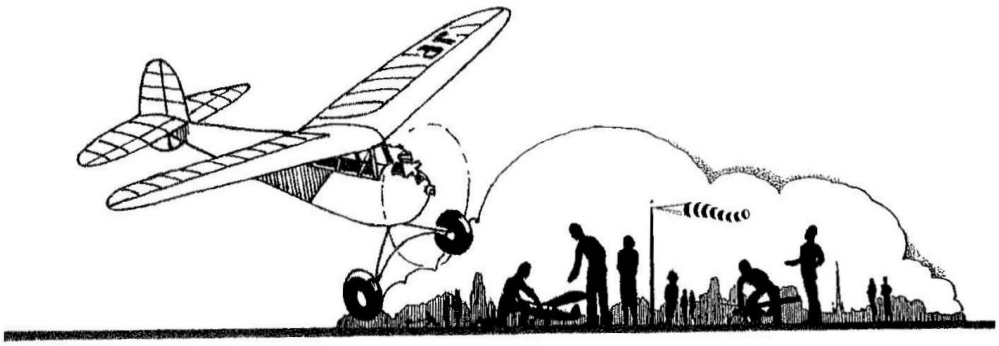


Sticks and Tissue No 144 – November 2018

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 Peter Ziegler

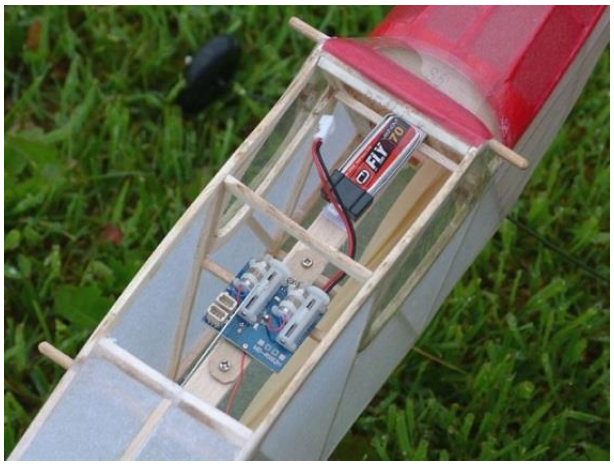
From Christain Moes in Canada

The "Far Valley MFC" flying site, located here on St. Joseph Island in Northern Ontario, Canada, has been in use for many decades by both full size (ultralight), as well as control line and R/C models, by a small but dedicated group of enthusiasts. However, it is not suitable (long but quite narrow) for all but the most well behaved freeflight models. If a free flying model is lucky enough to be caught in a thermal, and drifts downwind, there's little doubt it will be lost forever - high in the limbs of a tall tree somewhere... Open fields are few and far between in these parts. Although I have mused with the idea of "rubber powered R/C" for a while , I finally pursued the concept this past summer, and enjoyed some very successful results. It was a great learning experience and a thrill to watch these vintage models in flight - Highly recommended!

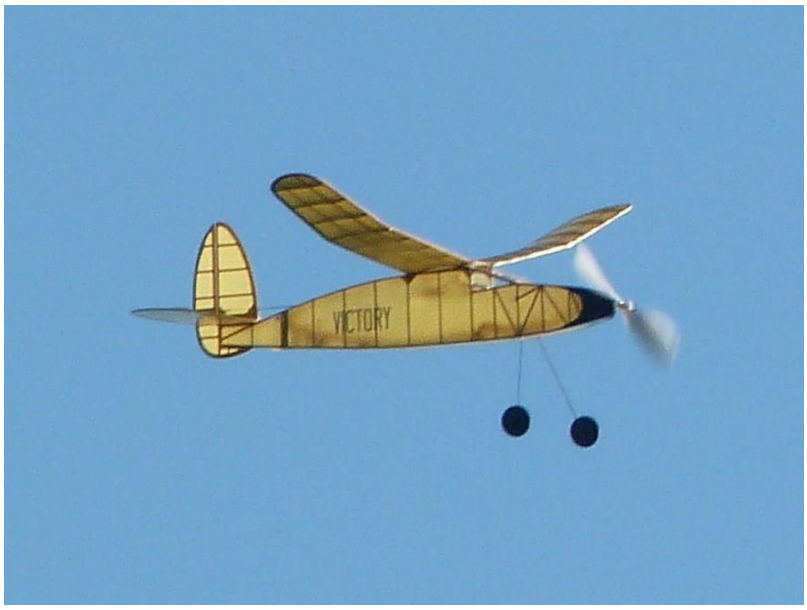
The whole idea of course, is to allow the model to fly "hands free" (freeflight) as long as possible - until the model begins to drift downwind, and rudder control (only) is used to steer it back to the field. This "R/C assist" allows freeflight models to be flown from a small flying site like ours and eliminates the need to chase over hill and dale to retrieve your model.

I built and flew three vintage freeflight models (with R/C assist) over the summer - all quite successful: KK Competitor (laser kit from The Vintage Model Co.), Korda Victory (Golden Age Reproductions kit) and the best flyer of the lot: "Miss Canada" (Easy Built Models kit). I used the same R/C setup in all three models - a "vapor" type micro receiver/servo module and a single cell (70 mAh) LiPo. The built-in ESC (electronic speed control) and elevator servo are not used. I do not use a power switch - just plug in the LiPo before attaching the wing. The battery life, required to power the Rx (receiver) and one servo only, is not an issue. The R/C equipment is mounted high in the cabin for easy access and to provide ample space for the rubber motor below. A single carbon fibre pushrod is used for the rudder only.

This first photo shows the installation in the KK Competitor. In this example the Rx is a HobbyKing 5 channel unit - but only one channel (rudder) is used.



Next photo is the KK Competitor airborne. All three models are covered with lightweight tissue and nitrate dope. The flying surface structures are quite flimsy prior to covering, and it was a learning experience to cover and shrink the tissue without inducing warps. Also, just enough dope - typically 3 coats - so that the structures don't change their shape (ie. warp) in the morning dew.



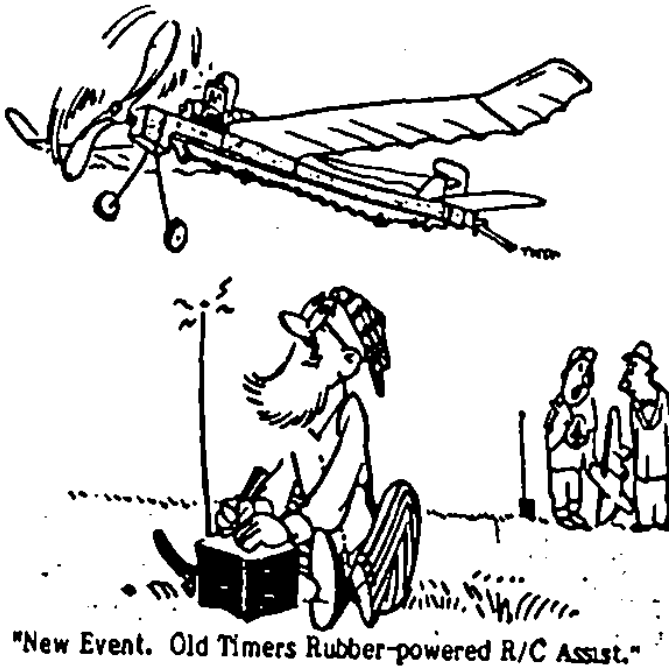
Building on the experience with the Competitor, my next model was the famous 1939 "Korda Victory". It has a 32" inch wing span, and is a very consistent flyer. The motor is a 24" loop - 12 strands of 3/32" rubber (as recommended by SAM website) which provides a spectacular climb to an altitude of approx 200ft. The smooth transition from climb to glide is a sight to behold, and a testament to this brilliant design. In this photo, you can see the expended rubber motor "at rest" in the lower fuselage.

My third model was "Miss Canada" or "Miss Canada Senior" if you prefer (it's a long story). This design was part of of series of progressively more advanced models used for training by the RCAF in the 1930s. Although I have some experience with smaller indoor models, I still have a lot to learn about handling these larger multi-strand motors - including proper lubrication and cording. However, as lessons were learned, Miss Canada made the best flight of the summer (just over two minutes) as seen in the video. My favourite model of the summer!

All three models (plus other tidbits) are featured on my YouTube channel:
https://www.youtube.com/user/FarValley

More photos of last summer's activities at Far Valley MFC can be found in the "Heard at the Hangar" menu on the Soo Modellers website:
http://soomodellers.ca/

This cartoon is optional - if you can fit it in somewhere...



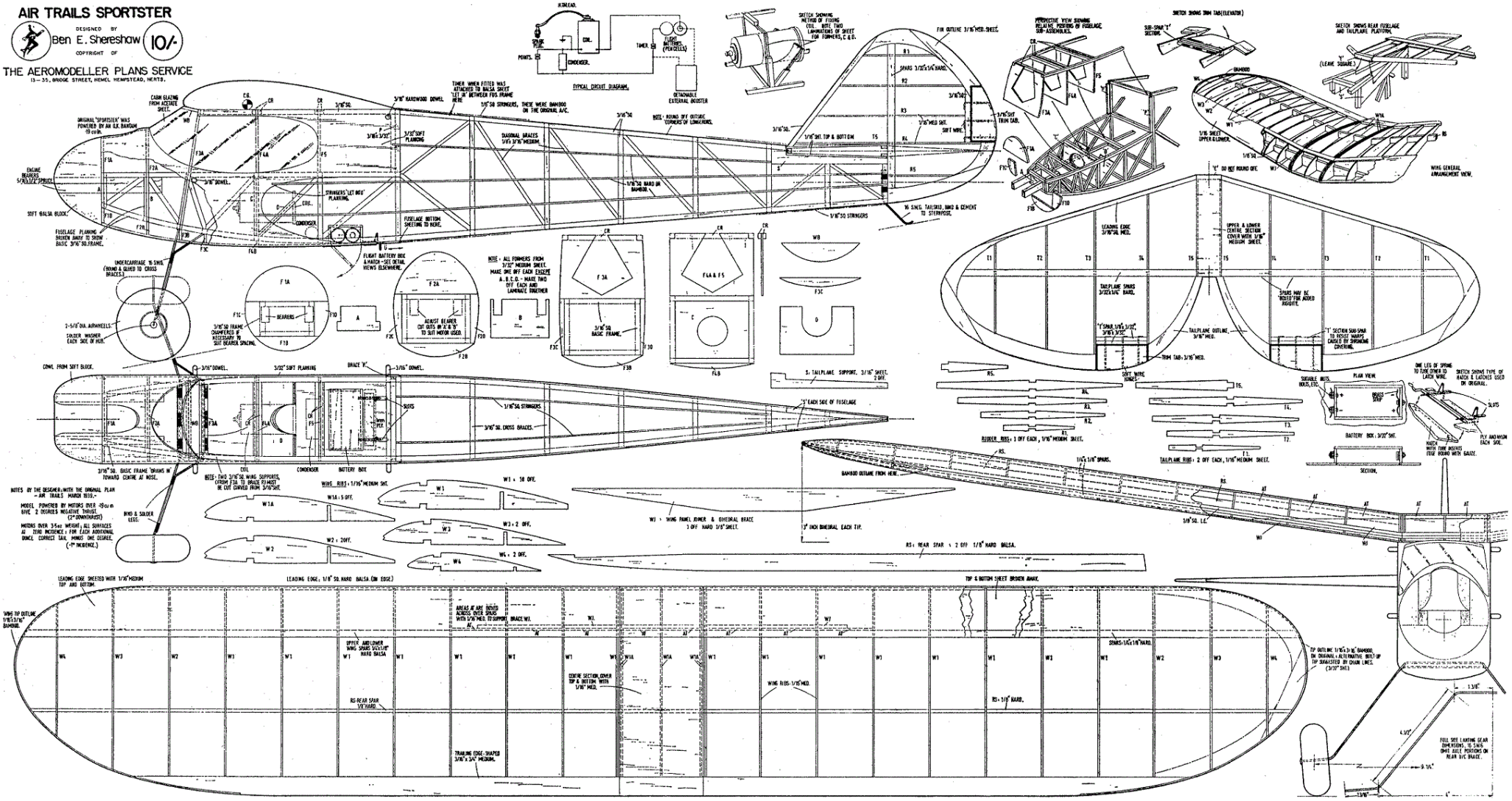
"New Event. Old Timers Rubber-powered R/C Assist."

From SAM Speaks USA 1990

AIR TRAILS SPORTSTER

DESIGNED BY
Ben E. Shereshaw
COPYRIGHT OF
10/-

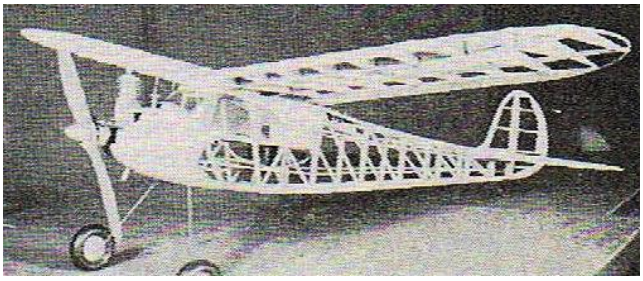
THE AEROMODELLER PLANS SERVICE
13-35, BRIDGE STREET, HEMEL HEMPSTEAD, HERTS.



Air Trails Sportster by Ben E Shereshaw a 46” span design for free flight from Aero Modeller March 1968

29 years old this month, this design represents a true vintage sports model for 3.5 cc. to answer the innumerable requests we have had for vintage plans. Initially published in the American magazine Air Trails, of fond memory, the Sportster introduced a new classification in engine capacity and started a series of attractive cabin power models which were used for competition as well as fun flying through from 1939 to 1944. Who could deny that the lines are attractive? The vertical fin shape, which was to become the trade mark of the many Ben Shereshaw designs subsequently kitted, the stringered fuselage, the large curving transparent cabin area and the robustness of the structure characterised a model of an era which many old timers hold in happy memory.

