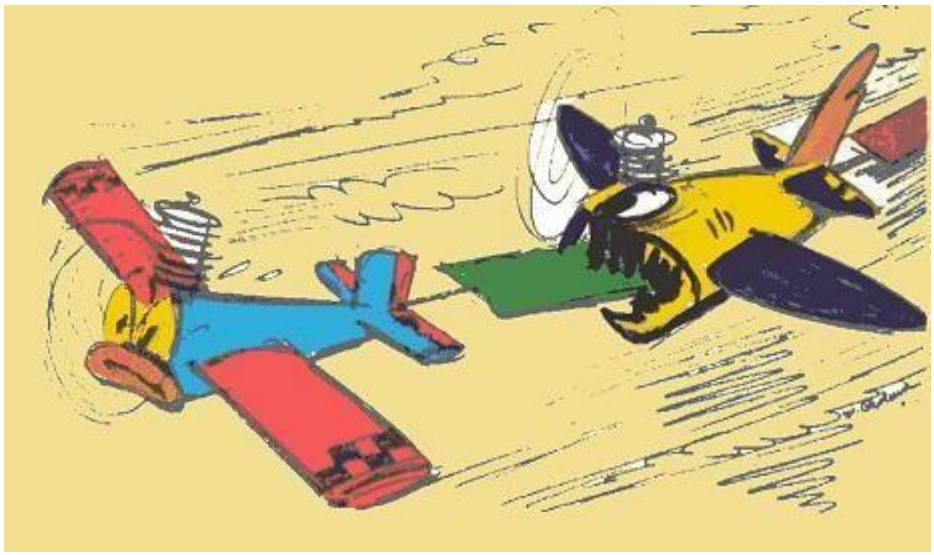
# Combat in the U.K.

## The Golden Years Part 1

## 1970 - 1974

## A Compilation of Articles and Contest Reports from Aeromodeller Magazines by Mick Lewis

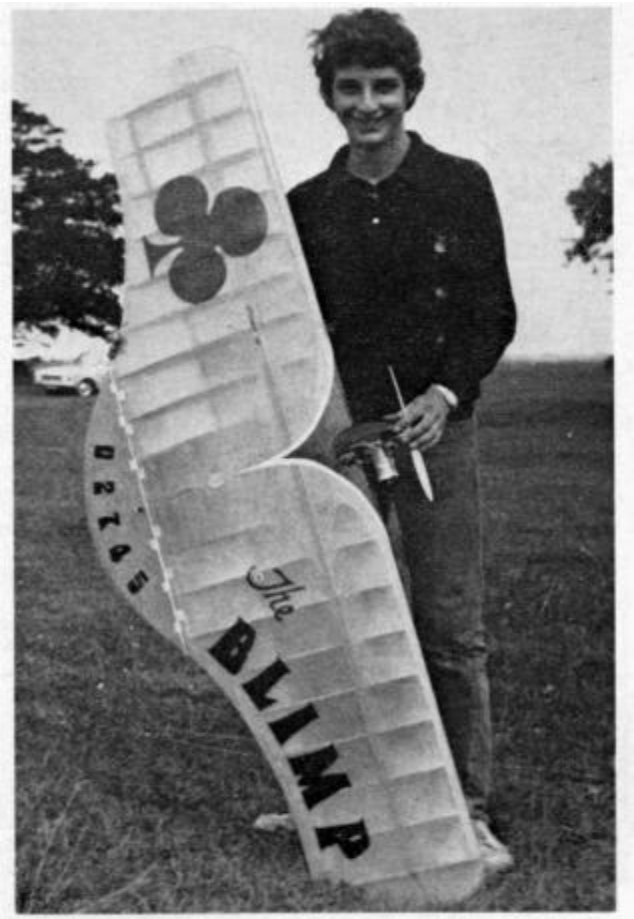


# 1970 Articles

It seems fitting that my old mate Frank Smart should appear first in this section of the book.Frank worked tirelessly to further combat in the UK from well before I met him in 1971 until his sad demise in 2009.He is much missed.

Frank with one of his early Piranha models. Like myself Frank was not the greatest of spellers and had to belatedly insert the 'h' on his plan of the model.His version of the word can also just be made out in this photograph.


I'm told Bob Murdoch of South Bristol club flew one of these in Vintage Combat in the early 1990's.I doubt he had a silencer like that though!



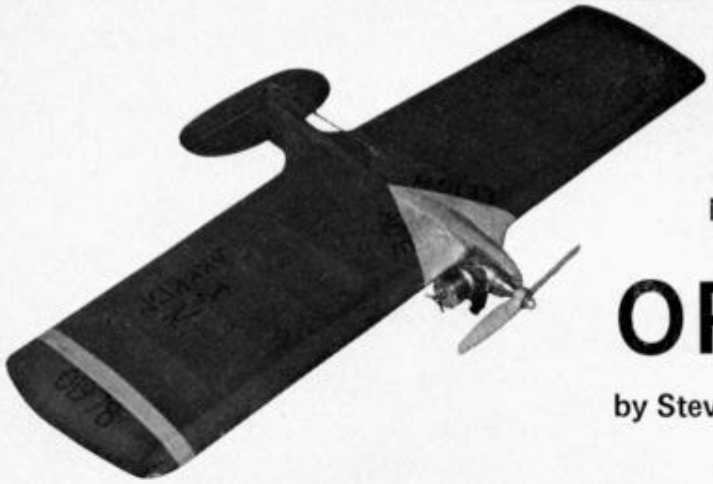

Now then, who's for combat? M. R. Chesterton, secretary of the Maidenhead club, hides behind his 70 in. span, 3 lb. 'wing' powered by a Merco 61. Root chord is 17½ in. while the wing section at this point is 2½ in. thick. No reports on its flying characteristics available, but it sure attracts the crowds!

Really wish I'd seen this fly!
Mick was a mate of Frank's before Frank left Maidenhead and formed the Glevum combat team in 1971.
Mick was contest director for the 1973 Nationals won by Derek Dowdeswell(see 1973 contest reports)

I really tried to improve the quality of this print as I wanted to see how young Vernon looked. She went 4 laps with Vernon?Some stamina that young lass!

Vernon Hunt shows Linda Stafford how to fly combat. His nerves held out for four laps before he took the handle back!

# 1971 Articles



Top notch combat design, winner of the 1971 British Nationals . . .

# ORCRIST

by Steve Jones

*ORCRIST* was not really designed – it just sort of happened in late 1969! I was greatly impressed by the handling qualities of the *Ruteress* design but was less enthusiastic about its strength; accordingly I merely grafted a tailplane onto a normal *Liquidator* type wing and produced the prototype *Orcrist*. This model is still in existence and was used to win the finals at Cranfield and the Nationals. Since this time various wing sections, ranging from $\frac{3}{8}$ in. flat to $1\frac{1}{4}$ in. 'full stunt' have been tried but the original has not been improved in any way!

But why the name *Orcrist* (pronounced as orc-rist with short 'o' and 'i')? Readers of *The Hobbit* by J. R. R. Tolkein will recognise this as the name of the Elven sword used by Thorin Oakenshield, the dwarf, in an important contest (the battle of the Five Armies) to overcome his enemies – the Warlords! Rather appropriate don't you think? Actually, although Orcrist had some magical properties, it was never claimed to fly . . . and its final fate was to be buried under the soil, so do not get too carried away with your fantasies!

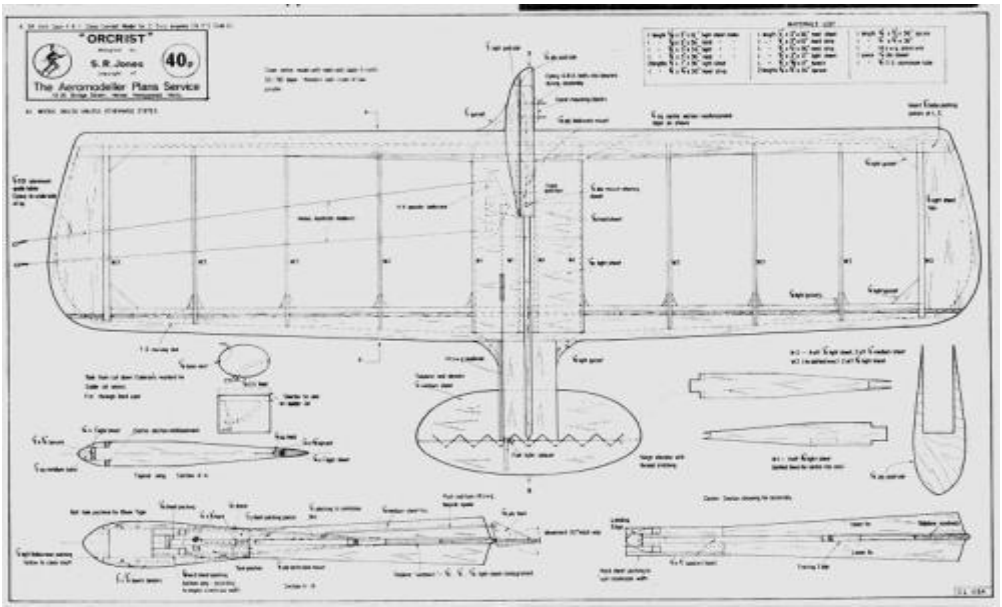
As for construction, care must be exercised in selecting wood in order to produce a light, strong model. The grades indicated on the plan will produce a model weight of 15-16 oz. which I consider to be the best compromise. If you really want the performance you can use lighter grades but don't blame me if it falls apart!

The construction is conventional combat practice and will be familiar to many. P.V.A. glue should be used for leading and trailing edge laminations, and epoxy for the engine pod; otherwise good quality balsa glue is adequate and shortens construction time.

Commence by laminating leading and trailing edges, taking care to eliminate warps by use of straightwood and clamping during drying. Cut out the ribs using two templates in the 'sandwich' method, and glue to the leading edge on a building board. Insert the trailing edge from the rear, and check carefully for warps. Add the tips and gussets, and build up the composite centre-section rib and bellcrank mount assembly. Laminate the tailplane assembly and assemble onto the wing along with the fins, taking care to line it up exactly with the centreline of the wing; any discrepancy here will have disastrous effects. The leading and trailing edges may now be shaped, (remember to leave the leading edge square for the pod!) taking care that the sections are as shown on the plan, and constant along the length of the span. Add the controls and tank, and sheet over the centre section.

Construct the engine pod using epoxy adhesive throughout – a fast setting adhesive such as *Devcon* 'five minute epoxy' speeds this process considerably. When set, shape roughly and epoxy to the wing, adding the $\frac{1}{2}$ in. gusset. Drill through the bearers and insert the bellcrank mount retaining dowel then finally shape the pod and smooth into the wing contour.

Sand the whole model smooth, and apply one coat of full strength dope to the framework. Sand smooth again, and nylon cover the engine pod and tailplane assembly. Cement the horn to the elevator and sew to



Steve with his Nationals winner. Rubber extension tube over the Oliver's intake keeps dirt out of the carburettor if a vertical 'forced landing' is made over soggy ground.


the tailplane. Rub wax onto those parts of the leading edge and tips to which the nylon must not adhere – this helps to produce a nice smooth section. Cover the framework with medium grade nylon pulled as tight as possible and apply six coats of 50/50 dope and thinners. Skimping on the dope does not save weight as fuel seepage can have an alarming effect – also a really tight covering seems to produce improved performance. Decorate to taste and apply one coat of fuel proofer.

Mount the motor and check the C of G position – ballast should be applied if necessary as this is vital. Final adjustments can only be made by flying the model – the C of G and/or elevator movement should be adjusted to permit tight manoeuvres without over-elevating. If it is possible to over-control the model you are certain to manage to do this in a combat heat!

Combat is perhaps the contest class in which the greatest emphasis is placed on piloting skill rather than model performance; however as the latter is still very important I will first make a few general comments on combat equipment.

## Models

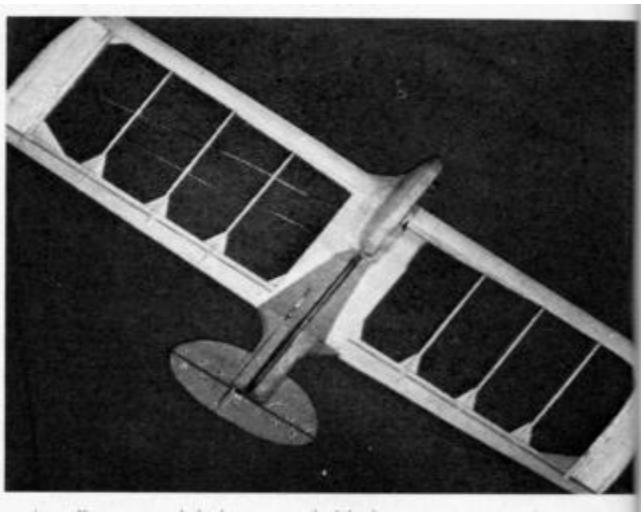
*Orcrist* fulfills the necessary conditions for a good combat model; so do many other designs, some of which are already in the A.P.S. range. The main requirement is for a strong light model – say 16 oz. with motor. The critical points seem to be to obtain a good leading edge section, really firm engine pod and mountings, and tight covering – plus of course, a properly 'trimmed' model with the right C of G and elevator movement. In short, it doesn't matter what you fly so long as it's at least as fast and manoeuverable as the opposition!

## Motors

As any observer of the combat scene will notice, the motor which has dominated the event is the Copeman Special Oliver Tiger. The reason for this is the utter reliability of the Oliver, and its ability to run evenly on suction feed through the most violent manoeuvres. Certainly other motors can provide more power, for example G.15 glow motors and M.V.V.S. diesels, have been tried by various people, but the reliability has been poor.

The cost of a new Copeman Special Oliver may seem high – but with proper care it can be made to last almost indefinitely due to the excellent reboring service available. It follows that Olivers can be picked up second-hand in quite good condition, in fact one of my best motors was acquired in this way.

If you buy a new motor the most crucial phase is the running in – if you do this badly you will have a slow motor at least until the next rebore. The correct procedure is to use a fuel containing 30 per cent castor oil and 2 per cent Redex; *never* run the motor on a large propeller as this only harms the bearings. Start off using a 8 × 4 prop, and give the motor 15 minutes ground running in 1-2 minute bursts, allowing it to cool between each. Start with a very rich mixture and work down to flat-out running; never over-compress the motor. At this stage



the motor may be flown, preferably on an 8in. × 6in. prop cut down to 7½in. diameter. Leave the mixture just a shade rich and again take care not to over-compress; fly wide manoeuvres with as much whipping as possible to keep the engine lightly loaded. After 30 minutes in this fashion you should have a pretty quick motor – keep to 30 per cent oil for a while though.

My fuel mix is 25 per cent castor oil, 2 per cent Redex, 35 per cent ether, 35 per cent paraffin and 3 per cent MPH ignition additive (or amyl nitrate etc.). Nothing is gained by reducing the oil except more rapid engine wear; for a new motor reduce the nitrate content to 2 per cent.

## Flying tactics

In order to fly combat well you must be in complete command of your model. As a minimum requirement you should be able to fly continuous manoeuvres by 'feel' without looking at the model, as in a heat you will be kept busy by watching your opponent.

For the newcomer there is no substitute for practice; in order to learn combat flying you really need to have three people who are all keen enough to go out regularly and just fly combat for fun – this need not be a very destructive process, and in any case you will learn far more than by keeping your models for a contest and then getting knocked out in the first round. As a combat trainer for this purpose, the APS *Dominator* (plan no. CL1093, price 20p) is just about ideal, since although the performance is not quite up to modern contest standards, it is very easy to build and fly, and is very strong.

Once you have learnt the basics you are ready to 'have a go' in a contest. Organisation on the ground is very important – your pit crew must know their job as they will be responsible for ensuring your engine run is good as well as starting the engine and handling emergencies. In A.C.E. we are fortunate in having several outstanding pitmen. For my Nationals success I am much indebted to Lenny Smith, Jim Woodside and 'Gypsy' Melrose who did a fine job. Our normal technique is to have a spare model ready with lines attached and motor warm. If anything happens to the first model, the spare is used and in the meantime the first model is made operational if possible. With practice it should be possible to change models in about fifteen seconds, so long as each pitman has a specific job to do and sticks to it.

As pilot, your job is to get behind your opponent's model and stay there; this is relatively straightforward if you have the better model, difficult if you don't. Once you are there you can take cuts – the biggest mistake you can make is to remove all the streamer in one cut.

To take small cuts you must judge your position accurately and cut the streamer with your propeller, since it is impossible to knock off small pieces with your wing or lines. This entails holding your handle along-side your opponent's or just slightly outside it; provided the line lengths are right you should be in position. It is no good standing behind your opponent and trying to take cuts, as you will fly inside his streamer every time.

Never attempt head-on attacks unless you are really desperate, as the chances of taking a cut are only equal with your opponents, and you are extremely likely to write off both models. Furthermore, a head-on collision is the only way known to modern science of damaging a Mk.IV Oliver! If you have a poorer model than your opponent, all you can do is to whip hard and try to anticipate his moves. The best way of 'losing' somebody from your tail is to perform manoeuvres which only just miss the ground; if he doesn't chicken out there's a fair chance of his crashing. Needless to say, you must have confidence in your own ability before trying this!

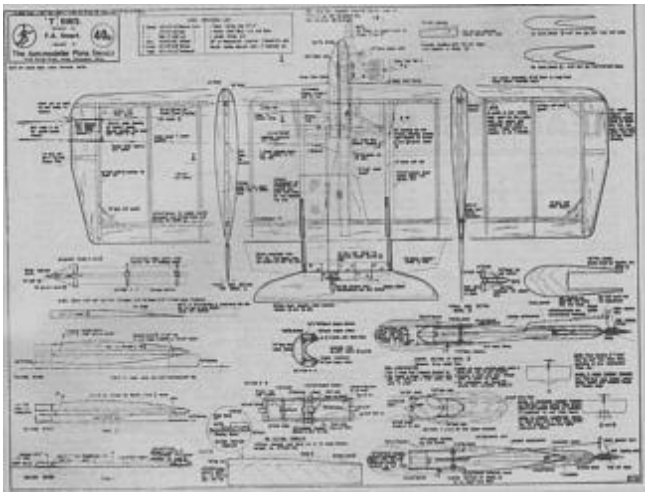
A last word on line tangles. These are almost certain to happen in a heat, but they need not be disastrous. The gentlemanly way out is to keep standing close to your opponent and fly out of the tangle – if you run apart one or both of you is bound to lose control. This fact is often used by the unscrupulous, when it is known as a 'line job' – I must confess to having done one to two in my time, but only in retaliation. If you do crash, keep hold of the handle and untangle the lines while your opponent is flying – throwing the handle away is dangerous as the lines will probably remain tangled and the handle will whip round in a frightening fashion.

