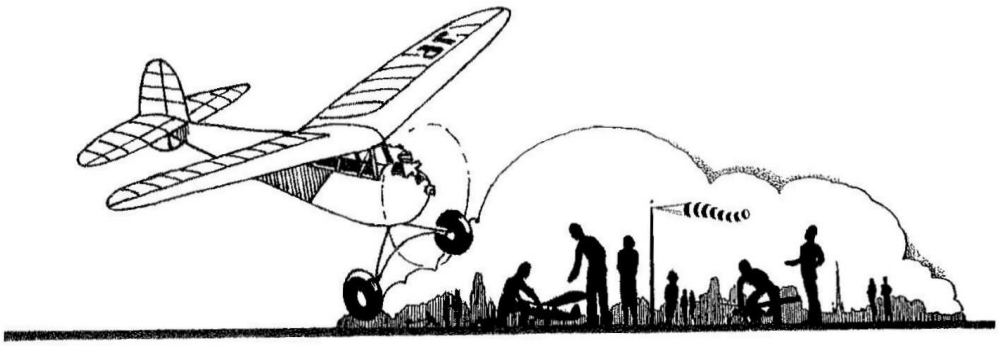


Sticks and Tissue No 127 – June 2017

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://sticksandtissue.yolasite.com/

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

Photo sent by Peter Renggli taken by Urs Brand and Urs Rindisbacher of the MG-Bern

From Jörgen.

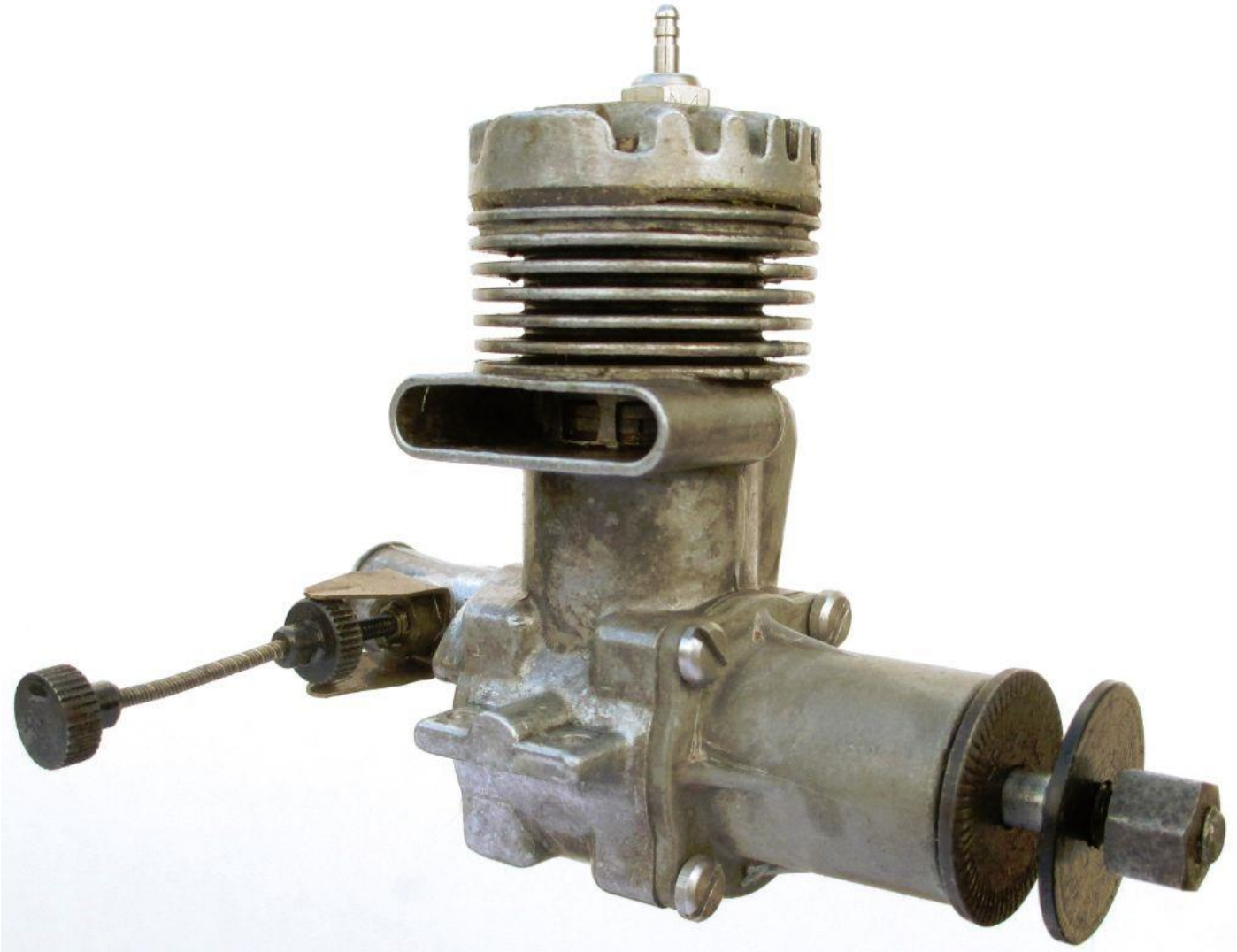
Hi James sending you some Pictures of my latest the Gladiator a kit from modelkraft@gmail.com it was supposed that afternoon but to much wind and a leaky made impossible better Luck next time . And also a pic of my Frog 45 with the Red Fin Twin it flow right of my hand and Engine and plane both performed great

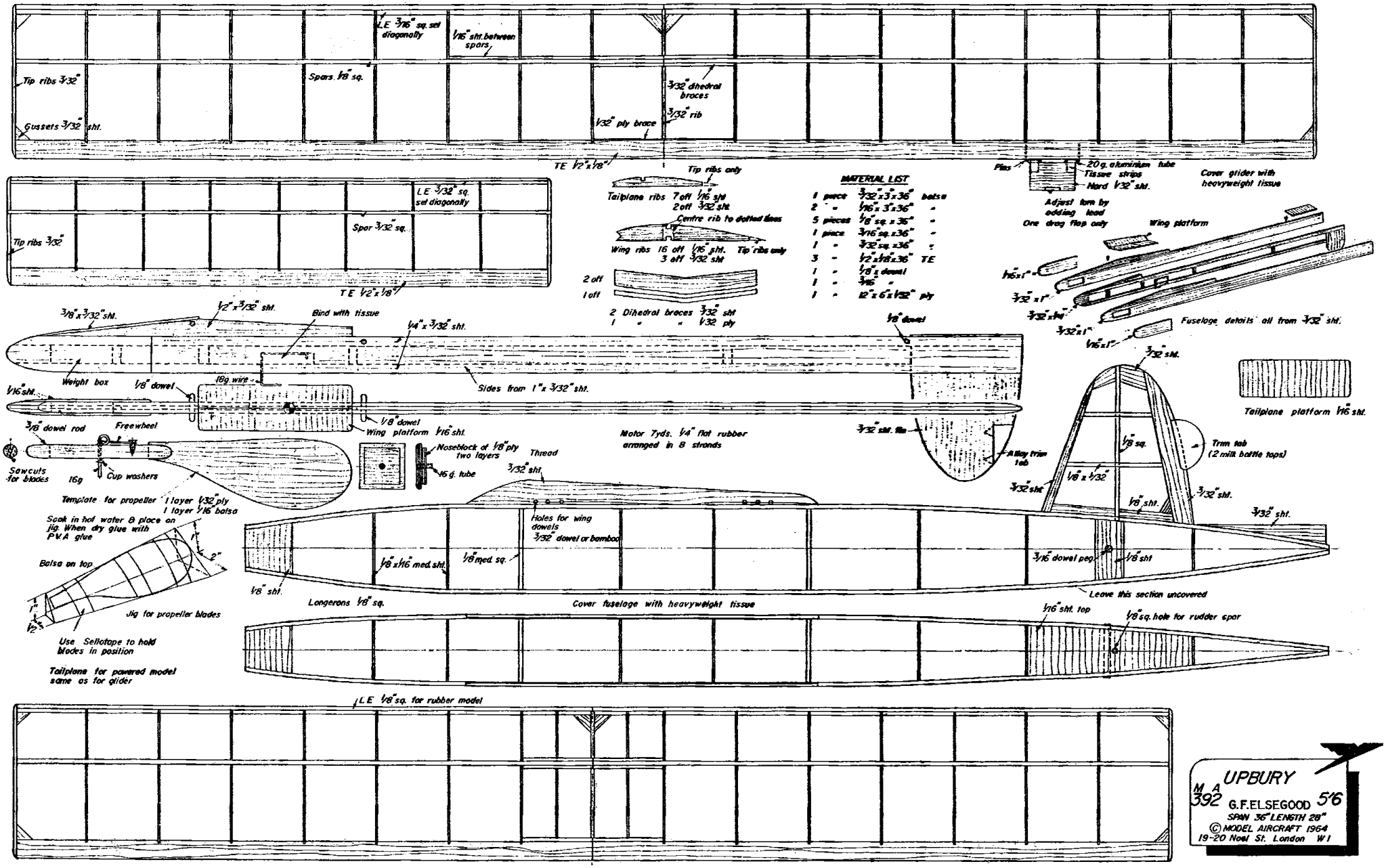
From Bill Wells

Sometime ago I asked a buyer at an Auction why he had just forked out nearly £2,000 on a selection of small but somewhat old model engines. He stared at me and said, 'When I was a little kid times were hard and all them rich kids had the latest engines in models I could only dream of, most of Em is dead now, but now I can afford to live a little of my childhood that I missed out on.' Well I can't argue with that but it got me thinking which normally I avoid because at my age it hurts!! It does seem at a lot of these modelling events the majority of flyers are of a certain age, if you follow my drift? Are they reliving their youth? Perhaps they are and the best of luck to them. If you talk to these modellers they all have one thing in common they all want to tell you about their models, present and past.

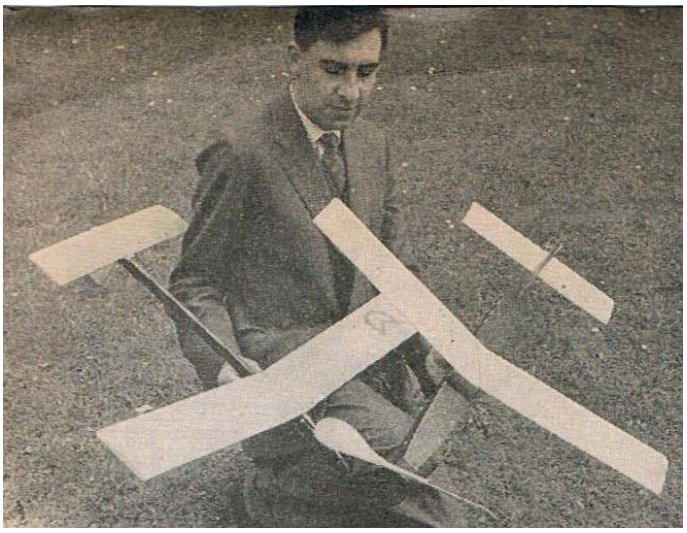
Like my 'buyer friend' perhaps I am reliving what I missed out on all those years ago! My interest in model engines varies. Sometimes I look at an engine that I might have spent hours cleaning and sometimes making bits for and think, 'if this engine could talk'!! A sixty year old engine may have had many owners, had a lively life and been modified many times or perhaps the one owner who may have kept it in a draw for most of those years. Who knows?

Anyway perhaps if I put the odd engine picture in Sticks and Tissue from time to time it might bring back memories. Pleasant ones I hope. So let’s start with a McCoy 19 Bump Lug




L.E. 3/16" sq. set diagonally
1/16" sht. between spars
Tip ribs 3/32"
Spars 1/8" sq.
3/32" dihedral braces
3/32" rib
Gussets 3/32" sht.
1/32" ply brace
TE 1/2" x 1/8"
L.E. 3/32" sq. set diagonally
Spar 3/32" sq.
Tip ribs 3/32"
TE 1/2" x 1/8"
Tip ribs only
Tailplane ribs 7 off 1/16 sht
2 off 3/32 sht
Centre rib to dotted lines
Wing ribs 16 off 1/16" sht. Tip ribs only
3 off 3/32 sht
2 off
1 off
2 Dihedral braces 3/32" sht
1 " " 1/32 ply
MATERIAL LIST
1 piece 3/32" x 3" x 36" balsa
2 " 1/16" x 3" x 36" "
5 pieces 1/8" sq. x 36" "
1 piece 3/16" sq. x 36" "
1 " 3/32" sq. x 36" "
3 " 1/2" x 1/16" x 36" TE
1 " 1/8" x dowel
1 " 3/16" "
1 " 12" x 6" x 1/32" ply
Pins
20 g. aluminium tube
Tissue strips
Hard 1/32" sht.
Adjust turn by adding lead
One drag flap only
Cover glider with heavyweight tissue
Wing platform
1/16" x 1"
3/32" x 1"
3/32" x 1/16"
3/32" x 1"
1/16" x 1"
Fuselage details all from 3/32" sht.
3/16" x 3/32" sht.
1/2" x 3/32" sht.
Bind with tissue
1/4" x 3/32" sht.
1/8" dowel
Weight box
1/8" dowel
18g wire
Sides from 1" x 3/32" sht.
1/16" sht.
1/8" dowel
Wing platform 1/16" sht.
3/32" sht.
Tailplane platform 1/16" sht.
3/8" dowel rod
Freewheel
Motor Tyds. 1/4" flat rubber arranged in 8 strands
3/32" sht. fin
Alloy trim tab
Noseblock of 1/8" ply two layers
Thread
Sawcuts for blades
16g
Cup washers
16 g. tube
3/32" sht.
1/8" sq.
Trim tab (2 milk bottle tops)
1/8" x 1/32"
3/32" sht.
1/8" sht.
3/32" sht.
3/32" sht.
Template for propeller 1 layer 1/32" ply
1 layer 1/16" balsa
Soak in hot water & place on jig. When dry glue with P.V.A. glue
Holes for wing dowels
3/32" dowel or bamboo
Balsa on top
1/8" x 1/16" med. sht.
1/8" med. sq.
3/16" dowel peg
1/8" sht
1/8" sht.
Longerons 1/8" sq.
Cover fuselage with heavyweight tissue
Leave this section uncovered
Jig for propeller blades
1/16" sht. top
1/8" sq. hole for rudder spar
Use Sellotape to hold blades in position
Tailplane for powered model same as for glider
L.E. 1/8" sq. for rubber model
UPBURY
M A 392
G.F. ELSEGOOD 5'6
SPAN 36" LENGTH 28"
© MODEL AIRCRAFT 1964
19-20 Noel St. London W1

Upbury R & G two models on one plan. By G Elsegood from Model Aircraft June 1964



These models re designed for the Upbury Manor Secondary School Model Aircraft Club. It is very important that the first models built by a newcomer to aeromodelling should be simple to build, have a reasonable performance and cost as little as possible. The Upbury R and the Upbury G were designed with these points in view. They are simple and rugged, together cost less than a pound (8s. for the glider and 10s. for the rubber version) and, if reasonably well built, will give consistent flights of about one minute.

Construction

Fuselage (glider): Cut two 1 in. strips from a piece of 3 in. 3/32 in. sheet. Make up centre from 4 in. x 3/32 in. strip. Bend hook from 18 S.W.G. wire and bind to a piece of 3/32 in. sheet with thread and tissue. Cement hook in position. Cement one side of the fuselage in place, set some lead in the nose and complete the construction by adding wing and tail platforms and dowel for rubber retaining bands.

Wings: The construction of the wings is quite straightforward. Sixteen ribs are cut from 1/16in. sheet, the centre and tip ribs from 3/32 in. sheet. Spars are hard 1/8in. sq., the L.E. 3/16in. sq. med. (1/4 in. sq. for rubber model) and T.E., sectioned 1/8 in. x 1/2in. The safest method for making the slots in the T.E. is to use a 1/16 - in. thick warding file. Assemble separately the port and starboard wings over the plan. Add gussets at the tips and cernent dihedral braces in position.

