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MODELLER

DECEMBER 1983

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Cover

The Pace 'Spirit' seen here in all its glory, is the subject for this month's Aircraft Described. It would certainly make a colourful and manoeuvrable subject for some enterprising modeller. Inset is Dave Cowburn and family with models used by Humberside MFC for their 'Display-Combat' Model's are profile War War II combat models, featured as full size plans this month

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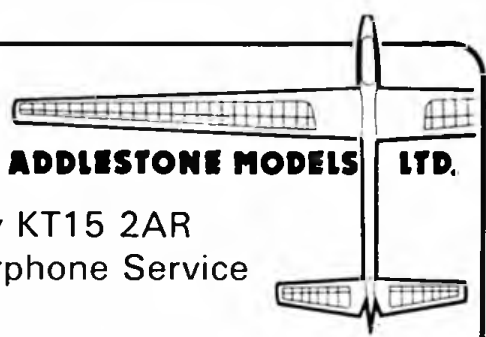
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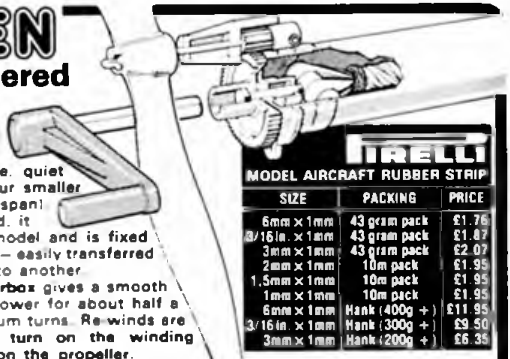
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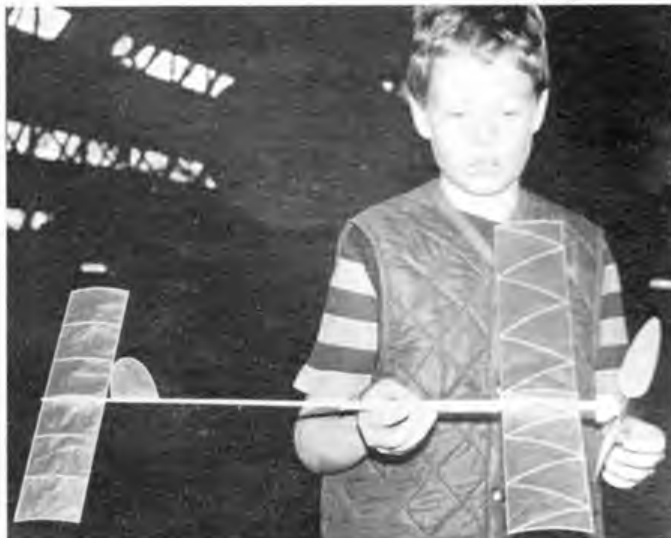
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Left: Alan Jackson watching Ted Buxton's model which travelled 6,500 miles to get to Cardington. Far left: Top Junior - beating many seniors, Robert Jones. Below: "Thanks a lot" - £100 cheque from Laurie Barr to winner Tom Jolley. (See Fly Rod Finals).

Coupe D'Hiver 1983

Another reminder to all Coupe D'Hiver enthusiasts whether you are going to fly them, hold them, time them or just plain watch them... The Annual Aeromodeller C. D'H. event takes place again this year at RAF Henlow, Bedfordshire, thanks to the kind co-operation of the Royal Air Force. The meeting will take place on the 4th December and as RAF Henlow is one of the biggest all grass airfields in the country, there should be plenty of room for those *Super Coupes* you will all be flying.

As in previous years, events will include the 80gm class Aeromodeller Cup, and the 100gm Boutillier Trophy.

For security reasons it is essential that we receive notification at the Aeromodeller editorial office of any person wishing to attend this competition as soon as possible, preferably with details of car registration No. and anticipated number of occupants. Applicants will receive details of the competition and a map which locates the flying site.

Editor in the making

As the sharp eyed may have noticed, the contents pages of 'Aeromodeller' have not had an editor mentioned for the last few months. Well, now there is again someone on whom you may heap abuse, articles, and anything aeromodelling. 'Aeromodellers' latest recruit is one Pete Freebrey. Some of you may have heard of him, the luckier ones will say... 'who?' Background for Pete stretches back further than he would wish but covers a mottled selection of interests ranging from C/L combat, team-race and stunt, F/F everything except indoor (shame on the man!) and



also the odd gold and silver medal for his proof that beginners can win in model rocketry... providing of course that Aeromodeller has been digested regularly for at least 15 weeks (sorry... years!).

F/F World Champs

Although we do not yet have the full results back from Australia, some tit-bits of information are reaching the office. It would appear that our F1A Glider team have really put it all together at the right time and at the right place to win a 1st in the Team Awards. Not to be completely outdone, the Wakefield flyers fought their way to the 3rd place Team Award for F1B (Rubber powered aircraft). Apparently the weather conditions were pretty poor so perhaps our flyers will have felt more at home with the conditions than at the last few World Championships! 'Aeromodeller' would like to add their congratulations to those from the rest of the country — to *all* of the UK team

some of these meetings. After all, indoor flying does not have the weather problems of outdoor F/F. The models can be inexpensive to build and great fun to fly and that's what it's all about... isn't it?

Sywell R/C Expo

Sywell, where thousands of aeromodellers have congregated for many years is to be no more. BUT... 1984 will see a bigger and better event at Cranfield instead. This move to a new venue should prove a winner, Cranfield being more centrally situated and with ready access both by road and public transport. The R/C model demonstrations and the regular full-size air display will be joined this year by a Microlight aircraft exhibition and flying display. All the usual extras in the form of entertainment and trade stands will be there. So make a date now — 22nd, 23rd April 1984. Trade enquiries to The Barnstormers Flying Circus Ltd., Green Lane Cottage, Shepherds Hill, Wollaston, Wellingborough, Northants.

... WELL DONE. A full report will follow later.

Imminent indoor

Indoor modellers in the cold Northern climes might like to make a note of the following dates and contests

Date	Venue	Contact
27th November 1983	Slaithwaite	Bernard Hunt — 0484 862353
18th December 1983	Wigan	Dave Yates — 0942 214725
8th January 1984	Slaithwaite	Bernard Hunt — 0484 862353
12th February 1984	Wigan	Dave Yates — 0942 214725
4th March 1984	Slaithwaite	Bernard Hunt — 0484 862353

The Slaithwaite meetings are held at the Colne Valley Leisure Centre, Slaithwaite near Huddersfield and start at 12 noon.

The Wigan meetings are held at Wigan Technical College and start at 11 a.m. All meetings are for the following classes: EZB, Indoor HLG, Peanut Duration and Scale. These are Low Ceiling Indoor Contests and anyone not knowing the *special rules* and *procedures* may contact John O'Donnell on 061-427 3711. Why don't you break the ice and go along to

Help!

Robert Shallcross of 176 Upminster Road South, Rainham, Essex, is an instructor for his local Air Training Corps. He is trying to create a new aeromodelling group on a minimal budget and would welcome *any* aeromodelling items. He will even collect them locally. Although they have no money they do have quite a number of used but working 2 volt lead/acid cells ready to swap for... w.h.y?

Apology

We must apologise for the omission in last month's 'Aeromodeller' of Mike Billinton's report on C/L Speed at the Nationals. We only hope that those enraged speed flyers have not done away with Mike ... it was our fault, honest!

Fly Rod Finals or casting around in Cardington

When Laurie Barr first proposed his personal campaign for indoor flying recruitment, he did so with such drive and commitment that he might well have taken over all of that first enlarged issue of Aeromodeller. As it happened, when Fly-Rod appeared in July it occupied a full six pages and, but for judicious trimming, might easily have taken another. No doubt it was a gamble to give so much to a minority interest but how it succeeded on October 9th at Cardington is proof that the venture was justified.

Aimed solely at the novice, Fly-Rod has the instant appeal of something that is bound to work within a wide band of structural quality. It can be made to the Nth degree and will then turn in over 15 minutes, or, as with the majority in the Cardington finals, it can be made by Mr. Average to fly for six minutes of sheer satisfaction. It may not look so much like an aeroplane as a device to carry a large prop on an unwinding motor: but it performs, and that's the real point.

So when 44 entrants found their way into the cavernous

airship shed, along with many more supporters and friends, Laurie's self-sponsored Fly-Rod EZB contest became the best attended event of its kind. They came from the outdoor free flight community, the Vintage flyers, the Scale fans and the 'just plain interested'. Butch Hadland and Bernard Aslett kept the scores, Laurie handed out the motors and for over eight hours, one could spot a half dozen of these stick insects groping around the heavy atmosphere. It certainly wasn't a day for high performance: but in contrast to the great outside it was dry, and wind-free. Ted Buxton, over from Burbank where he has worked at Lockheed for many years, showed he hadn't lost that lightweight touch which led the field over 30 years back, and that other intrepid novice (!) Ian Dowsett was also having a great time making his six flights of which the best two counted. But the day belonged to Tom Jolley — namesake of the C/L Aerobatic champion of the past and with the same accent of the Northwest, but a different chap with a line in gadgetry. His winder was a standard

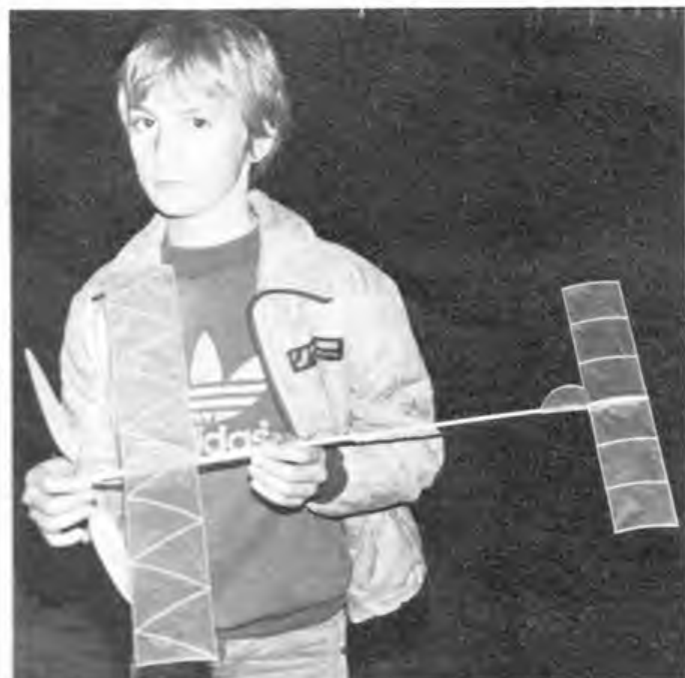
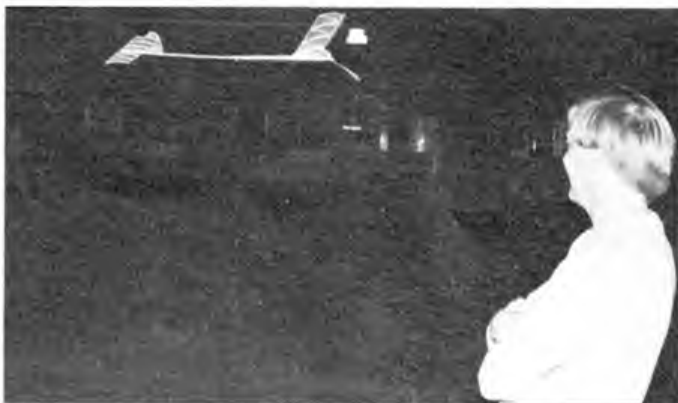
plastic case 5:1 ratio with the luxury of an LED readout. Take one discarded wristwatch and strap, epoxy the watchface to the back of a redundant calculator, wire this into a magnetic burglar alarm switch on the winder, then enter a 5+ constant on each pass of the handle, the number of turns comes up. Very neat — and cheap!

It was also Juniors' day Alan Cliff with dad from Henlow and Robert Jones up from Surrey were up among the leaders to such effect that Laurie added to his already generous prizes a special one for Robert in 6th

place. With 'Peanut' and flying scale enthusiast Nick Peppiatt 2nd and international free-flyer Trevor Payne 3rd, the aims of the event were realised in full; thanks from everyone Laurie — please do it again!

Fly-Rod Contest Results

T A Jolly	10 19 • 11 18	21 37
N Peppiatt	9 26 • 10 25	19 51
T Payne	9 15 • 10 13	19 20
R W Hopgood	9 31 • 9 41	19 12
J Walker	9 18 • 9 24	18 42
R Jones (Jr)	9 06 • 9 33	18 39
G Collins	8 35 • 9 54	18 29
I Dowsett	8 19 • 8 31	16 50
A Cliff (Jr)	8 07 • 8 29	16 36
44 entries		



Top right: Mark Hinton watches his Fly Rod float by. Top left: Tom Jolley's wrist mounted auto counter for indoor winding. Above winner of Fly Rod event, Tom Jolley. Left: young Alan Cliff from Henlow flies the Fly Rod well, came ninth in 44 entries.

What's On .

December 4 **AEROMODELLER COUPE D'HIVER INTERNATIONAL**
Venue: RAF Henlow. Further details contact Aeromodeller, PO Box 35, Wolsley House, Wolsley Road, Hemel Hempstead, Herts HP2 4SS

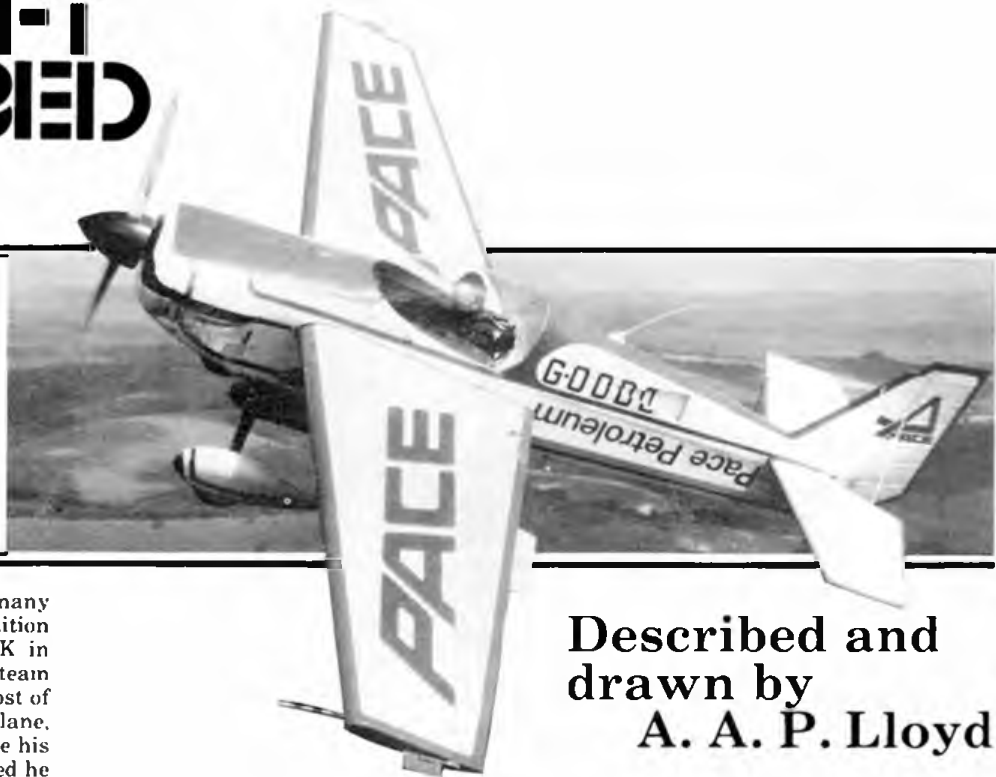
December 11 **ANGLIA WAKEFIELD DAY**,
Watton. Further details contact Bob Wells. Phone Chelmsford 267222 (day) Hornchurch 40859 (evenings)

EVENTS

December 31 to January 8 **MODEL ENGINEER EXHIBITION**
Venue: Wembley Conference Centre. See full page advertisement in this issue. Contact Exhibitions Department MAP Ltd, PO Box 35, Wolsley House, Wolsley Road, Hemel Hempstead, Herts HP2 4SS.

AIRCRAFT DESCRIBED

No:258



Described and
drawn by
A. A. P. Lloyd

RICHARD GOODE has been for many years an accomplished competition aerobatics pilot, representing the UK in international competitions, both as team member, and then captain. During most of this time he had used the *Pitts* biplane, eventually honing this type to produce his 'Ultimate Pitts.' But as time progressed he was to realise that the *Pitts* had obvious limitations as far as competition was concerned, proved no doubt by being able to actually sample many of the 'opposition's' aircraft at these competitions.

So the search began for a replacement aircraft something like the *Stephens 'Akro'* (watch these pages) which lent itself to modifications to suit the whim of its pilot. These machines are not available off the shelf and require either to be built from scratch or, as in Richard Goode's case, obtained from a friend, Michel Brandt, who by circumstances was forced to sell his *Akro* project.

Richard Goode had ideally wanted a machine with the V-16F airfoil by *Aero-spatiale* used in the new CAP-21 aerobatic contender, but by chance the Brandt machine had the wing complete with the similar V-13F airfoil.

Now, by arrangement with *Pace Petroleum* as sponsors, work could begin by adding a spare 10-360 *Lycoming* (270HP) from the 'Ultimate Pitts' and employing numerous specialists to work on all the sub-assemblies and eventually come up with Richard's modifications 'in the metal.'

As time passed the emergence of 'Britain's most expensive homebuilt' (Richard Goode, *Popular Flying* May-June 1983) has proved to be a superb example of workmanship and an elegant, precise performer in the skies above numerous displays this year.

PACE 'Spirit'

G-0000

Last year's flying was done to 'work-up' the machine to enable any modifications to be finalised before the '83 season.

These were largely the replacement of the engine with a reconditioned, much modified *Lycoming*, now driving a two-bladed *Hoffman* constant speed propeller, much research having been undertaken to resolve surging problems with last year's three-bladed unit.

Ailerons are now almost full span, with an offset spade tab beneath each unit, in addition to the usual servo tabs — roll rate is now 300° per second, with one hand on the stick! In addition, a reduction in elevator size has resulted in near perfect control harmonisation. A ferry tank diesel fuel container enables smoke generation, with the almost mandatory vapour trail showing the real flight path through tail slides, flick rolls and the *Lomcevak*.

Finally, the 1983 colour scheme is essentially eye catching, and one that I'm sure will appeal to modellers.

At a press reception to launch the *Pace* team's '83 season, the Executive Chairman, Victor Gauntlet, related his favourite anecdote: An important spectator at a display where Richard Goode was working had asked who the pilot was — reply 'Richard Goode,' moment of thought, then spectator counters with 'Richard Goode — should be Richard Bloody Fantastic.'

Below left, the Pace 'Spirit' from the starboard side showing the distinctive Pace Petroleum livery, note that the aircraft is intended to fly inverted from left to right in front of the spectators! In either direction the clear-view fuselage panel allows you to see the pilot's reactions . . . if yours are quick enough! Below, the business end of the 'Spirit' showing the 'Hoffman' constant speed propeller and the simple 'leaf' undercarriage . . . with the brake hoses attached with tie wraps (?).





Left: tail brace and control-link detail; at right, clear panels afford illumination to the cockpit area. Below left: large span ailerons are readily apparent while, below, a well-braced tail unit. Below right: the distinctive NACA duct on the rear fuselage. Photos: A. A. P. Lloyd.



Specification

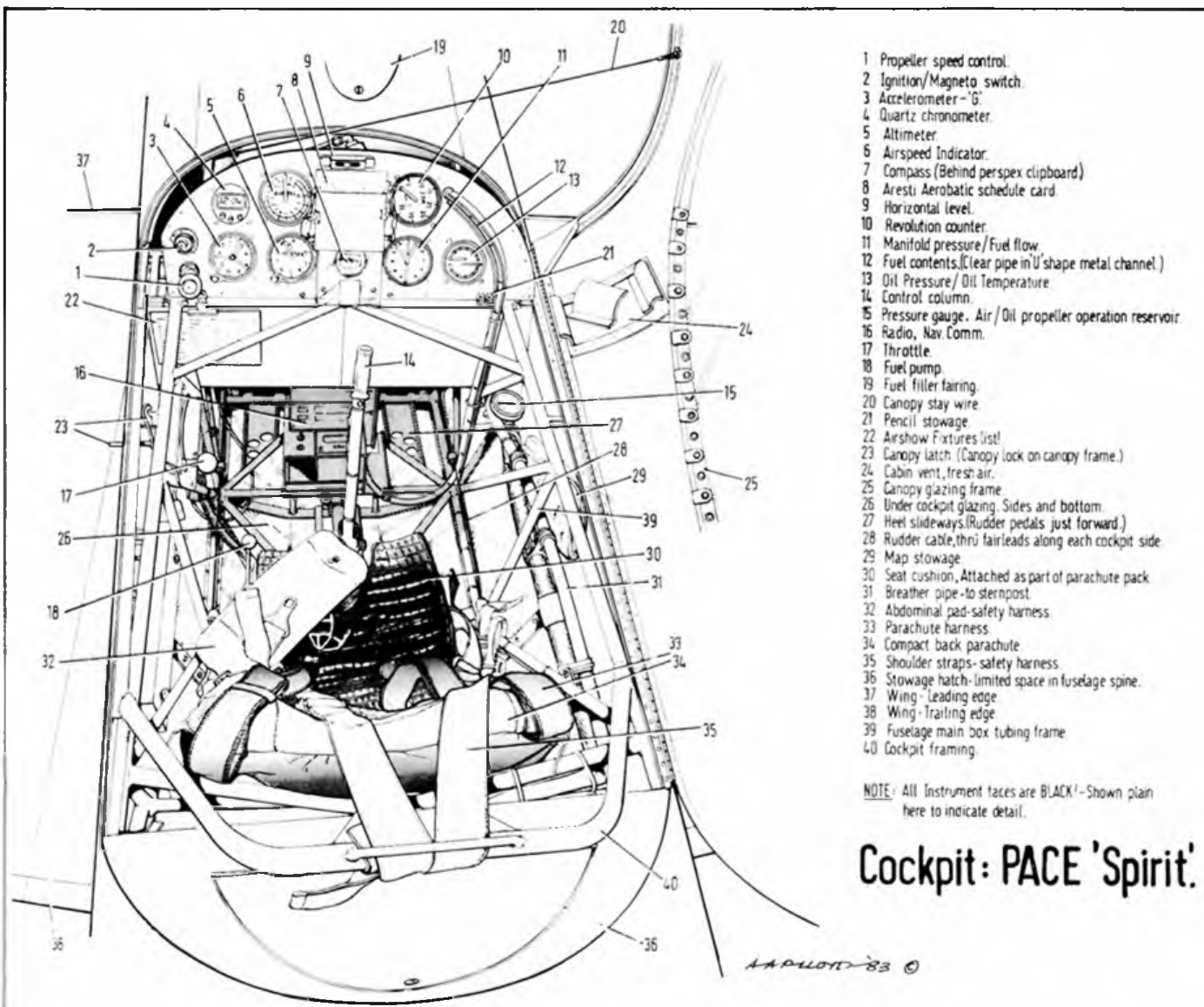
Engine: four cylinder *Lycoming* 10-360 (much modified) with inverted fuel and oil systems, and diesel display smoke system.
Power output: 270hp (at 3400rpm); 225hp (at 2750rpm, the normal maximum).

Propeller: *Hoffman* two-blade with constant speed unit.

