APRIL 1983 75p
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Aero modeller

MAP MODEL MAGAZINE

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Aero modeller

APRIL 1983

Editorial Director TONY DOWDESWELL
EDITOR COLIN RATTRAY
Graphics LORNA CULLEN

MAP MODEL DIVISION MAGAZINE

Advertisement Director M. GRAY
Managing Director RON MOULTON

Comment

THE comments, criticisms and appraisals which land on the editor's desk and ears, is always welcome and very useful. Unfortunately it does not always reflect the majority of readers' opinions. We are often asked why we don't use colour pictures in the editorial for instance. The simple answer is cost. In an ideal world there are many obvious improvements that could be made, but, as in all walks of life, a budget has to be adhered to. Nevertheless within the structure of our magazine a lot is, and can still be, done.

But we live in rapidly changing times and with increasing trends to specialisation. Whereas, only a few years ago we could assess readers demands through contact with clubs and at model flying meetings, this situation altered through 1982 with the sudden arrival of alternate attractions outside the realms of aeromodelling. As a result, there are fewer beginners and the diehards have become even more polarised.

In this issue we have included a readers' questionnaire for you to answer. The object is for us to know better who our readers are, and what your modelling and reading preferences really are. To obtain a fair survey it is imperative that all readers fill in and return this questionnaire as this is the only way we will be sure of what all of you want to see published each month.

The information will be taken very seriously by the editorial staff and used to formulate forthcoming editorial policy.

Don't miss this opportunity of letting us know what you want! Fill in and send off the form on page 155 NOW!

Editor

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Next month

Scale drawing for a rubber powered 'Heston Phoenix.' This design was in fact first published as a full size plan in the 1938 edition of Aeromodeller and has been resurrected by Don Knight. There will be the first part of a three part series on profile scale control line flying. Trade and book reviews plus our regular items which include Vintage, Control Line and Free Flight news. On sale April 15. Price 75p.

On the cover

Mick Staples' Bristol Scout D2 CO_2 powered model, winner of the Aeromodeller Cup at this year's Model Engineer Exhibition. Inset shows John Stroud's Stoneleigh Classic control line model, see page 154 in this issue.

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By C. E. Bowden
A beginner's model with contest performance, from a well-known designer of the period. Span 68 inches. Engines 3-5cc.
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Of unusual layout, this type of model has a high performance, and is of interesting construction. Span 77 inches. Engines 5-8cc.
PET/337 **Price £3.95**

TOMBOY *By Vic Smeed*
Popular design of the period, this simple cabin power model is designed especially for the beginner. Either 36 inch or 44 inch span, both on plan. Seaplane version also given. 0.75-1.5cc engines.
PET/398 **Price £2.50**

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24th September – 8th October 1983 at Brean Sands near Burnham-on-Sea

The Festival holidays cater not only for dedicated modellers, but for their partners and families too, with plenty of interesting and rewarding craft sessions, combined with a full family entertainment programme.

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A practical guide to the essential elements of radio control aircraft — building, installation, flying, maintenance. Power, glider & helicopter models. 205 x 148mm, 96 pages. Published Feb 28. **£4.95**

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Another top writer picks out the most important aspects of successful boat R/C. Covers construction, hulls, power & sail, radio installation etc. 205x148mm, 96 pages. **Published Feb 28. £4.95**

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Hangar Doors

This 1/6th scale control line Wagner Hirth Acrostar was built by Peter Miller winner of last month's Photo Feature. The model is powered by an HP40 R/C and has working flaps and all moving tailplane.

CLAPA CHAMPIONSHIP

This year's CLAPA Championship meeting organised by the control line section of Witham MAC and held at the St. John Ambulance Brigade Gala Day will be on July 9/10 at the Essex Show Ground. There are four control line events to be held — F2B for CLAPA members only and run over two days and on Sunday — Open Novice Stunt, Open Carrier and Open Scale.

Camping on site is free but is for competitors only and will be available from Friday afternoon. Send an SAE to Peter Burgess, 42 Blunts Hall Road, Witham, Essex. Tel: 0376 516881 for entry form and further details. Note: the meeting is pre-entry only.

STOCKPORT DMAC

This long established control line club is looking for new members! Apart from many experienced members, the club has it's own control line flying site. Two of the club members, Martin and Andy Daglish, came first in the Northern Area Winter Rally Goodyear team race event held on January 23rd at Church Fenton, so there is plenty of good advice available for the new young modeller.

Write a line to Brian Carrington, of 44 Alderdale Road, Cheadle Hulme, Cheadle, Cheshire SK8 5PP, if you are interested in joining their club activities.

SCALE INDOOR NATIONALS

This will take place on April 24 at the Derby Municipal Sports Centre. A pre-entry registration fee of £2 is required by March 31 and a charge of £2 per event will be made. For further details see What's Happening opposite.

BRAMAH'S MFC

This small club in Sheffield has been in existence for eight years. Due to their location and size of flying field, they have tended to specialise in R/C gliders. Currently they are trying to revive interest in control line flying, so if you are in the area, why not drop Mr. R. Crompton a line at 131 Herringthorpe Valley Road, Rotherham, South Yorks.

The club also have facilities for indoor flying where they have RTP and rubber powered flying sessions.

International Aeromodelling Sporting Calendar 1983

28.9.-4.10.	*Goulburn, NSW* AUSTRALIA	FREE FLIGHT WORLD AEROMODELLING CHAMPIONSHIP
'OPEN' INTERNATIONAL EVENTS		
13-15.5.	*Breitenbach* SWITZERLAND	International Jura Cup F2A, F2B, F2C
14-15.5	*Pfaffikon* SWITZERLAND	10. Int. Militky Cup F3E — Gliders
14-15.5	*Genk* BELGIUM	Genk International Combat F2D
20-22.5.	*Genk* BELGIUM	Third International Indoor Contest Indoor Models
*11-12.6.	*Utrecht* NETHERLANDS	Criterium Midden Neder Land F2A, F2B, F2C
18-19.6	*Orleans* FRANCE	International Competition for Indoor Models, F1D, F1D beginner
*25-26.6.	*Marville* FRANCE	'Grand Prix de France 1983' F2A, F2B, F2C, F2D
22-24.7	*Zeltweg and Wolkartogel* AUSTRIA	15. International Kolibri-Pokal 1983 F1A, F1E
23.25-7	*Pecs* HUNGARY	Mecsek-Cup F2A, F2C, F3A
23-24.7	*Genk* BELGIUM	International Control Line F2A, F2B, F2C
23-24.7.	*Brno* CZECHOSLOVAKIA	International Competition, F1D
20.8	*Mostar* YUGOSLAVIA	23. Soko Cup F1A, F1B, F1C
20-21.8.	*Noizé* FRANCE	Sixth International Days for Free Flight in Poitou, F1A, F1B, F1C
20-21.8.	*Flémalle* BELGIUM	Seventh International Competition for Indoor Models (all categories)
20-21.8.	*Brno* CZECHOSLOVAKIA	International Competition, F2D
27.8.	*Livno* YUGOSLAVIA	7. Memorial 'Izet Kurtalic' F1A, F1B, F1C
3-4.9.	*Rixensart* BELGIUM	Eighth International Combat Contest F2D
3-4.9.	*Zulpich* FR Germany	Eifel-Pokal, F1A, F1B, F1C
*10-11.9.	*Breitenbach* SWITZERLAND	International MBZ-Cup, F2B, F2D
*13-16.9.	*Sofia* BULGARIA	International Competition F2A, F2B, F2C, F2D, F4B
23-25.9	*Salgótarjan* HUNGARY	Nográd Cup, F2B
24-25.9	*Goulburn, NSW* AUSTRALIA	Reg Allamby Memorial Contest Free Flight F1A, F1B, F1C, F1H
8-9.10.	*Taft, California* USA	Ninth California FAI Invitational F1A, F1B, F1C
8-10.10	*Bordertown, SA* AUSTRALIA	Bordertown International Fly-in Free Flight F1A, F1B, F1C
29-30.10.	*Bern* SWITZERLAND	3. Int. Freiflug-Wettbewerb F1A, F1B, F1C
15.10	*Zagreb* YUGOSLAVIA	19. Kup Republike F1A, F1B, F1C
15-16.10.	*Sacramento* USA	Seventh Sierra Cup F1A, F1B, F1C

AEROMODELLER INDEX

The 1982 index for Aeromodeller is now available, price 75p plus 25p post and packing (or include a large SAE), from Sales Dept., Model and Allied Publications Ltd., PO Box 35, Wolsey House, Wolsey Road, Hemel Hempstead, Herts. HP2 4SS. Note: all subscribers receive a copy of the Index free of charge.

1983 FREE-FLIGHT NATIONALS

The 1983 National Model Flying Championships — the 35th Nats — will again be in two parts. From May 28 to 30 the Spring Bank Holiday weekend, the world's biggest free-flight contest will take place at RAF Barkston Heath, near Grantham, Lincs., by kind permission of Group Captain R. L. Joyce, Officer Commanding, Basic Flying Training, RAF Cranwell. If you were not among the 771 entries last year, make sure you do not miss the Free-Flight Nationals this time; it is growing increasingly popular with flyers from abroad, and the SMAE has again invited members of SAM to take part with their vintage models.

The 17 events on the timetable are:

Saturday, May 28
10am start

HLG Trophy	Hand Launched Glider
Sparklets Trophy	CO2
British Airways Trophy	A/1 Glider
Hales Trophy	A Power
308 Trophy	Coupe d'Hiver

Sunday May 29
10am start

Thurston Trophy	Open Glider
Sir John Shelley Cup	Open Power
Model Aircraft Trophy	Open Rubber
Frog Junior Cup	Combined Open Rubber Glider Power
Women's Cup	Combined Open Rubber, Glider, Power
Lady Shelley Cup	Tailless
Jubilee Cup	Vintage
CO2 Scramble	
Hand Launched Glider Scramble	

Monday May 30
6am start

Ronytube Cup	F1A Glider (7 rounds)
Fred Boxall Trophy	F1B Wakefield (7 rounds)
Eddie Cosh Memorial Trophy	F1C Power (7 rounds)

Send a stamped addressed envelope to: SMAE (F/F Nats), Kimberley House, Vaughan Way, Leicester LE1 4SE, for entry forms and full details; SMAE members will receive theirs direct and will, of course, be able to compete and camp at a lower fee than non-members. Spectators will again be welcome, and camping will be possible.

If you do not fly free-flight yourself come to the Nats in May anyhow; you will enjoy widening your model flying horizons and be amazed at the performance of today's top free-flight aircraft and the techniques of the competitors at Barkston Heath. If you are under 13 come to the Nationals and fly your DPR Chuckie with the country's top hand-launched glider experts available to give you tips on getting the best from it.

BRITISH SPACE MODELLING ASSOCIATION

You may not know the flying of model rockets in this country is illegal. The recently formed BSMA are endeavouring to reverse this Home Office regulation. The association's aims are to establish Model Rocketry as a hobby in Britain, inform members of the availability of supplies, provide technical information required by members, establish suitable sites and organise meets, establish links with organisations in other countries and provide a British team to compete for international events, and to encourage educational aspects and its links with space science.

Anyone requiring further information should write to the British Space Modelling Association, 15 High Street, Ditchling, Sussex, BN6 85Y, England with an SAE

NLMFC SCALE AND VINTAGE DAYS

The North London MFC are holding their annual scale day on June 5 at their flying site near Baldock, Hertfordshire.

They will also be holding a Vintage meeting on July 3. If you would like to fly at either of these radio controlled meetings, contact Mr. Richard Barley at 44 Orchard Avenue, Berkhampstead, Herts.

What's Happening?

March 27
PETERBOROUGH MFC *1ST ROUND OF CLASS A BRITISH DIESEL* COMBAT CHAMPIONSHIPS. Venue: River Embankment. Contact: Brian Waterland Tel: Market Deeping 343722

March 27
2ND AREA CENTRALISED. *HALIFAX TROPHY — F1C POWER (PLUGGE POINTS), GLIDER, GAMAGE CUP — OPEN RUBBER.* Contact: Area Competition Secretary

March 27
CONTROL LINE EVENT *FAI T/R, GOODYEAR T/R, COMBAT (AND POSSIBLY AEROBATICS)* — All events to be organised by Sheffield CLAMS. Venue: Church Fenton — Start 10am. SMAE members only. Contact: John Godden. Tel: 0532 521002

March 27
WITHAM MAC *C/L EVENT FOR WITHAM CUP (STUNT) & CARRIER COMPETITION.* Venue: Braintree car park at the Essex Showground. Contact: Peter Burgess Witham 516881

April 3/4
EASTER CENTRALISED F/F. *SUNDAY F1A, F1B, F1C (5 rounds), MONDAY OPEN RUBBER, OPEN GLIDER, OPEN POWER*

April 10
WAKEFIELD MINI GOODYEAR '500,' 500 lap race to Wakefield rules. Venue: ABC steps, Thornes, Wakefield. Contact: G. Kelly, 1 Broadway, Lupset, Wakefield

April 10
SMAE C/L CONTEST *FAI TEAM RACE, A TEAM RACE, GOODYEAR, F2B NOVICE AEROBATICS, SPEED COMBAT.* Venue: Barkston Heath. Contact: R. Horwood Tel: Bristol 48769

April 17
CONTROL LINE EVENTS *FAI T/R, GOODYEAR T/R AND AEROBATICS*
FREE FLIGHT EVENTS O/P (PANNETT TROPHY), O/G (KAY TROPHY), AND VINTAGE DURATION (VINTAGE TROPHY). SMAE members only. Venue: Church Fenton 10am start. Contact: John Godden. Tel: 0532 521002

April 17
ODIHAM SPRING GALA — *FREE FLIGHT PLUS.* Venue: Odiham. Contact: Norman Couling

April 24
SMAE INDOOR SCALE NATIONAL CHAMPIONSHIPS — *PEANUT, OPEN RUBBER, CO2.* Pre-entry in all classes by March 31. Registration fee £2, fee per event £2, spectators £1. 10am-6pm. Venue: Derby Municipal Sports Centre. Contact: Doug Sheppard. Tel: Bristol (0272) 697595