I hope these hints are of use to newcomers to combat – it is not a difficult class to become proficient in, and 'new blood' is always welcome in any contest class. The best way of learning, after practice, is to watch the people who are winning – there are no 'secrets' in combat, and people are usually only too pleased to explain why their model goes better than yours.

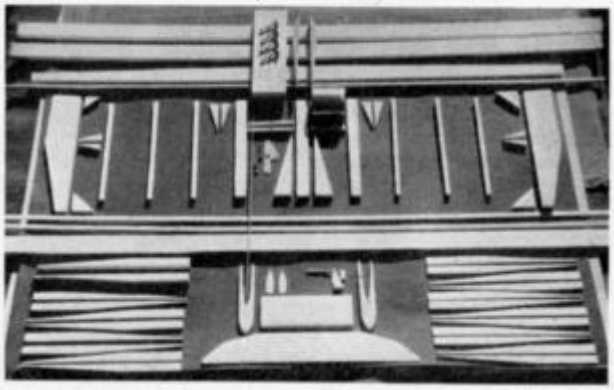
# 1972 Articles

That little-known club of control line specialists, known as Feltham M.A.C., also has a junior section keen to uphold the club's tradition on the sporting scene. Pictured here is the Junior Combat Team comprising of (l to r) Johnny Clark, David Brewin, Adam King (standing), and John Wade. To be on the safe side, they took some 29 combat models to the London Gala . . .

A combat team celebrating its first anniversary is the Gloucester Gladiators, now better known simply as Glevum. Back row (l to r) is Frank Smart, Dave Cox, Mick Lewis and Derek Dowdswell, while in front are Marcus Ginter, Peter Fooks and Tim Court – who we are assured is the 'star' flyer. Distinctive black spot is the club emblem.

To produce the models quickly, it is recommended that all parts are first cut out to form a sort of 'do-it-yourself' kit. Two models can be built almost as quickly as one . . . try it and see!




## KIT REVIEW

## PEGASUS MODELS'

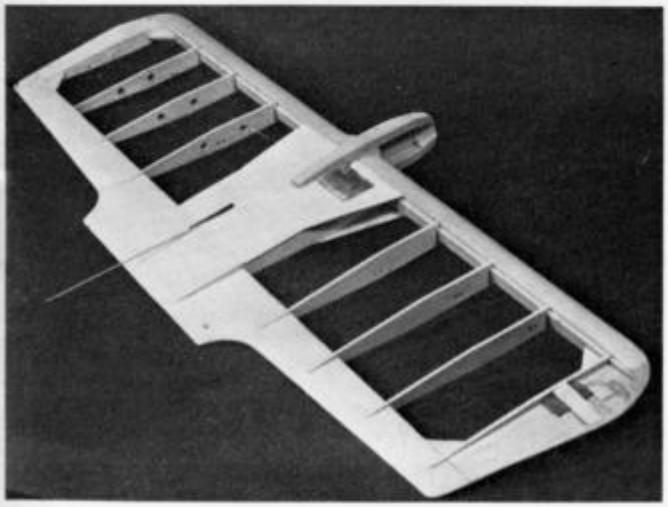
# Warlord

IT HAS OFTEN been remarked how rarely we review kits in this magazine, but the reason why is really very simple. Lack of suitable material! How nice therefore to receive a really up-to-date control line kit from a brand new company, namely **Pegasus Models** of *171 Bramcote Lane, Wollaton, Nottinghamshire.*

The design they have chosen is, of course, well known to combat fliers and readers of this magazine alike, who have read of the *Warlord's* many contest successes in the hands of Vernon Hunt and others. Indeed the box label rather *undersells* the product, stating that it won the 1970 and '71 Nationals – the whole 'pedigree' would probably cover the box lid! Removing said lid revealed a rolled plan (no creases) and superbly selected balsa for the relatively few parts involved. The leading edge (1 in. square), was from nice light stock as was the trailing edge, while the centre section sheeting was also well chosen. Indeed, all the wood virtually was as we would have selected – provided, of course, that the local shop could have obliged with the necessary grades, which is all too rare these days.

*Warlord's* construction is indeed extremely simple, the leading edge being reinforced with a strip of ¼ x ½ in. spruce, and does not utilise laminations of balsa as do some other current designs. The trailing edge is from ¼ in. sheet and not reinforced with spruce. All in all a very simple design which, with the aid of the very clear plan, may be built by an absolute novice.

Instructions were brief but adequate, and the whole model went together extremely quickly. The ribs were precut to size, but were not slotted to take the trailing edge – although this was only a few seconds work with the balsa knife. A genuine 'mustard tin' tank kit is included (consisting of the tin plus brass and copper tubing) together with clear instructions to make a 'Uniflow' principled unit. Our only difference of opinion here is that we prefer to have the lid on the outboard end, not inboard as illustrated, as this means that the feed and overflow vents may be more accurately positioned and their ends soldered in position for greater rigidity. The tank must be shortened slightly to fit the model and we find the easiest way to do this is to fit the lid in position, then pressing down on the tank with the lid against the bench, use the edge of the lid as a guide as you cut around with a hacksaw. Cut along the long sides first, then the ends, and the job is easy. Any other method (short of using a Dremel tool) can be extremely frustrating with the tank distorting whilst cutting is in progress. These tank kits will also be available separately – good news for all those who have spent fruitless hours wandering around shops trying to buy the genuine article.



**Sturdy but simple construction evident in this picture of the uncovered structure. Since the review model was built, the grain direction of the six triangular gussets referred to in the text has been corrected in future kits, so no complaints now remain!**


## See-through Wings

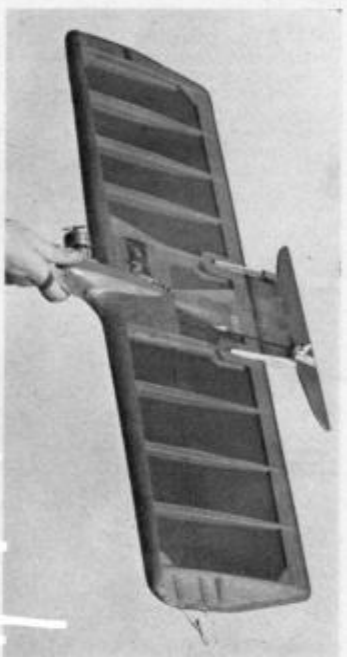
Ever tried one of those plastic film materials for covering combat models? We were first tempted when building a couple of *T. Birds* for flying at a local display, and time as ever, was running short. Also, to convince ourselves still further, the airframes weighed in at around 9 oz. – rather heavy, due to unsuitable wood being available. Allowing 5 oz. for the engine (PAW 249) and estimating 2 oz. for sanding sealer, nylon, four coats of dope and fuel-proofer (in all, several evenings' work), the total weight would have been in the region of 16 oz. Solarfilm thus seemed even more attractive . . .

Combat models are extremely rigid structures and during a prolonged combat session at the ensuing display, the Solarfilm passed the tests of many (!) repeated 'thuds' into the deck with no damage whatsoever, either to the structure or the film. A mid-air collision resulted in a slight split – quickly repaired with a patch and warm iron, and there is no evidence of any fuel seepage, and as ours was covered in transparent red, then this would have been readily noticed.

Doubtless, readers will be well aware of how Solarfilm is applied and its many virtues, but for those who have doubts as to its ease of application, we suggest giving it a try – despite a reluctancy to use this film (and hence, lack of experience in its handling) we are now at last convinced! The transparent colours seem to particularly suit these models and certainly avoid the somewhat drab appearance which is the 'norm' for combat models.

The elevator was hinged by this material as well – first strips were ironed on to the elevator with approximately ¼ in. overhang to its leading edge. Same-sized strips were then 'glued' to these overhanging pieces – adhesive side to adhesive side

**At right, 'T-Bird' covered in transparent red Solarfilm. Only 'mod' to the model was the addition of balsa sheeting around the booms to give the Solarfilm better adhesion at this point. Below is Claus Maikis' latest stunter, but a surfeit of dope resulted in an overweight model. After flying team-race practice and making heat flights it's rather hard on the arm muscles!**



# IRONMONGER F.A.I.

## Want a combat model capable of out-turning the opposition, yet strong enough to take all the rough and tumble? Try Richard Evans' hot-rod and join the winner's rostrum!

IN MY FIRST SEASON of flying combat seriously, I was unfortunate enough in one competition to find myself drawn against John Dixon, who was at the time one of the better combat fliers in the country. Four minutes, four cuts and a spate of hairy flying after the beginning of the bout, I came to the conclusion that the design of my model needed changing a great deal in order to compete with the higher aspect ratio wings that were beginning to appear. John was kind enough to send me a plan of his model, which was then known as the *Warmonger* and my present model eventually developed from this over about four seasons. It is interesting to note that Frank Dowling's *Liquidator* was also influenced by the *Warmonger*.

Many dimensional modifications to the original model have in fact been tried but I will only mention those that have turned out to be the important ones.

Firstly the root chord was increased by two inches which certainly improved the turning ability but also made the model very sensitive to small elevator movements and necessitated moving the engine forward of the leading edge to obtain a favourable centre of gravity. Obviously weight needed removing from the rear so all but four inches of centre sheeting were disposed of. The length of elevator was gradually cut down from 11 in. to 8½ in. in order that more elevator movement could be used without causing the model to shudder during manoeuvres.

Shape may seem familiar, but this model is certainly among the best of the current crop of flyers. Lightweight is the secret to real success – do not add any unnecessary weight.

Many different wing sections have been experimented with, but I eventually came to the conclusion that a $\frac{7}{8}$ in. wing and 1 in. centre section was best for all round use. I did in fact build a series of $\frac{3}{4}$ in. wings and although these were certainly fast in level flight, manoeuvring in strong winds caused them to be blown into the ground if one wasn't too careful.

The actual leading edge, which was solid on the original model, is now much lighter due to the use of hollow preformed wood backed by $\frac{1}{16}$ in. sheet and strips of spruce. It is with this that construction should start. At this point it is worth mentioning that all balsa used should be the lightest available unless otherwise stated.

Cut the L.E. to length on the plan and back this with $\frac{1}{16}$ in. sheet, setting the grain diagonally. When the glue has set, follow up with $\frac{3}{16}$ in. sq. spruce top and bottom. This unit should be allowed to dry at least overnight.

Turning to the trailing edge, glue a strip of $\frac{1}{4}$ in. x $\frac{1}{8}$ in. spruce to the edge of a sheet of $\frac{1}{4}$ in. x 4 in. balsa and hold in place with adhesive tape. While drying, the shape can be drawn out, also at the same time marking the rib positions and taper line. After cutting out this can be put aside with the L.E.

Dope both sides of a sheet of $\frac{1}{8}$ in. balsa, allow to dry, and then cover with lightweight tissue using another coat of dope as the adhesive. From this cut all the ribs apart from the centre rib and outboard tip rib. A piece of $\frac{1}{4}$ in. O.D. brass tube used as a punch is very useful for cutting the leadout holes in these and also makes for a stronger job. Cut the centre rib and outboard rib from hard $\frac{1}{2}$ in. and $\frac{1}{4}$ in. balsa respectively.

Taking the leading edge again, apply glue to the rib positions and fit the ribs in place. These should be a push fit, but if not use pins. Slot the T.E. in place but do not glue. Now, viewing from the rear one can remove any warp by twisting. With the T.E. unglued leave to set and do not touch again until completely dry. Only then should the T.E. be glued in place.

At this stage add all gussets and both tips remembering that the outboard tip is a sandwich of $\frac{1}{32}$ in. hard balsa and $\frac{1}{16}$ in. ply. This is very strong and adds the small amount of tip weight necessary. Fit the $\frac{1}{16}$ in. ply bellcrank mounts into their slots and then the bellcrank itself with leadouts from heavyweight Laystrate, bound and soldered to 20 swg wire. The use of cup washers for attachments of leadouts and pushrods is advised due to its ease and general neatness.

The tank is made from the traditional Colemans Mustard tin. It should be cut down so that with the lid on it is a push fit between the centre and first outboard

rib. It is advisable to solder the interior end of the feed pipe into position in order to avoid any possible misalignment from the centre line. The tank should be securely glued in position and a piece of $\frac{1}{8}$ in. sheet set vertically behind it.

The centre section can now be sheeted noting that it is not recessed but laid directly on top so producing the deeper centre section. When fitting the curved gussets glue them in position as full triangles and only cut the curves when completely dry.

Now turn to the pod. Accurate construction and good joints here are important to the strength of the model, and a weak pod will often cause engine vibration. Cut the ply strengthening piece as a full rectangle and epoxy the unshaped bearers in place. Mark the engine position so that it fits right up to the leading edge and then drill the engine holes $\frac{7}{32}$ in. Screw four 6 B.A. bolts and washers into the holes from the back and when nearly up tight cover the remaining threads and heads with epoxy. The front block, the doubler and L.E. spacer can now be fitted along with the pieces of $\frac{1}{16}$ in. balsa stuck to the inside of the bearers to pack out the wing pod joint. The whole pod can now be sawn, planed, and sanded to rough shape. Care should be taken with the fitting of the pod to the L.E. itself and is probably best finished with a round file. Epoxy the whole unit in place using the adhesive generously around the $\frac{3}{8}$ in. gusset at the front, and forming fillets around the bearers. Lastly drill and fit a $\frac{1}{8}$ in. dowel to pass through the rear of the bearers and to pass through the bellcrank mount. This completes the actual construction.

Sand the whole model smooth and apply a coat of dope. Sand again when dry and cover the whole pod and adjacent wing with 4 in. wide gauze bandage. This should be given enough dope to fill the pores.

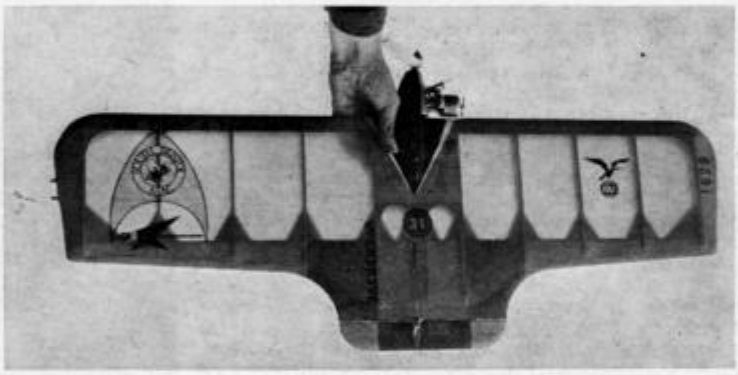
Cover the model with one piece of medium weight nylon applied wet. This, may sound messy but pulls up very tight when dried out and stops a lot of the unattractive sagging between ribs. Five coats of slightly thinned dope should be given all over and one extra one to the engine bay. Fuel tubing over the engine bolts stops clogging the threads with dope.

The elevator, cut from $\frac{1}{8}$ in. hard sheet and covered with tissue can now be fixed in position using close-weave nylon hinges. Glue the ply strengtheners in place and fit the Micro Mold elevator horn onto these. Bend the pushrod to give equal up and down on the second hole down from the top. This has proved to be a very satisfactory elevator set up. Fuel proof thoroughly and the model should be ready to fly. All up weight should be 16 oz. or less.

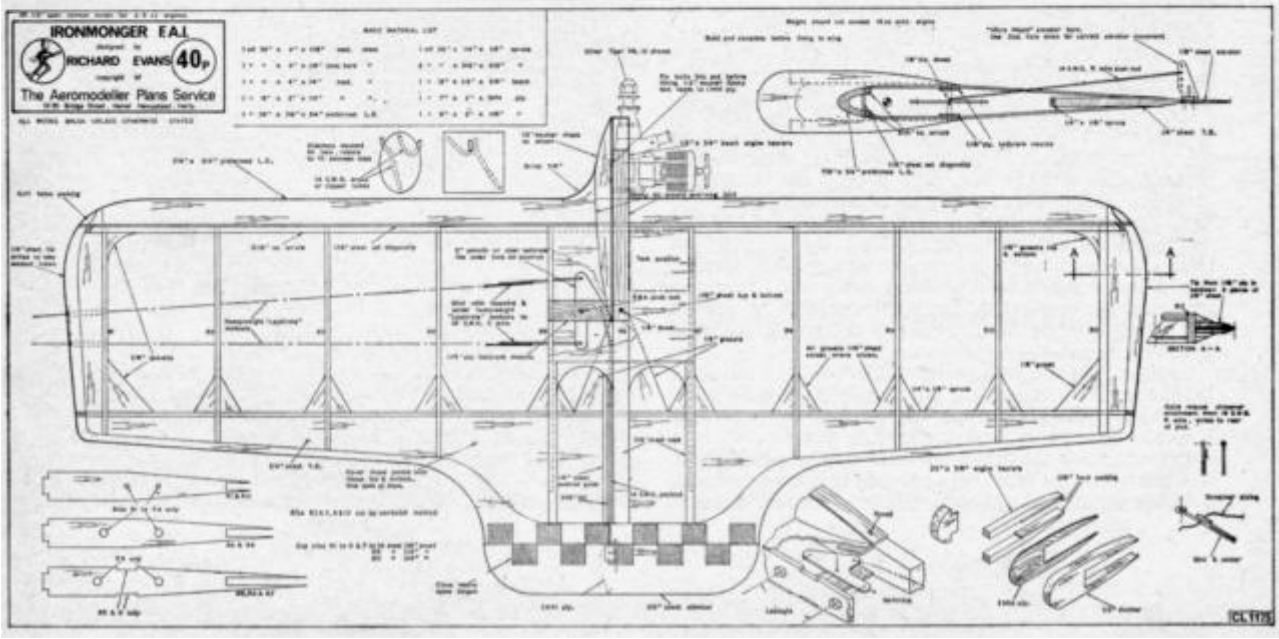
Check the C of G and if within $\frac{1}{4}$ in. either way test fly the model. It is quite possible that it will turn tighter in one direction than the other. This can be adjusted by shortening or lengthening the pushrod to give more or less up or down, as required. By doing this the flying

*Continued on page 692*

**Hold it up to the light, not a stain and shining . . . . . ! Transparent nylon finish reveals the well-braced structure of this design. Richard won the Dutch International event with this design, in addition to his many 'home' successes.**



**FULL-SIZE COPIES OF THIS 1/6th SCALE REPRODUCTION ARE AVAILABLE AS PLAN No. CL 1175, PRICE 40p PLUS 5p POSTAGE, FROM AEROMODELLER PLANS SERVICE, 13-35 BRIDGE STREET, HEMEL HEMPSTEAD, HERTS.**



# IRONMONGER FAI

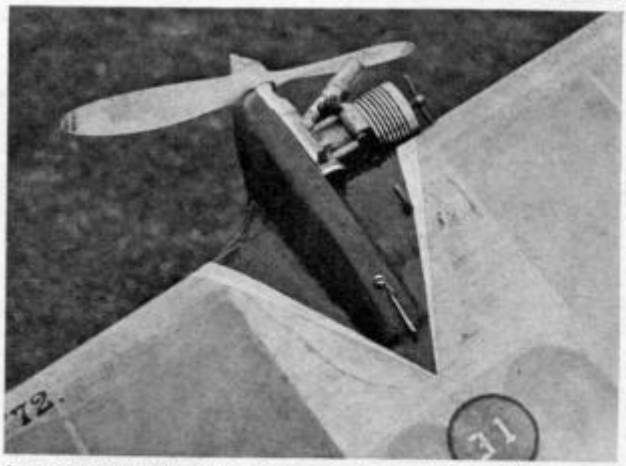
*Continued from page 685*

characteristics of the model can be improved quite noticeably.