When it was introduced in Air Trails magazine, the Sportster was a small design for power, particularly when one considers that only spark ignition could be used and the model had to carry the payload of a coil, condenser and flight batteries. Ben Shereshaw had created what was then termed a “small bore” engine which was to have been put out as a do-it yourself magazine design. Named the “Bantam”, the engine proved to be so popular and successful that Ben put into production and for many, this new .19 (3.25 cc.) engine created a new engine capacity class and a new phase in model engine design. For the “Bantam”, in terms of power to weight ratio was an exceptional product by any standards. It was practically the first rear disc valve induction engine to go into mass production. It was extremely light in weight. It peaked very happily at high r.p.m. on small diameter airscrews and when subsequently employed for the 1945 period pylon model such as the Goldberg Intercepter, it was darned near invincible till the arrival of the Ardens and accompanying Glowplugs. So, in many ways, this model was a trail blazer and we are sure that by using a diesel to take advantage of the short nose and to eliminate the weight of the batteries and coil, the Sportster will provide scintillating performance today.



The plan includes all the detail exactly as the original presented by Ben had in the March 1939 Air Trails. This means that installation of battery box, coil, and relevant formers and bulkheads as necessary, arc provided for the vintage purists who believe in using nothing but the original material. For those using a diesel or a glow engine, such details can be omitted.

As the designer was a perfectionist, his original instructions for assembly were also more complex than those to which we have become accustomed. For example, he recommended the construction of a jig to hold the longerons and diagonal members in place over the drawn positions on the plan whilst the parts were assembled and the cement was drying. The jig was formed by tacking brads on either side of the components; but nowadays, we have become used to using a soft board, household or steel pins and do not go to the extent of using jigs. Assembly begins with fuselage sides by laying out the longerons and by fitting all the diagonal and vertical cross members as can be seen in the side elevation. The sketch on the plan clearly indicates how the cabin is subsequently made as a sub-assembly and the nose framework extends on the basic sides along the line of the horizontal longerons only. Make two sides exactly the same, one over the other, above the plan. When these are dry, they must be joined by the cross members as indicated in the plan view. Start joining the fuselage sides at the cabin area where the width is constant, fitting former C at the third spacer position and this will be found to keep the assembly square. Draw the nose together and then the tail, fitting the intermediate cross members at each point as indicated in the plan view. Use plenty of elastic bands to draw the longerons in at the nose for the rather sharp curve at Fl Formers A and B should also be fitted to help keep the nose assembly square but first check the slot spacing for your engine bearers, having decided which particular engine you intend to use.

The cabin sub-assembly, using formers F3a, F4a, F5 and the upper false longerons which create the wing seat, are self explanatory on sight of the diagram. This can be made up ready to fit on the nose frame and former prepared to round off the nose. Before fitting these however, bend the undercarriage, noting that it is from doubled lengths of 16 sw.g. only and bind securely to the cross members at F3b and F3e positions. it should be noted that air wheels are specified on the plans as used during the 1939 period. These pneumatic wheels absorbed a lot of the landing loads and hence there was little need for a very rigid heavy gauge

undercarriage wire. Those who intend to use solid wheels should increase the wire diameter to 14 s.w.g. When the nose formers are fitted, the cabin is sheeted and nose blocks prepared to provide the shape to suit the engine. A tank can be positioned in the area near F2a and fuel shut off and modern timer accommodated according to one's modern whims. It should be noted that the original timer which interrupted the circuit for the coil and condenser was positioned above the fuselage, and behind the wing trailing edge. This was a normal position since most flights started by taking off on the undercarriage from the ground.

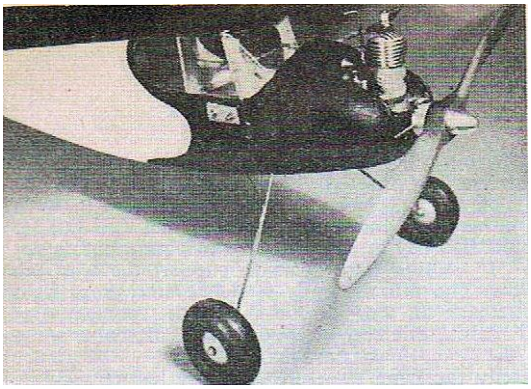
The tail surfaces should be the next task. The structure is rather like that introduced by the Californian Radio Control enthusiasts in, for example, the "Smog Hog" design by Howard Bonner. The similarity ends when one begins to study the weight of the structure! In each case for the fin or the tailplane, the lower spar is laid down first over the position on the drawing and the ribs cemented in place on the spars. Make sure they maintain proper alignment. The eighth balsa outline is then cemented in place, jigging it up with scrap balsa over the building board in order that it meets the rib centre lines properly. The outline should be roughly precarved to the airfoil contour before making this joint in order not to strain the structure too much after it has been assembled. The upper spar can then be fitted and when thoroughly dry, the assembly lifted from the plan, and in the case of tailplane, the centre section sheeted. It is recommended that the spar on the tailplane could be boxed in with webs on either side for added rigidity, and the builder should also pay attention to the recommendation for the "T" section false spars to support the trim tab hinges. The tail assembly is deliberately kept light particularly in view of the short nose moment. For this reason, one should choose only soft balsa wood for the 3/16 in. thick trim tabs. Study the wing structure carefully before tackling this most important part of the model. Note that the centre section is flat, to seat on the cabin super structure and there is plain dihedral out to the tips. This amounts to three inches under each tip as shown in the front view. The wing panel joiner and dihedral brace as well as the spar pattern are given full size on the drawing for the sake of accuracy. Cut these parts carefully and make sure that the contours are correct.

The wing is constructed in its three sections, the centre section and the two panels. Start by laying down the 1/4 x 1/8- in. hard balsa lower spar and the 1/8in. hard pattern cut rear spar for whichever panel you have chosen. Cement the ribs for that panel at their proper station. Ensure that the ribs are all properly aligned both fore and aft and also that they are perpendicular to the building board. The root ribs (which are laminated two standard ribs) are cemented at an angle which would result in the proper dihedral for each panel. Refer to the front view and make a small jig or pattern to ensure that this is correct. The original tips can be made of bamboo such as can be obtained from craft shops dealing with basket work material, but in the event of difficulty in local supply one must laminate the tips from 1/16 in. balsa using four or five laminations to obtain the outline, If bamboo is obtainable it can easily be bent to shape over a gas stove or Bunsen burner. Now attach leading and trailing edges into position. Again making sure of alignment. It might be a good idea to add a few triangular gussets at the junction with the trailing edge in order to preserve a good joint and others might prefer to slot the ribs into the trailing edge, but this must be allowed for when originally preparing the ribs. The upper spar is fitted and for the inner three rib bays, the two main spars are boxed with ils in. medium sheet between ribs Wl. This adds considerable strength and is also used as an attachment point for part WJ—the wing panel joiner. The opposite wing panel is then prepared and also the centre section, fitting the centre section end ribs (which are also laminations of two standard ribs) to accommodate the angle and also to match up with the root ribs of the wing panel so that the correct dihedral results. The three panels are then joined together with part WJ. This must be of strong grade balsa and the joint double-cemented for security. Finally, the entire leading edge is sheeted with 1/16 in. medium balsa,

sanded before application to about 1/20th so that it is not necessary to rub over afterwards which creates the 'starved horse" look of sagging sheet between the ribs. The wing tip area is cleaned up and now we have virtually a complete airframe ready for covering.

The original aircraft was covered in a light shade of what was then called Bamboo tissue, the nearest equivalent today being wet strengthened Modelspan. Three coats of dope was applied to the colour tissue of the original.

No records have been retained of the weight of the original model but the reader may take it from us that it was light by modern standards. Obviously the performance of such a model will be improved by weight saving and careful construction throughout, in fact the Sportster represents a very interesting structural assembly challenge for the modern modeller.
The provision of trim tabs on the tail surfaces and Ben's rule of thumb recommendation for correcting the tail angle according to the weight of the engine (motors over 3 1/2 ounces should demand minus 1 deg. incidence for each additional ounce), make for a very easily trimmed design.
We know from letter requests how many modellers will appreciate this renovation of a good looking model It comes from an era when the Doug las D.C.5 was news, when the Brown junior engine was still on sale (at $10 each), the Ohllson 23 had just been introduced at $16:50 and the latest airliner was the Boeing Stratoliner. The Paris Air Show was showing the latest version of the then new Hawker Hurricane and the .Fokker D.XXIII twin- engined twin boom fighter was the sensation of the month. Megows of Chicago had introduced Plane-film, "The Magic Covering" which was a fore runner of today's MonoKote. And . . . dare we mention it for each $l:50 subscription for a year's supply to Air Trails magazine a modeller was offered a FREE kit of Jim Cahill's Wakefield winner! Times certainly have changed! By building the A T. Sportster, modellers can turn the clock back and appreciate something of the skills of earlier designers and also obtain an enormous amount of pleasure in the process. Today Ben Shereshaw is still connected with this hobby. He has over the past few years, been perfecting his twin cylinder R/C motor, the latest twin carburettor version was displayed appropriately enough among the old timer designs in the vast hangar of Los Alomitos, California, during the 1967 American National Championships We are indebted to Ben for his permission to reproduce the design and wish him many many more years of modelling satisfaction.



From John Mellor

This (slightly blurry) photograph is of my 48" Keil Kraft Sportster. I think I sent you details of it (can't find them now) when it had just been finished but was unflown and said I would report again once it had successfully flown. It was originally built for Galloping Ghost using a Rand actuator that had been so successful in my Phleet Phoot. Not so this model. The Sportster was built from George Stringwell's plan for a 32" (I think) design which flew well for him. My local print shop scaled it up 50% and I built it pretty much exactly as per the plan.

It proved quite a tricky build – especially the triangular fuselage – and the wing is semi elliptical and lightly built so that got a small (ish) warp in it that would not come out. I enlarged the control surfaces based on previous experience with G.G. and things looked positive when I twiddled the sticks. Power was a 250 watt motor running via a 30 amp speed controller and 3S 1300 battery and it weighed is at just under a Kg. As I was a bit nervous about testing this model David Lovegrove and I set off for a local field with very long grass!! This proved a wise move as after a hand launch it headed straight for the ground even with full up elevator. No damage but next time I increased both rudder and elevator size my another 25% but the result was still the same. It seemed grossly under-elevated I added ¼" under the front of the tailplane. This had the desired effect and Sportster headed skywards. However it was obviously responding very little to the G.G. controls and would only turn right. I persevered by increasing the movement and size of the surfaces again but, although we mostly got it down undamaged, it was obviously not happy. A gurney strip by David Lovegrove sorted out the warp but there was just not enough control response.

We had also noticed that, despite range testing to 35 paces, we seemed to have no control at all at a distance and we decided this was due to incompatibility between the lemon (or was it orange) receiver and my Spectrum transmitter. By this time I had had enough and took the Rand actuator out and installed two servos and a Spectrum receiver and moved the c.g. an inch forward from the plan position as the model had

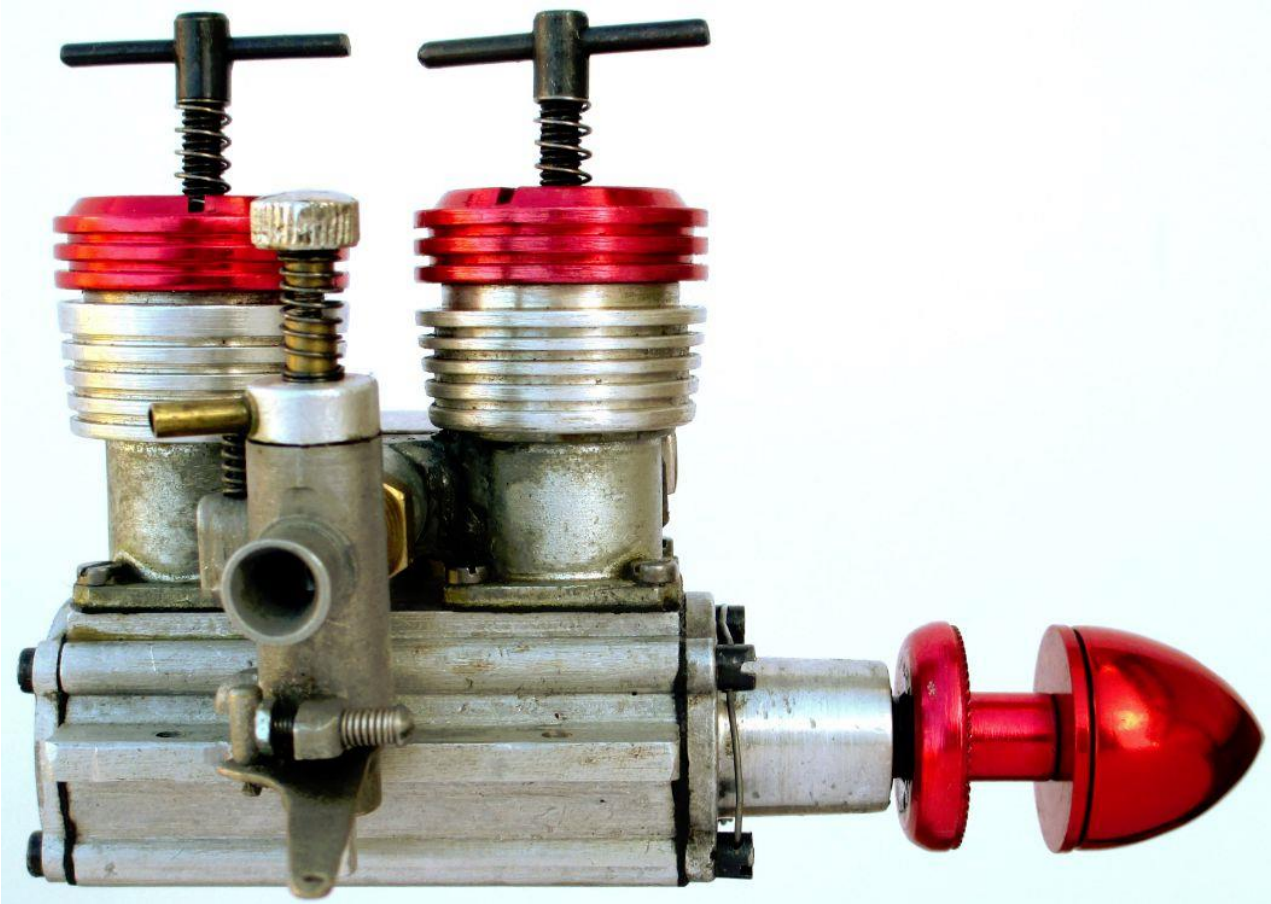
a nose up attitude. This transformed it into an excellent flyer with a good "old timer" look and it has since racked up many flights and is my "go to " vintage model. Moral – perseverance can pay off.

