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MARCH 1989 £1.95

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AEROPLANES AT ALLY PALLY

M.E. Exhibition Report

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p.126

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Cover: Five splendid aeromodelling subjects from the ME Exhibition. Main picture is of John Willis' 1/15th scale Hurricane I for rubber power. Inset quartet: Dave Hipperson's Jedi Knight F1B, Sid Hazell's Gloster Gamecock and Terry Badis' Lysander for R/C, and a neat Harvard II by Richard Mead. Report starts on p.126.

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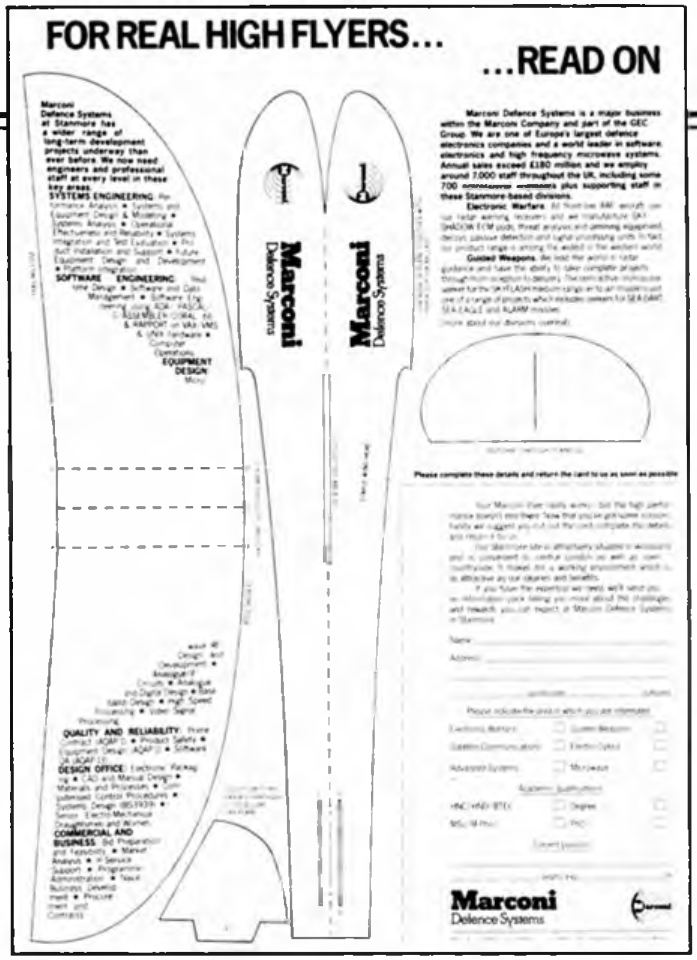


Marvellous ME!

A resounding success - that's the verdict on the 58th Model Engineer Exhibition, the first to be held at Alexandra Palace. More space and better facilities meant that almost 60,000 visitors could enjoy modelling's showpiece with greater ease than before. Widespread media coverage included Jenilee Rawlins' first photo appearance, aged three, in The Times on 2nd January; she just happened to be holding one of dad Dave's rubber-powered kit biplanes. Good for DPR Models, whose continuing involvement with the promotion of model flying fun, particularly among the youngsters, via the ME and other gatherings is an example other manufacturers might well consider. Thanks to all who attended or took part, notably, Robin James who lost no opportunity to air his Indoor fun-fliers. Difficult to decide which impressed more - the R/C demos or the CO_2 and the electric F/F foamies. We'll give the unofficial award (strictly no prize) to the circus of Whoopee quintuplanes - one of last month's *Aeromodeller* full-size plans. Thanks, too, SAM 35, BMFA, BARCS and BSMA for your support. Our report overleaf gives a first taste of what was what. Much more next month!

Presented free with Computer Weekly on 19th January was this Marconi Flyer, a glider from thin card tastefully decorated in light blue. Worry not about the demise of the Nimrod AEW - Marconi Defence Systems fly on!

BMFA PRO retires

Setting-up day at the ME Exhibition marked the final official duty of Martin Dilly's tour of operations as BMFA Public Relations Officer. Martin's achievements include exemplary attendance at local flying-field debates, and he has worked tirelessly to promote the image of safe model flying throughout the country, fuelled in no small measure by his personal high-octane enthusiasm for the sport. And certainly, future BMFA Prize-givings won't be the same without that characteristic 'Dilly Shuffle' at the microphone. Well done, Martin; your successor has some job to live up to...

Comment - justified or not?

The following letter from Bernard Aslett, not unrelated to the above topic, illuminates justice in criticism.

'Martin Dilly, towards the end of the last BMFA AGM, felt compelled to make an accurate and apparently telling comment - that the wealth of criticism from parts of the floor was rarely, if ever, matched by a similar wealth of offers to undertake the posts and tasks that our organisation needs in order to function.

'This comment provoked from certain sections, a response both ill-mannered and ill-disciplined - justified comment?

'Well, *none* of our officers, all employing their own spare time and rarely (if ever) claiming full expenses, would wish to suggest that they are faultless. Secondly, criticism, when justified, is only permissible when tempered with an appropriate measure of responsibility and self control.

'Sadly, Martin has felt unable to continue in the post of PRO. I wonder how many of these noisy critics are feeling some regret or just as importantly rushing forward to fill the gap.

'Can I suggest one useful qualification, generosity, by means of an example? For many years Martin has undertaken to assist the Annual Dinner trophy presentation, among other ways, with a carefully gathered and complimentary "pen sketch" of the trophy winners.

'At least one of the noisy critics benefitted in this matter, that same evening!'

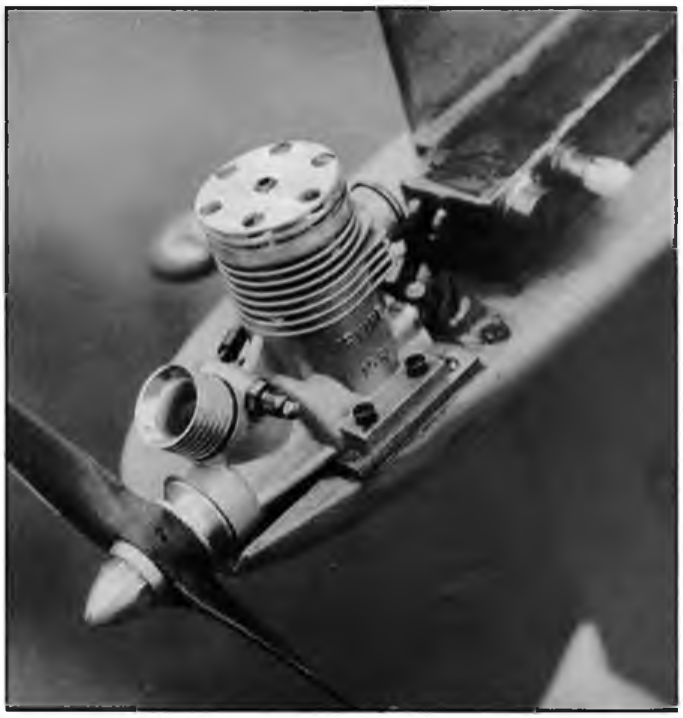
A limited quantity of 1989 AMA Calendars is currently available - just the job for the workshop wall. each month is illustrated with a splendid colour photo, and all disciplines of model flying are featured in the twelve months of the year. Send cheque or P.O. for £4.95, with your bank and address clearly printed on plain paper, to Argus Books Calendar Offcer, P.O. Box 35, Hemel Hempstead, Herts HP2 4SS, or telephone 0442 41221 for Access or Visacard sale.

Chinese whispers

CS Engines have recently featured in these pages. Now we learn from Peter Carter that he has taken on the task of supplying these motors - not as an official agent; at present none exists, although the company is aware of Peter's intentions. Peter is currently assessing the CS G15 and 061 tuned-pipe motors and props. Present comment is that all look very potent, and all are twin-ball raced; even the Sport 15P engine. Prices range from £49 for the Normal 049 (the ABC speed derivative is £51.75) up to £114.30 for the .15 diesel Team Race motor. More details to follow. Meanwhile, contact Peter for more gen at 27 Alexandra Road, South Woodford, London E18 1PZ.

Lightning reactions as Stafford Screen goes for his wallet at the ME! Ally Pally Exhibition was a great success - see our report which starts on p.126.

Model flying flavour to encourage you for '89. Top: All attention to the Stahl Skua at Scale Weekend. Centre: A busy corner at the M.E. Exhibition: Robin James prepares one of his Whoopee fleet. Above: Ian Harwood and Bill Grigg with their Lympne-Scale 88 entries; DH51 and Hummingbird in attendance.



Above: Peter Chinn returns on p.136 to review the Irvine .15R glow. This is Ed Needham's 'dieselised' version which was flown to such good effect at the 88 Nats by Dave Clarkson, creating a new Open Goodyear Record in the process. Below: A wry look at the therapeutic value of aeromodelling in Terry Rose's view...

Bring and buy

Lloyd Ressler, Chairman of the West London MAC tells us that, following the success of the Club's Bring and Buy sale, the meeting this year will be open to all modellers. Format is an auction with comments invited from the audience. All modelling goods will be suitable, so if you've something to sell, or are curious to buy, put 10th May in your diary, save 30p for your entrance to the Hall at the Battle of Britain Club, RAF Uxbridge, and contact Lloyd on 0753 882480 for more details.

Scale update

Essential journey for all Scale enthusiasts is to the Alumwell Centre, Walsall on 23rd April, for this is the time and place for the '89 Indoor Scale Nats. Doug Sheppard is the contact man for all information; call him on 0272 697595 especially if you can provide a model or two for the static exhibition upstairs.

F/F Rule Changes

Just in case your Rule Book hasn't arrived yet, here are brief details of the '89 Rule changes.

Glider flyers may not tow contest flights with anything heavier than 15 grams attached to their end of the towline. If they do, the flight is cancelled, and zero is scored.

In Rubber, the fuselage minimum cross-section area of 3.1 sq.ins no longer applies. Models can now be as slim as the builder wishes.

Open Power engine run is reduced from ten to seven seconds, and the Slow Open Power maximum engine capacity is now 3.5cc (0.21 cu.ins).

The twenty-second attempt rule has been removed from all classes. Other attempt rules remain but sub-20 sec flights no longer qualify for a re-flight.

Timekeepers may follow models on foot except in flyoffs.

Special rules must be published as per local rules, with the announcement of the event.

SMAE Rules now quote projected surface wing area.

'Yes, and remember – at Old Warden all the Wakefields disappeared in that glorious thermal...'

Here's our first report on aeromodelling activity at the 58th Model Engineer Exhibition

AEROPLANES AT

Heading: Just part of the merry SAM 35 stand. American, French and British designs visible – how many can you identify? Above: Videocopter by Brian Parkin was deserved winner of the RCM&E Cup. Feeds back pictures to ground-based video unit. Ultimate aim is a head-up instrument display... Above right: Not content with building the Vega 9cc V-twin from our plans, Eric Whittle scaled down the design to 2.6cc to create this charming motor. Right: Fine models and a touch of building on display at the BARCS stand. Centre right: Shiny Gloster Gamecock by Sid Hazell from Radio Modeller plans features sprung tailskid and working exhaust system.

ALLY PALLY

Top: Don Smalley's colourful Dalotel sports model was the sole R/C aerobatic representative. More next time, please! Above: Neat yellow rubber-powered Harvard by Richard Meade treated us to retract undercarriage. Left: Worthy Silver medal winner - Peter McDermott's DH 60 Moth. Below: Neil Lunam and Martin Dilly on duty at the BMFA stand.

GREAT FUN at the 28th - that was the verdict after the doors finally closed on the 1989 ME, the first at fresh, bright and airy Alexandra Palace. And how pleasant to see more and more model aircraft on display. Room for even greater numbers next year, with more ideas to attract... But here was a healthy selection of types, with notable input this time from the free-flight competition brigade. At judging, scant points separated Chris Edge's crisp Carbon-Ate F1A from the latest aluminium-surfaced F1C from Stafford Screen's stable. Kevin Wallace's Nats-winning F/F Bristol 77 took the Bristol Cup; it was actually the sole model representing this manufacturer. For invention it would be hard to beat Brian Parkin's Videocopter, designed to beam pictures back to the ground - and with plenty of scope for development.

Joining the F/F Silver Medallists was Peter McDermott's new, but very weathered DH60; and a duo of Bronze awards plus a clutch of VHC's, HC's and Commended certificates proved the continuing strength of aeromodelling at the ME.

Flying, too

After an unexpected day of informal fun-flying caused by a change of programme (and yes, we'll include more next time), New Year's Day heralded the now-traditional DPR Flying Championships, conducted with typical enthusiasm by Dave and Janine Rawlins and as keenly contested as ever. Close finish in the Chuckie Championship; Malcolm Allen was overtaken by two seconds at the very last flight by Ray Haywood. The twenty-second barrier proved difficult to crack. Junior Champ was Andrew Peppiatt; the Superfighter Championship went to Darron Bellworthy (who, we remember, flies a bit of R/C scale too, now and then!). Much more on these proceedings next month... Other aeromodelling activities were the BMFA F/F Experts Forum, where a variety of fairly esoteric subjects was debated, and Reg Parham's famous Indoor flying expo, which proved as exciting as ever. Again, closer focus on all this next time! For now, our pictures will give a hint of this Exhibitions story...

58th Model Engineer Exhibition Competition Results: Flying Models

Aeromodeller Cup and Silver Medal	C.Edge	Carbon-Ate A/2
Bristol Cup and Commended	K Wallace	Bristol 77
RCM&E Cup	B Parkin	Videocopter
Silver Medal	S Screen	F1C
Silver Medal	P McDermott	DH 60 Moth
Bronze Medal	D Hipperson	Jedi Knight No 17
Bronze Medal	S Mendis	LVG CVI
Very Highly Commended	J Robarts	DH1c Chipmunk
Very Highly Commended	A Sephton	ABC Robin
Very Highly Commended	J Robarts	Miles Sparrowhawk
Very Highly Commended	D Stokes	Minimoa 36
Highly Commended	M Pressnell	Firefly 1/2A
Highly Commended	P Lee	Parham Wakefield
Highly Commended	S Hazell	Gloster Gamecock
Highly Commended	D Stokes	Kirby Kite 23
Commended	B Stitchbury	1920 Biplane
Commended	N Cliff	Modern F1B
Commended	A Penhall	PLW-5 variant
Commended	J Willis	Hawker Hurricane I

Below: 1936 British Cup design, actually built by Jim Adams in the US and bought to the SAM 35 stand by David Baker. Below that: Displaying F1B delights – Dave Hipperson's Bronze-winning Jedi Knight No 17. Below that: Patrick Robarts' impressive C/L Miles Sparrowhawk, and (bottom) his dad John's scratchbuilt DHC Chipmunk, both Very Highly Commended.

AEROPLANES AT ALLY PALLY

Left: Exhibition regular Peter Lee entered this neat Parham Wakefield to uphold his Vintage interests. Centre left: John Willis treated us to this characterful Hurricane for rubber power. Centre, below: Aeromodeller Cup winner this year was Chris Edge's splendidly crisp Carbon-Ate F1A. Below: David and Jeanine Rawlins were at the helm of the DPR Championships yet again. More on this next month! Bottom: Silver Medallists both - Chris Edge and Stafford Screen display state-of-the-art free-flighters at the close of the Exhibition. Well done both!

Chris Bradford guides us through the delights of stationary control line flight for all...

Hover BOVVER!

PERHAPS you have seen our family of model flyers on the control line Scale circuit. As well as our interest in that branch of the hobby we enjoy many other aeromodelling activities, with the underlying principle that it is all for fun!

We've had much enjoyment from control line and sabre dancing – hover bovver, tail dancing, or just plain foolhardy; call it what you will, the challenge is great!

What do you need? Exactly the following:

(a) A model
(b) A .35 motor
(c) A three-line control system
(d) the ability to fly a control-line model without crashing every time; and
(e) a heck of a lot of nerve or 'bottle'.

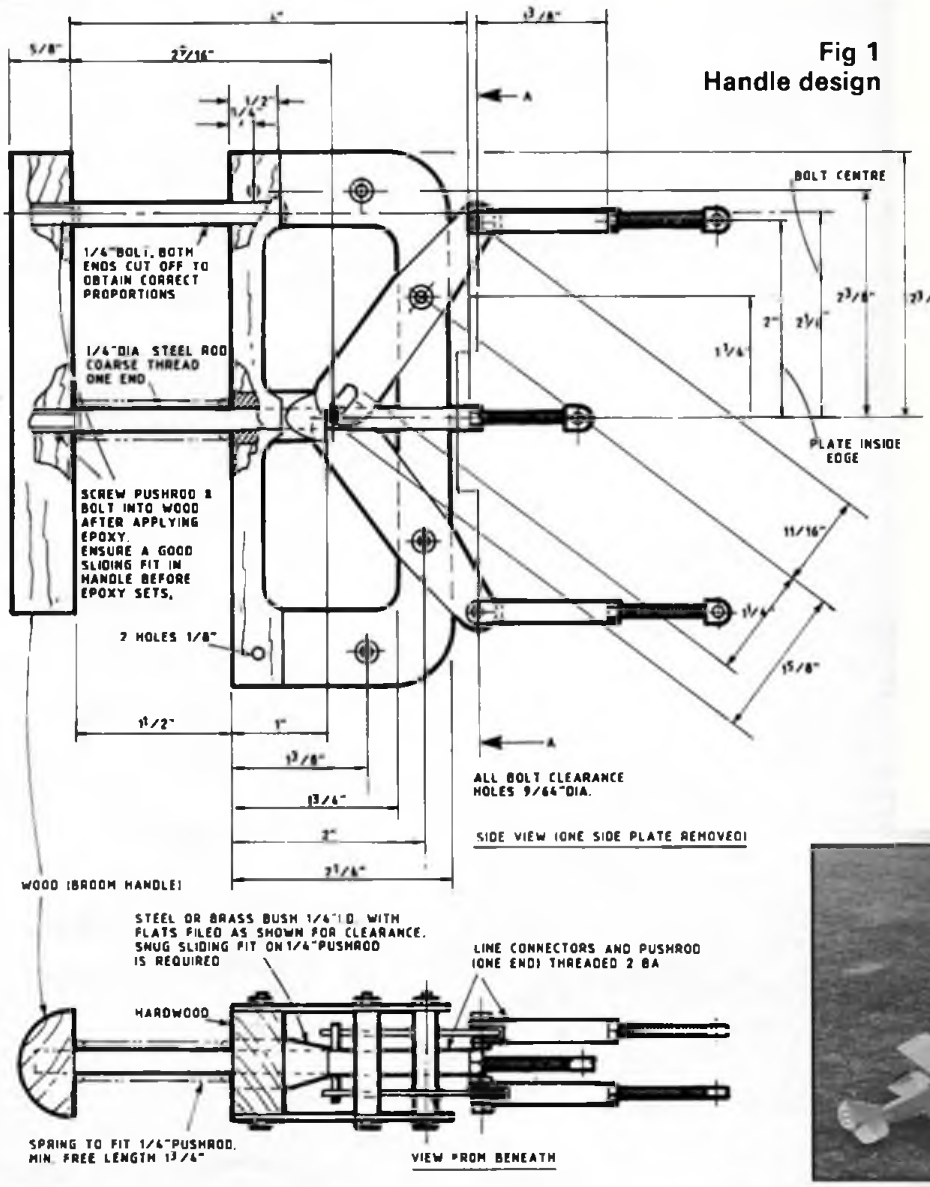
The simplest bit is the motor (after all, you buy it rather than make it). I use a loop-scavenged OS 35R/C with nylon 10 x 4 prop; a 10 x 6 is just as good. Other contenders are the Enya 35 and Merco 35. The secret is to have sufficient but not too much power, coupled with reliability and excellent throttle response. I always set the needle one notch – and only one – lower than the point at which the break from four-stroke to two-stroke occurs. The engine will then run cleanly and smoothly in level flight.

Next comes the control system. We need an efficient and very free-moving – vital! – three-line compensating handle and bellcrank. See Fig 1. Operation is thus: squeeze your hand for 'flat out' and relax for 'idle'. As you will see, this system allows single-handed operation. Spend time getting the system working perfectly and you will never regret it. Clean and oil it regularly. All of my 'three-line' models are flown from the same handle. The most important part is the centre carrier in which holes for the main bush and main alignment bush must be drilled parallel to each other. Use a drill stand for this, with pilot holes accurately spotted. Loctite all nuts. What lines? My choice is for seven-strand heavyweight Laystrate, 65 feet long. They will last for ages if you look after them.

My favourite type of bellcrank is the sliding type shown in Fig 2, but the system marketed by Roberts – if you can find one – is fine. Even better is the set-up produced by fellow UK Team Member John Robarts. Nevertheless, a simpler arrangement, such as the double-bellcrank shown in Fig 3 will give good results at the expense of some precision.

Use of a secondary bellcrank, as per Fig 4, is recommended for the following reasons:
(a) Mechanism action may easily be reversed if desired
(b) Throttle adjustment on starting is easily

Fig 1
Handle design



Heading: A motionless Real Ale biplane – reduced plans overleaf – proves practice makes perfect! Good display potential, too, as shown in the line-up at right.

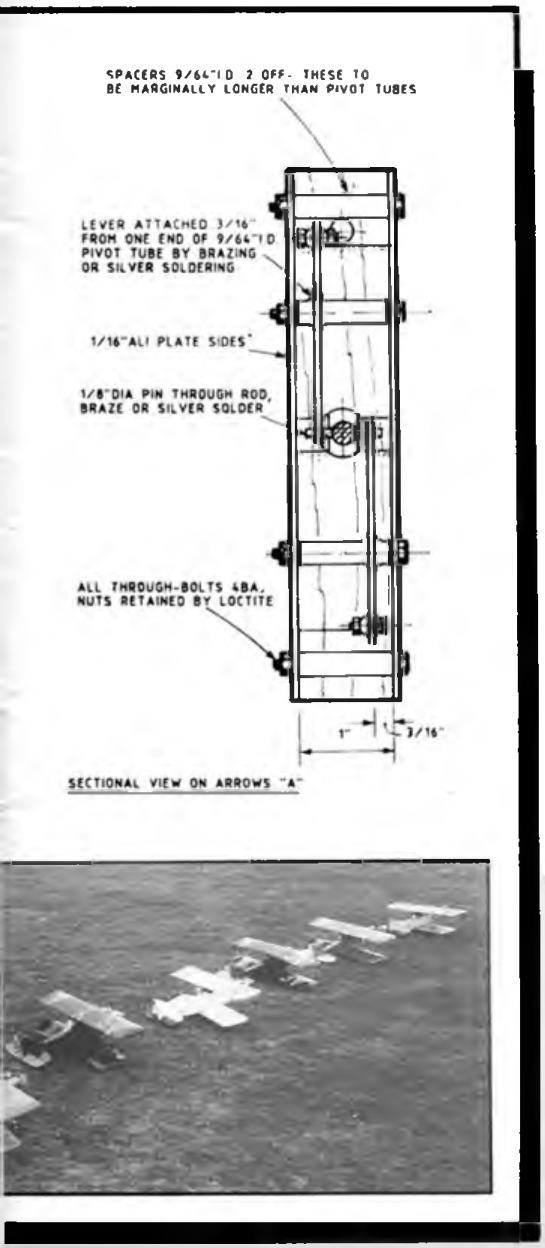
managed (providing the bellcrank is accessible)
(c) Throw adjustment can be varied
(d) The throttle may be biased to open up if the lines go slack. The last feature has occasionally got me out of a good deal of trouble! Some problems may occur on landing when the line tensions lessens, the engine opens up and off you go again – but when learning hover manoeuvres you will probably arrive by accident, at least to begin with!

Here's to Real Ale!

How about an aircraft? Real Ale II is most suitable. Acutally, this is a modified version of a design by Norman Ashford and Brian Youngs of the Broadlands Club, who were the first enthusiasts we ever saw hover a C/L model. The aircraft is simple to build and only a few notes are needed. Make the fuel tank as large as possible consistent with a comfortable fit between the top decking and bearers. We use old one-gallon oil cans as a supply of tinplate; 1/8in diameter copper pipe is easy to bend and solder. Elevator movement must be 55-65 degrees each way (yes, really that much). Don't peg the rudder to the fin. If the model falls backwards to smite the ground it is better if the rudder breaks off cleanly, absorbing some of the impact and helping to save the rest of the model. In fact, the model will fly quite happily without the rudder; so it's up to you.

For simplicity cover Real Ale in your

Plans overleaf: continued on p.174



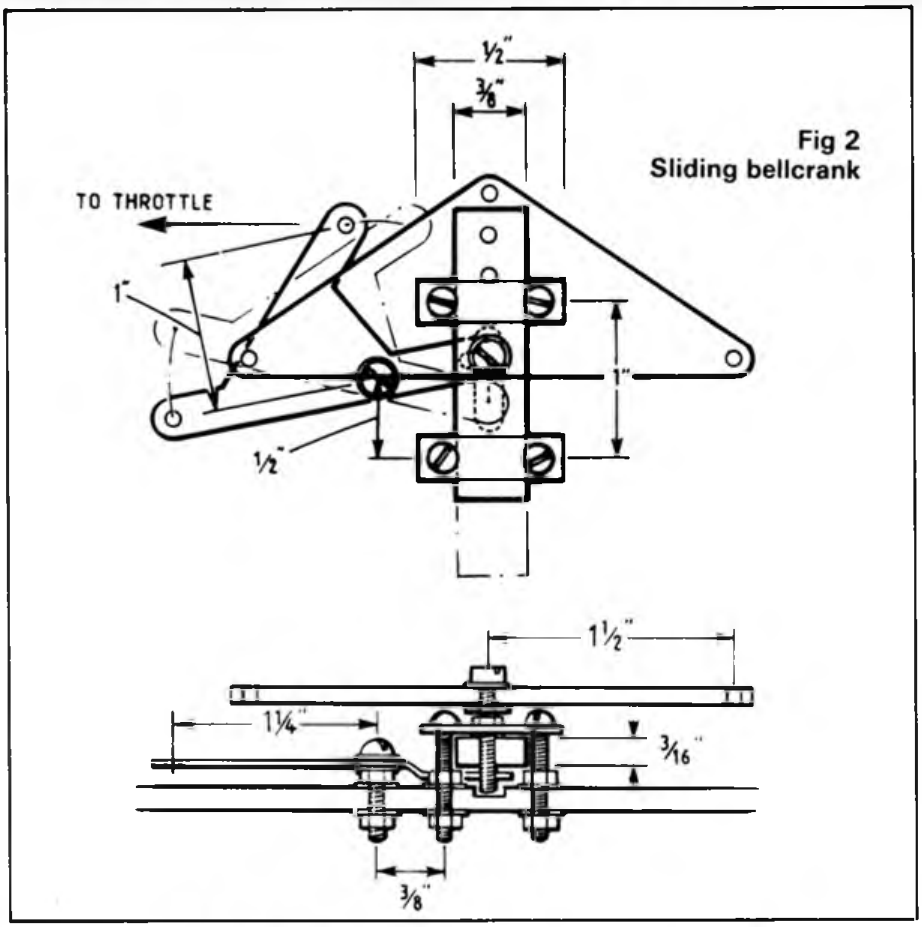


Fig 2
Sliding bellcrank

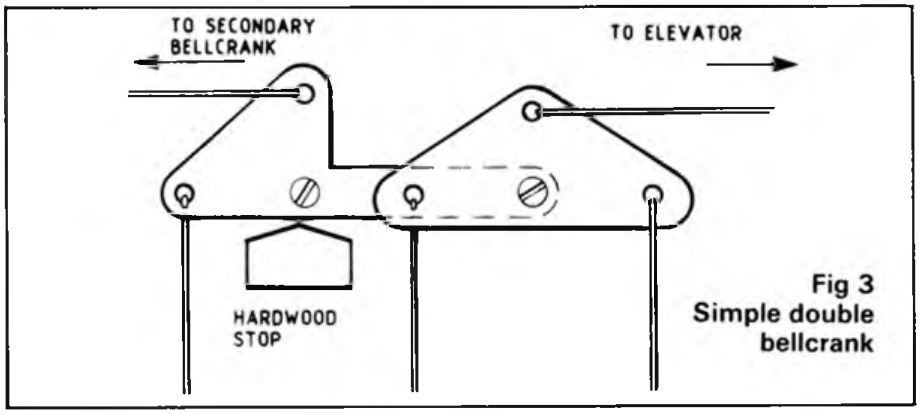


Fig 3
Simple double bellcrank

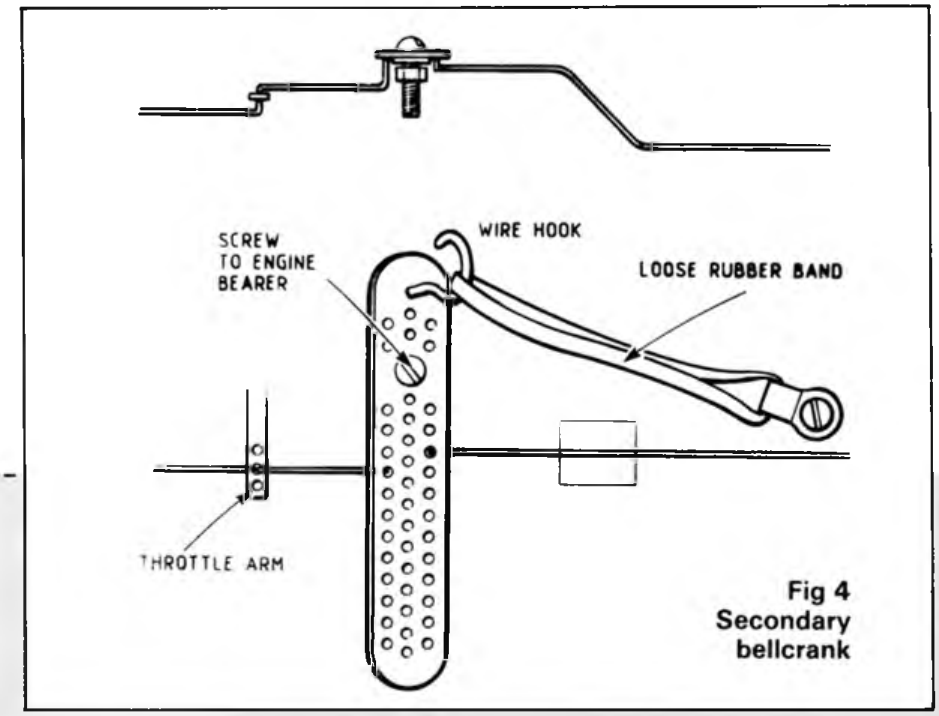
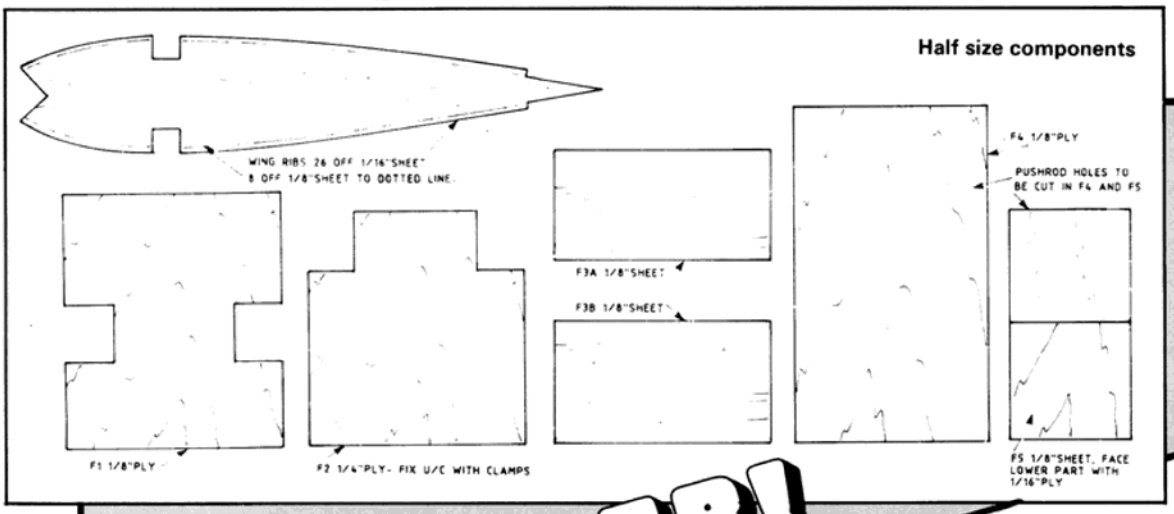
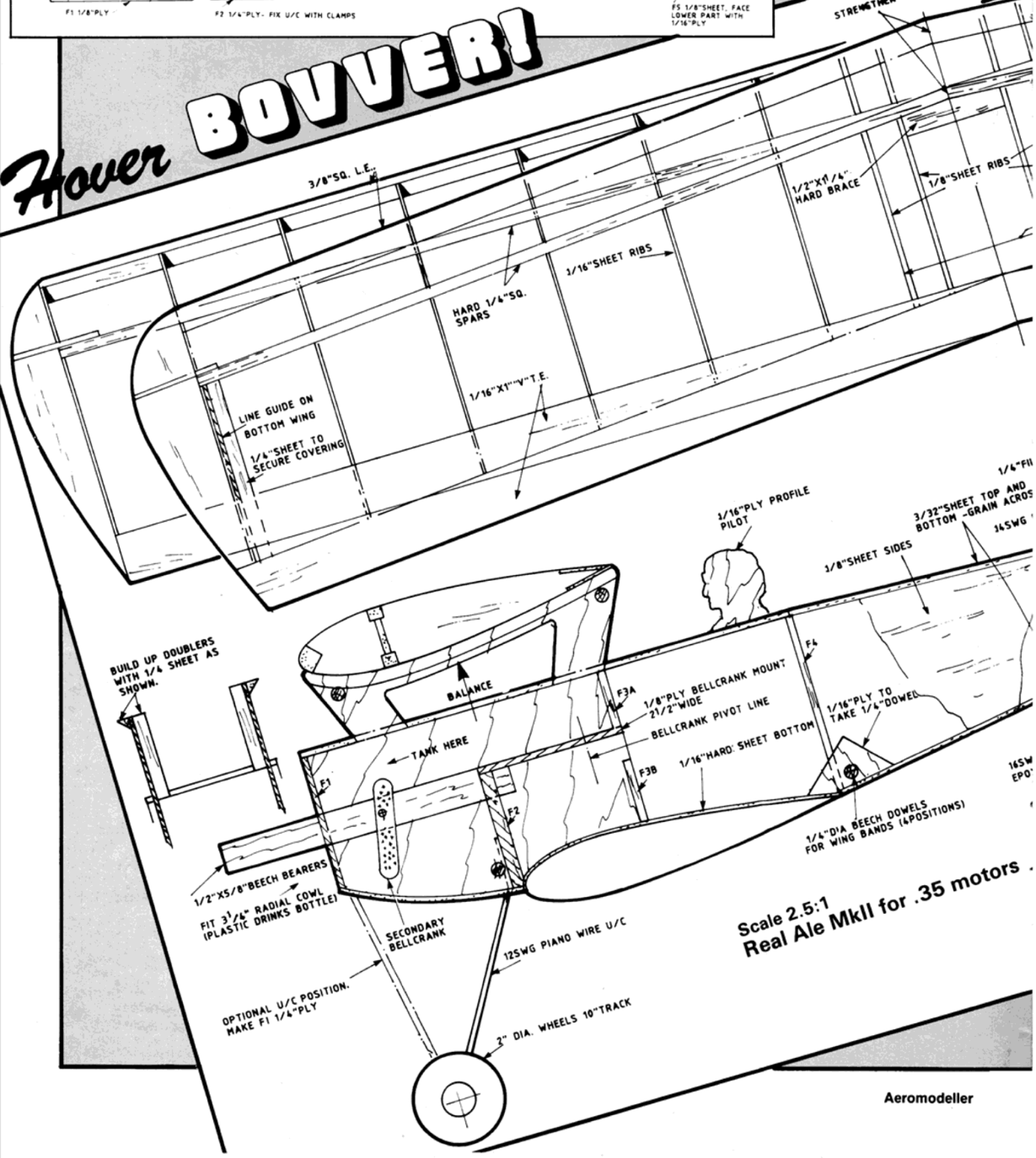