April 24
ROLLS ROYCE (HUCKNALL) OPEN THERMAL (BARCS LEAGUE) EVENT at RR Airfield, Hucknall, Nottingham. Entry £1.50 and frequency to P. Knight, 10 Newfarm Lane, Nuthall, Nottingham. Tel: Nottingham 383551

April 30/May 1
EUROPEAN CHAMPS TEAM TRIALS PART 1 *F1A, F1B, F1C (seven rounds)*

May 1
SMAE SPRING SCALE EVENT FOR C/L CLASS 2. Venue: Old Croydon Airport. Contact: Vic Willson Tel: Reading 471964

May 8th
SMAE C/L EVENT *FAI TEAM RACE, GOODYEAR, F2B, NOVICE AEROBATICS.* Venue: North Weald. Contact: R. Horwood Tel: Bristol 48769

May 8th
PETERBOROUGH MFC *2ND ROUND OF CLASS A BRITISH DIESEL COMBAT CHAMPIONSHIPS.* Venue: River Embankment. Contact: Brian Waterland Tel: Market Deeping 343722 (Provisional) Phone before travelling

May 8
THIRD AREA CENTRALISED. WESTON CUP — F1B Wakefield, Open Glider, White Cup — Open Power. Contact: Area Competition Secretary

May 8
ROLLS ROYCE (HUCKNALL) LARGE MODEL FLY-IN. Venue: RR Airfield, Hucknall, Nottingham. Details: SAE to P. Knight, 10 Newfarm Lane, Nuthall, Nottingham. Tel: Nottingham 383551

May 15
PONTEFRACT AEROMODELLERS *VINTAGE COMPETITION.* Venue: Pontefract Park. Entry fee £1 payable on the day. Including Ben Buckle Texico Vintage event. Contact: J. B. Gate, 8 Valley Drive, Great Preston, Woodlesford, Nr. Leeds

May 14 and 15
BRISTOL AND WEST WOODBURY WEEKEND GOLDEN JUBILEE EVENT. Saturday 14: 7.9pm 'Champagne' fly-offs for OPEN RUBBER, OPEN GLIDER and OPEN POWER. Sunday 15, 10am start — OPEN RUBBER, OPEN GLIDER, OPEN POWER, VINTAGE PRECISION (S. BRISTOL RULES) and All-in FAI (five rounds) with a special prize of £30 for the top F1B flyer. Contest and accommodation details from Elton Drew, 2 Downfield Close, Alveston, Bristol BS12 2NJ. Tel: 0454 415092

May 15
TYNEMOUTH MAC F/F RALLY *F1A (FIVE FLIGHTS, NO ROUNDS), O/R, O/P, COMBINED MINI, VINTAGE RUBBER, MLG.* Venue: Albermarle Barracks, 15 miles west of Newcastle on B6318. 10am start. Silent flight 11am start. Power. Contact: Tony Brown, 32 Clayworth Road, Brunton Park, Newcastle on Tyne, NE3 5AB. Tel: 0632 362155

May 17
ODIHAM SPRING GALA F/F SCALE POWER AND RUBBER

May 21/22
THERMAL SOARING NATIONALS. Venue: Mallusk, Co. Antrim

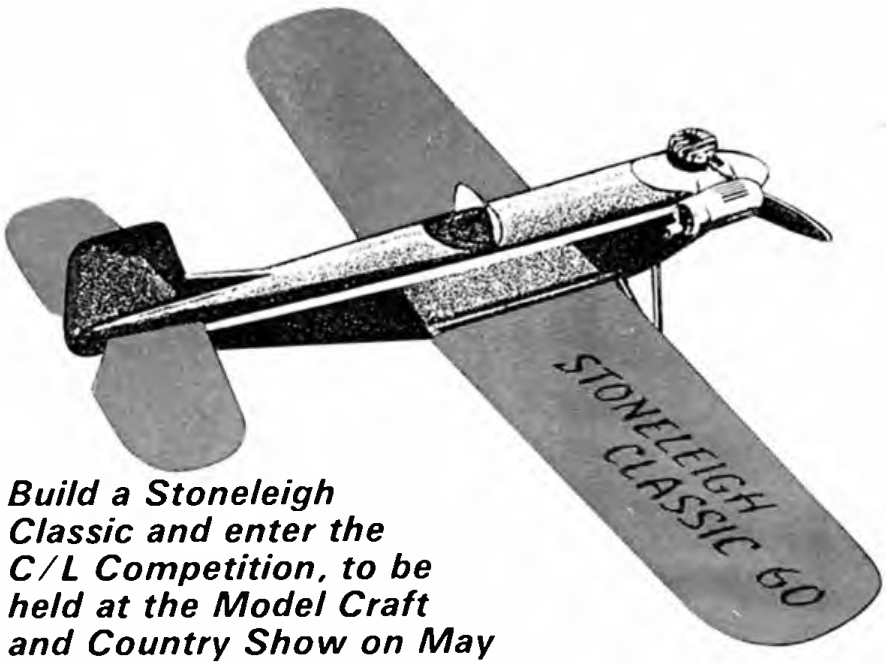
May 22
C/L NATIONALS. Venue: Craigavon, Co. Antrim

May 28/30
NATIONAL CHAMPIONSHIPS *MINI CLASSES 28th, FAI CLASSES 29th, OPEN CLASSES 30th.* Venue: Barkston Heath. Contact: D. Hipperson

May 29/30
HOLKER HALL SPORTS FLY-IN. Entries to the Secretary, HOLKER Estates, Cartmell, Cumbria

May 28
SMAE INDOOR EVENT. Contact: L. Barr Tel: 0628 25595

Full size plans in this issue



Build a Stoneleigh Classic and enter the C/L Competition, to be held at the Model Craft and Country Show on May 29 and 30. John Stroud.

HOW DOES ONE TURN an interested spectator of model aircraft flying into an active aeromodeller? My pet theory is that the popular demonstrations of expensive models very skilfully flown are the exact opposite of what is required. Whilst spectators of the latter will enjoy and admire the show, it always seems to me that they are unlikely to go away thinking that they too could take up the hobby. The skill and perhaps the money required are just too far out of reach.

It goes into the same category as I put ski jumping and motor racing — enthralling to watch but I could never hope to join in.

To encourage new modellers, especially the younger ones, I feel we need to demonstrate people of their own age group having fun with models which are not too advanced or expensive. Control line trainers fit this bill exactly. Not as expensive as R/C, building techniques are relatively simple, most people can get the knack of flying them and finally, the space required is fairly small. Stoneleigh Classic was designed for this task along the classic lines of the best trainers. The two sizes cover a wide range of suitable beginners engines and the model is simple to build and easy to fly.

For the raw beginner the '45' should be fitted with a 0.8cc engine and the '60' with a 1.5cc. Those who have already learned to fly should be able to cope with a 1.5cc engine in the '45' and a 2.5cc engine in the '60'. Because of the variety of engine sizes and weights which might be used, the nose as shown might be a little long for the heavier set-up. This will result in a balance point too far forward. Adding weight to the tail is much more effective and simple than to the nose, so I always try to err on the nose heavy side. The prototypes needed a little weight bolted to the tail skid to get the centre of balance as shown. Both were fitted with an undercarriage and the '60' also has a silencer. If you do not fit these items, the weight might not be necessary. My normal flying field is too rough for taking off and we need to resort to hand launching. Both models can be hand-launched and removal of the undercarriage will help avoid the model tripping up on landing. It also adds a few mph to the speed too.

I have built up a collection of sets of control lines over the years and now have all the lengths I need. When flying a new model I always select a set I think might be a little on the short side. It is easier to cope with a little giddiness than slack lines and an uncontrollable model. It is also a good idea not to use a full tank for the first flights on short lines.

Selecting the correct propeller size for a model can be difficult if the makers recommendation is not known. Using the wrong size prop can have a dreadful effect on performance. The easiest method is to watch others who are getting a good performance from the same engine and copy them. Even different makes of the same theoretical size propeller can give noticeable gains or losses in performance. The table I have given is a rough guide but experiment yourself with slightly different sizes and makes.

In the same way it is worth experimenting to find the best fuel for your engine. Both diesel and glow fuels come in different blends. Diesel fuel can be blended to give easy starting, higher performance or economy. Unless you are going in for competitions it is advisable to run on a general sports fuel as the engine is often easier to tune as well as start. With glow fuels the picture is slightly different. Most glow fuels contain some nitromethane to improve running characteristics and power. For the majority of engines 5% nitromethane is enough. However, a few types of engine run very poorly on fuel containing less than 15% nitro. This applies to most of the Cox range for instance. By all means try different mixtures but do not waste money on higher nitro than you really need. I usually buy a gallon of 5% as my standard mix and a small amount of pure nitro separately. By doing some sums on my calculator and borrowing the graduated jug from the kitchen, I can make up any brew I want to try. Above 25% becomes very expensive and is really in the realms of racing fuel. Be prepared to open the needle valve when using higher nitro fuel and to get a consequently shorter engine run.

Glow plugs and glow heads are often the subject of questions from beginners. All glow heads and some glow plugs are designed to work with a 1.5 volt supply. This can be obtained from an AD15 large dry cell or a large U2 sized alkaline battery (eg. the Duracell ones currently about 75p each). Both these are not rechargeable and in the long run work out rather expensive. Rechargeable 4,000mAh ni-cads which give 1.2 volts work very well indeed on glow heads. They are less satisfactory on some makes of 1.5 volt glow plugs, although there are ones specially produced for use with the 1.2 volt ni-cads. As a long term investment it is worth obtaining a 2 volt lead acid battery. This will cope with not only the 2 volt plugs but also the 1.5 volt ones if a length of bell wire is used as a dropper lead. Start off by making the leads too long, say 8 feet, and reduce the length until the glow looks a nice bright red, using a fully charged battery. The cost of a separate 2 volt or 1.2 volt charger can be avoided by using a car battery charger. A 12 volt 6 watt bulb in series with the cell will keep the charging rate down to just below .5 amps.

If you feel like building a 'Stoneleigh Classic', then get it finished in time to bring it along to Stoneleigh on either the 29th or 30th of May. Each day up to £250 in prizes is on offer for the best entrants below the age of 17 years. This is a fantastic level of sponsorship by the trade and should help to make it an interesting and successful event. I expect there will be time for non-competitive flights so you can bring along any control line 'plane and offer to fly at the control tent.

See you at Stoneleigh and help us to put on a good show.

STONELEIGH CLASSIC ENTRY FORM

Entry on the day will be accepted, but it will help us greatly if intending competitors fill in this form. It will also assure that you receive a gift from the sponsors on arrival at Stoneleigh with your 'Classic' model.

Stoneleigh Classic MAP Ltd. P.O. Box 35, Wolsey House, Wolsey Road, Hemel Hempstead, Herts. HP2 4SS.

Name .....

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Fold No. 2

This questionnaire covers all aspects of **Aeromodeller**. The information received will enable us to assess reader interest in the various departments of the magazine. Your co-operation in completing the form as fully as possible will be greatly appreciated, and will not only assist us in providing more exactly what the majority desire, but also help in answering the many trade enquiries that we receive, which, in turn benefits readers.

Fold No. 1

Aeromodeller Readers' Survey

Which categories of aeromodelling interest you?

(tick boxes)	Exclusive	Mainly	Occasional	Passive
Free Flight	☐	☐	☐	☐
Control-line	☐	☐	☐	☐
Radio Control	☐	☐	☐	☐
Scale	☐	☐	☐	☐

Aeromodeller intends to cater for readers' interests by publishing features on the following model types. Would you like to see *more* or *less* of each? Or, are you *satisfied* with the present editorial balance?

	More?	Less?	Satisfied
Free Flight			
Sport	☐	☐	☐
Scale	☐	☐	☐
Contest Power	☐	☐	☐
Contest Rubber	☐	☐	☐
Contest Glider	☐	☐	☐
Indoor			
Scale	☐	☐	☐
Tissue	☐	☐	☐
Microfilm	☐	☐	☐
R.T.P.	☐	☐	☐
Control-line			
Sport	☐	☐	☐
Scale	☐	☐	☐
Speed	☐	☐	☐
Aerobatics	☐	☐	☐
Team Race	☐	☐	☐
Combat	☐	☐	☐
Carrier	☐	☐	☐
Radio Control			
Sports Power	☐	☐	☐
Glider	☐	☐	☐
Scale	☐	☐	☐
Other Categories			
Vintage	☐	☐	☐
Plastics	☐	☐	☐
Waterplanes	☐	☐	☐
CO_2 Power	☐	☐	☐
Rocketry	☐	☐	☐
Unorthodox	☐	☐	☐

Help us to shape the editorial balance by indicating whether you would like to see *more* or *less* of the following general features — or are you satisfied as at present?

	More?	Less?	Satisfied?
Competition reports	☐	☐	☐
Trade News of new items	☐	☐	☐
Kit reviews	☐	☐	☐
Aircraft Scale Drawings	☐	☐	☐
Aircraft markings info.	☐	☐	☐
Scale Matters	☐	☐	☐
From the Handle	☐	☐	☐
Free Flight Scene	☐	☐	☐
Vintage Corner	☐	☐	☐
25 Years Ago	☐	☐	☐
Gadget Review	☐	☐	☐
Model News	☐	☐	☐
Book Reviews	☐	☐	☐
Engine News & Tests	☐	☐	☐
Full-size plans	☐	☐	☐
Plans Service features	☐	☐	☐
Championship Reports	☐	☐	☐
Aeromodelling technology	☐	☐	☐
Construction features	☐	☐	☐

Do you have associated interest in:

Photography? ☐ Electronics? ☐ Aviation? ☐

Motoring? ☐ Fishing? ☐ Sports? ☐

How many people read your copy?

Do you buy any of the following magazines? (R = Regularly; O = Occasionally).

