

Official Newsletter for Free Flight Scale flying in New Zealand
produced by the Free Flight & Control Line Scale SIG



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Contest notice

Morrinsville 2020 Indoor competition day

Scale free Flight & Control Line Classes at the Nationals

Control-line scale

To allow the participation of all types of control line scale models, this class is offered as a flying only event with no static judging. It is flown to FAI F4B flying rules. By making this a more open event, it has gained greater support at recent Nationals. If you have a control-line scale model come and fly in this event.

F4A Outdoor Free flight power scale

Free flight power scale is flown to FAI F4A rules. Power can be either i.c. engine or larger than low power class electric (refer to rules for motor power limits on our link on the MFNZ website or contact us). Models reflecting varying levels of experience and expertise are typically entered so if you are interested in this class and have a free flight scale model to fly, join us.

Outdoor Low power scale

This includes CO2, small electric, and Jetex. It is flown to FAI F4E rules. The class was created to allow low powered free flight scale models to be flown with other models of similar size and power source.

Outdoor Rubber scale

This is flown to FAI F4D rules, with no flying mark for landing as landings are mostly 'crash landings'. Like other FAI F4 classes, emphasis is on flight quality rather than flight duration.

Outdoor Kit Scale

This is flown to the SIG rules available under rules on our link on the MFNZ website. The objective is to encourage simple stick and tissue models 'built to the kit plan' rather than the elaborate highly decorated and finished models of other scale classes.

Indoor Peanut scale

Flown to FAI F4F rules, it has a totally different scoring system from F4 rules. Knowing the static scoring criteria assists in doing well in static. Unlike other scale classes, flying and static scores are ranked to find placings.

Indoor Rubber scale

Indoor rubber scale is flown to same F4D rules as outdoor free flight scale rubber but includes a flying mark for landing as good landings are much easier on a hall floor! Of all of the scale classes this (along with low power scale) could do with more support at contests.

Indoor Kit Scale

This event uses the same scoring as outdoor kit scale as above.

Memorial Flight

This is an unofficial class being trialled for the first time at this year's Nationals. It was introduced in Scale News 2. Hopefully it will be well supported and bring out many of the gifted or inherited scale models many of us have in our care. It may be flown during Day 1 or Day 2 events at those venues.

Nationals programme **Free flight scale**

December 30 - Registration 12.00 noon until 6pm

		6.30 – 8.30am	9.30am	6.30pm
December 31	Day 1	Power Scale Kit Scale	RC1 with RC fliers RC1 with RC fliers	
January 1	Day 2	Rubber Scale CO2 & Electric Scale	Free flight field Free flight field	Control line scale on control line circles.
January 2	Day 3			Indoor events in the Hall Peanut Scale, Kit Scale, Open Rubber Scale

A periodic publication with news of interest to free flight and control line scale modellers in New Zealand and beyond.

Editorial

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Special Interest Group
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The opinions expressed in this newsletter are not necessarily those of the editor or the Free Flight & Control Line Scale SIG or of Model Flying New Zealand.

COVER PHOTOGRAPH

Mike Mulholland's very lightly built Keil Kraft Westland Lysander proved what a great flyer it was at Richmond, NSW, Australia, earlier in the year. The propeller is seen freewheeling in a strong puff of breeze.

Thank you to all who have offered encouragement and appreciation in my task of producing Scale News. It was particularly pleasing to have several scale model building reports to run in this issue and also to be able to report on the Morrinsville indoor competition day. Thank you to all who have contributed. However, I would also like to hear of other scale events, both indoor and outdoor, even if only a small gathering of flyers have taken part. The newsletter will have more fully fulfilled its purpose when it provides news of scale model flying across the country.

Since the last issue of Scale News, The 2020 Morrinsville indoor flying day has come and gone. Whilst there was a lower attendance than in previous years, it has served to bring together flyers from across the North Island, one of the main objectives of running it. There is an advance notice of a provisional 2020 Morrinsville date below, but the committee would like to know what day suits the most flyers planning to attend. Would you please contact me, or anyone else in the SIG with your preferred day in October. It would be huge help to have this feedback soon as we need to make a stadium booking within the next few weeks. My contact details are listed opposite.

I had hoped to have this issue mailed out to you last month as a thinly veiled reminder to support the free flight and control line scale classes at the Nationals. Now that we are much closer to the Nats date, can I also respectfully ask that you get those entries rolling in! Knowing the level of support likely in respective events is a huge help in their Nationals planning for contest organisers in all SIGs. Registration is now really easy with the MFNZ we link. Just go to http://www.modelflyingnz.org/Admin/Nats_entry.php

I hope that the programme and additional description of all of the free flight and control line scale classes that will be offered at the Nationals, will be of interest.

Season's greetings and good luck at the Nationals for those attending.

Stan Mauger

Free Flight indoor contest day Indoor Scale at Morrinsville Sunday October 11, 2020 [Provisional date]

• F4D Rubber Scale • F4F Peanut Scale

Flown to FAI rules. Refer to link on MFNZ website under Scale FF & CL SIG

• Kit Scale

Flown to rules on MFNZ website under Scale FF & CL SIG

• Hangar Rat • HL Glider • Modelair Hornet will also be flown

Indoor Free Flight Scale Morrinsville Stadium

While the numbers attending the last Morrinsville Indoor competition Day were down on previous years, the day can still be declared a success for two reasons. Firstly it achieved one of the aims that was there at the start of planning these days. That was to provide an excellent indoor venue and attract flyers from across the North Island and beyond. This year the spread was from New Plymouth to the South and Whangarei to the North. Another aim was to provide a place for enjoyable competitive flying. It certainly achieved that. In most cases those flying supported a number of classes and that provided enough results for competition in most classes flown.

The FF & CL SIG is indebted to the Auckland Model Aero Club who have continued to underwrite the modest loss on running this event. They have expressed an interest in continuing their support, so it's now over to flyers to make this event the success that it can be with more support.

STAN MAUGER



TOP: Ricky Bould's Comper Swift (left) and Stan Mauger's Fleet Canuck (below it) flew in Open Rubber Scale.

ABOVE LEFT: Dave Jackson Flew his Lacey in Peanut Scale.

CENTRE: Ricky setting up his Fike for the Peanut Scale event.

