Aero Modeller

March 1977
30p
U.S.A. & Canada $1.25

INCORPORATING
MODEL AIRCRAFT

MAP HOBBY MAGAZINE

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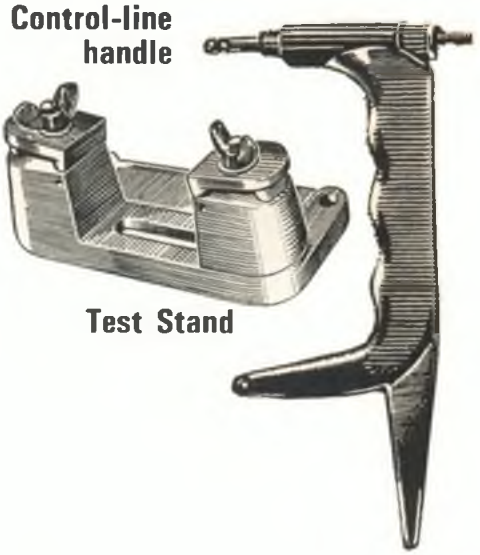

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SOLARBO

Harry Butler's electric RTP Lightning in the photo is looking somewhat battle-scarred - and no wonder! It has been flying for over 10 years at public displays throughout the country as well as at local club events, etc. At most of the displays it was used for balloon-bursting competitions - flown by *an estimated total of over 3,500 different 'pilots'* aged from 5 to 90 (and most of them quite inexperienced).

Despite hundreds of heavy and crash landings, the balsa airframe has survived with only simple repairs - but the wire undercarriage has failed twice through 'metal fatigue' and had to be replaced! And the model is still fully airworthy.

A striking tribute to the longevity of an all-balsa model! And to the design and construction of Harry Butler's RTP model aircraft kits (this model was the prototype of the Lightning kit which went into production about a year ago). Naturally Harry uses Solarbo balsa for all his kits, because only the best will do. There is nothing to beat really good designs built from Solarbo balsa!

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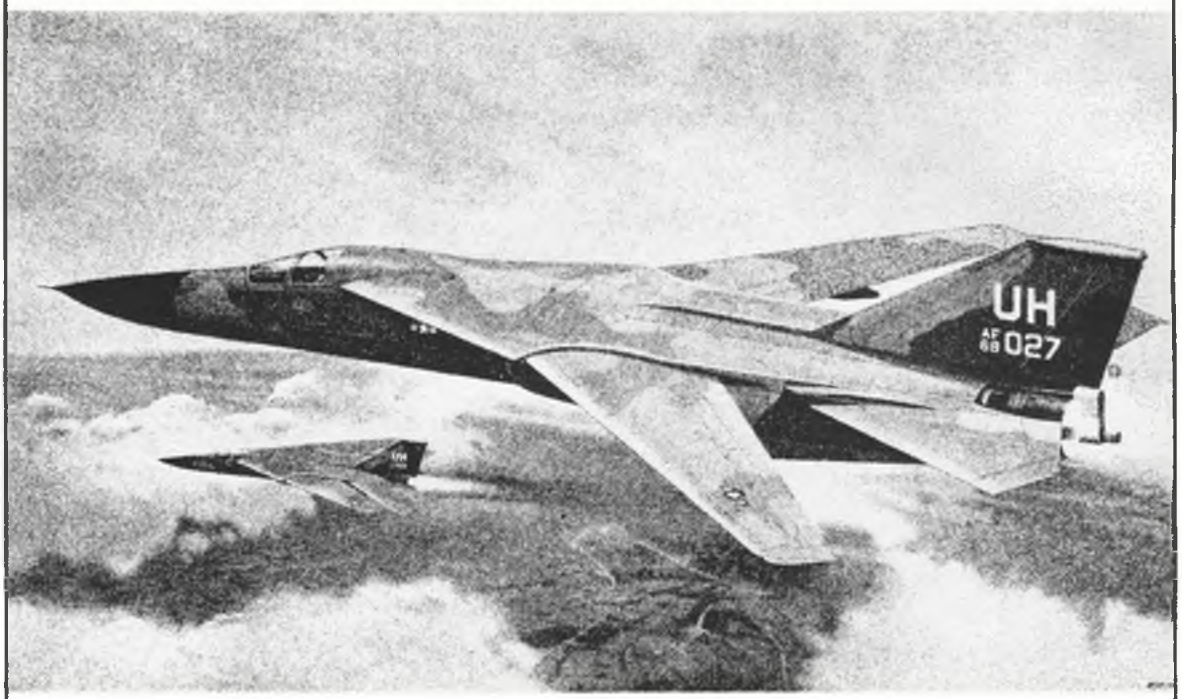
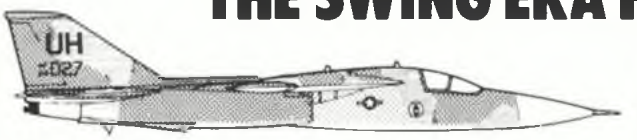
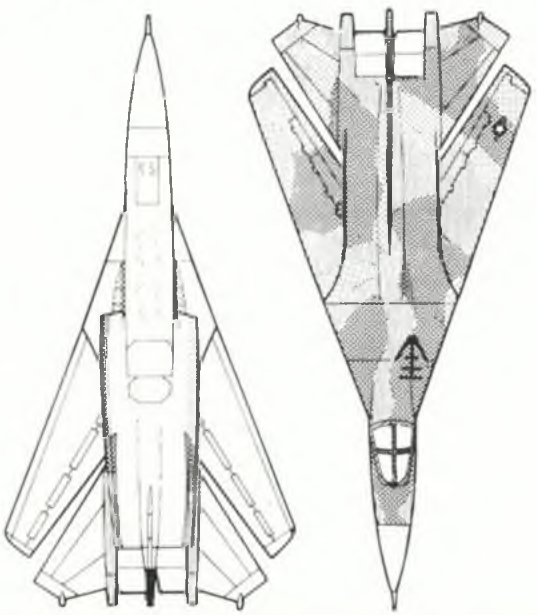


THE SWING ERA HAD BEGUN.





A two-seater all-weather tactical interdictor and attack bomber, the General Dynamics F-111A was the world's first operational swing-wing combat aircraft, making its maiden flight in December, 1964.

Although initially beset by many mechanical problems, the F-111 eventually proved highly effective during the Vietnam war. The later 'E' version was fitted with modified intakes and extremely advanced radar and electronic equipment.

Now faithfully reproduced in a superb Airfix 1/72 scale kit, the F-111E features movable swing-wings, detachable crew escape module and markings for four aircraft of the 20th Tactical Fighter Wing based in England.

Technical Details

Date of origin:	1964
Engines:	Two 18,500lb thrust Pratt and Whitney TF30's
Top speed:	Mach 2.5
Service altitude:	60,000ft.+
Armament:	M61 20mm multi-barrel cannon 500 and 2000lb conventional and laser-guided bombs.
Wingspan:	63ft. unswept
Length:	73ft. 6ins.

GENERAL DYNAMICS F-111E
1:72nd Scale

AIRFIX

Aero Modeller

INCORPORATING

MODEL AIRCRAFT

March 1977 Volume XLII No. 494

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Comment

Now that a 'split' Nationals has been announced by the Society of Model Aeronautical Engineers for Little Rissington spread over two week-ends in August, aeromodellers have six months notice for their premier event of the year.

But what, apart from the Indoor Nats at Cardington is to celebrate the "Silver Jubilee" holiday in June?

It concerns us that no major rally has been announced for the four day break which comes at such a peak period of fine weather and long daylight hours.

So we've taken it upon ourselves to book Old Warden for a "Silver Jubilee" celebration modelling day. It will incorporate the annual contest for the "Fireball" trophy donated by Michael Beach for vintage control line and while the day is planned for designs of 25 years vintage, or more, the field will be open for 'hush sports' free flight or R/C models, with electric, CO_2, rubber or super-silenced motors.

The aim is to recover the atmosphere of those fondly remembered days in the early '50s at Radlett and Langley.

Make a special note of the date—Tuesday June 7th—the Silver Jubilee Bank Holiday, just a few days before our other major event, the Aeromodeller all-scale day on June 12th, *also* at Old Warden. See you there?

on the cover

American R/C Scale Team member at the Cranfield Internationals, and 1976 team manager, Hale Wallace with his self-built 12in. equals one foot "Skybolt" at the EAA fly-in, Oshkosh last August. The Steen Skybolt is a fully aerobatic two-seater designed for home construction but does not always get such a dazzling model-style finish as on Hale's aircraft.

photo by Ron Moulton

next month

Like to try your hand at control-line speed flying? A newcomers speed class for 0.40 cu. in. engines has recently been introduced, and to assist those taking the plunge, a special feature together with plans will appear in the April issue, aimed at the beginner to contest flying. Regular features on control line free flight and scale news and views plus drawings for an electric RTP version of Snoopy's doghouse also appear in this issue—on sale March 18th. Don't miss it! Place an order with your newsagent now.

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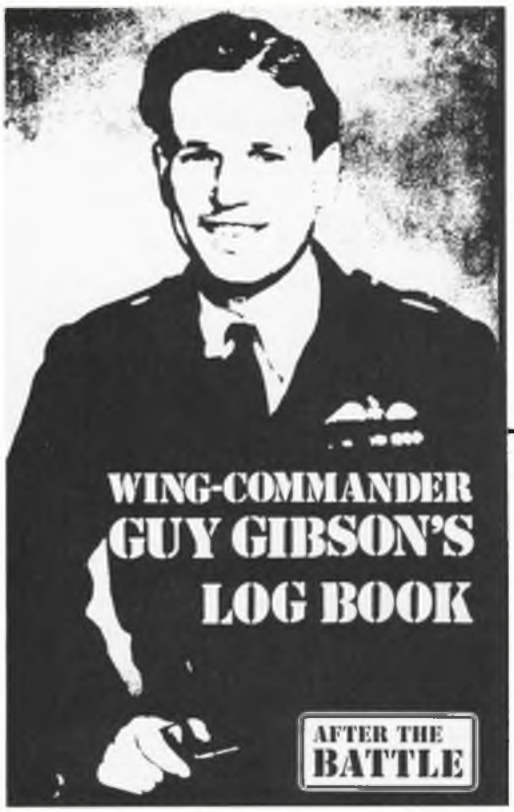

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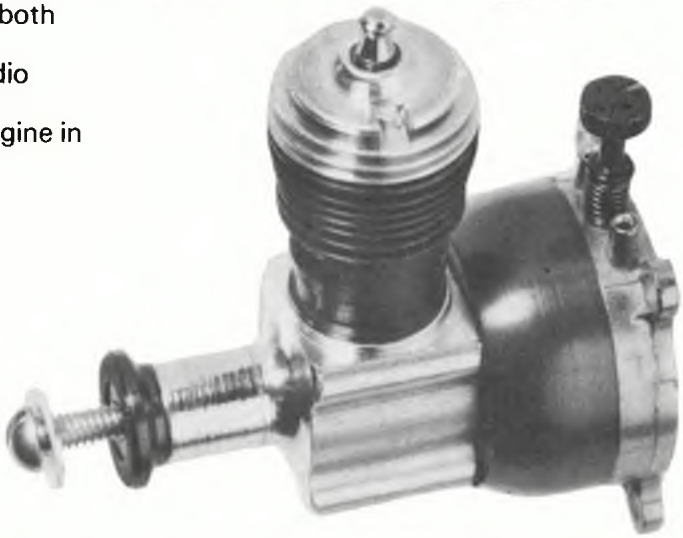

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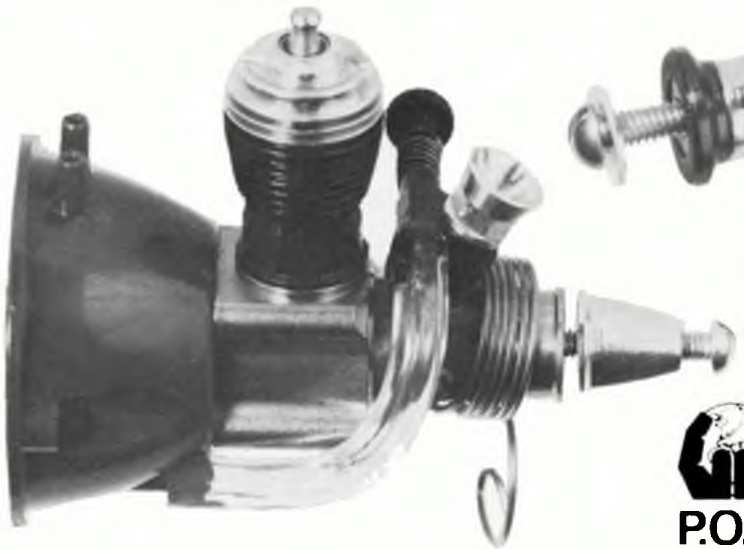

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Heard at the HANGAR DOORS

The 32nd Model Reduit D'Avion International Coupe d'Hiver contest will this year take place on 6th March at Montargis, France. 1977 sees some interesting rule changes for this event – a major departure is that hand launch will now be allowed. In addition, only one entry will be permitted, with one model, although a reserve may be used if the first model is lost or damaged. The models themselves must weigh 100 grammes total, and flights will be restricted to three of two minutes maximum duration.

In addition to the traditional Coupe d'Hiver class, the meeting will now also cater for A/1 glider and 1/A power enthusiasts. Interested? Then write to Ch. Menget at 1 Residence Bergerie, 91300 Massy, France. Entry fees are 6 Frs per class for Senior, 4 Fr for Juniors.

PRESS RELEASE from the *Royal Air Force Model Aircraft Association* reveals that at their 1977 AGM, a new rule concerning the use of silencers was introduced, to quote: "*Non-venturi silencers are to be fitted to all internal combustion engine powered models. Silencers must be effective. A non-venturi commercial silencer that has not been tampered with will be deemed to be effective. Commercial silencers are not mandatory, but non-commercial silencers must meet the approval of the officer in charge at the club station and the contest director at RAFMAA contests. Additionally, due regard must be paid to the duration of flying sessions and number of aircraft flown simultaneously to avoid unreasonably long and intense noise emission.*"

"*It will be the responsibility of the officer in charge of model clubs at RAF stations to enforce the new rule and of the contest directors at RAFMAA contest. Only under extraordinary circumstances will the rule be relaxed.*"

ALSO COURTESY of an RAFMAA press release we learn that Chief Technician Brian Baines of RAF Coningsby was presented with a £40 cheque by RAFMAA Chairman (and SMAE Vice-President) Air Commodore E. S. Baddeley – this being in recognition of Brian's impressive performances in both National and International A/2 glider contests, culminating with second place (out of 146) at the 1976 Criterium Pierre Trebod.

THE SHUTTLEWORTH Collection's 1977 Calendar of Events is now available (SAE to Shuttleworth Collection, Old Warden Aerodrome, near Biggleswade, Beds) – the first of their now famous Flying days being held on Sunday 10th April.

Other dates appertaining to model flying are: 1st May – *Kite Day*, 12th June – *Aero Modeller Scale Day*, 17th July – *Shuttleworth Veteran Aeroplane Society (Model Section) Sports Day*, 7th August – *Performance Kits Model Day* – with a strong emphasis on vintage models.

REGULAR VIEWERS of the BBC's television series *Wings* will be interested in the special exhibition being arranged at the Imperial War Museum from 15th January to 30th May. Opening times are from 10am to 5.30pm weekdays, 2–5.30pm Sundays – admission charges being 30p per adult, 20p children. For those who do not know their London, the address is the Lambeth Road – nearest tube station being Lambeth North.

1977 NATIONALS. The British National Championships will once again take place at RAF Little Rissington, but there is an important change. Free Flight and radio controlled thermal soaring events will take place on the weekend of 20/21st August, whilst the remaining Radio Control and Control Line contests will be held over the three day Bank Holiday period of 27th, 28th and 29th August. Regrettably, there will be no access to the airfield between these two dates. These details have yet to be confirmed by SMAE Council, but are current at time of printing.

ENGINE SPARES. So often we hear complaints from readers that spare parts for model aircraft engines are simply not available. However, having recently visited two of this country's largest importers/distributors of modelling goods, and being impressed by the very comprehensive range spares held in stock, we can see that the problem does not lie at their feet. Indeed, in many instances the stumbling block would appear to be the retail model shop who apparently cannot be bothered to order special parts on behalf of his customer. Naturally, not all shops exude this air of indifference – indeed some of the better shops specialise in providing a spares service – but there is a problem, and the distributors are keen to keep the modellers in the air, and their reputation untarnished. Therefore the best procedure for ordering spares is first to contact your local model shop proprietor. If he is unable/unwilling to help, *then* write direct to appropriate distributor (or manufacturer) stating clearly the part required – preferably enclosing the part to be replaced to avoid misunderstanding.

A Short Sunderland now graces the open area by the entrance to the Royal Air Force Museum at Hendon. It is restored to Coastal Command all-white colours with the markings of 201 Squadron.

FAIRCHILD A-10A

a profile-scale free flight model of an unusual prototype, designed for use with the Mabuchi A-1 electric power unit

by **Ian Edlin**

THE FAIRCHILD A-10A was the winner of the recent USAF AX competition for a heavily armed ground support aircraft with a long endurance, low noise level and the ability to make very tight turns at low altitude.

This requirement was brought about by the Vietnam war where these duties were often carried out by older types, such as the Douglas Skyraider. In particular the A-10A carries a larger, specially developed, anti-tank gun, and the pilot is protected by heavy armour plating while having an exceptionally good view from a bubble canopy well ahead of the wing. Quiet and economical General Electric TF34 fan engines are placed out of harm's way, high up on the rear fuselage.

The model is based on the prototype A-10A which I feel is a prettier shape and more decorative than production aircraft, However, I have 'borrowed' from later machines an under fuselage strake just ahead of the wing to add depth to the fuselage at the propeller slot position.

The barely adequate tailplane area is effectively increased by the engine pylons, while the combined area of twin fins and profile fan engines more than offsets the large frontal side area of the fuselage. The vortex tips (which are easier, to make than they look) and undercarriage fairings, serve to maintain the wing camber and could be supplemented by underwing stores pylons if desired – weight permitting. The motor position is safe, eliminates the need for downthrust and both tailplane and fins are reasonably clear of the propeller slipstream. As the motor mount can be slid fore and aft on the fuselage during test gliding, trimming is simplified and no additional weight is required.

To obtain a good performance, weight must be kept as low as possible, so the balsa must be carefully selected for light weight, consistent with sufficient strength to prevent undue flexing in flight. The wood for the fuselage in particular should also be checked for straightness.

Begin construction by cutting out all parts, taking care that the grain direction is correct. On the wing, tail and pylons the grain runs parallel to the leading and trailing edges. The lengthwise joints can now be made on a flat surface, followed by lightly sanding, and radiusing edges where necessary. Applying dihedral to the engine pylons is begun by first cutting one joint, bevelling the edge and joining. Then when the cement is dry, repeat the process for the second joint.

Slide the wing centre section, tailplane and engine pylons through the fuselage and cement carefully, checking alignment. The undercarriage nacelles can now be added, followed by the wing outer panels, engine pods, fins and finally the wing tips. The wing outer panels must be carefully trimmed to give the correct dihedral and avoid distortion while the pylon ends are bevelled to accept the engine pods.

Make up the motor mount by cementing the balsa sides to the spruce core and screwing the plastic mount in place.

If flight tests show that additional weight can be carried, an undercarriage, bombs or more paintwork could be added. The undercarriage position is indicated on the plan, as are also the prototype USAF markings. I believe 11369 was painted gloss light grey. Humbrol

FULL SIZE COPIES OF THIS 1/6TH SCALE REPRODUCTION ARE AVAILABLE AS PLAN NO. FSP 1305, PRICE 95P (INCLUSIVE OF VAT AND POSTAGE) FROM AEROMODELLER PLANS SERVICE, PO BOX 35, BRIDGE STREET, HEMEL HEMPSTEAD, HERTS HP1 1EE.

enamel could be used but beware, the weight could make the model a poor flier.

My own model carried one coat of thinned Humbrol cellulose sanding sealer on the fins and engine pylons and two coats on all other parts (plus the lower ends of the fins). The first coat was lightly sanded with worn fine glasspaper just sufficiently to remove the roughness.

In the case of the fuselage and engines, both coats were applied and painted details added with Humbrol enamel before final assembly.

However, in the case of the wing and tailplane, only one coat was applied before final assembly. In this way the black walkway lines could be applied while the parts were flat on the workbench. This was done with drawing ink applied by means of a pen and straight-edge, the sanding sealer preventing the ink from soaking into the balsa.

At this stage the wing camber was applied by warming in front of a fire (not too close) and bending gently. The second coat of sanding sealer, applied to the wing and tailplane after assembly, prevents the ink washing off in damp flying conditions and helps maintain the wing camber.

All joints should be pre-cemented if balsa cement is used. This will, for example, make the attachment of the wing outer panels much easier, as an immediate bond is obtained. The joints should later be re-inforced by applying a small bead of cement and then quickly smoothing this into a small fillet with a single stroke of a finger.

Before test flying, check that the wing and tailpalne are free of warps and correct if necessary by twisting in the opposite direction in front of a fire (again not too close) and holding twisted until the wood cools. Check also for correct alignment of parts as viewed from front or rear of the model. An additional fillet of cement will shrink over a period of time and can be used to pull parts back into alignment, but squarely cut joints and careful assembly should make this measure unnecessary.

