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JULY 1987

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AERO MODELLER



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Editor	<i>Geoff Clarke</i>
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Cover Story:

Amidst Toledo bustle and hurly-burly Tom McCoy proudly displays his superb vintage Lanzo Bomber. Patriotically finished eight-foot masterpiece is Orwick 64 powered and R/C Assist - note that half-elevator for longitudinal control. Our Expo photo-report is on pages 368-369. Photo Ron Moulton.

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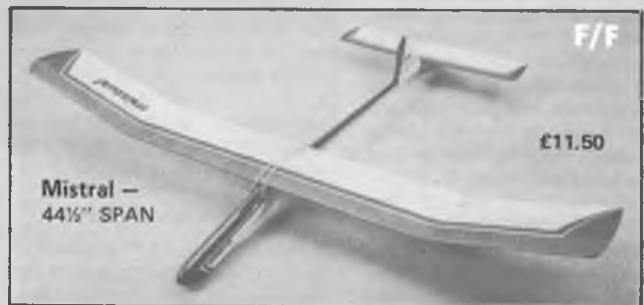
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HANGAR DOORS

'Bom' away!

The latest CIAM Plenary Meeting, held in Paris in April, contained much of interest. Our major report is elsewhere in this magazine; but here we can distil the major points for your immediate interest. The 'builder of the model' rule has been abolished for R/C Glider classes F3A, F3B and F3D. Of course, many - but not all - craft competing in these events use moulded components. . . Further R/C news is that in the Scale class engine size restrictions have been removed, and the weight limit raised to 7kg. Most encouraging for newcomers is the provisional rule for a new small power class, F1J, with 1cc the maximum engine capacity. We'll have more on this; meanwhile read our report and tell us what you think!

Jean's machine

One of the most famous of the Shuttleworth Collection's exhibits is the Percival Gull Six G-ADPR which, piloted by Jean Batten in the mid-thirties, made a series of record-breaking achievements. Most notable of these was the first-ever England to New Zealand flight in 1936, the journey taking 11 days, 45 minutes. After wartime impressment the Gull was repurchased by Percival Aircraft, whence it passed into the hands of the Collection in 1961, maintaining a full career of display work until the late '60s when - in common with so many other all-wood aeroplanes - it was found in need of extensive work. Lack of resources halted this task at intervals over the years; but as regular visitors to Old Warden will know, the Gull has recently been retrieved from store to

enable a structural survey to be carried out. With the glad news that much of the airframe is sound, Hunting Associated Industries have decided to bear the cost of getting Jean Batten's Gull back into the air. Work will be carried out at a number sites, and Old Warden re-assembly is scheduled for the end of the year. Look out for it - and why not celebrate the occasion by building a flying model of this historic machine?

Latest news is that Percival Mew Gull G-AEXF, owned by Des Penrose and currently being rebuilt in 'Cape Town' trim (we had a recent phone call asking if we could help with instrument panel details - we could) will be kept at Old Warden; so enthusiasts of British record-breaking aircraft are in for an exciting time next season.

Scandinavian Open

News of this International F/F competition comes to us from Per Grunnet of the Fritflyvnings-Unionen in Denmark. This year the event counts as a World Cup contest. It takes place on 3-5th July at Revingshed in the southern part of Sweden, less than one hour's drive from Malmo, near the city of Lund. The flying field is a large area normally used by the Swedish Army for training purposes. There are some trees but the site is more than adequate for a max in most wind directions.

It is hoped that a school will be used to house competitors. Camping at the school or close to the flying field is also permitted. As last year, the bulk of the timekeeping will be done by the competitors themselves. The contest begins on Saturday, 4th July. Round times will be decided at a 10am briefing.

All modellers are invited to participate. Entry fee is 100 kroner, to be paid on arrival or at the briefing itself. For more information, contact Thomas Koster at Harlosevej 184, DK-3400 Hillerod, Denmark.

Applecore arrival

Newly at the Fleet Air Arm Museum at Yeovilton is the world's only Fairey Albacore. The fuselage and tail of this machine was restored by Viv Bellamy from components retrieved from all over the World, including a control column which was found at the Museum's own 1985 Aerojumble! Other bits came from further afield; for example, a major part of the rear fuselage came from Norway. Programme note for film buffs: the 'Norwegian' Albacore was shot down in 1941; observer on board was Commander Arthur Keep who not only took part in a mass escape from the PoW camp in which he was subsequently interned but was the actual 'Forger' upon whom was based the character played by Donald Pleasance in 'The Great Escape'. Arthur Keep was present at Yeovilton when the Albacore arrived on 15th April; also there was the Telegraphist/Air Gunner on that fateful flight, Harry Griffin. The Albacore's wings are not yet ready to fit, but it is hoped that the complete aeroplane will be ready by July.

Just in case you're thinking of spending a few bob on aircraft restoration we can reveal that the cost of bringing this machine to static-display condition - it is not destined to fly - is a cool £100,000...

Ah-tissue!

Don't you wish that you could buy nice, light sheets of tissue in



a fresh variety of colours to give extra zip to the finish of your latest model? George Wallbridge could have just the thing for you. Research has borne fruit and from 'somewhere in Europe' - we say no more - has come the latest addition to SAMS' range of goodies - Superfast tissue. It's colourfast, it shrinks and handles like 'new-style' Jap, and it's 10% lighter, says George, than a certain other respected make...

We saw it on sale at the Indoor Scale Nats, and can confirm the myriad range of reds, blues, greens and yellows... Not only that, but 'antique linen', olive drab' and 'silver grey' are there too, plus good old plain white. Each 30x20in. sheet costs just twenty pence. We bought some...

More good news: that electric-power man, Derek Knight, hasn't yet forsaken CO₂. The famous Knight and Pridham Sodastream adaptor is once again available at £16.75 including postage from George at SAMS.



At left, we see the recently-photographed mortal remains of Jean Batten's Gull G-ADPR which, as reported above, is soon to be resuscitated into flying trim; we look forward to seeing it back at Old Warden. Occasional 'full-size' restoration news will appear in these pages. If the subject is one likely to interest aeromodellers. Above: This camera bird was flown by Clive Hall to capture stunning footage of storks in transit across the Strait of Bosphorus for the BBC programme 'In-Flight Movie', as reported last month. To find out more, read Clive's own account in the July issue of Radio Modeller.

Here's an inspirational sight - the fuselage of the FAA Museum's newly restored Fairey Albacore (see 'Applecore arrival'). Fancy a flying model? A fifty-inch version by Martin Fardell was published in our companion magazine RCM&E back in 1970; yes, it was intended for radio but it still looks ideal for F/F too. . .



Look for their advertisements in future issues of *Aeromodeller*.

Perhaps this is the time to wonder why more use is not being made of nitrous oxide (N_2O) as a propellant for Telcos, Sharks and Modelas? The Vintage magazine SAM 35 SPEAKS carried out some tests a couple of years ago — cartridges, the same size as CO_2 bulbs, are available from Boots Cookshops — but they seem not to have caught on. Editorial tests indicated that they were a happier power source in wintry conditions. Has anyone tried 'em recently?

Brumfly '87

Stafford Screen has sent us details of this one-day F/F event, to be run by the Birmingham MAC at RAF North Luffenham on 28th June.

Competitions will be held for Open Power, Open Rubber and Open Glider; 1/2A, Coupe d'Hiver and A/1 Glider. There will be a 10am start, and all events will be flown in five rounds from a line. The intention is to fly all classes to a three-minute max with the exception of one round (probably the first) which will be flown to 4 mins. A rigid code of conduct for model retrieval will be announced and this will be firmly enforced, with disqualifications threatened if discipline is breached...

Further details available from Stafford at 66 Stevens Road, Woolecote, Stourbridge, West Midlands DY9 0XN; or telephone 0384 396535.

Want to be a MADMAC?

Steven Fielding, Secretary of the Morley and District MAC, tells us about this club's activities:

'You don't have to live in Morley to be a member of MADMAC, as our current membership is from a much wider area of West and South Yorkshire.

'Our activities are almost entirely in the free flight area, with members actively flying in all the outdoor duration classes, and very effectively too as we have fliers who are regularly in the top placings. Vintage sport flying has now become as important to the club, with nearly half our members belonging to SAM35 as well as to the SMAE; and after an absence of several years, free-flight scale is up and coming again. Unlike many free-flight clubs, we do have an active club life away from the competition field, with monthly meetings throughout the year (fortnightly in winter) with a busy programme of events, as well as information and plan exchanges. In addition, we help members by supplying 'hard to get' pieces of equipment at reasonable prices.'

Live in the area? Interested in seeing what's what? Contact Stephen for more information on 0274 493080.

Copy this!

Want to tell us about *your* club's forthcoming events or latest bit of news? Then you'd better not leave it too late for inclusion — magazines do take longer to prepare than you might imagine and we'd hate to miss you. Just to help you, here are *Aeromodeller's* final copy dates for the rest of the year:

September issue:	1st July
November	1st September
December	1st October

If you have in mind a more

substantial feature, allow more leeway! And on this subject — if you have an idea or two, why not first give us a ring at the *Aeromodeller* office to discuss it? We'd love to hear from you!

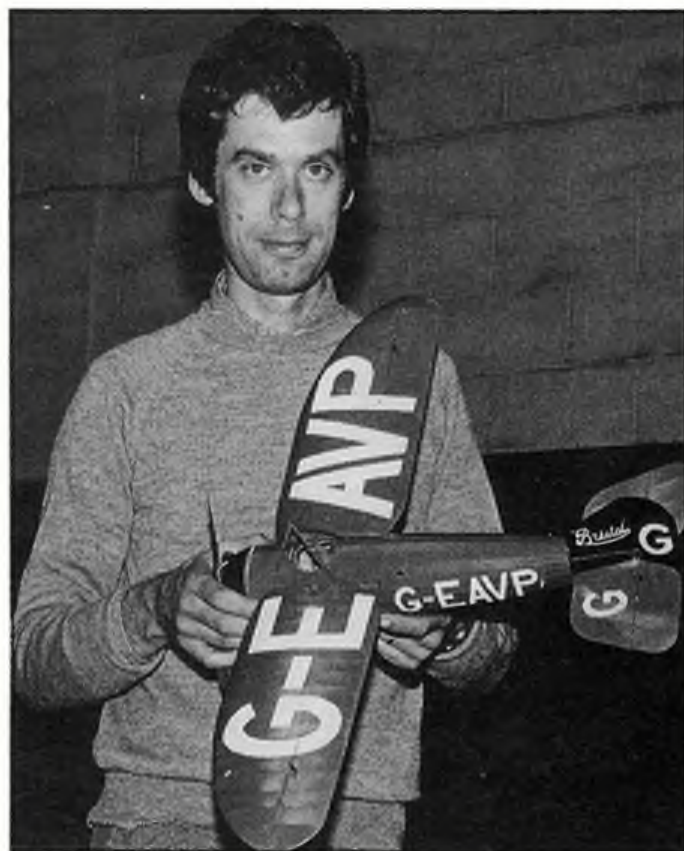
More on Scale Weekend

This issue should be out *just* before Midsummer Scale Weekend.

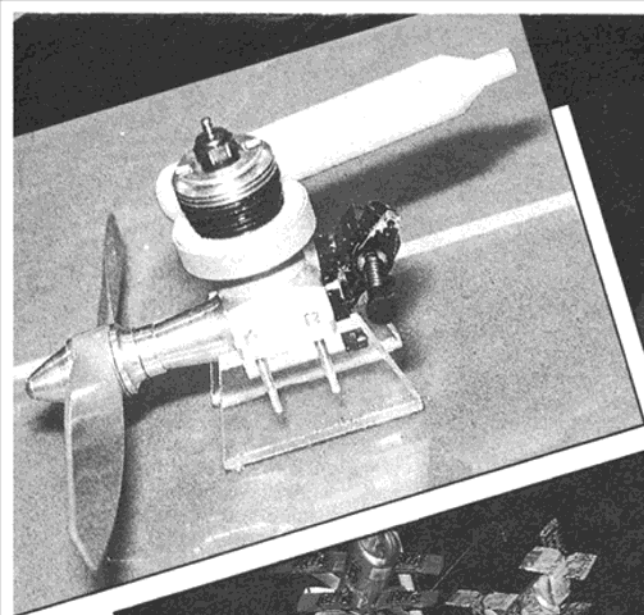
so we'll briskly tell you that a full list of non-R/C events will be posted at the ASP tent. And note — there will be a KK/Veron Scale Kit mass launch event, as last year, to augment the fun and games named in the June issue. See you at Shuttleworth!

Heavenly Comet

Hot news is that the Shuttleworth Collection's DH88 Comet 'Grosvenor House' has taken the air for the first time in forty-eight years. The post-restoration flight took place from Hatfield on Sunday, 17th May; lucky participants at our Large Scale Day at Old Warden on that day were able to see the crimson racer over-fly on return to its British Aerospace home. As for the future, there is no doubt that G-ACSS will be an immensely popular display machine. Look out for it! Meanwhile we trust that this trouble-free 'first' flight is sufficient reward for all who have been associated with the sometimes switchback progress of this worthwhile project.



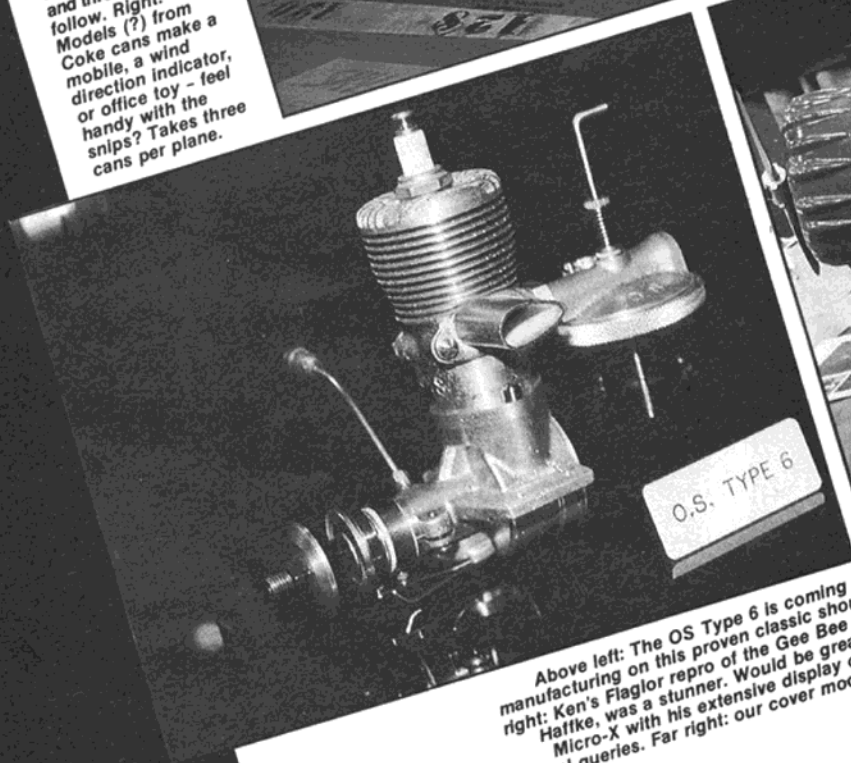
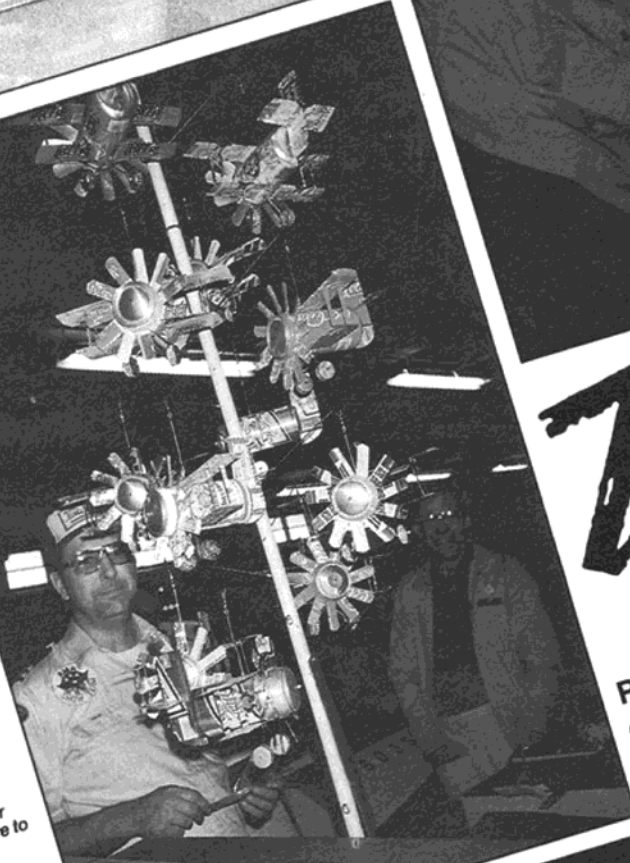
Clock the contributors, No.1: Here's Scale correspondent Bill Dennis at the Indoor Scale Nationals (reported elsewhere in this issue). Actually, we had to include this shot because it depicts Bill with his '3rd in Open Rubber' Bristol M1D — *Aeromodeller's* full-size plan for 'May'.



Toledo

R/C Expo it may be titled but Toledo offers a rendezvous for MECA, SAM, NFFS and all others interested in classic aeromodeling

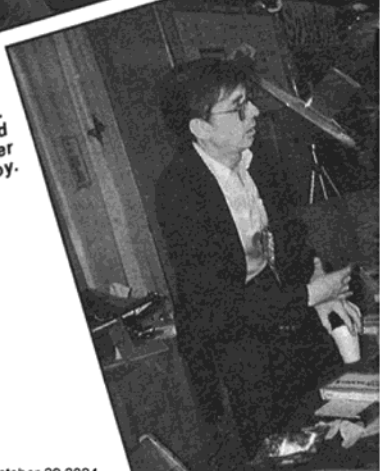
Above: Cox are back with the .074 Queen Bee plus designed silencer and throttle - more to follow. Right: Models (?) from Coke cans make a mobile, a wind direction indicator, or office toy - feel handy with the snips? Takes three cans per plane.

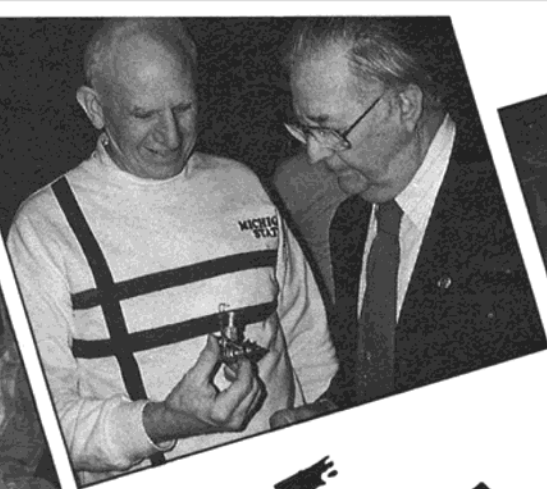


O.S. TYPE 6



Above left: The OS Type 6 is coming back into production! Modern manufacturing on this proven classic should attract many orders. Above right: Ken's Flaglor repro of the Gee Bee Y, expertly modelled by Henry Haffke, was a stunner. Would be great for C/L scale stunt! Right: Mr. Micro-X with his extensive display of rubber free-flighters answered perpetual queries. Far right: our cover model, the 96in. Chet Lanzo Bomber with Orwick 64 by Tom McCoy.





Topics

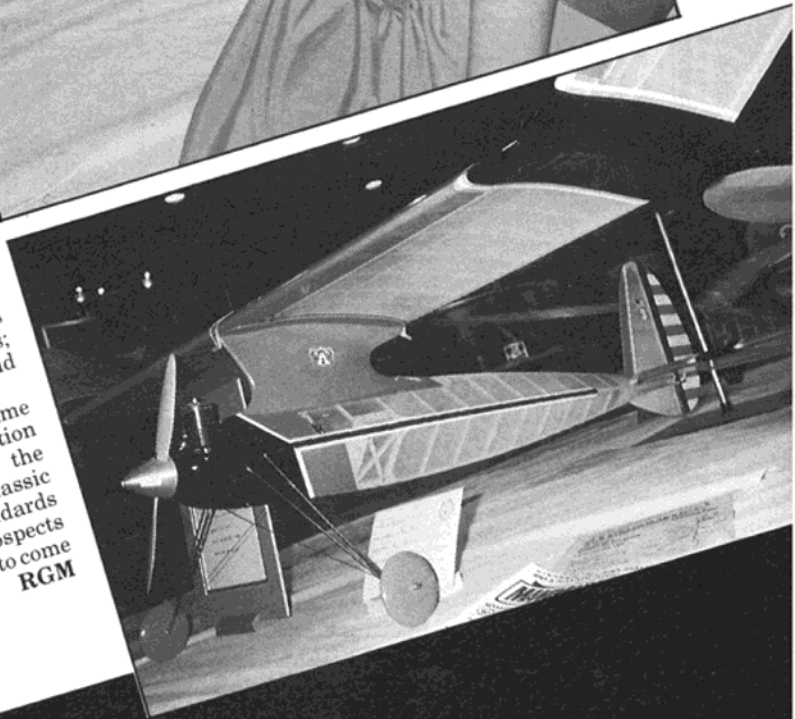
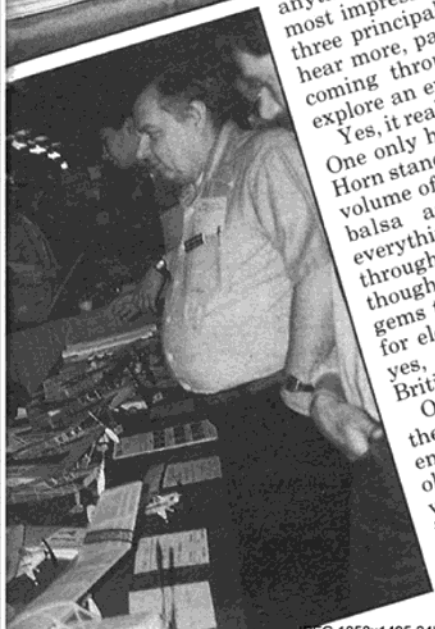
IT'S A HEARTENING THOUGHT that in the midst of 291 stands at America's most important R/C Expo, run annually by the Weak Signals Club of Toledo, Ohio, one can find outstanding and strictly non-R/C exhibitors with crowds around them snapping up the goodies. The Swap Shop has always been a major feature of this show, now in its 33rd year. We don't know of anywhere else to match the spectacle of hundreds of tables literally bending under the weight of motors, kits, partly-made models and every kind of junk imaginable, most of which actually changes hands during the three busy days. All this material is naturally vintage stuff; most of it maturing into its fortieth year. But elsewhere there are the stands for the Repro Engine people, amongst whom we must highlight Herb Wahl, who has two simply magnificent 'new' repros of the Bunch Tiger. Then there's Campbell's Custom Kits, who travelled all the way up from sunny Florida with a fascinating list of rubber jobs, and were acting as an agency for many other sources, including Micro-X who were exhibiting independently, Peck, Blue Ridge, American Junior and the old Comets. Grouped next to the popular Campbell stand were Easy Built Models, down from Ontario in Canada. If anything, this company's range was the most impressive and a great credit to the three principals of whom we are sure to hear more, particularly as one of them is coming through to Europe this year to explore an exporting situation.

Yes, it really was a back-to-balsa Toledo. One only had to struggle past the Hobby Horn stand in the main arena to realise the volume of interest in true stick-and-sheet-balsa assembly. Hobby Zaic's books everything from Frank Zaic's books through to American kits you never thought to be still available. Among the gems there we found folding prop blades for electric powerplants, rubber supplies; yes, even an emphasis on the good old British diesel.

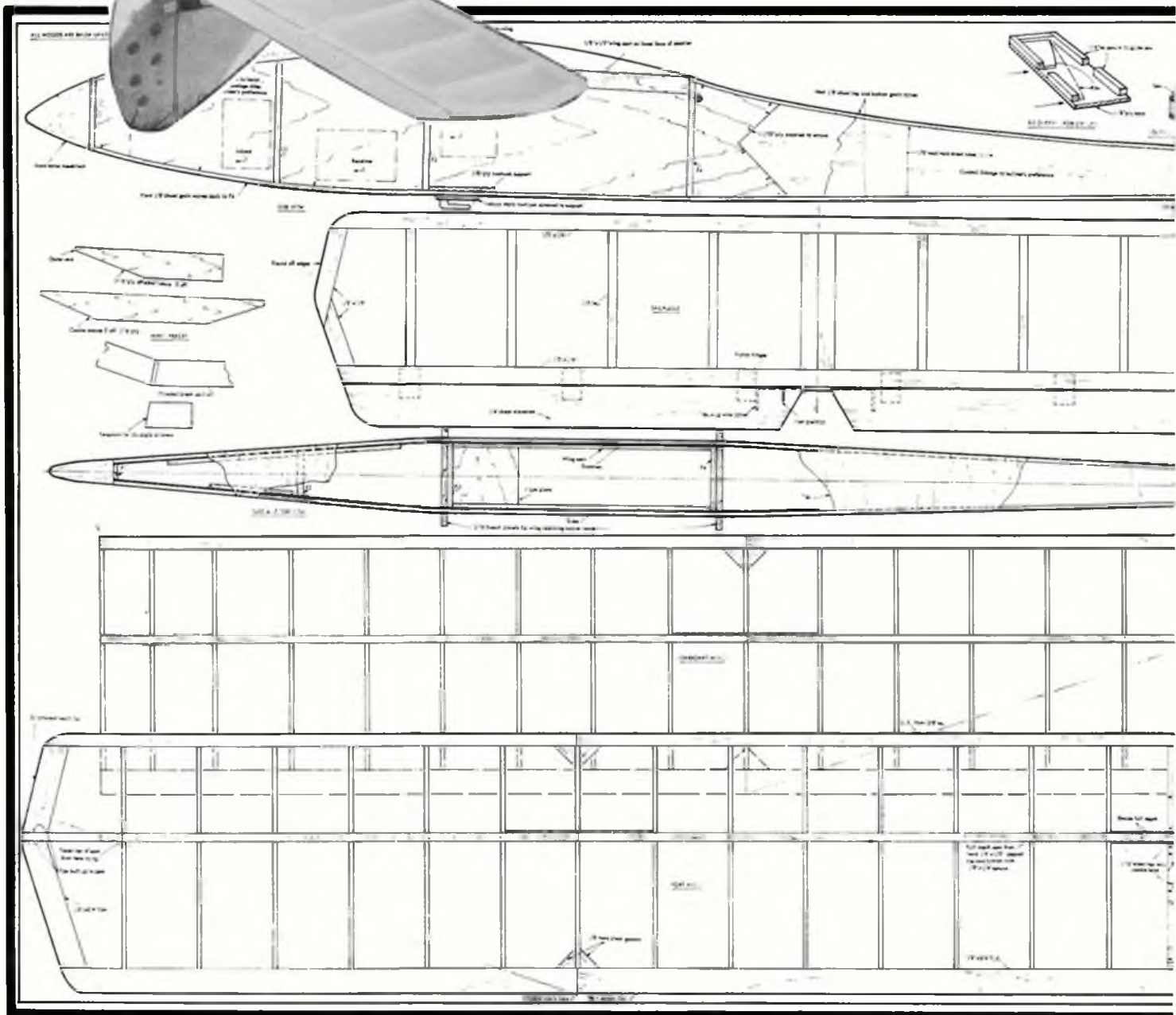
OS Engines are getting into the same theme by putting the Type 6 ignition engine back into production. From the obvious interest the prospect of a classic vintage engine made to modern standards is among the most encouraging prospects — and a vital indicator of trends — to come out of a very busy Toledo.