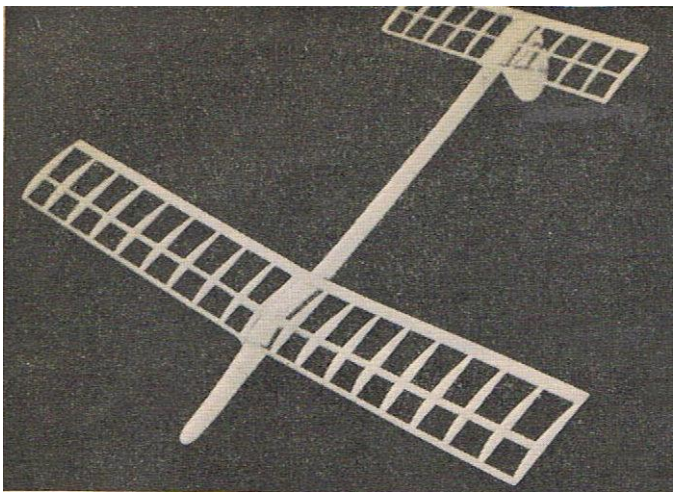
Tailplane: Similar in construction to the wings—seven ribs from 1/16in. sheet, tip ribs from 3/32 in.

Fin (glider): Cut from 3/32 in. sheet and build into fuselage. Cut tab from thin alloy (two milk bottle tops stuck together with rubber solution or impact adhesive make a good substitute). The fin for the rubber-powered model is built flat on the plan without the ribs. These are afterwards cut from 1/32 in. sheet and curved over the spar to produce an airfoil section. Sand L.E. and T.E. to a smooth contour.

After Covering: Give the fuselage and wings two coats of clear dope, the tailplane one coat. Pin down the wings and tail while the dope is drying to avoid unnecessary warps.

Flying (glider): Add weight or packing until all traces of a stall have disappeared. Remove any tendency to turn with the trim tab. Tow up using a 50 ft. line. The model is capable of adaptation and development. For instance, more experienced boys have built Upburys with Benedek wing sections, elliptical tips and Geodetic construction, thus achieving a corresponding increase in performance.

An auto rudder was fitted to the original glider models, but 1 found that some boys had difficulty in making this accurately, so I decided to modify the design to eliminate this feature. The rudder is now hinged with soft iron wire, or thin strips of aluminium and is used to counter any natural turn on the tow line. The glider is made to circle on release from the line by a drag flap, similar to those fitted on power models a few years ago. After experimenting with various sizes and positions, we found a flap of 1/32 in, sheet balsa 1 1/4 in. x ¾ in., weighted with lead from old cement tubes and placed 6 to 8 in. from the wing tip, gave the best results.



The rubber-powered model is bigger and much more robust than first rubber models usually are. It will fly in rough weather though and stand up to the results of over enthusiastic trimming by eager youngsters. We have found that we get through

about four propeller blades per model per season, usually ending up with a single-bladed propeller, so it is worthwhile making up a few spare blades !

From Andrew Burston in Oz

In your June issue, Sid King wonders if the Good brothers ‘Rudder Bug’ was the first purpose-designed RC model.

My immediate response was that their ‘Guff’ was the answer. However, this model was initially featured as a free flight model in the June 1940, Air Trails magazine. Upon further investigation, I discovered that the honour goes to Chester Lanzo, whose RC model appeared in the December 1937 issue of that magazine.

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RADIO-CONTROLLED GAS MODEL

PART I.

Detailed plans for duplicating the radio-controlled gas model winner of the National Contest. The 15th Air Trails championship-model presentation

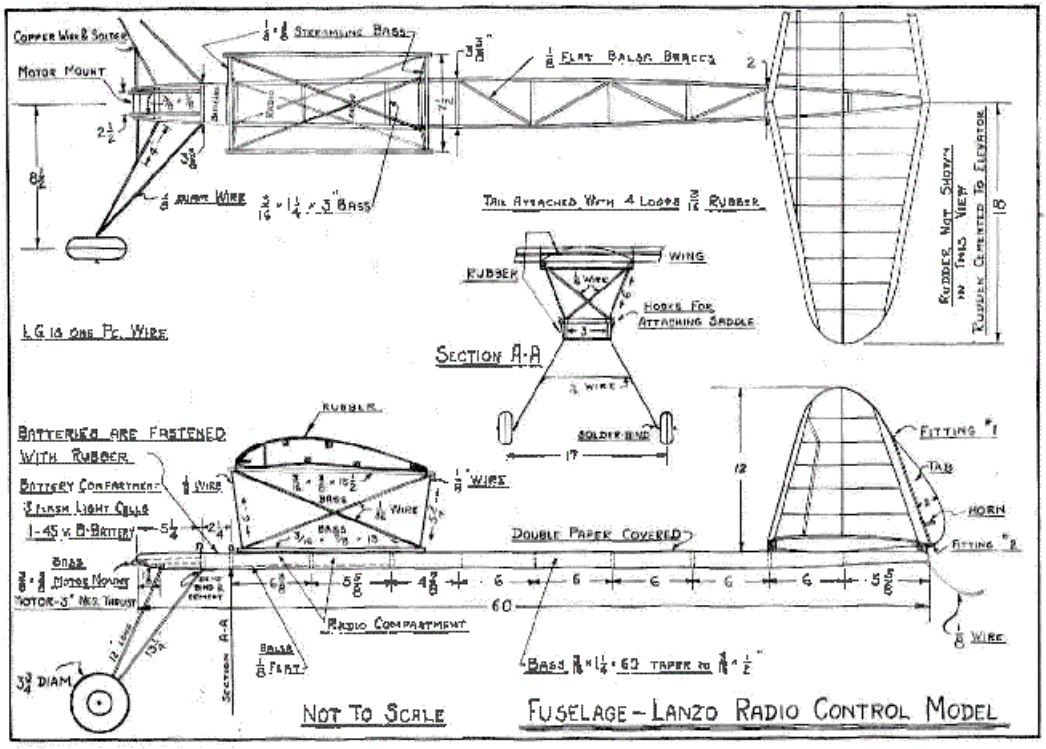
By Chester Lanzo

In collaboration with Gordon S. Light

Chester Lanzo experimented for 4 years to solve the problems of practical radio control for model planes. The model above is a

THE idea of a radio-controlled gas model is practically as old as the gas model itself. For the past five years gas models have been flying successfully. But it was not until this year that a successful radio-controlled gas model was demonstrated to the satisfaction of the modeling public. Chester Lanzo of Cleveland turned in this history-making flight at the National Model Meet last July in Detroit. The model and the radio apparatus are the result of his four years of experimenting. He was one of the first to conceive the idea of radio control and had the honor of being the first to carry it through to a successful conclusion.

Lanzo's first idea on radio control was to operate all of the controls, that is, elevator, rudder, and ailerons. Early in his experiments he found this was impracticable. The weight of the receiving set was greatly increased by having three controls. And the size of the model necessary to lift the weight of the radio unit assumed such large proportions as to make it unhandy for flying. In addition the three-control radio unit became extremely complicated, increasing the possibility of failure at a critical time. To operate the



A 48" WING SPAN CABIN CONTEST POWER MODEL.

ETHEREAL LADY

DESIGNED BY
V.E. SMEED.

3/-

ALL WOODS ARE UNLESS OTHERWISE STATED ARE BALSA

METAL MOTOR MOUNTS MAY BE USED

THIS LINE MAY BE LOWERED TO THIS TO THIS POINT FOR UPRIGHT INSTALLATIONS N.B. USE 1" DOWNTHRUST.

TO REMOVE MOTOR IF BUILT TO PLAN
1. REMOVE AIRSCREW
2. UNBOLT MOTOR
3. SLIDE FORWARD TO CLEAR INDUCTION TUBE.
4. LIFT OUT MOTOR BY RAISING BACK FIRST SHAFT APERATURE IN NOSE BLOCK MUST BE LARGE ENOUGH TO PERMIT THIS

SINCE INDIVIDUAL MODELLERS PREFER DIFFERENT COWLINGS THE ONE SHOWN, WHILE COMPLETELY SATISFACTORY ON THE ORIGINAL MODEL, NEED NOT NECESSARILY BE EMPLOYED

CUT FINGER HOLE ON ST'BD SIDE FOR CHOKING INDUCTION PIPE SHOULD PROTRUDE THRO' FORMER

1/8" DOWEL

3/8" x 1/4"

1/8" DOWEL

1/8" SHEET

SIDE PANELS HARD 1/8" x 1/4" STRIPS

12 SWG WIRE

2 1/2" AIR WHEELS

COIL & CONDENSER POSITION IF REQUIRED

1/16" SHEET MAY BE LET IN UP TO FORMER 4

FAIRINGS SHAPED FROM 1" x 1/2" BLOCK ATTACHED TO LEGS WITH 4 LAYERS OF RAG PULP LIBERALLY CEMENTED

BATTERY BOX IF PETROL ENGINE IS USED

WING BRACE 1/16" PLY.

1/4" x 3/8" CRUTCH ASSEMBLE WITH SCRAP CROSS PIECES WHICH ARE CUT AWAY AFTER INSERTION OF FORMERS

ENGINE MOUNT & COWLING DETAIL, BEARERS ARE SET THRO FORMER 1. (WELL GLUED & BRACED) INTO NOSEBLOCK. COWL SIDE PANELS ARE BUILT UP OF 1/8" x 1/4" STRIPS. UPPER HATCH FROM 1/16" SHEET. 1/8" x 1/8" MAY BE USED AS STIFFENERS LOWER COWL MAY BE CARVED OR MOULDED FROM CELLULOID

1/8" PLY WEBS

ADDITIONAL 3/8" x 1/4" CEMENTED TO TOP OF CRUTCH TO FORM PLATFORM

BAMBOO RUBBER BAND RETAINER

3/4" WHEEL

GENERAL NOTES.
DIFFERENT MOTORS WILL NATURALLY AFFECT THE C.G. POSITION BALLAST MAY BE ADDED BENEATH THE TAILPLANE AS REQUIRED. THE FUSELAGE SHOULD BE COVERED WITH RAG PULP OR DOUBLE COVERED WITH HARD TISSUE TWO COATS OF CLEAR DOPE & TWO OF COLOURED WILL GIVE A PLEASING FINISH & ADD WEIGHT IN THE RIGHT PLACE. THE NOSE MAY BE LENGTHENED UP TO 1". IF A PETROL MODEL IS USED CONSTRUCTION REMAINS THE SAME. TRIMMING IS ACCORDING TO INDIVIDUAL TASTE (THE MODEL HAS NO VICES) BUT 1/2" RIGHT SIDETHRUST MAY BE BUILT IN.

1/8" SHEET.

UNDERCARRIAGE 12 SWG PIANO WIRE BOUND TO FORMER 1 IF WOOD MOUNTS ARE DESIRED USE 5/8" x 5/8" SPRUCE CUT OUT SLOTS IN NOSE BLOCK & F1 TO SUIT ENGINE USED

A DOUBLE LEG DETACHABLE U/C MAY BE CONSTRUCTED FROM 14 SWG WIRE PLUGGING INTO TUBES SUITABLY BOUND & BRACED TO FORMERS 1 & 2.

COOLING GRILLE (IF DESIRED) CUT OUT SQUARE, INSERT ROUNDED 1/8" x 1/8" IN FRONT OF APERTURE.

NOSEBLOCK REAR FACE. (MAY BE HOLLOWED)

FAIRING BLOCK

FORMER TEMPLATES TRACE ON TO FOLDED PAPER TRIM OFF OUTER TEMPLATE AFTER EACH FORMER IS CUT NOTCH FOR STRINGERS WHEN FORMERS ARE IN POSITION

ALL FORMERS 1/8" SHEET. EXCEPT Nº 1. 1/8" PLY.

ALUMINIUM OR SOFT IRON WIRE HINGES

1/8" DOWEL LOCATING IN CELLULOID FACED HOLE IN FORMERS

1/4" x 1/4"

1/4" x 1/4"

CARVE BLOCK TO FAIR IN TAILPLANE & FIN WITH FORMER 9.

TAPER SPAR FROM HERE

TAILPLANE CENTRE BLOCK

1/8" DOWELS

FIN CONSTRUCTION. 1/8" SHEET EXCEPT WHERE NOTED

CENTRE SECTION COVERED 1/16" SHEET.

1/2" x 1/4"

1/16" PLY WEB

1/16" x 1/16" STIFFENERS

1/2" x 1/8"

1/8" SHEET

PORT WING CHAIN DOTTED.

1/8" x 1/16" BIRCH OR BAMBOO.

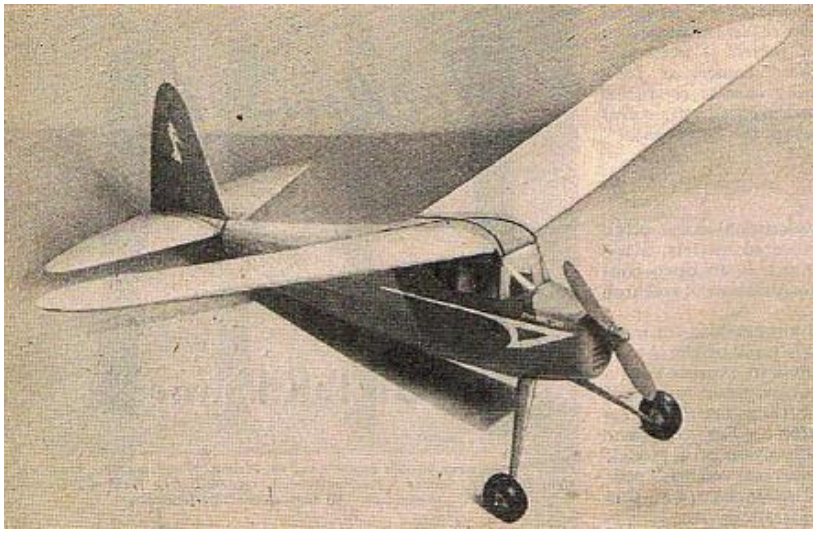
BOUND TO CRUTCH

20 SWG

16 S.W.G

ALTERNATIVE TAILWHEEL ATTACHMENTS

Ethereal Lady by Vic Smeed a 48” span power model from Aeromodeller June 1948



Ethereal Lady is one of these amiable little aeroplanes that will put up with minor modifications, over loading, glider-towing, and all the maltreatment inflicted on models by ingenious aeromodellers, and will still retain its viceless characteristics and delightful flying qualities. As a first power model, with the smaller engines, it is ideal, although not of the slab-sided construction normally recommended for first attempts. With larger engines it is a challenge to the pylons and freak models in its performance, and yet retains complete simplicity in trimming.

The maiden flight of the prototype was straight off the drawing board—5 mins, 40 secs. on a 40 sec. motor run, in non-thermal conditions. This model was powered with an Ohlsson 23, and a careful compilation of performances over a period of weeks gave an average rate of climb of 1,700 ft. per minute for this machine. A Mills-powered version climbed consistently at 800—900 f.p.m. So far five models have been built to this design—one with a Mills, two with E.D.’s, and two with Oblsson 23’s. one of which (the designer’s) was converted to take a 2 cc. Movo. Each of these models was built by a different builder, and none so far has cost more than 9/-, excluding motor and wheels, although built so far apart as South Africa, Germany. Yorkshire and Kent.

One trouble with the diesel motor applied to semi-scale and scale models is the difficulty of positioning the C.G. correctly with so much motor weight forward. Ballast seems a wasteful means of correctly relating the forces, and to provide a pleasing cabin and ready access to the motor without cranking the wings is a bit of a problem. Since, however, a semi-scale job is built for looks as well as performance this weight set-up does offer scope for a careful colour-dope finish. This is the case with the diesel-powered version of the” Lady “—the nose has been shortened as far as is practicable, and the fuselage is finished with two coats of clear dope, two of colour, and one of banana oil.

To anyone wishing to modify the design, it should be pointed out that, while an ample margin of longitudinal stability is inherent in the model, any increase in weight in the nose will mean ballasting and an increased pitching moment, with the consequent recovery-lag in a stall, etc.

Construction.