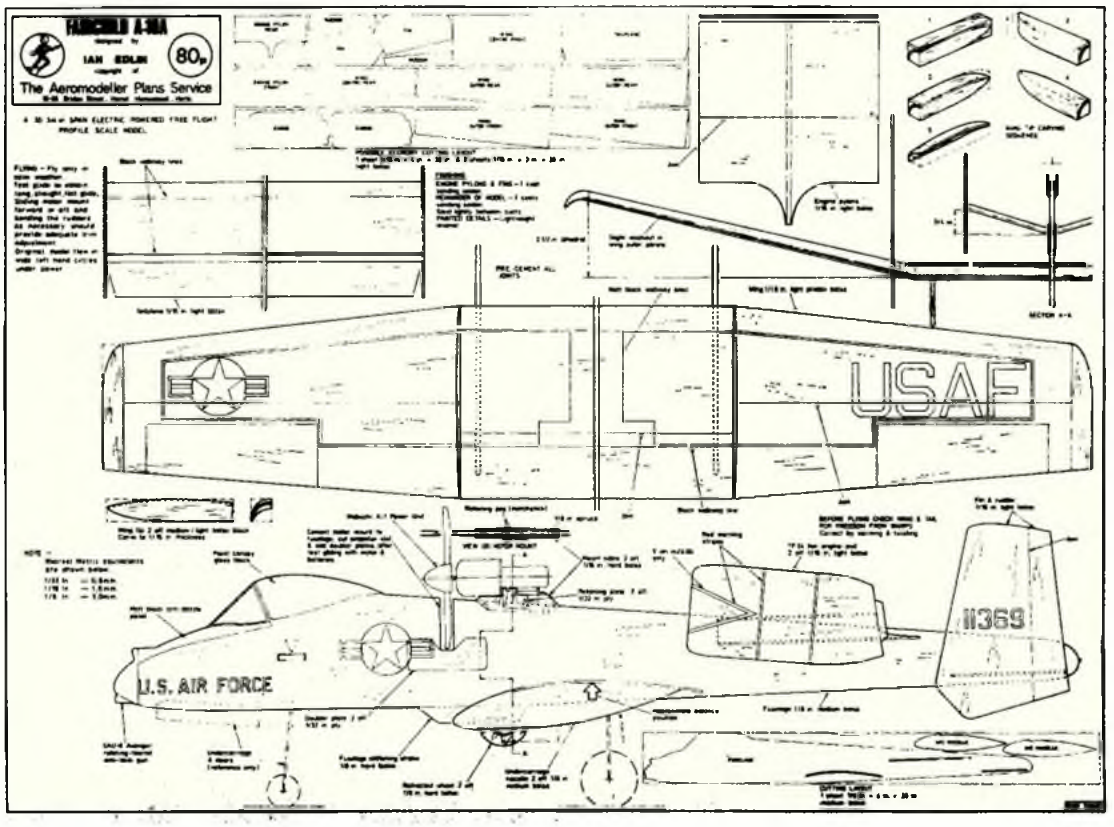
The slot for the propeller should not be cut until satisfactory test glides have been obtained with the motor and batteries in position. Carry out test glides on a calm

day, preferably down a slope and into the wind (if any). Slide the motor mount back or forth until a long flat glide is obtained and bend the rudders to correct any turning tendency. Mark the motor mount position and *go home*! Do not be tempted to complete the model on the flying field.

The prop slot can now be cut and the motor mount and fuselage doubler plates can be cemented in place.

Test flights have shown that in the event of a hard landing or collision, the motor can slide off its mounting and damage the forward fuselage. A simple retaining device consisting of two pieces of ply and a removable peg (matchstick) is shown on the plan and should prevent such mishaps.

The original model flies in a wide left hand circuit, climbing realistically on the initial power of a near full charge, then levels off for a steady cruise followed by a gradual descent and gentle landing. A most satisfying and relaxing experience, and one you should not miss.



SIG MUSTANG KIT REVIEW

Ron Truelove examines an interesting, 50 in. span, semi-scale control line stunter

IT'S NICE TO SEE an example of modern kit technology being applied to a control line model, and this 'scale like' stunt model produced by the American *SIG Manufacturing Co* features a polystyrene foam-core wing, plus fuselage top, dummy radiator, and removable cowl all vac-formed from ABS plastic.

My initial impression was one of disappointment on discovering that the wing cores were not covered. I reckoned that if I made a mess of *them* then there would be no second chance, and any mistake in the skinning would be impossible to correct – thus rendering the whole kit scrap. Apparently uncovered cores are common in American kits, but as a modeller I think I would prefer to pay an expert an extra few 'bob' to do this part of the construction. A lot of US kit manufacturers' good names must hang in the balance every time somebody like myself attempts to cover one of these wings for the first time.

Other first impressions of the box contents were confined mainly to the good quality of the balsa. Yes you read it right, good! The $\frac{1}{16}$ in sheet for the wings matched each other nicely in both grade and weight. Each of the individual parts were the grade you would expect them to be and of uniform density throughout, not hard down one end and soft down the other, which seems to be all too common these days. In short, apart from a slight twist in one of the leading edge pieces (which pulled out easily during assembly) the wood parts were of an exceptionally good quality. The ABS vac-formed parts were equally of good quality, but surprisingly did not extend to the wing tips; surely one of the ideal uses for this material?

Some confusion reigned over the parts not supplied in the kit insofar that some were plainly labelled as such on the very clear plan, but others were not and this could lead one scurrying back to the model shop unjustifiably complaining about missing parts.

The tank is one of these items and is specified as a Veco T21E. I gave up trying to buy it, and resorted to making one. Unfortunately, if you are not familiar with this particular tank, there is a lack of necessary information on the plan to even choose an equivalent, let alone scratch build one – so a bit of tank designing has to be fitted into the building programme.

The printed instruction sheet is clear and fairly complete, although some allowance should really be made for the occasional over-enthusiastic beginner who is bound to build this as a first model.

So to assembling the model – and working through the instruction sheet, one first comes across an important note regarding the use of various adhesives. Trouble is, *SIG* have tried so hard to 'sell' their adhesives that you can get a bit lost in trade names, and not being familiar with American products I did not really understand what they were trying to convey, but finally settled for this interpretation:

SIG Core Bond – used for glueing balsa sheet to the foam cores; I used *Copydex* for this job, an ammonia based contact adhesive.

SIG Epoxy Glue – clearly a twin-pack epoxy. I used a slow cure version for strong jobs, e.g. engine bearers, and 'fast-set' for the cannot-wait-bits.

SIG Bond – actually an aliphatic resin, but I used a PVA adhesive on all balsa to balsa joints.

SIG Ment – a balsa cement, and is mainly used for ABS-to-balsa joints.

The most important thing to remember about adhesives is, if in doubt experiment on some scrap material first. Incidentally, *SIG* adhesives are now available in the UK – from H. J. Nicholls & Son Ltd, who reside not a mile from London's Holloway Road . . .

As skinning the wings is probably not a regular event in the British kit builder's life, I feel that a somewhat lengthy explanation of how I tackled this particular stage of the construction is required.

The *Mustang's* cores needed very little preparation, being straight and accurate, but the surfaces were slightly rippled, as if they had been cut too slowly, and thus needed slight sanding. Making the wing skins was straightforward following the method described, but I did not bother to straighten the edges, only fitting them one to the other, making sure to keep them in the right order.

As this was my first attempt at 'skinning' foam wings, I started by seeking advice from Dick Edmonds of *Edmonds Model Products* whose kits all feature foam wings (supplied ready-covered of course). His suggested method of assembly differs from *SIG*'s mainly in that both his sides are covered at the same time. Dick's wings use a thinner airfoil than this *Mustang's* stunt section, and by lightly contact cementing both skins and gradually smoothing them both down together he can check for warps as he goes and straighten them out before they get too established. Although this stunter's wing is probably too thick to develop any warps I still fancied this method of construction as I had seen it work.

The initial mating of the skins to the core is done by using the scrap foam offcuts as an assembly jig, but first

make a practice dry run to ensure you get everything the right way round.

Firstly, of course, you have to apply the contact adhesive thinly to the core, as the foam is less porous than the balsa skin. When the adhesive on the core starts to dry (i.e. goes matt in places) give the balsa skins a coat – but hang them up to dry – bulldog clips are handy – as the balsa will try to curl. When all surfaces are fairly dry, take one skin and lay it on the lower foam scrap piece, then place the wing on carefully, followed by the top skin and upper scrap piece. Firmly but gently press down. Instantly remove the wing from the 'jig' and check for warps. Untwist if necessary and replace in 'jig'; press down hard and recheck. If satisfied, place wing in one 'half jig' only and rub skin down hard, repeat for other side then finally check and breathe a sigh of relief! This is the point where you have discovered that skinning wings requires about 10 per cent skill and 90 per cent nerve.

The remainder of the wing assembly I completed as per instructions apart from taking the lazy approach with the outboard tip. After all what is the point of hollowing out the tip block if one then adds weight in the form of lead afterwards? I kept the block solid and added less lead to compensate.

If like me you have to resort to making a tank, bear in mind that it is intended to be removable, and therefore arranging for all the plumbing to come out of the front of the tank is something of an advantage. Also I sealed off the top of the tank compartment under the bearers with scrap $\frac{1}{16}$in sheet and thoroughly fuelproofed the inside.

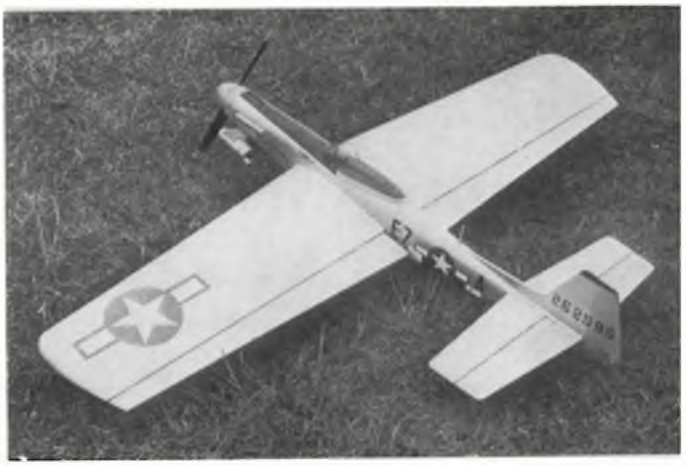
Being a chap who dislikes piano wire pushrods I made a $\frac{3}{8}$in square balsa one, and taking advantage of the external elevator horn, I fitted an all-metal adjustable link at the rear.

Two comments on the undercarriage: first, after drilling the holes in the bearers and trial fitting the wires, the leg sections did not line up of course, but in trying to twist one it snapped like a dry twig, right on one of the bends. I reckon the reason was because the bends in the wire are far too sharp – the inside radius of the bend should be at least equal to the diameter of the wire. Guess who had to bend up another u/c wire? Secondly, fixing the wheel doors to the legs with the celastic strips required a vast amount of patience. I thought the celastic would never dry or stick, but it did finally work, although I put a small blob of Bostik 1 at the bottom end to deter any attempt of the door to twist.

Grain filling with thin coats of dope, lightweight tissue and a good rubbing down with wet and dry between each coat provided a satisfactory preparation to a paint finish, although the structure should be ideal for an iron-on film if required. I painted the 'cockpit' area black before glueing the canopy into place and then masked the clear areas before painting the whole airframe including the canopy frames.

Although the model is actually based on Herbie Keefe's aerobatic Mustang – and the two transfer sheets supplied contain all the correct stars and numbers etc – I still prefer the aircraft to be painted as most people expect a *Mustang* to appear i.e. in 'military' colours. The suggested colour scheme, though correct, results in a model which looks like a model aircraft! With this in mind, I painted on what I considered to be typical P51 colours and markings, using some of the white stars from the decal sheet, and finally fuel proofing with Ripmax 'Tufkote'.

With my O.S. 40 plus its silencer being far heavier than the Fox shown on the plan, it was no surprise to



have a very stable first flight, but adding about 1oz to the tail restored the aerobatic performance. A lot safer than starting off tail heavy! As for performance, remember that this design is the handiwork of top-line American pilot Mike Gretz – and while perhaps the expert pilots will find the wing loading just a little high, there is no doubt that the vast majority of control-line enthusiasts will be more than satisfied. It certainly flies better than I can pilot it!

To sum up: without a doubt the foam wing is immensely strong for a stunt model, possibly too strong if a lighter core could have been used, but I have a feeling that time will show that this model can take quite a few knocks and outlive a conventionally built stunter many times over. Incidentally the wing, including leadouts, bellcrank, flap pushrod and tip weight came out to $12\frac{3}{4}$oz, whilst the finished model before trimming was $48\frac{1}{4}$oz. So when you take into account the O.S.40 and its silencer (about $4\frac{1}{2}$oz heavier than the Fox 35) plus over 4oz of paint, etc, it's not a bad weight, certainly a lot better than I expected.

Skinning the core *seemed* the worst job, but if you get organised and really make sure that you know what you are doing, you will be surprised how easy it is. Although I used a slightly different method from that in the instructions I was just playing safe, *SIG*'s method should be fine on these thick wings.

Regarding the time spent on the *Mustang* the building of the airframe took 31 hours, plus another four for fuel tank building. Grain filling and painting etc took me 23 hours but this could be reduced by using an iron-on film, so the complete model should take between 45 and 60 hours depending on the finish required.

The SIG Mustang retails at £18.95 *and is available from H. J. Nicholls and Son Ltd of* 308 *Holloway Road London N7 6NP. This same concern also imports many other SIG kits and control-line accessories. A mail-order department is available.*

The O.S.40 sits neatly in its place, where it is covered by an ABS moulded cowl – this being retained in position by woodscrews leading into small ply plates positioned either side of the firewall as shown at right.

THE FREE FLIGHT SCENE

This month: Martin Dilly

Some of the F/F representation at the December CIAM plenary meeting in Paris. Left to right: F/F Technical Committee Chairman Pete Allnutt (Canada), George Xenakis of the USA, Rudi Beck (Hon President CIAM and Hungarian delegate), Denmark's Thomas Koster, Pierre Chaussebourg of France, Otaker Saffek of Czechoslovakia, and the UK's Ian Kaynes.

FAI NEWS

IAN KAYNES is the United Kingdom delegate to the CIAM (*Commission Internationale d'Aeromodellisme*) and he and I, representing New Zealand, both attended the plenary session in early December at the FAI's Paris headquarters.

Probably the most disturbing item on the Agenda – 28 pages of it – was a proposal that World Championships should in future be run on a three year, rather than a two year schedule. Various related proposals also appeared, including one that *either* F1A, F1B or F1C Championships should be held every year; this ignored the fact that, at present, the six team members not flying on a particular day are vital for the recovery and support part of their team's effort. A Swedish proposal that entry fees be split into an accommodation part and an entry part, so that teams could elect to cater for themselves and provide their own housing, was included in the organisers' guide as a recommendation.

Anyhow, the majority of nations apparently felt that we should stay on the two year cycle, so it's 1977 for the next World F/F Championships with Denmark the host country, and July 6-12th the date. Accommodation will be either in schools or a military tented campsite specially built for the contest, but costs will probably be higher than in the past, possibly $US160 per competitor.

Thomas Koster who, one suspects, has been rather active in getting the Danish Championships proposal onto a firm footing, also asked for permission from CASI for the 1977 Championships to be held with the "all together fly-off" rule applied for all three classes, in view of the very long duration of F1C fly-offs if the "consecutive two minute period" system is applied. With restricted time available at Roskilde, the CIAM meeting approved this rule exception for the 1977 Champs.

Still on FAI power rules, 3.3.9.c is altered to read "*The flights and the motor run must be timed with at least two stopwatches.*"

A French proposal to outlaw attempts to artificially increase flight durations by "flapping" under models was rejected as unenforceable and hard to define, but was referred to the F/F technical committee of the CIAM, as was another French one for the adoption of the 220 gram A/1 specification, but with a 30 metre line length, as a new provisional FAI category. Not really a good day for the French, as their attempt to have 100 gram mimum weight Coupe d'Hiver rules accepted was also rejected.

The correspondence between CIAM technical committee chairmen (Canada's Peter Allnutt in the case of free-flight) and the members of their committees must in future be copied to the CIAM technical secretary, so that it will be possible to monitor how the work of each specialist committee is progressing throghout the year.

St Alban's Phil Bixby demonstrates the single handed glider launching technique with his Lively Lady. This works best in a wind of about seven knots or over, otherwise the first part of the tow requires a high speed sprint.

SPANISH POSTAL A/2

Results of the Spanish Postal A/2 contest have just come to hand, and show a clean sweep for British flyers in the individual classification; Andy Crisp of Biggles topped the results with five 3s, a 4 minute flight, a 5 minute one and 4:43 while trying for the 6, with Crookham's Gary Madelin second, 27 seconds behind, and Keith Proctor of York third with 3:15 on his eighth flight. 54 people flew in the individual event; in the team results the Rumanian club Associatia Sportiva Dacia came out on top of the 23 teams competing, with a full house of fifteen maxes plus 1543 seconds, with the Biggles team of Cowley, Crisp and Moore second with fifteen maxes and 1276 seconds. Crookham's Madelin, James and Stewart took third in Team with 2695 secs, only five seconds less than a full house.

Andy and the rest of *Biggles* flew after the April 2-day FAI meeting at Sculthorpe, when the weather was very calm and obviously thermally. Flying his low aspect ratio *Flashback* model, with a 65 x 7 in. wing using the Shoaf airfoil, he made five maxes for the postal after having done four earlier maxes earlier in the day in the SMAE event. Trying for his five minute flight Andy had a D/T failure, and a 67 minute flight resulted, needing a spare model for the six minute attempt.

Individual Results

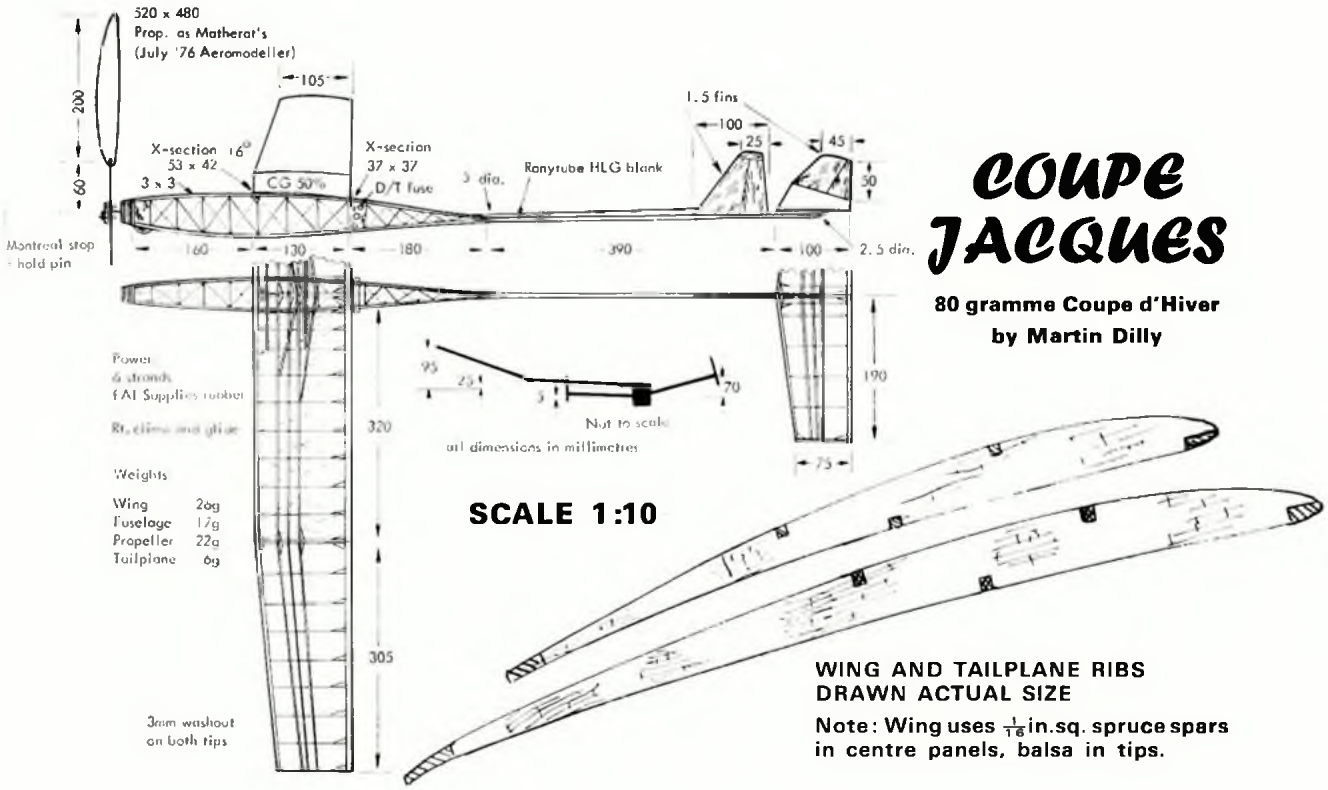
1. A. Crisp	*Biggles*	900	+	240	+	300	+	283
2. G. Madelin	*Crookham*	900	+	240	+	300	+	256
3. K. Proctor	*York*	900	+	240	+	300	+	195
4. C. Coloneson	*Rumania*	900	+	240	+	300	+	172
5. V. Ackerman	*Czechoslovakia*	900	+	240	+	300	+	130
6. A. Jack	*Tynemouth*	900	+	240	+	300	+	128

Team Results

1. Associatia Sportiva Dacia (Rumania)	2700	+	1543
2. Biggles (Crisp, Cowley, Moore)	2700	+	1276
3. Crookham (Madelin, James, Stewart)	2695		

SMAE CENTRALISED MINI CONTEST

The Barkston Heath Centralised Mini contest came a week after the Coupe d'Hiver International at Halton and the drift was equally low, maybe five knots at the most. In the circumstances this was just as well, because the whole of Lincolnshire was covered in dense fog, and contest director John Cooper wisely decided to allow timekeepers to follow models on foot to keep them in sight. This brought the expected objection from a club not one hundred miles from Whitefield, but even the objector eventually flew in the Coupe contest (and beat me, the rotter . . .). To have insisted on static timekeepers would have made the whole contest a farce, and might have provoked strong reactions from those who had fought the weather to get to Barkston. As it was, the weather conditions – icy



COUPE JACQUES

80 gramme Coupe d'Hiver
by Martin Dilly

WING AND TAILPLANE RIBS DRAWN ACTUAL SIZE

Note: Wing uses $\frac{1}{16}$in.sq. spruce spars in centre panels, balsa in tips.

the previous afternoon in much of the country, followed by a rapid overnight temperature rise – deterred a lot of potential competitors from the drive into Lincolnshire and entries were lowish for all four classes.