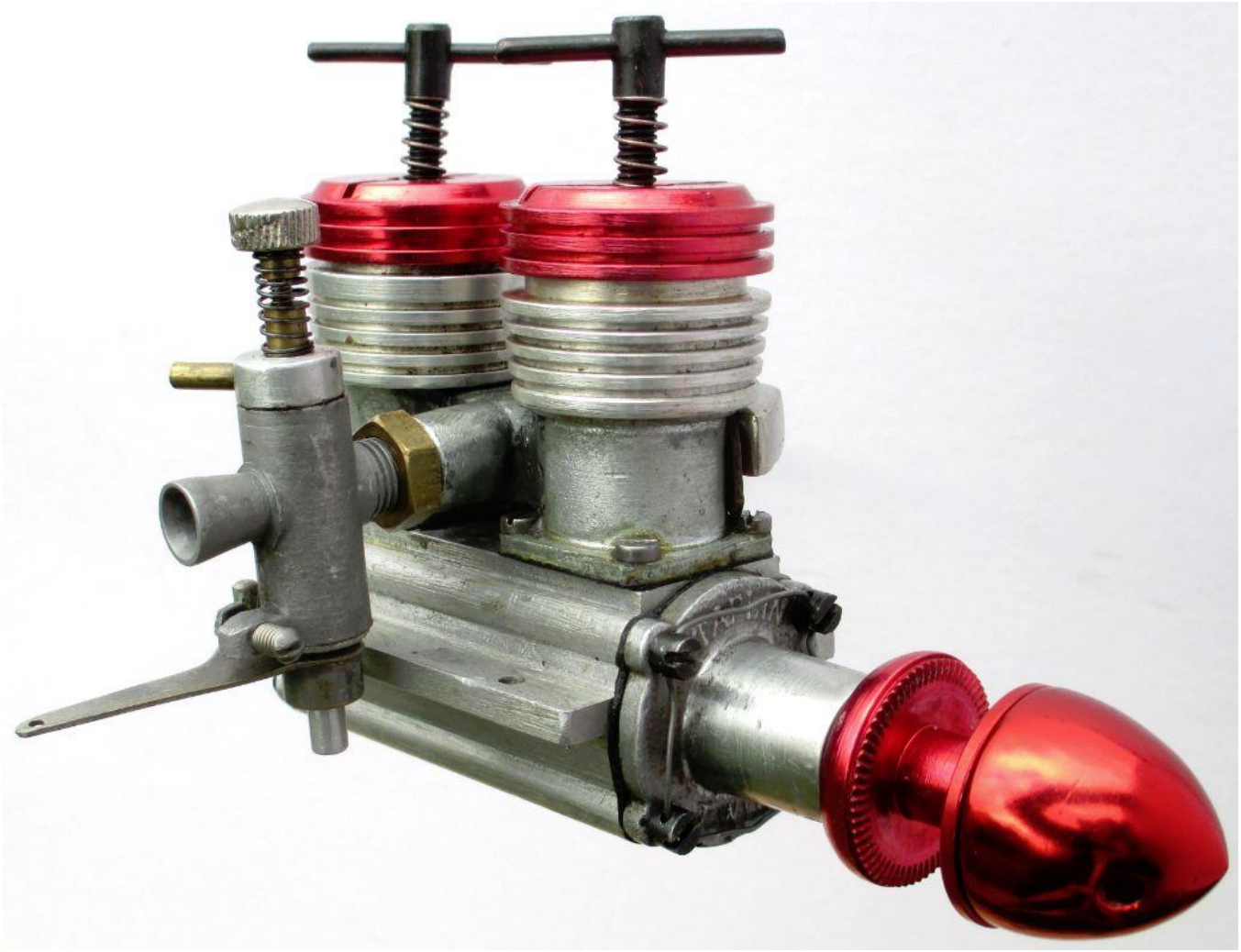
Aurora Taplin Twin Mk III **from Bill Wells**

Following on from running a delightful Taplin Twin (7cc) MK. I engine with its easy starting I managed to get my grubby little mitts on an Aurora Taplin Twin MK III 8cc engine. There was a 8cc MK II made by Taplin, with Red heads and Siamese cooling fins but they were allegedly difficult to assemble, so they reverted to conventional cooling fins with Red anodised heads, prop drive and spinner. Then the MK III was produced with screw down heads to trap the cooling fins or water cooled jacket if used for marine purposes. The capacity was also 8cc and there is a test report (1967) on this Taplin manufactured engine. Allegedly after the demise of Taplin, the MK III was manufactured by Kumar using the trading name Aurora utilising some of the original Taplin parts. While I appreciate the huge number of engines made by Kumar / Aurora they do seem to vary in quality. A lot of their engines seemed a bit un-fettled (rough around the edges) some ran really well, some not so well! It looks as though the Mk III had an original Taplin Crankcase without the patent numbers on the mounting lugs. The inlet manifold tube joining the two cylinders was very crudely soldered onto the cylinder walls like there was a definite lack of heat and the solder had been moved into place while only just in a molten state. The tube for the carburettor was pointing downwards by a few degrees so that if the carburettor was mounted vertically the operating arm attachment screw fouled the mounting lugs! The screw itself has a small cheese head and the screw driver slot is well to one side of centre (it may not be original of course). The throttle arm looks as though it is made from thin brass sheet not as neat as the chrome plated one on the Original Taplin. The exhaust manifold screw is angled upwards so the manifold is not held square to the cylinders. There has been absolutely no attempt to match the cylinder fins. The crown of the heads is slightly different, but to be fair that isn't really noticeable.

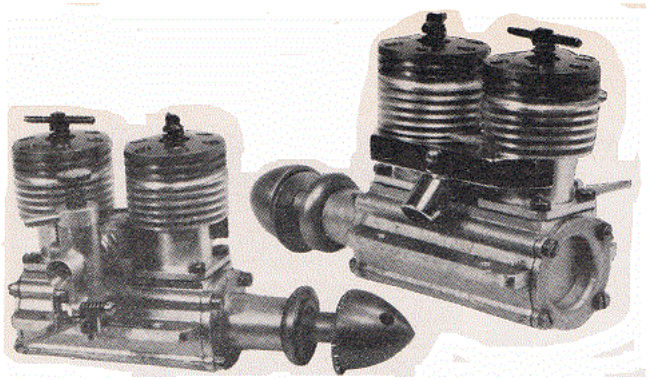
The needle valve is difficult to adjust as it keeps springing back, a small fault that could easily be over come by grinding the springs flat at both ends and or using thin washers. The needle is also sensitive, its position causing an erratic lean to rich to lean in a single turn! It isn't impossible to adjust its just awkward. I finally took the exhaust manifold off so I could prime the cylinders and concentrate on the rear cylinder with the front cylinder compression backed off. The engine would fire but not run so I then concentrate on the front cylinder. With both cylinders very close to firing a small exhaust prime and quite a few flicks later, the engine fired and picked up. Easy enough to adjust the compressions, they needed slight tweaks as the engine warmed up and then again after adjusting the needle valve. I was using a 14x6 prop to help with the starting and because it was already bored out to fit the prop drive sleeve. The throttle pick up was a bit rich (slow) even with the bleed air fully open! Maximum 5000 rpm and the slow running was a bit rough at about 2500. Hot restarts were nearly as hard as the cold start except the setting were already established.

In conclusion this engine is not an easy starter even after the settings have been established. The slow running is poor. The front cylinder front hold down screws worked loose while running. There is a little bit of side play on the front bearing. To compare the two engines I was using the same engine test stand, fuel tank and fuel as the I had for the MK 1 Taplin Twin. In comparison the Aurora MK III is difficult to start, harder to set up and has a poorer pick up. But it sounds Great when it is running. The bright red anodised spinner and heads are very attractive otherwise the external appearance including the non-matching cylinder fins makes the engine look a bit shabby! In fairness this isn't a new engine so it may well have looked cleaner and had less wear when it was new! It is a bit on the heavy side at 18 ozs





Taplin Twin Mark 2 8cc diesel from Aero Modeller April 1963



Reversing the usual role where a marine engine is usually a conversion of a standard aero-engine the Taplin Twin has been developed primarily as a marine engine, in which field it has achieved considerable success
and an excellent reputation. The air-cooled aero-engine is the "junior partner" as it were, and obviously limited in application by the bulk and weight, of the unit. The "Taplin Twin" is a heavy engine at 17 ½ ounces (twice the weight of a typical glow motor of similar power output); slow revving with its side port cylinder induction, and an in line alternate-firing twin, which may at first sight seem to complicate the issue unnecessarily. Those are normal reactions of an aeromodeller.

Having run a "Taplin Twin", however, one cannot help but be impressed by its really excellent handling qualities, first-time starting, extreme flexibility and perfect throttle response. The"Tapin", in fact, is one of the easiest starting engines of any size or type we have ever handled. You simply leave all settings at running position, choke twice, Set the throttle about one-quarter open and flick and it is almost, uncanny how the engine starts immediately. Even if you "lose" the compression and mixture settings (and there are two separate compression adjustments), it is virtually child's play to set them up again —needle about one - and a quarter turns open, start on one cylinder in the normal "diesel" manner and then adjust the compression on the other cylinder to pick up. If the noise 'gets a bit too much after bench running for a while, close the throttle to produce a purring 1,500 —2,000 r.p.m. tick-over (depending on the prop. size) as steady as anything—or select any intermediate speed you prefer. It is certainly easier to start and simpler to handle than some beginner's engines we have had through our hands.

The "Taplin Twin" is a high-torque rather than a high power engine, developing approximately 46 ounce-inches torque at full throttle opening over the range 4-6,000 r.p.m. Peak power Is developed at the comparatively low r.p.m. of 9,500 and is of theortder of .36 B.H.P. These are almost ideal "sports" engìne characteristics.

Propeller size recommended by the makers is 13 x 8 (Trucut wood), which gives around 6,000 r.p.m. static. A 13 x 6 Trucut steps the r.p.m. .up to 6,800, and on a 10 x 6 nylon the "Taplin" positively races at 10,000 r.p.m. plus. Despite the fact that the latter is an undersized prop., the "Taplin" starts just as easily on it, and runs just as 'smoothly. Virtually any propeller size between 12 X 4 and 14 x 4 or 14 x 6 is useable, but to approach maximum power output in flight 13 x 4 is about right for free flight, with a13 x 8 best for control line.

The "Taplin" makes available a favoured type of engine for British sports flyers—a diesel to suit, really large models and an alternative to the universal glow motor for radio control models of 5 ft. to 7 ft. span where all-out aerobatic performance is not the main aim. In the latter respect the throttle fitted as standard gives complete motor speed control via a "progressive" servo, and the alternate-firing cylinders reduce engine vibration to a remarkably low level for a compression-ignition engine of 8 c.c. capacity.

Basically, the overall design has changed little from the original Taplin Twin , although there are numerous detail improvements and the displacement has been increased to a full 8 c.c. by opening out the bore slightly.

Modified porting has also resulted in improved "breathing" and an improvement in power output,and shaft friction has been reduced by fitting a cageless needle roller race for the front bearing on the main 3/8 in. diameter crankshaft. This shaft is now carried on a roller race at the rear and needle rollers at the front; whilst the intermediate shaft is carried on two roller races. Whilst this arrangement is original enough, the Shafts are also unusual in being nickel plated to resist corrosion Col. Taplin being under the strong conviction that diesels fuels inherently do tend to be corrosive, particularly when "trapped" in twins.

The main crankcase casting is a solid affair some 2 1/2 inches long with full length mounting lugs. The centre section houses the two ball races carrying the intermediate shaft, which is virtually a short crankshaft with integral disc and 7/32- in. diameter crankpin, made in the conventional manner, and a further disc and

pin fitted at the other end. The front pin carries the correcting rod for the forward piston and engages in a hole in the main crankshaft web to pick up the drive. The crankpin on the rear intermedia e shaft web, of course, merely carries the rear piston connecting rod. The main crankshaft is carried in a detachable front housing, secured to the crankcase with four screws ; and the bottom assembly is completed by a crankcase back cover.

The two steel cylinders are of substantial thickness, turned with an integral square flange to sit on the crankcase and a substantial collar or ring above the exhaust a smaller rectangular intake port is cut through the port cylinder wall 90 degrees (circumferentially) to the exhaust. The cylinders face intake to intake and are connected by a cold drawn manifold, which incorporates a boss facing sideways into which the carburettor screws.

Two transfer passages are scalloped out on the inside of the cylinder, opposite the exhaust and overlapping the exhaust opening some 90 per cent. Each cylinder is then mounted by locating in its respective hole in the crankcase and securing with four screws through the bottom flange. Only weakness in this layout appears to be the possibility of the induction manifold connecting the two cylinders breaking away from one or other of the cylinders and so introducing an air leak.

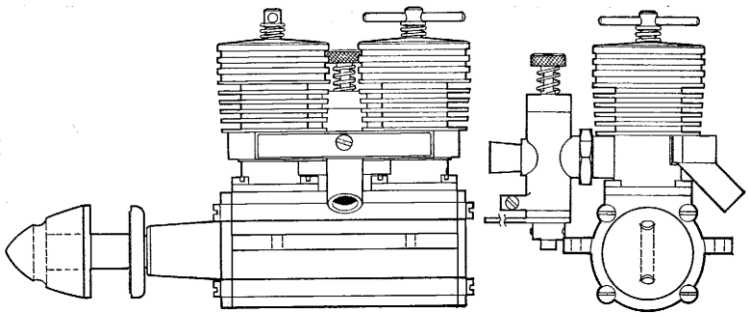
Cylinder assembly is completed by the addition of finned jackets machined from dural, surmounted by turned dural heads each secured with six screws extending down to the cylinder flange. Both jackets and heads are anodised red. On an original version of the aero-engine Mark II "Twin", a series of separate sheet dural fins enveloping both cylinders were 'stacked" in position and secured by deeper, recessed heads. This was found not to be entirely satisfactory and so the conventional jacket arrangement has now been adopted, with separate jackets for each cylinder. Each head, of course, carries a compression screw, and a small compression spring provides locking action to hold adjustments.

