Sticks and Tissue No 76 – March 2013

If you can contribute any articles, wish to make your point of view known etc please send to or phone 01202 625825 JamesIParry@talktalk.net

The content does not follow any logical order or set out, it's "as I put it in and receive".

Thanks to Mark Venter back issues are available for download from
http://www.cmac.net.nz

Writings and opinions expressed are the opinion of the writer but not necessarily the compiler/publisher of Sticks and Tissue.

John Hoyle with Carroll Krupp designed model built by Phil Smith at Beaulieu

From John Hoyle

Shortly after Phil Smith died I was fortunate enough to acquire this lovely model from his estate. The 8ft span original, designed and built by Carroll Krupp from Akron, USA and powered by a 10cc Brown Junior, was proxy flown by Herbert Fish to win the Bowden Trophy in 1937. I believe Phil must have made it following the Bowden Bee in about 1990 but like the Bee it was never finally finished and flown. He took it to Old Warden for display one year, I remember a photo of it appearing in one of the magazines after a Vintage Meeting. Beautifully finished in typical Phil style - doped solartex plus orange and black Humbrol enamel - all of it as good as new - the front end of the model had been set up for an engine of about .40 capacity. Many years ago I had the good fortune to buy an early Mk1 Taplin Twin from the late Col. Bowden's estate and thought it perfect for this model. The results you can see in the attached photos, the model having it's maiden flight on March 20th at Beaulieu. The motor and model seem to be an ideal combination, it flew "off the board" with no trim changes so I am keeping my fingers crossed for a debut at Middle Wallop at Easter. Photos by John Taylor


SMAE 6022
PHIL SMITH
A.B.A

From Jörgen

Hi James sending you pics of my Hacker Cub freeflight with an Gasparin 120 twin covered with tissue and for the first time I used Tissue Paste and Ezedope and if I practice some more I think it will work just fine. I sure dont miss the smell of nitro dope. I wonder if there are people who tried on silk ,polyspan, and tissue over mylar ??

From Charlie Stone

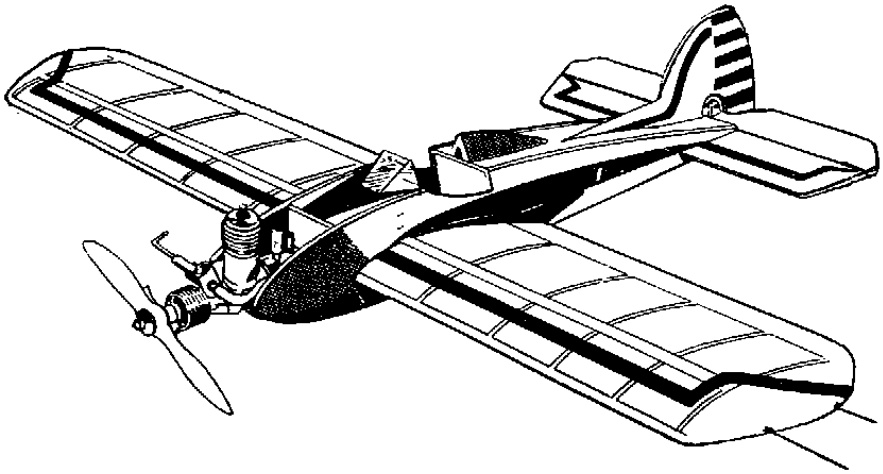
I suspect that the answer to Bryan Passey's question as to the identity of the A class team racer is the `Pacemaker'. Just for fun I have attached the only photo that I have of my version of this model which was the very first Vintage A class model that I built and it was used with some success powered by an Oliver Tiger.

I have also included two views of my favourite A class racer the Tempest (scaled up from the plans in Aeromodeller in I think 1955). The photos are tiny and probably not much use to you, but are there for interest sake alone.

Both the Pacemaker and the Tempest have won the State Championships for A class here in Western Australia some (many) years back. So they both worked well enough to serve their purpose powered by Olivers and with speeds just over 90 MPH.

From Allan Laycock

Attached are photos of my Malmstrom Bambinetta FF 150% enlarged - didn't have an Ed .46 or Frog 50 so it had to be larger for the Merlin. There are 3 photos of the completed model and on of it 'bare bones'. It took me longer to figure out how to mount/use one of those button thingys than to build the model.
Also attached is a Vic Smeed Courtesan with Frog 80 - again a bit larger at 40". I always thought that the '50s designs were too small for engine size esp Veron Cardinals, Plecan Hummingbirds and the like.
Regards from Oz (ie Australia it is really pronounced Oztralia hence Oz),



A 45" span twin boom rubber driven flying boat

KITTIWAKE

DESIGNED BY

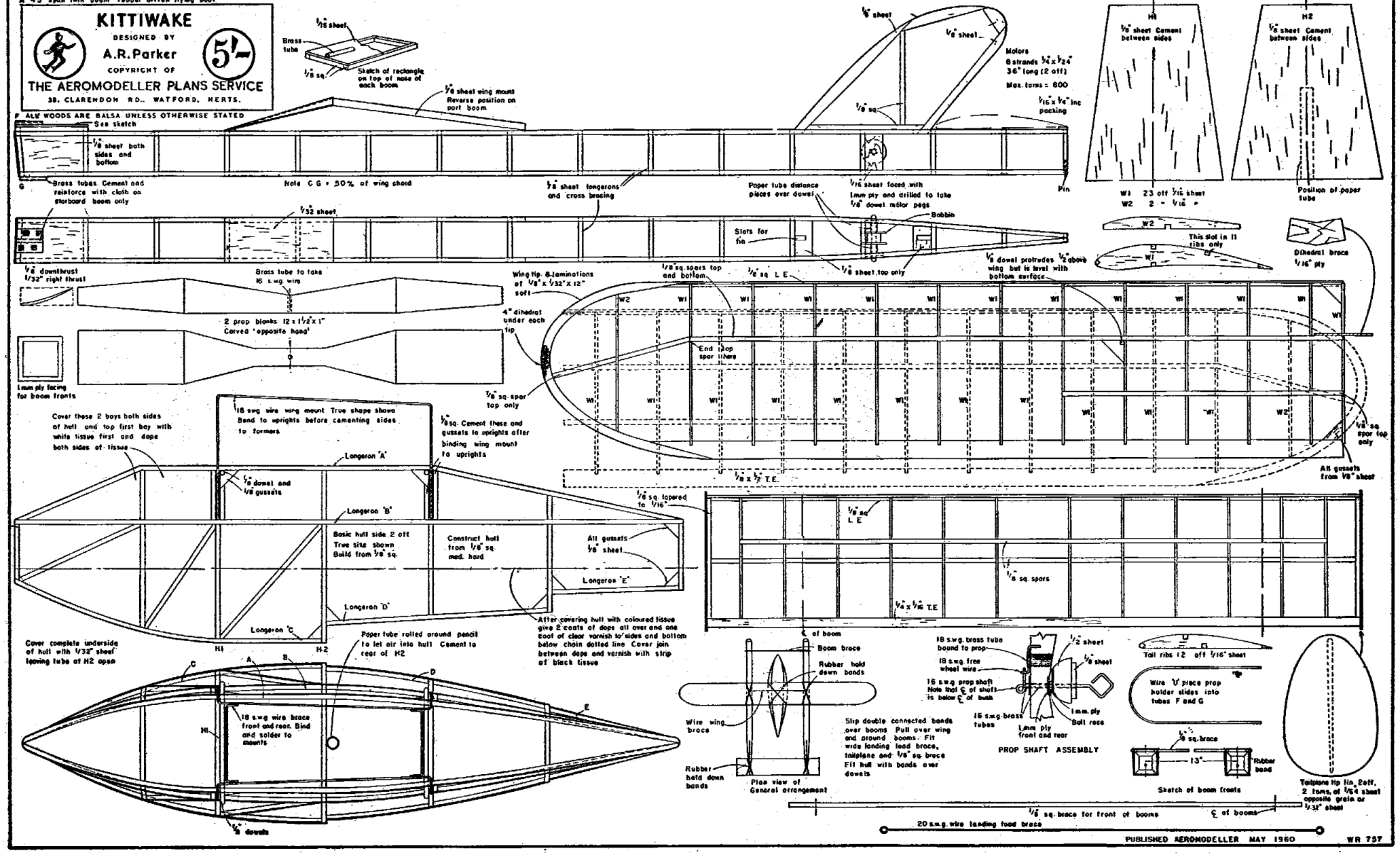
A.R.Parker

5/-

THE AEROMODELLER PLANS SERVICE

38, CLARENDON RD., WATFORD, HERTS.

ALL WOODS ARE BALSA UNLESS OTHERWISE STATED



PUBLISHED AEROMODELLER MAY 1960 WR 757

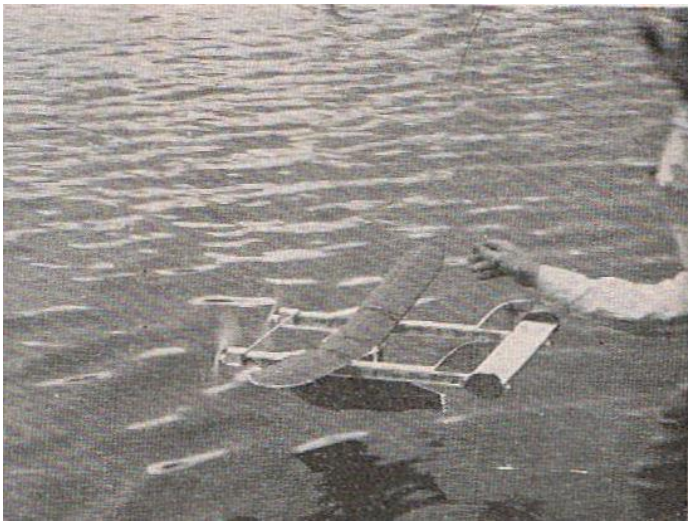
Kittiwake British record holder for watewrplave duration by Ray Parker from Aero Modeller May 1960.

Until a couple of years ago when W. Tinker and Co. of the Portsmouth and Epsom clubs experimented with this type of craft, apparently only members of the old North Kent M.A.S. and the present North Kent Nomads M.C. have made rubber driven flying boats. It is rather surprising that more modellers have not done so, as the flying boat is a fascinating subject and very spectacular when skimming off the water. Experiments have been made with single motor layouts but the designer has yet to see one take off the water without a hard push. When they appear to have sufficient power to take off, torque troubles are in evidence as the machine tilts badly and invariably spins into the water. Sponsons and floats do not appear to be effective, however well designed, as drag on the water pulls the machine round.

Having had some success with the twin motor layout, it was decided to build a "Wakefield" size machine for two reasons. Further, it is a very efficient "land" plane size and secondly, a long motor run can be obtained due to the length of nacelles. Since an "old rule" Wakefield had 14 strands of 1/4 in. x 1/24th in. 36 inches long, Ray decided to power Kittiwake with two motors each comprising 8 strands of the same 36 in. length.

Start construction by building the hull, two 1/8 in. sq. side frames for which are pinned down over the plan, one frame over the other for accuracy and speed. When dry, they are separated, and 16 s.w.g. wire wing mounts bent and bound in place and gussetted. A paper tube is made by rolling over suitably waxed dowel and cementing, then fitted to former H.2. This former and H 1. are then joined to the side frames and whole structure allowed to dry thoroughly. Rear of side frames are brought together and held under pressure of a clothes peg. The front end is similarly treated after steaming the structure forward of H.1. Spacers and dowels are now added. Underside of the hull is covered with 1/32nd sheet, leaving a hole for the paper tube end to prevent cavitation on take-off. Five of the upper hull panels can be covered with white tissue, doped inside and out, for cabin effect; otherwise cover with coloured tissue, as for the rest of the hull, and apply 2 coats of dope. The lower half of the hull should be clear varnished. Wire braces are bound and soldered to wing mounts.