The ½A Power flyers had the problem of judging how short an engine run to use to still remain in sight when the motor cut, and yet have sufficient height for a reasonable glide. Peter Bayram judged things well with his T.D. .051-powered *Orbiteer*, and managed 9:03 to place first. Peter – and his timekeepers, running after the models – had an energetic day of it, as he also made nine HLG flights for his second win of the day. A small, balsa-coloured aeroplane is not the easiest thing to time during a muscular launch in fog; I can tell you, having tried it.

A/1 towing also led to difficulties for timekeepers, especially Martyn Cowley's, as he indulged in some circle towing in the fog, with the model barely visible at the top of its towline. Martyn even managed to force a fly-off for third place with York member Doug Bartle, Doug having made four flights against Martyn's two. Had the SMAE's new quartz clock not signalled the end of the contest Doug would have managed a fifth flight and taken third place, but instead Cowley made 2:08 in the fly-off.

For half an hour or so around two o'clock the visibility went up to about 200 yards, and there was even a glimpse of hazy sun above the murk. I had decided to fly early in Coupe d'Hiver; having forgotten to make new motors up after the Halton contest, I had to use the same FAI Supplies ones that had already had at least one contest flight, and their declining power began to show after some had to be used twice at Barkston. Even with quite a 'floaty' glide from its 240 square inch wing, it only got high enough for two maxes, and the O'Donnell delayed prop start model went ahead by thirteen seconds for first place, after John had a spate of motor breakages winding for the last flight.

The model I flew seems to have caused a bit of comment, probably because it is the first rubber model I have flown for about ten years, so perhaps a few comments and a three view would be in order! The prop is a direct copy of the Matherat one that Georges flew at Halton in 1975, but uses a Montreal stop system with a panic pin, so one can walk around with a fully wound motor while having lunch, talking to people, looking at other models or even trying to find a thermal to chuck the thing into. The hub is fabricated from 20swg brass and 16 swg wire, the wire outriggers being silver soldered to the main hub plate; I now know why people prefer light alloy hubs having spent a happy few hours soft soldering the various pins, springs and washers into place and persuading them not to stick to the bits they were supposed to slide in. No stops are used to locate the blades in the glide mode, and they trail freely in the breeze with no apparent ill-effects. I used the cartridge motor loading system (see the April 1975 *AeroModeller* for details), and FAI Supplies rubber made into six strand motors. Some 1964 Dunlop I had stored since my last efforts in rubber flying got the model to roughly shoulder height and once allowed it to land with turns still on; the current batch of FAI rubber was giving about 35 seconds run on 260 turns, and a reasonably good climb.

The wing uses the same airfoil as Matherat's (reputedly USA 5) with three 1/16in. sq. spruce spars in the centre panels, which also have heat shrunk terylene thread bracing in an X-layout in each rib bay; centre panels are flat (after de-warping over the Halton barbecue) and tips have about ⅛in. washout.

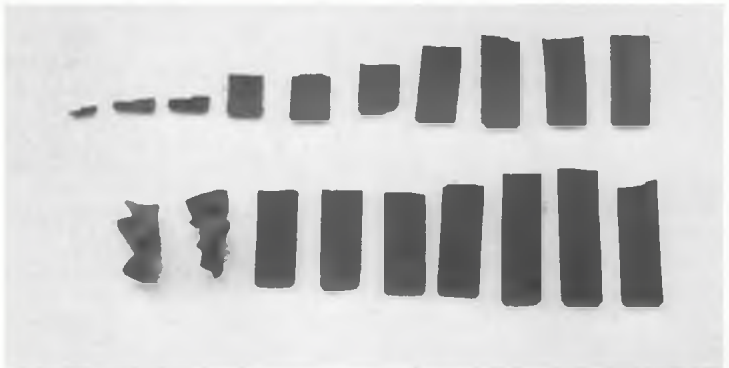
I used a Ronytube HLG rear boom, which "fishtails" alarmingly on the climb, and a D/T-operating line running forward to allow the fuse to be mounted just behind the wing, where varying fuse lengths are less likely to cause trim changes than at the extreme rear.

Coupe d'Hiver (*10 entries*): 1. J. O'Donnell (Whitefield) 8:58; 2. M. Dilly (Croydon) 8:45; 3. M. Évatt (Biggles) 6:38.
½A Power (*10 entries*): 1. P. Bayram (Richmond) 9:03; 2. R. Peers (Falcons) 7:37; 3. J. Fletcher (Royston) 4:15.
Hand Launched Glider (*11 entries*): 1. P. Bayram (Richmond) 4:34; 2. P. Ball (Grantham) 4:22; 3. I. Allen (Falcons) 4:17.
A/1 Glider (*10 entries*) 1. J. Bailey (Bristol & W) 9:11; 2. G. Madelin (Crookham) 8-31; 3. M. Cowley (Biggles) 3:40 + 2:08.

A NEW SOURCE OF RUBBER?

One of the purposes for which the SMAE exists is *"to encourage, and support research in model aircraft design, theory and construction"*, and also *"to act as . . . general traders, agents and manufacturers . . . of any articles of any description which may assist the development of model aviation."* With the general sheer hard work of day-to-day organisation and preservation of flying facilities this tends to be neglected, but at present some approaches are being made to one of the international rubber research organisations in the hope of getting some rubber produced that is more suitable for our purposes than much of what is on sale today. You may be interested in a brief bibliography of sources of data on rubber performance, characteristics and testing that I have collected for the organisation concerned; if anyone can add to this I would be glad of further information.

Comparison of Rubber Testing by Winding and Stretching — R. J. North; Free Flight News, Feb. 1976.
What's on First – Chris Matsuno; Free Flight News, Jan, & Feb. 1975



Fragments of Filati from a single motor burst of Paul Masterman's; note two separated knots at lower left. Smallest fragments are less than $\frac{1}{32}$in. long.

Rubber and Other Funny Stories – P. S. Masterman; Free Flight News. July 1974

Preparation and use of Rubber Motors – J. R. Mabey; Free Flight News Nov. 1972

Testing Commercial Rubber – R. J. North; Model Aircraft, Feb. 1961

Rubber Thermodynamics – Dale Hornish; 6th National Free Flight Society Symposium, 1973

Experiments on 16-strand Rubber Motors – Jon Davis; National Free Flight Society Symposum 1971

Energy Storage in Rubber Filaments – Walter C. Érbach; NFFS Symposium, 1971

Energy Release of Rubber Measured with Automatic Integrators – George Xenakis; NFFS Symposium, 1971

A glance at the photograph on this page will give you an idea of some of the strange things that today's rubber does; this particular collection of bits came from a single 14 strand Filati Wakefield motor of Paul Masterman's that broke in its winding tube. As well as the two main halves of the broken motor, there were also several pieces an inch or more long, as well as the fragments shown, the shortest of which measure less than 1/16in, in length. It would be perhaps instructive to take a high speed cine film of a breaking motor in order to establish the actual sequence of events.

SMALL FIELD EVENTS

With the prospects for a split-venue 1977 Nationals looking good, now is the time to be looking at the possibility of running some extra-curricular unofficial free-flight events. Looking on the pessimistic side (*Martin's view, not necessarily shared!* – *Ed.*), if we once again get involved in the R/C + F/F + C/L-all-at-the-same-venue type of exercise, very low duration classes will be the only ones possible from the safety point of view. It is therefore worth looking at two events successfully run at the U.S. Nats and National Free Flight Championships for the past few years, Cargo and Rubber Speed.

Current rules for these which come by courtesy of Bob Meuser, NFFS driving force and editor of *Free Flight*, follow:

Cargo

Projected wingspan not to exceed 48in.

Maximum engine capacity .025cu.in.; propeller to be attached and driven directly from the engine output shaft.

Models must carry a dummy pilot having a minimum weight of one ounce, and minimum dimensions as shown in the accompanying sketch.

A simulated cargo must be included in a container and must be carried completely within the outside surfaces of the model

Éxternal cargo 'packs' or 'pods' are not allowed. Any rigid material can be used for the dummy pilot. Any material can be used for the cargo; however, if liquid is used it must be enclosed in a leak-proof container within the model as described above.

Both dummy pilot and cargo are to be furnished by contestant and shall be readily removeable and replaceable for checking size and weight.

The dummy pilot must be in an upright position and facing forward, with at least a half square inch of visibility through transparent areas to the front and both sides to provide forward and sideward visibility with the head of the pilot.

Landing gear may be removeable but must remain attached to the model during the entire flight. It shall be of such a design and construction as to support the model at rest in a normal symmetrical attitude and to support the model during completely unassisted takeoffs. The landing gear must have at least two wheels, both of which must rotate and function as wheels during takeoff.

Total weight of model ready to fly shall be a minimum of 5 ounces, including dummy pilot. Ballast other than the dummy pilot or simulated cargo must be permanently affixed to the model. Total flying weight shall not exceed 100 ounces.

The minimum takeoff area shall be 4 x 24 feet for cargo.

No mechanical device or added power shall be used to assist the model in rising from the ground. A completely unassisted (no pushing) launch is required for each flight. The model must be held before release in such a manner that its natural resting position on the ground is in no way affected. In the event that the contest director decides the launching area is unsuitable for ROG, hand launching will be permitted.

An official flight occurs when the model remains in flight for 40 seconds or more and when the prescribed engine run has not been exceeded.

Éngine run after model is released for flight shall not exceed 20 seconds, ROG.

Éach contestant shall be allowed a total of 12 attempts to make flights over 40 seconds.

The score of a contestant shall be the total gross weight of the three best flights over 40 seconds. Gross weight is the all-up weight of the model as it is released for takeoff, and includes the model plus fuel, dummy pilot, and simulated cargo. In the event of a tie, the winner shall be the contestant whose model lifted the greatest gross weight on any one official flight.

Rubber Speed

No model dimension shall exceed 36 inches.

Model must fly a 200 foot course (100 feet wide).

Model must ROG. Wheels or takeoff gear not required.

Pushing or catapulting not allowed.

Model must not rotate over 360° during timed flight.

Unlimited launches permitted.

Best flight determines the winner.

Rather than trying to re-invent the wheel by working out an Anglicised version and ending up with a mess, it seems sensible to use the experience that American flyers have already had with these classes and use their rules for British contests. Among the variations tried in the U.S. has been to limit the wing loading to 4 ounces/100 sq. inches, propeller diameter to a maximum of one third the wingspan, and to allow 6 attempts for 3 scoring flights. The Illinois MAC rules allow models to takeoff from a table (!), thus avoiding any question of whether or not the model is airborne as it crosses the starting line.

Steve Marriot (Biggles) won the Boxing Day Coupe d'Hiver event at Chobham Common with his mid wing 'Bung Fu' design, featuring straight dihedral and a diamond fuselage. Pole mounted device is meter for the high set thermister.

USA 5 AIRFOIL

STATION	0	1·25	2·5	5	7·5	10	15	20	30	40	50	60	70	80	90	95	100
UPPER	0·73	2·10	3·04	4·42	5·41	6·22	7·20	7·94	8·38	8·17	7·66	6·76	5·62	4·20	2·48	1·50	0·50
LOWER	0·73	0·17	0·03	0·03	0·25	0·60	1·15	1·59	2·00	2·16	1·94	1·62	1·16	0·77	0·40	0·20	0·50

To time a speed run two timekeepers are necessary one at each end of the course. As the model passes the first marker, Timekeeper A starts his watch, and as it passes the finish marker Timekeeper B starts his; the two timekeepers then meet and stop their watches simultaneously. The difference in recorded times on the two watches is the time the model took for the speed run.

Because a speed aircraft must use its power for speed in a straight line, rather than for random aerobatics, directional stability is important; most of the successful U.S. aircraft have large fins in order to stay within that 100 foot course width, and sheet construction is popular. Favourite propellers include the 6¾in. Kaysun and the 6in. Testors, both plastic to withstand sudden arrivals; in Britain it might be worth trying the KeilKraft plastic prop that is now supplied in *Ajax* kits – you know, the one that puts the cg so far forward compared to the balsa prop the model was actually designed to fly with, 30 or so years ago . . .

Using dolly undercarriages and eight strands of ¼in. rubber, speeds around 50 mph are possible, and the model will probably stay low enough not to be hit by a pylon racer . . .

Reverting a moment to Cargo, the AMA rules look rather complex, and have the effect of making it a 'one motor class', that motor being the TD.020. In the 1950s, when Clipper Cargo, under Pan American sponsorship, was one of the regular events at the All-Britain Rallies that St Albans ran at the Handley-Page airfield at Radlett, the rules, as far as I recall, set a 1 cc maximum engine capacity, with no model size or weight limits. Some models were huge, and my six foot one used a tuned E.D. Bee diesel to lift 39 ounces – but only for 39 seconds!

ELECTRONICS FOR FREE-FLIGHT

One of the projects that has been occupying Thomas Køster's spare time for the past year or so has been a multi-function electronic timer for power models. Thomas had a working prototype in an immaculate fibreglass F1C front end at the Paris CIAM meeting, and it was as meticulously engineered as all the Køster equipment. Weight is 85 grammes, and all functions are controlled by a single output shaft, driven by a miniature electric motor drawing about 80 milliamps and geared down to give considerable torque. Eight integrated circuits are used and the delays for the engine sequence and the D/T operation are each adjustable via digital reading thumbwheels, the engine one in one tenth second increments and the D/T in tenths of a minute.

Starting is by means of a release button on which the thumb rests during launch; when this is released nothing appears to happen for about seven seconds (or whatever time you select). Then the shaft rotates for one revolution, freeing the various triggers from a series of Seelig-type stacked snail discs. The D/T arm is released, too, but re-trapped by an outer disc, as with a normal timer extender disc used for fly-offs. Peace reigns again for three minutes (or whatever flight time you have dialled up) and then a further buzz of the shaft frees the D/T trigger finally. Reputed cost of components alone was around £150, but Thomas is also working on a single-function glider timer that may be available for sale in the future, presumably at a rather lower cost.

AN AIRFOIL FOR COUPE D'HIVER MODELS

Several of the better-performing large Coupe d'Hiver aircraft, especially the French ones, use the USA 5 airfoil or one claimed to be it. I have not had time to compare the ordinates with the drawn sections on plans of these but here, for what it is worth, are ordinates for USA 5. As with many airfoils much may depend on spar positions and their turbulating effect. My own Coupe (apologies for this month's bout of egocentricity . . .) is covered with Mike Woodhouse Japanese tissue which has been very slack on each contest outing, due presumably to the moisture in the air and the combination of finishes used on the model. This probably serves to emphasise spars and may even provide a certain amount of 'dynamic turbulation' as the tissue wobbles in flight.

One obvious difference between the USA 5 ordinates and the airfoils used by some of the current Coupes is that the rear 30% is thinner (3·5% as against 4·5 for the USA 5 at the 70% station in the case of Matherat's airfoil); the USA 5's slight reflexing of the undersurface at the rear is replaced by a concave, almost 'flapped' trailing edge.

BOXING DAY CONTEST AT CHOBHAM

Advertised first at the Halton Coupe International, announced as an informal contest with a scheduled one hour lunch break – in a day with flying starting at 10.30am and ending at 3.30pm – and organised by members of a London Area club who prefer to remain anonymous, this was the first time several of us had flown at Chobham for a year.

Even with about five knots of northerly drift the ice-covered marshy pools and tangled heather helped to make retrieving the longer flights quite a tiring process. Originally announced plans were for four flights in A/2, A/1, Wakefield and Coupe d'Hiver, with two flights before the 1pm lunch break and two after. Entrants came from the far flung reaches of East Grinstead and Biggles-dom, as well as the more local Croydon and Crookham flyers. With maxes set at 2½ minutes for the A/2 and Wakefield events, only Pete Jellis came near to maxing out, scoring 9-55 in A/2 for first place, in spite of several quite usefully strong patches of lift.

As the loose organisation departed for the local pub for the scheduled lunch break, some of us heard them mention that third and fourth flights could, after all, be made during the time they were away; not everyone was within earshot, however and several people wasted a useful hour before realising that they were being beaten by flyers using the lunch hour to score. The return of the re-warmed 'organisers' brought a certain amount of justifiable criticism at the rather offhand way in which they were treating the day's activities, particularly from those who had travelled a hundred miles or so to compete.

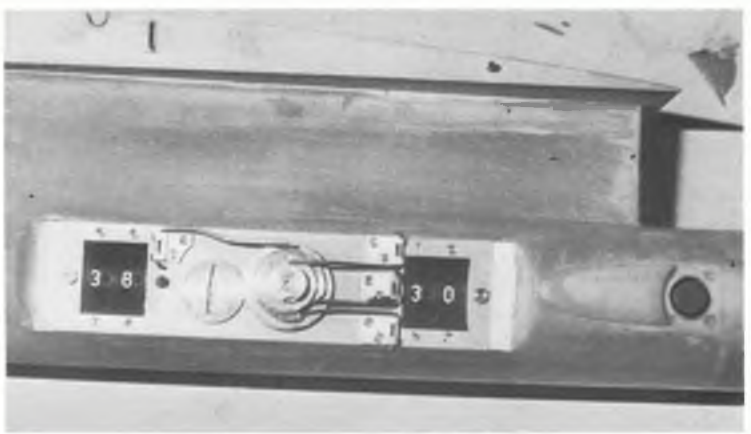
Steve Marriott's neat diamond fuselaged, straight-dihedralled Coupe d'Hiver model was at home in the light breeze and won, making me a third-time second placer in three consecutive Coupe contests. In A/1 Cliff James again cleaned up, with what is becoming one of the 'winning-est' models around; I believe John Bailey used the same design to win the SMAE Mini contest the previous weekend at Barkston Heath.

Wakefield 1. D. Wylds (Crawley) 8:51; 2. A. Wells (Anglia) 8:30; 3. A. Crisp (Biggles) 7:55.

A/2 Glider 1. P. Jellis (Croydon) 9:55; 2. M. Dilly (Croydon) 8:38; 3. R. Cedar (Croydon) 8:35.

A/1 Glider 1. C. James (Crookham) 7:49; 2. G. Madelin (Crookham) 7:22; 3. S. Marriott (Biggles) 5:17.

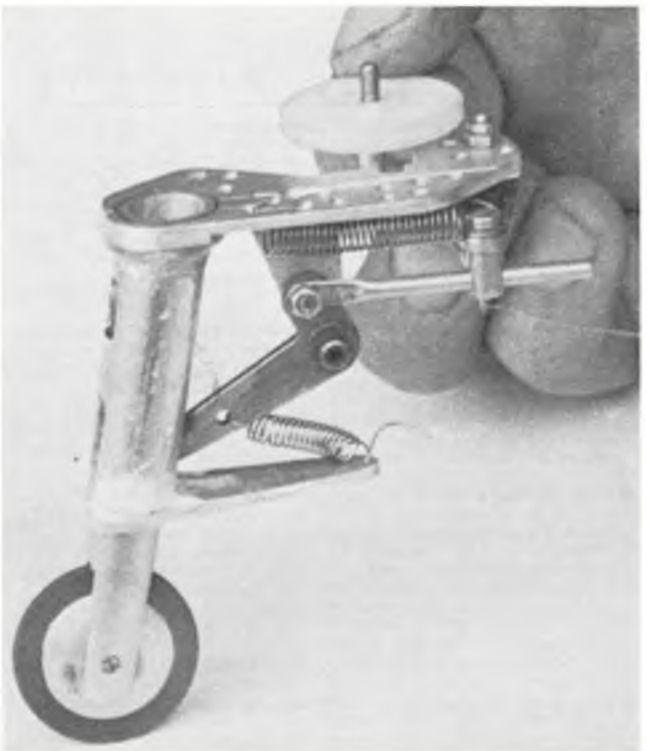
Coupe d'Hiver 1. S. Marriott (Biggles) 6:46; 2. M. Dilly (Croydon) 6:23; 3. A. Wells (Anglia) 5:54.