Fig 4
Secondary bellcrank

Hover BOVVERI

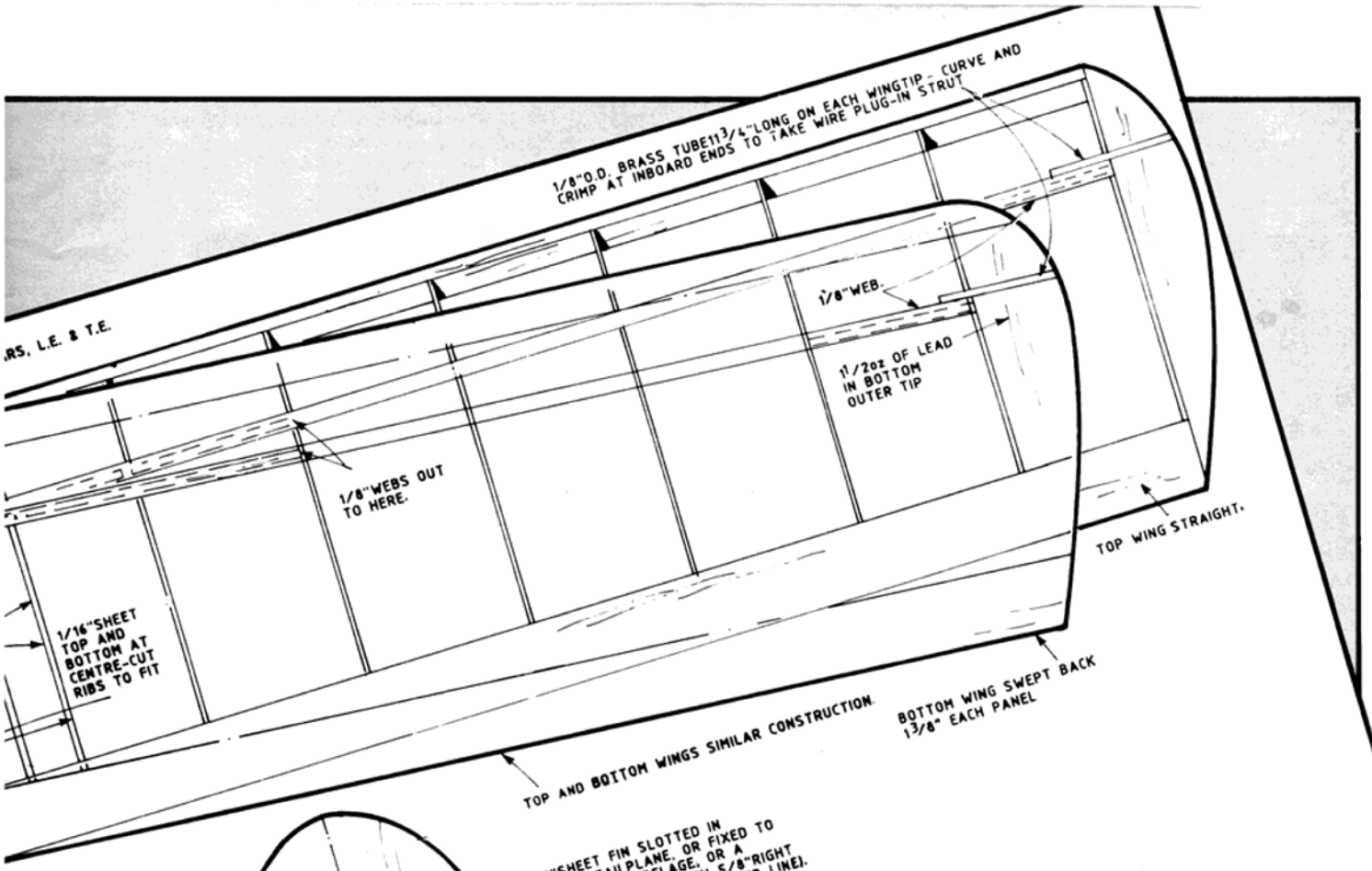
Real Ale is a simple, tough and entertaining biplane for all forms of C/L fun flying. Here's the chance to build yours!

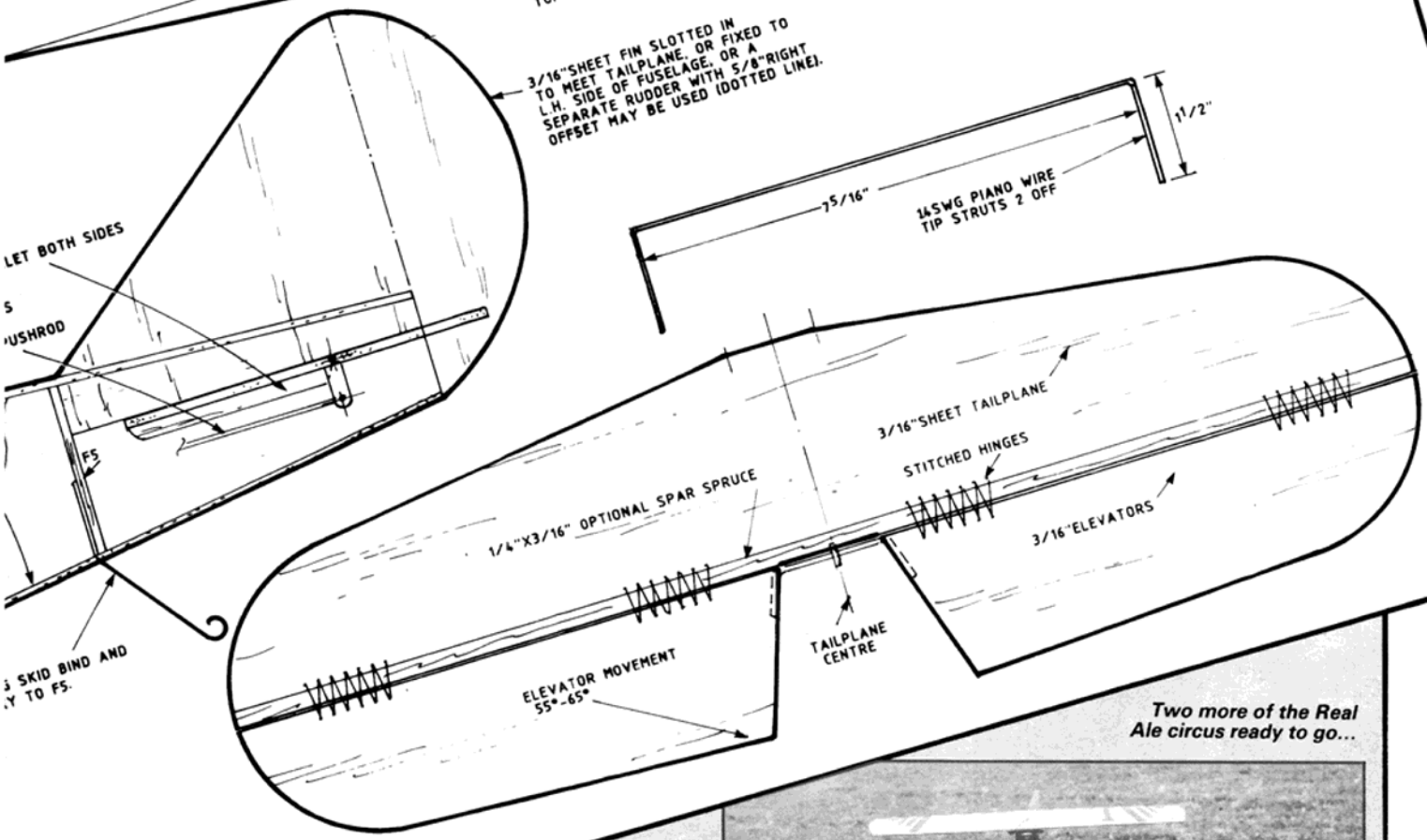




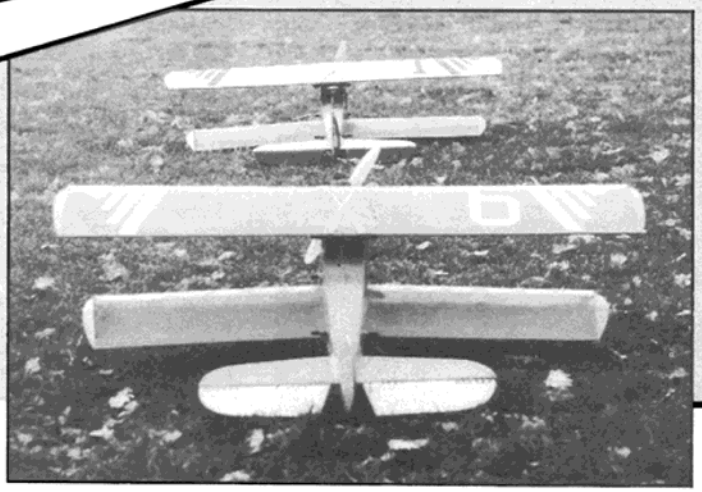
Scale 2.5:1
Real Ale MkII for .35 motors

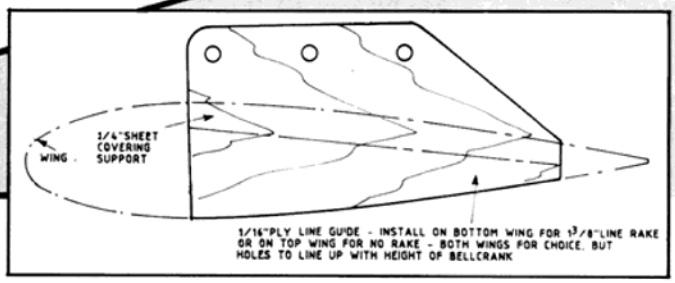
Aeromodeller





Two more of the Real Ale circus ready to go...





THOU WINTER WIND...

Enthusiasm was high at the 1988 Aeromodeller Coupe d'Hiver event...

POSTPONEMENT by one week and transference to RAF North Luffenham actually aroused hope that conditions on 12th December would be kind for this perhaps most taxing of rubber model classes. Certainly the forecast was encouraging, reinforced by a very reasonable Saturday for trimming around the country...

Something of a disappointment, then, to awaken to a fresh breeze on the day itself. At the airfield drift was, most helpfully, directly down the runway, but a degree of turbulence generated by a ridge a couple of miles upwind caused a few problems right away, and as windspeed increased scores were generally lower as the day progressed.

Nevertheless, the threat of rain never materialised and the task of flying in stiff conditions proved well met by many contestants.

Those who flew early profitted most. Bob Wells always likes to get away first and his '80gm' efforts were rewarded by two consecutive maxes, but later flights failed to match this and Bob was to finish in fourth place in the class, just behind Derek Neil who also maxed twice, and ahead of a cluster of enthusiasts including eventual top junior Anthony Ball. Father and son duo of Dennis and Ian Davitt flew to deserved second and third places respectively, each with a single max to boost their scores (Ian's, interestingly, was achieved on his last flight when conditions had begun to relent just a bit).

Below: Past 80gm winner Steve Philpott gave best to the conditions after a competent start.

Inset, above: Dave Greaves, second in 100gm, gives his model the once-over. Above: Andy Crisp prepares popular FIGaro design. Right: Top Junior, Anthony Ball waits to go.

Classic achievement

But nothing could match Mick Chilton's splendid achievement of five maxes – reward for unhurried preparation and careful choice of air. Despite customary anemometer and thermistor devices, Mick admitted that he

was sensing the air correctly more by his own feel and judgement than outside assistance. Something of a triumph for practice – and 'traditional' competition sense; though it was plain that Mick's model flew beautifully in the conditions, with none of the buffeting so apparent elsewhere. Indeed, some models tumbled so badly that propellers were almost stationary during tailslides. But others tried hard. Pete Harris, 80gm winner in '86 was let down by a three-quarter-minute flight; had he matched the rest of his flights he might well have clinched second place. So might John O'Donnell, yet again proxy flying Frank Monts' trusty Chicken Coupe, which was slightly out of its depth on the day; despite compact layout this is really a calm weather craft. John ran out of time with a flight to make. And we must applaud Jon Ward's efforts. Unaware of the announced three o'clock finish he was pacing his flights to end half-an-hour later. With three maxes already to his credit he needed only in excess of 50 seconds to take second place. His disappointment was obvious, but his sportsmanlike acceptance of the rule was a credit to aeromodelling. Free Flight Scene correspondent Dave Hipperson has made no secret of his ambition to win both Coupe classes on the same day but he decided to save his efforts for next year after witnessing the semi-airborne antics of the *Aeromodeller* control tent as he was preparing to launch for his first flight... Well done, too, David Beales – top in Vintage thanks to his 1950 design Curry Dore which even managed to punch its way through to a fourth-flight max.

Flights in the 100 gram class were taken, on the whole, later in the day and durations were correspondingly low. Dave Greaves made one of the two over-100-second flights but he was let down by a sub-half-minute last flight to allow a steadily improving John Cooper through to win the Bernard Boutillier Trophy for the second time.

Congrats

Well done to all, especially those who flew in both classes. How pleasant to see strongly maintained interest in Coupe flying, particularly in the 80g category, even if this is nowadays at the expense of the 'ROG' event. Prizegiving on the field was a brisk affair with something for everyone. Thanks

John O'Donnell ran out of time in 80gm with famous, proxy-flown Chicken Coupe by the USA's Frank Monts. Ballasted for the 100gm class, model made fourth place.

go to Messrs. Ripmax, PAW, Chart Micromold, Argus Books, Quickstart Engines, The Model Shop, Windsor and The Model Centre at Hemel Hempstead for their donations and help. Thanks are also due to Phil Ball, the Rutland R/C Fliers and RAF North Luffenham for allowing us to divert from our originally-announced date and venue.

But tell us – why, yet again, was it a perfect flying day on the Monday?

C'est la vie – see you all next year!

1988 Aeromodeller Coupe d'Hiver
RAF North Luffenham, 12th December

80 gram class: Aeromodeller Trophy

						Total
1 M Chilton	120	120	120	120	120	600
2 D Davitt	108	120	54	113	93	488
3 I Davitt	102	88	89	75	120	474
4 D Neil	80	120	120	66	78	464
5 R Wells	120	120	69	60	88	457
6 R Peers	86	88	115	55	110	454
7 G Turnbull	112	109	97	77	54	449
8 P Harris	93	85	120	46	100	444
= A Ball (J)	120	77	71	89	87	444
10 J Ward	120	78	120	120	–	438
11 Miss J Nash	77	101	70	65	111	424
12 S Screen	97	90	69	120	41	417
13 F Monts USA (proxy John O'Donnell)	99	95	67	120		381
14 M Dixon	120	48	69	84	59	360
15 J Dyer	67	102	90	39	60	358

16	R Pavely	355	32	M Molton	203
17	J Cooper	349	33	P Watson	200
18	E Hawthorne	348	34	S Rose	196
19	J Carter	329	35	B Rowe	185
20	D Beales (V)	328	36	P Thorp	162
21	S Philpott	305	37	G Sharp	156
22	O McMahon	291	38	G Ferer	139
23	R Cheesley	290	39	N Dubal	119
24	S Dixon	269	40	N Francis (J)	111
25	P Dancer	269	41	G Beal	111
26	P Ball	268	42	R Francis	97
27	A Beales	255	43	B Horsley	70
28	R Johnson	251	44	A Longhurst (V)	62
29	R Chilton	239	45	P Gibbons	60
30	B Lavis	233	46	G Archer	41
31	A Crisp	218	47	M Evatt	39

J denotes Junior flyers. V denotes Vintage entrant

100gm class; Bernard Bonutillier Trophy

				Total
1 J Cooper	52	64	103	219
2 D Greaves	89	102	27	218
3 P Carter	92	83	34	209
4 F Monts USA (proxy John O'Donnell)	72	77	59	208
5 R Rowe SA (proxy M. Croome)	61	67	40	168
6 J Carter	62	41	44	147
7 D Beales	52	46	44	142
8 R Peers	52	37	46	135
9 P Dancer	81			81

4A Trophy for best Vintage: D. Beales
Wasp Trophy for best junior: A. Ball

MOTOR MART SPECIAL

We welcome back Peter Chinn, who concentrates this month on the 'Best in the West' Irvine .15

At last! A state-of-the-art British 2.5cc racing engine, the record-breaking Irvine 15R-ABC.

THERE WAS a time when the international status of a model engine manufacturer depended on how successfully his motors performed in control-line circles. During the late 'forties and early 'fifties, McCoys and Doolings ruled the roost in C/L speed; Atwoods and Foxes in stunt. When the FAI adopted the 2.5cc limit for World Championship class Speed and free-flight Power events, other makes came on the scene: Super-Tigre, Oliver, K&B, OS, Eta, to name a few.

Then came the challenges from the state sponsored modelling institutes of Eastern Europe; first from MVVS (Czechoslovakia) and then Moki (Hungary), to be followed, in more recent years, by increasingly dominant hand-built specials from the Soviet Union. These developments, coupled with the fact that Western manufacturers found it much more rewarding to switch their efforts to the production of engines for the expanding and more lucrative radio-control market, have led to a sharp decline in the production of 2.5cc speed type engines in the West.

For some years, the Super-Tigre company provided the only factory-built speed engines (the G.20/15, followed by the G.15) offering effective opposition to the Czechs and Hungarians. When the G.15 was eventually outclassed, its place was taken, after a five-year development period, by another Italian product, the very successful Rossi R.15. The only other Western speed engine to make its mark was the TWA 15, designed and built by Bill Wisniewski and Roger Theobald, who, with prototype units, took first and second places in the 1966 World C/L Speed championships. These engines also introduced a new development to the model aircraft engine world, the tuned-pipe exhaust system, a device that was quickly taken up by the opposition.

Super-Tigre has long since given up the production of 2.5cc speed engines; and the Rossi brothers, whose entry into the model engine business began with tuning Super-Tigres, before manufacturing their own speed engines, are now devoting most of their attention to R/C engines, including specialised high-performance units for ducted-fan aircraft, power boats and cars.

Given the present situation, it would seem rather unlikely that any busy and successful engine manufacturer would wish to spend time and money on the development, tooling and production of a new 2.5cc control-line speed engine. Nevertheless, this is exactly what the people at Irvine Engines have done.

Motor motivation

The motivation behind this new move is not hard to work out. Ron Irvine was, himself, a keen speed flyer well before he set up Irvine Engines more than twenty years ago and it is no great surprise to find that within the company are two of Britain's most successful C/L speed exponents.

Peter Halman is Irvine's development engineer. In October 1986 he broke the then Russian-held 5cc class FAI world C/L speed record – not, mark you, with a 5cc engine, but with a slightly modified Irvine 21R of only 3.5cc. Ken Morrisey is Irvine's Midland area sales representative; he is another frequent speed winner. In June '87, at the Three Sisters C/L speed meeting, he broke the UK 10cc speed record with an impressive 347.43 kph (215.88 mph) using an OS Max-61VR modified for control line use. Only the fact that Ken's model was built to FAI specification prevented this figure from being claimed as a new 10cc world record.

It was at this same meeting that Peter Halman set a new British 2.5cc class record of 284.81 kph (176.97 mph), using a pre-production model of the new Irvine 15R. Subsequently, at the 1988 World C/L Championships in Kiev, Peter recorded 285.49 kph (177.39 mph) to return the highest speed of any Western competitor. In October, he did better still, winning the Majorca Open international competition and raising, yet again, his British record, this time to 288.92 kph or 179.53 mph.

The Irvine 15R is now in production, complete with the Irvine pipe designed for it. It is an entirely new model, of course (not, for example, a sleeved down 21R) and no doubt represents a quite considerable investment. Having regard to the fact that the demand for engines of this type is small, compared with the sales of Irvine's now quite extensive range of R/C engines, the return to the company is likely to be seen only in terms of prestige, unless other, less highly specialised versions can be produced. At the moment, the demand for Irvine's R/C engines is taking up virtually all available production capacity but the 15R is also being offered in a non-pipe, free-flight version.

Let's have a quick look at the existing production engine...

Like all Irvine motors, the body of the engine is an investment casting. It is a quite heftily proportioned unit, deliberately so in order to achieve the rigidity desirable in an

The Irvine .15 is being manufactured in pipe and non-pipe versions for C/L speed and FAI free-flight respectively.

Irvine 15R-ABC

Type: Single-cylinder, rear-exhaust two-stroke-cycle with shaft rotary-valve induction and Schnuerle scavenging. Twin ball-bearing crankshaft. Ringless aluminium alloy piston running in chromed bore brass cylinder liner.

Bore: 15 mm (0.590 in.)
Stroke: 14 mm (0.551 in.)
Swept volume: 2.474cc (0.151 cu.in.)
Stroke/bore ratio: 0.933 : 1
Checked weights: 194 grammes (6.84 oz); 221 grammes (7.80 oz) including Irvine 15 tuned pipe.

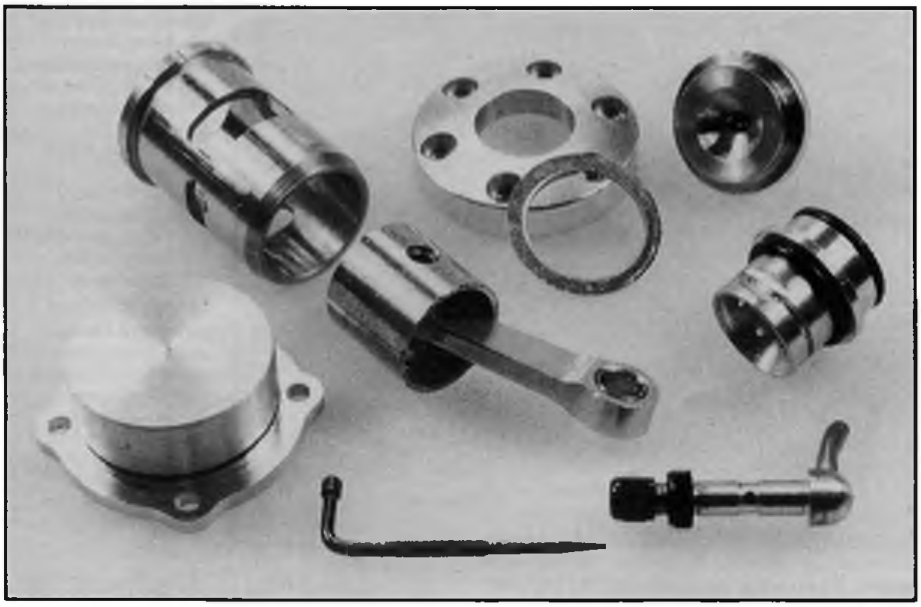
Mounting dimensions:

Crankcase width:	30 mm
Length from prop driver face (less pipe):	76 mm
Height above CL (less glowhead post):	53 mm
Mounting hole spacing:	16 x 35.5 mm

Manufacturer's nominal power rating: not stated

Manufacturer and distributor: Irvine Engines Ltd., Brunswick Industrial Park, New Southgate, London N11 1JL.

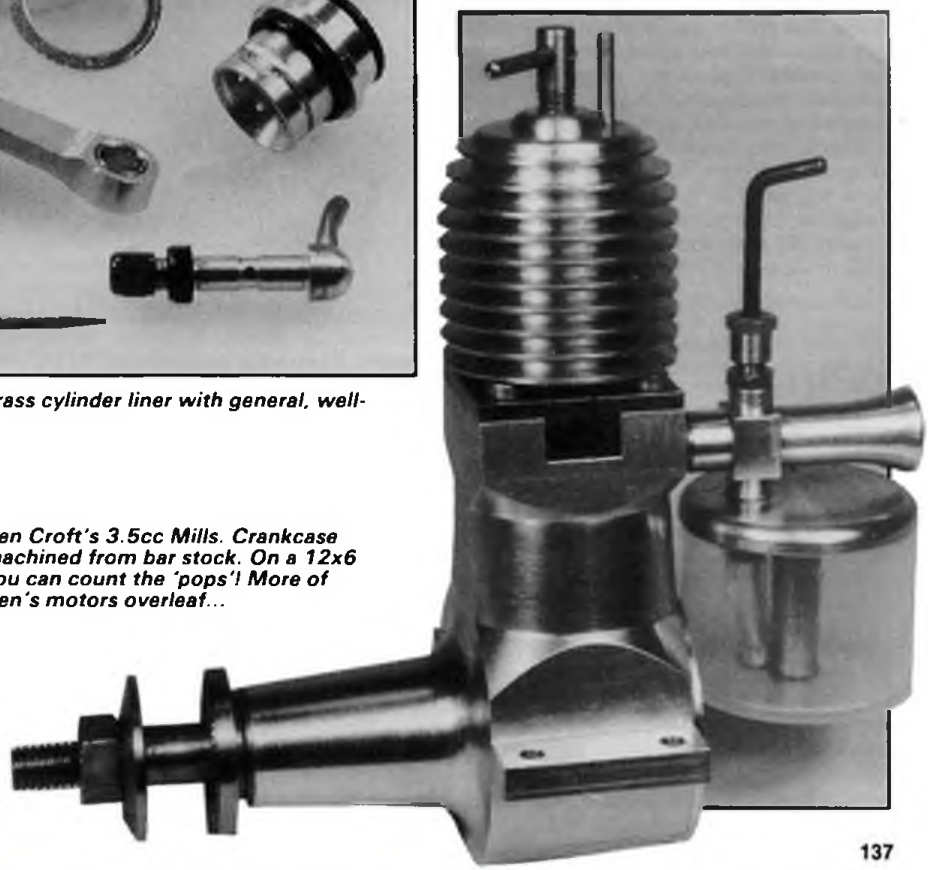
Robust main casting, sturdy 12mm crankshaft and prop driver and spinner assembly of the Irvine .15R.



Irvine 15R features thick-walled chrome-bore brass cylinder liner with general, well-shaped parts. Note also the two-part head.

ultra high-performance power unit. The crankshaft has a 12 mm diameter main journal with an 8.3 mm bore gas passage and a large, 15 mm long rectangular valve port. The latter registers with a matching intake port that is offset in the direction of crank rotation and which it uncovers from 36 degrees after bottom dead centre to 62 degrees after top dead centre. The crankshaft has a 5 mm o.d. hollow crankpin, a 1/4 in. diameter front journal and is supported in two high quality ball journal bearings, an eleven-ball plastic-caged bearing at the rear and an eight-ball steel caged bearing at the front.

The chromed bore brass cylinder-liner has a Schnuerle-plus-third-port scavenging system, consisting of a deep, unbridged exhaust port at the rear, flanked by wide transfer ports which emerge through the cylinder wall close to the third port. All the ports are angled and inclined through the liner wall to promote an efficient gas flow pattern. Here, the effectiveness of the port angles is helped by the use of a fairly thick (approx 1.85 mm) liner wall. The three inlet ports are served by well-proportioned transfer channels in the surrounding casting. Likewise, the speedy discharge of exhaust



Ken Croft's 3.5cc Mills. Crankcase machined from bar stock. On a 12x6 you can count the 'pops'! More of Ken's motors overleaf...

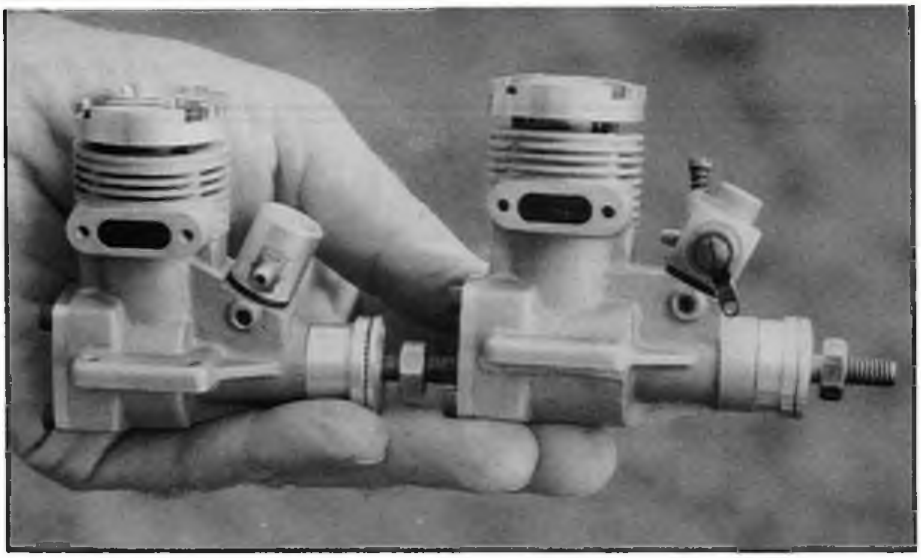
gases is encouraged by a smooth transition in the shape of the exhaust duct from a rectangular form at the liner port to the circular outlet at the pipe connection. Measured port timing of the engine examined was: exhaust 194 degrees of crank angle; Schnuerle transfer ports 134 degrees; third port 132 degrees.

Low reciprocating weight is essential to the realisation of high peak rpm and smooth running. The 15R's flat-crown ringless aluminium piston, complete with gudgeon-pin, weighs only 3.8 grammes and its machined high duty aluminium alloy conrod, lightened and unbushed at the top, is a mere 2.1 grammes. The 4 mm o.d. gudgeon-pin, retained by wire circlips, is, of course, hollow but blind at the front end in order to prevent charge loss from the third port to the exhaust port. The conrod is bronze bushed at its big-end where there is an angled oil hole into the top of the bearing. The rod is 27 mm between centres, equal to a moderately long 1.93 x stroke, which means that rod angularity and piston side thrust is kept low.

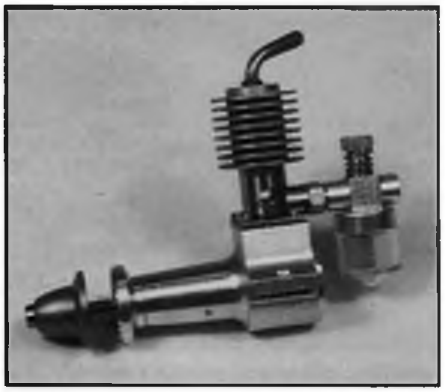
In the approved ultra high-performance 2.5cc racing engine manner, the 15R dispenses with the conventional screw-in glowplug and uses a two-part glow-head assembly consisting of a combustion chamber insert, with integral glow element, tied to the cylinder by an outer component with six 2.5 mm head screws. The glow-head has a deep part-spherical chamber, surrounded by a very slightly sloped 2.8 mm wide squishband.

