



Message From The President



Hi to all GMAA members,

Welcome to the first newsletter for 2009! I hope you all enjoyed your Christmas and new year. Hopefully your wish list was filled.

First of all I would to thank all those who helped out at the BBQ at Bunnings. A big thank you to those that were there all day, a job well done. It was a great day with a good amount raised for the club.

For the members flying at dog rocks a reminder to close the gates around the club rooms when you are leaving to keep the sheep out, they are activating the security light and flattening the battery.

Last of all don't forget the BBQ at each field on the Saturday after the general meeting.

Enjoy your flying.

Bob Carter.

For Sale

OS160 with pitts muffler ,standand muffler,perry pump,prop,ally spinner.about 3 hours run time. - \$350

OS91fx with ally spinner and prop.only just run-in - \$200

OS46ax with spinner& prop - \$60

Flight box with panel, electric fuel pump, glow lead and battery - \$60

Contact Bob Carter. 0438742998, or 52742998

Next meeting, 17th March, 2009



From the Editor

Hi all,

Welcome to the first newsletter of 2009. Work and other commitments has kept me from getting this issue out before the club meeting, but them's the breaks! I will be keeping this one brief and loading up the March issue with lots of goodies. Please note, I won't be posting this issue, so please help get a copy to anyone you know without access to a computer.

This month I have included the next instalment of a great article on the Golden Age of RC, contributed by Ralph Tabley and written by Ian Carter of E-GO models fame.

Finally, just another reminder to ensure that our registrar Phil Pope has all your correct details, including your current email address. If you happened to received a newsletter in the post last month, but you have an email address, please help save some trees and postage costs and pass the email address on to Phil.

And remember, as always, info@maa.org.au will find me!

Adam Echter

Safety Officer's Report

Nothing to really report from Mannerim – everyone seems to be safety conscious and are aware of the need to be careful both in the pits and on the flight line. This is a good time to remind everyone that we are NOT permitted to even enter our fields on days of total fire ban. Imagine what a disaster it would be for our Club if we were responsible for a fire! So, if you are not sure about any particular day then take the trouble to find out as to whether or not a total fire ban is in place. If you are flying in a crosswind be aware that your model will tend to be blown toward to you which can lead to flying over your head or even over the pits. You need to make the effort to keep the model out in front of you

Remember "SAFETY IS NO ACCIDENT!"

Brian.



Events Calendar

Feb 22	Leura Fun Fly	Camperdown
22	Electric Fun Fly	Carrum Downs
28/Mar 1	Annual Fun Fly & Swap Meet	Warrnambool
28/Mar 1	Tates Performance Hobbies	
	F3A Pattern Aerobatics	Mannerim
Mar 1	Sportscale & ARF Scale	Keilor
7 & 8	Old Timer, Control Line & Freeflight	Leopold
14-16	Avalon Airshow Weekend	
14-16	South Pacific Scale Masters	Shepparton

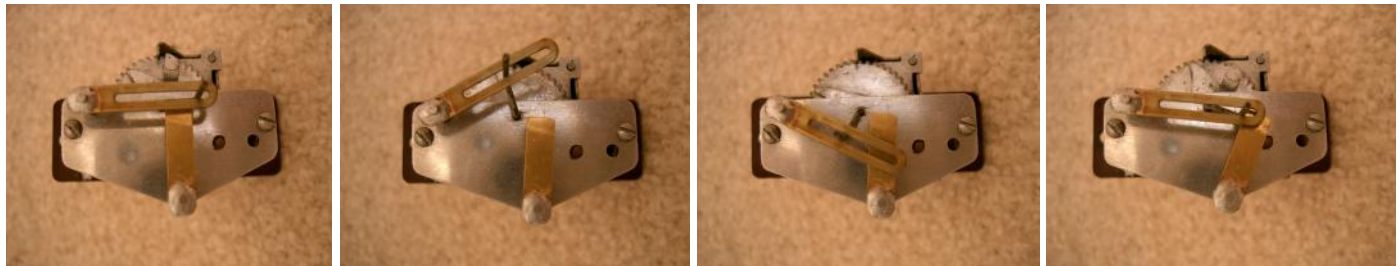
*The Piper Cub is the safest aeroplane in the world!
It can just barely kill you.*

More events can be found on the VMAA Website.

www.vmaa.com.au

Kick-up elevator

A logical development of this was to incorporate an additional stop at about the 340 degree position. At this point the rudder had virtually completed its cycle and would be nearly at neutral. With suitable linkages to the elevator it was possible to use this position for “kick-up elevator” which is desirable for looping in flight or flaring during landing. Once again, this action was momentarily triggered every time the crank/wheel passes the 340 position but like the rudder passing through an unwanted position it has no effect on the flight path.