Thomas Koster's electronic timer, here fitted in a glass fibre F1C front end. Digital indicators can be set by integral thumb wheels to programme the engine cut-off sequence (left) and D/T (right) and read in decimal seconds and minutes. Large button on extreme right starts timer as model is released.

UP IT GOES

Derek Heaton and Malcolm Ross describe the compact, reliable retracting undercarriage leg used on their FAI Class team racer



Pictured just fractionally less than actual size the undercarriage unit is seen to be extremely neat and deceptively simple. Principle is different to most retractors previously seen in that the wheel disappears from sight vertically upwards. Operation is very quick and positive.

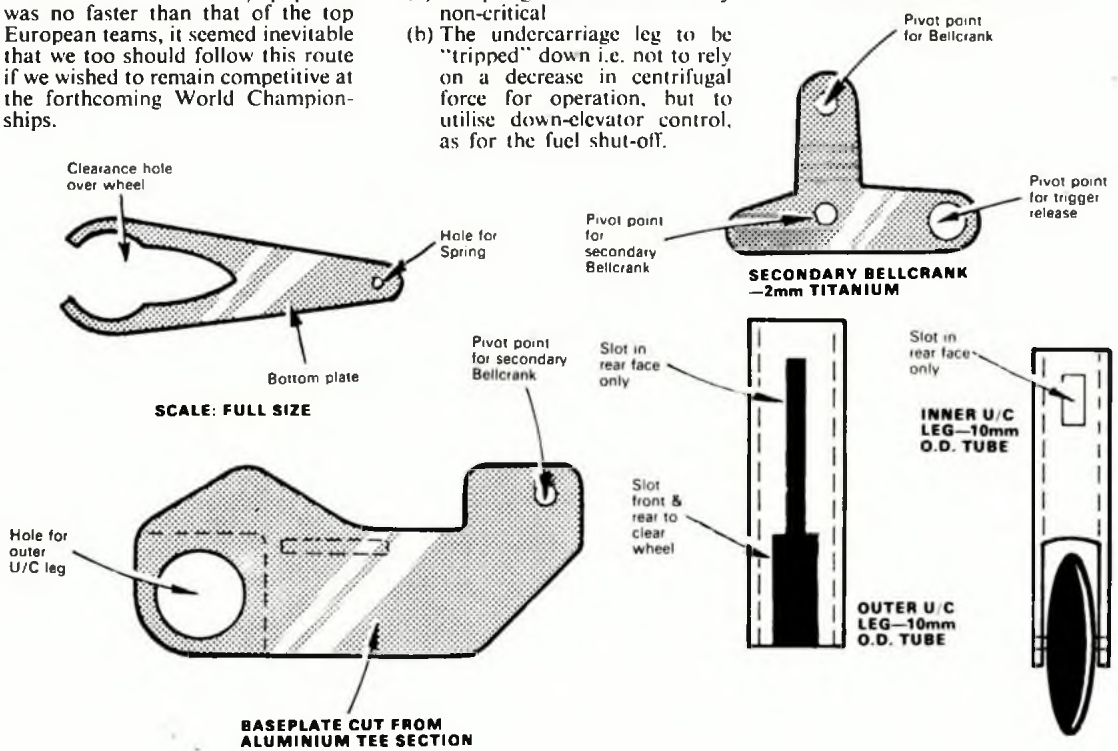
DURING THE WINTER of 1975 rumours were filtering through from the Continent that retracts were to be the theme for FAI Class team racing in '76. Since our model/equipment was no faster than that of the top European teams, it seemed inevitable that we too should follow this route if we wished to remain competitive at the forthcoming World Championships.

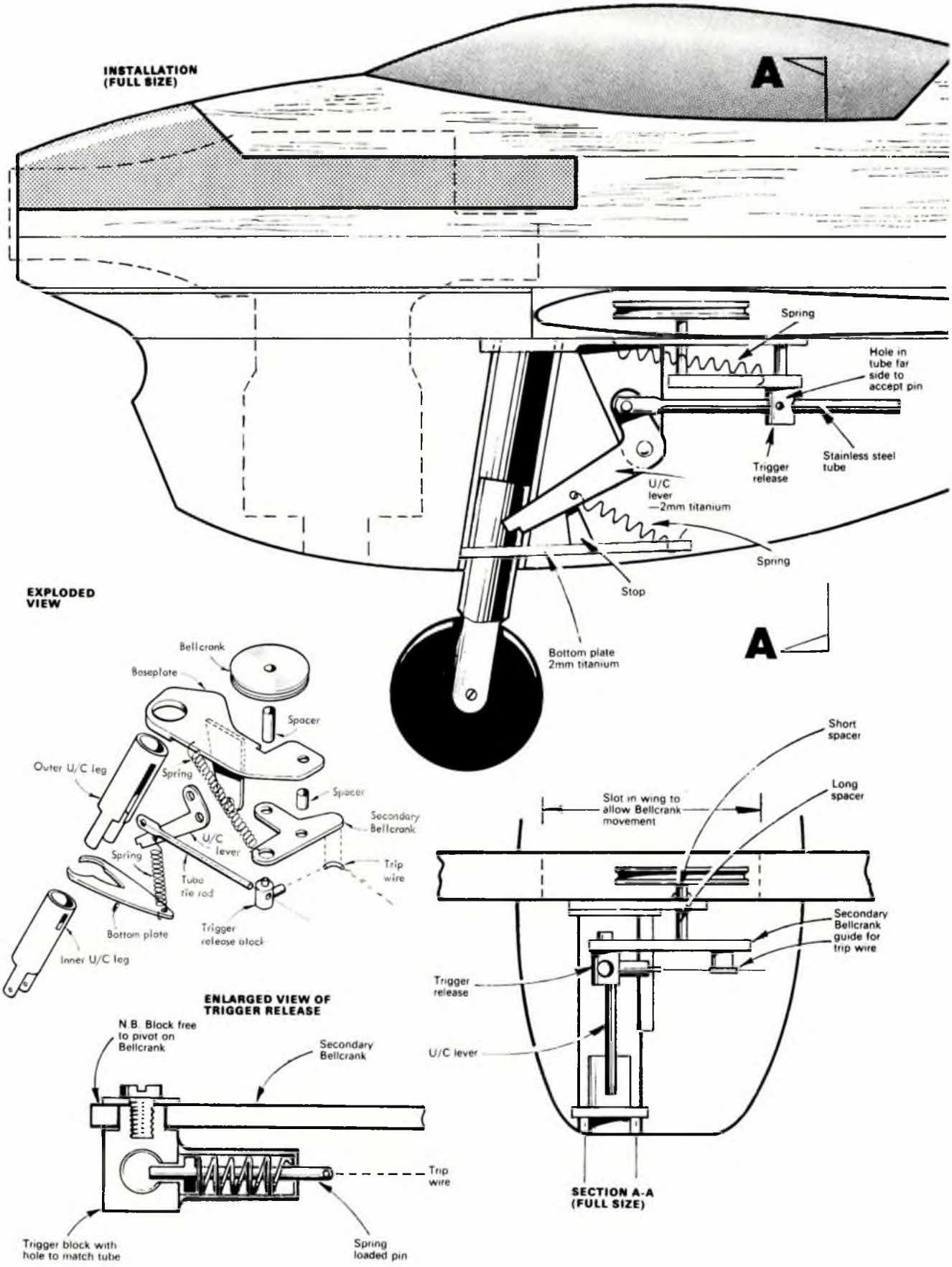
After a couple of months of sketching various schemes, we settled on the following necessary features of our system:

(a) All spring forces to be relatively non-critical

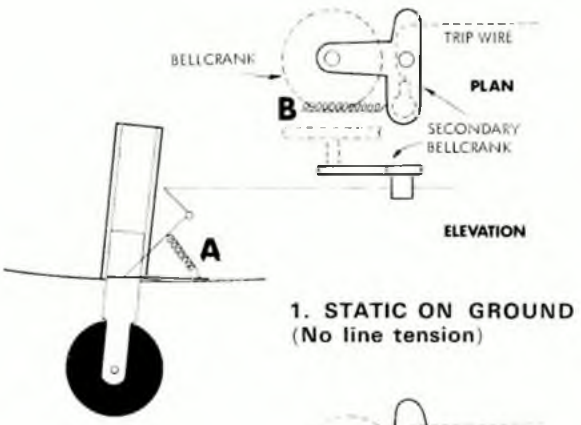
(b) The undercarriage leg to be "tripped" down i.e. not to rely on a decrease in centrifugal force for operation, but to utilise down-elevator control, as for the fuel shut-off.

(c) System to be as simple as possible with a minimum of moving parts to lessen chance of failure i.e. a vertical lifting leg eliminates the need for a "door".



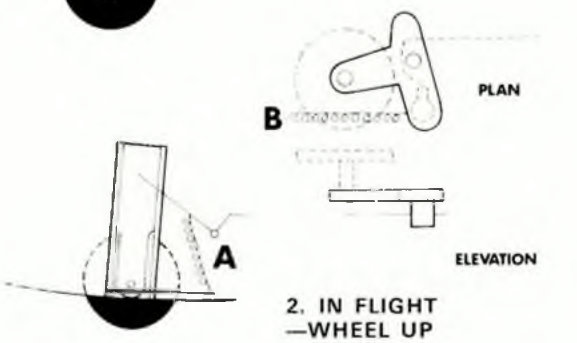


HOW IT WORKS . . . .



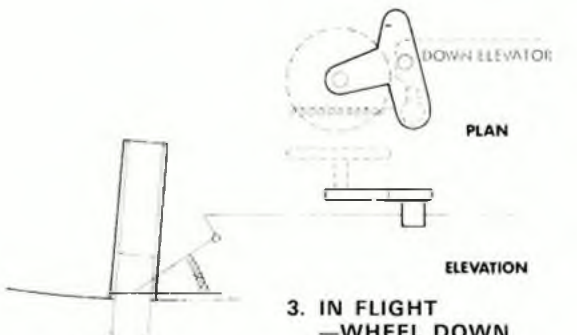
1. STATIC ON GROUND
(No line tension)

Springs A and B, being in tension, hold the undercarriage in the down position. The notch in the end of the undercarriage lever prevents the leg from retracting under downward pressure from the pitman.



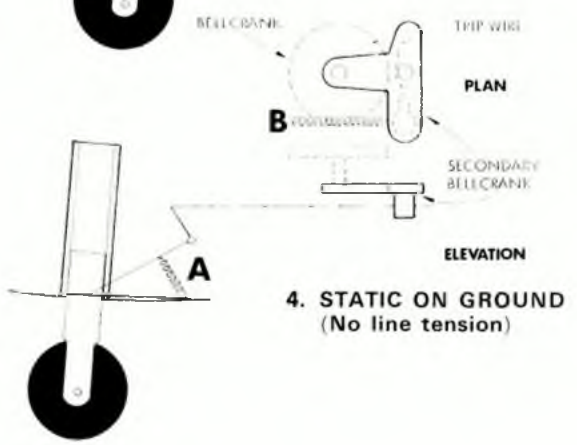
2. IN FLIGHT
—WHEEL UP

In flight centrifugal force acts on the circular bellcrank and pivots the secondary bellcrank, thereby pulling back on the tube tie rod and pivotting the undercarriage lever which raises the leg. *Note:* the combined strength of springs A and B must be less than the centrifugal force in flight.



3. IN FLIGHT
—WHEEL DOWN

A flick of down-elevator releases the spring loaded pin from the tube. Spring A is now free to contract and in so doing drops the undercarriage leg.



4. STATIC ON GROUND
(No line tension)

On landing centrifugal force disappears and spring B pulls the secondary bellcrank forward, allowing the spring loaded pin to engage in the tube resetting the system for the next take-off.

(d) An added bonus of the lifting leg principle was that with part of the wheel left protruding from the model it should still be possible to land the model, without damage, should the system fail to operate – lack of time would not permit the rebuilding of a model prior to the World Champs, the date by which the system had to be working perfectly.

Has it been worth it? The answer must be a qualified "yes". During the early trials we were able to fly the model with the leg in both the up and down modes. With the leg retracted the model proved to be 0·8 secs to 1·0 secs faster over a distance of ten laps. Allowing for the fact that the drag is obviously greater on the tubular leg than with a spatted wheel, we estimate that a "retractor" can save about five seconds on the overall race time; five seconds is a lot at a World Championships, but not nearly as critical in the *average* domestic event.

Construction, as can be seen from the accompanying drawings, is centred around the baseplate cut from a length of extruded aluminium Tee section. The outer undercarriage leg is epoxied into the baseplate and a generous epoxy fillet applied. The unit can be fully fabricated prior to installation in the model to check that everything works smoothly. It is very important to ensure that the trigger release block is free to rotate in the secondary bellcrank and that the spring is kept clear of the block, any tendency for the block to bind will probably result in the pin not engaging in the stainless steel tube – hence on take-off the leg will not retract.

The stop on the bottom plate is required to prevent the undercarriage lever from swinging too far back and not aligning the inner u/c leg with the notch in the lever that acts as a locking device, preventing the u/c retracting on the ground. It may be necessary to cut additional slots in the front of both the inner and outer u/c legs to allow the lever to describe its full arc.

Installation of the unit into the model is straightforward, the base plate being epoxied straight onto the bottom of the wing with extra rigidity being supplied by the balsa block forming the nose of the model being a neat fit around the front and sides of the outer undercarriage leg. The remainder of the bottom of the fuselage is of planked construction to give the greatest free area inside for the "workings".

Skyrider 3

by Jack Headley

novel free flight sportster for a Cox Pee Wee .020 cu. in. motor

Half Full Size Plans Overleaf

Jack's two daughters display Skyrider III (left) and the Mark IV derivative. Decorated as road traffic warning signs they depict 'Caution: Model Flying Ahead' and 'Caution: Model-Hungry Tree Ahead'!

SOME TIME AGO (before Pylonius had R/C models to pick at), the American *Northrop MAC* was mostly interested in free flight duration type modelling, with a little control line on the side. We even had our own local flying field, though it wasn't very big, and here we held our sport flying type contests. We went through all the usual competitions, a 'One Design' rubber stick model contest, a Jetex contest, and indoors (we even had a fine indoor flying site). We also held RTP speed flying events and things like a paper aeroplane contest.

After trying all these for a couple of seasons there was a need for something fresh, so I thought, what could be more appropriate, with a name like Northrop MAC, than a Flying Wing contest! I decided to run such a contest, open to all, with three classes: rubber, glider and power duration.

This first competition was not too well attended, but everyone there, flyers and spectators alike, had a good time, and promised to return the next year in greater numbers with more, and better, flying wings. And so they did.

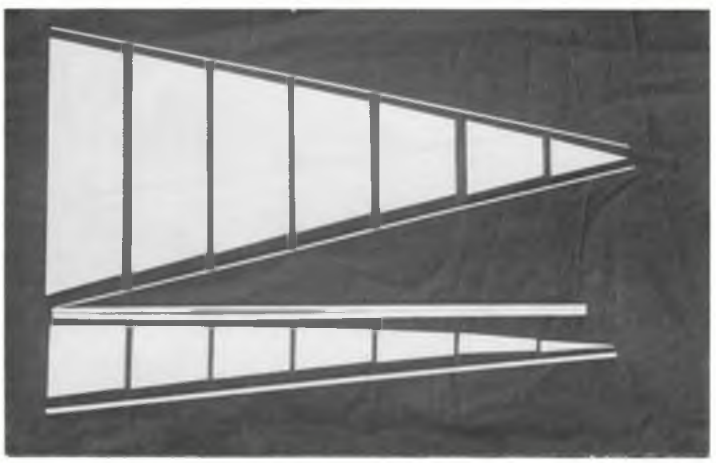
All this happened back in the sixties, and aeromodelling has changed quite a lot since then. The Northrop Club is now exclusively for Radio flyers and the free flight field is a parking lot for a high rise building, but the flying wing contest is still held, and this year will see the eleventh such event.

The model presented here was not actually built for this competition, but is really a sport version of one of my many flying wing contest models. As can be seen it is a very simple project, and this latest version was built in the spare time of a recent foggy weekend.

You will need the following materials on hand for the construction:

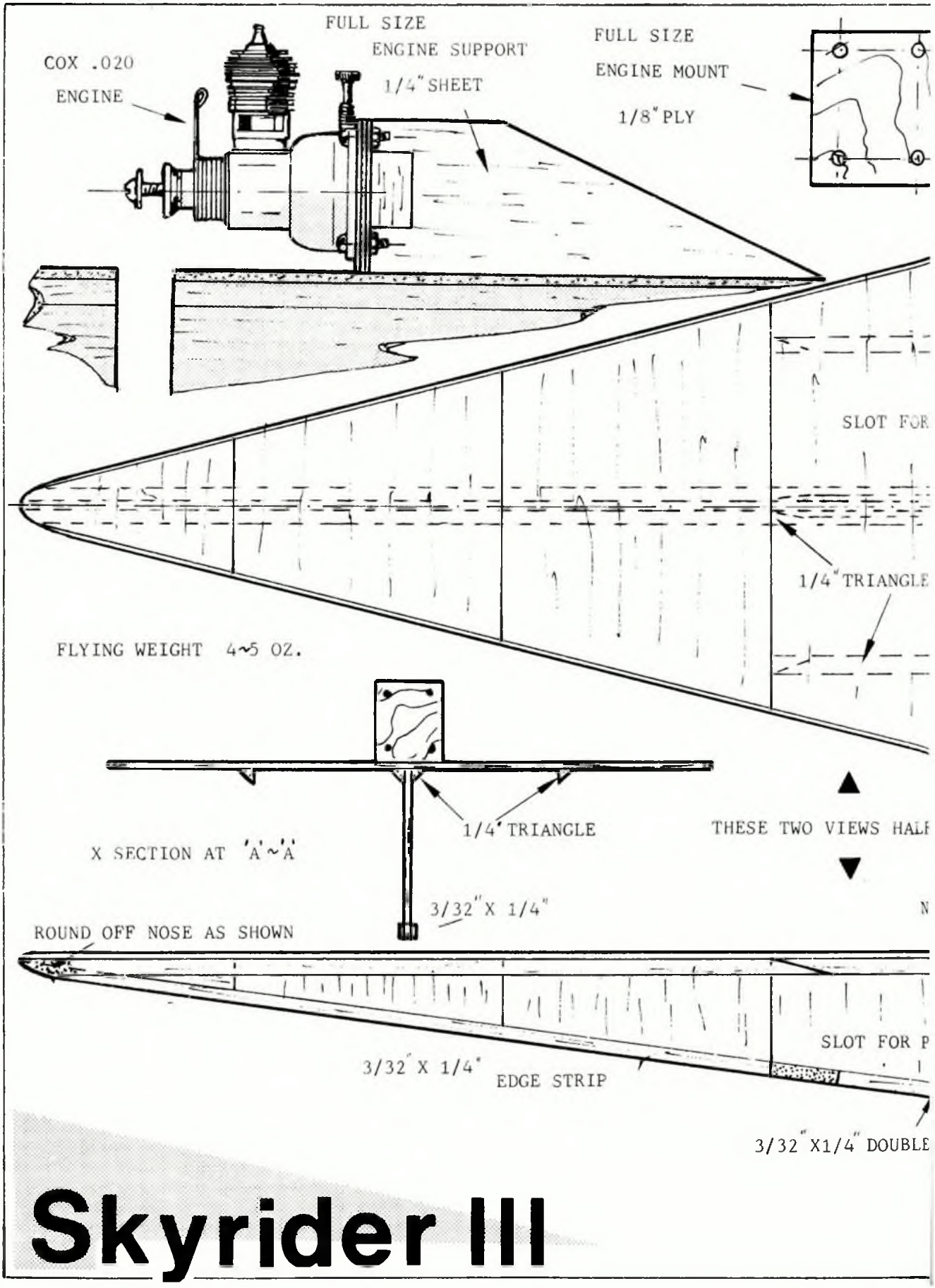
2 sheets $\frac{3}{32}$ × 4 × 36in hard balsa
2 lengths $\frac{1}{16}$ × $\frac{1}{2}$in hard balsa
2 lengths $\frac{1}{4}$in triangular balsa
2 lengths $\frac{1}{16}$ × $\frac{1}{4}$in hard balsa

The only other items required, apart from the engine, will probably be in your scrap box. It is important to get good wood, particularly for the wing, as I know to my cost. *Skyrider II* was built with some softish balsa that I had on hand, and after assembly it warped so badly that it looked like a Smith's crisp.