RIGHT: Alan Reed's Eastbourne Monoplane, also in Peanut Scale sported some nicely made wheels.

Results

F4D Indoor Rubber Scale

	Static	Flying	Total	
1. S. Mauger	730	1157	1887	Fleet Canuck
2. R. Bould	565	1006	1571	Comper Swift

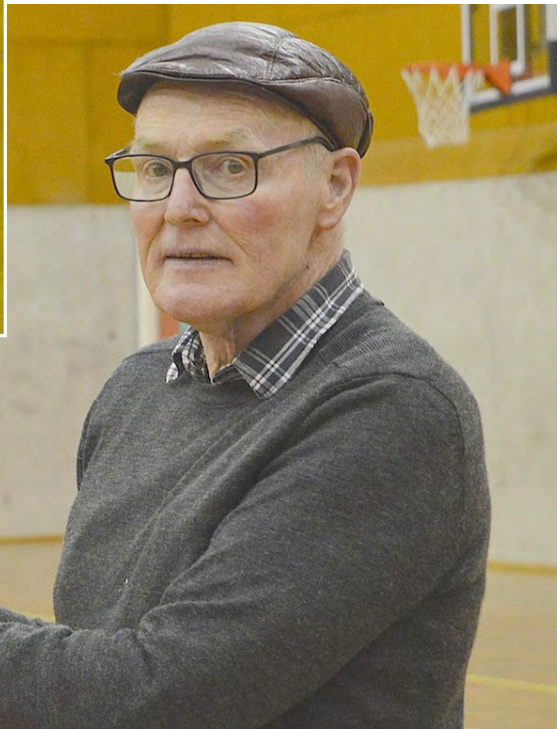
F4F Peanut Scale

	Static	Flying	Ranking	
1. D. Jackson	39.5	52	3/1*	Lacey
2. R. Bould	40	43	2/2*	Fike
3. A. Reed	43.5	12	1/3*	Eastbourne Monoplane

(*Flying decides tie-breaker)

Kit Scale

	Static	Flying	Total	
1. S. Mauger	76	53	129	KK Auster Arrow
2. R. Bould	56	55	111	Luscombe Sedan
3=. D. Jackson	60	49	109	Comet Stinson 105
3=. A. Reed	71	38	109	Peck Baby Ace



KIT SCALE ENTRIES
 TOP LEFT: Dave Jackson flew his Comet Stinson Model 10.

CENTRE: Alan Reed with his Peck Baby Ace.

LOWER LEFT: Ricky Bould had his Veron Luscombe Sedan trimmed nicely.

LOWER RIGHT: Stan Mauger's Keil Kraft Auster Arrow now repaired and re-trimmed since damaging it at last year's Morrinsville day.

Cessna Bird Dog

US ARMY scheme

With two Cessna Bird Dog projects included this month it seemed logical to provide some photos of the full size aircraft for enthusiasts of this scale subject. The Bird Dog shown below is hangared at Ardmore Airfield, in Auckland and owned by Rob Mackley. I was able to do a thorough walk around the aircraft some years ago. These are just a few images from that photography. The aircraft is in a distinctive US Army colour scheme and beautifully restored. It is most appealing to those of us who love subjects with international orange schemes. In this scheme the Bird Dog would make a very visible free flight scale subject! If you would like any further views of the aircraft, particularly details and hard to get reference, please let me know. I have quite a resource that I can share.

STAN MAUGER



VMC Kit Scale Cessna Bird Dog

The FF and CL Scale SIG decided on an initiative to attract more entries in kit scale. It was decided to approach the Vintage Model Company to provide laser cut parts sheets of the Cessna Bird Dog and Cessna 140 with the hardware and plans being sourced locally in order to reduce freight costs. This was done and as a result fourteen kits are in the hands of modellers.

I have completed the Bird Dog. The quality of the wood was first class as was the laser cutting of the wood with little charring and first class fits. The build of the fuselage was achieved without any difficulty and the only modifications were to add magnets to hold the nose block in place, something I now do as a routine, and sheeting the nose area instead of using paper covering. The fit of the paper patterns was very accurate and eased the job of fitting the transparent cockpit glazing panels.

Building the wings was also very straightforward but covering had its moments as the leading edge is thin and wide and there is slight taper on the outer panel. I had pre-shrunk the tissue and it was not the best result. A disaster with the application of

the tissue letters resulted in two panels having to be redone. The tissue shrinking was done using orange acrylic ink thinned with water. This gave a denser colour and is a method I have used for some time to give more body to the colour.

The tail surface outlines have notches for the internal members and this gives some much need stiffness to these surfaces. The finished model weighed 17.5 grams (less rubber and prop) and uses a grey Ikara 6" prop. Initial test glides show it is in trim with a .115" motor of 12" length. It is in the US Army training colours that a locally based aircraft uses. I used laser printed photocopy paper that was lightly sanded on the back face prior to gluing it with thinned canopy glue.