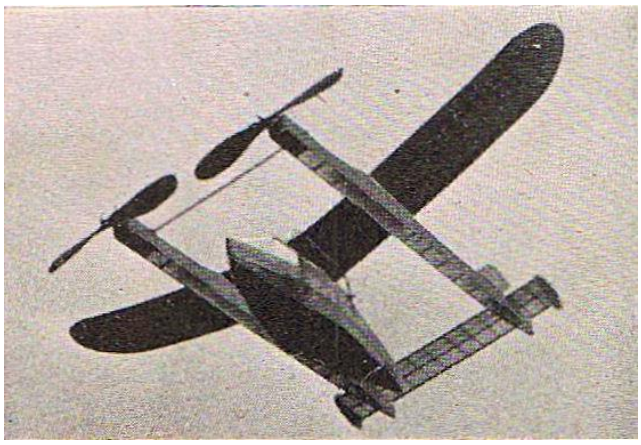
Wing construction is quite straightforward, noting that 1/8th dowels protrude 1/2 in. above the wing, and the covering of the centre section over the hull, with 1/32nd sheet. When joining the wings, ply dihedral keepers are used to maintain 4 in. dihedral under each wing tip. Tailplane is also straightforward. Note that the upper spar is cut short at the tips. Two end fins are cut from 1/32nd sheet and cemented in place applying only a small amount of cement to prevent warping.



Nacelle construction is of simple box form, starting with two sides built together over the plan. These are joined with spacers, rear ends being brought together first. Pieces of 1/8 in. sheet, frame "A" and 1 mm. ply are added around the nose. 1/16 in. sheet and ply laminated rear motor peg retainers are drilled and cemented in place. Fit brass tubes to the starboard nacelle only to take a U-shape wire to hold the prop. after winding this motor first. Add 1/8 in. sheet wing mounts, noting one is smaller than the other to take the dihedral. Also add slotted 1/8 in. sheet piece, for fins, on the top rear of each nacelle. Make up two fins, and cement in place after covering. Cover all surfaces with lightweight Modeispan, and dope as for similar sized conventional rubber model.

When making prop assemblies, note that your port runs in clockwise direction and starboard anti-clockwise. Study prop shaft details well before bending the wire. Make up two motors, each of 8 strands 1/4in. x 1/24 in., 36 in. long. These should be pretensioned before fitting to nacelles—100 turns clockwise for starboard motor, and 100 turns anticlockwise for port. Useful fittings for motor pegs are paper tubes either side of bobbins to keep the motors central. Assemble the model with nacelles parallel, and held by the tailplane and a 14 1/2 in. length of 1/8 in. square balsa across front ends of nacelles, just behind pieces "A", so that 1/8 in. protrudes either side. Rubber bands hold this in place, and is so designed as to break on a hard landing and so save the airframe.

A wing wire brace of 20 s.w.g. Piano wire simply hooks over the protruding dowels on upper wing surfaces. Make sure the wing is central between nacelles when attaching rubber bands. A simple arrangement of bands holds hull under centre section. Kittiwake should balance at 50 per cent. chord. Should any correction be necessary to achieve this, it is best to move the wing mounts rather than add weight. Lateral balance can be corrected by addition of weight.

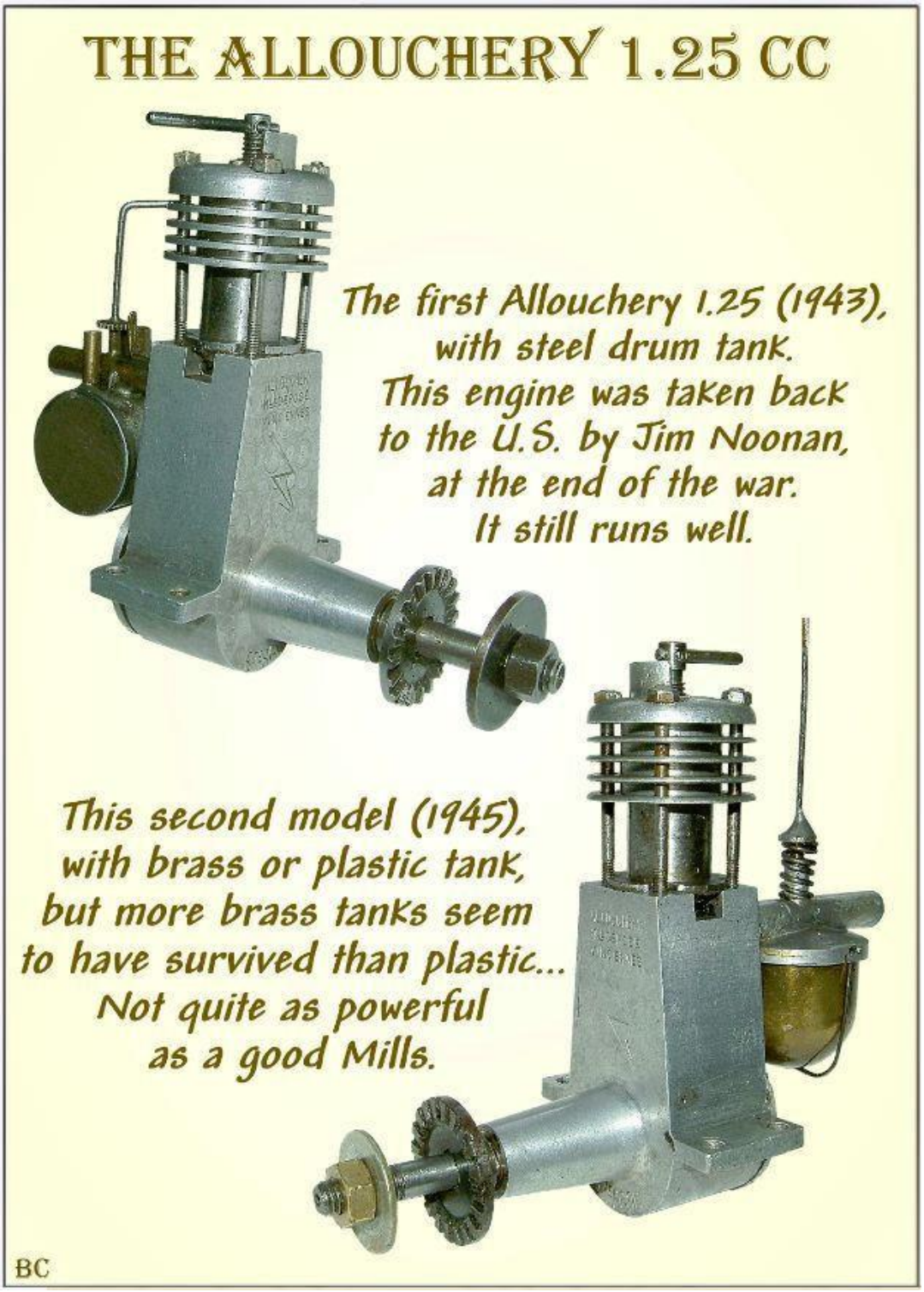


On the original model, it was found that initial glide tests were good, and that 1/16 in. packing could be added under tailplane trailing edge without causing a stall. The noseblock was packed with 1/8 in. downthrust and 1/32in. side thrust on each nacelle for a good circling climb. These adjustments are now incorporated in the design. When trimming, increase turns gradually, working up to 800 maximum. A point to watch is to have an equal number of turns on each motor. Before attempting water takeoffs, practise from short grass.

From Geoff Goldsmith

Hi James, in the last S&T a somebody had an enlarged Deb. this is mine from around 1990, Saito 45 and about 7 ft. the uncovered model is in the next email.
I would recommend that if anybody wants to have a go, make the wing stiffer than mine as it does warp. also make sure the rear wing dowel is connected down into the fus. otherwise it is own boot strap situation. I seem to remember I took it to Old warden for the Vic Smeed day we had a few years ago.
ps It is for sale so contact me 01306 881000

Myself and Dennis Bryant with the Debutante at Old Warden.



Bill Wells

Around 1965 I started making a Piper Apache control line model from an APS plan. I didn't have a lot of tools in those days a junior hacksaw, a Swan and Morton model knife, a hand drill and single edge razor blade being the main ones so progress was slow. Another problem was sourcing small amounts of thin plywood in fact some of it was made from veneers scrounge from a joiners and laminated with Cascamite glue. The building progressed in fits and starts and was dependant on materials and spare time both of which seemed to be in short supply. Even when the structure was complete it seemed to take forever to paint and decorate the model. The model looked too good to fly then one day I took the plunge as did the model! There was serious damage to the wing spar within the fuselage, superficial damage to the right wing and fin. I lost heart and patched it up and put it into storage. At last, with time on my hands and in my dotage I took the model apart. As I did so there was a certain amount of empathy with the model as we had

both suffered the ravages of time! The balsa in places was a bit brittle, there was lot of paint and skin cracking. The two wing panels were brought together and reinforced using large chunks of balsa wood and thin five ply. Putting the fuselage back on the wing was the easy part I now have to decide how to tackle the surface finish as the layers of paint and varnish were badly cracked. At this point in time I really don't know whether I will get it back to be a flyable model or if I will have somewhere to fly it!

This model had a profound effect on me which has lasted to the present day. I put a lot of time and energy into this model and the amount of flying I got out of it was nil. I was very upset because of the wasted effort to make it look good amounted to nothing. From my point of view wasting time making a model look like a real aeroplane was a shear waste of time. Don't get me wrong, I like scale models and have the greatest admiration for those who spend a tremendous amount of time making them and flying them. The model has a wing span of 37 inches, a length of 28 inches and weighs about 1½ lbs less the final paint job and engines. The engines used were an ED Super Fury on the left and a DC Sabre on the right.