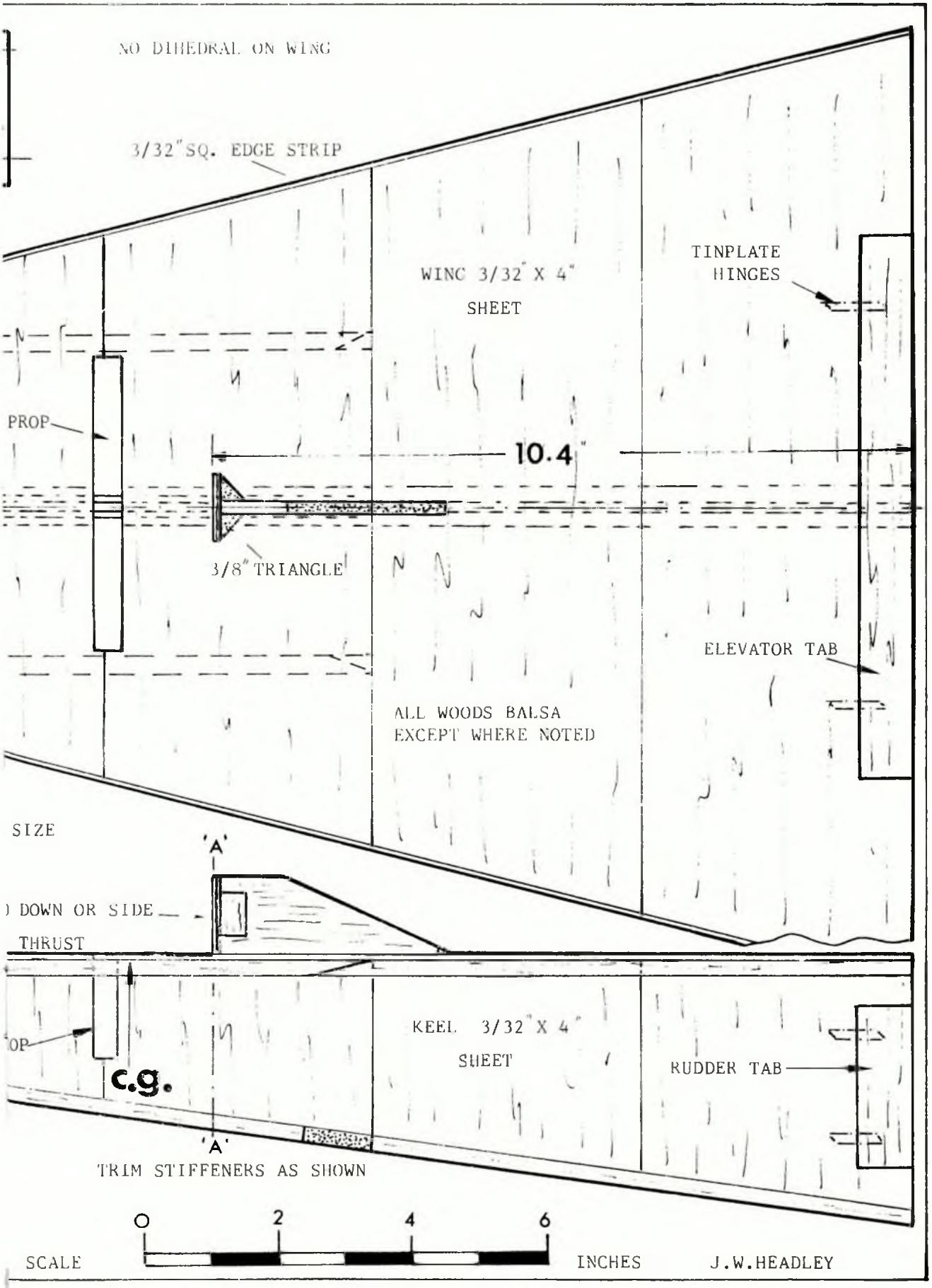


The model is made up of three basic assemblies: wing, keel, and engine mount, and we start first with the wing. Basic wing dimensions are length 28in and span 14in making it a 76° delta, so begin by marking out a 14in length of $\frac{3}{32}$in sheet, and cutting off each end at 76° (use the plans for this angle if you do not have a protractor handy). The shorter edge of this sheet gives the basic length for the next 'plank', so cut each end of this second item at 76° also, and so on until all seven pieces have been cut. If everything has worked out all right, the last of these should be a pure triangle. Pin and glue all these planks together – now on the building board – and after everything has dried trim each edge straight, as they will probably be a little 'wobbly'. Next cement into place the $\frac{1}{16}$in.sq edge strips. Do not cut the prop slot yet, as this cannot be done correctly until the engine has been installed.

Now for the keel. This is made in a similar way to the wing, except that now we are making a right angled, 28in long by $3\frac{1}{2}$in base length. Again use the plans to set the cut angle for the first sheet, then cut the remaining six pieces as before. The last piece, also a pure triangle, is made with the grain running in the opposite way for better strength. Cement all these pieces together with the aid of a straight edge on the top side, so that no camber is built into the wing on final assembly. Trim off the bottom edge next, then glue into place the $\frac{1}{4}$ × $\frac{3}{32}$in edge strip.



Skyrider III



Picture up shows the engine installation with the prop running in a slot in the wing and 'fuselage'. At right is the completed machine – leaves ample scope for decorating with your own pet colour scheme, or design a suitable traffic sign! However, remember to go easy with the amount of paint used – a heavy airplane is a fast-flying one.

The engine mounting is a plate made from ¼in plywood glued to a support of ¼in hard balsa. Two small triangular blocks help to support the plywood.

This is the last opportunity to sand all the items, so lightly go over all the sheets and remove all the little lumps of cement and the small steps that may have crept in between the sheet joints, and then knock the corners off the edge strips. Cut out the elevator and rudder tabs, sand, and re-attach with tin plate hinges.

Now to assemble our three pieces. Pin the wing back on the building board with enough pins and/or weights so that it is quite flat, then draw a centre-line down the wood, and cement the keel on this line together with the two lengths of ¼in triangle reinforcing strips. Make sure that the keel does not wander away from the centre-line while all this gluing is going on. The two offcuts of ¼in triangle are cut to length, trimmed, and cemented onto the wing as stiffeners in the slot area, similarly the $\frac{1}{16}$ × ¼in doublers around the bottom edge strip of the keel can be attached now. Leave all this to dry overnight, then remove from the board and draw another centre-line across the top of the wing. Cement the engine mount into place on this centre-line with the front of the plywood plate 10·4in up from the trailing edge. This should get the CG in the correct place. Attach the engine and prop, then cut the slot, making sure that here is just sufficient clearance. A small saw is useful here for cutting through the keel joint. Make a final pass with the sandpaper block, then decorate to suit.

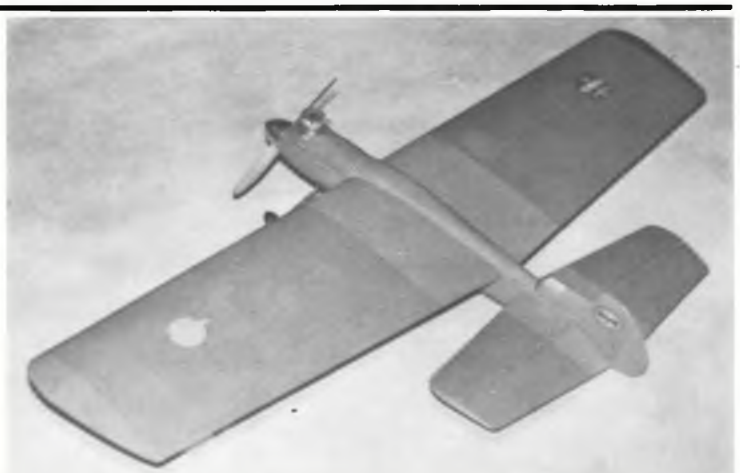
Before going to the flying field make sure that the CG is as shown on the plans, and if not then use a little Plasticine to correct this. At the field first try a few hand glides to see if the glide is satisfactory, then make a few power flights, using shortish engine runs so that the trim tab settings can be established. What we are trying for is a gentle climb to the right under power, followed by a smooth glide in either direction back to earth.

On the initial flights with my prototype the model refused to climb at all until some up elevator was used, and this meant a little revision of the CG to get the glide back, so this is probably a good place to start when doing your own trimming. Because of the engine location it is possible to get a few trimming flights in on one engine 'start', as the motor does not stop when the model lands under power! This is also quite helpful when trying to find the model in the long grass . . .

When the best rudder and elevator tab positions have been found cement them into place semi-permanently, so that they will not get disturbed accidentally. Happy flying!

VINTAGE CONTROL LINE

An original de Bolt Stuntwagon by Fran Ptaszkiewicz of Tonawanda, N.Y. Still powered by Hornet 60 driving a 12 x 5 prop., it rotates in the typical clockwise Dmeco direction.



FRAN PTASZKIEWICZ worked with Hal de Bolt in those tremendous days when the famous Bipes, Wagons, Speedsters etc. from "Dmeco" were leaders in the field. Most of the original stock went up in flames when the factory burned down, but happily Fran kept copies of plans which he is now able to sell by arrangement with de Bolt. The list covers blue line Ozalid prints of almost every Dmeco design plus a few factory original plans. Typical price for a plan, and reproduction of the original instruction sheet is $3.25 which is excellent value for such rare treasures. The de Bolt Bipe and Super Bipe were remarkably compact designs with surprising manoeuvrability for their loading with either a heavy Super Tigre G15 or G16 diesel (just imagine nowadays – a 40 diesel!!) Micron 30 or Drone, maybe a full ignition Madewell 49 etc. Big advantage is that they fit a European car boot, don't break easily, and above all, are sheer pleasure to aviate. Fran is also able to do Hal's plans for the R/C kit models, Sonic Cruiser, Live Wire Cruiser etc. Send for full lists (enclose a few International Reply Coupons) to Fran at 23 Marlee Drive, Tonawanda, New York 14150, U.S.A.

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BETWEEN THE LINES

with Dave Clarkson

Start line action at the '76 US Nats complete with a trio of jet speed ships – a sight which is not only rare in the UK, but virtually impossible with current noise restrictions.

1976 SMAE C/L CHAMPIONSHIP

Received with thanks from Bob Horwood, SMAE C/L Chairman, are the following final positions for 1976:

1st equal	John Newnham Davies/Broadhead	200 pts.
2nd	Horton/Haworth	196 pts.
3rd	Clarkson/Daly	195 pts.
4th	Jim Mannall	193 pts.

These were calculated using the *Plugge* system on the basis explained last year in the SMAE *Model Flying* Newsletter. Seems like this new system has finally found the way to stop we racing people absolutely dominating the SMAE Championships because of the relatively large number of racing classes. Hopefully this year, some speed and/or combat competitors will figure too!

RACING ROUND-UP FOR 1976

Some of the more pleasurable things to publicise each year are John Horton's justly famous League Tables, better known perhaps as *Horty's Lists*. As before, these are far too comprehensive to publish in full, so the usual abbreviated lists are given below.

FAI Team Racing

The full 'Horty List' covers the efforts of 38 competitors in 19 competitions. The summaries go as follows:

Annual League

Team		*1sts*	*2nds*	*3rds*	*Points*
1. Smith/Fry	(Feltham)	2	2	3	34
2. Heaton/Ross	(Norwest)	3	2	1	32½
3. Rudd/King	(Feltham)	2	2	1	27
4. Clarkson/Daly	(Norwest)	2	1	2	25
5. Horton/Haworth	(Wharfedale)	2	2	0	22

All-Time Greats

Team		*1975*	*1976*	*Total*
1. Heaton/Ross	(Norwest)	45	32½	77½
2. Rudd/King	(Feltham)	40	27	67
3. Smith/Fry	(Feltham)	30	34	64
4. Clarkson/Daly	(Norwest)	38	25	63

Close huh! Of the 27 competitors who placed in any contest in 1976, no less than 13 were 'Novices' (i.e. competitors with less than 10 points gained).

Class 'B' Team Racing

Still a Northern speciality as the summary of the efforts of 29 competitors in 7 competitions shows.

Annual League

Team		*1sts*	*2nds*	*3rds*	*Points*
1. Smith/Hudson	(Tynemouth)	1	2	0	16
2. Heaton/Ross	(Norwest)	1	1	0	14
3. Ridley/Burns	(Nuneaton)	1	1	0	12
4. Giles/Harknett	(Feltham)	1	1	0	11
5. Wilson/Gardner	(Tynemouth)	1	0	1	10

All-Time Greats

Team	*1972*	*1973*	*1974*	*1975*	*1976*	*Total*
1. Heaton/Ross (Norwest)	10	17	4	8	14	53
2. Horton/Haworth (Wharfedale)	13½	10	19	–1	4	45½
3. Ridley/Burns (Nuneaton)	0	0	5	21	12	38
4. Smith/Hudson (Tynemouth)	0	0	0	21	16	37

Goodyear

Yet again the 'big one' with 53 competitors listed, and 18 competitions flown.

Annual League

Team		*1sts*	*2nds*	*3rds*	*Points*
1. Horton/Haworth	(Wharfedale)	5	2	0	42
2. Daly/Howard	(Norwest)	2	3	1	31
3. Green/Cunningham	(Ipswich)	1	1	2	20
4. Allcock/Chambers	(Wolves)	1	0	3	18
5. Bryant/Chilton	(Feltham)	2	1	0	17

All Time Greats

Team	*1970*	*1971*	*1972*	*1973*	*1974*	*1975*	*1976*	*Total*
1. Horton/ Haworth (Wharfedale)	11	17	20	15	23	44	42	172
2. Clarkson/ Daly (Norwest)	0	26	31½	26	40	30	7	160½
3. Fry/Smith (Feltham)	8½	3	9	28	24	46	9	137½
4. Heaton/Ross (Norwest)	0	13½	39½	27	28½	5	4	117½

Yet again a healthy 'Novice' proportion amongst the point scorers this year with 17 out of 41 being 'Novices'. Congratulations must go to Green/Cunningham of Ipswich for being the highest placed team starting 1976 as 'Novices' – yes, definitely it is possible for a team of newcomers to shoot to the top despite the presence of many so-called 'Experts'. My *Novice of the Year* title goes to the Norwest team of Rosser/Rosser who started the year with absolutely zero points (had never flown before) and yet finished the year in 8th place well ahead of some illustrious names.

Overall Racing Champions

The results of over 60 competitors in more than 20 separate competitions (never mind how many events!) have gone to come up with these – a considerable effort. All cheer for John Horton for not only was this effort all John's but, with his team mate Donald Haworth, he topped the individual list.

Individual Championship

Team	*½A*	*FAI*	*Goodyear*	*B*	*Total*
1. Horton/Haworth (Wharfedale)	10	22	42	2	78
2. Heaton/Ross (Norwest)	0	32½	4	14	50½
3. Smith/Fry (Feltham)	—	34	9	—	43
4. Daly/Howard (Norwest)	—	9	31	—	40
5. Clarkson/Daly (Norwest)	—	25	7	—	32

As last year, the final summary gives me particular personal pleasure!

Club Championship

CLUB	*No. of Teams*	*½A*	*FAI*	*Goodyear*	*B*	*Total*
1. Norwest	8	0	73	69	14	156
2. Wharfedale	5	22	48	47	8	125
3. Feltham	8	—	78	26	17	121
4. Elliott	6	4	9	37	3	53

Yes! NORWEST **IS** BEST. Actually, John adds the note that if he had received the results from the '3rd London Area C/L Championship Meeting' probably Feltham would have finished above Wharfedale and Norwest would not have been so far ahead. But, if you don't send in the results, what can you expect? So do please send the results: the all-important address is John Horton, 10 Lawn Avenue, Burley-in-Wharfedale, Ilkley, West Yorkshire LS29 7ET.

Seen at the WAM contests. Left: 'The Master' Edmond Bridant uses extra long syringe to re-fill the pacifier tank on his Fast Combat model. Above is Ira Keeler's model for the same event – note plastic clunk-tank rubber banded to leading edge.

DECEMBER 1976 CIAM MEETING

Thanks must go to 'Doc' Jackson, the new CIAM C/L Committee Chairman, for the following, promptly published in the American Newsletter *The C/L Speed and Racing Gazette* and gladly lifted by myself! A condensed summary of items passed of interest to we C/L fanatics is as follows:

(a) The 2 year cycle to be retained for World Championships. Both UK & USA offer for 1978 C/L World Championships. France tentatively bids for 1980, and Sweden definitely for 1982.
(b) Team race pilot proxy is to be banned because of 'skill' required.
(c) Motor capacity is now based on measuring stroke and linear bore at top dead centre.
(d) Speed pull-test is now 40g, and safety straps for speed are compulsory.
(e) *'Fuel tank, tubing, and any associated fitting valves or shut-off units must be accessible and capable of being accurately measured'* to keep team race fans happy.
(f) *'Pilots must keep their controlling hand and the model on a plane perpendicular to a line joining their shoulders and passing through the center of their body' pilots must also keep their controlling hand on the vertical line between the middle of the chest and the top of the forehead, except when overtaking, land or taking-off when an exception of 3 laps is allowed'*. This also for T/R pilots.
(g) Line crossing on overtaking is now *allowed*, provided the above requirements are satisfied, for T/R pilots.
(h) Combat circles must be on grass.
(j) A "cut" in combat must include part of the streamer.
(k) In combat, when one model is down, the other must fly straight and level only after any line disentanglement necessary has been made (a clarification). Same goes for model withdrawal prior to servicing during a bout.
(l) Mechanics in combat must enter the circle from the point nearest the model. A non-recoverable streamer due to a model fly-away may be replaced with a new one from the Circle Marshall.

Beyond these actual changes, the CIAM C/L Committee are required to consider silencers for team race and combat, and also the reduction in size of motors for team race. Furthermore, two special committees will be appointed, the first to review the T/R rules and re-write the T/R Jury guide, and the second to review the combat rules and re-write them in the interests of clearer language and better understanding. No change in either set of rules is intended, or will be allowed.

Well! Looks like really sensible stuff to me. Let us all hope that these two special committees can do a good job and give us really clear and understandable rules in time for the 1978 World Championships in Speed, Stunt, Team Race *and* Combat in *England*.

MORE GOODIES

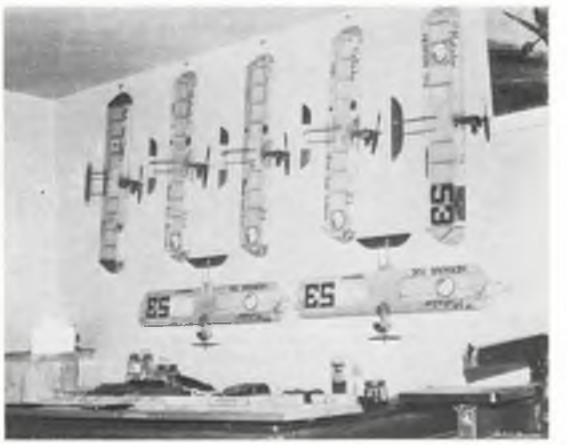
Currently topping all the important FAI Speed contests, and long-time provider of specialist parts for both speed and team-race flyers, is Germany's Emil Rumpel. With such a growing demand for his superbly machined components, he has now expanded his interest into a part-time occupation.

In addition to supplying the full range of Rossi 15 engines and their spares, he can also provide many special parts, such as Cox-style collector ring carbs with various venturis, Allen-headed compression screws and plastic inserts for these engines. As well as these, he can supply both team-race and speed pans cast in magnesium, centrifugal force fuel switches, speed tanks, circular bellcranks and a truly superb propeller pitch calculator. Those interested in such products which have an enviable reputation for their quality, should write to Emil at Vormholzes Ring 32, 5810 Witten 3, West Germany, for a price list and further details.

'WAM' COMBAT 1976 *by Rich von Lopez*

The 1976 Western Associated Modelers (WAM) contest season came to a close with the state meet at Stockton, California on 3rd October. The season had been nine contests long, spanning the months from April to October, and the top combat pilots, those who pursued one of the class championships, are honoured by the presentation of a perpetual trophy at the WAM *Parade of Champions Dinner* at the end of the year. These trophies represent a class

Above left is Mike Jang with his foam leading edge A combat model flown at WAM events. Cox power – what else! Left is Will Roger's Fast Combat entry – featuring glass fibre leading edge. Placed fourth at US Nats.



Above are Mike Spindler and Rich von Lopez at Merced, California where they finished first and second respectively in Class A combat (same as FAI). At right is a glimpse of a keen combatteer's workshop – all 'Lil Matador' ½A combat models. Very competitive class in USA.

championship that only the most persistent and consistent pilots are able to earn, and are awarded for ½A, A, BC Fast, Slow, Highest Score of the Year, Junior Combat Champion (under 18 years of age), Senior Combat Champion (over 18 years of age), and for the Overall Combat Champion. The Club Combat Champions trophy is a team award given to the club with the most combined points. Northern California combat pilots are fortunate to have such an organisation that presents a season-series of this type. Certainly, combat could flourish throughout the United States, and the rest of the world, if more series of this type were offered to the aspiring combat pilot. Exposure of our sport to the public brings new life into it and everyone benefits.

The WAM pilot classification system according to number of wins serves as a method by which novice pilots can gain experience through a sort of apprenticeship programme. All pilots who advance in flying status throughout the year are awarded a certificate proclaiming their accomplishment. In 1976 there were five beginner pilots who moved into the advanced ranks, and a further five were upgraded from this category to the Expert class.