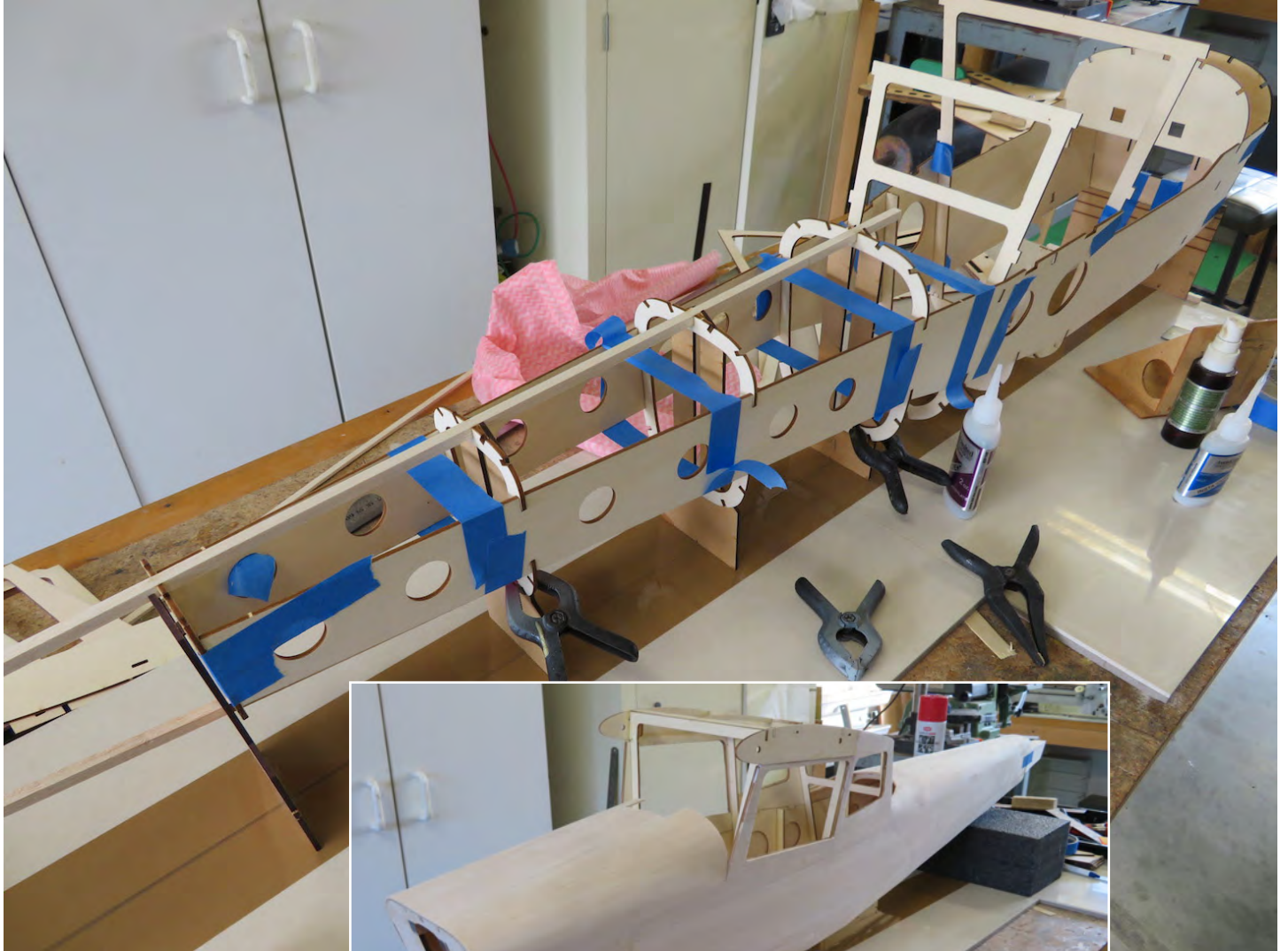
There are a few kits still left for those who wish to participate.

RICKY BOULD



Gwyn Avenell's Cessna Bird Dog

By way of comparison to the Cessna Bird Dog on the previous page, this radio controlled project is modelled to a 1/5th scale for 91 – 120 glow power. While much more sheet construction is used, as would be expected for model at this size, it does share interlocking fuselage construction in common with smaller models.

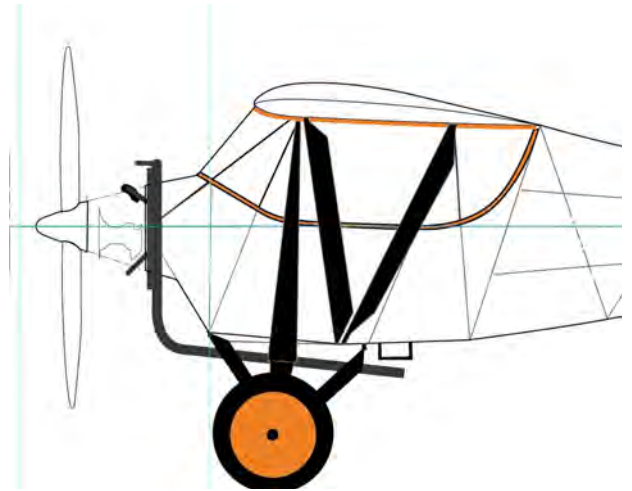


Stan Mauger's Monocoupe Velie



The rebuild

This model has been flown several times, as above, but needed better access to the engine, less power and redesigned exits for the diesel engine exhaust. It was an opportunity to correct nose contours and my method of using the full size fuselage tubular frame patterns to establish the forward structure (see right) has already been described in a Slipstream article last year. Having made a mock-up using kebab sticks, I have now set myself the task of putting this to the test in revising the forward end of the fuselage. The engine bearers were positioned using templates and a new vertical former and then the dowels and infills built around the aligned structure. It has gone smoothly so far (see lower left). The Mini Bee was selected to replace the last engine used, a Merlin, as the Bee cylinder shape and size is very close to the Velie radial engine cylinder and the needle access is good and the tank usable. The next stage will be to make a form for a silicone mould for the cylinder and then to cast another four cylinders from it.



Mike Mulholland's Westland Lysander

Genesis

The Lysander, like the Sopwith Camel, is one of those aircraft that seems to have acquired a reputation for being a difficult prospect as a free flight model. These reputations probably derive from handling quirks in the design that made the full-sized aircraft a handful but which don't apply to free flight models, such as powerful rotary engines and variable incidence tailplanes.

To be fair, short noses and short-coupled tailplanes are not your usual go-to for a rubber powered free flight model. Throw in some pretty complex shapes and a fairly challenging build and it's probably no surprise that so few Lysanders are seen in Free Flight. Like many of us I had ogled the Howard Boys 50" version for years, and after laying the Lysander bogey to rest with my very successful Keil Kraft 18" version It was time to give it a go.

Start... and stop!

Probably because the Howard Boys design is so well-loved and holds iconic status, I neglected the first and cardinal rule of scale building which is to sort out your documentation first and align your plan to that. Off I went and launched into the basic 3/32 box structure only to find that the Boys plan was a cunningly concealed disaster. In fact, I have come to the conclusion that Mr Boys did not build his model from this plan at all. My guess is that he probably designed as he built and that he or someone else drew the plan for publication later. There were the obvious inaccuracies around outlines which I was always prepared for, but as I got building I realised that the fuselage sections (while not too inaccurate in shape), were the wrong dimensions for the internal box structure and the sheeting offsets were wrong. The wing roots are wrong and percentage to chord is also wrong. Add to that the differences between one wing and the other and I'm afraid I just lost confidence in it.