A word about motors. As anyone who has frequented the combat circles should know, the Copeman tuned Oliver Tiger has dominated this event for many years and looks like doing so in the future. It is not the most powerful of 2·5 c.c. motors but for all round performance and reliability it cannot be beaten. A good example should fly a combat model at something over 75 m.p.h. Models can be made to go much faster with the use of glow motors but unless they are fully sorted out can produce endless problems. The only person in this country who uses a glow powered combat model with success is Mick Davies but he has a very experienced pit crew who know the quirks of the motors very well.

My model was developed around the Oliver Tiger and I suggest that for competitions this motor should be used. Once one owns two of these motors it is possible to have several seasons flying with little extra outlay in this direction.

Combat flying is a most rewarding branch of the hobby



but one cannot expect success immediately. If you are willing to build half a dozen models a year, enter at least as many competitions, practising every weekend as well, you could be winning within a couple of years. I hope you give it a try.

# [1973 Articles]


Junior member of the Glevum club, Tim Court, launches Frank's 'Pirana 4' design. Frank produces a great number, and variety, of models each featuring many practical points, with great emphasis given to detail and rapid construction.

## Practical hints and tips to build better combat models, and build them quicker too

By Frank Smart

### Make good use of 'Five Minute' epoxy

Rapid setting epoxy resins, of which there are many currently available on the British market, have been one of the greatest advances since the balsa knife for the aeromodeller of today! Apart from their great time-saving properties when constructing models, these fast-curing adhesives can be used for several other tasks apart from the more conventional ones. For instance, mounting the elevator horn on to its ply plates can be rather a 'fiddly' and untidy job, but this can be greatly simplified. First, roughen up the underside of the nylon R/C-type horn with coarse glass paper then, with a fine smear of epoxy, put it in position and allow to set. Now drill undersized holes through the horn and ply, then screw 8 BA bolts in place from the top, with the nylon back plate held in position. Snip off the surplus length of the bolts, filing down to leave just a couple of threads proud of the backing plate. Apply epoxy over the lot – smoothing down with a moistened finger. This results in a very smooth attachment, which does away with nuts and washers and

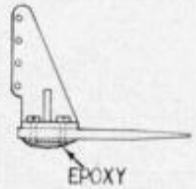



Figure 1 – Elevator horn

leaves no protruding, untidy ends to poke holes in other models – particularly useful if you tend to carry polythene bags full of combat wings. See *figure 1*.

Flexible leadouts too can benefit from the 'epoxy treatment', as illustrated in *figure 2*. In this instance, leadouts should be doubled back into the model after threading on the respective colour coding. Allow sufficient Laystrate to enable full movement of the bellcrank to be obtained, then bind the fine plastic sleeving tightly with fuse wire. Now apply epoxy to the loop, leaving just a small, round hole for the fishing swivel. As soon as the epoxy is set, bring the two lengths of Laystrate together within the wing structure and solder – making sure that the soldered section will not foul the leadout tubes in the tip. A neat, snag-free arrangement.

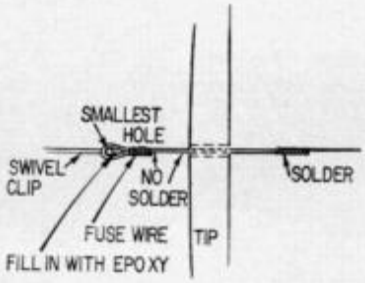



Figure 2 – Flexible leadouts

Many 'new' combat models rapidly attain the appearance of old wrecks due to fuel soakage, despite numerous coats of dope and fuel proofer. Such fuel soakage, of course, weakens the models and increases the weight. The cure? Simple – the problem probably occurs because fuel is creeping under the covering from the areas where the tank vent/feed pipes emerge. Safeguard against this happening by applying epoxy fillets as shown in *figure 3*.

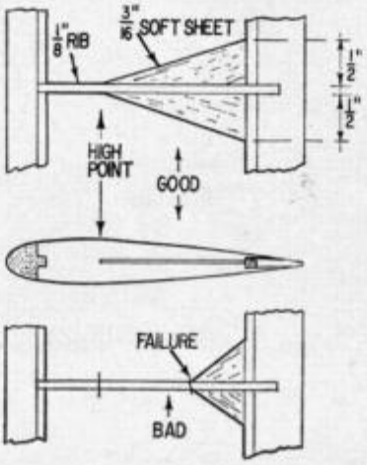

Figure 3 – Fuelproof tank vents

### Wing rib gussets

If you are a 'gusset enthusiast', you may have found that your ribs tend to break or crack where the gusset ends. This is usually caused either by *a*) the nylon tightening up and pulling the trailing edge to meet the leading edge, causing the ribs to 'climb' over the trailing edge or, *b*) when the model hits the ground on its first, hard impact. The main mistakes that people make is either in making these gussets too small, using the wrong grain direction, or using too thin balsa wood, such as 1/8 in.

In our club (Glevum) we have found that if the gusset is extended forward to the high point (maximum depth) of the rib, then such failures are greatly reduced – see *figure 4*. It is best to use 3/16 in. or ¼-in. balsa for gussets. Too heavy you say? Not if you use really light wood.

Figue 4 – Gussets




fashionable, swept wing design with really hot performance

Derek Dowdeswell's

# '73 NATIONALS WINNER

the model with a 'bite'!

THE 'NORMAL' procedure on occasions like this seems to be to write all about the model and the development thereof, whilst airing views on the general state of combat flying. Well, you'll all be glad to hear that I have absolutely no intention of trying to be different, so read on!

My first combat bout took place some two years ago, when I flew a very 'wide' *Twister*, which at the time was being pulled by a very tired arm and an even more tired Oliver Tiger. Also taking part in this extravaganza was a certain Richard Evans flying a very fast, very light model which shall remain nameless (*Ironmonger*, if you must know!) Needless to say, my opponent won, but after that bout it became apparent that I needed to change my model design. So all through the 1971 season I designed and built several models and eventually came across one that flew reasonably well. I stayed with this design for the greater part of the 1972 season, changing one or two features and trying new ideas. It was with one of these models that I came second in the Dutch International that year.

Then something else happened towards the end of that season that made me think very seriously about my design. While flying against a clubmate, Mick Tiernan, I flew a loop. Nothing wrong with that you may say, except that within that loop Mick managed to do an 'eight' and get two cuts into the bargain! After that bout I had a long look at Mick's models and came to the conclusion that once again mine were ready for the scrap heap.

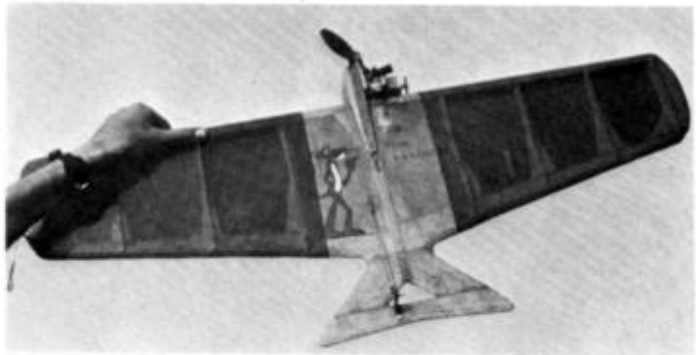
After building four models vaguely like Mick's, I finally came up with the model drawn here and it was with this that I won the '73 Nationals and placed fourth at this year's Dutch International.

Before any model airplane is built something has to be found with which to build it. During the history of Aeromodelling many different materials have been tried, but none have enjoyed the same success as wood, and in particular balsa wood, but when choosing your balsa wood there are several points to bear in mind. Firstly, it *must* be straight; it is no good having a really well-built model if it's the shape of a donkey's hind leg. Secondly, the wood must also be light, this especially applies to the leading and trailing edges, although all the wood in the outboard wing can be a little heavier than the remainder.

If this model is built in the correct sequence it is possible to build one in a week. Everyone has their own favourite building pattern, but for anyone who hasn't built many combat models before, then this is the suggested sequence. If a great number of models are going to be built then it is worthwhile to 'mass produce' certain items before starting on an individual model.

The first operation is to cut out and epoxy together the trailing edge, ensuring that it is flat. While this is drying, the tailplane is cut out and also epoxied. When both the T.E. and the tailplane are ready to work with they are epoxied together, taking great care to get them level. All the spruce spars are glued to the L.E. and the T.E. using P.V.A. The ribs are cut out and glued to the T.E. then the L.E. is glued to the ribs and the whole assembly clamped together,

Build it light (under 16 oz.) and straight, then bolt in a good 2.5 c.c. engine and you have a quick really competitive model. Note Derek's use of nylon-covered centre section, Solarfilmed tips. Probably best compromise of strength and minimum weight.

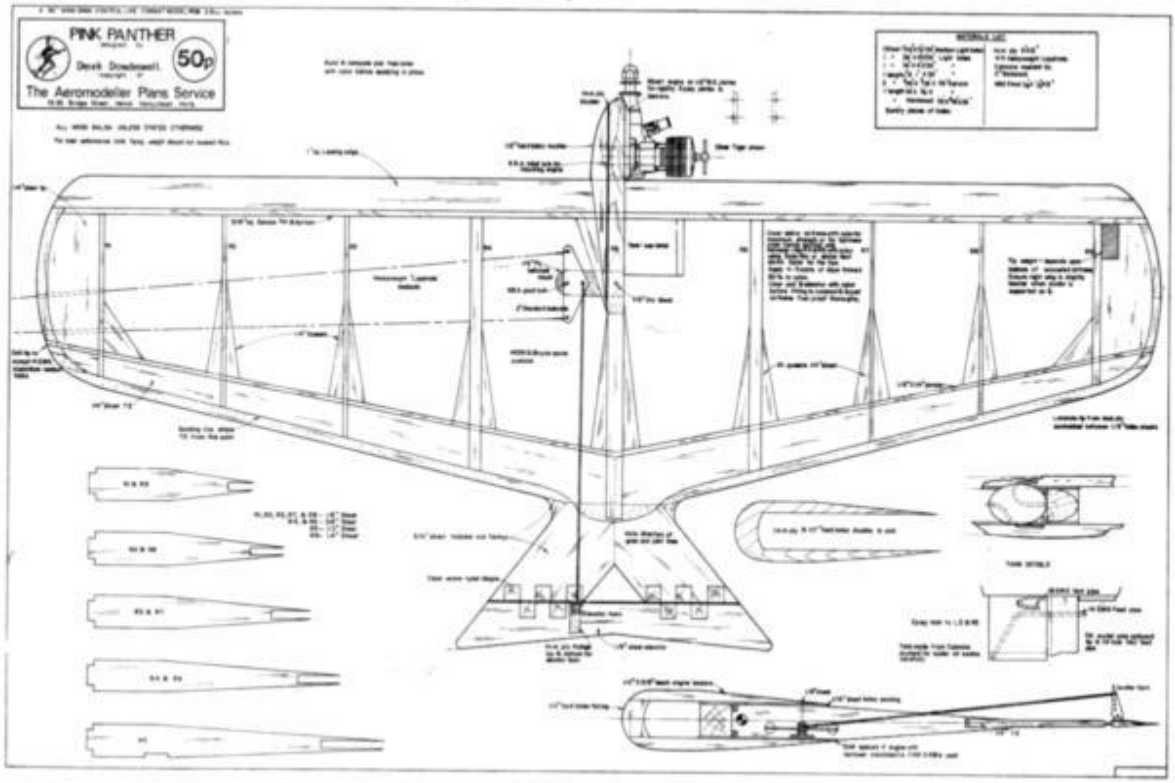


**FULL-SIZE COPIES OF THE 1/6th SCALE REPRODUCTION SHOWN BELOW ARE AVAILABLE AS PLAN NO. CL 1206, PRICE 50p (INCLUSIVE OF POSTAGE AND VAT) FROM AEROMODELLER PLANS SERVICES, P.O. BOX 35, BRIDGE STREET, HEMEL HEMPSTEAD, HERTS HP1 1EE.**

using elastic bands around the L.E. and T.E. While this basic frame is drying, the outboard tip plate is laminated up, using 3/32 in. balsa and 1/32 in. ply. This, together with the inboard tip plate, is then glued in place. The bellcrank assembly is made up and epoxied in position making sure that it is a good fit in the centre rib. Make up the leadout loops and construct the tank which is then epoxied in place. All the gussets may now be fitted together with the T.E./tailplane fairings. While all the glued joints are drying (I normally leave the frame overnight) the pod is made up – ensuring that the thrust line of the engine is parallel to the centre line of pod – which is then shaped and put to one side, as is the elevator.

The complete frame is then sanded to shape, making sure that an even wing section is obtained. If the whole model is to be covered in nylon then all the frame is given two coats of dope, but if the outboard part of the wings are to be covered in Solarfilm to save weight, then it is only necessary to dope the centre part of the frame together with the pod and elevator. The pushrod is installed and the model covered in nylon. The amount of dope applied is a matter of personal choice, but I normally put on about 4-5 coats of 50-50 dope/thinners. After the elevator is covered in nylon, it is fitted on to the model, using nylon hinges.

The pod is also covered in nylon prior to being epoxied in place. The elevator horn is fitted, using the 1mm. ply plates. If Solarfilm is to be used it is applied just prior to fuel proofing the nylon, which is done using a polyurethane varnish. The model is now ready to fly. As far as the centre of gravity position is concerned, the correct position varies from model to model, but once found for the first one built, try to build it to that position every time – alter using small pieces of lead. There isn't really any secret to combat flying, but a lot of practice and good organisation of a team are two things to remember at all times.



# Contest Calendar

| | |
|---|---|
| June 17th | **SOUTH MIDLAND AREA THERMAL SOARING,** 10 a.m. start at Howell's Farm, Halls Green, off B1037 Walkern Nr. Stevenage, map ref. OS 147 285282. |
| June 17th | **S.M.A.E. INDOOR MEETING** – CANCELED. |
| June 17th | **FELTHAM C/L RALLY.** Combat, F.A.I. and Goodyear T/R at Charville Lane, Hayes. |
| June 17th | **MIDLAND AREA F/F MEET.** CANCELLED. |
| June 17th | **AEROMODELLER SCALE RALLY** at Old Warden, Biggleswade, Beds. |
| June 24th | **LEEDS GALA.** A/2, Open P/R, HLG, Mini Comp., Vintage Duration, Vintage, Precision, C/L Combat. F/F events start 10 a.m.; C/L 11 a.m. Venue R.A.F. Topcliffe, S.M.A.E. members only. |
| June 24th | **ST. ALBANS M.A.C. SUMMER GALA.** F.A.I. R/G/P in rounds from 10.30 a.m. Cd'H, A/1, HLG. Venue Chobham Common. |
| June 24th | **FINCHLEY & DISTRICT M.A.C.'s C/L GALA.** Stunt and Combat at Glebelands, Summers Lane, Finchley, N12. Pre-entry (25p) to J. F. Goodwin, 77 Gallants Farm Road, East Barnet, Herts. Field entry 30p. |
| July 1st | **COLCHESTER M.A.C.'s 25th YEAR ANNIVERSARY GALA.** F.A.I. Thermal Soaring, R/C Class II Scale, F/F Scramble, C/L Scale, C/L Combat. Venue: The Middle Wick, Mersea Road, Colchester, Essex. Details and pre-entry (essential) 30p to D. Sargant, 17 Old Heath Road. Colchester, Essex. |
| July 1st | **S.M.A.E. INDOOR MEETING** at Cardington, Bedfordshire. |
| July 8th | **SECOND WESTERN AREA C/L RALLY.** F.A.I., Goodyear T/R, Combat at R.A.F. Fairford. S.M.A.E. members only; show cards at guardhouse. |
| July 8th | **S.M.A.E. 4th AREA CENTRALISED MEET.** Team glider, F.A.I. power, Cd'H. Area venues. |
| July 15th | **S.M.A.E. INDOOR MEET (TEAM TRIALS)** at Cardington, Bedfordshire. |
| July 15th | **SHUTTLEWORTH MODEL SECTION OPEN DAY.** All F/F and C/L scale and vintage flyers welcome. Gates open 9 a.m. at Shuttleworth Collection, Old Warden, Biggleswade, Beds. |
| July 15th | **S.M.A.E. CENTRALISED C/L MEET.** F.A.I., ½A and Goodyear T/R, Speed at N. Luffenham, Rutland. |
| July 22nd | **STOCKPORT COMBAT RALLY.** 40p pre-entry from D. Wood, 16 Norview Drive, East Didsbury, Manchester M20 0QF. Send S.A.E. 60p on day. £10 first prize plus Mainstream Trophy. 10.30 a.m. start. Venue Worth Meadow (off N.2 road on A560 Sheffield Road. ½ mile from Stockport's centre). |


Another top-notch combat model from the stable of that prolific builder –

**FRANK SMART**

MOST PEOPLE, after flying a swept wing model have their reservations as to making a change from the basic 'wing' design which has reigned so long in this country, due mainly through lack of development. Such development requires a group of people working together, such as in the Northwood days when the APS *Razor Blade* came to the fore. It takes a long time for an individual to develop a model up to competition standards from scratch.

So at this stage we must thank Mick Tiernan and his brother Dave for starting it all off. Having all been chased round the sky in 1972 by Mick we got the message, then with the combined effort and enthusiasm of the Glevum (Gloucester) team (Mick Lewis, Derek Dowdeswell, Dave Cox, Tim Court and yours truly), the 1973 swept wing designs were developed very quickly over the winter, everyone trying out their own different ideas.

First impressions of a swept wing model is that it feels light on the lines and the 'know where it is' feel has gone. But the most important feature to look for is that its turning ability is different. I say this because in some cases the *Ironmonger/Warlord* can be equally as tight in the first 'loop' or 'bunt', but the recovery of speed is slower than this design which will do consecutive 'loops' or 'bunts' without the motor being overworked and losing height. (Keep the motor happy!) A consistent engine, especially a Copeman Mk. IV Oliver, will solve most of your problems.