The 1976 Champions? In ½A – a class which is getting a lot of support recently, especially in combat and aerobatics – was 20 year old Mike Spindler, who was also ½A Champ back in 1974. He flew a Cox Tee Dee .049 powered L'il Matador to five first and one second place, and is probably one of the smoothest most relaxed combat pilots on the WAM circuit. The same style also gave him the Slow Combat title. In Class A Edmond L. Bridant retained his 1975 title flying his familiar Firefly with Super Tigre G15-19 power. The Firefly design is kitted by Midwest, and was designed by Edmond with Rich von Lopez (plans are also available from Aero-Modeller Plans Service as Plan No. CL1251, price 90p inclusive of post). He was equally successful in BC Fast, using a Super Tigre G21-35 power on a modified Matador.

To Matt Rodrigues of the Clovis Control Lines went the Junior Championship – and he is destined for plenty more successes if he keeps up his current standard. Senior and Overall Champion went to Mike Spindler, who beat team-mate Ed Bridant by a simple point. Champion club proved to be the Flying Tigers, who had six pilots placed in the top ten!

The 1976 season saw Cox Tee Dee .049s as the dominant power plants in ½A Combat, while scratch built *Li'l Matadors* took most of the wins. Mike Jang tried a foam leading edge ½A design and Doss Porter used Cox foam stunt wings in one of his designs. In addition there was always a large contingency of Midwests *Li'l Snips* in the hands of various pilots.

In Class A Combat the *Firefly* design was dominant; it won all of the open contests and won every time in the Expert Class. The majority of pilots use Super Tigre G15s and G15-19s. Several including Mike Spindler, used Veco 19s; these motors throw the balance off on the Fireflies. Next season the A class pilots will have new Super Tigre X-15s, Fox Schneurle 2 B.B.Main 15 and the promising Cox Conquest 15.

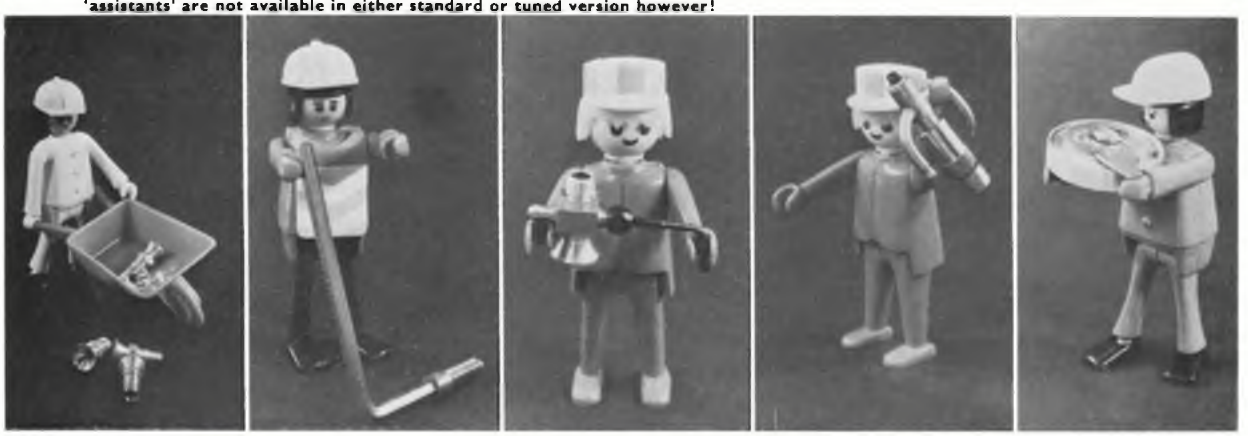
In BC Fast Combat the most popular designs were *Matadors*, *Nemesis IIs*, and *Voodoos*. Rob Wickham, Norm McFadden, Rich Brasher and Jerry Cook Jr, all tried some variety of foam aircraft; Brasher and McFadden seem to be on the right trail in this department and Doss Porter used foam egg carton tops for rib material. All the pilots used either Super Tigre engines or some variety of Fox Combat Special. The exception here might have been a K&B 35. Next season will probably bring out more foam designs as well as more new Fox Combat Specials.

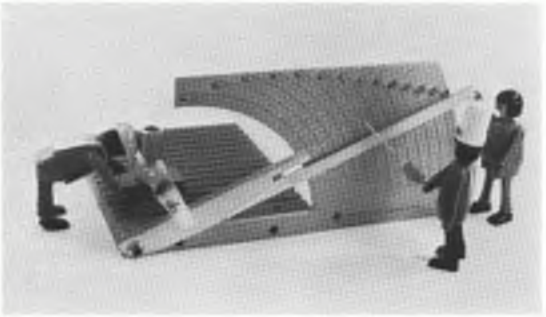
Slow Combat had the most varied equipment of all the events. There were many different home designs as well as the standard kit type aircraft. Throughout the seasen Super Tigre, Fox, K&B Enya and O.S.Max motors were entered in the competition.

STUNT SCENE *by Glen Alison*

Why not enter a stunt competition this year? Do not worry if you think you are 'not good enough' because even if you do come last, you will have learnt more about stunt flying in that first competition than you will have done in all your previous experience! You will also make friends and have contributed towards the sport.

A selection of goodies from the lathe of Emil Rumpel, namely (from left to right) team race venturis to suit Rossi FR motors, an Allen-headed compression screw, Cox style annular ring carburettor with small-bore venturi, centrifugal force operated fuel switch for speed models and lastly a special, ultra smooth and progressive action bellcrank for either speed or team race. The little 'assistants' are not available in either standard or tuned version however!





A pitch gauge is essential for the serious competitor flier who wishes to rework/modify propellers for maximum performance – and the Rumpel unit is ideal for the job. Robust, accurate and easy to use.

How do you go about it? Firstly you must have a suitable model with engine and lines that conform to the general SMAE regulations with regards to weight, wing area, length and diameter of lines etc, and which is capable of taking a pull test of ten times its own weight. Learn the novice schedule of manoeuvres. In many competitions you will be allowed to fly the novice schedule against competitors doing the full schedule, and have your score adjusted by an equalisation factor.

Choose a competition from the Contest Calendar, and preferably let the contest director know that you are coming – it really helps with the organisation. Turn up with plenty of time in hand to enable you to get at least one practice flight in, which gives you a chance to check the engine run and calm nerves etc. Entrance fees are usually in the order of 50p and are often returned as part of the prize list.

Because of time limits in competitions you must be able to start your motor reliably in order to get take-off points (that is releasing the model within one minute) and not to overrun at the end, thus losing landing points.

If you are using a lapped piston glow motor, here is a good system of starting. Connect the lines and fill the tank before entering the circle, this saves time when nerves are building up and is therefore two less things to go wrong at a critical time. Get your helper to hold the model inverted so that the motor is upright while you prime it by squirting fuel into the carburettor. Turn the engine over a couple of times to free it up, and then take the model from your helper turning it the right way up and flick the prop a few times – this has the effect of getting the fuel up into the cylinder ready for a quick start. Return the model to your assistant inverted and see if the judges and timekeepers are ready: if so, connect the battery leads to the engine. If you are using crocodile clips, then have one on the plug and one on the silencer. Now turn the engine over slowly, and feel for the kick as the plug 'fires' the mixture; give it one more turn and then look up and give the 'start' signal. This is when your time starts, and if you have done the preparation correctly the engine will start first or second flick. It is a great confidence booster if you get your engine going quickly! Disconnect the leads and turn the model over and place it on its wheels ready for take off. Check that the engine is running correctly, (it should not require any needle adjustment at this stage if you have had a practice run) then check the lead out connections and walk to the centre of the circle letting the lines run through your fingers.

'Waggle' the handle to see that the controls are free and that UP *is* up, it is so easy to put the lines on wrongly in the heat of the moment, or even to pick up the handle upside down. I have seen about five models written off because of this alone.

Look around the circle to check for stray people or animals that may have wandered into your circle space, and if all clear give the signal to your helper to release the model. The word is *release*, not push.

Now you are off; fly half a dozen laps straight and level to calm down and then give a clear signal for your first manoeuvre – do not worry about low pullouts at this stage, just concentrate on doing a complete schedule. By all means have a helper in the centre of the circle with you to remind you of the sequence, that is allowed and even happens in World Championships.

So the first flight is over, hopefully with a safe landing, and you move out of the circle ready for the next competitor. It is really satisfying to have competed and done your best and join in with the cameraderie of the stunt scene. Why not ask the judge for his comments on your flight, rather than just waiting for the score to be posted? He will probably be more than willing to give useful constructive criticism.

CLARA NEWS *by Graham Bryant*

Response has picked up recently, and Membership forms have been posted to everyone who has applied. There are, of course, some notable omissions amongst the ranks of T/R flyers, but the way membership is building up you'll be in the minority if you *don't* join CLARA! There has been a surprising response from overseas, and it's likely that CLARA will evolve into an International Team Race "Union" before long. If you still hesitate in joining, just think: if CLARA's good enough for the European hot-rods, then it's good enough for you!

It is hoped that the first issue of a Newsletter, tentatively called 'deCLARAtion" (get it?) will be sent to all paid-up members by about the beginning of March, at the latest. This will constitute a receipt for your membership fees. "deCLARAtion" will contain news views contest-results, articles of interest, gossip, scandal, and everything else the T/R flyer likes to read about. It isn't intended to compete with *AeroModeller* (yet!), but it *is* intended to be *your* Newsletter, and a channel for correspondence and letting-off-steam, if you feel you have to. I hope to be able to run a regular feature on latest European and US developments, so if you want to stay at the top of the tree, or just get started in contests, this will be invaluable. It will also be possible to include a photo-feature, so if you have any *good-quality*, black and white prints, and size, of general or specialist interest, or if you'd like to see your mag in print, send them along. Address as in Membership form.

Lastly, a reminder to those who haven't joined: 1977 could be a crunch-year for model flying. Control-line is particularly vulnerable, for a number of reasons, to uninformed and/or biased legislation. CLARA could be the only way for team-race enthusiasts to protect their interests. Think about it.

END OF THE LINE . . .

Combining a career of Chemical Engineering with a regular part-time journalism commitment to this magazine, plus lengthy correspondence with overseas enthusiasts and yet remaining competitive in several control line racing classes is more than a strain. After a while it becomes impossible and this is the situation in which Dave Clarkson has found himself. Thus he has decided to cease his popular *Between the Lines* column – a decision which your Editor naturally regrets, as since its inception in November 1973, Dave has really lifted the C/L coverage of this magazine to the point that it has gained world-wide respect. Factual, explicit, seraching, sometimes controversial, Dave's writing will be sadly missed – but not completely! As from the next issue, the control-line coverage will be on a new basis – and Dave has kindly consented to remain our correspondent on racing matters.

CURRENT SMAE RATIFIED RACING RECORDS

Kindly provided by Dave Stapleton, SMAE Records Officer, this record list is correct as of December 1976.

CLASS	*RACE*	*HOLDER*	*CLUB*	*RECORD*	*DATE*
½A Team race	Heat	Heaton/Ross	Norwest	4:02	August 1976
½A Team race	Final	Heaton/Ross	Norwest	8:52	October 1975
Goodyear	Heat	Clarkson/Daly	Norwest	4:04·2	September 1976
Goodyear	Final	Rudd/King	Feltham	9:05	September 1973
FAI Team race	Heat	Clarkson/Daly	Norwest	4:03	September 1976
FAI Team race	Final	Heaton/Ross	Norwest	8:15·8	May 1976
'B' Team race	Heat	Nixon/Campbell	Hunters	3:26·5	August 1976
'B' Team race	Final	Clarkson/Daly/Woodside	Norwest	6:41·4*	September 1974
Rat Race	Heat	Rudd/King	Feltham	2:46*	May 1970
Rat Race	Final	NO RECORD ESTABLISHED			

*Record set under superseded 'Imperial' rules and not relevant to current 'Metric' rules which involve a 25% longer race distance.

The SMAE hopes to be in a position to issue 'Record Certificates' to record holders during 1977.

SCALE MATTERS

by Alan Callaghan

LAST MONTH I described an ingenious way of hiding the charging nozzle for a CO_2 tank and motor as incorporated in David Deadman's Telco powered *Curtiss-Wright Junior*. Unless you are content to have the valve and pipe permanently waving in the slipstream and thus spoil the effect of all the work you put into making a scale model as accurate and as realistic as possible, you will find it quite difficult to disguise the device convincingly as any part of the real aircraft's structure, assuming that the subject chosen is a normal-configuration, tractor monoplane or biplane.

The problem is easily solved on any prototype that has an open cockpit simply by putting the valve pointing vertically upwards inside a hollow, removable pilot. No matter what the reason may be for not putting a pilot into a model – there are those who think that scale modelling simply begins and ends solely with the aircraft itself, and that adding pilots is somewhat toyish – a good model never looks quite complete in the air if the cockpit can clearly be seen to be empty. The main snag is that pilots, together with scale airscrews and scale wheels, are one of the most difficult parts for the average modeller to make, and unless a suitable one can be bought off the shelf at the shop, can frequently be neglected in the final rush to get a newly-finished model airborne.

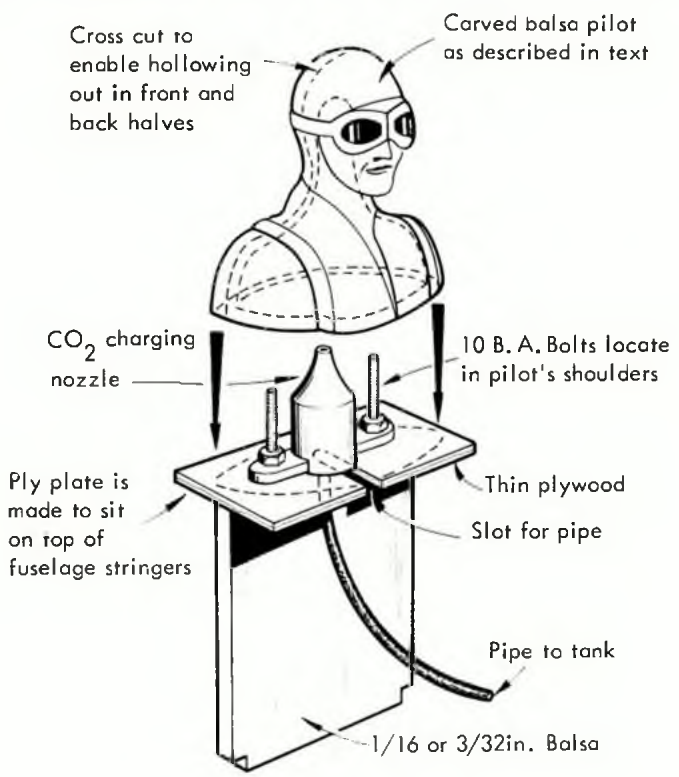
Large models in, for example, 1:12, 1:8, and 1:6 scale are reasonably well catered for in this respect, but the enthusiast for smaller scales usually has no alternative other than to set to and make his own. If there is any foolproof, quick, and entirely simple way of making a realistic lightweight pilot to any given scale, I would be very interested to hear of it! However, until now I have found the following method reasonably quick, and successful, for small models.

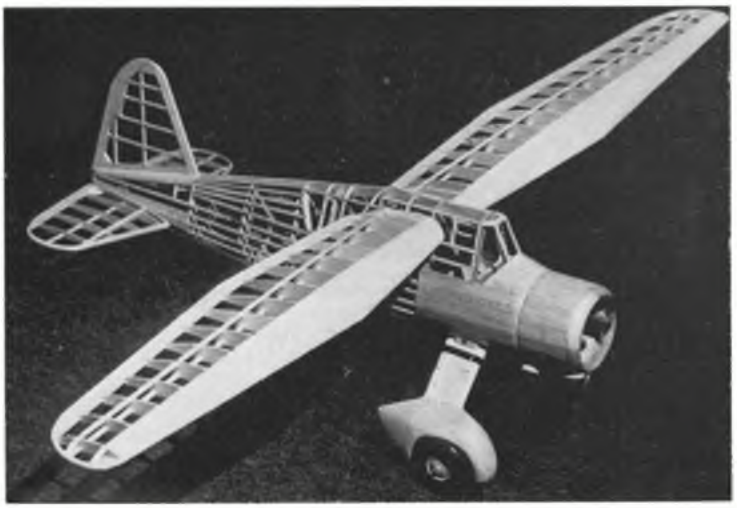
Choose a piece of very soft balsa large enough to make the figure down to approximately waist level. Although only the head and shoulders will probably be needed, this allows plenty to hold when carving to shape. Using a sharp modelling knife or scalpel, roughly carve the head and shoulders to shape using photographs as a constant reference, or get someone to sit still as a model for you. I am afraid that this will always be an acquired skill but would refer to page 98 of *Flying Scale Models* (as published by Argus Books, P.O. Box 35, Hemel Hempstead, Herts, HP1 1EE – price £1.75) as a helpful guide, and simply recommend trial and error with perseverance as the right technique.

Once the basic shape is correct all further work can be done using a small piece of fine glasspaper rolled into a stick, and finishing off as cleanly as possible. Three coats of full-strength dope are added and sanded with fine flourpaper only after the third coat. If very soft balsa has been used it will now be possible to form some of the fine features such as the eyes and mouth simply by drawing and pressing into the surface with a sharp 2H pencil.

Once satisfied with the overall shape, cut off the head and shoulders at approximately the required level. Then using a new double-edged razor blade cut the pilot cleanly in half vertically across from shoulder to shoulder. Being careful not to go too near the outer surfaces or the newly-cut edges, hollow out each half using a very sharp blade in your knife and finish off with glasspaper. Now glue the two halves back together again and give the outside another coat of dope to hide the joint. It can now be accurately cut to the correct level to suit the cockpit – again using the razor blade to ensure a *very* clean cut.

The mount for the pilot consists of a piece of thin plywood set horizontally from side to side in the cockpit, and to which may be bolted a CO_2 recharging valve, with the pipe leading away underneath to the tank. The loads taken by this member during charging must be absorbed by a full bulkhead, below the plywood plate, of either 1/16in. or 3/32in. balsa with the grain running vertically. Telco specify a compression load of 4½lb. at this point, so a medium grade timber would be advisable. If the valve mounting bolts are fitted pointing upwards and the heads glued with epoxy to the underside of the ply, they will double as locating pegs for the pilot, coming as they should one inside each shoulder. The front of the plywood should have a 1/16in wide slot to accommodate the pipe when the valve is slid into place. Before putting the mounting plate into the model and with the valve temporarily bolted in place, gently force the pilot over the bolts, making sure that the nozzle itself does not touch the inside surface. When a firm positive fit is achieved – if necessary by adding small extra pieces of packing – give the inside of the pilot two coats of dope to seal the surface, and then finish the outside as required. In the small scale with which we are con-





The Westland Lysander with all its romantic wartime history is a popular subject for modelling - and Paul Leith's version looks very pretty in its uncovered state. Built to his own 1/12th scale design it is destined for DC Merlin power.

cerned here, I always make goggles from acetate straps, and seat harness from cartridge paper strips, collars and scarves from crumpled and folded tissue paper doped on, and finish off with matt enamel paints. Seam lines in the helmet can be neatly simulated by scoring the surface with a sharp knife after painting and rubbing in some brown shoe polish. Paint the plywood mount matt black and it will all but disappear when the pilot is sitting on it. The valve and all the hard work will be practically undetectable ,until you come to recharge the tank, that is!

* * *

The "magpie" instinct is a valuable part of the make-up of most modellers, since many are the bits and pieces to be found in the shops today that can, with a little cunning, be successfully incorporated into a model. A recent find of mine could not be further from the realms of scale model aircraft. This was in fact a cheap plastic necklace, which is made up from approximately three hundred small injection-moulded cylinders strung together, each one being 5mm diameter by 5mm high and having seven clearly cut fins. I used these, cut in half, as cylinder head fins on top of *William Bros.* cylinder barrels as the basis for a scale Pobjoy motor on a 1/18 scale *Miles Satyr* biplane. The whole cylinders, however, are ideally suited for making up a scale engine of any configuration in models of Peanut Scale dimensions or slightly larger. I cannot specify an exact source for these, but would suggest trying any shop, or more likely a market, where cheap plastic "jewellery" is sold. They are well worth searching for, being inexpensive and just one would furnish you with Peanut Scale engine cylinders for a very long time indeed.

* * *

A very useful publication to make its first appearance during 1976 is *Vintage Aircraft*, available from 137 Onslow Gardens, South Woodford, London E18 1NA. This magazine is produced in A4 size, printed in black and white only, and so far has dealt mainly with civil and light aircraft dating up to the Second World War. The quality of the printing is very high, and a great deal of information can be gleaned from the excellent large-format photographs chosen of some quite rare aircraft. The current issue, No 3, contains information on the *Supermarine S.6* series, various members of the *D.H. Moth* family including the rarely-seen *Fox Moth*, as well as a four-page article on the Shuttleworth Collection *D.H.51*, which would make a very good modelling subject.