	R	O		R	O		R	O
Radio Modeller	☐	☐	RCM&E	☐	☐	Scale Models	☐	☐
Aircraft Illustrated	☐	☐	Skyplane	☐	☐	Aeroplane M'ly	☐	☐
			Flypast	☐	☐	Model Airplane News	☐	☐
Model Builder	☐	☐						

Shopping

Do you buy your **Aeromodeller**

	Yes	No
Every month	☐	☐
From a:		
Model shop	☐	
Newsagent	☐	
on subscription	☐	

Is **Aeromodeller** the only modelling magazine you regularly purchase?

Yes	No
☐	☐

Do you buy most of your modelling goods from:

Local model shop ☐

Visit other areas ☐

Mail order ☐

You

How long have you been aeromodelling?

Less than one year ☐

1-2 years ☐

2-5 years ☐

5-10 years ☐

10-20 years ☐

Over 20 years ☐

Do you belong to a modellers' club? ☐

Are you a lone hand? ☐

Do you have a workshop? ☐

or do you use the 'kitchen table' ☐

Upon average, how much do you spend per month on modelling goods?

Under £15 ☐

£5-£10 ☐

£10-£20 ☐

£20-£30 ☐

Over £30 ☐

You don't have to give your name — but how much do you earn per year?

Under £3,000 ☐

£3,000-£6,000 ☐

£6,000-£8,000 ☐

£8,000-£10,000 ☐

Over £10,000 ☐

Age:

Under 21 ☐

Under 30 ☐

Under 40 ☐

Over 40 ☐

Family:

Single ☐

Married ☐

Children — if any ☐

	Yes	No
If yes, are they interested in modelling?	☐	☐

Thank you for filling in the above details. Now, in not more than 25 words can you provide a practical and *constructive* suggestion for making **Aeromodeller even better** — *the best suggestion - and we do need your name and address for this* — will be rewarded by a year's free subscription.

I suggest.....

.....

.....

.....

Name (BLOCK CAPS) .....

Address .....

.....

.....

ALL REPLIES WILL TREATED AS STRICTLY CONFIDENTIAL

25 YEARS AGO IN AEROMODELLER

By Dave Day

Cover photo this month was of the Lockheed T-33 Jet Trainer which was in fact, a tandem cockpit version of the well-known *F-80 'Shooting Star'*.

The final phase of the Wakefield Trophy controversy was recorded in the Editorial with the news that the SMAE Council had voted that it should be retained by the FAI.

You may feel that large models are a fairly recent innovation, but 'Hangar Doors' contained news of a fleet of outsized models owned by James Pappas of Indianapolis. A photo showed part of the fleet including a 25ft. 8in. span *Convair B-36* fitted with six Jacobsen two-stroke engines of 2¼ horsepower each and 4 Dynajets! All up weight was 300lbs. The owner was said to be 'thinking' of flying it under radio control. Also shown was a 60lb control line *Boeing B-50* and a half-size *Piper 'Cub'*.

A feature on full-size gliding holidays was accompanied by plans of a 54in. Slingsby T31 tandem Tutor by J. Wilson. Other plans service introductions for this month were the XL-56B, a 51in. span Wakefield by Radoslav Cizek of Czechoslovakia, which had an impressive contest pedigree; and a 36in. span ⅛ scale free flight model of the *'Arrow Active' Mk. II* by Flt. Lt. E. H. Norman for 1cc diesels.

Also included were ⅓ full-size dimensioned plans of the *'Ebenezer'* a 20in. span all sheet biplane for small motors *(see below)*. Best Striegler's design took the country by storm and remained popular for many years after. (Plan below).

'Famous Biplanes' No. 14 featured the *RE8* ('Harry Tate') by G. A. G. Cox. This had the usual page of detail sketches which we came to associate with this feature.

'Aircraft Described' No. 91 described George Myer's home-built aerobatic biplane *'Little Toot'*. Interestingly, before building the prototype, George built a 1/24th scale model of all metal construction. Sadly, George died earlier this year.

'Lactron or Dunlop' by A. W. R. Alexander and R. Benson compared the merits of round section Hungarian rubber with its British equivalent from the Dunlop Rubber Company. The main conclusion reached was that the Hungarian rubber was lighter for the same cross-section and power output.

Regular readers of this column may have gained the impression that I find the Radio Control content of Aeromodeller at this period rather amusing. This might be true were it not for the fact that I can remember absorbing every word with great interest. Most branches of the hobby have merely undergone refinement in the last twenty-five years whereas the electronics industry has progressed by an unbelievable amount.

Thus in 'Radio Control Notes' by Howard Boys, we find one of those incredibly ingenious schemes for getting two proportional channels from a single channel on/off radio system, plus notes on the importance of quench coils and constructional notes for a magnetic actuator.

'Engine Analysis' No. 46 by Ron Warring analysed the Fuji 29 glow motor of modest performance which produced 0.4 BHP at 12,400 rpm. Ron described it as 'a docile engine'.

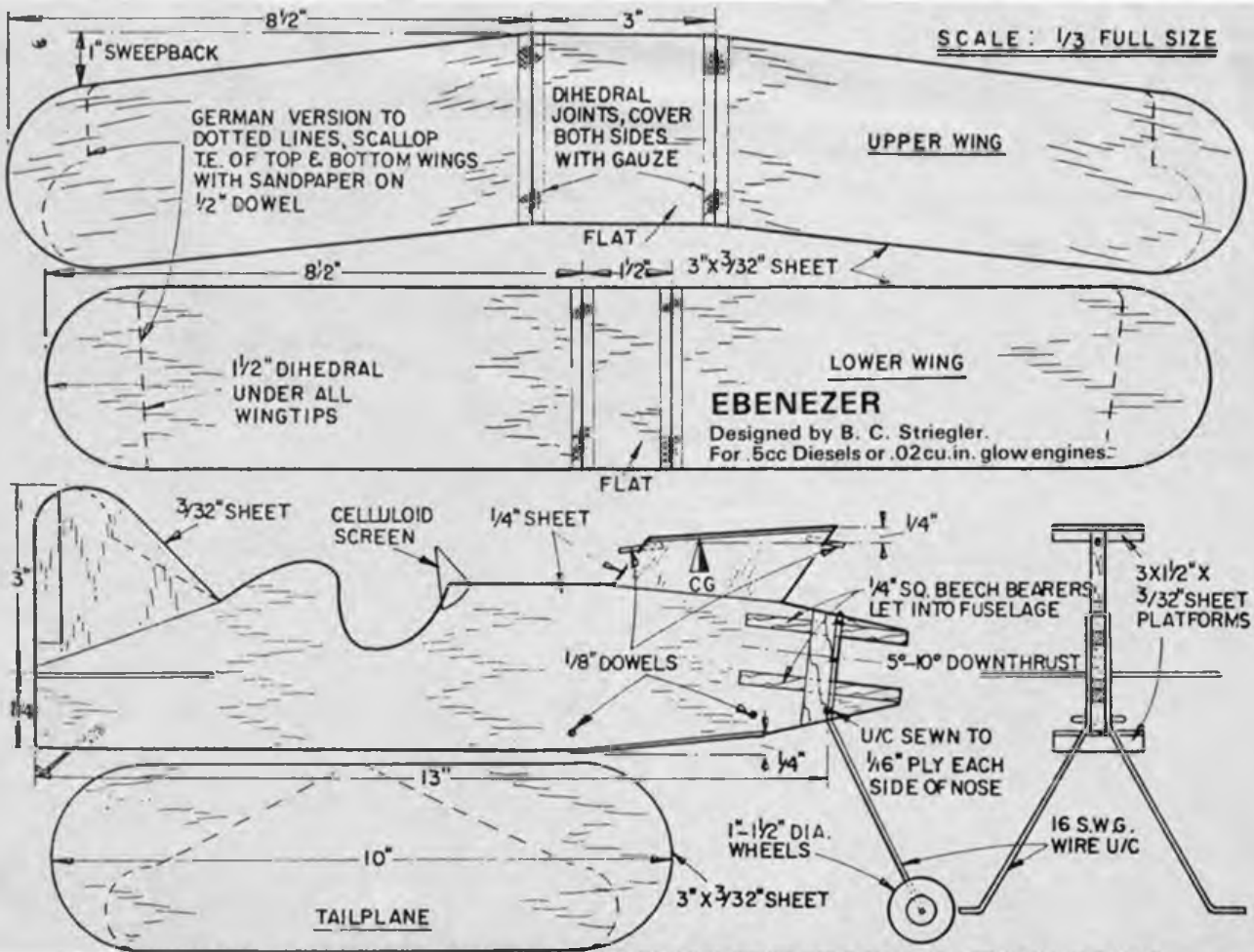
'Trade Notes' contained news of a new innovation from 'Mercury' — an epoxy fuelproofer. *Three* bottles were supplied and the model had to be left for one week before exposing to fuel!

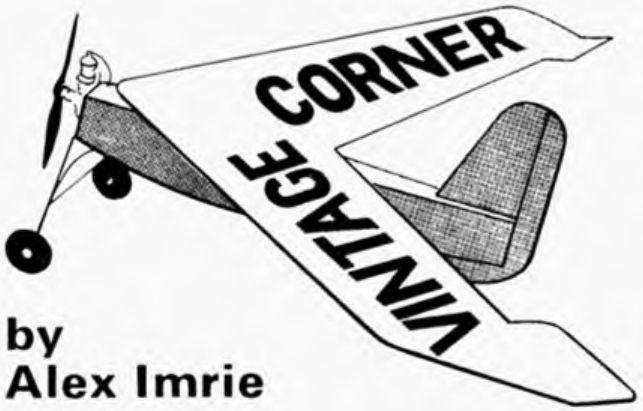
'Gadget Review' showed how to make laminated three blade props (bang up to date for stunt fliers), several useful hints on tip-up tail dethermalisers and do-it-yourself turnbuckles.

'Decor Detail' had colour notes and unit insignia for Japanese aircraft, plus some interesting shots of German Albatroses and a rare shot of Manfred von Richthofen seated in a Roland DIII.

Finally, a tale from Hangar Doors concerning two members of the Larks Club flying two *'Astro-Hogs.'* One model was seen spinning into a field some distance away while both pilots concentrated on the one overhead. Only a safe landing of the one model (by both pilots) finally convinced one unfortunate modeller that he had been flying the wrong model.

In case you are wondering — yes, I've done it too!





by Alex Imrie

Bill Mackley of Auckland with his 6ft wingspan, Baby Cyclone powered 'T-Tailed' Venus built and flown before the war, recently renovated and made airworthy

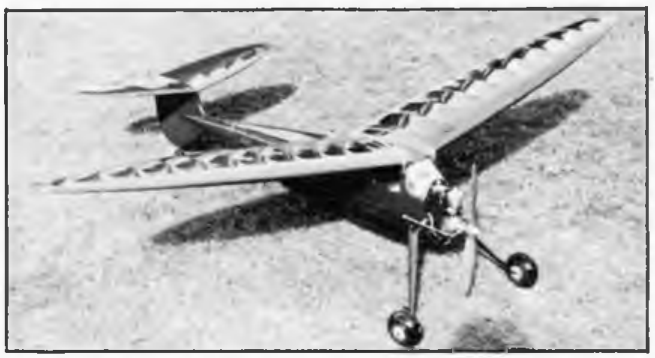
A KIWI STORY

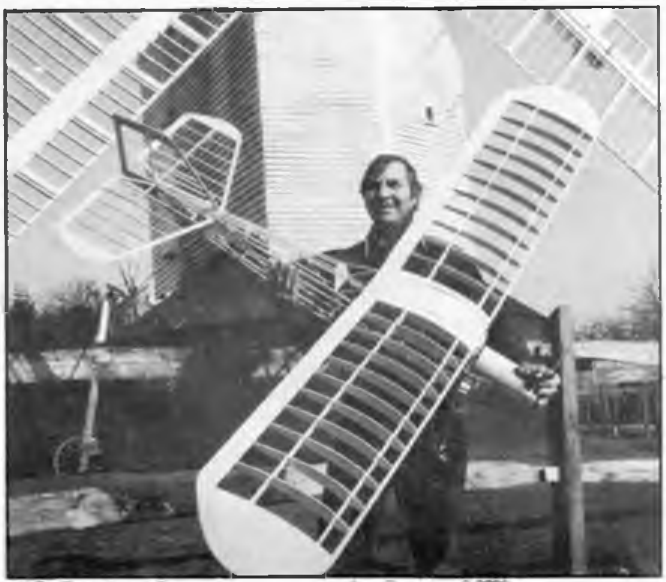
When the boy across the street in Auckland, New Zealand began to build model aeroplanes in 1929, fourteen year old Bill Mackley got the bug and he is still at it today. His first model was constructed from pine and was covered with tracing linen, but he was stumped by the carving of the propeller, and his model never got off the ground. Aviation had first really been brought to Bill's attention some 12 months previously by the first aeroplane flight to New Zealand from Australia carried out by Kingsford Smith's three-engined monoplane Southern Cross, only three months after its great trans-Pacific flight from Oakland to Brisbane. New Zealand became air minded almost overnight, and many found an outlet for this enthusiasm in the building of model aeroplanes. A series of articles on the hobby written by a Fred C MacDonald began to appear in a Saturday newspaper and they were closely followed by Bill. He then entered the official contest sponsored by the paper, which had published the plans for a thirty inch span stick model named *'Steady Jim'*. This model was of spruce construction with bamboo ribs in its single surfaced silk covered wing, it was too heavy to fly well, and in the competition Bill's model only managed 17 seconds. The winning model was flown without wheels, its builder having substituted a skid undercarriage. Bill Mackley then joined the Auckland Model Aero Club which had been formed in 1928, and by 1930 he was using balsa and building designs that were published in the American magazines of the day. He must have been a 'natural' since even at this early date, he was clocking durations of around 60 seconds.

He lived and breathed model aeroplanes, being totally engrossed in modelling to the exclusion of everything else including school lessons! His ability was such that he became the chief designer and assistant manager of a company called Modelair Ltd, that had been formed to meet the demands of the many New Zealand model builders. The owner was none other than Fred MacDonald, the Saturday newspaper modelling writer!