The First set of drawings I obtained were the William Wylam drawings which were published in 1958. I'm guessing that Boys used these drawings as his plan was also published in 1958 and his basic design follows the Wylam proportions. These drawings are fully dimensioned, very tempting and very nearly had me hooked. Enter the Haynes Westland Lysander Workshop Manual – yes really! Those of us who in earlier years pored over

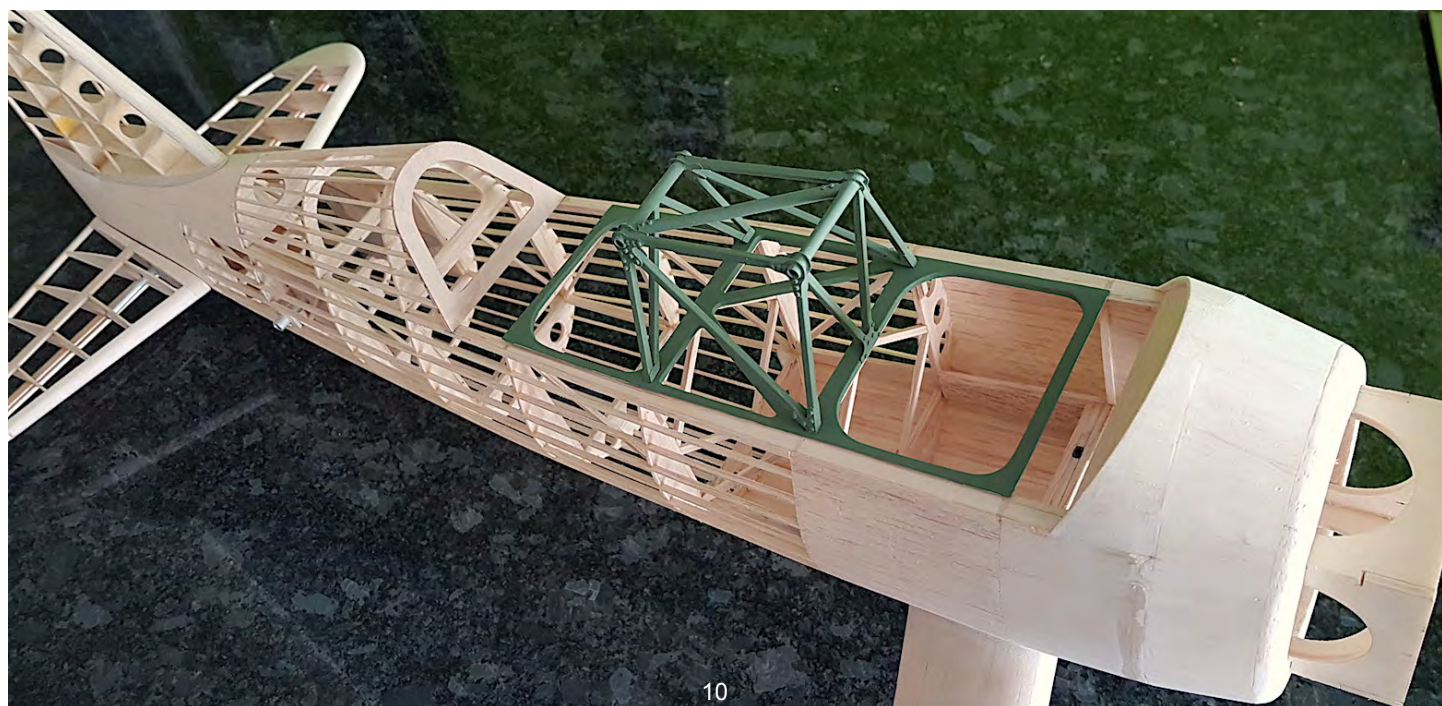
grease-smudged copies of the Haynes Manual to attempt yet another WOF on our Hunters, Avengers, Escorts, Minis and other assorted rubbish, might be surprised to learn that you can also buy the Haynes workshop manual for an Me109 or in this case a Westland Lysander. What the Haynes Manual, with its detailed construction photos, clearly showed was that the Wylam drawings, beautiful as drawings, were not wholly accurate.

At this point it was Ricky Bould to the rescue with a pristine set of the 1/24 Aeromodeller drawings. These are also beautiful drawings and while they largely agree with Wylam, they depart where required in accordance with the photographic record. A trip to the printshop, the exchange of a few dollars and a 200% copy became my 1/12 plan

Fuselage

I had made the 3/32 square internal box structure already and the good news was that with some surgery the new correct sections would fit around it nicely. A major departure from the Boys design was my decision to build a scale cabane structure rather than the non-scale half former structure usually employed on model Lysanders. The Lysander is really a parasol rather than a cabin aircraft and lurking under all that glasshouse is a kind of triangulated rollover frame not unlike the thing on the top of a PT19, that sits inside the canopy and carries the wings. Boys would not have had access to a vacuum box and would have needed more structure to support the various bits of plastic sheeting. I save a bit of weight here while also achieving a more scale representation

The fuselage box is actually a very complex shape - it goes from rectangular to whatever shape you call that at the tail - also maybe not apparent but the top longeron slopes down from a point just forward of the tail so collectively these give the box a slightly swoopy look but it's correct! At the front end you can see the result of hanging around with Gwyn Avenell and his radio scale models too much! The ugly but very functional Liteply structure grafted on the front of the truncated nose section bears all





the loads and the tapering longeron doublers transfer and dissipate the stresses aft. Additional formers glued around the box will support the cowling and a further Liteply plate on the front of the box will carry the dummy motor and noseblock assembly.

The cabane structure is 2.4mm basswood with 10 thou styrene fishplates to provide mechanical strength - all cyano'd together. Compression tubes are 5/32 aluminium tube. These will take the wing pegs and dental bands through the middle. Pins and more fish-plates assist its adhesion to the top longerons. There is a lot of visible cockpit structure in a Lysander and I have a horror of furry looking painted balsa. The original aircraft has aluminium covers over each of the 2 cockpit bays incorporating the corner fairings. I vacuum formed a nice smooth one-piece cover that encompasses all of the visible top structure and takes paint (and embossed rivets) nicely.