G-APFV

A 37" span scale control line model for 1—1·5 c.c. engines (A.P.S code E.F)

PIPER APACHE

DESIGNED BY

J. Stivala

6'6

THE AEROMODELLER PLANS SERVICE

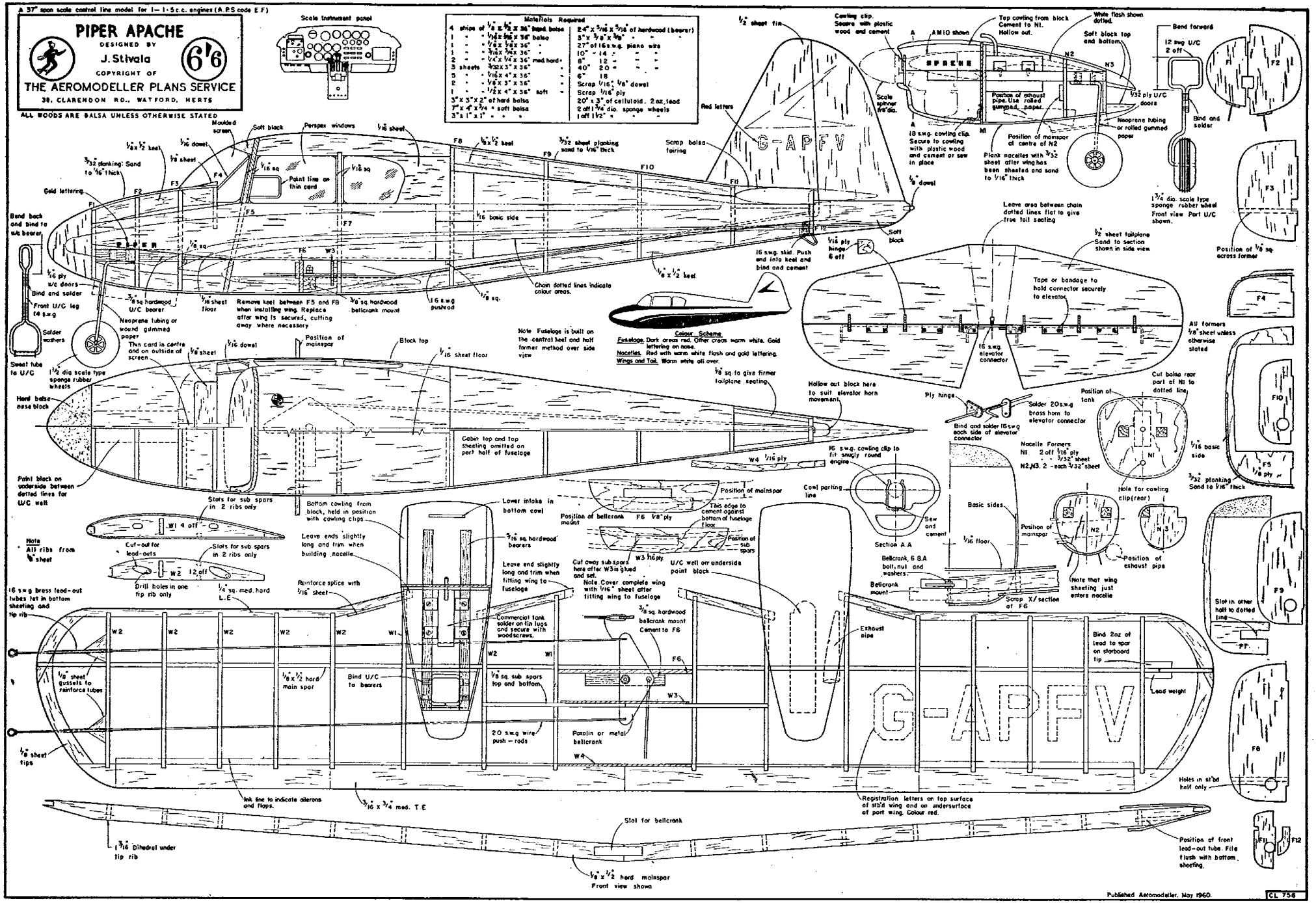
38, CLARENDON RD., WATFORD, HERTS

ALL WOODS ARE BALSA UNLESS OTHERWISE STATED

Scale instrument panel

Materials Required

4 strips of 1/8" x 1/2" x 36" hard balsa	24" x 5/16" x 5/16" of hardwood (bearer)
1 " " 1/16" x 3/16" x 36" balsa	3" x 3/8" x 3/8" " " "
1 " " 1/8" x 1/8" x 36" "	27" of 16 s.w.g. piano wire
1 " " 3/16" x 3/16" x 36" "	10" " 14 " " "
2 " " 1/4" x 1/4" x 36" med. hard "	8" 12 " " "
3 sheets 3/32" x 3" x 36" "	40" 20 " " "
5 " " 1/16" x 4" x 36" "	6" 18
2 " " 1/8" x 3" x 36" "	Scrap 1/16" x 1/8" dowel
1 " " 1/2" x 4" x 36" soft "	Scrap 1/16" ply
3" x 3" x 2" of hard balsa	20" x 3" of celluloid. 2 oz. lead
7" x 4" x 3/4" " soft balsa	2 off 1 3/4" dia. sponge wheels
3" x 1" x 1" " " "	1 off 1 1/2" " " "



Published Aeromodeller, May 1960.

CL 756

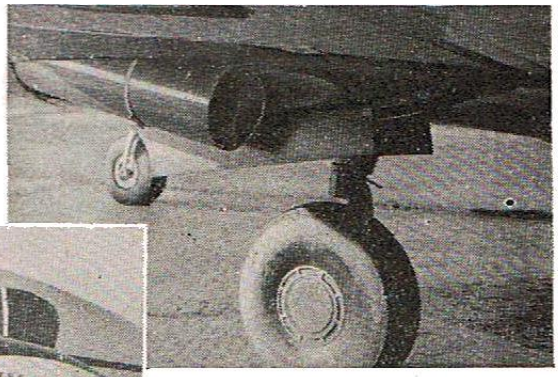
Piper Apache 37” control line for 1 – 1.5 cc by John Stivala. From Aero Modeller May 1960

When John Stivala first sent us this neat 1/12th scale controlliner for two 1 c.c. or 15 c.c. engines he lived in his native Malta G.C. Now he is an Australian - living at Coburg, Victoria!

A brief description of the full-size Apache is necessary to indicate this aircraft’s capabilities. The 1960 Apache, powered by two 160 h.p. Lycoming engines, has an outstanding performance as well as being the cheapest twin available. Max speed is 183 m.p.h. and cruising 171 m.p.h.; this with five passengers aboard. Using the aid of wide span flaps, landing speed is only 52 m.p.h. landing distance being 670 ft. Cruising range is 840 miles but this can be increased to 1,200 using auxiliary tanks, and even further for Max Conrad to make his transatlantic ferry flights (related in Hangar Doors). Loaded weight is 3,800 lb. and span 37 ft. 1 3/4 in. length 27 ft. 4 1/2in. Equipment for both night and day flying is provided in the form of full instrumentation plus many radio aids. Vigors Ltd. of Kidlington made available their demonstration Apache G-APFV for preparation of these drawings which are all the more accurate for Vigors’ kind assistance, and this particular machine will be based at Kidlington, Oxford in future if you want to see the plane on the cover.

Our model Apache is all-sheet covered, and because of this, very strong. Simplified lines make for easy construc tion; flying is similarly easy and stable on 40-50 ft. .010 ins. wire lines.

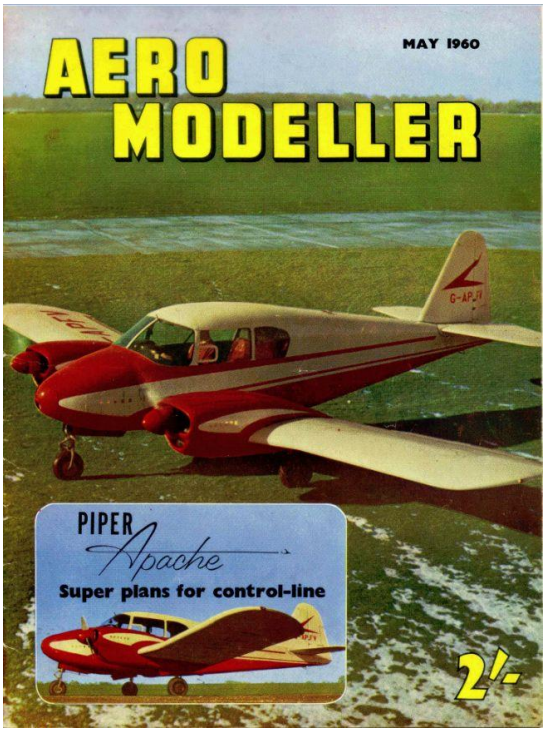
Fuselage construction comes first. Pin 1/8 x 1/2 in keel pieces over the plan and then cement half formers F.1 to F.l2 in place at right angles to the plan. When dry, the keel is removed from the plan and a second set of half formers are added plus nosewheel bearer. The 1/8 in. sq. floor supports and 1/16 in. sheet, floor are fitted into place, then the basic fuselage sides of 1/16 in. sheet are attached after outer edges of F7 are added. Keel is removed between F5 and F8. Retain pieces for later replacement after wing is installed. Nose and tail soft balsa blocks are carved and sanded in position. Upper fuselage can now be planked with 3/32 in. sheet; from F8 to F.1l, and in front of cabin F1 to F4. Nosewheel wire is bent and bound in place on 3/8 in. sq. hardwood bearer. Cockpit and interior details in the form of instrument panel, seats etc. are applied and block cabin roof cemented in place before shaping to match planking.



Close ups of actual aircraft show, left, cowling and nosewheel detail. Note also landing light in nose. Above, mainwheel, u/c doors, and short exhaust pipe shroud protruding from nacelle under wing

Window frame from 1/16 sheet is cemented in front of

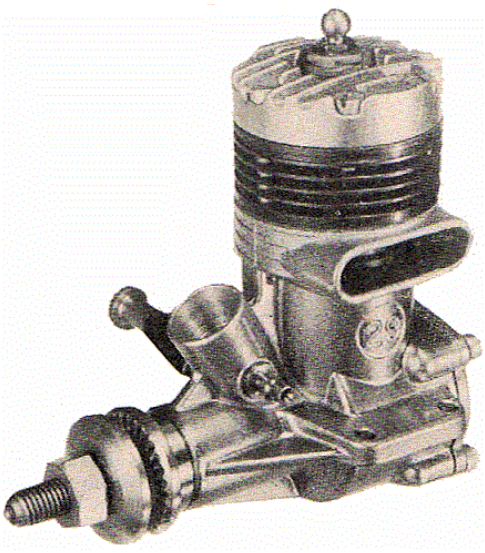
F8. Similarly, 1/16 in. sq. upright frames are added,
either side of F7, before covering windows with acetate and moulded windscreen. Bend the 16 s.w.g. wire tailskid, push into keel, bind and cement. Panels are made separately over the wing plan to accommodate dihedral. Slide ribs over mainspars, fit ribs to T.E. pinned over plan, add LE. sections and tips. Join halves with F6, W3, W4, add bellcrank mount.



Fit the bellcrank. Now assemble nacelle formers, Nl, 2, 3, on engine bearers and add to wingspar with joint between N2 and spar. Bind the main u/c legs in place on the bearers. Next, offer the wing to the fuselage, joining at floor underside which sets incidence by tops of W3, F6. Replace keel parts. Leadout and pushrod wires are attached. (Note 16 s.w.g. brass lead-out tubes at port tip). Now sheet all over surfaces, extending sheet into nacelle and fuselage area. After fitting tanks, nacelles are planked with 3/32nd sheet, and top and bottom cowlings hollowed out from block, top then being cemented in place. 16 s.w.g. wire cowling clip must be tested for snugfit around engine before sewing to lower cowl. 18 s.w.g. wire clip is secured at rear of cowl.
Tailplane and fin are made up from 1/2in. sheet, noting elevator connector details and attached to rear fuselage. Join pushrod to the horn with central lead-outs and elevators "neutral". Now complete fuselage planking, sand over all parts, cover with tissue, then sanding sealer can be applied and model finished in red and white colour scheme shown in the plan and on the cover.

Karl Gies

Lanzo Cabin Duplex off on a test flight. What is different about this model from the plan other than the internal fuselage bracing?