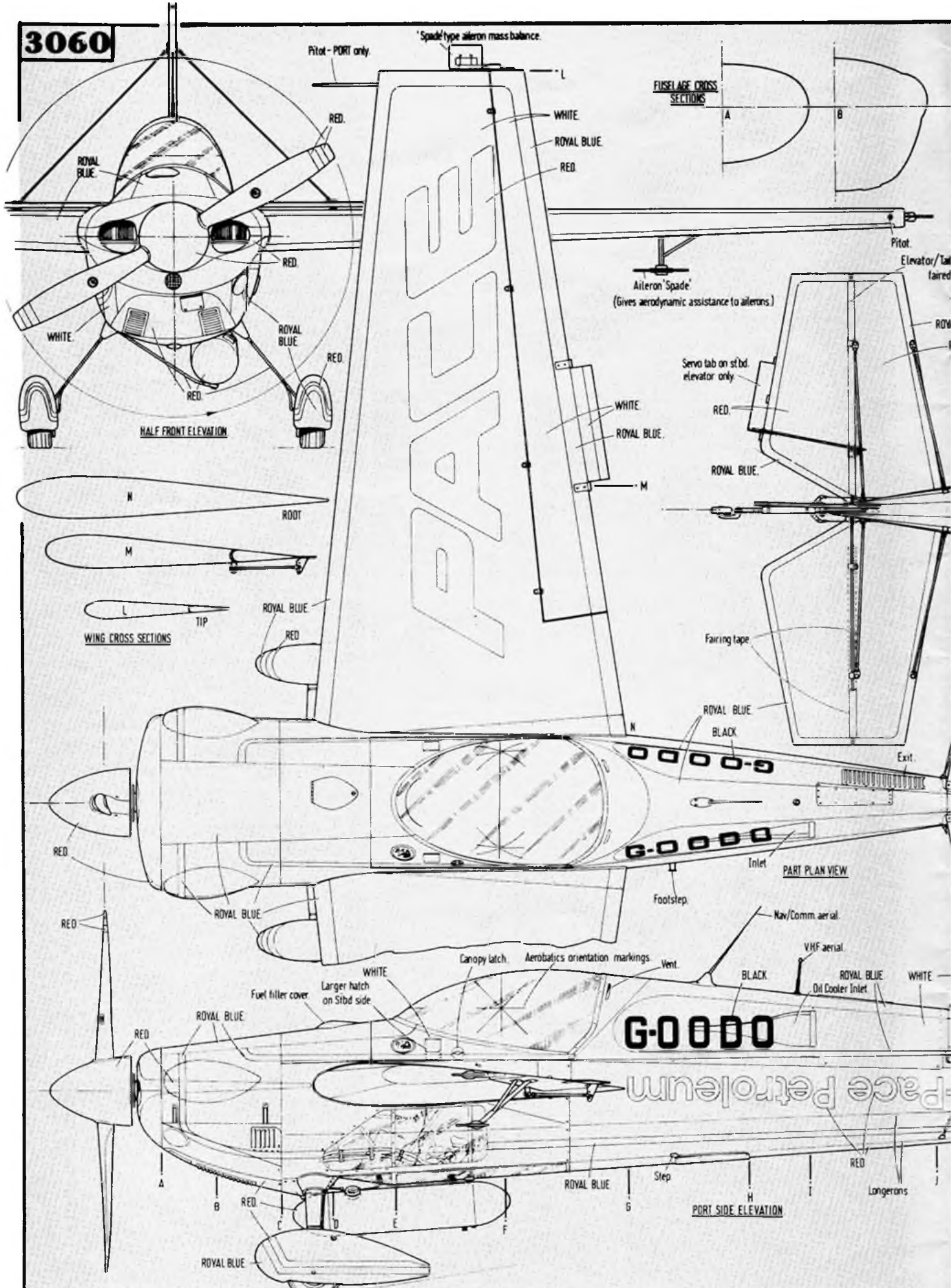
Airframe: Span 25.0ft., length 19.1ft.; zero fuel weight 1010lb, maximum AUV 1450lb; wing, scientifically designed for equal performance erect and inverted, with no

incidence, dihedral or sweepback.

Performance: Maximum speed (dive) 300mph; maximum speed (level) 210mph; cruising speed 180mph; range 500 miles; rate of climb 3,000ft. min; G limits + 10, - 8 (operational); rate of roll 300 degs/second.

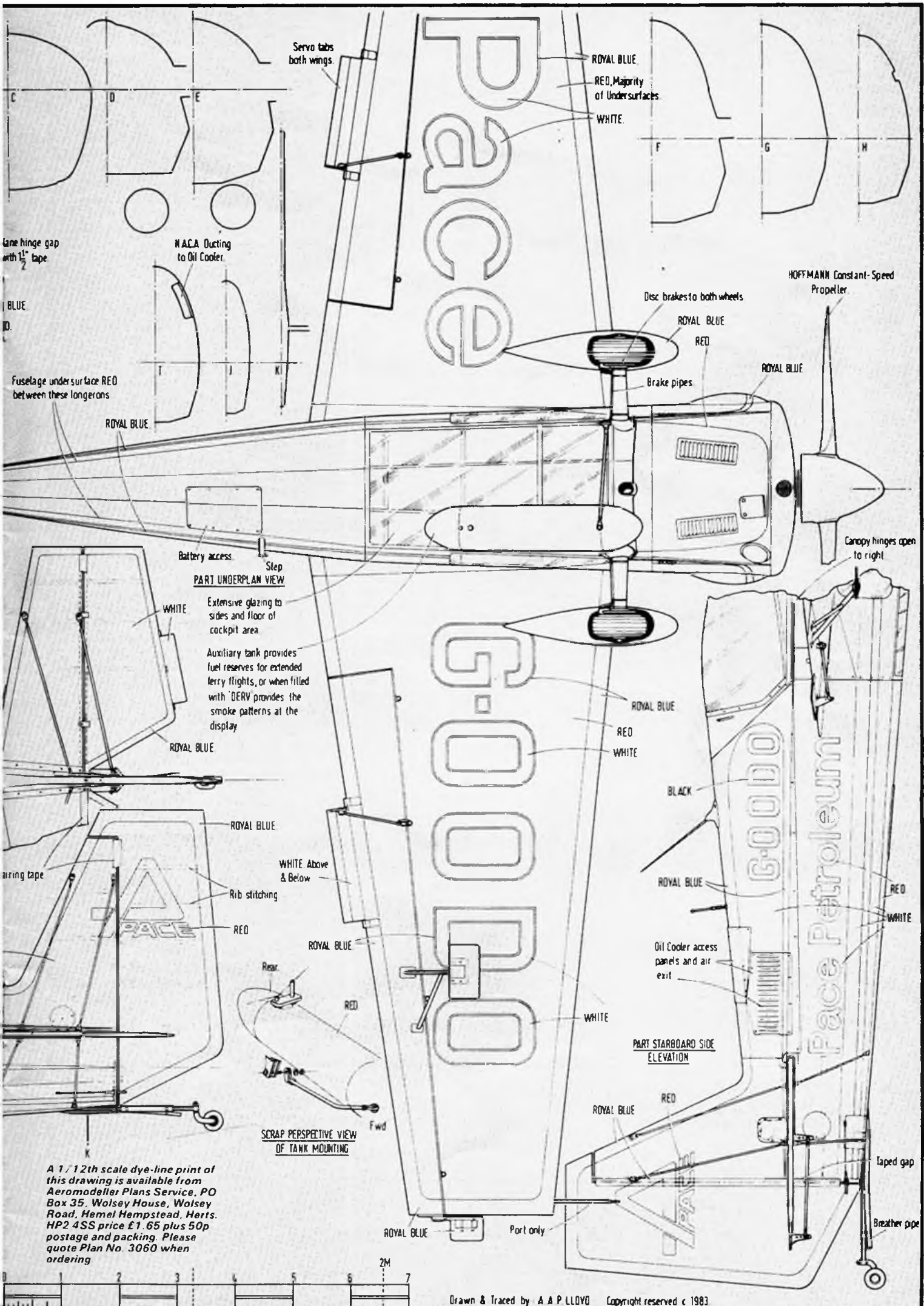


3060



Richard Goode-Pace Petroleum 'PACE SPIRIT' (1983 Season.)

SCALE: FEET



lane hinge gap with 1/2" tape

BLUE

Fuselage under surface RED between these longerons

airing tape

A 1/12th scale dye-line print of this drawing is available from Aeromodeller Plans Service, PO Box 35, Wolsey House, Wolsey Road, Hemel Hempstead, Herts. HP2 4SS price £1.65 plus 50p postage and packing. Please quote Plan No. 3060 when ordering

Servo tabs both wings

NACA Ducting to Oil Cooler

Battery access
Step
PART UNDERPLAN VIEW

Extensive glazing to sides and floor of cockpit area

Auxiliary tank provides fuel reserves for extended ferry flights, or when filled with DERV provides the smoke patterns at the display

WHITE Above & Below
Rib stitching

Rear
Fwd
SCRAP PERSPECTIVE VIEW OF TANK MOUNTING

Peace

ROYAL BLUE
RED, Majority of Undersurfaces
WHITE

Disc brakes to both wheels

ROYAL BLUE
RED

Brake pipes

HOFFMANN Constant-Speed Propeller

ROYAL BLUE

Canopy hinges open to right

ROYAL BLUE
RED
WHITE

BLACK

ROYAL BLUE

Oil Cooler access panels and air exit

PART STARBOARD SIDE ELEVATION

ROYAL BLUE

RED

G-0000
Pace Petroleum

RED
WHITE

taped gap

Breather pipe

ROYAL BLUE

Part only

2M

Drawn & Traced by A A P LLOYD Copyright reserved c 1983



**WIN A
COSINA
SLR
CAMERA**



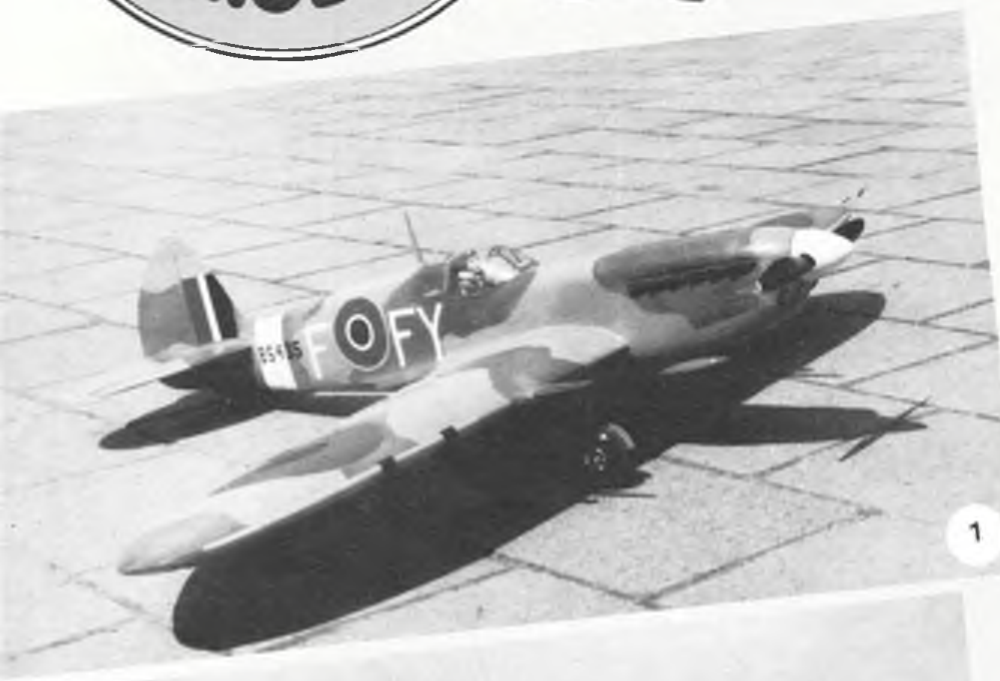
All entries should be good quality black and white or colour prints. Your name and address should be on the back of the print. Details if possible should be given about the model and its construction.

Send all entries to:

Aeromodeller.

Photo prize Feature,
PO Box 35, Wolsey Road,
Hemel Hempstead, Herts.
HP2 4SS.

Photos will be returned
after publication.



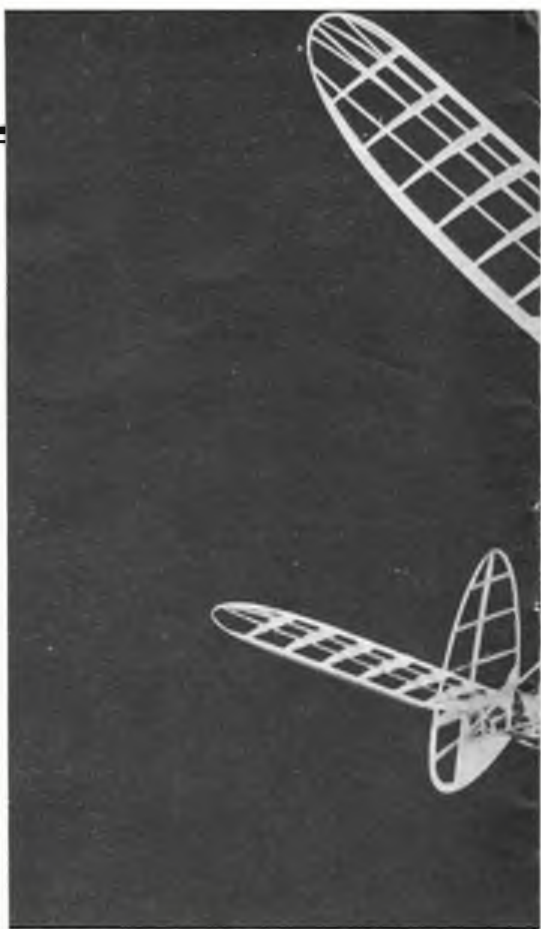
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2



3



FLIAR PHIL hopes that you are in the mood, and ready to join him in travelling around (even as far as South Africa!). For this month's Photo Prize Model News is, again, a truly international collection. Interesting model masterpieces from both home — and abroad. Obviously the readership of the world's best aeromodelling magazine (*Aeromodeller* — OF COURSE!) is world-wide. Footnote! Our respected Editor says "Flattery will get Fliar Phil nowhere — fast!"

Photo No. 1

Let's away to Holland to give the 'once-over' to this fine photo of a 'Spitfire' MkVIII C/L model. From an APS plan (CL 776) it comes from George van de Ven of



4



Photo No. 5 winner

Fliar Phil knows how often aeromodellers, seeing the fine craftsmanship in an uncovered model, have remarked "What a pity it has to be covered." The airframe having an aesthetic appeal in its own right. This dramatic photo of his 'Korda Wakefield,' (before covering), by Dave Hipperson of Herts, finely portrays this aesthetic quality. Destined for Vintage Wakefield events. Built exactly as per MAP plans (still available from MAP), Dave gets this month's camera.

Photo No. 6

The 'Virginia Champ' (60in. span) designed by Robert Little, the plan being published in the US 'Model Builder' magazine (1982). BUT Fliar Phil hastens to add, "Not quite!" This photo shows the skill of Steve Ditta of New York. Steve has scaled the 'Virginia Champ' DOWN to 13 $\frac{1}{2}$ in. span! — complete with dummy Brown Jr. engine, battery box, ignition coil, metal motor mounts — in fact everything fitted to the 60in. span original. Remarkable piece of miniaturisation Steve. Congratulations! Photo by Ed Soltis.

Photo No. 7

Fliar Phil just *had* to include this photo of an R/C Focke-Wulf FW 190. Sent by Jorgen Korsgaard of Ellund, West Germany. Photo taken at a W. German R/C display 1982. Jorgen did not include any 'vital statistics' — but a superb scale job by any standard.

Photo No. 8

Finally, off to South Africa! A fine flying shot by Jerry Metcalfe of Port Elizabeth SA of his DC powered F/F 'Ladybird.' The photo captures for FP the spirit of a relaxing afternoon's sport flying — and the 'Ladybird,' reliable and problem free, is just the job for an afternoon's 'fun flying.'

Home again! Fliar Phil hopes you are not suffering from 'jet-lag!' However a quiet perusal of the varied attractions in this month's Aeromodeller will soon cure that. Happy landings!

Ray Malmstrom

Veldhoven. George has made some slight modifications, including three line control. Span 53 $\frac{1}{2}$ in. Power: Enya 35 (inverted). Markings are of 611 Squadron.

Photo No. 2

Mr. Lee of Nottinghamshire built this 'Tiger Moth' from an APS plan in 1968. He informed F.P. it "flew straight off the board." You can't have it better than that! It is finished in the colours of the Royal New Zealand Air Force. An excellent photo — but Fliar Phil wonders just what the pilot is up to!

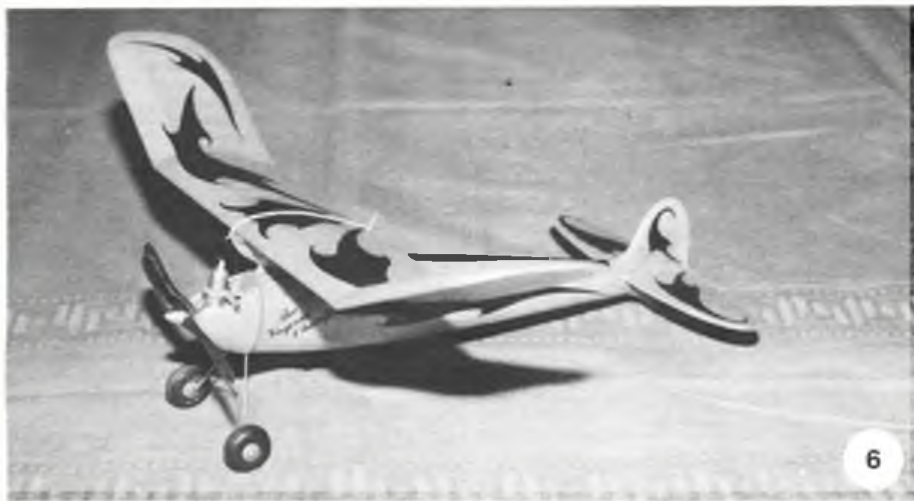
Photo No. 3

Unfortunately, Mr. D. Woodward of

Moray, Scotland, did not include any details with this photo of his WWI Sopwith 'Camel.' However, Fliar Phil could not resist this well-posed shot of the famous fighter. That expanse of aerodrome should afford plenty of space for 'offensive patrols!'

Photo No. 4

All aboard for Czechoslovakia. Quick work with his camera produced this quite remarkable photograph from Ing. Lubomir Koutny of Brno. It is his rubber-powered 'Minihydroplane' after a water take-off. Details are: Span: 330mm. Flights of 80secs. plus. Holds Czech indoor ROW record of 43 secs. Certainly a photo to reflect upon!



FREE FLIGHT

DAVE HIPPERSON REPORTS

SCENE

Open Rubber Flyoff Model by Terry Dilks



Rule changes

The SMAE Council have passed four rule changes for inclusion in the rule book effective from January 1, '84. These were all at the suggestion of the Free Flight Technical Committee and all competition flyers would be well advised to send an SAE to The SMAE head office at Leicester for a copy of these and any other amendments they may be missing. In brief the four changes are:

(1) **There will be no compulsion to rise-off-ground (ROG) in SMAE Vintage contests.** Incidentally the SMAE Free Flight Technical Committee hope to be adding two more Vintage events to the calendar for '84 because of the growing interest in this branch of free flight.

(2) **The experimental Slow Open Power rules** which were tried out at the February meeting of '83 have been made official and are: "Models shall have no timed moving surfaces apart from DT. Fuel supply shall be suction only — that is no pressurisation of tank either from engine or self pressurising tank. Engines to a maximum capacity of 10cc and shall have plain journal bearings as manufactured and not have modified bearing systems. Engine runs to be 10 secs for glow and 12 secs for diesel or spark motors. Three minute max." It is hoped to run two or three of these events in '84.

(3) **Special Trials** rules for F1A, B and C European and World Champ. Trials only. "CD may postpone if ground wind speed exceeds 18mph or if visibility is insufficient to allow timing of a three minute max. The max must always be three minutes — never varied. CD may alter length of round but never to shorter than 30 minutes and he may alter the frequency of rounds but never to more than seven per day. All 14 rounds must be held before a Team can be decided. When conditions are such that Trials flights are impossible then an SMAE FAI contest *will be run anyway.*"

The last line simply guarantees you a Comp. no matter what — probably a five flight event without rounds on either or both days. The rule book now takes out of the hands of FFTC or SMAE Council the possibility for them to draw up a Team without a Trials — all 14 rounds have to be held somewhere and sometime!

(4) "Pre-entries for Trials and Centralised Free Flight events will in future be sent to the Chairman of the FFTC unless otherwise stated in the official SMAE publication. "This is a fail safe device so that everyone knows to whom to send entries as the Chairman of the FFTC has to be elected immediately and his name and address published. Perhaps it would be a good moment to remind you that in '84 the FFTC intends to continue with their policy of strict enforcement of the existing SMAE pre-entry requirement. In writing stating events and classes to be entered no less than 21 days before the event enclosing Comp Season ticket number or correct revenue please.

Continuing our current series of contest winning designs this month we present the model that led the field at the Club Champs flyoff in August. While everyone else had some difficulty bettering six minutes in the cool evening air Terry Dilks produced this immaculate model — just trimmed that morning — and recorded over eight minutes. Fortunately he got it back so we were able to take dimensions. Perhaps the model is a little smaller than current state of the art thinking but after all it is glide performance that matters above all else and this is not necessarily a direct product of size. Terry believes this model actually glides more like an A2 rather than waffles about as do some designs on thick sectioned lightly loaded wings. He has taken an A2 section of some breeding from the Ray Monks stable and maintained similar surface characteristics with the T spar construction. Of course this has meant rather harder wood in the wing as there is precious little of it. Firm leading and trailing edges with medium 1/16 sheet ribs produce a wing of 40 grams but at 340sq.in. it offers a clean and practical solution to the hunt for the super glide.

It is highly powered with the short pre-tensioned motor fitting in the 40in. motor section. Once again for glide stability considerations. Short nose and short motor for low moments of inertia. The prop assembly is the much favoured free wheel fold system and the larger than average blade dimensions would run off full turns in well over two minutes. To handle the first part of this the starboard inner panel has considerable wash-in — but other panels are flat apart from slight natural wash-out on the tips. No effort has been spared on fuselage elegance either. Jig built with diagonal longerons (the purist's way) there is no parallel section. Much more difficult to repair in the event of major breakage! Future flyoff

results will prove if Terry's hunch about the A2 section is right. Remember it is still much lighter loaded than an A2 would be.

SMAE Fifth Area Centralised Meeting ... 4.9.83

Very strong winds virtually everywhere kept entries low for this event. Plugge points tempted some heroism in Open Power where the most entries were recorded and Anglia consolidated their lead by sweeping up Team Power and taking the top two individual places too! Special mention should go to those that flew anything in the Southern Area as Beaulieu had real gales — winds sometimes in excess of 40mph. Crookham, that flew Team Power there, managed a remarkable third — models were going literally miles on maxes.

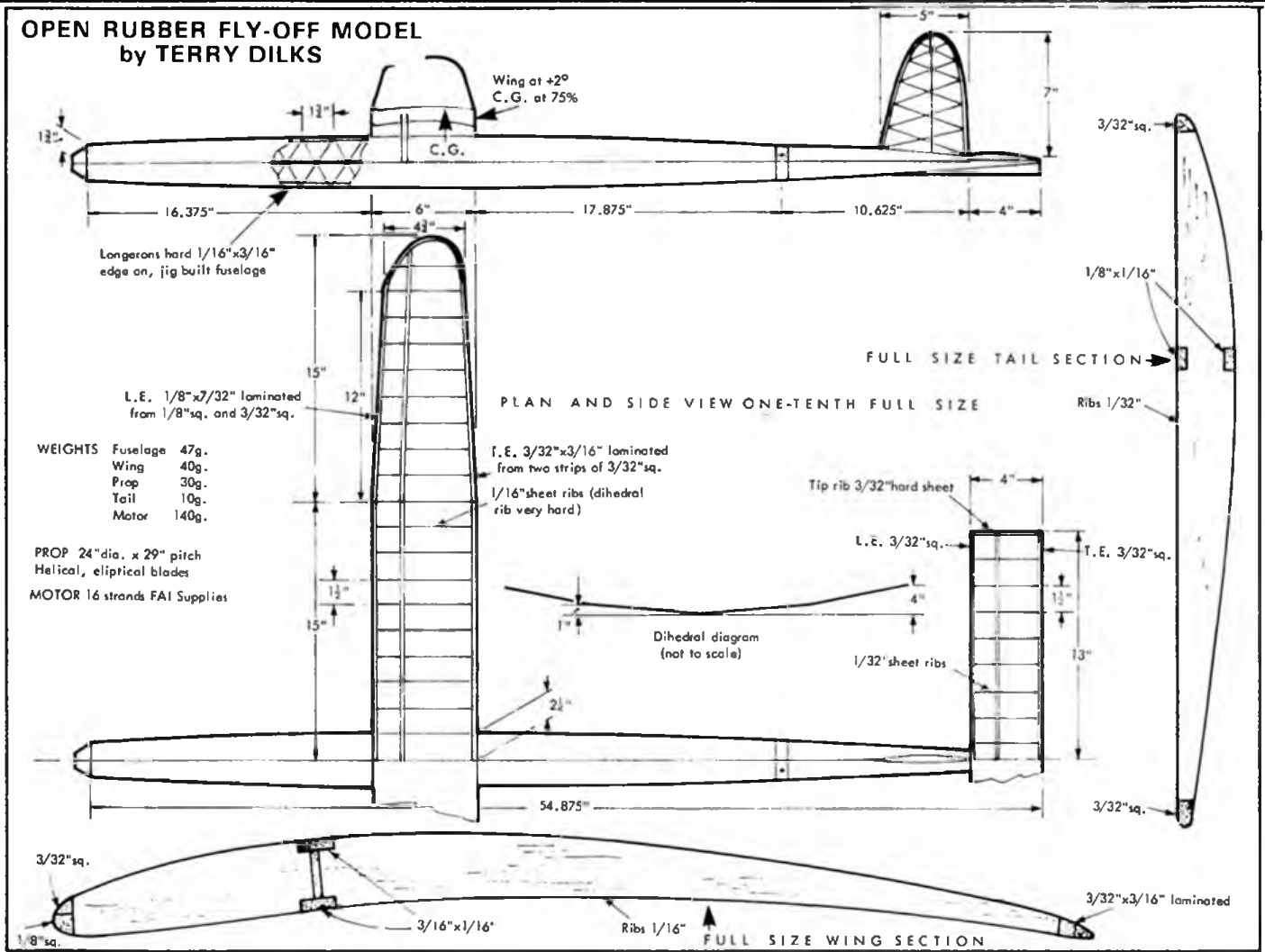
Terry Dilks took a break from flying rubber to top the A1 results with four maxes and one 35 second flight at Barkston Heath whilst clubmate Peers took third in Wakefield at the same place. Barkston had a very pleasant sunny but windy day 20-30mph but further north the wind was less and at the centre of the depression was Albermarle Barracks. Here Tynemouth took advantage of a couple of quite flyable periods (10mph)



Top perfect style from Jeff Anderson seen at Barkston Heath. Left: similar style from Russell Peers. Below Phil Ball prepares for fly-off at SMAE Club Champs - 2nd Open Rubber.