Bill made the first official flight of over five minutes in New Zealand when his *'Yellowbird'* hooked a thermal and flew for five minutes fiftythree seconds. By 1935 modifications to the basic design had produced a slabsided model with RAF 32 aerofoil section wing which used the then popular undercambered tailplane, and this machine led to the *'Redbird'* in 1936. Doubts had been expressed in Bill Mackley's hearing about the use of a diamond section fuselage, eventually a bet was made about the feasibility of this and Bill won the bet by making the *'Redbird'* with such a fuselage. Produced in numbers by Modelair both of these rubber driven models became famous New Zealand designs, and were partly responsible for the

Top right Julie Scott with husband Doug's Banshee which will be powered by an Ohlsson 23 ignition engine. Right it is hard to tell where Doug Scott's Buccaneer stops and the windmill sail begins! Model now completed and is powered by a Brown Junior ignition engine. Below Venus in its original form fitted with the Model F Baby Cyclone

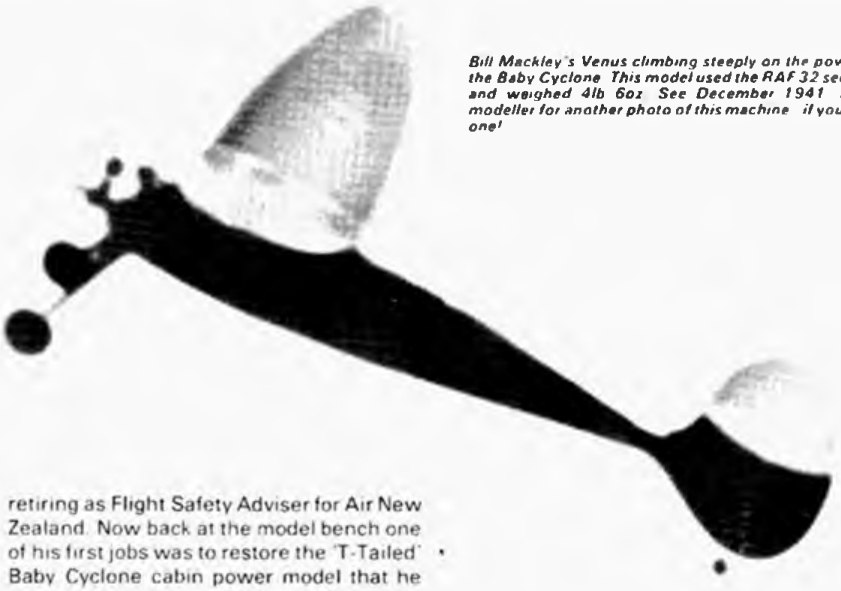




number of active New Zealand modellers rising to over 2,000 by 1939.

About this time he took over the leadership of the Auckland Model Aero Club and although fully occupied with this and his Modelair activities, he still found time to learn to fly on a DH Gipsy Moth with the local Aero Club. Bill Mackley built every kind of flying model, and his indoor hydroplane record for New Zealand with a time that was better than the then world record for this class of model was unfortunately not officially recognised as a world record. Having obtained a Baby Cyclone petrol engine, he soon had a power model in the air. This was a clean parasol design of 72 inch wingspan, and later by using the same wing and tail he evolved a neat cabin design. This Baby Cyclone powered cabin model is not unknown to UK vintage enthusiasts, since it was illustrated in the December 1941 issue of *Aeromodeller*.

His modelling activities now became sporadic due to concentration on full-size aviation, he joined the RNZAF at the outbreak of War and eventually came to this country and did a tour of operations flying Whitleys in Bomber Command. Other flying tours followed and he continued to fly as an airline pilot after the war, recently retiring as Flight Safety Adviser for Air New Zealand. Now back at the model bench one of his first jobs was to restore the 'T-Tailed' Baby Cyclone cabin power model that he had left behind when he went off to the war in 1939. Currently his model interests revolve around electric R/C and CO_2 but with a lovely lake in his backyard his thoughts are already turning to R/C water-planes, and we look forward to hearing of the next design from this New Zealand pioneer's drawing board, as well as to more details of his early modelling days.



Bill Mackley's Venus climbing steeply on the power of the Baby Cyclone. This model used the RAF 32 section, and weighed 4lb 6oz. See December 1941 Aero-modeller for another photo of this machine if you have one!

Left: this model was originally built during 1935/36 by Fred Rising, who powered it with a home made Westbury Kestrel 5cc petrol engine. The 66in span renovated model is now owned by A Askew and flown under radio control it relies on glow plug power, seen here at last year's Nationals.

Below: it is not generally known that Joe Elgin designed the Playboy series of models in 1939 that were kitted by Cleveland. Here he is on the right with P. E. Beck's Playboy Senior at Wright Air Force Base during the SAM Champs a few years ago.

SAM 35 YEARBOOK

If you like the chatty SAM 35 SPEAKS, you are bound to like the new Yearbook, which is more or less like a "Bumper Annual" of the monthly issues. The historical accounts by C. E. Bowden, Reg Parham and Mike Kemp are all pleasingly presented in different styles: Colonel Bowden's 'doings' are at once well known to readers of early *Aeromodellers*, but it is interesting to read the extra detail that he has included in this narrative of his overall view of a lifetime of aeromodelling, dating back to before the First World War. The 'Indoor Story' by Reg Parham is a concise history with beautiful little dimensioned 3-view drawings of models that marked milestones in this fascinating section of the hobby, from Alphonse Penaud's beginnings in 1871 to the 30-minute flier of 1948. The development of the Nordic brand of Wakefield model makes a nice study and is well presented by Mike Kemp, who, of necessity, takes the story beyond the recognised vintage limit for completeness. Additional subjects include, SAM in New Zealand, SAM in Germany, Banshee Fireball, and Rubber Motors, a goodly assortment, and there is much more.

The selection of plans include four rubber driven designs by the late Vernon A. Boehle of Indianapolis, a prolific model builder and contest flyer in the 1930s who later served in the famous Eagle Squadron as a Spitfire pilot. Why the name of Mr. E. W. Twining, who designed the 'T' frame twin pusher, a 3-view drawing of which appears on page 84 was omitted, I do not know. Also it might have been opportune to have differentiated between the *'Wakefield Gold Challenge Cup'* that this machine won on July 5 1911, and the later *'Wakefield Cup for International Competition'* first competed for on September 29 1928 and won by Mr. T. H. Newell with his Falcon.

While appreciating that the three sheets of fold-out drawings at the end of the book are small scale versions of Terry King's fine draughtsmanship, it seems a pity that these are completely devoid of measurements. Dimensioned drawings have always been a popular feature of all 'Yearbooks' and many modellers build from this data. Would-be builders must have these figures or else buy the full size plans, so the catalogue treatment of these three drawings, is in my opinion, a retrograde step. Some of the other plans have been 'changed' for ease of reproduction, possibly the most serious case is Leon Schulman's Skyscraper. At the time he designed this model Schulman was involved in important experiments with aerofoil sections, and to retain the authenticity of this design it is essential to use the correct one. Grant -M2 is written across the wing plan in the Yearbook, when in fact this machine used a 'Modified Grant -M2-10' (Note: modified by Leon Schulman) at the wing root, which was

Left all spruce structure, papier-mache wheels and freewheeling propeller all combine to give Alan Crompton s Jackdaw a really convincing look. Above Alan s Jackdaw II built completely as per (see text) appropriately registered G-AEIN. Below close up of the Jackdaw stern showing the motor anchorage

Below right unknown modeller lets her go! Can any reader please tell us, who, what, where, when?

changed in a special way as the chord decreased towards the wing tips.

The foregoing comments are not meant to be 'nit picks', but are given as constructive criticism and I trust will be accepted as such. I was honestly disappointed to find errors and short comings that could have been avoided with just a little more care. On the other hand there is no excuse for calling the *Voetsak* a Defender, or for mis-spelling the late John Haggart's name.

All things considered the varied contents of this nostalgic compilation by Dave Baker is a good effort and well worth having, copies can be had direct from Tony Hogan, 7 Crowborough Close, Warlingham, Surrey for £3.40 postage paid.

JACKDAW 'AS PER'.

The fact that some contributors to Vintage Corner decided to 'improve' some of the features of *Jackdaw II,* has prompted Alan Crompton of Radcliffe near Manchester to reply in practical terms on the details that some claim to have improved. He also notes that no one yet has put up any flight times that have come near to Rupert Moore's creditable performances, and has submitted the following notes on his adherance to the "design and conception of an original thinking man".

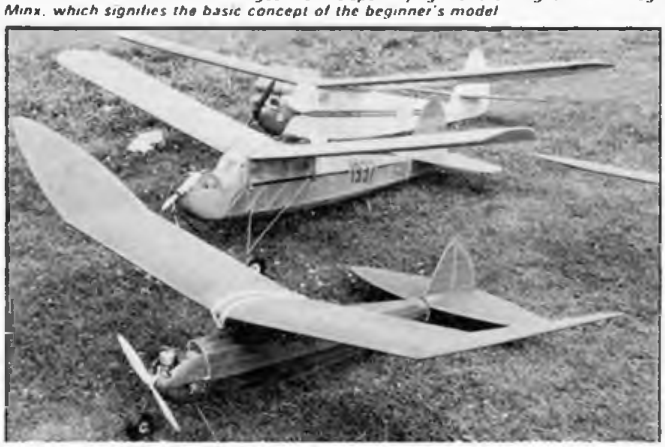
"Spruce was used throughout as advocated, unobtainable $\frac{1}{64}$in and $\frac{1}{32}$in sheet was produced from $\frac{1}{16}$in sheet by sanding down. Rupert Moore's method of making wheels out of newsprint was followed closely, the result being a scale wheel of exceptional lightness . . . $\frac{1}{2}$oz per pair! The covering employed was red and white Japanese tissue, bringing the total weight to a modest 5$\frac{1}{4}$ozs.

The designer's idea for wing fixing is so simple and its shock absorbing qualities are quite remarkable, it is also possible to alter the incidence of each wing.

His freewheel design is well worth the trouble to make, removing the need of wire hinges as well as retaining a scale appearance. Contrary to expert opinions the rubber motor anchorage has *proved* to be of sound design with a clean appearance, and an added bonus is the ability of being able to adjust the Centre of Gravity.

The Jackdaw II design was the result of many years experience, all the design details were tried and tested, sometimes to destruction. We should make the most of such designs without recourse to *improvements.*" Well done Mr. Crompton. Full Marks!

Below three models from the Humphrey's stable, left to right Simmons Gas Champ (Model Airplane News December 1940), Bob Jeffrey's Standby (1938 Zaic Yearbook), and Elbert Weathers Westerner (Model Airplane News May 1938). Right Vic Dubery, the new SAM 35 Chairman indulges in some sport flying with the delightful little Frog Minx, which signifies the basic concept of the beginner's model.



1982 OPEN RUBBER AND WAKEFIELD WINNERS

Both models designed and described by Dave Hipperson

IN AN IDEAL WORLD the Wakefield and the Open Rubber model would be one and the same thing but many years ago the FAI thought they knew best and imposed rules to govern their International rubber duration contests and since then the two disciplines have evolved on divergent paths. The Wakefield formula of today being so pinned down by rules that most of the incentive, or need, to experiment with structures and layout design has been quashed. In the Open class the challenge is happilly still there to reduce weight and increase power without weakening the structure to the point of impracticability. Configuration and size possibilities are virtually endless too — much more encouraging when one sits down to commit oneself to 50 or 60 hours building!

It would be an understatement to say that these two designs were not dreamed up overnight. True the general configurations were arrived at fairly quickly — a couple of seasons experimentation — but since then many years of 'fine tuning' have brought them to their present stage. After actual duration considerations the next most important factor was that the models perform as consistently as possible. To this end gadgetry and unnecessary fanciness were avoided. Many people use frills for the sake of it often to the detriment of performance. The one that springs to mind is the ultra short nose idea with prop blades folding under the wing. If a Wakefield of mine ever has the blades so much as touch the wing or pylon leading edge on folding I cut the tips off so they don't! Its hard to bring yourself to do this to finished eliptical blades but by doing so you beat a dozen or so people a year before you even enter. Variable incidence tail (VIT) is held in a low regard for similar reasons of unreliability. Flying at rubber model speed, VIT isn't really necessary although in winds above 15mph it would be useful to reduce the looping tendency at launch but in terms or duration, even in wind, they have no advantage. Remember, in the history of the Wakefield World Championships only once last year — has a VIT equipped model ever won.

Jedi Knight (Wakefield)

This Wakefield retained a conservative square tip shape until a year or so ago when tapered tips were experimentally tried and hence higher aspect ratio more as a concession to fashion than as an attempt to improve what was already considered a very good glide. (The square tipped model is identical in section and construction but uses a shorter 48in. parallel chord wing and a corresponding slightly larger and once again parallel chord tail). As is often the case the experiment proved a reversal of what was expected as the taper layout immediately improved thermal stability whereas the old layout had been prone to being pushed 'out' when really strong lift was encountered. What was more useful the two piece wing — necessary to fit the existing F1B model box — proved much more convenient in windy weather when retrieving. Thus this taper layout designed to satisfy the need for something that looked the part in calm and liftless conditions and dare I say — flyoffs — has actually been adopted for all weathers. The remaining square tipped models have been re-trimmed closer to the stall for still air!

Construction

The latest model No. 13, of which this is the plan, has a rolled and wound balsa motor tube. The sheet blanks are thoroughly water soaked and the inner straight tube is wrapped around and dried on a suitable diameter former removed and its seam stuck. The outer $\frac{1}{32}$ sheet, a piece 4in. wide and very light, is also wound wet around the same former but at a 45° angle. When dry it can then be slid off and easily expands that bit to wrap around the $\frac{1}{16}$in. inner tube which is liberally covered with PVA type glue first. The rear tube is composed of two identical $\frac{1}{32}$ sheet cones formed wet on a mould, dried and seamed. One is then covered with thinned PVA and pushed inside the other. The flying surfaces are straightforward as are the prop blades. The nose assembly is turned from Rock Maple and has little aerodynamic advantage over simple bent wire but does have the advantage of protecting the prop shaft from bending.