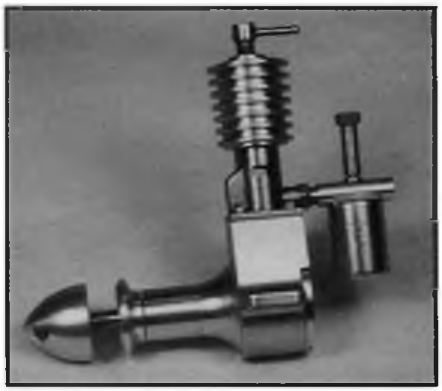
The Irvine 15R has a 13 mm i.d. intake boss into which is fitted a machined venturi having a 7 mm choke (effective area 38.5 sq.mm.) with six peripheral fuel jets. The latter are fed by a tangential needle-valve assembly that also serves to retain the venturi in the intake boss.

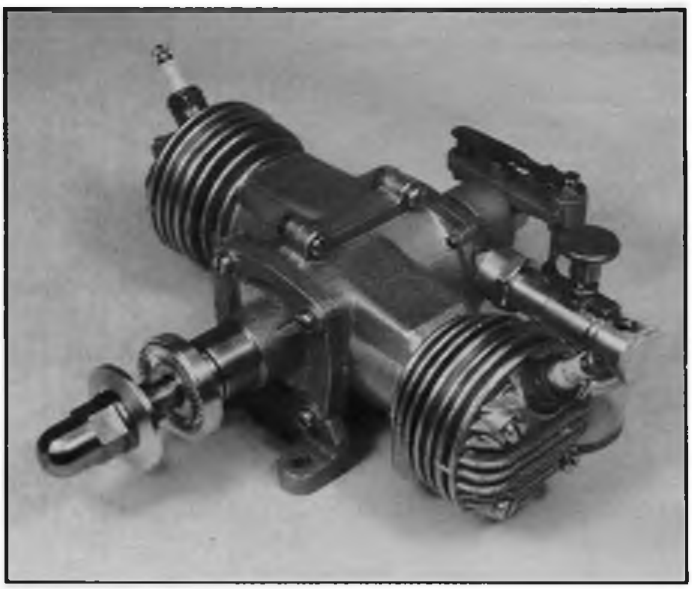
The 15R comes complete with the usual speed-type machined spinner assembly with the combined prop driver and spinner backplate mounted on a brass split taper collet. Also supplied with the speed engine is the Irvine tuned pipe that has been expressly designed for it. (The free-flight version of the 15R has different port timing and is supplied without a pipe, of course.) Incidentally, the pipe is machined from the solid in three sections, yet weighs barely an ounce.



Seen at the Nats - Merco .20 prototypes owned by Ian Russell. Don't bother ordering; production is not planned!







Above left: Ken Croft's 0.15cc diesel needed six piston-cylinder assemblies before fits were good enough. Above: Sparey 0.8 (actually 0.64cc -Sparey miscalculated!) runs beautifully, says Ken, but is a bit bulky for its displacement.

After problems with his 0.15cc diesel, Ken found this Craftsman Twin relatively easy to construct. Original 1946 castings used.

The set-up

Engines of this type are strictly for experts in their field and can only be expected to deliver competitive levels of performance if properly set up. This includes skilled attention during the bench running-in period and, with each Irvine 15R speed unit, the manufacturer includes a sheet giving terse, no-nonsense instruction on how to do this.

Very briefly, the procedure starts with four 7x4 Top-Flite 'Power Props' cropped to 6.1/4in, each of which is then trimmed to hold the engine to different speeds, ranging from 27,250 rpm to 30,500 rpm, without the pipe fitted but with the plug lead connected. Initial running-in then takes place on the second-fastest prop, running rich at 26-27,000 for five to six minutes, followed by runs on each of the four props in turn, starting with the fastest and leaning out briefly to maximum rpm when hot. The cylinder and piston assembly are then removed and the piston inspected for high spots. If present, these are stoned off and the engine re-run and re-examined.

When the piston is OK, the engine is fitted with its pipe, including the recommended tailpipe insert. It is then run with the needle open 2-2.1/2 turns from the open exhaust setting, on the fastest prop, at 32-33,000 for no more than two minutes, then leaned out for a maximum of three to four seconds - that is, just sufficient for a tachometer reading to be taken. Rechecks are then made on other props. During these runs, the needle-valve is gradually closed towards the peak setting and, between each run, the piston is re-examined and re-honed if necessary.

If a glow element fails, the engine must be washed out to make sure that no damaging particles remain inside. The final bench tests are to run the engine at maximum rpm on the fastest prop for 15-18 seconds and, if rpm are held, to repeat this on the second-fastest prop for five to six seconds. The recommended flying prop is 5.6 inch pitch with a blade length of 74 mm (i.e. 5.83 in.dia.) and the owner is advised to look for speeds in the region of 266-268 kph; that is, around 166 mph.

Nowadays, remember, record-breaking speeds do not come straight out of the box. No matter how well an engine is designed and built, the last few mph between otherwise identical machines, are down to mechanical efficiency; and that means patience and meticulous attention to the sort of procedures outlined in Irvine's recommendations.

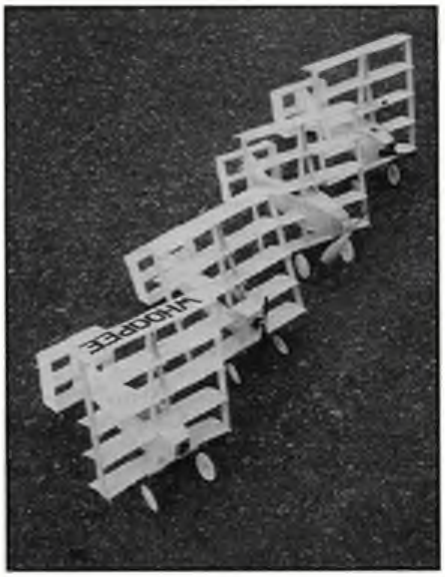
high potential

More on electric free flight as Chris Coote puts motors to the test

I HOPE that the previous series of articles has unveiled some of the mysteries of electrics, and perhaps persuaded some of you that it is worth having a go. Most of the content has been generated by yours truly, and – of course – there is a limit to what one individual can achieve. I think that electrics hold the key to sport free flight in the future, and may well blossom into duration competition classes as well. If this is to happen it will need more than one modeller's input. I would like to see a joint development and spreading of ideas and results through this column. Your co-operation is needed! Feed in your information, queries, letters and sketches. Especially if you have no experience of electrics, there may be something that is puzzling you. As it is probably confusing someone else as well, you are likely to be doing others a favour by writing in. I cannot guarantee to answer all your questions, but I will have a jolly good try. Here is my address. Chris Coote, 44 Edward Road, Clevedon, Avon. BS21 7DX. Tel: 0272 877149.

Competition Success

I am pleased to report that an electric model won the last Indoor Open Scale event at Alumwell against all the CO_2 opposition, including the previous Nationals Scale winning CO_2 ABC Robin ably flown by Andy Sephton. The victorious model was Dave Hanks' Eastbourne Monoplane, a completely homebuilt effort including the geared motor system. Dave has kindly supplied some details and history. As a long-time dabbler in electrics from electric RTP days, Dave decided to approach Indoor free flight in a logical fashion after obtaining some tiny motors at an ME Exhibition where he was giving an ERTP demo. These motors were a very low-powered version of the type now seen in the Knight and Pridham unit. After rewinding, a 5:1 gear system was added simply by cyanoing bits of nylon strip to the ends of the case to take a geared propshaft made from 18 swg wire. It was decided to make a simple test model as light as possible, using high-wing layout for ease of trimming.



An all-sheet 20in Piper Cub was constructed mainly from light 1/32in sheet; it weighed 42gm unpainted (but ready to fly) with two 50 mAh cells. Flight performance exceeded all expectations (thanks to the low weight) and regular sorties of 50secs or so were achieved on half charge inside a small sports hall.

At about this time we came across higher-powered motors in Mini-Stomper toys (see photo) and these little toy cars became eagerly sought after. Dave managed to find a 'racer' variant rather than the more common four-wheel drive type; to his delight it contained a 4:1 gear system ideal for his purposes. This motor was modified in a similar way to that in the Piper Cub; and bearing in mind the lessons of low weight, the Eastbourne Monoplane was drawn up ready for the 1987 Nationals.

In the best traditions of scale modelling the beast was not flown until the day of the event, and a bit of experimentation with props was required to get lift-off. The main problem was not one of power but rather of under-elevation, cured by the model inadvertantly clipping the wall and thus, fortuitously, resetting the rather flimsy elevator! The last competition flight was sufficient to earn the model fifth place overall, so Dave determined to improve it for 1988. Extra engine, rigging and pilot detail gave an all-up-weight of 52 grams. Two 50 mah cells were still used, driving a six-inch (150mm) silver Peck plastic

Above: Robin James' Whoopee was last month's full-size plan. Below (clockwise from top left): rewound Mabuchi 360; HY42; Derek Knight's double unit; geared KAP01; geared Union motor; and HY70.

Mini-Stomper toy car costs £1.99 from Woolworths; yields similar motor to Union and K & P units. Used by Dave Hanks in his Eastbourne Monoplane, drawn opposite.

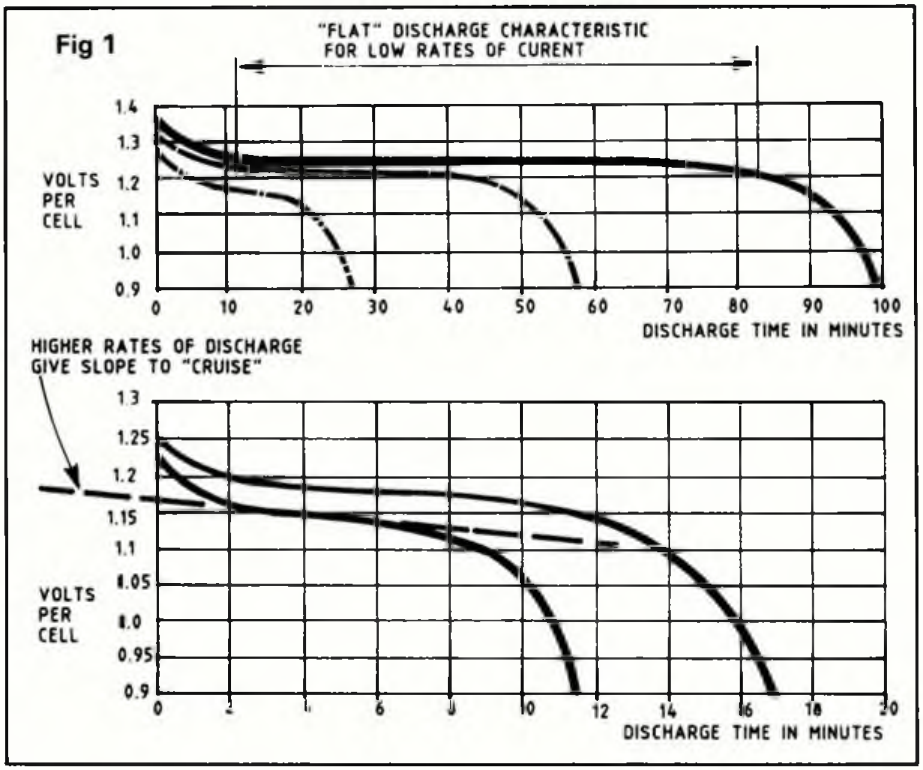
'rubber' prop. The winning flights were among the most realistic I have seen. A long, slow, takeoff was followed by very low-speed flight for approximately 40 seconds, and a very gentle descent led to a perfect tail-up landing. The exact amount of charge was varied to restrict maximum altitude, thus ensuring that sufficient energy was retained for that gentle power-on landing which scores so highly. Indeed, this is one of the advantages of electric power for Scale, particularly Indoor; precision of flight can be so easily and reliably controlled.

More wings!

At the same meeting I happened upon Simon Rogers' Zalewski quadruplane. Truly delightful, this is one of those obscure Russian WWI types with apparently more rigging and struts than anything else! This model gave a fine illustration of what may be flown by the standard KP01 geared unit. The model itself was developed from an earlier, smaller CO_2 version. It came out at 22.1/2in span and 99 grams ready to fly on the standard setup with three 50mAh cells. The amount of rigging between the four wings really had to be seen to be believed; but the model managed to haul itself into the air on a full charge after the event. Other models, such as Derek Knight's own Tiger Moth (at 110 grams and 26in span) showed that a conventional biplane with a reasonable amount of rigging is entirely practical at this size. It would be instructive to calculate the wing loadings of typical successful models. How about sending in some details? Just to start you all off, I have worked out that Dave Hanks' winning Eastbourne Monoplane had a loading of 2.42oz/sq ft (or, since I prefer to measure all weights in grams and dimensions in inches, 46.4 gram/100 sq in). Doug Sheppard's outdoor Blackburn Dart comes out at 8.2oz/sq ft, whilst my own Pee-Wee sports model is a heavyweight at 10oz/sq ft (190gm/100 sq in).

Testing, testing

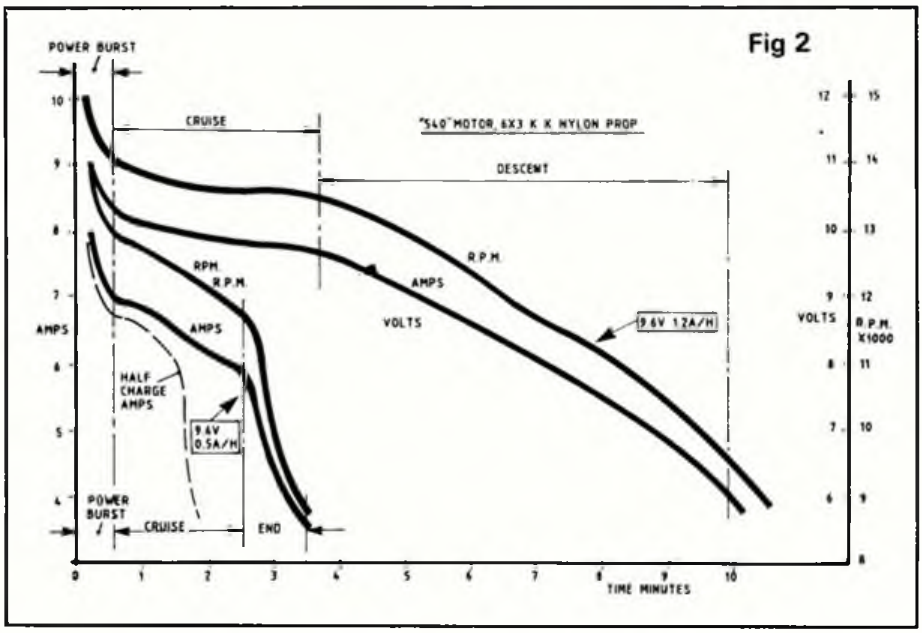
One of the activities that seems to take up a lot of my 'tinkering' time is test running of suitable motor/battery combinations. Very early on I realised that the traditional discharge characteristics of the cells used for electric flight were not really as shown in the makers information. The oft-quoted flat curve (Fig 1) thought to be typical of nicad



cells does not really apply at the very heavy discharge rates that we tend to end up with in electric flight applications. Fig 2 shows the results of tests I did (over ten years ago, in fact) on a then-typical electric R/C motor set-up. However, the general shape of the curves is exactly similar to what I have recently measured on small free-flight equipment. The significance is in the shape of the curves.

How we can use these characteristics to our advantage when trimming and flying our models? The first thing to note is that there is no 'flat' section of curve; in other words, no area where current consumption (and, therefore, prop RPM) are constant. The curve is more like that of a traditional rubber motor. An initial power burst is followed by gently declining RPM until the final portion is reached, when an increasingly rapid decline in current occurs.

If we do not put in a full charge the curve will follow the same overall trend with a slightly less sharp initial power burst but with a more pronounced drop in RPM in the cruise phase, followed similarly by a very rapid decline. So how can we use this information to our advantage in, say, the trimming situation? For Scale types I like to make the initial trials just as one might with a full-size aircraft – that is, by performing taxying trials slowly and increasing power until lift-off is achieved. Because an individual motor/prop characteristic may be so easily repeated it is a simple matter to put in half-charge and measure the duration of the three main discharge phases on a stopwatch. You will then know for just how long to hold the model on the ground until the start of the rapid decline in revs at the end of the run. This is the point at which to release for that first taxi trial. You know that if things start to go wrong the 'throttle' is already rapidly being pulled back. Probably there will be insufficient power to fly the model; so for the next test we hold on until



about halfway through the cruise phase. In this case, upon release the initial RPM will not be much more than before, and so nothing too violent should happen. However, the duration of increased power will now be sufficient to allow the model to accelerate nearly to flight speed. Once again, the rapidly declining power at the end will ensure that if the model does get off, it will rapidly land; the classic short test hop.

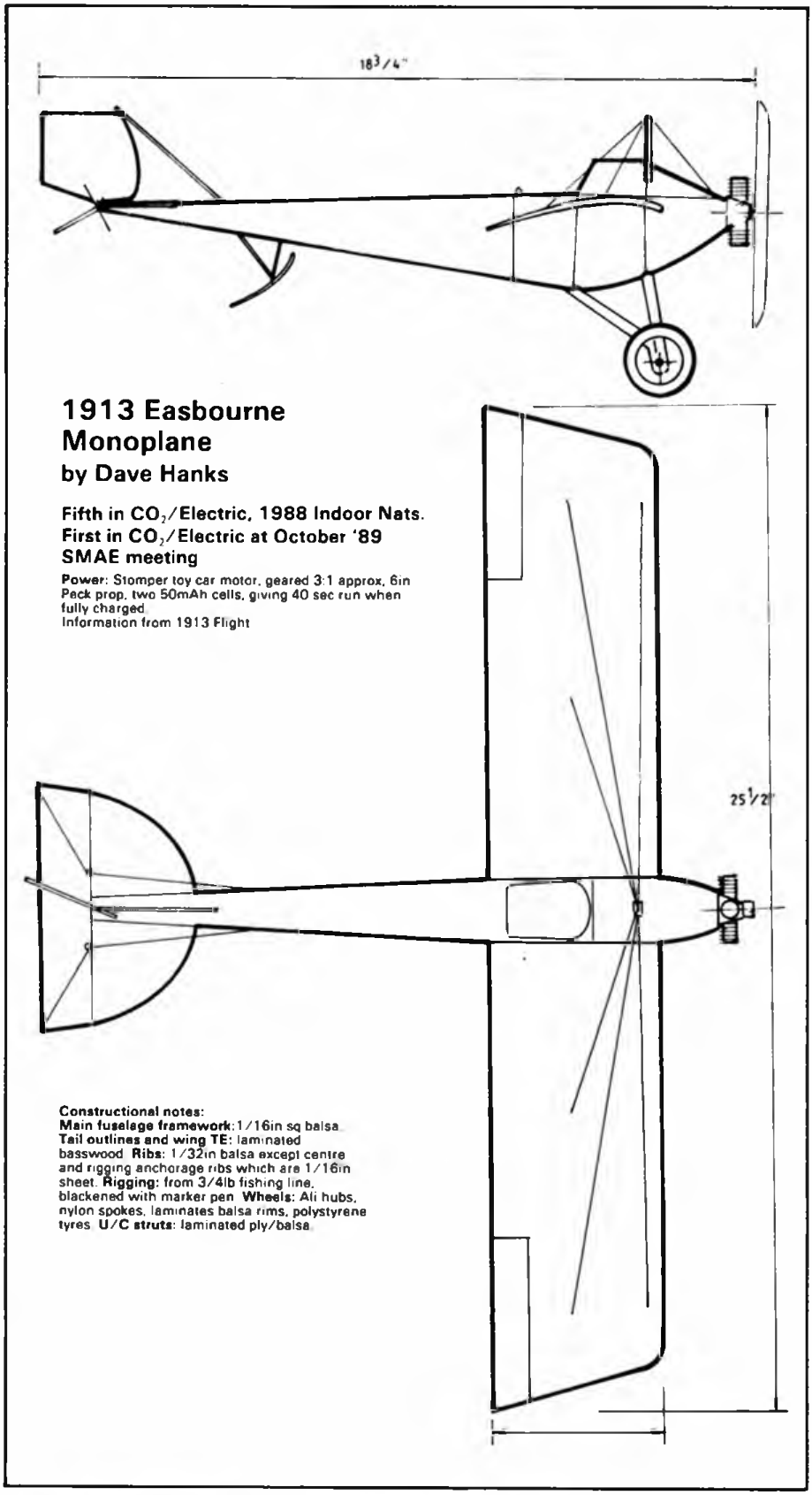
The next try can use the whole of the cruise phase. If the previous hop was OK this will give a longer, low altitude flight without too much torque, enabling you to check the turn. The final checks can still be done on half charge to give short flights, but with the knowledge that the initial power burst for good takeoff will not be much less than a full charge. Once trimmed out the exact amount of charge can be varied to alter the length of the cruise phase and thus obtain the duration or altitude required. Speed control can trim back the liveliness of a particular motor/battery/prop combination if this seems necessary in the early trimming stages. If you have to keep doing this you are probably flying with too many cells (and thus excess payload). Wing loading, and thus airspeed, will be higher than ideal. Since most Scale jobs fly in excess of true scale speed this can be most unattractive - and judges do not like it!

Remember that partial charging affects mainly cruise duration, *not* initial power burst. The only way to try a model on reduced RPM is to use a speed controller or to hold the model back for a predetermined length of time until a known part of the discharge curve is reached. This 'hold back' time will be the same each time, as long as you charge in a consistent and accurate manner. If you damage the cells by a careless overcharge you will also their capacity and thus the shape of the discharge curve. A completely different result will then ensue and you will need to time the characteristic again (or install new cells).

Developments

At long last I have managed to get hold of one of Vista Labs' geared HY42 units. This is the modern equivalent of my old VL101 unit that gave me good service in outdoor free flight and control line models a few years ago, until I foolishly burnt it out in a non-fused installation. I have recently been testing this motor and its special thin, undercambered prop. I hope to be able to report on this soon. I have also been sent some other motors, both geared and plain, by Derek Knight. These are basically small R/C units, but appear to have good application in outdoor models. Latest development from Derek is a twin unit using two KP01 motors geared to a single shaft. This seems to give a particularly useful and lightweight unit for outdoor or large indoor use (as Robin James has discovered - see his Electrolight feature in January's *Aeromodeller).*

Watch out for further details in this column, but suffice to say at the moment that at 57 grams, including three 100mAh cells and the charging/switch jack, it seems capable of lifting a six-ounce model easily when turning a 7 x 5 or Modela CO_2 prop. I am sure that this size of unit is the next logical development. It would allow many of the small, traditional, outdoor sport and Scale models to be converted to 'electrics' with minimal effort. Roll on some quiet weather for flight tests!



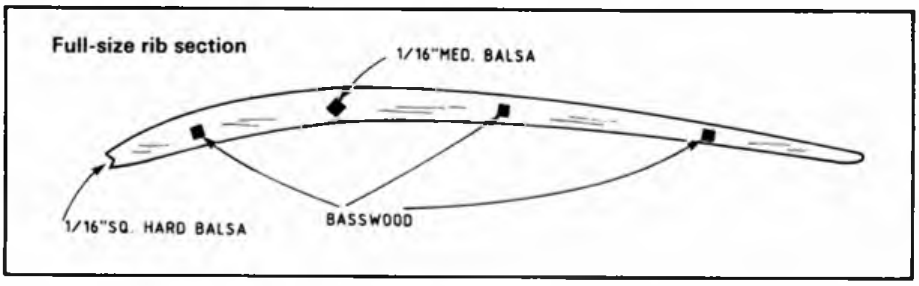
1913 Easbourne Monoplane

by Dave Hanks

Fifth in CO_2/Electric, 1988 Indoor Nats. First in CO_2/Electric at October '89 SMAE meeting

Power: Stomper toy car motor, geared 3:1 approx, 6in Peck prop, two 50mAh cells, giving 40 sec run when fully charged.
Information from 1913 Flight

Constructional notes:
Main fuselage framework: 1/16in sq balsa. **Tail outlines and wing TE:** laminated basswood. **Ribs:** 1/32in balsa except centre and rigging anchorage ribs which are 1/16in sheet. **Rigging:** from 3/4lb fishing line, blackened with marker pen. **Wheels:** Ali hubs, nylon spokes, laminates balsa rims, polystyrene tyres. **U/C struts:** laminated ply/balsa.



SCALE MATTERS

Bill Dennis takes a close look at a successful rubber twin from our Plans Service...

MOST OF us have spent time looking at Rupert Moore's famous plans of the Typhoon, Scion, Harvard and others, and have probably come to the conclusion that looking at them is the most sensible thing to do! Certainly, few designs approach them for complexity and ingenuity, but it has to be said that one always feels a degree of scepticism as to whether these machines can be made to work. Occasionally we see examples on the flying field but the best they usually achieve is a prolonged descent.

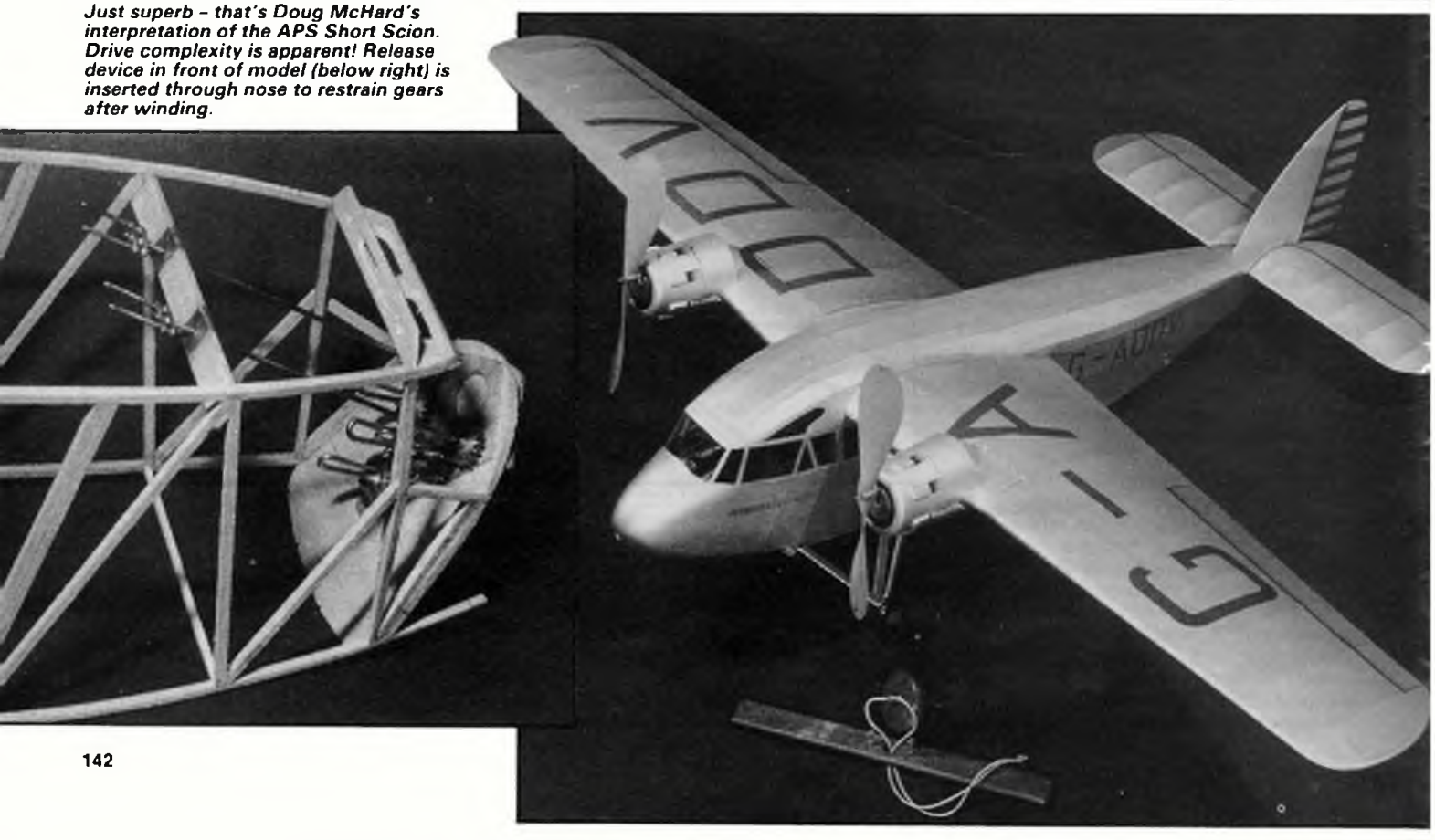
Not so long ago Mike Hetherington built a Britten-Norman Islander using the Moore drive, and although the model itself was unstable, the power was certainly there to fly it. So interest was considerable when Mike recently showed me a photo of Doug McHard's version of the Scion successfully flying over Barkston heath!

Doug has kindly furnished me with his comments on the model from which I have assembled the following details.

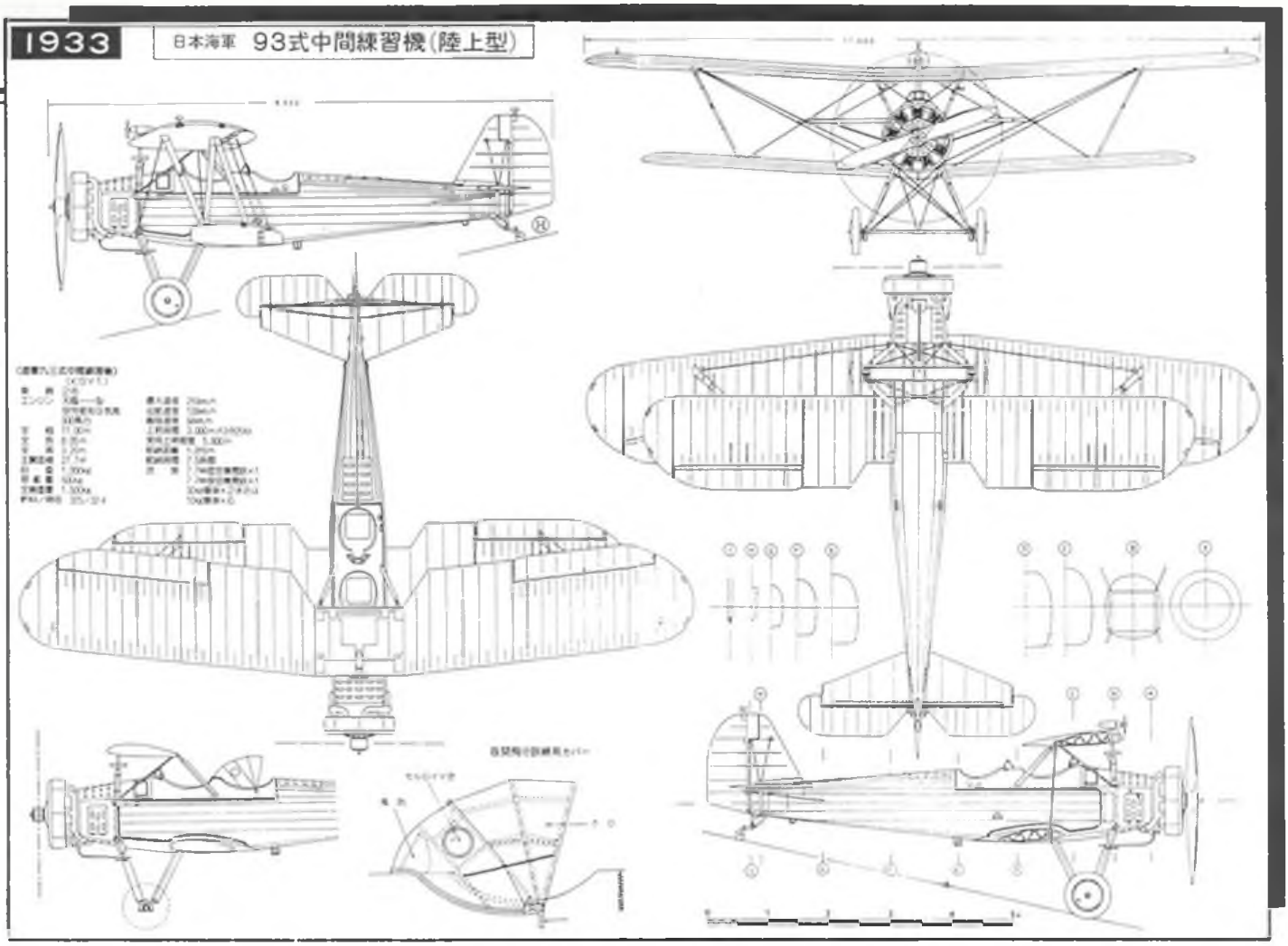
Scion structure...

The first thing to say is that the Scion does indeed fly, and although few flights have been made, it shows great promise, climbing well on relatively low power.