Cylinder bores are 'armou' plated (hard chromium plated), the advantages claimed being increased wear and corrosion resistance—at a cost, incidentally of considerably complicating production. Hard çhrome plating of cylinder bores is coming more and more to the fore and appears to have definite advantages.

Pistons are of conventional form of cast iron, and quite substantial in section. Connecting rods are light alloy forgings with the big ends bronze bushed. Gudgeon pins are silver steel, 5/32 in. diameter.

Exhaust ports are connected by a plated manifold sealing on a cork gasket. A downward facing stub exhaust is brazed to the bottom centre of the manifold and the complete unit is attached with a single screw. The position of the stub exhaust pipe ensures complete draining of the manifold with the engine in the normal, (upright) position.

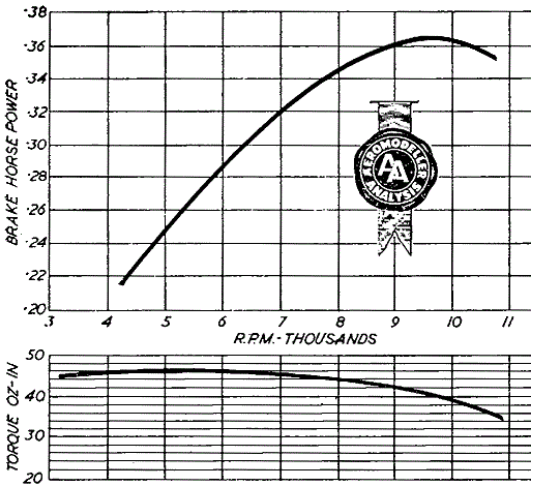
The carburettor unit is clever and quite straightforward. Fuel entry is metered via a needle valve at the top and thence to the centre of the choke tube traversing the centre of the body. Intake opening at the throat is controlled by a barrel valve, actuated by a lever at the bottom of the body. This lever has limited movement given by one fixed stop (barrel valve wide open) and an adjustable screw stop at the other extreme for setting the slow speed adjustment. An adjustable air bleed is also incorporated for setting the slow speed mixture with the barrel valve closed, this bleed being shut off when the throttle is opened. Thus adjustment of air bleed has no effect on open throttle mixture.



Being of cylinder port layout, the "Taplin Twin" timing is symmetrical, thus the engine will run equally well in either direction of rotation. Transfer timing is quite generous ensuring the introduction of a full charge in the head and probably also assisting scavenging at higher speeds. Speed is, however, ultimately limited by the induction timing, which is taken right up to the limit, -i.e. up to the bottom of the exhaust. Any greater induction timing would mean both exhaust and induction port being simultaneously uncovered by the bottom of the piston. The amount of charge which can be inducted is quite high for a sideport engine, as shown by the fact that the "Twin" will run at 10,000 r.p.m. plus although its design speed is in the neighbourhood of 6,000 r.p.m.

Workmanship throughout we found to be excellent, and an improvement in many respects over the original version of the "Taplin Twin" which was rather crude in certain details and also tended to suffer from tight

ball bearing fits. The bearings carrying the intermediate crankshaft we still feel lack diametrical clearance, but this is a very tricky assembly in any case and the engine did not appear to suffer any loss of power or undue friction from this region, as evidenced by no signs of overheating of the crankcase. As a model engineering production the “Taplin Twin” represents excellent value for money and we imagine more time must be spent over every individual engine than a dozen mass-produced sports engines normally receive. A lot of diesel twin ‘know how’ gained over the past years with the original model has also been built into the Mark II which accounts for its delightful handling characteristics. It is not really competitive with glow motors. of similar capacity, but is rather in a class of its own and for “sports” performance in a large free flight or control line design, or easy-flying radio control it could justly win a lot of regard.



Specifications :
Displacement 8 c.c. (.488 cu. in.)
Bore: .705 in.
Stroke: .625 in.
Weight: 17 ½ ounces
Max power: .363 B.H.P. at 9.450 r.p.m.
Max. torque : 46 ounce-inches at 5000 r.p.m
Power rating: .045 B.H.P. per c.c.
Power/Weight ratio :. 021 B.H.P. per ounce .

Material specification .
Crankcase: light alloy gravity die casting
Cylinder: high tensile steel, hard chrome plated
Pistons : Meehanite
Contra pistons : Meehanite
Connecting rods : light alloy forgings .
Crankshaft : main-nickel plated steel; intermediate-nickel plated steel
Main bearings : front (main shaft) roller race rear(main shaft) ball race
Intermediate shaft bearings : two ball races.
Front bearing housing: light alloy die casting
Crankcase back cover : light alloy die casting
Cy1inder jackets: duraI, anodised red
Heads : dural, anodised red .
Carburettor : gravity die casting with turned light a1loy components
Spraybar: brass
Propeller driver: dural, anodised red

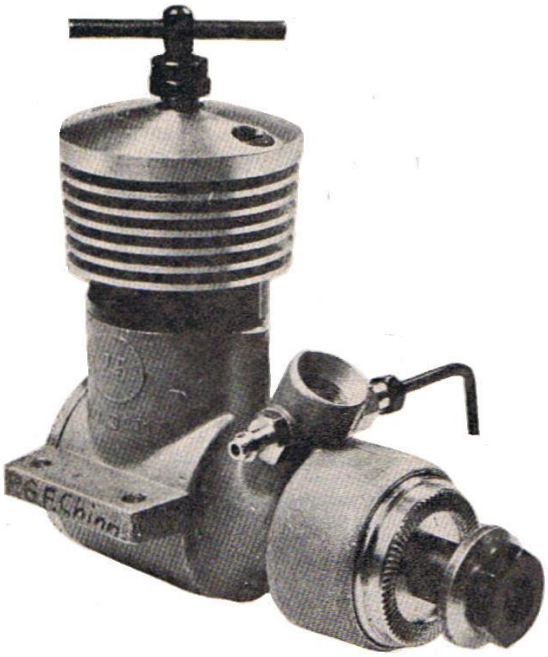
Propeller RPM

14 x 6 Trucut	5,800
13 x 8 Trucut	6,100
13 x 6 Trucut	6,800
l2x6Trucut	7,400
l2x4Trucut	9,000

From Jörgen Daun

Hi James I have been testing some rc carbs on my small diesels because i like to fly slow low and Close "aging problem" and I have tried an Tarno rc carb on a MILLS 0,75 and its works very well but on a Indian Mills not so good because of the subinduction .And on the Letmo 0,6 I used the German carb withs was rewied in Aeromodeller a while back works well to but need time to adjust the airbleed for best transition and last a BODDO Mills 1,3 with an Va 0,49 rc carb seems to work well to but the Engine is far from been

running in .The problem with the VA carb and the Tarno is hard to get . Folks ask me why bother go Electric yes I do that sometimes and Ican wear a White shirt and a strawhat and come home without smelling diesel but Electric have no SOUL? Besides I like the smell and mess.I also sending a Pictures of my CAVU from my last flying day this season.



The D-A Drabant 2.47 cc diesel motor from Model Aircraft June 1962

The Norwegian David-Andersen Drabant was first introduced in December, 1958. as a successor to the original long-stroke plain bearing D-A motor. Later the Drabant was extensively modified internally, including a new cylinder, larger crankshaft and new ball-bearings. It is with this latest model that our present report deals. This engine is sold in the U.K. by Messrs. Performance Kits of Sandy, Bedford- shire. David-Andersen engines have always been of high quality construction and the latest Drabant is no exception. Not only is the engine well made and finely finished, it has a number of small but valuable refinements which lift it above ordinary run-of- the-mill production engines. Typical of these are the compression screw and needle-valve assemblies. Thus, instead of the compression screw operating direct in threads cut in the alloy head, a steel insert is used. Additionally to maintain precisely the right amount of stiffness in the adjustment, the insert extends above the head, where it is split and externally threaded to take a gland nut. The grip of the insert thread on the compression screw can thus be adjusted to suit the requirements of the operator and the screw cannot wear loose and/or slacken off—or become detached in flight.

Similar attention to detail is evident in the needle valve assembly. The spraybar is machined from brass, is closely fitted in large bosses cast in the carburettor intake and is relieved at the centre to avoid undue venturi restriction. A special brass nut, with a reduced bore sleeve extension, locks the spraybar in position and the sleeve section, which is bifurcated, carries the needle in a fine thread with an external gland nut to hold the needle firmly at any setting.

Essentially, the D-A Drabant is a twin ball-bearing, shaft induction, reverse-flow scavenged diesel. It is built around a robust and well finished diecasting comprising crankcase and bearing housing. The bearings are British Hoffmann and support a 3/8 in. dia. hardened crankshaft. The shaft is unusual in that it has a 1 1/2 turn spiral oil groove, just ahead of the valve port, to throw lubricant forward to the front race. The shaft is a tap fit in the races, but is restrained against being knocked back (as in a crash) by a substantial circlip which

engages a groove in the shaft immediately forrward of the front bearing. The prop driver is taper fitted to the shaft and is partly surrounded by the extended front bearing housing. Because of this and the circlip, the driver is best removed (should this become necessary) by heating to the point where it will drop off after a light tap on the shaft end with a copper or lead faced mallet.

The cylinder of the latest Drabant is of leaded steel with a hard chromed bore. It has a deep flange by which it is vertically located in the main casting and the twin opposed exhaust ports are cut through this. The transfer system consists of four ports arranged in two pairs, fore and aft, between the exhaust ports. The ports are elliptical, produced by drilling at 45 deg. to the cylinder axis and each is fed by a channel cut in the outer wall of the liner which registers with a similar channel in the casting.

Porting, in general, is fairly conservative. According to our measurement, the exhaust ports remain open for 136 deg. of shaft rotation, while the transfer period is 120 deg. On the induction side, the shaft has a small oval port, bored to correspond with the angle of the carburettor intake and giving the quite modest timing of 75 deg. ABDC to 40 deg. ATDC. The gas passage through the shaft is quite small— only 5 mm. bore or 0.197 in.

The piston is of Meehanite and relatively heavy, due to a very thick skirt section. It couples to a machined conrod via a fully-floating 4 mm. gudgeon-pin. The piston has a shallow coned crown to which the contra piston is matched. The upper part of the cylinder is encased in a machined alloy cooling barrel and head unit and the complete cylinder assembly is tied to the main casting with two 3 mm. screws.

Specification

Type; Single cylinder, air-cooled, reverse-flow scavenged two-stroke cycle, compression ignition.

Crankshaft type rotary-valve induction.

Bore: 15 mm. (0.5905 in.). Stroke: 14 mm. (0.5512 in.). Swept Volume: 2..47. c.c. = 0.151 cu. in.

Weight: 5.9 ozs.

General Structural Data

Pressure diecast aluminium alloy crankcase and main bearing housing with screw-in machined alloy rear cover. Hardened, non-counterbalanced, disc-web crankshaft, with 0.375 in. dia. journal and 0.236 in. dia. crankpin and running in two Hoffmann 3/8 in. i.d. eight-ball journal bearings. Leadloy steel cylinder with hard chromed bore. Meehanite piston with, fully-floating 4 mm. solid gudgeon-pin and machined alloy connecting-rod. Machined aluminium alloy finned cylinder jacket with steel thread insert and gland nut for compression screw. Machined alloy prop driver fitted on shaft taper. Prop retained by 5/16 in. o.d. sleeve nut on 6 mm. threaded crankshaft extension.

Reversible brass spraybar assembly. Beam mounting lugs.

Test Engine Data

Running time prior to test: see text.

Fuel used: Mercury RD diesel fuel.

Air temperature; 50 deg. F. (10 deg. C.).

Barometer; 29.6 in. Hg.

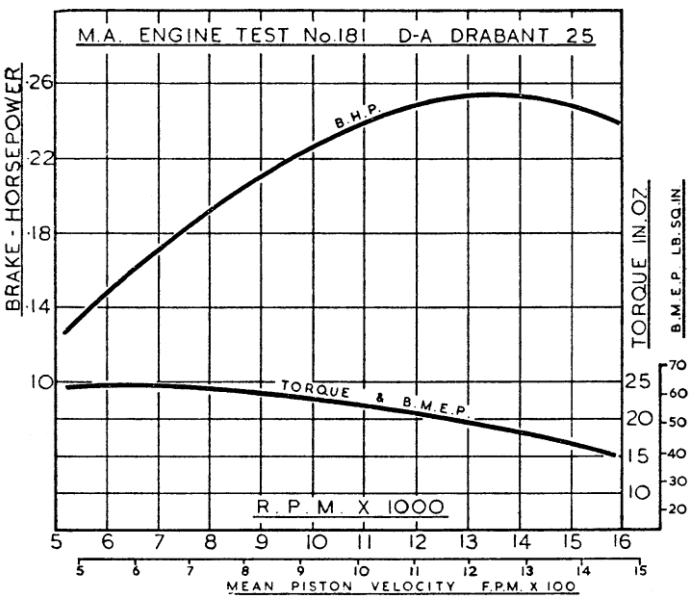
Performance .

Our test Drahant was received direct from the manufacturer and examination indicated that it had had some previous running; probably not less than one hour. The engine, in fact, appeared to be adequately run in as received but, to check this, it was given a series of runs on 9 X 4 and 8 X 4 props totalling a further one lour's duration and careful readings were taken at the beginning and end of this period. No difference in performance was, in fact, indicated and the engine was therefore judged ready for test.