Covering

The inside of the fuselage is not treated with anything at all. There is nothing softer nor less likely to damage a rubber motor than raw balsa and lubricant penetration has never been a problem — some wood fuselages have lasted 10 years. Outside it is covered with Modelspan as are the prop blades. The rear boom and the remainder of the airframe is covered with light Jap. All warps, or rather lack of them, are initiated at the water shrink stage and dope is applied when the tissue has dried in two or three thin coats — enough to allow flying in, and long exposure to, rain.

Trim

With warps, incidences and CG as shown and perhaps a strip of $\frac{3}{32}$in. square stuck to the starboard side of the fin the model should be very close to trim. Two or three flights should complete rough trimming and then attention can be spent on perfecting the glide and re-setting the power trim. Don't be tempted to take the glide too near the stall as most flying will be done in breeze and thermals which could upset a close rig. Glide circle diameter is important — nearly everyone has too tight a glide turn. As a general rule if the wings are banking the turn is too tight. Circles of 40 seconds are usually about right. With the relatively high pitch prop and moderate cross section motor the climb is not as fast as a short run model but it gets higher by climbing for longer. This has the added beneficial effect of centring into lift better and also making power trim less sensitive.

First flights are usually safe on $\frac{1}{3}$ turns as long as the glide is correct and the thrust line as per plan. The only real danger is too tight a power turn at this stage. Final trim is usually one and half steep climbing turns in about 15 seconds then a climbing cruise for abother 25 secs and 10 seconds of cruise before the prop folds.

Jedi Knight Wakefield model

Sue Hipperson with Skywalker 130

Skywalker 130 (Open rubber)

This rubber class is at an interesting stage. At last the penny has dropped that large models fly for longer than small ones in calm conditions although it is arguable that a smaller more compact set-up is more convenient for reaching the flyoff. The Skywalker 130 — with its 310 sq.inch wing is a flyoff model. Its glide and distance visibility in the air is better than most. It has a duration of 7 minutes in still air, as long as the weights are somewhere inside the suggested brackets and reasonable rubber is being used. Just in case you are tempted to greatly reduce the weights quoted, a word of caution. I have two lighter versions — No. 8 which I have had 3 years and still has to be fully assessed and could easily be only slightly better than its predecessors that weigh 40 grams more and certainly more difficult to handle. It has still only had one contest flight.

The superlight model No. 7 which incidentally uses only 100 grams of rubber

Jedi Knight tail unit in D/T position. Note trim adjusting screw.

Rear boom to motor joint of Jedi Knight. Glass fib·e tube fitted to both units for tight location and locked by motor peg.

Prop fold and timer arrangement on Wakefield.

and has a 19 gram wing is definitely a high performer but can only be flown in flat calm, it has folded its wings twice on DT and still after 4 years has not been trimmed enough to risk in a contest flyoff! The last thing you want is an aeroplane you can't use, *build it strong enough.*

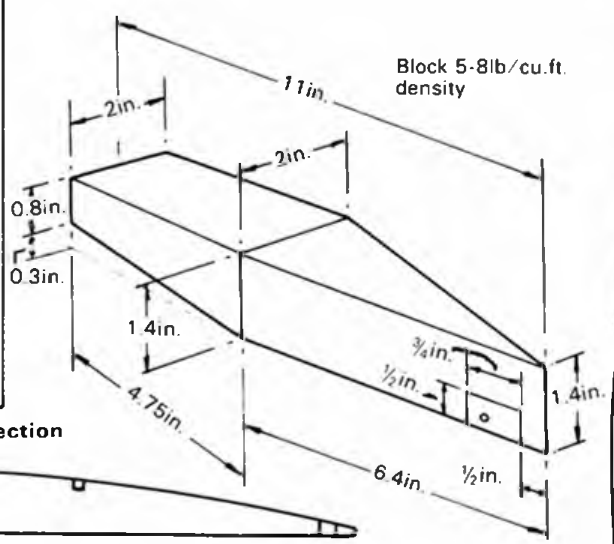
Construction and Covering

Construction is straight forward but don't be tempted to use Jap on the fuselage as it is only marginally lighter than Modelspan and shortens this components life considerably, as it does not take kindly to being soaked in lube. What is more — Jap tends to slacken off in damp evening air no matter how well doped and although this is quite acceptable for the wing and tail to have the fuselage slacken will allow it to twist despite the Warren bracing. Once again warps are set at the water shrink stage and the finished flying surfaces should be observed for a few weeks after construction so that they are known to be steady. This is a model you will need to be able to use at a moments notice — you can't guarantee you will have time for a check flight.

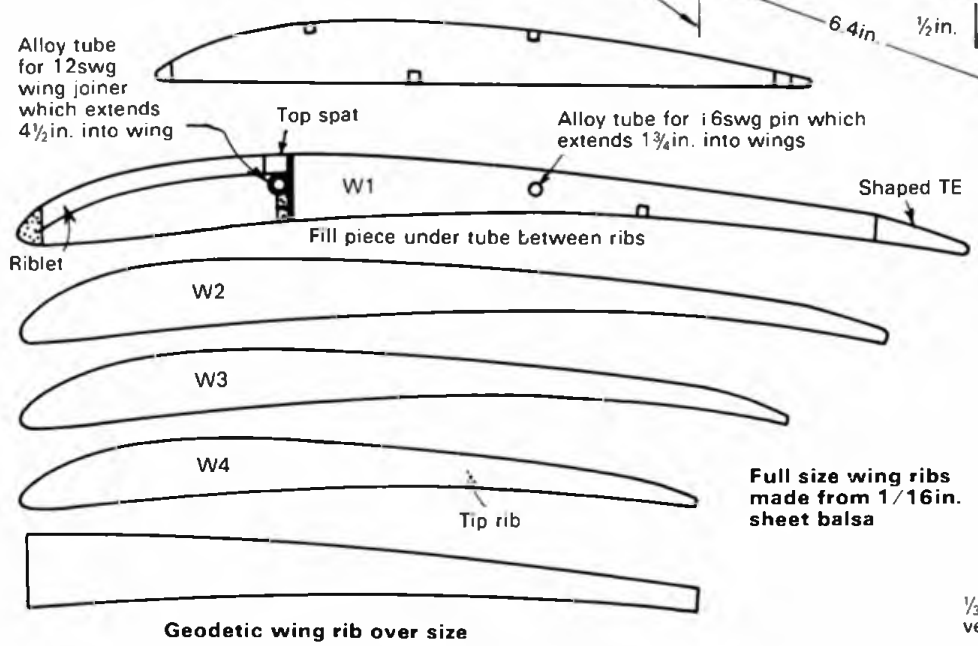
Trimming

A rather more nervous affair than with the Wakefield as it is considerably more frail. I have found that the motor distributes itself quite differently after it has been wound to full turns and unwound through the prop than when it is loaded and simply wound sufficiently to hold tension. Therefore, it is best if the model is trimmed on old, well used rubber and would to near full turns and allowed to run down even for the initial hand glides. This will seem an enormous chore at the time but it will save you time as otherwise you may approach the fully trimmed state after numerous flights only to try full winds and a long DT one calm evening and have the model stall all the way down on the glide. Actually the insertion of a piece of lead in the tail for these early check flights might be another way around the CG shift problem and save wear and tear on you and the motor. I have found the CG can move ½in. to ¾in. so that should be a guide as to how much ballast to use. It is vital that this model is perfect on the glide as it is here that it scores. Adjust glide turn with tab on the fin to give large circles (60 secs isn't too big although it will look it) and as close to the stall as possible.

Prop. 22in. dia. x 28in. pitch. Section flat bottom or slight undercamber. Blades approximately 3/16in. thick at about 2in. diameter and tapering to tip.



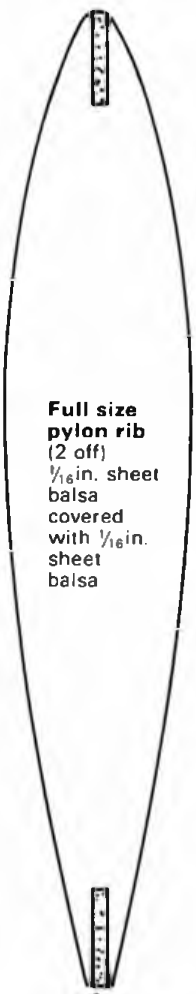
Full size tail centre section



Full size wing ribs made from 1/16in. sheet balsa

Geodetic wing rib over size

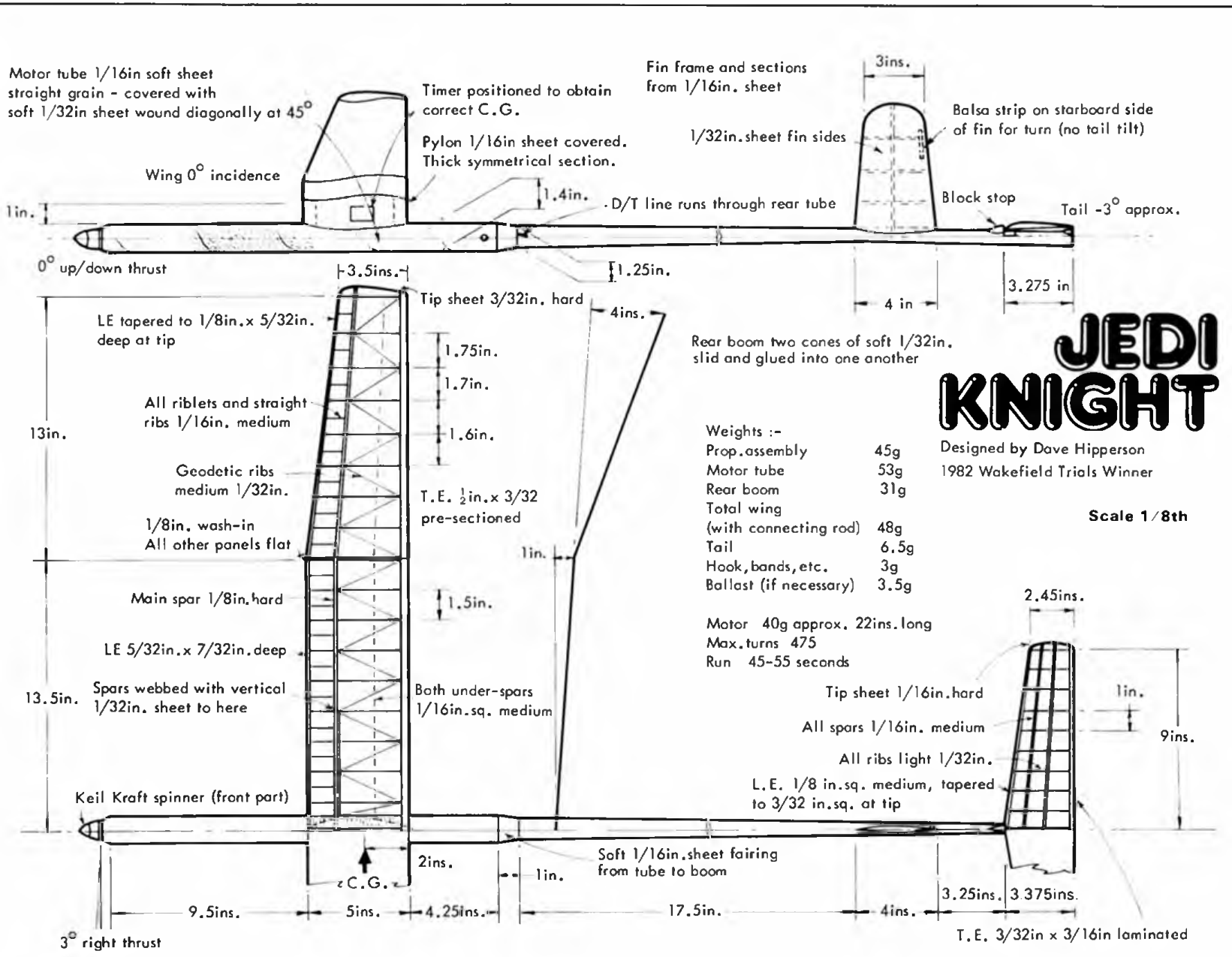
Root fin rib section full size



Full size pylon rib (2 off) 1/16in. sheet balsa covered with 1/16in. sheet balsa

Covered with 1/32in. balsa sheet

1/32nd sheet verticals front and back



Wakefield wing half with wire joiners in position.

Open Rubber pylon wing mount.

Skywalker 130 fin and tail mount.