The stringers give the Lysander its shape and there are plenty of them – about 40 to get right around! I went with firm 1mm x 2.4mm and this is holding the shape nicely. I umm'd and ahh'd about scale stringer placement because of weight, but balanced against that there is so much support for the covering and such tiny areas between wood that I will cover this model in my lightest indoor tissue. To get the rear decking stringers perfect I actually carved a solid block to the correct shape, sliced and diced it at the appropriate

stations and then traced the formers from the resulting cross sections. Old-school but you can't argue with the results. At the back end the sheeted sections from the tailplane back to the tail cone and the forward fuselage imitate the full-size structure. The rear side panels are very light block hollowed out. I hollowed them out to 1/32 using my home-made gouge made from sharpened 19mm thin-walled brass tube and sanding.

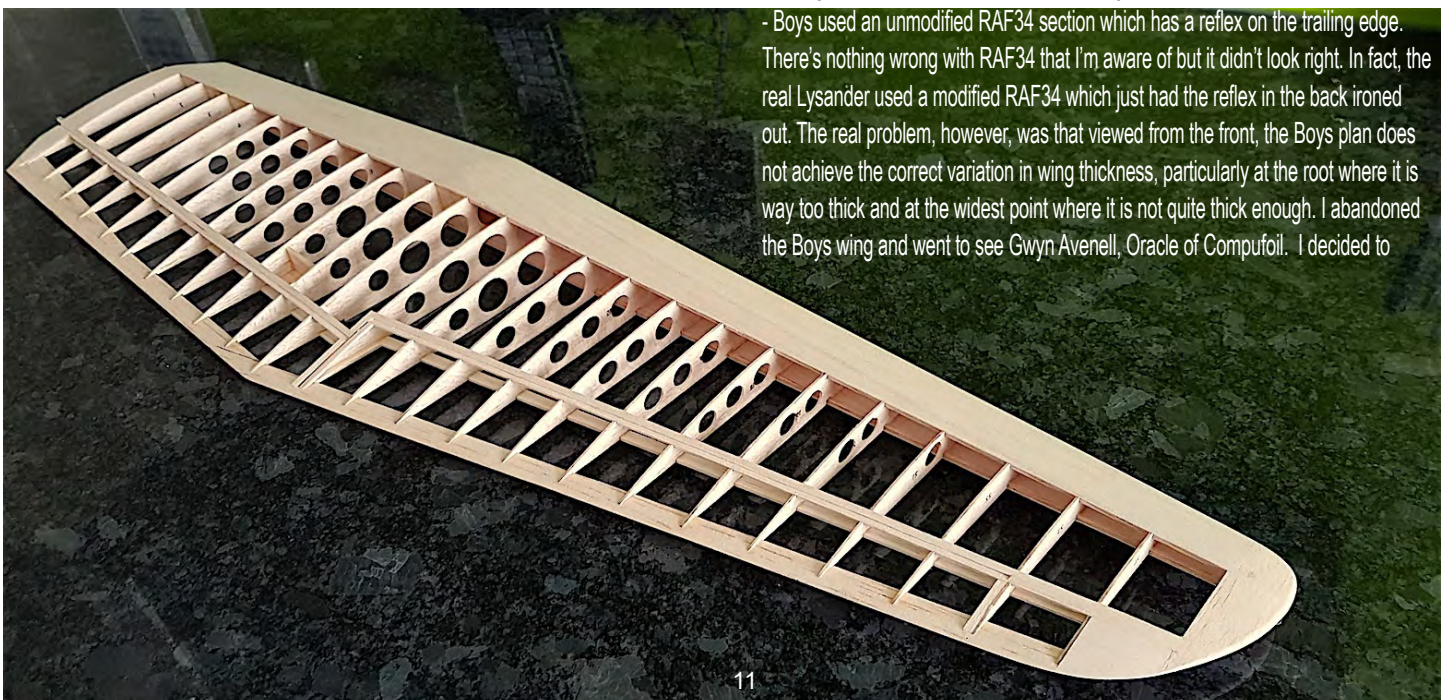
The rear peg support is internal and the outer hole is just to support the tissue covering. This allows the rear peg to be flush with the fuselage - much less obtrusive.

Canopy

I carved a plug and Vacuum formed a canopy using Avetek's machine - at roughly 260 x 90 x 90mm it was too big for my little box at home. We also did one in 10 thou styrene that I will carefully cut to represent the framework. A bit tedious but it means that I can paint the inside cockpit green the outside black and just overlay the whole thing with thinned RC56. Weight is the major consideration and by doing things this way I've ended up with a very thin and light canopy at 7g.

Wings

Among the various problems I encountered with the Howard Boys plan was the wing. Leaving aside that the shape was not quite right there was an issue with the ribs - Boys used an unmodified RAF34 section which has a reflex on the trailing edge. There's nothing wrong with RAF34 that I'm aware of but it didn't look right. In fact, the real Lysander used a modified RAF34 which just had the reflex in the back ironed out. The real problem, however, was that viewed from the front, the Boys plan does not achieve the correct variation in wing thickness, particularly at the root where it is way too thick and at the widest point where it is not quite thick enough. I abandoned the Boys wing and went to see Gwyn Avenell, Oracle of Compufoil. I decided to