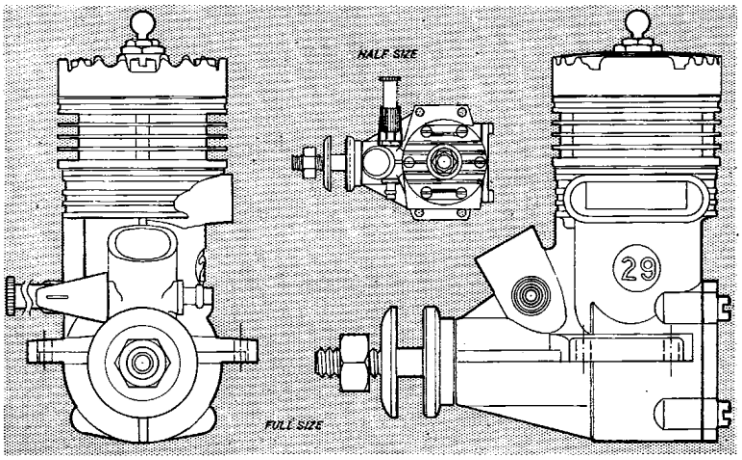
Gordon Burford's Glo Chief Australian 29 with fiery performance June 1959 Aero Modeller

Apart from detail differences, most 5 c.c. plain bearing glow motors seem to look very much alike and follow the standard layout and design practice established in the United States. The Australian "Glo Chief" is no exception. Externally, and internally, it looks just as one would expect a motor of this size and type to look. Perhaps a little on the rugged side-which is certainly no fault-and weighing a matter of 7 5/8 ounces. Its out standing feature is its performance-right at the top of its class for 5 c.c. plain bearing engines with a maximum B.H.P. of almost exactly 0.5 developed between 14,000 and 15,000 r.p.m. Even with this top performance it remains an easy enough engine to handle. Running tests were conducted with a standard castor- methanol mixture with 20 per cent. Added nitromethane. Performance is almost equally as good on a moderately doped fuel, in fact the compression ratio was a little on the high side for the "racing" fuel employed, giving a marked tendency to kick back. Hand starting was easy, however, right down to 7 in. diameter propeller sizes tried, provided the correct technique was established.

The "GloChief" appears to need a fairly generous prime for starting, in the right place. Priming through the exhaust, it was necessary to open the needle valve right up as well and start very rich. Otherwise the engine quickly cuts after running off the prime. Finger choking alone did not produce good starting response, but priming through the intake tube (with the fuel line already full) produced almost instantaneous starting with the needle valve at or near (slightly rich) running settings. Once having established this technique, the engine was run through a whole series of tests without any starting bother at all.

The "Glo Chief" ran consistently and well at all speeds tested ranging from 8,000 r.p.m. to well over 19,000 rp.m. It appeared happiest running at the higher speeds but still developed good torque down as low as 8,000 r.p.m. and was quite steady at that speed. At high speeds the exact setting of the needle valve for optimum lean mixture was a little critical. On several occasions, when apparently running smoothly and two-stroking, further adjustment of the needle by only a matter of two or three notches produced an increase in r.p.m. of as much as 1,000 on a given propeller load.

One could add the comment too, that in the case of the "Glo Chief" a substantial length of flame is sometimes blown out of the exhaust when starting very rich. Another peculiar habit (which appears to have evolved with modern glow motors) of spitting back raw fuel through the intake when flicking over, indicates the generous shaft porting. (With a forward facing intake the trajectory of this fuel usually coincides with the position of the operator's face.) The torque curve shows that the high initial torque is well maintained, resulting in a substantially flat power peak. Anywhere between 12,000 and 17,000 r.p.m., in fact, the "Glo Chief" output is maintained at over .09 B.H.P. per c.c., which is a pretty good figure on its own for a glow motor to achieve as a peak. Over speeding in the air would not result in an appreciable power loss, having selected a slightly undersize propeller in the first instance.



Thus a 9 x 4 would probably make an excellent free flight propeller, although a 10 x 4 or 11 x 3 would be a more logical choice, slightly trimmed, if necessary. A 10 x 6 Frog nylon (or possibly even a 9 x 6), or an 11 x 4 wood propeller would probably be a good choice for radio control. One of the main applications of the "Glo Chief", however, is undoubtedly for control line work where its excellent power characteristics should make it outstanding for stunt. We suspect, however, that it may be a little critical as regards tank location, particularly as the vibration level is

rather high, especially around the 12-13,000 r.p.m. figure. Rather bad vibration is, in fact, about the only criticism we have to offer on performance. Constructionally the "Glo Chief" features a substantial leaded steel cylinder (unhardened) which is a nice sliding fit in the crankcase unit casting. The cylinder is held by two bolts through the head (fore and aft positions) engaging in the crankcase, the remaining four head bolts merely screwing into the top cylinder fin to hold the head - down without distortion. The cylinder seats on its lowest fin, sealing with a fibre gasket. The crankcase face is as cast. Large area diametrically opposed exhaust and transfer ports are cut in the cylinder walls. The transfer passage provided in the crankcase casting is of generous proportions and covers some 100 degrees (radially). The exhaust opening covers approximately 150 degrees (radial).

PROPELLER—R.P.M. FIGURES

Propeller dia. x pitch		*r.p.m.*	*Propeller dia. x pitch*		*r.p.m.*
12 x 4	(Trucut)	8,500	9 x 3	(Tiger)	14,900
11 x 4	(Trucut)	9,900	8 x 3½	(Tiger)	18,000
10 x 6	(Trucut)	9,600	10 x 4	(Stant)	12,800
10 x 4	(Trucut)	10,100	9 x 9	(Stant TR)	10,000
9 x 6	(Trucut)	11,400	9 x 5	(Stant)	13,000
8 x 6	(Trucut)	13,000	9 x 4	(Stant)	13,800
8 x 5	(Trucut)	16,500	8 x 4	(Stant)	17,000
8 x 4	(Trucut)	17,000	8 x 6	(Stant)	13,900
7 x 6	(Trucut)	15,000	7 x 6	(Stant)	17,300
7 x 4	(Trucut)	19,000	7 x 4	(Stant)	18,000
		plus	10 x 6	(Frog nylon)	10,800
			9 x 6	(Frog nylon)	12,800

Fuel used: 25 per cent. castor; 55 per cent. methanol; 20 per cent. nitromethane

The piston is substantial in depth, but of extremely light Meehanite construction with the lower walls machined away very thin. The top is flat with a vertical plate deflector, machined as an integral part. The gudgeon pin of 5/32 in. diameter is fully floating, whilst the connecting rod is machined (milled) from solid duraI. Big end bearing is 7/32 in. diameter, leaving a relatively small wall thickness at the bottom of the connecting rod. The piston, consistent with the soft bore, is of hardened steel.

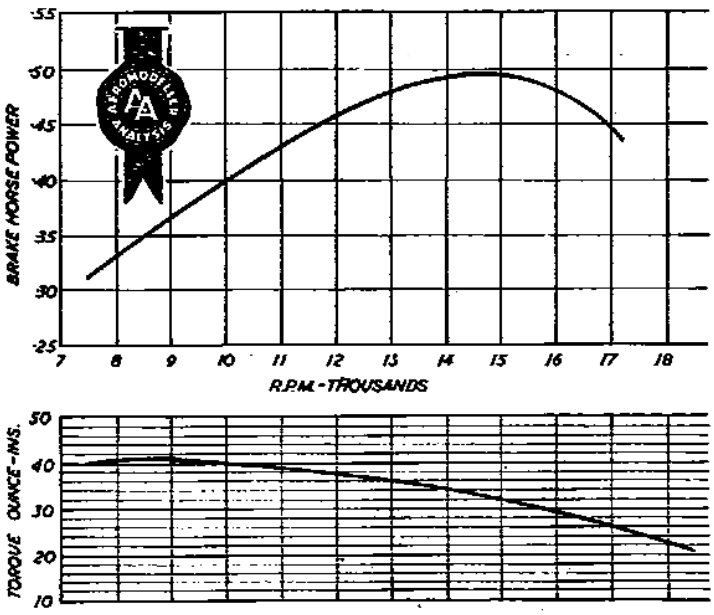
The crankshaft is 7/16 in. diameter over the 1 1/8 in. bearing length, stepping down to a 1/4 in. diameter threaded length for the propeller shaft. The intake port is cut square with the hole down the centre of the shaft 5/16 in. diameter. A crank web is machined away for counter balance and bearing length and crankpin finished by grinding, the bearing itself being formed by a cast iron (or similar metal) sleeve press fitted into the crankcase unit, this bearing being finished by honing.

The crankcase unit is a substantial casting weighing approximately two ounces, with a minimum of machining, and the head is gold-anodised, machined alloy.

Summarising: an orthodox glow motor of sound construction and also well made. Both the design and construction show obvious familiarity with model engine requirements and a certain amount of additional "know how" as well—as evidenced by the extremely good performance figures realised. And it looks strong enough to take a lot of abuse.

SPECIFICATION

Displacement: 4.92 c.c. (30 cu. in.)
Bore: .739 in.
Stroke: .700 in
Compression: 8 : 1
Bore / stroke ratio: 1.04
Max. torque: 41 ounch-inches at 8,500 r.p.m.
Max. B.H.P.: .495 at 14,600 r.p.m.
Power Output: 1 B.H.P. per c.c.
Powerwejght ratio: .065 B.H.P. per ounce
Bare weight: 7 5/8 ounces.
Material specification:
Cylinder: leaded mild steel
Piston: Meehanjte
Crankshaft: hardened steel
Crankcase unit: Light alloy gravity die casting.
Cylinder head: Machined alloy; Gold anodised
Back cover: Die cast light alloy
Propeller driver: Dural
Bearing: Cast iron sleeve (plain)



Spraybar: Brass
Glo plug: not specified, KLG plug used on test.
Manufacturers:
GORDON Burford &Co Ltd., Grange, South Australia
Price: £5 19s. 6d. (Australia)
British Agent: Performance Kits, Coventry

Plan wanted

My name is Terry Inman and have been an aeromodeller all my life. For some time now I have bee trying to get a copy of the FROG TARQUIN plan for my collegue Mike Patience but with no success, It seems a bit of a rare one. Any help or guidence on this one? Just a long shot, hope you dont mind me making contact.
Best Regards, Terry oilerinman@btinternet.com