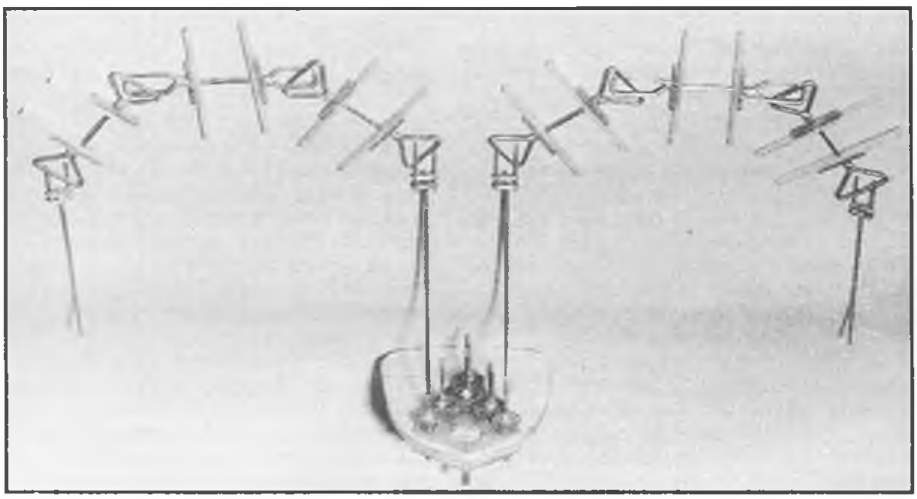
Looking at the plan, there are several areas where the structure appears inadequate and reinforcement necessary. For example, localised sheeting around the undercarriage is advisable. The fixed portion of the centre section bears a great load from the undercarriage, drive train and wings; yet it is attached to the fuselage in only a cursory fashion, needing some reinforcement. Piano wire these days is very different stuff to what it used to be, even during my modelling career. The specified 18 swg fork shafts bent straight away and were replaced with 16 swg.



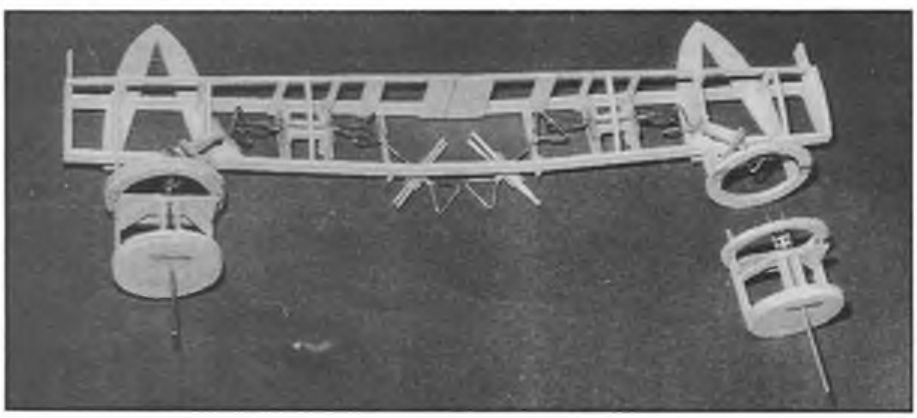
Just superb – that's Doug McHard's interpretation of the APS Short Scion. Drive complexity is apparent! Release device in front of model (below right) is inserted through nose to restrain gears after winding.



Above: One of the 'build me!' subjects which frequently crop up in research (usually when something else is being sought). Kawanishi Type 93, or K5Y1, cries out to be a free-flight model... Go on – try it, someone!



The Scion's 'Moore Drive' displayed in all its glory (above) and during installation, below. A test of wire-bending skills...



Diverting power from the rubber motors back up into the centre section necessitates quite a change in angle, with potential losses in efficiency. The motors are attached to the hooks indirectly via tape loops which act as universal joints - Doug used half-inch nylon tape from a haberdashery shop for these. Even so, the motors do tend to interfere with one another, and are prone even to lock up altogether as power runs down and knots form. Gears are standard Meccano items. It was necessary to plug and drill them to the correct, smaller bore. These gears look very similar to the originally-specified Superscale gears, which Doug speculates may well have been cut from Meccano stock.

...and flight

Doug's Scion is currently flying on only about two-thirds of the power originally called for, using three eight-strand motors instead of four ten-strand motors. The new Scion weights fifteen ounces, two ounces more than Moore's original model (which Doug himself actually flew at Eaton Bray in 1948!). All it would manage then was an extended glide, which points to rubber quality being a major factor.

The Scion needed no nose ballast, which isn't surprising given all that ironmongery in the front. Trimming posed no problem, with little adjustment necessary.

All in all, a magnificent piece of work. It must be said, however, that if anyone could get this design to work, it would be Doug McHard. The model would be very intolerant of anything less than very accurate workmanship and attention to detail.

Let's hope we see it in action at Old Warden next year!

Rule changes

There have been a number of changes to the SMAE Scale rules. They will come into effect next season. Perhaps the most important of these affect Indoor Scale, where the maximum weight limit for both rubber and CO_2/Electric has been increased from 85 and 120gm. respectively, to 150gm. for both. Furthermore, maximum wing loading is down from the previous, frightening 50g/dm² to a more realistic 15g/dm², which should not caused much anguish. As an example, my Avian monoplane was loaded at 13g/dm² – and I tend to build heavy Indoor models.

The rulebook has recently been reprinted and a large SAE to the Leicester office will bring you a copy.

It remains to be seen whether the weight increase has any effect on the type of model produced. Certainly the change in rubber is dramatic, so I wouldn't expect to see models much over 100gm. If it allows people to attempt a slightly larger or more complex model without the fear of disqualification due to excess weight, then it will be a good thing. I know some experts are scornful of such weights, but they must remember that the average modeller can find it difficult to keep things under control!

Indoor Nationals

These will be held once again at the Alumwell Centre in Walsall on 23rd April. Events will be the usual official classes of rubber, CO_2/Electric and Peanut, plus air-racing, mass launch and yet another fun class which is the brainchild of Charlie Newman. Models are to be rubber powered scale jet subjects, with no dimension greater than 24 inches – as Charlie points out, a two-foot-span Starfighter would be four feet long! Flying will be mass launch with a simple MIAMA-type static judging schedule. If the notion of rubber-powered jets doesn't appeal, think again and don't be put off. They can look very realistic in the air, especially if the propellor is small and fast-turning. Derek Knight's Hunter is well known, and last year we saw a very impressive MiG 15 converted from a Keil Kraft kit. The name of this new class, by the way, is Durex-Jet...

Finally, Doug Sheppard would appreciate early entries for this year's event, for there may well be a maximum for the rubber and CO_2/Electric classes. Get your entry forms from Doug at 13 Luckington Road, Monks Park, Bristol, BS7 OUT.

Rubber Scale from Czechoslovakia – Vladimir Kunert with new 1/20 scale Aichi Grace. Flies for over two minutes!

Superb Avia B-534 by Pavel Kolar is finished authentically in the markings of the aircraft flown by his uncle.

Antonin Alfery's Aichi Seiron for Peanut Scale features foam construction. Brave subject with those drag-inducing floats.

John Robarts ponders C/L Scale winning prospects

AFTER COMPETING in my first C/L Scale World Championships I took stock, asking myself – what lessons had I learned? And how should we aim at the 1990 Champs? Critera are simple. Individuals go to win (with suitable models) and as a group of three, they try for the Team award too.

The first question is this. How can we capture international trophies? The BMFA, as the governing body of UK model aviation sport, should ensure that we field the most competitive team. Even the sport or Sunday flier likes to see his home country on top. The way in which we approach Team organisation reflects upon our full-size aviation industry. At Kiev there was quite a subtle 'hard sell'; Soviet aviation personnel were present with badges, literature and other devices to forge the connection between model and full-size aviation.

It takes at least eighteen months to draw up, build and tune a new model to the standard required. A long time – but not too late if a start is made now. I suggest, therefore, that the Scale Technical Committee begins at once to arrange meetings or seminars, inviting interested parties to submit details of their intended creations so that advice can be offered – and mistakes corrected. After all, one can study a subject for ages and still produce glaring errors on the finished model – mistakes which could immediately be spotted by a judge's fresh pair of eyes.

Then why not arrange training sessions where the pilots' rough edges could be smoothed (and more faults remedied). I am sure this would work, resulting in higher scores and better World ratings. Why not give it a try?

What to build — to win?

Now to prototype choice. A personal matter as far as I am concerned, because I do feel I have exhausted the possibilities of the Chipmunk! One must aim for a prototype which is capable of scoring ten points in every category, both Static and Flight. Static first: judging is by reference to an approved three-view and photographs. If the subject is a curvacious one, the pictorial evidence may conflict with the drawing unless the photographs are taken exactly 'square' (in any case, some distortion is inevitable). Instead, choose a subject of simple outline, with as many straight lines as possible! Next: colour scheme. Is it too complicated, with loads of pinstriping (so easy to get not *quite* right)?

Choose an easy one so you don't get needlessly downmarked. The next important decision concerns flight options. Does one go for aerobatic options, like Chris Bradford with his Nieuport 17, or should mechanical gadgetry win the day (as shown by Ron Truelove's Heinkel 51, for example). My own view is that some judges are not fully conversant with stunt manoeuvres – and the fact that all procedures must be carried out as per prototype means one more area of interpretation where points may be lost. Judging mechanical options, such as tank or bomb drop, is straightforward and predictable. Either it scores ten points or zero!

In the past few months your Editor has published three-views of many interesting subjects which would delight everyone in the C/L circle at, say, Scale Weekend, but they are generally not the best choice for National and International success. A model of a full-size aircraft incapable of looping manoeuvres and without even simple mechanical options, such as flaps, will place down the field however well it is built and finished.

Russian Li-2 by Pavlenko rests between World Championship flights. Placed second. Fedosov's winning An-28 is just behind.

BUILD FROM OUR FULL SIZE PLANS!

LE VEAU LENT

Rene Jossien's 1949 power contender is revisited by Mike Green

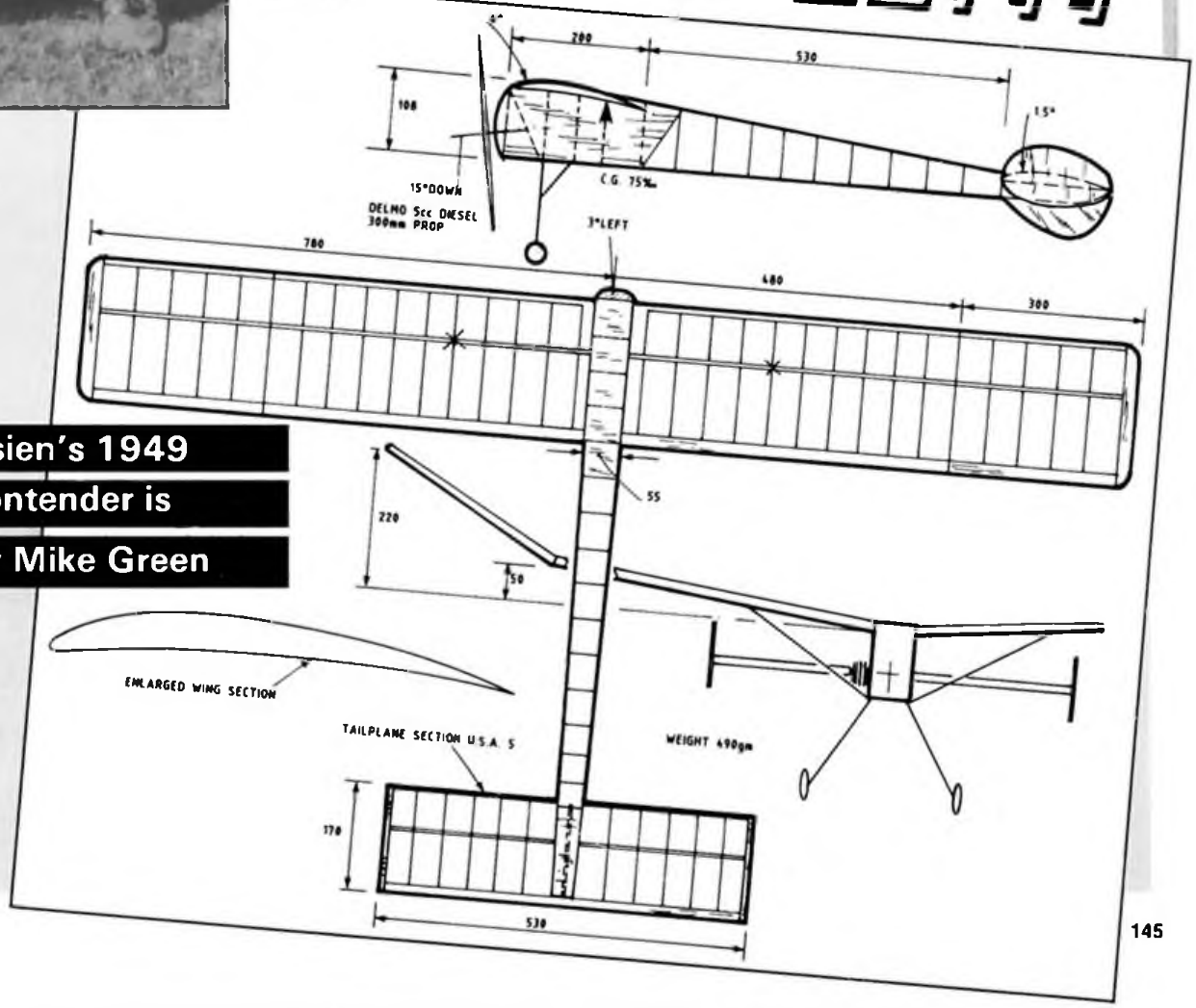
Top: Mike holds his 1988 replica of Veau Lent. Anglicised span is just over 62 inches; Mike chose a PAW 19 for power. Drawing at right shows unusual rigging angles.

'ANCIENS modellistes' who attended the International Weeks at Eaton Bray in the late 'forties and early 'fifties will remember the French participants who flew with such panache. One of these fliers was René Jossien of Paris Air Modèle (King René to readers of the SAM 35 Yearbooks). Whose models Le Sphinx and Veau Lent were featured in the 1951-2 Zaic Yearbook.

Now, I have fancied building these for some time (many years in fact) but it was not until eighteen months ago that I did anything about it. Sphinx was the first project to be realised. Largely as a result of this I had the good fortune to make contact with René Jossien himself. I have consequently been able to verify many points, some fairly major, others minor, in connection with Veau Lent. To the best of my knowledge, no full-size plans of this machine exist, and, as you will appreciate, there is a limit to the information available in a small drawing. René has helped fill in the gaps.

L'histoire...

The original Veau Lent was built in 1949 and carved out for itself an excellent record in competitions, including 2nd in the 1950 French Championships. The method of scoring at that time was given by the ratio glide/motor run; convenient – and necessary in the absence of reliable timers. A ratio of eleven was claimed which was pretty good at the time. (Forgive me if I state the obvious, but younger fliers may not be familiar with the system). A Delmo 5 cc diesel supplied the horses for the original. I am not acquainted with this motor, but was sure that a modern equivalent would be too heavy and too powerful. A PAW .19 seemed a much better choice. Present-day requirements dictated the use of a clockwork timers, an internal metal tank, and fuse operated D/T. This latter presents no problems as the tail fixing is just right, with no fins in the way! In fact, I wished I had used a clockwork D/T, when searching vainly for the model one day – it turned up, luckily. Purists may wish to try the metered glass tube fuel tank but I doubt if it would be accurate enough for modern contests, although, in its day, it was perfectly suitable for ratio scores. It may occur to others to fit radio: there is room inside the fuselage, but this is a real power duration model and to my mind such an act savours of blasphemy and witchcraft!



Quick work...

The construction is quite simple. Indeed, it is a pleasant surprise to find that when the airframe is complete there is not all that much more to do, whereas the gadgetry on an 'eighties model may take as long again (and then some) to finish! A few features may be unfamiliar. Since the framework is rather open care needs to be exercised in the choice of wood. This has led me to suspect that the wood we use nowadays is in some way different; perhaps more fragile than before?

The fuselage is a simple box of 3/16in. sq. balsa. It is essential to give some thought to the wing fixing at a very early stage. I prepared the root ribs (to the full SI 53009 section) and the chordwise sheet member at the same time. These are sandwiched together accurately and drilled to take the stub locating dowels. Care needs to be taken over squareness, but the wing halves will fit like a dream. If you get it wrong it will be very difficult to rectify any errors later. Actually, I may have over-engineered the front end but at least the parts are unlikely to come adrift!

The fifteen degrees of downthrust look alarming but have proved necessary. René tells me his original began – and nearly ended – its life in an enormous loop, with the thrust line on datum. Equally unusual, there is three degrees of left sidethrust. A reduction to ten degrees 'down' would be OK for a 2.5 cc motor.

The wing is built in halves. Each plugs into the stub dowels, and bands over the top of the fuselage hold the wing together. The 16 swg struts maintain the correct dihedral angle. The internal spar is spruce. Don't make the ribs a tight fit or they will break when slid into position. The ribs are first glued to the LE and TE, final adjustments are made to the spar position and glue (cyano is ideal!) is run into the joints. The wire attachments are firmly bound and glued to the spar.

Could be a Slow Open Power choice... build one and try it at the Nats!

The strut 'eye' should remain within the undercamber, otherwise it will be a nuisance when it is time to pin the wing down after doping. The corresponding eye in the fuselage fixing must be in the same plane (think about it!) or rigging will be difficult. The right inner panel has 3/16in. wash-in; there is 3/16in washout at each tip.

The tailplane is basically the same as the wing. Section is USA 5. The outer fins are from light but firm 1/8in. sheet, sanded and covered in Lightweight Modelspan. Small keys ensure the tail does not go askew. Wing and tail are stable structures. Cover wings and tail in Jap tissue and use heavyweight Modelspan on the fuselage. I sprayed mine as the original with black fuselage and fins, red wings and tail. René Jossien's model sported the letters PAM, stencilled large under the wings.

Much of the character of this model comes from the leggy wire undercarriage. I used commercial wheels; the originals were a sandwich of balsa, ply and balsa, sanded to a streamlined section.

Get up and go!

Flying the model will present no problem to anybody who has kept reasonably up to date with power duration, though extreme care must be taken to start with. The model flies 'right climb, right glide'. Balance point is at 75% chord. Glide is flat with a hint of right turn. Having carefully checked the motor run at 2.1/2 - 4 secs. I tried a powered flight with the prop on backwards and engine running slowly. This helps one to find the feel of the machine and ensures that nothing is going to go badly wrong. The next two or three flights were made with the prop the right way round and with increased power. This seemed satisfactory; the model entering a vertical climb with good transition into the glide. Increasing the motor run indicated too straight a climb so I stuck a two-centimetre strip of 1/8 x 1/4in. onto the right-hand rear of the underfin, to act as a tab. This proved enough to initiate a comfortable right spiral. The last test flight, with a 10 sec. run, was most impressive. Thanks to increasing windspeed and poor terrain for recovery, the model was nearly lost. The ratio achieved was better than first quoted. Perhaps the smaller prop on the PAW has less of an airbrake effect than the original's twelve-inch airscrew. I must say I have got quite a kick out of building and flying this machine, and I look forward to comparing it to current Slow Open Power models.

Classic French Vintage lines shown to advantage here, notably wire wing struts. Take care with fixing – follow Mike's instructions!

BALSA CUTTINGS

Cyano de Bergerac takes a sharp scapel to aeromodelling matter of moment

Paying compliments on a grand Scale

Everyone has praised the way in which the Italians handled the World R/C Scale Championships at Gorizia. Here in Britain we might say they gave the lie to that old music-hall saying – 'You can please some of the people all the time and all the people some of the time but you can't please all the people all the time.' But the French, who are seldom reported to suffer serious injuries from making headlong dashes to support their next-door neighbours in the south, have manfully swallowed what must have been some disappointment over their own placings, and expressed their thanks with generosity and charm. *Modele Magazine*, speaking of Heaven and Hell, said that Paradise is a place where the police are English, the cooks French, the mechanics German, the lovers Italian, the whole thing being organised by the Swiss. By contrast the Infernal Regions would be an abode where the cooks were English, the mechanics French, the lovers Swiss and the police German, the whole thing being organised by the Italians. It went on to say, however, with the most penetrating scrutiny of the arrangements, that the Italians proved the exception to this rule, and distinguished themselves by the trouble they took to ensure the Champs were run in the best possible way. Praise indeed! But lest any reader should think that our French friends had a hard time of it, be assured that they didn't. There is also a delightful report cracking up their Team Manager, not only for his moral support, but for his skill in providing the wine white well-chilled on the dates even, alternating with the wine red agreeably room-temperatured on the dates odd!

Did you build it yourself, Mister?

In 1988 Dave Hipperson's column carried at least three references to the FAI CIAM decision taken last April to waive the Builder of the Model rule. From 1989 onwards you can fly at FAI World and International contests using a model you didn't build yourself – in fact, the FAI jury even let one through at the *last* European Champs!

Through Hangar Doors in August your Editor (forbearing to influence the readership by revealing his own views) called upon the multitude to arise, and raise its voice, and cry aloud, saying what it thought about this business. However, it can now be revealed that the story of seventeen postmen collapsing under the weight of mail generated by this appeal is not true. Nevertheless, de Bergerac Surveys Limited have just reported that people do read Hangar Doors, and they do read Free Flight Scene (nothing about people reading Balsa Cuttings, though) and you only have to talk to other aeromodellers to establish that people do know about this thing. Some are even appreciatively aware that our own Free Flight Technical Committee rejects the idea of the principle being applied here to domestic events. Yet, where is the cloud of dust? With the introduction of what must be to proper aeromodellers the most peculiar and pernicious rule of all time, it might have been supposed there would have been a general outcry. But, much more significantly, there is general silence. Take heed of that, O ye who dwell in the high places of international aeromodelling. And, *think on't!*

Youthful enjoyment at Vintage Weekend – Terence Hoey holds dad Paul's Dizzy Diesel. How d'you spell 'Diesel', Paul?

More of the same

When reporting on the FFTC's opposition to abandonment of the Builder of the Model rule, Dave Hipperson did say that undoubtedly the issue would be raised again. He added, with an almost audible sigh, that it was a very complex question. Take heart, mate, and draw encouragement from the knowledge that there are a great many builders (*builders*, that is) who think it is a very *simple* question.

Acquire a glazed look

Once, business premises might go unchanged for half a century. The most they did was wap up a new fascia with the incoming bloke's name, paint over the white tiles, spread a bit of that imitation grass cloth over the white marble slabs and behold! – your fishmonger's (Wet, Dried & Fried) became a greengrocer's (Families Waited on Daily). Nowadays they rip it all out and re-style the whole shebang every time a new delivery of mini-skirts comes in. That's why you are there, complete with roof-rack, padding and lots of lashing, plus a little silver for crossing the palm of the shop-fitters' foreman. For you know what they do with that lovely, dead smooth, dead flat, nice, true half-inch-thick armour-glass door they take off, don't you? Well, it won't fit anywhere else, will it? So they take it up the dump and they smash it. But if *you* can get those old, razor-blade-scarred hands on it, you can unclamp any kick-plate or locking-plate (reach for a handy big Allen key), fill any holes made for fittings with Plastic Padding sanded flush, then Evo-Stik on a renewable eight-by-two-foot sheet of sundeala to make yourself the mostest building board you'll come across in a day's march. Turned over, apart from being a splendid setting-up bed, if you Araldite along the left-hand edge a strip of half-inch-square ali angle for your T-square to slide along, it makes what could fairly be described as a drawing-board and a half. Next month – how to make a Venetian blind.

Trouble in store

Whilst there will always be a place on our workbenches and trousers for good old balsa cement, it must be admitted that a lot of aeromodellers use a bit of cyanoacrylate these days, and from time to time there is twitter on how to prolong its shelf life. We are advised: 1. Keep it cool. 2. Keep it in the fridge. 3. Keep it in the freezer. 4. Don't bother; doesn't make any difference. 5. Try this special stuff. 6. No, try *this* special stuff. (Much more expensive.)

Of course, if you just cut the cackle and get on with the job instead of sitting there open-mouthed watching Hardship Street or DeadEnders, the stuff doesn't get the chance to thicken up. The best approach seems to be that adopted by the aeromodelling vicar of Gargoyle St. Evan at Thripple, in Hants, who wishes to remain anonymous. In one of his many interesting letters to this column he says he finds it helps to store his cyano in the still, dark atmosphere of the cool felt-lined pitch-pine cupboard in the vestry where he keeps the Communion wine. This doesn't stop the glue going off but he doesn't worry about it so much.

LET'S GET TOUGH IN COMBAT!

PART 2

Frank Smart concludes his look at stronger combat craft techniques and urges you to build!

AT THE Nationals it was suggested that differently-shaped elevators made no difference to model performance, provided area was constant. I don't agree. The detachable elevator confers many advantages.

This component is the most vulnerable part of the model. Without it, you have nothing! Thus it should be able to take a 'whack'. Two control horns give you twice the chance of maintaining combat after an incident. Replacements may be fitted between rounds. This means more mileage per model - and it's easier to change an elevator than a motor....

The most promising of my elevator experiments involved 0.04mm ply glued between two layers of 1/16in balsa and weighted until dry. Sharp corners and edges are easily achieved by sanding to the core, and covering is neater. Inlay ply packing top and bottom to create a rigid platform for control horns.

The weak link will now be the horns themselves. Metal components are the answer - but are scarcely available these days.

Bellcranks next

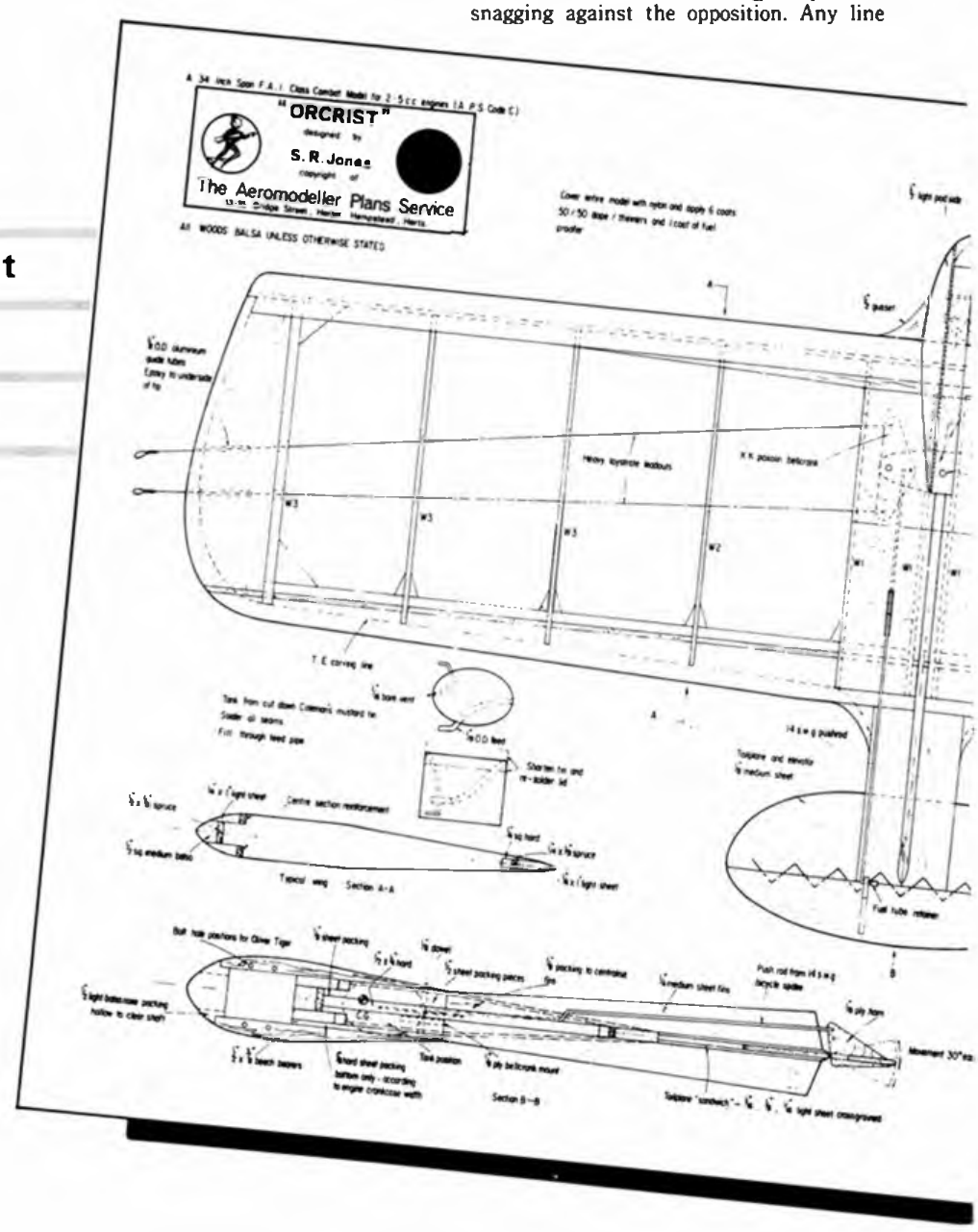
One of the most common causes of failure is a result of underestimating the pull loading on a bellcrank assembly. Bad fits, a weak fuselage, or poor soldering will mean a major repair job early on in the life of the model - perhaps enough to put a beginner off for good. Bellcrank holes should be a clear but rattle-free fit. This will improve control response. Nothing less than seven-strand Laystrate must be used. Check the bellcrank carefully and discard if less than perfect in any way, particularly if you choose paxolin. Black glass/nylon Micromold bellcranks are well worth the extra cost. Notably in America, there has been criticism over the use of external bellcranks. They can be dangerous. At the Nationals one model went F/F when its bellcrank and leadouts were completely removed in a collision. One for the rule book, surely....

The cover-up

Nylon is strongest but the Combat beginner will probably be happier with one of the iron-on plastic films such as Solartex, Polytex or Coverite. Although they are advertised as fuel-proof I recommend one thin coat of a two-part proofer such as Tufkote, with an extra coat around the tank and engine bay. The model will be easier to clean, is air and waterproof, and the covering will stay taut. Ordinary varnishes (such as polyurethane) will eventually peel off. Seal around tank pipes with epoxy glue. This will prevent fuel seepage into the structure and will add strength - useful when pushing on fuel tubing in cold weather.

And finally...

Lines and handles should be looked at closely. Split-rings, clips and connectors must be sleeved in silicon tubing to prevent snagging against the opposition. Any line



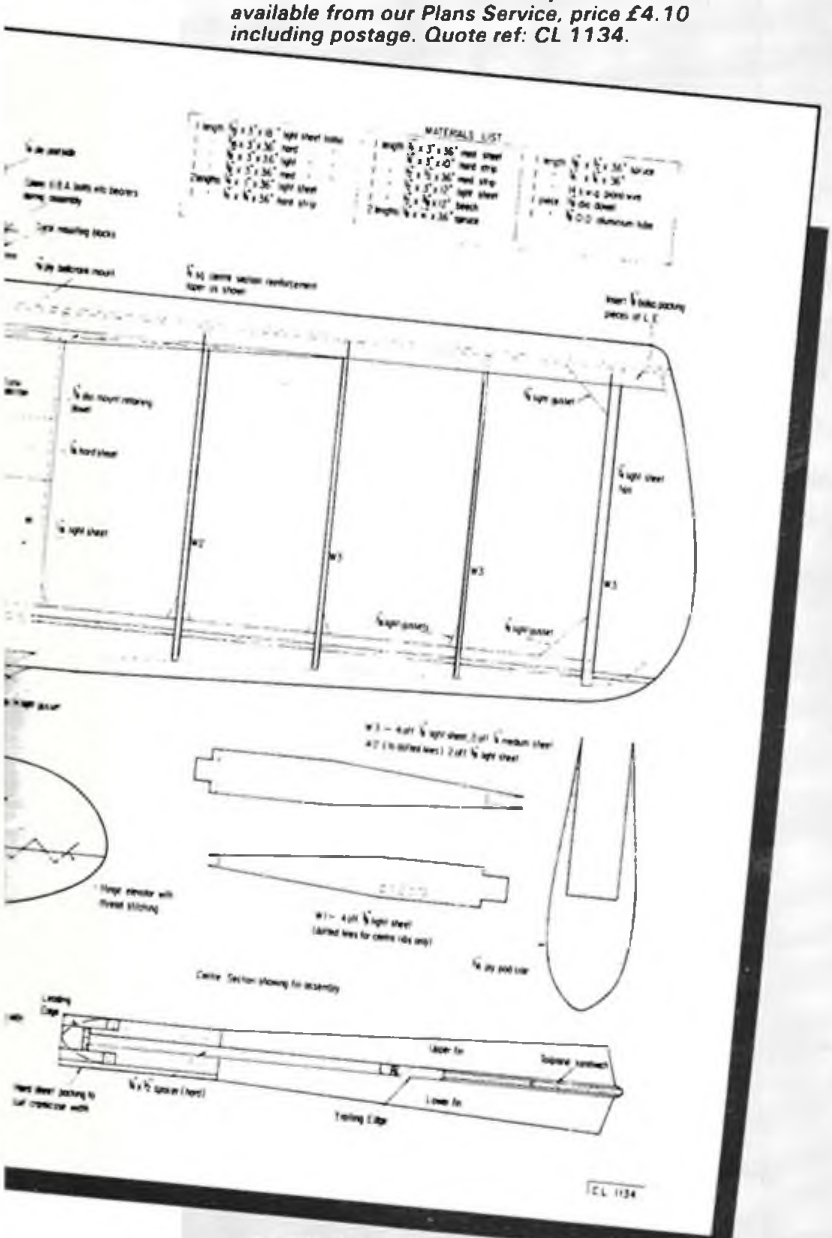
tangles will be sorted out more quickly. A handle wrist strap is a decided advantage, for if the model is pulled from your hand immediate disqualification will result. I speak from sad experience!