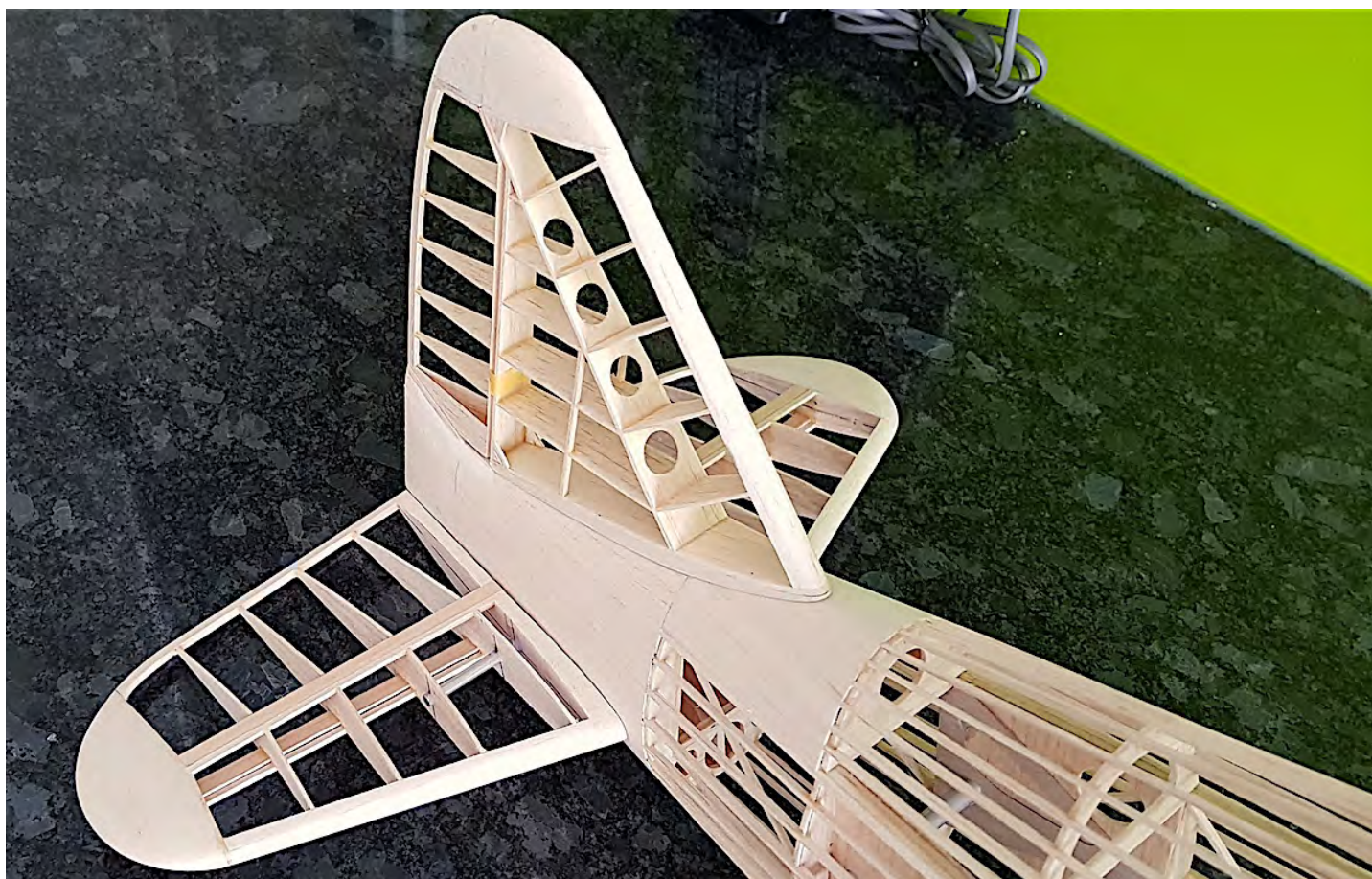
make the wing a little more Clark Y-ish - the beauty of Compufoil is that you can play around with the parameters and get exactly what you want - in this case it started life as Clark Y, but with the lower surface bellied out a bit, though not as much as RAF 34. Interestingly Compufoil also calculates the centre of lift and guess what? - bang on the front strut position. The Oracle also laser cut the basic ribs for me but by that time I'd used so much of his Saturday that we just did the outlines and I did the lightening holes the old school way.

Tail surfaces

The tailplane, fin and rudder are pretty close to full size construction. The tailplane is in two halves that slide over an 1/8 aluminium tube running through and protruding from

the fuselage. This allows the whole tail to pivot like the real one. The incidence angle is fixed and regulated by a ply tongue in each half that meet and lock together in the middle of a transverse box across the fuselage. A short length of nylon bolt is threaded vertically through one of the ply tongues. This is a firm fit in the box, top to bottom, allowing accurate and positive adjustment by turning the screw.

I've built the tailplane to scale and used the chunky scale section so there are certainly questions in my mind about its likely effectiveness, but the good news is that with this construction it's an easy matter to make another set of tailplane halves, if not. Also, the adjuster means that I can bring the CofG forward and wind on a bit of negative tailplane to help.



Undercarriage and wheel pants

The Lysander used Dowty sprung hubs à la Gloster Gladiator – cunning wheels with the shock absorbers embedded in the hub. The undercarriage legs are therefore rigid. I decided that I would find a way of springing the wheels within the voluminous wheel pants but that the legs would have to be really rigid if the fuselage joint was to stand a chance. The U/C legs are 3mm square section carbon fibre well locked in to a hard balsa sandwich and braced forward and aft.

I was originally planning to use a 3-D printed plug to vacuum-form the wheel pants but the incredibly complicated shape was going to take too much time to draw up in CAD. Old-school time - block of rock-hard balsa and a sharp knife. It's a very complex shape but in fact the essentials of the shape come almost automatically out of the geometry - if you can understand what I mean. That geometry had to also incorporate both rake and toe-in, in the leg stub. Then I had to do it all again in reverse for the other side!

The wheel pants are vacuum-formed in two halves but the halves are unequal - not the two simple clamshells we normally see. I did this by sitting the form in two specially shaped cradles to get an inner and an outer.

How it all mounts was a challenge - I made up a balsa and ply section that slides firmly over the two protruding carbon spars. A 6mm lite-ply arm mounts on the end of the sliding section and this carries the undercarriage suspension.

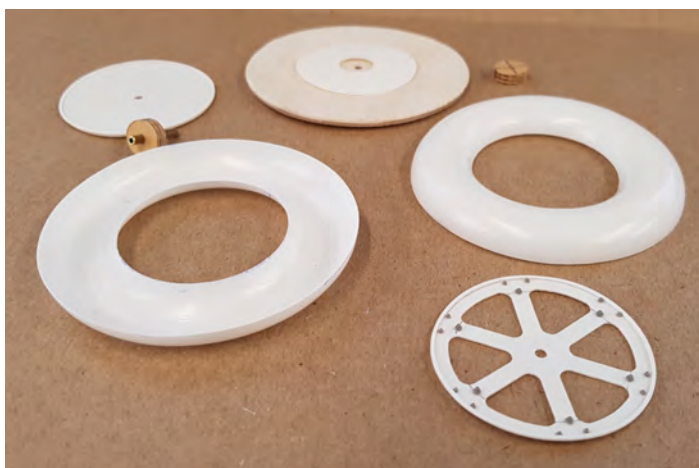
The two shells are joined with internal doublers which both strengthen and provide glue surface. These are moulded off the original form so they can't help but be right!