OPEN RUBBER FLY-OFF MODEL by TERRY DILKS



between rain and topped Wakefield with Brian Martin dropping just 50 seconds and Ron Pollard taking second place a minute behind.

Results		
A/1 (13 flew)		
1 T Dilks	Falcons	8.35
2 C R Plant	Darlington	8.11
3 J Cooper	Biggles	6.46
Wakefield Gutteridge Trophy (11 flew)		
1 B Martin	Tynemouth	14.10
2 R Pollard	Tynemouth	13.14
3 R Peers	Falcons	11.12
Open Power Individual (24 flew)		
1 R Collins	Anglia	9.00 • 3.39
2 A Wells	Anglia	8.38
3 J Bailey	Biggles	8.37
Team Power Teams		
1 Anglia A	Collins, Wells, Bond	23.58
2 Biggles A	Bailey, Payne, Cooper	18.21
3 Crookham	Hook, Cox, Smith	16.00

Open Rubber Trophy . . . Barkston Heath . . . 18.9.83

It was inevitable that eventually this would coincide with windy weather. However the forecast was more pessimistic than it need have been. Barkston had sun all day but the first round three minute maxes landed well off the 'drome and the strong south westerly made chasing later four minute flights a very long walk in the country indeed. During the day, contestants told numerous stories of flights that were to clear the town of Ancaster and still be picked up. The determination shown by the 15 who flew made the event rather more of a contest than the Northern Gala had been a week earlier when a mere handful flew in

Rubber and that for the Caton Trophy!

The first upsets came when Dilks dropped his second max. going for four minutes and then clubmate Carter did likewise in the third round. Mike Chiltern too, could well have finished much higher had he not thrown away this third flight by re-launching after a spin-in with much of the turns gone when he had time to cure the fault and re-wind. Perhaps it was the effects of the barrel of free beer laid on from lunch-time. Consumption rates were kept in check by supplying small plastic cups. Next time someone is bound to bring a pint tankard!

By the last round the wind was a steady 20 but had certainly reached 25mph occasionally and at altitude much higher. It never seemed impossibly turbulent however. At this point, Russell Peers, John O'Donnell and Phil Ball the current holder had full scores and models left to make their last flights.

O'Donnell launched fairly early on and along with a number of others in the same patch seemed to contact good air initially only to have it suddenly collapse and turn very angry, hurling models around and down and back on the ground way short of a max. This left Peers and Ball to fly. Ball had lost his rough weather model the flight before and was forced into using his now legendary 360sq.in. model. It would have appeared impossible to launch such a model

in this wind. However he waited just long enough to let the bad air that dashed O'Donnell's hopes pass to one side and released for a smooth climb that really only showed the wind by the speed with which it grew smaller. Nevertheless four minutes is a long time in such conditions and it didn't seem quite happy until just before prop. fold when it started to gain height again. Only Peers could force a fly-off now and he had two models left. He launched cleanly but



Terry Dilks in Open Rubber Trophy. This model is not the published design but one he used in comp. flights.



Left: Richard Anderson (with father, Jeff) was eventually 2nd Junior. Right: Eric Hawthorne launching at the Open Rubber Trophy meeting - a bit crosswind.



disaster struck at 50ft. when the port wing folded. As if that wasn't enough, the remains still insisted on flying as the crucial seconds ticked away. Eventually the wing sheared completely in time for the flight to count only as an attempt and Russell was assembling another before the remains hit the ground. Time was tight and rather than risk a motor blow for which there would be no margin he underwound to be sure of a flight.

Another perfect launch and a very smooth flight but the air just wasn't good enough. Even with all the assembled onlookers willing it to stay airborne it was down in a little over three minutes. This left Ball the winner for the fourth consecutive time and let John Carter back in to take second.

Eighth place went to Anthony Ball who also walked off with top Junior and there was still more to come from him. As prizes went down to tenth there was still a good crowd for the presentations of a couple of hundred pounds worth of goods and cash including Champagne for the top placers.

This led on nicely to the Champagne fly-off itself. Yes, there were people who still



had models left and were not exhausted! Certainly, there were no problems with visibility and even the wind eased a little. Away first was Carter, who's prop blade sheared off a few feet up. This rendered his flight an attempt and thus effectively a 'no flight' as there was only one attempt allowed - annoying for him because the model carried on gamely to record a time that would have placed him third. Peers followed quickly with a good flight and Terry Dilks went almost last. Terry picked a beautiful patch, the model quite literally whistling up in lift for over seven minutes and first place.

1. P. Ball	3:00	4:00	4:00	4:00	15:00
2. J. Carter	3:00	4:00	3:34	4:00	14:34
3. R. Peers	3:00	4:00	4:00	3:09	14:09
4. J. O'Donnell	3:00	4:00	4:00	2:39	13:39
5. T. Dilks	3:00	3:30	4:00	2:44	13:14
6. M. Chilton	3:00	4:00	1:12	4:00	12:12
7. G. Beel	2:38	2:55	4:00	2:25	11:58
8. A. Ball Jnr.	2:06	2:17	3:17	2:17	9:57
9. M. Croome	3:00	2:40	4:00	---	9:40
10. E. Hawthorne	2:40	4:00	---	---	6:40
11. J. Anderson	2:12	---	3:15	---	5:27
12. R. Anderson Jnr	2:26	0:52	1:58	---	5:16
13. N. Marcus	3:00	---	---	---	3:00
P. Putnam	3:00	---	---	---	3:00
15. B. Horsley	0:04	---	---	---	0:04
(28 entered - 15 flew)					

Champagne Flyoff				
1. T. Dilks	---	---	---	7:05
2. R. Peers	---	---	---	5:25
3. A. Ball Jnr	---	---	---	1:44
4. R. Anderson	---	---	---	1:43
5. B. Horsley	---	---	---	0:10
6. J. Carter	---	---	---	attempt
7. J. Anderson	---	---	---	---



Left: Mike Chilton - one round let him down. Above: John O'Donnell launches - unlucky patch on last flight kept him out of the fly-off. Right: Russell Peers launches at Open Rubber Trophy - first round.



The Ball family went away with four placings — three of which were Anthony's as he went on to take third in the Champagne flyoff! Despite the colossal distances that maxing flights travelled and thanks to relatively clear fields, very few models were lost permanently. The event was a contest right through the day rather than a qualifying formality followed by a lucky dip. It goes to prove that four minute maxes are still perfectly practical even in 20mph winds as long as the incentive is there.

Sponsors included: Dave Stapleton, Loctite, Solarbo, Micro Mold, Ripmax, Humbrol, SAMS Models and various cash donations. Thanks are due to all — and to those who flew.

SMAE Sixth Area Centralised Event . . . 25.9.83

In contrast to the Area meeting a fortnight before, a very optimistic forecast tempted hundreds out for this last of the series. In reality the weather wasn't quite that wonderful — the Midlands having the best of the sun — the South the lightest winds. Here Pete Williams topped a large glider entry flying at Beaulieu with a fly-off of a little over four minutes against six other qualifiers. Runners up Cooper and Lavis both came from Nth Luffenham. 1/2A power suffered rather reduced entry numbers and proved a repeat of last year's win for Pete Harris once again at Barkston Heath. As usual his performance was to a very high standard but at least clubmate Baggott gave him a flyoff this time. This class is certainly getting very specialised and losing support as a result.

The team event for the Farrow Shield — Open Rubber — had an enormous entry and seven clubs recorded full scores. Fly-offs everywhere were held in fairly calm conditions although Albermarle were unlucky this time to have the wind pick up and Church Fenton had rather poor visibility. Elsewhere models were seen down and where most flew — 25 at Barkston — generally the best times were recorded. Individual honours going to Mark Croome with over nine minutes and Ball being bounced into third by Derek Wain flying at Merryfield.

Back-up performances from the remainder of Grantham and Bristol and West put these two clubs way out on top. It was perhaps an illustration of the direction of development that at Barkston at least times were proportional to wing area. Mark Croome's colossal Cabaret Star with its prop measured in feet and wing area of 500

Following the family tradition. Anthony Ball scooped three prizes at Open Rubber Trophy.



sq.in. will appear as the drawing in next month's column.

Plugge Cup — The Magnificent Seven!

The East Anglian Area tried out the new and rather small venue of Stradishall for this sixth event but it didn't seem to disturb Anglia's concentration on their quest for the Plugge Cup — they did it. Their full score in Rubber and particularly fine 7:07 flyoff from Bob Wells gave them enough points to stay 71 points ahead of Biggles. This represents a fine achievement for a small club who have flown positively all year. They made particularly quick progress up the lists by way of their results in the two power events then they took the lead halfway through the season after the Weston Cup with some consistent Wakefield flying.

They slipped a few points in Team Glider but held onto the lead and returned to win Team Power and place well in Team Rubber to clinch it. With a little team spirit and determination a small club can overcome even the disadvantages of poor aerodromes to top the list. Bob Wells is their leading light scoring points for the club in five events out of six but he was backed up effec-

tively by Derek Niel scoring in four, Paul Bond scoring in three, Roy Collins scoring in the two Power events and winning one and Roche and Pavely also contributing. That's all there were scoring — seven people won the Plugge Cup. Hasn't your club got seven people in it?

SMAE Sixth Area Results			
A/2 SMAE Cup (65 flew)			
1	C P Williams	Richmond	15 00 - 4 11
2	J Cooper	Biggles	15 00 - 3 39
3	B Lavis	Biggles	15 00 - 3 18
4	G Madelin	Crookham	15 00 - 2 46
5	J Foster	MFFG	15 00 - 2 17
6	D Brawn	Anglia	15 00 - 2 10

Open Rubber Individual scores (73 flew - 31 flew off)			
1	M Croome	Grantham	9 00 - 9 02
2	D Wain	Bristol and West	- 7 58
3	P Ball	Grantham	- 7 10
4	A Wells	Anglia	- 7 07
5	P Davies	Bristol & West	- 7 02

A Power (14 flew)			
1	P Harris	Birmingham	10 00 - 5 18
2	R Baggott	Birmingham	- 3 32
3	R Peers	Falcons	9 37
3	T Tyson	Crookham	9 37

Team Rubber — Farrow Shield			
Grantham	Croome, Ball, Hipperson	49 59	
Bristol & West	Wain, Davis, Chapman	48 31	
Croydon	Marcus, Sharp, Carter	44 09	

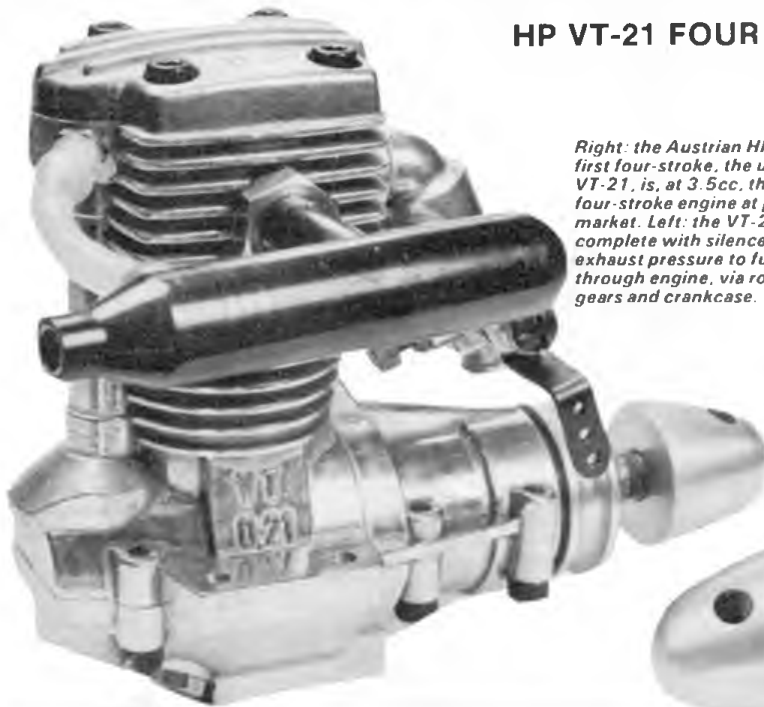
Final Plugge Results			
1	Anglia	1348	
2	Biggles	1277	
3	Birmingham	1108	
4	Crookham	1077	
5	Grantham	976	

*Right: Mark Croome launches — note big blades!
Below: recently on form John Carter prepares to launch Open Rubber in SMAE Club Champs. fly-off. Out of luck this time.*

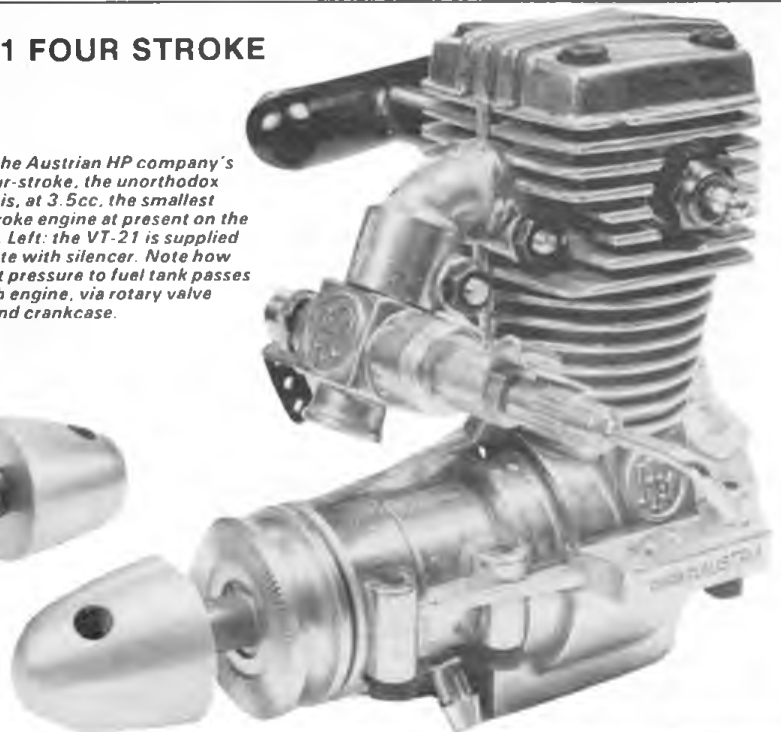


PETER CHINN'S Engine Test

HP VT-21 FOUR STROKE



Right: the Austrian HP company's first four-stroke, the unorthodox VT-21, is, at 3.5cc, the smallest four-stroke engine at present on the market. Left: the VT-21 is supplied complete with silencer. Note how exhaust pressure to fuel tank passes through engine, via rotary valve gears and crankcase.



Specification

Type: Single-cylinder, glowplug ignition, four-stroke with gear-driven vertical axis cylindrical rotary-valve. Twin ball bearing crankshaft.

Bore: 16.6mm (0.6535in.)

Stroke: 16.0mm (0.6299in.)

Swept volume: 3.463 (0.2113cu.in.)

Stroke/bore ratio: 0.964:1

Measured compression ratio: 10.5:1

Measured valve timing:

Inlet opens: 45° BTDC

Inlet closes: 45° ABDC

Exhaust opens: 38° BBDC

Exhaust closes: 29° ATDC

Inlet period: 270°

Exhaust period: 247°

Overlap: 74°

Checked weight: 322 grammes (11.4oz)

General structural data

Main casting. Pressure diecast aluminium alloy comprising upper half of crankcase, front housing and rear bevel housing, plus cylinder with integral head and fixed chromium-plated brass cylinder liner and rotary-valve sleeve.

Crankcase bottom. Pressure diecast aluminium alloy fixed to main casting along engine's horizontal centre-line with six M3 × 0.5 Allen head cap screws.

Piston and conrod assembly. Short-skirted, lightweight slipper type, flat-crowned aluminium alloy piston with Dykes pattern low-pressure piston-ring. Short connecting-rod, 25mm (1.56 × stroke) between centres, with plain small end and bronze bushed big-end, both with oil-hole. Fully floating 4mm OD tubular gudgeon-pin with plastic pads. Reciprocating weights: piston and ring 3.25 grammes; piston, ring and gudgeon-pin 4.3 grammes. Conrod weight: 3 grammes.

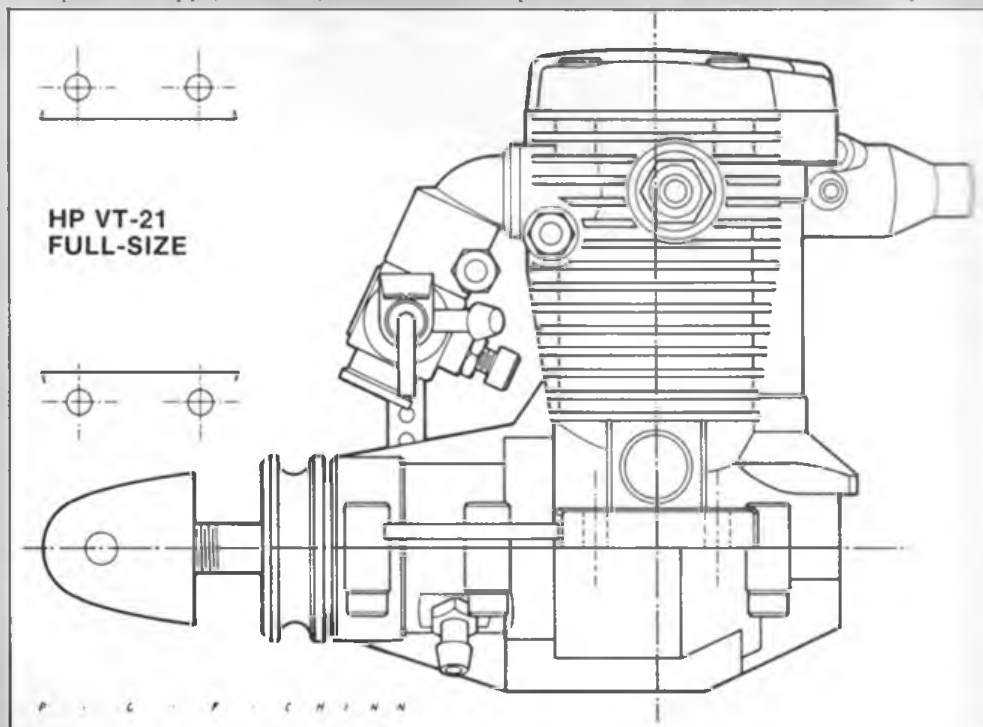
Crankshaft and bearings. Conventional overhung counterbalanced crankshaft with 9mm dia. main journal, 7mm dia. front

journal and separate 6mm dia. crankpin pressed into 7.5mm crankweb. Crankpin has 4mm dia. spigot that engages the bevel gear drive to the rotary-valve. 24mm dia. machined and anodized aluminium alloy prop driver fitted to shaft by brass split tapered collet. Machined anodized aluminium alloy spinner nut fitted to standard 1/4-28 UNF thread on shaft end. Shaft supported in one 9 × 24 × 7mm 7-ball steel caged ball journal bearing and one 7 × 19 × 6mm 7-ball steel-caged shielded bearing. Both bearings retained between top and bottom halves of crankcase.

Rotary valve. Machined brass, vertical axis cylindrical type, 9mm OD, 5.2mm ID ×

14.6mm long, fitted with 30-tooth 22.4mm dia. × 2.5mm hardened steel spur gear. Rotary valve operates in chromed brass sleeve in cylinder head where it uncovers, in turn, inlet port, glowplug cavity and exhaust port.

Valve drive. Drive from crankshaft to rotary-valve involves bevel gearing in rear of crankcase, a vertical shaft and spur gearing in the cylinder head. A 14.8mm dia. hardened steel bronze bushed bevel gear picks up the drive from crankpin spigot. It is free to rotate on a 4mm dia. hardened steel pin that is located in rear of crankcase bottom, where the pin is secured with a steel strap and two short 3mm Allen head cap



The Austrian *Hirtenberger Patronenfabrik's* recently introduced VT-21 is the smallest four-stroke model aircraft engine offered to date. It is also HP's first four-stroke and a rather distinctively different one.

Among its unusual features is its use of a rotary-valve in the cylinder head, in place of the more commonly used poppet valves. Rotary-valves are no longer rare among model four-strokes: three other model engine manufacturers are also offering rotary-valve four-strokes but each uses a rotary-valve that is based on a recognised type. For example, the 10cc RVE uses a vertical axis disc valve, the 14.3cc Webra T4 has a vertical axis conical valve and the 15 and 20cc condor engines feature horizontal axis cylindrical valves. The HP uses a totally different arrangement; a vertical axis cylindrical valve.

Also very much off the beaten track, so far as current model engines are concerned, is the VT-21's crankcase construction. Instead of a barrel crankcase with detachable front and/or rear ends, the crankcase is split horizontally along its longitudinal centre line. The upper half of the crankcase includes the cylinder casing and, another unusual feature, this also embodies a non-

Highly unusual is VT-21's use of horizontally split crankcase. Short, fixed shaft, seen at rear is for bevel gear.



detachable cylinder head and contains a fixed chromed brass cylinder liner.

These departures from orthodox practice are supplemented by some other novel features to make an engine of unique appearance. For example, what might seem to be the cylinder head is a cover for the spur gears driving the rotary-valve; the fixed head, itself, has rectangular horizontal fin-

ning with the carburettor angled downward from the front of it and the glowplug placed horizontally in its side.

The vertical cylindrical rotary-valve gives the engine a most unusual combustion chamber shape. Basically cylindrical, except for the port in its 1.9mm thick wall, the chamber's depth (6.8mm at the centre) is greater than its diameter (5.2mm). This is

screws. The bevel gear has 20 teeth and engages a 16-tooth bevel pinion at lower end of the vertical drive shaft housed in the rear or the main casting. The speed of the drive-shaft is therefore raised to 1.25 times crankshaft speed. At its top end, the shaft is fitted with a 12-tooth pinion that meshes with the large diameter 30-tooth spur gear attached to the rotary-valve thereby reducing rotation of the latter to the required half crankshaft speed.

Head cover. Of pressure diecast aluminium alloy, the head cover encloses rotary-valve gear and drive shaft pinion and also serves to vertically locate the rotary-valve in the cylinder head, by means of steel shim washers. The test motor was fitted with four 0.15mm shims giving about 0.005in. axial clearance on the rotary-valve. The head cover is fitted to the cylinder casting with a paper gasket and four M3 x 0.5 Allen cap screws.

Inlet pipe and carburettor. The carburettor is installed in the front of the cylinder head by means of a short, curved, pressure diecast aluminium alloy inlet pipe. Brass cotter pins and nuts are used to retain the inlet pipe in the cylinder casting and the carburettor in the inlet pipe.

The carburettor is of the barrel-throttle two-needle adjustable automatic mixture control type. It has a pressure diecast aluminium alloy body and a steel throttle barrel. Choke diameter 4mm. Effective choke area approximately 8sq.mm.

Silencer. The VT-21 is supplied complete with a silencer which screws directly into the cylinder casting in place of a separate exhaust pipe. The silencer is made of brass, but is quite small and weighs less than 0.7oz. It has a volume of less than 5ml and a 4mm ID outlet giving an outlet area of just over 12½sq.mm, which is increased to 16.7sq.mm by the integral pressure nipple. **Pressure fittings.** A short length of silicone tubing is provided for connecting

the silencer outlet nipple to a brass nipple on the cylinder head. The fuel tank is then pressurised from another nipple located in the lower half of the front housing.

Test conditions

Running time prior to test: two hours.

Fuels used: (i) 80 per cent methanol, 20 per cent castor-oil (initial running-in); (ii) 77 per cent methanol, 18 per cent castor-oil, five per cent nitromethane (second hour); (iii) 72 per cent methanol, 18 per cent castor-oil, ten per cent nitromethane (tests).