RGM

Main picture, top: The Swap shop. 'How much for this almost new Bunch Tiger?' was typical talk over 100 tables. Above left: Veterans Karl Spielmaker and Joe Dallaire are studying a replica Shereshow .16 while Brian Beck's Spook 72 with Ohlsson 60 (above) was covered with translucent silk. Miss Weak Signals Kelly Ferrall, at left, graces Orest Drobey's metal finish Ryan STA to show the finer points.



SUPER LU





Try R/C Vintage Soaring with this enlarged version of an old favourite. Mike Chiddick explains how

It's all a coincidence

Lulu Mk III came about as a result of a string of coincidences. The first was when a colleague at work lent me a batch of early *Aeromodellers*. At the time Keith Williams and I were on the look out for a 'different' Vintage power model! In the November 1949 magazine there happened to be a lightweight contest glider, the Lulu... Coincidence Two was when George Stringwell, in the course of a talk at the Soaring Association, mentioned that he had recently met John Barker, whom he remembered as Lulu's designer. The final coincidence was the rapidly approaching inaugural Vintage glider competition at Frankley. In the time available it was too late to build a Sunspot or Thermalist, but, we thought, why not have a go at Lulu? We were both attracted by the straightforward lines and simple construction, particularly the single-spar, parallel-chord wings. To give the model more appeal and to avoid the need for micro servos we decided that a 72in. version should do the trick. From scaling up to first flight (on the morning of the contest) took about two weeks of spare time. John Barker reckoned the original version took him four hours. That's quicker than my favourite glue takes to set!

Hardly any changes have been made to the original design; just a few minor alterations to allow radio gear to be fitted. We found that carrying the rudder line from the fin right down to the underfin gave excellent rudder authority in flight. The longish tail moment also gave plenty of elevator response. Composite spruce/balsa main spars can cope with an enthusiastic towline operator and the weight of the radio gear.

Did it take long to build, Mister?

No, for it really is all very straightforward, but a few comments in addition to the notes on the plan may be helpful.

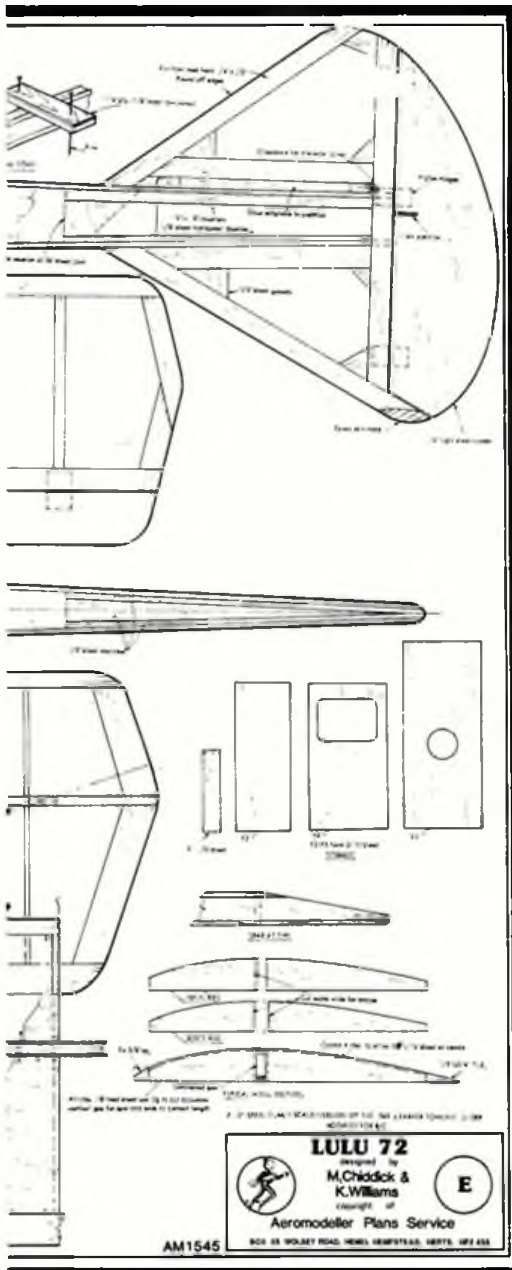
Easier to build and more-accurate wing assemblies result from using the rib-cutting jig shown on the plan. This type of construction adopted demands good, consistent joints between the rib ends and the full-depth spar; the jig will provide them. Use a sharp knife to cut the profile

and a razor saw to cut the ribs to length. Make up two complete main spar assemblies, cut and rejoin the tip sections with the dihedral braces, and finally taper the tip profile before assembling the wing panels. Use either 1/16in. ply reinforcement at the centre section to make a one-piece wing or insert a tube into the spar assemblies for a joined wing. The bigger-than-original trailing edge section is notched to avoid covering-induced droop. During assembly the full depth spars can be held down by making some ply/balsa saddles and using 1.1/2in. pins or rails (see sketch on plan).

The secret of an accurate fuselage is to select a really good pair of evenly matched sheets for the sides. Thixrofix the doublers in place and drill the wing dowel holes before assembling. Bring the sides together with the two centre section formers and use the wing dowels to help hold the formers square while the glue dries. Pull in the nose and tail, but remember to put a slave sternpost in position between the sides; this will form the slot needed for the fin assembly.

Just a couple of points to watch when it comes to the tail unit. Above all, use straight-grained medium stock for all these components except for the underfin which needs to be of more robust material; also, rub some epoxy into the lowest section of this component as it is bound to get scraped during landings. We used figure-of-eight stitched hinges on our prototype as we felt this was more authentic than mylar strips, although they would do the job just as well.

A careful search through our collections of hoarded items produced just sufficient tissue to complete the model. This process also determined the colour scheme; black fuselage, and white flying surfaces. The wings were covered in heavyweight and the tailplane and fin in a medium tissue filched from some long-forgotten kit. Lightweight tissue was used on the fuselage. Being lapsed tissue coverers we were both pleased, if not a little surprised, with the overall effect when the model was finished. A modern puncture-proof material would make sense if you intend to fly off the slopes, but for Vintage competition flying film is hardly appropriate.



Plans for this Lulu 72 are available from ASP Plans Service, 9 Hall Road, Maylands Wood Industrial Estate, Hemel Hempstead, Herts HP2 7BH. Price is £3.80 including postage.

'What's it like to fly?'

The answer is 'absolutely great'; with the centre of gravity on the main spar all that was needed was a couple of hand launches and then it was straight up the line. The original towhook position was used but this is probably a bit too far forward (John Barker must have been able to run fast as he can build!). On the line the model handles beautifully because the underfin always works in clean air, giving excellent rudder response. The wings will stand energetic towing without any problem and although we expected the leading edge configuration to produce a sharp stall, this turned out to be quite

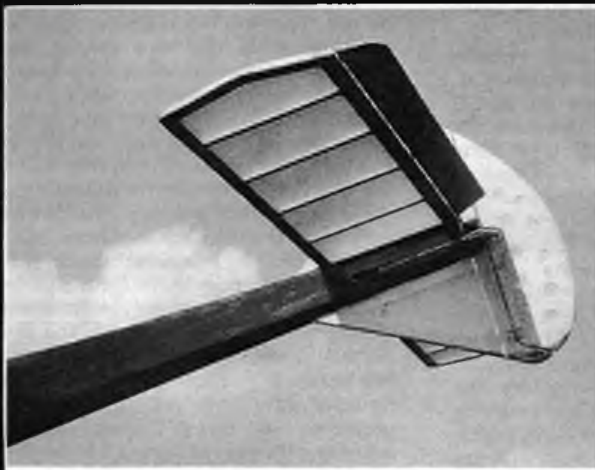
gentle. Rudder response on and off the line is excellent, allowing the model to be positioned easily and accurately. Lulu will also turn into thermals and soar with ease, as Keith has demonstrated with an eleven-minute-plus flight. I still think it was a fluke!

So far the model hasn't been flown in much more than a reasonable breeze, but a couple of notches of down-trim are enough to keep it penetrating steadily into wind without breaking any speed records. A bit of extra care is needed on landing to keep the underfin intact. Make sure the final approach is dead into wind so that as the model approaches the ground, only a quick dab of down elevator is needed for the nose

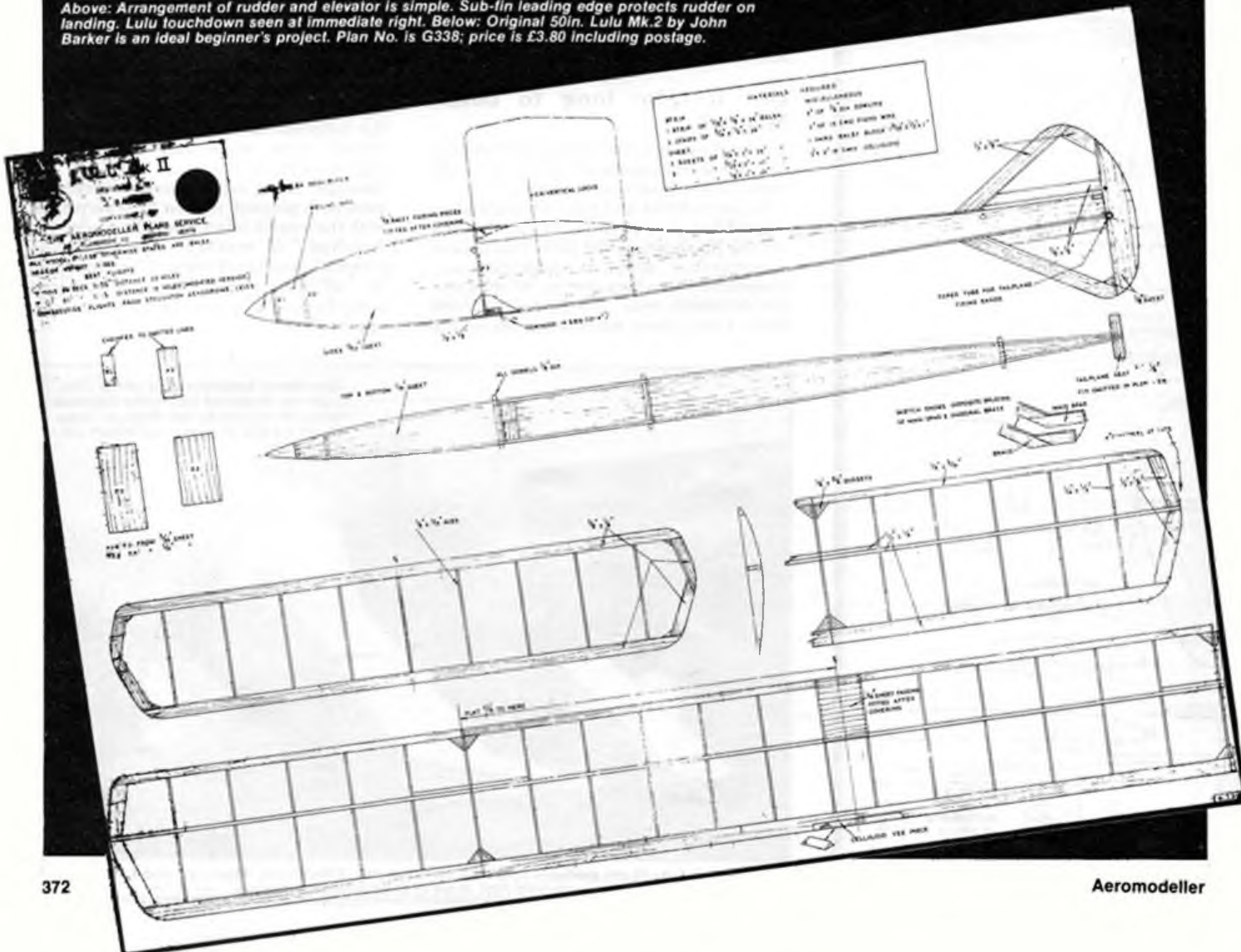
to make first contact with the ground.

On balance we have both been delighted with the model, and we are looking forward to flying in more Vintage competitions. The model compares very favourably with similarly-sized modern counterparts, and its ease of building and flying would make it a good trainer. Keith and I certainly feel that the Vintage Glider class is worth supporting, for the models provide instant refresher courses in aspects of aeromodelling that most of us probably haven't touched for ages, and the competitions add just the right degree of edge to the flying.

Here's your chance to join the fun!



Above: Arrangement of rudder and elevator is simple. Sub-fin leading edge protects rudder on landing. Lulu touchdown seen at immediate right. Below: Original 50in. Lulu Mk.2 by John Barker is an ideal beginner's project. Plan No. is G338; price is £3.80 including postage.



OF ALL THE SMAE scale events, I think this one is looked forward to with most anticipation; perhaps because all the action is concentrated in one space, and there is no danger of it being ruined by the weather. I will let the photographs form the bulk of the article, and will concentrate here on the new and interesting models.

One of the amusing aspects of Indoor Scale is hearing the endless variety of reasons to explain why CO₂ motors (and hence models) perform badly indoors. One of the favourites is 'humidity', and for this reason the CO₂/Electric event had been brought forward to the morning, before the accumulated breathing of 60 people had saturated the air! I entered a battered and generally appalling Puss Moth, mainly to see how it performed indoors, knowing that it flies for about 80 seconds in its natural environment. I was not surprised to find little real difference, even though



1987

INDOOR SCALE NATIONALS

the hall seemed very humid to me. My two CO₂ motors, which are about ten years old now, always perform well, while others seem to have endless problems with sealing rings and icing-up. I still maintain that the reasons for difficulty lie in models being too heavy, thus needing full throttle to get away.

I digress. The most striking model was a Catalina by Ian Pallister, who I believe was attending for the first time. It is quite an achievement to build a twin-CO₂ model of some three-feet span down to 115g. Construction was conventional, and the fuselage was fully sheeted — no octagonal starved-horse structure here. The Telcos ran on standard tanks interconnected by a simple manifold of brass tubing; the model took off smoothly from a dolly and flew extremely well in fairly tight left-hand

A super scale day at the Alumwell Centre, Walsall
on 26th April is reported by Bill Dennis

circuits — an exceptional performance.

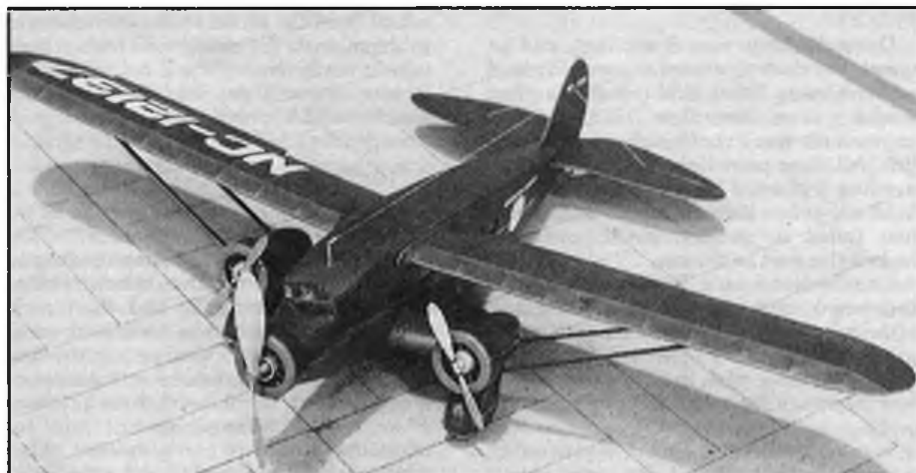
Barry Hetherington had built two new models of typically interesting subjects; his CO₂ machine was a smaller version of his outdoor Stinson Trimotor which looked delightful in the air.

Mike and Peter Hall are, like myself, enthusiasts for aircraft from WWI, and they always seem to turn up with machines that I have been planning myself! This year Mike had built a Brandenburg W12, and Peter a W29, both floatplanes and both very nicely decorated

in lozenge camouflage. Unfortunately motor troubles prevented us seeing these in action.

Last year Derek Knight produced a new and untried Avro 560 powered by one of his prototype electric power units. This time he won the event with some very fine flying from the same model, the first time an electric model has triumphed. Derek thus became the worthy first winner of the new trophy for CO₂/Electric — a very attractive silver cup in traditional style donated by Richard Grainger, and named

Heading: Most impressive was Ian Pallister's twin-Telco Catalina which flew beautifully after a late motor change. Matching the power unit is important, and Ian had experienced some trouble in this respect. Well worth the effort! Below left: Trimotor enthusiast Barry Hetherington produced this CO₂ Stinson which rewarded him with the highest flight score in this class. Only one Telco is fitted, though! Below right: Good fun, this indoor flying! Reg Boor's Peanut P-51 Mustang sported a four-blade prop and looked good. Careful choice of scale meant plastic-kit transfers could be used.





Top left: Andy Sephton notched up 5th place in Open Rubber and Peanut with his Lacey M10. Had there been time, model could have flown in CO₂ as well for its removable noseblock allows installation of a Brown A-23 'power egg'. Top right: Peter Smart's Stinson Junior, - ninth in CO₂ - sits on its documentation, a Wylam drawing. Nice to see Peter in action on the indoor circuit again! Above left: Electric specialist Derek Knight's V.S. Walrus, here on static display only, sported authentic 'walk here' stencils. Right: Fellow RAFMAA member Butch Hadland cheerfully shows his Morane Type 'H'. Green machine was 3rd in Peanut.



the Doug Sheppard Cup in honour of Doug's sterling efforts at promoting Indoor Scale over the years. Derek's Avro also took the coveted Aeroplane Monthly award for the best British ultra-light.

Peanut was flown in the middle of the day, and produced the usual result. This time a panel of timekeepers was used to preclude any possibility of timekeeping hanky-panky!

Mark Hinton was once again invincible, his Santos-Dumont 14-bis flying in usual reliable manner to keep at bay Nick Peppiatt's Farman Moustique, Butch Hadland's Morane 'H' and Lindsey Smith's new Voisin Seaplane; a biplane, floatplane canard with rotary engine, if you please! Andy Sephton fought a Lacey M10 battle with Peter Lee; their positions were to be reversed in Open Rubber. Worthy of a mention are Adam Beales'

first competition efforts with his Martinsyde F4.

Open Rubber was flown last; and as usual this class produced some of the best performances. Barry Hetherington's other model was a Dewoitine D338, a three-engined pre-war French airliner of elegant line. All three propellers were driven, thus needing a piece of high-tech cardboard to hold the props before launch! The model just failed to qualify, but it certainly looked the part in the air.

Charlie Newman's Twin Mustang also impressed and showed great promise, although it did not have enough room after a very long take-off run. This model, together with the Catalina, won a special award for achievement against all odds!

My own Bristol M1D eventually performed well, flying for over thirty

seconds following a long take-off on one wheel from the airfield side entrance! The problem with the model was high weight which really shows itself on take-off. A lighter one will get into the air from a shorter, and hopefully straight run.

Afterthoughts...

I think there is scope for change in the flying procedures at the Indoor Nats. The Rubber and CO₂ rounds seemed to drag on interminably, with endless attempts being taken - there being no less than eight available. It may be a better idea to scrap the attempt system, leaving just the four flights, and to compress the action into one hour instead of one-and-three-quarters. This would release more time for trimming, which is sorely needed. Also, while a strict 'flying order' system is fine in



1987 Indoor Scale Nationals

Open Rubber (15 qualified)

Open Rubber (15 quinnies)				Static	Flight	Total
1	R Hadland	RAFMAA	Lacey M10	987	1051	2018
2	M Hinton	SAM 35	Santos Dumont 14-bis	952	1064	2016
3	W. Dennis	Bristol & West	Bristol M1D	1033	818	1851
4	P Lee	Basingstoke	Lacey M10	834	976	1810
5	Ft.Lt. A Sephton	RAFMAA	Lacey M10	905	888	1793
6	P Frederick	Assoc	Westland Widgeon	764	968	1742
7	R Johnson	Assoc.	Curtiss SOC 3	784	906	1690
8	B Pursglove	Nottingham	Bellanca CF	828	848	1676
9	R Boor	Wigan	P.51 Mustang	851	816	1467
10	C Newman	Oxford	P-82 Twin Mustang	936	528	1464
11	G Hannah	Impington	Bristol Brownie	636	816	1452
12	K Bates	Cleemac	Piper J-3	777	421	1198
13	L Smith	RAFMAA	SE5 Two-seater	501	478	979
14	G Ball	Assoc.	DH Puss Moth	493	482	975
15	A Beales	Croydon	Martinsyde F4	547	316	863

CO₂/Electric (12 qualified)

			Static	Flight	Total	
1	D Knight	Portsmouth	Avro 560	988	984	1972
2	N Peppiatt	Assoc	Sopwith	974	983	1957
3	C Newman	Oxford	Avro 504N	1063	834	1897
4	B Hetherington	Nottingham	Stinson Trimotor	838	1020	1858
5	R Hadland	RAFMAA	Fike	954	882	1836
6	S/Ldr I Pallister	RAFMAA	Catalina	922	669	1591
7	G Dimes	Sth Bristol	Piper J-3	802	744	1546
8	W Dennis	Bristol & West	DH Puss Moth	708	752	1460
9	P Smart	Hethal	Stinson Junior	882	588	1430
10	R Boor	Wigan	Bristol Brownie	766	496	1262
11	L Smith	RAFMAA	Gloucestershire Gannet	680	586	1258
12	R Waddington	Calderdale	Sopwith Pup	698	180	878

Peanut (14 flew)

1	M. Hinton	SAM 35	Santos Dumont 14-bis
2	N. Peppiatt	Assoc.	Farman Moustique
3	R. Hadland	RAFMAA	Morane H'
4	L. Smith	RAFMAA	Voisin Seaplane
5	Ft. Lt. A. Sephton	RAFMAA	Lacey M10
6	P. Lee	Basingstoke	Lacey M10
7	R. Boor	Wigan	P-51 Mustang
8	G. Whitfield	Assoc.	Wight Baby
9	G. Hannah	Impington	Drume Turbulent
10	R. Johnson	Assoc.	Westland Wood Pigeon
11	A. Beales	Croydon	Martinsyde F4
12	D. Knight	Portsmouth	Hawker Hunter
13	K. Bates	Cleemac	Westland Widgeon
14	R. Waddington	Calderdale	F.W. Stosser

Kit Mass Launch Eliminator

1	L. Smith	Veron Fairey Spearfish
2	R. Hadland	KK Piper Super Cruiser
3	B. Roberts	KK Piper Family Cruiser



Top left: Second in CO₂/Electric was Nick Peppiatt's deflectable Sopwith Tabloid, modelled in 1914 'Brooklands' racing trim. Moulded cowling adds class. That magazine looks familiar. . .

Top: New model in Open Rubber was Barry Pursglove's Bellanca CF - an unusual choice. Pilot of the full-size machine might have wished for improved 'ahead and downwards' visibility. . . Above: Victorious again in Peanut was Mark Hinton with his well-known Santos Dumont 14-bis. Below: A similar lightweight 'pioneer' approach was chosen by Lindsey Smith who entered this Voisin Seaplane, first seen at the M.E. Exhibition. Came fourth this time - may do better! And yes; all that forward-fin offset is really needed.

theory, in practice it leads to long hiatuses when Joe Bloggs is found to be eating his sandwiches when called. I would suggest reverting to an orderly queue arrangement, which would certainly speed things up. The problem of rubber motors cooking while waiting will be raised, but I don't believe a word of it. In any case, one can always wind in the queue.

The Peanut rules need a drastic rethink to inject some life into the event. Tinkering with the present ones is useless. The static section could perhaps be changed to a simple schedule akin to the 'proper' scale rules, involving accuracy, craftsmanship, detail and complexity. The flying could be enlivened by making the models fly around two pylons from a set starting position; the clock would stop when a pylon is cut or the model lands. Admittedly, this would introduce a large

element of chance, but this is something decidedly lacking in this event.

Once again there were talks and a static demonstration of models. I only caught part of Doug McHard's photographic history of his modelling career, but it was fascinating. (So was Richard Grainger's exposition of airship aeromodelling, of which more anon! GC). Paul Briggs must be thanked for his considerable efforts in organising the exhibition.

The scale kit mass launch has become very popular. There were thirteen entries this time; and Lindsey Smith got the loudest cheer of the day when he won with his Spearfish.

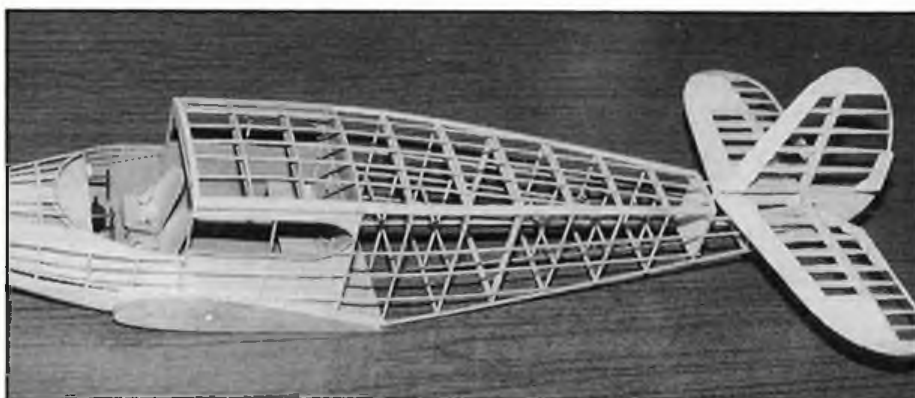
Finally, there were quite a few 'notables' present who said they hadn't entered but were there to enjoy themselves spectating. Either they were kidding themselves, or it is time to start stamp collecting!



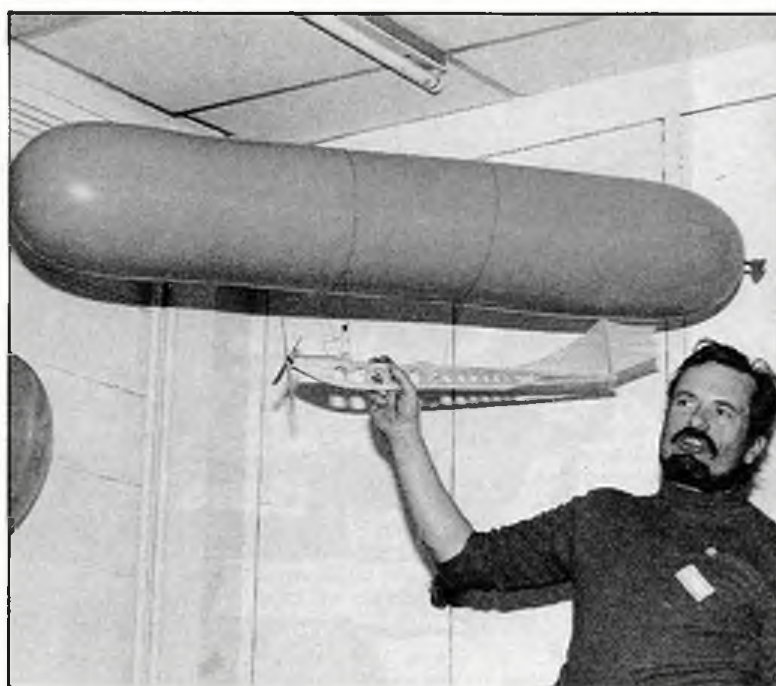
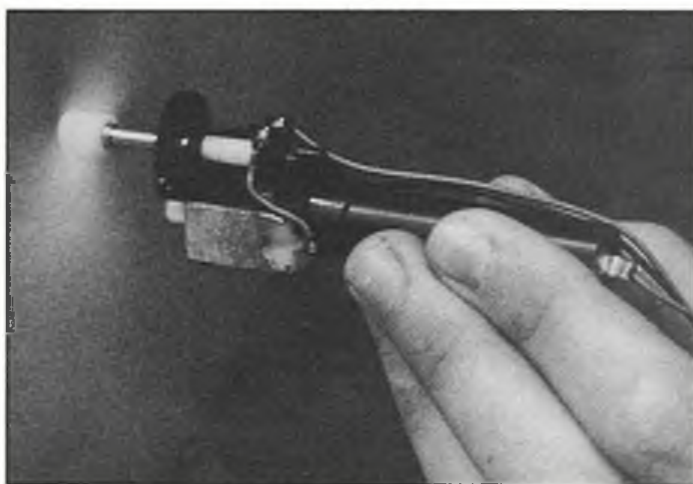


Lots more from the Indoor Scale Nats! This page, top: The KK/Veron kit mass launch, run on the 'first down goes out' basis, was great fun. Triumphant trio are, left to right: Brian Roberts who was third with his KK Piper Family Cruiser (the airframe of which was built back in 1953!); Butch Hadland (KK Piper Super Cruiser, second place) and Lindsey Smith, whose Veron Falrey Spearfish stayed up longest of all. Above left: Strakey camouflage and interesting markings characterises Peter Hall's CO₂ Fokker Triplane. Above right: Ray Johnson had to relinquish the Aeroplane Monthly Trophy this year but his Peanut Westland Woodpigeon was a charming British Ultra-light subject nevertheless. Left: Also by Ray Johnson was this large Curtiss SOC-3 (seventh in Open Rubber). Below left: Barry Hetherington's new Dewoitine D338 was the centre of much attention. Failed to qualify in Open Rubber despite much effort but will be one to watch when fully trimmed. All three props are driven. Below: Derek Knight, at right, was the recipient of the Aeroplane Monthly Trophy, presented - as were all the prizes - by guest Richard Riding, who won a Comper Swift kit in the raffle! Derek's electric Avro 560 - seen before in these pages - was a quiet revelation.