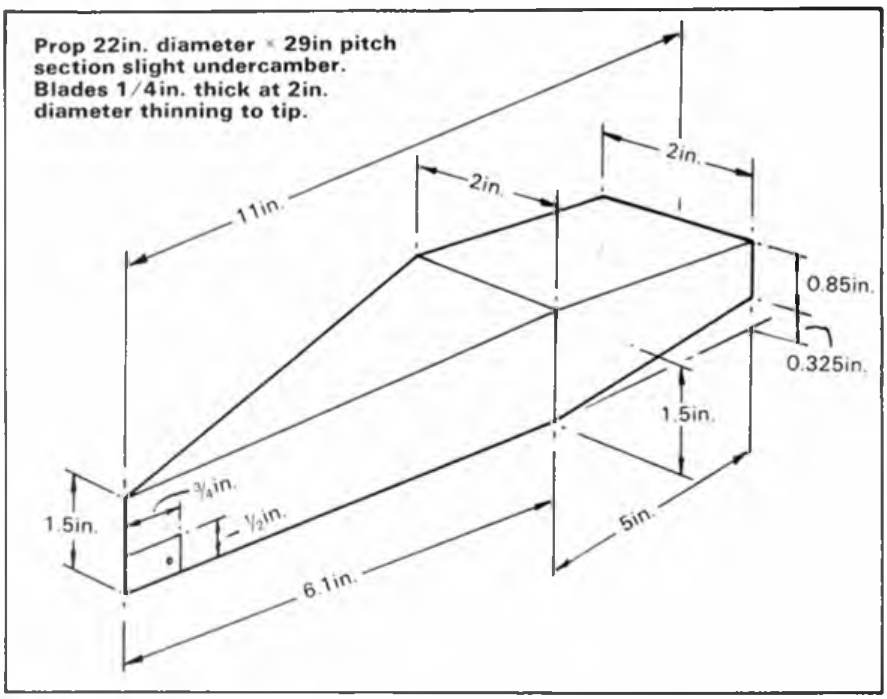
The power trim has never been a problem with a run of around 2+ minutes the first burst is healthy, but not uncontrollable particularly if the warps and dihedral are as per plan. First power hops should be made after you are happy with the hand glides and after winding to ½ turns and allowing 60 secs of run to unwind. Really careful checking of the thrust line to the plan, should avoid any nasty low level stalls. As you progress simply launch the model earlier through the run down until you are flying on the completely full turns. Don't let the power pattern tighten up too much as it will tend to on full winds. The final pattern should show two fast climbing 15 secs turns and then a steady climb for another minute and 30 secs climbing cruise to prop fold.

Contest Record

The Wakefield series won the Trials last year and the Open model won the Nationals. There were other successes in 1982 as well but the best impression is obtained from examining their performance over the past few years. There are no trophy awards for Open Rubber SMAE or otherwise currently on the calendar that the Skywalker 130 has not won and the Wakefields have lifted every domestic SMAE F1B award. It has also the distinction of now having qualified on three consecutive occasions for the British World F1B Team. I only wish I could list its successes at the relevant WC, but due to various circumstances the Team places have never been taken up.

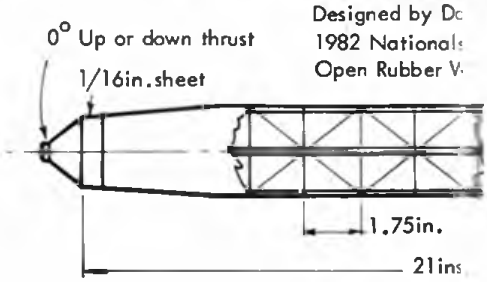
Future

With the increasing reliability of ground based thermal detection methods there seems little incentive to further develop the Wakefield. The Skywalker however is not the end of the road. Bigger models than this have flown successfully in the past few years and a larger version is planned. There does seem to come a stage however, where the usual power/weight ratios necessitate enormous rubber motors if the structures are not kept down very light. Then come the handling problems so their usefulness is limited to special occasions. The Skywalker 130 will fly well in any wind up to 15 mph. Good flying and may the 'Force' be with you — particularly at flyoff time!



SKYWALKER—130

Designed by Dc
1982 National
Open Rubber V

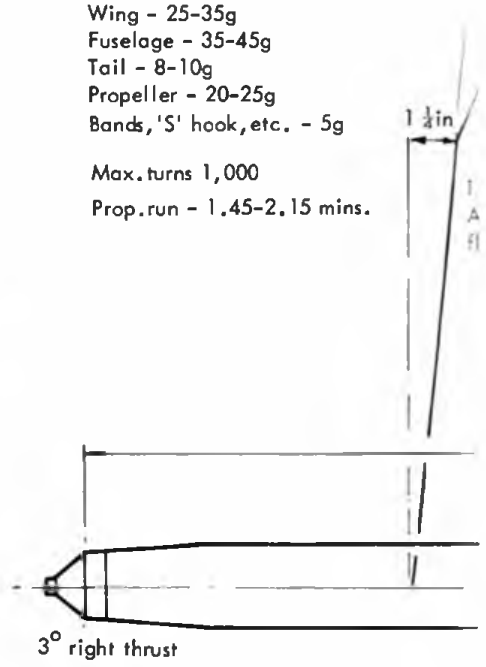


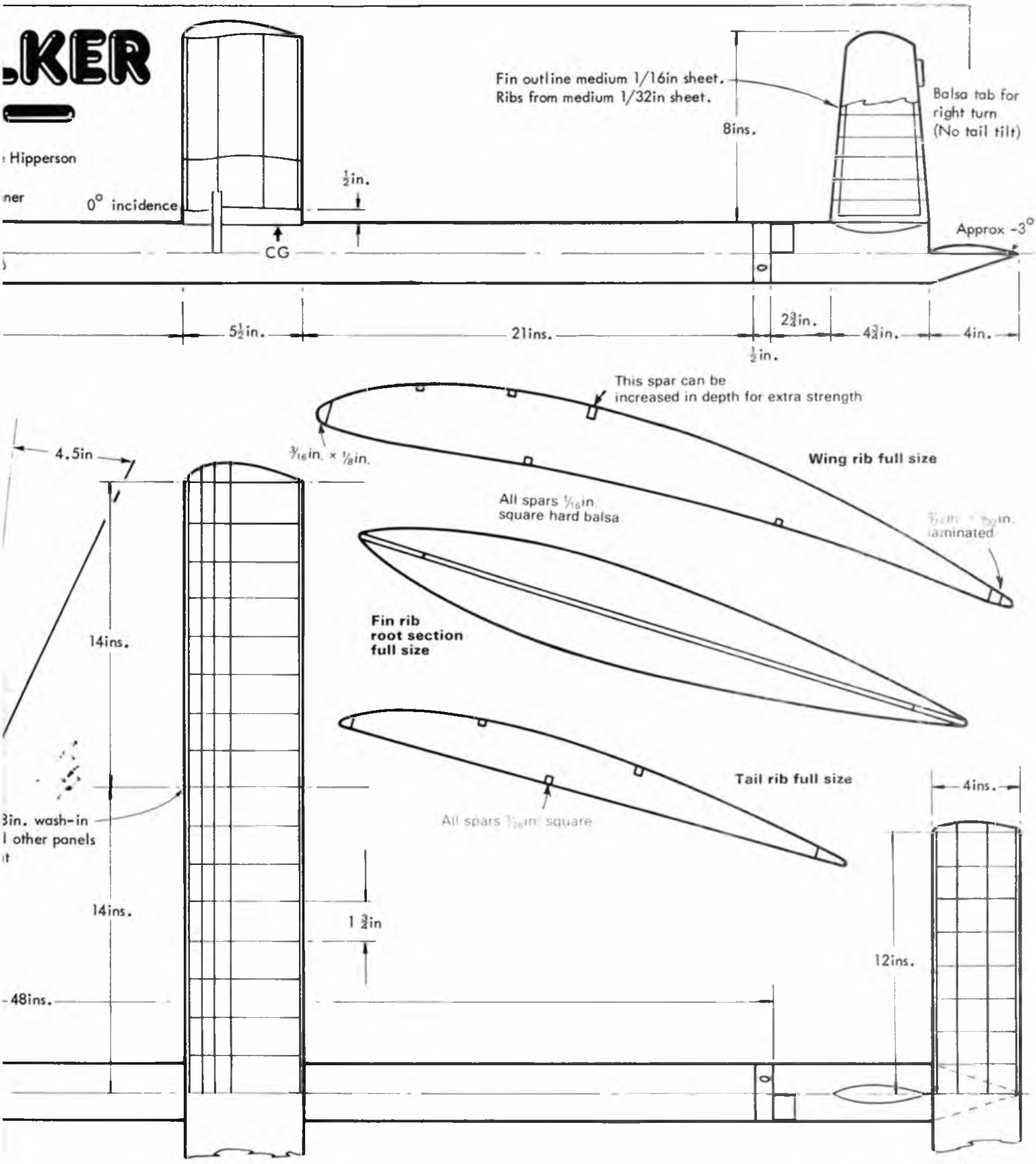
Scale 1/6th

Nose 1.70in. square
Fuselage 2 3/16in square
Longerons 3/32ins. square
Spacers 1/16in. square
Diagonals 1/16in. x 1/32in.
Propeller 22in. diameter x 29in. pitch
Rubber 4½oz.- 54ins. long (130g)

Weights:-
Wing - 25-35g
Fuselage - 35-45g
Tail - 8-10g
Propeller - 20-25g
Bands, 'S' hook, etc. - 5g

Max. turns 1,000
Prop. run - 1.45-2.15 mins.





Hipperson

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HAWKER FURY II
HIGH SPEED FURY II

By E.Fillon

THE HAWKER FURY is an excellent subject for a rubber scale model of any size with its long nose, generously proportioned tail surfaces and good ground clearance to the motor thrust line, allowing a large flying propeller to be accommodated. Couple these practical features together with attractive lines and a wide range of alternative squadron markings and we have plenty of potential for making an eye-catching model.

Although the construction of this model is simple in principal, it would be something of a challenge to the builder entirely new to Peanut Scale modelling. If you have never built such a small model before, the tiny sections of material involved will be quite unfamiliar and the overall fragility rather daunting. If you have built several Peanuts already and are looking for a slightly more demanding subject, then one of these Furys just might be what you are looking for.

The fuselages are unusual in that the compound carved nose and cowlings are made from block foam, carved and sanded to shape. Blue styrofoam or the lightest grade of Rohacell are preferable to ordinary white foam. Both will sand and carve very well and Rohacell will take cellulose finishes. It may be stating the obvious but whichever foam you decide to use, experiment beforehand with glues and finishing methods. Hot wire cutting is only really suitable for white polystyrene foams. White PVA glue or aliphatic resins are best for glueing the foam to the framework.

The nose and cowlings could even be skinned in aluminium foil attached by means of narrow strips of double-sided Sellotape along the panel line joints, thus avoiding the risk of paint damaging the foam.

Special jigs are drawn to make the assembly of the all important cabane struts an easy job. With the jigs pinned in place over the plan, the fuselage is taped to these inverted, and the struts pushed into the top decking and aligned over the plan while the glue sets. The bamboo for the wing tips and tail outlines can be stripped from any piece of garden cane, although the larger the diameter of the piece from which it is cut, the easier it is to control. Use a heavy duty knife, i.e. a Stanley knife, and a good straight edge to cut strips a little larger in section than the finished sizes, then sand them down to the required sizes. Straight splitting of the cane down its length is rather a hit and miss business but you may already have acquired the knack of doing this accurately.

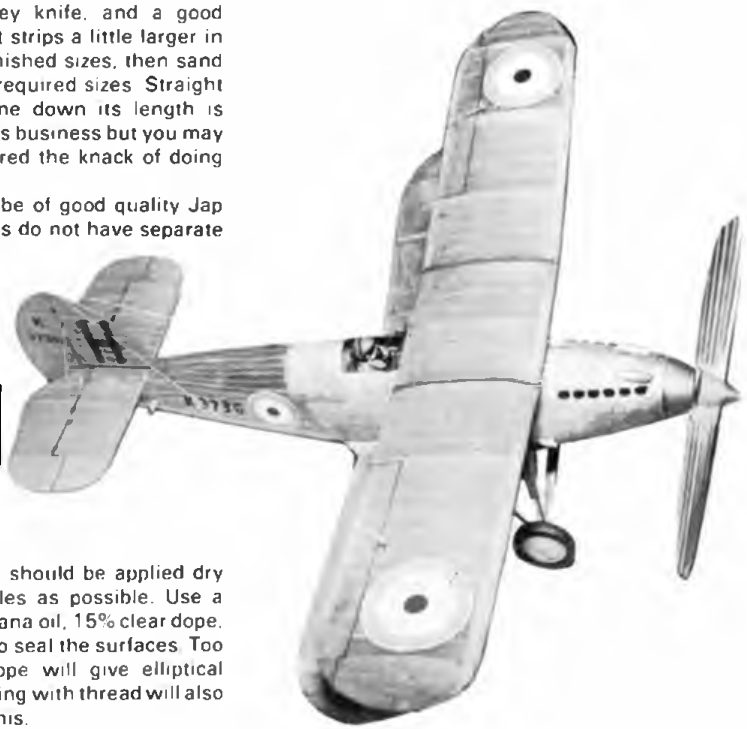
Covering should be of good quality Jap tissue. As the wings do not have separate spars, the covering should be applied dry with as few wrinkles as possible. Use a mixture of 15% banana oil, 15% clear dope, and 70% thinners to seal the surfaces. Too much shrinking dope will give elliptical dihedral. Rigid bracing with thread will also help to overcome this.

A 7in. Peck plastic propeller cut down to about 5½ins. would be a reasonable alternative to the wooden prop. The broad blades can be twisted to give extra pitch if required but performance will also depend upon the weight of the finished model.