Idealists will always push for rules to suit the skilful pilot, but Combat is still reliant upon your state of preparation – and how good your back-up team is. In recent years, organisation has been left to the dedicated few. All participants need to consider fair, positive work sharing; or groups must take turns at organisation if all four Combat classes are to thrive. Neil Gill, who has been with us from Junior days, did us proud at the World Championships at Kiev, placing second in F2D; and I am sure there are plenty of budding champions waiting to surface, but events must be adjusted for spectator appeal.

At first I thought the Nelson engine would cause Diesel 'A' to follow the same route as FAI, but it is now obvious that the extra power makes all the difference; full use may be made of the circle, even in the worst weather, without excessive model speed. Better flying standards will result from greater control (a superb final at Peterborough on 9th October proved that) and all looks clear for 1989 Combat.

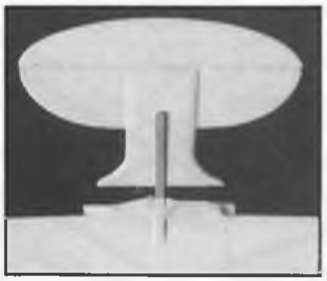
Don't leave it for another year; concentrate on new models now and get them flight tested before the new season. I currently have six Cloud Nines ready for covering – so watch out!

Above: Light, Russian-style model by Paul Stanley contrasts with Orcrist, below – plans of which are available from our Plans Service, price £4.10 including postage. Quote ref: CL 1134.

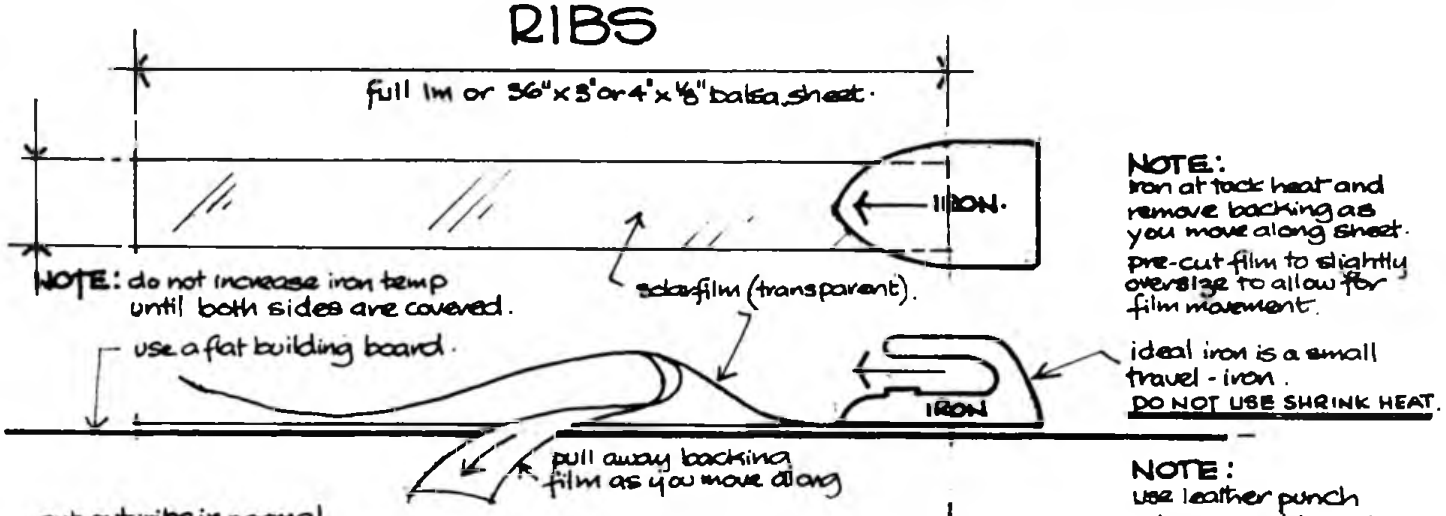


Frank Smart's own Orcrist is covered in Solartex. Weight 14.1/2oz – very competitive for a 1970 design. Left: Engine pod is pre-covered with Solartex.

Right: Centre panel covering laps onto tail. Below: Check-fitting engine pod to wing. Solartex covering can't be bettered – but Solarfilm is similarly excellent, especially in fashionable 'clear'. See details overleaf.

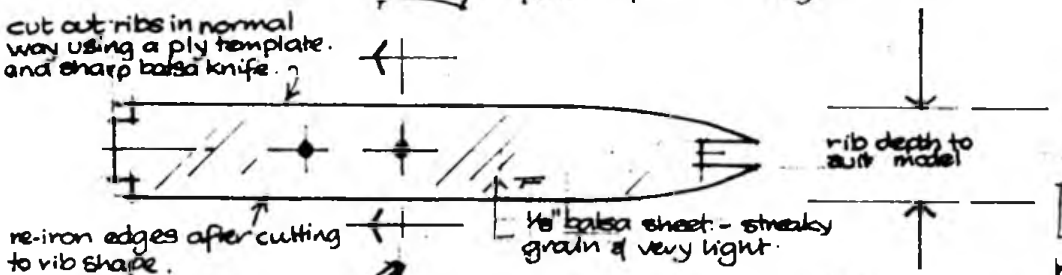


RIBS

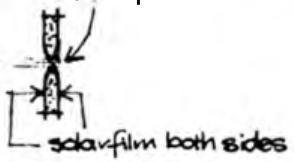


NOTE:
iron at tack heat and remove backing as you move along sheet.
pre-cut film to slightly oversize to allow for film movement.

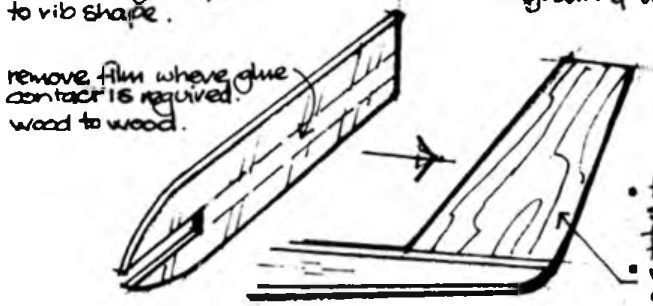
ideal iron is a small travel-iron.
DO NOT USE SHRINK HEAT.

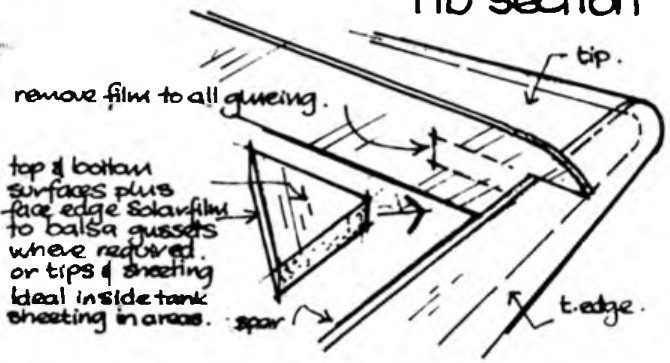


NOTE:
use leather punch rotary wheel type to make 1. aut wire holes. after fit in model.



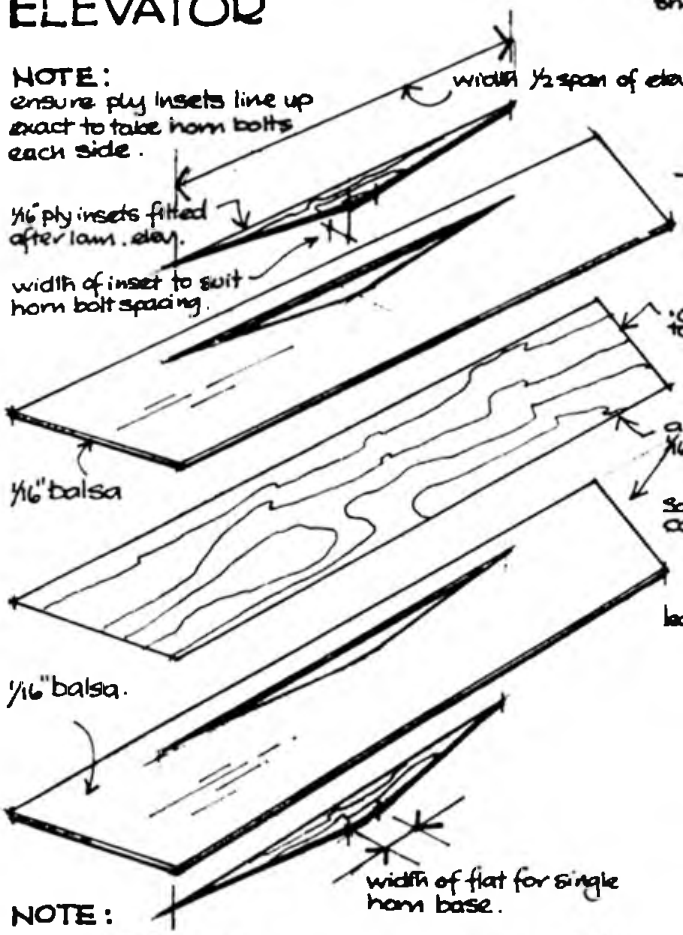
rib section

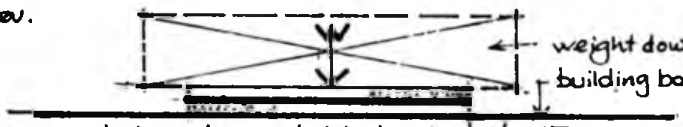




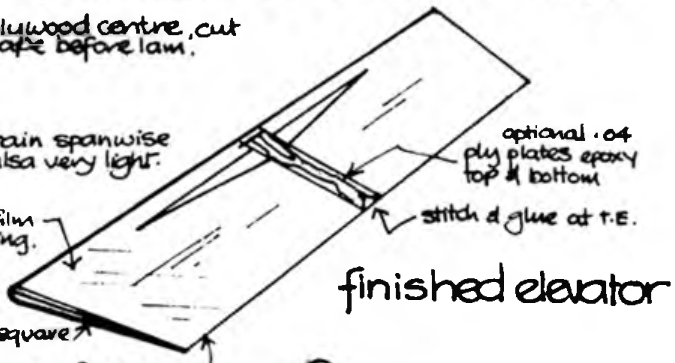
ELEVATOR

NOTE:
ensure ply insets line up exact to take horn bolts each side.

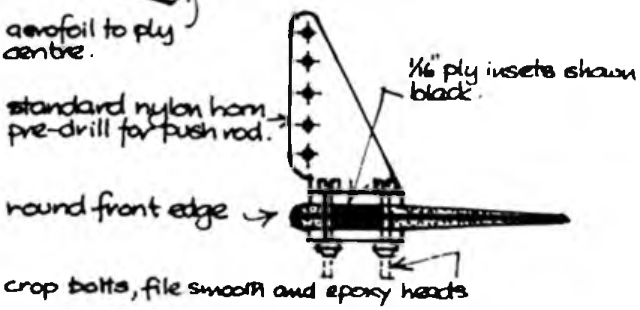




full-size cross sect. elevator



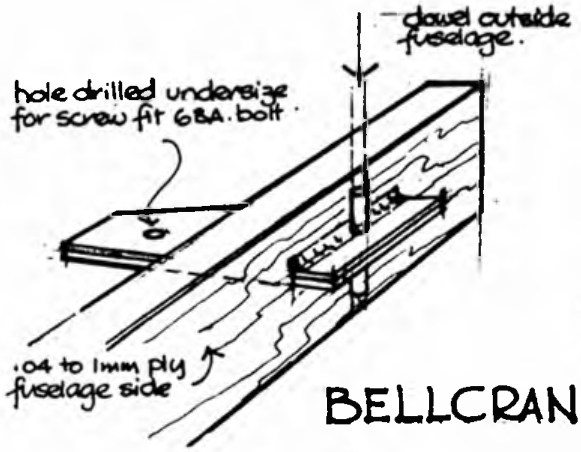
finished elevator



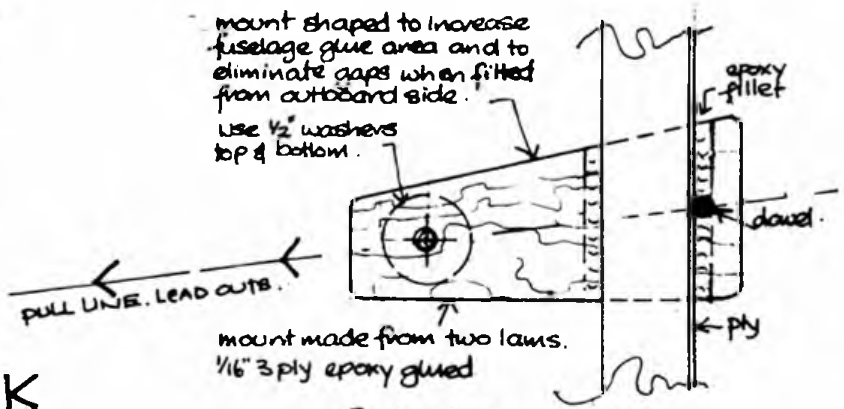
full-size sect. elevator.

NOTE:
to keep weight down use minimal thinned PVA glue ensure glue to perimeters. tape to prevent curling. for speed & ridgitity use epoxy resin 5min. glue.

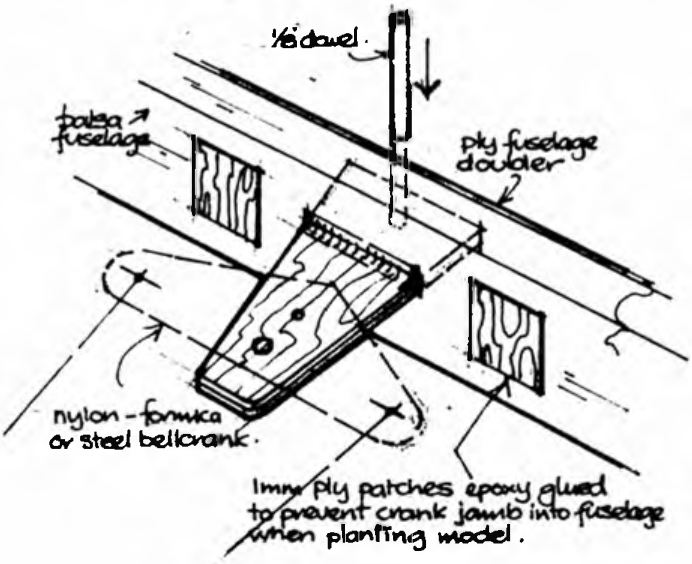
Aeromodeller

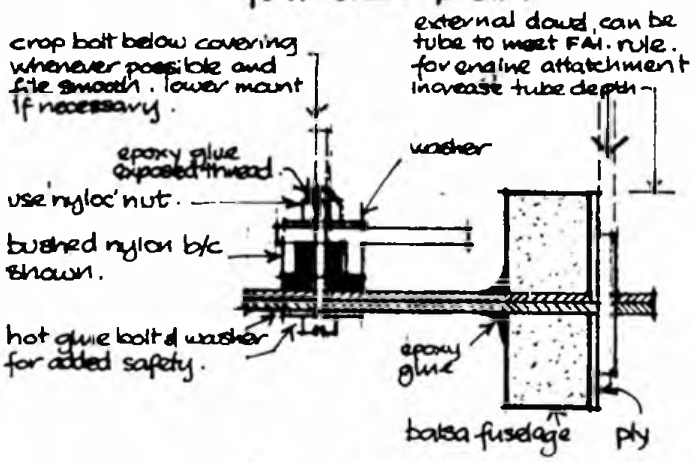


BELLCRANK



full-size plan

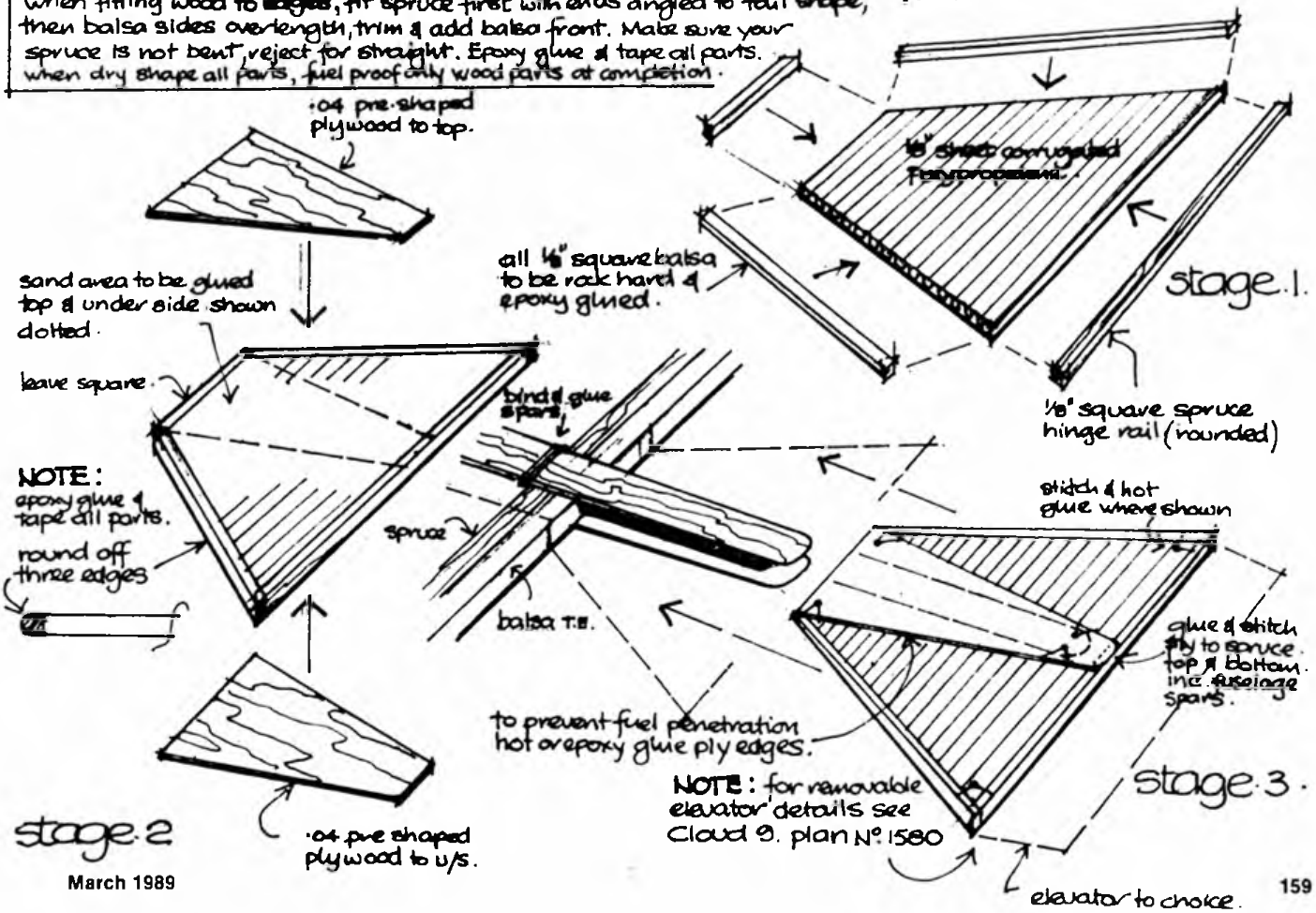




full-size section.

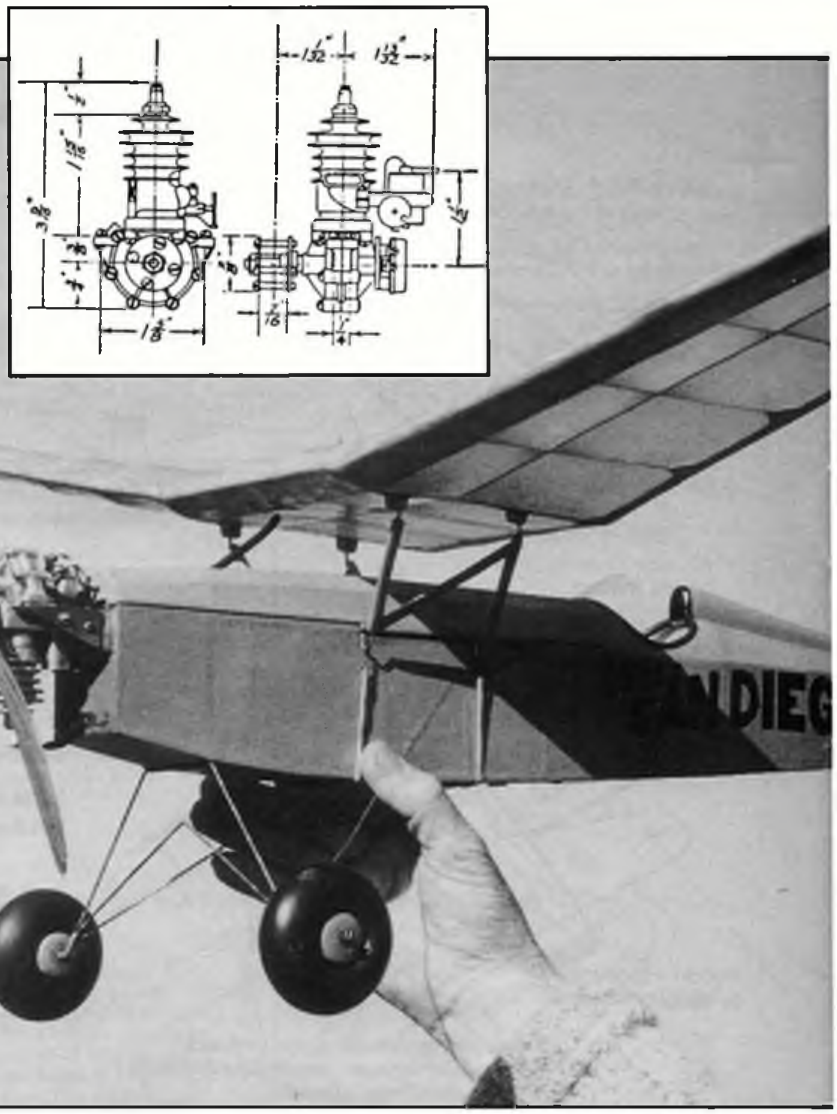
NOTE:
when fitting wood to edges, fit spruce first with ends angled to tail shape, then balsa sides overlength, trim & add balsa front. Make sure your spruce is not bent, reject for straight. Epoxy glue & tape all parts. when dry shape all parts, fuel proof all wood parts at completion.

TAILS



VINTAGE CORNER

To the flying field with Alex Imrie's replica of a 1935 sportster...

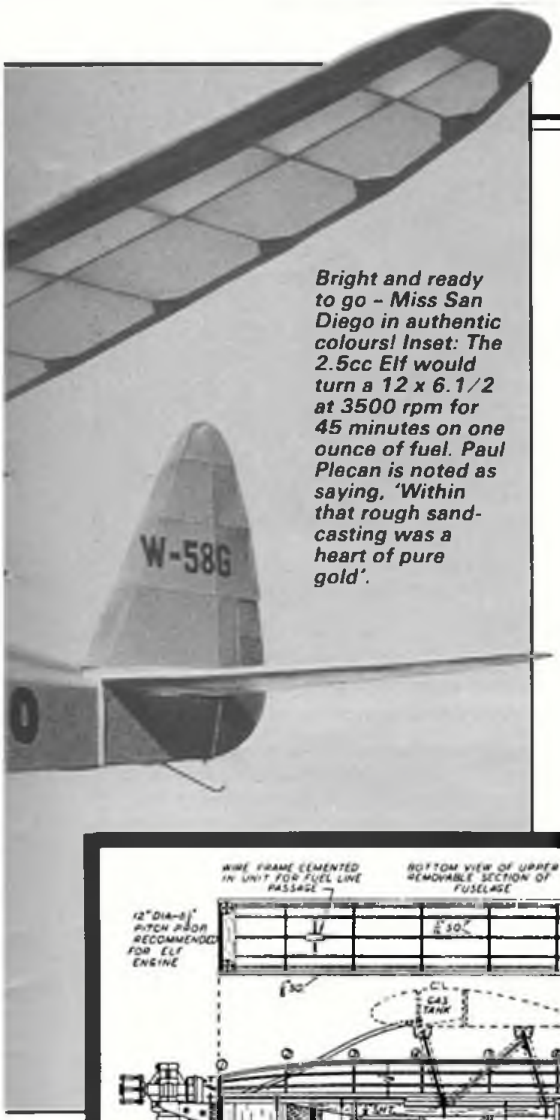


IT IS early November 1935, and at his home in Poinsettia Drive, San Diego, a young man of 18 is working on the final drawings for the design of a model aeroplane to be powered by a real petrol engine. He has applied all his skill to this job and knows that if it is a success he will earn some much needed money from the commission that the sale of the engines will bring, having just been appointed the Southern California distributor for the motor, which is the smallest of its kind in production. Known as the Elf, the engine is the brainchild of Daniel Calkin of Portland, Oregon, who has perfected the little motor over the previous three years and has already flown it many times in a 36in. model of simple type weighing only thirteen ounces. Calkin has chosen his San Diego agent well, since the young man has already a high reputation amongst model enthusiasts as a designer and is a regular contributor to magazines like Model Airplane News and Flying Aces. Now he finalises his first power model, which is his 58th design. If we look over his shoulder we can see that it reflects the typical layout of the time, and could indeed be the prototype of his personal sports plane – a shapely parasol with elegant tapered wing and open cockpit with windscreen and headrest, doubtless sired by his love of real aeroplanes, and markedly different from the ungainly little box that Calkin had produced. Its structure is as delicate as a rubber powered model; measuring 48 inches, it has to be lightly built for the low power of the Elf. In keeping with full-size practice he has already named the model 'Miss San Diego'; the modeller's name was, of course, Elbert J. Weathers, or Joe to his friends.

A replica Elf

Some 25 years ago, when I became an engine collector, the Elf stood high on my priority list; but then so did the Brown Junior, Baby Cyclone and a host of others. Eventually I obtained most of the engines that I sought, but that elusive Elf was conspicuous by its absence. I did manage to get one on short-term loan seven years ago, but that merely heightened my desire to have one of my own. I am not really a 'replica' enthusiast when it comes to engines, but time was slipping past and I just could not get an Elf, regardless of how hard I tried; so knowing that sets of castings and drawings for replica Elfs were available I resignedly began to toy with the idea that maybe one could be built up from these. I did not have the ability to do this myself, but Mike Patience, a friend of mine, is a fine machinist and I began to make suggestions to him in this regard. Mike actually owned an original Elf (serial number 234). Doubtless fearing that he might weaken and succumb to my frequent approaches to him to trade for his precious jewel, he had some sets of castings made up by his local foundry and felt that the answer was to make me a replica. He had done some work on the engine (which nowadays uses the rather unattractive name of Corncob to differentiate between it and the later Elf single-cylinder motor of 1940) in the intervening five years since he obtained the castings, but then sold his house and left the UK to live in Wellington, New Zealand. It had been difficult enough to put pressure in Mike when he lived in Worthing, which is only 80 miles away; now he was resident on the other side of the world, I did not really think that I would ever hear any more of the replica Elf. Mike and I are not avid correspondents. Our contact was nebulous to say the least, so imagine my surprise when he telephoned me early in 1988 – the line was clear and his first words were 'Can you hear it?' I certainly could hear the unmistakable sound of a model engine in the background – it was the replica Elf! Mike had planned to build Ted Foti's Bantom for it to gain some running time and to fly at a local meeting, but did not get the model

Under construction. The finished fuselage rests on the original plan with the issue of MAN that contained Joe Weathers' building instructions. Top-Flite 10 x 4 propeller fitted. Although the framework is light, it is not flimsy, and subsequent events proved Joe Weathers' statement that 'the structure can take it'.



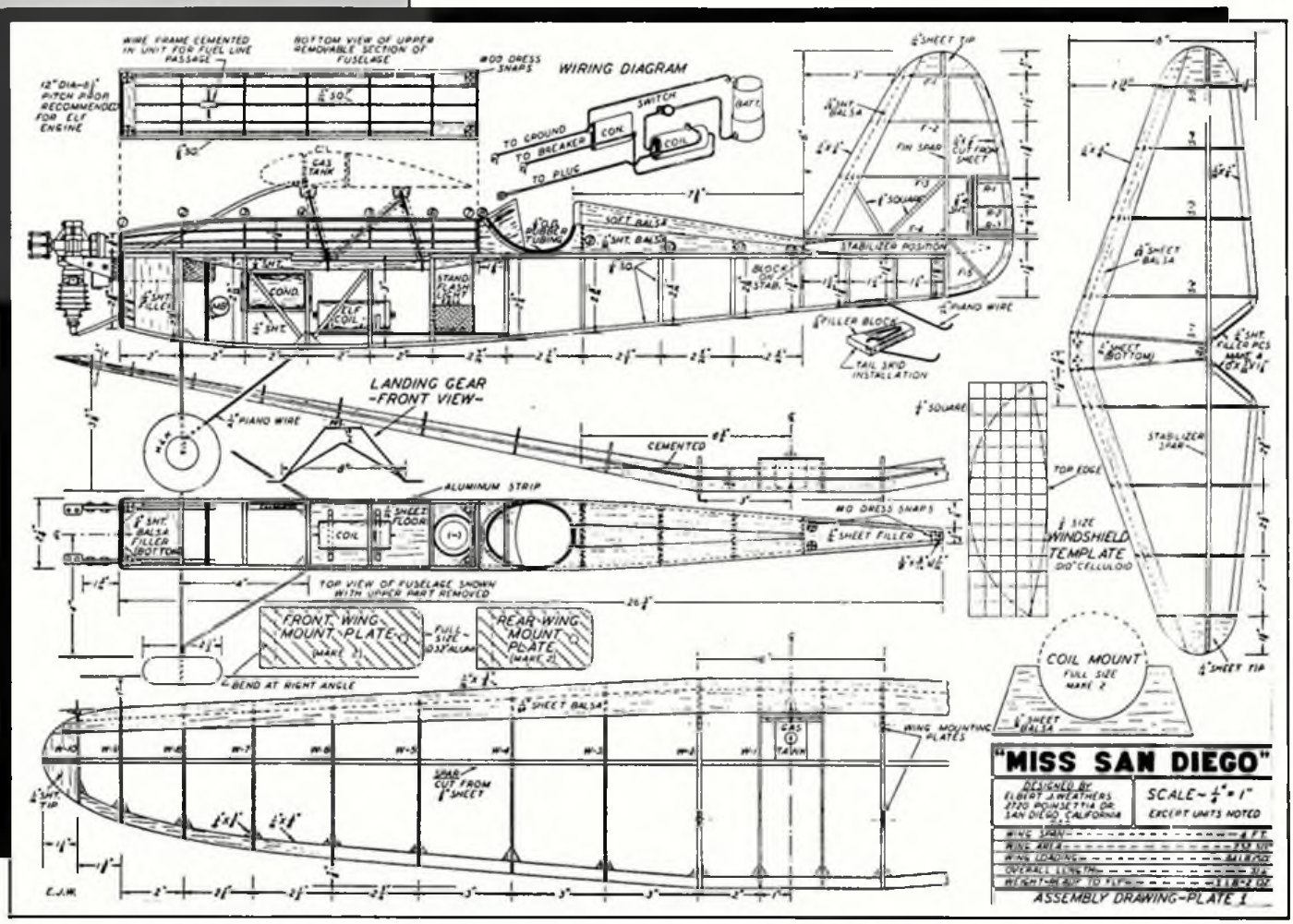
Bright and ready to go – Miss San Diego in authentic colours! Inset: The 2.5cc Elf would turn a 12 x 6.1/2 at 3500 rpm for 45 minutes on one ounce of fuel. Paul Plecan is noted as saying, 'Within that rough sand-casting was a heart of pure gold'.

finished in time, so he packed up the engine and sent it to me. The same day that it arrived, I installed it on a block and found it to be an easy starter. Forthwith I called New Zealand with the Elf running, and when Mike picked up the phone, my words mirrored his: 'Can you hear it?' So that little motor is probably the only model engine to have sent its song of power and speed across 13,000 miles – twice! The Elf can tolerate plenty of running, although it is difficult to accept Dan Calkin's statement that the motor should be able to run 100 hours before any serious wear becomes apparent. My engine did not have a great deal of compression, but this, it was said, would improve after running-in, and run it in I did, using any excuse at all. The Elf was demonstrated to all and sundry, not once but repeatedly! It was a joy to operate, and at a conservative estimate, the engine had logged at least five hours running before I fitted it to the model. It was smooth and vibrationless but the compression was still less than I would have liked despite using the standard 3:1 fuel/oil mixture when originally an 8:1 mixture was recommended by Dan Calkin. Various propellers were tried during this time. The motor sounded happiest on a Top-Flite 10 x 4 and it was with this propeller that most of the bench running was done, speed being carefully kept down to the specified 3500 rpm.

Miss San Diego herself

Ever since it appeared in the October 1939 Model Airplane News, and later in Air Age Gas Models, Joe Weathers' Miss San Diego had been a special favourite of mine that I dreamed of building one day, but construction

This plan is reproduced from the October 1939 Model Airplane News. The writer's model was built from the original 1935 drawing. Beneath that, the fuselage logo displayed by Joe Weathers and retrieved by Jim Alaback.