Glowplug used: Rossi R4.

Silencer used: HP as fitted.

Air temperature: 18°C.

Barometric pressure: 762mm (30.0in.) Hg.

Relative humidity: 73 per cent.

Test results

Power output: 0.238bhp at 12,250rpm

Torque: 23oz in. at 8,500rpm

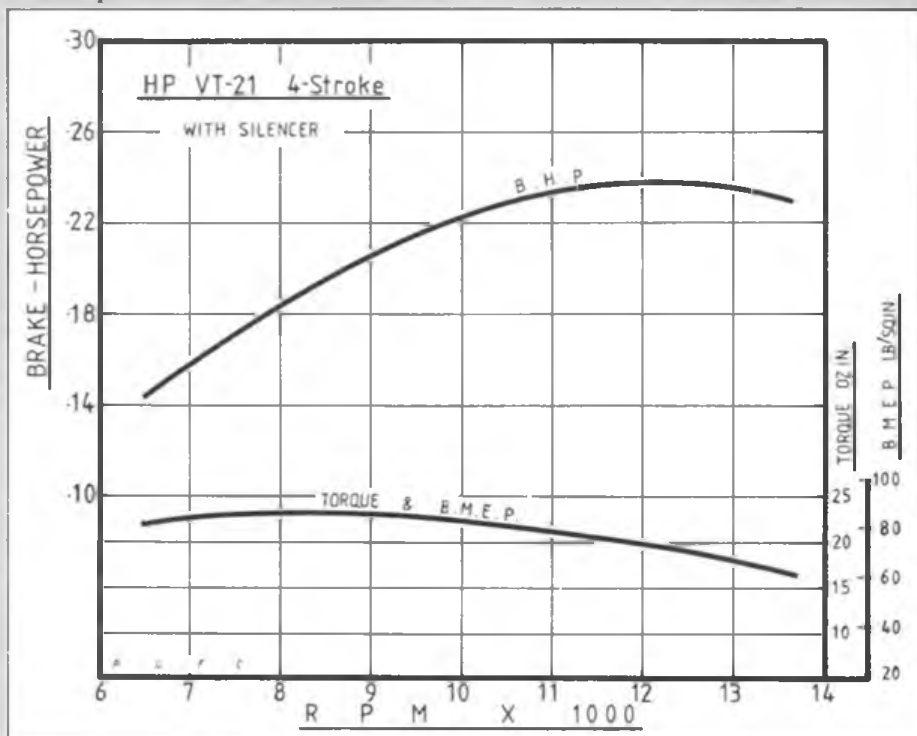
Equivalent bmep: 85.5lb/sq.in.

Specific output: 68.7bhp/litre

Power/weight ratio: 0.334bhp/lb.

Manufacturer: Hirtenberger Patronen, Zündhütchen & Metalwarenfabrik AG, A-2552 Austria.

UK Distributor: Ripmax Ltd., Green Street, Enfield EN3 7SJ.



Engine Test

not exactly in accordance with the i.e. engine designer's ideal of a hemispherical or pent-roof combustion chamber, but is possibly more efficient than might be supposed since it probably imparts extra swirl to the charge. In theory, this should permit a higher compression ratio and/or leaner mixture to be used before detonation is encountered. Some support for this view could be claimed by the fact that the HP has the highest compression-ratio of any four-stroke tested to date yet, on test, was completely free from the lean mixture detonation sometimes encountered with other model four-strokes. Incidentally, the combustion chamber also includes, in effect, a stepped squishband, formed by the 3.8mm wide shoulder between the cylinder bore and valve sleeve, plus the 1.9mm wide rim of the valve itself.

Next up in size from the .21cu.in. VT-21 are the .30-.40cu.in. four-strokes, such as the Saito FA-30 and FA-40, Enya 35-4C and 40-4C and the OS FS-40. At 11.4oz weight, the VT-21 is not markedly lighter than these (for example, the FS-40 and Enya 40-4C weigh exactly 12 and 13 ounces, respectively) but it is the smallest, in overall outside dimensions, of any four-stroke motor currently available. Mounting dimensions are comparable with those of a typical 5cc two-stroke.

Performance

Anyone who has previously operated only two-stroke glowplug engines will be pleased to find that the VT-21 responds to familiar handling procedures. There is one proviso here.

As with all four-strokes, the fact that mixture is drawn directly into the cylinder, instead of into the crankcase, requires caution when choking the intake prior to attempting to start the motor. Over-choking can quickly result in an excess of fuel being introduced into the cylinder which can cause an hydraulic lock and possible damage if an attempt is made to start the engine in this condition.

Apart from this, the VT-21 can be treated in much the same way as a two-stroke. We found it easy to start by hand when cold. Hot restarts were a little less prompt, but immediate when an electric starter was used.

The glowplug supplied with the VT-21 was a Rossi R4. This, an HP recommendation, appeared to suit the engine very well under the prevailing conditions. Also



Other parts of VT-21. Note sturdy crankshaft, slipper piston and short conrod. 'VT' stands for Viertakt, the German for four-stroke

suggested is the Enya No. 4 or, in hot weather, the Rossi R5 or Enya No. 5. HP do not recommend any specific fuel mixture but merely advise the use of a 'good quality brand.' As the data table shows, we used a ten per cent nitro mix for the performance test, as is generally employed in our tests of four-strokes.

The manufacturer's claimed power output for the VT-21 is 0.25kW (rpm unspecified) which is the equivalent of 0.335bhp. This, equal to a specific output of almost 97bhp/litre, is well in excess of the highest figures recorded to date for currently available model four-strokes and our test motor fell short of this target with a figure of 0.238bhp at 12,250rpm.

Inevitably, one must expect discrepancies in individual test figures. These derive from variations both in the test engines themselves and in the conditions under which they are tested. It may well be that other examples of the VT-21 are more powerful than our particular test motor. Since the VT-21 is a new and unorthodox type of engine and, bearing in mind that performance variations tend to be more pronounced with small motors than with large ones, these factors may well account for the drastically different results at present being realised. Here, we would mention that other independent tests, carried out on the Continent for

French and German magazines, have produced figures of 0.200bhp at 11,750rpm, 0.235bhp at 14,000rpm and 0.265 bhp at 12,600rpm. In marked contrast, an American report has credited the VT-21 with an output equalling that of the maker's claims at between 12,000 and 12,500rpm and, judging by the higher prop rpm figures quoted (still with the silencer fitted and using ten per cent nitromethane fuel), this particular engine would appear to have been a substantially better example than the others (including our own) for which independent test results have been published.

Prop rpm figures recorded with our test motor included 7,400rpm on a 10 x 6 Top Flite maple, 7,900 on a 10 x 5 Top Flite maple, 9,100 on a 10 x 4 Top Flite maple, 9,700 on a 10 x 4 Zinger maple, 8,900 on a 9 x 6 Power Prop maple, 9,500 on a 9 x 5 Zinger maple, 9,700 on a 9 x 5 Top Flite maple, 10,350 on an 8.5 x 6 Zinger maple, 10,400 on a 9 x 4 Top Flite maple, 10,500 on a 9 x 4 Zinger maple, 10,900 on a 9 x 4 Power Prop maple, 11,400 on an 8 x 5 Zinger maple, 12,000 on an 8.5 x 4 Zinger maple and 12,400 on an 8 x 5 Power Prop maple.

Below left: vertical drive shaft is geared up, through bevel gears, to run at 1.25 x crankshaft speed 2.5:1 spur gears at top reduce rotary valve to required half crankshaft speed. Right: carburettor, shown dismantled, is two-needle, automatic mixture type. Black finished exhaust stub and silencer are made in one piece.



Comparing these figures with the performance curves and allowing for some rpm build-up in the air, the most appropriate prop sizes include 10 x 4, 9 x 5, 9 x 4 and 8 x 5; the larger diameters and finer pitches being suitable for a slow scale model; the smaller diameters and coarser pitches for smaller faster models.

Running qualities were good. The engine clearly benefits from a nitro fuel — even five per cent nitromethane gave markedly smoother firing and a better throttle response. Safe idling was not much below 3,000-3,500, largely because only an infinitesimal amount of throttle arm movement separated the last 500-1,000rpm in the idle range. A very tight linkage between the throttle arm and servo output is obviously required here. Incidentally, having the carburettor in the front of the cylinder (unlike most four-strokes) puts the needle-valve control uncomfortably near the prop, though no more so than on some shaft rotary-valve two-strokes.

As previously noted, the HP was pleasantly free from any tendency (common in some other four-strokes, both poppet-valve and rotary-valve) to detonate when leaned out too far. This is identified by 'knocking' or 'pinking' when the needle setting is too weak, possibly resulting in the engine kicking its prop off if not instantly corrected by opening up the needle. The HP simply cut out when over-leaned.

The silencer was effective and when the VT-21 was throttled back slightly, or was running on one of the larger prop sizes, it was remarkably quiet. The unusual feature of running exhaust gases through the



Engine's main casting includes integral cylinder head. Also shown here are crankcase bottom, rotary valve and spur gear, head cover, valve shims, pressure nipples and glow plug

rotary-valve housing and crankcase, to pressurise the fuel tank, did not appear to have any corrosive effect on the working parts. HP's special inhibitor, for adding to the fuel, was not available at the time of testing. On dismantling the engine after the tests, some surface discolouration of certain parts was present but there was no evidence of any corrosion.

Just one final point. It appears that, to replace the piston, cylinder-liner and head

(not head cover, listed as cylinder-head) or either half of the main casting, could be expensive as none of these parts is listed separately. The moral is clear. Be extra careful not to damage your VT-21!

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COMBAT CLASSICS

SPITFIRE

Designed by
Dave Cowburn

FOLLOWING OUR 1982 display season it was decided, in Humberston M.F.C., that something a little more realistic than the 'Wildcats' (Aeromodeller May '82) we were using could be used to improve our presentation of 'Display - Combat', it being much easier for the spectators to identify with models which are instantly recognisable as antagonists than when the only difference between the models is the colour

Building Instructions

Wings *Spitfire*, balsa

(1) Prepare a template for the trailing edge and mark out on 75mm x 6mm (3" x 1/4") med-soft balsa.

(2) Cut off triangular trailing edge extensions and glue these back onto the main trailing edge.

(3) Cut out near line and sand back to size.

(4) Either strip top and bottom laminations of leading edge from one metre length of 75mm x 6mm (3" x 1/4") soft balsa or

splice up from shorter stock lengths. Mark position of 12mm x 18mm (1/2" x 3/4") centre lamination and glue up the leading edge blank with PVA or aliphatic resin (yellow 'carpenters adhesive'). Clamp and set aside to dry.

(5) Cut bellcrank mounts from 3mm (1/8") ply. Bolt bellcrank (75mm (3") 'Micro-mold') to bottom plate and add top plate. Check the spacing which this gives and cut the two 6mm (1/4") centre section ribs to suit this. Glue up this assembly and jig up over the plan to dry.

(6) Cut ribs from 25mm (1") wide strips of soft 3mm (1/8") balsa by direct measurement from plan, the high point of the trailing edge taper coincides with the rear lead-out, remembering to make two of each size and including holes for lead-outs in port set. The extreme tip rib is left square at this stage to help jig up the wing on the building board, it is shaped down to blend into the elliptical profile of the wing when the wing structure is complete.

(7) Cut out the tips, the starboard being 'solid' 6mm (1/4") sheet and including about 25 grams (1 ounce) of tip weight, the port being laminated from 3mm (1/8") sheet to include the lead-out tubes (nylon 'snake' outer). Add 3mm (1/8") packing to fit slot in leading edge and glue on tip ribs to form complete tip units.

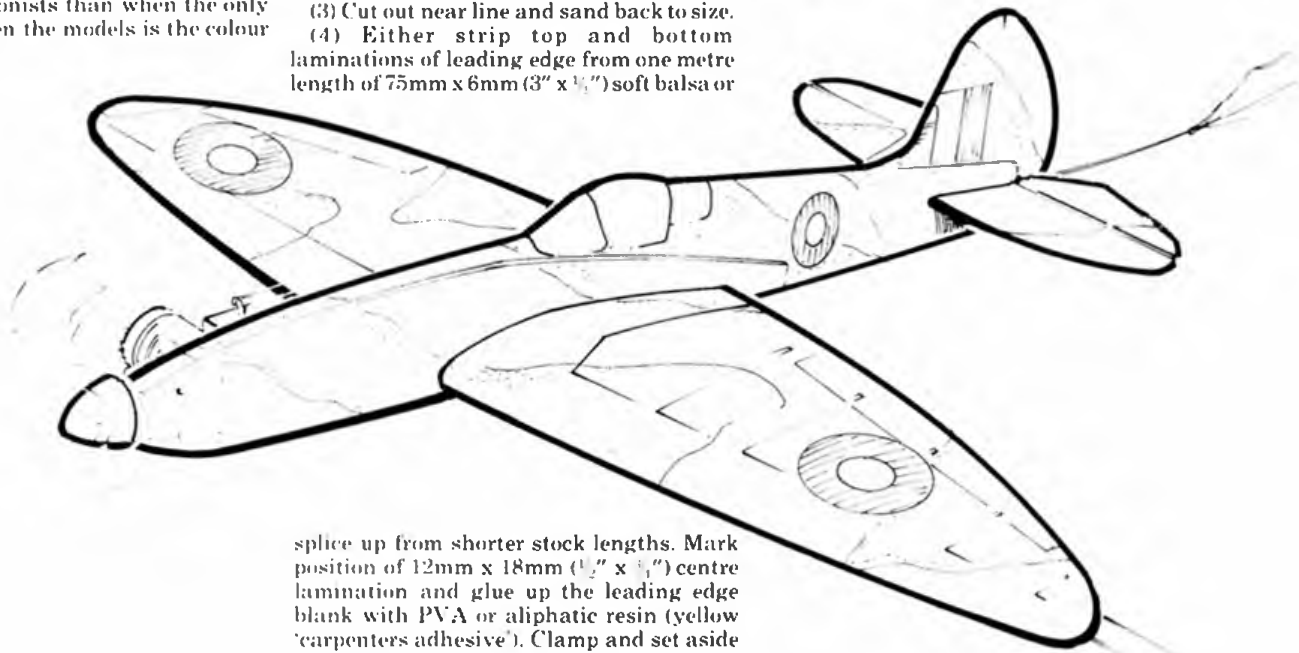
(8) Dry fit the wing, building up the starboard half first inverted over the port half-plan. Add leadouts (double heavyweight laystraight) and check for full and free movement. When satisfied, mark rib positions onto leading edge and trailing edge then disassemble.

(9) Glue and pin ribs and tip units onto leading edge, add trailing edge and pull-up tight with bindings of 'Sellotape'. Jig up flat on board - 3mm packing under leading edge, 12mm under trailing edge - and leave weighted down to dry.

(10) Fit push-rod (retained with 'Z' bend), tip gussets and centre section sheeting. Carve and sand leading edge to section, blend in tips and tip ribs, taper off trailing edge and relieve the sharp angle on ribs on peak of section.

ME109 wing is similar except for tips which are carved from soft balsa or polystyrene foam, which is covered with brown paper as detailed for the foam wings to prevent attack by dope.

If a 'fabric' wing covering is contemplated (strongly recommended) it is best done at this stage before the wing is mated up to the fuselage. This allows the strength of the



covering to pass through the centre section without being broken. If a tissue or film covering is to be used it can be left until after the model is assembled.

Nylon covering is applied by stretching complete panels, about 50mm (2") oversize of material over, firstly, the underside and then the top of the wing. Use many pins to hold the covering in place (I usually end up with pins spaced about 12mm (1/2") apart) and work round the outline several times retensioning the material and shifting the pins to get all the wrinkles out. Now brush dope through the fabric into the wood around the outline of the wing. DO NOT dope the open panels of the wing at this stage. When dry, remove the pins and trim off the nylon neatly and dope down the edges. Cover the other side of the wing. When the edges are well sealed and stuck down the open areas can be given a coat of dope (if any small wrinkles remain around the tips they can be slit with a razor blade and smoothed down with balsa cement).

To cover with *Solartex*, follow the advice given with the roll of material.

of the streamer. A spare pair of wings were quickly fitted to a ME109 profile and new wings were cut to suit a Spitfire with elliptical planform.

Both models performed well 'straight from the board' and our Combat Classics were born. Since then new templates have been developed for the foam wings so that it is possible to cut cores for a variety of prototypes with the one set of templates. For those who do not have access to foam cutting equipment details of a built-up balsa structure for the wing are included on the plan and if you wish to build a 'one off' scale-like sports model this is probably the best version to pick as it will be much easier to fit all the extra detail and special paintwork, etc. which this kind of model acquires (at the expense of performance). However, if, like me, you build your models for flying rather than posing you will find that the foam wing version is to be preferred!

COMBAT CLASSICS

MESSERSCHMITT ME 109

Foam wings (Spitfire)

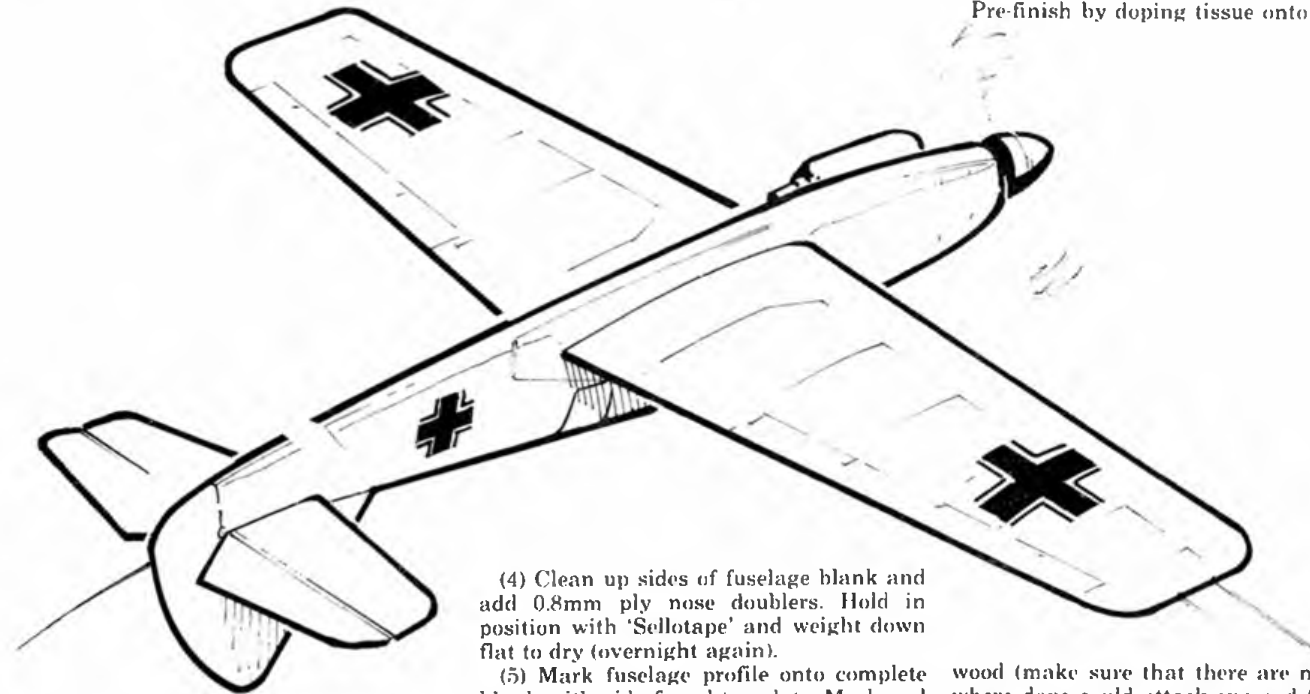
(1) Mark out wing blanks (2) onto 50mm (2") sheet foam with card template and felt tip pen. Cut out with fine toothed saw. Alternatively, cut out with vertical 'Hot wire' around a ply-wood template. Cut tip blanks (4) from 25mm (1") foam by similar means.

(2) Weight wing blank down onto flat surface and pin profile templates in position. Draw 'hot wire cutter' through from leading edge to trailing edge. Using off-cut as a bed, turn over and repeat. Change templates and

laminate on spruce spine (if you are making both models, glue spruce strip to both edges of a 50mm (2") wide x 12mm ($\frac{1}{2}$ ") balsa sheet and strip down to width of bearer spacing when dry).

(2) Epoxy 12mm ($\frac{1}{2}$ ") square ramin or beech spacer block and engine bearers in place.

(3) Laminate rest of fuselage blank(s) from 12mm ($\frac{1}{2}$ ") and 25mm (1") soft balsa strips. Clamp, bind with 'Sellotape' and leave under weights overnight to dry flat.



cut spar slots and lead-out away port panel).

ME109 cores are similar but easier to prepare as the blanks are straight tapered and can be cut from the sheet with the standard hot wire bow and vertical guides pinned to the block.

Tail group is simply cut from 3mm ($\frac{1}{8}$ ") sheet, but the production of a set of paper or card templates will aid economic marking out of the sheet. Join elevators with 14swg wire joiners epoxy glued into slots cut into the surface and leading edge of the elevators. Cover this area, top and bottom, with 0.8mm ply plates which strengthen the elevators and form a mounting for the elevator horn (large Micro-Mold). Round off leading edge of tail-plane and hinge line of elevator only. Hinge elevators with figure eight herring-bone stitching.

Fuselage and airframe assembly

(1) Cut fuselage core to length and

(4) Clean up sides of fuselage blank and add 0.8mm ply nose doublers. Hold in position with 'Sellotape' and weight down flat to dry (overnight again).

(5) Mark fuselage profile onto complete blank with aid of card template. Mark and cut wing seat, tail slot, spar holes, bellcrank mount and centre line of foam wing (depending on version chosen) while blank is still 'square' to give a true datum.

(6) Cut fuselage to shape (coping saw) and round off edges. Taper extreme rear to match fin and rudder. Cut away starboard nose doubler to clear engine and add block balsa between bearers shaped to fit crankcase. Drill for engine mounting, bedding motor down onto 3mm ($\frac{1}{8}$ ") thick alloy plates. Pass engine mounting bolts through front port side of fuselage and epoxy these and plates into position with motor temporarily bolted down to ensure an accurate fit. When set, slacken nuts from above engine mounting lugs and remove engine leaving bolts in position as mounting studs.

(7) **Built up wing:** Fit wing, adjusting seat with files or glass-paper for a satisfactory fit, and epoxy into place ensuring that wing remains 'square' to fuselage. Fit tail unit and connect up push-rod adjusting for true neutral elevator.

Foam wing: Fit bellcrank unit, push-rod and tail group. Fit spars (spruce or ramin) and trial fit wing halves enlarging cut-out in root of port wing to clear push-rod and give full and free movement of the controls. When satisfied, glue in place ensuring that both wing halves line up with the marked datum. Add cover plate to push-rod exit, reinforce wing-fuselage join with bandage and glue. Add tips, including tip weight secured with epoxy and nylon patch, and leadout tubes. (ME109 tips are carved from blocks of foam, Spitfire tips are laminated to include a balsa outline). Carve and sand to match wing section.

Foam wing is now covered with thin brown wrapping paper, applied wet and stuck with thick 'Polycell' pasted onto the wing panel. (Note that the paper is wetted by drawing it through a bowl of water just before applying to the wing, it is not soaked). Leave the model for 24 hours in a warm place to dry out thoroughly.

Finishing

The quality of the final paint finish depends very much on what is underneath it! For this reason the Pre-finish is probably more important than the actual painting.

Pre-finish by doping tissue onto all bare

wood (make sure that there are no places where dope could attack exposed foam, reinforce with extra paper patches if necessary). Give as many further coats (five) of thinned dope as required to seal all the pores in the nylon wing covering and give a semi-gloss finish to the fuselage, rubbing down between coats with fine glass-paper to remove any 'fuzz' or loose edges of tissue. (The proto-type Spitfire was covered in 'Solartex' which is claimed not to need pre-finishing, nevertheless, I gave the wings a couple of coats of thin dope). The foam wing models are now covered (wings) with Solarfilm. Use a colour which can make a good base for your paint scheme (for example, pale blue underside would not require further painting). The camouflage may now be painted on. The proto-types were sprayed with Humbrol enamel using Humbrol reference cards as a guide as to scheme. Add cockpit details and national markings. Allow to dry and fuel-proof. Fit motor, 2.5cc to 4cc, stunt pattern fuel tank and fly on 52-foot lines. Happy hunting. And remember, C.L. is fun, go round with a friend!