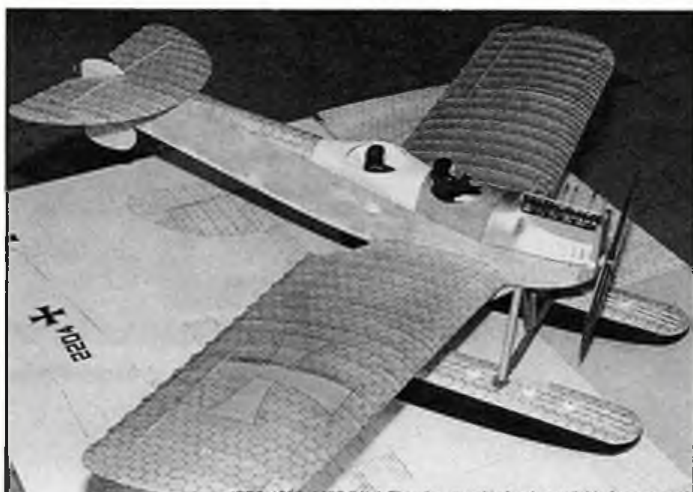




Sideshow highlights: Top: Belligerent Curtiss Kittyhawk in RAF 'desert' camouflage is the work of Paul Briggs. Construction is largely blue foam; model - seen in the static exhibition - awaits final trimming. Left: This'll be interesting! Derek Knight's Cessna Bobcat F/F twin will be powered by two of his electric units, one of which is shown in action below left. A three-minute charge gives over 40 seconds of useful run, turning a geared Telco prop at nearly 4000rpm. Three 50mAh cells used; weight (less prop) is just under thirty grams. Soon to be commercially available - get in the queue!



Left: Lovely! Paul Brigg's Brandenburg seaplane will be a showstopper when completed. Much lozenge-painting in store... further gen on this rubber masterpiece in a forthcoming Aeromodeller. Above: How about this, then? The enthralling subject of model airships was given lively exposition by Richard Grainger, seen here with a Telco-powered, gondola-equipped delight. Once again, much more on this topic to appear in this magazine!



ALL THE LATEST!

THE FAI, RESPONSIBLE world-wide for all aviation sports, depends on specialist commissions for the organisation of parachuting, gliding, aerobatics and ten other disciplines, including model flying. It is the job of CIAM, the Commission Internationale d'Aeromodelisme, to administrate our hobby. Unlike the other FAI Commissions, CIAM includes within it technical committees for ten specialist interests in model flying, and thus its annual meetings are very heavily attended, both by national delegates and by technical observers. This year's meeting in Paris at the FAI's headquarters in April saw 74 people present; 28 of them national delegates and the rest observers or chairmen of technical committees.

Britain's delegate is Pete Freebrey, who is also a vice-president of CIAM. We also provide Ian Kaynes as chairman of the free-flight committee; Dennis Thumpston represents scale; and Martin Dilly represents New Zealand and chairs the information and education committee. On this occasion they faced a 61-page agenda, with two days in which to discuss and vote on a host of proposals affecting every aspect of model flying. Rather than covering every point discussed, it will be enough to highlight the major changes in free-flight and control-line.



Martin Dilly reports on the latest CIAM Plenary Meeting, held in Paris during April



The F/F Tech meeting in progress. Left to right are Xavier Abad (Spain), Thomas Koster (Denmark), Peter Wanngard (Sweden), Peter Allnutt (Canada), Danny 'M to Z' Maslowicz (Australia), George Xenakis (USA) and Chairman Ian Kaynes (GB). Note the tastefully decorated room at the French Aero Club.

Free-flight

A Hungarian proposal that 'any effort to help the release of thermals in free-flight contests is forbidden' was approved in spite of the free-flight technical meeting being strongly against it. For a start, what are the penalties? Who is forbidden to 'flap'? Competitors? Helpers? Opposing teams? Spectators? Clearly a poorly thought-out proposal. Despite having the appearance of being in the interests of sportsmanship there seems to be no way it could be enforced. It is unfortunate that some nations' delegates clearly voted without their F/F flyers having given it much thought (and briefing their delegates accordingly).

The F/F World Cup, very much Ian Kaynes' brainchild is now off and running, and it is open to any discipline's CIAM committee to organise a similar event. The idea is to encourage participation in FAI Open Internationals (i.e. events that can be entered by individuals, rather than by national teams). The rules, to be in the Provisional Rule section of the Sporting Code, rather seem to favour European flyers, with a requirement that there should be included in the list of eligible events two from each continent except Europe, and that in Europe any nation may have only one contest in the World Cup. This year's World Cup is being run as a trial by Ian, but a stamped, addressed envelope to him at 7 Ashley Road, Farnborough, Hants GU14 7DS will bring you the list of 1987 events and details of the way the World Cup works.

A new provisional rule for a small power class, F1J, will encourage newcomers and also allow more small field activity. Maximum engine capacity is 1cc; no exhaust extensions are allowed; minimum weight is 160 grams; engine run is seven seconds and there is no fuel restriction. Five flights are allowed, with a two-minute maximum.

With the intention of avoiding the problems that have occurred at some recent Championships, when timekeepers seem unaware that models need not be identified only as A, B, C or D, but may use any combinations of letters or numbers, section 2.6.6 in the Sporting Code has been modified. It now requires the FAI sticker only 'to appear on each model', rather than on each main separate part of the model, but the identification code for that particular model must appear on each part of the model - wing(s), tail, front and rear fuselage if detachable - so that the individual parts of a competitor's different models may be separately identified (except for Indoor and Scale). The ICAO mark (e.g. G-12345) need now appear only 'on the model', rather than on each part as before. The letters or figures must be at least 25mm high.

Several proposals that towline lengths should be reduced (30 and 40 metres were suggested), rubber weights lowered (China wanted 30 grams and the DDR wanted 25),



and F1C power runs shortened (4 secs. or 5 secs.) all reflected the international shortage of reasonable-sized flying fields, but all were either defeated or withdrawn.

In F1C there is now no requirement to mark the motor; in recent events this has, in any case, rarely been checked, and seemed pretty pointless since the crankcase, which usually bore the mark, is probably among the less-critical components.

Control-line

In control-line the CIAM technical committee will be looking at suggestions to score aerobatic manoeuvres out of 20 instead of 10 in order to give a better evaluation, and also to increase the number of judges to seven, discarding the two highest and two lowest scores.

The new combat rules proposed last year by the UK, changing the model specification, seem to have aroused vast opposition and are revoked. In other words, you can still use the 'old' type of model, but maximum engine venturi diameter will be limited to 4.00mm. This will be verified by using a 4.05mm diameter no-go plug gauge. A standard fuel will be supplied, consisting of 10% nitromethane, 20% first-pressing castor oil and 70% methanol. Until I mentioned it at the meeting the C/L technical committee seemed happy to leave it at that, but it did seem hard on diesel users, so they are allowed to use any fuel! Finally, a combat flyer will be eliminated if he deliberately attacks or interferes with his opponent's continuously-level-flying model with clearly no paper streamer left.

Radio control

In R/C Classes F3A (aerobatics), F3B (soaring) and F3D (pylon) the 'builder of the model' rule has been abolished. While many people may see this as the beginning of the end, it is after all the pilot's skill in flying the aircraft that is scored or judged, and in practice it is probably even harder to determine just who has built an aeroplane with moulded wing skins or fuselage than it is when an orthodox structure is used. I shall leave the main body of the R/C discussions and changes for *Aeromodeller's* sister magazines to cover. However, the apparently relentless increase in size and weight of R/C scale models seems to continue. Am I alone in finding it bizarre that the CIAM scale committee proposed that the maximum surface area be increased to 250 dm², giving as its reason 'safety. With the increased maximum weight for F4C models an increase in surface area is required' — and that the maximum weight should be raised from 6 to 7kg? England's contribution to all this was a proposal, also passed, that all piston engine capacity restrictions be removed. There are now CIAM provisional rules for Large Scale R/C models having a maximum surface area of 500 dm², maximum weight of 25kg, and a maximum engine capacity of 100cc.

Top: The Plenary meeting itself. Facing the camera are Dennis Thumpston (UK), Ottokar Saffek (Czechoslovakia) and Albert Naserov. Centre: The F/F Tech Committee from another angle! Ian Kaynes seems enmeshed in thought. . . Left: Here we see FAI Director-General Cenak Kapek (Czechoslovakia), CIAM President Sandy Pimenoff (Finland) and Technical Secretary Tony Aarts (Holland) in a light-hearted moment.

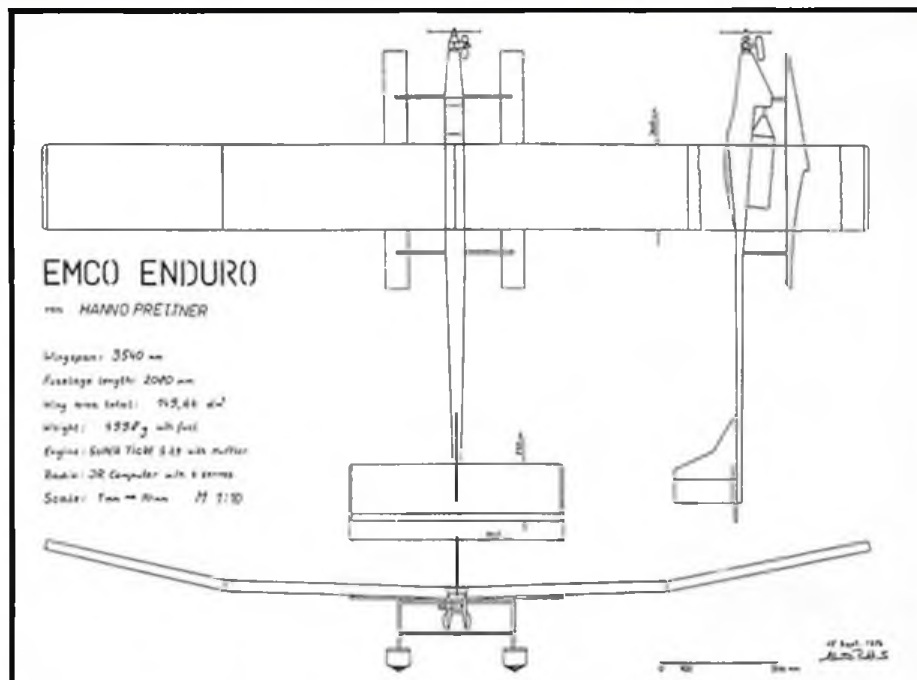
Other matters — and looking ahead

The CIAM Bureau, roughly the equivalent of the SMAE's executive council, has been remarkably stable over the years, and last year's team were elected for another term. President is Sandy Pimenoff of Finland. First Vice-President is the UK's Pete Freebrey. Second V-P is Ottokar Saffek from Czechoslovakia. Third V-P is Werner Groth from Federal Germany. Secretary is the USA's John Worth. French-speaking Secretary is Pierre Chaussebourg and Technical Secretary is Tony Aarts of the Netherlands. The technical committee chairmen, apart from the British ones mentioned earlier, are: Laird Jackson (USA):C/L; Ron Chidgey (USA):R/C Aerobatics; John Grigg (USA):R/C Soaring; Francis de Profit (Belgium):R/C Helicopter; Bob Brown (USA):R/C Pylon; Peter Blommart (Belgium):R/C Electric, and Howard Kukn (USA):Space. Each chairman invites a minimum of five specialists of different nationalities to serve on his committee; the specialists must be nominated by their national aero clubs each year before March 1st, as must judges and jury members, but the people serving on the technical committees do so as individual expert consultants, not necessarily to represent their own nations' views.

World records are also a part of the FAI's responsibility. Tony Aarts handling this for CIAM; one sad note was that Hanno Prettner's new R/C seaplane duration record, reported recently in the model press, had to be disallowed because the Austrian Aero Club failed to submit the claim within five working days of the attempt. The time limit is essential to avoid other people making attempts on record figures that have already been broken, but it did seem odd that after all the flyer's work had been done, somebody in an office blew it all by not reading the part of the rules that applied to him.

On a happier note Andras Meczner of Hungary was awarded the prestigious Alphonse Penaud Diploma in recognition not only of his many years at the pinnacle of FIC flying but also his work with younger flyers in his own country and the fact that he is a flyer who exemplifies the fine spirit of international collaboration present in contest flying. This was the first time that one person was nominated by two nations and I am personally delighted that Andras was proposed by both Hungary and New Zealand; for many years New Zealand proxy teams at World Championships did not fly FIC and Hungary flew FIC only. This led to the two teams helping each other with retrieving and repairs and always Andras was in the thick of it; now he has retired from international flying he will be much missed.

In CIAM and the FAI generally there is a new emphasis on Junior flying; last year the first-ever Junior World Parachuting Championships took place in Turkey, and next year the first World Junior Model Championships will run at the Leszno gliding centre in Poland, probably in August. Classes will be F1A, B and C, and the age limits are 10-18. Already 14 nations plan to send teams, so contact the SMAE's F/F chairman, Pete Harris, if you want more details of Britain's plans.



In, then out again: As reported at the meeting, Hanno Prettner's Emco Enduro has failed officially to capture a new R/C Seaplane Record because the claim was submitted too late...

More details of forthcoming World and European Championships were decided. This year's F/F Champs at Poitou already has entries from 33 nations and it looks as if the USA alone will have around 100 people there including supporters. Next year the World C/L Champs will be at Kiev, USSR from August 16-22nd and will include F4B C/L Scale. When the first plans for a Champs at Kiev became known, some people were concerned about the radiation situation since Chernobyl is about 60 miles away, but at the April CIAM meeting the Soviet delegate had figures that showed that the radiation level in Kiev now is about average for an industrial city. Entry fee will be about \$250, including accommodation.

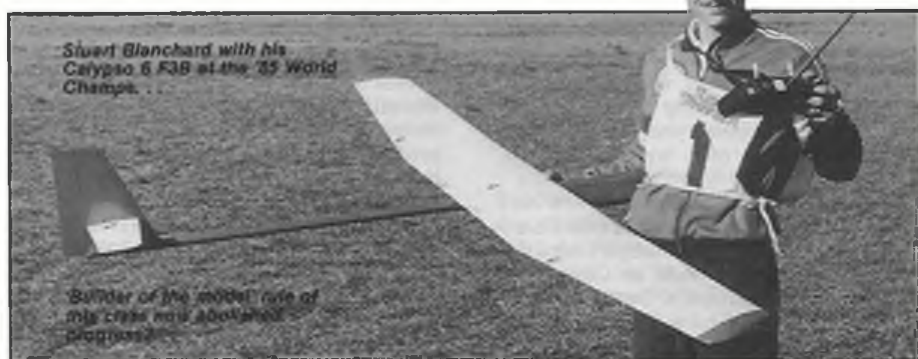
Other events further into the future will be the European F/F championships at Zrenjanin, Yugoslavia, about 50 miles north of Belgrade, from July 3-9th next year on a site measuring 4x12kms. There was an offer to hold the World Champs on the same site in 1989, but the original offer from Argentina was favoured by a

considerable margin, so that year it will near Cordoba in September. The entry fee is being held down to \$100, as it was at Goulburn, and the national airline will be offering a 30% discount from Europe, so overall costs will not be much more than a Yugoslav event for many people.

In '88 the European Space Championships will be in Rumania from Aug. 30-Sept 4th and F1E at Brezno, Czechoslovakia from Sept. 21-24th; there is a tentative offer for F1D from the USA in 1988, subject to site tests this June. Looking still further ahead, the Yugoslavs are offering to run the '91 World F/F Champs, again at Zrenjanin, and in 1989 the European F1D event will be at Slanic, Rumania in September. The same year sees two offers for the European C/L Champs from Poland and Great Britain, with a tentative July date at Three Sisters, and Rumania the site for the Space event. In all, with the addition of offers for most of the R/C events the scene looks very healthy indeed and the 1987 CIAM plenary meeting was a most useful one.

VIEWPOINT

Claus Maikis puts down the C/L handle to consider aeromodelling's progress



Stuart Blanchard with his
Calypto 6 F3B at the '85 World
Champs. ...

Builder of the model rule of
this class now adopted
progress.

SELDOM HAVE I ENJOYED an article so much as Mr Brookes' Viewpoint in the May *Aeromodeller*. You don't find such independent opinions and clear thoughts very often. While he left some questions open, I feel he's already answered them himself without knowing it.

Maybe the language barrier prevents my better understanding of his words. His statement 'we have to progress, that is clear' is not quite, to me. Looked at more superficially, it sounds as if we have to strive for progress, at all costs, for its own sake. Considering Mr Brookes' intelligent explanations I do not impute such a trivial way of thinking. Maybe the masses follow such unconscious wishes without knowing a goal. As can be seen, we have enough problems with ever-increasing wing spans and engine sizes in R/C, longer flight durations in free flight, and higher speeds in control line. An increase in these areas is not progress in itself.

Stagnation?

I suppose Mr Brookes understands the term 'progress' as the continuous search of mankind for improvement, but in a much more general and human way. Essentially, any progress can only be called as such when — in the end — mankind has improved in itself. If we develop new technologies which in turn offer us new ways, progress only takes place when we use this new knowledge to our — human — advantage (nuclear weapons may be technically interesting, but they do not fall into this category;

rather the opposite!). New technologies should help us to make things better or easier, offer new ways, open new areas, give better insight and understanding.

Since the performance level at the competition scene has reached such unexpected heights it might be a good thing to take a new look at the situation, and to spend some thoughts on how to use all the present knowledge. I'm sure there are better ways of enjoying our sport than what we do today. Striving endlessly for extreme top is a blind alley where things cancel themselves. The old-timer movement is at least a try in that direction. I agree with Mr Brookes that it might reach a crisis. If it's handled in a purist and competition-oriented way, it will go the same way as other events. However — we have another choice besides development and stagnation.

Creativity!

Mr Brookes gives the answer: 'The pleasure in model flying lies in creating...' 'Creating' is the key word. Where else do you find creativity these days? Few, if any, professions give us the freedom to do what we want. Creativity is one of the most important characteristics of man, and where can we employ it better than in

modelling! There's no limit to creativity, and it doesn't matter whether we use it for increasing the power of an engine, designing a beautiful stunt airplane, or constructing a delicate 'stick and tissue' form. Actually, working with his own hands is a very important experience for man's psyche. Those who prefer ready-built airplanes don't know what they renounce — they give away a large part of creative experience. On the other hand, insisting on certain limits, such as 'pre-1951', tends to kill creativity. Perhaps the Vintage situation should be thought over anew.

I don't care about the Builder of the Model rule. Every coin has two sides. If one chooses to be creative as a pilot I'm not going to force him to build his own airplane. I'm aware that dropping the rule might give some problems with certain events or with beginners. For my part, I'll never fly an airplane which I haven't built. I don't want to give away even the smallest portion of creativity. I let others cheat themselves.

What next for aeromodelling? To look around at the present movement, to avoid unhealthy growth, and to recognise the original element which has started it, and which will keep it alive and well today, too. Creativity was the beginning, and it will be the future.



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Just for Juniors KIT REVIEW

Fuller's FUN FLYERS

We look at a bright new range of all-sheet gliders for the youngster



HIPER, ZOT, SWIFT and Molecule — zappy names for just a few of the all-sheet quickies in the Fuller's Fun Flyers series of gliders for the youngster. Name behind the venture is George Fuller — yes, Mr Dixielander himself, whose company, Teign Models, is bidding to capture the attention of air-minded youngsters with a colourful selection of — well, Fun Flyers, really...

There's twelve in the range — a real mixture of the straightforward (the Comp Special and Swift, for example) and the curious (try the Molecule or Canardly). There's also a Tailless, a Dart, an Ovalwinger, a Tandem and a Plank — indeed, just about every type of model layout is featured in this cheerful collection. We received one of each — ideal for a field trial, we thought, so we reached for the 'phone... In the twinkling of a mortar-board David Morgan, the Acting Head of Broadfield School here in Hemel Hempstead had arranged a couple of late-morning sessions with a merry dozen juniors, all agog to try balsa-bashing for the first time. How did they get on?

Testing, testing...

In short, pretty well. Attractive boxes were soon opened, colour-printed die-cut parts pressed out and components identified against the drawings. Side and front views are given; our tyros would have benefitted from an exploded, perspective sketch, plastic kit style. Several of the kits contained the instruction to shape fuselages from a basic strip of balsa or to sandpaper flats on surfaces; tedious work

for our under-tens who would have preferred this already done. Nevertheless, everyone galloped through this stage of the business and soon we were ready for a mass glueing session.

This is where things almost came — literally — unstuck. In this age of solvent abuse the kit manufacturer who aims his product at the youngster is faced with pressures unknown a few years ago, so instead of a handy tube of glue our testers were faced with a sachet of PVA — an adhesive not famous for quick-drying or gap-filling tendencies, desirable qualities both in these circumstances. To block difficulties your Editor had taken along a supply of a wonder glue that sets in minutes, fills gaps and is tacky enough to hold components together while they dry — balsa cement, in fact. This was a wise move and assembly headaches were obliterated almost before they began. Of course, such a mass-test of a product is a different affair from the individual construction of a model at home. Remember that all craft demanded similar techniques; but as each was different, your Editor (who was monitoring proceedings to the best of his ability) had to deal with identical questions at varying intervals throughout each session, and blanket remedies were necessary for the maintenance of sanity. Generally, all was well. Paul found that the wing of his Flying Kidney, being of quarter-grain balsa, was too stiff easily to adopt the necessary reflex section; and our second Paul needed help when it came to packing and glueing the polyhedral on his Hiper. Quickest to assemble was Michelle's Dart — possibly the familiar shape was a help;

most complicated was the Molecule, but builder Sian was perfectly happy with her attempt at this space oddity.



No-one found overwhelming difficulty, so after a period of mutual handiwork admiration, and a few construction-testing unofficial classroom flights it was off to the playground for the biggest test of all.

Fun-Fliers airborne...

As you'd expect, such a variety of layout means a mixture of flight patterns. Indeed, this is commented upon in the instructions, where the suitability of the Zot, Flying Dart and Molecule for straight-line flight only is emphasised, although it has to be said that the models themselves sometimes had other ideas! As expected, it was the largest and lightest that flew best. Matthew's efforts with the aptly-named Comp Special, and that high performance Hiper built by Paul were particularly noteworthy, as was the Flying Wing produced by Amy. None proved untrimmable thanks to the provision of adequate plasticine (coloured to suit the model). In one or two cases the wood was of a heavier grade than ideal, which meant a fast flyer here and there; but this was deemed no less desirable a characteristic by our test pilots. Such was the success — in personal achievement as well as model flyability — that all the Fun Fliers were jealously guarded during trials, later to be taken home... who knows, perhaps one or two of our builders may yet succeed in gaining an authorised Test Pilot's badge.

Opposite page: Our youthful team of test pilots, happy after successful trials. Test Pilot badge, inset, will be awarded to the flier who achieves the best National flight each month. Right: Matthew Hall and Richard Lee (both nearly 10) were particularly enthusiastic about the Swift and Zot.



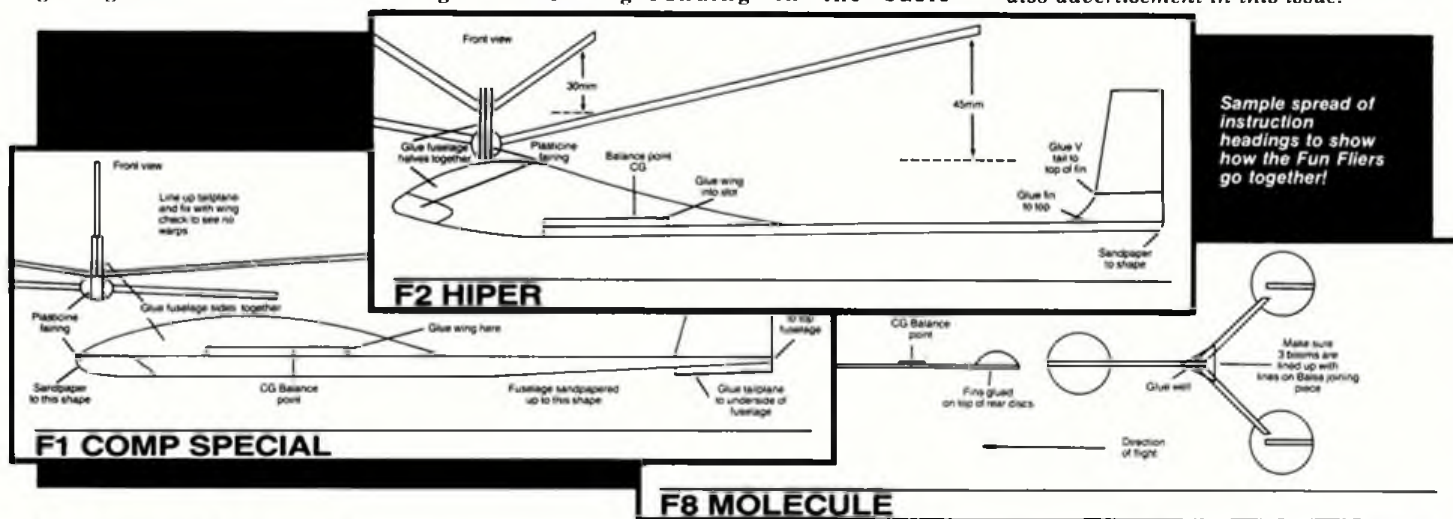
This notable idea, the better to further a link between manufacturer and customer, encourages the youngster to submit a Test pilot Application Form verifying a best flight with his model (plus vouchers from more than one kit!). The result of this is a badge to mark the achievement; additionally, the best performance of the month gains the lucky winner a free kit of his choice. We look forward to details of this competition. It is interesting to contemplate on the design most likely to win!