The undercarriage springing is a more complex version of what I did for my little Keil Kraft Lizzie but with an expansion spring instead of a torsion system. The photos show a rubber band, but I went with the spring due to the difficulty of replacing bands once the wheel is in and the two sides are glued together.



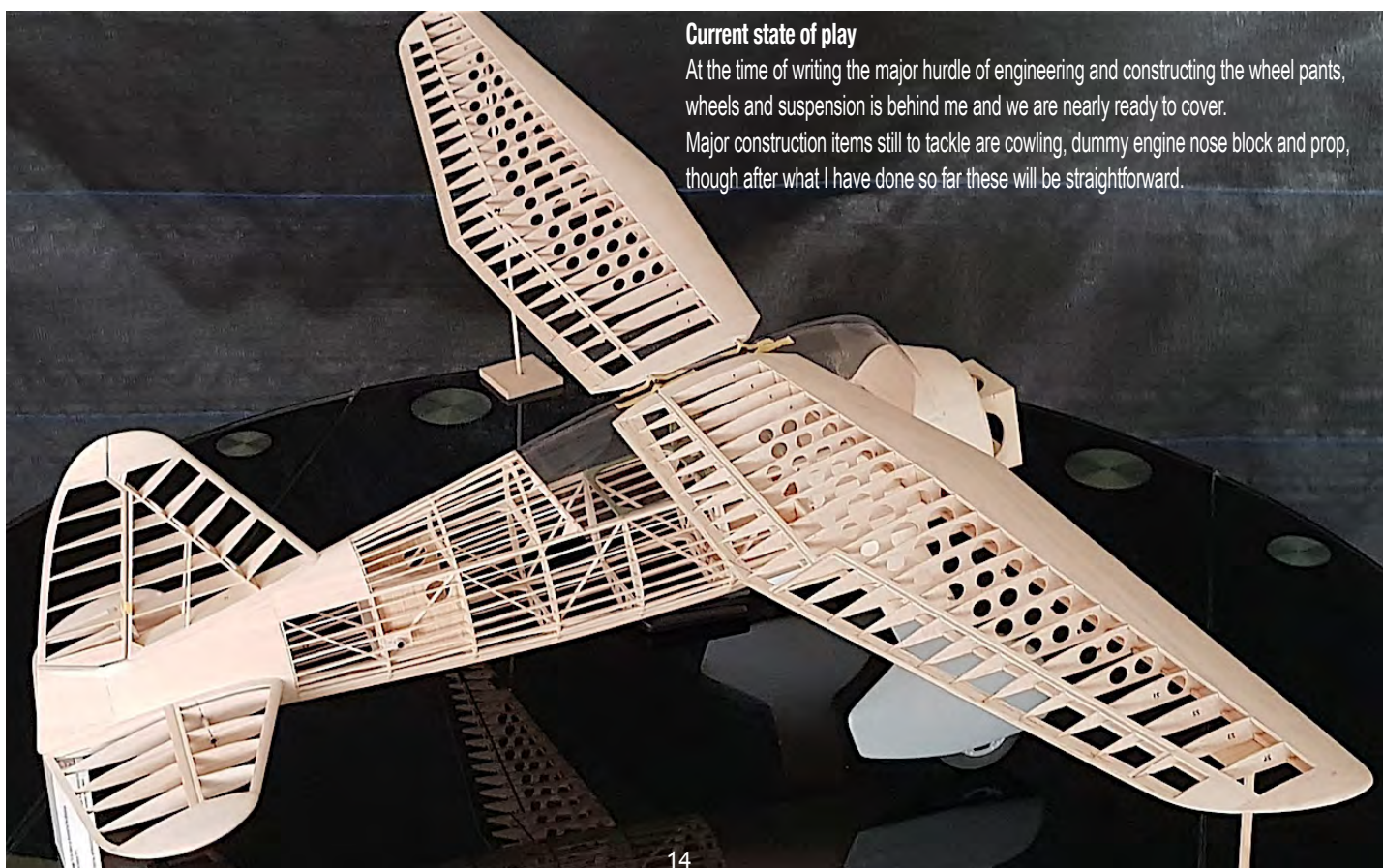
Wheels

Wheels on this model are quite a big deal. They are a bit of a feature and quite a large item at this scale, being 70mm diameter and 16mm wide. I deliberated over several schemes including turned balsa and foam rubber tyres on a balsa core. In the end I found that this method gave the lightest and most realistic results. The tyre is two half shells vacuum formed over a 3D printed form. The core is just a piece of 3mm balsa which is stiffened by the tyres and needs no other reinforcement. The functional hubs are 10mm diameter 3mm ply discs with a brass bush. The wheel faces just glue to the ply discs in the centre and this holds them down tight against the tyres. A bit of paint (Alclad Aluminium and Tamiya tyre black). Weight is 6g apiece which is very acceptable.



Current state of play

At the time of writing the major hurdle of engineering and constructing the wheel parts, wheels and suspension is behind me and we are nearly ready to cover. Major construction items still to tackle are cowling, dummy engine nose block and prop, though after what I have done so far these will be straightforward.