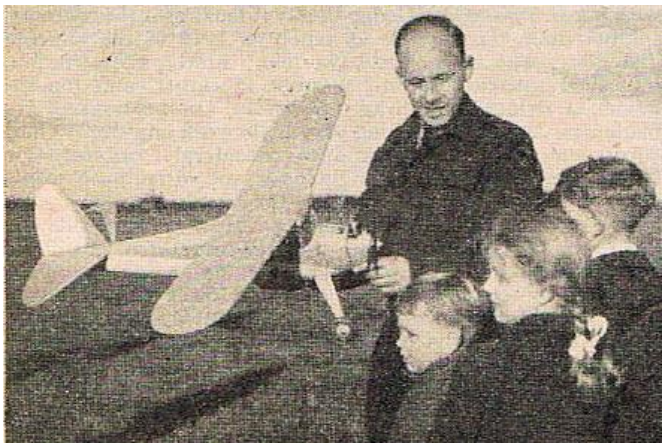
The construction throughout is perfectly straightforward, but the following points may help. Some eyebrows may be raised at some of the materials nscd—for instancc, 1/8 sheet wing ribs—but if the wood used is graded correctly, a sturdy and reasonably warp-proof yet surprisingly light structure will result. The prototype weighed 23 ozs. with the Ohlsson 23, ignition equipment and heavy-duty batteries.

Fuselage.

This is commenced by laying down the ¼ x 3/8 crutch. Scrap pieces of balsa are used to form a frame into which the formers can be slipped with a minimum of trouble. Before removing the crutch from the plan, mark in the positions of all formers. These are cut from 1/8 medium sheet, and the centres may he cut out, leaving ½” all round, if desired. Cement them in lightly, add the bottom centre stringer, and check that the formers are square before cementing them permanently. Observe that F1 is complete with bearers and undercarriage before being attached.

The wing runners come next, followed by the stringers. The tailwheel attachment should be bound in place before completing the lower stringers. When fitting the stringers, place each end and mark the positions of the required notches —the best way of avoiding those unsightly wavers. Notice that the top centre stringer locates in a notch cut in the centre of the top of F5. and that the next each side describe inward curves from the rear ends of the wing runners until resuming a normal course from F7 onwards. F6 is squared out at the

top to assist in the transition from the flat top of F5 to the elliptical form of the after-fuselage. This construction provides a smooth and easy-to-cover fairing.
Odd corner-plates, cabin details, etc., may now be added. The cowling construction will vary with the type of motor used, the installation, and the individual builder's tastes. That shown on the plan has proved very satisfactory, since the noseblock is rigidly held to the bearers and is not likely to be dislodged in the event of one of those down-wind nose-overs. The sheet covering of the forward fuselage is optional, especially if rag-pulp tissue is used; it is, however, recommended for ham-fisted fliers! A small area of sheet is essential round the finger choke-hole and round the timer.site.
Wing.
The construction of the wing requires little comment. The 1/16' x 1/16' stiffeners were found to greatly reduce tissue sag between ribs. The leading edge may be covered with 1 /32" sheet if desired. The tips may be constructed from sheet, or, for the builders who look askance at one l/8"x 1/16" spruce tip, a second length of spruce may be glued round the first.
Tail Surfaces.
These are straightforward and call for no special comment.
Motor Mounts.
The engine bearers and undercarriage are attached to FI before gluing the former in. It should be borne in mind that this former is the keystone of the model—it is, in effect, an engine and undercart securely fastened to a ply bulkhead which is sort of followed around by a model. Remember that the strength of cement relies largely on its soaking into the material being cemented—ply will not absorb it and therefore Croid. Pafra. or a similar glue should always be used.
The near-cantilever bearers used on this model have proved satisfactory on many models built by the designer, but modifications may be made by anyone viewing the idea with suspicion. Metal mounts may be employed, in which case some means of rigidly affixing the noseblock must be devised.
A piece of soft iron wire soldered between each (side) pair of bolt-heads, and a retaining strap under the heads (to prevent them from dropping out) makes a simple and foolproof means of bolting the engine in—the nuts may be dropped into place and tightened without the need to hold the heads.
The installation shown on the plan necessitates moving the motor forward and tilting to remove. This system is not possible with all types of motors; in the event of any difficulty a small piece of the noseblock at the top may be cut out and cemented to the front of the top hatch. With motors weighing
5 ozs. or under, the nose may be lengthened slightly, and in the event of a petrol motor being used, the positioning of the batteries allows the use of a considerably longer nose. The location of the timer is left to the individual builder, since this is a controversial point, though a box sited between F3 and F4 is recommended..
Undercarriage.
This is formed to plan from 12 s.w.g. piano wire and is bound and sewn to F1 before the insertion of the former into the crutch. The fairings are carved from 1" x 1/2" block— notice the clearance at the upper ends to avoid penetrating the covering in the event of excessive backward travel. The wire leg fits in a groove cut into the fairing, and the whole is secured by four wrappings of rag-pulp, liberally cemented.
Finish and Flying. -
Rag-pulp is recommended; this again is a matter of personal taste. If a lightweight tissue is used, double-covering is well worth while. This type of model can be made to look very attractive, and, as mentioned elsewhere, there is room for the builder to spread himself on his colour-scheme. A hole drilled in the bottom of the cowling at the extreme rear of the engine compartment, and a small V-piece cemented outside will
protect the finish by collecting superfluous oil and allowing the slipstream to blow it clear of the model. -
When glide tests seem satisfactory, trimming should be carried out for right-hand circles under power. The



diameter of the circles will vary with the power available—with small motors a wide circle produces the most pleasing results. The higher-powered “Ladies” have all exhibited the ability to hold a tight spiral. A slight amount of sidethrust allows the model to be trimmed for a wider circle while gliding. The designer’s present model (Movo-powered) requires two degrees right-thrust and slight right rudder.

From John Ralph

I have a little nostalgia related tale which may be of interest to some who might be able to relate to the topic

I was given some model making magazines a few weeks ago the likes of which I have never come across before.

My model aircraft interest started way back in the early 1940's and since then I have come across ; read and contributed to many aero modelling related magazines. I have a treasured collection of Aeromodellers from the late 1930's through to the 1950,s. Plus a lesser number of the early SMAE publication " Model Aircraft " . So you can imagine my surprise at seeing for the first time these little magazines with attractive colourful covers with the title :- " MARINE & AERO MODELS. " on the front. The other information on the covers is that they were a :- " HUTCHINSON MONTHLY " with a price tag of 1s6d.

I was given ten of these diminutive mag's (they only measure 7in x 4.5in) but two are the forerunners of the hybrid mags and they just have " MARINE MODELS " on the cover . The new topic of AERO MODELLING was added by HUTCHINSON from OCTOBER 1947. An indication of how long the original marine mag had existed can be judged from the number on the OCTOBER mag which reads :- " VOL. XV L . No.1 .

The copies I was given go through to June 1948 and as can be seen by the covers highlight topical interests of the time . Control line was a relatively new interest in the UK and a Ron Molton design appears on one cover plus the famous " Queens Cup " on another.

So what of the contents of these magazines? Well they are not very exciting ! A few reviews of well known kit models plus reports of club activities and SMAE matters. There are one ore two useful articles by Ron Molton so HE appears to have been well aware of this rival Mag. to his main employer " AEROMODELLER " . The latter at the same price as " MARINE & AERO MODELS " was a far superior magazine.

The usual " Expert " rubber powered model designers such as Bob Copland and Ron Warring contributed a few articles . And I raised a smile when I read " How to prepare a rubber motor for contest flying." It would have only been any good for tying up your roses if you had followed the advice !!

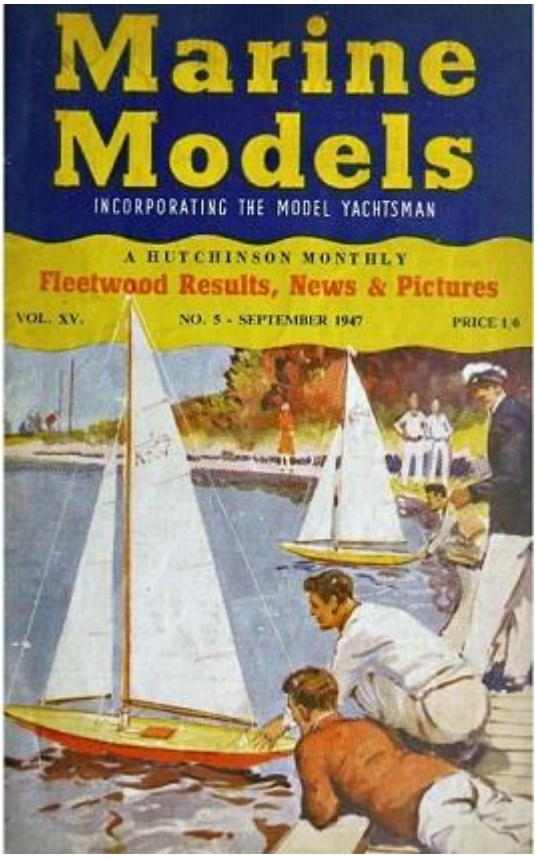
There are a few plans and one, would you believe, was for a MILES MESSENGER reproduced from the "Blueprints of the KIT designed and produced by Aeromodels Ltd. Aigburth, Liverpool.

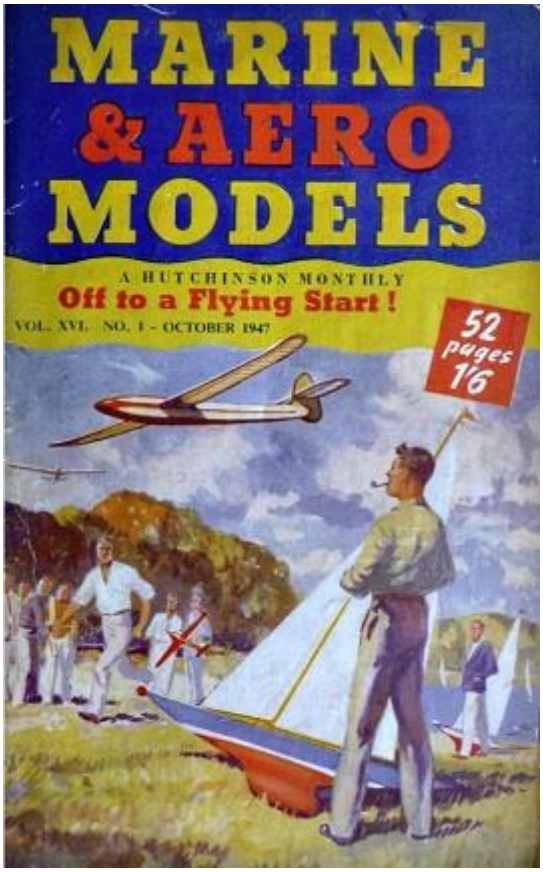
The preamble for the article states " In reproducing the plans and instructions for building we are convinced that many modellers would appreciate their guidance in making the model throughout and without having recourse to the more simple method of buying a kit . Readers ,desirous of building from kits will know how to obtain them "!!!! What happened to copyright one wonders?

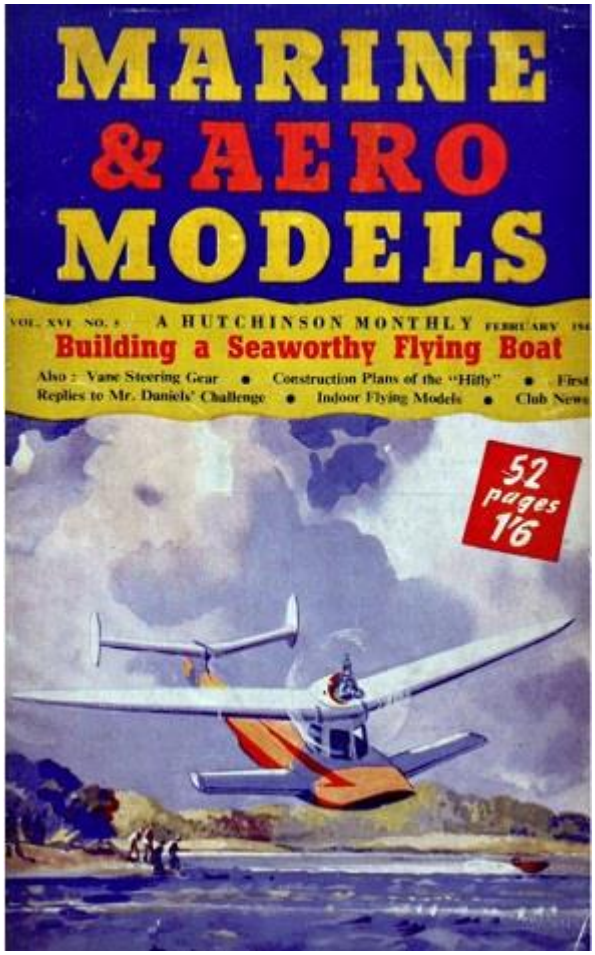
Very few adverts were carried indicating that the trade was not impressed with the circulation of the magazine and as noted I can see why. One of my great interests at the time was" JETEX " and there is no mention of this new form of propulsion which featured in the contest calender and in the many scale jet aircraft which could now be modelled.

Anyway , that is enough of my latest " Gem " with which to bore you with. I hope their is an " OLD TIMER " out there who might already know about the above magazines. Sadly one such who I bet WOULD have known was the late John O'Donnell.

Best wishes to all out there in " Nostalgia Land " John Ralph.