To sum up: here we have a series of colourful gliders perfectly suitable for youngsters. The intention is obviously to encourage the collection, building and flying of the complete set; and there is no doubt that such an effort would provide a useful grounding in the basic

aerodynamics of a wide variety of layouts, each with its own demands to be accommodated by the youthful experimenter. Our experience showed that this could be a most enjoyable process; but our advice is to put that white glue on one side and give the kids a tube of cement! That done, you'll have set of model aeroplanes that are well-named — Fun Fliers they are!

Our thanks to test pilots Paul Austin, Sian Barrett, Dominica Coleman, Matthew Cook, Matthew Hall, Richard Lee, Kirsty Novak, Andrew Plowright, Amy Robbins, Michelle Smith and Paul Wiley.

Fuller's Fun Fliers cost £1.49 each. They are available from all model shops; see also advertisement in this issue.



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Build a diminutive de Havilland. . .

DH 53 Humming

THE DH 53 WAS ONE of the more successful ultra-lights designed to take part in the 1923 Daily Mail Trials at Lympne. Of unmistakable de Havilland appearance the DH 53 boasted none of the freakish characteristics exhibited by many of the other competitors at the Trials but was a sensibly-arranged and robust machine, although, interestingly to aeromodellers' eyes, the fuselage verticals and spacers were not fixed directly to the longerons; the ply covering serving to tie together the structure. At certain points steel tubing cross-struts were employed; but the majority of the structure was wood, in accordance with contemporary de Havilland practice.

Two prototypes were built for the Trials, both equipped with 750cc Douglas motorcycle engines — a powerplant which was to cause problems at Lympne. Despite this, the DH 53s performed most impressively and although no prizes were won they were clearly the best all-rounders. Once he had been eliminated Capt. Broad in the first prototype performed a fine sequence of aerobatics for the crowd's benefit. Not long after the trials the first machine, which had by now received the registration G-EBHX, was re-engined with an inverted Blackburne Tomtit V-twin and with other modifications this machine was flown with distinction during the following year. The DH 53's reliability and general competence resulted in an order from the RAF for eight machines, six of which made a noteworthy appearance at the 1925 RAF Pageant.

Despite a lack of orders from the civil market the RAF craft appeared under private ownership after disposal from that service, and thus appeared at airfields up and down the country for a while longer. Particularly notable was the silver and

green G-EBXN which, re-engined with a Bristol Cherub, survived until 1940. The careers of the civil machines have been documented in various publications (notably the Putnam book 'de Havilland Aircraft since 1909' and Richard Riding's 'Ultralights', both of which — coincidentally — are soon to be reviewed in this magazine). Five DH 53s were built for overseas including three for Australia, about which we will learn more presently; but the type's main claim to fame is that it pointed the way to the more substantial Moth as a desirable 'club' machine.

All the way from down-under comes Jim Fullarton's 1/8th scale ultralight for 0.8cc motors

What of the prototypes? The second, originally named Sylvia II and subsequently registered G-EBHZ was sold engineless to a group of RAF officers who entitled themselves the Seven Aero Club, fitted an ABC Scorpion and flew 'HZ' — not entirely without incident — at a number of race meetings.

Its ultimate fate is not certain but it seems it was sold after a final appearance in September 1926. The first DH 53 passed into active private ownership but eventually languished in a Kent back garden until rediscovery — and subsequent rebuilding by the de Havilland Technical School. An ABC Scorpion was fitted, several modifications made, and after trials this famous little machine was handed over to the Shuttleworth Collection where it still lives happily, although its flying career has been

crippled by engine unreliability which has meant more rebuilding and subsequent display solely as a static exhibit.

The DH 53 in Australia

From down-under, Jim Fullarton continues:

Three aircraft of this type were imported into this country, where they had long, if somewhat chequered lives VH-UAC and UAD, fitted with Blackburne engines were imported by the Dept. of Civil Aviation in 1924 for use by their officers, one of whom attended the lightplane trials in that year, though not as a competitor as the aircraft had been made in this country. Both were sold to the Aero Club of NSW in 1930, who refitted them with Bristol Cherub engines (the fuselage being cut back to accommodate this motor) and thereby started a tale of woe for future owners. The Cherubs were heavier than the Blackburnes, and to keep below the design weight limit, the Department — never noted for flexibility in such matters — put a limit of two gallons on the quantity fuel that could be carried!

The club sold 'UAC' to a Mr Goodson in Queensland, who seemed to do quite well with it, amassing 100 hours flying time before selling it to Mr Caldwell, of Sydney. It was at this period that I made my only sighting of a '53 in full flight, when Mr Caldwell flew over Coogee beach advertising a popular brand of wine. After a couple of forced landings, it was sold to someone in Samoa and its subsequent fate is unknown.

'UAD' was sold in 1932 to Mr Vern Cerche of Melbourne who is best known as the man who taught the late Reg Ansett to fly, thus helping to inaugurate Ansett ANA which to-day operates as Australia's major private domestic airline. Mr Cerche operated it for some years — being only a lightweight himself, perhaps he could

Jim's 45in. Humming Bird is fitted with a PAW80, shown here with strictly non-flying metal prop. Builders could further enclose the motor once thrust line adjustments have been made.



Bird

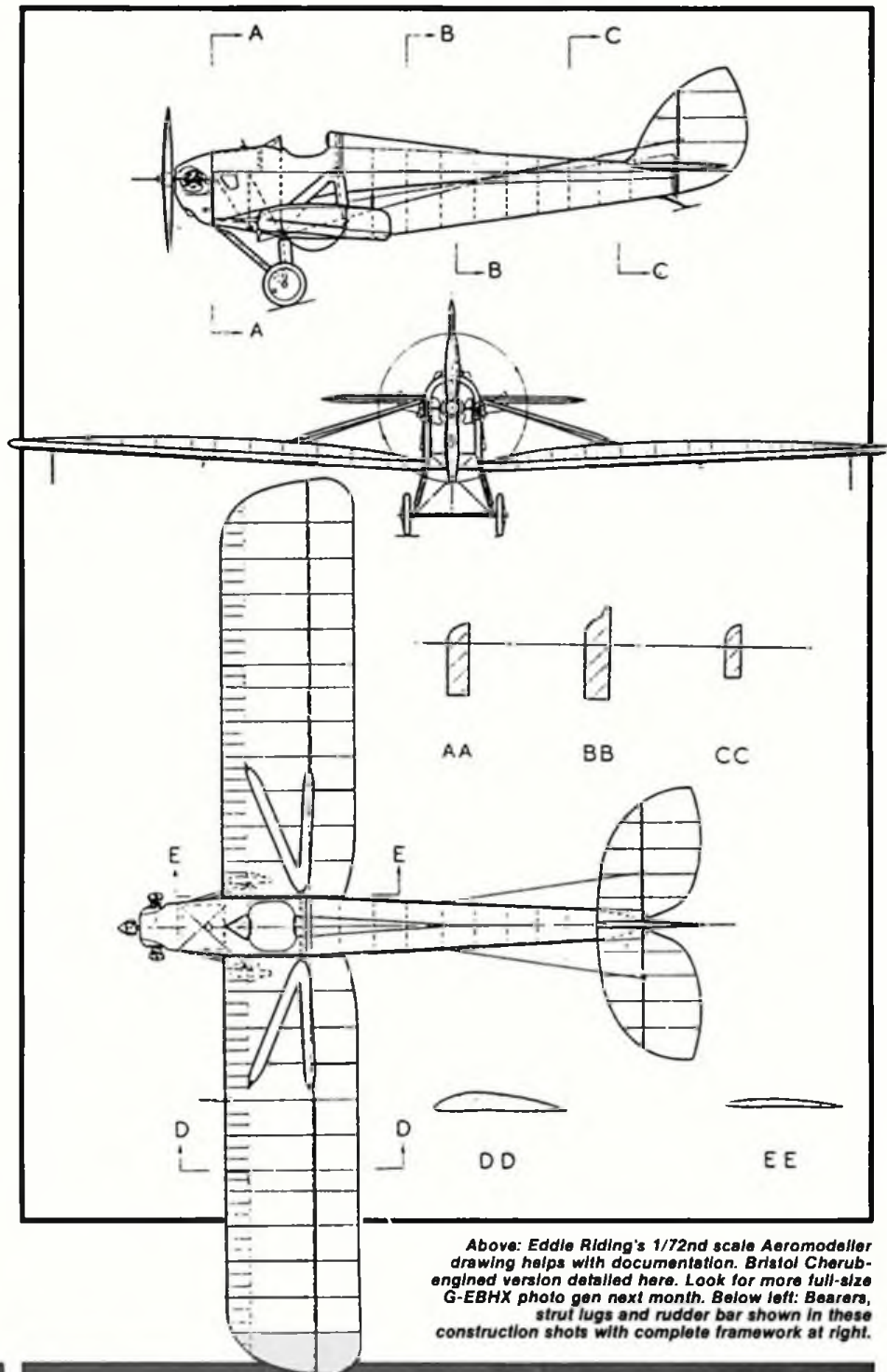
carry more fuel — but after some vicissitudes it was sold in 1944 to a former colleague of the writer's, Ernie Rose. It was not in an airworthy condition at this stage, and after investigating the weight limitation problem, Ern gave up hopes of restoration and it was eventually scrapped after the war.

Though less is known of its origins, it was the third Australian DH 53, serial 118, which really distinguished itself. It was taken to the Northern Territory in 1929 by the famous Flying Doctor, Clyde Fenton, but crashed on its first take-off. The remains languished in a hangar at Wyndham for some years before being taken in hand and painstakingly restored by another flying doctor, Ralph Coto, who fitted a 40hp. Aeronca engine and a seventeen-gallon tank. Then in May 1937, although the DH 53 was unregistered and even unlettered, Dr Coto set out for Perth, a flight of 1500 miles over some of the most inhospitable terrain in Australia. He arrived there six-and-a-half days later with only one forced landing *en route*. Despite this amazing performance, the Department would not grant a C of A, so Dr Coto donated it to the Perth Technical College; its ultimate fate was to be burned as rubbish some years later.

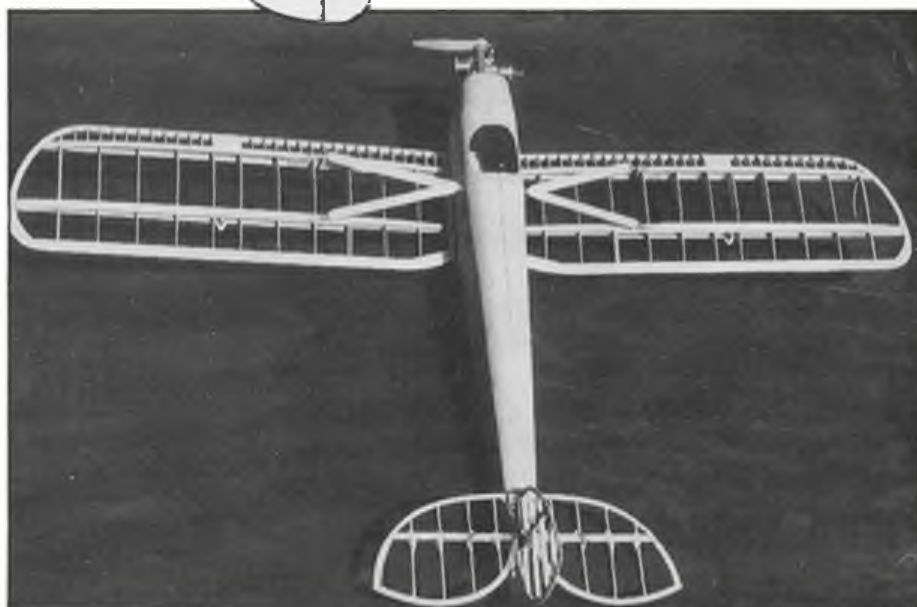
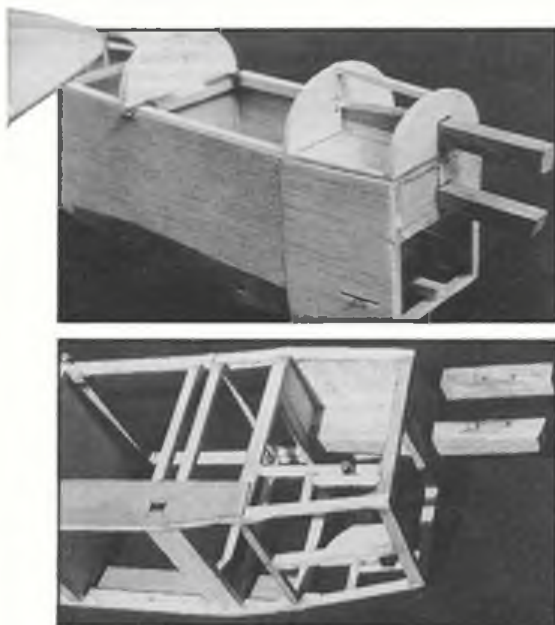
Building the model

In 1930, the late Norman Lyons, founder and Chief Commissioner of the Model Aeroplane Association of Australia, published the plans for a 30in. model of the DH 53, one of which was then in service with the Aero Club of NSW. The model could hardly have been described as an instantaneous success, due principally to the rather unfortunate decision to construct the entire fuselage out of cane pith!

A year or so later, however, one of our members built one with a balsa framed



Above: Eddie Riding's 1/72nd scale Aeromodel drawing helps with documentation. Bristol Cherub-engined version detailed here. Look for more full-size G-EBHX photo gen next month. Below left: Bearers, strut lugs and rudder bar shown in these construction shots with complete framework at right.



fuselage, and found that it flew well, raising the scale record for our club-the 'Bondi Black Hawks' - from 15 to 45 seconds. After that, we all built '53s, and in the first State Scale Championship in May, 1933, the writer's struck a patch of good air in the last round to come from behind and win with a time of sixty-four seconds.

Given that background, it is not hard to understand that when looking for a scale subject a couple of years ago my choice almost inevitably fell on this snub-nosed lightweight from the early '20s.

The model presented here placed second in F/F Scale at our 1985-86 Nationals, largely because of a 20-point bonus caused by it being the only entry to make a take-off from the roughly grassed surface. As reported in *Aeromodeller* last year, it suffered from an unduly tight left turn under power, a failing which has since been cured with a dose of sidethrust.

My aim was to produce a reasonably light model, but with points of concentrated stress well reinforced to take care of those hard landings; and it has worked out quite well in this respect. The short nose means that care has to be taken to avoid tail-heaviness, and for this reason, the fuselage is quite lightly framed, depending for its strength on the sheet covering (*very scale-like! GC*) which should be a light grade of 1.5mm balsa sanded to about 1mm at the rear. To avoid distortion, the sides and bottom should be sheeted before adding the formers, so that the structure can be laid down inverted on a flat surface.

The turtleback is 0.8mm balsa applied in two pieces joining along the top stringer. PVA cement is used - and wrapping the assembly with old rubber strip to hold it in place while drying is a good idea. Ply is recommended around the cockpit opening, as balsa proved a bit fragile here. The ply

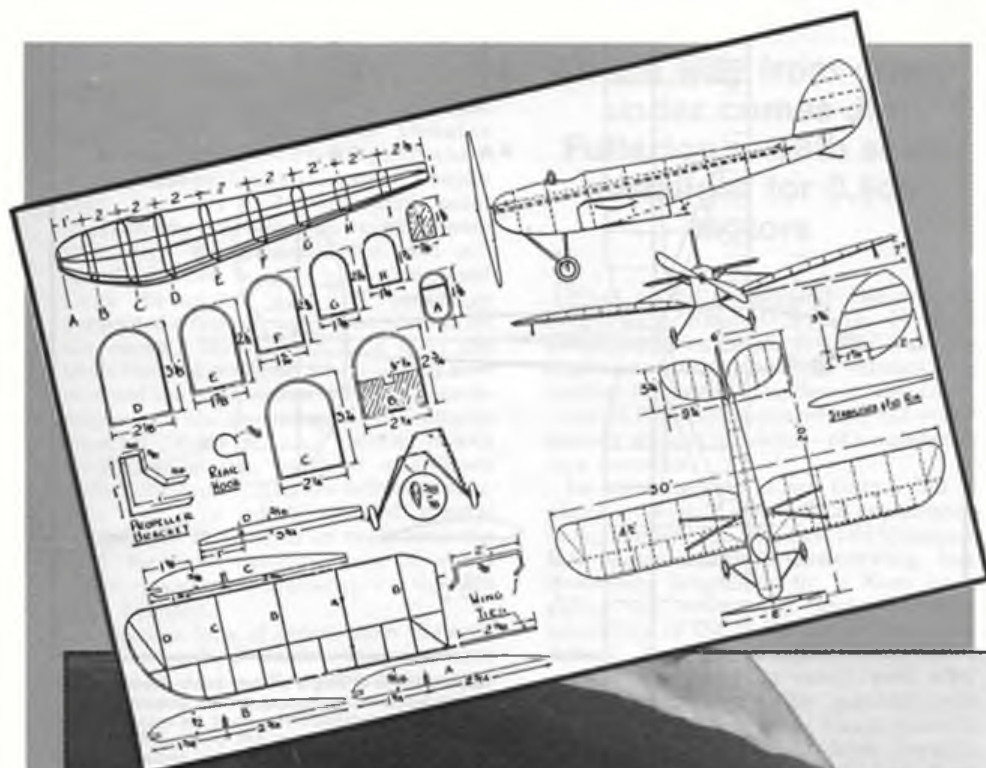
should be soaked and preformed around a can of suitable diameter. The cutout is edged with plastic tube, slit to fit.

The undercarriage works on a different principle to the full sized version, as the telescopic rear leg slides freely in the brass tube, and the spring action comes mainly from the torsion bar effect where it bolts onto the firewall. This is backed up by a piece of valve rubber or a spring slipped over the rear leg before assembly. The tank is soldered up from shim brass with flanged end caps, the whole being shaped around a wooden form block. The control column assembly is slipped into place from inside. It locates in holes made in the fuselage sides, after which the horns are inserted from outside and epoxied in place.

The dummy cylinder may be turned from bar or purchased as a spare. I found that it makes a convenient place for stowing ballast. The cowl is carved from soft balsa in several pieces; one block below the bearers, and one above, with smaller pieces being used to fill around the cylinders. As a fireproofing measure, I lined the exhaust area with aluminium foil.

Flying surfaces

Tail outlines and wingtips are laminated from strips. To achieve this you will need to cut forms to the inside contour from sheet. The strips are then soaked in boiling water and held against the forms to dry, using pinned blocks of balsa. They are then coated with PVA cement and again positioned against the forms, working on a base of non-stick oven paper. The double taper in wing thickness, which is characteristic of this aircraft, means that both L.E. and T.E. have also to be tapered; and when pinning down, don't forget to wedge the T.E. to the correct reflex angle. The I-beam spars have their webs between the ribs, to which they should be securely cemented to maintain continuity. To help get the webs level with the rib slots prior to fixing the top cap strip, they may be sanded with a file made by



The prototype - later registered G-EBHX - is seen at de Havilland's Stag Lane airfield when absolutely brand, spanking new. Douglas first twin engine fitted at this stage. Despite practical lines the type's main claim to fame is that it helped to point the way to the larger, more robust DH Moth as a club and private-owner machine; it was underpowered for everyday use. Drawing, above shows 1st September, 1930 presentation in the Australian magazine *Flying*, referred to in text.



sticking a strip of sandpaper to a 6mm piece of balsa. Both spars are blocked in solid at the strut fittings. The root rib is built up from strips to accommodate the locating pegs, which should be checked to fit the fuselage holes at this stage. The unusual size of the ailerons made me worry about possible warping, so I decided to keep them integral with the wing, leaving just a gap in the covering to simulate a hinge line. The false riblets are made a little oversize and sanded to match the adjacent ribs after fitting.

The wings are held on by bands under the fuselage - a trifle untidy, but very effective - and as they carry full flight loads, be sure to epoxy those hooks securely. The struts are built up on a spruce core, to which the fittings are fixed with epoxy and thread binding, after which the balsa fairing is added. The lower ends of the struts are first attached to the wing spars and the whole thing is then set up on blocks with the fuselage horizontal and the wing at the correct dihedral. The upper fitting is screwed to the fuselage lug, and then epoxied to the rear strut, being held with a spring peg until dry. The front strut is then attached to the rear at the top, and the balsa fairing added. Believing that discretion is the better part of valour, I have just about doubled scale dihedral; if anyone wants to try the correct amount (about 38mm) I wish them luck, but hope that they have access to the legendary field covered with long green grass.

Finish and flying!

Wings are covered with heavyweight tissue and, the tail surfaces with the lighter grade; both are doped silver. The fuselage colour is dark blue. For crash resistance, at least during the test period, the tail is held on with rubber bands, and located with V-shaped keys, but when everything is sorted out it may be fixed. The external control wires are simulated with light nylon fishing line, looped and secured with cyano through short lengths of brass tube at the ends to look like turnbuckles. Rudder lines are double, and all are attached at the rear with open hooks made of pins, so that they can be disconnected.

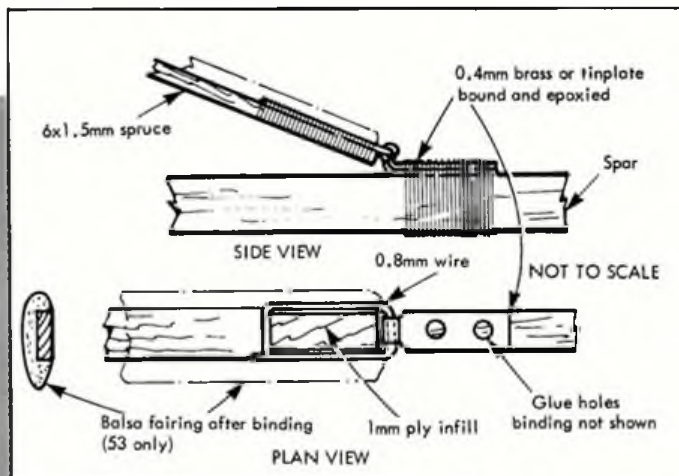
Trimming flights should be preceded by plenty of hand glides, preferably down a slope, adjusting elevators and rudder to get a flat glide with a slight right turn. Longitudinal stability is good; the only problem area on the prototype being that left power turn mentioned previously. Torque alone would not seem to account for this, and I blame the effect of rotating slipstream on the rather large rudder. I corrected it with about five degrees of right thrust, as attempts to counter with rudder produced a right spiral on the glide. The PAW 80 provides more than enough power; I use an 8x4 prop cut down to six inches to reduce the area of rotating slipstream. Good flying!

References

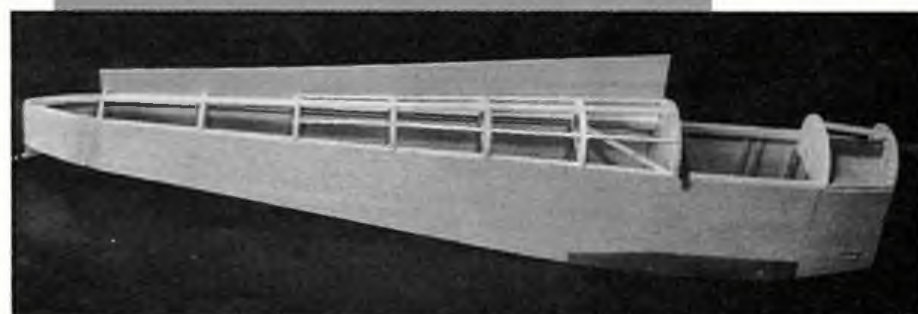
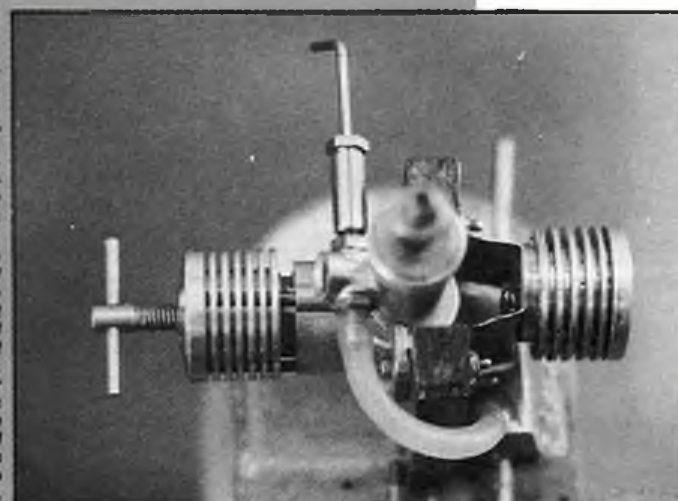
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Thanks to: Arthur Smith and Colin Parker for help with photographs; Paul Straney and Alwyn Smith for other data.

Diagram at right shows the strut fitting. Straightforward hinged arrangement may be adopted on other scale models.



At right and bottom, flanking our shot of the finished model, are further construction shots to help builders: G-EBHX now has royal blue fuselage, silver surfaces and registration in black on wings, white on fuselage. Angled wing trailing edge at root is correct for restored machine, if not original. Dummy cylinder is fixed to bearers by simple bracket; small finplate tank is fitted to bulkhead.



FREE FLIGHT SCENE

**Dave Hipperson's surge
Easter Two-Day SM**

VASTLY MORE CONTESTANTS than in recent years were tempted to this annual two-day event at Training Area 9 by the remarkable summer weather which preceded it for a few days. In reality the Easter tradition did its best to return for the actual contest, with breezy conditions during the first day's Open events developing into quite windy weather before the start of FAI on Sunday. Although there were some threatening clouds throughout, it stayed dry.

Open Day

With many miles of clear, downwind retrieval country the CD seemed determined to use all the space while it was available and for the high performance classes set a more appropriate max than has been usual of late. Nevertheless, with lift easily detectable - even though it was rarely very strong under the overcast - flyoffs there were. The glider flyers had got off lightly with a three-minute max and the relatively smooth grass terrain allowed some patient circle towing, repaying ten contestants with full scores. Perhaps thermal picking became a little more difficult as the day progressed. Chris Edge and Gerry Le Vey suffered extraordinary short third flights when lift decayed suddenly into turbulence, and Bill Colledge dropped a crucial five seconds on his last flight.

The four-minute max in Open Rubber eliminated more contestants than usual, with many flights falling short. Chris Strachan came closest of the non-maxers when his last flight dropped behind a distant copse to rob it of those final, vital seconds.

After recent talk that the traditional 10-second run was making life too easy for the Open Power flyers, particularly when attempting 2:30 maxes, it was interesting to see the effect of a 3:30 max. Less than a quarter of the entry were capable of it! Despite this, the longer max seemed a more popular way of reducing the fly-off than shortening the run, which would further complicate that critical part of the timing.

Fly-offs

The glider fly-off was first. Those away clearly fared best; Carter releasing a little in front of Cuthbert's already-thermalling model and rising faster for the first few minutes at least. With a 15mph breeze the models were becoming quite difficult to see after five minutes or so, even with the aid of binoculars; and the outcome hinged largely on the timekeepers vision. ('Visibility' contests have thankfully become much less common since the advent of binoculars). Both models disappeared at some altitude, but Cuthbert's flight was in view longer and thus looked like the winner - at nearly 8 1/2 minutes - until John Cooper's card was returned with over a minute more! John had been busy off to the side of the main bunch and had selected slightly slower-moving air. Both his and Cuthbert's models were eventually picked up over two miles away. Carter's was found at Marlborough.

First launches also found the best air in the Rubber Flyoff. Neil Cliff's distinctive elliptical model started a little hesitantly then quickly worked itself into good air. Meanwhile, Mike Howick - despite launching later - had found helpful enough air with his relatively small, conventional layout - his swept-wing model having been damaged earlier.