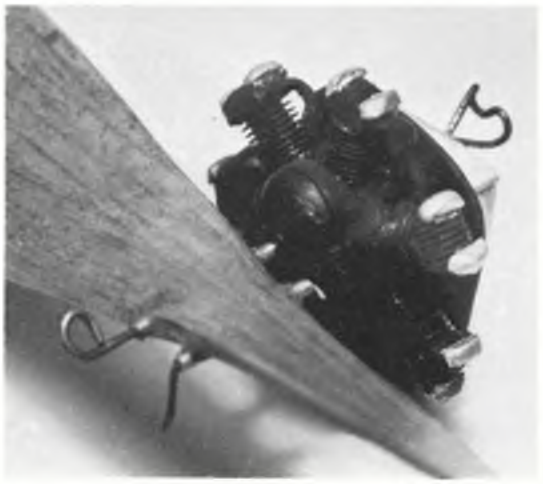
Scale drawings have not yet been included, and although this may all too quickly seem to many to be a deciding factor against buying, my own view is that if these are not consistently and accurately drawn to a very high standard, they are not much use, and the space they would occupy is much better filled with good quality photographs of the more rare and little documented subjects. The magazine is published quarterly at 40p per issue or £2.20 by subscription, and it is still possible to obtain the first three issues which I would strongly recommend as a change from the wealth of material now generally available on military, modern, and "not-possible-as-flying-model" subjects.

* * *

In the same area of interest I thought it worth illustrating this month two F/F Scale models of quite rare subjects built by Paul Leith of Dulwich, London. It is always tempting fate slightly to state that

Above left is an example of the excellent 'Vintage Aircraft' quarterly magazine as described in text.

At left is Paul Leith's 40in. span 1929 Civilian Coupe finished in silver with blue trim and lettering. Weight with the DC Dart (at the moment that is in the 'Saro'!) is just 10oz.



Above is a plastic necklace as described in the text with a 1p piece for comparison, whilst at left is the motor assembly for the author's Miles Satyr utilising the necklace for the cylinder barrels.

certain subjects have never been tackled before, but having studied many aeromodelling magazines dating back quite a few years, I have yet to see models of these types, the *Civilian Coupe Mk 1*, dating from 1929, and the long-range verson of the *Saro A.17 Cutty Sark* flying boat.

Both of these models are built very lightly to around 40in. wingspan, weigh 10-12oz all-in giving a very reasonable power to weight ratio for the D.C. Dart power units, and are not overburdened with detail that cannot be seen when they are in the air. This is quite a practical alternative approach to the "superscale technique" in that if you neither intend to enter a model in contests, nor wish to have a complete range to a particular scale for side by side comparison, then there is no real reason for building to the usual whole-figure (i.e. 1/12, 1/8, etc.) scales, which may give you some awkwardly sized models as well as creating difficultes in finding the ideal power unit of which there is a rather limited choice these days.

The efficiency of a high aspect ratio wing is very clearly demonstrated by the *Civilian*, which performs excellent take-offs followed by a rapid climb on only approximately half throttle. At the time of writing the *Saro* has yet to be completed and trimmed but would appear to have all the makings of a very good flier assuming that the slightly smallish scale tailplane does not complicate matters.

* * *

As a final note I have been informed that the first Indoor Model General Fly-in scheduled initially for March 6th at Cardington has been cancelled in deference to the Crawley and N.E. Indoor meetings to be held on the same date and catering for similar interests, but in more congenial surroundings. Magnificent as Cardington may be, flying there is rather a chilly business in early March!

Another of Paul Leith's designs, this time a Saro A17 Cutty Sark. Colour scheme is all silver with black lettering. The drag ring cowling to fit over the DC Dart has yet to be completed, but weight of this 40in. span machine is a moderate 12oz.

FORMING A NEW CLUB?

RAY FAVRE, the new and very active Vice Chairman of the **Society of Model Aeronautical Engineers,** when discussing the Society's structure, with fellow Council members said "*Every model flyer should realise the importance of belonging to an SMAE affiliated club . . . It constitutes the very foundation of the nationwide network of the Society*". He then went on to outline how simple it is for responsible model flyers to set up such a Club.

In order to affiliate a Club to the Society needs a minimum of five SMAE Members, one of whom must be a full member. A number of Clubs have a 100 per cent membership rule.

If your Club meets this minimum requirement then write to the Society at the address below, giving the name of the proposed club and a list of the SMAE members' names and their registered numbers. Remember, each extra Full SMAE member gives your club an additional vote on vital matters affecting model flying in this country.

Remember that where there are already five SMAE members in a non-affiliated club, it is easy to alter the club status and use your votes to influence the Society at national and local level. Please write for further information to the SMAE Secretary, Mrs Jo Halman, 36 Tyne Road, Oakham, Leicestershire LE15 6SJ.

OSHKOSH–home of aviation inspiration

THE GREATEST aeronautical show on earth takes place each year at Wittman Field, Oshkosh, Wisconsin, where a week long convention draws visitors from all over the world to see the EAA in action. To reinforce the bold claim in this introduction, we can confirm that the 1976 meeting attracted 1,260 display aircraft and over 8,000 transient visitors. On our first day, there were 9,238 aircraft movements on the two runways and when we flew in, courtesy of Carl Mohs in his brand new Cessna 172 for the second visit, we parked in row 64, position 8, which was the first vacant parking spot. We'd been warned what to expect. After 3 days even the keenest aeronut just has to leave for relief. Either the camera gives up, or the mind is totally befogged by too much aeroparaphernalia. For it's not only the homebuilts (there were 420 of these), but the classics of the '44-'53 period which bring out lines of superb Luscombes, Stinsons and Globe Swifts etc. and the Antiques of pre '41 where rows of Beech Staggerwings vie for numerical superiority over Wacos, Great Lakes, Spartans and the elegant Howards. Then the Warbirds and Confederate Air Force produce their contribution from the B.29, B.17 through a host of B.25 Mitchells and every WWII fighter to even the very prototype XP-51 Mustang. Add the campers who came by air and fill a field with tents, alongside their planes, and the reader can appreciate that Oshkosh is solid aviation with only the runways left clear for continuous activity.

What we did not expect was to find the place so full of aeromodellers – most of whom either have built or are building their own aeroplanes. John Isaacs was actually there with his Spitfire (Aug. '76 issue), Harold Best-Devereux with his Tailwind and Michael Beach whose SE5 is due for

Upper left: Five seat Wildcat conversion for family transport. Left: 300 mph Dennis Polen Special, sleek red with white/gold trim, and the 'Piranha' mini-fighter - even faster - flown from California. Below, Dennis Harbin's Fly Baby Biplane disguised cleverly as a SPAD.

John Monnett's Formula Vee sports racer is an aeromodeller's dream, definitely the design to watch.

completion this year was another of the British visitors. Phil Kraft's Super Fli was prominent, and the finish on Hale Wallace's Steen Skybolt (see cover) was unbelievable. One could meet many of the US Scale model personalities just by gravitating to the incredible Polen Special. Claude McCullough and Bob Wischer were among those we spotted.

The overall impression is that EAA and its 46,000 membership represents the cream of design talent. Shapes range from the powered Icarus hang glider to the Dyke delta and the Rutan Vari-Eze. Engines are more than likely ex-ground power units, or from cars. The VW in a two seat Sonerai makes a Turbulent very much old-hat, while the Honda Civic, Ford V-4 and V-8, Kawasaki Z-1 and converted outboard engines are all in use, the Civic clearly having greatest potential.

As for the finish – well there's nothing drab about any well-kept American plane. The only dirty ones you'll see are the DC-9's and Boeing 727's at the airports and they are absolutely soot-filthy. At Oshkosh, the colours shine and decorative skills of the talented finishers was such that the visiting British modeller could only gasp at the extraordinary standards. – **Ron Moulton.**

Top: L to R Burt Rutan's VariEze contrasts with Mike Murphy's 1911 Bellanca Replica built when 16, still used to fly to college. Jim Bede's BD7 and Ed Lesher's Teal are fantastic pusher designs. Top right: the WAR Mini FW 190 and Ken Rand's two seat KR2, each foam plastic over base structure.

Below: John Moody fitted 125cc McCulloch to his Icarus Hang Glider, takes off and lands by foot power, flipped inverted once! Never again! Right: Of thirty Pitts S.1s Robert Getting's red white and blue Indian pattern was outstanding, also Jim Barney's Safari striped dazzler.

MODEL ENGINEER EXHIBITION

Wembley Conference Centre
January 4th - 15th 1977

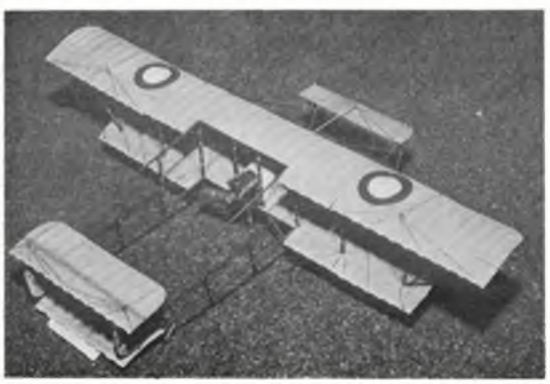
Championship Cup winner was the FE 26 by K. Larter - a superb piece of R/C handicraft, which flies superbly. An HP61 is buried behind the dummy engine, driving the pusher prop via a long extension shaft.

EACH SUCCESSIVE year passing by has seen the Model Engineer Exhibition grow in size and popularity. As record attendances were achieved annually, it became increasingly clear that a new 'home' would have to be found – and in 1977 the venue proved 'new' in every aspect. Contrasting strongly with the drabness of Marylebone's Seymour Halls, the not-quite-finished Conference Centre at Wembley proved bright and modern – almost luxurious. Whilst some might mourn the lack of 'atmosphere' attributed to the former hall, few could honestly state that the massive increase in floor area – which permitted better display of the exhibits plus greater trade support – was not much appreciated. In fact the whole looked like a proper exhibition rather than a village hall cleared out for a rummage hall sale! Loss of a boating pool was to some extent offset by the excellent lecture/film rooms made available, whilst the sheer convenience of the adjacent car park endeared the new venue to many.

Happily, aeromodelling was better represented than before and the better display facilities should help to encourage even more in '78. As it was, the overall standard of entry was good, but by no means exceptional – leaving plenty of scope for 'pot hunters' in future years! Winner of the Championship Cup for flying scale models was K. Larter with his radio controlled *FE 2b* – a really well built, accurate model and which as visitors to last years Old Warden Scale Day will agree, has an outstanding flying performance. An even more ambitious project was R. J. Parkhouse's Silver Medal winning 1910 *Dunne D8 Pusher* – also for R/C – which was well documented and showed some first-rate engineering in its construction. Excellent engineering was also evident in G. Rae's superb, ultra sleek pylon-racing glider – for looks alone it deserved a Design Centre Award! Not surprisingly the extremely high standard of construction and finish placed this machine ahead of its non-scale stable-mates.

As for the non-flying scale aircraft, there were a handful of truly outstanding models, that so easily could have been overlooked by the person who decries 'plastics'. Far from being straightforward, nicely assembled commercial kits, these were true masterpieces in plastic. Take the 1/24th scale *Harrier Demonstrator* by D. L. Bailey as an example. While based on the Airfix kit it had been superbly modified from a single seat to a two seat variant – and apart from the necessary lengthened nose and rear fuselage, moulding of two hinged canopies a pair of seats plus full instrumentation – the model bristled with extra detail. Incredible, and a worthy Silver Medal winner. Superb though it was – the *Harrier* only just eclipsed V. Cook's *Maurice Farman Longhorn* – built to 1/72nd scale entirely from

Left: Two visitors to the RTP pole with interesting, scratchbuilt models were R. G. Tillyer with an AW FK 10 quadraplane and K. J. Hailey with 36in. span Handley Page 0/400.
Below left is V. Cook's example of artistry in plastic card - a truly superb Maurice Farman Longhorn. Fully rigged and detailed; right down to the spoked wheels. Reg Parham delighted the crowds just before the close of the show by flying a trio of indoor ornithopters. Below he is seen winding a bi-plane version, aided by Mike Fantham.



'scratch'. In other words, every single part – from the detailed basket seat to the spoked wheels were made from plastic strip and sheet. Never let a traditional 'solid' builder scorn plastic models when crafts such as these exist.

For ourselves however, the electric round-the-pole feature was the focal point of the exhibition – and for many others too, judging by the consistently large crowds attracted. Several people – by no means all youngsters – spent their whole time at the exhibition between the flying area and the Harry Butler (Models) stand.

Perhaps we should not be surprised at the degree of interest in electric rtp – this branch of the hobby has been expanding for several years now, largely thanks to the enthusiasm, and inventiveness of Harry Butler who by specialising in this form of flying has made all the necessary equipment readily available. Best of all, his approach is practical – and the results speak for themselves.

For 1977, line length was restricted to a mere 16 feet – but this 6 foot reduction was more than offset by the fact that the flying took place at ground level, rather than being strung above the rest of the exhibits, and thus line tangles and 'accidents' were no trouble to sort out. The result of this was greater than ever activity, with the pole in constant use and the many visitors with models to fly having a chance to try out their creations.

As last year, contests were held on an informal basis throughout the period of the exhibition for these visitors, and it was heartening to see the great variety of models produced.

Judged Senior Scale champion – and thus winner of the excellent Harry Butler (Models) variable output transformer unit – was D. P. Longhurst from Essex with a truly superb model of the *De Havilland DH2* – built to his own plans, which were in turn based upon a Revell plastic kit. The model was superbly detailed, down to the fabric-effect finish on the fuselage, 'stitching', bolt heads, dummy pilot and radial engine. The only area in which the model left something to be desired was in the flying – but the necessary 10 laps were completed, and a little time spent trimming the machine in the future should result in a better performance.

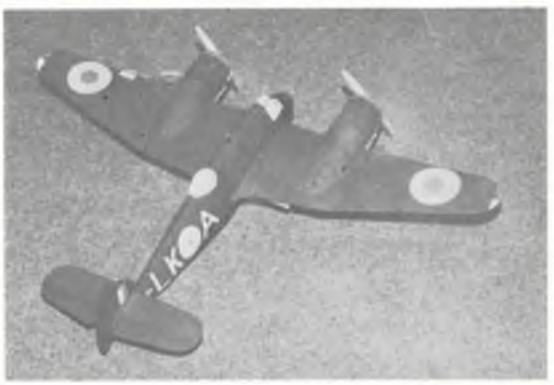
Regular 'ME' visitor – and previous stunt Champion – Andrew Baldwin placed second with an *Akrostar*, which though accurate and impressive could not quite emulate its full size subject's aerobatic performance. Perhaps if larger lines had been available – and if the 'up elevator' control system installed had been operational – he would have achieved a few loops. However he did just keep in front of another regular visitor – Denmark's Ib Lyngkilde who had the most impressive model seen – a *Lockheed Starfighter* nearly three feet long, and which flew on a single Mabuchi 26D motor with Cox 4 x 1½in. prop buried within the fuselage. Ib's model looked – and sounded – superb, but 'adjustments' made to the wing area in order to enable it to fly, plus a hurried paint job, lowered his score.

As for the Junior Scale fliers, the standard was equally high. Here, winner by a clear margin was 15 year old Martin Simkins – a member of the Biggles club (is there nothing that this club cannot turn its hand to?!) His 1/24th scale *Beaufighter* was scratchbuilt

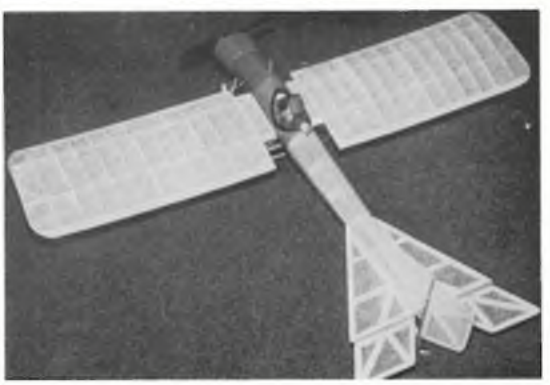
continued on page 171

D. P. Longhurst was awarded the Senior Scale prize for his superb RTP version of a DH2. Fully detailed, the model proved a little overweight, but nonetheless flew satisfactorily. Dummy engine and pilot detach readily to reduce flying weight.

Junior RTP scale winner Martin Simkin's Beaufighter - really ambitious lightweight project. By virtue of designing his own aircraft, he managed to beat David Scott's superbly built and finished Sterling 'Corsair'.



Akrostar by Andrew Baldwin unfortunately failed to live up to the reputation of the full size machine. Longer flying lines would have helped - also a little less weight.



Another RTP scale model - Derek Farman's Blackburn Monoplane built to 1/12th scale, giving a 32in. wing span. Flew beautifully on its geared Johnson 36 motor, fitted with an extension shaft.

BOOK REVIEW

a closer look at some recently published books, aimed at the air-minded market

Aimed at the complete novice, this book will give a good basic knowledge of the various aspects of model flying.

THE KNOW-HOW OF FLYING MODELS *by Derek Beck, Osborne Publishing, 48 pages. 8¼ x 10¾ins. Paperback.*

For the young, and the young in heart, 15 paper/card projects ranging from basic gliders to an anemometer, or a missile launcher to a drinking straw hang glider. Colours are garish, pattern papers are thoughtfully included and well illustrated, comic style flying tips make it specially attractive to the modern generations.

Our eleven year old test pilot assures us it's a 'super book' which is deflationary to one weaned on nothing but balsa and otherwise offended by light-hearted approaches to flying models. Maybe we're too old to understand. First viewing of this book tends to give a confirmed aeromodeller the collywobbles. Second and third looks show how clever it is, and not a trick missed in elementary teaching the know-how of making a paper glider.

MODEL FLYING HANDBOOK *by Ottar Stenstol, Oak Tree Press Co. Ltd., 160 pages size 5½ x 8¾in. Hardbound, price* £2.95.

A beginners book in the 'old fashioned' style is that all aspects of aeromodelling are mentioned, plus basic aerodynamics, and thus naturally within the confines of a relatively small publication, each aspect is dealt with rather superficially. However it does provide plenty of stimulus for the newcomer in that it endeavours to describe each branch of the hobby, giving the basics with regards to model types while the many line drawings provide a clear idea of the machines being discussed. Originally published in Norway in 1971, and later translated into English to be published in the USA in 1976, it is brought partly up to date with regards types of R/C equipment illustrated and models described.

Above left: Not one for the die-hard balsa modeller, but perfect for the younger enthusiast.

Left: Cleverly printed, but a log book makes for heavy reading. The information is there if the reader has the inclination to unearth it.

WING COMMANDER GUY GIBSON'S LOG BOOK *by 'After the Battle Magazine', 208 pages, size 8¾ x 8in. Hardbound, price* £4.95.

This facsimile of W/Cdr Guy Gibson VC, DSO, DFC's second log book is superbly printed and bound, so that it is virtually indistinguishable from the original – even all the hand written entries look *exactly* like freshly written ink.

Ideal for aviation buffs and/or historians, the log book covers the period from late 1940, and in typical log-book form lists the aircraft flown, pilot, crew, hours airborne, destination, and/or purpose of flight. It is *not* an adventure-packed report of his many missions, but a factual listing of duties performed. Those deeply interested in aviation will pick out details of some of the more obscure aircraft he flew (such as the *Cygnet*) and be particularly interested in the background and training undertaken leading up to the 'Dam Buster' raids – where Gibson describes the night of May 16th 1943 as "*Led attack on Monne and Eder Dams. Successful*", and showing a flight time of 6 hours 40 minutes. All interesting stuff if you can interpret it – but not a book for the casual reader. A poignant last

entry is made on September 16th 1944, just three days before the Wingco failed to return from a raid over Germany – an entry made incidentally on page 100 of this 208 page book.

FLY – THE COMPLETE BOOK OF SKY SAILING *by Rick Carrier, John Murray (Publishers) Ltd. 128 pages, 10¾ x 8¼in. Hardbound. Price* £4.50. Viewed from any aspect, this book is superb! From the attractively designed cover, through to the really first class photographs, excellent line drawings, and artistic yet sensible page layout – this book shrieks quality. Budding hang glider pilots are given a concise history of their new sport, clear descriptions of the different types of wings available and flying instructions from ground preparation through to high altitude flying. Perhaps the only criticism is that this American book has not been 'Anglicised' for this country, as all the useful addresses for sources of supply of materials, etc., for hang gliders refer to the USA only. A brief listing of U.K. addresses would have been most useful.

The book is a credit to the printer, but also to the designer who has managed to integrate text, sketches and pictures to provide a natural flow-through of information to help the tyro. Read this book and you are half way to flying yourself – or if you suffer from 'lead feet', at least you will have a full understanding of what those intrepid aviators are experiencing. Excellent value for money.

Not just a how-to-do-it manual for the hang gliding enthusiast, but almost an object lesson in book layout and production.

MODEL ENGINEER EXHIBITION

continued from page 169

from *AeroModeller* 3-view drawings, and was fitted with a pair of Mabuchi 26D motors. Martin could teach the Seniors a thing or two about scale – in particular the lightness he achieved, which must have aided the high flying points received, especially after card flaps were added to slow down and improve the realism of the matt-black device. Martin was also virtually the only visitor to perform a good aerobatic flight (with a trusty Keil Kraft *Nieuport*) and his nicely flown laps were quite a revelation to some of the fliers! For his efforts he received a Harry Butler (Models) transformer unit.

Not far behind in the scale class was 14 year old Mark Newland who designed his *Bleriot* by scaling it up from a plastic kit. He had clearly taken a lot of trouble over his subject, and the design flew perfectly.