From Control Line News

THE HANDLE

Construction Techniques

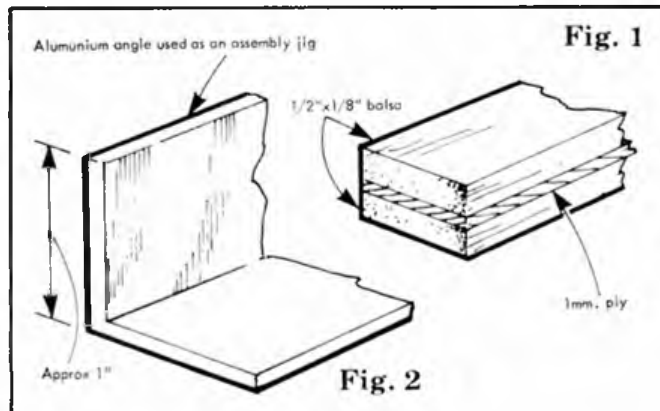
The August edition of this column described the processes needed to manufacture carbon-fibre spars. Now I would like to deal with building these into a typical team racer wing of basic $\frac{1}{4}$ in. or $\frac{3}{16}$ in. sheet balsa. If you have not considered the complications of making spars to be worth your time then thin strips of pine can be used in the same way with very useful gains in strength.

The first stage in building any competition model is in the selection of balsa wood. My method is to buy wood when I do not need it! That way I can sort through all the wood in my local shop without the need to buy any, should it not be suitable. A letter scale is a good thing to have as you can weigh likely-looking wood rather than use the time-honoured methods like thumb-nail crushing or waving one end. Good office supply shops often sell these useful scales. Look for wood in the 4-6lbs./cubic foot range for the main construction. A supply of some harder grades around 10lbs./cu.ft. is useful for localised strengthening.

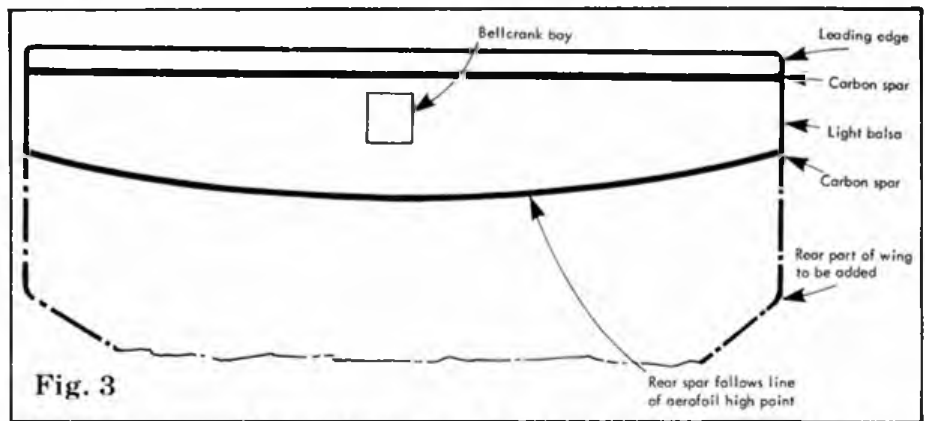
Leading edge: this is a heavily stressed area in a T.R. model. It must be able to withstand the stress of catching the model and give a resilient edge to the aerofoil. As our spars will provide spanwise strength we are more interested in bending resistance from front to rear. My favourite method is to build up a balsa-ply-balsa sandwich. (Fig. 1). Cut a strip of 1mm ply $\frac{1}{2}$ in. wide x the wing span. Using P.V.A. glue, sandwich between strips of $\frac{1}{8}$ in. x $\frac{1}{2}$ in. medium hard balsa. I use a piece of aluminium angle as a jig to maintain accurate straight assembly. (Fig. 2). Small C-clamps hold the components in place while the glue sets. An added advantage is that the central ply strip provides a clear line to use as a reference to the wing's aerofoil when carving and sanding takes place. If not using a symmetrical section you can easily change the ratio of the facing balsa laminates above and below the ply core.

Fitting the spars

1. The front. There are two possibilities:
 - (a) Glue the carbon strip behind the leading edge sandwich. This is my favoured path.



- (b) Locate in front of the bellcrank bay.
 2. The rear. Here I recommend that you locate the spar along the line of the aerofoil's maximum depth. Again this gives you a clear line to use when carving the wing and the minimum of hard carbon needs removing. A danger is sanding the aerofoil flat while hacking away at the spar. The front spar is easier to shape as you can attack it from the front while shaping the leading edge.



At this stage you will have an item something like that shown in Fig. 3. The next stage is to build this onto the rest of the wing. There is much to be gained by sweeping the grain direction forward to follow the line of the trailing edge. This will require scarf joints in the centre, but this will not cause any problem as the fuselage also stiffens this area.

All that now remains is to add trailing edge outlines in a harder timber such as lime or pine. Shaping can now take place. I normally use a razor plane for roughing out and then finish with large sanding blocks (14 x 3 in.) to which are glued various grades of abrasive. When the final sanding is completed add the wing tips. I now usually make these from G.R.P. board as sold in radio spares shops. With this material there is no need to use tubes for line exit guides — the glass is hard-wearing enough.

My first attempt at fitting spars was carried out using Araldite epoxy adhesive. Although successful, the slow drying nature of this epoxy meant several days elapsed in the joining of the wood to spars and in gluing the scarf joints. However on the second

model, cyano glue was used and has been completely satisfactory in use and, of course, the work of only a few hours to complete construction.

Although Fig. 4 shows a flying wing model the same technique can be used by simply adjusting the size of the components.

In the next column I will deal with covering wings with glass and epoxy resin. If you have any areas of construction technique you would like explained, do write in and I will do my best to include details in the column.

Balsa sheet density guide for $\frac{1}{4}$ x 3 in.

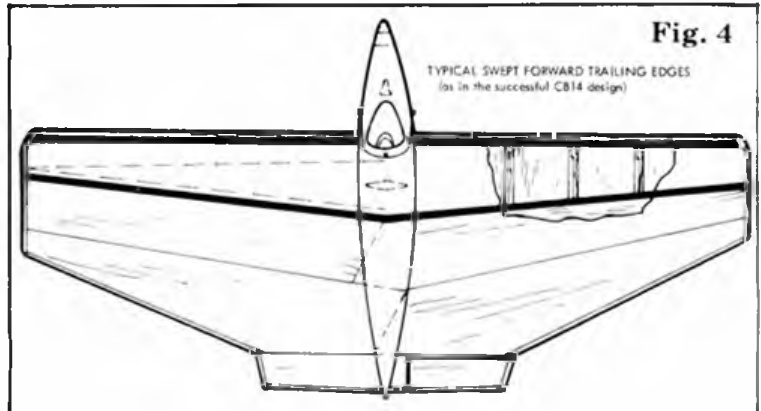
Sheet weight (grms)	Density in lbs./cu.ft.
34	4.7
35	4.8
36	4.9
37	5.0
38	5.2
39	5.3
40	5.5
41	5.6
42	5.7
43	5.9

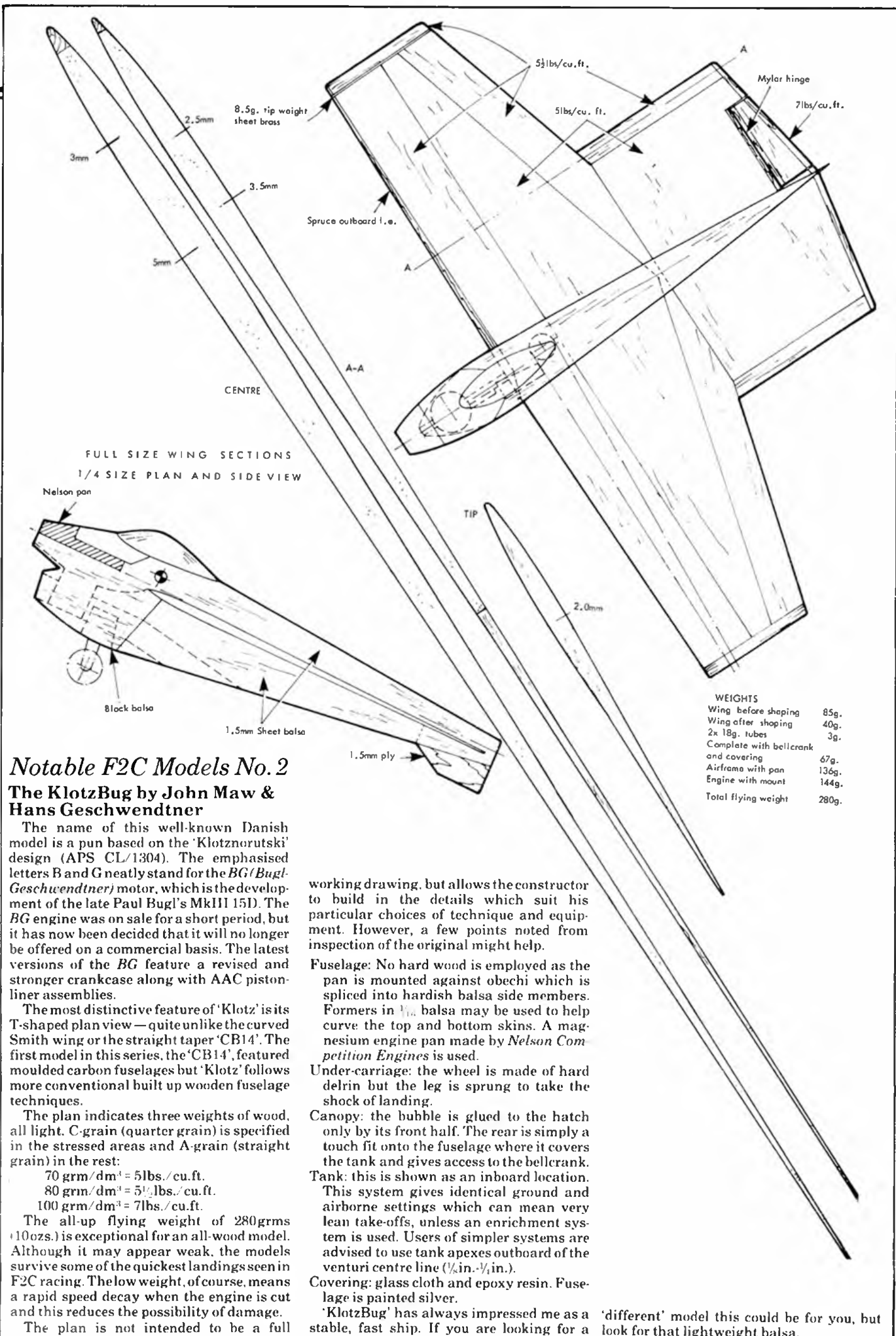
British Nationals 1983

Congratulations are due to Bob Horwood and Tim Andrews for achieving the first sub four-minute Goodyear race under the 'diesel only' rules. Several teams have had the potential to achieve this, so it was really a matter of time until the record tumbled. We shall probably see many under four minute races next season.

If the Goodyear record was a pleasant, if anticipated, surprise then the number of teams who went 'sub-four' in $\frac{1}{2}$ A team race was amazing. Although several sub-fours have been recorded in recent years, notably by Don Haworth, no event has seen six teams beat the mark. What is more these

continued on page 596





Notable F2C Models No. 2 The KlotzBug by John Maw & Hans Geschwendtner

The name of this well-known Danish model is a pun based on the 'Klotznorutski' design (APS CL/1304). The emphasised letters B and G neatly stand for the BG (*Bugl-Geschwendtner*) motor, which is the development of the late Paul Bugl's MkIII 15D. The BG engine was on sale for a short period, but it has now been decided that it will no longer be offered on a commercial basis. The latest versions of the BG feature a revised and stronger crankcase along with AAC piston-liner assemblies.

The most distinctive feature of 'Klotz' is its T-shaped plan view — quite unlike the curved Smith wing or the straight taper 'CB14'. The first model in this series, the 'CB14', featured moulded carbon fuselages but 'Klotz' follows more conventional built up wooden fuselage techniques.

The plan indicates three weights of wood, all light C-grain (quarter grain) is specified in the stressed areas and A-grain (straight grain) in the rest:

70 gm/dm³ = 5 lbs./cu.ft.

80 gm/dm³ = 5 1/2 lbs./cu.ft.

100 gm/dm³ = 7 lbs./cu.ft.

The all-up flying weight of 280grms (10ozs.) is exceptional for an all-wood model. Although it may appear weak, the models survive some of the quickest landings seen in F2C racing. The low weight, of course, means a rapid speed decay when the engine is cut and this reduces the possibility of damage.

The plan is not intended to be a full

working drawing, but allows the constructor to build in the details which suit his particular choices of technique and equipment. However, a few points noted from inspection of the original might help.

Fuselage: No hard wood is employed as the pan is mounted against obechi which is spliced into hardish balsa side members. Formers in 1/16" balsa may be used to help curve the top and bottom skins. A magnesium engine pan made by *Nelson Competition Engines* is used.

Under-carriage: the wheel is made of hard delrin but the leg is sprung to take the shock of landing.

Canopy: the bubble is glued to the hatch only by its front half. The rear is simply a touch fit onto the fuselage where it covers the tank and gives access to the bellcrank.

Tank: this is shown as an inboard location.

This system gives identical ground and airborne settings which can mean very lean take-offs, unless an enrichment system is used. Users of simpler systems are advised to use tank apexes outboard of the venturi centre line (1/8 in. - 1/4 in.).

Covering: glass cloth and epoxy resin. Fuselage is painted silver.

'KlotzBug' has always impressed me as a stable, fast ship. If you are looking for a

'different' model this could be for you, but look for that lightweight balsa.

performances were no flash in the pan as they were repeated in both rounds and semis.

Refreshingly there were several different approaches to be seen in engines and technique. Several *Webra* 'Speedy' conversions (1.6cc to 1.5cc) performed well, including the winning example of Davis-Banks. I think I am right in saying that the three highest placing *Webras* had new piston-liners made by John Daly. The most popular engine is still the *Oliver* 'Cub' but in its latest Schnuerle port guise. Most notable of these was Rudd-King's which had a range of about 60 laps per tank (3.54 best race). Most 'Cubs', however, adopt the two-stop technique with about 45 laps per tank.

So far the Australian *Sesqui* engine has not made any impact. Certainly the *Sesqui* has had component failures, but I believe the factory are working on detail changes to eliminate these faults.

Models remain almost entirely traditional wing and tail designs; some of classic elegance as typified by Dave Campbell's latest racer. Scaled down 'Smith Wings' have been tried but found lacking, especially during landings when the oscillations make catching rather like fielding a potato crisp. In my opinion *A* remains an enjoyable and relatively cheap class in which to compete and the enjoyment is now sharpened a little by a keener competitive edge.

Goodyear at the Nationals — an analysis

Thanks to Mark Jarvis and a few others, information was obtained on each model flown in the competition. The purpose of this article is to analyse that information so that what people need to be competitive can be seen and further to see what, if any, pointers to the future may exist. Goodyear is different from the other CL racing classes in that there is not and has never been any single path to dominance. More than one model design, motor or set-up can be competitive and this feature is well illustrated by this year's Nationals. If variety is the spice of life, then Goodyear is the spiciest event in CL racing. I hope this analysis will help those involved and those who hope to be involved to decide whether paprika, cayenne, cumin or cloves is the one for them.

Airspeed is quoted in seconds per 10 laps in race traffic, the above are averages of up to four separate timings. To convert to mph divide these times into 2240 which gives the highest speed to Alcock Myska at 113 mph, the slowest to Bryant Chambers at 98mph and the greatest concentration around 105mph.

Before you immediately conclude that a *Rossi* FI is most likely to give the goods in the air, let us look at the motor popularity stakes.

Popular Motors

1	<i>Rossi</i> FI	13
2	<i>Rossi</i> RV	8
3	<i>Nelson</i> FI	7

Besides these there was just one *Nelson* RV and just one special, an *AABC* conversion of an *OS25* FSR produced by Donald Haworth. Clearly the days of the *Rossi* RV are over and the choice lies between a second-hand *Rossi* FI (for all of these were the MkII model, not out of production) or a *Nelson* FI. Few if any of the *Rossi* FI's I saw were standard whilst all of the *Nelson* FI's were standard. Not surprising for most of the *Rossi* FI's were ex-Goodyear glows or ex-Team Race diesels and therefore old, needing attention to make

Highest Airspeed			
Team	Airspeed	Motor	Model
1 Alcock Myska	19.9	<i>Rossi</i> FI	Pressure / small tank
2 Andrews Horwood	20.9	<i>Nelson</i> FI	Suction
3 Catlow Jephcott	21.3	<i>Rossi</i> FI	Suction
4 Green Malcolm	21.3	<i>Rossi</i> FI	Pressure / big tank
5 Clarkon Needham	21.3	<i>Rossi</i> FI	Pressure / big tank
6 Whorton Gennard	21.4	<i>Nelson</i> FI	Suction
7 Langworth Daly	21.5	<i>Rossi</i> FI	Suction
8 Rudd King	21.9	<i>Rossi</i> FI	Suction
9 Pegg Thorpe	22.0	<i>Nelson</i> FI	Suction
10 Bryant Chambers	22.9	<i>Rossi</i> FI	Pressure / small tank

them work properly. Such attention includes:

Chrome Liner — usually done as part of a re-bore procedure, but found to be beneficial.
Diesel Head — necessary for the rules, but frequently home-made and not the standard item. AA or AB or CuCu material selection seems best.

Other modifications seen included crankshaft seal bands removed (essential in some people's view now, including mine) and the use of an *STG15* 20 needle valve assembly. Unless you are unusually fortunate, a *Rossi* FI will need such attention so it may well be that a *Nelson* FI is the best choice. Quite where Joe Myska gets what must be 1BHP from, I do not know, but suspect that pressure feed to a big hole, a copper 3-part head and Charlie Cottrell have something to do with it.

Significantly 3 out of 4 quickest *Rossi* FI users still used pressure and the one who didn't was still using a big hole, so maybe the *Nelson* FI has potential left for none of these were on big holes. Who will be the first to get a pressure fed *Nelson* FI on a big hole, like Henry's largest at 0.375in. ID, working well? I suspect that the results could be rather interesting.

Model choice was not so clearly defined but APS designs dominated.

Popular Models

1	Deerfly 'Mike Argander Special'	9
2	Ol Blue	7
3	Lil' Quicke	3
4	Miss San Bernardino	2

With single examples each of 'Starter', 'Stinger', 'Lil'Gem', 'Plum Crazy', 'Mr. D' and 'Johnson Special', of which only the third named is an APS design. Needless to say, not one of the APS designs I saw being used were constructed precisely as described for the originals, common features being sheet metal 'wobbly' undercars, recessed tanks, hollow fuselages and enclosed controls and line connections all in the interests of drag reduction. Advertised model weights ranged down to 420gm. (Alcock Myska's — what a coincidence!) and it seems that a good model must weigh less than 500gm. Bob Horwood's 'Deerfly' has gone significantly quicker (like a 10 sec. heat time improvement) since he replaced its floppy, flexible tail with a stiff, rigid one, so stiffness is obviously important. Quite the most rigid model present was Alcock Myska's, what a coincidence, again! I concluded from all of this that a 'Deerfly' or 'Ol Blue' will do, but it must be as clean, as light and as stiff as you can make it. Just what we have found in recent years in FAI team race in fact: if only we Goodyear men could take the easy way out and use flying wings!

The final item we noted was the props people use. Home-made FRP props declared as 7 x 6in. were used by almost 90% of the fliers illustrated by the 'quick ten' listed above of whom only one used a commercially available prop, a *Master* 7 x 6in. All of the rest used *Howard*, *Bartels* or home-made

versions of the old *Tornado* 'Plasticote' 7-6 except of course for Bob Horwood who was doing entirely his own thing as usual. Whether GF epoxy, CF epoxy or mixed GF/CF or polyester instead of epoxy does not seem to matter too much. What does seem to matter is the diameter/pitch combination because this is one area which most people would not declare. All I can report is that diameters between 165 and 175mm were seen and that pitches between 135 and 155mm were deduced, so maybe 170mm x 140mm is a good place to start. Needless to say use of a pitch gauge and a balancer are essentials.

What about the future? Well, it is all about motors really and the top two motors we now use first made it to the top in FAI Combat. So it is to the motors on their way up in that event to which we must look. If I hear things right it is the *OPS 15 RE* that has the most poke there with the *Nelson 15 FI* and the new Dutch *USE 15 MkII* close behind followed by the *Cipolla* 'Combat' 15. I have looked at the *OPS* and it is heavy but relatively cheap. The *USE* is a beauty and light too, but relatively expensive. It is still much cheaper than the *Nelson* so to me the *USE* could be the one when I get fed up with my *Rossi*'s breaking. Any information on these motors quite naturally will be received with my gratitude.

British Diesel Combat Championships

Peterborough Model Flying Club ran the 4th and final round of the 1983 British Diesel Combat Championships at their River Embankment Flying site on Sunday, September 18th.

With appalling weather on preceding days and a pessimistic forecast, a small entry was envisaged. Incredibly, twenty-six people from as far away as Manchester, Leeds, Bath and London flew in the competition. At 10.30 a.m. there were no fewer than nine practice circles going! Despite the forecast the day turned out bright with moderate winds and no rain fell at all during the competition.

At the end of the third round of the championship the points table was headed by Neil Gill (P'boro) with 9 points, followed by Rob Roy (P'boro) 8, Mike Whillance (Urmston) 7 and Pete Tribe (Cosmo) 6. With 5 points awarded for a first place down to 1 for entering, the championship could have been won by any of the above.

The first round of the competition had few surprises, the exception being young Richard Scully (Wharfedale) and his *Oliver* 'Tiger' powered 'Fifth Revolution' beating Pete Tribe (Cosmo) and his *MVVS* powered foamie.

Neil Gill, flying an *MVVS* powered cut-down version of his F.A.I. model 'Panic', lost to Paul Vallins (Cosmo) when Neil's lines snapped and Mervyn Jones (Wharfedale) lost to Rob Roy (P'boro) 1 cut to nil in an excellent close bout.

In fact, Gill, Tribe and Jones all won their losers' round bouts to get back into the competition.



Left: 15 year old Richard Scully, winner of fourth round 1983 British Diesel Championships. He won with an Oliver Tiger powered 'Fifth Revolution'. Right: reasonably happy trio at Peterborough all hoping 'Lady Luck' will smile their way next time! Left to right: Jeremy Wilson (Cosmo), Mike Whillance (Urmston) and Tim Bartram (Cosmo).



Also in the losers' round Andrew Cox, flying a PAW19 powered *Solartex* covered '5th Revolution', flew a tremendous bout against Mick Humphreys (Northampton) and his 'Oliver' Tiger powered 'Spanker' to win 3 cuts to nil, thus proving once more that a ball-race motor is not essential.

The first major upset of the competition came in the second round, when Richard Scully put Neil Gill out when Neil's bellcrank broke. This was followed in quick order by Rob Roy and his *Oliver Tiger* powered 'Macerator' being put out by Jeremy Wilson (Cosmo) and Mike Whillance (Urmston) losing to Pete Tribe.

With only Pete Tribe of the main contenders left in the competition, a quick calculation showed that if Pete came any lower than second then Neil Gill would still win the championship outright.

Peterborough M.F.C. had taken 1st, 3rd and 4th places in Diesel Combat at the British Nationals in August, but they promptly lost their last two entrants when Richard Scully beat Mark Jarrett and Pete Tribe beat Brian Waterland. With Tim Bartram beating Mick Hember (Cosmo) and Jeremy Wilson winning over Pete Grange (Sharston Speed) Cosmo Club had three in the last four.

The excellent bout between Scully and Bartram had to be re-run since both had three cuts and equal ground time! Richard won the re-fly 1 cut to nil.

Coincidentally, the other semi-final between Wilson and Tribe also had to be re-run after a one-all draw. Pete Tribe winning the re-fly 3 cuts to 0. Tim Bartram had run out of models and elected not to fly for 3rd/4th giving Jeremy Wilson 3rd place.

In the final, Pete Tribe took the whole of 15-year-old Richard Scully's streamer in one attack. Richard kept his cool, however, took back a cut and won on ground time, to become the youngest ever winner of a Diesel Combat Championship round. Richard had had some bad luck in the past and it was good to see him receive some reward for his efforts.

The result of the four rounds of the 1983 British Diesel Combat Championships was a tie between Neil Gill (P'boro') and Pete Tribe (Cosmo), 10 points each. 3rd was Rob Roy (P'boro'), 9 points and 4th Mike Whillance (Urmston), 8 points.

Control-Line Speed — British Nationals 1983

Maybe it's churlish to say that a few 'loners' intruded in what seemed a private battle between Bilston and Feltham clubs this year, though they did add variety to a rather complex and multi-pronged event.

The (now 10) separate Speed C/L classes certainly allow a large number of individual and long-standing battles to again be joined, although all finally form part of the Nationals 'Handicap Speed' contest.

This effectively allows all the Speed classes (with engine capacities ranging from 0.8 to 10 cc) to compete together on equal footing as each flyer attempts highest possible percentages of the prevailing Record speeds in the particular class.