Ball and Horsley, both equipped with Ball's 360 sq.in. design, flew a little later and found terrible sink; Ball being the unluckier, falling out of the side of good air in which he had launched to flounder down quickly from considerable height. Both Len Auckland and Derl Morley flew late, the former finding a stable patch but Morley, launching from a similar place as had John Cooper earlier, found helpful air for a time of nearly seven-and-a-half-minutes. However Neil Cliff's early flight

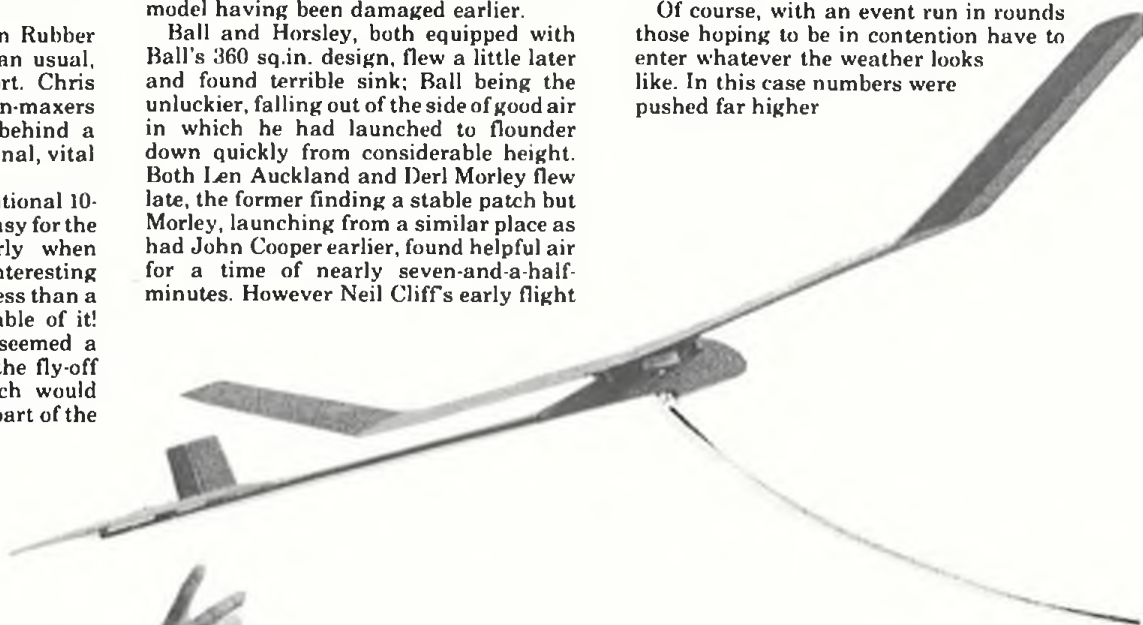
had clocked almost ten minutes enough to beat them all.

The finale was to be Power with three qualifiers. Harris, away first, was quickly followed to a similar height by Peers who was flying the .40 model that has won for him so many times already this season. Here it was carrying some twelve-minutes-worth of D/T fuse as he wanted it back for the Nationals! His timing was right, for although the model looked a little shaky 'off the top' it straightened on the glide to wander into the same good air as Harris had found, then circling again to outglide the opposition by a minute. Peter Watson's later flight, although very tidy, was never in good enough air to challenge.

FAI Day

As forecast, the FAI day was much windier although there were sunny intervals and consequent small, strong thermals. Conditions in the air were to prove very difficult. Fortunately the wind direction had stayed at a constant south-westerly all weekend and the more hardy were growing well acquainted with the downwind landmarks. Furthermore the positive drift was keeping models clear of the only real hazard, a large copse of trees about a mile downwind.

Of course, with an event run in rounds those hoping to be in contention have to enter whatever the weather looks like. In this case numbers were pushed far higher



y begins with a report on the E Meeting at Salisbury Plain

than might usually have been expected on such a rough day. Although maxes were fairly plentiful from the start in Glider, Rubber and Power fliers fared badly. Power models appeared in need of a little more windy-weather trim; and in Wakefield the lift was so strong - and passing so fast at ground level - that a mistimed launch was disastrous. Many models floundered around in sink, but turbulence was not such a factor as might have been expected at this rolling, hilly site - certainly nothing on the scale of Barkston. Fliers and models seemed to cope with the terrain well and further downwind the gentle hills actually saved some sinking models with slight ridge lift towards the end of their flights.

By round three the wind had risen to 20-25 mph and many had dropped out. The field was halved in Glider, and in Rubber only Kaynes had a full score to lead already by quite a margin. In Power, Screen, late back after the second round, launched a little 'left' and into bad air to drop half-a-minute; subsequently he retired after the model was retrieved badly damaged. Dick Johnson too called 'enough' after D/T failure led to a flyaway. Both Watson and Bailey were launching well and flying steadily. They had unspoiled scores.

The chances of a flyoff in glider were removed when in the fourth round Colin Sharman was one of the few still flying to drop badly leaving only John Williams with a perfect score. In F1B Kaynes was actually the only man to max when the others produced a crop of short flights, some being little in excess of a minute. It was now howling 25-30 mph at times. Only three remained flying F1C but all three flights produced were excellent. John Bailey was very unlucky when poor air brought his flight down half-a-minute early, moving him down to second place and out of the flyoff chance. Both he and Watson were demonstrating superb style, given such a high wind.

At left we see Sue Coy releasing John Williams' F1A for its final flight on the second day - a very tense moment; but a beautiful max won him the contest.

Photos at right: 1: Mike Howick releases for a max in Open Rubber. He used a more conventional layout in the flyoff and took third place. 2: It's a tricky business jiggling the prop on - especially with another motor being stretch-wound this close to your ear! Phil Uden has the prop; the motor belongs to Gerry Pink. Phil was out of luck with a poor first flight. 3: It was a weekend when the fancy models stayed in the box. These are Steve Marriott's F1Bs. 4: George Fuller is back in action. Here he competes in Open Power. 5: Dead into wind every time - Pete Watson is getting very good at F1C in any weather; and in high wind he is almost unbeatable. This model and John Williams' glider returned the only perfect scores in FAI. 6: Ian Kaynes launches on the crucial last flight, which clocked far more time than he needed. 7: Mike Woodhouse tries his prototype sprung-loaded torque-metered winding jig, made by Dave Stapleton. Jig was fine but the prop spilt a few seconds after launch and Mike retired with no score. 8: Jack North has seen it all before. At this meeting he assisted and timed the eventual F1B winner, Ian Kaynes.

July 1987



In Glider the last round was critical. Any of the top four could have won it had John Williams made a mess of his last flight. Carter and Cooper - two of the top three from the evening before - rounded off their days with fine maxes to ensure high places, but Williams kept his record and won with the only unblemished score. Colin Sharman came back with a max very late in the round to take third. Only Cuthbert spoiled his good flying with a disappointing 1:50 but this still placed him a creditable 5th on a very tough day.

Ian Keynes' F1B technique was quite exemplary. It is very rare in any conditions to see an individual take such a commanding lead in this class. Ian was not about to let this slip despite damage to his number one model. Even with maxes from nearest challengers Dilks and Peers he required only a flight of 1:15 on the last round to clinch it.

Once again patient observation and feel (his bubble machine, the only one on the field, had been damaged by this time) gave Ian a beautiful patch of air into which he climbed away higher than ever. He had the presence of mind to set a very short D/T, hence the non-max but his time was still far more than was needed to take the Mike Duce Trophy. Incidentally, Foster, last year's holder, had retired after a poor flight in the third round.

Bailey and Watson, leaders in F1C, came out for their final flights of the weekend. As usual, Bailey launched quickly after the hooter and maxed again, pushing Watson to make 2:30 or better - which he did with ease. Ray Moore, who had been flying steadily apart from an unlucky crosswing launch in the 3rd round, made a token flight to be sure of third place.

Although conditions had never been impossible, thanks mainly to the good natured site, this was certainly not a day for fancy models. Tissue, balsa, bent piano wire and great courage reigned supreme. It was most appropriate that the only trophy on offer should go to the outstanding performer of the meeting - Ian Keynes.

Easter Two-Day Meeting, Salisbury Plain: 18-19th April

Open Glider to 3:00 max. 31 flew. 9 in flyoff

1	J. Cooper	9:00 + 9:37
2	J. Cuthbert	9:00 + 8:21
3	J. Carter	9:00 + 7:46
4	M. Cook	9:00 + 5:50

Open Rubber to 4:00 max. (22 flew - 6 in flyoff)

1	N. Cliff	12:00 + 9:40
2	D. Morley	12:00 + 7:29
3	M. Howick	12:00 + 6:07
4	L. Auckland	12:00 + 5:15
5	P. Ball	12:00 + 2:46

Open Power to 3:30 max. (12 flew - 3 in flyoff)

1	R. Peers	10:30 + 7:51
2	P. Harris	10:30 + 6:51
3	P. Watson	10:30 + 4:46

F1A (28 flew)

1	J. Williams	15:00
2	J. Cooper	14:35
3	C. Sharman	13:12
4	J. Carter	13:08
5	J. Cuthbert	12:50

FB1 for Mike Duce Trophy (17 flew)

1	I. Keynes	14:15
2	T. Dilks	13:15
3	R. Peers	11:10
4	L. Auckland	10:02

F1C (10 flew)

1	P. Watson	15:00
2	J. Bailey	14:30
3	R. Moore	11:40

A simple twin anemometer system

Despite occasional doom-laden forecasts that the technology exists to create the infallible thermal detection machine, it never appears. I include myself in the numbers that breathe a sigh of relief and say 'thank goodness'. It seems the majority of people are still motivated more by the building and development of model aeroplanes than by application of fancy hardware and computer technology. Of course, if one wants to win every contest this is the wrong road along which to travel. We have known for along time that the air in which the model is flown is a vastly more important factor than its performance or state of trim. Hopefully, if that infallible detection system was ever to appear (or even one close to it) then the FAI would find a way round it.

In my article on thermal detection techniques a few months ago, I stressed the importance of knowing what was going on in the air by feel rather than by relying too heavily on paraphernalia. Since then I have come, rather reluctantly, to the conclusion that my thermistor system at least has made little or no difference to my results. There are days when it's useful; and then again there are days when it is a distinct encumbrance. The problem is deciding in advance which days will be which! Given the problems associated with numerous launch-site moves - so common on many of the fields on which we fly - too much tackle can definitely *reduce* your performance and will certainly spoil your enjoyment of the day's flying.

However, experiments with an anemometer were promising, particularly on very windy days. Most of us can recognise a lull, but it isn't so easy when the wind is so strong that one is either sheltering flat on the ground or behind a vehicle with the model. In those circumstances it's very useful to have a windspeed read-out so that you can still protect the model but know what is going on above.

Why a twin system?

Last year I experimented occasionally with two anemometers, one on the thermistor pole and the other 100 yards upwind. This proved decisive just once - at the RAF Champs when the wind was consistent in direction (rather important if you have a double sensor set-up) and rose in strength steadily during the day, bringing with it severe turbulence for which, sadly, Barkston is getting a worse and worse reputation. Although setting up the rather cumbersome equipment was a chore I was able to differentiate between calmer spells caused by the severe turbulence and genuine thermal-induced lulls. In fact, during the final few flights, I took notice of *just* the anemometers; it was relatively easy to feel the rises in temperature.

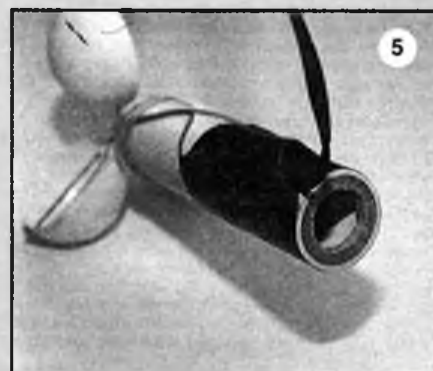
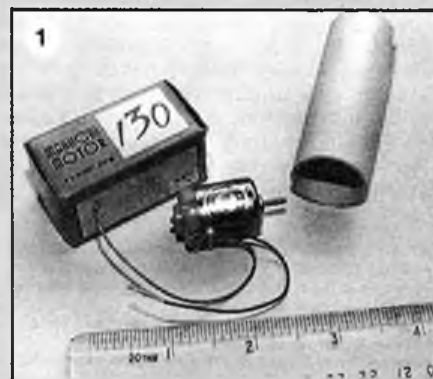
With turbulence being such a decisive factor in thermal generation and detection, and with such a lot of it about over our sites when the wind exceeds 20mph then I reason that the double anemometer is perhaps a more important piece of equipment than temperature sensors. It is for this reason that I have created the simple system described here.

Ideally, two units are stationed about 100 yards apart. One is close to the intended launch point, the other directly upwind. You can feel the lulls if it's pleasant enough not to be sheltering behind a vehicle but what you cannot feel is whether the lull is the beginning or the end of a thermal. This is critical. Launching too early is usually worse than launching late. The double anemometer heads tell you if it is as calm upwind as downwind; if so, one waits until the upwind sensor shows the wind increasing again. This way you know you have the back edge of a reasonable-sized calm patch, and - hopefully - the thermal above you. You launch as the upwind meter begins to show an increase in wind speed over that registered downwind. It's as simple as that.

On a windy day, even if it isn't a huge thermal that you are releasing into, at least it is likely that you have a large enough lull to allow the model the best chance of getting away cleanly and not finishing up as matchwood - the victim of roll-over turbulence that so often feels like a lull but is in truth just the wind momentarily blowing from above rather than from in front!

Sensor and vanes

The heart of the system is the motor in the sensor head. These are Mabuchi 130s, which are not only about the smallest available but have proved very free-running. Mine were bought from Blunts Models in Mill Hill, London, but they may be found in most model shops for less than £2.00 each. Dials were the next problem. Buying a sensitive enough micro-ammeter at an electrical component shop can be a very expensive business and having to get two identical examples simply doubles that cost. However, there's a very rich untapped source - record-level meters from defunct stereo cassette recorders, Hi-Fis, or



Discos. All the ones I tried worked well - my final decision being made on the basis of size. Such units should be available from electrical and electronic repair shops, or even in scrap equipment in junk shops if you haven't any in the loft!

The third part of the system is of course the vanes themselves. Early prototypes used four half-ping-pong balls arranged on arms some 6in. long to ensure sufficient leverage to overcome the friction inherent in the motor. In fact such long-armed vanes were used until the advent of the system shown here when it was discovered that they were quite unnecessary for this motor/meter combination.

You will appreciate that the larger the distance between the ball and the central axis the more slowly will the motor be revolved in any given wind strength. Hence by adjusting the length of these one can 'tune' motor revs to match the sensitivity of the meter within the wind-speed range in which we are interested (i.e. 0-30 mph for full-scale deflection).

In my case the best effect was with as little leverage as the diameter of the ball vanes would allow. Hence the three-ball, shortest-armed most compact system imaginable. See photos.

Linearity

The output of the motors is presumably proportional to the speed at which they revolve. Originally it was assumed that the higher the wind the faster the vane would turn but this is true only up to a point. That is to say: as the wind rises the force on the cup side of the vane increases but of course the drag also increases on the ball side of the vane coming back upwind. Hence as the wind increases the vane becomes *less* sensitive. This seems to suit perfectly all the meters I have used. What we usually finish up with is a linear reading on the scale; the nett result being

that the dial is very easy to read, calibrate and interpret.

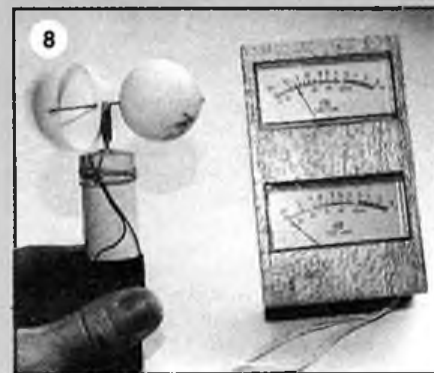
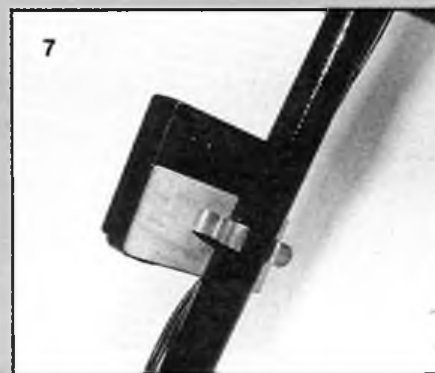
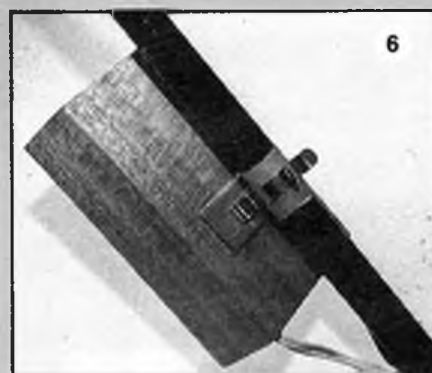
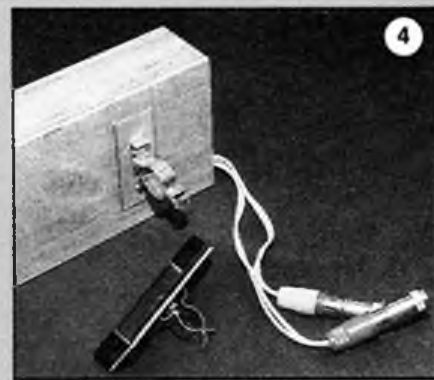
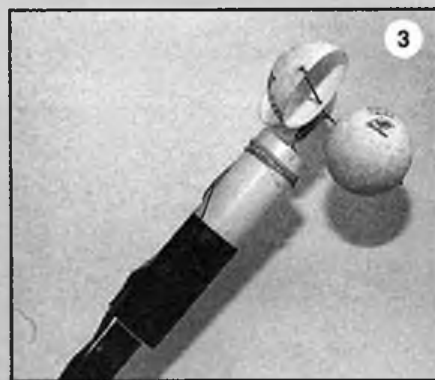
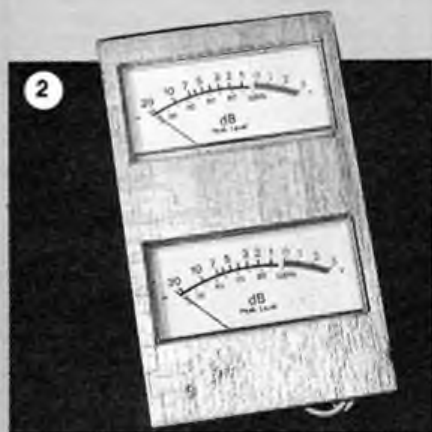
The system needs no special wiring, nor any electrical knowledge apart from the ability to solder the wires into the phono-plug connectors. The motors are simply connected to the meters with polarity determined by direction of vane rotation. There are no intermediate electronics at all. Of course, the upwind sensor needs 100 years of wire which can be a bit of a problem; but it is worthwhile. The best arrangement seems to be four or five feet of wire out of each sensor head so that both are identical; an extension lead of the required length is fitted to the upwind unit.

Mounting has been designed to be as quick and simple as possible. The recommended roach pole is the four-section Silstar 410, which is just over four meters long. They are quite popular at good fishing shops and if you are unlucky enough to require them out of season most shops will order a couple for you. Mine cost approx £7.00 each. They have a very well-made reinforcement at the bottom, covered by a removable cap, so in order to stand them upright they may simply be slipped over a short spike driven into the ground. As they are not that long they should not require further fastening. The anemometer head is constructed from plastic conduit into which those Mabuchi motors fit nice and tightly. Two formers have been added inside exactly to fit the small, gently tapered end of the second section of pole. The top two sections are not used but should be kept for flying major streamers on those hot, lazy days when turbulence and wind speed variations are neither detectable nor important.

If you really cannot live without a thermistor then I can recommend the compact digital read-out units that are being sold by both Mike Woodhouse and Free Flight News. However, there is a cheaper alternative. Tandy sell a Micronta

clock/thermometer - you can see one clipped to the pole in one of the photos - which reads Centigrade or Fahrenheit every five secs. With a tiny bit of modification the clock mode can be cut out. I haven't even bothered to remove the thermistor and stick it up a pole; instead, I just drilled out a large hole in the plastic casing to let the air through. Make sure the sensor bead is never in direct sunlight and you have a thermistor every bit as good as anyone else's for less than £12.00; and it's small enough to go in your pocket! Remember though - it's the double windspeed meter that I believe to be the key to consistent flying. Try it - but don't trip over my wire...

All the bits! Photo 1: Basic ingredients for the anemometer head - a Mabuchi 130 motor and a short length of plastic electrical conduit. This material is the very same as that currently popular for F1B motor-loading cartridge tubes. 2: Twin 'level' meters from an old stereo cassette player, simply boxed in a small balsa housing with a clip at rear for fixing to pole of anemometer stallion closest to launch point. 3: The complete head. Hub of brass tube is, a push fit onto motor shaft. Motor, in turn, is push fit into conduit. Note three-ball vane for maximum revs; internal friction of motor is very small. Heat-moulded polythene cover over exposed end - above motor - prevents rain filling the tube. After operation in the wet it is advisable to disassemble and dry out. 4: Rear of meter housing box showing clip bolted to box through ply reinforcement. The other item is a mounting for the Tandy Micronta thermometer. Phone plugs connect leads running to vane head. It is advisable to fit shorting-line sockets - as here - to act as a damper on meters when in transit, thus avoiding damage to sensitive needle mountings. 5: Bottom of vane head showing lower bulkhead drilled out to a snug fit on top of second section of roach pole. 6: Meter box clipped in place. Masking-tape band prevents clip from cutting through glass-fibre pole strands. 7: Thermistor clip mounted similarly. 8: Just a gentle blow is enough to register. That's Dave's hand - he was holding, blowing and photographing simultaneously!





Also at the Two-Day Easter Meeting was Mike Evatt, here seen giving a tremendous heave to his F1B. Despite some very short flights and no maxes at all he plugged away when many gave up and came in fifth.

Vintage and Pannett Meeting, Driffield: 12th April

After a very wet preceding week it was more than a little damp for this regular Northern Power attraction. Although the rain thankfully relented for the contest the damage had been done and what with strong thermals, a stiff 20mph breeze, mud and a flooded river downwind, entries were lower than last year. However, the standard, particularly in such windy weather was very high.

In Open Glider only two made it through to the flyoff - one of whom had more than a little luck on the way. Cuthbert was able to retake a dropped flight when it was discovered that a previous max had not been recorded, thus finishing with a full score after having to make rather more flights than he expected. However, one wonders to just what rules they were flying as the SMAE book certainly would have disallowed such a convenience as it states that *all* flights after such a breach are automatically disqualified. Be that as it may, Cuthbert still had to face clubmate Carter in the flyoff. He towed and released first into helpful air and although Carter had positioned himself well downwind he was unable to reach the opposing model. Left to find his own lift he took the whole of the ten-minute period to do it - but when it came it was superb. After a tidy zoom the model was timed out of sight, still going up after some twelve-and-a-half minutes with its owner running underneath cursing the fact that he had flown without D/T when he had only a little over four minutes to beat.

The Vintage flyoff was filled with Rubber models. All were launched within a half-a-minute of each other giving a good comparison of flight patterns and a close test of performance. As the props folded Dennis Davitt's Lanzo picked up a stall and was down quickly after having behaved impeccably all day.

Phil Ball's game little Hi-Ho, so reliable earlier, was now no match on glide for the

300-square-inchers. Once again it was Strachan's Lanzo against Dilks' Challenger. They glided on and on almost in formation but the longer run of Chris Strachan's model had already instilled it with advantage and the model took the Topcliffe Trophy by almost half-a-minute. This was Chris' lighter version of his red-and-yellow striped model that has stood him in such good stead over the past few years. Decoration of this one is black-and-yellow stripes. Nearly six minutes is a good Vintage flyoff time - this model, which is right down on weight, will be tough to beat.

Open Power, the main event, had only two flyoff qualifiers after Alan Jack had D/T'd himself out of a chance on the third flight. However, the two at the top were the very cream of the crop. It was a showdown between Peers and Hopper with no one else cluttering the sky. Peers was first away with a perfect pattern, followed a couple of minutes later by the Hopper model which climbed even higher. Alas, Hopper overran - or at least that was what one of the timekeepers recorded - and all looked lost. However, as John O'Donnell was quick to point out, it's the average of the engine run watches that should be taken, accordingly to the SMAE anyway. The other watch showed more than one second less so Hopper squeezed in with an average of 9.9sec! A superb flight of more than ten minutes convincingly won the much coveted Tony Pannett Memorial Trophy but one can't help thinking that any such doubt must have left a bitter taste with both competitors. I certainly wouldn't have liked to have been the CD at that moment...

The Morley Club had given a day's flying to run the event as smoothly as ever and our thanks are extended to them as well as to Ian Davitt who furnished us with the basis of this report. It should be noted that Ian also managed his first glider placing after having taken up this class only this season. He was the top of the non-maxers in Vintage too with his Senator.

Pannett, Kay, Vintage Meeting, Driffield: 12th April

Open Glider for Jack Kay Memorial Trophy (12 flew)	
1	J. Carter 9.00 + 12.21
2	J. Cuthbert 9.00 + 4.10
3	I. Davitt 8.47

Vintage for RAF Topcliffe Trophy (13 flew)	
1	C. Strachan (Lanzo Stick) 9.00 + 5.45
2	T. Dilks (Challenger) 9.00 + 5.19
3	P. Ball (Hi-Ho) 9.00 + 3.36
4	D. Davitt (Lanzo Stick) 9.00 + 2.51

Open Power for Tony Pannett Memorial Trophy (10 flew)	
1	J. Hopper 9.00 + 10.20
2	R. Peers 9.00 + 7.18
3	A. Jack 8.50

Don't forget

19th August (originally 19th July)

SMAE Club Championships:

Salisbury Plain, Training Area 9.

Open Glider, Rubber and Power for individuals and/or club teams. (Teams comprising one flyer in each class - no need to nominate in advance).

Contact: Free Flight Tech Committee; Peter Harris 0562 741443 or Phil Ball 0332 665361.

Grantham Grand Prix, Barkston Heath: 29th March.

Open Glider (7 flew)	
1	J. Cuthbert 07.30
2	W. Colledge 06.06
3	J. Williams 06.06
Open Rubber for Open Rubber Trophy (5 flew)	
1	J. O'Donnell 7.30 + 8.35
2	J. Carter 7.30 + 6.04
3	A. Ball 7.30 + 5.32
Open Power for Arthur Percival Trophy (4 flew)	
1	T. Payne 7.30 + 7.00
2	R. Peers 7.30 + 4.40
3	P. Watson 7.23
Combined FAI for Barkston Cup (6 flew)	
1	J. Bailey 11.10
2	J. Cuthbert 11.00
3	J. Carter 9.23

All of the above to 2:30 max in 20-25pmh wind

HLG for Bill Fall Trophy (7 flew)	
1	M. page 7.50
2	P. Ball 6.03
3	R. Clark 5.48



Topcliffe Trophy winner at Driffield was Chris Strachan's fine black-and-yellow striped Lanzo Stick.

FLY LEAVES

An occasional look at books of interest to the aeromodelling and aviation enthusiast



Paper Airplanes From Around The World

by Ray Roberts (*Paper Airplanes International*, 1521 Morningside Drive, Burbank, Calif. 91506, USA. \$7.50).