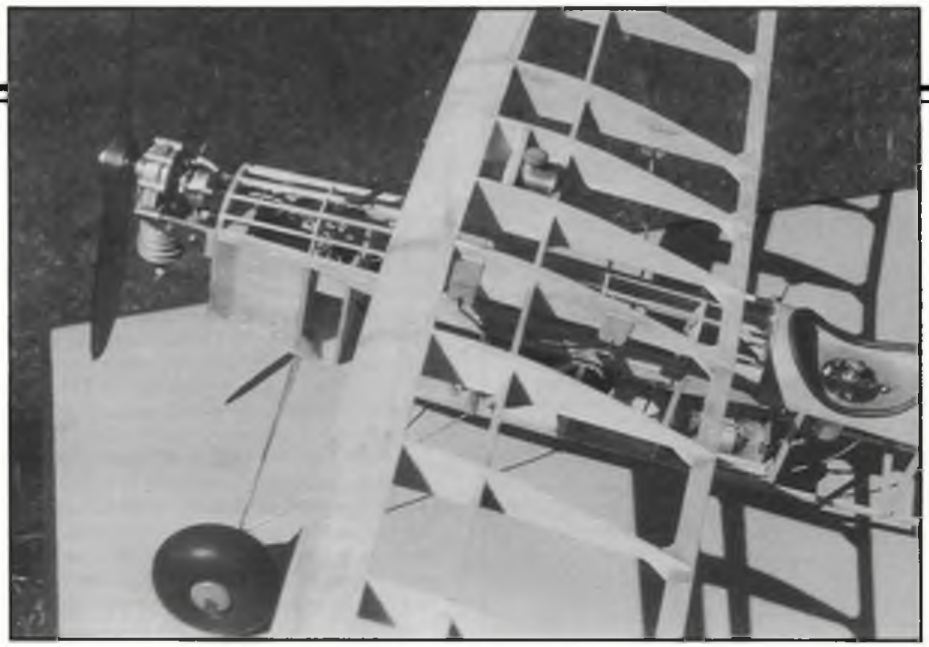


MISS SAN DIEGO

was never seriously contemplated because of the lack of the right engine. Being completely uncowled, this model would just not be the same aeroplane without that distinctive Calkin engine outline at the front. Now thanks to Mike's skill and industry the first hurdle had been passed and the dream could become a reality.

Joe's original model was firstly coloured a 'vivid orange' and carried the name 'Miss San Diego' in a particularly attractive style on the fuselage sides. The only illustration of this that I could find came from an old Popular Aviation magazine. No mention was made of the colour of the lettering which appeared light against the dark coloured fuselage. A better picture showed the model at a later date, completely overpainted yellow with the legend 'Elf Engines' in black on the fuselage advertising the fact that Joe had become an Elf distributor. Initially I decided to finish my model in this manner; however, when chatting with Doug McHard at one of the Old Warden meetings and admiring his Arado 198 which carried the civil registration D-ODLG in black over the bottom wing surfaces, he showed me a photo of the model in flight that revealed no lettering on the port wing and white letters on the starboard side! Who said that the camera cannot lie? Doug explained that this was a typical case of spectral reflection caused when the sun is at an angle of less than 35 degrees to the horizon. I immediately recalled that the shot of Joe Weathers' original model was also taken with a low sun. Maybe those letters were black after all? Doubt about this did not exist for long, since, when in touch with Jim Alaback, who is Secretary of the San Diego Aeroneers (the club that Joe Weathers founded in 1935) he not only concurred the low angle lighting effect, but amazingly, while sorting through some Joe Weathers memorabilia, loaned to the Aeroneers by Joe's family, he found tissue cut from the fuselage of the original model bearing the name – black on orange. He sent me a xerox copy of this, and a colour sample. Needless to say, my model, now, just had to be a replica of Joe's first version, and work was started right away.

I had obtained Joe's full-size drawing (which dated from November 1935) through the John Pond Old Time Plan Service and the MAN article and found that there were detail differences between these two sources. Most significant was the use of an untapered spar on the tailplane, duplicated wing root ribs and a complete lack of any information on the location of the ignition circuit components on the 1935 drawing. The construction, as might be imagined, followed rubber model lines and this was not unrelated to the low power output of the Elf. Wood sizes are smaller than one would employ today on a similar model. Never having before used 1/16in. square or 1/64in. sheet on a petrol model, this job rapidly took on a 'watchmaking' aspect for me; it certainly made me appreciate the skill of the rubber model builder and Peanut enthusiasts who work in these smaller wood sizes. The fuselage is a basic box of 1/8in. sq. topped by a semicircular decking of 1/32in. sheet aft. Forward decking, which is removeable via four press-studs employs 1/16in. sheet formers with

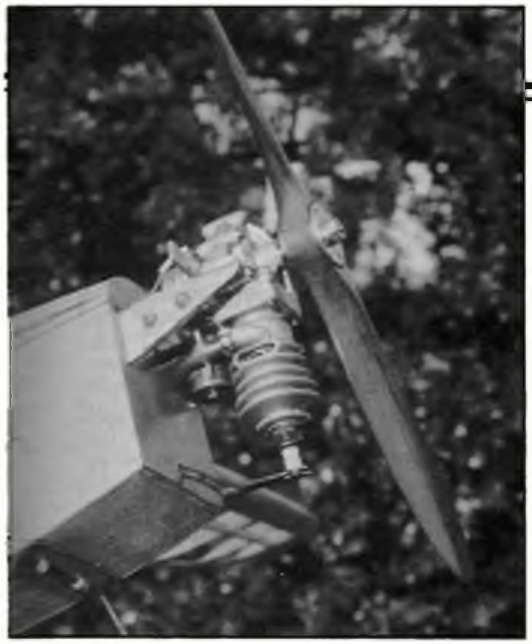


A close-up showing fuel tank in wing centre section, aluminium tabs for wire cabane strut ends and Austin timer in cockpit.

1/16in. sq. stringers. Although Joe could not use such a device, since it had not been invented in 1935, I placed an Austin ignition timer in the open cockpit. The engine was mounted and all electrics installed and 2.3/4in. Trexler airwheels were fitted, under-inflated to 2.1/2 inches diameter to imitate the original's M&M wheels.

The fuselage hung on the wall of my den for ages while I busied myself with other things (or was I really windy about making that wing?). Suddenly I realised that the model was to have been finished for *Aeromodeller* Vintage Weekend. I had told so many people that it would be there, that I had to clear the bench and get cracking, 1/64in. sheeted leading edge or not! After some attempts at sanding down 1/32in. sheet to this wafer thickness, I gave up and used 1/32in. sheet anyway, sanding it down *in situ*. Although I soaked the wood and pre-moulded it around a suitable form, the structure was easily distorted when trying to get the sheet to lie exactly on all the noses of the ribs. The wing is attached via a 1/16in. piano wire cabane sliding in aluminium faced slots in the fuselage, the strut ends being held by tension into four aluminium tabs glued to the end centre section ribs. However, the tension bowed the ribs sufficiently to introduce warps into the wing panels, so Joe's double rib was used at this location. The original model was covered with 'Mino' tissue, which was a lightweight bamboo paper with parallel watermark lines about one inch apart, and it was yet another coincidence when I found a piece of this ancient material in my tissue box! There was only sufficient to cover the fuselage, the remainder of the model being covered with Japanese tissue. 'Mino' does not have a grain, and when doped the fibres came up with a surface like sandpaper, but careful sanding eventually gave a smooth finish. I covered the wings rather too tightly and the dope used was obviously not thinned enough, for the lightweight structure deformed at this maltreatment. Most troublesome was that

Moment of truth. Fine-tuning the Elf before the first flight, 15th August 1988. Model was flown initially without any decoration to facilitate repairs.

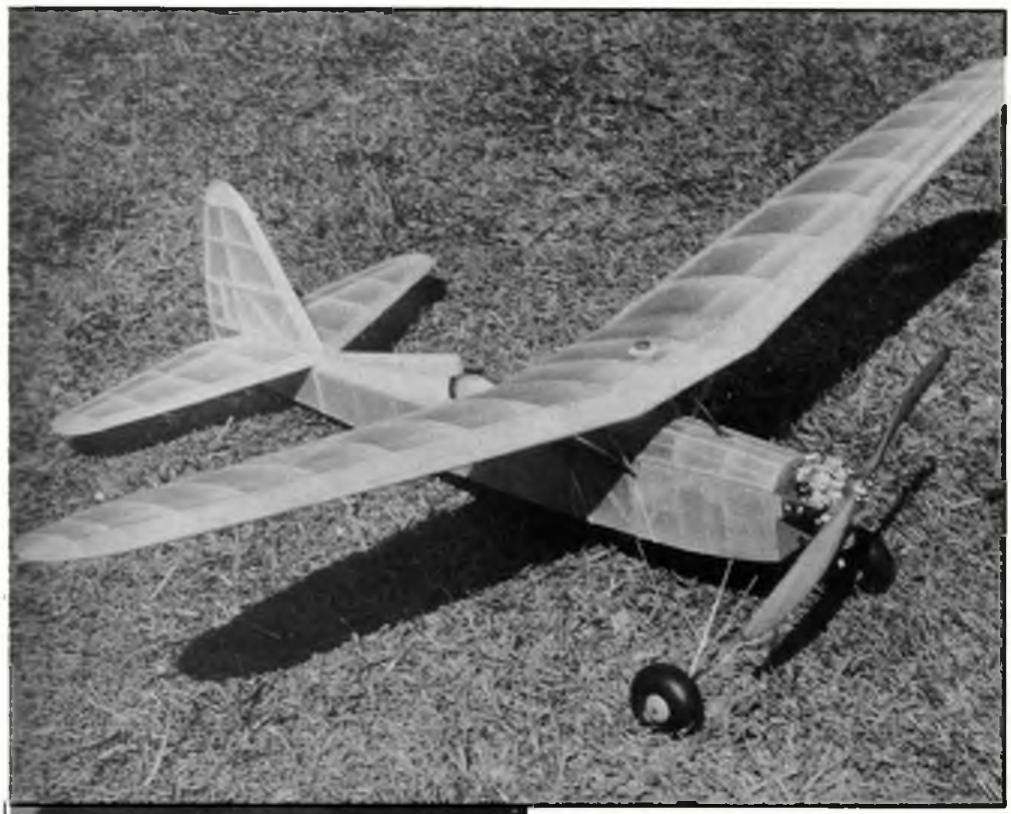


Cabane attachment and undercarriage springing are shown to advantage in this view.

the trailing edge arched upwards between the ribs, but I was able to alleviate some of this by holding the wing down in a jig for several days after final doping. I decided to decorate the model first after proving it in the air: ready for flight in this basic state the model weighed 20.1/2 ounces.

In the air

After some push-ROGs and hand glides, first flights took place in calm conditions using the Top-Flite 10x4 propeller. After normal adjustment of thrust line and trim tab, the model was soon describing fairly tight left-hand power patterns with wider left-hand glides. The float carburettor is fed via a rubber tube from a brass tank in the wing centre section. I almost immediately got fuel inside the wing. The amount carried was



Above: The model, shown fitted with first Elf Chauviere shaped propeller that took all day to make, just before going out to fly - when it failed to deliver the thrust!

really unnecessary so I henceforth flew with fuel in the float chamber only, a method that Joe had used. The Elf is so economical that this is sufficient for fifty seconds of engine run; since I was limiting the power to thirty seconds anyway on the Austin timer, the limited fuel supply was a good back-up in case the aged airdraulic timer did not function. The float chamber is situated directly over the HT lead and refuelling is done via the rubber tank connecting tube until fuel overflows from the air hole in the top cover and it can, of course, drip onto the plug lead; I never really thought of the fire risk until it happened! Once when starting, a spark at the plug snap-on clip ignited spilt fuel and in an instant the Elf was enveloped in flames. I was able to extinguish the fire by cupping my hands around the engine and so smothered the flames by cutting off the air. Thus they did not get to the structure; if they had, doubtless the fire would not have been so easily put out because nitrate doped tissue is not very flame resistant... The engine had been hard enough to come by, and it would have been heart-rending to have seen it melt away! Needless to say I now take care to mop up any overflow before starting. Certainly Miss San Diego looked great in the air, just like a rubber model, as she spiralled upwards accompanied by the subdued whirr of the Elf.

Propellers

So far so good, but I was attracted to the Chauviere shape of the original Elf 12x6.1/2 propeller and, indeed, had already obtained Dan Calkin's block drawing for this. Peter Lilley, one of our vintage control-line enthusiasts is a timber specialist (note his address: 68 London Road, Baldock, Herts) who will undertake to produce any size and type of wood for our purpose, and it was from him that I obtained some really excellent blanks of walnut. Before this, an original Elf propeller had been offered in the MECA Swapsheet, and the letter telling me that my attempt to secure it had been unsuccessful arrived in the same mail as the wood from Peter Lilley. It took me all day to carve that first propeller and the disappointment was acute when the model refused to fly with it! The 4500 rpm possible with the Top-Flite 10 x 4 had dwindled to about 2800 rpm, but worse than that was the resultant feeble thrust. In some ten flight attempts I got two hesitating circuits... so much for my skill as a propeller carver! I re-worked that propeller and made another, paying more attention to the Clark Y type aerofoil section; static power was about 2500 rpm (there being a noticeable loss due to driving the revolution counter). It was hard to believe that the model would fly on this power, and it seemed almost pointless to even try, but after launching one could hear a marked increase in rpm once the model got underway and the slow stately flight was a joy to behold, quite different from the zip of the model using the Top-Flite propeller. Now we were getting somewhere!

One problem with using this larger diameter propeller and the almost scale position of the undercarriage meant that sometimes the tip of the propeller touched first on landing, especially on the rough tufty grass of my field; thus breakages can occur, and I am ever conscious of the fact that the crankshaft is only 1/8in. diameter. Up to the present I have made four Elf propellers, but that truly beautiful style of flight that results from the use of the big Chauviere propeller and its distinctive shape are so much a part of this model that I would not fly it with anything else.

Centres of gravity and lateral area

After about 50 flights the model began to develop a tendency to 'come-in' under power; also, the glide patterns were not always 'left', but varied through a straight glide to a right turn. I fly in a small tree-bordered field and like the 'left-left' pattern, but the straight

Since the cat walked on the wing, only the fuselage was taken to Vintage Weekend where the Editor captured this scene during the frequent running of the engine for interested modellers. Fuselage doped a 'vivid orange' based on original colour sample, which turned out to be the same shade as the writer's VW Beetle!

glides were obviously going to put the model into the trees sooner or later, so I really worked at that trim! In the event, the model did leave the field on occasions thanks to a falling-off in power, the engine offset then being too much for the reduced torque, causing the model to fly away in an almost straight line. On one low, straight flight it caught the tops of some tall grass at the edge of the field and was precipitated onto a road removing part of a cylinder fin, breaking the propeller – and it narrowly missed being run over by a car! On another flight it glided into a wooden pole which spun it over a hedge into somebody's bird-bath! This irregular power output (maybe I should not have run the engine so vigorously on the bench!) highlighted another problem. Flying in light breeze conditions with the motor labouring on the Elf propeller meant that the model was often in a level flight attitude when it commenced the torque turn. This then became steeply banked, and although it provided some spectacular flying, the only way out was down. It dawned on me that perhaps the CG and CLA were displaced vertically, the model's behaviour being exactly like that described by Charles H Grant in his writings. He pointed out that early power modellers, reared on rubber designs tended to use too much dihedral (which gave a high CLA). There is fourteen degrees of dihedral on Miss San Diego but my problem was not of Joe Weathers' making!

I made a scale card cut-out of the side view of the model, using double thickness of card for wings and wheels, and hung it up to find the CLA. This was just inside the windscreen at the top longeron. Then the model was suspended by the tailskid to find the CG and this was further forward, of course, but it was about one inch below the CLA! The reason for this was that in trying to reproduce Joe's original model I had lashed the coil to the bottom of the fuselage since I assumed that he would have done this at the time. (This was Joe Weathers' first power model; the location of the heavy ignition components were new to him and he probably took advice from Dan Calkin on this since Dan was already flying an Elf powered model and he had placed *his* coil on the bottom of the fuselage.) As already mentioned, the 1935 drawing is devoid of information in this regard; the MAN 1939 drawing shows the location and it is significant that the coil and the flight battery are above the bottom longerons thanks to a raised floor. Joe, flying an original and more powerful Elf, might never have encountered this instability problem which C H Grant is careful to state might only occur under 'certain conditions'. These seemed present so I re-located the coil upwards to put the CG on a horizontal line with the CLA, just like Charlie Grant preaches; and even on engine 'off-days' in breezy conditions my model has now lost its tendency to make those hair-raising, steeply banked turns that produced cartwheel arrivals.

Sheer delight

I usually fly in the still air of the evening, but the most flights carried out in one day took place on a particularly fine September day, when I went out to fly in the late morning. Such was the state of the trim and the health of the Elf that in a fairly short time over thirty flights were made. Flying this combination of model, engine and prop is sheer delight. The engine, stopped by the Austin timer, allows just the right amount of mixture to be sucked into the crankcase during the last few propeller revolutions in readiness for the next sortie. All that is necessary is to refuel the float chamber, plug in the booster battery, and the engine usually starts first flick; no need to choke or touch the needle valve at all, just pull out the knob of the Austin timer, disconnect the booster and away she goes again, straight ahead for almost 50 yards then round into that left torque turn, spiralling upwards to over 100 feet until the timer cuts the ignition all ready for next time.

On the same day the engine eventually began to fire unevenly in the air, obviously due to the flight battery running down; next flight the engine was well down in power and the model landed 'engine-on' and stood on its nose near the footpath where a man was walking his Grosser Schnauzer dog (named Kaiser, I learned later). The dog immediately investigated the model, apparently did not like what it saw and turned through 45 degrees, lifting its leg to irrigate the orange machine. The dog's owner and I both shouted at the same time, and the dog, startled, hit the port tailplane with a paw the size of a loaf of bread before making off! Since our cat had already walked on the wing, necessitating some repairs, one wonders if Joe Weathers was an animal lover? The broken trailing edge and ribs put an end to that flying session, but repairs were undertaken right away and the model was out again in the evening. I forgot to change the flight battery, and after a few flights, intermittent running set in and the engine power faded on the eighth flight, and as explained the model departed in a straight line. I started to run after it since the light was failing, and as the power fell off further, the model very slowly started a right turn. It was now outside the field and over the trees; the right turn continued although the model was now descending. It almost made it back to the field, but collected the top of a hawthorn tree. I heard the noise of it entering the branches, but it took some time to find the model about 20 feet up. Later I returned with two eight-foot bamboo poles that I keep for such occasions, some parcel tape to bind them together and a torch, because it was now quite dark. In the flashlight beam I poked the end of the pole through the undercarriage and yanked the model free, backwards out of the branches. It slid down the pole until I could catch it, when I found to my amazement that there was only one hole in the wing tissue. So I was lucky, since those thorns could have shredded the whole covering. Thus ended a perfect day during which Miss San Diego had logged forty-three flights. The wing and tailplane have yet to be doped orange, and since they bear the patches and scars of over 200 flights, maybe it is time to recover and paint them, thus finally completing this most enjoyable model of the first Miss San Diego.

Miss San Diego joins the writer's small petrol model fleet. Molecule (Atom) at top, Wasp (Frog 175), Fly Baby (Bantam 19) and Cavu (Frog 175) in foreground. Original Wasp and Cavu were Elf powered.

FREE FLIGHT SCENE

Dave Hipperson's look at the competition scene

begins with a neat prop dodge...

RECENTLY I have been covering my rubber model props with 20gm/metre glass cloth, the lightest grade currently available. It was Terry Dilks who showed me the best way, which allows the blades to be carved in an easy and more precise operation. Traditionally one first carves the back surface, then fully finishes it with undercamber and profile shape.

However, when you come to carve the front you find yourself carving down to a thin edge of balsa, often finishing up with a blade that is very fragile before it is covered. Moreover, if you then cover with dope and tissue it is likely that your carefully derived section will distort somewhere along the span as the dope dries. There is a very simple way around this.

Carve the back surface in the usual way – completely finishing the profile and undercamber required. Then, before you do anything to the front (that is, while it is still raw block, thus offering greater stiffness) cover the back with 20gm/metre glass cloth. My favourite technique is to use SP113 laminating epoxy available from the larger model shops or direct from Mike Woodhouse. 3cc of resin mixed with 1cc of hardener (4cc total) is enough for the backs of two blades of F1B size. The mixture is best warmed under an electric light to thin it (not too much heat otherwise you may accelerate the curing; normally it sets in six hours.)

This thin epoxy is brushed over the blade surface as sparingly as possible. Normally you will have about 1cc over. The glass cloth is laid on the wet surface with plenty of excess. Ensure that it is perfectly flat. You will be surprised how well a meagre covering of resin on the blade wets the glass. There is no need to brush on an excess. However, a little extra can be usefully applied to the edges to ensure that a perimeter border is well filled with resin. This makes the job of trimming later much tidier. Do be sparing with the epoxy. You can 'splash it on all over' and finish up with very heavy blades. This way you use just enough to stick the glass.

The SP113 takes six hours to set at room temperature. That gives you plenty of time to work on it. When you are happy the glass is perfectly flat all over the back surface put the blades away to cure. It is ideal if you can come back to them after about four hours – just before the resin is completely set – and trim off the superfluous glass with a razor. It's just that little bit easier then; but not essential.

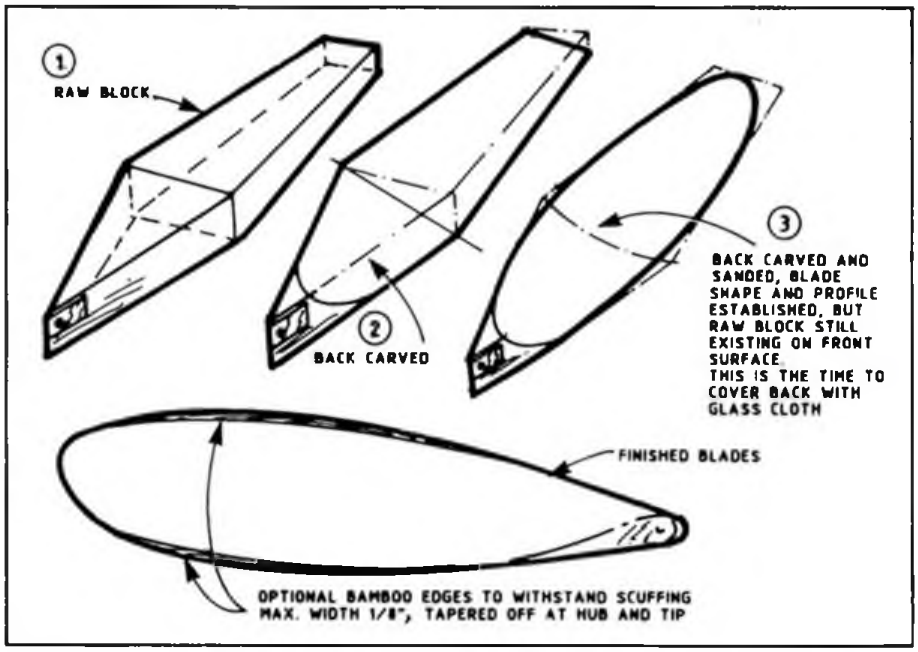
When perfectly hard after six to ten hours, you can sand around the profile to the finished shape, next carving the front to the required contour and section. You will notice how much easier the blade is to work on. The glass and resin on the rear adds greatly to the stiffness and allows you to get a much more accurate section – and very thin edges if you require them.

When perfectly happy repeat the covering procedure on the top surface. Don't wrap the glass around the edges, as you would tissue. Just lay it over and reinforce the edge with a bit of resin. Any excess can be sanded off later. When hard, the blades thus finished can be brushed again with epoxy for a very smooth finish. They need to be lightly sanded first to form a key; usually I wipe them over with thinners to ensure they are not greasy. The amount of resin used for this stage is also very critical. Remember, it's not dope – it won't evaporate. Everything you brush on stays on – and it won't sink in this time because of the existing glass/resin already on the blade. I am constantly astonished at how little extra epoxy is required for this finishing coat. Remember the *less* you use the lighter the blades; and, after all, you can easily add another coat if you want. I reckon 5cc of resin/hardener mixture is enough for all four surfaces. Remember to arrange the blades horizontally when curing as this coat will tend to run. Once again, drag it on as thinly as possible after warming. When hard the finish will probably be sufficient to cut back with fine wet and dry paper.

A third coat would make it perfect but I have never found this necessary. Indeed on Open model props I have not yet gone even as far as a second coat. Aerodynamically smooth is good enough – glossy is unnecessary and can actually look cheap. Blades made in this way have proved themselves much stiffer than the balsa equivalent, and only one or two grams heavier.

I have used gloss colour paint once. I don't recommend it. The paint is heavy and the finish on the blade has to be really 100 per cent to look good. Gloss paint really shows the faults. Also, damage is very hard to repair neatly.

The only other snag can be the edges chipping. Obviously the blades are going to be much more resistant to general rough-and-tumble until it's time for that sideways excursion down an aerodrome runway. This



Above: Stages in prop blade carving, as described in text. Below: The two power models used by Trevor Payne (at right) in the Champagne Flyoff at the Falcons Gala.

Left: A closer look at Trevor Payne's latest, super-light .40 model. Wing features carbon reinforcement. Right: Chris Strachan was unlucky at the Falcons Gala. Model vanished, high up, in fog...

will chip bits off your lovely feather edges, so adding injury to the insult of what undoubtedly has already been a poor flight. To guard against this the best solution is to ensure the blades never come into contact with the runway! No short flights - get them all off the drome, or catch the others. However, the second best bet is a nose-skid; but you will find it has to be very deep to guarantee blade clearance; then, of course, you risk them fouling on fold.

The most practical solution is to trim the edge off the leading edge and trailing edges likely to touch the ground, replacing by a bamboo edge inset by about 1/8in. This can be very easily cyanoed on and then carved down to the blade shape, reinstating the sharp edge. Bamboo withstands knocks very well and of course can be replaced if it gets worn.

I can recommend SP113 epoxy which comes complete with two syringes for accurate measurement of mixing quantities. The glass cloth is also available from Mike Woodhouse; I would advise the 20 gm/metre weave. Lighter material has been available in the past but although pretty to look at it is very difficult to handle without snagging badly and, of course, it's not as strong. John Cuthbert also supplies a similar resin; this is available with colour pigments that don't effect the strength or inhibit setting - worth a try.

Whatever you do, don't try to use household or motor-car type resin. It sets much too quickly to allow you time to get a smooth surface and it is difficult to thin. One of the beauties of SP113 is the 'cure' time which gives you plenty of time to work, and allows the surface time to smooth itself out.

Contacts: Mike Woodhouse is at 12 Marston Lane, Eaton, Norwich, Norfolk NR4 6SZ. John Cuthbert's address is 7 St David's Crescent, Bottesford, Scunthorpe DN17 2SR.

Final World Cup Positions

Our congratulations to Stephan Rumpp on his second consecutive World Cup win in Glider. I am sure that modellers who made Walt Ghio's acquaintance when he was in the UK for the Nationals would want to join with me in congratulating him on becoming Wakefield World Cup holder for '88 - with the highest points score ever! In Power Thomas Koster - one of the very few contestants to place in more than three events in the year - took top honours.

Looking at the pattern of performance it is still evident that USA flyers domiciled on the West Coast have the advantage of two local World Cup events. Perhaps that is how it should be. The original fears were that it would be a European-only event and the USA wouldn't get a look in. Check those glider scores at the top. Mat Gewain got the edge by flying in the Pacific Champs. Good for him. Excellent flying by Foster, Simpson, Galbraith and Archer at their local events gave them good positions in F1B and F1C but in the former they were no threat to the considerable activity from Sauter and Seja flying plenty of events in Europe. Bror Eimar must be heartbroken after winning in Norway and Sweden to have two freakishly bad consecutive flights in Germany probably lose him the clean sweep and the World Cup in F1B. He flies tremendous models. Ken Faux is the UK's most successful contestant in this series with only two events flown.

We should not forget that collation of this International league is no mean achievement; so we also congratulate Ian Kaynes on his fine performance in this regard. This year's results were to hand very soon after events and those that had paid the small contribution necessary were furnished regularly with updates. It is this enthusiasm that generates excitement and an ever increasing spiral of interest. Only in its second year, the FAI World Cup is proving a great success and a draw to competitors - even from overseas. This year the list of eligible events is even larger. All details available from Ian Kaynes, 7 Ashley Road, Farnborough, Hants GU14 7EZ.

The world prepares. Here's advance publicity for the F/F World Champs...

1988 World Cup

F1A: 105 scores

1	S Rumpp	D	48	Won in Hungary, second in Germany, 12th in Sweden
2	M Gewain	USA	47	2nd and 8th in USA and 2nd in New Zealand
3	J Bradley	USA	37	1st and 4th in USA
=	R Isaacson	USA	37	1st and 4th in USA
=	A Westerman	DK	37	1st in Holland and 4th in Norway
16	M Gregorie	GB		2nd in USA
24	J Cuthbert	GB		3rd in France

F1B: 101 scores

1	W Ghio	USA	70	Won both events in USA, 2nd in Hungary
2	B Eimar	S	52	Won in Norway and Sweden, 13th in Germany
3	B Sauter	D	50	1st in Germany, 2nd in France, 10th in Holland
4	F Seja	D	40	3rd in France, 3rd in Sweden, and 5th in Hungary
=	J Foster	USA	40	2nd in both USA events
11	N Beaumont	GB	25	1st in France
16	D Hipperson	GB	24	3rd in Germany, 6th in France

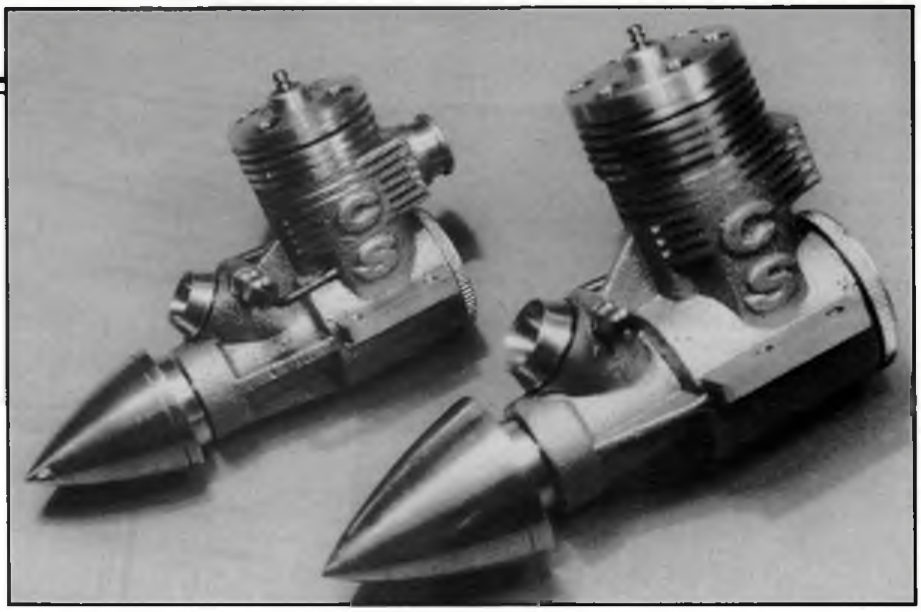
F1C: 75 scores

1	T Koster	DK	65	Won France and Germany, 3rd in Sweden
2	G Agren	S	45	1st in Norway, 2nd in Sweden
=	R Simpson	usa	45	1st and 2nd in USA
4	K Faux	GB	40	1st in Hungary, 3rd in France
=	D Galbraith	USA	40	1st and 3nd in USA
14	S Screen	GB	20	2nd in France
30	P Harris	GB	12	4th in France

'Spareday' Meeting: Driffield, 13th November

Organiser and Reporter: Dennis Davitt

When booking airfields for the 1988 season, the SMAE Northern Area in 1987 included a few spare days at Driffield. One was 13th



November. There being no other event on this day, a proper competition was run, rather than allowing use of it only for trimming.

The event had not been advertised but had been publicised at previous competitions, and so the turnout was an unknown quantity. Actually there was a respectable total of 27 entries.

Open Glider had the best support with eleven taking part. Surprisingly, no-one managed to max out. The winner, John Carter, put this down to the lift being in very small patches. Having sensed rising air on tow, he explained that he circled and pulled up straight again as normal to check the lift was still present – only to find it wasn't, except on rare occasions.

Mini Vintage had been put on mainly to satisfy the demands of the locals, which resulted in few entries on the day. However, this did not detract from the popularity of Ken Attiwell's win. Ken is now 69 years old and still runs after his models...

Gordon Beal was so puzzled by the poor performance of his Mini Vintage models that when he got home he checked everything thoroughly, including the motors. Compared to decent FAI, he found that the FAI he had used on the day stretched nearly twice as much for the same load. Wonder how much of this stuff there is about?

Top of page: 1cc and 2.5 CS glows, owned by Gerry Le Vey. Smaller motor weighs 92 grams – twice the weight of a Cox 049! Other photos, from John O'Donnell, look back at the SAM 35 Warwick meeting; Ray Jenyon launches Polydi, Brian Faulkner lets the Judge Wake go, and John Wingate concentrates hard on his Itzme 3.

With nine entries Open Power should have led to a three-way flyoff, but Ewan Jones' last two convincing maxes were preceded by an off-trim opener of only 1:06. The two who did reach the final were asked if they wanted a limited flyoff in the somewhat breezy conditions. Ray Monks was easy either way, but as always Russell Peers wanted no limit. Both men made very good climbs, Peers holding on in the glide to win. Open Rubber attracted a low entry of three, Gerry Ferer and John O'Donnell maxing out. Both had made long recoveries during the day and, probably because there was little at stake, declined a flyoff. In hindsight, there probably would have been more participants if a 2.1/2 min max had been set; and allowing re-entry would have been popular.