MARINE
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MODELS
A HUTCHINSON MONTHLY
Building a Seaworthy Flying Boat
Also : Vane Steering Gear • Construction Plans of the "Hifly" • First Replies to Mr. Daniels' Challenge • Indoor Flying Models • Club News
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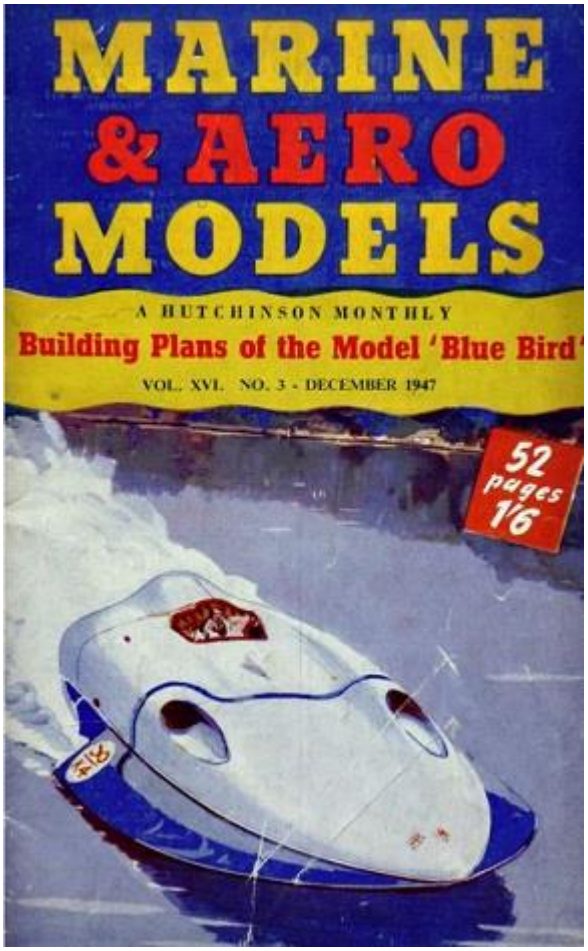
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A HUTCHINSON MONTHLY
Building Plans of the Model 'Blue Bird'
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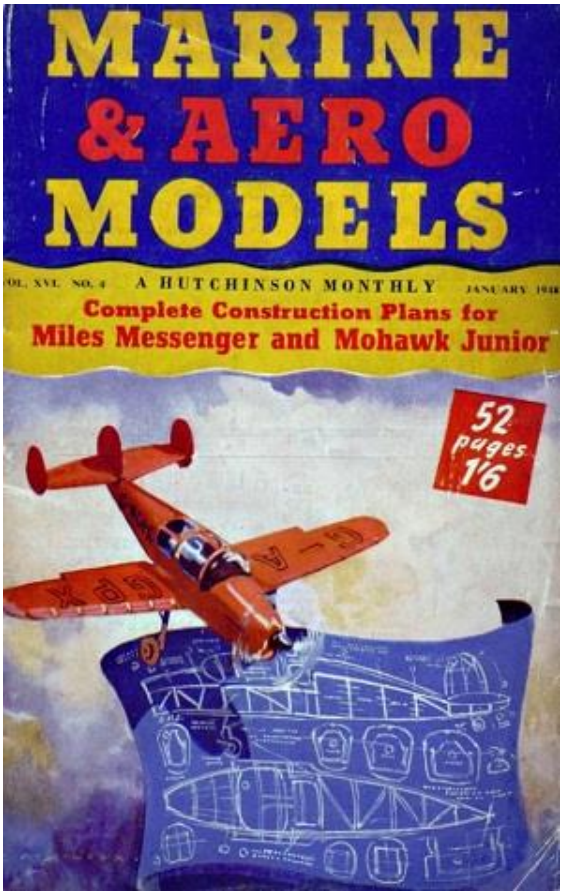
MARINE
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Complete Construction Plans for
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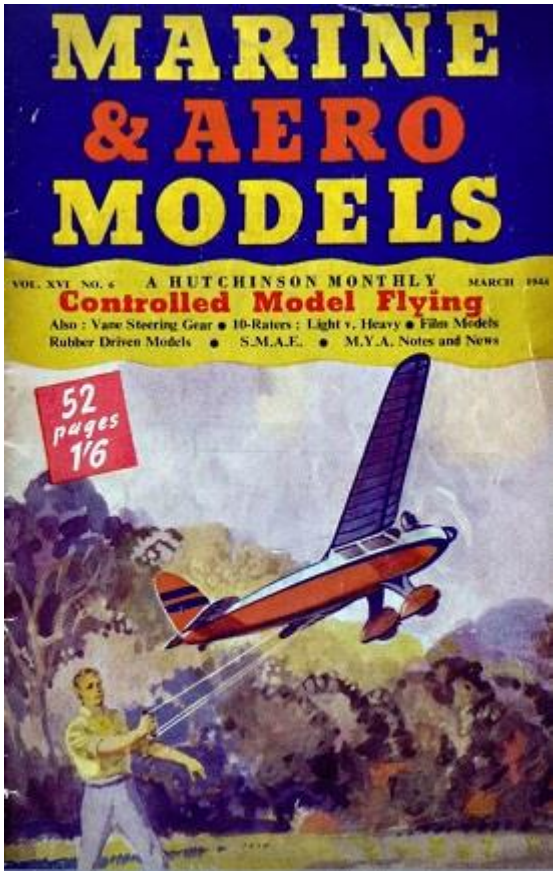
MARINE
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Also : Vane Steering Gear • 10-Raters : Light v. Heavy • Film Models
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Controlled Model Flying
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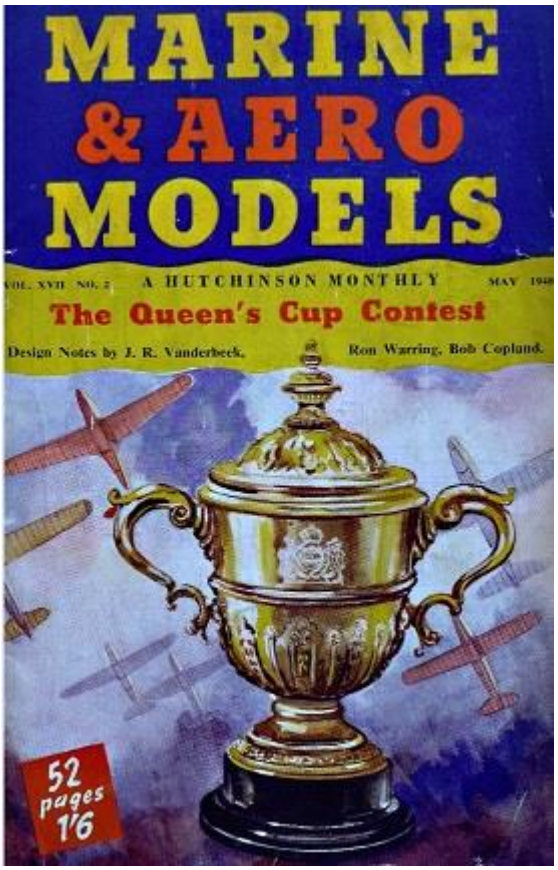
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Design Notes by J. R. Vanderbeck, Ron Warring, Bob Copland.
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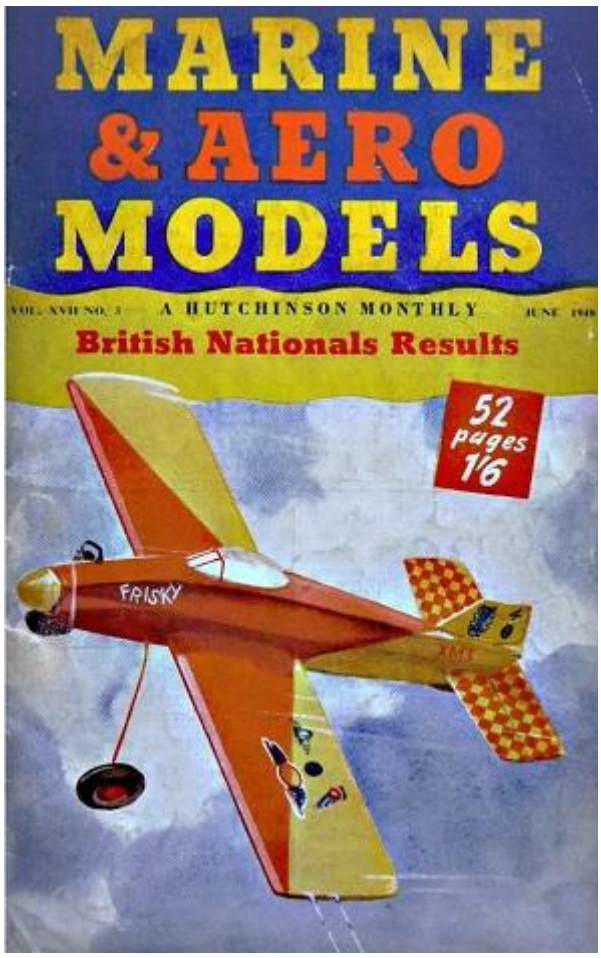
MARINE
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British Nationals Results
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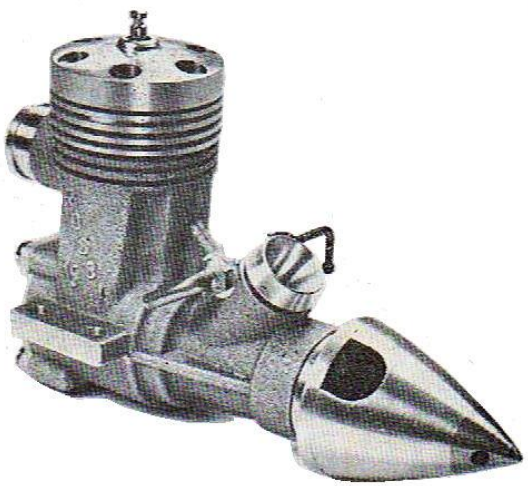
FRISKY

Rossi R-15 'Normale' Aeromodeller December 1973



It is only ten months since the Rossi 15 was first dealt with in the AM. Engine Tests, but the interest in this World Championship winning engine is such that we felt bound to bring the situation up to date by running a further report, this time on the current version for which the manufacturer has claimed an even higher power output than was achieved with the 1972 model.

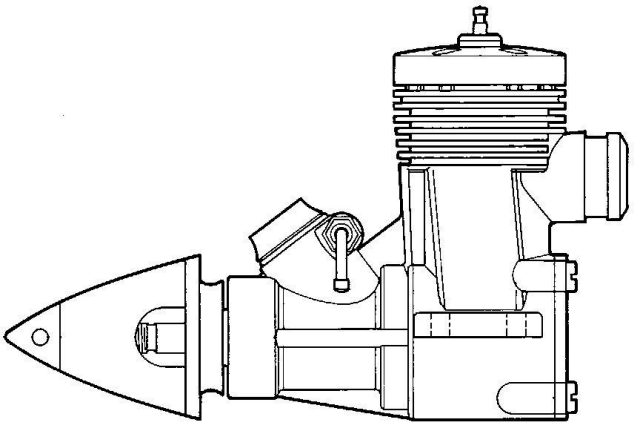
Once again, the unit submitted for test was the standard or 'normale' (i.e. non-pipe) version that has become recognised as the only motor to use at the present time if one expects to achieve any sort of success in international class free-flight power events.

The modifications that have been made to the present model consist mainly of a larger diameter crankshaft journal, a larger rear ball-bearing, later rotary-valve closure, modified cylinder port timing and (the only outwardly visible difference) slight changes to the main casting in the vicinity of the lower cylinder fins.

To take the casting first. This has been modified to add more metal externally to the lower part of the finned section between the transfer passages and where the exhaust stub joins the cylinder casing. This also increases the area of the lower fins which now completely surround the cylinder except where interrupted by the exhaust. In addition the case is fractionally higher which, in conjunction with the absence of the 0.2 mm. head gasket, reduces the gap between the top fin and the cylinder head.

Internally, the case is machined to make the larger o.d. rear ball bearing necessary to support the new crankshaft. The shaft has a 10.5 mm. (instead of 10 mm.) main journal and this has allowed the valve port to be widened to extend the induction period. Measurement of the test engine indicated a rotary- valve timing of 41 degrees ABDC to 62 degrees ATDC. This compares with a 39-47 degree period measured on the earlier engine. The large valve port is, of course, rectangular and, as before, registers with a slightly offset, parallel-sided bearing aperture. to assist gas flow and give rapid opening and closing.

The machined intake venturi with its six peripheral jets, is unaltered and has a 6 mm. throat for an effective choke area of 28.3 sq. mm.



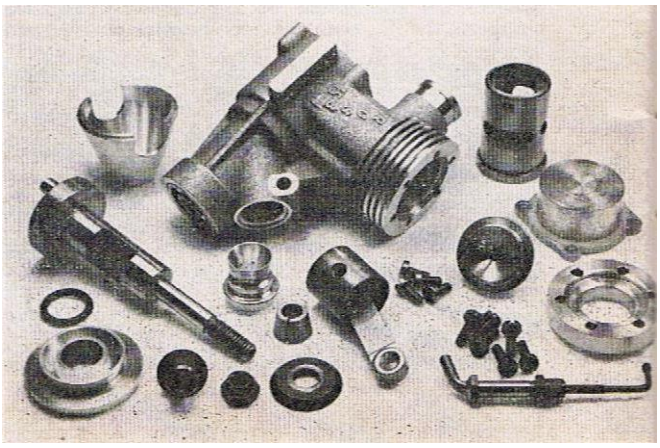
Cylinder port areas and shapes remain virtually unchanged (the third port is just a trifle deeper) and the measured exhaust period, at 152 degrees of crank angle is not significantly different from the (150 degrees) of the previous model but the main transfer period, at a measured 136 degrees, is open for six degrees longer than before and the third port, which previously opened two degrees later, now opens simultaneously with the main transfers for a 10 degree longer period than before.

The craftsmanship exhibited in the construction of this engine continues to be of a very high order.

Performance

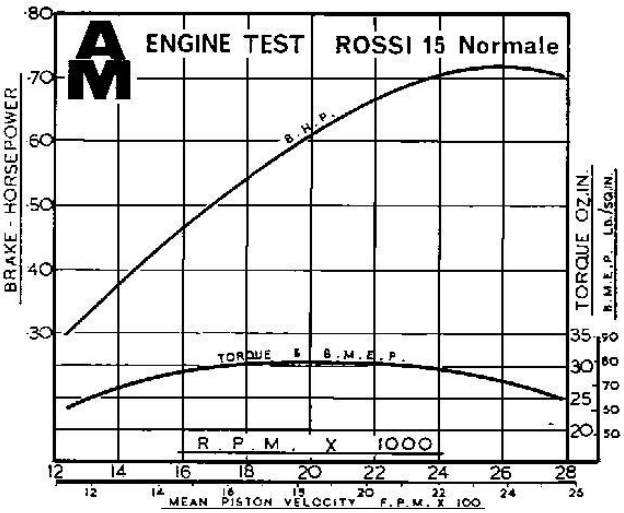
Right from the beginning, the handling characteristics of our R.15 were impeccable. Nowadays, ultra high performance does not automatically mean tricky or vicious handling qualities (the latest K&B racing 40 is another engine that demonstrates this) and we can honestly say that the hand-starting qualities of the Rossi were better than some so-called 'beginner's' diesels we have handled. Admittedly, many contest flyers prefer to use an electric starter on the R.l5, rather than expose their fingers to the risk of cuts from the sharp blades of a glassfibre prop and, for convenience, we also used a starter but for anyone who does not

want the bother of carrying around a starter and battery, a rubber finger stall will make a tolerable substitute so far as the Rossi 15 is concerned.
Rossi Brothers' current recommendations regarding running-in the R.l5 call for 25 minutes bench running on a 3 to 1 methanol/castor-oil mix using a 7 1/2 x 3 in. prop, followed by a further 60 minutes bench running on the same fuel with a 7 x 3 prop. Clearly, the latter is intended to ensure that the engine is fully freed up at its peak. At this stage, in fact, our motor turned a TopFlite 7 x 3 in. at 26,600 r.p.m. — 1.200 r.p.m. faster than the earlier engine tested.
The manufacturer's claimed power output for the R.l5 Normale is now 0.75 b-h.p. at 25.000 r.p.m. (and, incidentally. 0.90 b.h.p. at 28.000 r.p.m. for the piped version) and we got very close to this with a figure of 0.72 b.h.p. at a slightly higher (26,000 r.p.m.) peak. This seems to tie in quite well with the 7 x 31/2 in. Bartels epoxy-glassfibre prop used by many contest flyers. Our motor turned a stock example of this prop at 24,400 static which would suggest that, already so close to its maximum power output, the engine would quickly unwind to just beyond its peak when the model is launched and thereby rapidly accelerate the model to its maximum climbing speed One hears of some continental F/F exponents running their R.15's at 25.000-26.000 r.p.m. static, so one hesitates to suggest props that would hold the Rossi to very much lower static r.p.m. but, just for the record, our test sample turned a 7 1/2x 3 3/4 in. Bartels at 22,200 and a 7 x 4 in. Power-Prop at 21,400. For the benefit of those who might care for a tentative essay into the world of C/L speed without the complication of a tuned pipe it may be worth mentioning that our Rossi turned a 6 x 7 in. (Top Flite pattern) Bartels at 20.200 and a 5 3/4 x 8 1/2 in. Bartels-Moki at 20,800. Going farther down the scale to what was once considered a normal size prop for FAI free-ifight, an 8 x 4 Taipan nylon-glassfibre was turned at 17,800, while a 7 x 6 in. Bartels rotated at 17,800. This really represents the limit of the Rossi's usefulness on FAI fuel, at least. Under still heavier loads, torque now drops off rapidly, power output then becomes inferior to that of much less exotic designs and the engine begins to run unsteadily.
The message is loud and clear: Don't buy a Rossi unless you are going to use it for the purposes for which it was designed — or unless you are prepared to part with £34 iust for the pleasure of owning one.
But if you aspire to FAI competition success, the answer is simple: you just have to have an R.15.
Power / Weighs Ratio (as tested): 2.00 b.h.p./ lb.
Specific Output (as tested): 291 b.h.p./litre.
Footnote: In accordance with FAI regulations for the 2.5 c.c. World Championship class, straight methanol/ castor-oil fuel was used for all our tests. However. for events where doped fuels are permitted the Rossi brothers approve up to 70 per cent nitromethane provided that the engine is first given adequate running-in on straight fuel and provided that the nitro content is then introduced in gradually inercasing quantities. A reduction in compression ratio is recommended with nitro fuels and can be easily effected by fitting one or two of the aluminium head gaskets available for this purpose. It may also be necessary to use a different glow-head from the No. 2 type fitted as standard. Glow-heads are now obtainable in four grades. No. I calda (hot) and No 2 media (medium) for FAI fuel and No. 3 fredda (cold) and No. 4 molto fredda (very cold) for nitro fuels.



SPECIFICATION
Type: Single cylinder. aircooled, glowplug ignition Schnuerle loop scavenged two-stroke with crankshaft rotary-valve and twin ball bearings.
Bore; 15mm. (0.5905 in.)
Stroke: 14mm. (0.5512 in.)
Swept Volume: 2-474 cc. (0.1510 cu.in.)
Stroke/Bore Ratio; 0.933:1
Checked Weight; 163 grammes (5 3/4oz.), including spinner assembly.

