247mm x  
185mm.

FREE to a good home  
NOT for re-sale

Contact Max  
0403 053 981  
16 Lakeview Parade  
Warriewood

This newsletter  
Produced by Members of the  
Meccano Modellers Association  
Sydney Inc.  
Special thanks to Peter Stuart,  
Warwick Lewis, Michael Links and  
Chris Johnson.  
Lee Squires, Editor.

The Transporter bridge took about 50 person days to build, or about 4 days each for 8 builders. It will be a team effort, with a few meetings to get to the build stage, the acquisition of parts, and then the building....and fine tuning.

Last time we all had a heap of fun and enjoyment. I should make all aware that some financial contribution would be appreciated, as it is a lot of Meccano to buy. On completion, storage will be required (although I am hopeful we can split the jib into 2 \*6ft sections..a design issue ☺). I don't plan to take this model overseas except to New Zealand...but you never know.

Please contact me on 9519-9586..043 720 1172 or [wsouthcott@bigpond.com](mailto:wsouthcott@bigpond.com).if you are interested and what you might be prepared to contribute. I have starters of myself and Keith Burston.:-)"