One hundred-and-eighty-four items related to this fascinating subject appear in the 1987 catalogue of Paper Airplanes International. 'From Around The World' is no idle boast since examples are included from France, Germany, Italy, Holland, Poland, Israel, Japan, England and the USA ranging from simple folded paper gliders to an exact scale model of the DC3 of over six feet (yes, 72ins!) span. Many of the models (some are rubber powered) are designed for flight; and at the other extreme there are accurate scale models that when completed are every bit as pleasing as models made with 'normal' materials. All subjects are illustrated and each is described in a standard-format resumé which indicates suggested skill level required, whether or not the model is pre-coloured, pre-cut, profile or 3-D, the type of model (whether static, flying, scale, freelance) and so on. Listed as a new approach to the age-old art of paper modelling are three-foot-long models of Boeing 727 airliners in the colours of Federal Express, PSA and Delta, which are said to be laser cut. Not all the items are aeroplanes; indeed, space ships, a helicopter and even a Saturn V rocket are included. A number of books on the subject are included in the survey, including out of print and thus hard-to-get items. One wonders at the industry of Mr Roberts in being able to offer such a wide range of material in his catalogue which includes a free sample of cut-out sheets for a US Air Force F100 Super Sabre. If paper aircraft are your thing you will certainly find something to interest you in this compilation. Don't dismiss the subject as kids' stuff either; I would like to remind readers of the very fine paper models made

by Mike Hetherington (did you ever see his Focke Wulf Stosser fly at Old Warden?) and the beautiful creations in this material by Alex Campbell of the old Seagull Models company. Unless one was told it was impossible to believe that paper was their medium; and remember it's cheaper than balsa! AI

Radio Controlled Gliding

by Dave Jones (*Argus Books*, £8.95).

There is something particularly stylish about the effortless, unassisted progress of a well-trimmed R/C glider — an attraction that has resulted in this branch of our hobby enjoying continual growth since the dawn of reliable radio equipment. Indeed, R/C gliding today is the most popular form of controlled model flight. Dave Jones is well-qualified to set down all that the newcomer could wish to know; as a competitor, designer and resident columnist in our companion magazine RCM&E he is not only aware of latest trends but is familiar with problems faced by the prospective soarer. This is a practical guide, as just a trio of the chapter headings, 'Avoiding Construction Errors', 'Repairs' and 'Foul Weather Flying' (the last-named being sub-titled 'flying to survive') will prove.



A considerable part of the charm of R/C glider flying is the importance of knowing what effect weather conditions and flying-site topography will have upon model performance; and model design too gives the enthusiast something to ponder for never has the old battle of 'strength versus weight' been more important to win than with a glider meant for bungee or power-winch launch. All these factors are discussed in this book; and the particular delights of slope-soaring — general procedures and competition flight too — are elucidated by acknowledged specialist Keith Thomas. Clear line drawings by Roy

Garner augment unfussy text and the total impression is of a well-thought-out guide to help the beginner up to intermediate levels of skill — and then to encourage him to progress further. GC

Model Aeroplane Building Sketch by Sketch

by Peter Holland (*Argus Books*, £7.95).

Who better than ASP's illustrative wizard, Peter Holland, to produce this pictorial guide to model aircraft construction techniques. Long time subscribers to the Argus range of magazines will be fully aware that Peter's talent for making clear the whys and wherefores of 'how to build' is unsurpassed; and here we have a lifetime of modelling experience distilled into this invaluable handbook. No less than twenty-three chapters serve to contain all you could wish to know — from choice of materials to pre-flight rigging checks via discussion of fuselages, wings, hatches, struts, undercarriages, linkages, covering, and much, much more. This volume teems with handy hints and tips clarified in classic Holland style. Something for everyone here — and if your interest lies in sport R/C then this is really your book! As a taster we could think of no better illustration than Peter's own 'prop-slot' propulsion system, devised back in the 50s but given recent currency in the full-size world (incidentally, this reviewer has always hoped to see a Bristol 188 so powered — does anyone fancy a go?). Enjoy this book — it's a problem-solver, a time-saver and it will fire your imagination. GC



FREEBIRD 4, last year's Gold Trophy Winner, is a straight forward development of my Nats winning Freebird3 design of 1985. Firstly, why change the design so radically? This is simply in the search for an ever-tighter-turning aerobatic model. Freebird 3, although a very competitive design lacked the crisp-turning ability of many continental models. Hence the modifications drawn here. The reasons for the change to a side mounted engine was two-fold. First, an inverted diesel engine tends to richen up during outside manoeuvres, so when one picks up level flight again a misfire occurs; no real problem but it doesn't look too impressive!

The second reason was to bring the thrust line onto the wing and tailplane centre line in order to create a model with an equal turning radius for inside and outside manoeuvres. In other words the model is almost symmetrical in side view except, of course, for the undercarriage on one side and canopy and fin on the other. The wing tailplane and fin remain unaltered but the nose and tail moments are changed. The fuselage is of the same overall length as Freebird 3 but the nose is one inch shorter and the tail one inch longer. To compensate for this the full length engine bearers have been omitted to allow for the centre of gravity change a longer tail moment would bring. Subtle changes, all in the interests of a tighter turn. The weight one should aim at for a finished Freebird 4 is 45-50oz; not difficult to achieve, so why not try building one?

Tony Eifflaender details latest mods to this pedigree stunter



Construction

Although Freebirds 3 and 4 are not difficult models to build one should realise most of the metal work will have to be home made so previous experience of this is desirable. The full building sequence of the wing, tailplane and fin was covered in the July 1986 issue of *Aeromodeller* so I shall concentrate on the fuselage.

First choose your engine. The bearer spacing shown is for the PAW 29 or 35. Cut the engine bearers to length and screw to

the engine. Make up formers 1 and 2, attaching the wire undercarriage to former 2, and fit the formers to the engine bearers ensuring everything is square. While this assembly is drying cut the fuselage sides out and glue the 1/32in. ply doublers in place.

Next glue the tank supports to the bearers. Remember the distance between the screws as this aids tank building. If you have not got the facilities for building a removable tank as described you will have to fabricate a large enough tank to be glued permanently in place between the bearers.

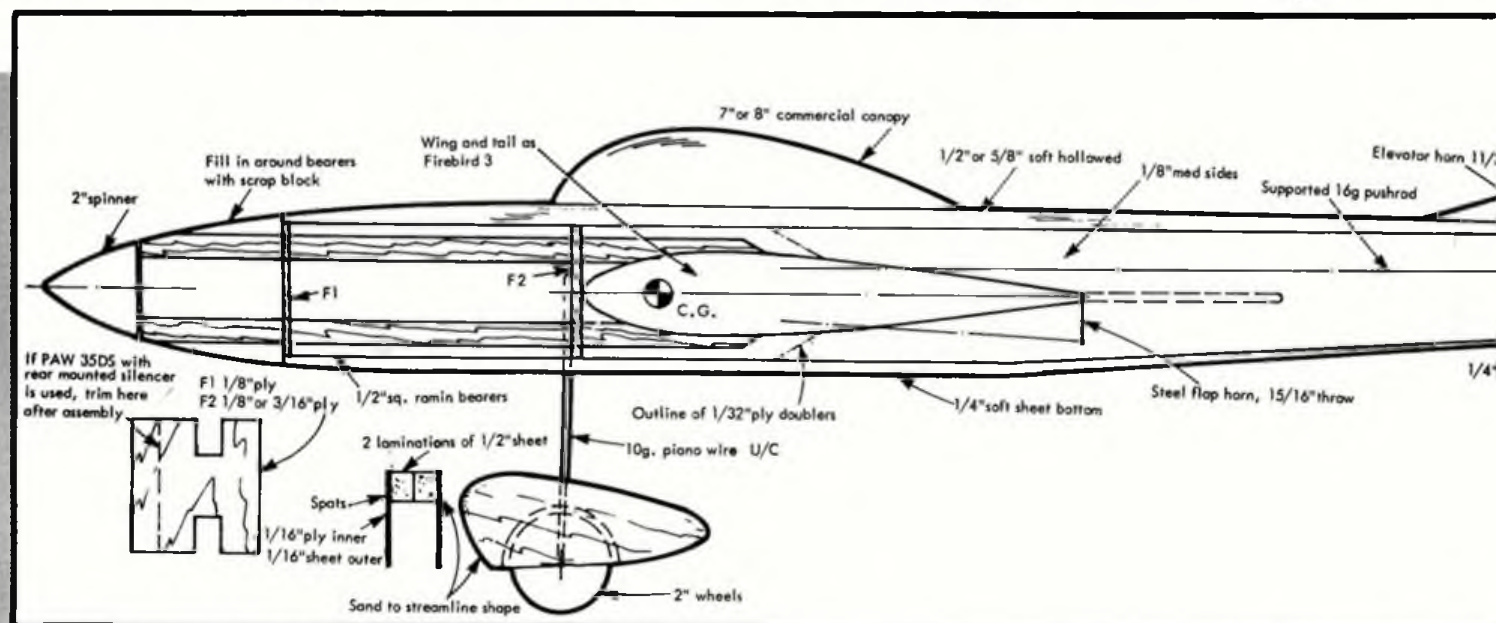
If a removable tank is fitted, cut out the space required for tank removal from the outboard side of the fuselage only, saving this piece for the tank cover.

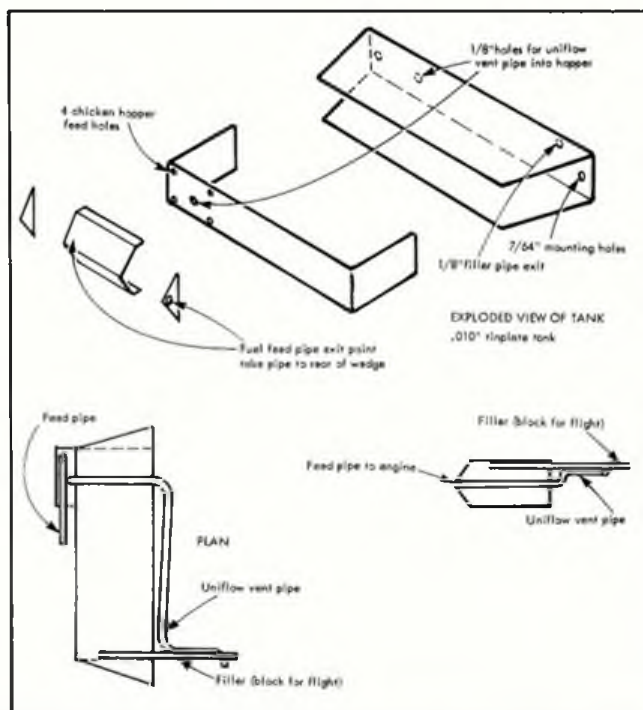
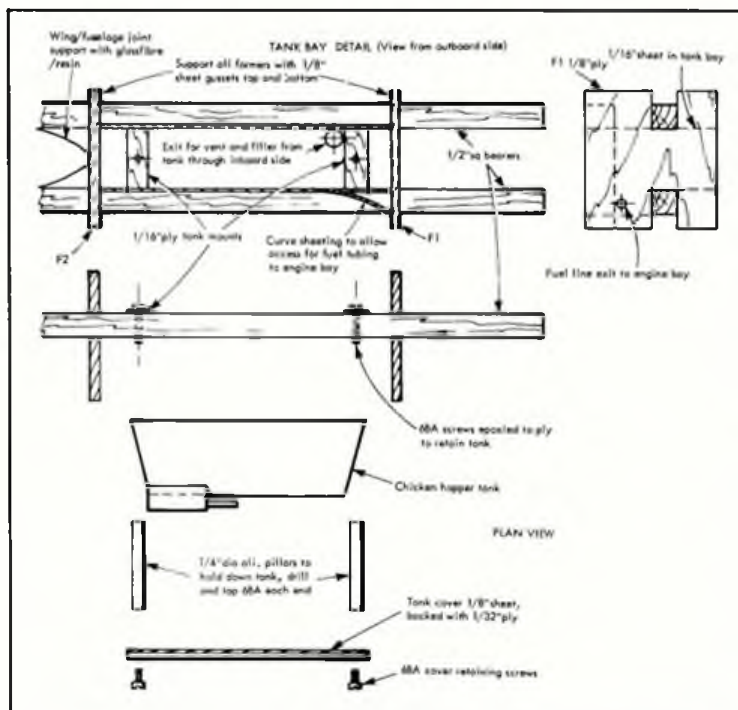
Next glue the fuselage sides to the engine bearer assembly. Do this upside down on a building to ensure a true thrust line. When dry remove from the board and glue the rear of the fuselage together, checking for symmetry. Now sheet in the tank bay with medium hard 1/16in. sheet balsa and add gussets to all the formers to add support to the engine bearers. Finally drill a 3/8in. diameter hole in the tank bay wall for the exit of the vent and filler pipes. At this point decide on the silencer system to be used. If the standard PAW unit is chosen then F1 and the fuselage side will require cut-outs for clearance. Fill the resultant gap with 1/16in. sheet balsa to seal the tank bay.

Now build the tank and associated metal work. Care taken here will result in an easily removable tank, a must for serious competition work.

The basic fuselage is now complete and ready for mating with the wing and tailplane. I use glass fibre resin and cloth for these highly stressed joints. Add the

Move up to FREEBIRD 4!





Opposite photo: Freebird 4 is released for a win in the '86 Gold Trophy. Main picture this page shows very latest version.

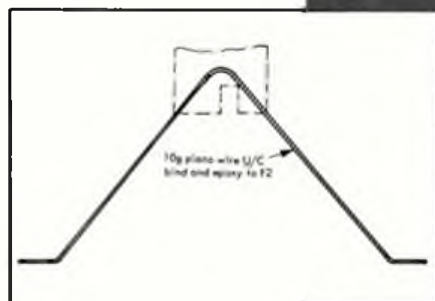
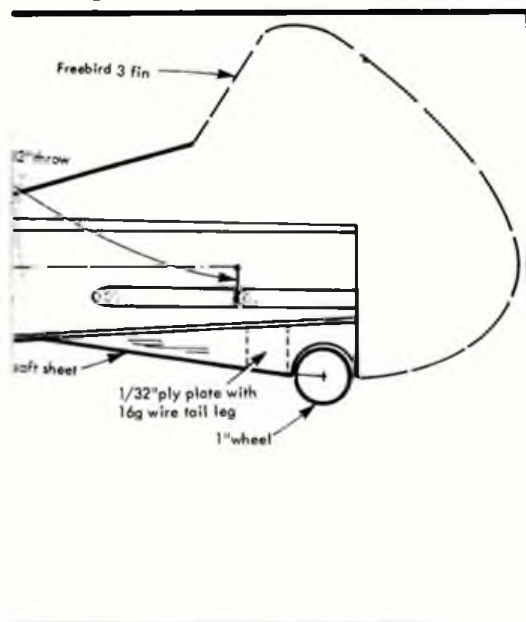


Photo below right: Tank and engine bay of Freebird 4 - now fitted with a prototype PAW 40. More news to follow! Diagrams are self-explanatory, but refer to text for even more gen.



top and bottom sheeting and finish off the engine bay with soft block balsa, sanding to shape.

Now your model should be ready for covering. I would recommend a traditional tissue covering as the best compromise between strength and weight. To whet your appetite look at some of Claus Maikis' colour schemes (always a pleasurable way of forming a new idea).

Motor matters

Now a last word on diesel engine starting procedure. One of the commonest questions I get asked is 'how do you do it?'. Quite simply I follow this procedure.

Turn the engine backwards onto compression and fill the tank; this avoids flooding (the commonest cause of a non-start). Open the needle valve half-a-turn from the running setting and choke the engine twice. Now increase the compression by one full turn on .29-.35in. motors (a quarter of a turn for smaller diesels).

A good flick and the engine starts! If it doesn't, just choke the engine once more and give another flick. As the engine warms up return the compression and needle valve to their original settings. After a little practice you will wonder what all the fuss is about. Once I have established the running settings I mark their positions so I don't forget, because the setting will never vary that wildly.

If you want something a little different but a model that is also very competitive, try an updated Freebird - who knows, with a little practice the sky's the limit!

Outstanding! – Julian Hopper's pedigree Open Power model is examined by Dave Hipperson



SUPERJACKER!

IT WAS AT THE August '76 Nationals at Little Rissington that this design had its first contest outing. The flyoff win was its very first blood. Since then there have been seven more versions and many wins at the Nationals and other major power events. The different marques have varied only in fine detail from the pattern shown here. After the design showed so much potential Julian quickly discarded his original idea of using smaller Super Tigre powered models for the contest flights. He now flies this one design throughout the day, which at least keeps his options open at flyoff time.

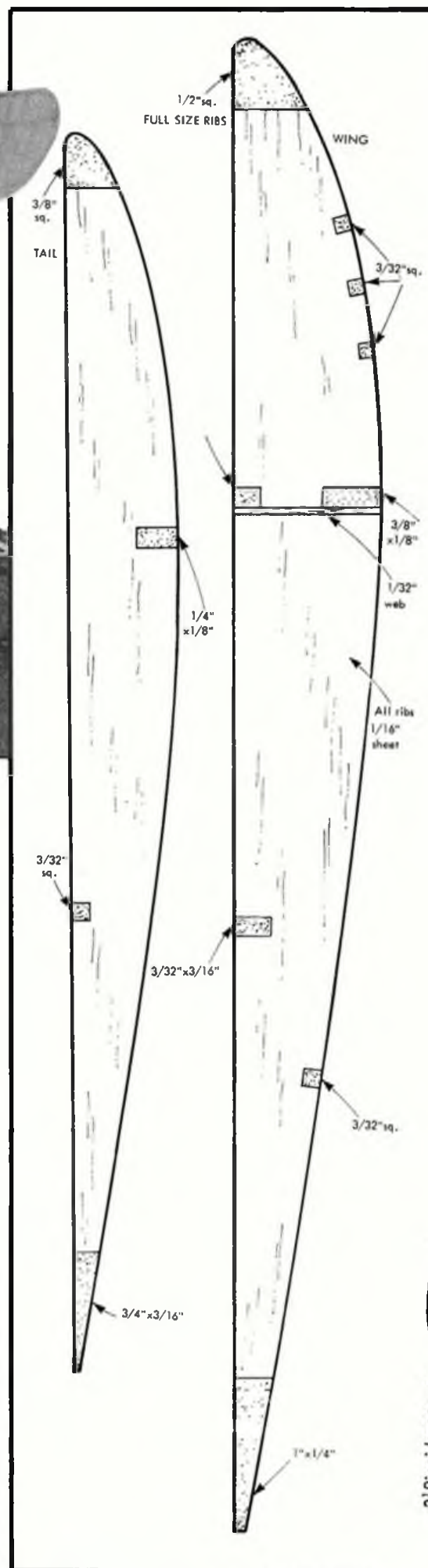
Julian could never be accused of not going to the limit with his flying. Although the model is quite basic in construction a number of versions have been very much lighter than the weights quoted here! They

were spectacular but often not in quite the way Julian would have liked. I recall a particularly fast one blowing up on the climb in '77 when the wing got damp in the National flyoff. Another one exploded after it went flat at the '79 Nationals...

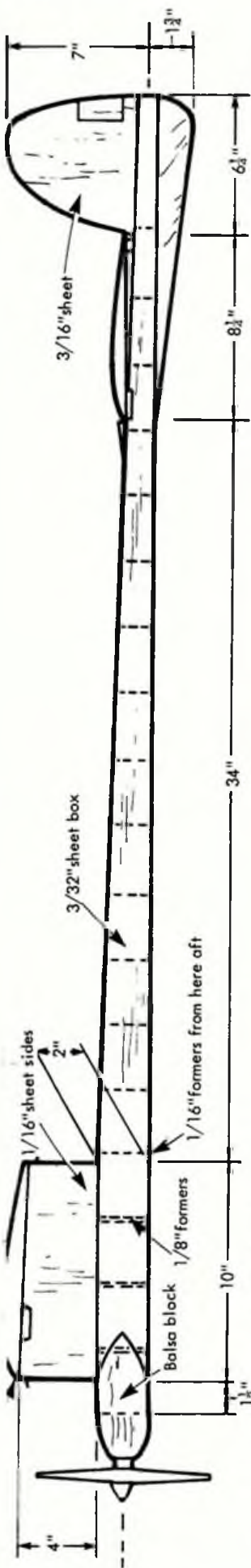
The design here, No 7, has proven to be quite robust and it has been this model that was used for most of Julian's flyoff wins in 1986. His record has been really quite outstanding; he has won everything he flew in – and that's most of the important Open Power events, apart from the Pannett which he didn't attend – until the Southern Gala where he had to be

continued on p.407

Heading: Superjacker 7 about to hit the sky at the 1986 Nationals. Below: Julian Hoppers's young son holds Dad's Superjacker before the Open Power flyoff for the short cup at the Southern Gala.

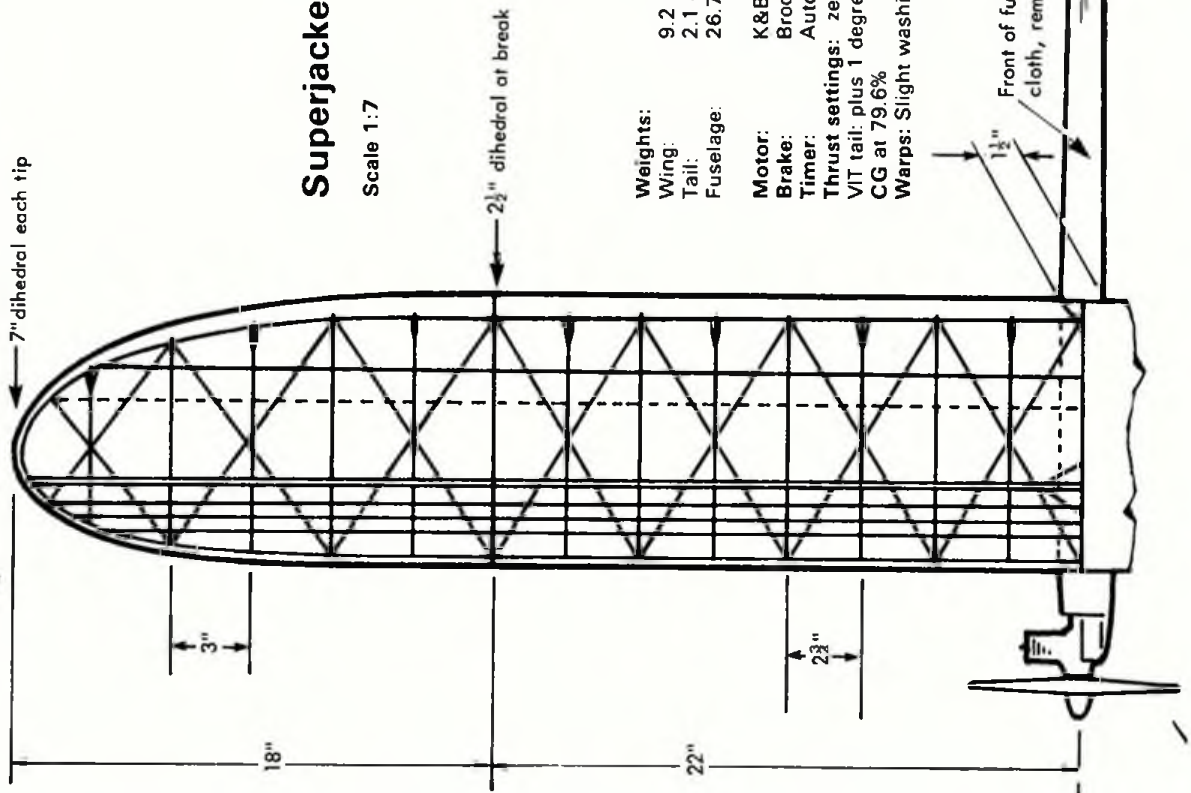


Aeromodeller



Superjacker 7

Scale 1:7



Weights:

Wing: 9.2 oz
Tail: 2.1 oz
Fuselage: 26.7 oz

Motor: K&B Torpedo 40 or OS 40SR.

Brake: Broderson.

Timer: Autoknips.

Thrust settings: zero-zero.

VIT tail: plus 1 degree for power, minus 1 1/2 degrees for glide.

CG at 79.6%

Warps: Slight washin - starboard inner wing panel

READERS' LETTERS

Opinion, controversy, praise ... what's on your mind? Don't keep it secret — let's all hear what you have to say ...

MW Revealed!

Dear Sir,

In the March issue of *Aeromodeller*, when referring to a photograph of a C/L vintage biplane, you posed the question 'who is MW?' (These initials appeared on the fin of said model. GC). Well! 'Tis I. . .

As the name along the sides implies, the biplane is an *Inspiration*, a design by S.F. Walker which was published in the August 1949 edition of *Model Aircraft* magazine. An E.D. Competition Special originally provided the urge. My version was built for a Masco Buzzard 2.8cc diesel and was finished in time for the 1984 Old Warden Vintage Day. I had owned this engine since the early '60s but had never installed a model although various thoughts on suitable projects came and went. 'Twas ever thus.

Test flights of the model were somewhat precarious. I had persuaded my friend Chris Bradford to help me, mainly because he owned a tachometer. Knowing that a fairly high pitch propeller would be required I fitted an 11x8, considering this a good substitute for the recommended 13x6.

After fuelling up and starting, the tachometer was brought into use. This indicated about 4,400rpm, which seemed rather low, so judicious propeller trimming was carried out which eventually raised the speed to about 4,800rpm. Attempts were then made to fly. I can't remember now whether the first flight was from a hand launch or ROG but power was marginal and if there had been a wind the flight would probably have had a premature end.

After this Chris produced an old 10in. diameter Truflex propeller. Revs were now checked at about 8,000; a big improvement, we thought, but airspeed seemed less than before and half-way through the tank of fuel there was a sudden silence. Seized engine! As Vintage Day was fast approaching it was back home, flash up the lathe and lap the piston and cylinder together again...

On the day itself the weather was again kind — and calm — so the model was entered

for the Fireball Trophy. After the model had been in the air for a few laps I heard Chris shout 'Loop it'. I attempted to do just that and, wonder of wonders, the *Inspiration* managed to fall round. Next came the command 'Invert it', which, being an idiot, I did; a successful manoeuvre until the time came to recover into normal flight, which it didn't. Instant mash and bent crankshaft.

By the next Vintage Day both engine and model had been refurbished but power was now insufficient to fly the model because the new crankshaft was somewhat tighter than the original. Therefore, no flight.

The model was later re-engined with the BB Amco shown in the photograph, but I confess that the character of the model now seems to have been lost and if I can manage to get a little more power from the Buzzard I think that I will revert to the original power unit, but my projects tend to take years. I am always being ragged about this...

Pewsey, Wilts

Malcolm Webb

Slow Open controversy

Dear Sir,

When the Slow Open Power rules first appeared I was attracted by their inherent simplicity and by the way in which they could be translated into compact designs as exemplified by the Dixielander. My own choice was George French's 1/2A Train which doubles for 1/2A and SOP, being free of all gadgets. Dave Hipperson has also endorsed the simple approach by advocating two designs powered by the Cox TD.09, and this is the path I myself will take this year — fellow Team Race enthusiast Dave Campbell has developed a 48in. span model for the Tee Dee...

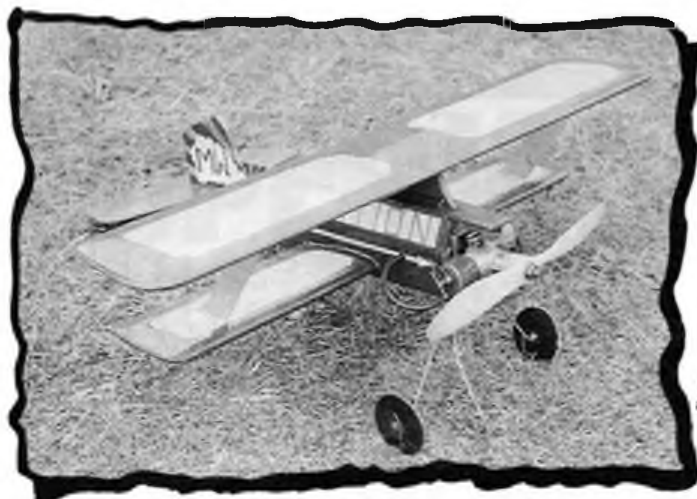
Having followed the simple route quite happily I am bothered by two SOP developments in which I see potential for the same decline as has afflicted, say, Class II Goodyear in control-line racing, namely:

- Experts competing in a class notionally aimed at novices; and
- Models which begin to show all the symptoms of increasing cost, increasing complexity and, in this case, greater size — all with the objective of gaining superior performance.