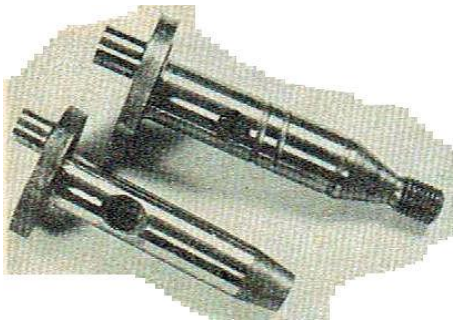
Despite its modem appearance, the Drabant retains many of the good points of the old long stroke D-A 2.5 engine tested nearly so years ago in this series—notably its easy starting and very good low-speed torque. Starting was very straightforward. Hot or cold, the Drabant started readily after choking the intake and we found it quite unnecessary to resort to port priming at any time. Only when props of under 8 X 3 1/2 were used, was there any marked deterioration in starting qualities. There was then a tendency for the prop to "bite," but since operating r.p.m. under such loads appreciably exceeds the b.h.p. peaking speed, there is littlepoint in using such a prop in practice.

The low to medium speed pulling power of the Drabant was demonstrated by the way in which it handled

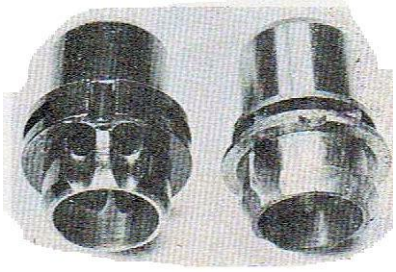
10, 11, 12 and even 13 in. dia. props.
For example, the engine ran steadily and smoothly on a Top-Flite 13 X 5 ½ prop at 5,100 r.p.m. It turned a 12 X 5 Power-Prop at 6,300 and an 11 X 5 Power at 7,400. In the medium speed range, 8,200 r.p.m. were recorded on a 10 x 6 H.S. Rislan prop, 9,550 on a 10 X 3 1/2 TopFlite wood, 10,000 on a 9 X 7 D-A nylon, 10,600 on a 9 X 4 Top-Flite nylon and 11,500 on an 8 X 6 H.S. Rislan.
Higher up the speed range, prop performance was not quite so good as one might expect of a "racing diesel"
type motor and the Drabant turned up 13,600 OU an 8 X 4. Strato prop, 14,100 on an 8 X 3 1/2 Top-Flite and 15,900 on a 7 X 4 Power-Prop.



Confirming the impression gained from prop/r.p.m. tests, torque tests of the Drabant revealed that maximum torque was developed at the relatively modest speed of 6,000 r.p.m. (where a very good figure of 24.5 oz. in. equivalent to a b.m.e.p. of 63 lb./sq. in, was recorded) with a steady drop over the next 10,000 r.p.m., resulting in the peak h.p. occurring at approximately 13,500 r.p.m., actual output being slightly over 0.25 b.h.p. Since an output in the 0.28- 0.30 b.h.p. bracket would not be unreasonable for an engine of this class, it seems probable that the Drabant could be tuned to give a somewhat higher top end power and the induction system immediately suggests itself as a starting point. As we have mentioned, crankshaft porting is quite modest and it is conceivable that an enlarged crankshaft port and gas passage, to give less restricted gas flow to the crankcase, might prove profitable. However, we hasten to add that the average user will find the Drabant's performance fully adequate for most installations and the few hundred extra r.p.m. necessary to bring the engine up to top class competition diesel standards can really only be of interest to FAI free-flight experts.
Handling and running qualities of the Drabant could be faulted in only one respect: namely, a vibration period in the 9,000 – 9,500 r.p.m. bracket. At speeds above and below this range, the engine ran steadily and much more smoothly. The controls were admirable in all respects. The needle-valve was non-critical, yet responsive, and therefore easy to adjust to the optimum setting. It was easy to turn and comfortable to use, yet held its settings firmly. The same can be said of the compression adjustment which was aided by a beautifully smooth working contra- piston that remained totally unaffected by temperature—a pleasant contrast to contra-pistons, still all too common, which become firmly seized in the bore when the engine warms up.
To summarise, the Drabant obviously rates high marks from an engineering standpoint. It may not be the most powerful 2.5 ball-bearing diesel currently available but it makes up for this in quality construction, easy handling, detailed refinement and an obvious ability to stand up to hard work.
Power/Weight Ratio (as tested): o.686 b.h.p./lb. .
Specfic/ Output (as tested): 102 b.h.p./ litre.



New enlarged crankshaft with spiral oilway (top) compared with original Drabant shaft



New type Drabant cylinder (left) compared with original type

Cocklebarrow 2018 Tony Tomlin

Cocklebarrow is a name that is now part of the vintage R/C vocabulary as meetings have been held here for 30+ years, currently three meetings a year are held. The first meeting in July was well supported with 40 fliers, this was, as many will remember, held in conditions of extreme heat with the mercury around 90F [32C] over the weekend. It was the first time in the memory of the event that fliers left early in the afternoon due to the heat!

Sadly the second event in August was the other extreme with a cold and very strong wind that caused the abandoning of the event by lunchtime! All was not lost thanks to the dedicated fliers who turned up, 10 signed on and many more were browsing the car boot sellers.

On September 30th after the miserable conditions in August we hoped for a respite. Luckily the weather gods smiled on us as, although it was a day of sun with a fair amount of cloud, the wind was generally light throughout the day blowing straight up the 'Cocklebarrow slope'. Landings were down the field and parallel to the notorious Cotswold stone walls that have so many times led to broken models!

As this was the last meeting this year we hoped for a good turnout, and we were not disappointed, with a steady stream of cars arriving and the car park area quickly filling up. We were pleased to welcome some new fliers, some travelling long distances including from Essex, Cornwall, Devon and Wales.

Within a very short time the air was full of models in the circuit. For safety we had limited the number of models flying at one time to five and this seemed to work well with very little waiting. Thanks to David Lovegrove, Spike Spencer, John Laird and Nick Blackwell who efficiently marshalled the pilots box.

As usual there was a good selection of models, the largest being the 120" Majestic Major by Phil Huddleston. The smallest, a SE5 by John Mellor with a wingspan not much over 12", flew really well powered with a diminutive electric motor. Junior 60s were as always present with 5 counted, including the model by Dave Stock missing a collision with the wall surrounding the site by the tiniest margin! Mick Langford was flying his Falcon, always a steady flier. There were 3 Buzzard Bombshells flying, with one spending an interesting 10 minutes circling with a Red Kite that had turned up to see who was sharing his air space! Jack Pritchard had a KK Dolphin twice size that had an electric power pod cleverly disguised as an I.C engine with its iconic shape looking impressive in flight. Three pretty John Bowner designed Swannees [1966] were flown by David Lovegrove, Spike Spencer and Mark Deans, all electric which is now the trend. With so many models now electric it was noticed that at times the air was full of models that made no sound! To many fliers this still doesn't seem natural! In total there were 45 fliers signed on with between them 97 models. As always there was lots of interest in some of the more unusual models which happens when real aeromodellers get together, one of the good things that come from our interesting hobby.

The car boot sellers were busy all day with a number of people coming away with very nice models that were to have another life.

All too soon the day came to a close and modellers said their goodbyes until the next time. It is planned to have 3 events in 2019 with, as before, meetings in July, August and September.

Finally thanks go out to Ted and Linda Tomlin, Pam Tomlin, Rob Smith, Rob Blair, David Lovegrove and David Bowl whose help over the weekend made these meetings a success.

Dolphin x 2.5 by Ted Tomlin

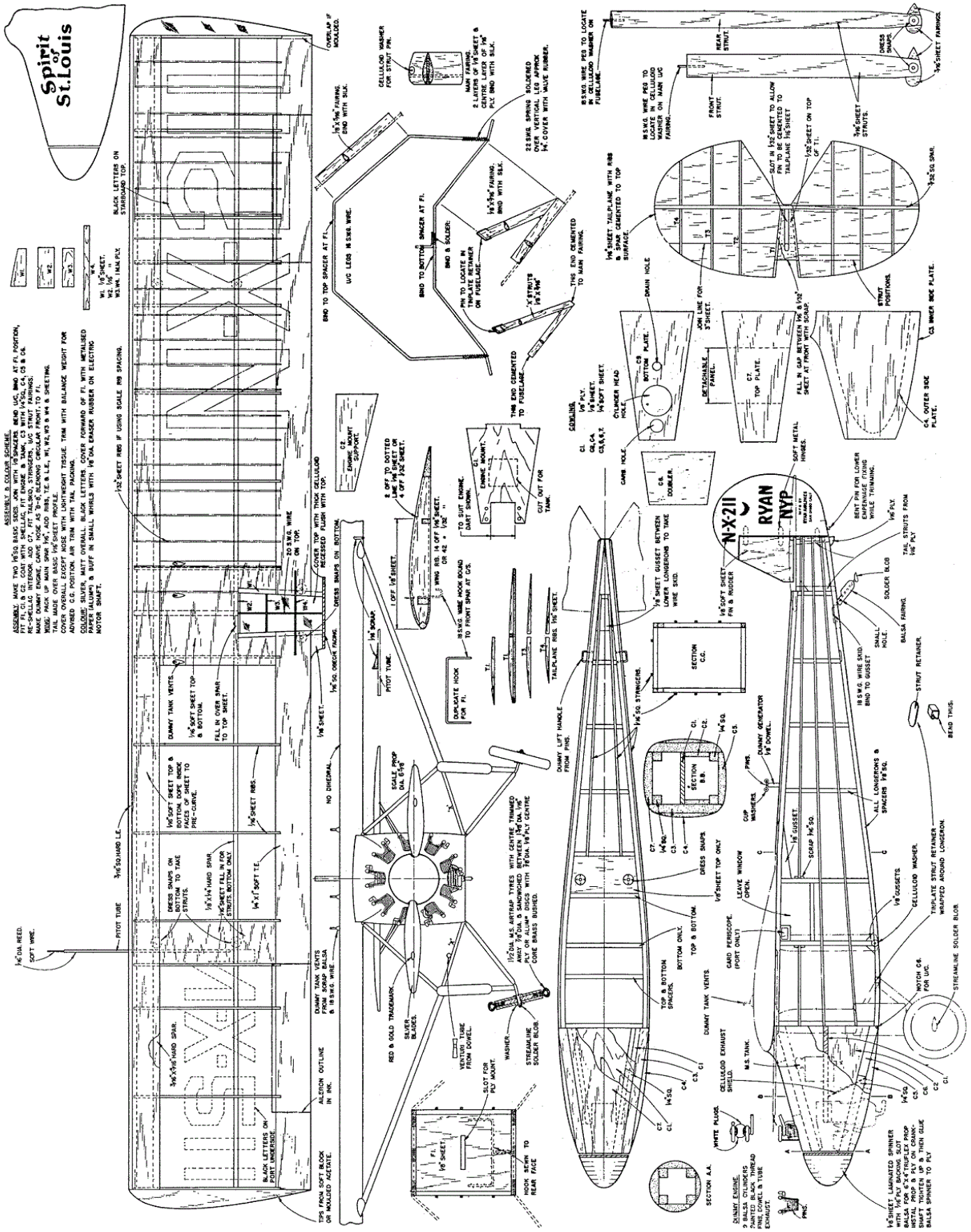
Buzzard Bombshells, Sparky and Airmaster on the flightline.

Super Elf by Mike Whittle.

David Lovegrove and Spike Spencer Squadron all flew

Majestic Major by Phil Huddleston flew well.

Richard Preston and Brian Brundell [powered by Pasty].



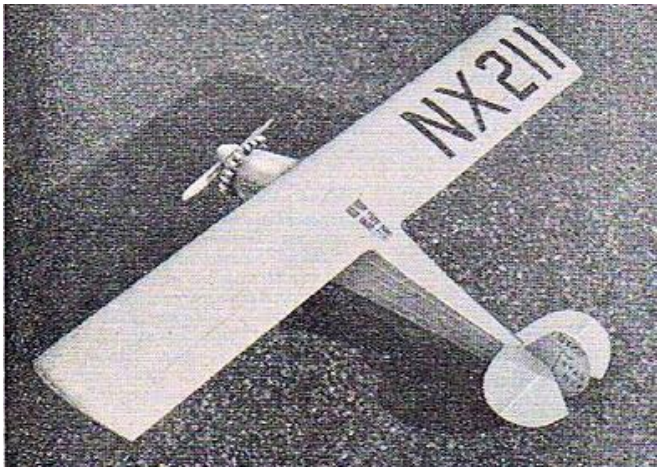
Spirit of St. Louis a 34-inch free-flight scale model for small capacity engines by Ron Moulton from Aero Modeller June 1957

“Impossible!” stated the critics. Nevertheless we always did like tackling something really difficult and

even if the Ryan N.Y.P. did show an alarming lack of dihedral and paltry tail surfaces, it did at least boast a nice simple fuselage construction and, believe it or not, Clark "Y" airfoil section on the full size. Such a flying scale subject is the type of challenge which makes aeromodelling all the more interesting. The "Spirit" has always been a modellers' subject in the U.S.A., but oh! how it has been divested of its true characteristic flat wing and stringered fuselage in so many cases! To satisfy ourselves that a model could be made free flight, to exact scale, apart from the zero wing incidence of the full size, plans were drawn up more than a year ago and three prototypes made by independent modellers. The dihedral problem was considered seriously and as originally designed, the model had the spacing between the wing struts filled-in with a celluloid plate to provide sesquiplane effect. This point has been eliminated from the drawing.

Flt./Sgt. Bob Collington st R.A.F. Hemswell was the first to get one of the prototypes airborne and he tried it straightaway without the celluloid strut filler. Low power, with a prolonged glide seemed satisfactory so he increased the revs on the Dart driving a Truflex 6 x 4, and to use his own words, "The stability of the model in the sir gave the impression that it was held horizontally by a pair of invisible hands on the wing tips"—so much then for our concern over the dihedral! First power flights have, in all cases, been practically dead straight runs. To obtain a nice climbing turn, Bob Collington found he could deflect the rudder as much as 20 degrees—which just shows how insensitive those diminutive scale surfaces are, and how this design serves to contradict the expectations of the Pundits. Best flight pattern is wide left hand climb, turning to the right on the glide, using slight right rudder. So much for flight performance. As for the construction, the model is little more than s square box fuselage with a slab of wing superimposed and solid sheet tail surfaces. Anyone with experience will find it a simpleton to make except, perhaps, if you want to make it absolutely dead scale with true rib spacing when you find yourself with forty-eight 1/32 ribs to cut. The most difficult part of the model is the dummy engine, but if treated carefully, it is remarkable how one can reproduce nine balsa cylinders with thread fins wound around a carved balsa dowel, and odd pieces of reed used for the curling exhausts, with pins for push rod covers, etc.