Babcock Compound Escapement.
Horizontal arm for Rudder, vertical arm for Elevator

Rudder arm moved up (right rudder)
Elevator arm still vertical (neutral)

Rudder arm moved down (left rudder)
Elevator arm still vertical.

Rudder arm almost back to neutral.
Elevator arm now to right (kicked up)

The next step was to change the fiddly mechanical elevator linkage to an electrical contact so that a separate circuit could be made to an additional escapement just for up elevator.

By itself this does not seem to be much of an advance as this circuit would always be made as the wheel/crank passed through its position. However the neat and rather cunning plan was to wire this circuit in series with the contacts of the relay. Therefore, two things had to happen simultaneously for the elevator to operate. The crank/wheel had to be at the 340 degree position and the relay had to be energized. This would only happen if the operator keyed three times and held the signal on for as long as up elevator was required.

Quick-Blip Throttle

This concept was extended one step further with the “Quick Blip” throttle control. No further stops were involved. There was merely another electrical contact placed early in the cycle at about the 45 degree position. Where as the up elevator circuit had been wired in series with the Normally Open (i.e. energized) position of the relay contacts, this circuit was wired in series with the Normally Closed (de energized) relay contacts. What happened then was that a very brief signal would start the crank/wheel rotating. As it passed the 45 degree contacts, that part of the throttle circuit would be momentarily made while the final part would be completed as the relay contacts sprung back to their de energized position.

The throttle circuit could trigger a 2 or 4 claw escapement to give a fixed sequence of throttle movements.

It should be noted that there was a “chicken and the egg” situation here as it was one thing to have a radio system with the potential to operate a throttle but it was quite another thing to get anyone to manufacture an engine that could make use of that capability. Up to this point, the main demand for engines had come from the control line flyers who ran their engines flat out all the time. Specialized engines for R/C only started to appear during the late 1950s. From then on, idle speed and smooth acceleration were just as important as sheer power.

So, in summary, the compound escapement offered a selective sequence of rudder, elevator and throttle control. Press and hold gave Right rudder, Press release press and hold gave Left rudder, Press release press release press and hold gave Up elevator, while a quick “blip” resulted in a change of throttle setting which could be cycled from Low to High to Low etc.

It was possible to operate additional control functions by “cascading” several compound escapements together but this generally confused the issue and made it more likely to key the wrong control.

Credit for the development of the Kick-up elevator and Quick-blip throttle is given to Ken Willard. Ken wrote a regular column in Radio Control Modeler magazine in the USA for 17 years and at one time had worked for Babcock Controls of Laguna Beach, California. The Babcock compound escapement progressively incorporated the features that have just been discussed.

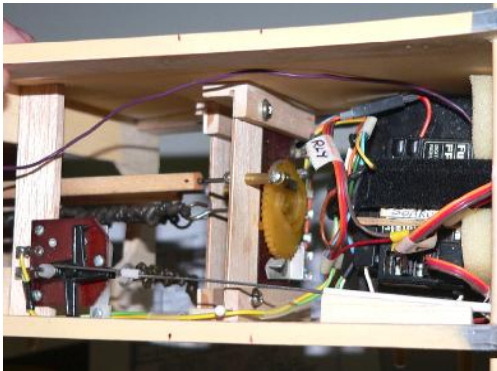
Perhaps the best examples of compound escapements came from Howard Bonner in Los Angeles, California. Howard had the happy knack of “making a better mouse trap” and this was shown with the escapements and subsequently with his “Duramite” multi channel servos and then the “Digimite” proportional radio. The “**Bonner Varicomp**” compound escapement had a molded nylon wheel with a cam track on its face. A cam follower was linked to a torque rod to convey the motion to the rudder. Metallic wipers on the back of the wheel brushed over a printed circuit board to make the appropriate electrical connections. It was robust and functional.



Bonner “Varicomp” compound Escapement
(Ian Carter Collection)



Control / output wheel removed to show its wipers at rear and the printed circuit mounting board.