Quietly and efficiently organised again by Pete and Jo Halman, this year's 'Nats' brings to a close their three-year efforts on behalf of the Speed Committee, and Speed flyers were fortunate during this period to have 'on tap' voluntary effort of this quality, whilst Jo is happy to acknowledge invaluable assistance from, amongst others, Dick and 'Babs' Roberts.

With top four placings being seized by four new records set by more recently recruited Speed flyers it was always going to be hard for older, more established names using 'last year's equipment' to get into the top 10, let alone win and thus they were found trailing badly in handicap terms.

Amongst many interesting features was Frank Chambers' 152.7mph using OPS 21 for 2nd place on Minipipe and 70% nitromethane to snatch the record set minutes before by Dave Brewin using K&B 21 carved to 180° exhaust period for tuned pipe on 50% nitro.

Geoff Paige fulfilled much previous promise by a very strong record breaking 172.7 (still only gave him 4th place!) with an OS 40 in the Formula 40 class which requires the hauling around of two .018in. dia. wires. This he arranged by use of a .60 size carburettor 180° exhaust period 50% nitro with 12% synthetic oil *Picco* 40 pipe a John Stidwell 1.65 machined alloy rod self-built graphite cages to ballraces to withstand the 29,000rpm certainly being reached on the 7in. x 7in. propellers. The whole 'combo' is now becoming sufficiently hairy to require the services of Speed C/L's roving pilot mechanic Martin Radcliffe whose long experience with his own 60 class models led him just a hour before close of the three-day event to an even more masochistic and hurtful experience when his much in demand needle valve setting skills propelled this author's 60 model to a fastest 196mph and thus displace Martin himself from what had seemed an impregnable 195 achieved early on the first day. Such selfless action is all very well — but it just happened to be the third Nats running for this sequence of events to occur! His future course is clear — fly early on the Saturday and go home...

Previous Nats winner Dick Miles initially posed threats in four separate classes — a plan suffering quick modification on the first day but even so ended with top Open 40 time and a 2nd placing in the popular Formula 40 class.

Dick McGladdery captured top Open 29 speed but at some way below his own record speed, though probably driving hard to an FAI 2nd place and future 'cares of office' may have hindered here.

Elsewhere Paul Eisner rotated as furiously as ever — 175.18mph on 52ft. lines in Open 15 class being highest rotational speed of the Nats.

Top prize for sheer persistence under severe provocation over the years must go to Ray Cox whose Mopoline OS 61 model was persuaded (yet again by Martin Radcliffe) to a personal high of 186.73mph. For many years he has maintained possibly the highest standard of construction within the Speed C/L fraternity allied heartbreakingly to a high number of crashes. No-one could fly that badly for so long surely? Fortunately he has at long last convinced himself the error lay within his typical model layout and that CG position and tailplane heights actually are a factor even to the 'brick on a string'. He'll now take some stopping. Another good Nationals for Control-Line Speed with much purposeful activity on the circle, and all played out in the fine friendly atmosphere customary at this event — it's hard to argue with a stopwatch.

Nationals C/L Speed Class Results

.049	— K. Morrissey	78.08
.09	— J. Allcock Myszka	130.82
.15	— P. Eisner	175.18
FAI	— P. Eisner	155.78
	— D. McGladdery	150.04
	— D. Smith	149.21
21N	— F. Chambers	152.7
	— D. Brewin	151.24
	— G. Bryant	138.09
.29	— D. McGladdery	163.65
	— I. Skinner	158.88
	— P. Rose-Smith	137.92
	— D. Roberts	131.36
F40	— G. Paige Radcliffe	172.74
	— D. Miles	164.98
	— K. Morrissey	137.92
	— P. Grange	148.74
.40	— D. Miles	169.21
	— P. Grange	154.6
.60	— M. Billinton	196.06
	— M. Radcliffe	195.03
	— R. Cox	186.73

Nationals C/L Speed Handicap Results (22 flew)

1.	J. Allcock Myszka	Bilston	.09	Webra	130.82mph	103.27
						(new record)
2.	F. Chambers	Bilston	21N	OPS21	152.7mph	102.11
						(new record)
3.	D. Brewin	Feltham	21N	KB21	151.25mph	101.15
						(new record)
4.	G. Paige Radcliffe	Feltham	F-40	OS40	172.74mph	100.77
						(new record)
5.	P. Eisner	Feltham	FAI	Rossi	155.78mph	98.82
6.	M. Billinton	Elliott	60	OS61	196.06mph	97.72
7.	M. Radcliffe	Elmbridge	60	OS61	195.03mph	97.21
8.	R. Miles	Feltham	F-40	KB42	164.98mph	96.21
9.	P. Eisner	Feltham	.15	Rossi	175.18mph	95.54
10.	R. McGladdery	Feltham	FAI	Rossi	150.04mph	95.17

Vintage abroad

Letters from overseas readers contain much of interest and usually indicate a desire to communicate and exchange plans etc. with UK enthusiasts. Readers are invited to contact any of the undermentioned correspondents and so further the world wide interest in vintage models.

Australia

John Tidey, 6/15 Ranclaud Street, Merewether, New South Wales, 2291, Secretary of the Australian SAM Chapter has kindly sent us a copy of the No. 4 Newsletter which contains results of their first Nationals. There is obviously great interest and enthusiasm 'Down Under' for vintage models. SAM Australia was only some 60 members strong at the time of their first Nationals meeting at Goulburn NSW (April 1983). From the number of aircraft fielded and the number of competition entrants the modellers all appear to be very active builders and flyers. Their President, Bill Gordon mentions some of his impressions:

"R/C Texaco is emerging as the most popular event. Last year a five minute flight was pretty good. This time Geoff Brown maxed through and there were plenty of others who got maxes. Four-stroke glow or petrol ignition motors are the way to go, but there is still no sharp distinction between these two. "Senior Playboys" seem to be the most popular competition choice. This follows the American experience. However, the 'Simplex,' 'Powerhouse,' 'Buzzard Bombshell,' 'Comet,' 'New Ruler' and 'Lanzo Record Breaker' have all shown that they are potential winners. We need to give some thought to the encouragement of free flight Old Timer and Vintage activity. In all three events we had at least six entrants although the nasty weather prevented some from completing all rounds. If the AFFS (Australian Free Flight Society) had not been with us however we may not have had this many entries. It would be a great pity if SAM becomes predominantly R/C orientated. We hope that clubs will persevere with free flight events, even if the interest seems low, and we hope that SAM members will make a point of having a couple of free flight models to enter in these

events. On a nice day there is nothing more enchanting than watching your model circle lazily in the sky without the hassles of R/C interference."

In the same issue Merv Buckmaster (Editor of Airborne magazine) suggests an idea about vintage flying that is not new "...just a copy of Old Warden, namely a rally or fly-in. The basic feature is that each pilot flies when he feels like it, and at the end of the day, an unknown judge names the top few models. Prizes can be awarded to the pilots..." Merv then quotes from a recent letter that he has had from John Pond which shows that a low-key competitive atmosphere is desirable. John says "... I do believe some form of competition is good for the game. Maybe it only has to be a draw based on a ticket for each flight, but certainly something to look forward to at the end of the day..." These views mirror our own feelings. Australia is certainly 'doing its stuff,' and after a late start a 'Vintage Explosion' similar to that experienced in the UK seems to be happening.

Another Australian, Brian Evans of 90 Bowen Road, East Doncaster, Victoria 3109 is moved by our recent 'Stentorian' article to write to us. He spent four years in the UK on a business sojourn in the early 1970's and flew with the Lee Bees Club. At the UK Nationals in 1972 he met John Wylde and in the exchange of magazines and plans that followed Brian received one sheet of the 'Stentorian plan.' In his own words "... I set about modifying the design to take radio and to draw up those bits and pieces contained on the missing drawings. Major modifications were made to strengthen the airframe and wings and the wing section was altered to a flat bottomed aerofoil. All these modifications were made without altering the general character of the model. I certainly had to guess the detail in such areas as the cowling, fuselage cross section and other smaller details, I did retain the wing-joining system but in a strengthened form. The finished model was covered with authentic Japanese silk and painted. It certainly finished up looking a really attractive aircraft and drew attention on the flying field. This was my first R/C model and it was powered with a McCoy 40 initially and eventually with an OS 40. The radio was a five channel JR operating rudder, elevator and motor. To me the model was at first difficult to fly and stability was



Left: Stan Brown with his 'Buzzard Bombshell' (R/C Assist) powered by an OS 30 glow engine at Goulburn.



Left: First SAM Australia Nationals. Max Starick used an ignition Brown Junior in his 1940 Sadler Pacemaker (R/C Assist). Right: Red Zephyr powered by Taipan 21 glow engine entered by Basil Healy of New South Wales at First SAM Australia Nationals (R/C Assist).





Left John McCarthy won the most impressive model award with his rubber powered Club Duration at the First SAM Australia Nationals at Goulburn, New South Wales, last April. Right Bob Stone of Victoria with his OK Cub 099 glow powered Comet Mercury in free-flight power at Goulburn



improved by the addition of a dorsal fin. Unfortunately earlier this year it was written-off when the wings folded at high altitude due to dowel failure. I will certainly be building another 'Stentorian' and intend to construct it as close as possible to the original. In the meantime I thought to register the existence of an R/C 'Stentorian' here in Australia that first flew in 1980."

in vintage models, and wonders where he might obtain plans for the Mercury 'Gili-Chopper' and/or the 'Gili-Hatchet' designs by Phil Guilman. (The last named now available from MAP price £2.50 + postage). He has managed to obtain a set of original 'Super Slicker' plans but does not have a suitable engine for this at present. Ron also mentions that he ordered 'Southerner' plans

some months ago from one of our advertisers enclosing money orders but so far has not received a reply, if this catches the eye of the advertiser perhaps he might like to drop our New Zealand friend a line?

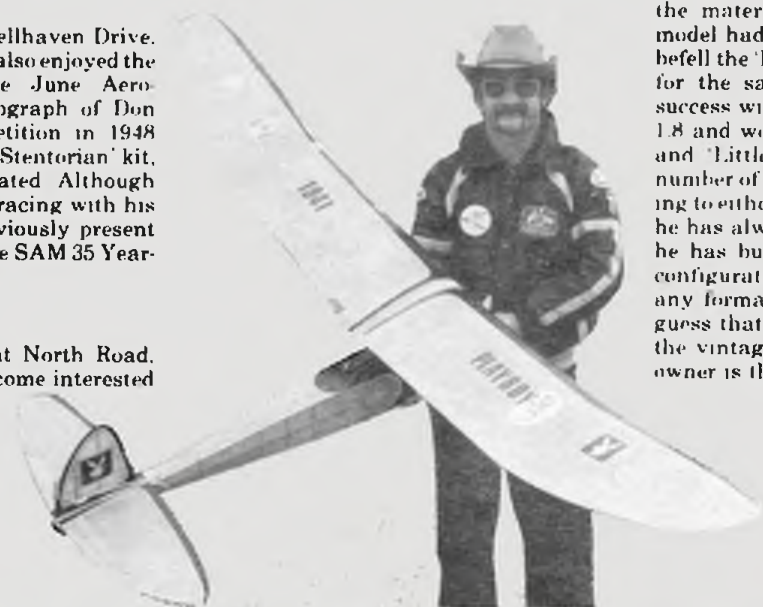
Another regular reader of Vintage Corner from New Zealand is Lew S. Hale, 15 Wilson Street, Te Aroha. He started modelling in 1948 with a 'Dizzy Diesel' enlarged slightly for the ED Mk11. Since he did not scale up the material sizes at the same time, the model had a very short life. The same fate befell the 'Little Vagabond' that he modified for the same engine! He did have more success with a 'Wren' powered by the Elfin 1.8 and would like to build both the 'Wren' and 'Little Vagabond' again. Lew has a number of old plans available that he is willing to either trade or sell. He maintains that he has always modified plans designs that he has built and says "... if the modified configuration does not please the judges of any formal event that might be entered, I guess that in the end the satisfaction that the vintage (sport-style) model gives to its owner is the real reward..."

Canada

Brian W. Fairey of 242 Bellhaven Drive, Waterloo, Ontario, N2J 3L6 also enjoyed the 'Stentorian' article in the June Aero-modeller, and sent a photograph of Don Baker taken at the competition in 1948 during which Don won the 'Stentorian' kit, the story of which was related. Although currently involved in team racing with his son, the vintage bug is obviously present since Brian asks whether the SAM 35 Year-book is still available?

New Zealand

Ron Magill of 4207 Great North Road, Auckland 8 has recently become interested



Right SAM Australia Secretary, John Tiday of New South Wales flew this Playboy Senior in the R/C Assist powered by a Frog 500 glow.



Left another New South Wales modeller, Barry Lee with his Kayo in R/C Assist powered by an OS FS 40 glow. Right Dennis Parker of Victoria who is the SAM Australia Editor placed third in Free-Flight Power with his Frog 150 diesel powered Thermal Thumber



VINTAGE CORNER

South Africa

Stan Ohlsson, PO Box 158, Mossel Bay 6500 built his first model in 1932, this was a Japanese kit which flew reasonably well, so he was hooked and has been at it ever since! Stan's letter gives a good insight into the difficulties encountered by overseas builders in remote areas both then and now! He writes "... Mossel Bay is only a small town and in those days there was no hobby shop (there still isn't) but a general store would get the Japanese kits fairly often, and I managed to get some other lads building as well. Unfortunately there were no adult modeliers in our town, so we had to muddle along learning by our mistakes. The Japanese kits were all bass and bamboo jobs, and we stuck them together with that evil smelling brown goo called *Seccotine*. In 1935 or '36 in answer to an advert in a Cape Town (250 miles from Mossel Bay) newspaper, I wrote away for a model aircraft catalogue. This was a great move as I discovered balsa, dope, cement etc., also Model Airplane News, Air Trails and Flying Aces and later Aeromodeller. These magazines helped us tremendously and from then until I joined the South African Air Force in 1942, we built many of these delightful *Comet* and *Peerless* kits plus *Megout*, *Burd* etc. which were not quite so plentiful. I also built most of the duration models of the day, 1937 and 1939 'Kordas,' 'Clodhopper,' *Denny* 'Condor,' *Pacific* 'Ace,' 'Miss World's Fair' etc.

Right Don Baker poses with his model on the take-off boards during the 20 seconds power competition at Warwick in 1948 when he won the Stentorian kit mentioned in June Vintage Corner. Photo by Brian W. Fairey of Ontario, Canada, who was another competitor.



In 1939 I built the first power model to fly in Mossel Bay. This was the original *Comet* 'Clipper' and was powered by a *GHQ* engine. Hereby hangs a tale, because the 'Clipper' had long been finished but the engine refused to start. Months of flipping produced a few half hearted plops, and now and then a one second burst. Eventually I found an article on two stroke engines and learned, amongst other things, about crankcase compression. I had noticed that fuel was continually being pushed out between the crankcase halves, so in spite of the instruction manual which said that the joint must be metal to metal, I made a thin card gasket and shellacked it into place. When it was dry, a few flips and the engine burst into

life, and ran its tank dry. One snag, the engine ran in the wrong direction, because instructions said flip clockwise, which we did. By moving the timer arm to the opposite side, the engine was made to run anti-clockwise, although for some reason, it was smoother running in the opposite direction. The 'Clipper' was successfully flown a few days later. In 1940 it was fitted with an *Ohlsson* 60 and the *Comet* 'New Clipper' or 'MkII' as John Pond calls it, was built for the *GHQ*. This appears partially completed in the enclosed photograph. This machine also flew successfully, and it was only in the late 1940's that I learned of the *GHQ*'s infamous reputation.

After the war I settled in Cape Town, joined the local model club and enjoyed



Left: Aeronca K 54in, span rubber powered model made from a *Comet* kit in 1940 by Stan Ohlsson of South Africa (see text). Below: Buzzard Bombshell variously powered by an *Ohlsson* 60, *OK* 60 and *Rocket* ignition engines, built in 1948 by Stan Ohlsson and seen here on the disused military aerodrome at Fisantekraal, 18 miles from Cape Town.



many happy years of building and flying, especially with my very dear friend the late Basil Moore, who managed the South African free flight team at several World Championships and who was well known to Ron Moulton. In 1980 I returned to Mossel Bay in semi-retirement and have managed to get about 20 fellows of all ages into building and flying, there is a growing interest in Vintage R/C Assist, and I am almost finished building a *Cleveland* 'Playboy Senior' 70in. span model which I brought back in 1946. I have also started a *Comet* 'Clipper MkI' and there are two others on the building board by two other modeliers, a three quarter sized 'Clipper' and a Berkely 'Brigadier 58.'

Stan goes on to say that he wishes that his area would produce the same activity that he reads about in Vintage Corner, and goes on to tell of the magnificent flying sites nearby "... cow pasture some two miles square, other areas have rivers and dams for seaplane fans, and slope soaring sites, all within ten miles of the town. Sites are completely remote, no silencer problem, also Mossel Bay enjoys warm summers and mild winters so we have year round flying." Mouth watering isn't it?

Since there is not yet a SAM Chapter in South Africa, Stan wishes to join SAM 35. He is another prospective SAM 35 Yearbook purchaser, requires some spares for *Ohlsson* 23 and 60, and would really like to obtain a *GHQ* again for old time's sake. He can't get rubber strip either and complains that model shops in his country only seem to cater for the present day R/C modeller.

Other countries

We are kept well informed about vintage activity in the USA mostly via John Pond's column 'Plug Sparks' in Model Builder magazine the same can be said about Merv Buckmaster's Australian magazine Airborne with Jim Fullerton's column 'For Old Time's Sake.' In Germany there is considerable interest in vintage models and Gerhard Everwyn, Dachsteinstr 12A, D-8000 München 82 has been responsible for fostering the movement there, but although various articles have appeared in the German model press over the last three years there is no regular column for such enthusiasts. While in countries like France, Italy, Sweden and Switzerland lone-hands plough their lonely furrows that result in



spasmodic mention in their respective model magazines, this invariably brings in more enthusiasts, since exposure is the best possible advertisement. We would like to hear from modellers with vintage leanings in any country of the world and will be pleased to publish their stories and photographs. Not only is news of current activity wanted, we would also like to hear from or about the pioneers in any country. Who knows, we might yet find plans of Gems Suzor's tandem winged 'Milkilo' with which he won the Coupe de France in 1936, or find out the part that Ciampolini played in the development of Italian model engines before the 'Giglio' series of 3 and 10cc motors emerged at the end of 1938.

Above: R/C Stentorian with dorsal fin, built from a partial plan by Brian Evans of Victoria in 1980 (see text). Left: unfinished Comet Clipper powered by GHQ by Stan Ohlsson of Mossel Bay, South Africa in 1940 (see text).



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Kit Review by Bill Burkinshaw

IT REALLY shouldn't be necessary to justify the review of an R/C model in 'Aeromodeller,' after all the title of the magazine is 'Aeromodeller,' and the *Acoms* electric powered R/C 'Sirocco' is a model aeroplane. I have always taken a very broad view of my modelling activities which include R/C cars, boats and aircraft, C/L and free-flight not to mention other interests such as hill-walking, micro-computing and jazz! It really doesn't do to be narrow in outlook, it is almost always the case that one can learn something from the other person's interest that impinges on our own speciality. So much for the sermon! What of the kit? Without reservation, the *Acoms* electric flight 'Sirocco' is a success; it is both beautifully produced and presented and a good flier to boot.

As an almost ready to fly model, the injection moulded foam airframe decorated with self-adhesive decals has a lot to be said for it. The finished result is impressive to look at and it satisfies many people's (far too many some would say) requirement of being ready to fly quickly. As a practical R/C model it works well and I cannot see any reason why any aeromodeller would object to sharing a flying field with such a model or indeed fail to gain pleasure from operating it.

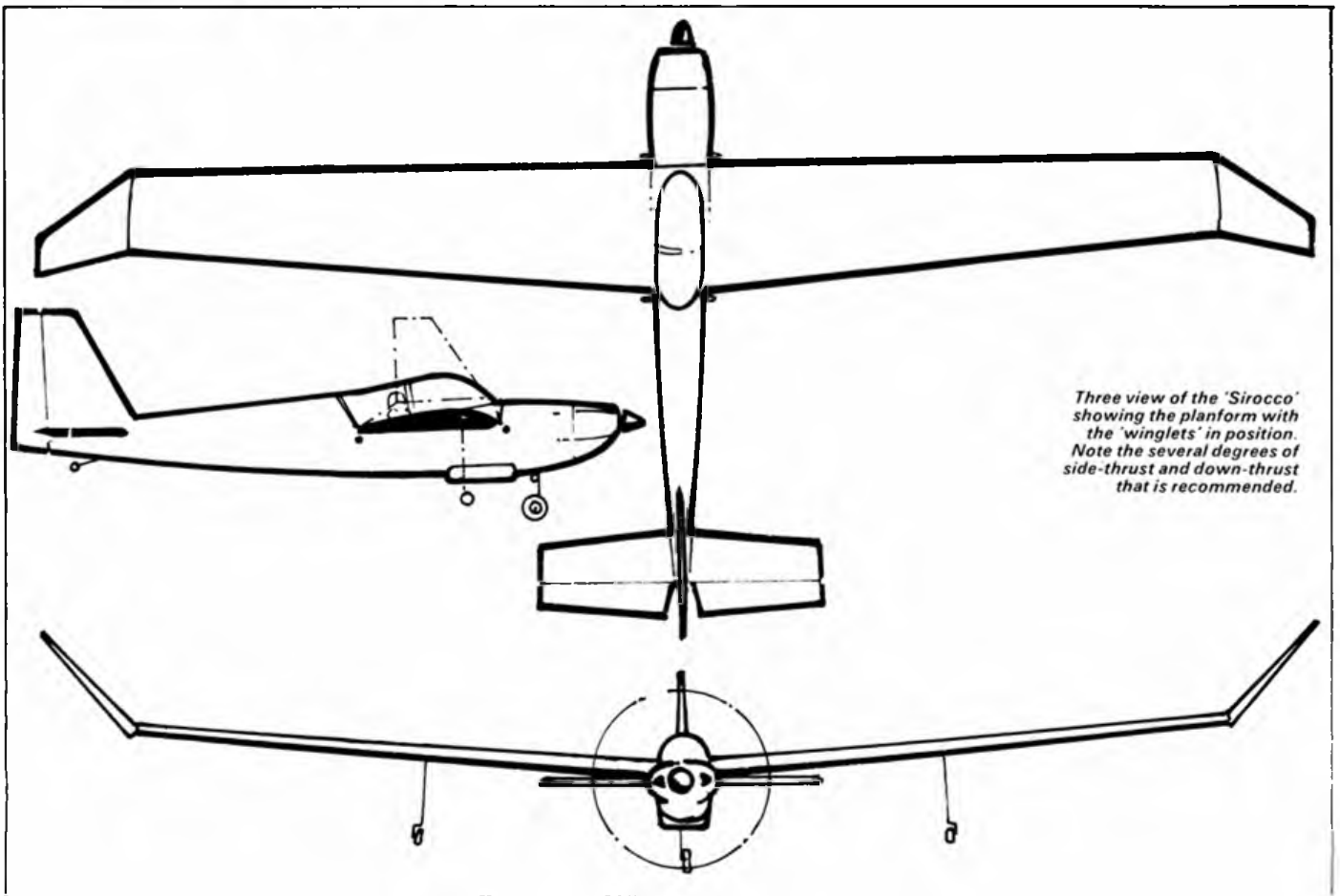
Assembling the model

Instructions are excellent leaving nothing to the imagination right from the first stage of applying the self adhesive decorative material through to flying. The fuselage is already assembled, several parts including the wheels, battery retainers and motor mount have to be fitted using self-tapping screws and the tail plane and fins also need gluing in place with five minute epoxy. Both rudder and elevators are already hinged in place so only need bending over-centre slightly to free off the moulded in hinges before connection to the servos.

Some painting and assembly are needed in the cockpit and pilot area, but these are simply accomplished using *Tamiya* paint markers which do not affect the foam. Five minute epoxy is recommended for joining

acoms

Sirocco



Three view of the 'Sirocco' showing the planform with the 'winglets' in position. Note the several degrees of side-thrust and down-thrust that is recommended.

the two wing halves, reinforced with a die-cut ply brace and a strip of the self-adhesive decal material on the underside. This latter strip considerably stiffens the wing as it is very strong in tension. One could say that with this strip added, the airframe is fully stressed for positive IG manoeuvres, not so well for negative!

NASA style winglets are supplied in the kit allowing the builder to experiment with either conventional style tips or otherwise by virtue of their simple slide over fixing.

Motor/battery system

The heart of the model is its powerplant, the real secret of its success. A small *Mabuchi* 380S motor is coupled to a large moulded plastic propeller via a reduction gearbox. This arrangement allows the motor to 'unwind' thus reducing current consumption and at the same time turning a more efficient propeller than would be possible using a direct arrangement. Power for the motor is supplied from a six cell battery pack rated at 600mAH. The individual cells are of the $\frac{1}{2}$ Sub-C size (exactly half the physical size of 1.2AH cells commonly used). *Sanyo* batteries are used, once again part of the key to success, as these are really top quality batteries which are eminently suitable for fast charge high discharge rate applications. Power is fed via a simple harness incorporating an on/off switch and fuse. It is quite feasible to reposition the switch and operate the motor on/off from an additional link from the elevator screw with a lost-motion linkage fitted. The kit makes no provision for this arrangement.