The strutting is rather involved, but the method of retention permits easier assembly and a minimum risk of damage in the event of a hard landing. One should remember that the wings do not have to be supported by the struts which are purely ornamental and the wing is in fact, retained by connecting it with tight elastic bands from the wing hook to the inside fuselage hook on F.1. Then slide it forward so that the Newey dress snaps on the trailing edge pop into place to lock the wing and retain the incidence. Leave the tail surfaces loose, held on by elastic bands until you have sorted out a flight trim, then cement firmly into place with tail struts added for scale. Interior details of the "Spirit" can be found with the description of the full size aircraft overleaf and all that remains is for modellers to obtain a realistic finish for this famous aircraft.



A mixture of three parts aluminium dope, one part light grey, thinned, provides perfect colouring. The nose portion can be realistically covered with metal foil or wallpaper and buffed in small whirls. The lettering, which is especially accurate on the drawing, can be applied by home-made transfers as detailed in Aero Modeller, October, 1955. Use lightweight tissue and try to keep the weight down.

From Adam

66 inch scorpion from the Belair kit.

Everyone can see it’s not a keil kraft version but it goes together well.
5 5lbs, 3 cell electric set up. 450watts power on 13/8 prop.

Photos sent by Peter Renggli taken at the 2017 MG Bern Antik Flugtag. Photos by Urs Brand and Peter Ziegler


BBC
SBC 20 D

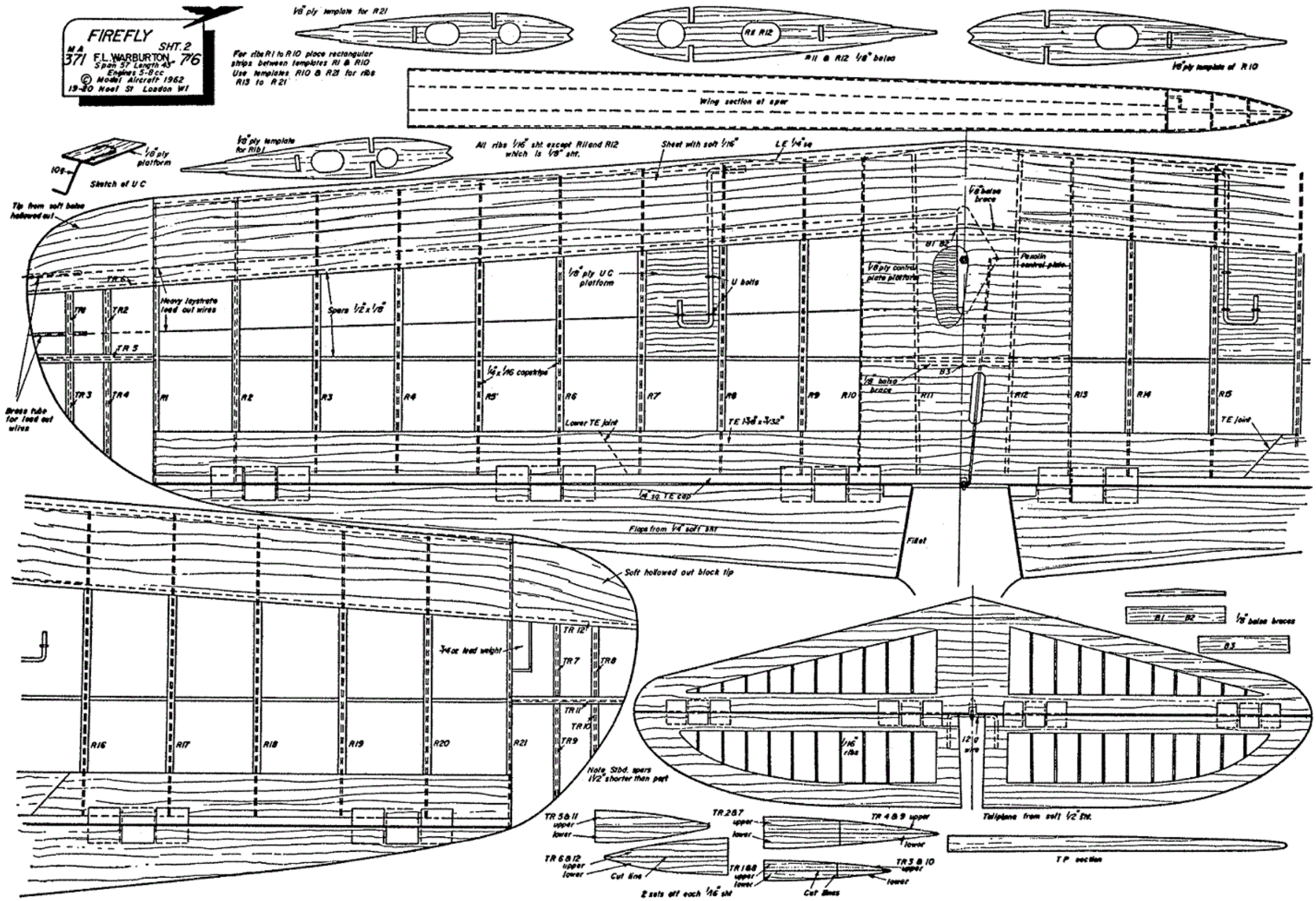

MG

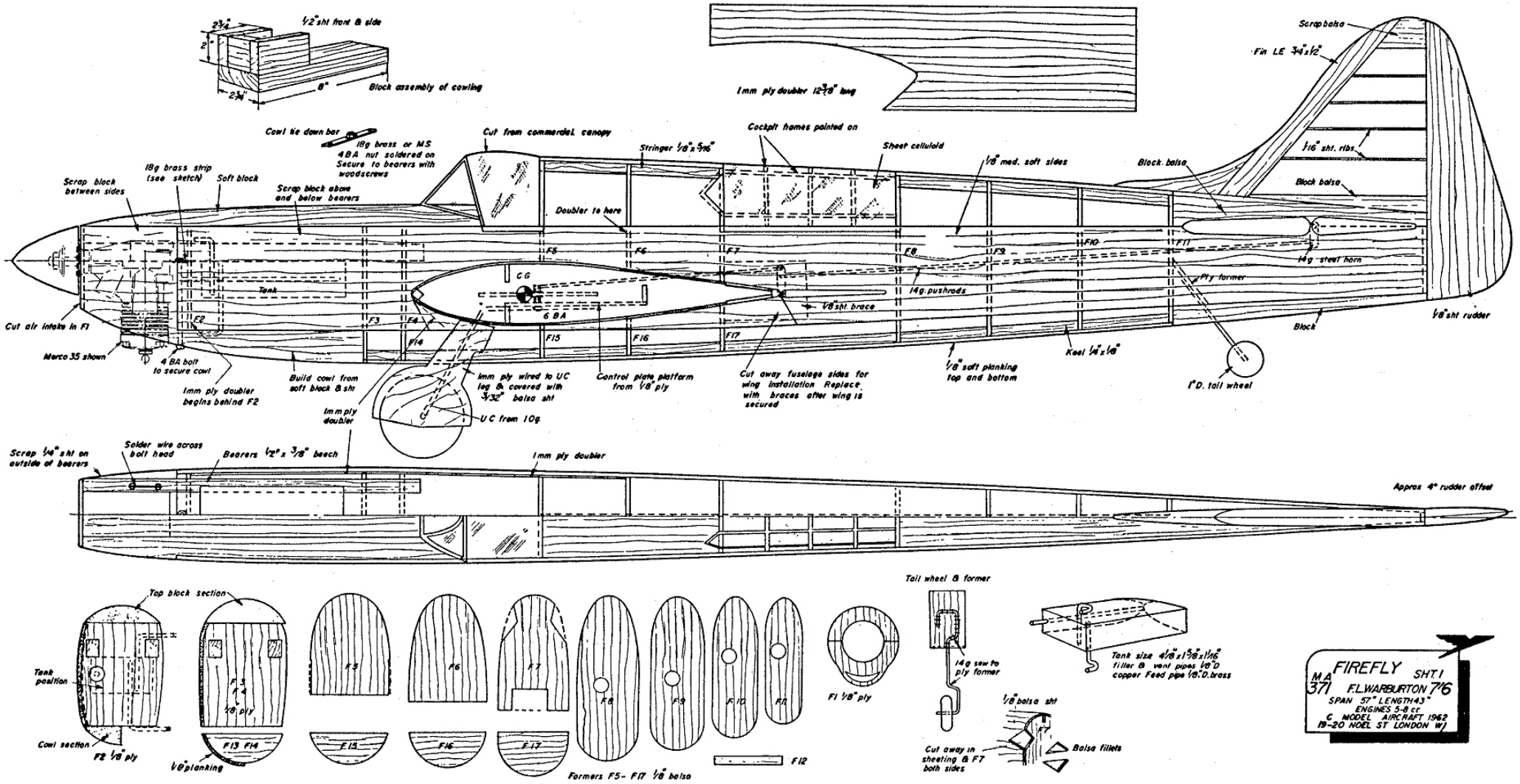

BE 78
SATYR 1942


BE 78
SATYR 1942

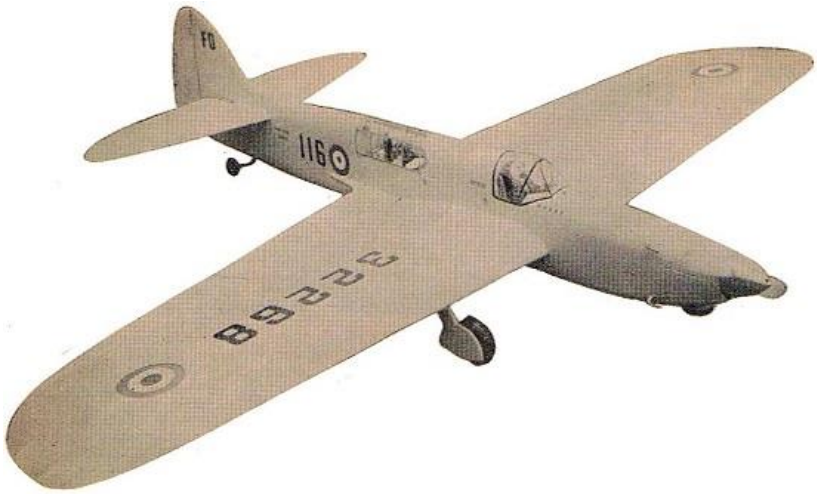

PILOT 4
02


Super 60
1961


FIREFLY
SHT. 2
MA 371 F.L. WARBURTON 76
Span 57 Length 43"
Engines 5-8cc
© Model Aircraft 1962
19-20 Noel St London W1
For ribs R1 to R10 place rectangular strips between templates R1 & R10
Use templates R10 & R21 for ribs R13 to R21
1/8" ply template for R21
R11 R12
R11 & R12 1/8" balsa
1/8" ply template of R10
Wing section at spar
1/8" ply template for Rib 1
1/8" ply platform
10g
Sketch of U C
All ribs 1/16" sht. except R11 and R12 which is 1/8" sht.
Sheet with soft 1/16"
L.E. 1/4" sq
Tip from soft balsa hollowed out
1/8" balsa brace
B1 B2
Pencilin control plate
1/8 ply control plate platform
1/8 ply U C platform
U bolts
Heavy laystrate lead out wires
Spars 1/2" x 1/8"
TR 1
TR 2
TR 3
TR 4
TR 5
TR 6
1/2" x 1/16 capstrips
B3
1/8" balsa brace
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
Brass tube for lead out wires
Lower TE joint
TE 1 3/8" x 3/32"
TE joint
1/4" sq TE cap
Flaps from 1/4" soft sht
Fillet
Soft hollowed out block tip
1/8" balsa braces
B1 B2
B3
TR 12
3/4 oz lead weight
TR 7
TR 8
TR 11
TR 10
TR 9
R16
R17
R18
R19
R20
R21
1/16" ribs
12 g wire
Note Stbd spars 1 1/2" shorter than port
TR 5 & 11 upper lower
TR 6 & 12 upper lower
Cut line
2 sets off each 1/16" sht
TR 2 & 7 upper lower
TR 1 & 8 upper lower
Cut lines
TR 4 & 9 upper lower
TR 3 & 10 upper lower
Tailplane from soft 1/2" sht.
T P section


1/2" sht front & side
2 3/4"
2"
2 3/4"
8"
Block assembly of cowling
1mm ply doubler 12 3/8" long
Scrap balsa
Fin LE 3/4"x1/2"
Cowl tie down bar
18g brass or MS
4BA nut soldered on
Secure to bearers with woodscrews
Cut from commercial canopy
Stringer 1/8"x5/16"
Cockpit frames painted on
Sheet celluloid
1/8" med. soft sides
Block balsa
1/16" sht. ribs
Block balsa
18g brass strip (see sketch)
Soft block
Scrap block between sides
Scrap block above and below bearers
Doubler to here
F5
F6
F7
F8
F9
F10
F11
14g steel horn
Ply former
CG
Tank
14g pushrods
1/8" sht. brace
6 BA
Cut air intake in F1
F2
F3
F4
F14
F15
F16
F17
1/8" sht rudder
Block
Keel 1/4"x1/8"
Merco 35 shown
4 BA bolt to secure cowl
Build cowl from soft block & sht
1mm ply doubler begins behind F2
1mm ply wired to UC leg & covered with 3/32" balsa sht
Control plate platform from 1/8" ply
Cut away fuselage sides for wing installation. Replace with braces after wing is secured
1/8" soft planking top and bottom
1" D. tail wheel
1mm ply doubler
UC from 10g
Scrap 1/4" sht on outside of bearers
Solder wire across bolt head
Bearers 1/2" x 3/8" beech
1mm ply doubler
Approx 4" rudder offset
Top block section
Tank position
Cowl section
F2 1/8" ply
1/8" ply
F13 F14
1/8" planking
F5
F6
F7
F8
F9
F10
F11
F15
F16
F17
Formers F5- F17 1/8" balsa
F12
F1 1/8" ply
Tail wheel & former
14g saw to ply former
Cut away in sheeting & F7 both sides
1/8" balsa sht
Balsa fillets
Tank size 4 1/8"x1 5/8"x1/16"
filler & vent pipes 1/8" D
copper Feed pipe 1/8" D. brass
MA 371
FIREFLY
SHT. 1
F. L. WARBURTON 7/6
SPAN 57" LENGTH 43"
ENGINES 5-8 cc
C. MODEL AIRCRAFT 1962
19-20 NOEL ST LONDON W1

Semi-scale control line stunt model by Frank Warburton suitable for 5 – 8 cc engines. From Model Aircraft September 1962



The Firefly is a perfectly orthodox stunt model as far as layout and construction are concerned, yet it has many realistic features, plus ample scope for constructional detail, to help in gaining high appearance points in competitions. Even more important it is very steady and positive on the lines and makes an ideal all weather stunter.
The original is a little on the heavy side at 50 oz., but with 610 sq. in. of wing area, it handles very "lightly" with a Merco 35.