Ricky Bould's SAAB J29 Tunnan

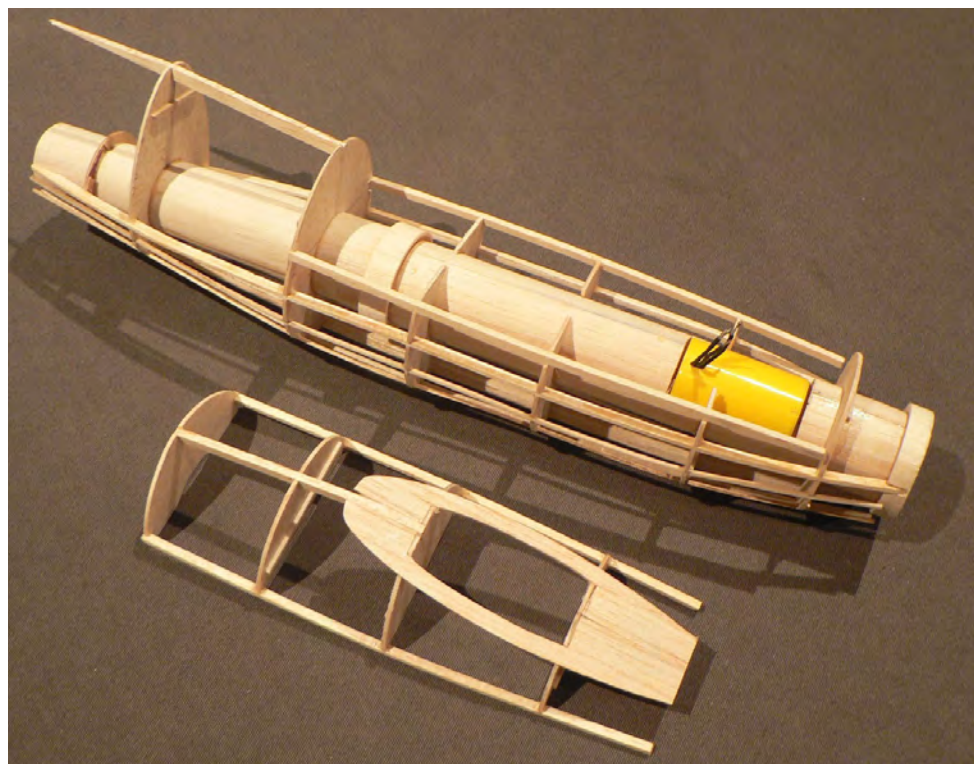
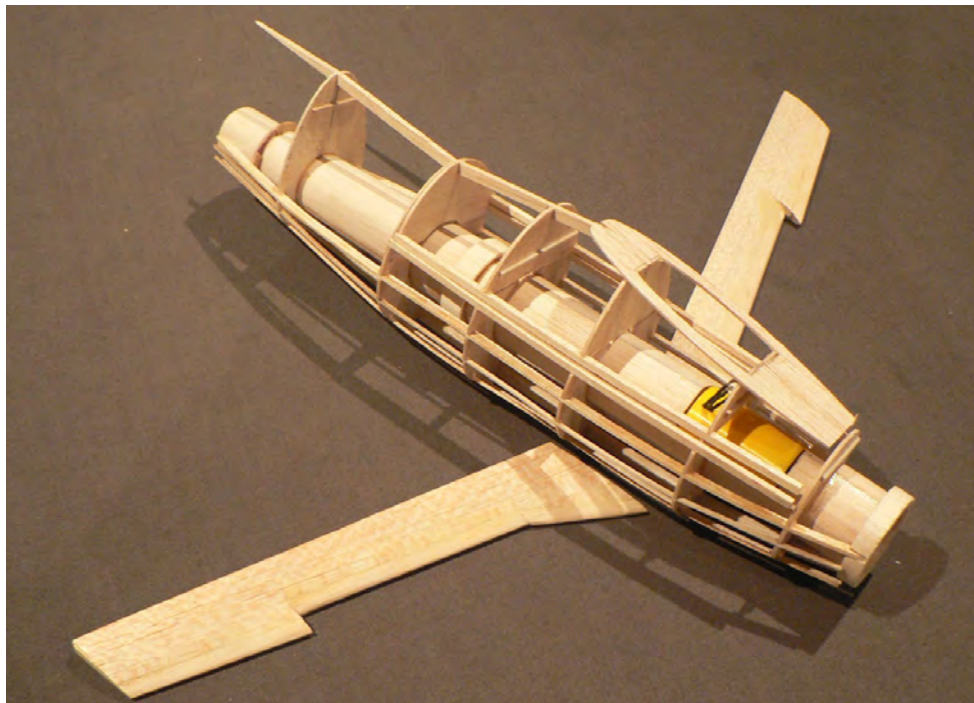
Free flight electric scale

I have long had an ambition to make a ducted fan model, probably inspired by the Veron Sabre and Fairey FD2 many years ago. The switch to electric power sparked further interest but the weight of the early systems was a concern.

The advent of the small KP fans and associated timer, together with the advent of Li P batteries, has helped but seeing the fan models of Stephen Glass, Derek Knight and Ivan Taylor gave me the final push. I have taken a safe route and the SAAB has met all the criteria as it has a straight through duct and a distinctive appearance. Trips to Sweden and seeing the aeroplane close up fuelled further interest. I searched my files and found two models, one by Dave Rees that was lacking in accuracy and another, a Rapier powered model by Mike Stuart that was accurate. The plan was scaled to 22" to get the required duct size, and checked against 3 views from MMP Publications before starting. This confirmed that the plotting of formers in Mike Stuart's plan was accurate and this made the production very straightforward. Also the thread of Stephen Glass's SAAB build gave invaluable advice on fan position and the split for the wing/fuselage join.

I elected to use the D box structure as espoused by Ivan Taylor, for the wing, to give a very stiff and light structure. The tail surfaces were the normal sheet core with ribs on both sides that tapered from 1/4" to 1/8" at the tip, with separate control surfaces. The fuselage is a light structure built around the central duct and is covered in 1/32" sheet. The top is split at wing level and allows access to the fan, speed controller, timer and battery. This is held on with magnets.

The 32mm fan and timer are from KP and the speed controller is a 10 amp Falcon unit. Batteries are currently being sourced, and a decision on how these will be placed in the model will be taken when the final configuration is known. The model weight is in the 70gm region prior to covering with silver Mylar.



Don Spray's Grumman Tigercat

Free flight rubber scale

Having flown alongside George Fay who has built a number of rubber powered multi's, I felt the urge to build one of my own. The Grumman Tigercat appealed for a number of reasons. The nacelles are widely enough spaced to allow the use of a good sized propellor, there is ample dihedral and the aircraft has a sleek low drag fuselage shape. I have kept to scale outlines as much as possible but changed to an aerofoil similar to Clark Y. It has been particularly important to keep weight down in this model through light balsa selection and lightening parts where possible. The main construction has stopped for the moment while I make two contra-rotating propellers, assemble the nose

blocks and bobbins and pin the model together (including the eight strand motors) to ascertain the CofG. Only then will I attack it with my Dremel® where necessary. All the balsa, laser cut ribs and light plastic mouldings were supplied by Gwyn Avenell of Avetek. The project has been quite a challenge made more complex by building it from a 3 view plan from the Internet which I have had expanded to a one metre wingspan at my local copy shop. This has been a thoroughly enjoyable build to date.