The other features that attribute to its manoeuvrability is in its shape. Area has been transferred to the centre of the model where it is more effective and this together with a narrow tip chord allows use of full control without loss of speed. This wing shape is more flexible than the normal wing, where cracks frequently occur in the trailing edge curve close to the elevator.

After sorting out tank problems, with internal flaking of copper vent pipes, at the '73 Nats (remedies please!) I achieved 6th place at the Dutch International, 3rd place at the Luton club's Burns/Brown rally and at the Western Area, with my hard working pit crew and this lively model.

A final word: this model is designed for lightweight nylon for the best strength/weight ratio and should be built at 15 oz. or under, $\frac{3}{8}$ in. thick leading edge for calm weather, 1 in. section for windy conditions. Test fly on a calm day as elevator settings are critical on this design to obtain equal diameter 'loops' and 'bunts'.

Just to be different, the construction starts with the trailing edge! Firstly, cut out the T.E. from $\frac{1}{4}$ in. sheet, butt join the halves together and add the triangular infill piece, using fast-setting epoxy. Now cut through the triangular infill piece to accept the spruce T.E. spar, which must be in one piece, running from tip to tip. Using P.V.A. adhesive, glue this spruce spar to the balsa, holding in place with elastic bands, using scrap pieces of spar material to protect the edge of the balsa T.E. When dry, add the forward piece of the triangular infill once more, then sand the completed unit flat before pinning down over the plan.

Add the tips, fuselage flat centre, rib centre pieces and all gussets, butting everything up against a piece of scrap, straight, hardwood at the leading edge position, which is discarded later. Fit the half ribs to the top surface (except left-hand rib at centre) as well as the tailplane which is made as a separate unit, then butt jointed to the wing. After glue has set, remove the complete unit from the plan, and add the $\frac{1}{4}$ in. wide beech veneer top and bottom of the centre section – taken back over the tail. Using 1 in. wide $\frac{1}{4}$ in. ply strips for cramping blocks, cramp down to press veneer on to balsa centre and tail. Leave overnight.

Turn model over and butt up against the 1 in. hardwood strip once more – packing the T.E. to suit. Add the remaining half ribs. Make up the leading edge from the Veron pre-moulded section with $\frac{1}{4}$ x $\frac{1}{4}$ in. spruce spar fitted flush inside – or alternatively produce a 'do-it-yourself' moulded leading edge, as described on page 186 in this issue.

At this stage, offer the L.E. up to the wing (dry), check for 'high points' on the rib ends – sanding off as necessary. When satisfied, glue L.E. to wing, holding in place with wide elastic bands. Next, drill the in-board tip and insert large bore lead out guides of single strand electric cable – pull out copper centres with pliers when epoxy has set. Make up bellcrank assembly and mount as shown. Fit infill blocks to

The 'pot-polisher' herself, Mrs. Pat Smart displays a 'Hornet 2' (with 'balanced' elevator) and a 'Hornet 3' which Frank built for the Dutch International. Note also his use of colour tissue trim – very effective but with no weight penalty.

fuselage to take bearers and pod, all flush with the leading edge. Make up infill blocks to pod by drawing round the L.E. profile, cut out and offer up to L.E. Epoxy in place, sand level, then add ¼ x ½ in. hard balsa packing strips top and bottom of fuselage (alter thickness if necessary to suit crankcase width of your motor).

Assemble the engine pod and cover with nylon for strength and leave on one side – do not fit yet. Make up the tank from a Coleman's Mustard tin (available from *Pegasus Models* if you have no genuine ones containing mustard left!) which is shortened by ½ in.

The model is now given two coats of thin dope over all wooden parts before it is covered – using close-weave, lightweight nylon. Cover in two pieces – under-side first, starting by sticking at tail and down centre of model. When dry, pull out to tips, dope leading edge, then work along trailing edge. Repeat for top surface, marking push-rod hole and tank vents, making small holes to slide over. As there is no centre section sheeting to secure the nylon to, lightly rub in epoxy through the nylon to the fuselage ribs. This prevents the pushrod hole from 'moving' and allows you to start pulling the nylon spanwise fairly soon.

Cover the elevator in nylon, epoxy the ply plates for the horn in place, and hinge to model. Now fit the engine pod with plenty of epoxy and dowel as shown. Also, smear epoxy glue on the nylon around the tank area to prevent fuel seepage (especially around vents). Now apply three coats of 50 per cent dope-thinners, add tissue decoration if required, and give a further couple of coats. Between each coat, allow to dry out thoroughly and lightly sand down. Finally, add transfers, and fuel proof with two thin coats of clear polyurethane varnish.

The final balance point should be as shown – further back and you will have a very tricky model to handle, further forward and it will lose its manoeuvrability. Keep the C.G. as shown, and with a flying weight of 15 oz. or less, it will really GO!

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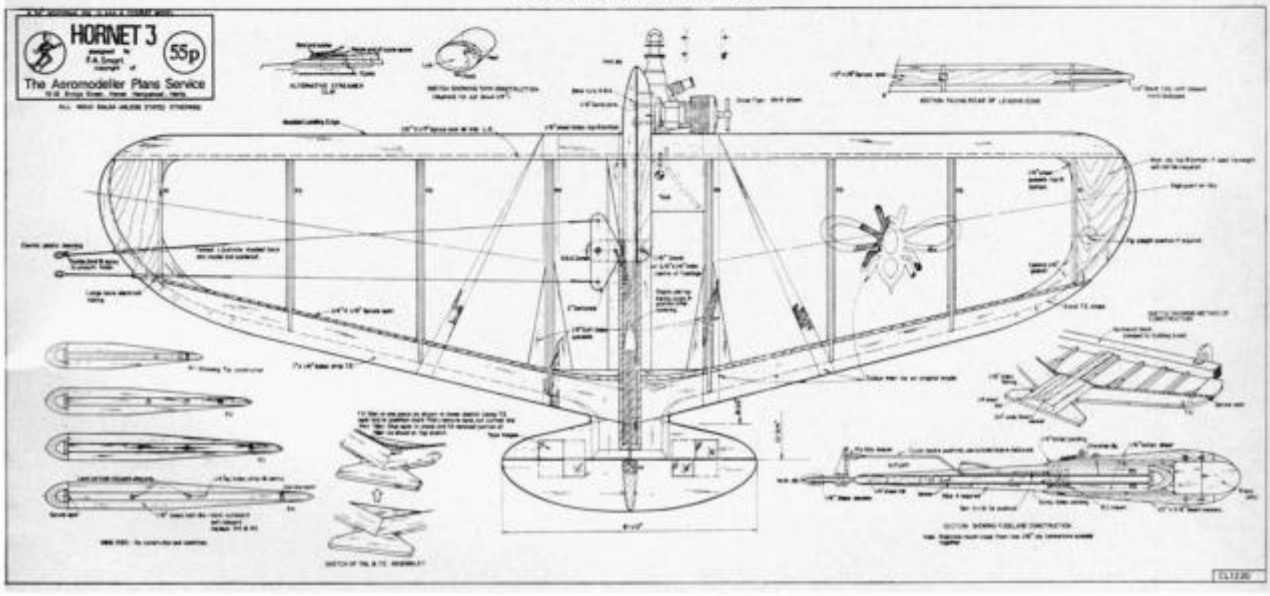


FRANK SMART describes his 'do-it-yourself' approach to

# MOULDED LEADING EDGES

AFTER THE 1973 Nationals the Glevum (Gloucester) combat team began to put their thoughts together on some special models suitable for the coming Dutch International, where previous experience had taught us that smaller and lighter models would be required for their calmer conditions.

Mick Lewis was the only person in the team fortunate enough to acquire some very light RipMax pre-moulded leading edges, so with time running out, I decided to make some.

First thoughts were directed at the A.P.S. *Ruteress* design which has a balsa front spar and 1/16 in. balsa sheet covering, but I wanted something which would be made as an independent unit so that I could build up several at a time and 'mass produce' wings. Eventually, the following procedure was adopted and six 1 in. leading edges were made, using a 3/16 in. square spruce spar up front instead of balsa, and with 1/16 in. light balsa sheeting to all three faces, finally double wrapped in lightweight tissue. These models were to be kept for the closing rounds should we be fortunate enough to get that far!

All up weight of the *Superfly* design was around 5½ oz., the leading edges being ¼ oz. finished. With a Copeman tuned Oliver Tiger up front and a total weight of 12 oz., the model really went with a considerably increased turning ability – hardly bricks on strings!!! However, the leading edges were still not strong enough to withstand more than two rounds of high speed manoeuvres and the stronger ones illustrated here have now been produced with just a slight increase in weight, providing a reasonable selection of wood.

## Making the Jig

First we require a good flat baseboard of 1 in. or ¾ in. marine plywood, some 3 ft. long with a width to suit the number of 'recesses' required; I found four sufficient.

Now make two hardwood spacing strips to be used later as leading edge removing tools, easing the L.E. from the jig when set. These spacing strips should be the same width as the finished leading edge's final depth, ¼ in. wide and 40 in. long so as to project from each end of the jig.

When machine planing the spacing strip (1¼ in. wide to suit Oliver Tiger bearer spacing), machine to size 1¼ in. x ¼ in. battens in hardwood, with sufficient run through to have, say, four spare ones so that the early stages of L.E. construction may be assembled on them before reaching the jig. (These building battens should be clearly marked for the position of all ribs, 'inboard' and 'outboard' halves, etc.)

Using the spacer, fix the battens to the ply baseboard with screws at 4 in. centres, but do **not** glue as you may wish to change the spacing at a later stage. If thick ply is unobtainable, prevent warping of the baseboard by battening on both sides at the same spacings, and keep the jig in a constant temperature, away from damp. Figure 6 clearly shows the jig construction.

## Building Sequence

a) Carefully prepare a 1 mm. plywood former template, then using this, cut out the required number of formers from balsa strips slightly wider than the template, keeping the surplus shapes for internal gussets if required (see illustration). Mark all formers on one face as you cut them out, then line up using a short length of 3/16 in. sq. spruce in the leading edge cut-out, pin together sandwich method and mark (in the order that they will fit the model). Lightly sand the straight surface followed by the curved surfaces to remove any unevenness.

b) Cut ¼ in. thick balsa back spar to length (width to suit your section) and pin ready marked hardwood batten.

c) Using fast setting epoxy, glue all formers in positions indicated on sides of hardwood batten (Stage 2) then slot the ¼ in. balsa back spar at the extreme ends to take the thickness of the tip pieces to be added to the model later.

d) Select a straight 3/16 in. square spruce spar and epoxy into 'V' cuts in formers, allowing sufficient overhang at each end to accept the tips. Hold spar in position with small elastic bands at each former, then remove pins. (Small gussets can now be added using P.V.A. glue, if additional strength is required – Stage 3.)

e) When all is set, remove from hardwood batten, cut strips of balsa sheet of required thickness to a width just sufficient to overlap the back spar when pushed into the jig. The sheet is then glued with 10 min. epoxy in two stages (Stages 4-5) and when set the surplus balsa is planed and sanded back to the spruce spar (Stage 5) so that the unit will seat squarely in the jig. A note here; do not use P.V.A. glue on the spar as the sheeting will spring apart when damped later.

f) At this stage, have a 'dummy run' at the jig to make sure all is well, as balsa thicknesses do vary. Do not glue, but dampen sheeting internally with water applied via a soft brush – this will help the forming.

g) When satisfied (make sure rib positions are marked on back spar before fitting to jig) commence applying P.V.A. glue to all formers, working from the spruce spar backwards and using a hard balsa wedge to get the glue into the front. Leave the two long edges of the back spar till last. Using a long strip of hardwood engine bearers or similar, press the unit into the jig: this gives even pressure and prevents damage if thinner balsa is used. Remove surplus P.V.A. glue with square edged balsa scrap or damp rag.

h) Leave overnight, then remove from jig with the hardwood strip, trim ends off sheet leaving spruce spar and balsa back spar projecting from ends to accept the tips. If extra strength is required, add tissue doped on, using sanding sealer first (Stage 7). However, if Solarfilm covering is to be used, do not tissue cover as bubbling is caused when ironing the film on and can look unsightly. If spruce back spars are not to be used on the model, it is advised that twin ¼ in. x 1/16 in. spruce spars in short lengths be added over the centre five ribs.

j) One final note. Accuracy in all marking up, so that rib/formers line up properly, etc., will pay dividends in increased strength, and the selection of wood should be as careful as that for the rest of the model, with the heaviest on the outboard.

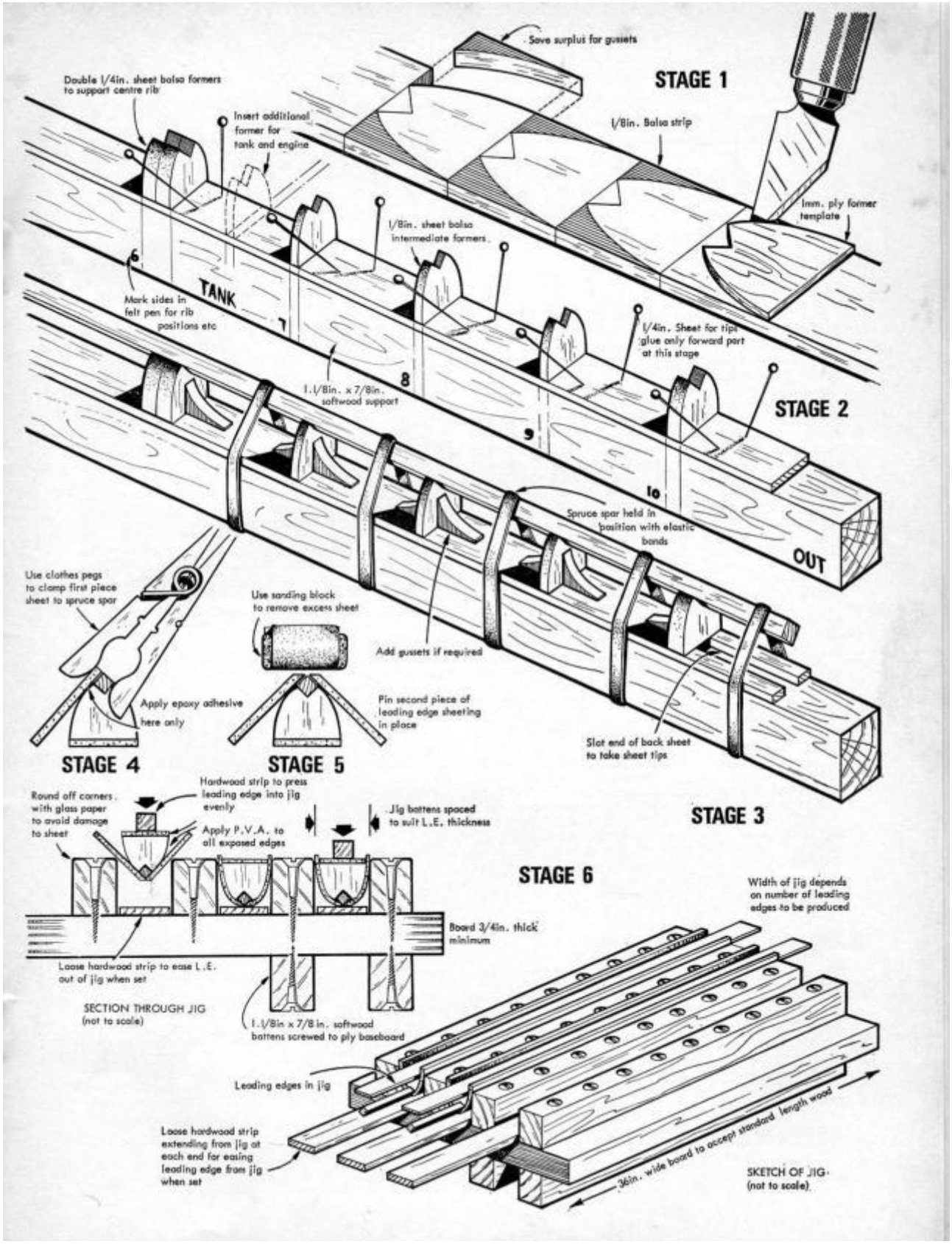
**Leading edges in the process of being formed. In the background may be seen the formers glued to the backing sheet, resting on the softwood support, and with clothes pegs clamping half of the sheeting to the spruce spar. The formers used should correspond with wing rib positions plus one between each rib to prevent the balsa sheeting from 'sagging'.**

## Advantages and Disadvantages

Basically, there are more good points than bad! Leading edges can be made to suit your particular model, rather than you having to design a model to suit stock leading edge sizes. Also, sheet balsa is far cheaper than 1 in. square or moulded sections, and there is a far better possibility of finding the correct grade of sheet as the choice is greater!

Jig built leading edges are fairly strong, light and very straight – a finished L.E. can be left in the jig until required to fit the airframe, and of course the formers guarantee a true section without the mess of carving and sanding. Two leading edges can be easily produced in an evening, after one has of course made the jig – no doubt the biggest drawback. However, this is very simple, and your local do-it-yourself supplier can easily machine

*continued on page 193*


Save surplus for gussets
STAGE 1
Double 1/4in. sheet balsa formers to support centre rib
Insert additional former for tank and engine
1/8in. Balsa strip
1mm. ply former template
1/8in. sheet balsa intermediate formers.
TANK
Mark sides in felt pen for rib positions etc
1/4in. Sheet for tips glue only forward part at this stage
1.1/8in. x 7/8in. softwood support
STAGE 2
Spruce spar held in position with elastic bands
OUT
Use clothes pegs to clamp first piece sheet to spruce spar
Use sanding block to remove excess sheet
Add gussets if required
Apply epoxy adhesive here only
Pin second piece of leading edge sheeting in place
Slot end of back sheet to take sheet tips
STAGE 4
STAGE 5
STAGE 3
Round off corners with glass paper to avoid damage to sheet
Hardwood strip to press leading edge into jig evenly
Jig battens spaced to suit L.E. thickness
Apply P.V.A. to all exposed edges
STAGE 6
Width of jig depends on number of leading edges to be produced
Board 3/4in. thick minimum
Loose hardwood strip to ease L.E. out of jig when set
SECTION THROUGH JIG (not to scale)
1.1/8in x 7/8 in. softwood battens screwed to ply baseboard
Leading edges in jig
Loose hardwood strip extending from jig at each end for easing leading edge from jig when set
36in. wide board to accept standard length wood
SKETCH OF JIG (not to scale)

# Moulded Leading Edges — *continued from page 186*

the wood to the correct sizes. Mass production is easy once you get the hang of it, and work economically i.e. there is always something that can be attended to whilst other parts are drying. While two are in the jig being completed, two more could be at the previous stage having the second piece of sheeting added (Stage 5) two more at Stage 4 and two more having the spruce spar added while yet a further two could be having the formers added to the back spar. Meanwhile . . . !