Construction

Cut all the wing ribs from soft 1/16 in. balsa by the sandwich method, i.e. cut 1/8 in, ply templates of R.1 R.10; and R.21 and then sandwich ten balsa blanks between R1 and R10 and bolt together. Carve and sand to aerofoil section, mark the position of the main spar slots, then separate the ribs and cut out the 1/2 X 1/8 in. spar slots individually. Repeat for starboard wing ribs, sandwiching blanks between R10 and R.21 templates, but remember to place only nine blanks between the templates. Cut the ribs R.11 and R.12 from 1/8in. balsa and cut lead out holes in all ribs to save weight.
Slide the ribs for one half on to the rear spar, then fit top and bottom span. Tack cement the ribs lightly into place, add L/E and repeat for other wing half. When dry, butt join the two wings. together and add braces as shown. Build up the two piece T/E and fit to wing, check for warps, and when satisfied, add the ¼ in. square T/E cap.
Now re-cement all the ribs securely to the spars, bend the U/C legs to shape and secure to the ply formers, then fit in place between R7. and R.8, and R.15 and R.16. The U/C doors are made from 1 mm. ply wired to the U/C leg and covered with a sandwich of 3/32 in balsa.
Fit the bellcrank assembly complete with pushrod and lead-out wires. Cement soft 1/16in. L/E and centre section sheet into place. Now cut the wing tip sheets from 1/8 in. balsa, glue to the main wing and fit tip ribs TR. to TR.6 upper and lower sides of the port wing, and TR.7 to TR.12 upper and lower sides of the starboard wing. The wing tip L/E's are of soft balsa block, hollowed out to save weight. Fit the lead out wire tubes into the port wing tips and pack approximately ¾ oz. lead into the starboard wing tip. Cap the ribs with 3/4 x – 1/16 in. soft balsa strips. Make and hinge the 1/4in. sheet flaps and connect both push rods.

Fuselage

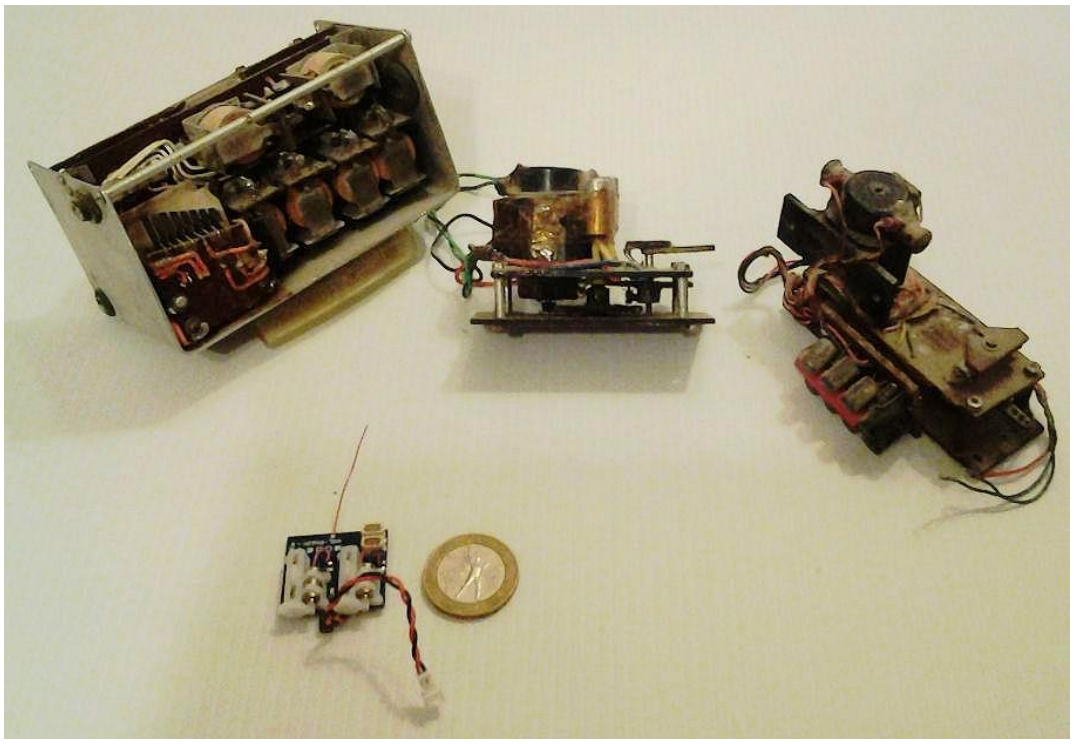
Cut Out the medium 1/8 in. sheet fuselage sides and cement 1 mm. ply doublers to the inside faces. Cut away the section under the wing and save for later.
Drill the engine bearers with 2 deg. offset, cement to F.2, F.3 and F.4 and fit the tank into place on the bearers. Pre-cement the sides to this assembly, hold with elastic bands till dry, then cement F.5, F.6 and F.7 into place. At this stage the fuselage is firmly cemented to the wing, checking for zero incidence and then the tail-end is brought together by F.12 Hold this with pins and rubber bands until dry, then slide F.8, F.9, F.10 and F.11 down the pushrod and connect the tailplane to the pushrod.
The tailplane is cut from soft ½ in. sheet with 1/16in. ribs added. Slide the tailplane back and forth along the top of the fuselage sides until neutral flap and elevator is achieved then cement firmly into place.
Replace the cutaway section under the wing and add the remaining formers P.13. F.14, F.15, F.16 and F.17. Plank the top of the fuselage with soft 1/8 in. balsa. After the tail wheel has been sewn with fuse wire to its ply former and cemented against F.11, plank the fuselage bottom with 1/8in. balsa.
Cement the hollowed out block for the nose in place and cut out for the forward cockpit. The engine cowl is made from 1/2 in. and 1 in. sheet carved to shape.
Build up the fin over the plan, then sand to section and cement in position with the rudder offset as shown on the plan.

Add cockpit details and both pilots and cement on the cockpit covers. I find that the Mercury Crusader canopy, suitably cut down, makes a perfect scale Firefly front cockpit canopy. Use sheet celluloid for rear. Fit the wheels now —I used Veco 2 1/2 in.
Give the whole model two coats of sanding sealer and sand smooth, cover fuselage with lightweight tissue and apply more sanding sealer until a smooth gloss finish results. Heavyweight tissue is used for the wing, tail and fin. Give three coats of clear dope and three of finishing colours, wet sanding between each.
Metal polish the final coat. Add the necessary transfers and finish with fuel proofer (two coats). The original model is fitted with a Merco 35 and flies to perfection, but it has also flown equally well with a Glow-Chief 45, so any good glow motor between 35 and 45 will do.
For correct flying trim, the c.g. must be as shown on the plan. Detail and superb finishes are the vogue in stunt at the moment, so do not be afraid to spend a little extra time during painting.

From Stephen Winkworth

Some of your readers may recognise two home-made servos, based on the Chris Olsen "Mighty Midget" servo of the 1950's, and it will bring a thrill of nostalgia to count six relays and six tuned reeds on the side of that home-made receiver. On the electronic side, behind the reeds and relays, there is one deaf-aid valve and two transistors, as well as sundry capacitors, resistors and sundry other gizmos, all carefully mounted on a separate 1mm Paxolin board.

It all worked, sometimes, when the fates were in a good mood and the transmitter tuning was freshly aligned with the frequency of vibration of the reeds, and the relays didn't chatter or stick. Model aircraft were even occasionally guided through the air by all this stuff. In 1965 I entrusted a valuable 'Robot' spy camera to this unlikely guidance system, mounted in the belly of a massive own design aircraft powered by a Merco 61 Mk1. A photograph in RCM&E magazine during that year actually shows the equipment, and the servos are clearly identifiable. This setup worked well enough to produce some aerial photography good enough to impress columnist Peter Russell. It was pretty weird to come across the gear just as I was starting to embark on a new small model project. Oh yes, that tiny little gadget next to the one Euro coin is going to be doing the same job as the other stuff in the photo. Probably a lot more reliably.



By the way, if anyone has a copy of RCM&E for May 1965, the photo appears on page 207. I no longer have the whole article as my copy has been damaged. Can anyone help with this? I do not know of any earlier articles on aerial photography by R/C model aircraft, though surely I cannot be the first to have tried this. When one thinks how drones have made the whole business so easy and so important in a thousand

applications it gives me a small, rather rueful thrill to think I might have been one of the earliest. The extreme flexibility of the drone and its easy replaceability have made it invaluable for missions like filming volcanic eruptions, and one hears of regular use by farmers for detailed crop management. The other day I read that drones are the instrument of choice for surveying seaside piers in need of renovation. Those sorts of use would have been beyond even the most sophisticated model aircraft. Nevertheless a firm of architects approached me some time after my article appeared, and a fairly serious attempt was made at setting up a commercial 'aerial photography by radio control' business, which was to be named Photair.
Stephen

Showscene, from Dave Bishop of DB Sound.

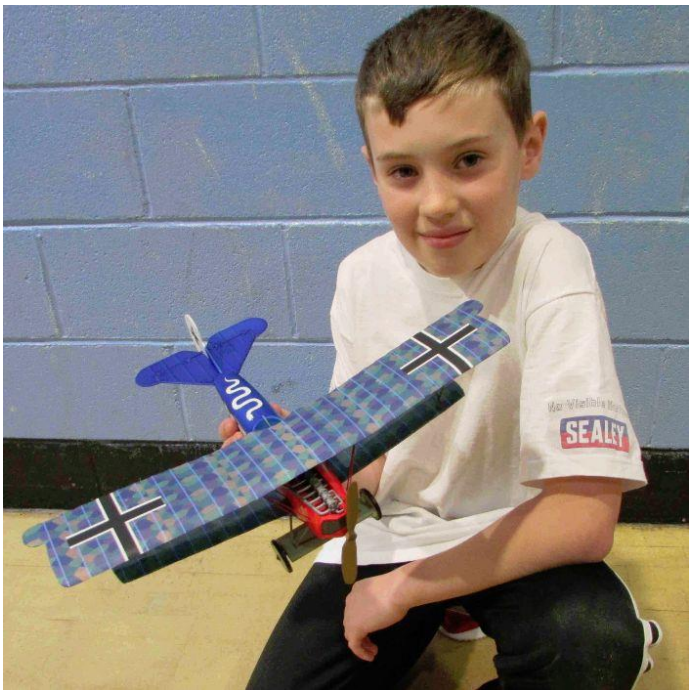
My deepest apologies for not sending a Sticks & Tissue piece for last month's edition but I have been up to my eyes in making a film and doing recordings of an inaugural Remembrance Service in centre of our Village of Tatsfield. That "job" has occupied most of this year but the good news is that the whole package is almost finished and has been wrapped up all onto a solid state memory stick. The result will be some public showings to invited audiences to let them see what the story of it all was about. It will be interesting to see and hear some feedback.
So onto the Showscene for the end of this 2018 year and I must tell you that the Bishop family met at Old Warden on the Shuttleworth Heritage Day on Sunday September 2. We camped there from the Friday afternoon with the help of the super gentleman and his wife who were in charge of the excellent camp site. The reserved space was very generous and to complete it all the weekend weather was clear blue sky, wall to wall. The countries number one aeroplane journalist Alex Whittaker has also camped there and was very kind in his reporting of one of our Modelair events recently. I think I have mentioned in past Sticks & Tissues that there is a new public address loudspeaker system that has been installed which is much better than what was there before. As a professional PA presenter of some 62 years' experience, I couldn't hear one anti-phase lobe from any of the "boxes" (not horns) along the whole flightline. In fact it was good to see and hear that there was a single special loudspeaker placed for the camp site as well. Very good that! I remember way back in the beginning at Old Warden many years ago, the "father" of the Public Address Engineers, named Haydn Warren, formed a group called the APAE which was the association of public address engineers and one time he related to me how he was horrified at the sound relayed (then) at the Farnborough Airshow. I too always attended Farnborough and remember the dreadful reverberation echoed all over the whole airfield from a huge together stack of long reach horns with the result of so many anti-nodes and anti-phasing that it was awful to listen to. Haydn always was an advocate for a high number of short horns all set at very low wattage. That is why I always carried so many short horns in my DB Sound business and only gave sound reinforcement and not ear piercing amplification for the whole of my 62 years of being in the business.
Being a Sunday only Show at Old Warden the day was spent with my son James and I doing a catch-up chat with a camera hanger visit and enjoying the many things that were going on. Bus rides were being given driving all around Old Warden to the many customers who queued up for a 1930 nostalgic bus trip. Aeroplane passenger flights were being flown at the same time all morning in a stunning DH 89a Dragon Rapide. There were a number of working traction engines of ages old with the proud name of Shuttleworth engraved and the staffs appropriately dressed operating them to massed audiences. The afternoon started with a parade of very old mint condition vehicles again with their drivers and passengers dressed in the period costume and some ancient bicycles being peddled by smiling and very hot riders. Wonderful fun all enhanced by a very interesting commentary. The wind speed was about 3 miles per hour and right up the runway for the afternoon airshow described by two cracking commentators. The two of them did us all proud with nine minutes silence whist we saw and heard two Spitfires and two Hurricanes giving stunning displays to a captivated and packed audience. It reminded me of the days when we had our Scale model events there run by dear Ron Moulton with a partitioned static display of models behind the whole length of the flightline. In those days we had so many visitors that overspill car parking was across the main road. And did I enjoy presenting them as well. Ah me, great memories and didn't the sun always shine?