R/C installation

No problems here if the recommended *Acoms* R/C equipment is used it slips into the purpose designed tray to perfection and the linkage hooks up faultlessly. Provision is made for alternative makes of R/C. I cannot see that it would be difficult to fit virtually any system currently available. Do look very carefully at the diagrams detailing fixing of the control horns — I got it wrong first time. Fortunately *Acoms* thoughtfully provided spare horns!

Charging and flying the 'Sirocco'

A comprehensive check should be made that all controls move in the correct direction and that the model balances as it should. Radio control will not overcome an incorrectly balanced aeroplane, it will not



This clearly shows the bumper bundle of goodies that you find on opening 'Sirocco's' box.

fly properly unless it balances in the correct place. To be fair, it is almost impossible to conceive how the balance point could be wrong if *Acoms* R/C is used and installed as per instructions.

Charge the power battery partially for the first flight say eight or nine minutes instead of the full 15 of the auto chargers provision ... If the adjustments of rudder and elevators are wildly out you can't stop the motor and will have to fight the controls for a fair while otherwise. Wait for a calm day! Once launched, don't expect to be able to pull back the elevators and climb away steeply. Allow the model to build up speed for about 40 or 50 yards before starting to climb and attempt to keep the model upwind and out of the sun.

With a fully charged battery (15 minutes on the *Acoms* charger) flights of around five minutes should result but I have found on monitoring the charge with a digital volt meter that the battery is not fully charged by the *Acoms* charger. Safely but not fully. If you have a DVM, then monitor the charge by measuring the on-charge voltage of the battery and when it reaches a peak between

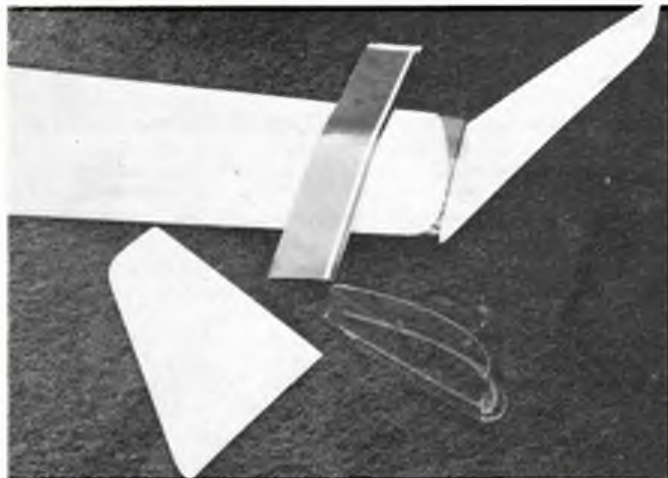
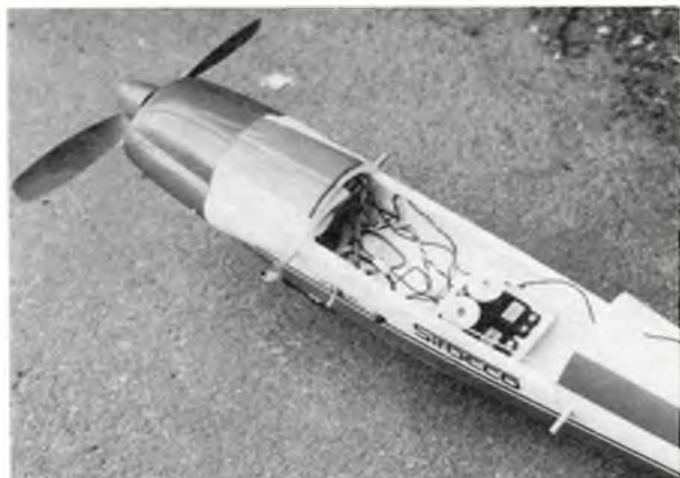
9.5 and 10.5 volts depending on the individual peak and the state of the 12 volt lead/acid battery you are charging from switch off and then fly. You will find something of an improvement. My best recorded flight so far has been just short of seven minutes. Don't be tempted to lighten the model by connecting the R/C equipment to the drive battery, the voltage of this can drop to a level too low for safety.

Conclusions

An eminently successful little model, capable of a satisfying performance and looking really good. The foam construction will stand a reasonable amount of abuse and if irreparably damaged, spare parts can be obtained. A lot of fun for a modest outlay in powered R/C terms and a simple practical way into R/C modelling. Why not give it a try? You can still enjoy the other aspects of your hobby as well.

Price £56.26 not including battery.

Some detail of the model in close-up. Right: side-view of the model complete with winglets, showing the small out-board wheels that act purely as stabilisers. Below left: clean and straightforward R/C installation. Below right: shows the simple way in which the 'winglets' may be attached to the wing using the clear plastic adaptor. Trimstrip is provided to hide the join. Take care here, as this will wrinkle unless you are very careful.



Pop-up wing dethermaliser

Dethermaliser band pin keys into brass tube in fuselage

Snuffer tube

Band

Fuse

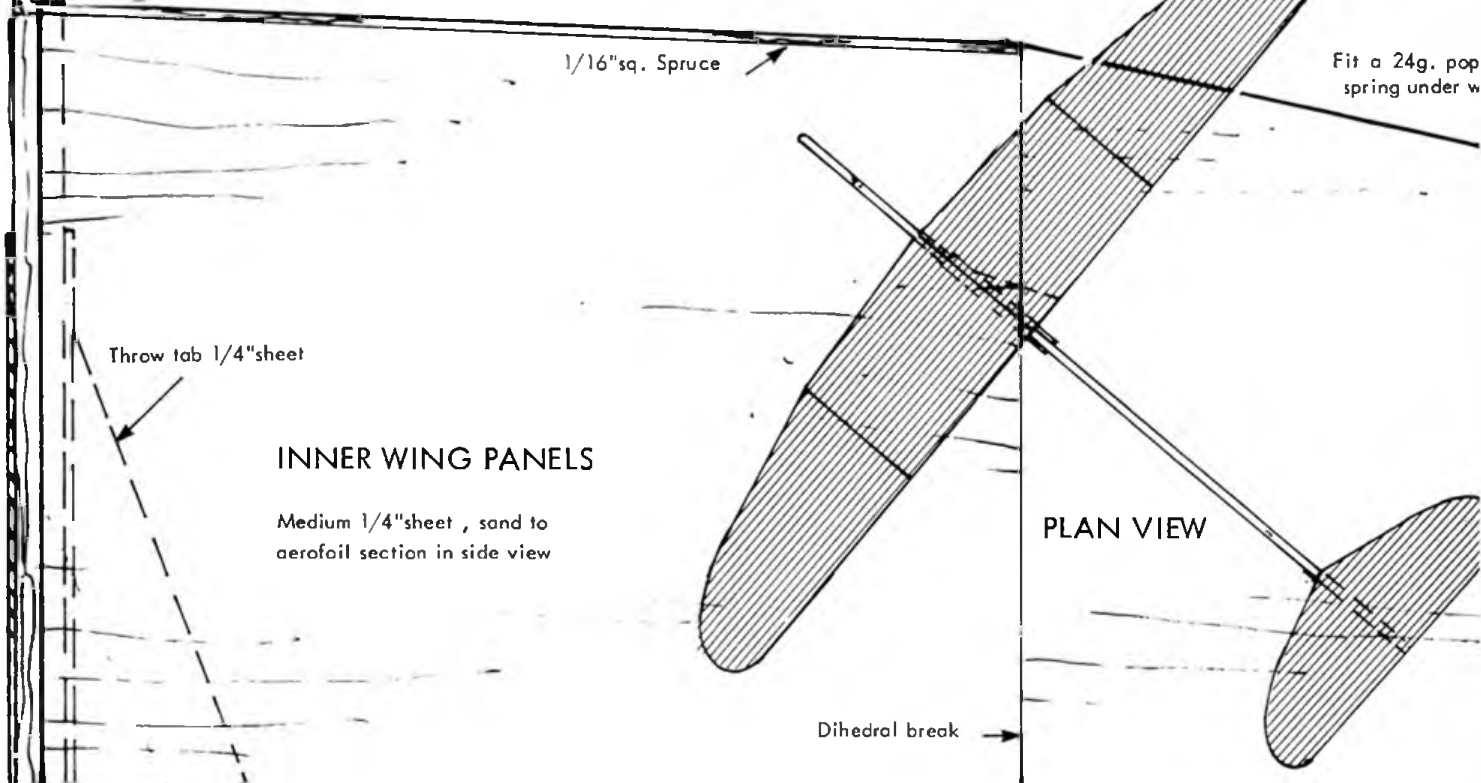
Cut fuselage to form 'hatch' which is glued to wing

Balance at 75% chord

GOLD RUSH

1/16"ply pivot arms 2 off glue to wing and 'hatch'

Top Chuck Glider design by Martyn Cowley



FIRSTLY let's set this thing straight. This is not just another HLG story — being British this machine is a chuck glider commonly known as a Chucky! I've been chucking them for some 20 years, since I was a lad.

Early influences obviously focus on Lee Hines 'Sweepette 20' and Tony Salter's '18in. Slarmi' Aeromodeller Plans Service — long fuselage and under fin.

I think I've taken chuck gliders to every model event I ever attended (even when I flew combat) so that I always had something to fly and run around after between competition flights. Typically in England where it is always blowing half a gale, I usually entered chuck glider when it was just too windy to fly anything else. With this background, I prefer large models, (I have flown 24 × 5in. wings) for stability in

turbulence and primarily for visibility in the air downwind, and after landing on those long flights on a windy day. I don't believe you lose too much altitude by using a larger model, especially by comparison to their superior glide. I find they are more likely to glide their way out of trouble if you do make a mistake. An 18in. model typically puts you on the ground quicker than a sackful of spanners if you miss the core.

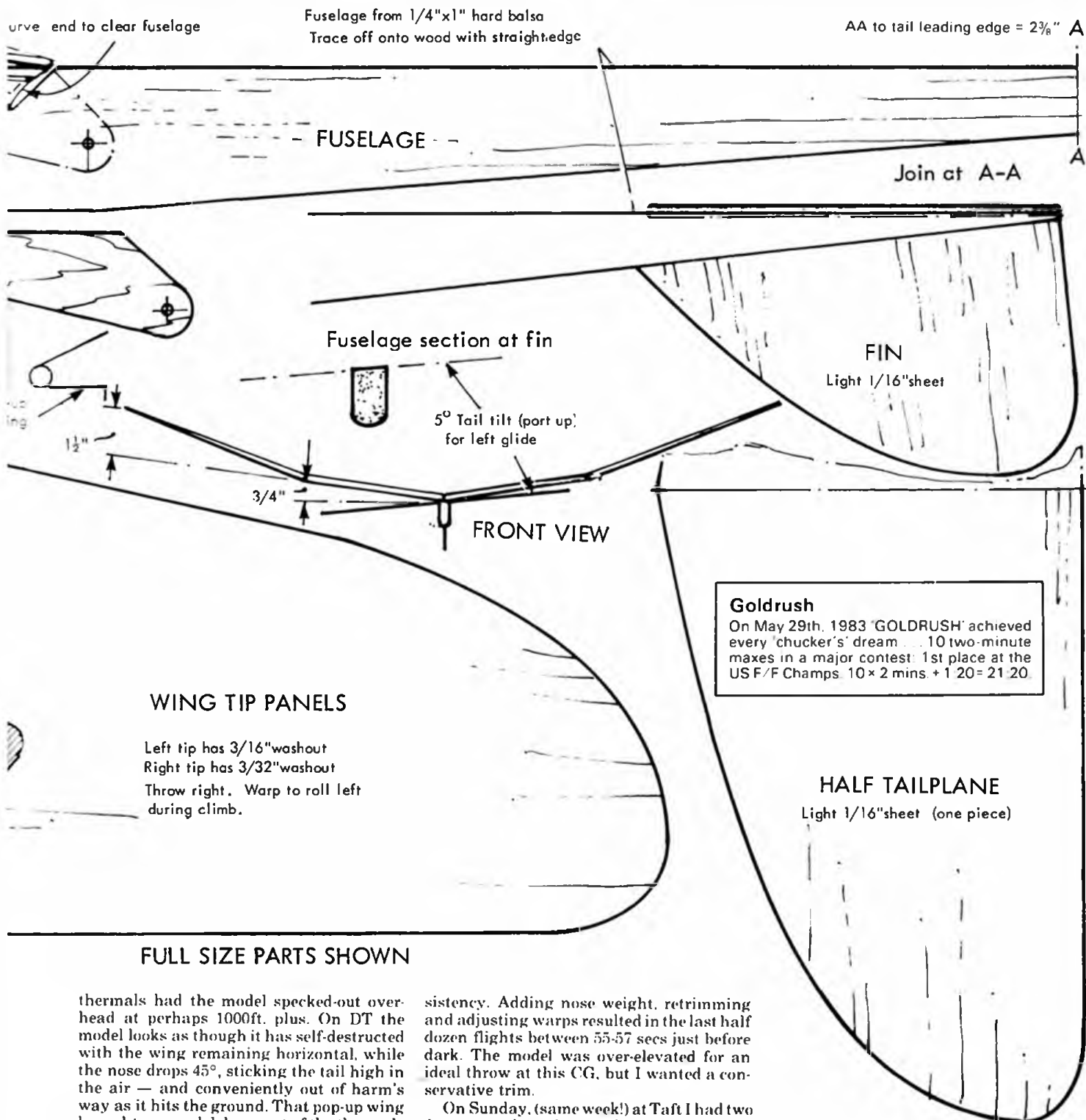
I've always preferred weighty models — it's all that rough weather. Personally I think they throw better — nothing is worse than almost ripping your arm off, overthrowing a real lightweight.

In England I always used drop-off weights to DT with no problems — but here in California the thermals play for keeps! I lost several models, then tried all manner of tip up tails and hinge methods, but could never get really consistent flights. I think pop-up tails never seat exactly the same twice. Plus — I use a potentially dangerous trim. Right launch with wash-in on inboard right panel, model gliding left! That may sound like a spiral dive waiting to happen, but it's great

for trimming the throw part of the climb, just like a power model, rolling left while turning right. The glide is then just like any rubber model trimmed to fly Right Left using side thrust against warp. Any stalls from poor trim or turbulence tend to wing-over into wind and transition into a smooth glide, still giving a chance of a good flight.

My best models, using warp and tail tilt to give a left glide, have always needed just a touch of right rudder to hold the glide open. This opposite rudder comes on stronger if the model tightens up in a stong lift and prevents it spinning in. You see — we aliens do things differently!

As Chuckies are finely tuned with minute adjustments to tailplane and rudder, I was naturally keen to find a DT method that would leave these surfaces firmly in place — hence the pop-up wing! Even I was surprised how effective this type of DT is on a Chucky. There is no doubt that it saved my model from a fly away several times during the F F Champs. I was typically D.T'ing at 2:40-3:00 mins on each flight and despite chasing on a motor bike, some of the big



Goldrush
 On May 29th, 1983 'GOLDRUSH' achieved every 'chucker's' dream... 10 two-minute maxes in a major contest: 1st place at the US F/F Champs. 10 x 2 mins. + 1 20 = 21 20.

FULL SIZE PARTS SHOWN

thermals had the model specked-out overhead at perhaps 1000ft. plus. On DT the model looks as though it has self-destructed with the wing remaining horizontal, while the nose drops 45°, sticking the tail high in the air — and conveniently out of harm's way as it hits the ground. That pop-up wing brought my model down out of the thermals faster than a mouthful of roofing nails!

Stan Stay immediately spotted a further benefit for the nomadic jet-setting chucky flyer — simply by removing the hinge pin, the wing comes off making the model very transportable — even in a suitcase. Just a drop of 'Hot-Stuff' gives temporary pin fixing for a day's flying on arrival.

Now, if you're looking for a history of this particular model, hold on tight. I built it on Wednesday evening and flew it for an hour on Thursday night. I don't believe in over training! From the first test glides the model looked very promising. But trying for high times with a rearward CG gave occasional long low pullouts — a real killer for con-

sistency. Adding nose weight, retrimming and adjusting warps resulted in the last half dozen flights between 55-57 secs just before dark. The model was over-elevated for an ideal throw at this CG, but I wanted a conservative trim.

On Sunday, (same week!) at Taft I had two low power launches to check that nothing had changed. I entered the contest and did 2:00, 1:20, 2:00, 1:30 2:00 and then flew off with seven straight maxes to equal Bill Blanchard's 1974 magic 10 maxes — the goal for all Chucky flyers. I must confess I drew inspiration from having witnessed Mike McKeever and Jim Lueken's previous attempts at the record.

I think I must have been more tired at this stage than I realised because my eleventh flight was a real gamble. Even before I launched I had my doubts about the air. I simply relaxed too soon and blew it with a 1:20. Next year after I get to the ten, I'm going to take a couple of minutes time-out to get serious!

One final comment: standing out in the dirt ready for my eighth or ninth flight, my mind suddenly locked on the fact that the tailplane was still only held on to the fuselage with 1/4in. double-stick transfer adhesive — a technique I use with new models for first flights in case incidence needs adjusting before gluing. At that stage I chose to leave things as they were for the rest of my flights. Matter of fact, I still haven't glued it on yet!

I made no other test flights between contest flights, and in fact had not adjusted the model at all since I set it up that Thursday night. To me that confirms this pop-up wing DT system is reliable!

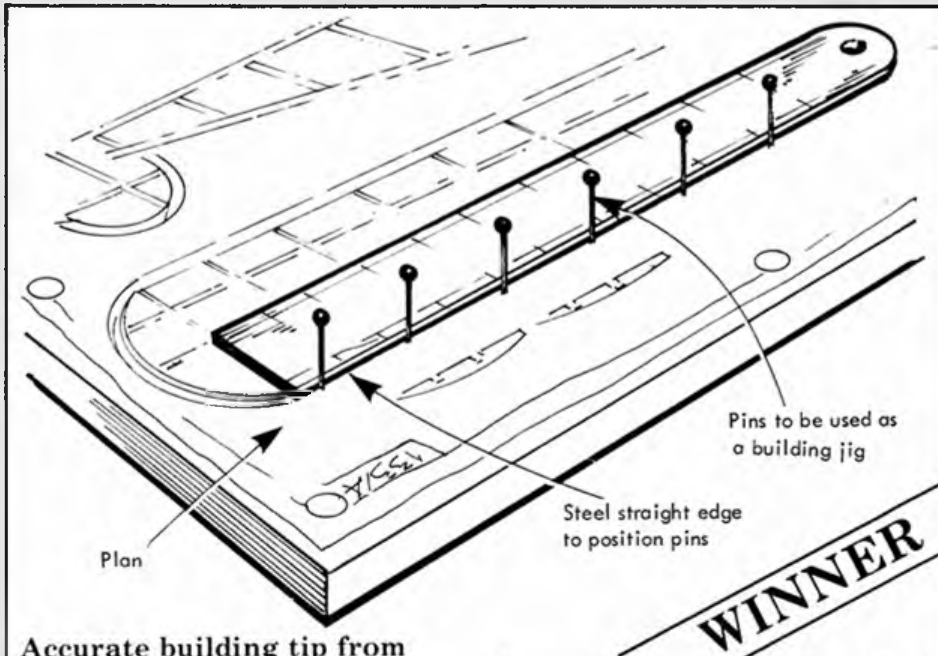
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Accurate building tip from Trevor Faulkner

This method ensures alignment of straight components being built over a plan. Pins are inserted alongside a (steel) rule or convenient straight edge which lies along the required edge of the component shown in the drawing. The pins then are in exact

alignment and the actual wooden section is placed next to these. A second row of pins is then used to hold the strip, (e.g. LE) against the first row). This is particularly useful when lighter or long sections of wood are being used, and avoids the variations caused by placing individual pins by sight.

Wire bending and coil forming jig from Dave Cowburn

Larger diameters of piano wire are best formed around a small radius rather than being bent over the sharp edge of vice or pliers. This simple jig allows 8 or 10swg wire to be bent for U/Cs without risk of over stressing. For bending coils, the fixed end of the wire is first bent at a right angle (later cut off) and put into one of the holes in the base plate. The coil can then be formed round the peg with the bending-bar. For bends around 90° the end of the wire can be held by a peg (nail) dropped into one of the holes.

Anyone with access to the simplest engineering facilities (e.g. school metalwork dept.) should have no difficulty in constructing this jig. The more ambitious home workshop (Black & Decker on vertical stand) should cope without too much trouble!

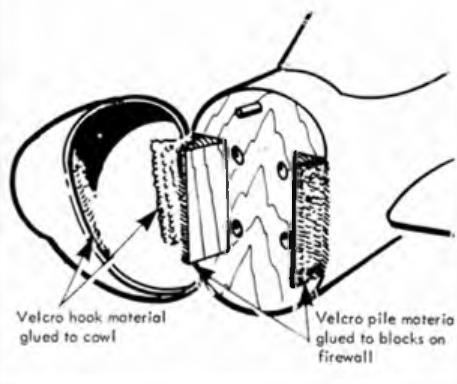
'Wobbly Wheel' for profile C/L sports models from Dave Cowburn

The 'wobbly wheel' has been well proven on C/L racers over the last five years or so. The ability of the leg to swing back when the wheel strikes a lump in the runway considerably improves the fast landing run of the typical racer when compared to that given by the rigid legs previously used.

The simplified version shown here allows this principle to be easily applied to sports models too (without the need for any 'Engineering' facilities) and has the further advantage that the U/C can be easily replaced if damaged or removed completely if the flying site is too rough for even a sprung U/C.

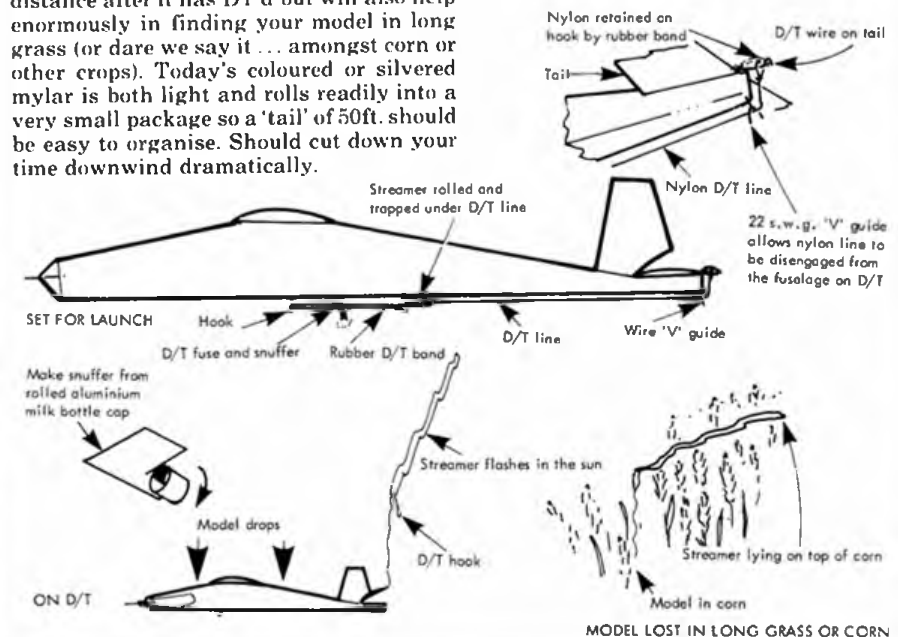
Engine cowl fixing from Craig Sguden

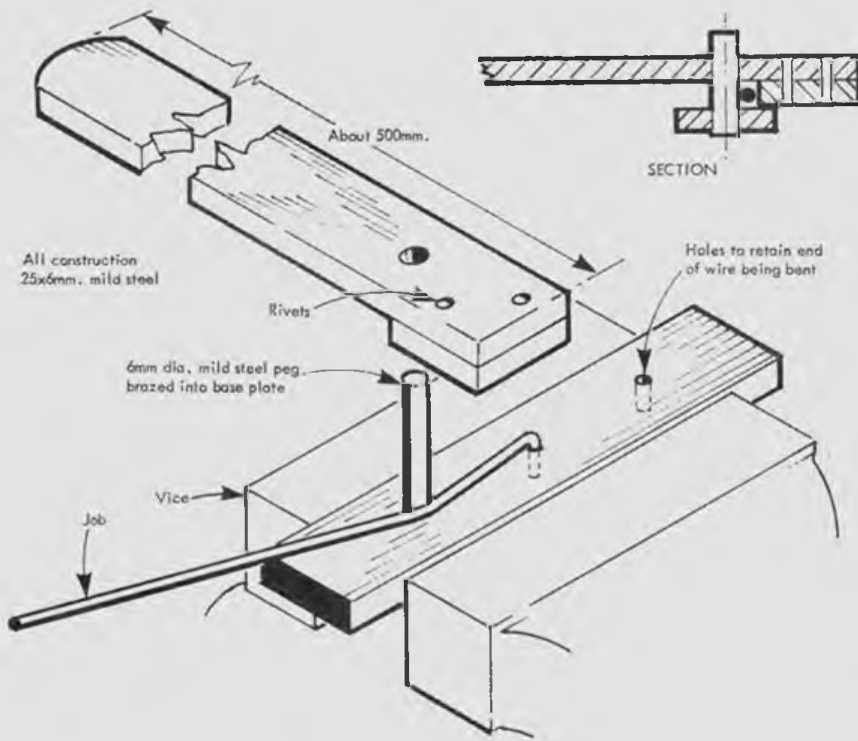
Engine vibration can cause vacuum-formed plastic cowls to split if attached with screws. Strips of velcro glued to blocks can dampen vibration as well as hold the cowl firmly and make removal quick and easy. The self adhesive backing can be softened by fuel so remove the glue and re-attach with epoxy. Velcro and similar materials can be obtained from dressmakers and craft shops.