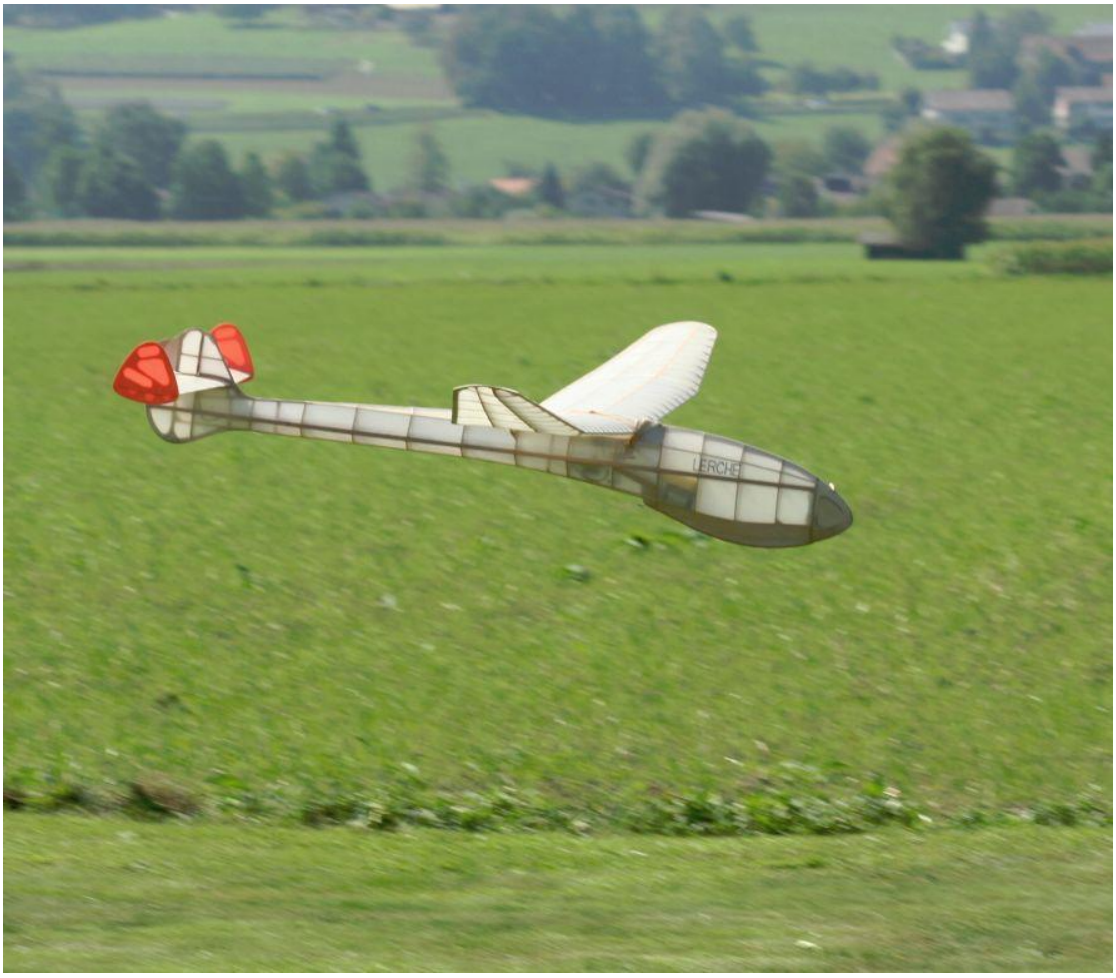
More of Peter Renggli's great Swiss photos


OL 9 240
OL 9 240


Kadell Team


FZ-90

Peter's Achilles from magazine plan



TISSUE AND MYLAR COVERING David Lovegrove

There are a few out there who've never tackled T&M covering. I wonder if they tried and failed, or was it just that they preferred to stay on safe, familiar territory? Whatever the answer, I bet they wish they didn't have to go through all the hassle of pinning things down while the dope's drying and patching them up later on! The other bonuses are that -

1. it's as light, or lighter, than tissue on its own
2. the finished product looks exactly the same as tissue on its own

It's a personal thing, but I think the T&M method, described below, is actually very quick and easy. It has to be, because I have a low boredom threshhold and anything that smacks of hard work is a definite no-no!

So, instead of dozing off in front of the haunted fishtank, watching *Flog It* / *Countdown / Pointless* this afternoon, what about exhuming an old wing from the model graveyard in the loft and spending a couple of hours practicing your technique? With the help of these notes, of course! *Please* read them carefully first though: you need to do things in the right order or you'll come a cropper for sure!

But before I launch in to the nitty-gritty, some of you may be aware that several years ago Mike Woodhouse published his own notes describing the process he employed at that time. I read them, but I confess I never followed his advice because (no offence, Mike!) of the suggested use of *Evostik* to stick the mylar to the structure. I didn't fancy that. Evostik is a "Marmite" product as far as I'm concerned. I'm really not fond of it although I do keep an ancient screw-top tin of it, which I use only for the occasional bit of doubler lamination. When I can get the lid off, that is . . .

I think Mike also recommended that it be thinned with toluene, which is not the easist solvent to obtain. I can't think why! Besides, if you want to frighten yourself, look at this website. It describes the extremely harmful effects of this and other solvents we use in our hobby!

http://www.uic.edu/sph/glakes/harts1/HARTS_library/solventhazards.txt

It wasn't until I latched onto Balsaloc (a water based, odourless, heat-sensitive adhesive) that I finally got stuck in (ouch!) and got to grips with T&M. The results exceeded my expectations.

A few chastening lessons were learned on the way, but that's part of the fun, isn't it? One in particular prompts me to mention an important caveat, and that is not to be over-ambitious when tackling the top surfaces of wings. The difficulty won't be in attaching the mylar: that's always a doddle, whatever the shape and dimensions. But attaching the tissue and retaining your sanity can problematical! I quickly discovered that it's best to tackle bigger wings in spanwise sections of around 3"/ 75mm at a time (you'll still be using a single piece of tissue). Otherwise you could very well end up with a useless, soggy lump. An "oh dearie me" moment, for sure.

To repeat, this problem really only occurs with respect to the wing's top surface and its exaggerated compound curves. The underside of the wing (flat or undercambered) is easy. This salutory lesson was learned a few years ago, when I was covering the top side of the wing of my lovely yellow KK Scorpion. I tried to do it all in one go but with a width of some 10" or 11" wide at the root, several pieces of tissue were sacrificed on the alter of experience before commonsense intervened! So trust me: there's no need to attempt to do the whole panel in one go - it will be okay done in stages.

Materials

Esaki lightweight tissue is the one I use. It is excellent and possesses great wet strength. The only possible problem you might encounter is with the white which, after doping, can sometimes look a bit patchy. I don't know why this should be - maybe it's because over mylar, the undyed fibres don't absorb dope quite as well? It's not always a problem but be aware of it. All the other colours are fine.

Note too that batches of the same nominal colour, bought at different times, may not be exactly the same shade. Black is the one I've found to be a particular offender. I mention this because an unexpected colour variation can spoil an otherwise perfectly good job. Been there . . .

As they say, "Other tissues are available" but as I've only ever tried only a couple, I've not much feedback to offer. Never used alongside mylar but, on its own, I heartily disliked StarSpan. Quite apart from the rather strange colours, it was very brittle when doped and the shrinkage was fierce. As for Modelspan, that's really heavy, compared to Esaki. Also, as far as I know, it's no longer available. Yes, there are inveterate hoarders amongst you who have piles of the stuff and swear by it. But Esaki gets my vote, every time.

Mylar is available in 5, 10 and 15-microns thicknesses. Its benefits are numerous. To those already mentioned can be added the facts that when heat-shrunk, it exerts practically no tension on the underlying structure, so the risk of warping is all but eliminated. Then, when clad with doped tissue, it gives a tough and stable finish. Next, because it provides a firm substrate to the tissue, nifty trim schemes are easily accomplished simply by using different coloured tissues. Finally, and in a similar vein, if a fuselage or wing panel exceeds the standard length of the tissue, an invisible butt-join is possible, with just a modicum of care.

Applying it is simple and fool-proof but note that there's no point in overlapping the mylar onto itself - it doesn't add any strength. The only exception would be where the covering at a wing's dihedral or polyhedral break is supported by just one or two ribs glued together. To make a reliable join between the adjacent mylar panels, you'll need a small overlap of approx. 5mm. (Thinks: it might be possible to do the whole span in one piece? I haven't tried it, but it could work)

Next, I strongly advise using 50/50 thinned Non-Shrinking Dope (AKA Banana Oil) on the wings and tail. Normal shrinking dope will start off looking okay, but thinned or no, it will continue to shrink the tissue, powerfully, for some time afterwards. You'll see the ribs buckling and your beautiful wing warping, as the structure is compressed. Not nice.

On a fuselage, a coat or two of 50/50-thinned low-shrink dope is okay, provided the structure is robust. As for thinners, I always use the non-blushing stuff supplied by John and Pauline at FliteHook. It's silly-cheap compared to the commercial cellulose thinners sold for modelling use. And be warned: the stuff you buy at Halfords is a bit of an unknown. I believe its primary use is for cleaning paint spray guns, so the quality isn't likely to be right for dope-thinning. All solvents are definitely not created equal . . .

As already mentioned, Balsaloc is excellent for attaching the mylar. However, full-strength, it's a bit gloopy and only adds unnecessary weight, so mix in about 20% water and stir well.

GET IT HERE

Mike Woodhouse (Free Flight Supplies) usually has the heavier grades of mylar as well as 5 microns. He may also have it in bigger widths but the 12" standard widths sold by him and FliteHook are perfectly

adequate for smaller models. Both stock Esaki tissue.

Balsaloc is obtainable from both and most model shops stock it too.

Non-shrink dope and non-blushing thinners from FliteHook (collection only, I believe). I don't know of any other suppliers.

THE OTHER STUFF YOU'LL NEED

- A scalpel and plenty of new blades

- Steel straight-edges, 12" and longer

- A small pair of sharp scissors (straight and curved-edge if possible)

- A roll of soft kitchen tissue

- A small artist's paintbrush (preferably a soft 6mm "flattie")

- A good-quality, large, mop-type doping brush, about 25mm / 1". Get the best you can afford.

- A paint-pad device to apply the Balsaloc. Mine is made from a ½"/15mm square scrap of 1.5mm ply, super-glued end-on to a handle made from a short length of 4.5mm / 3/16" dowel. Imagine a plate spinning on a pole – that's the orientation of the ply square on the dowel. Onto the ply face I stick a scrap of ordinary, firm

foam plastic, about 10mm thick, using EvoStik or similar. The foam plastic tends to fall apart over time, so watch out for "bits" appearing as you brush on the Balsaloc and renew when necessary.

- Old newspaper to cut the tissue on. Renew it frequently as it quickly becomes shredded).

- A dish of clean water to dip your brush and paint-pad in after Balsaloc-ing, so they don't go rock-hard. It's okay to leave them in the water, drying with a piece of kitchen towel just before use.

PREPARING AND PLANNING THE JOB.

Prepare the airframe as usual - no lumps or bumps left to show up under the covering.

Paint the Balsaloc on sparingly with a small brush or the paint pad described above, coating the wing root, L/E and T/E sections**, wing tips, spar tops and all the top and and bottom edges of the ribs.

The reason for coating the ribs' edges is that if you should later need to do a repair, it helps to be able to cut out the damaged tissue/mylar completely from the affected rib bays. But if it's not stuck down completely, it will lift and peel back as it's cut, making a tidy repair just that bit trickier.

Allow the Balsaloc to dry completely. That should take only 5 – 10 minutes in a warm room, assuming you've applied only a thin coat. Wait until it's completely transparent before you start ironing on the mylar.

** Where there are large areas of balsa sheeting (e.g. C/S, D-Box) on the wing or fuselage, I normally coat just a ½"/15mm margin. Coating the whole area adds too much weight and also causes a problem when ironing down the mylar, as air and gas bubbles are trapped underneath.

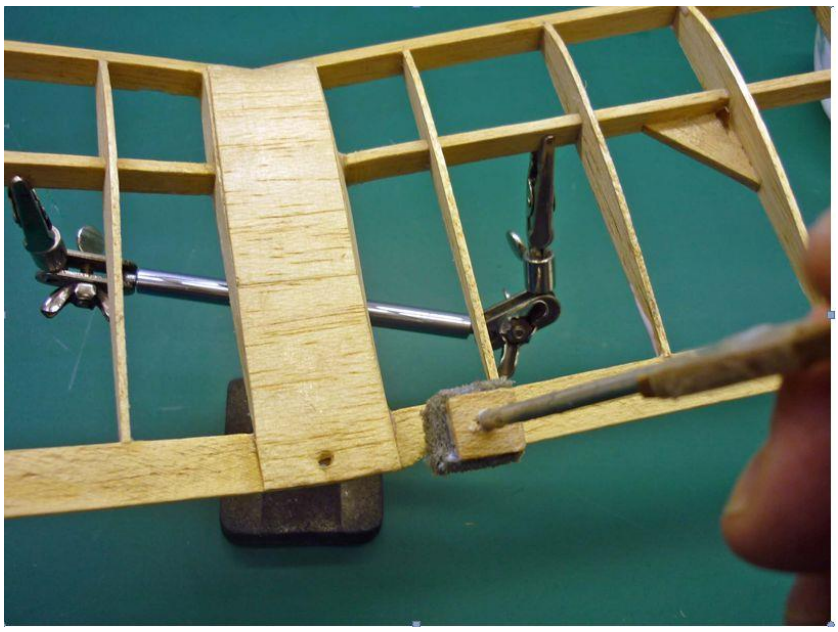
HOW TO DO IT

The Mylar

For the faint of heart, fear not. Mylar – even the thinnest - can be pulled about and stretched with very little risk of damaging it. It's also surprisingly heat-tolerant. You'll soon get a feel for it.