To fill you in on the packed full size Heritage air display the list went as follows; Kirby Kite, Tiger Moth, DH Comet, Chipmunk, 2 - Magisters, Politkarpov PO2, Depperdussin, 2 Hurricanes, 2 Spitfires, Gladiator, Tutor, Camel, Sopwith Tri-plane, DH 60x Moth, Dessoutter, Comper Swift, Avro 504K, Bristol Boxkite, Blackburn Monoplane, Dakota, the Global Stars, Parton Arrow, Pitts 12, FW44 Stieglitz and the Schneider Grunau Baby.

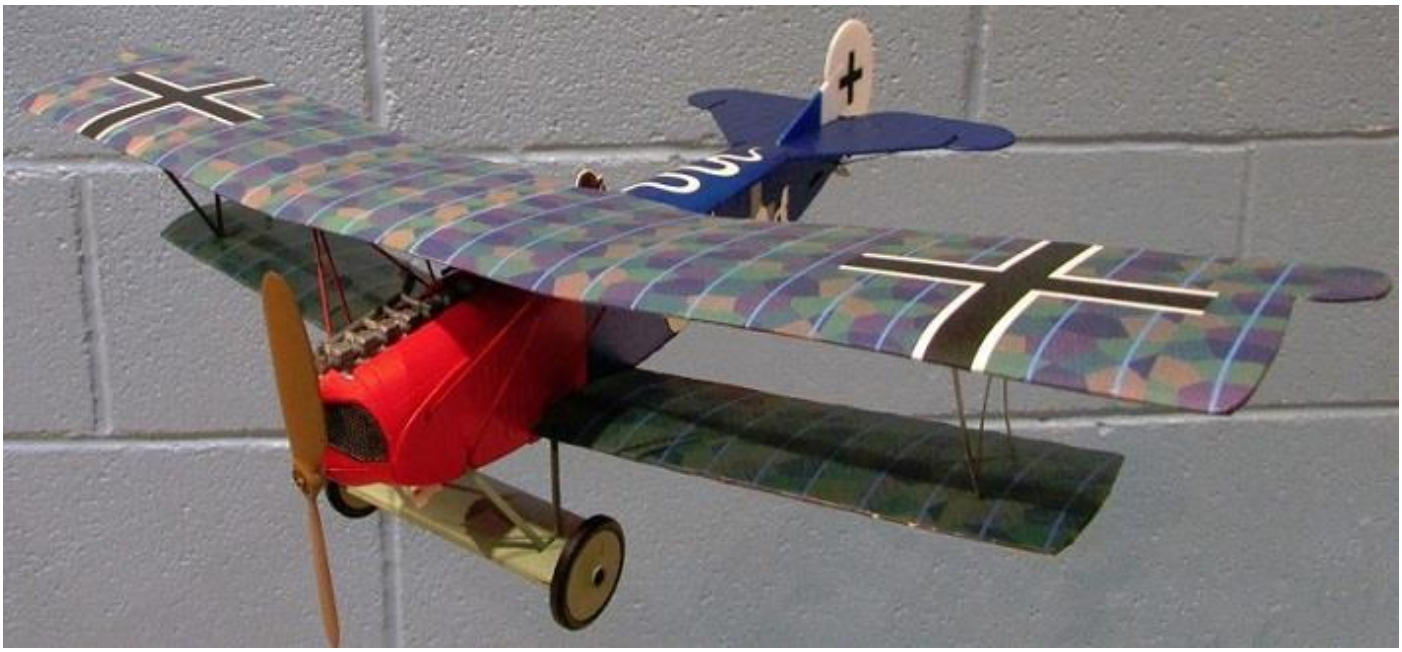
It was some show with a huge atmosphere that had great singers dressed in the WW2 kit ripping out the songs that we all sang as kids and there was so much going on that it really needed more than just the one perfect day to take it all in. But that's Old Warden for you and you won't beat that place for entertainment and I have left out the super restaurant and also the crack (talk) from so many old friends. Do yourselves a favour and make it a "must go to" place next year. There's always the three Modelair events run by that super couple Ken and Sheila Sheppard and you might happen to recognise yours truly there and if so do please come up and say hullo. I'd like that. All the best for Christmas and the New Year.

Dave Bishop It would be nice to hear from you. email davedbsound@gmail.com.

Just a sad note, that the third and final Modelair event this year at Old Warden was a rainy job that made it a kind of washout. My word did it rain and it was so different from the full size show three weeks before there.



The Sevenoaks club encourages the very young members and during the winter time they also have a lot of indoor flying events complete with super refreshments along with tea and coffee by David and Leslie Turner. This young lad flew his model beautifully.



Here is his Biplane close up.

Just shows how popular indoor flying is with some of the Sevenoaks flyers stopping for a picture.

Another Sevenoaks scale model.

This set of pictures show the atmosphere at Old Warden's heritage Day on September 2.


CLAYTON & SHUTTLEWORTH
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G-E

Despite the awful weather some flyers were ready to pose with their models at the Modelair event over the weekend of September 22-23. These pictures were taken on the Saturday and the Sunday's flying was cancelled. Picture shows young teenager (just) Rory Tooley who is my tip for a world champion.

This lad was equipped with his stack of Combat Control Line models at the last Modelair event.

This gentleman had a model called Jamison at the last Modelair event.

FLITEHOOK

Indoor Free Flight Meeting

West Totton Centre, Hazel Farm Road, Totton, Southampton, SO40 8WU

Contact: Tel. 02380 861541

E-mail flitehook@talktalk.net

Café on Site

Flyers £8 Juniors & Spectators Free Flyers must be BMFA Members Sundays 10.00a.m. to 4.00p.m.

2018

9th December 2018

30th December 2018

2019

13thJanuary 2019

10th February 2019

10th March 2019

14th April 2019

Waltham Chase Aeromodellers

INDOOR F/F MEETING

Waltham Chase Aeromodellers, in association with South Hants Indoor Flyers, are pleased to announce the continuation of the Indoor F/F Meetings held at the Main Hall at **Wickham Community Centre, Mill Lane, Wickham, Hants PO17 5AL.** These meetings will be held on the following dates:

Tuesday, 2nd. October 2018
Tuesday, 6th. November 2018
Tuesday, 4th. December 2018
Tuesday, 8th. January 2019
Tuesday, 5th. February 2019
Tuesday, 5th. March 2019
Tuesday, 2nd. April 2019
Tuesday, 7th. May 2019
Tuesday, 4th. June 2019
Tuesday, 2nd. July 2019

All meetings will run from 7.00 p.m. to 10.00 p.m. The Main Hall at Wickham Community Centre is particularly suitable for indoor free flight models of all types, with a ceiling free of obstructions. Tables and chairs will be available in the hall, the organisers are always grateful for assistance with moving furniture. A hot drinks machine is available on site.

Admission to the meetings will be £5 for fliers and £1 for spectators, whilst accompanied children will be admitted free. Junior fliers will be charged as adult spectators. Fliers will be required to show proof of insurance.

No R/C models may be flown at these events.

Flitehook, who carry a large stock of indoor models and accessories, will attend many of the meetings.

Waltham Chase Aeromodellers look forward to welcoming all indoor F/F fliers to these events.

For further details please contact:

Alan Wallington, "Wrenbeck", Bull Lane, Waltham Chase, Southampton, Hants.
(Tel. 01489 895157)

(e-mail: alan@wcaero.co.uk)

or see our web site: www.wcaero.co.uk

KK Scorpion - 44" cabin model

Ref: ot-kkscop

Parts Set for the attractive Keil Kraft Scorpion. Includes all the shaped balsa and plywood parts required to build the basic airframe, including bulkheads, formers, wing ribs, shaped trailing edge for wings and tail. Shaped outlines for fin and rudder, sub fin, cowl cheek sides, dihedral braces, gussets, plus many smaller items.

Builder to add their own stripwood and covering.

Full size plan included.

KK Scorpion Specification
Wingspan - 44 inches
Suitable for 1.3 to 2.5cc engines or conversion

RRP: £55.00 Inc VAT
Price: £55.00 Inc VAT
60.50 USD | 65.11 EUR

Super Scorpion - 66" cabin model Parts Set

Ref: ot-kksupersco

Parts Set for the attractive Keil Kraft derived Super Scorpion. Includes all the shaped balsa and plywood parts required to build the basic airframe, including bulkheads, formers, wing ribs, shaped trailing edge for wings and tail. Shaped outlines for fin and rudder, sub fin, cowl cheek sides, dihedral braces, gussets, plus many smaller items. ncludes plan, which shows RC Assist conversion. Builder to add their own stripwood and covering.

KK Super Scorpion Specification

Wingspan - 66 inches
Suitable for 3.5cc engines or conversions
Price: £75.00 Inc VAT
82.50 USD | 88.79 EUR

Air Trails Sportster Cabin Model

Ref: ot-airtrsport

Air Trails Sportster by Ben Shereshaw from Air Trails 1939 - 46in span Cabin model. Parts Set includes all shaped balsa and plywood parts to complete the airframe, such as fuselage sheeting, bulkheads, formers, wing ribs, tip shapes for wing and tail/fin, wing joiner boxes, plus many smaller parts. Includes full size plan

Price: £55.00 Inc VAT
60.50 USD | 65.11 EUR

Linnet Parts Set 43" span

Ref: ot-linnpk

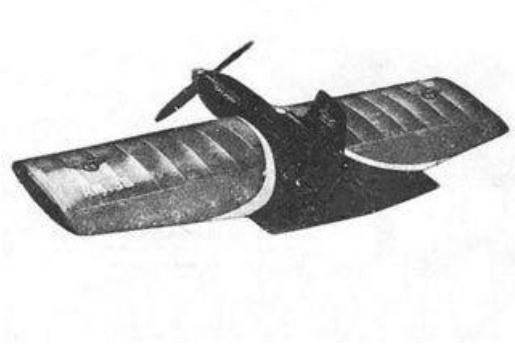
Quirky looking design by GR Woollett published in Aeromodeller January 1954
43in span suits 1.3cc size motors. Tricycle undercarriage and low wing, looks semi-scale and makes a pleasant change from the usual high wing cabin job.

Part Set includes all the laser cut balsa and plywood parts, such as cowl cheeks, fuselage sheet, formers, bulkhead, LG mount, shaped gussets, fin outlines, wing and tailplane tips, wing ribs, sub fin, wing seat, plus many smaller items.

Parts fit original Aeromodeller plan which is not included - shown for reference only. Builder to supply stripwood and covering to complete basic airframe.

Mercury Toreador CL Parts Set

Ref: ot-kktore



Parts Set for the **Mercury Toreador** model. Suitable for Stunt or Combat. Laser cut parts will save you hours of tedious cutting and include fuselage sides, fuselage top & bottom in one piece 1/2" balsa, bulkheads, formers, fin/rudder, wing tip shapes, wing ribs with additional tab to allow the symetrical wing to be built on a flat board without packing each rib, bellcrank mount, spinner ring, shaped trailing edge and elevator.

Also includes **full size plan, and canopy, vac-formed in clear plastic.**

SpecificationsWingspan - 36 inches, weight around 20 oz and suitable for 2.5 to 3.5cc engines (AM35 shown on plan). Builder to supply small amount of stripwood to complete.

Price: £50.00 Inc VAT
55.00 **USD** | 59.19 **EUR**

Regards,
Leon Cole
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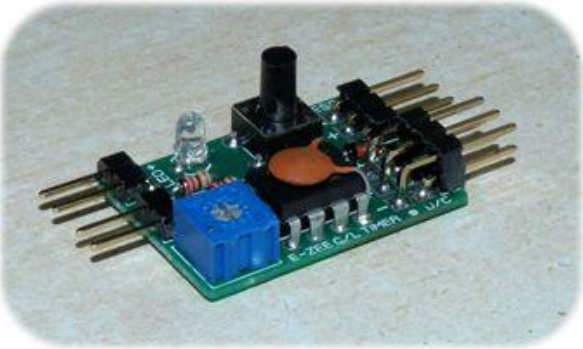
Dens Model Supplies

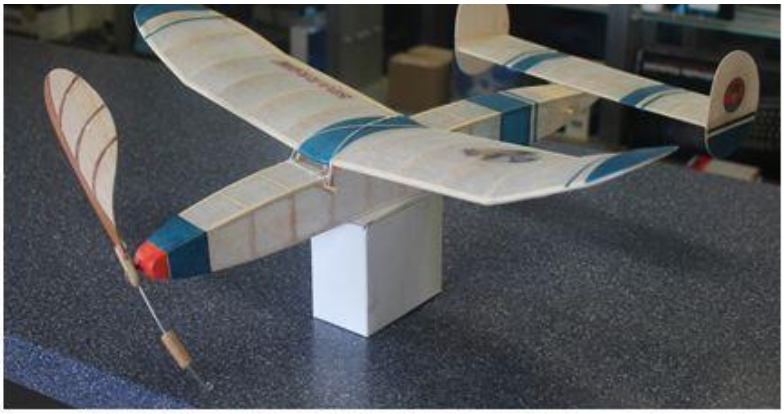
Traditional CL Kits including the ACE + Plug & Play Electric CL Starter Kit….just add glue and a battery !!

Tinplate CL tanks….Bellcranks, Lines, Handles, Cloth Hinge Tape, Leadouts etc

Cox Engines & Spares



Electronic Timers for CL & FF



Laser Cut - High Quality FF & RC Kits