In all, the contest was extremely well supported – there were lots of entries really good prizes courtesy of Harry Butler and Model & Allied Publications, and above all plenty of enthusiasm. As ever the public enjoyed the many combat sessions (with noisy 'oohs' and 'aahs'), while an arrested carrier deck landing brought forward a good cheer and a successful scale flight a round of applause. All good PRO stuff – only equalled by the SMAE who not only enrolled new members and answered queries at their stand, but also arranged a series of well attended and interesting lectures on aeromodelling topics. See you at Wembley in '78?

Above, aircraft carrier for RTP arrested landing was provided by the Champion School of Bugbrooke, Northants. Pete Goulstone's Keil Kraft 'Swordfish' has just 'arrived'! At right is Harry Butler - who dispensed RTP models, engines and advice throughout the show. At far right is Les Brock plus very impressive RTP Avro Lancaster, with all four engines operating!

topical twists

by 'Pylonius'

illustrated by Sherry

"But it's less than 36in. span"

Baffled by Science

"*Now, looke here, what's all this ——— noise you're making?*"

"*To answer that I will have to refer to our meter readings, which, you will understand, we have only just made at 200ft above sea level, with a humidity factor of . . . .*"

"*Never mind about all that rubbish. You can hear the —— thing for miles.*

"1·367542 *miles if I may correct you. This takes into account the considerable attenuation that occurs over . . .*

"*£Œ?£? just you listen to me . . .*"

"*Would you kindly not raise your voice. Our accoustic recording meter is adjusted to a 6db level only, and is very sensitive . . .*"

"*£Œ?£Œ? your noise meter. I'll – I'll get the law on you . . .*"

"*A rather ineffective recourse, if I may say so. You will find, sir, that if you measure the distance to the nearest habitation, presuming you are not a resident of one of the allotment hutments in the next field, and apply the formula of SWL minus 20logR minus B, you will readily see that the Sound Pressure Level comes well within the requirements of the proposed D of E code. The same could hardly be said of the output of that ballistic piece you are pointing in my direction . . .*"

Just Ribbing

When I was a young modeller the big break through in kit refinement was the printed rib. Unfortunately, the splotchiness of the crude stamping machines on the soft balsa made out a very good case for the use of rib templates. Even so, I have always thought the rib to be the heart of the model, which may seem a bit odd anatomically, but then, it should be remembered, that Adam got most of his pleasure out of ingenious rib development – an example to be followed by every model builder.

It was in the rib structure that the quality of the model was to be found. There was the simple beginner jobs of the minimal framework type, with a sixpenny bus ride between the rib stations, while at the other end of the spectrum there as the expert's wing, an intricate web of ribs, reminiscent of a gothic screen, with under ribs, over ribs, cross ribs and riblets, all neatly skewered on built up spars. But what do we find in our convenience package times? Wings that should never be: great slabs of frothed up pap, with not an honest to goodness rib in sight. Gone are the traditions of sound craftsmanship and the deft skills of the balsa knife. No longer do we have the layout of proud design and finely cut templates, and soon, no doubt, you will merely go to your model shop and ask for, say, a six foot length of six inch chord wing, to be cut off while you wait.

"*Thank you, sir. I might advise you that we now have our wing tapering machine working. You will appreciate how much more elegant a tapered wing looks . . .*"

Branching Out

We modellers have been exhorted to get together more. Great though the gulf that divides the free flighter from control liner, and indoor flyer from the radio pylon fan, we are brothers under the skin, be it microfilm. tissue or plastic, all sharing a common pursuit.

Quite right, too, I thought. That radio flyer may not be a rich banker or the bloke who robs him, but just an ordinary poor bloke like myself who just happens to keep his wife very firmly in her financial place. And that control line chap; he may be quite civilised really – might listen to Beethoven and read poetry. Who knows? They may be approachable. Why not give it a try?

Nothing lost, I took the plunge. Holding my rubber model as a badge of identity I strode boldly over to the group of radio flyers.

"*Good afternoon . . .*"

"*You can't fly that thing here. This is strictly radio.*"

"*I had no intention of doing so. I . . . .*"

"*Come to that, you have no right to be on the take off area at all. It says it quite clearly in the flying field rules: flyers and helpers only.*"

"*But I come in a spirit of detante.*"

"*I don't care what fuel you're using. Off.*"

Bloody but unbowed, I next made my way to the control line circle.

"*Good afternoon.*"

"*Can't you see I'm lap counting.*"

"*Well, I only want to ask a few friendly questions.*"

"*You won't if you stand there. You need a head for that sort of thing.*"

"*Sorry. I was only trying to find out what C/L is all about.*"

"*That's all right. Come back when we're not so busy.*"

Not all that encouraged by my progress so far, and not wishing to look in on the Indoor flyers in case I opened the door too quickly and brought about a general catastrophe. I decided that 'togetherness' between the various branches of the hobby needed the services of a Kissinger if any sort of rapport was possible. Meantime it was back to the old desperate factions and the usual acres of flying field betwixt our pet obsessions.

Narrow Mindedness

One particular authority, floundering about in the mire of bureaucratic restriction, has introduced a 'toy size' limit of 36in. wing span on model aircraft using it's open spaces.

This is something of a blow, particularly in these days of high aspect ratios, but the ruling, however silly, could be taken as a challenge. It is surely not beyond the ingenuity of model flyers who get out of sight flights on 10 grammes of rubber strip, to produce a viable Wakefield or A/2 within that span limit. Could be the basis of an exciting club contest – or even a national one.

CLUB NEWS

IT IS A NICE FEELING when a model event 'hits it off', that is, all the parts necessary for success come together: the location, the turn out, the weather, and most essential of all, the spirit that prevails. This was very true of the *AeroModeller* Coupe D'Hiver International, held at RAF Halton, last December. A picturesque field; a large and colourful entry; clear, calm weather; and bags of enthusiasm and mutual co-operation. Possibly the most successful 'small field' event yet held.

Bearing on its insignia the old A-Frame Pusher, first of the high performing free flight models, we can expect plenty of contest news from the **Bristol & West MAC.** Their report, sent in by PRO, Brian Hollis, catalogues a whole string of successes during 1976 in SMAE and Open Class events. Wins include those of Chris Batty in Open Rubber at the East Anglian Gala and the Nationals. He also got a third in FAI glider at the Nationals. Chris, incidentally, is one who found the call of aeromodelling irresistible, rejoining a very thankful club after an absence of several years. One time World Glider Champion, Elton Drew, naturally features on the result sheets, with a notable second in Open Glider at the Nationals. The successes of John Bailey, have been somewhat overshadowed by his recent move to Bedford. Such an active, all round competitor, will be sorely missed. Stacks of successes for the club in the Western Area Championships and Inter Club Contests. The former with three firsts, two seconds, and two thirds out of the seven classes. And, in the latter, firsts in all three classes, plus two seconds and two thirds – almost a clean sweep. Club membership remains about the 12 mark, but requires strengthening in the Power Class. Anyone interested in free flight contesting should contact R. J. Cummins, 14 Beeche Leaze, Alveston, Bristol.

Also reporting a good year is Mr R. A. Smith, PRO of the **Tynemouth MAC,** and the North Eastern Area. Particularly encouraging has been the growing junior interest, especially in C/L racing, and membership has remained steady both at club and area level throughout the year. It was a year when many modellers got their first taste of indoor flying. The Area ran two events at the *Sporting Club of Washington.* The sport attracted C/L and R/C flyers as well as free flighters. Man responsible for promoting these events is club member, Jeff Anderson. Adding a vintage flavour to the Northern Area Rally was the Tynemouth club coach. Not that the coach itself was that old, it was just that you rarely see a coach at rallies now, whereas back in the fifties and early sixties they easily outnumbered the cars. Anyway, the coach was well supported by the C/L and R/C flyers, with 50 seats occupied. Mostly they were come to spectate, but Tynemouth won FAI team race (Wilson/Gardner) and Class 'B' team race (Smith/Hudson). Thanks go to Dick Wilson for organising the outing. One inspiring feature of 1976 was the support given at the rallies for the club C/L section. It is hoped that many of these supporters will be the competitors of the future. Anyone wishing to know about the Tynemouth Club, and, indeed, the Area, should contact Mr R. A. Smith at 74 Whitley Road, Whitley Bay, Northumberland.

Generally, though, we do not hear so much of the art of model design these days, but a useful article on R/C design appears in the **Penrith & DMC** *Fellside Falcon.* By basing all the dimensions on ratios of the wing chord, you can produce a good basic model, with all the bits in the right places and the correct proportions. Moreover, this empirical method gives a good, accurate fix on the C.G. position. At the club AGM, Mr C. Bowman was nominated '*Modeller of the Year*' for the outstanding progress he had made and in winning the Club Open R/C Novelty event. From round the pole to up the pole is the way I would describe the fate of the former club rtp trophy, for it has now become the 'Best Crash' Trophy. Now, without wishing to be a censorious old bore, I cannot but deplore the idea of making a humourous issue out of a model crash. What, say, if the best crash of the year was on to somebody's head?

When is a sport not a sport? When its a hobby. But "hobby" is a quaint old word, redolent of fret work dust and plate photography, and mostly we are concerned to get model flying recognised as a sport. At least it got a look in at the *Sport for All* Day in Hyde Park, which, by association, you may think to be of the horizontal kind, but was in fact various sportive caperings and junketings by celebrities: five-a-side golf, and that old Liverpool favourite, beat the goalkeeper. Norman Chapman tells us all about this in the **Three Kings** *Court Circular.* The model look-in came in the attractive shape of eight assorted models, against a background upon which the deathless legend, 'Model Flying' was writ large. A new feature in the *Court Circular* is a book review, conducted

YOUR CLUB ?

IN THIS and following issues, we will be publishing the addresses of model club secretaries for which we have records. Within the past twelve months all the clubs detailed have been written to and the details checked or amended. Clubs which did not reply have been deleted from our records, but newly formed clubs have been noted as the information was made available.

If your club is not listed – or if the secretary has changed recently – then please let us know and enable an accurate listing to be achieved. Amendments will be printed at the soonest opportunity.

CHESHIRE

Widnes Model Flying Club
R. Arkley, 52 Manor Road, Woolton, Liverpool L25 8QQ

CO. DURHAM

Chester Le Street Radio Model Club
K. George, 8 Fairisle Ouston, Chester Le Street, Co. Durham DH2 1JT.

Newton Aycliffe M.F.C.
A. Wilson, 7 Middridge Farm, Middridge, Shildon, Co. Durham

DERBY

Alfreton & District MAC
H. Walker, 24 Castleton Avenue, Riddings, Derby

Mansfield & District MAC
S. Mellor, 46 Hillview Road, Brimington, Chesterfield, Derby

Rolls-Royce (Derby) MAC
N. J. G. Jones, 7 Larch Close, Allestree, Derby, DE3 2JA.

Rolls-Royce (Hucknall) AMC
M. J. Kelk, 90 Chaddesden Park Road, Derby

DEVON

Torbay Model Aero Club
P. B. Ward, 29 Furzegood, Marldon, Paignton, Devon, TQ3 1PH

DORSET

Bournemouth Model Aircraft Society
H. F. Weller, Flat 24, Wimbourne House, 16a Wimbourne Road Bournemouth BH2 6NT

Christchurch & District Model Flying Club
G. Harris, 73 Fenton Road, Southbourne, Bournemouth, Dorset

Marquis FC
E. C. Sparrow, 76 Casterbridge Road, Came View, Dorchester, Dorset, DT1 2AG

Contest Calendar . . . .

February 20th	**SMAE CENTRALISED MINI EVENT.** A/1, C d'H, ½A, HLG. Venue: RAF Barkston Heath
27th	**NORWIND INDOOR MEET.** EZB, Keyhole. Scale and HLG CO_2 welcomed – contest arranged if sufficient entries. Venue: Wigan Technical College Details: P. Farrimond, Wigan 34068.
March 6th	**N.E. AREA (SMAE) INDOOR MEET** EZB, HLG, Scale (N.E. Area Class 11 rules), Novice Duration. Hall size 226 x 105 x 122 x 35ft. Venue – Sporting Club of Washington (by arrangement with Sunderland Assoc. Football Club). For further information contact Jeff Anderson, 16 Chevely Walk, Belmont, Durham DH1 2AU. Tel. Durham 68493.
6th	**S.E. AREA (SMAE) INDOOR MEET.** Peanut scale, EZB, HLG, CO_2 Scale. Venue: Crawley Sports Centre, Haslett Avenue, Crawley, W. Sussex. Hall dimension 120 x 105 x 30ft high. Pre-entry (SMAE members only) Seniors 60p, Juniors 30p. Associates 90p. Spectators 20p. Details/entry forms: D. Cash, 22 Crossways Avenue, East Grinstead, Sussex, RH19 15F. Tel. E. Grinstead 23242 or A. Boyle on Horley 3664. Soft shoes only to be worn in hall.
20th	**SMAE 1st AREA CENTRALISED.** Open Rubber, Open Power, A/2 (Plugge Trophy). Area Venues.
27th	**SMAE SPRING SCALE MEET.** R/C Class II (Blue & Brown frequency), F/F Class II (experimental). Venue: RAF Little Rissington, Glos. SMAE members only.
April 10th	**SMAE C/L MEET.** FAI, ½A and Class B team race, Handicap & FAI Speed, Combat, Aerobatics, Novice Stunt. Venue: RAF Cottesmore or N. Luffenham, Leics. SMAE members only.
16th & 17th	**SMAE SPRING FAI MEET.** KMAA Cup F1A, Weston Cup F1B, Halifax Trophy F1C. Venue: Sculthorpe – confirmed. Pre-entry essential. (Points for Senior and Junior SMAE Champs.)
24th	**BIGGLES GRAND APRIL-SHOWER DEFYING EXTRAVAGANZA.** Open R/G/P, C d'H, ½A, A/1, HLG, Venue: Bassingbourn Old Airfield, Nr. Royston, Herts. SMAE members only.
24th	**SMAE INDOOR MEET** EZB Beginners/Expert. Venue: RAE Cardington, Beds.
May 1st	**CROYDON F/F RALLY.** Open R/G/P, A/1, C d'H, ½A SMAE-type rules. Venue: Bassingbourn Old Airfield, Nr. Royston, Herts. 10am start.
1st	**NATIONAL KITE RALLY.** Old Warden, Beds.
8th	**SMAE SCALE INDOOR NATIONALS** Plus general fly-in. Venue: RAE Cardington, Beds.
8th	**SMAE SECOND AREA CENTRALISED.** F1C (Plugge Trophy), Open Rubber & Glider. Area Venues.
15th	**SMAE INDOOR MEET.** 35cm Microfilm. Venue: Cardington, Beds.
15th	**SMAE C/L MEET.** FAI and Goodyear team race. Handicaps and FAI speed, Combat, Aerobatics, Novice Stunt. Venue: RAF Cottesmore or N. Luffenham, Leics.
22nd	**OXFORD MAC R/C THERMAL SOARING MEET.** % Slot scoring. Venue: Port Meadow, Oxford. Limited pre-entry (50p) with SAE to D. Powles, 47 Mark Road, Headington, Oxon.
June 5th	**WIMBOURNE MAC R/C THERMAL SOARING.** Pre-entry (£1) plus freq. and SAE to I. Matterface. 59 Cutlers Place, Colehill Wimbourne, Dorset. Tel. Wimbourne 5037.
5th–7th	**SMAE INDOOR NATIONALS.** FAI Microfilm, EZB, Open Microfilm, Open Tissue (65cm max span), Manhattan, HLG and 35cm Microfilm.
7th	**SILVER JUBILEE VINTAGE.** Old Warden, Beds.
12th	**SMAE THIRD AREA CENTRALISED.** F1B (Plugge Trophy), Open Glider, Open Power. Venue: Area Venues.
19th	**SMAE INDOOR MEET.** General fly-in at RAE Cardington, Beds.
19th	**SMAE C/L MEET.** – Details as April 10th.

by Phil Bolderson. He supplies some entertaining information. From Sir Douglas Bader's *Fight for the Sky* comes the surprising revelation that the most highly aerobatic monoplane fighter in the Second World War was the unglamorous old *Hurricane*. A more dispassionate judgment would undoubtedly give this honour to the unarmoured, extremely light Mitsibushi *Zero*. Back to the Croydon patch, where the caravans may have rested, but have long since departed, helped on their way by a hefty deluge or two. Since the gyppoes have gone, however, the weather has been quite enticing, and activity on the patch more its old robust self. Even so, it can still be cosier indoors, and the *Doug Blake Indoor Chuck Glider* event was quite a success – a warm up, we trust, to more serious indoor endeavour. Newcomer, Allan Callaghan, who is, incidentally, a Scale expert, got himself a nice clear lead in what appears to be a progressive event.

Some time ago we gave some publicity in these columns to the attempts of Mr John Foster to start a model club in Maidstone, Kent. Now we have a very complimentary letter from his friend, Dr R. A. Dines, in which we are thanked for the help given, and wherein we are told of the founding of the **Maidstone Free Flight Group.** There are five members so far, and although the only flying site mentioned is Mote Park, Maidstone, they appear to have serious intent in the wider contest field, and have a new bubble machine to prove it. They hope, soon, to affiliate to the SMAE, and then, no doubt, they will link up with the merry men in the Forest (Ashdown). All F/F modellers welcome to join – fun as well as contest. Contact R. A. Dines, 50 Tuscan Drive, Walderslade, Kent. Tel: Medway 67045.

Printing a club newsletter can be costly enough, but when it comes to circulating it that's when, at present day postal rates, the costs really soar. But there are other forms of distribution, and Mr E. J. Burles of the **Bath MAC** tells us how the club newsletter is picked up with a copy of the *AeroModeller* by arrangement with the local model shop. This has the effect of keeping club fees down to a reasonable level. He goes on to say that the membership figure has gone up to the 40 mark, due mainly, he believes, to local displays given by the club in 1976. Mr Burles is also concerned, together with SMAE rep John James, in helping a modelling class at a local school. No better way of fostering future Bath recruits. One of the club newsletters, which Mr Burles has sent us, covers a visit to the famous Cardington Airship Shed – a most useful piece of obsolescence. Setting the pace round the catwalks were not the usual flimsies but plagues of CO_2 powered craft. These little syphon suckers were about 30 years ago, filling up half the adverts in the American model mags. Now we've got 'em at last. Back to Bath. Club meetings take place at the *Hat & Feather* in Walcot St., Bath on the 1st and 3rd Wednesday of each month at about 8pm. Why not pop in?

This month finds *SEADOG*, the newsletter of the **South East Area (SMAE)** in something of a boisterous mood. The conditions of the re-negotiated Ashdown Forest Licence are almost magnanimous, with rubber and glider flyers given more or less full rein. The seven contest Sundays allowed is, of course, the most crucial factor as far as the free flighters are concerned, for without the Area comps they would be truly in the doldrums. As it is, F/F participation is on the increase, and the emergence of a new element, the Maidstone F/F Group, is taken as a healthy sign for the future. There are signs of a quieter future, too, as the radio flyer turns away from all the decibel anxieties towards Thermal Soaring, both for recreation and contesting. There are also considerably fewer engines to be heard on the F/F field than was the case a few years ago.

The newsletters sent to us by Mr A. V. Jarvis, PRO, of the **Caterham & DFC**, suggests that the club has gone through a very good year, with a doubling of membership from about 30 to 60 members, the retention of a low club subscription, and many events and outings to look back upon, not to mention the displays. Seems that club activity is mostly of the radio kind, advanced enough for them to run their first pylon race. A taster for the coming year comes from a note in the newsletter by Dave Clouder: two *Pipers* in formation as a display spectacle. This could cause some confusion on the Carnival programme, though as the only Pipers most people know are the Dagenham Girls.

Now is the time when members of the **Leicester MAC**, sharpen both wits and modelling knives for the start of the now traditional Winter Building Programme. Members are again told in the club newsletter that all forms of model life are eligible, from Penny Plane to R/C helicopter. This is one way of shaking people out of that mid-winter torpor when, instead of having a vision of golden days on the flying field, they are overwhelmed with the sight of American cops muttering incomprehensibly as they manfully strive to reduce world over-population. We, see, too, in the newsletter, that the club has introduced a free flight section. They, too, are expected to follow the example of the glider and C/L groups in holding regular monthly competitions. John Birch continues the saga of the sagging tish in another indoor episode when he comes to grips with the dreaded Penny Plane. His model had the droops, but all came well when he changed over from Modelspan to Jap. At the November indoor meeting his two Penny Planes were flirting with the light fittings.

Clubman

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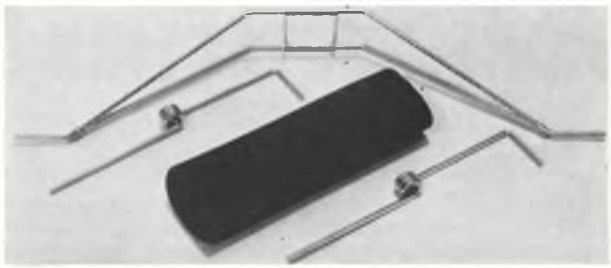

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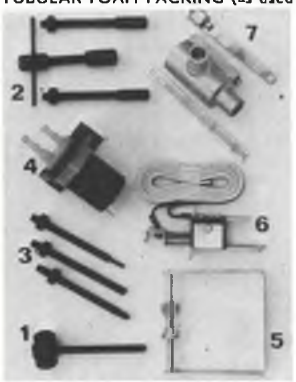

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