Clean the sole of your covering iron/sealing tool carefully while it's cold (Fairy Power spray cleaner is magic!). Warm it up to a low temperature (100 - 125°C) and allow it to stabilise. This isn't critical as mylar sticks to the Balsaloc with surprisingly little heat. Note the bond is not permanent, but neither will it let go without provocation – the mylar is easily lifted for re-positioning if necessary.

Apply the Balsaloc and allow it to dry.



My patent paint-pad thingy in action

Over the newspaper, and using a new scalpel blade, cut a generously oversized piece of mylar. There is no "right" or "wrong" side, so it can go on either way up.

Initially, you'll need to tack the mylar in several places around the outlines of the workpiece (a "tack" is a small dab with the tip of the iron – just enough to hold the mylar lightly in position).

For a wing, start at the root, tacking at the L/E, centre and T/E. Do the same at the tip, stretching the film a little lengthwise, as you see here, to remove any sagging.

Then tack along the leading and trailing edges at intervals, gently easing out any major wrinkles as you go.

For a fuselage, tack the mylar in a few places onto solid wood at one end of the open area, then tack the opposite end, stretching slightly to take out the slack.

Now tack along the edges of the longerons, at about 3"/75mm intervals, still watching to see if any stretching is needed to eradicate large wrinkles. If any appear as you go along, simply pick up the edge and gently lift the mylar away from the tack(s), stretching and re-tacking. You might need to do this a couple of times.

Add more tacks along the L/E and T/E, again gently stretching the mylar to ensure no major wrinkles develop.

When you're happy, go round and firmly iron the film down around all the edges (no need to increase the iron heat). It must

be fully adhered to the trailing and leading edge sections. There should now be no major wrinkles showing. Any small ones will disappear in a minute!

On the underside of an undercambered wing, carefully run just the tip of the iron over the rib edges (you did coat them with Balsaloc, didn't you?) to fix the mylar in place. As you do this, you'll probably see tiny wrinkles appearing alongside the rib edges. Don't worry – they'll soon be gone!

Only now apply the iron to the open areas to shrink the mylar completely, all over the panel. It's not usually necessary to increase the iron's temperature but just see how it goes – if the wrinkles are particularly stubborn, you can increase the temperature slightly (allow the iron to stabilise before proceeding). Incidentally, you can touch the mylar with the iron! It won't blow a hole unless

you've increased the heat too much. If the wing is undercambered, carefully shrink the mylar between each pair of ribs. If it becomes detached from the ribs (unlikely) just iron it back down.

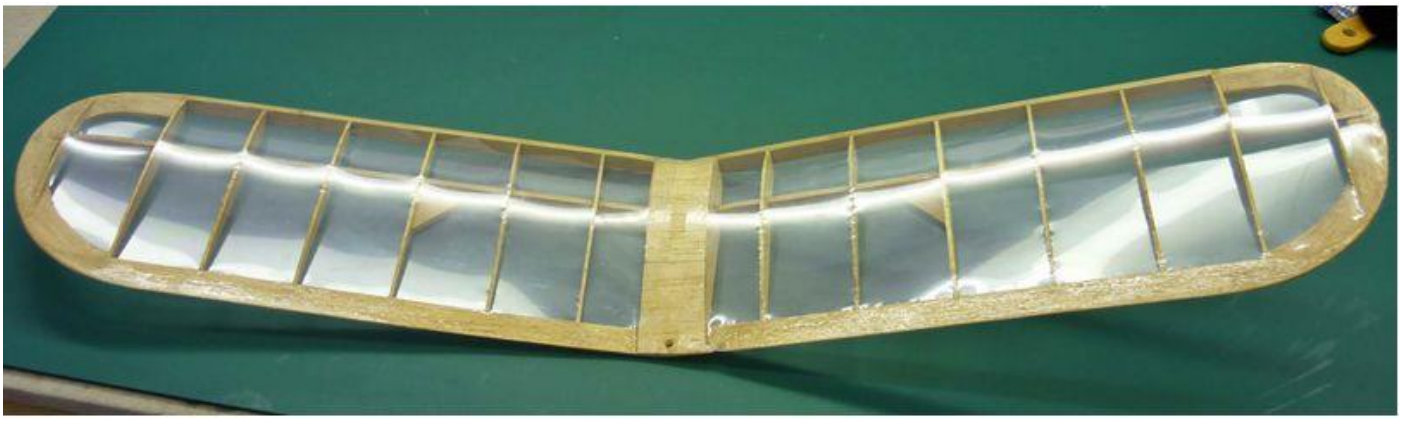
If you're unlucky enough to blow a hole in the mylar (WOW - that iron was much too hot!), simply paint Balsaloc around its edges, reduce the iron temperature to a more sensible level and iron on a patch. Cutting back the damaged mylar to the edges of the panel will give the best repair. That's why it's best to coat the rib edges.

If any reluctant minor wrinkles remain, for instance in the corners of the open areas, increase the temperature of the iron a bit, allowing it to stabilise. Gently "wipe" the mylar away onto the solid area adjacent to the wrinkle.

If you need to make any overlaps, don't forget to re-coat the mylar with Balsaloc.

Now trim off the surplus with your sharp, new scalpel blade.

Cover the other side of the wing panel in the same way.



Attaching the Tissue

I attach the tissue only with water initially, as this makes it pliable and easily able to conform with the contours of the mylar surface. Others advocate adhering it with thinned dope and only then spraying with water to shrink it. I think my way is better.

After you've finished smoothing it with kitchen tissue, no surface water will remain, but the dampness left in the fibres of the tissue is enough to give you just the degree of tautening you need.

You must not allow the tissue to dry out; doping must follow immediately, whilst the tissue is still damp. Usually, doping damp tissue would cause "blooming" but using that magic, non-blooming thinners avoids that trauma.

If the tissue isn't long enough to cover the whole of a fuselage in one go, you can easily butt another piece up to it by generously spraying the mylar with water and "floating" the extra piece of tissue up to the first piece. Both pieces of tissue must have dead straight edges where they butt up together. If you're careful, there will be no overlap and no-one will ever know!

My preference is to do the top surfaces of each wing panel in turn (I always do the top surfaces of wings first, because I prefer overlaps to be out of sight, underneath). When the second panel is finished, the first will be ready for its underside to be done.

Check the mylar durface for after-market wrinkles or dents and shrink again, locally, as required.

Wipe it down with acetone (methylated spirit or thinners would do as well) and a tack-cloth, if you have one.

Now cut a piece of tissue (grain along the longest length as usual) with a total width-overlap of 1½”/ 40mm (don’t forget to allow for the extra distance over the curved surfaces of a wing) and about 2”/ 50 mm longer.

Check that it’s the right side up (convention says dull is normally up, but it’s your choice) and lay the tissue down on the mylar. Getting it as close as possible to its final position to begin with helps when trimming the edges.

Using a small (fine) spray bottle filled with cold water, spray a section of the tissue about 3”/ 75mm wide generously with water. As it penetrates the tissue, surface tension will suck it down onto the mylar. It will look wrinkly and nasty to begin with (see below) but immediately begin gently wiping and smoothing with a piece of kitchen tissue. Where necessary, lift, spray again and lay it back down, again gently smoothing. You’ll find it will soon sit tightly to the mylar.

The tissue here has been thoroughly wetted out after being positioned (dry) on the mylar. Looks horrible doesn’t it? But most of those wrinkles will go, immediately you begin smoothing out. If they fail to respond, don’t rub harder! – just carefully lift the tissue and spray again before dropping it back in place. Smooth again. You’ll see the wrinkles instantly disappearing.

It shouldn’t be necessary to lift the whole piece of tissue during the smoothing process, just those areas that haven’t responded to the smoothing.

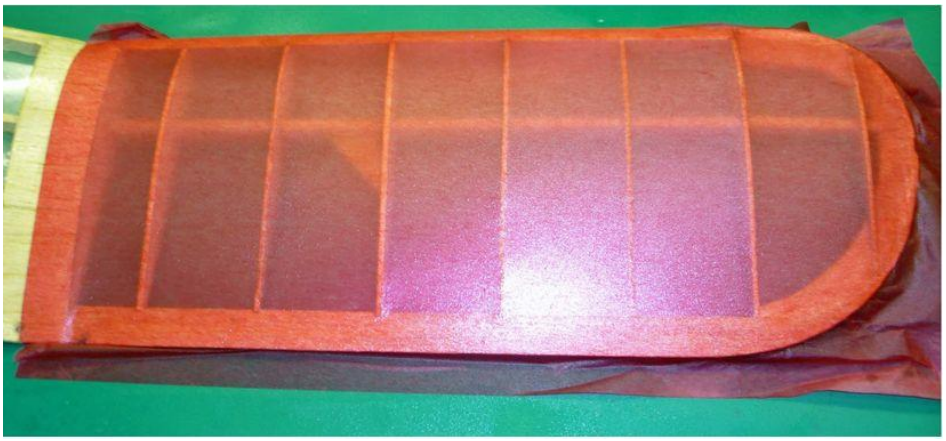
You may need to go through this process a couple of times, spraying and smoothing in between. And remember,

water is the magic ingredient!

The first section always takes the longest. After that, you’ll find that surface tension will hold the completed sections of tissue firmly in place as you progress and it all goes much quicker. I repeat, water works the magic. You can’t overdo it!

You’ll find that the areas with compound curvatures, for instance the undulations on the top surface of a wing and the tips, will need a little extra attention but you will find that with patience, the tissue will always conform very easily. Just keep going until it’s in place. As always, take care not to allow the wet tissue to stick to itself or it’ll spoil your day!

At the end, check again that the tissue is in good contact with the mylar. When it's nicely down, it will have a uniform appearance as below. If not, spray again, smooth, etc . . . Incidentally, the tissue will smooth down easily over those often difficult wingtips, without having to cut annoying, ugly slits in it! Just like this.



After smoothing, still damp but the wrinkles have gone

Leave the overlaps for the time being –they'll be dealt with in a minute. On no account try to trim them yet!

Doping the Tissue

When satisfied that it's tidy and while the tissue is still damp and in firm contact with the mylar, immediately dope it, quickly and generously, with 50/50 non-shrinking dope. Dope all the overlaps too, as this helps to strengthen the tissue while you're working it around the edges.
This may seem counter-intuitive but after sloshing on the dope, I straightaway wipe it off with a fresh piece of kitchen towel. Even though it may look as if there's no dope left behind, rest assured, enough will remain in the tissue fibres to consolidate the bond with the mylar (the smell will confirm it). I have found that doing this helps to give the tissue a nice even appearance when the dope has dried off.

Now go round the edges and stick down the overlaps/wrap-arounds of tissue with more dope. That means carefully cutting off the surplus, notching, slitting, etc., firmly fixing the overlaps, as you would normally do. As before, wipe off the surplus once the tissue is safely down.