It is also true that this form of construction is not quite as strong as a solid or moulded equivalent, but a 1 oz. leading edge of this type is probably better than one of the same weight in the hollow pre-moulded type as the strength can be built in where necessary. Also, while not so easy to repair, it is worth remembering that after a mid-air collision with a lightweight model, there is precious little to repair anyway!

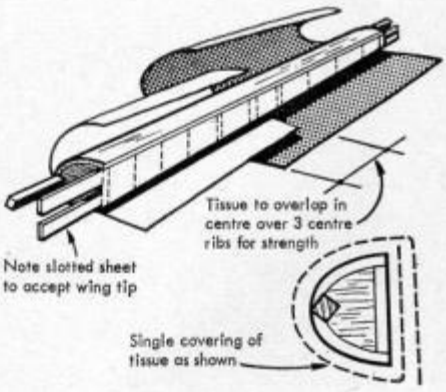
## Conclusion

It is intended that the method described of making both jig and L.E. is a simple method – no doubt there are modellers with the equipment to make more sophisticated, adjustable jigs.

Doubtless individuals will experiment and come up with variations on this idea and I have in fact several that will be tried out shortly: the rolled plywood booms suggested by Trevor Faulkner in the January *AeroModeller* has inspired me to make a L.E. in 1mm ply, which will probably fly through anything wrapped in nylon (so watch it!) Thin fibre-glass sheet is also available to a few, and this is much cleaner than actually making it up in fibre-glass with a mould, and probably much lighter. . . .

With World Class combat in the offing I hope my ideas will provide food for thought in 1974.

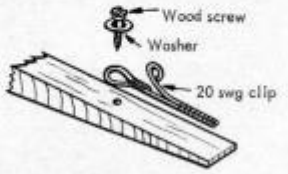
## STAGE 7




## Streamer Clips

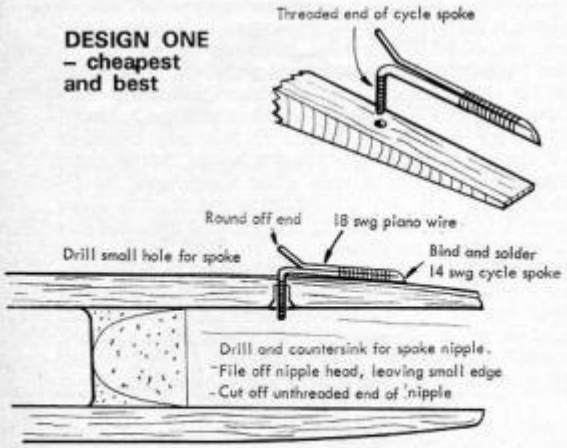
Always one for neat, practical solutions, and with an eye for attention to detail, Frank Smart sent us details of the clips he is now using on his combat models. The problems he found with the usual wire clips were that they tended to damage the surfaces of other models when carried in bags, especially when Solarfilm covering is employed, so he used to unscrew them while in transit but frequently lost the screws, while the holes in the bearers worked larger,

**Old-type of attachment**

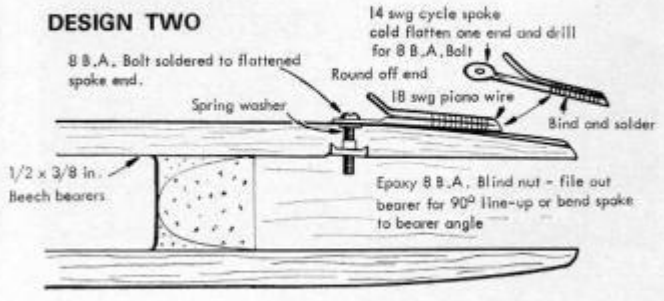



so the screws eventually pulled out. Also, their manufacture tended to be a 'fiddling' job with all that wire bending and now that thicker streamer string is being used, the fuse wire was not man-enough for the job – sometimes the wire bent backwards after a string cut made by an attacking model, or when the pit crew changed streamers. The methods sketched below show his current methods which have proved quite satisfactory and are quickly, and safely, detachable.

**DESIGN ONE – cheapest and best**




**DESIGN TWO**



# Glow-Motors For Combat?

**Is the diesel engine still supreme for combat flying?**

**Messrs. Lismore, Hammersley and Strudwick of the CANNOCK OUTLAWS M.A.C. think not!**

DURING THE PAST six years, *Cannock Outlaws M.A.C.* have flown glow motors in combat competitions and forsaken the traditional diesel. There were many reasons for this, but particularly they were as follows:

(1) Top quality ball-race diesels were becoming expensive to buy as an initial outlay, and also required frequent rebores, con-rods, etc., whilst against this the glow motors were considerably cheaper to buy and lasted a lot longer. For example, one of the motors now being used by the Club is in its fourth season, and has had no significant replacements of parts.

(2) Diesels, although consistent, need a good deal of sorting; that is to say, not every example was as good as its predecessor.

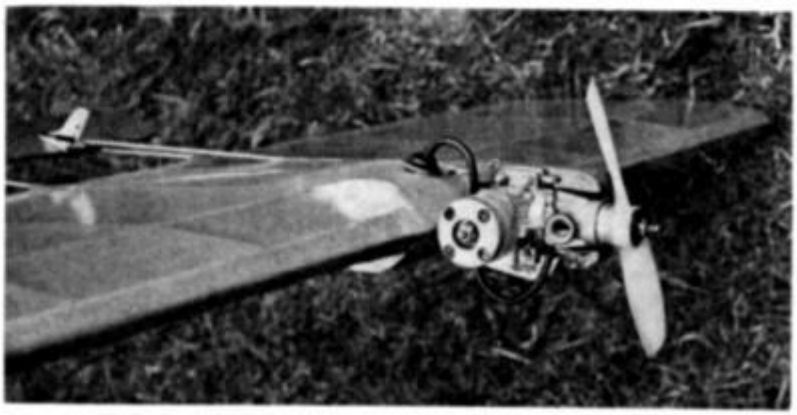
(3) It was felt by several members of our Club that we needed something new, and when Mick Davis first obtained a Cox Special 15 Mk 2 we felt that this would be the answer. We flew Cox Specials for two seasons, but these were, to put it mildly, a financial embarrassment – requiring new pistons and con-rods every two competitions, so the change to Super Tigres was inevitable. However, here it must be stated that despite the Cox Specials being 'fragile', they are a far more consistent motor than the Super Tigre.

**Development**

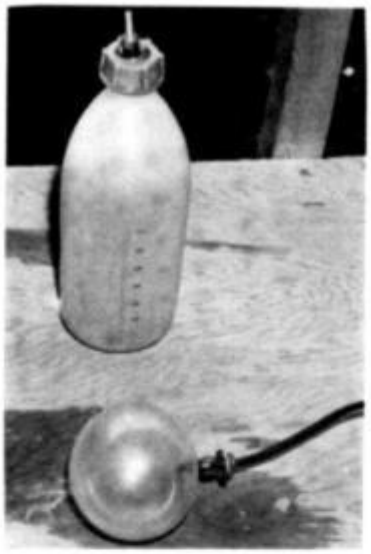
The original thought behind the use of glow motors for combat was initiated after a Club ½A combat competition. We reasoned that in view of the fact that a Cox Special was of a similar weight to a PAW 1·49 and Oliver Tiger Cub, and produced about double the power, one of these in a ½A combat model would be the answer. However, this was not to be, as for some inexplicable reason the set-up was a dismal failure and the Cox Special was put on the shelf for a long time, until one day we saw in an American magazine the plans for *Splinter*, a very high aspect ratio (42×6in.) combat model. Mick Davis was the first to build one of these and used with it the pacifier tank that we now take for granted.

This arrangement was an immediate success and further development in this field led us on to better

**Heading picture: John Hammersley displays a tissue covered 'Banshee' (with boom-mounted elevator) together with a Solarfilm covered 'Ironmonger' which has now superseded it, proving ideal for glow engines if the weight is kept to a minimum.**



**Right: typical glow motor installation –note the large 'pod' to carry the pacifier type fuel tank, and cut down nylon propeller to allow engine to reach maximum rpm.**



**Yes, that is a baby's dummy, blown up to around 2½in. diameter! Make sure that the filler bottle is strong enough to reliably hand out this sort of pressure without splitting.**

model designs. The biggest problem we found – and, in fact, still find – is making the models light enough and yet strong enough to withstand combat bouts. After a couple of seasons with Cox Specials, we turned to using Super Tigres, both G 20/15 and G 15's. These motors are exceedingly well made, being reasonably easy to use and require no tuning whatsoever, apart from opening up the venturi to its maximum possible diameter. We are now experimenting in the use of MVVS glow motors, but these may possibly wait until next season.

**Fuel Systems**

We originally tried all our motors on suction and pressure tank systems and soon found that none of the high-performance glow motors would run on suction feed, and we had a limited amount of success with pressure tanks. We then discovered the pacifier system – a very convenient and simple method of obtaining consistent runs. This system consists of a baby's pacifier (dummy) made up on to a piece of rubber tubing as shown in *Figure 1*. (It is a source of great amusement when walking into a chemist shop and asking for half a dozen dummies!)

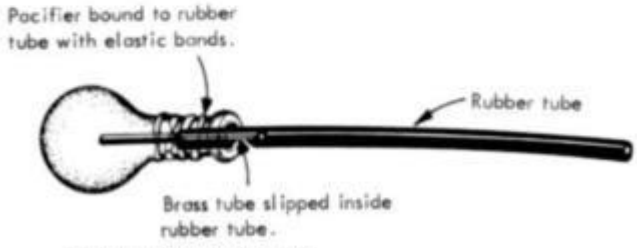



**Figure 1. 'Pacifier' fuel tank.**

Once the dummy has been manufactured, a good strong bottle is required to blow it up. We have experimented with pumps and syringes, but have always returned to the old-fashioned bottle. The dummy is blown up to approximately 2½in. diameter (which is sufficient for an engine run of about five minutes) and the rubber tube crimped whilst the squeezy bottle is removed. The rubber tube is connected on to the spray bar, the motor started on a prime and the rubber tube released when the motor is running on the prime. This operation requires a little practice to perfect, but used often enough is not very difficult. Engine runs with this system are very consistent as long as the motor is set as rich as possible on the ground and thoroughly warmed before launching. The system we use in contests is to start the engine at the beginning of the one-minute warming-up period, and leave it running till the launching time.

**Fuel, Props., Plugs, etc.**

We have experimented with many kinds of fuels and props. Cox Specials all have 15 per cent nitro-methane fuel and Frog 7×6in. nylon props – used in 13oz. models, every motor would give 97 mph. We tried one of these combat models on 60 per cent nitro-methane and a cut-down Frog 7×6in. prop. in a speed competition, and before blowing the engine up recorded 105 mph, enough to place third at the competition!

Super Tigres, however, are a little more difficult when it comes to selecting props and fuel. We run all our Super Tigres on 10 per cent nitro-methane fuel, but each motor has its own individual propeller requirements. Basically, we run on Tornado 7×6in. and Keil Kraft 8×4in. suitably cut down, but no doubt some Super Tigres run better on other props.

We do experience from time to time problems with plugs; mainly with the ceramic seals blowing out of the plug, but a good *Fireball* or *Taylor* plug will last a whole competition.

**Models**

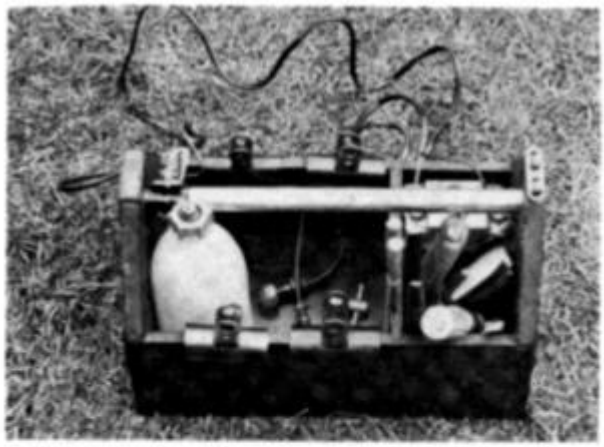
As stated earlier, in the early days of our flying glow motors we made *Splinters*. After various attempts with each design, we manufactured models that were basic 32×8½in. wings with 2in. booms which we called *Banshees*. These were very efficient with Cox Specials, but being tissue covered and weighing 12–13oz. were very vulnerable. When we started using Super Tigres, we kept to the same layout, but nylon covered them and had a stronger construction. These were reasonable, but after being out-manoeuvred and out-flown by a taper wing design, flown and constructed by Mick Tiernan, we decided this could be the thing to build! Mick Davis modified the basic Mick Tiernan design by increasing the wing area, and was very successful – so successful, in fact, that one continental flier wrote to Mick Tiernan and asked him if he could obtain the plans of the '*Model Type Mick Davis*'! However, in the latter part of last season we borrowed a Richard Evans *Ironmonger* and constructed one of these. We bolted in one of our G 20/15's and, hey presto, success!

Built for an all up weight of around 14oz., we have yet to find a better design than the A.P.S. *Ironmonger* (Order No. CL1175, price 40p), but with model development over this winter we hope to come up with something slightly tighter-turning.

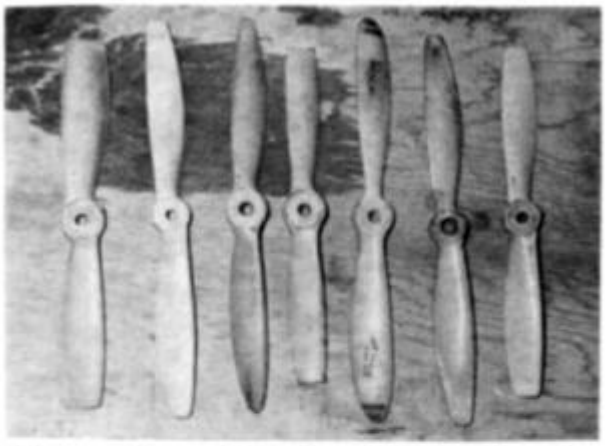
**Flying**

Combat flying is rather difficult, using a glow motor. Very few diesel-powered combat models fly at the same speed as a glow-powered one, although in general they turn tighter and are probably faster around the manoeuvres.

Because the Super Tigre develops maximum torque at around 13,000 rpm and its peak power at above 20,000 rpm, it is essential that models are light so they do not 'kill' the motor rpm in manoeuvres – tight manoeuvres with a glow motor invariably slow the model down considerably. Therefore, flying a glow-powered combat model against a diesel-powered machine can be tricky, as when attempting to follow one ends up with the glow model overshooting. However the method we



**Note how the pit box carries several Bulldog clips to nip off the fuel tubing between the fully inflated fuel tank and the engine. Starting procedure is described in the text.**



**Various propellers used by the Cannock Outlaws – from left to right are a cut down Keil Kraft 8×4in., a 7×6in. Tornado and Frog, a cut down Frog 7×6in., full-sized Top Flite and Keil Kraft 7×6in., and finally a cut down Tornado 7×6in.**

developed is to go for cuts in the cross, and also to attempt to follow at a distance and 'cut corners' where possible. It is very difficult to practice combat flying with these motors, because if the whole club flies glow motors then practice sessions do not relate to actual contest conditions!

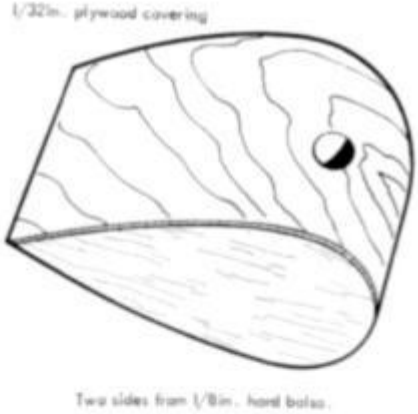



**Figure 2. Typical pod for housing pacifier fuel tank. Pod should be approximately 3–4in. long, 2½in. deep and have ¼in. diameter hole for inserting the empty pacifier.**

To fly glow motors you need a good reliable pit crew. Many top fliers pick up their pit crews at competitions, but with glow motors this would be virtually impossible as the pit crews need to be acquainted with the systems involved. For example, normally when a diesel-powered model hits the floor it is immediately restarted and thrown back into the air – this is *not* the case, however, with glow motors. The system used is that the person delegated as a streamer holder replaces the streamer from the crashed model, puts a clip on the 'dummy' to stop the fuel escaping, returns to the spare model (which is being pitted by the other two members of the team) and attaches the streamer to this spare model. This is quite a hectic procedure, especially if during the four-minute bout you have more than one or two collisions!

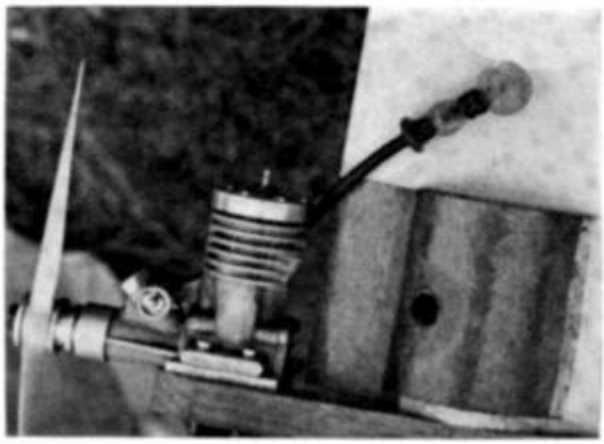
**Close up of MVVS installation reveals the pod installed right against the leading edge and bearers, with the empty pacifier ready to be inserted.**

**Conclusion**

It is interesting to note the remarks of all the top combat fliers when talking about glow motors. The normal reaction when we walk on the flying field is, '*You're not playing with those toys again*'. Mick Tiernan expressed the usual opinion that they were too much trouble to sort out, but '*don't stop flying them – we need some variety*'. Whilst having a similar discussion with Vernon Hunt, his remarks were that he thought anybody could be good flying a combat model ten miles an hour quicker than anybody else, and that all the art was being taken out of it!

There are only one or two other clubs and individuals who fly glow motors, but we normally find that anybody who is flying a glow motor at a competition cannot go back to flying diesels.

Finally, there is one thing to remember; whilst it takes considerable time, money and effort to make a diesel run at a consistent 85 mph, *anybody* can purchase a Super Tigre G15, run it for about 15–20 minutes' 'running-in period' and obtain 90 mph in the air. Whilst this may not be as consistent as a diesel, it is certainly quicker and we are sure that if more people were prepared to try glow motors in combat models, combat flying in Great Britain would take a turn for the better. Should anyone require any further details, or information regarding glow motors for combat, just contact us at any combat competition.