Simple aid to model retrieval from B. Faulkner

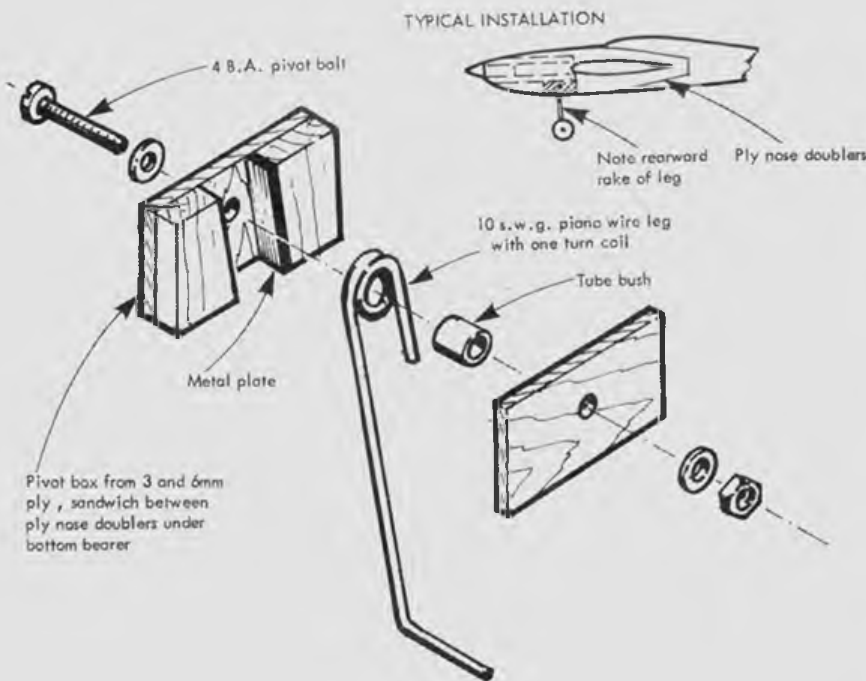
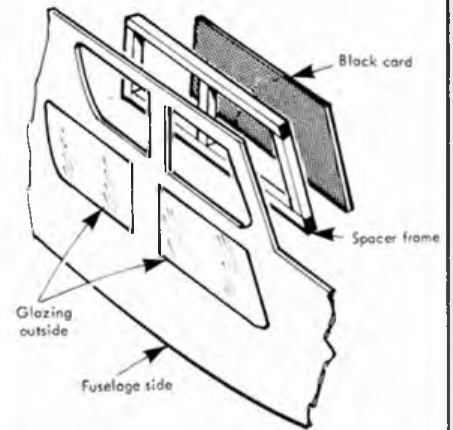
This neat adaptation of an old idea will not only help you 'spot' your model in the distance after it has DT'd but will also help enormously in finding your model in long grass (or dare we say it ... amongst corn or other crops). Today's coloured or silvered mylar is both light and rolls readily into a very small package so a 'tail' of 50ft. should be easy to organise. Should cut down your time downwind dramatically.





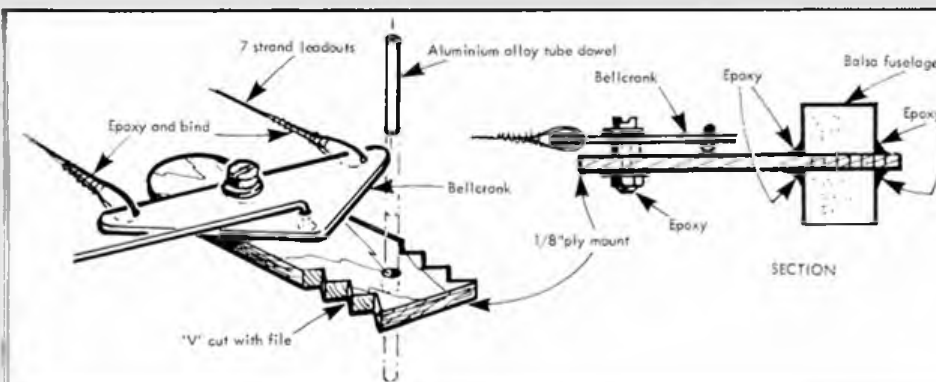
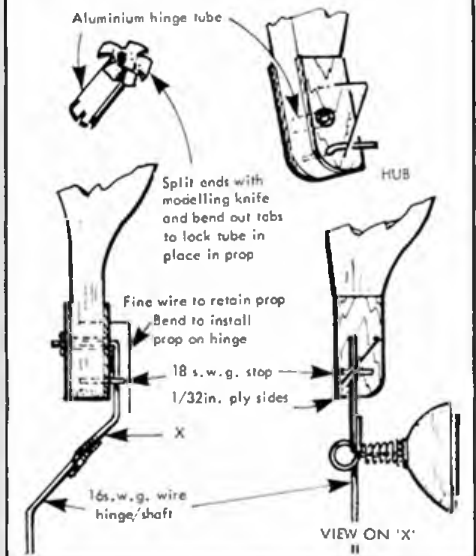
Improve those cabin windows from Craig Sugden

Cabin windows might be desirable but on some models it will leave the area very weak. Glue a piece of thin card, painted black, to the framing forming a recess. Then windows can be fitted from the outside. Using this method you can reproduce a pleasing cabin area without the usually associated weakness.



Removable propeller from B. Faulkner

A simple design for a removable propeller blade to allow replacement in the event of breakage on the field. An 18swg wire stop at the hub acts as a normal stop under power and a lighter gauge wire is used to retain the prop when folded. The latter is simply bent back to allow the fitting of a new blade.



Secure bellerank fixing from Frank Small

With ever increasing speeds in FAI combat there is an obvious need for more safety. One area needing consideration is the method of mounting the bellerank. Some people use dowels where I use a small aluminium tube but in addition the ply mount is filed with a 'V' file along the edges to be inserted into the fuselage. Normally when the slot is cut in the fuselage the epoxy glue is forced out particularly if the hole is cut accurately. The 'V' cuts hold the epoxy glue inside the fuselage for a more secure hold.

SHOP TALK

NEW MODEL HOBBY PRODUCTS
REVIEWED



Cotswold 'Novice' powered glider kit

This simple powered glider from *Cotswold Kits* for two function R/C and 0.8cc motors is something of a departure from the norm, for unlike all their previous kits, the 'Novice' does not feature a GRP fuselage. Instead, *Cotswold* have chosen to use all built-up balsa ply structure to accompany the foam cored obechi veneered wings. The model looks very straightforward to construct with all necessary balsa and ply parts

nicely saw cut to shape. Vacuum formed wingtip fairings, cowling and canopy cum wing tip fairing are included. The hardware package contains spinner, glass fibre ribbon for wing joining and all necessary bits and pieces for the R/C equipment installation.

Having had the chance to fly one of the prototypes we can vouch for the docile flying characteristics and can recommend the 'Novice' as an ideal introduction to simple, no frills R/C flying. The Cotswold Kits 'Novice' costs £19.66 from good model shops.



Acoms two function 35MHz R/C system

Just the job for fitting into the 'Novice,' this new two function 35MHz AM R/C system also matches the 'R/C-on-a-budget' concept well. The outfit is for dry battery operation and includes two servos, battery box/switch

harness, servo output arms and mounting screws, frequency pennant and neck strap all backed up by importer *Richard Kohnstam's* simple no fuss, fixed-price service exchange system. The equipment is of course SMAE/MHTF Type Approved and costs around £48.00



Ross Models' new range of kits

A second new name to be added to the list of model kits manufacturers this month is *Ross Model Kits*. Proprietor Martyn Holbrook is well known in R/C gliding circles but has obviously taken the broader view and decided to include free-flight models in his new kit range to be distributed by *Flair Products*. His introductory kits are the 'Elf,' a simple 355mm span chuck-glider and 'Algy' a 735mm span tow-line glider.

Both models are entirely traditional in concept and include good quality die-cut and saw cut balsa parts, adequate instructions and in the case of the 'Elf,' nose weight, sandpaper and self adhesive canopy decal in addition to the manufacturers canopy decal supplied with both kits. Purchasers of the 'Algy' will need to purchase tissue or heat shrink film for covering the built up wing. Both models are very stoutly packed in colourful boxes. Prices are as follows — 'Elf' £1.70, 'Algy' £5.38

Sailplane International big air wheels

There is nothing like a pair of really good balloon tyred wheels to set off a vintage model somehow, chrome plated plastic hubs just don't look right. This range of wheels includes six sizes ranging from 45-200mm. The largest size shown here are truly enormous. Prices range from £5.00 (45mm dia/per pair) to £15.00 (160mm dia per pair).



Cipolla Engines

Sailplanes International of South Wales are now importing a range of *Cipolla* engines, three engine capacities are available at present 1.5cc, 2.5cc and 4cc. The three versions of the 1.5cc are: Standard, R/C and Diesel (all others in the range are glow). The 2.5cc comes as Standard, Combat and R/C and the 4cc as Standard and R/C. The quoted power outputs appear to be quite high and with the expertise of the Cipolla brothers (world class team-racing team), the engines may well be worth watching closely.

The 2.5cc Combat is all aluminium, the cylinder liner is of the AAC style (aluminium piston running in an aluminium cylinder chrome plated). It has twin ball races and an oversquare bore/stroke of 15mm/14mm. Weight is only 165gm. Engine comes with cylinder head incorporating special glow plug, but heads accepting standard plugs will be available, as will of course the special glow plugs! The instructions recommend a pressurised (pen bladder) fuel system and the quoted power is 0.7BHP at 27,500RPM. The 2.5cc 'Combat' costs £34.50.



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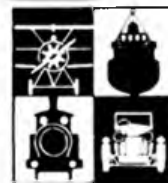
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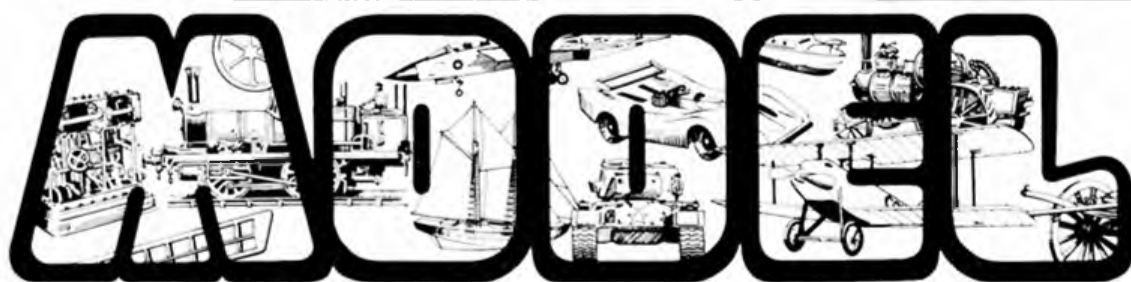
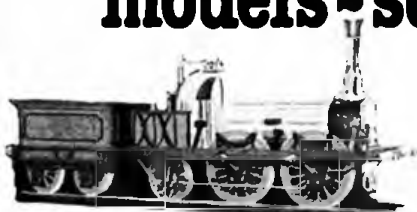
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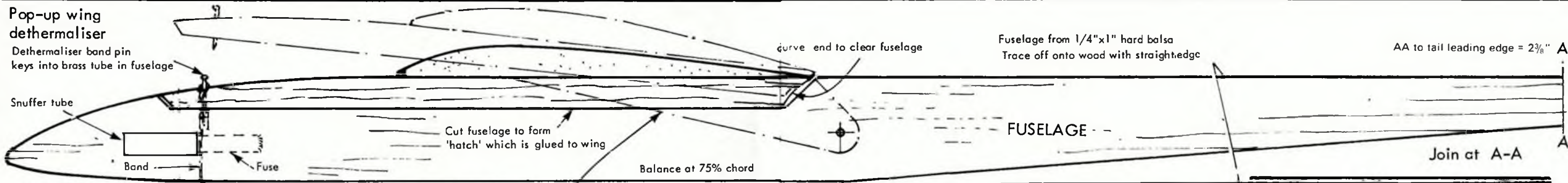
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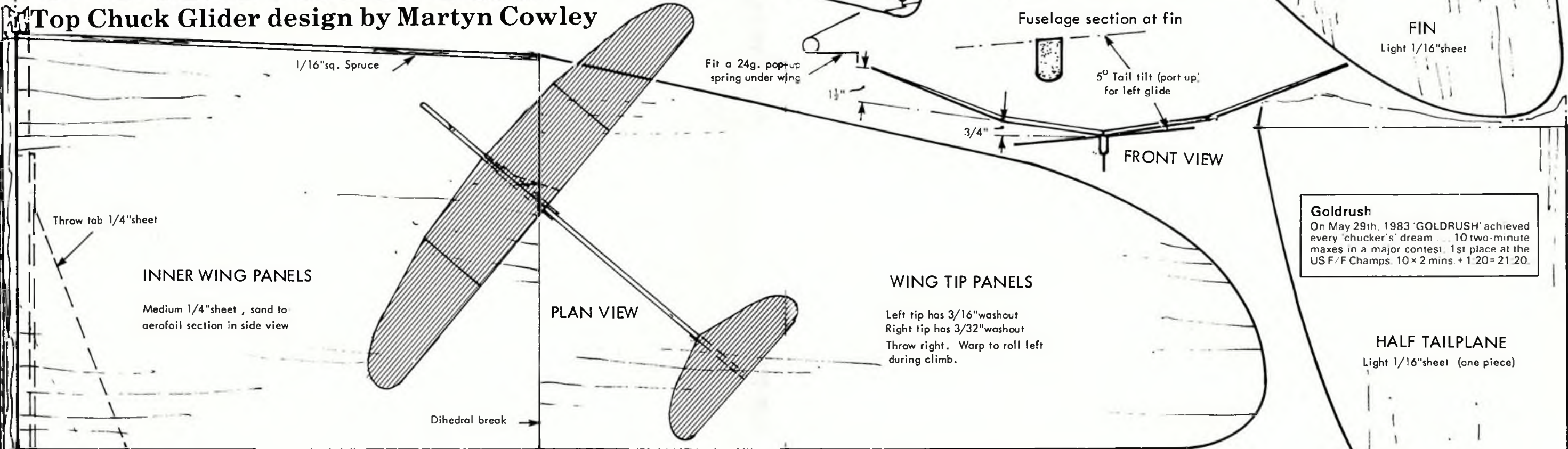
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FULL SIZE PARTS SHOWN

FIRSTLY let's set this thing straight. This is not just another HLG story — being British this machine is a chuck glider commonly known as a Chucky! I've been chucking them for some 20 years, since I was a lad.

Early influences obviously focus on Lee Hines 'Sweepette 20' and Tony Salter's '18in. Slarmi' Aeromodeller Plans Service — long fuselage and under fin.

I think I've taken chuck gliders to every model event I ever attended (even when I flew combat) so that I always had something to fly and run around after between competition flights. Typically in England where it is always blowing half a gale, I usually entered chuck glider when it was just too windy to fly anything else. With this background, I prefer large models. (I have flown 24 x 5in. wings) for stability in

turbulence and primarily for visibility in the air downwind, and after landing on those long flights on a windy day. I don't believe you lose too much altitude by using a larger model, especially by comparison to their superior glide. I find they are more likely to glide their way out of trouble if you do make a mistake. An 18in. model typically puts you on the ground quicker than a sackful of spanners if you miss the core.

I've always preferred weighty models — it's all that rough weather. Personally I think they throw better — nothing is worse than almost ripping your arm off, overthrowing a real lightweight.

In England I always used drop-off weights to DT with no problems — but here in California the thermals play for keeps! I lost several models, then tried all manner of tip up tails and hinge methods, but could never get really consistent flights. I think pop-up tails never seat exactly the same twice. Plus — I use a potentially dangerous trim. Right launch with wash-in on inboard right panel, model gliding left! That may sound like a spiral dive waiting to happen, but it's great

for trimming the throw part of the climb, just like a power model, rolling left while turning right. The glide is then just like any rubber model trimmed to fly Right/Left using side thrust against warp. Any stalls from poor trim or turbulence tend to wing-over into wind and transition into a smooth glide, still giving a chance of a good flight.

My best models, using warp and tail tilt to give a left glide, have always needed just a touch of right rudder to hold the glide open. This opposite rudder comes on stronger if the model tightens up in a stong lift and prevents it spinning in. You see — we aliens do things differently!

As Chuckies are finely tuned with minute adjustments to tailplane and rudder, I was naturally keen to find a DT method that would leave these surfaces firmly in place — hence the pop-up wing! Even I was surprised how effective this type of DT is on a Chucky. There is no doubt that it saved my model from a fly away several times during the F/F Champs. I was typically D.T'ing at 2:40-3:00 mins on each flight and despite chasing on a motor bike, some of the big

thermals had the model specked-out overhead at perhaps 1000ft. plus. On DT the model looks as though it has self-destructed with the wing remaining horizontal, while the nose drops 45°, sticking the tail high in the air — and conveniently out of harm's way as it hits the ground. That pop-up wing brought my model down out of the thermals faster than a mouthful of roofing nails!

Stan Stay immediately spotted a further benefit for the nomadic jet-setting chucky flyer — simply by removing the hinge pin, the wing comes off making the model very transportable — even in a suitcase. Just a drop of 'Hot-Stuff' gives temporary pin fixing for a day's flying on arrival.

Now, if you're looking for a history of this particular model, hold on tight. I built it on Wednesday evening and flew it for an hour on Thursday night. I don't believe in over training! From the first test glides the model looked very promising. But trying for high times with a rearward CG gave occasional long low pullouts — a real killer for con-

sistency. Adding nose weight, retrimming and adjusting warps resulted in the last half dozen flights between 55-57 secs just before dark. The model was over-elevated for an ideal throw at this CG, but I wanted a conservative trim.

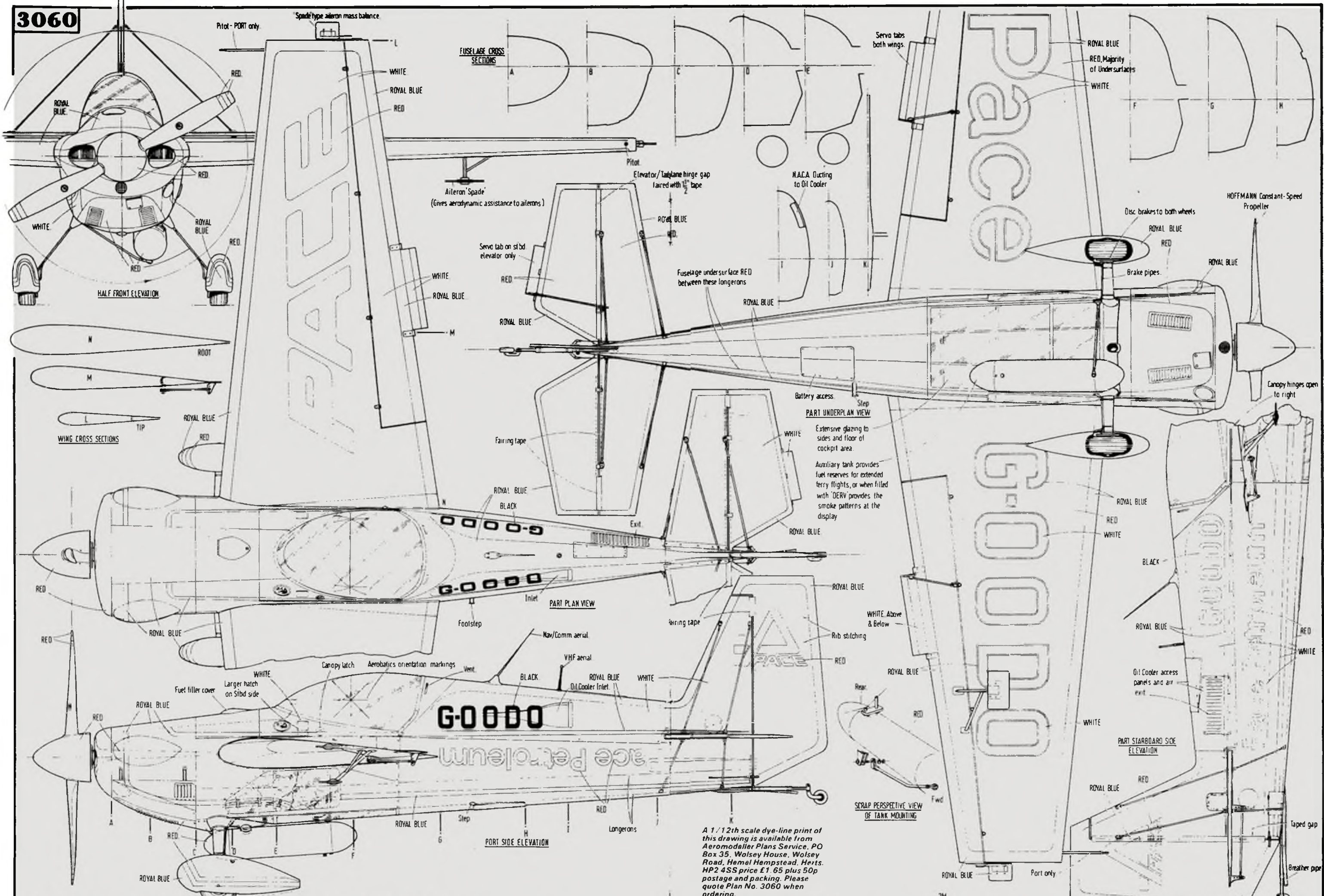
On Sunday, (same week!) at Taft I had two low power launches to check that nothing had changed. I entered the contest and did 2:00, 1:20, 2:00, 1:30 2:00 and then flew off with seven straight maxes to equal Bill Blanchard's 1974 magic 10 maxes — the goal for all Chucky flyers. I must confess I drew inspiration from having witnessed Mike McKeever and Jim Lueken's previous attempts at the record.

I think I must have been more tired at this stage than I realised because my eleventh flight was a real gamble. Even before I launched I had my doubts about the air. I simply relaxed too soon and blew it with a 1:20. Next year after I get to the ten, I'm going to take a couple of minutes time-out to get serious!

One final comment: standing out in the dirt ready for my eighth or ninth flight, my mind suddenly locked on the fact that the tailplane was still only held on to the fuselage with 1/2in. double-stick transfer adhesive — a technique I use with new models for first flights in case incidence needs adjusting before gluing. At that stage I chose to leave things as they were for the rest of my flights. Matter of fact, I still haven't glued it on yet!

I made no other test flights between contest flights, and in fact had not adjusted the model at all since I set it up that Thursday night. To me that confirms this pop-up wing DT system is reliable!

3060



Richard Goode-Pace Petroleum 'PACE SPIRIT.' (1983 Season.)

A 1/12th scale dye-line print of this drawing is available from Aeromodeller Plans Service, PO Box 35, Wolsey House, Wolsey Road, Hemel Hempstead, Herts. HP2 4SS price £1.65 plus 50p postage and packing. Please quote Plan No. 3060 when ordering.

SCALE: FEET

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APPENDIX - Links to the plans

The magazine contains two free plans printed front/back on a folded pull out banner of four pages. The banner is not included in the document.

Pace Spirit by A.A.P. Lloyd

Aircraft described No:258

3View

[See the union page](#)

Messerschmitt Me 109 by Dave Cowburn

Combat Classics

CL Pull Out

https://outerzone.co.uk/plan_details.asp?ID=9564

Spitfire by Dave Cowburn

Combat Classics

CL Pull Out

https://outerzone.co.uk/plan_details.asp?ID=9565

Gold Rush by Martin Cowley

Chuck Glider

FF Centre

[See the union page](#)

**PACE
SPIRIT**
Aerobatic Aircraft
Inside Story and
Scale Drawings