The competition will be run in 1989, probably on 12th November; but maybe with different classes. Watch for news.

Driffield 'Spare day' Meeting: 13th November

Mini Vintage (3 x 2:30 min max)

1	K. Attiwell	5:34
2	G. Beal	6:06
3	F. Jackson	1:26

Open Glider (3 x 3 min max)

1	J. Carter	8:06
2	P. Dixon	6:59
3	G. Beal	6:22

Open Rubber (3 x 3 min max)

1	J. O'Donnell	9:00
2	G. Ferer	9:00
3	B. Horsley	2:26

Open Power (3 x 3 min max)

1	R. Peers	9:00 • 6:21
2	R. Monks	9:00 • 5:09
3	E. Jones	7:06

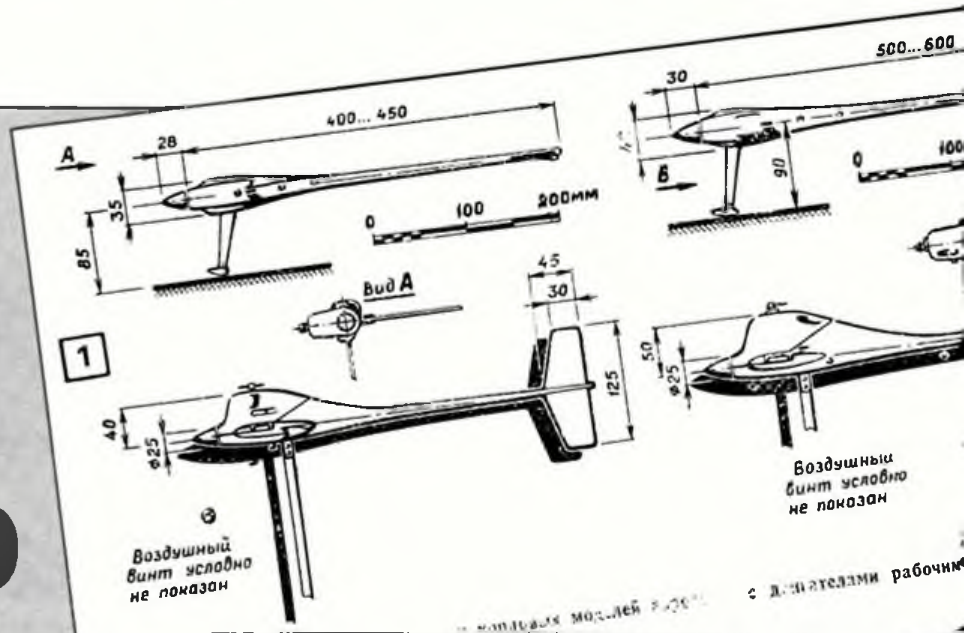
What's Happening: SMAE Free Flight

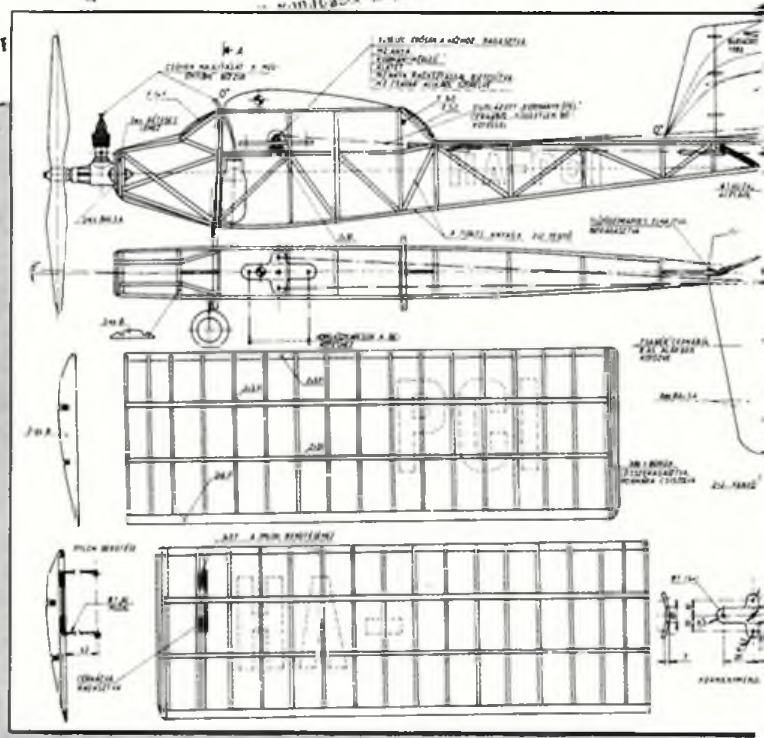
19th February
Winter Open Meeting
Open Glider, Rubber, Power Slow Open and Vintage.
Venue: Bottesford. Contact: Gerry Le Vey. Tel: 0904 705647.

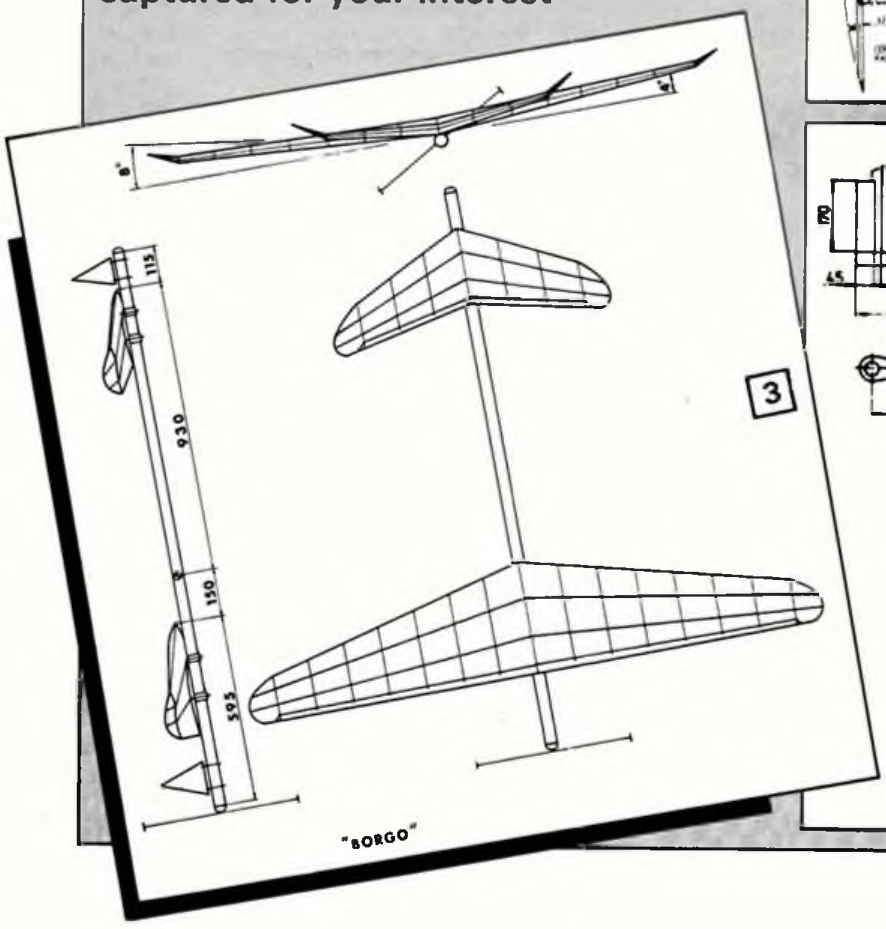
1: Is it a plane? A hydrofoil? Neither, actually. Round-the-pole ground skimmer for 2.5 power hails from Russia and would seem to be an acquired taste! 2: CO_2 control-line-scale – even for Modela power – promises short duration but here's an offering from Modellezes magazine. 3: Borgo is an Italian canard project from 1933, recently aired by Contin Pierluigi and featured in Modellistica.

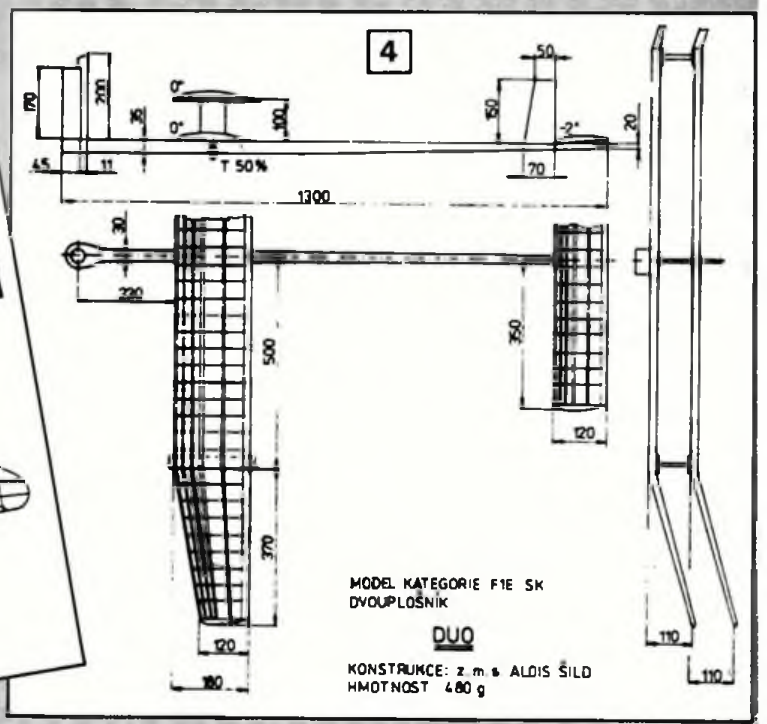
WORLD SKETCH PAGE

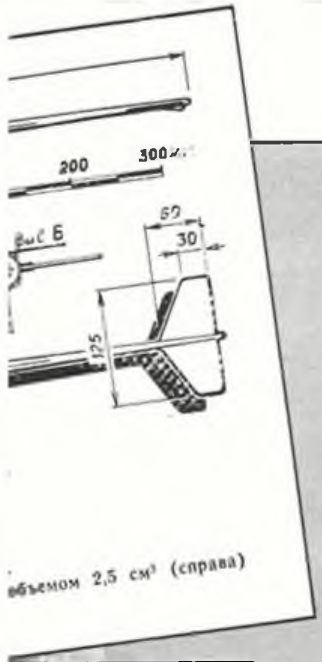
Fragments from overseas captured for your interest

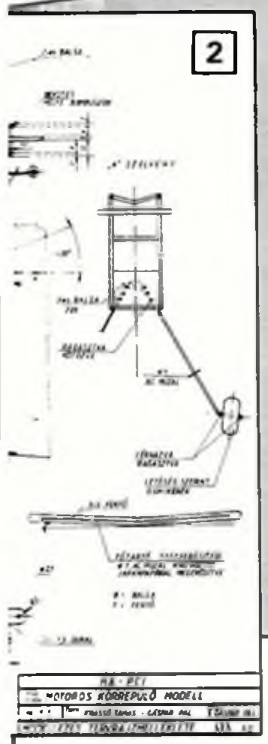


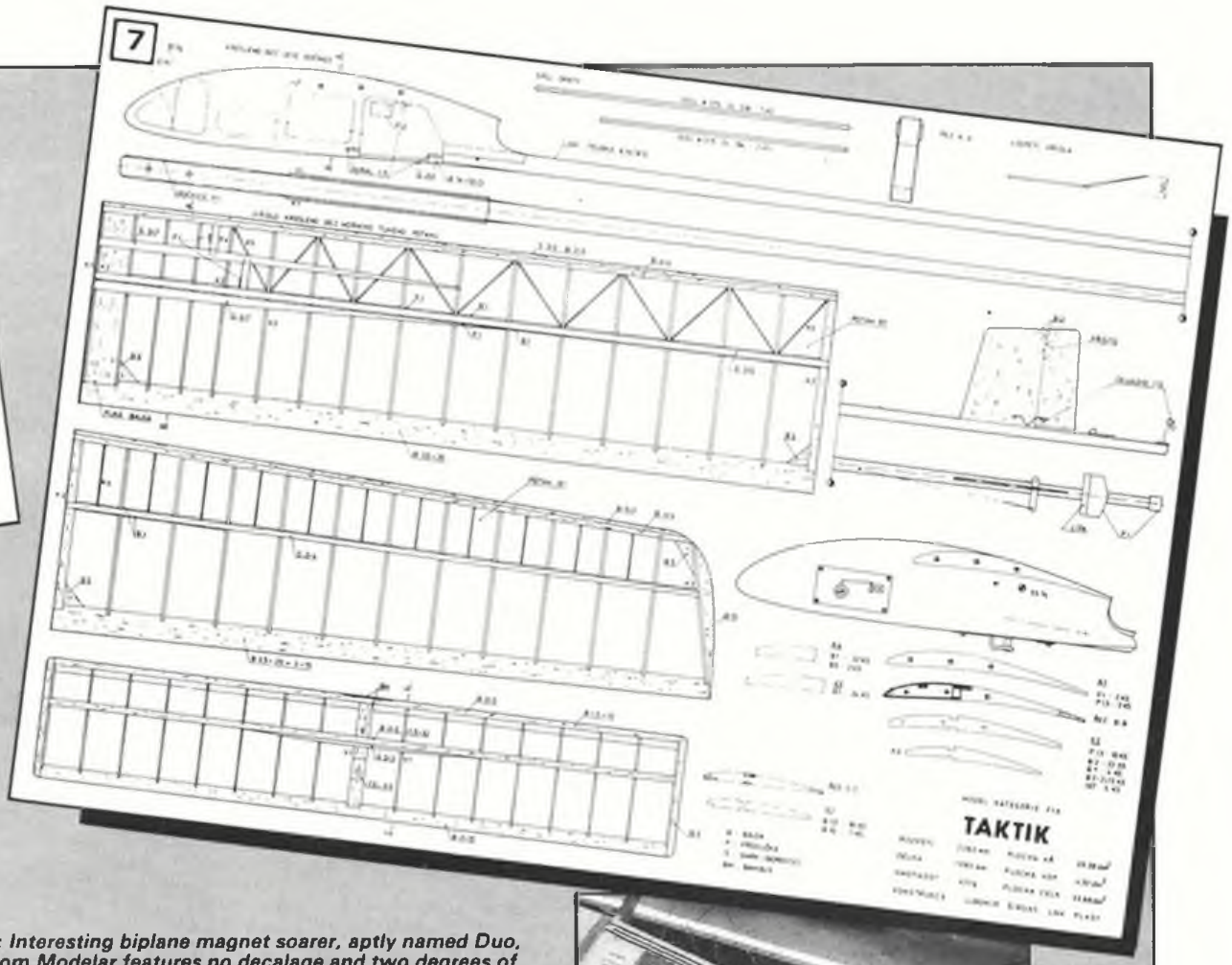




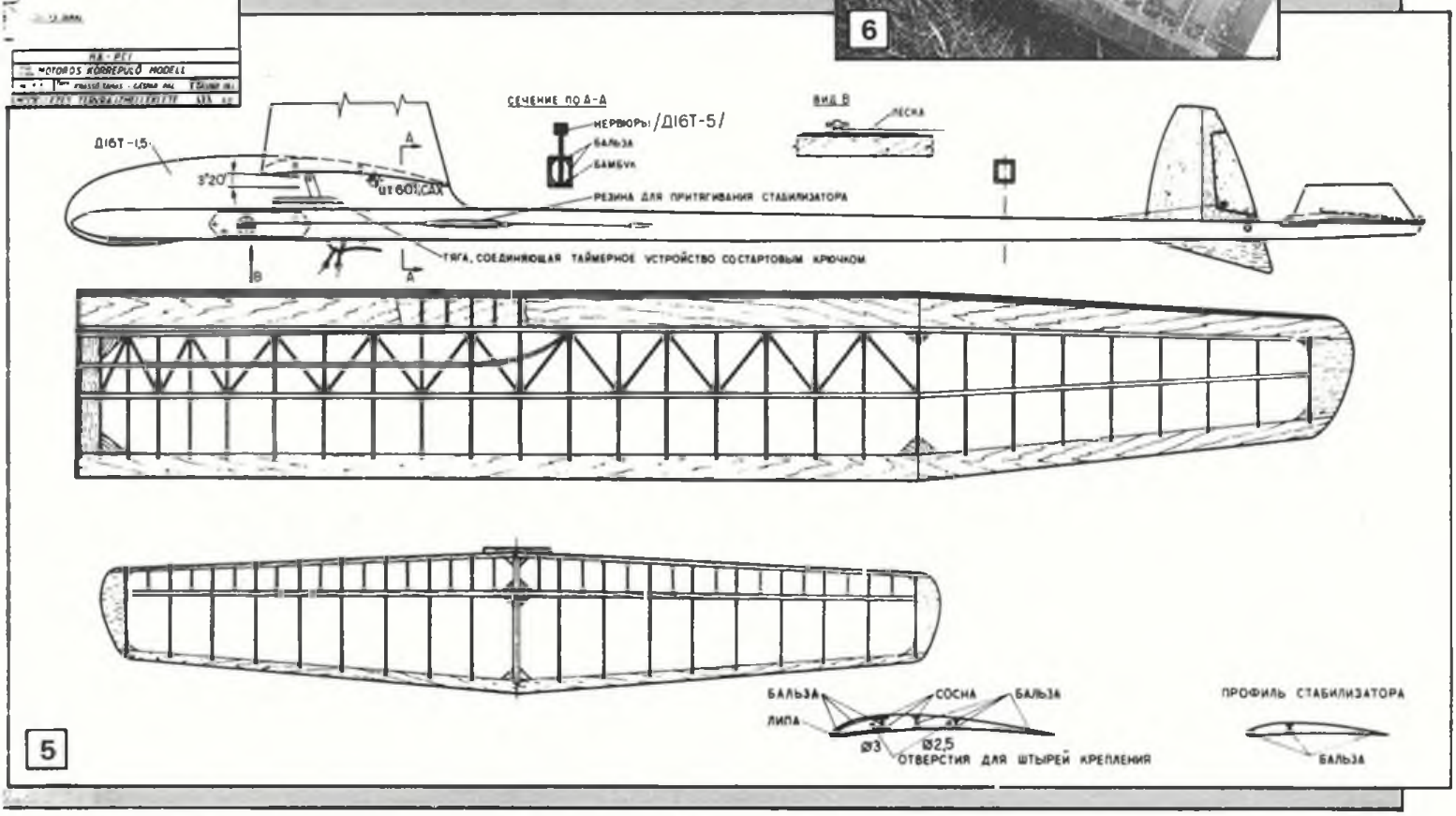








4: Interesting biplane magnet soarer, aptly named Duo, from Modelar features no decalage and two degrees of negative tail incidence. An odd shape. 5: Back to the USSR for this F1A of traditional layout. Tail dihedralled probably to prevent runway damage, rather than for estoeric aerodynamic reasons. 6: F1A wing by Hungarian junior Voros Jeno incorporates much carbon fibre; each rib is capped... 7: Staggered, tapered spars are of note in this Czechoslovakian glider which completes a trio of F1A topics this month.



1988 Aeromodeller F/

THIS TABLE is based, as always, on the top three positions in all SMAE events during the year. Three, two and one point is awarded to first, second and third; proportionally less if there were less than three scores. Thankfully next year the SMAE change their system that at present invalidates any event that attracts less than six entries. Next year they will work to a proportional system but still count the top six placings. We will adjust our scoring to coincide for '89 and onward; it will then be fair. But for now we still show the two scoring systems. You will see that a number of flyers place very differently depending on which accounting system is used. Philpott and Cuthbert are prime examples. Because flying weather on many of the Sundays in '88 was atrocious (to put it mildly) there were a number of occasions when the number of scores did not reach six - sometimes when they didn't reach half that! Let us hope for better in '89... No computer print out was available to us this year so all these figures were extracted from SMAE score sheets 'by hand'. Hopefully there are no mistakes. Although we analyse in detail only the top dozen the chart goes down further than ever to 36.

At 12th we have Colin Sharman - very much the 'complete' glider flyer. He won A/1 at the 5th Area meeting with the only full score and had already tidied up at the beginning of the year with a second place in F1A at the 1st Area event - his club mate Rod Audley beating him on that occasion. He was also third in Open Glider at the Fourth Area event, and fourth in A/1 again at the Nats. With a couple of fifth places (in Open Glider at the Club Champs and the 3rd Area event) his SMAE points tally tots up quite well. Quite an achievement to place so highly in four out of six of the season's Area events, particularly as his home site of Merryfield is hardly the largest. Could be something to do with the Bristol and West's Plugge Club effort. Colin is one of only three appearing in the top twelve who fly glider exclusively.

Julian Hopper did well to place in four out of the five SMAE events in which he entered. His Nats Power flyoff was his worst flight of the whole year which included some excellent non-SMAE results. His wins came right at the beginning and end of the season with victory in Open Power in the Frog Senior and then the Hamley (again!) in the same class at the Northern Gala. He was fourth in the White Cup once again for Open Power, and made a guest appearance at the Spring Mini meeting with a useful third in HLG. It's a pity Julian doesn't come out more often these days.

Diversification

By contrast, John Cooper is always busy - this year flying in sixteen events over many classes. All his Glider successes were at Open meetings, although like most others, he flies A/2s in this class. He won the Winter Meeting in February, then placed second at the Third area event. He was fifth both at Easter and at the Fourth Area Meeting. The surprise of the season was his convincing win in 1/2A at the Spring Meeting when he topped a flyoff against substantial opposition - his first adventure into Power for many years.

This is the first time we have seen Gordon Beal at the top end of this chart. Flying mostly in Glider he had close second places in Open at both the Nationals and the Windy Southern Gala but he won the Third event. He also placed second at the Vintage flyoff in the Spring. Plenty of placings from only eight events flown.

Steve Philpott diversified greatly in his fourteen events in the '88 season, coming on with a great rush towards the end of the year, although rather strangely he did not fly in the Trials. He won both the SMAE CO_2 events but only Nationals victory added to his SMAE points as CO_2 at the Spring Meeting was too poorly supported. We give him full points for both! He took more time off from Glider to win Coupe d'Hiver at the Southern Gala with a very nearly standard Garter Knight. His successes in his main class were a second place in A/1 at the Spring meeting and sixth in A/2 at the last Area event. He was also fifth in the Tailless at the Nationals - unexceptional in itself apart from the fact that by doing so he may well have revolutionised thinking on model design for his class - trust Steve! He was also responsible for his club's top score in Team Power - not bad when one considers he is a member of Birmingham, *the* power club.

The Falcons Club are probably still a little away from being a threat in the Plugge Cup but as a collection of individuals their SMAE Trophy tally this year is remarkable. Between just four of them they collected no less than fourteen SMAE Trophies! Dave Hipperson is now one of this group. Flying only in Rubber he won an event in each of its three disciplines. He took Open Rubber at the Winter meeting and then two events at the Nationals; CDH for the 308 Trophy and the Boxall

Dave Hipperson summarises last year's F/F achievements

Trophy for F1B. His performance in Open at the Nats landed him a fourth place which clinched the Overall Rubber Champ award for the event. His other successes were a second place in CDH at the 4th Area event, third and fourth places in Open Rubber at the Easter and Northern Galas and finally third place in the F1B Team Trials. Just above him at sixth, John O'Donnell had a very good season. From only fourteen events flown he placed in eight. He missed the grand slam in Vintage by a whisker with a close second at the Nationals when he had already won the Winter and Spring events with his very on-form Challenger. The Nats was the end

The flavour of Open Power - Ray Monks about to release at the Nats.

of the model too as the parts that came back from the flyoff some weeks later were in a sorry state - one model met a combine harvester. He had a good Nationals, coming second in the large and blustery Open Rubber flyoff and also picked up SMAE points

1988 Aeromodeller F/F Championships Table

	Events flown	1sts	2nds	3rds	SMAE Points	Aeromodeller Points
R. Pears	25	6	6	4	91	33
J. Cuthbert	16	4	3	1	55	19
J. Carter	23	4	1	3	60	17
P. Ball	19	3	2	3	57	16
S. Screen	12	4	1	2	55	16
J. O'Donnell	15	3	4	1	48	13
D. Hipperson	14	3	1	2	47	11
S. Philpott	14	3	1	-	27	9
G. Beal	8	1	3	-	27	8
J. Cooper	16	2	1	1	28	7
J. Hopper	5	2	-	1	25	6
C. Sharman	13	1	1	1	26	6
P. Harris		1	1	-	25	6
A. Ball		-	3	-	23	6
A. Cliff		2	-	-	22	6
A. Wells		2	-	-	22	6
C.P. Williams		1	1	1	22	6
A. Hall		1	1	-	19	6
M. Page		2	-	1	19	5.5
T. Peyne		1	1	-	9.5	5
P. Watson		1	1	-	28	5
P. Gaunt		1	1	-	24.5	5
N. Cliff		1	-	2	21.5	5
S. Fielding		1	2	1	18	5
G. Madelin		-	2	-	18	5
M. Howick		1	-	2	18	5
E. Jones		1	1	-	17	5
M. Warren		1	-	1	15	4
R. Pavely		-	2	-	19	4
W. Colledge		-	2	1	16.5	4
R. King		1	-	1	15	4
P. Owens		1	1	1	13	4
D. Neil		-	-	-	13	3
T. Dilks		1			14	3
A. Jack		1			12	3
K. Faux					12	

F Championship Table

in CO_2. At the 2nd Area event he took the coveted Gamage Cup with his Open Rubber models after having placed fourth at the 1st Area event in the same class. His season finished with a second place in A/1 and a third in Open Glider at the windy Southern Gala. Sadly A/1 did not contribute to his SMAE points despite the excellent score as there were only five entries. A/1 indirectly brought John's season to a premature end when he fell while towing at the 5th Area event and dislocated his shoulder - not the only top glider flyer to injure himself during the year.

Mysterious

Previous champ Stafford Screen is fifth this year but he has done it by flying in only twelve events. He was out of the country for a number of the early - season contests so he didn't get into his stride properly until the Nationals. Nevertheless he did manage to place fourth in F1C at Easter in a flyoff (out of which he D/Td too early) and was third in Open Power at the 3rd Area event. He was sixth again in F1C at the Fourth Area event when a mysterious one-minute flight ruined a winning chance. At the Nationals he won the overall power championship with a tremendous performance, taking the Hales Trophy for 1/2A, the Eddie Cosh Trophy for the F1C and third place in the Open Power flyoff. An overall performance better by one place than Hipperson's which had equalled the previous best performance set by Ian Davitt a few years ago. He then went on to win the Club Champs in Open Power and took a close second place in the incredibly windy 1/2A flyoff at the last Area meeting of the year. He was also sixth place in Open Power at the Northern Gala and rounded off the season by winning the AM Power Bowl by winning the F1C Trials.

Phil Ball, who has topped this chart before, also got off to a slow start. His first placing was second in Open Rubber at the Second Area event, then again in the same class at Easter. He improved his points with a fourth in Vintage at the Spring meeting but stepped up the pressure by the Nationals where he won the Falcons Trophy for Slow Open Power and took third place in HLG. The Southern Gala proved successful for him in the same classes but he reversed the positions with a win in HLG and third in Open Rubber, having to settle for one place lower than his son Anthony. He managed a fifth in Open Power and third in Open Rubber at the Club Champs although he was only sixth in Open Rubber at the last Area event. He rounded off the season well by winning the Caton Trophy at the Northern Gala with one of the longest flyoffs of the year. He had a busy season flying in nearly twenty events.

The top three, who all come from the same club - Falcons - have reached their positions by excellent (and at times inspired) feats of competitive flying. As can be seen from the totals John Carter was actually second in the SMAE Senior Champs whereas John Cuthbert has come in above him in our points tally. A/1 at the Southern Gala has distorted these figures. Cuthbert won this with an excellent nine-minute total in atrocious wind - but again, there were fewer than six entries so the event did not count. Next year will be different. John Carter's early season saw a fourth in Open Rubber at the winter meeting and a third in Vintage in the Spring - his first ever Vintage placing! He was only sixth in F1A at Easter, but this was no guide to his later form in this class. At the Nationals things began to get going. He won the Model Aircraft Trophy for Open Rubber - something that had eluded him for twenty years! The next day he took a third place in F1A. Then followed an extraordinary run of Glider successes, right through to the end (much as his clubmate Cuthbert had done the previous year). He won Open at the Club Champs, then the Pilcher Cup at the Southern Gala. He was second in F1A at the final Area event, beaten only by the terrible wind that so afflicted Barkston Heath for that flyoff. All this after qualifying for the Open Rubber flyoff and making A/2 flights as a support event - with five maxes in record time! He came good again in Open Glider at the Northern Gala to lift the CMA Trophy with a flyoff flight that won by a huge margin. He then rose to take his first team place once again in Glider with a 'third' in the Trials at the end of the season. John had flown in 23 events and placed in almost half of them. For his birthday his wife presented him with ten litres of white emulsion and a paint brush! What is she trying to tell him?

Maintaining the Falcons Club's interests: John Carter accelerated his pace after the '88 Nats, where he was captured by the camera while awaiting the moment to launch.

Total flying

John Cuthbert flew in only sixteen events, all Glider, and placed in twelve! He got right down to it from the start with a win in A/1 at the Spring meeting after notching up a useful third place in Open Glider at the Winter meeting and a fourth in the same class as the 2nd Area event. He had a productive Easter, placing fourth in Open and second in FAI glider. If there was a peak it must have been during those three glorious days at the Nationals. I had the good fortune to watch his first few flights in A/1. I thought then that he appeared to be the closest thing to a 'total flying machine' that I had seen. Seemingly nerveless, utterly confident. He made the full score in A/1 look easy - and did it all before lunch. He was eventually beaten into second place in the resulting flyoff, which was a tragedy, but no one realised it at the time. The following day he won the massive Open Glider flyoff for the Thurston Trophy - once again with a confident flight made long before most of his opposition had their lines out. Then in FAI, after a difficult time with tricky and rapidly changing conditions from the dawn start through a day punctuated by wind, calm and downpours he stood in a tie at the top with Carter and Williams - all on a perfect 'six-max' totals. He watched his opponents drop time on their last flights, then launched confidently in neutral air knowing that he had made it. His win in F1A brought him not only the overall Nationals Glider Champ award but also the accolade of having come closer than anyone in history to the clean sweep in any one discipline at the Nats, and in the largest entered event at that. What a weekend. He went on to win the controversial A/1 event at the Southern Gala, then placed fourth in the same class at the 5th Area event. He finished this year with a 'second' in Open Glider at the Northern Gala. The Trials proved to be his only real disaster when right from the start he couldn't get it together; but sometimes it's better if everything goes wrong on the same day - it leaves the rest of the season clear. What is worrying is the damage he sustained right at the end of the year at the Crookham Gala. It would seem that his injury (bad enough in itself) has manifested itself into complications indicating a slipped disc. I am sure everyone would wish John both a speedy recovery and success in his new venture into the glider kit manufacturing business.

Russell Peers has topped our table and won the SMAE Championship for the second year. His points score in each of the classifications was very nearly twice his closest rival - but he did fly in 25 events! The reason he didn't break his previous record total of 100 was simply that the three of the power events in which he flew did not attract sufficient entries to qualify for SMAE points. (An illustration of the bad weather right through the season). Unlike many top competitors he is a real threat in two disciplines - both Power and Rubber.

Continued on p.174

MIND THE LINES

Ron Prentice looks at past, present and future Vintage control line affairs

THE RUBERY Hill rallies organised by the South Birmingham club – and Peter Martin in particular – are high spots in the Vintage control-line calendar, thanks to relaxed fly-for-fun activity with low-key competitions thrown in for good measure.

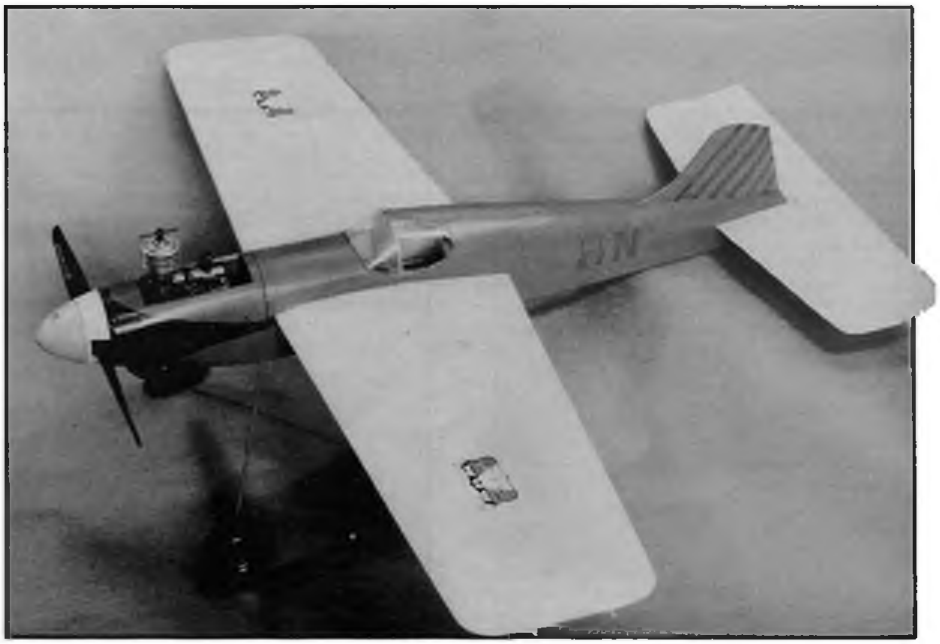
Because of other commitments I was unable to attend the Rally on 23rd October but Peter Martin, John Russell and Andy Brough have helped with this report.