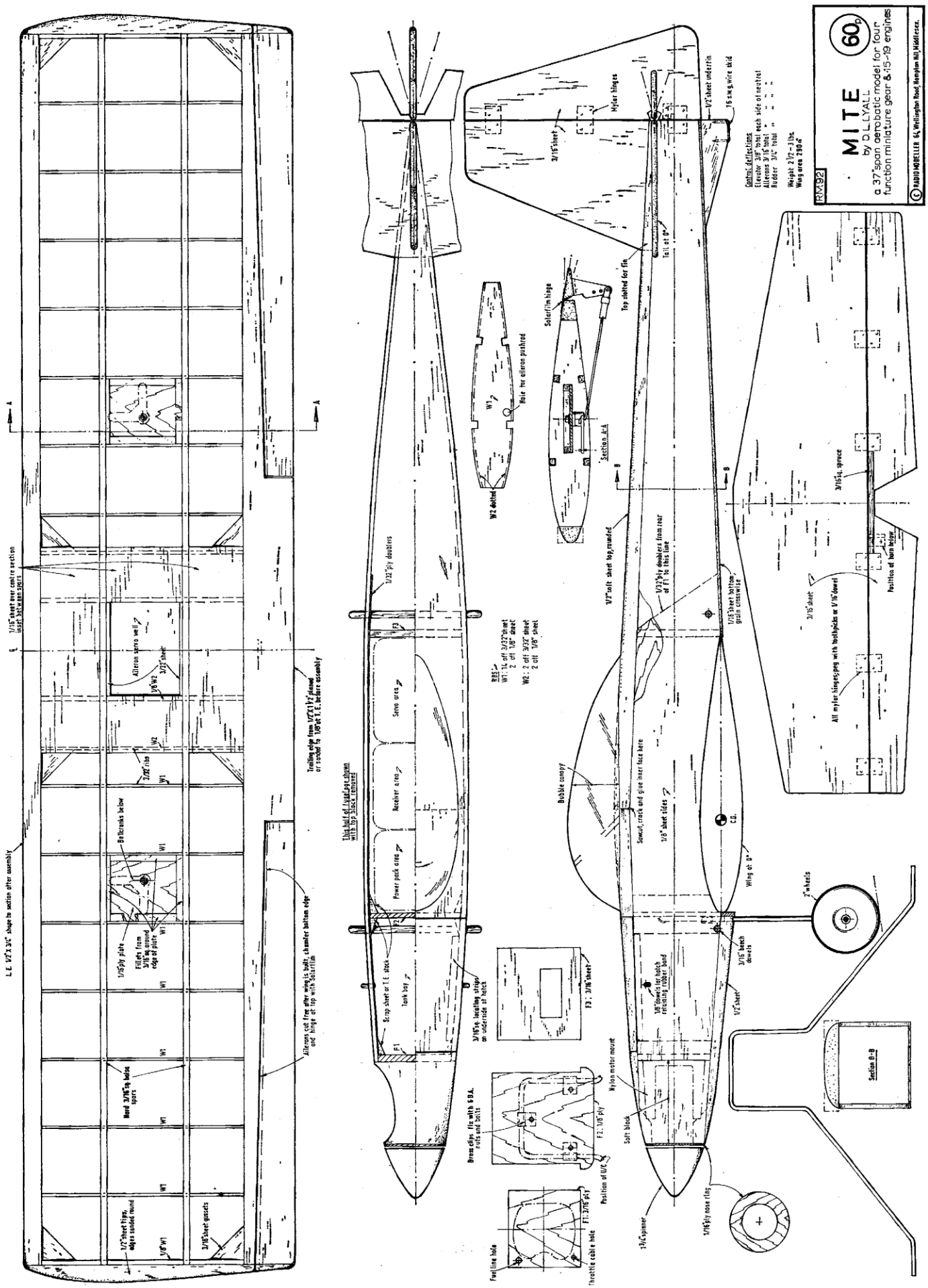
General Structural Data
Sandcast aluminium alloy crankcase/c ylinder-casing/front housing unit. Detachable rear crankcase-cover secured with four screws. Hardened steel crankshaft with full disc internally-counterbalanced crankweb. 10.mm. o.d. main journal. 7.5 mm. id. gas passage and 4.5 mm. o.d. crankpin. Shaft supported in one 10.5x21 mm. 8-ball steel caged ball journal bearing at the rear and one 6 x 16 mm. 6- ball brass-caged ball journal bearing at front. Flat crown deflectorless lapped cast-iron piston running in hardened steel cylinder liner. 4 mm. o.d. hollow gudgeon-pin located by circlips in piston. Machined aluminium alloy connecting.
rod. unbushed, but with oil holes at both ends. Two-piece machined cylinder-head assembly consisting of trumpet-shaped combustion chamber insert having integral ignition filament and a separate outer ring securing complete assembly to main casting with six screws. No head gasket.



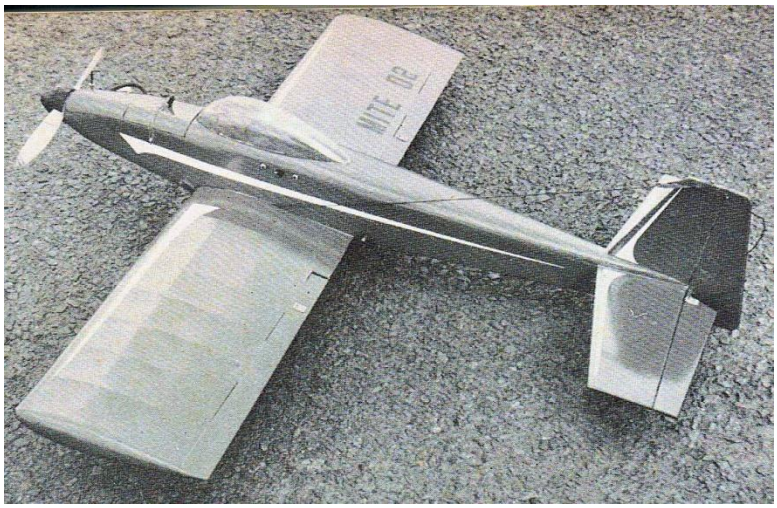
Machined aluminium alloy prop. drive, spinner-backplate, mounted on shaft via aluminium split taper collet. Machined aluminium alloy spinner shell. Steel spinner nose-cone securing spinner assembly to shaft. Machined aluminium alloy venturi insert with 6 mm. i.d. choke and retained by tangent mounted needle-valve assembly feeding fuel to six peripheral jets in venturi.
TEST CONDITIONS:
Running time prior to test: 1 1/2 hours, approximately.
Fuel used: 75 per cent methanol, 25 per cent Duckhams Racing Castor Oil.
Glowplugs used: Rossi No. 2 glowheads as supplied.
Air Temperature: 23 deg. C (73 deg. F).
Barometric Pressure: 30.05 in.Hg.

Sent by Ken Croft

Just a correction. Page 29 re Derek Collin's engine which the text says is based on a Cloud engine. This is not correct as it can clearly be seen to be based upon an Elf "Corn Cob" crank case and cylinder casting, which itself is an ignition engine. Diesel conversion is something I proposed a long time ago during my own 20 years of engine building. My idea though was to leave the ignition timer in place and to use a dummy spark plug as the comp screw, so I would have what appeared to be an ignition engine but was in fact a diesel.



Mite a 37” span RC model for .15 - .19 by D Lyall Radio Modeller August 1971

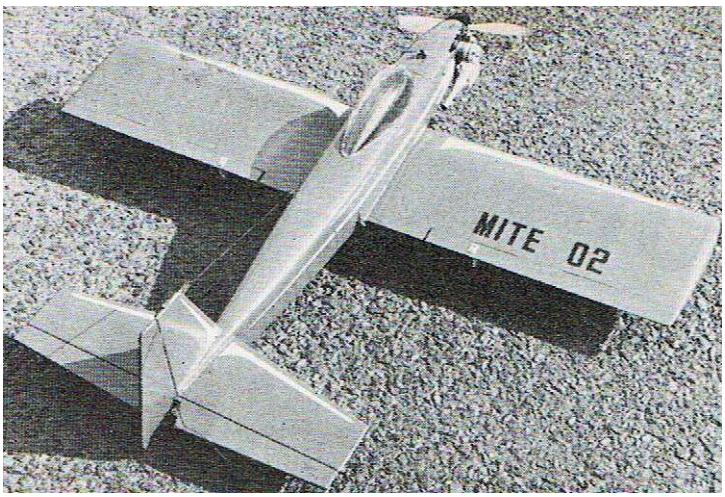


Before designing the Mite, I had been flying a small well-known aerobatic design of 38in. span, and using an O.S. 19 motor. This machine had a few drawbacks, mainly caused by the type of field I fly at and the weight (16oz.) and size of my home-built digital gear. In order to obtain the correct C.G. position in the model, I had found it necessary to fit the DEAC in the main radio compartment with the receiver and servos. This, combined with the width of the fuselage, prevented the fitting of more than two servos, so rudder control was omitted.

As regards flying, the machine proved excellent, the only problems being getting the machine off the ground and back down again. The tricycle undercarriage gave too much drag on the grass strip to allow the aircraft to get up enough speed for a take-off. In fact, all the take-offs were made by hand launching (quite so—Eds), which is an amusing exercise when flying without a helper. Landings were made dicey by the combination of small wing area and high weight. Any attempt to slow down the high gliding speed of the model only resulted in one wing stalling and dropping, followed by the inevitable crunch.

To try and overcome these dis advantages the Mite was drawn up,
with the following points in mind:

1. The weight was to be kept to a minimum, 2 3/4lb. being the acceptable maximum, without compromising the performance. I felt that this was about the maximum weight a .19 size motor could pull through manoeuvres such as vertical rolls and the top hat, which depend to a large extent on the power weight ratio of the model.
2. Wing area to be at least 2 sq. ft. in order to achieve a reasonably low wing loading.
3. A two wheel undercarriage, attached to the fuselage for strength. Securing the undercarriage in this manner considerably simplifies the wing constructions due to the omission of all undercarriage fixings. Two wheels were also felt to be an advantage for flying from rough grass.
4. No dihedral. The amount of dihedral used on an acrobatic design of this type did not offer sufficient advantages in the way of stability, to justify the additional work involved in construction. The wing is basically 36in. span with block tips, thus allowing the use of standard sheetand strip balsa sizes.
5. The fuselage dimensions were mainly dictated by the sizes of the items to be carried internally, i.e. the tank length determined the nose length of the model.



The wing chord was arranged to allow the radio compartment to carry all the radio gear, including the Deac. The fuselage had to be wide enough to enable three servos to be fitted abreast. The servos, in fact, were mounted on a detachable tray, the tray being secured by four screws to two bearers running across the fuselage.

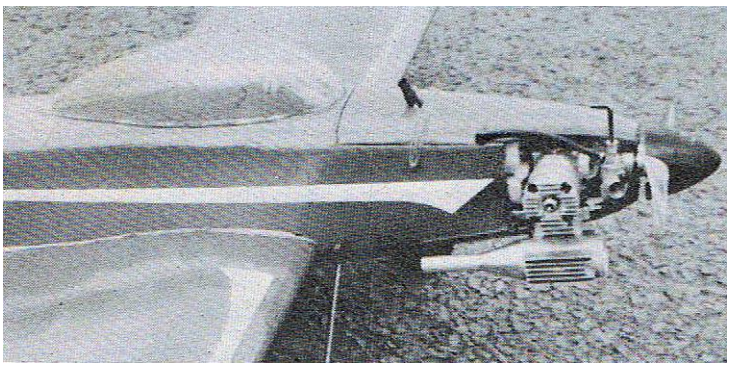
CONSTRUCTION NOTES

As can be seen from the plan, construction is very simple. It is doubtful if construction could be further simplified without the use of foam core wings and or other moulded components.

Wing

Construction differs slightly from that normally used, in that there is no sheeting on the wing at all. This does not mean that the wing will be any weaker, as can be seen from an examination of the wing cross section on the plan, the solid leading and trailing edges, combined with hard balsa spars, being the main

strong points of the structure. This type of construction does not have any real advantages over the sheeted wing, other than simplicity of construction and ease of repair in the event of damage.



Note the shape of the ailerons. It's not an error in the drawing, in fact there is a good reason for this, sorry, two good reasons. First, to get as much of the aileron area out toward the wing tips where it is most effective, secondly to avoid excessively weakening the trailing edge at the inner edge of the aileron cut-out. Shaping the leading and trailing edges should be no problem, if you have been wise enough to invest in a mini or razor plane. If you have not invested in one of these handy little gadgets, now's the time. For shaping block a tool of this nature is invaluable.

Construction commences by cutting the leading and trailing edges from a sheet of 1/2in. medium/hard balsa. Ribs are formed using the sandwich method, the blanks being cut from soft 3/32in. sheet. Pin down the underside front mainspar and assemble the ribs to it, use a piece of scrap 1/2in. sheet to pack up the rear of the ribs. Add the top spars, leading and trailing edges (note the trailing edge should be shaped before assembly), followed by the centre section sheeting, and scrap sheet fillets. Turn the wing over, add the second spar, centre section sheeting and tip blocks. For strength, white glue fillets should be smeared on all joints. The wing can now be sanded and all control linkages fitted, after cutting out the ailerons.

Fuselage

No problems here, the only point worth commenting on being the undercarriage installation. Be sure and use plenty of Araldite or epoxy around the fixings and bulkhead. If your landings are anything like mine, a strong undercarriage assembly will soon prove its worth.

Commence fuselage construction by cutting out the sides and formers. Attach ply doublers to the fuselage sides, using a contact adhesive. Bend the undercarriage wire and secure to F.2, using brass or thick tinplate clips. Assemble formers F.1, F.2 and F.3 to the fuselage sides, pull the sides together at rear and glue. Temporarily attach the wing to the fuselage, using rubber bands, and then fit the tailplane, to check for alignment with the wing. Remove the wing and add the fuselage top blocks. Roughly carve the top decking to shape and cut the slot for the fin, again checking for accurate alignment. At this stage it is advisable to smear former F.2 and the undercarriage fixings with epoxy adhesive for added strength.

Construction is completed by adding the underside sheeting and then forming the engine cowling from soft sheet as per plan.

Finishing

Finish should be Monokote or Solorfilm, with trim as preferred. The use of any other type of finish is not advised as it would probably be heavier and, in any case, involve considerably more work. If done carefully, it is quite possible completely to cover the machine using only one large sheet of Solarfiim.

Flying and trimming For initiaI test flights check the c.g. position and control surface deflections. Ensure that the deflections do not exceed those stated on the plan. In particular, the ailerons are the most sensitive control surfaces on a small model of this nature. With everything set as per plan, the elevator will require to be set with a small amount of "up," in order to maintain level flight. This can be set by using the transmitter trims during initial test flights, or can preferably be pre-set on the ground. The amount of trim required will be between 1/32in, and 1/16in. measured at the trailing edge of the control surface. If you have not flown a model of this nature before, you would be well advised to talk an experienced flyer into test flying and trimming your machine, not that much trimming should be required. The only trim adjustment found necessary on the prototype, was the up elevator trim stated above. During all flights to date, the model has been allowed to take-off from the grass strip, there being no requirement for hand launching. In

the air the machine has the characteristics of a larger model, being very smooth, yet sufficiently responsive. The standard acrobatic schedule offers no problem to this machine. Spins, for example, are very clean at entry if aileron is used with rudder, this being quite normal with most modern designs. Square loops, top hat and vertical rolls are performed with ease, there being quite adequate power using the recommended size of motor. Landings have proved to be very straight forward, the model being very docile during the approach, showing no tendency to drop a wing if brought in slowly. Overall, I have found this model to be one of the most satisfying I have flown.