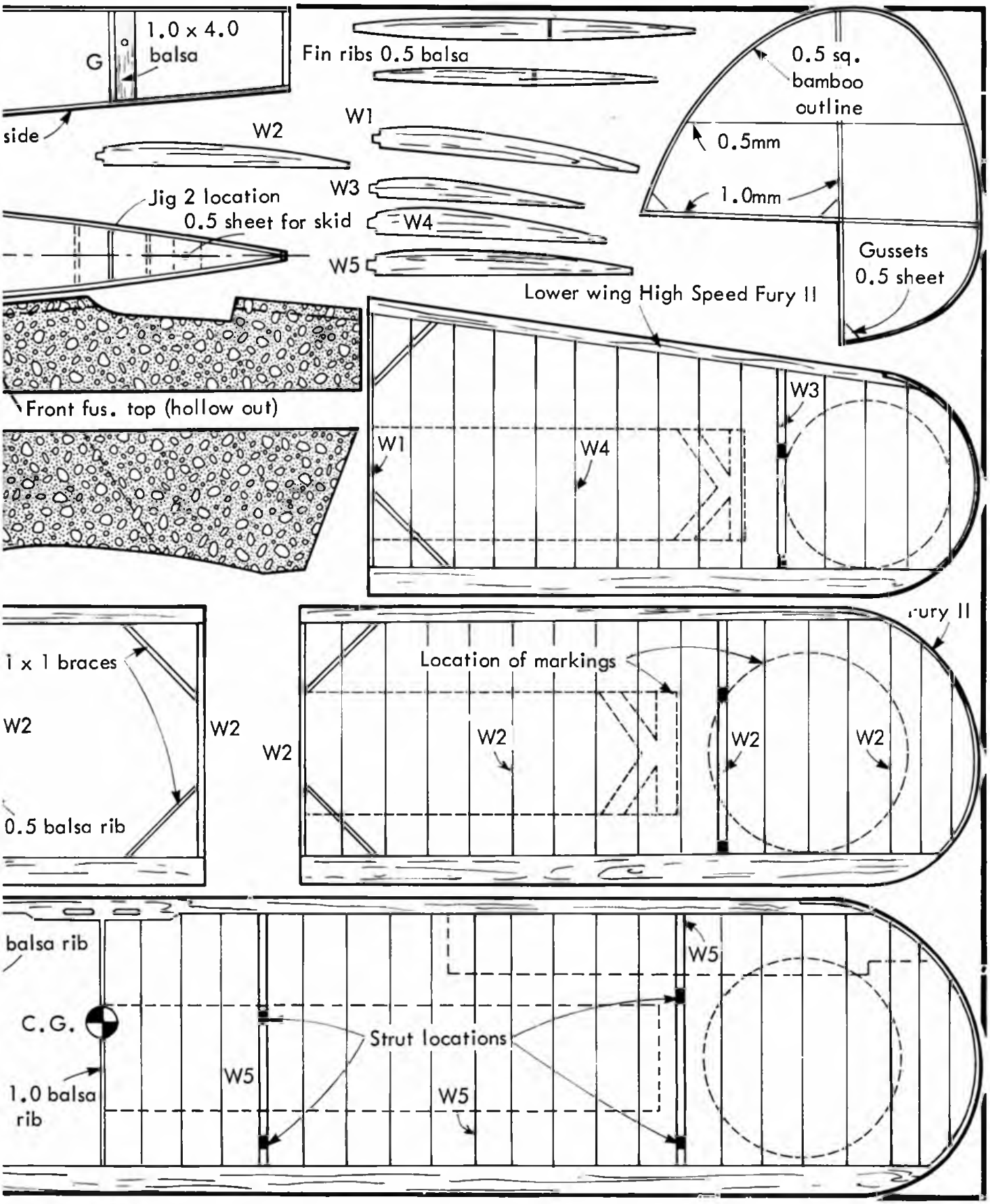
Blue Styrofoam is used for loft insulation and should be available from any good builders merchant. Obtaining small quantities may be a problem but one could always share a sheet with others, build a few decent model boxes, or insulate the loft as a last resort if no offcuts can be acquired!

Rohacell is available from Thorp Modelmakers, 98 Grays Inn Road, London WC1, in sheet sizes aimed at the professional model making market.

M. Fillon's original plan included details of a camouflaged Spanish Fury, thus showing further possibilities in colour variations. If your version turns out particularly well, why not send us a photo of the results?

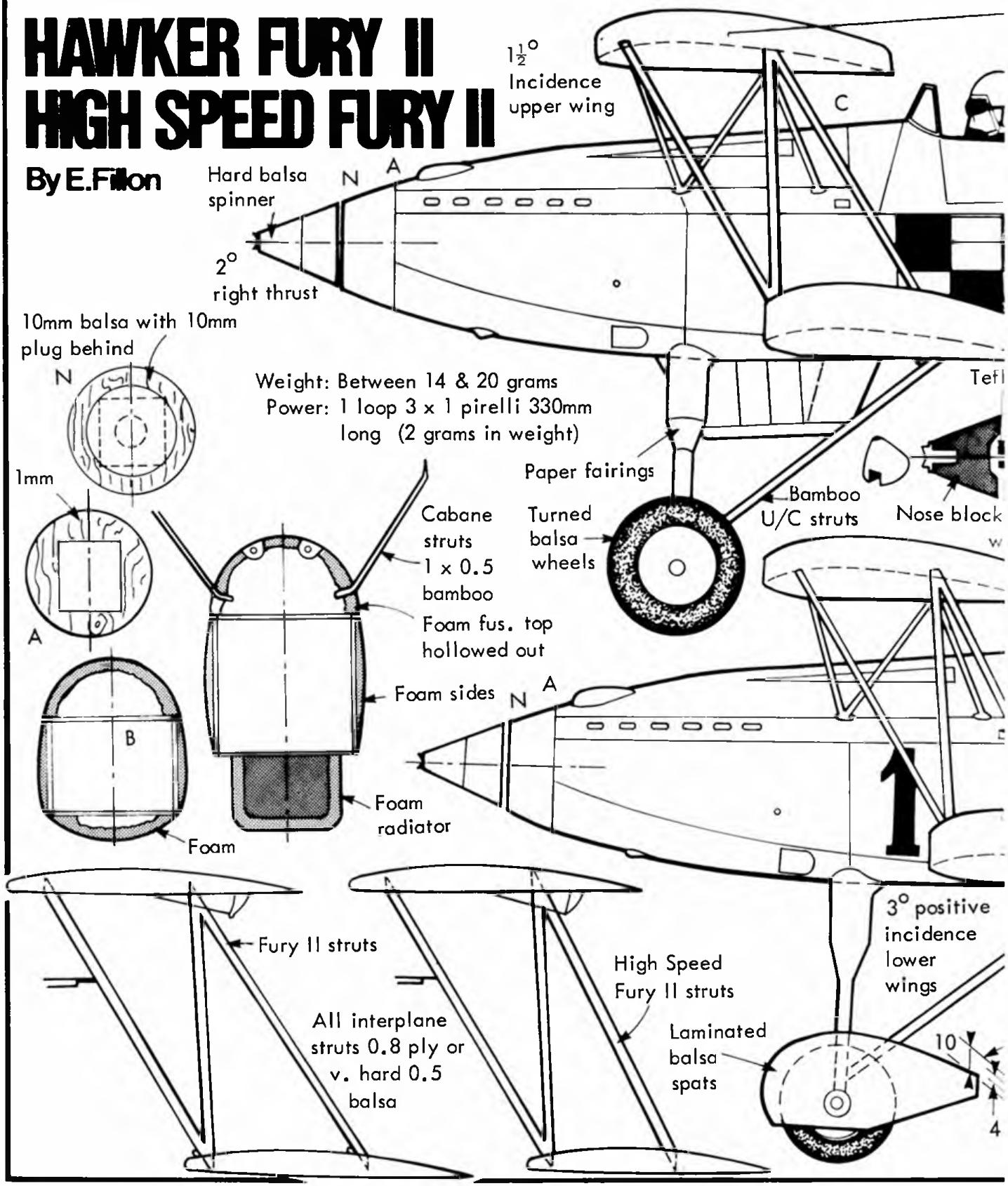


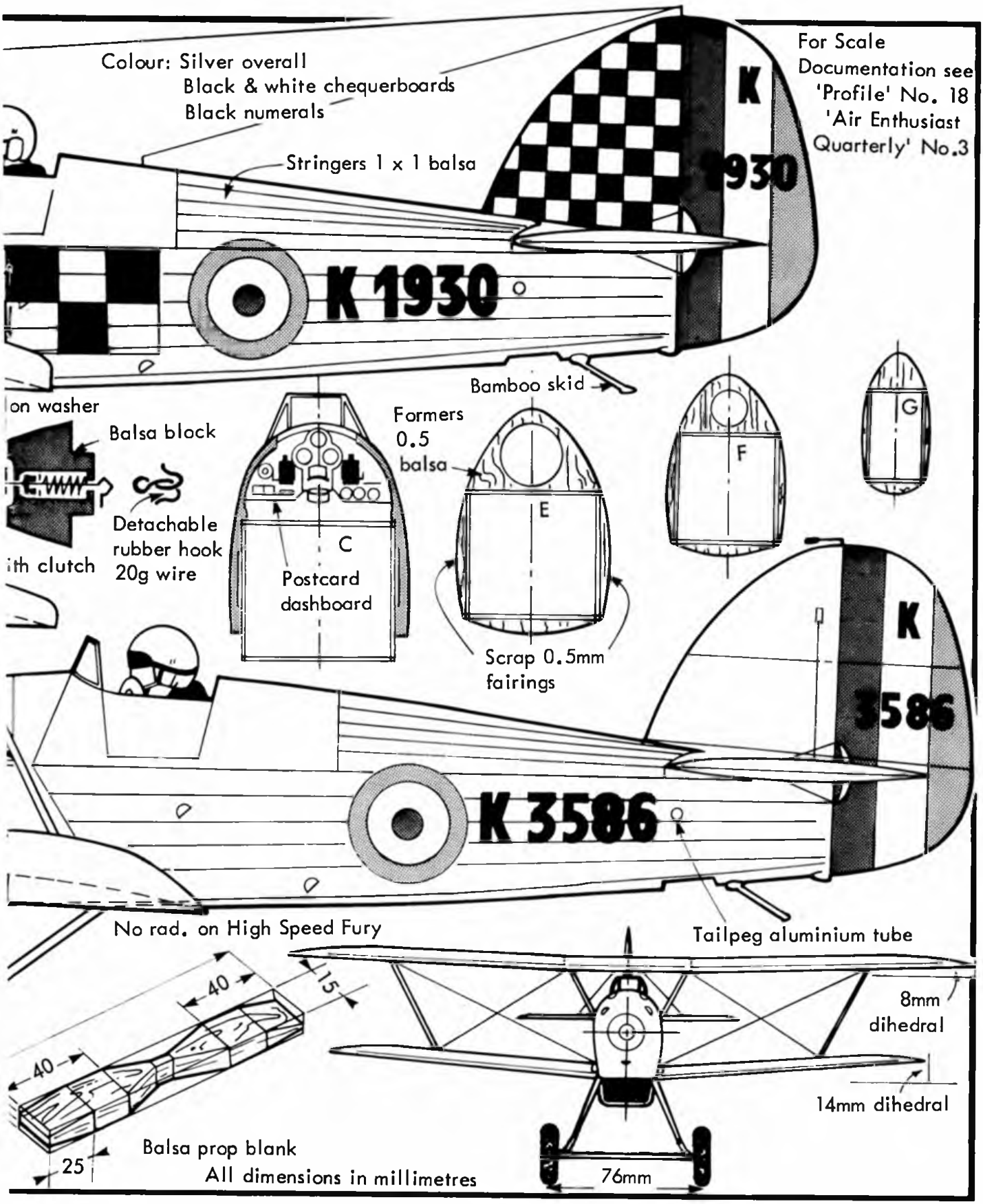
Three variants of the Fury: top photo shows the High Speed Fury II decked out in training colours. Left: Hawker Fury II and below: Spanish Fury.

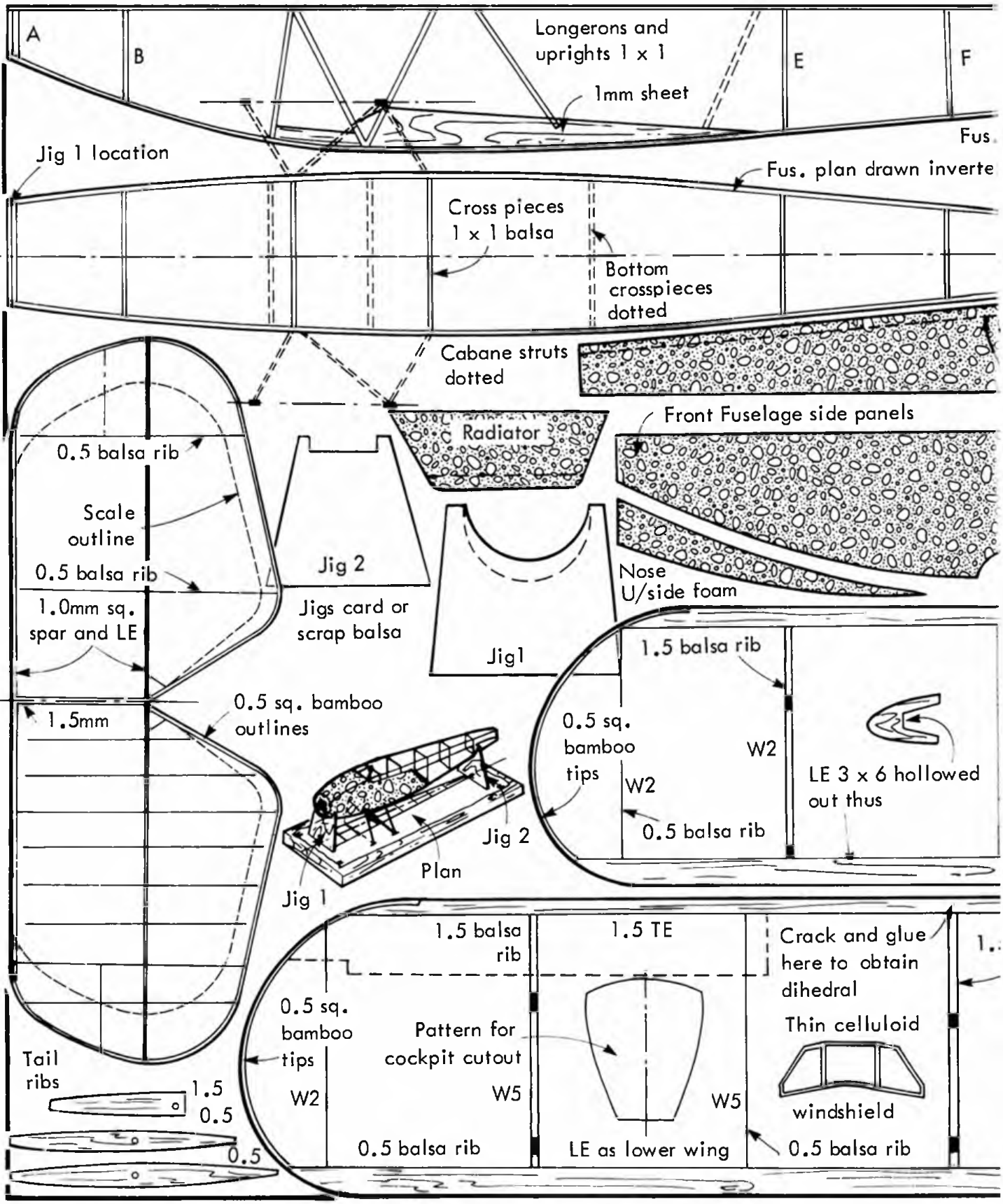


HAWKER FURY II
HIGH SPEED FURY II

By E.Fillon







Engine News

by Peter Chinn

Born 1961 and still going strong. The latest version of the Super-Tigre ST35 which, as the characters on the crankcase reveal, started life as the C35 model.