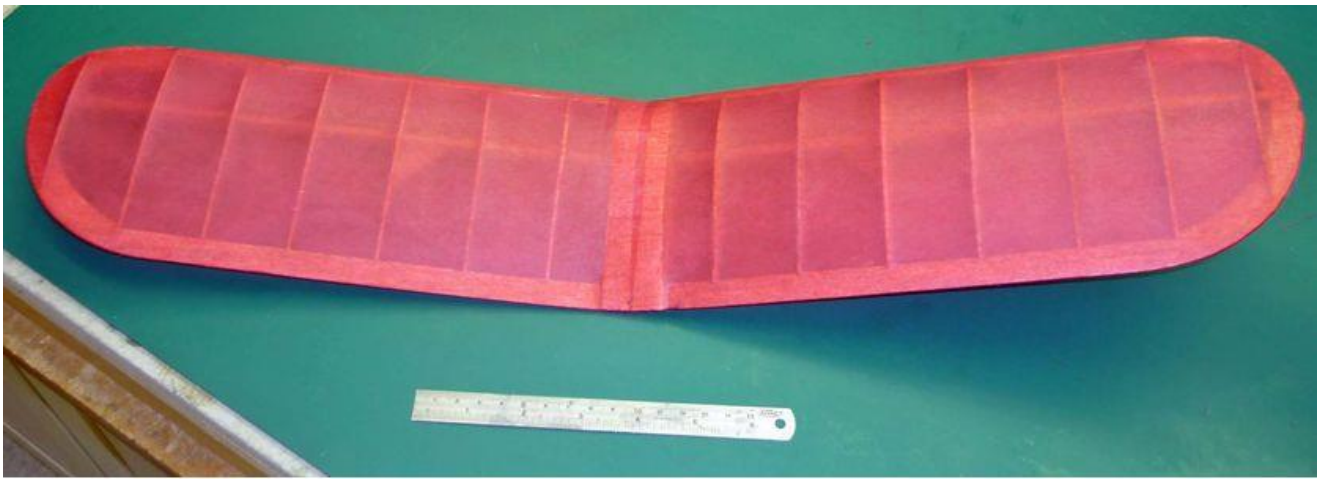
Allow the tissue to dry to the touch (in a warm, well-ventilated room, if you're allowed). That should take only 10 minutes or so. You'll see the appearance changes subtly. Although it won't be completely dry for a few hours yet, when the tissue is touch-dry it's quite safe to go on and cover the underside of the wing. And if that's a flat surface, you'll find it's breeze!

When it's dry, the tissue will be uniform, hopefully completely free from wrinkles and with a slight sheen.

It should be neatly and firmly attached to the mylar but you may see small areas where the tissue is slightly paler and looks dry. That means it hasn't adhered properly to the mylar, so treat with more thinned dope, rubbed well in with a fingertip.

You need two further coats of thinned dope (not wiped off) to waterproof the tissue and if you really just want the lightest possible finish, you could stop there. But to add a bit more gloss, three or four thinned coats, to taste, will incur very little extra weight.

Finally, if the model will be subjected to fuel residues, a coat of fuel proofer is strongly recommended.



Pinocchio wing. Tissue all done, first coat of dope dried, and ready for more.

***

I hope you found that easy to do and the result pleasing. Why not email James with your thoughts?

Carrying on with materials I tried John Hoyle's method as mentioned in S&T a couple of issues ago of dyeing polyspan and it worked very well indeed the colour being perfect. However I did make one mistake in my rush and that was not washing the material under cold water when simmering had finished , next attempt too late for my Tomboy though was 100%. James Parry

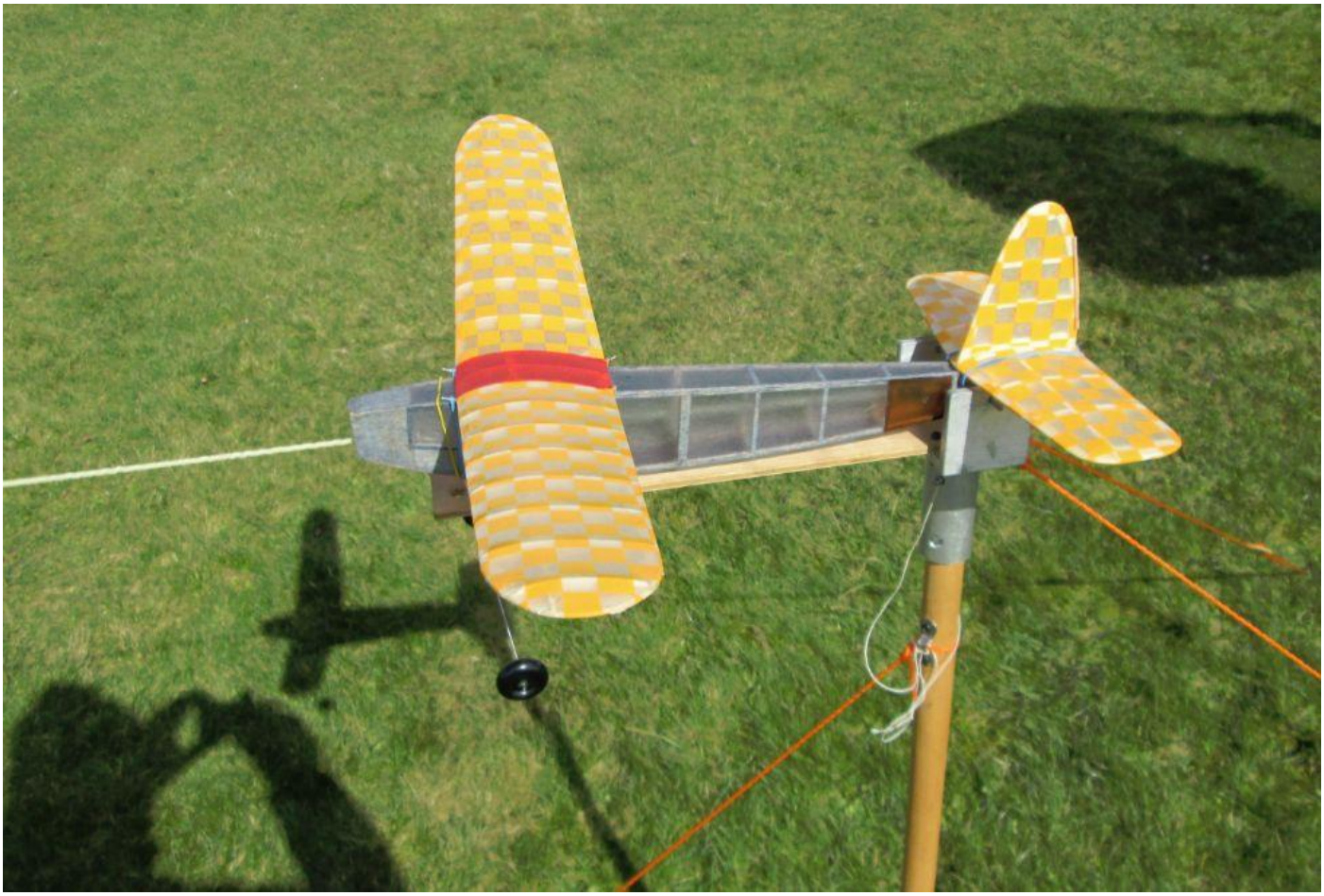
Middle Wallop 31.3.2013.

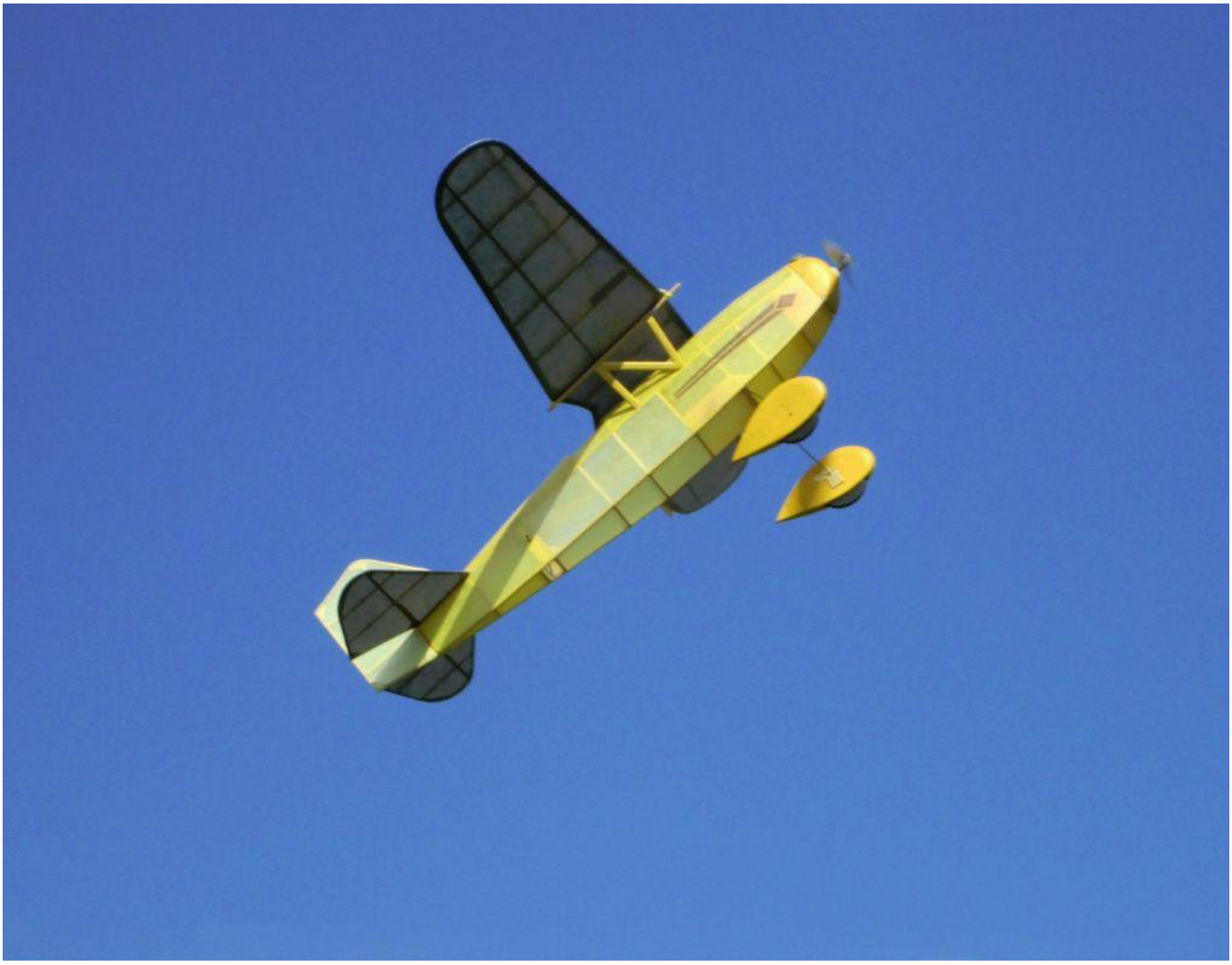
I didn't send out S&T a couple of days ago as I wanted to include photos I hoped to take at Middle wallop today. So here are those photos taken a few hours ago on a bright windy and freezing cold day.