From David Bintcliffe

A careful study of this photo of a 1930 s cabin Waco QDC shows the first use of a large brushless motor in its nose....making it suitable for scale modelling!
Photo is from the front cover of a nice book "Wings of Yesteryear" by Haynes publishing

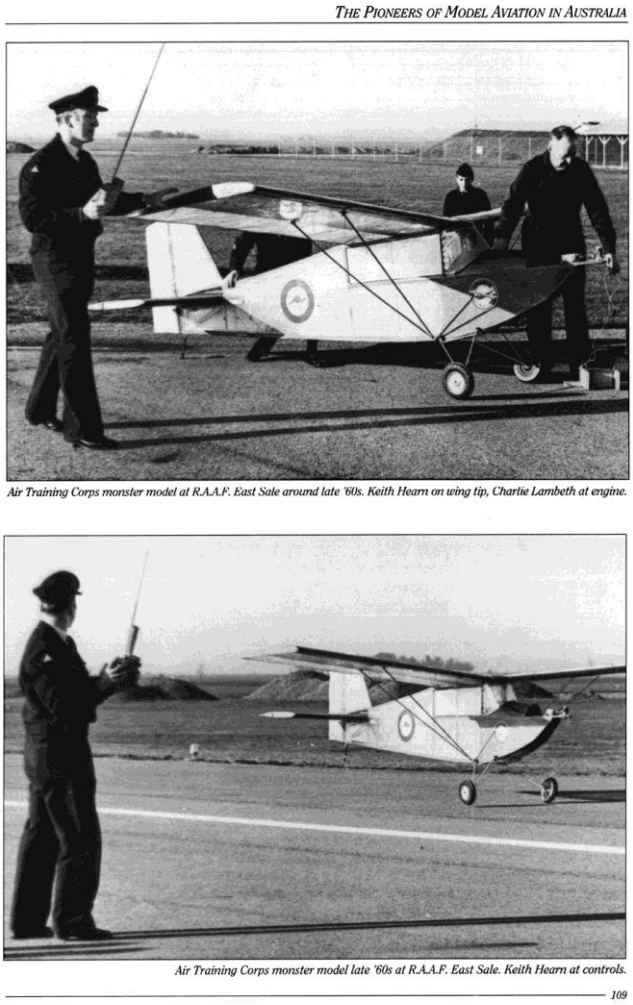
Aeromodelling whilst serving in the RAAF (1964 – 1973)
By Brian Grebert (FAI AUS 5778)

This story continues from my "Control Line "Downunder" article that was published in S&T 126.

Royal Australian Airforce (RAAF) Enlistment:

At the age of 17, on the 8th of January 1964, I officially joined the Royal Australian Airforce (RAAF) at St Kilda Barracks in Melbourne in the state of Victoria, Australia. After the "Swearing in Ceremony", by chance I happened to meet a fellow Recruit who was also interested in Aeromodelling. As the passenger train that was to transport the new recruits to the 3 month "Boot Camp", wasn't to leave for another 5 hours or so. My new found mate "Phillip" and I decided to scour Melbourne's leading hobby shops to fill in time. Back then they were, "Central Aircraft", "Model Dockyard" & **"Hearn's Hobbies".** We spent about ½ hour at each, drooling over model planes etc that we would like to have but couldn't afford at that time.

*See Link below for the history of the Three **Hearn's Brothers** and their RAAF & Aeromodelling exploits. These guys are full size and model aviation Aussie Icons.*
http://www.ctie.monash.edu.au/hargrave/hearn.html



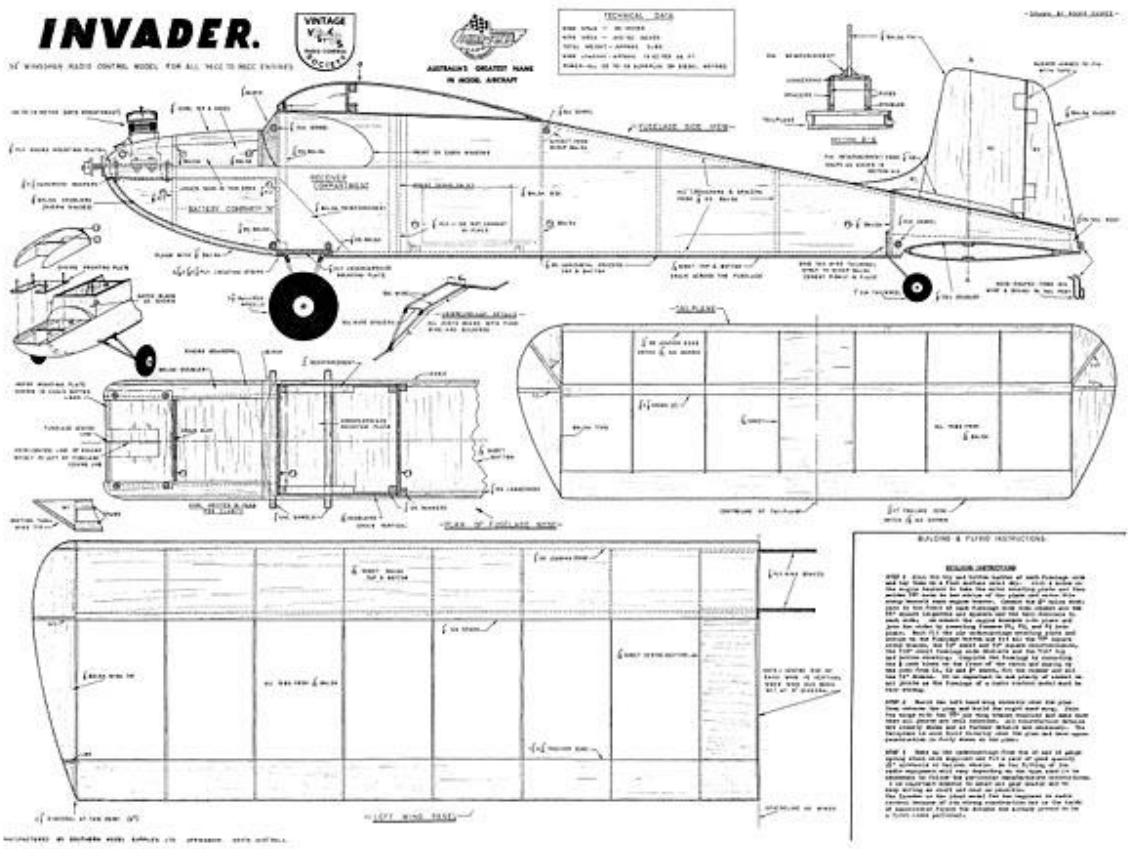
Keith Hearn, RAAF Sale, Victoria, late 1960s

Boot Camp" at RAAF Base Forest Hill in Wagga Wagga New South Wales (NSW):

The next day after arriving at the Boot Camp, Phillip & I were surprised when we found that the "Mechanical Apprentice Training Squadron" had a model aircraft club, so it did not take us long to introduce ourselves to "like minded Kin Folk". The best part of this club was that kits, balsa, engines,

EVERYTHING was for free to use. WOW!!. The only drawback was that when a person was “Posted Out” (transferred to another base), they had to hand back the “Engines” to the club, as they were considered the property of the “Defence Department” and re-issued to another modeler to use.
The township of Wagga had a Hobby Shop where you could buy modeling gear to keep. I bought and owned my first R/C system from this shop, a single channel “Bang Bang” OS Pixie with a super regenerative receiver and a “Rubber Band” driven escapement actuator. (The TX was on 27.120 Mhz, and no Xtal in the RX. Allowing only one aircraft to be flown at any one time) This system was installed into a cabin model called the **“Invader”**, kitted by the Australian company called Aeroflyte. (See Plan Below)
On weekends, the Club had approval to fly “Free Flight” and R/C on the Airfield which also had to be shared with the occasional full sized sailplane gliders. The **Central aircraft “Stork” F/F** was a popular model that was supplied by the Club. **(See also plan)**
C/L was not active in this Club.

http://outerzone.co.uk/plan_details.asp?ID=5663



Aeroflyte 50” wingspan single channel Invader (OS 2.5 cc Glow motor)

Radio Technician Training course at RAAF Base Laverton Victoria:
After the completion of “Boot Camp” Phillip and I went our separate ways, he signed up for a “Mechanical” mustering and he remained at Wagga to do an adult training course. I went to Melbourne to do a Radio Course. (We kept on bumping into each other during our airforce service and were able to once again fly model aircraft together)
RAAF Base Laverton had a “Radio Apprentice Training Squadron” but it did not have a model aircraft club like Wagga. However I got to meet some “Appies” (Nickname for Apprentices) and we flew Control line on the Base’s footy / cricket field when it was not in use for sporting activities. Radio Contol was flown on weekends on the tarmac area of the airfield. (Civilian R/C flyers were welcomed as visitors as well.)

At this time 1964, the USAF had a “Weather Reconnaissance” Squadron with U2 Spy Planes. The U2’s would take off in the early morning and return late in the afternoon after taking so called “Weather Samples” over who knows where??? Some of the “Yanks (American) service men” were aeromodellers too, they flew the latest Analogue 4 Channel Proportional R/C sets, while most of the Aussies were using 6 to 10 Channel Reed systems.

http://www.airport-data.com/aircraft/photo/001145678.html

Lockheed U2. Picture taken at RAAF Laverton Vic Australia at an open to the public air display.

“Balsa Buster’s” USAF airbase Phan Rang South Vietnam (1967 – 1968)

On completion of my Radio training I posted to several “Communication Sites” around Melbourne. In 1967 I was posted to RAAF No 2 Squadron, (Canberra jet bombers, which carried out photo reconnaissance and low level bombing.)

A 2 Squadron Canberra bomber comes to a stop after an operation. The squadron, which lost two aircraft in Vietnam, achieved an enviable record for bombing accuracy during the war. [AWM P03654.017]

No 2 Squadron was a contingent at the USAF airbase in Phan Rang South Vietnam. To my surprise on arriving in Vietnam from Australia and disembarking from a C130 “Hercules” transport aircraft, I was greeted by the sound of a Control Line model aircraft being flown in the distance. What?? I thought to myself, model aircraft being flown in a “WAR ZONE”.

The USAF special services squadron as part of its’ welfare to the American GI’s, had a fully operational workshop (the size of a small house in area) dedicated to the building and storage of model aircraft. Also along side of the club house were C/L circles and R/C flying area. The Club was called the “**Phan Rang Balsa Buster’s”**

The Australian RAAF hangers, living quarters, motor vehicles and aircraft all had “Red Kangaroos” painted on them, to advertise our presence on the base. Five Aussies joined the club (no fee). The first thing that the

Yanks plagued us for was “Kangaroo” stencils, so that they could paint “Australia’s National Icon” on their model planes.
The “Red Kangaroo” featured in the centre of the roundel was made into a “Stencil” and the “Aussies’s” painted them on just about everything on Phan Rang airbase that “Didn’t move”.

Royal Australian Airforce “Kangaroo Roundel” that featured on 2Sqn’s Canberra’s.

The club had a “Hobby Shop” that sold model supplies and would order in at “Cost price”, any model item from either the KYOSHO Corporation Japan (back then they sold mainly Scale C/L balsa Kits) or WORLD ENGINES in Cincinnati, Ohio, USA. (This company is now defunct it sold Kits, motors, R/C Radios etc) Orders from either these two companies would take approx: 2 weeks to arrive either by Military or Civilian flights carrying mail.
I bought a 4-channel Digi-Trio Proportional R/C “Build it yourself Kit” from World Engines. It was on 27 Mhz Band, OK to bring back to Australia, the 72 Mhz band being not Australian approved. The construction of this radio system was featured over several months in the American RCM magazine.

An American GI’s had a 3 channel “Galloping Ghost” pulse proportional set. It was the first time I had ever seen or heard of this technology. At first sight whilst the model was on the ground, it looked like a “Radio with Hiccups”. With all of its flapping & shaking, I expected it to fly by itself (like a butterfly) without the motor pulling it, or maybe it would just “Shake itself to bits” before take off. To my surprise, this aircraft turned out to be a very smooth flyer in the air.

One of the most popular 5 Channel Digital R/C sets was the PCS (Proportional Control Systems). I believe it was a “Budget” version of the more expensive Kraft radio. (World Engines sold them for about $US 300.00) cheap for a R/C unit back in those days, but expensive by today’s standards. It was advertised by a beautiful “Sheila” (Girl) as “A Sweetheart of a Radio”.

I spent a lot of my free time at the club, building C/L kits and lots of model aircraft talk with the Americans, “Chewing the Fat” as the Yanks called it. C/L could even be flown at night time due to the floodlights nearby. Carl Goldberg’s C/L “Ringmaster” was very popular. It came in kit form in two sizes (2.5cc & 5cc versions). They were used as a trainer, basic stunters, combat, Rat Racers and I even saw one fitted with an arrester hook for “Carrier Deck” landings using a third line.

Modeling highlights of my Vietnam tour:

- The “Camaraderie” between the American servicemen and the Aussies.

- **R&R** in Hong Kong, military slang for rest and recuperation (or rest and relaxation or rest and recreation.) I visited **RADAR** Hobby shop in Kowloon, I came away with "Armfuls of Goodies"
- Being invited to participate at a C/L competition in Okinawa Japan. (The USAF was prepared to fully sponsor me to represent the "Balsa Busters" over there.) Alas, my RAAF Commanding Officer couldn't be sold on the idea of me going, not even by USAF Officers who said it would be a good Public Relation exercise for both the RAAF & USAF could convince him otherwise.
- Being part of a aeromodelling feature in the "Stars & Stripes", an American military newspaper. Also in the "Phanfare", Phan Rangs USAF local newspaper, when my "Single Channel" 0.049 powered Goldberg "Cessna Skylane" caught the Mother of all thermals and was last seen heading over "Charlie Country" (ie Viet Cong secured jungle)

On the return from my Vietnam tour of duty, I was stationed at various RAAF bases in Australia, over the next few years before I took my discharge in 1973.
During this time, I still kept my finger in the "Aeromodelling Pie", flying a bit of this and a bit of that.

From Stephen Winkworth

As long ago as 1976 the late Fred Militky managed to fly a solar-powered model aircraft. Photos appeared in model magazines. The project, sponsored by Graupner, cost a great deal more than any average model builder would be prepared to pay. There were 96 mono-crystalline cells, producing a total of 10 Watts, and the model weighed 605g. Its performance, on a day of full sun, was marginal.

Solar cells have come a long way since then, so I thought, why not see if something altogether cheaper, lighter and more usable could not be produced, with the lightweight radios and high efficiency outrunner motors of today. The problem first of all was to find a source of cells. Surely one of the big electronic s companies would have a huge selection.

So I spent a long time searching the net. Enormous range of solar arrays... But never an isolated cell, with dimensions and weight and other vital specs. Eventually I tracked down a small company in Sheffield which would sell me individual cells of specified characteristics. They are of the 'amorphous' variety, so less efficient than the mono-crystalline kind, but their fairly low weight (8gm) and a power of 300mA at 1.5v sounded promising. Two banks of six should give power comparable to a two-cell lipo, at 600 mA.

For max power efficiency I settled on a pusher configuration, and a V-tail, and I chose an aerofoil from Martyn Pressnell's Aerofoils for Aeromodellers, with a fairly flat rear portion, for maximum solar absorption: the Hansen AH-6-40-7, which I have used before. The fuselage and tail would hang underneath and weigh next to nothing.

Here is the result. But the power seems much less than I had hoped for. So far, a day of full sun and light wind at mid-day has yet to materialise, even in the South of France. Some glide tests have shown that as soon as the wing is facing away from the sun there isn't even enough power for the radio. Some kind of auxiliary battery, maybe with a diode to prevent it overcharging when in full sun, is going to be needed. Ultracapacitors were my first thought, but they might not survive the 14 or more volts the cells generate in full sun.

Does anyone have a little more knowledge of electronics: even maybe of solar cells? It would be nice to get this project working.

I was most intrigued by two articles in the latest Stick and Tissue, and wonder if you could put me in touch with their authors. First, the Facetmobile (author Den Saxcoburg). Second, the Wombat, by David Lovegrove.