# An American Came . . .

## Dave Clarkson catches up on the control-line scene in the U.S.A. from Charlie Johnson

**Charlie Johnson caused quite a stir when he flew his Nemesis II combat model at the Nats. The sight and sound of a hot '40' running on a pen bladder tank, giving a perfect run, certainly turned many heads and quite a revelation it was too after seeing British attempts at 'Class B' combat.**

AN UNEXPECTED but most welcome entry in the '74 Nationals at combat was American Charlie Johnson, from San Diego in Southern California. Charlie was fifth at last year's U.S. Nationals in A.M.A. Combat, so he is no mean flier. Perhaps the most impressive machine I have ever seen was hoisted every now and then during our Nationals by Charlie – an A.M.A. size combat model, the *Nemesis II*, powered by a K&B 40F. One indicator of the U.S. combat scene is the fact that Charlie once won a $300 first prize combat contest (yes £125!).

Anyway, talking to Charlie – your typical U.S.A. control-line fanatic – was most educational because besides combat he also flies Rat and Goodyear (events we know) and the Californian specialities Slow Rat, Slow Combat, etc. As expected, all U.S. control-line seems to be flown using glow-motors essentially because this is traditional, but also because nitro is cheap at $5.80 per gallon (approximately 35p a pint) and so are glow motors; besides which, glow motors on 50-70 per cent nitro are faster than diesels (don't last long, but they are faster).

are built to give ultimate flying characteristics with little regard to crash resistance – if you crash, you lose – especially since no spares are permitted. Speeds of 110-120 m.p.h. are common using high nitro fuels in typically a Super Tigre G21/35 FI twirling a 9 x 6 in. wooden prop. With speeds like these, safety rules (such as no mechanics inside the flight circle, etc.) have to be enforced – and are.

# 1970 Contest Reports

## Combat Capers

AT THE forthcoming **World Championships** (to be held at Namur, Belgium, over 20–24th August – but please don't ask us for more details yet – 'cos we dunno!) a combat event will be held in addition to the usual contests, but only under a supporting event classification. This is because the F.A.I. combat rules are still only provisional and subject to revision, thus a contest cannot attain World Championship status. To clarify this point, it should be emphasised that the provisional F.A.I. rules have been in existence for 5–6 years. These are the ones to be used, not the *proposed* re-write of the F.A.I. rules drawn up recently by various British flyers. These are likely to be considered by the F.A.I. C/L sub-committee at the November 1970 meeting of the C.I.A.M.

One question which does arise, however, is that should we ask a team to represent us, in the light of previous experience in Belgium in respect of combat, and the rather loosely-defined rules? Bearing in mind that the team would have to pay their own expenses (and possibly entry fees too, as there is no Championship status involved) would it be fair on the pilots, not to mention pit crews? We think participation is essential despite the difficulties.

O.K so they dared to call it the World Champs even though no Brits attended.
Have a laugh at many of their models but bear in mind that 10 years down the line things would be very different indeed.The phrase "The Russians are coming"was never more apt.

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**World Control Line Champs**

Conclusion of Peter Richardson's report from Namur

Overall combat champion Kiselyov, is flanked by his very efficient pit crew. Model is incredibly light and very fast. He had six identical models processed.


9. Reichle's M.V.V.S.-powered wing was decidedly old-fashioned in appearance and performance. 10. The Bulgarian team depended on a mechanical starter for their pressure-fed Super Tigres. Note small size of models. Flew fast. 11. Duebell uses mylar-covered surfaces. HP15D power – often difficult to start. Model quite responsive. 12. Mohimont's pit man seems unhappy at the prospect of starting the Webra Mach II – unwarranted!

## Southern Gala

Relatively unaffected by the weather, and with a fairly good entry (32), **Combat** was the best supported control-line event. With most of the 'names' absent, the lesser known fliers had a field day, but the result was, rather inevitably, another Vernon Hunt benefit, when he fairly convincingly beat S. Andrews (Southampton) in the final. He had with him a new model 'Bumblebug' – a complete change from his present design, but although very hot, it did not suit his flying style, so it looks as if 'Warlords' are here to stay – for a while at least!

The event was again run to the old S.M.A.E. rules, in lieu of the newly adopted F.A.I. rules – a decision reached by the competitors themselves.

(F/F events reported in 'Free Flight Comment')

## The Nationals

In complete contrast to the previous year when the spectators practically ignored the **Combat** event, this year's contest had a large following and rather a carnival atmosphere – no doubt due to the sun as much as the high standard of flying. The calm weather on the first day tended to illustrate quite how much some people rely on a stiff breeze to give their models a high airspeed, picked up during downwind manoeuvres. With the exception of a few *Ruter-ess* type designs., the contest was almost entirely between 'wings' – even the once popular flying tails were gone.


Above:- Vernon Hunt(white shirt) overcame all others to take the title.


Right:- M Keeling of Highgate flew very well with his own design wing.

Frank Dowling modestly admitted to having the 'ultimate' in combat models with his very tightly-turning model which clocked 94 m.p.h. on an 8 in. x 6 in. Punctillio wooden prop. He achieves this ability to turn tightly by narrowing the root chord by $\frac{3}{4}$ in. and setting the engine back into the leading edge by some $\frac{1}{2}$ in. to maintain C.G. position. A thick, 'true' wing section prevents the model from losing airspeed at the bottom of manoeuvres. It was certainly good, but unfortunately was damaged during an earlier bout.

An unusual feature at this Nats was the large number of top fliers who reached the fifth round. This may sound contradictory but it often happens at this major event that the better fliers are knocked-out by unknowns very early on during the proceedings. This naturally resulted in some really first-class combat, particularly during the semi-finals, by which time quite a large crowd had gathered.

The finals brought together Hunt (ACE) and Cowley (Northants). At the whistle it was Hunt first away, but Cowley was only a little slower. In his usual style, Hunt took on the offensive immediately, and seemed to be making mincemeat of his opponent, who although trying hard just could not get on to Hunt's tail. Halfway through the bout, with Hunt leading by four cuts, there was a line tangle, but both models were soon back in the air. At this point Cowley seemed to 'wake up' and really chased Hunt's model – both of which were turning incredibly tightly. Some really agile action by Cowley, who seemed to be permanently kneeling or sitting on the ground, avoided further line tangles, and he took two cuts in rapid succession. A free-flight model glided right through the circle, miraculously avoiding damage, or causing any. At the final whistle, the flying could not have been harder – but the result was another Nationals win for Hunt. The crowd enthralled with this, the best final for many years, clapped both opponents enthusiastically.

The event was run to the F.A.I. rules and no real problems seem to have arisen.

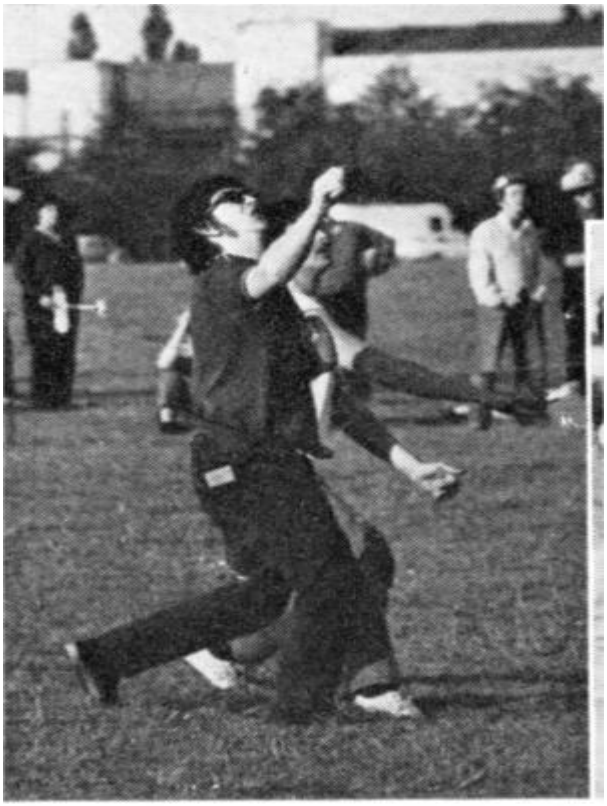
# 1971 Contest Reports

## The Nationals

**Combat**, as always, a two-day event, suffered from the occasional rain more than most events due to soggy streamers refusing to stay in one piece, and this caused delays in the first round. Models were naturally almost universally 'conventional' wings, although thoughts differ on maximum rib depth and aspect ratio. As usual, everyone is after yet faster models with tighter turning capability, with the expected 'staleness' of design which development always brings. Many of the pilots seemed very new to the sport and had obviously not practised such minor details as pit crew 'work sharing'! Common were the heavy prangs with the pilot shouting many and varied instructions to his team, only to confuse the issue even more. This should not be necessary in a well organised combat club; but is understandable for the 'lone wolf' fliers who perhaps only compete at the Nationals.

The first semi-final brought last year's victor, Vernon Hunt, against Richard Evans, and a brilliant bout followed, which was greatly appreciated by the large crowd. The result was very close, but Vernon had the rare misfortune to lose, in fact, the first semi-final he has ever lost!

The final brought Richard and Steve Jones together to provide what many people proclaimed the 'best yet' final. Agility and reflexes of these two 'aces' was remarkable even for those used to watching combat. Steve eventually emerged as the winner – but both received a warm round of applause for their performance! He used his new 'wing plus tail' model, which is shortly to be included in the *Aeromodeller* plans range.



ABOVE:- Steve Jones(winner)battles out the final against Richard Evans.

"Agility and reflexes of these two 'aces' was remarkable even for those used to watching combat"

Left, swept wing combat model by 'Stoo' Holland has Copeman Oliver recessed into leading edge to provide rearward C.G.

## Woodford Rally

Vernon Hunt (left) used his familiar *Warlord* design to demolish the opposition, finally beating John Alcock (right) in the final. No prizes for guessing the engines used.

# COMBAT INTERNATIONAL

**reported by Mike Callaghan**

SEVENTEEN of the top British Combat exponents made the journey to Holland to compete in the International F.A.I. Combat Meeting, organised by the Amsterdam Model Flying Club 'Daedalus' on 12-13th August.

From the outset it was obvious that 'Daedalus' had put a tremendous amount of effort into the organisational side of the affair and all competitors were given a set of F.A.I. rules (multi-lingual) with a special amendment sheet carrying the latest regulations, including clarification of the infamous 'knot' rule which upset so many flyers at our own Nationals. The rules simply stated that the knot which connects the thread to the streamer must remain attached, otherwise the last cut is not valid. Clear, but not popular with our fliers!

The venue was a local football ground upon which two circles had been made available. These were utilised so that while one heat was being flown in circle A, the next competitors were making ready in circle B – a system which worked exceptionally well in practice.

A good entry was received, 53 in all, consisting of 17 British, 14 Dutch, 11 German, 7 Belgian and 4 Danish competitors. All losers from the first round were re-drawn against each other, the winners going through to the second round.

Standards varied widely in the first round, although it was noticeable how the Continentals are increasingly turning towards *Warlords* and *Dominators* powered by Olivers – and using them to good effect. The Germans and Belgians used very fast models which were virtually unmaneouverable and easy prey to the medium speed, tight turning British models. Many of the bouts in the first round were rather uninteresting to watch due to excessive amounts of ground time incurred by many of the Continentals, many of whom need to improve their pitwork.

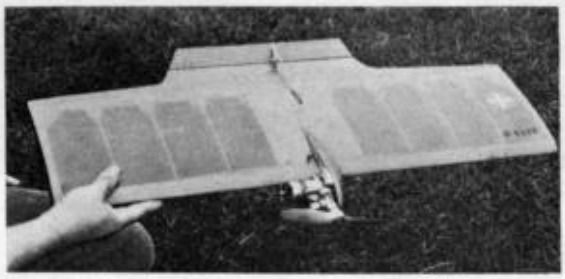
The second round brought a raising of standards and saw the exit of a number of British flyers, which in some cases would not have happened under the 'old rules' concerning cuts of the string. By the end of the third round the only non British competitor left in the contest was Jensen from Denmark, and he was perhaps more than a little lucky to be in this position. One area of controversy arose in this round when Mick Tiernan flew against Van Zijp of the Netherlands. Mick clearly beat his Dutch opponent, then, after the final whistle, flew straight and level – only to have the Dutchman take four cuts off his

Heading picture shows finalists Richard Evans and Derek Dowdeswell, victory going to Richard with his 'Ironmonger' design, plans of which will appear in the next issue of 'Aero Modeller'.

Above left, Dutch pilot Van Zijp (left) used a model based on the 'Liquidater' but with slightly less wing area and fitted with an Oliver Mk. III. A really good pilot, beating Nagyi of Germany by 440 pts. to 70 in the first round. At left, Van Mechelen of Belgium (centre) is a pilot to be watched in the future, together with his well-organised pit area. Model is a Dominator, unfortunately, only tissue-covered. Power is supplied by a Super Tigre G2-D.

Dubel of Germany (left) with typical Continental model featuring lightweight construction and Solarfilm covering. M.V.V.S. diesel used, turning a 7in. x 5 in. propeller at 16,500 r.p.m. Model is fast but loses speed drastically in manoeuvres. Alpine headgear is glass-fibre-coated inside!

Below right, Rasmussen of Denmark used this simple lightweight, nylon-covered design fitted with a Webra Mark II diesel, although many Continentals are following the British preference for the Oliver Tiger.



streamer! The Dutch crew claimed these as genuine cuts, but fortunately the circle marshall (who sat in the centre of the circle) saw what happened and would not let his judgement be swayed by his countrymen. Indeed, this official earned everyone's praise for his unbiased judgement – and for his patience in officiating at every single bout over the two day period. Incidentally, a further example of the Dutch club's efficiency was the insistence on a safety check and pull test on the lines before each bout.

Jensen continued his winning ways in the quarter finals beating Bob Morgan in a very closely fought contest, with a final score of 315 to 285. He then went on to meet Richard Evans in the semi finals when his luck ran out, Richard giving an excellent exhibition of accurate streamer snipping, being credited with three cuts, although, in fact, several were convinced that the scorers missed a couple of very small nips. The other semi final was fought out between Derek Dowdeswell and Mick Tiernan – victory going to the former after another good scrap. The ensuing final promised combat at its very best but after a mid air collision and the resulting model change, the latter part of the contest was rather an anti-climax, Richard coming out on top with 412 points to Derek's 185. A fly-off for third place saw Mick Tiernan beat K. Jensen fairly easily.

The prize giving proved to be a glorious affair with over £200 worth of prizes, largely donated by local traders – the first few finalists receiving Lenco stereo equipment while *every* competitor (in point order) chose a prize from the vast array on display. In conclusion, the '*Daedalus*' club have really demonstrated the way a competition should be run, with organisation easily on a par with World Championship standards. Congratulations '*Daedalus*' on both your enterprise and tenth anniversary.

*Results:*

| | | |
|---|---|---|
| 1. | R. Evans | (U.K.) |
| 2. | D. Dowdeswell | (U.K.) |
| 3. | M. Tiernan | (U.K.) |
| 4. | K. Jensen | (Denmark) |

Mike Neville battles it out with Ronald Kaptyn of Holland – potential line tangle situation here!

Winner of the German Championships, held at Stuttgart, Rob Streefkere, also of Holland, takes on British flyer Avery

The Glevum 'Black Spot' symbol goes International! Frank Smart tackles Mau of Denmark. *(P. Tupker photos.)*

Sixteen of the seventeen Brits who flew in the Spaarndam international.
Who missed out on the photograph then?


Messers Buys,Meijer and Metkmeyer caused quite a stir by placing fourth in the combat event at the Nationals.
Fred Meijer's piloting skill surprised many competitors who were under the impression that British combat flyers were invincible while the Continentals

had a very low standard in this sport.
Maybe so at one time but this Dutch trio have shown their ability quite forcibly!

**Combat** maintained its tradition of high entry (96) and was probably the least affected by wind in some respects. High winds produce really high-speed down-wind manoeuvring as the models 'wind-up' in successive loops, bunts, etc., but it also produces problems in that obtaining cuts is more of a 'hit or miss' affair, little snips being virtually impossible to obtain. This also tends to push a greater emphasis on the pit crew, as hitting the ground becomes an even greater likelihood and it is obviously imperative to have a reliable team preparing the reserve model, transferring streamers, etc. So much for the F.A.I.'s attempts to make it a 'pilots only' competition!

An anomaly of the F.A.I. rules was discovered, which caused some argument in the early rounds – that of the 'string' cut. The rules state that cuts of the string count zero – so if the whole streamer is detached by such a **cut then that person can lose no points other than time penalties.Likewise the traditional knot cut is a virtual impossibility.Obviously this rule will have to be reviewed although its original intention was no doubt to prevent models attacking too closely.**

Models were naturally enough stereotyped wings, but Mick Davis produced a 'new look' which could provide the next design direction, judging by its high-speed performance. The model features sharply-tapered wing tips and uses a Super Tigre G20/15 glow running on pressure (from a Pacifier tank) and the resulting machine was quite a revelation to watch. So you thought you had a tight-turning model? See this going better at an indecent rate of knots!

Entries from French and Dutch teams also helped enliven proceedings. The French favoured the Cox 15 as a powerplant, but without using pressure feed, in rather small models of conventional layout, although they also produced a more traditional wing. However, although the Coxs screamed, they seemed underpitched and were way down in speed, while the models themselves needed improvement. In contrast, the Dutch team had a very 'British' approach, using Oliver-powered models based on the *Liquidator* but somewhat reduced in area to meet the calmer Dutch weather conditions. An unlucky choice for this mee*ing! Their standards have improved enormously, indeed Fred Meier placed fourth (after being beaten by Richard Evans) and this indicated that perhaps our invincibility just isn't true any longer.

The final itself was a classic, fought out between Mick Chilton and Mick Loughlin, the former using a 14 oz. *Warlord* powered by a home-tuned Oliver, the latter a Copeman Oliver-powered own-design wing. For much of the bout, the lines were crossed completely, but still they battled on until eventually, the streamer came detached from one model, only to snag on its opponent. Seconds, and several manoeuvres, later the two models separated momentarily, and the wayward streamer had somehow lodged itself back on its rightful model! Pity the scorers! However, after this really exciting contest, the verdict was victory for Mick Chilton.


**Combat finalists (7) were Mick Loughlin and Mick Chilton (right) – the eventual winner.**


11. Well . . . if you must fly combat, what can you expect! 12. Jean Morelle launches Claude Lienard's model, assisted by fellow Frenchman Alain Daflot. 13. A new design concept? Mick Davis with very 'hot' combat model.

[South Bristol Silver Jubilee Gala](#)

[Northern Gala](#)

**COMBAT**
1. M. Tiernan (Leicester)
2. F. Smart (Glevum)
3. R. Evans (South Bristol)

Richard Evans compares model shapes with Mick Tiernan – the latter being eventual combat winner, Richard placing third.