Heavy overnight rain had cleared by 10am, though it remained very wet underfoot – but there was an almost total absence of wind. A fabulous day's flying was the result. Dozens of models (not all vintage) were flown, including a Skystreak 40, a 334G, a brace of Yoicks from Nottingham, an ED Racer powered Crackerjack, a Boxcar complete with Super Cyclone, a Mercury Musketeer, built from one of my kits, with Fox 35 up front (whew!); an Irvine 20 powered Hopit and that circular flying oddity, a Stooplate.

As far as Old Time Stunt was concerned most were happy to fly for fun, as the competition itself attracted just four entrants. These stalwarts were Alan Walker (Stunt King; AM35), Dave Nielson (Lil Abner; ST15) and the father and-son team of Steve and Lionel Haines, who aired an Enya .15 powered Ambassador and OS 35 equipped Foxstunter respectively.

Winner was Dave Nielson with two consistent flights totalling 477 points, not far ahead of Alan Walker. Lionel Haines was let down by his second flight; and last was father Steve who first flight terminated early thanks to a very lean motor.

The mandatory Midge Speed competition was organised this year by Eric Hawthorn. How pleasant to see that 'real' Vintage engines were in the majority – and Frog 150s took the first two places. Ray Gordon's Elfin 1.49 powered model will be one to watch once he has sorted out a consistent engine run.



Latest from the Prentice building board — his replica of Henry Nicholls' original Mercury Magnette. ED Comp Special provides the urge.

Brian Lister and Eric Hawthorn himself used AM15s (as I did a few years ago) and showed that they are on competitive terms with the Frogs and Elfins.

On the subject of Midge competitions, Andy Brough tells me that the rules will be changed for '89. Vintage Midge is for models powered by specifically-listed motors, and Classic Midge is meant for Vintage ball-raced motors; more news in due course.

Have a Go!

Visitors to Old Warden Vintage Weekend who witnessed Sid Sutherland and Ken Marsh back on the C/L handle after more than 20 years will remember the pure joy generated by this experience (see our report in the November issue). Afterwards Sid was compelled to put pen to paper about it, as follows:

'With a cry of "Mind the Lines!" the memories came flooding back. To see fellow West Essex Club member Dennis Allen in the judge's chair at the C/L circle certainly brought back the nostalgia – or was it golden memories? When I was asked to have a go I felt very apprehensive, having used only R/C transmitters for control (sometimes!) in the last twenty years. After watching fellow clubmate Ken March putting up a very creditable fight my ego took over, but standing out in the centre while you, Ron Prentice, started the Merco 29 Devil Bat (which you kindly supplied for us to fly) I must admit I thought "What am I doing out here?" The lines looked so short and the handle felt so small... "I hope I get one lap in, at least, before becoming giddy..."

'What a lovely surprise. With such a stable model my confidence soon returned. I remembered to keep the lines tight and to perform manoeuvres downwind – and to keep my eyes off the trees as they flashed by. Now I was really enjoying myself – trying manoeuvres, and extending myself sometimes; but Laurie Glover's splendid design

Below: Sid Sutherland and Doug Scott at evocative Epping Forest glade (see Have a Go!).

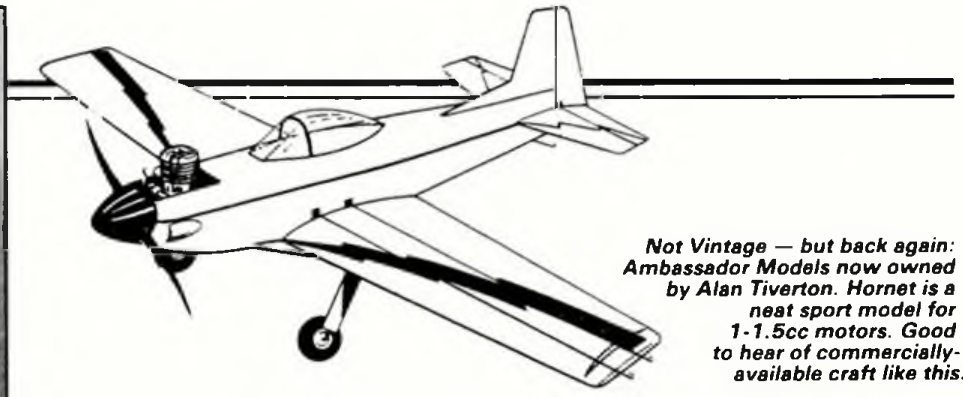
Old Time Stunt

1	D Nielson	Lil Abner, ST .15	477
2	A Walker	Stunt King, AM35	460
3	L. Haines	Ambassador, Enya .15	340
4	S Haines	Foxstunter, OS .35	298

Midge Speed

1	A Brough	Frog 150	92.57 mph	inc. 10% bonus
2	J Gibbs	Frog 150	87.56 mph	inc. 10% bonus
3	T. MacDonald	Frog 150	86.69	inc. 10% bonus
4	B Lister	AM 15	82.57	
5	E Snow	PAW 149	78.94	
6	E Hawthorn	AM 15	77.56	
7	D Burgess	PAW 149	75.64	
8	R Gordon	Elfin 149	74.78	inc. 10% bonus

Pics from the Nats. Top: Terry Taylor with his Foxstunter — always a popular choice. Above: Maurice Doyle from Belfast with his Tycoon. John Hamilton assists.



Not Vintage — but back again: Ambassador Models now owned by Alan Tiverton. Hornet is a neat sport model for 1-1.5cc motors. Good to hear of commercially-available craft like this.

kept me out of trouble. Truthfully, when the engine cut I was ready for more.

'I must thank you and Laurie for enabling me to recapture some of the atmosphere of those exciting, early control line days. You made my day; may your lines never go slack!

'To all modellers out there I say – try control line again and re-live those happy moments.'

Thanks, Sid; I'm sure your example will inspire others! A photograph submitted by Sid shows him and Doug Scott with an Oliver Cub powered stunter in Epping Forest. He tells me that flying in this particular glade brought back many memories, because it was at the same site that he and Ken Marsh were taught to fly control line by Fred Deudney in 1947/48. Fred's model was, he recalls, powered by a Mills 1.3 (what else!). It was flown by many members of the West Essex club for hours on end, until even the metal engine bearers became too hot to touch. It is sad to report that Fred Deudney is very ill at the moment following a nasty car crash and a stroke. If any of Fred's old friends would care to drop him a line via the Editor, I will arrange to have them forwarded to the hospital.

Stateside stunt...

I recently had a letter from my U.S. correspondent Tom Dixon in Atlanta, Georgia. Tom is a keen stunt flyer who publishes lists of vintage and modern plans which can supply. He has revamped several old Bob Palmer models, notably the Chief – now called Chief Instructor – and the upright-engined Thunderbird. The alterations include making both wing panels of equal size, a longer tail moment, a more rearward undercarriage position and a 'one to one' control system – effectively a Nobler set-up, built from Thunderbird components. Tom says it flies superbly with a Merco 35 or a Magnum 40.

Tom also sent me a photo of Lanny Castleberry's Mercury Crusader. I had already received a plan of this slightly-altered model, just when I had almost completed an original from the Amerang kit. Again Tom claims that a lengthened moment arm improves the flight characteristics. He makes the point that it is most unfortunate that Amerang have decided to discontinue making the Crusader kit, because they are popular in the States. I must say that mine was a very good flyer, the only problem being that I hadn't a good enough engine in it.

Lanny Castleberry's nephew Scott, who is only twelve years old, will be flying a similar Crusader in the US Nationals. It is powered by a Magnum 40 reworked by Tom Dixon who says, confidently, 'We fully expect young Scott to blow them away as he an excellent flyer and very coachable'.

...and new models

We have news of more control line kits soon to be on the market. Fellow club member Alan Chatfield, who formerly ran a model shop in Tiverton, has recently taken over Bowmans Models. Their range of models were all R/C, but Alan has now bought the rights to the Ambassador range of seven control-line models and will soon be preparing the first batch of kits. They are a mixture of 1.5 – 2.5 cc powered sport and stunt models of between eighteen and thirty-two inches span, which will appeal to the younger modeller. The Hornet looks particularly attractive. Watch out for them!

Still on the subject of kits, I have heard from Ted Fancher, who writes for the US magazine Model Aviation, that a new company called Control Line Classics is marketing several vintage era kits. Currently they have available Bob Palmer's Pow Wow, published in the March 1954 Model Airplane News. They also plan to produce the Oriental, a popular simple stunt model similar to the Veco Chief and also the original upright-engined Palmer Thunderbird. Ted also tells me that a firm called A.J.'s Free Flight Service, of 4840 E. Leisure, Fresno, CA 93727, is marketing the deBolt All American Senior, Ringmaster, P-51, YAK 9 and, of course, Barnstormer, which is so popular here and in the States. I wonder if these goodies will be available over here? A few months ago my brother-in-law, who lives in Boston, Mass, sent me a SIG Magnum Stunter kit. I can endorse the claim made about it in the November 1987 *Aeromodeller* kit review – although I have yet to build it!

Lanny Castleberry's fine Mercury Crusader. Slightly modified verson has extended tail movement for smoother manoeuvres.

The Broadlands club team. Models at rear have radial cowlings, just for variety.

Hover Bovver: Continued from p.139

favourite brand and colour of plastic film and you are ready to go (one member of our club chose a delicate, slippery shade of Thames mud brown; we call this aircraft the 'flying kite', at least in public, for in our part of Wiltshire 'Kite' are a sewerage lorry company...)

Flying - the good bit

Set up the engine so that it will keep running healthily with its nose up; it must tick-over reliably. A squeeze of the handle should give full power; when you let go, idle occurs. The engine should stop at a pull on the middle (throttle) line.

Real Ale is best hand-launched until you are familar with its ground handling. Hold elevator level, give full throttle and get your assistant to launch slightly nose-up. In fact it is safer for him just to let go of the model, rather than throw it, for line tension is crucial in those first few seconds. You will have plenty of power. The elevator, with its large size and plenty of movement, is sensitive but predictable. Test at first on a calm day.

When you are used to the model, try wing-overs - gentle at first, but then more and more steep until the model is climbing vertically. Now try entering the climb more slowly, and sharper, each time.

Too slow and you will merely land. Too sharp and the model will end up on its back.

Hover Bovver

Still in one piece? Time to try a bit of 'Hover Bovver'!

Make a number of circuits with the aim of slowing to landing speed exactly at the most downwind point every time. Now repeat, but at a height of four feet instead of ground level. Now squeeze the handle for full throttle and simultaneously bang in full 'up' elevator. The aircraft will rotate through ninety degrees and start to climb. Be ready to feed in 'down' if necessary to prevent a very low-level loop, and climb away vertically (or chicken out!). Do this time and time again. Soon you will be able to track back and forth by means of the elevator alone.

When you have mastered this and can 'S' up into a vertical climb each time, ease off the throttle just when the climb starts. The secret is gradually to use less and less power until the model hovers. Increase throttle to get out of trouble. You have plenty of power available.

By now you will have experienced the odd prang or tailslide into the ground, but keep practising until you can go up and down, and stop, at will. By then you will be able to do as much as me - so I can't help you any more!

In our club we have evolved some quite hairy stunts using this manoeuvre as a basis. We have successfully caught models by the wingtip during the hover; another favourite is to loop another model around the hovering one. If you try anything like this (and it is tempting) do be careful. There are bound to be mishaps.

At present I am working towards hovering two models at once, but as yet I can't even fly them together in the circuit. I know of only one modeller who can do this; namely, Charlie Crawley of the Finchley Club. Indeed, he can go even one better with 'three-up', following in that line of achievers which began all those years ago with Jim 'Fireball' Walker. Inspiration to everyone. So get hovering - and maybe you'll beat me to it!

Aeromodeller F/F Table from p. 171

I have long believed that he is actually better at Open Rubber than Open Power but he prefers the latter, so tends to fly it more. This year his success in everything else was probably eclipsed by his F1B flying in Galas and SMAE events, particularly the last one! He was third in Open Rubber at the Winter Meeting but flew only the class when he realised that Power, his first choice and in which he had placed second, was unlikely to attract enough entries to score points. He was then sixth in Open Power at the First Area event but switched to Rubber for the next to place third. At the Spring Meeting he was third in that four-way 1/2A power flyoff (won by Cooper) and sixth in Vintage. His season began to accelerate with wins at Easter; F1B for the Duce Trophy and Open Power on the same day. He was third in this class at the next Area event but he didn't score at all in the 4th despite making a full score in Open Glider for his Club Team effort and a creditable total in CDH.

By his standards he had a disappointing Nationals, particularly when one considers a number of his adversaries did startlingly well. However, second in Open Power and third in Tailless all helped the points along. He was certainly well ahead by this stage of the season because of his consistent effort. He then had a sensational second half to wrap it up. He placed in the points again at the Club Champs with a third place in Open Power. Then came the very windy Southern Gala when his two maxes in the Short Cup were enough to deter everyone else from even competing in the Power class! This gave Russell another trophy but no SMAE points. He then flew a full score in Rubber, which had a decent entry, and picked up the points he needed and the Flight Cup. A couple of quick flights with his 1/2A could easily have made him the first person ever to have won three SMAE Trophies on one day; but it was not to be. The turbulence had both flights down quickly but still enough for second. At the next Area event, flying in Team Power he took the top spot again and had an excellent Northern Gala with second places in both Rubber and Power. He wound up the season in his most spectacular style coming up from second position in the F1B Trials to take the lead and hold it right through to the end of the event in the most horrible weather, thereby winning his first place on a World Champs team, the Premier Shield, and the SMAE Thurston Trophy for the Senior Champs.

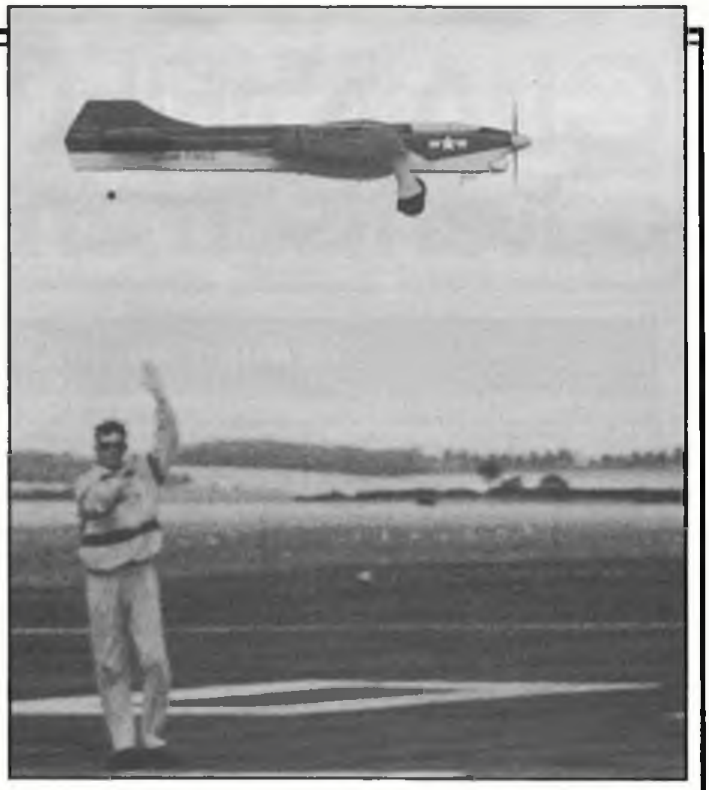
Cheerfully pedalling back from downwind, Phil Ball had a busy season which finished very strongly.

Russell became interested in the Senior Championships idea at the start of 1986 and, contrary to what one might have expected, his interest in it has, if anything, sharpened his flying performance in every class. It is difficult to imagine anyone coming close to him in his present form. Observing this it would appear that he is motivated more than his opposition; and it is this drive that contributes greatly to his success. His stock of airframes is vast but it's that little bit of difference in his attitude that allows him to use them well and give himself the edge. It now remains to be seen not so much how well he does in the World Champs - if he goes - but more, what effect exposure to that sort of contest might have on his attitude to the domestic program.

What is certain is that if he attends Argentinia then (despite the fact that it would be his first such International event) the rest of the World will be in the presence of probably the most highly-motivated contest free flighter there is.

When he won the Trials he might have been winning his first-ever contest. His enthusiasm was boundless. His laughter could be heard half-way across the drome!

WHAT'S ON



5th March
SAMS FUN FLY
Venue: Watford Leisure Centre. Indoor Lympne Trials event. Contact: George Wallbridge. Tel: 0763 88384.

5th March
1989 FALCONS MINI GALA
Venue: Driffield. Classes: 1/2, A/1, CDH (first round from 10-11.30am, then rounds of one-hour duration) and Mini-Vintage in rounds. Contact: Russell Peers. Tel: 0270 60893.

19th March
BMFA AREA CENTRALISED EVENT FF
Venue: Areas. F1A for KMAA and Plugge points;
O/R and O/P for Frog Senior. Contact: BMFA.

19th March
BMFA FIRST CENTRALISED EVENT CL
Venue: 3 Sisters. F2B, F2C, Open GY and British GY.
Diesel A and 1/2A Combat. Contact: BMFA.

25th March
WIGAN INDOOR MEETING FF
Venue: Wigan Technical College Sports Hall, New Market Street, Wigan 10am - 4pm. Fun-fly and P15 Duration. Contact: Peter Dean Tel: 0772 731127. **This is a Saturday meeting.**

25-26th March
BMFA EASTER MEETING FF
Venue: Salisbury Plain Training Area 10.
Saturday: F1A, F1B, F1C (F1B for Duce Trophy) - first four rounds. Sunday F1A, F1B, F1C - final three rounds; O/G, O/R, O/P. Contact: BMFA.

2nd April
BMFA SECOND CENTRALISED MEETING CL
Venue: 3 Sisters. F2B, F2D, F2C Team Trials for 1989
Eurochamps (invitation only). Contact: BMFA.

8th April
WIGAN INDOOR MEETING FF
Venue: Wigan Technical College Sports Hall, New Market Street, Wigan 10am - 4pm. Fun-fly, EZB and HLG. Contact Peter Dean Tel: 0772 731127. **This is a Saturday meeting.**

9th April
PETERBOROUGH MFC SPORT AND VINTAGE DAY FF, CL
Venue: The Embankment, Peterborough. 10am start. C/L: Old Time Stunt, Midge Speed, Yoicks Comp, Vintage A and B T/R, Vintage Concours, Fly for fun (mown grass circle). F/F: Jetex, KK/Veron/Stahl flying scale rubber, concours, small-field fly-for-fun. C/L Contact: Mick Taylor 0733 204484. F/F Pete Gibbons. Tel: 0733 314741.

9th April
BMFA SECOND AREA CENTRALISED EVENT FF
Venue: Areas. F1C for Halfax Trophy and Plugge points.
O/G and O/R for Gamage Cup.

23rd April
SPRING MINI AND VINTAGE MEETING FF
Power, HLG,
Vintage, SOP. Contact: BMFA.

23rd April
BMFA INDOOR SCALE NATIONALS FF
Venue: Alumwell Centre, Walsall. M6, junction 10. 8.30 to 5.30. Peanut, Open Rubber, CO_2/Electric, Air Racing. Pre-entry only by 31st March.
Fun events for Kit Scale and Jet subjects - entry on the day. Talks and demonstrations; large static display. SAE to Doug Sheppard, 13, Luckington Road, Monks Park, Bristol, Avon BS7 0UT. Tel: 0272 697595.

30th April
WITHAM CUP C/L AEROBATICS EVENT CL
Venue: Slip End recreation ground, near Luton. F2B, Class 2 Aerobatics. Contact P. Burgess via Glen Alison on 0923 772675.

29-30th April, 1st May
BRISTOL AND WEST WOODBURY WEEKEND FF
Venue: Woodbury Common. Saturday: Champagne Flyoffs in O/G, O/R, O/P; also Vintage. Sunday: O/G, O/R, O/P, Vintage to SMAE rules. Monday: Five-round combined FAI; Vintage to South Bristol rules. Contact: Elton Drew. Tel: 0454 415092.

7th May
THIRD AREA CENTRALISED MEETING FF
Venue: Areas. F1B for Weston Cup and Plugge points; O/P for White Cup; O/G. Contact: BMFA.

7th May
THIRD BMFA CENTRALISED MEETING CL
Venue: Hullavington. F2B, F2C, Open GY, British GY, B T/R, F2D, Handicap Speed. Contact: BMFA.

21st May
MORLEY & DMAC VINTAGE EVENT FF
Venue: RAF Church Fenton. Vintage Cabin Duration for models under 60in span. Authentically must be proven; plans, etc. must be provided. Contact: Stan Horne. Tel: 0532 610429.

27-29th May
BMFA BRITISH NATIONALS FF
Saturday: A/1 for British Airways Trophy. CDH for 308 Trophy. 1/2A Power for Hales Trophy, HLG for HLG Trophy CO_2 for Sparklets Trophy.
Sunday: O/G for Thurston Trophy, O/R for Model Aircraft Trophy, O/P for Sir John Shelley Trophy. Vintage for Jubilee Trophy, Women's Cup, Junior Open for Frog Junior Trophy.
Monday: F1A for Ronytube Trophy. F1B for Boxall Trophy, F1C for Eddie Cosh Trophy) FAI events start at 6am), SOP for Falcons Trophy, Tailless for Lady Shelley Trophy.

3-4th June
3 SISTERS GALA CL
Venue: 3 Sisters. Open Speed, F2B and Class 2 Aerobatics, F2C, Open GY, British GY, A Combat, F2D Vintage A and B T/R, OTS, Midge Speed. Contact: John Noble. Tel: 061-790-4056.

11th June
FOURTH AREA CENTRALISED MEETING FF
Venue: Areas. SOP for Astral Trophy, O/G for Plugge points and Model Engineer Trophy for teams. CDH. Contact: BMFA.

18th June
CHILTERN CUP C/L AEROBATICS EVENT CL
Venue: Slip End recreation ground, near Luton. F2B, Class 2 Aerobatics, Vintage Aerobatics. Contact Rex Landon via Glen Alison on 0923 772675.

18th June
F1E TRIALS
Venue: Sheffield. Contact: BMFA.

2nd July
FOURTH BMFA CENTRALISED (PROVISIONAL) CL
Venue: TBA. F1B, F2C, Open GY, British GY, F2D, Handicap Speed. Contact: BMFA.

9th July
BMFA SUMMER MINI MEETING FF
Venue: Barkston Heath. A/1, CDH, HLG, 1/2A Power, Experiment Mini Vintage (small cash prizes) not plaques; does not count towards Senior Champs points. Contact: BMFA.

9th July
MORLEY INTERNATIONAL SILENT DAY FF
Venue: Heath Common, Wakefield. Events: P30, Mini Vintage up to Wakefield size, CDH, Dart Power. Contact: Stan Horne. Tel: 0532 610429.

16th July
KNAVESMIRE FREE FLIGHT ANCIENT AND MODERN MINI EVENT FF
Venue: York Racecourse. Contact: John Pool. Tel: 0757 703060.

16th July
BMFA S.E. AREA OPEN FREE FLIGHT EVENT FF
Venue: Ashdown Forest. Contact: Mick Howick.
Harriers, Hare Lane, Blindley heath, Lingfield, Surrey RH7 6J8.

22-23rd July
BMFA SHOW (PROVISIONAL)
Venue: To be announced. Contact: BMFA.

25-30th July
1989 CONTROL LINE EUROCHAMPS CL
Venue: 3 Sisters. Contact: BMFA.

30th July
BMFA CLUB CHAMPS FF
Venue: Driffield, O/G, O/R, O/P for Club Champs. Contact: BMFA.

30th July
SHUTTLEWORTH MODEL GROUP OPEN DAY FF,CL
Venue: Old Warden Airfield, Biggleswade, Beds. 9am - 6pm. General model flying of all types. Contact: Mick Staples. Tel: 0223 241978.

5-6th August
WOODVALE INTERNATIONAL RALLY
Venue: RAF Woodvale. International R/C events.
Trade stands. Comping. Vintage Car Rally. Competition and Camping. Contact: John Armstrong. Tel: 051 5266857.

19-20 August
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Venue: Plumpton Racecourse. 10am - 6pm both days.
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27-29th August
BMFA RADIO CONTROL, CONTROL LINE AND SCALE NATIONALS (PROVISIONAL)
Venue: Barkston Heath. Details to follow. Contact: BMFA.

1st September (Friday)
BMFA SOUTHERN GALA FF
Venue: Little Rissington. O/G for Pilcher Trophy, O/R for Flight Cup, O/P for Short Cup, 1/2A for Quickstart Trophy, CDH, HLG. Contact: BMFA.

3rd September
SHUTTLEWORTH MODEL GROUP SILENT DAY FF
Venue: Old Warden Airfield, Biggleswade, Beds. 9am - 6pm. Al types of model flying but no i/c engines. This includes ground running! Contact Mick Staples. Tel: 0223 241978.

10th September
BMFA FIFTH AREA CENTRALISED EVENT FF
Venue: Areas. O/P for Plugge points and Keil Trophy for Teams, F1B for Gutteridge Trophy. A/1. Contact: BMFA.

17th September
BMFA NORTHERN GALA FF
Venue: Driffield. O/G for CMA Trophy, O/R for Caton Trophy, O/P for Hamley Trophy. Contact: BMFA.

17th September
BMFA FIFTH CENTRALISED EVENT CL
Venue: Hullavington. F2B, F2C, Open GY, British GY, 1/2A, T/R, F2D. Contact: BMFA.

24th September
DOUG BLAKE TROPHY C/L AEROBATICS EVENT CL
Venue: Slip End recreation ground, near Luton. F2B, Class 2 Aerobatics, Vintage Aerobatics. Contact: Glen Alison. Tel: 0923 772675.

24th September
BMFA SIXTH AREA CENTRALISED EVENT FF
Venue: Areas. O/R for Plugge points and Farrow Shield for Teams. F1A for SMAE Cup, 1/2A Power. Contact: BMFA.

7-8th October
BMFA FIRST EUROCHAMPS TRIALS CL
Venue: TBA. F1A, F1B, F1C. No trophies. Possible 8am start. Contact: BMFA.

15th October
F1E EVENT SHEFFIELD FF
Venue: Sheffield. F1E for CMC Trophy. Contact: BMFA.

15th October
BMFA SIXTH CENTRALISED EVENT CL
Venue: 3 Sisters. F2B, F2C, Open GY, A and 1/2A Combat, Handicap Speed. Contact: BMFA.

21-22nd Octonbr
BMFA SECOND EUROCHAMPS TRIALS
Venue: TBA. F1A, F1B, F1C. Contact: BMFA.

22nd October
MORLEY & DMAC 20TH BIRTHDAY GALA
Venue: Alamein Barracks, Driffield. Fly-for-fun day. Vintage and Power comps. Engine starting competition. Contact: Stan Horne. Tel: 0532 610429.

FF suffix to event title indicates a free-flight contest; CL indicates control line. BMFA contacts are: Ian Bracken on 01-263 9849 (FF) and Richard King on 01-890-4504 (CL). For more details check with Free Flight Scene and From the Handle columns where frequently updated information will appear.

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Red (S)	✓	✓
Dark Red (S H66)	✓	✓
Light Green (F)	b	-
Light Green (R)	b	-
Dark Green (H33)	✓	-
Tropic Blue (S)	✓	✓
Light Blue (H26)	b	★
Airforce Blue (F)	-	-
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Dark Blue (H24)	✓	✓
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Clesr	-	-
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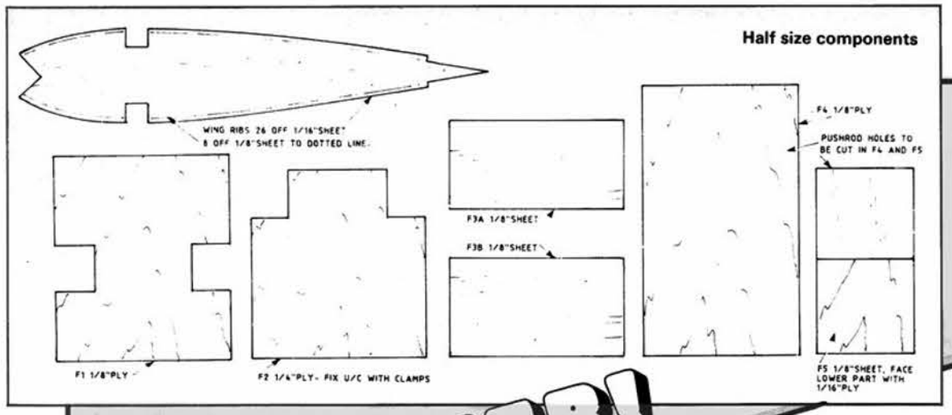

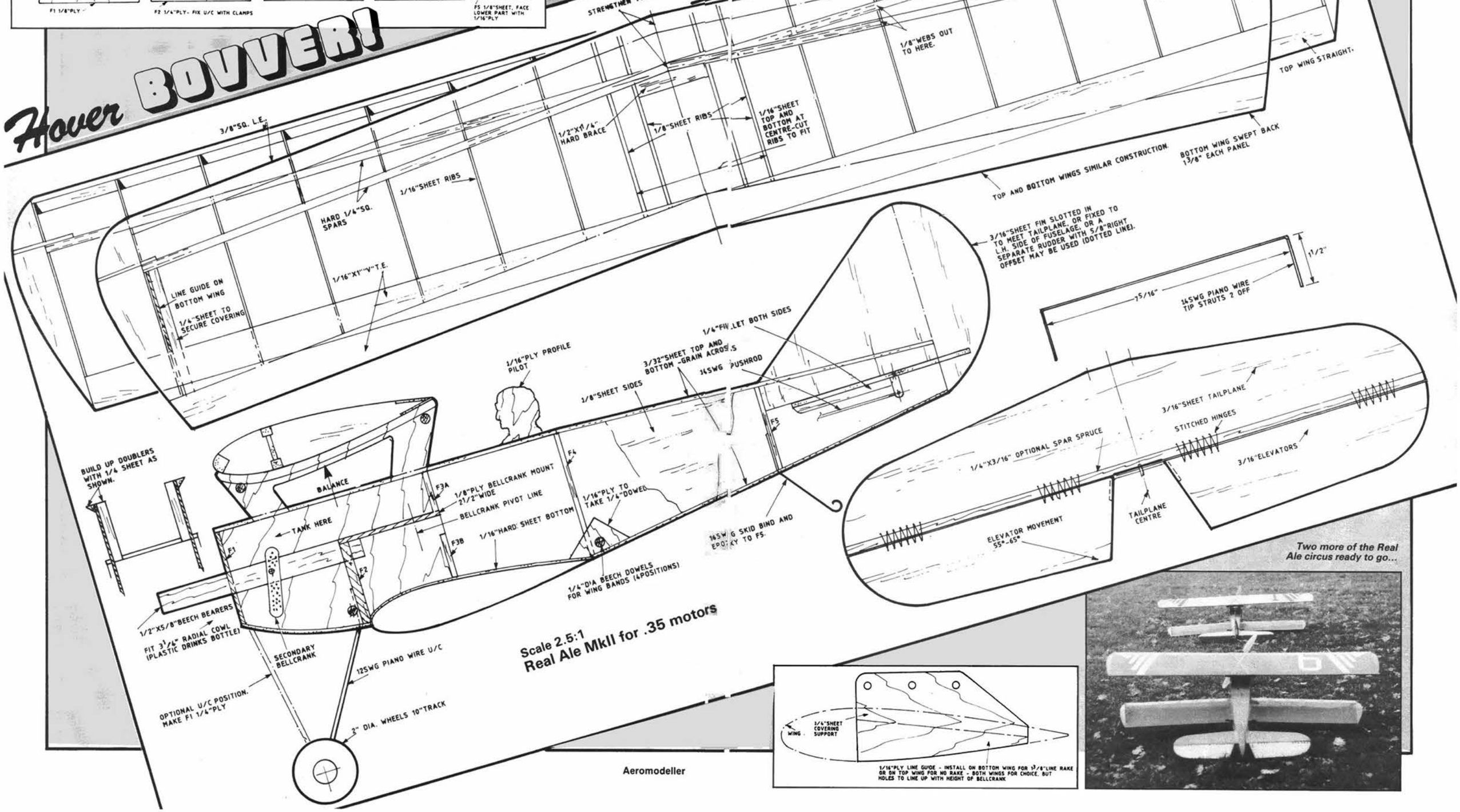

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Two more of the Real Ale circus ready to go...

Links to the plans

The issue comes with a free plan (Le Veau Lent) printed front/back on a pull out banner of four sheets. The banner is not included in this document.

HOVER BOVVER by Chris Bradford
Stationary Control Line Flight "Prop Hanging" Plan. See also the union page.

Document Page: 10

Le Veau Lent by Rene Jossien
FF Power from 1949 revisited by Mike Green
https://outerzone.co.uk/plan_details.asp?ID=10004 ...
Document Page: 25

Orcrist by S.R. Jones
CL Combat revisited by Frank Smart
https://outerzone.co.uk/search/results.asp?keyword ...
Document Page: 28

Hover Bovver union page by
Added with the only purpose of giving a panoramic view of the plan.
Document Page: 53