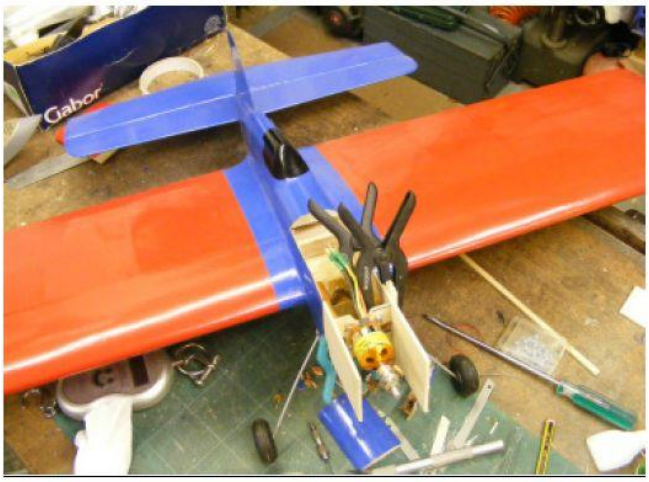
BLUE PANTS

Another successful C/L to RC conversion

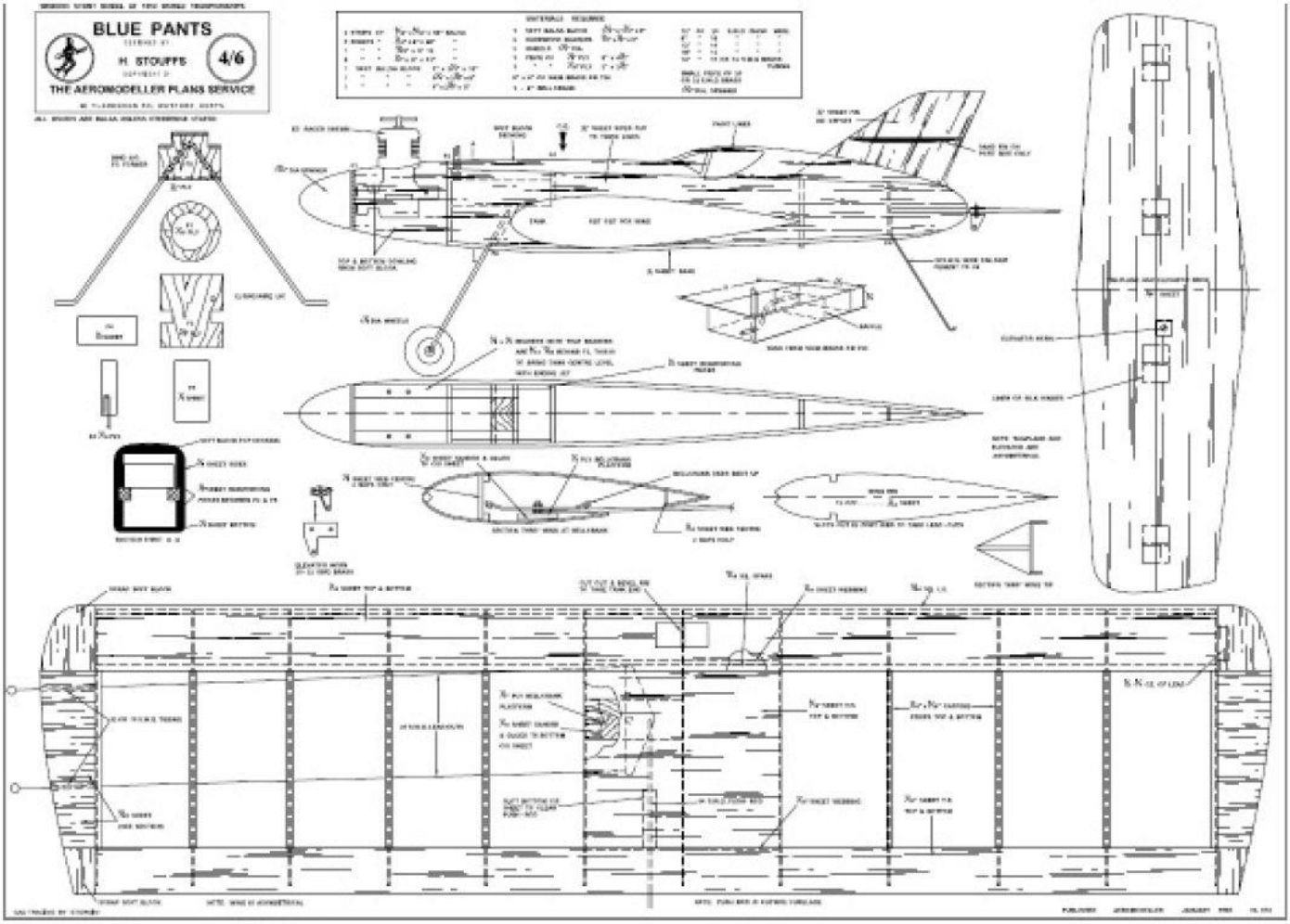
Way back in the days soon after graduating from short trousers, I and a small group of school chums were eager (and quite successful) control-line flyers. One of the more memorable “Stunt” models built by my chum John Mellor was perhaps one of our most successful designs and I have fond memories of its simple build, reliability and manoeuvrability. A few years ago, those memories surfaced again when I spotted an old BP airframe at a

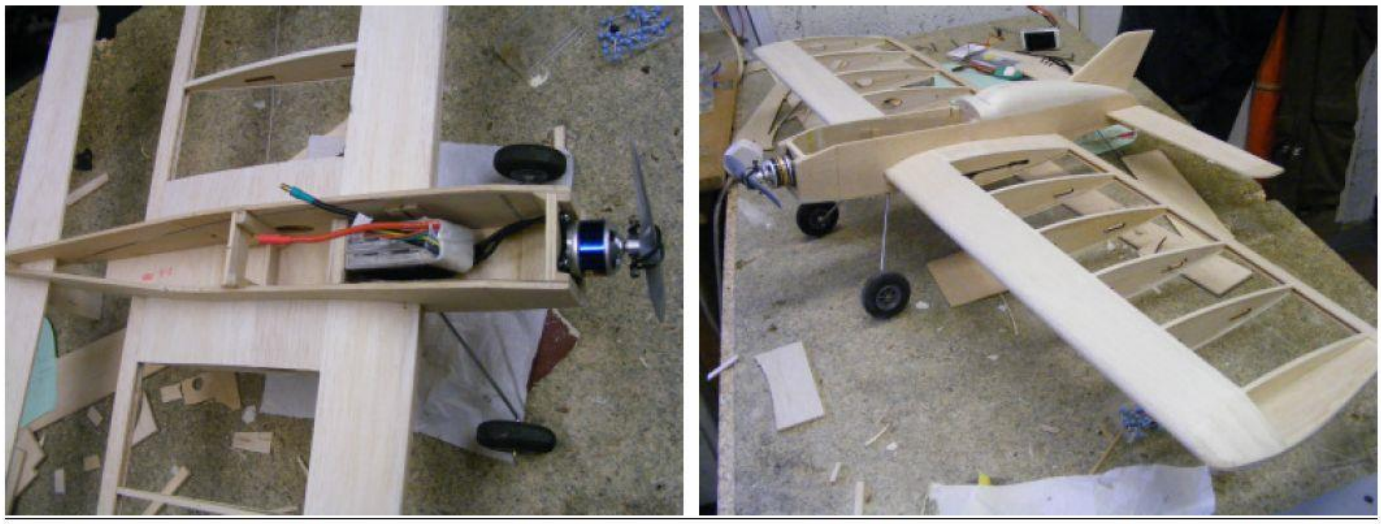
CADMAC auction evening. It was even more attractive because of the ED Mk2 Racer in remarkably good condition hanging on the oil-soaked front end. While the model was attractive to me, my bidding was really driven by that desirable engine but I was aware of a competing bidder at the back of the room and he went past the point where my wallet was prepared to take me that day. When he stepped up to collect, I saw I had been bidding against none other than John Hook. I congratulated him on his gain and then discovered that he too really only wanted the motor. Subsequently, after a bit more haggling at a later meeting, I obtained the airframe from him for a sensible sum with the intention of an electric c/l conversion.

On closer examination, that airframe was in reasonable condition but the front end had obviously had several different motors during its life and the wood was pretty pulpy around the tank. It did not take too long to sever the fuz sides just ahead of the wing and then graft on a completely new front end for my chosen 250Watt outrunner; the tank bay was replaced with a large top hatch for access to the electrics. Finding room for a LiPo was not so easy because of the way the undercarriage former had been installed in the original. After a bit of trail and error, I could just get a 3S 850 in while one of Alan Bond's c/l timers sat over the leading edge sheeting inside the fuz. A quick workshop test showed that the motor produced an adequate breeze (redistributing paper and Balsa scraps around my workshop) so I waited for a suitable day for an ECL maiden. One thing and another got in the way and it lay on the shelf for over a year. In



Front end rebuld for the original 'Vintage' airframe





C/L build: Revised fuz layout with through spars webbed but no internal wing sheeting. 0.8mm Ply doublers extended to rear of wing root. 'Torque Rod' Undercarriage secured to side doublers and across 3mm bottom Ply plate [for increased equipment room]

the meantime, I had completed and successfully flown my T-Tray RC conversion, reported in earlier copies of S&T. Some more CAD doodling soon had a copy of the Blue Pants original design (www.outerzone) on my PC. While retaining the original size, my intention was to build a new airframe with a somewhat revised fuz, especially the undercarriage mounts and wing centre section in order to allow more room for LiPo and RC gear for an intended future project. As things turned out, in exchange for some other electronic wizardry, I undertook to build a C/L airframe for Alan Bond with a bit more performance than the profile jobbies he had been experiencing thus far. As I had already prepared the CAD, the BP seemed an obvious choice and this would also be a CAD proving build before embarking on my RC version. Assembly was soon coming together and I was able to deliver it to Alan in early 2016. I think it had one of Dens Model's "Ring Rat 250" motors on the front.

Alan's CL version *(completed 2016)*

Later in 2016, I laser cut all the parts for my RC version and assembled the wing in a few days. The fuselage was fabricated over a couple of following weeks but it sat there partially completed through most of the Summer. It was when I saw Alan flying his C/L version so well on the lines at Tarrant Hinton that I received the jolt to complete mine. I had no worries about any extra RC weight as his ECL version just continued to glide serenely for almost a complete lap once the motor had switched off.

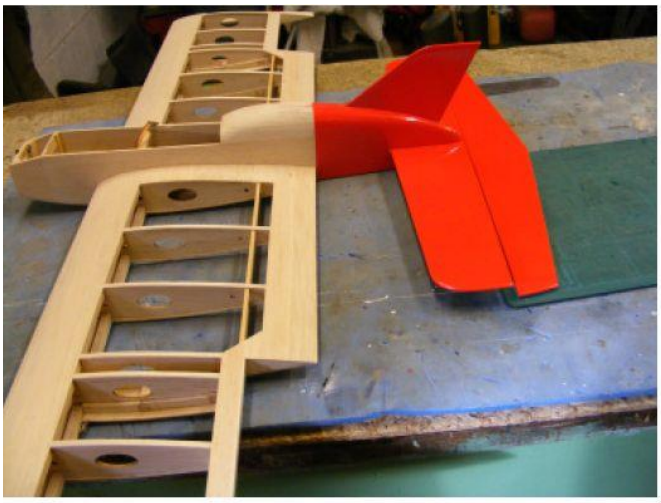
My RC version just needed the fuselage covering to be completed and the top battery hatch to be made and I had hoped this might be treated to a maiden flight a few days before the SAM35 meeting in June at Middle Wallop. Unfortunately, weather conditions precluded that target being met until the following weekend at our Salisbury Midsummer fly-in where the wind was zero, in great contrast to the gales at MW.

Having tested the Motor/ESC/ LiPo setup on my Wattmeter, I was confident that, at about 135WPP, the model
would have no difficulty in producing a healthy rate of climb. The only concern, accentuated by all advice I had been offered, was that the huge Elevator, combined with a very short Moment Arm, would make it very

lively to control. I had considered making the first flights with a stabilised Rx but the one I had was misbehaving and I wanted to avoid that. Anyway, I had successfully flown my 24" T-Tray unstabilised (admittedly after some early excitement) so what was the worst that could happen to a flyer of my calibre ? I lined it up on the freshly mown grass and gently opened the throttle. The result was 'interesting' but see below for the problem I encountered.

On the second takeoff attempt, the model rose quickly from the grass and the next five minutes of its maiden flight were a total anticlimax. I had set 65% Expo on the Elevator and Ailerons and, even when rarely using full deflections for some early aeros, control was benign with no alarming stability characteristics. It would happily do tight C/L type loops with 'square' corners or huge expanded wide loops using all the available power to fly over the top at about 200ft. I was well-chuffed. Later that day I had at least four more flights and the 3S 1300 battery was good for 7+ minutes of quite spirited flying. Landings were easy to set up but the previous C/L characteristics of a long glide were still there and I even joined the glider boys in a few thermal turns.

That Problem:
That first takeoff clearly illustrated that the small Fin area and the lack of any Rudder control compounded by a day of zero wind gave little directional control until full airspeed was achieved and the wheels were off the ground. The model shot off at anything up to 90° away from its initial heading before leaping off the ground. Now I have become familiar with it, it is manageable but some changes to the sidethrust angle and more wind may help. The power available makes underhand launching easy so that option is always available.


Aileron cutouts

BLUE PANTS definitely makes an interesting C/L to RC conversion and I am already having lots of fun with this easily transported model.

RC Version - Significant changes from the original design:
Flying Surfaces:
Symmetrical span
(C/L version has larger inner wing and stabiliser)
Inset Ailerons (2-servo arrangement)
Rear Spars (3mm x 3mm Spruce) at Aileron hinge point
Elevator:
Hinge line moved 12mm aft for reduced control surface area
Fuselage sides:
0.8mm Ply doublers extended to rear of wing TE
Undercarriage:
Torque Rod type instead of the bulkhead mounted original (More room for battery)
Apart from those changes, all dimensions and outlines are the same as the original plan. I understand that covering film was first used in the 1960s so I felt no guilt in using Hobbyking film to cover this one.

KEY DATA

RC Version:

Span: 37 inches
Chord: 9 inches
Wing Area: 1.7 ft2
Weight: 25oz = 14oz./ft2
Motor: BRC 2217-6T 1500kv (Max. 250W)
Battery: 3S 1300mAH LiPo
Prop: 7x4
Power: Measured at 220W = 150WPP
Controls: ESC, Ailerons, Elevators

The flying weight of that first auction lot conversionto ECL was just under 30 Ounces.

Original:

Control Line Stunt Model powered by a 2.5cc Diesel
Design by Henri Stouffs. First published in AeroModeller January 1955
Original plan available from www.outerzone.co.uk

Showscene Dave Bishop.

This season seems to be flying by so quickly and we are now in the declining part with the night's drawing in already which means that the BBC's Proms season will be upon us in no time at all. Mind you it has been a lot of fun so far and I have had the pleasure of presenting some local flying (and non-flying) events as well as visiting the first one of three, Old Warden's Modelair events. I am really looking forward to the next one on July 22 – 23 this month. At Old Warden there is a touch of everything going on in the aeromodelling scene and there are so many people there that you can never really catch up with all of the "goss" of so many old and new friends. Ken and Sheila Sheppard will be in charge once again along with all of the usual helpers and I promise that if you take the trouble to come, you will have a darned good time. Also why not bring along a model as well and show it to everyone.
It was great to receive an invite from Jane Stephenson to go to the 31st Wings & Wheels show on June 24 – 25 at North Weald aerodrome. Jan had handed over the reins of the show to her son Tom. The "usual team were there and the weather was kind for the many flyers of all disciplines to show off their models. As usual it was a pleasure to traipse along the trade line and do some shopping for my own modelling needs. I would like to thank so many of you who kindly came and said hullo to yours truly.
Here are some more pictures I have taken at the flying fields of the Sevenoaks, Croydon and Caterham clubs, plus a few from Old Warden and North Weald. See you next month and all the best,
Dave Bishop of DB Sound. Email davedbsound@gmail.com

A Sevenoaks scale Dauphin.

Love this Sevenoaks club members Cub, with its balloon wheels and the model is such a super flyer as well.

The lovely couple of Ali and Jane Machinsky at the 31st Wings & Wheels outside their Al's Hobbies stand. Al'i can tell a million stories that make everyone laugh like crazy.

There is almost every sort of modelling on show at Wings and Wheels including this superb Tank. The big gun in the turret really works, I'm told.

The lady here at North Weald is Tracy Richardson of Perma Grit with (left) James Gordon and Gavin Barden from the Caterham Club.

Another huge "biggee" by the wonderman Steve Carr is here with his Fokker Tri plane along with its home built engine and ignition system plus umpteen servos. Steve has had over 30 flights so far and "is getting used to it" so he says.

We had a group picture taken at Wings & Wheels (Left to Right) Neil, Steve, Matt, Terry, DB, Luke, Jan, Mick, Stuart and Shane.

Greg Hayfield and his Daddy David at Wings & Wheels with his recovered four years old O/D Bipe.

Another lovely model at Wings & Wheels was this large jet that was a joy to see completing wonderful aerobatics at such high speed.

I just loved the finish on the Russian model at the Wings & Wheels show.

And what a pretty model is this Aviator seen at the Wings & Wheels show.

This colourful Christen Eagle was displayed by a cracking chap from overseas named Ludo, at North Weald.

James Gordon flew this Auster in the "Tiger Cubs" slot at the Wings & Wheels show that had been built by the ex-chairman of the Croydon club, Roger Godley.

The flight line director Les Eagle with two happy ladies at the Wings & Wheels show.

These 3 happy chappies are always "on duty" at Old Warden in the transmitter pound. You can fly on 35 MHz there.