Combat finalists at Northern Gala were Ray Ambler (left) and eventual winner Mick Tiernan. His swept-forward trailing edge model may seem familiar – in fact, the wing planform is very close to that of the 'Peacemaker'! Full-circle development!

# [1973 Contest Reports]

# SPAARNDAM INTERNATIONAL

## highlight of the combat fliers' calender, reported by Mick Chesterton – pictures by Paul Tupker

**Eventual winner, Vernon Hunt giving a last-minute tweak to the Oliver's needle before leaving it in the care of his pit man, Sleddon.**

ENGLAND IS STILL top of the control-line Combat class and nobody who attended this excellent contest would argue otherwise. However, the Dutch are never content to be beaten, so with an eye to improving the standard of combat in Holland, the Daedalus club of Amsterdam organised a second European Combat contest at the sports ground in the picturesque village of Spaarndam, near Amsterdam. Our host's hospitality and their enthusiasm for organisation ensured the success of the event as did the weather, which was perfect with no dazzling sun, but still very warm and calm. The venue too was ideal, the chosen pitch at the sports ground being easily big enough for two circles.

The contest was a two day affair held on the Saturday and Sunday, business commencing early on Friday 17th August as contestants from Belgium, Germany, France, Denmark, England and Holland started to arrive.

Everyone was then issued with their own identification badge: black for competitor, blue for spectator, and red for organiser. In addition there was a gift envelope for each person containing, among other things, a souvenir ribbon and a map of Spaarndam.

The first engine heard on the Saturday was at 7.45 a.m. – everybody was eager to begin! Breakfast was eaten in the Sports club restaurant and the final preparations completed so that the contest began at 10.30 a.m.

Bob Morgan (G.B.) flew a well controlled heat against F. Op de Beek from Belgium, following at good distance and winning by an equally good margin of 440 to 177. Vernon Hunt (G.B.) scored over 500 points against his first round opponent Gunther Schwarz from Germany who was disqualified anyway! Schwarz, perhaps better known in the team race world, was also disqualified from the 'second life' fly-off which started after lunch.

Bert Mokkemeyer won through here, so with his brother Rob who had won his morning heat, the Dutch winners of the British Nationals team race event had a place each in the second round – a versatile pair!

During the course of the day there were 15 disqualifications, a rather high figure, and by five o'clock it was obvious that the day's flying had nearly finished. Soup, rolls and coffee were ready for everyone in the restaurant and a typed results sheet was provided. Studying these results one saw that the top scorer of the day was A. Mau from Denmark, being the only person to score over 600 points although our own Derek Dowdeswell was near with 595.

On Sunday the **second round** started in fine style with Richard Evans (G.B.) drawn against Kaptain from Holland, in circle two. Evans had a lot of engine trouble and Kaptain quite skilfully outflew him with a good model – the final score of 433 to 300 might have looked very different had Evans' engine been set right.

Mittler of Belgium flew notably well with a tapered wing design and beat his Dutch opponent De Heer convincingly 524 to 246. Morgan (G.B.) flew against Nielson (Denmark) in an exciting heat where both sides were evidently skilful, but Morgan followed hard and the Dane was not quite clever enough – score was 500 to 377.

Most notable for clean flying was the heat between Rasmussen (Denmark) and Dowdeswell (G.B.). This bout was a model of team behaviour, the pilots themselves hardly coming into contact – no centre circle 'rough stuff' here and it was a great pleasure to see Derek through to the third round by 397 to 173.

The organisation continued efficiently with the **third round**. Meijer of Holland followed Farrant (G.B.) very closely through manoeuvres and this paid a dividend of 540 points; highest in the third round along with Carolan from England who beat first round top scorer Mau.

The draw for the **fourth round** was between one German, one Danish, three Dutch and no less than 11 English competitors! First to fly in circle one were Mick Tiernan and Jim Carolan both of Great Britain. Although they were quite evenly matched, Carolan proved that he was more skilful on this occasion dismissing Tiernan by a good margin.

Meanwhile in circle two Bob Morgan showed how experience counts; it was not an easy heat and at the final whistle his Danish opponent Anderson was less than 20 points behind. Then British National Champion Derek Dowdeswell was drawn to fly the notable Van Zijp from Holland. This promised to be a good heat and it turned out to be full of action. Van Zijp taking cuts easily while Dowdeswell's engine was running badly. There was a line tangle and resulting crash in which the Dutchman broke a propeller. His pit team did a quick change and he was back in the air, but Derek was soon airborne also, this time, with a good engine setting. Dowdeswell took two cuts quickly and finally the heat.

**Victorious Glevum! They didn't quite make it an all Glevum final, but at least took the team prize with (l to r) Derek Dowdeswell, Tim Court, Frank Smart and Mick Lewis. Arch organiser and frequent C/L Jury member at World or International Champs Tony Aarts is seen far right.**

**It's that man again! Rob Metkemeyer swops pit-man duties from team-race to combat – Ted Kroon seems quite confident in his abilities too. Rob also flew in the contest – as did his brother Bert.**

Meanwhile, in circle one Frank Smart took early cuts in a light hearted heat against Berry also of G.B. Vernon Hunt on the other hand had his task set against German team race pit man Konrad Kaul who used M.V.V.S. engines which were not consistent and not always faster than Hunt's Langworth-Olivers. Knowing Hunt's reputation as a formidable opponent, Kaul repeatedly ran across the centre of the circle, attempting to avoid his opponent. However, his efforts were no more than a nuisance to Hunt and the final score told the story well: Kaul 322 and Hunt 639. In fact the German's score was a fairly good one, but Hunt had almost doubled it.

Avery (G.B.) had a very 'untidy' heat against the Dutchman Streefkerk, but beat him well, 339 to 178. Finishing round four Meijer of Holland flew Sleddon (G.B.). Sleddon's models looked the better but Meijer was obviously a superior pilot and after a dispute Meijer took the lead by 39.2 to 194 points.

For the **quarter finals** the field had been reduced to seven English and one Dutch contestant. The first bout was between Avery of Finchley and Dowdeswell of Glevum and proved to be both clean and entertaining; three cuts to one and no dispute. At the end of the four minute combat period both models still carried streamers.

Frank Smart was next against the one remaining non-English contestant; the bout starting quickly with Smart following through every manoeuvre and taking the first cut, a very small one. Meijer then got a larger cut and two fast passes followed in which both streamers were removed. Smart crashed and the 18 seconds spent on the ground cost him the heat. Meijer was the winner by just 18 points.

Hunt versus Carolan was a very skilful affair with over 1,000 points being scored between them. Carolan was a little faster, but Hunt beat his opponent by one cut because of the debatable, but none the less adopted, interpretation of the F.A.I.'s badly written 'string cut' rule.

In the last quarter final Mick Lewis of Glevum beat Bob Morgan of Finchley without too much trouble, using a very light-weight tapered wing design, similar to those used by the rest of the Glevum club.

And so to the **semi-finals**. A re-draw took place once again and, despite the organisation's commendable sociable effort to keep apart clubs and countries in previous draws, Lewis and Dowdeswell both of Glevum were drawn demoralisingly together for one of the semis – there was thus no possibility of an 'all Glevum final'. Hunt flying for F.F.A.S.T. was drawn against Meijer of Holland, whom he beat very definitely by three cuts to nil, his model being the more lively of the two and his greater skill and piloting ability being apparent.

So Hunt was through to the final without fuss or bother and it was obvious that he would fly someone from Glevum. Who was it to be, Lewis or Dowdeswell? Well, they were not apparently very worried and after the depressing result of the draw it was put down to luck and they decided to enjoy Spaarndam's Glevum semi-finals. Three cuts each was the order of the day, two of Lewis's being little ones and the final score separated them by just two points ground time.

In the fly-off for third place Meijer had the edge on Dowdeswell – Derek hitting the ground numerous times and had a good chuckle at his profusely perspiring pit team. The score was a near one, but gave Holland the benefit and third place.

The final began smartly but Hunt was not satisfied with his engine setting and was soon down for re-adjustment. He took off again and Lewis took a cut, and still Hunt's engine misfired. After a further adjustment Vernon was happy and he soon took a cut to even the score. Lewis overshot an attack and took all of Hunt's streamer and a large piece of

**Fred Meijer, one of the mainstays of the organisation, looks sneakily confident as he flies against Sleddon (G.B.)!**

**'Wish I was a bit taller!' Glevum junior Tim Court reaches high over a partially obscured Jooke van Asperen (Netherlands).**

**Just one of the large British contingent – Avery with rather typical British wing layout. Very hot, humid conditions proved oppressive to some fliers.**

**Left: 'Is this contract binding?' Ron Kaptyn (N'lands, left) and Berry have their feet untangled from scrapped lines by the pit-men. At right: 'Seen any good planes lately?' Richard Evans sinks to his knees as he later tackles the same pilot.**

string as well, leaving himself at Vernon's mercy, who soon took a passing cut to secure his victory. Both models were quick and evenly matched and the final score read 405 to 334.

The **prize giving** was a fine social evening, while brief television coverage of the event brought rousing applause from those present.

Glevum won the **Bergman Challenge Cup** team prize and no less than 32 individual prizes were awarded, Hunt receiving his first prize of a Lenco stereo record player while Mick Lewis took a large R/C model aircraft kit(?) for second prize. Fred Meijer in third place had a Taipan model engine, whilst Derek Dowdeswell possibly having other interests, chose a large bottle of Smirnoff Vodka!

The individual trophies were simple, and quite beautiful, rectangular coloured glass on a small wooden base. In fact, superb prizes following a first class contest.

In **conclusion** the standard of flying was probably higher than ever before. Great Britain is still well on top but we know that we have strong competition from European countries now and this will push our standards higher.

But combat as an Internationally recognised class is only just beginning – parts of the F.A.I. provisional rules can only be described as ridiculous. Indeed, the S.M.A.E. rules as they were ten years ago make current F.A.I. equivalents look a little unnecessary. A number of clauses in the rules are badly written, the prime example of this being Section ten, clause 'd' which states: 'No points shall be awarded for cuts of the thread line'. This *presumably* refers to the means of attaching the streamer paper to the model itself, which in the past has been cotton thread or similar. At Spaarndam there was so much dispute between the circle marshalls and the flying teams over tiny paper cuts (simply because they were worth the fantastic figure of 100 points **each**!) that, had there been disputes about pieces of cotton thread or line, the first round would have taken far more than four hours to fly. It should be taken as read that a piece of thread or line cut would not be counted. Indeed it has been in England for a very long time.

How much better to write positively, rather than negatively, 'a cut shall be the opponent's streamer paper falling from one attack'. A shower of bits and pieces shall then be 'one cut' unless the judge concerned considers that more than one attack was made. However, this subject might well be a good one for a winter debate in order to establish a good set of rules before next season, certainly, please, before Spaarndam '74.

Bravo **Deedalus** and congratulations. Our support and attendance can almost be guaranteed next year, maybe in even greater numbers.

**Above: Danish visitor Luis Petersen with his combat model powered by O/D diesel featuring magnesium crankcase and front-facing exhaust. Below, Kroon from the Netherlands, and third finalist, refuels his Rossi-diesel version of the 'Turtle IV' racer.**

## Why no Combat World Championships?

Combat is an event flown keenly and competitively all over the world. Simply from reading the magazines one can see that combat is flown in the following countries (in alphabetical order – no chauvanism, yet): Australia, Austria, Belgium, Canada, Czechoslovakia, Denmark, E. Germany, Eire, France, Great Britain, Holland, Italy, New Zealand, Poland, Spain, Sweden, U.S.A., U.S.S.R., W. Germany.

Of recent times numerous International competitions have been held all over Europe and the signs are that this trend will increase. So, why no World Championships?

Our respected FAI Legislators tell us that, until a workable and universally acceptable set of rules is adopted, there will be no World Championships. Come on legislators, agree and adopt, there must be a wealth of operating experience all over the world by now.

For almost as long as Combat has existed, we British have won nearly everything when we bothered to turn up, usually by a virtual white-wash. Could it be, my nasty mind suggests, that our foreign brothers are afraid of us and, therefore, dragging their heels about agreeing a full set of rules?

All shout aloud, lads, maybe they will hear us in Paris – WE WANT A COMBAT WORLD CHAMPIONSHIP, O.K.? all together – WE. . . .

# The Nationals


Having felt the wind of change last season in favour of an increased interest in **Combat**, the Glevum combat team estimated that the '73 Nationals would have an even larger entry, and prepared for the organisation well in advance, which paid off. The entry was almost alarmingly high at 130 – including five Dutchmen, five Belgians, four Danes, three Germans, four Frenchmen and six from Eire.

Combat began promptly at 10 a.m. on the Sunday, circle marshals Frank Smart and Mick Lewis keeping things running smoothly, thus enabling the whole of the first round and half of the second round to be completed that day.

Last year's winner, Mick Chilton of ACE, gave an excellent display of British combat in defeating L. Op de Beeck of Belgium by five cuts to nil, but Mick met his match in the second round, losing by two cuts to one to Glevum junior, 15-year-old Tim Court. Last year's second placing M. Loughlin was easily beaten by Mick Tiernan after a string cut left him at Mick's leisure. Meanwhile, 12 year old I. Gray was giving Richard Evans a rough time with his A.P.S. *Orchrist* design. Richard winning, but with little satisfaction.

Previous double champion Vernon Hunt made heavy weather of his first round encounter with John Hammersley of Outlaws. A careless cut of the string followed by several seconds on the ground was Vernon's downfall, giving the bout to John. The value of a good circle marshal was again shown when Frank Smart had to separate Underwood and Kruyff of Holland to prevent an 'unfortunate' incident. Rasmussen of Denmark flying a swept-wing design model gave Stu Holland a few problems, but veteran Stu put on a great display of following and in and out attacking, to settle the bout in his favour. A bout certainly worth a mention was the one between Wood of Sharston and Luckins of Stevenage. Luckins spent most of the first three minutes on the ground due to poor engine settings, falling one cut behind during this time. With the motor now on song, Luckins made the most of the final minute, taking four very nice cuts to win. Meanwhile, something shocking was happening in circle one! Static electricity conducted down the lines gave Evans and Avery a 'boost'. In the reflight Richard put on an electrifying (!) display and won through easily. Two fliers who had been going well were brought together in the first quarter-final. Mick Tiernan, who was, by the way, originator of the modern swept-wing design, was using his latest banana-shaped flying elevator model. This time, however, Mr. Tiernan was against an adaptation of his own earlier swept-wing design flown by Glevum's Derek Dowdeswell. Mick was first in but due to over-enthusiasm, took an enormous cut and continued to take the string; this left Derek the comparatively easy task of getting two cuts which he did efficiently. It is interesting to note that for the past three years, Mick has been ousted by the eventual winner.

Probably the biggest upset of the championships occurred in the semi-final. Wiseman from Stockport and Evans both flew *Ironmongers* and hence a close bout resulted. At the conclusion, cuts were three each, but Richard had logged some ground time and hence lost the bout. It must be said, however, that Richard's gentlemanly conduct in talking his opponent out of line tangles probably cost him the bout. In the other semi, Glevum's Dowdeswell had little difficulty in defeating Bob Morgan of Finchley. The third-fourth place bout was flown off to a commentary given by Dave Rudd and much applause by the crowd, Richard repeating his last year's third place. One day, Richard ...

The final between Wiseman and Dowdeswell was *not* the expected, and often experienced, anti-climax. From the beginning it was obvious that Derek's *Pink Panther* design with swept-wing and unusual tail configuration had rather a large edge over his opponent's *Ironmonger*, and after a good clean bout, Derek emerged a clear winner by three cuts to two.

Sincere thanks must go to Mick Chesterton who proved a capable and unbiased contest director, and, of course, to the Glevum club who both organised, competed, and won the event!

**The victorious Glevum Combat team! In back row (l to r) is Mick Lewis, Mick Chesterton (contest director), Mick Taylor, George Copeman and Frank Smart, while in the foreground are Dave Cox, Derek Dowdeswell (the new National Champion) and junior Tim Court. The remainder of the 60 models are housed in the box they are sitting on!**

# SOUTH BRISTOL M.A.C. GALA

## R.N.A.Y. Wroughton, 30th September 1973

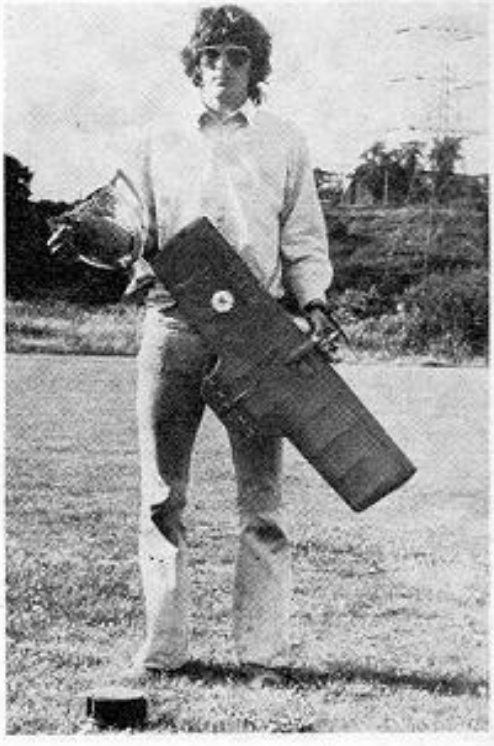
The control line Combat event was a late inclusion, and had a reasonable entry the eventual final being between Richard Evans and Mick Tiernan, whose models were strapped together with Sellotape at this stage, and was held in very gloomy conditions. Interesting was the use of the F.A.I. re-circulation of knocked-out fliers rules which gave all more flying and thus a more interesting contest.

**At right is Richard Evans who won the combat event.**

**At left, a good turn-out from the Maidenhead combat fliers, although they failed to place in the final results.**

**Combat.** 1. R. Evans (S. Bristol), 2. M. Tiernan (Leicester), 3. D. Dowdeswell (Glevum).

Half an 'Ironmonger' is better than none! Vernon Hunt walks away with the remains after a spectacular mid-air collision in the quarter-finals of the Stockport combat rally. Having exhausted his stock of these machines, he had to resort to his trusty 'Warlord' for the remaining bouts.



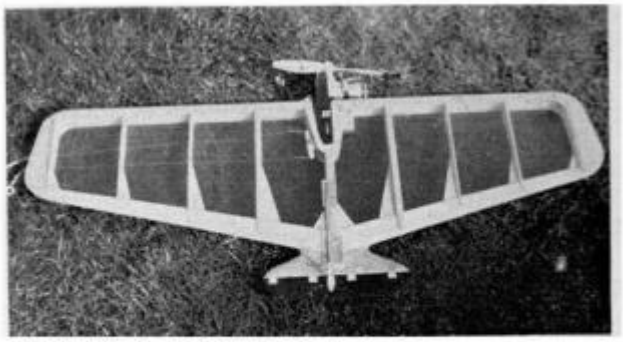
Eventual winner of the Stockport combat rally was Bob Morgan who received the Mainstream Trophy, thanks to his own variation of the 'Ironmonger'.