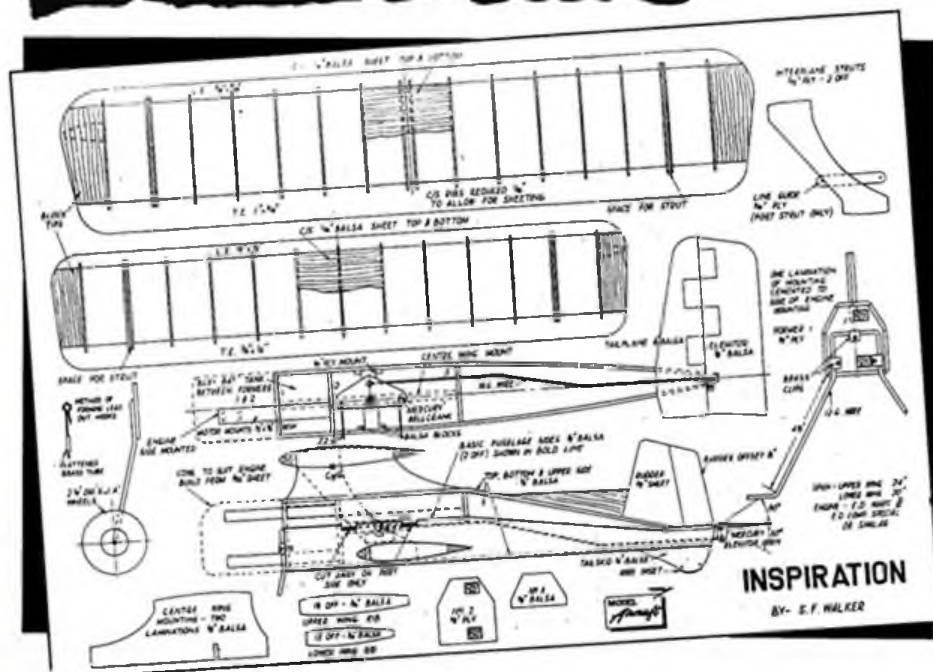
Classes already exist which allow 'no holds barred' for the committed F/F modeller, so why let this 'introductory' class degenerate into yet another annexe for the very skilled and highly experienced? Now — I am no advocate of the banning of entrants just because they are very good; but I must propose two simple rule changes which, I feel, would protect SOP from possible degeneration:

- A maximum engine size of 2.5 or 3.5cc.
- Contestants of any level of skill may enter but those designated 'experts' will not win. Victory will go to the highest.

Aeromodeller



The photo of Malcolm Webb's *Inspiration* biplane, as published in March; and more from the plan. . .



placed 'non-expert' (the difference being that 'experts' will be those modellers who have gained, say, three placings in other Power events).

By these amendments I would hope to keep SOP cheap, cheerful and attractive to novices at Power flying.

Jim Woodside
Liverpool 18 (3 Sisters MAC)

Super service — again

Dear Sir,

I must write in praise of the service PAW give to their customers. Fast is not the word. On 29th December 1986 I wrote to this company for a quote for spares for a PAW 100. On the first post of the 31st December I received a price list for all engines plus my quotation and hand written details of how to fit the parts as quoted! This is not the first time I have had this excellent service.

Not only are their engines of a high standard but so is their after sales service. **Rochester, Kent**

Allan F. Smith

Northern Area News

Dear Sir,

It is some considerable time since any news came out of the Northern Area in the form of a newsletter; indeed it is a long time since any real contact existed between the area and the members it serves. I suspect that many aren't even aware of it, but the Area Committee, which is a part of the SMAE structure is there so that information can flow to and from members. The first part of this process must be from member to the society; by that I mean that you must pay a subscription! After that the average member tends to think that he can have very little effect on the policies and decisions made by the SMAE council, but if enough club members agree with an individual's point of view the club can put a proposal to the Area Committee. Other clubs will then become involved and may support the idea. The proposal is then put to the SMAE by the Area as a whole. Not every proposal is successful of course, but if it is then a single member's idea will have improved the national body. If not, then at least his idea or grumble has had an airing and a lot more people know about it! It is up to the Club secretary or

chairman to make sure that all SMAE members are aware of this procedure. Each club can send a representative to the Area meeting to share its views and to get the latest information.

Quite a lot goes on during the flying year but it is surprising how few people know what other clubs are doing. Many of the events don't get into the magazines. A club may think that its event is not prestigious enough to be put in or the secretary may have missed the copy date. (Send them in! GC). Your club 'do' might be just what people are looking for in their area. The more people who attend your fly-in or comp the more worthwhile to run it becomes, and the greater is the benefit to the club's finances.

I intend to run an updated 'What's Going On' sheet which will become part of the Northern Area minutes mailshot. Some of the events will be initiated by the area or my club (York) but I hope very much that this 'direct-to-clubs' method of publicising events will be adopted by all. I therefore invite clubs in the Northern Area to send me details of the events they hope to run in 1987. I will guarantee that the details will reach more than forty others!

7 Ryedale Close
Norton, Malton,
North Yorks
YO17 3DQ

Dave Kerswell

SUPERJACKER

continued from page 405

content with second place. Julian does admit to having not done much building recently because of pressures of work. In fact his last model was built back in '81, at about the same time as that prototype - which Julian always reckoned glided the best of them all - was lost out to sea on a trimming flight at Woodbury Common after a D/T failure.

Practical and formidable

Unlike Tom Smith's Super Nogs this model really could be built by anyone with power model experience and ordinary aeromodelling workshop facilities. Julian himself has always made a point of using stock motors too, even if they are very much at the top of the market! The model's structure is quite conventional, if on the light side, but they usually hold together as long as they stay pointing upwards when under power. Superjacker's record shows it is just about the most formidable model to be encountered in an Open Power flyoff. The aforementioned Super Nogs, and of course Russell Peers' similar approach with a beefier wing but undercambered section, are about its only opposition at the moment in the 40 class.

Julian has noticed that some versions glide better than others so a little experimentation with the nose entry radius on the wing section could prove interesting; he admits he varies this a bit from model to model. If there is ever a problem with models such as this as there is with flyoff Open Rubber models, it is

finding a large enough site on which to observe them and trim them to their full potential. Julian has been known to 'go' in a flyoff with a repaired and unchecked model! He won the Southern Gala last year in just that way!

Main picture: Connection is made - soon the .40 will bark. . . At right: Back a few years - here's Julian with Superjacker 2 at the 1978 Nationals.



VINTAGE CORNER

An appreciation of C H Grant by Alex Imrie



WITH THE PASSING of this pioneer on 15th January last at the age of 93 years, following injuries received in a motoring accident, we recognise his inventive genius that has left an indelible mark in many areas of Aero-Science. To associate ourselves with any form of aviation is to be reminded continually of Charles Grant: when wheels are retracted for flight and extended for landing... when we see the operation of drooping leading edges and slotted trailing edge flaps that change the shape of our airliner's wing suiting it for slow or high speed... when our models fly with that certain stability that we have learned to expect of good designs... when reading the informative model journals that we enjoy today... remember that these things evolved over a period of time and C H Grant was an integral part of their evolution.

Early Bird

Charles Hampson Grant was born in Elizabeth, New Jersey in 1894, his family moving to Peru in the State of Vermont a few years later. Grant became fascinated with the study of flight and read everything that he could lay his hands on,



following the experiments of the early aviation workers like Octave Chanute, Professor Langley and the Wright Brothers. During a visit in 1908 to an aeronautical exhibition in New York he purchased a flying model, and it was the inability of this model to fly that caused him to undertake the design and construction of his own model flying machine. The craft that emerged was a gull-winged stick tractor, mostly made from split bamboo, fitted with a wheeled undercarriage and measuring some twenty-eight inches wingspan. Its best flight was a measured 128 feet ROG, achieved in May 1909.

Other model experiments followed, but the desire to fly himself meant that more time was now being spent in making full-size gliders, a pursuit in which he was encouraged by his mother who assisted with the fabric work. He first flew on 15 August 1910 when he leapt off a roof with a wire-braced 'lifting surface'. The resultant glide of sixty-five feet was accepted later for his entry into that hallowed organisation of pioneer American airmen, The Early Birds. By July 1911 he had made a 25ft span biplane hang glider based on the Octave Chanute concept. Built from spruce, covered in muslin and braced with piano wire, it weighed ninety pounds and was controlled by body movement. Fitted eventually with a high lift aerofoil, ash landing skids and cable operated Curtiss-type ailerons, Grant made many flights in this machine, some of them covering distances of up to 400 feet at altitudes of twenty-five feet, before the glider was destroyed by strong winds during the winter of 1916/17.

During the period of his full-size gliding experiments he continued to build flying models as vehicles for his research in aerodynamics. Stability about the three axes of rotation was his main concern and he was able to demonstrate straight flights of over 2000 feet on many occasions. At a model competition in New York in 1912 he won several events for distances in a straight line. These stability experiments were the beginnings of studies that he would later detail for the benefit of all enthusiasts in his articles in Model Airplane News and his book 'Model Airplane Design and Theory of Flight'.

Aeronautical Engineer

Charles Grant entered Princeton University in 1916 to study civil engineering because of the detailed coverage given by that course to stress analysis, strength of materials and structural design - all essential areas of

Heading photo: The Maestro shows how! Charles Grant launching one of the all-balsa stability test models used in his writing to demonstrate correct aerodynamic proportions. Photo taken at Manchester, Vermont in May 1980, by John Worth, to whom we extend thanks for the loan of other photographs taken at this time. Left: Stylish portrait of Grant, whose work in model aeronautics was recognised in 1943 by the National Aeronautic Association when they honoured him with the Frank Brewer Trophy.

knowledge for an aircraft engineer. In addition he was able to gain practical experience with Grover Loening, the Chief Engineer of the Sturtevant Airplane Company of Boston who were at that time engaged on the construction of an all-metal airframe of a projected 'Battle Plane'. Early in 1917 Grant delivered the first aerodynamics lecture at Princeton; and by then he was already working on his own design for a fighting aircraft. This machine was named the 'Grant Fast Scout', a biplane single-seater to be powered by the 100hp Curtiss OXX water-cooled V8 engine. More than the usual amount of metal was to be used in its construction; the wing spars, undercarriage and interplane struts being fabricated from thin-walled steel tubing. To improve the pilot's view, the top wing was fitted to the top of the fuselage without external strutting, and the resulting

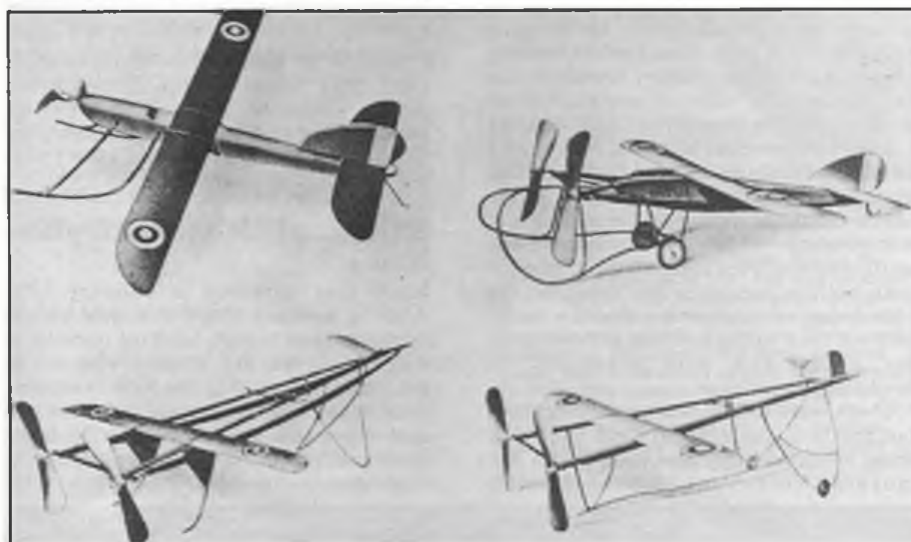
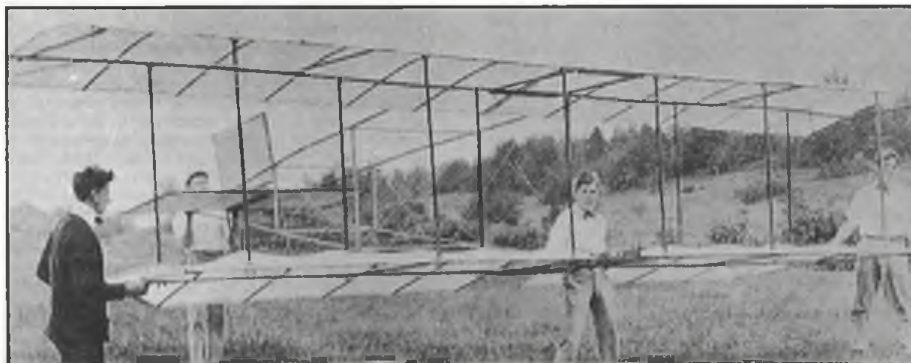


narrow gap, coupled with a streamlined nose gave a low drag profile. A horseshoe-shaped radiator was enclosed behind a large-diameter propeller spinner which had a central opening to allow the entry of cooling air. However, the most important feature of the machine was a retractable undercarriage meant to reduce drag, and called a 'Collapsible Landing Chassis' on the August 1917 drawings. Cables for retraction and extension operated from a centrally-situated hand crank in the cockpit and acted upon the landing-gear axle. Pivoting about the front leg attachment to the longerons, the rear leg attachment slid along a steel tube runner, and remained fully aft when the undercarriage was in the 'up' position. The Fast Scout was a promising design, estimated to have a top speed of 120mph (which would have been considerably higher with the projected use of the 150hp Hispano Suiza engine).

Following America's entry into the war, Charles Grant volunteered for the Aviation Section of the Signal Corps. Accepted into the engineering branch, he attended the School of Military Aeronautics in Massachusetts. Two months before he graduated as a 2nd Lieutenant in July 1918 he learned the tragic news of the loss of his brother Duncan, who was killed flying a Sopwith Camel while serving in the 135th US Aero Squadron. Grant was employed at the test centre at McCook Field at Dayton, Ohio. His Fast Scout remained on the secret list; the politics of aircraft procurement pertaining at the time decreed that a prototype was not to be constructed, but the French Aviation Mission, recognising the merit of the design, presented Grant with an honourable 'Brevet d'Aviateur Militaire'.

When Dayton-Wright decided to build an entry for the 1920 Gordon Bennett air race, Howard Rinehardt of the design team, appreciating Grant's knowledge of aerofoil behaviour, approached him for advice on wing construction. A very clean monocoque-fuselage, cantilever variable-camber-wing monoplane with retracting undercarriage was the result of this association. The wing was made in three sections; the full-span leading and trailing-edge portions (which were solid balsa wood covered in thin three ply) being coupled to the undercarriage mechanism

Top: Fifteen-year-old C H Grant with his eighth successful model, an A-frame twin pusher that was capable of 1300-foot flights. This photo was taken at Peru, Vermont in 1910 by his mother who did much to encourage his aeronautical interest. Below that: Charles Grant standing in the cabane of his 1912 biplane glider. His brother Duncan is supporting the port wingtip. Plans to fit a light 12hp engine were never completed. Above left: Four Grant designs that were manufactured by the Ritchie-Wertz Company in 1919. These are thought to be the first commercial models to make extensive use of balsa. The twin-propeller tractor at top right was also available as a biplane; it sold at \$20.70. Left: The first KG of 1933 seen here re-engined with an early Brown engine and with the wing raised above the fuselage on a cabane, a redesign that was found necessary to counter spiral instability which accompanied the first flights.



so that at slow speed with the wheels down the leading and trailing edges drooped to give a high lift aerofoil section; and when the wheels were retracted the associated linkage raised the drooping portions of the wing to present an aerofoil section designed for high-speed flight. The undercarriage/variable camber operation was via a single manual crank in the cockpit, like that envisaged for the 'Grant Fast Scout' of three years earlier, but the wheels on the Dayton-Wright RB-1 retracted into fuselage wells. The whole machine presented a very advanced approach to the problem of high-speed flight; the main features mentioned above are standard aeronautical practice today. It is hard to understand why Grant, who had numerous patents protecting his model aircraft designs at the time, did not see fit to patent this variable camber wing.

Model mass production

Despite his involvement with full-size aviation C H Grant spent all his spare time experimenting with models. His tractor designs in particular flew with great stability; their excellent performances for the time were without doubt because of the carefully-fashioned sheet balsa flying surfaces. The end of the war saw Charles Grant possessed of two main objectives: promoting safety in flight, and endowing aeronautical knowledge to young people via the medium of model aircraft. He had already established business contacts in Dayton and on leaving military service in 1919 a number of ready-to-fly models and sets of parts were marketed, manufactured by the Ritchie-Wertz Company. Known at first as 'Right Fliers' these were by 1920 named 'Riteflyers'; both names, of course, being plays on the aeronautical connotation of the name 'Wright'. When introducing the would-be customer to balsa the company's 1919 catalogue stated that a very rare and light wood was used in the construction of the models to provide strength and flexibility and to overcome the necessity of covering with tissue paper or silk. Balsa wood had first appeared on the model scene as early as 1911 when John Caresi, a leading New York model builder found this material in the Long Island City Docks where it had arrived after having been used as packing for mahogany logs transported as deck cargo. Its use in the Grant-designed models mentioned was probably the first extensive commercial use of this now universally-used model aeroplane

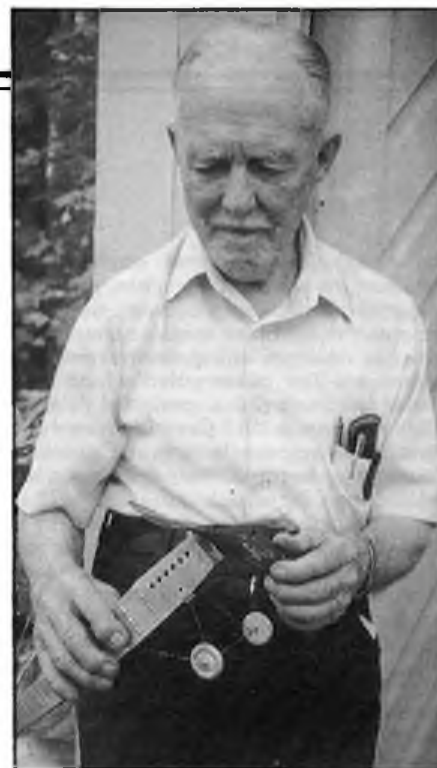
material. Charles Grant's fertile mind had also produced the woodworking machinery that resulted in correctly cambered aerofoil sections being machine-cut into the solid balsa wing blanks. The tractor models, some of biplane configuration and having two propellers, were well presented, with enclosed fuselage and colourful insignia, but they were not cheap, ranging in price from \$3.75 to \$20.70. The business was a great, if short-lived success. At one time 1000 models per day were being produced, but the financiers' neglect to pay the agreed patent royalties heralded the end of this venture in 1921.

Youth Training

Following the termination of the full-size and model work in Dayton C H Grant and his wife Lillian returned to Vermont where they organised and ran summer camps from 1922 until 1933. For a short period every year, some thirty teenage boys were given basic training in health fitness, character building and instruction in aerodynamics. This popular course, which was termed 'The Boy's Camp of Model Airplane Building and Designing' was at a Peru location named Camp Duncan Grant in memory of his brother. A number of the students were to make names for themselves in model aeronautics, among these being Howard McEntee, Joseph Kovel and Dr Walter Good; and some fifty years later Grant was still receiving grateful letters from many who had been lucky enough to be participants at these summer camps.

Following the increased interest in aviation that resulted from Lindbergh's epic solo flight from New York to Paris in 1927, Charles Grant again ventured into the commercial side of model aircraft when in 1928 he formed the Grant Aircraft Company to produce all-metal ready-to-fly tractor fuselage models. Precision stamped from medium-hard aluminium sheet six thousandths of an inch thick, components were ribbed to provide stiffening and were correctly proportioned with built-in incidence and dihedral; the idea being to present a complete model aircraft that would perform satisfactorily for enthusiasts who possessed no modelling knowledge.

There were initial financial difficulties but the products were so good that they were taken over by the well-known toy makers Kingsbury Manufacturing



Above: C H Grant in 1980 with an example of the stamped-aluminium fuselage of his 1928 Silver Arrow design that was manufactured in quantity by the Kingsbury Manufacturing Company at Keene, New Hampshire until 1930. Below left: Joe Kovel, Al Huber and Charles Grant prepare the ten-foot span KG-2 for what was to be a record breaking flight of 64 minutes, 40 seconds at Hadley Field, New Jersey on 25th May 1935. Below right: On the runway at St Louis during the 1935 Nationals, Joe Kovel is seen fine tuning the Brown Junior of his KG. He had motor trouble most of the day and managed only fourth place with a thirty-one-minute flight. Winner was Leo Weiss who came within 28 seconds of Joe's sixty-four-minute record flight.

Company of Keene, New Hampshire, in 1929. The future of the Silver Arrow models appeared to be assured but the beginning of the Depression following the Wall Street crash of October 1929 forced the company to close down.

Editor of Model Airplane News

MAN first appeared in January 1929. After a hesitant start it slowly gained momentum although tending initially to concentrate on the state of the art as generally practised in the New York area, seemingly being unaware of the many new and advanced models that were being described in other magazines such as *The American Boy* and *Boy's Life*. It was not



until Charles Grant became editor in 1932 that new thought and improved model designs appeared. Under his leadership the club movement flourished and the magazine went from strength to strength, providing readers with informative articles on model aircraft design and constructional techniques. The explanations encompassed in Grant's own articles on model aerodynamics provided practical solutions to the problem of tractor stability, thus sounding the death knell of the twin-pusher as a standard contest model. Petrol-engined models began to appear; Maxwell Bassett swept the board at early events although his models obviously lacked spiral stability, but this was compensated for by the fund of knowledge and very careful trimming techniques that Bassett had developed. Grant was able with his famous KG design to solve the gas model stability problems that beset early power modellers. In 1936 he formed the International Gas Model Airplane Association which was sponsored by MAN; news of members and their models appeared in a presentation called 'Gas Lines'. This organisation was probably responsible more than any other factor for increasing the popularity of gas models up to the end of 1937, by which time it numbered some 4500 members. C H Grant worked for the official recognition of the IGMMA and when this was obtained as the National Aeronautic Association Gas Model Division it gave added impetus to the standing of the then-young Academy of Model Aeronautics. The AMA, operating under the aegis of the parent NAA organisation, set rules, standards and specifications, and is not only the voice of American modellers today but the American aeromodelling representative to the FAI. Grant continued as editor of MAN for over eleven years, firmly establishing that journal as a leader in its field; moreover, he continued to subscribe articles for many more years thereafter and produced a number of books, some of which are still available.

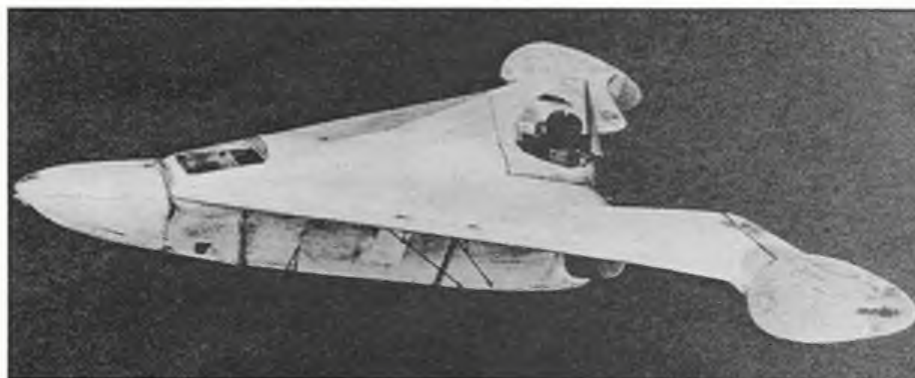
KG Gas model

After C H Grant witnessed Maxwell Bassett's flights at the 1932 Nationals he set about designing a power model that would incorporate the stability characteristics that he considered to be lacking on Bassett's model. The design that resulted was given to one of his ex-



Above: Books by C H Grant. *Model Airplane Design* was first published in December 1941, had four printings and was recently re-issued as *The Aero-Science of Free Flight*. *Design for Flight* was published in 1947 and was re-issued in 1979 as *Gateway to Aero-Science*. **Below left:** Much of Grant's research on full-size projects was done with models. During his 'Delta' period he designed this control-line petrol-powered model. With a 3cc motor speeds of 65mph were recorded; this represented a full-size velocity of 1700mph! **Below right:** The success of the KG in the 1930s caused it to be copied in all sizes. This Wasp, built by the writer, was designed by L S Wigdor in 1937 and described in the April 1938 *Aeromodeller*.

summer camp students, Joseph Kovel for building; and Joe completed the model with just one day to spare before the 1933 Nationals. Unable to obtain one of Bill Brown's engines, an unnamed, untried motor reputedly of 2/5HP (twice the power of the Brown engine) was installed but on the day of the competitions the engine could not be coaxed into life, so Bassett won again without challenge. A Brown engine was later fitted; Kovel and Grant both had doubts that the lesser power of the engine would lift the seven-pound weight of the KG, but they need not have worried for that engine's excellence and power output was never a problem. This original KG was made like a 'fuselage' rubber model, the wing and the tailplane resting directly on top of the straight-topped fuselage. Tests soon showed that this set-up was spirally unstable. In circling power flight the nose went down as soon as the model banked giving a spiral into the ground! Straight power flights were possible, these being successful when engine torque was corrected by rudder offset. Obviously there was a fundamental difference between models powered by rubber and those powered by miniature engines where the inertia of heavy components was a factor of note. It took three days of testing to determine the importance of the position of side area relative to the centre of gravity. Charles Grant later recalled '... Apparently the weight swung outwards on turns, while skidding caused by this outward swing produced a side pressure above the centre of weight. This caused the plane to bank sharply and spiral. For the second series of tests, the wing was raised to a parasol position which raised the centre of weight on a line approximately with the centre of the side area of the airplane. This latter point was given the name Centre of Lateral Area... The first test flight proved the accuracy of our reasoning. The plane climbed steadily and evenly to an altitude of 1200 feet and did not return to earth until more than 14 minutes had elapsed.' The original KG was designed along full-size lines, aerodynamically and structurally, with the arrangement of weight and area in accord with Grant's research findings. Modified to the parasol layout, the success of the KG resulted in its basic layout being widely adopted, especially after the appearance of working drawings and detailed building descriptions by Joe Kovel in the April and May 1935 issues of *Model Airplane News*.





less critical on earlier power models of very large size operating at much lower power loadings. Carl Goldberg found one answer to the problem by raising the wing some six inches above the fuselage on a pylon and employing a large amount of polyhedral, thus raising the CLA well above the position usually held as ideal and perpetuated in the Grant CLA theory. Goldberg considered that his fast-flying models actually slipped inwards when banked, the CLA being situated well above the Centre of Gravity providing side area which tended to right the side-slip. The fact of the matter is that Grant and Goldberg were both right! There were various other ways to solve spiral instability on the high powered 'skyrocket' type of power model that had appeared. Leon Shulman, for example, managed it with a low CLA on his 'Wedgy' family of models. However, it is considered that the Grant CLA theory provided more inherent stability under all conditions of flight than did the pylon set-up which required the line of thrust to be continually tilted upwards above the horizontal during powered flight.