Does anyone happen to know this "Hell's Angel" chappie seen at Old Warden trying to do "wheelies" on his borrowed electric scooter that belongs to Pat Rich.

The new person in charge of the Wings & Wheels event at North Weald aerodrome. He is the son of Jane Stephenson and the MD of Traplet Publications Tom Stephenson and a very nice young chap.

From Spike

While doing some housekeeping in my PC files, I rediscovered the attached table of model engine shaft thread data that originated from Ian Sykes many years ago. May be useful to you as a page filler.

While there are some obvious omissions, the table covers many familiar motors.

S&T readers may wish to know that, if they can't locate a friendly local engine-wizard, most of these sizes of taps and dies can be obtained at quite reasonable prices from Tracy Tools down in Torquay www.tracytools.com

Make	*Model*	*Size*	*Thread*
ASP	Two Stroke	.25 to .46	1/4-28
ASP	Two Stroke	.60 to .90	5/16-24
ASP	Two Stroke	1.08 to 1.20	3/8-24
ASP	Four Stroke	.65 to .91	5/16-24
Cox	All Models	.01	2-56
Cox	All Models	.02	3-48
Cox	All Models	.49 to .51	5-40
Cox	All Models	.09	6-32
Enya	All Models	.09 to .11	5x.8mm
Enya	SS Two Stroke	.19 to .50	1/4-28
Enya	Non SS Two Stroke	.15 to .25	6x1mm
Enya	Non SS Two Stroke	.29 to .60	7x1mm
Enya	Four Stroke	.46 to .90	7x1mm
Enya	Four Stroke	1.20	8x1mm
Enya	Twin V	2.40	3/8-24
Evolution	All Models	.36 to .46	1/4-28
Evolution	All Models	.61 to 1.00	5/16-24
Evolution	11.6		10x1mm
Fox	All Models	.19 to .50	1/4-28
Fox	All Models	.60 to 1.20	5/16-24
GMS	All Models	.25 to .47	1/4-28
GMS	All Models	.61 to .72	5/16-24
GMS	All Models	1.20	3/8-24
HB	All Models	.12 to .15	5x.8mm
HB	All Models	All Others	1/4-28
HP	All Models	.21 to .61	1/4-28
Irvine	All Models	.15	6x1mm
Irvine	All Models	.20 to .53	1/4-28
Irvine	All Models	.61 to .72	5/16-24
Irvine	All Models	1.20 to 1.50	3/8-24
K&B	All Models	.15	10-32
K&B	All Models	.20 to .65	1/4-28
Magnum	All Models	.21 to .45	1/4-28
Magnum	All Models	.61 to .91	5/16-24
Magnum	All Models	1.08 to 1.20	3/8-24
Megatech	All Models	.46	1/4x28

MDS	All Models	.18	10-32
MDS	All Models	.25	6x1mm
MDS	All Models	.28 to .58	1/4-28
MDS	All Models	.61	8x1.25mm
MDS	All Models	.68	5/16x24
Mecoa	All Models	.40 to .61	1/4-28
Merco	All Models	.33 to .40	1/4-28
Merco	All Models	.50 to .61	5/16-24
Moki	All Models	.51	6x1mm
Moki	All Models	.61	7x1mm
Moki	All Models	1.20	10x1.25mm
Moki	All Models	1.80	10x1mm
Morris	All Models	All Sizes	8x1.25mm
MVVS	All Except Twin	All Sizes	6x1mm
MVVS	Twin		10x1.25mm
OS	All Models		5x.8mm
OS	Any Except FP	.15	5x.8mm
OS	FP	.15	7/32-32
OS	All Two Stroke	.20 to .50	1/4-28
OS	All Two Stroke	.60 to .91	5/16-24
OS	RX RX-FI	1.40	5/16-24
OS	108, 160 BGX-1	3/8-24	
OS	Four Stroke	.20 to .52	1/4-28
OS	Four Stroke	.70 Ultimate-P	1/4-28
OS	4 Stroke Not 70 Ult	.70 to 1.20	5/16-24
OS	Multiple Cyl 1.20, 1.60, and 3.20		5/16-24
OS	Multiple Cyl	3.00	3/8-24
Thunder Tiger	All Models	.25 to .46	1/4-28
Thunder Tiger	All Models	.61 to 1.20	5/16-24
Tiger Shark	All Models	.40 to .46	1/4-28
Tiger Shark	All Models	.61 to .75	5/16-24
Tower	All Models	.40	1/4-28
Picco	All Models	.21 to .45	1/4-28
Picco	All Models	.60	8x1.25mm
Rossi	All Models	.21	1/4-28
Rossi	All Models	.40 to 1.05	8x1.25mm
Royal	All Models	.21 to .46	1/4-28
Saito Single	FA	.30	1/4-28
Saito Single	FA	.40	6x1mm
Saito Single	All Models	.56 to .91	7x1mm
Saito Single	All Models	1.00 to 1.80	8x1.25mm
Saito Multi	All Models	.60 to 1.00	7x1mm
Saito Multi	All Models	1.00 to 2.00	8x1.25mm
Saito Multi	FA 300TL FA 300TTDP	3.00	10x1.25mm
Saito Multi	All Models	3.25 to 4.25	8x1.25mm
Super Tigre	All Models	.11 to .15	5x.8mm
Super Tigre	All Models	.20 to .60	1/4-28
Super Tigre	All Models	.61 to .90	5/16-24
Super Tigre	2300 3250	5/16-24	
Super Tigre	S2000 S2500 S3000 S4500	10x1.25mm	

Tartan	Standard		7x1mm
Tartan	Super		8x1.25mm
Webra	All	.21 to .60	1/4-28
Webra	All	.80 to 1.20	8x1.25mm
Y S	All Models	.45 to 1.60	8x1.25mm
Zenoah	G20 G38		8x1.25mm
Zenoah	45 and 62		10x1.25mm

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12th November 2017
10th December 2017

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14th January 2018
11th February 2018
11th March 2018
8th April 2018

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BMFA MID-WEST 166

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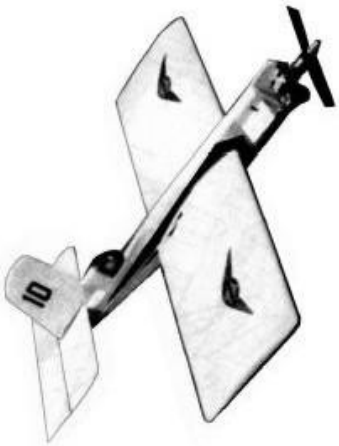

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WOT 4

ON BOTH DAYS, MODELS OF ANY SIZE, IN ANY VERSION, WITH ANY FORM OF POWER ARE WELCOME.

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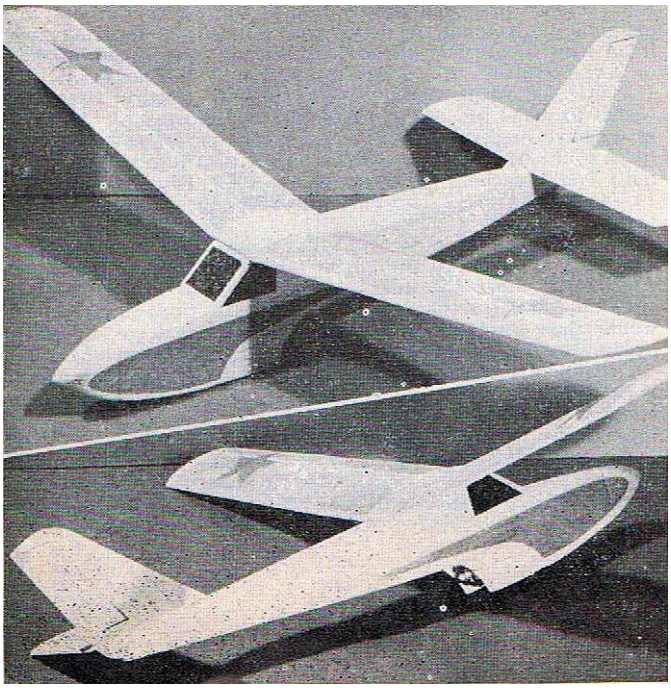
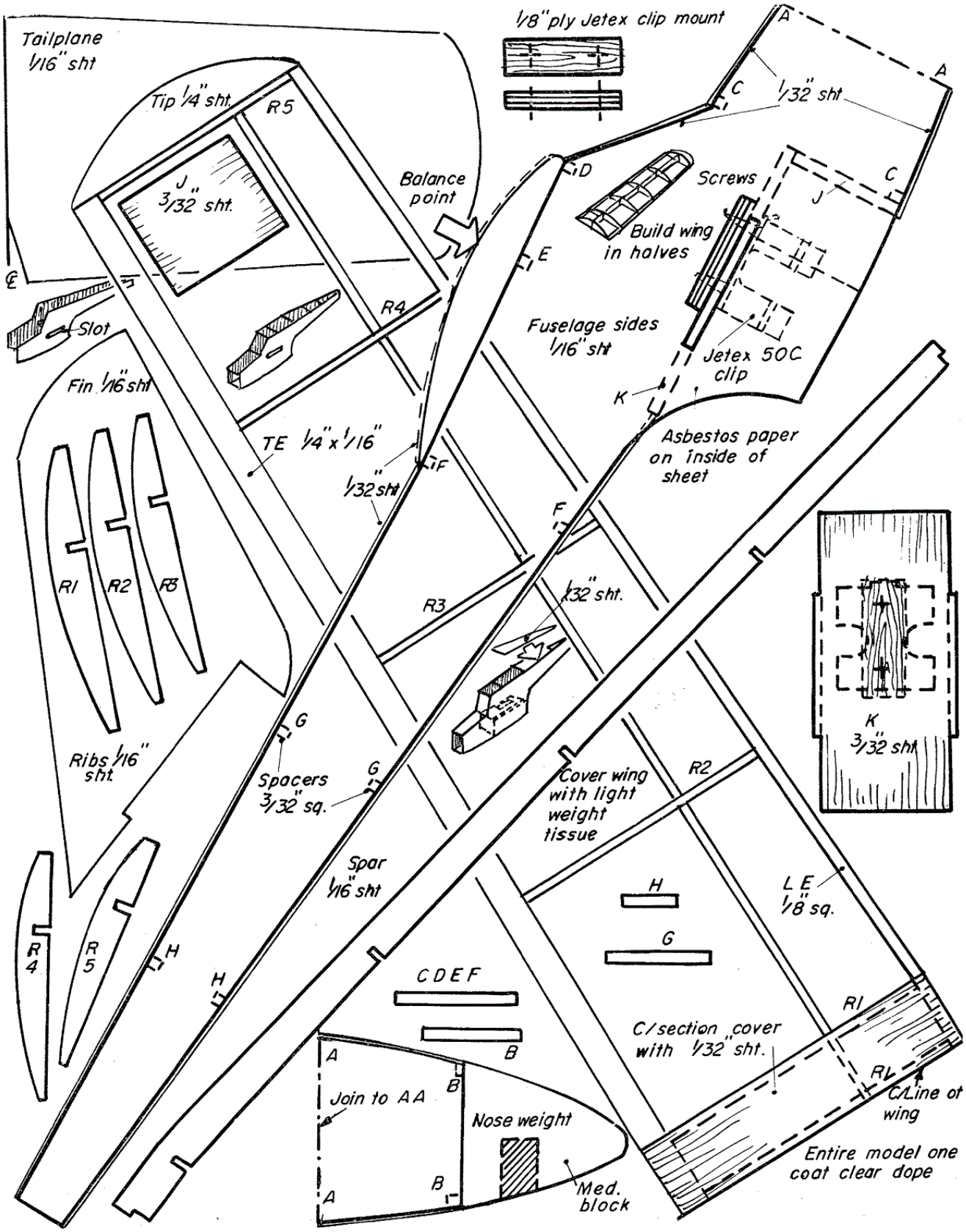
SPECIAL THANKS TO OUR SPONSORS, **R&D WALKER BUTCHERS**, MORETON CHARITY, EDITH MANN CHARITY

Ray Malmstrom's "Model'n Tip" SILENT FLIGHT

It seems a great pity that rubber and Jetex type models have almost vanished from the aeromodelling scene in the past few years. Killed by the diesel and glo-engines, the noise of which has threatened the very existence of our great hobby, it is high time rubber and Jetex models returned to our flying fields, and we enjoyed once more the real flying fun and thrills these models can provide. No noise, and therefore no objections from local councils, farmers or the public—so let's start a new and glorious age of aeromodelling—with every exciting kind of rubber or Jetex powered model! On the subject of Jetex models. Two tips: Never light a Jetex unit with a match, use a piece of smouldering balsawood or string, or dethermaliser fuse. Matches usually ignite more than the wick! Secondly always test glide your jetex model with the motor in position but unloaded. This way you ensure a heart warming glide at the end of the power run. To get you started in the art of silent flight," we are presenting this month Jetstream, a simple to build jet-model powered with the Jetex 50C motor. Use medium grade balsa throughout, and make sure your fuselage is square, and your flying surfaces free from warps. As always, balance your model carefully. Test gliding and flying should be over long grass on a calm day.



Plan on next page



Jetstream from Model Aircraft May 1965

Small Electric Scale

Belair Kits are very pleased to have commissioned renowned scale designer, Peter Rake to produce a range of small electric scale models.
Wingspans are typically around 36 inch (1m) and all suit the economical 400 brushless motors and mini servos. All airframes are of traditional all wood construction and no mouldings are required. Each aircraft has been thorughly flight tested and are all proven fliers.

Call Belair on 01362 668658 or visit their online shop at www.belairkits.com

Here are just three of the growing collection see all the others on our website

Martinsyde Elephant - electric scale 50 inch
Ref: res-martele

The latest design in the Belair range of small electric scale models. Parts Set for the Peter Rake Martinsyde Elephant.

The Martinsyde "Elephant" G100, a single-seat fighting scout, was large and unwieldy - hence one explanation for the nickname "elephant". Originally introduced as a long range fighting scout it proved unsuitable in this role and from 1 July 1916 it was used predominantly for bombing duties.

Our Parts Set includes full size 3 sheet detailed construction plans, plus laser cut parts, including fuselage sides, bulkheads, formers, wing ribs, tip shapes, scale control horns, wing tip scale outlines, fin/rudder and tailplane parts, wheel cores, plus many smaller items. Buidler to add their own stripwood and covering.

Specifications
Scale 1:1.325, wingspan 50.35 inches. All wood construction, for 400 size brushless motor setups and 3 cell lipoly. 4 channel - ESC, Rudder, Elevator and Ailerons

Price: £60.00 Inc VAT
66.00 USD | 71.03 EUR

Fokker DVII Parts set and plans
Ref: res-fokkd7

The Fokker D.VII was a German World War I fighter aircraft designed by Reinhold Platz of the Fokker-Flugzeugwerke. Germany produced around 3,300 D.VII aircraft in the second half of 1918.

The D.VII quickly proved itself to be a formidable aircraft.

Our Fokker DVII is modelled at Wingspan 38” span and a scale of 1.3”=1ft. It is suitable for 400 size brushless motors and the kit includes laser cut parts in balsa and plywood plus a multi sheet plan. Builder to supply their own stripwood and wire.

Price: £60.00 Inc VAT
66.00 USD | 71.03 EUR

Price: £60.00 Inc VAT
66.00 USD | 71.03 EUR

Bellanca Skyrocket - 42 inch Electric Parts Set and Plan

Ref: res-bellsky

From the Golden Era of flight, comes the elegant Bellanca Skyrocket. With a wingspan of 42 inches, the design is traditional all wood construction and modern CAD design features.

A full size multi-sheet plan is included and the laser cut parts set includes all the balsa and plywood parts required to build the basic airframe, such as fuselage sides with spar slots and wing position holes laser cut for accuracy, formers, bulkheads, cowl components, wing ribs, shaped spars, tip shapes, trailing edges, struts plus many smaller items.

Specifications
Scale 0.9" to 1ft, 42 inch wingspan for 400 size electric brushless motors and 2 cell lipoly batteries. Rudder, elevator and motor function.

Image of laser cut parts is not for the Skyrocket, but is typical of kit contents. Builder to supply stripwood and covering to complete basic airframe.

Price: £60.00 Inc VAT
66.00 USD | 71.03 EUR

Regards,
Leon Cole
Belair Kits
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All dates are Tuesdays

TUESDAY 25th JULY
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