Mick Langford's Southerner

Rob Blair's Scorpion

Rob Blair's Majestic Major ***Dave Bailey's Vic Smeed designed Electra***





Derek Collin's Tomboy Senior getting away

Ian Andrew's Scram


G-SCOR


G-SCOR

Tony Tomlin's Cutlass a with PAW 80

John Laird's Vic Smeed designed Debutante

Den Saxcoburg's Fat Champ so called because the model is wider than norm due to the Tom Ridley produced MkII Oliver Cub

Close up of Cub

Tomboy Senior mass launch Only 5 this time due to wind and very cold conditions

David Kinsella's Column

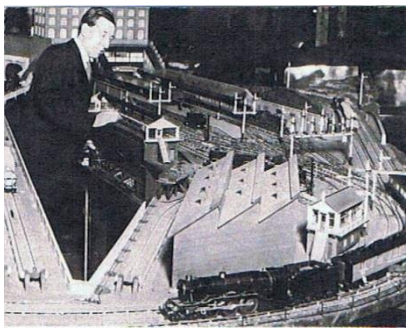
Welcome Home

An old friend returned in December to add warmth and sparkle to; our festivities. Yes, AeroModeller With a print of the first edition of November 1935 tucked inside as a generous bonus (38 pages!), new publishers ADH treated us to pages of blazing colour, crisp reporting, history, analysis and plans, 68 pages here! Glorious at a fiver (ten postage stamps), December's delights gave us facts on FROG, Eaton Bray, Vic Smeed celebrations and serious stuff (6 pages) on compressed air power. Me a lunch chum nof the Pavelys long ago, Martyn Cowley's piece with a wealth of pictures reads dead right to: me (be assured, boys , that compressed air power - like steam – is a a mighty mover). AeroModeller: enjoyable, collectable and great. Bi-monthly so far.

Der Oberste Eperte

A fine picture of uber ace Hartmann on taking over all—jet JG Richthofen in 1955. Often flying six missions a day in the 109 on the Eastern Front, the leading aces such as Barkhorn scored heavily - Hartmann. with an incredible 352. The yo-yo dive and climb technique, often closing to 60ft, was the method employed. Evidence suggests that he preferred the 109 to the jet 262.

Serious Stuff



Rex Stedman of the leeds Model Company popped up in SAM 35's journal in October. Fond of ambitious projects and close to Bonds O' Euston and Henry Greenly (the 13 mile RH&DR his magnum opus which operates between Hythe and Dungeness), here we have Rex testing a layout before sending it to the Horden family in NSW, Australia. Rex operated from premises in Jack Lane, Hunslet. West of London another enthusiast built a 75ft hall for his model railway and moved his full-time builder into a cottage nearby. Visitors in. threes enjoyed a maid-delivered

tea at the end of an afternoon's running. Yet another great layout was built for Sir Edward Nicholl in the 1920s, the main station six tracks wide. World class and featured before, Hermann Goering's 2000ft O Gauge display amazed all the many who saw it.

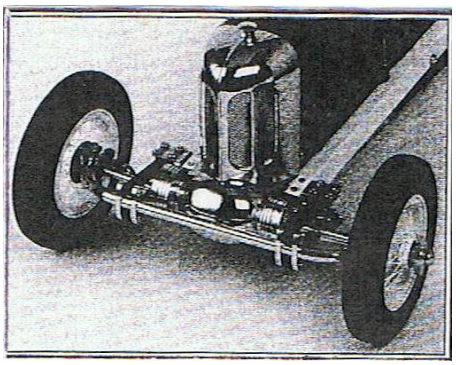
Classical RAF

Wing Commander Laddie Lucas CBE DSO DFC was born in the golf club founded by his father. A fighter ace of great energy and leadership and resolve (he once crash landed by the 4th tee at Sandwich), he defended Malta with 249 Squadron before re-training in Mosquitos for low level strike and support missions. An Express journalist recruited by Beaverbrook himself, Laddie wrote several books including Flying Colours (1981), one of the two greats on the life of Douglas Bader, Laddie and Douglas marrying sisters Jill and Thelma. Twice captain of the Walker Cup Team, Laddie was arguably the best left-handed golfer in the world. He was an MP for nine years, chairman of the Greyhound Racing Association and with other fighter boys such as Paddy Barthropp was a perfect choice for television's This Is Your Life (1984). Two of Laddie's best - Glorious Summer and Courage In The Skies – were written with his fighter chum Air Vice Marshal Johnnie Johnson.

Water Beauty

John Taylor's Dryad rubber-powered flying boat of 1946 set the ball rolling for me . What a super model! Like Mike Hetherington 's memorable pale blue Spitfire and David Baker's several models, wind-ups such as my Keil Kraft Senator and Pirate are rewarding and wonderful fun and go way back in the history of aeromodelling. From that time comes Albert Hatfu1l's very own Senator kit, boxed in red, white and green and complete with famous KK decals in red and gold.

Indy Star



Hardly seen outside museums in the USA, the slim Miller racer of the 1920s took the Indy 500 Brickyard and board tracks by storm. In the UK around 2000 a magnificent tinplate model appeared. Almost 20in long, working leaf springs and steering, a powerful clockwork motor drove forward to the front axle and wire wheels. All metal of course, rubber tyres too, colours were black, white, red, green and yellow. Each came with a driver in racing gear. Launched by Gilbow Ltd of Enfield, this 7lb beauty at £200 sold quickly.

The Book

To get the lowdown on Lines Bros, Frog, Tri-Ang and kits and bits, only the huge book published by New Cavendish in the 1980s will do. Lots of pictures, adverts and text will whisk you away to the 1950s and beyond when the great factory in South Wimbledon was making toys and models for boys of all ages.

Large One, Please

With the sun over the yardarm, thoughts turn, to a stiff Tizer or two so richly deserved. Made along with Irn-Bru by A G Barr, the 137 year old firm has joined with Britvic (bottlers of Pepsi, 7Up and other brands) to form a beefy £1.4 billion outfit helmed by Barr's Roger White. Markets like the move and for us the Tizer of Cumbernauld will flow for many years to come. Cheers! Remembering ITMA and Chinstrap, I don't mind if I do.

A3 Action

Just as that AC Cobra was tested along MI prior to Le Mans, now and then a tiny Cooper was extended on A3, the road from the west leading to London. An obvious choice since Charles and John Cooper had their garage in nearby leafy Surbiton. An Acton Napier man, Charles founded the business in 1919 and racing was there from the start, Brooklands nearby. Using Norton singles (hence lots of frames around ready for s pecials), Cooper built trim 500s for Formula III. By 1955 there were 1100 and 1500cc sports/racing Coopers at Ewell Road and by 1959 Coventry Climax power had made Cooper FI World Champìons and again in

1960. The Auto Union of Silver Arrow days seen as a handful, John showed the racing world that it was the way forward. Bold on Minis even today, how many know the meaning of that word on the back panel?

Tailpiece

Thin on shelves checked, perhaps the run of Corgi's excellent Great War scouts – Camel, Albatross, Spad, DVII – is coming to an end. All metal, around 7in and detailed with rigging, squadron markings and tricky lozenge finish, wise ones bought extras for later conversion to other squadrons, Jastas, civil use, etc. Try the Modelzone shops, Duxford, Hendon, but time may be short.

Vintage Events with Tomboy competitions for 2013.

Event	location	date	contact
Sam 35 Gala	Middle Wallop	31.03.13	Tony Tomlin
Sam 1066 Fun fly + comps.	Middle Wallop	05.05.13	Tony Tomlin
Wimborne Vintage	Cashmoor [Dorset] Betw Blandford Forum & Salisbury	12.05.13	Bill Longley / Tony Tomlin
Cocklebarrow Farm Vintage R/C	. Bibury [Glos]	16.06.13	Tony Tomlin / Paul Howkins
North Berks. RMAS	nr. Abingdon	07.07.13	Tony Tomlin / TBA
Cocklebarrow Farm Vintage R/C	nr Bibury [Glos]	11.08.13	Tony Tomlin / Paul Howkins
SAM1066 Fun Fly and Comps	Middle Wallop	22.09.13	Tony Tomlin
Cocklebarrow Farm Vintage R/C	nr. Bibury [Glos]	06.10.13	Tony Tomlin / Paul Howkins

Contact Details:-

Tony Tomlin	02086413505	m. 07767394578	pjt2.alt2@btinternet.com
Paul Howkins	02476 405126	valerie@jhowkins.plus.com	
Bill Longley	01258 488866	tasuma@btconnect.com	

Notes

Please check before travelling as circumstances can cause events to be changed/cancelled at short notice

Middle Wallop; dogs are not allowed on the airfield at any time

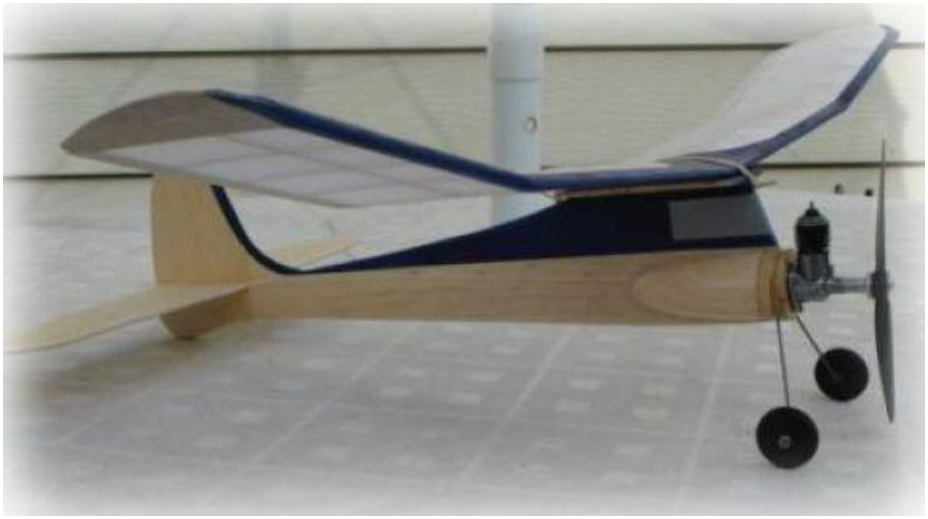
CONTROL LINE EVENT

14 April – Sunday Control line day Wimborne MAC – Cashmoor

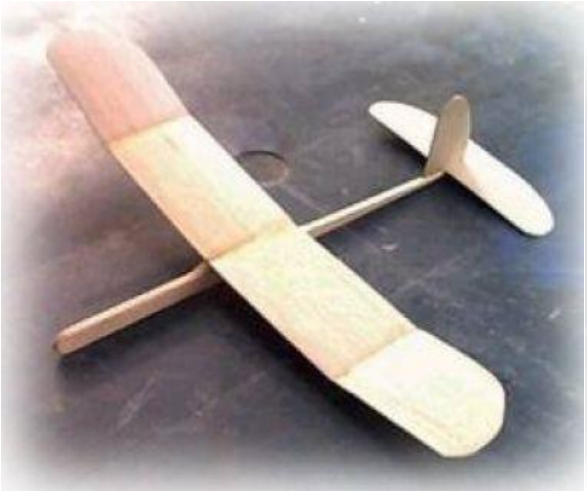
contact me James Parry jamesiparry@taktalk.net 01202625825

Dens Model Supplies

FREE FLIGHT MODELS



Nomad - Perfect for the Cox Sure Start



Zoomer

'Ebenezer' Great Lakes Biplane

RADIO MODELS

Centurion

Pippin

Den and his Fat Champ at Middle wallop a few hours ago