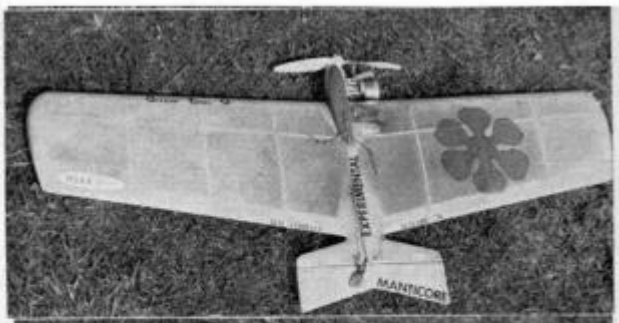
# 1974 Contest Reports

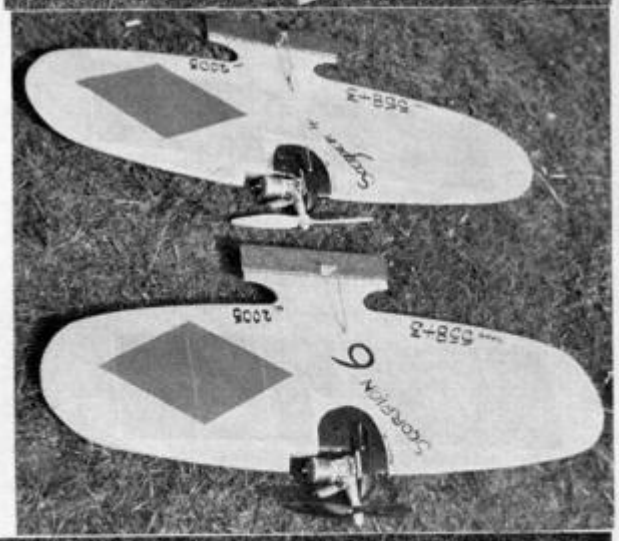
## Glevum Combat Rally

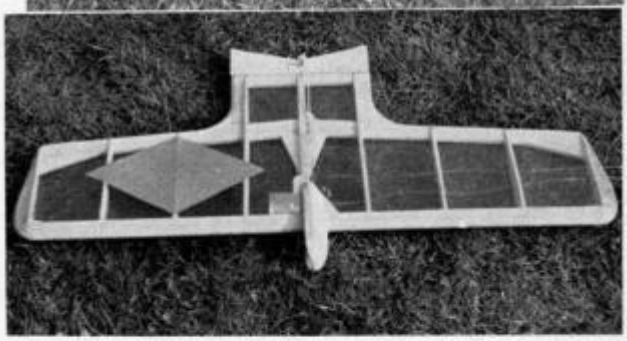
Left: Winner at the Glevum combat rally, Richard Evans with attractively decorated 'Supermonger' – latest, very hot version of his well known 'Ironmonger' design.

Right, Malone of Nuneaton, seen here with his back-up pit crew, used this swept





A variety of wing shapes seen at Glevum meet! At top is Dave Wood's 'Titan', nicely finished in orange Solarfilm with black and white trim – most impressive model of comp. Very fast and tight manoeuvring. Below is Tim Cobbald's experimental 'Manticore' design with swept forward leading edge. Below that are two unusual elliptical designs from Bath MAC. These 'Scorpion's' have conventional leading edges cut from ply, lightened, and with recessed engines. At bottom is John James' 'Normonger' – another modeller who takes advantage of Solarfilm covering for lightness. Easily stripped off for repairs too.

### Glevum Combat Rally

Hardworking P.R.O. of the Glevum Club, Frank Smart, is to be thanked for the following report of his club's first combat comp, from the depths of the Gloucestershire – Ham. Over to be exact. No, that's not the nature of the remaining sandwiches, but yer actual venue – honest!

The battle commenced with some 38 pre-entered red entries necessitating a preliminary round, spurred on with the thought of a total prize bag totalling some £45 of modelling accessories, vouchers, cups and trophies!

First round ran reasonably smoothly, although it was evident that flyers were in need of some rust removing, judging by the rate of collisions! A notable bout was fought between Wiseman of Stockport M.A.C. flying his own design *(Showgun)* against junior Andrew Walker, aged 13, of Alfreton and District M.A.C., with a *Warlord*. Andrew played the game well, and comes from a club with a 75 per cent junior membership (total 48 members) after amalgamating with A.C.E.

One of the most improved junior flyers since last season was 16-year-old Ian Perkins from the South Bristol stronghold who took on Veron Hunt of Alfreton (ACERS). It was evident that Ian had been busy over the winter, and with his *Ironmonger* well on song, took the advantage against Hunt's *Warlord* which was suffering motor-wise. Final cut was taken to win by Perkins seconds before the whistle in a low attack, even though he had won on ground time which Vernon had accumulated, plus a string cut early on.

The John Hammersley v. Whittle bout showed the variation in tactics, with John's Super Tigre G15 glow against the inevitable Tiger. With the speed and line tension advantage, John made good use of the upwind manoeuvres to 'kill off' the Oliver diesel, then made his attacks to win.

Most promising new team was the Bath M.A.C., which although having several different designs under way, did well to get one of their teams to fourth place.

Luck comes in at times and Dave Wood of Stockport breathed a long sigh of relief after taking all of John Hammersley's streamer early, but the engines proved troublesome and a large amount of ground time was lost with both motors playing up.

In the quarter finals Mick Tiernan, now with A.C.E., lost to John James of Bath by only 12 seconds in a close-fought bout – Mick being credited with two really neat cuts.

The semi-finals came up around 5 p.m. with just a slight breeze and the sun burning the faces of the scorers staring for cuts off the streamers.

Wood of Stockport v Evans of South Bristol proved to be an anti-climax with Wood's new design *Titan* turning inside Richard's *Supermonger* in both loops and bunts, but in fact,

*continued on page 297*

*continued from page 295*

**Combat models go amphibious! One of at least three models which free-flighted at the Glevum meet being recovered from a nearby lake – not a method of engine cooling which George Copeman recommends! Line cuts which cause this sort of accident are an increasing safety hazard, but one which is hard to guard against.**

this was the downfall of Wood – he took a string cut. He retired to save this supermodel to fly off for 3rd-4th place later.

The other semi-final, James of Bath and Malone of Nuneaton, came out with Malone on top. These flyers were evenly matched and although relatively unknown last year, put on a fine display of clean combat, despite what was at stake.

In the Finals, Richard Evans met the newcomer Malone and a fast exciting final finished the day with Richard taking four skilful cuts to win, the *Device* design of Malone not being quite up to shaking off Richard's well-tried model.

## The Stockport Combat Rally – *Worth Meadow, Stockport*

The Stockport Combat Rally held on Sunday, 14th July, attracted 40 entrants including one American flier and was mostly members of the Stockport, Sheffield, Preston, Glevum, Alfreton, South Bristol and A.C.E. clubs. The weather, much the same as last year, started off cloudy with a little drizzle but improved during the day to become sunny in the afternoon although it remained breezy all of the day.

The contest started at 10.30 flying off bouts from the preliminary and first rounds whilst waiting for some of the pre-entries to arrive. We wish to thank the Stockport police for directing lost aeromodellers to the difficult-to-find airfield who had become scattered all over Stockport!

A surprise during the first round was 13-year-old Peter Degg of Alfreton beating Mick Chilton, the '72 Nats winner. The bout in this round between Alec Herring and Steve Malone provided excitement with a total of nine cuts; Alec emerging the winner taking five of these cuts.

The second round produced the best bout of the day and deservedly both competitors were applauded at its end. This bout was between Thomas of the U.S.A. flying a scaled-down 'Nemesis' A.M.A. Combat design powered by a G.15 on a pacifier and Dave Wood of Stockport flying his renowned Oliver powered 'Titan'. The bout was basically a flight between the speed of Thomas against the manoeuvrability of Wood who finally won with three cuts solely due to skill. The fastest bout of the day was between two G.15 users, Hammersly and Roberts, with Roberts winning out in this his third Combat contest.

The final between Richard Evans flying a 'Titan' and Derek Dowdeswell was unusual because after 4 min. flying the result was an exact draw and, therefore, had to be reflown. In the refly Richard Evans won to take the Mainstream Trophy, plaque, cash and sponsor prizes. Other placings also richly rewarded were:

2nd Derek Dowdeswell (Glevum)
3rd Dave Wood (Stockport)
4th P. Roberts (Sheffield)

Thanks are due to the Model Shop (Manchester), Pegasus Models, Solarfilm, Solarbo and George Copeman for their kind sponsorship in the form of prizes.

As perhaps a sign of the times, nine of the 40 entries used glows (1 MVVS and 8 G.15s) and three of these were left by the quarters. A Taipan 2.5 Schnuerle glow was being run-in during the contest and this sounded really ferocious. Increasing competance in the pitting of glows was noticed.

Left: Mick Lewis takes his turn at pitting, helping fellow club mate Derek Dowdeswell at Stockport meet with his Pink Panther design. Below: Derek Dowdeswell is flanked by Richard Evans and Dave Wood.

# The Nationals

*Combat*

Well supported with 134 entries, combat once again attracted a healthy foreign contingent with competitors from West Germany, Denmark, Belgium, U.S.A., Eire and, of course, Scotland! A most interesting entry was that of Californian Charlie Johnson, normally a '35 combat man'. No time to sort out his F.A.I. models, so used borrowed Oliver Tigers and old models, but look out for this gentleman next year.

This first day *can* produce shocks although this year the heats went according to the form book; perhaps the only surprise being the elimination of Glevum's Frank Smart by an old club member, Chesney from Maidenhead. Round 2 continued into the next day, when first head to roll was that of Derek Dowdeswell (last year's winner) who was beaten by J. Mittler of Belgium, after Derek took all the streamers in one go (that's what all combat flyers have nightmares about!). John Hammersley of Outlaws and Vernon Hunt of A.D.M.A.C./A.C.E. provided a real vintage display of combat, John using his 'glow'-powered *Ironmongers* was four cuts to nil up in a minute, but a model change with Vernon getting four cuts, evened things up and John finally lost on ground time.

The third round saw the departure of Stoo Holland (on his annual holiday from Eire), by Mick Tiernan of the newly formed *Hunters* club of Leicester. Steve Bingham, also from *Hunters*, put out Malone of Nuneaton who had earlier dealt with Tim Court of Glevum. Meanwhile, Richard Evans in circle one was taking care of the last Danish competitor John Mau; a conclusive victory of five cuts to one. Stockport's Dave Wiseman, second last year, and Loughlin of Wanstead who finished in the same spot the year before, had quite a tussle, with Dave just coming out on top.

Round four saw the last Glevum competitor packing his equipment for home after a close heat between Mick Lewis and Mick Tiernan, ground time being the decider. Steve Bingham defeated Ray Sibbald, an old hand from the Sidcup club, while Jim Carolan defeated Ambler from Preston. The two remaining foreign competitors, Fred Meijer of Holland and Mittler of Belgium had been drawn together and after a reflight (over centre-conduct) Mittler was the eventual winner. Back in circle one, Richard Evans defeated '72 champion Mick Chilton by four cuts to one, and Vernon Hunt put out last year's runner-up, Dave Wiseman, by five cuts to two. Bob Morgan, who had earlier defeated the strongest threat from the Germans, Johny Dubell, had a relatively easy task in beating James of Bath.

The quarter finals resulted in Mick Tiernan and Steve Bingham being drawn together – two cuts all and the string tangling Steve's prop shaft resulted in Mick winning through time lost on the ground. Jim Carolan outflew Mittler of Belgium to claim a semi-final against Mick. Richard Evans beat Burles of Bath by four cuts to one and Vernon Hunt eliminated Bob Morgan by a seven cuts to nil victory!

The first semi-final was a well-thought-out affair by Richard Evans. Richard changed from his normal *Ironmonger* design to a *Titan* design of Dave Woods, and by turning well inside Vernon's *Ironmonger/Warlord* won convincingly, three cuts to nil. Unfortunately, during the bout the model was destroyed and one of Richard's Tigers now requires a new crankcase.

Jim Carolan and Mick Tiernan both flew *Andurils* (designed by Steve Bingham), the bout being evenly matched and very clean. Mick made most of the attacking, and won by two cuts to nil.

The fly-off for third place gave Jim Carolan an easy victory over Vernon Hunt who removed all of Jim's streamer in one attack; Jim making sure with a three cuts to one margin.

The final looked set to be a classic as Richard was looking for his first Nationals win, after being placed at the Nationals over the past three years. Richard was back to his *Ironmonger* while Mick was flying his usual 'banana style' models. Richard went straight into the attack, taking a small cut about

**Charles Thomas, serving with the U.S.A.F. in this country flew two typical American designs in combat – one Cox 15 powered, one Super Tigre G15. Weight is around 12-14 oz.**

an inch long, but Mick hit back to make it one-all, then two-one. At this point came the probable 'crunch' for Richard as he dropped his first clanger of the two days in taking all of Mick's streamer. A return by Mick to make it three-two and the cherished prize of winning the Nationals had eluded Richard once again; congratulations, Mick, and Richard the competitor he is – see you next year!


Richard Evans(2nd),George Copeman and Mick Tiernan(1st)
George tuned both the Mk4 Oliver Tigers used in the final.

Dave Wood with his Titan design – one of the most impressive seen at the meet. Spanning 36 in., and with approx. 13 in. max chord, these models weigh around 15 oz. when finished in nylon centre-section, Solarfilm tips. All-nylon covering increases weight by ½ oz.

# SPAARNDAM '74
# Combat Internats

## Hollands annual combat meeting

reported by VERNON HUNT

Action! D. Williams launches Martin Fox's model as another pit man retrieves another stricken craft.

THE LARGEST get-together of British and European competitors could be looked upon as a preliminary for next year's Criterium, but to be honest neither the standard of flying nor the organisation this year was impressive as in the past. In fairness though, the high winds and torrential rain did not help the *Daedalus* club and W.O.C. combat team of Amsterdam in this matter. Taking up our Nationals rule of 'all cuts count' i.e. even if the thread is detached in the process, a ruling of line cuts not counting brought us back to square one.

Accurate combat was impossible over the weekend except perhaps for the last couple of hours on the Sunday around finals time; one could win a heat purely by staying airborne for the required four minutes. The English provided nearly half the total entry of 104 which made life difficult in the latter stages. It was good to see an entry from both Sweden and Italy; perhaps the Italians would have done better to have looked for a team race event!

Besides individual achievements, the importance of the team event was strongly in evidence, the main contenders from the start being a combination of Outlaws, Bristol, Stockport, Glevum clubs to form GO! and Alfreton and Hunters forming A.H.A.

Heads rolled because of the conditions; last year's finalist Mick Lewis being the first to suffer from Marchall of West Germany – two cuts all and ground time the decider. As the Dutch fly-off losers, it was necessary to 'prune' to have 32 for the third round, this being done by picking 16 fliers at random. Nationals champion Mick Tiernan wished his name had not come out of the hat, as he narrowly lost to John Hammersley. Of the last 32 fliers, 23 were British so matching of fliers from the same country was inevitable. For myself, the biggest upset was the defeat of Richard Evans by fourteen-year-old Andy Walker of Alfreton (sorry; A.H.A.!) by two cuts to one. Other notable heats in this round being Steve Bingham's win over Jim Carolan and Tribe's victory over Fred Meyer of Holland.

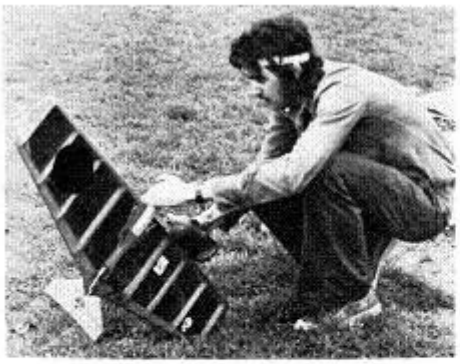
At the quarter-final stage Rose of Hatfield defeated Andy Walker of Alfreton (who also had Tim Court's scalp under his belt), Steve Bingham putting out an impressive John Hammersley, and Dave Wood beating Vernon Hunt, both flying the *Titan* design. Another new face being that of Martin Fox of Nottingham who had a good victory over Avery of Finchley by two cuts to nil.

In the semi-finals Steve Bingham of *A.H.A.* had a three cuts to two win over Rose of Hatfield, while Martin Fox was, to say the least, unfortunate to lose to Dave Wood. It looked to be another surprise result until he clipped Mick Lewis, one of Dave Wood's pitmen, whilst going for a 'take-off' cut during the heat. Instant disqualification, without consideration for the pitman actually being inside the circle.

Mick Lewis of Glevum with what is becoming a familiar sight at combat meets – a Solarfilm covered Titan.

Holland's Bob Metkemeyer of the host club battles it out with England's Bob Rippengale.

Vernon Hunt, our reporter, is another to join the 'Titan-users' club, forsaking his well known Warlord design.



Left, Derek Dowdeswell from Glevum used model showing strong 'Titan' influence, plus Solarfilm covering for speed and lightness.

Right, winner Steve Bingham stays with his distinctive Anduril design. His long experience at combat flying put him in good stead in a 'classic' final.

A third and fourth 'fly-off' took place with Rose the victor over Fox, other placings down to eight being decided on a points basis.

The final was a very good one with Steve Bingham's experience standing out a mile. After making the initial attacks and taking the streamer and knot separately to count as two cuts, he was content to fly defensively. The art of putting one's opponent into the ground was at its best; as soon as Dave removed the streamer leaving the knot, his time accumulation on the ground would make no difference to the result if he had removed the remaining part of the streamer. Congratulations to both for showing what combat is all about.

Team prize went to *Alfreton-Hunters Associates* while further victories included the English winning the football matches again this year by beating the Dutch 1 - 0 and the Danish who had beaten West Germany by two goals to nil!

**Results:**

1. S. Bingham (A.H.A.). 2. D. Wood (GO!). 3. Rose (Hatfield). 4. M. Fox (Nottingham M.A.C.). 5. V. Hunt (A.H.A.). 6. J. Hammersley (GO!). 7. Walker (A.H.A.). 8. Avery (Finchley).

**Bad weather and lack of time caused two combat contests (the Luton club's Burns-Brown meet and the South Midland Area event) to be curtailed prematurely, and consequently these competitions were completed at the South Bristol Gala, where the host club also held its own combat rally! Above right, shows Burns Brown finalists, Steve Bingham, Richard Evans and Mick Tiernan (who placed 2, 1, 3, respectively) while below them are the South Bristol victors with winner, Mick Chilton in the centre, flanked on the left by Mick Tiernan (2nd) and Mick Lewis (3rd).**