Full-size design

Some of C H Grant's involvement with full-size aircraft has already been mentioned. This did not end with the variable-camber wing of the RB-1, but continued throughout the span of his long life. His industry in this area was not crowned with practical success mainly because of the lack of funds with which to pursue specific inventions, and in most cases there was a lack of support from manufacturers because his concepts were generally too far ahead of current knowledge. Nor were some of these appreciated at the time by that august body of technical representatives of the National Advisory Committee for Aeronautics.

Grant's research into high-lift devices conducted over a 12-year period using model aerofoils resulted in his patenting a 'Changeable Camber Wing', a variation of



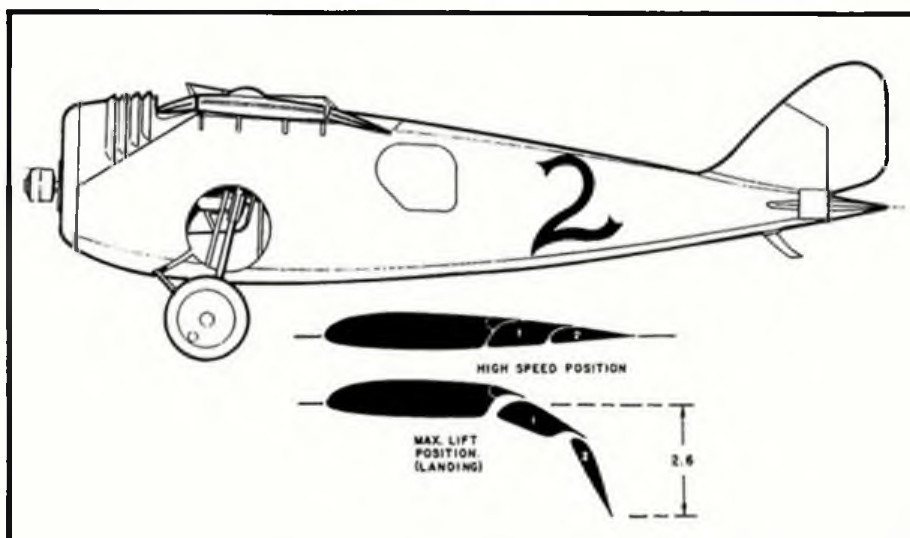
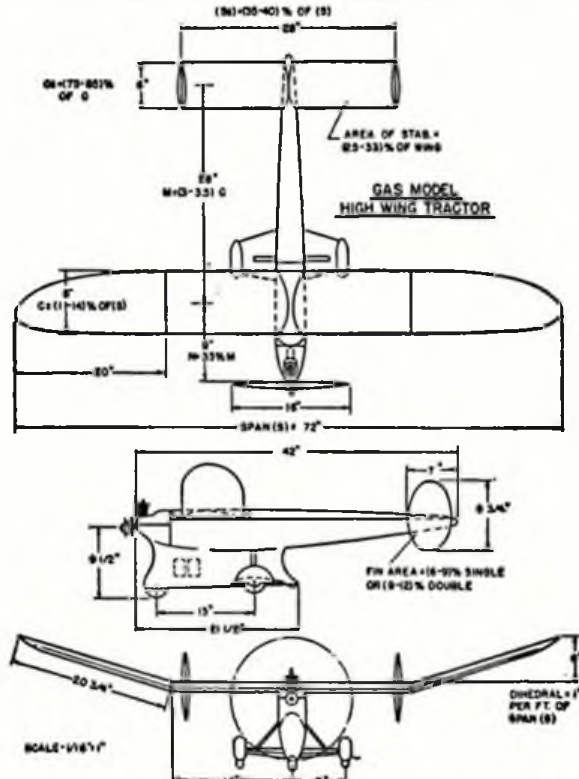
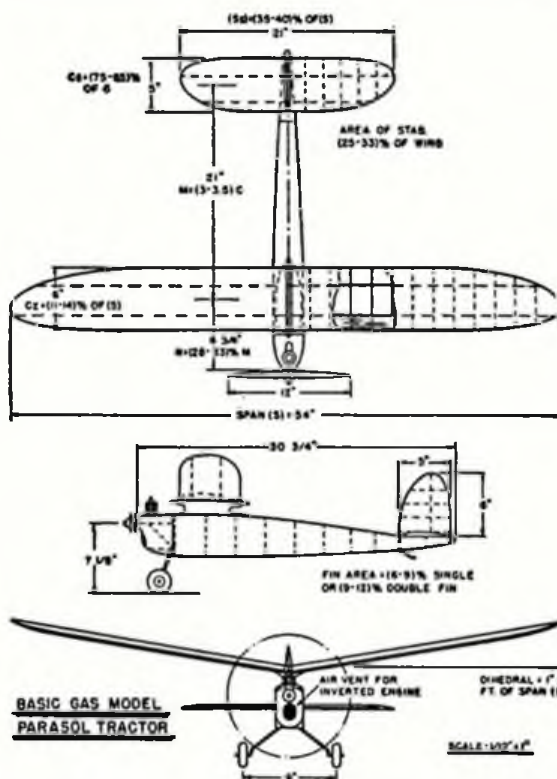
The KG-1 was 8ft span, the KG-2 being a refined version with a wingspan of ten feet and weight of only six-and-a-half pounds. The version described in MAN was in fact a further refinement known as the KG-3. Although the plans were given for an 8ft wing, a wing of 6ft. span could be used, this being done in many cases to save cost and improve transportability.

Top: Noel Barker starts up the Anderson Spitfire of his KG-1. This model, which was built some twenty-five years ago from plans in the Zalc Year Book and has flown a great deal over the years, was written-off recently when flying R/C assist! Above: Another view of Noel's KG-1. Note the use of six-inch diameter ZN airwheels for smooth landings. The vintage revival of recent years saw more KGs appear; another was built by Jack Humphreys. Below: Reminiscing. C H Grant and Joe Kovel talk about old times for a taped interview at Chicopee, Mass. during the 1985 US Nationals. The original KG-1 in the background was completely renovated by Joe Kovel, builder of this model which is now in the AMA Museum.

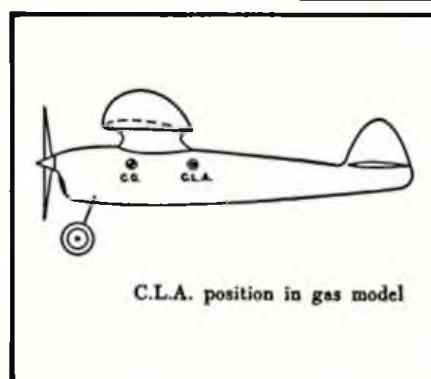
Opposition

Throughout his life Charles Grant experienced plenty of the above commodity. Despite the impact made by the KG gas model his CLA theory was not universally accepted by all gas model builders and at times fierce controversy raged. He was, however, the first to admit that there were other ways of providing spiral stability and he recognised the results of other early power modellers working along different lines to his own, but he was careful to point out that in some cases skilled trimming techniques were being substituted for inherent stability. The change in the rules for gas models early in 1938 whereby the engine run was limited to thirty seconds caused the emphasis to be placed on small, high-powered fast flying models, the aim being to get as high as possible in the short time allowed for the engine run. On these models the difficulty was handling the excessive torque, a factor that had been





which, the multi-segmented trailing edge flap, was also patented. He submitted the idea to NACA in 1934: by April 1936 the suggestion was that instead of closed gaps between segments these could be left open and advantage taken of the resultant slot effect of the Grant Streamlined Flap (as it was by then termed). NACA completely missed the point of Grant's presentation which was a device that would decrease the speed of the aircraft, increase the wing's lift, and enhance flight safety by greatly lowering the stalling speed and reducing flap drag. When NACA dismissed the idea, Grant had the device wind-tunnel tested at New York University and the findings of this evaluation were published in the Journal of the Aeronautical Sciences in October 1939. This could not very well be ignored by NACA who then produced their own report which concluded that Grant's idea produced the best combination to develop high lift for take-off and landing. A variation of the Grant wing flap fitted with a slot controller was accepted by the Martin Company and first fitted to their model 2-o-2 and 4-o-4 transport aircraft. Grant filed a patent for this device in April 1945, and the fact that the Martin Company also filed patents two years later



Top: Two Grant designs; at left: layout for a power driven test model, showing ideal proportions, from CH Grant's book *Design for Flight*. At right: From the same source, a low-CLA contest power model. Centre: Here we see the Dayton-Wright RB-1 of 1920 - showing the variable-camber wing in the slow speed (high lift) position actuated by linkage from the undercarriage; advanced thinking! - and Grant's multi-segmented slotted flap, also known as the Grant Streamlined Flap of 1937. It evoked no interest with NACA but within ten years was being used on many aircraft; it is the basis of the wing flap designs used today on most military and transport aircraft. Above: This diagram shows C H Grant's famous CLA location, indicating that for spiral stability the Centre of Gravity and the Centre of Lateral Area should be parallel to the thrust line.

resulted in some extended litigation in and out of court. Eventually both parties were awarded patents but the Patent Office decreed that Grant was the first inventor. In the end he received very little for his idea and many of the large aircraft that were manufactured during the immediate post war years used some form of flap similar to his invention; but it was impossible to keep track of patent infringements.

A similar story could be told of his patented delta-wing designs, one of which was a radio controlled torpedo-carrying glider that would be released some distance from the target by a 'mother plane' and then guided to a close range launch point. The war ended before this could be built but Grant had high hopes for the low-keel full-span slotted design which had natural inherent stability. His experiences in this regard were really no different to those of many other inventors.

Retirement

Although C H Grant retired in the early 1960s this did not greatly change his energetic life style. He had moved back with his wife Lillian to Vermont, the scene of Camp Duncan Grant with all its memories, but he carried on acting as an engineering and aviation consultant. Ideas still came to him; and these had to be patented despite all the work that this involved. New thoughts for flaps, slots, controlled airflow and the Grant Vertaplane, a proposed V/STOL light aircraft occupied his time. If recognition and success had eluded him in the field of full-size aeronautics he never lost his driving enthusiasm, and despite all the frustrations he continued well into his 80s trying to interest manufacturers in devices aimed at improving safety in flight. He also kept abreast of the current trends in model aeronautics and would talk literally for hours on the telephone, not only to acquaintances of years gone by, but also to model enthusiasts of younger generations. He never lost his faith in the youth of the day, especially where aeromodelling was concerned. Let us see to it that our young enthusiasts honour the Charles Hampson Grant legacy.

What's on...come on, the summer's here!

20-20st June

ASP 21st SCALE RALLY
Venue: Old Warden Airfield, Biggleswade, Beds. The annual pilgrimage for all scale enthusiasts! Informal R/C, F/F and C/L scale flying all weekend long plus the delights of the Shuttleworth Collection and - new for '87 - Band, Barbeque and Beer on Saturday. Camping too. Don't you dare miss it! Contact: Aeromodeller. Tel: 0442 41221.

21st June

LUCAS-BILSTON C/L FLY-IN
Venue: Lucas Aerospace Sports Field, Fordhouses, Wolverhampton (close to Junction 2, M54) Aerobatics, Vintage Aerobatics, Slow Rate and Class I Vintage speed to Andy Brough rules. Silencers essential for all classes except Speed Gates open 10 am. Contact: Keith Garbett Tel: 021 556 0115.

21 June
BLACKBURN AND DMAC SUMMER FLY-IN

Venue: Pleasington Playing Fields, Blackburn. Scale, semi-scale or unusual model rally. A fun day for all. Excellent prizes. Entry fee £1.00 payable on the day. 10am start. Contact: Michael Winder, 27 Belgrave Road, Darwen, Nr Blackburn, Lancs BB3 2RP.

21st June

WHARFEDALE OPEN MINI GOODYEAR SMAE rules but with Open Models. Venue: Dewsbury, W. Yorks. Contact: Jeff Smith. Tel: 0532 663432.

21st June

OXFORD MFC FREE FLIGHT RALLY
A/I, CDH, CO, flown in rounds from 10am. HL/G and Vintage (34in max span limit for rubber models) not flown in rounds. Special Junior awards. No power models! Note: Champagne fly-off at 7pm. Saturday 20th June for A/I, CDH and HL/G. Contact: Andy Crisp Tel: 0865 53800.

27-28th June

THREE SISTERS C/L GALA
Stunt, Novice Stunt, Open Speed, Midge Speed, FAI T/R, Goodyear Class 2, Open Goodyear (1985 rules), Diesel Combat, FAI Combat, Vintage T/R Classes A and B. Contact: J.A. Noble Tel: 061 790 4056.

28th June

BRUMFLY '87
Venue: RAF North Luffenham. Events: Open Power, Open Glider, Open Rudder, 1/2A, CDH, A/I Glider. Five rounds flown from a line. 10am start. Entry fee: Seniors £2.00 for one event, £1.50 per additional event. Juniors £1.00 one event, 50p per additional event. Contact: Stafford Screen. Tel: 0384 396535.

28th June

CHILTERN CUP C/L STUNT COMPETITION
Venue: Slip End, Luton. Contact: Glen Alison Tel: 0923 772675.

4-5th July

NORTH YORKSHIRE FREE FLIGHT GROUP TWO DAY MINI-EVENT
A/I, CDH, CO, HL/G. Mini-Vintage, maybe other small classes. Venue: York Racecourse. Camping and caravans permitted. Prizes and cash. Contact: John Pool. Tel: 0757 703060.

4-5 July

INDOOR NATIONAL CHAMPIONSHIPS
Saturday: Index event for E2B, Fly Rod E2B, Peanut Duration, Novice Pennyplane, CO, Duration Manhattan Cabin, Pennyplane, HL/G Houlberg Trophy for E2B (best two flight from six), Sparklets Trophy for CO, Duration (best two from six), Sparklets Longest Flight Trophy for CO, Duration (flights on this day only qualify).

Sunday: Index event for FID, Open Microfilm, 35cm Microfilm (best single flight), Aeromodeller Trophy for FID (best two from six), 1988 Indoor W/C Team Selection Trials (first three flights in rounds - best three from nine). Fun flying if no interference with comp flights. Contact: Bob Bailey. Tel: 0438 723 642.

5th July

SMAE C/L AND F/F SCALE COMPETITION
Venue: RAF Abingdon, near Oxford, 10 am start. Contact: Charlie Newman. Tel: 08677 3020.

5th July

PETERBOROUGH MFC DIESEL 'A' COMBAT
Venue: The Embankment, Peterborough. Contact: Mick Taylor. Tel: 0733 204484.

11-12th July

HARROGATE MODEL CAR CLUB MODELLING EXTRAVAGANZA
Venue: Newby Hall, Ripon, North Yorkshire. C/L competition, Helicopter and fixed-wing fly-for-fun Helicopter Workshop and tuition on the Saturday. Also R/C cars, slot cars, model boats and much more. Contact: Robert Thorn. Tel: Harrogate 501970.

11/12th July

CLAPA CHAMPIONSHIP
F2B for CLAPA members only. C/L carrier and C/L scale (both open to all). Pre-entry only. Venue: Essex Showground, Braintree, Essex. Contact: P. Burgess, 42 Blunts Hall Road, Witham, Essex. Tel: 0376 516881.

11/12th July

NYFFG MINI EVENT
Contact: G. Le Vay. Tel: 0904 705647.

12th July

MORLEY & DMAC SILENT AND VINTAGE DAY
Combined A/I and CDH. Vintage Rubber (up to Wake size) and Vintage Glider (up to Nordic), P.30, Mini SOP (0.5cc diesel). Event sponsored by Finlux TV. Prizes! Venue: Heath Common, Nr Wakefield. Contact: Barry Judge. Tel: 0274 875976.

12th July

WHARFEDALE CLASS A COMBAT
Venue: Dewsbury, W. Yorks. Contact: Jeff Smith. Tel: 0532 663432.

12th July

ASP GOLDEN ERA DAY
Venue: Old Warden Airfield, Biggleswade, Beds. All the fun of the fair with a flavour of the 'twenties and 'thirties'. Period aeromodelling on display - turn up and fly scale or vintage; dress up too and really lock the part. This event follows the Shuttleworth Flying Evening on 11th July - an unforgettable chance to view all the rarities of the collection amidst classic Big Band Melodies. Other attractions too! Overnight camping arrangements. Do come! Contact: Aeromodeller. Tel: 0442 41221.

12th July

SCOTTISH AEROMODELLERS' ASSOCIATION T/R COMP
Open Goodyear, 1/2A T/R, FAI T/R. Venue: Newhouse, Contact: Neil Munro, 30 Lamberton Court, Pencaitland, East Lothian EH34 5BL.

19th July

SHUTTLEWORTH MODEL GROUP OPEN DAY
Old Warden Airfield, Biggleswade, Beds. 9am-6pm. Everyone welcome! C/L scale competition and general fun flying. Contact: Mick Staples. Tel: 0223 241978.

19th July

BLACKPOOL AND FYLDE RCMS SCALE FLY-IN
R/C Semi-scale to super-scale: all welcome. Grass runway! Venue: Blackpool Zoo flying site. Contact: Chris Bromley. Tel: 0253 25080.

19th July

COLCHESTER MAC VINTAGE DAY
Texaco, Flying Fifteen, Precision and fly-for-fun. R/C only. SAE for details to Peter Grant, 2 Duncan Rise, Gt Yeldham, Halstead, Essex. Tel: 0787 237967.

26th July

FACCT THERMAL SOARING RALLY
Venue: RAF Weston-on-the-Green. BARCS League and R/C Chuck Glider. Pre-entry £2.00 + SAE SMAE members only. Contact: N.G. Webb, The Bungalow, 13 East Street, Fritwell, Oxon OX6 9PX.

26th July

INDOOR EVENTS AT CARDINGTON
1988 Indoor W/C Team Selection Trials (second three flights in rounds). Fun flying if no interference with comp flights. Contact: Bob Bailey Tel: 0438 723642.

26th July

1987 DREAMING SPIRES GALA
Comps: Vintage: lightweight rubber (36 in. span max), Vintage glider (up to A/2), vintage HL/G, CO, Precision, Rubber kit contest (36 in. span max., plastic props and D/T allowed). Scale events for F/F power (up to 1.5 cc), CO/electric, Rubber (15in. span min) and KK/Veron Rubber scale Mass Launch. SMAE membership required for flying. Venue: Port Meadow, Contact: Charlie Newman. Tel: 086 77 3020.

1-2nd August

WOODVALE RALLY
Model flying, competitions and displays;

full-size aerobatics, vintage and classic cars; R/C cars and much, much more. 9 am - 6 pm each day. Entry £6.00 per car. £8.00 two-day ticket; children and OAPs £1.00.

2nd August

VINTAGE R/C GLIDER FLY-IN
Venue: Wolverhampton or Frankley, to be confirmed. All flying will be from peg-board. Pre-entry. Contact: Dave Jones, 5 Wootton Rise, Alcester Road, Wootton Waven, Warwickshire B95 6BJ.

2nd August

THREE KINGS C/L CARRIER DAY
Old Croydon Airport, Purley Way, Nr Croydon, Surrey. Profile carrier. Silencers and insurance essential. Contact: Derek Bird. Tel: 01-874 6394.

2nd August

WAKEFIELD MFC STUNT COMPETITION
Venue: Thornes House School Playing Field. F2B and Novice Stunt. Contact: B. Temporal. Tel: Wakefield 270690.

9th August

SCOTTISH AEROMODELLERS' ASSOCIATION T/R COMP
Open Goodyear, Class II Goodyear, 1/2A T/R, FAI T/R. Venue: Newhouse. Contact: Neil Munro, 30 Lamberton Court, Pencaitland, East Lothian EH34 5BL.

15-16th August

ASP VINTAGE WEEKEND
Venue: Old Warden Airfield, Biggleswade, Beds. Don't miss this one. Vintage enthusiasts! Two days packed with everything you could wish for - R/C, F/F and C/L Vintage models of every type. Informal and semi-formal competitions, many courtesy of SAM 35 - but lots and lots of fun-flying and the chance to browse amongst nostalgic Contact: Aeromodeller Tel: 0442 41221.

15-16 August

PLUMPTON '87
Planes, cars, boats, trains, traction engines and lots more, including trade stands and a live band plus fairground and many other attractions. Aircraft from chuck gliders to pulse jets will be there. DPR Competitions for juniors on both days. Prizes! Full camping facilities at £15 per family for the weekend, daily entry is £2.00 (adults), £1.00 (children). Senior Citizens free. Car parking free. Venue: Plumpton Racecourse. Contact: Dave Bishop (D.B. Sound). Tel: 0959 77550.

16th August

FACCT MINI-GLIDER COMPETITION
Venue: Weston-on-the-Green area. 60in span, 20 oz max. Bungee launch. Pre-entry £1.50 + SAE. Contact: N.G. Webb, The Bungalow, 13 East Street, Fritwell, Oxon OX6 9PX.

23rd August

INDOOR AT CARDINGTON
Fun Flying and All-In index (best single flight). Contact: Bob Bailey. Tel: 0438 723 642.

6th September

SHUTTLEWORTH MODEL GROUP SILENT DAY
Old Warden Airfield, Biggleswade, Beds. 9am-6pm. No C.C. engines to be run. Contact: Mike Staples. Tel: 0223 241978.

6th September

TEESIDE MFC SCALE & VINTAGE MEET
Visitors welcome but Comps restricted to TMFC members. Contact: Stuart Smith. Tel: 0642 764842. (essential as no further details given)

13th September

INDOOR AT CARDINGTON
1988 W/C Team Selection Trials (third three flights in rounds). Fun flying if no interference with comp flights. Contact: Bob Bailey. Tel: 0438 723642.

13 September

WINTHORPE R/C MFC SCALE FLY-IN
Venue: Winthorpe Showground. Contact: J. Shaw, 68 Macaulay Drive, Balderton, Newark NG25 3QJ.

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20th September

THREE KINGS C/L SCALE DAY
Old Croydon Airport, Purley Way, Nr Croydon, Surrey. FAI Scale and Profile classes. Silencers and insurance essential. Contact: Derek Bird. Tel: 01-874 6394.

20th September

INDOOR AT CARDINGTON
Fun flying, reserve date for 1988 W/C Team selection Trials if required. Contact: Bob Bailey Tel: 0438 723642.

27th September

DOUG BLAKE TROPHY C/L STUNT COMPETITION
Venue: Slip End, Luton. Contact: Glen Alison Tel: 0923 772675.

27th September

SOUTH MIDLAND AREA THERMAL SOARING RALLY
Venue: RAF Weston-on-the-Green. BARCS League and R/C Chuck Glider. Pre-entry £2.00 + SAE. Contact: J.H. Shaw, Alver, Witney Road, Freeland, Oxford Tel: Freeland 881350.

28th September

HUDDERSFIELD ANNUAL THERMAL CROSS COUNTRY EVENT
To be held over a 10-mile course. Teams of four eligible. Start from Birdsedge flying site. All frequencies. Entry £2.00. Contact: Ian Roebuck, Kepra, Dunford Road, Holmfirth, West Yorks.

27th September

ROLLS-ROYCE VINTAGE FLY-IN
Optional R/C-assist, Texaco and flying. Fifteen events, optional C/L Old Time Stunt and Midge Speed. Venue: Rolls-Royce airfield, Hucknall, Notts. R/C Contact: P. Thompson, 8 West Terrace, Hucknall, Notts NG15 7GD. C/L contact: T.P. McDonald, 351 Uttoxeter Road, Mickleover, Derby DE3 5AH. Tel: Derby 511273. SAE with enquiries please.

27th September

WHARFEDALE 1000
Class B T/R, including Vintage. Venue: RAF Dishforth. Contact: Jeff Smith. Tel: 0532 663432.

27th September

HEMINGFORD ABBOTS VINTAGE MEETING
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4th October

HESWALL MAC OPEN C/L COMPETITIONS
F2B Aerobatics, Novice/Junior Aerobatics (10% advantage to Juniors). Competitions sponsored by Neston Computers. First prize in F2B is a telephone, plaques for top three in both comps plus top Junior. Silencers and insurance essential. Entry: £3.50 (Seniors and Novice Adults), £2.50 (Juniors - under 18). Contact: C. Humphreys. Tel: 061 639 1453 (Mon-Fri, 9am-5pm) or write: 249 Rake Lane, Wallasey, Wirral L45 5DJ.

11th October

SCOTTISH AEROMODELLERS' ASSOCIATION T/R COMP
Open Goodyear, Class II Goodyear, FAI T/R. Venue: Newhouse. Contact: Neil Munro, 30 Lamberton Court, Pencaitland, East Lothian EH34 5BL.

11th October

HUDDERSFIELD OPEN VINTAGE RALLY
F/F Vintage F/F Vintage C/L, R/C Assist. No formal contests. Non-vintage F/F limited to 0.8cc diesels, silencers not required on vintage models with appropriate engines. Venue: Whitely Common. Contact: essential for frequencies) Colin Thompson. Tel: 0484 850422 or 851433.

18th October

SOUTH BIRMINGHAM MFC VINTAGE C/L RALLY
Venue: Rubery Hill Hospital, Rubery, Nr Birmingham. General flying for all SAM 35 and SMAE members. Fun comps to SAM 35 rules. Contact: Peter Martin. Tel: 021 459 5520.

15th November

SOUTH BIRMINGHAM MFC. SAM 35 AND MECA SWOPMEET
Venue: St Brigid's R.C. School, Frankley, Beeches Road, Northfield, Birmingham. 12.00 Start. Contact: Peter Martin. Tel: 021 459 5520.

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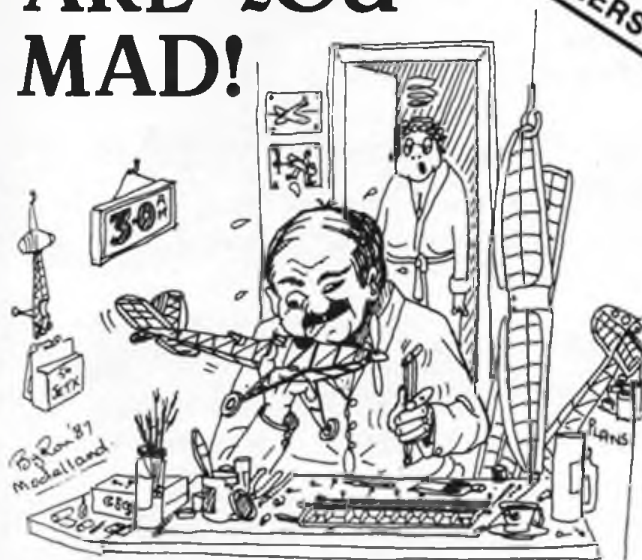
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Super Lulu (Lulu Mk II) by Mike Chiddik, Keith Williams, John Barker

RC conversion of LULU Mk II by John Barker (Aeromodeller Nov 1949 plan No. G338).
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De Havilland 53 Humming Bird by Jim Fullarton

FF Power 1/8 Scale

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Free Bird 4 by Tony Eifflaender

Tony Eifflaender details latest mods to his pedigree stunter

[Document Page: 34](#)

Superjacker by Dave Hipperson

FF Power. Description of Julian Hopper's Open Power Model

[Document Page: 36](#)

Inspiration by S.F. Walker

CL Model. Presented in READER'S LETTERS. Picture in March 1987 in MIND THE LINES.

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An Appreciation of C.H. Grant by Alex Imrie

Some designs of C.H. Grant. Presented in VINTAGE CORNER

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