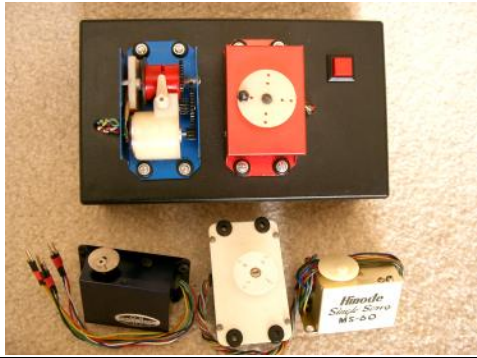


Bonner “Varicomp” installed in “Bi-Fli” model (Elevator unit out of sight. Rudder drive and unit for 2-position throttle control visible).

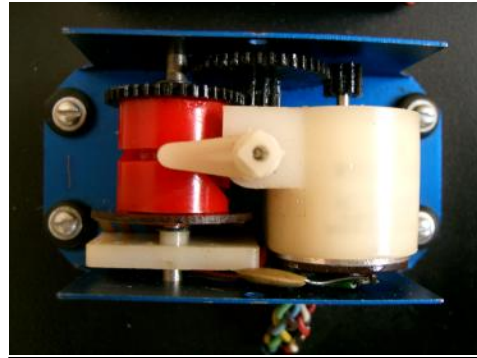


“Bi-Fli” tail showing torque rod connections to Rudder and Elevator.
Designed by Phil Kraft 1959

As the 50s decade closed, these rubber band driven escapements were superseded by units powered by electric motors. They provided ease of installation as well as more power to the control surface and a more consistent operating speed. The Japanese excelled at manufacturing these and there were many brands such as Royal, M.K. Hinode and O.S. (Yes, O.S. did make products other than engines. Their single and multi channel radio systems were excellent)



Motorized Compound Escapements by Royal, O.S., M.K. and Hinode (Red servo is for motor control)



Case lid and output wheel removed from Royal Rudder unit. Shows electric motor drive.

Tone Modulation

The 1950s saw an improvement in the radio signal being transmitted to the model. Previously the signal had been a Carrier Wave which was switched on or off. This had left the receiver vulnerable to interference when there was no signal being sent.

The improved technique was to send a continuous carrier wave to the receiver and to modulate it i.e. impose another wave upon it at a much lower frequency (around 600 Hz). The tone could be detected at the receiver and control information could be sent by switching the tone on or off.

It should be noted that Tone Modulation did not cure the problem of interference between systems using the same frequency band so it was still not possible to fly more than one model at a time.

Tone Modulation actually pathed the way for more ambitious control systems because if you can impose one tone on the carrier wave it is then possible to allocate different tones to correspond to different control surfaces. This will lead on to Multi Channel Control which will be covered after this final form of Single Channel called "Pulse Proportional" or "Gallopig Ghost."

Pulse Proportional

The previous forms of single channel control involved a fixed sequence of control selections or a Morse code type of signal to select a particular control movement. Pulse proportional involved repetitive switching On and Off of the control signal to give a "poor mans" type of proportional control.

Rudder control was achieved by varying the Mark/Space ratio (the width) of the tone signal i.e. if the signal was "on" for 50% of the time and "off" for 50%, then the rudder would be Neutral. If it was "On" for a *greater* proportion of time then the rudder would be displaced to the Left, whereas if it was "Off" for a *greater* time it would be proportionally displaced Right. Coincidentally, if the Rate at which the signal was switched was to *increase*, the elevator would deflect Down proportionally and Up if the rate *decreased*. It needs to be appreciated that both these control surfaces were oscillating back and forth all of the time at about 10 cycles per second so it required some form of electronic control box on the transmitter to convert control stick movements into pulses.

Throttle control could be triggered by momentary full On or full Off signals. This form of control achieved a good following from about 1959. It required a lot of patience to set up all the linkages and it looked a little strange flapping about on the ground. However, in the air it could produce a steady flight and several types of commercial units were produced by companies such as **Rand** and **Controlaire**.

Next Meeting

Meetings will be held on the third Tuesday of each month , the Venue -
 Geelong East Uniting Church
 Cnr of Boundary Rd & Ormond Rd
 East Geelong
 8:00pm
 Entry is via Boundary Rd, Church car park.



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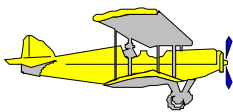
**Don't forget the monthly
 BBQ on the
 Saturday after each club
 Meeting held at Both fields.**

**BBQ will be held at
 Dog Rocks Field
 And Mannerim Field
 \$2 coin donation**

RAIN , HAIL OR SHINE

Newsletter Contributions Always Welcome

DEADLINE FIRST MONDAY OF EACH MONTH
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Our Flying Fields