Super-Tigre ST35

Along with a couple of new Super-Tigre R/C engines, recently received for assessment from ST distributor Mick Wilshere, was a plain bearing control-line motor which, strictly speaking, is far from new. Currently listed simply as the ST35 and previously designated 'ST35 Combat-Perry,' its origins actually go back no less than 22 years — from which, prospective buyers might reasonably deduce that it cannot be a bad motor to have survived so long.

In the summer of 1961, Super-Tigre manufacturer Garofali introduced a new engine in the then popular 35cu in control-line class called the C35. The 'C' stood for 'Combat,' but there was also a C/L aerobatic version of the engine, with different porting, known as the C35 Stunt.

The one-piece body casting (crankcase, cylinder casing and shaft housing) of the current model has minor modifications, such as lugs for silencer attachment, but is basically the same as the 1961 engine and still carries the *'C35'* in raised letters on the transfer side, together with, on the opposite side, the legend *"Made in Italy by Micro-meccanica Saturno"* — the name by which the Super-Tigre company was previously known. However, practically every other part of the engine has been changed or modified, resulting in steady improvements to performance. In 1977, for example, Perry directional slots were added to the original Super-Tigre scavenging system and these are continued in the current model. The latest modification is a new cylinder head, deeper than the old one, with a wider squish band (3.8mm instead of 3.4mm) and a 'double-bubble' combustion chamber.

The engine has, of course, the traditional lapped ferrous piston and liner assembly. The crankshaft has a 12.5mm od journal, a 9mm i.d. gas passage fed from an oval valve port, and a 6mm o.d. tubular crankpin. It runs in a bronze bushed main bearing and is coupled to the gudgeon-pin by a machined aluminium conrod, bronze bushed at both ends. The gudgeon-pin, 5mm o.d. and tubular, is retained in the piston by wire circlips.

The intake port through the main bearing is oval, supplied from a 10mm i.d. intake boss. The ST35 is equipped with a peripheral jet aluminium venturi, retained by a tangent spraybar. This has a 4mm choke, 1mm larger than that of the 1977 model and increases effective choke area from a very modest 7.1sq mm to nearly 12.6sq mm. Also supplied, however, is an optional large bore venturi having a choke i.d. of 8mm (50sq mm area) for use with a high-pressure fuel system.

The ST35 has a bore and stroke of 20 × 18mm, giving a swept volume of 5.655cc or 0.3451cu in. No performance figures have been issued by the manufacturer for this latest version of the ST35, but one would assume that its power output would not be any less than that of the previous Perry-ported model. The maker's nominal rating for this was 0.65 PS (0.64bhp) at 17,000rpm (fuel and venturi size not stated) and it is perhaps worth mentioning that our last test of an ST35 (without Perry ports, but with a 16sq mm choke Mag-IV carburettor) yielded a gross figure (i.e. less silencer) of 0.68bhp at 14,500rpm on five per cent nitro fuel, which is still very good for an engine of this size and type.

Pfeffer Ball-Bearing 0.6

Another 'oldie' which continues to attract a small but steady clientele is the little Pfeffer 0.6cc diesel from Czechoslovakia. This engine has been on offer, from several sources, in the *Aeromodeller* advertisement columns recently, but has been around for at least a dozen years. We have one of the early examples which was

Left: parts of the newest ST35. Modern features include Perry supplementary ports and dual concentric bowl combustion chamber. Right: unmistakable features of Pfeffer 0.6cc diesel are its square finned cylinder, built-in twin silencers and triangular mounting flange.

acquired in 1971. A revised model was introduced later and one of these was mentioned in this column in the July 1978 issue. Our third specimen came from the Swiss based collector, Peter Scott, and is one of the newer twin ball bearing models.

Currently, the Pfeffer is available in a choice of plain bearing or ball bearing models — the latter being about 30 per cent more expensive. The maker, Josef Pfeffer of Brno, has been constructing model engines for a very long time and the 0.6 is reminiscent in many respects of the early post-war period of model design. It has, for example, a high stroke/bore ratio (1.5:1) and induction is via a piston controlled cylinder port.

A distinctive feature of the Pfeffer 0.6 is its square finned cylinder jacket and rear crankcase extension with triangular mounting flange. Another feature of the more recent versions has been their integral twin 'silencers': small cylindrical expansion chambers pressed into housings on the sides of the main casting. Another change made when these were added, was the replacement of the original horizontal intake tube with a longer, upwardly inclined intake, a modification brought about by the need for the needle-valve to clear the silencer outlets. The outlets, incidentally, are ribbed, presumably to facilitate fitting silicone tube extension pipes.

In the plain bearing version of the Pfeffer, the crankshaft runs directly in the aluminium alloy material of the detachable front housing. In the ball bearing version, the shaft journal is the same diameter (5mm) but runs in two 11mm o.d. eight-ball steel-caged bearings contained in a larger diameter housing. Shaft ends are knurled for pressed-on aluminium prop drivers and are fitted with replaceable 3mm dia. studs and anodised aluminium spinner nuts. Cylinder heads are also anodised and have the luxury of a steel thread insert for the compression screw. The latter is provided with a locking lever, and four long 2mm screws tie the complete cylinder assembly to the crankcase. The piston has a flat crown, a very long skirt and a pressed-in gudgeon-pin. A machined duralumin conrod couples the piston to the 3mm crankpin.

Parts of ball-bearing model Pfeffer 0.6. Note long stroke piston/liner assembly. Cylinder has twin opposed exhaust ports, long transfer channel at front and induction port at rear

The Pfeffer 0.6 has a bore and stroke of 8 × 12mm, giving a swept volume of 0.603cc or 0.037cu.in. Checked weights of the examples shown in the photo were 50.2 grammes (1.77oz) for the plain bearing model and 51.7 grammes (1.82oz) for the ball-bearing version.

Brown Juniors

Mention of the Pfeffer engines brings to mind that John Birnie, of Coopers Hill, Gloucester (who owns a couple of these motors) has suggested that we point out that importing engines from abroad is not so difficult as is sometimes supposed. *"For instance,"* says John, *"in the past, AM has stated that Brown Junior CO_2 units were difficult to obtain. Not so, I have been buying mine direct from the USA since 1972."*

Thoughtfully, John also sent along a copy of a letter from the Customs and Excise authorities setting out how the import duties, one of his own private imports were assessed. In this instance, as the two small engines concerned were valued at no less than £70 and were being sent to a private individual for personal use, they were admitted at a duty rate of ten per cent instead of 13 per cent. The standard 15 per cent VAT charge is, of course, then levied on the value plus duty.

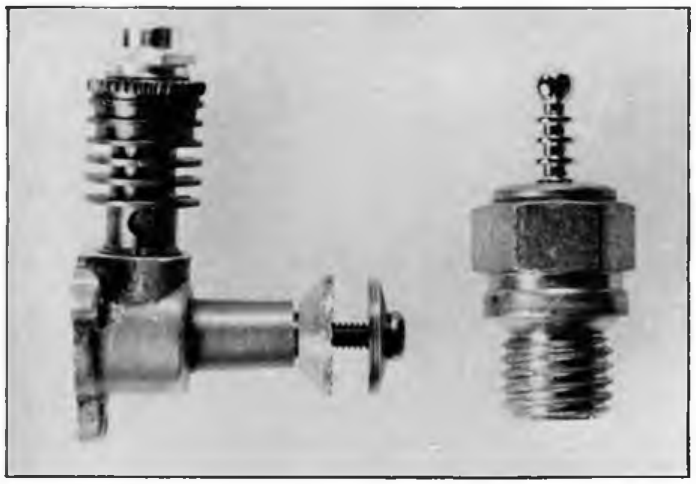
It should be pointed out that rates of duty also depend on the country of origin. As anyone who has received an overseas charge parcel from the post office will be aware, the rate of duty is not quoted on the charge docket but one can check on this by working backwards from the VAT charged (VAT × 100 ÷ 15) to find the assessed value plus duty and, again backwards, to find the assessed value (subtract duty charged from the figure calculated above) and, finally, the rate of duty (duty × 100 ÷ value).

Checking on the charges we have paid over the past couple of years, it would appear that the duties most commonly applied were 12 per cent, 13 per cent and 14 per cent. On an Enya 60 four-stroke received from the manufacturer in Japan prior to its release in export markets and valued at £72.68, the import duty charged was £9.45 (13 per cent), VAT was £12.32 (15 per cent) and clearance fee 80p, making a total of £22.57. Incidentally, imports from Japan seem to attract the highest rates of duty and, as can be seen from these figures, by the time postage is added (about £12 for airmail in this instance) little or nothing is to be gained, financially, by importing privately if the same engine is available through normal retail channels in the UK.

Where a foreign product is not obtainable in the UK, however, importing privately is not difficult. There are many methods of remitting payment. Ask your bank or local general post office for details.

Incidentally don't imagine that getting an overseas friend to send you the engine as a 'gift' will enable you to wriggle out of paying customs dues! Gifts, genuine or otherwise, are *not* exempt from import charges. Likewise, if the package is inaccurately or inadequately declared by the sender, it is

Josef Pfeffer's 0.6cc diesel is now available in a choice of plain or (right) ball-bearing models



The Brown Campus A-23 'Peanut' engine with standard Fox glow plug for comparison. It actually weighs less than the glow plug!

liable to seizure by the UK customs, so make sure that the sender completes the appropriate documentation when sending it. Failure to do so may result in your having to pay an extra 25 per cent on top of the duty and VAT to get it released.

If, by any chance, you find that the Customs have overcharged you (it can happen if the sender fails to declare the value and the Customs make their own assessment) write to the Surveyor of Customs at the address given on the charge docket. Generally the Customs people are helpful if you play fair. Just be thankful that things have changed since the days of purchase tax which when at its highest rate was 36⅔ per cent and duty was 25 per cent. Importing an American engine, for example, could then cost you an extra 70 per cent plus postage, on top of its cost in the US.

This item started off under the heading "Brown Juniors." Better get back to it!

In this column, May 1981 issue, we published an item under the heading "Salute to Bill Brown." This was by way of celebrating the 50th anniversary of the very first Brown engine to fly a model plane, the forerunner of the famous Brown Junior 10cc petrol motor of 1932 that put power modelling on the map. As then mentioned, a previous anniversary of the Brown Junior had been marked with a test report on one of our Brown Juniors and it is proposed to republish this in the not too distant future. In the meantime, we are including a few photos of one of Bill Brown's current products, the Campus A-23 'Peanut' CO_2 motor.

As the photos show, this minute motor is scarcely any bigger than a standard ¼in. glowplug and, in fact, it weighs less. Its nominal bore and stroke are both 3mm. giving a swept volume of 0.0212cc or 0.0013cu.in. Complete with tank, feed pipe and the prop supplied with it, the A-23 weighs only 7.2 grammes or just over ¼oz. The motor itself weighs an incredibly modest 1.8 grammes or 1/16oz!

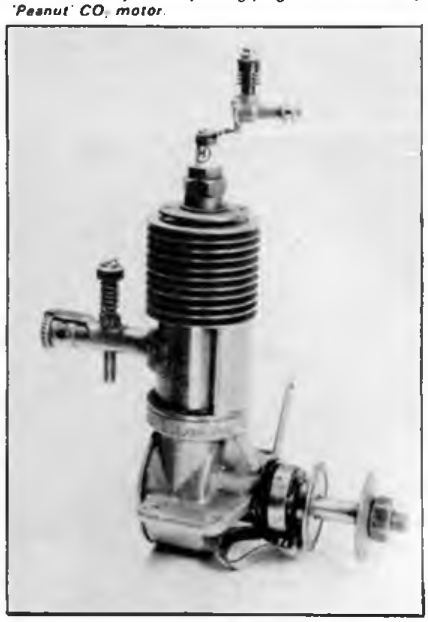
For the benefit of readers who are not familiar with CO_2 motors (incidentally, the engine comes with an excellent instruction sheet) it should be explained that they are operated by the expansion of compressed (liquified) carbon dioxide, usually supplied from a 'Sparklets' soda-syphon bulb which is used to charge the small aluminium tank carried in the model. When released from the tank through the delivery pipe to the cylinder head of the motor, the CO_2 rapidly vaporises and expands, driving the piston down.

There is a ball-valve in the cylinder head which normally cuts off the gas supply, but this is lifted by a spigot on the piston crown as the piston approaches the top of its stroke. Gas is admitted briefly while the spigot is in contact with the ball and is then cut off again automatically as the piston descends. Spent gas escapes through an exhaust port at the bottom of the cylinder when the piston reaches the bottom of its stroke. The amount of gas admitted (and thus the power of the motor) can be controlled by rotating the cylinder, which is screwed into the crankcase. This raises or lowers the valve seat relative to the piston spigot.

The nice thing about these little motors is that they do not depend on running at high speed to develop usable power. They can therefore be used to turn relatively large airscrews. The standard prop for the 'Peanut' is 4½in. dia. but for 'large' light models, the motor will turn up to 5½in. dia. if required.

Bill Brown was, of course, the originator of the CO_2 model aircraft motor and his first design to be marketed was the 'OK' CO_2 motor manufactured by the Herkimer Tool and Model Works between 1947 and the early 1960s. In addition to the A-23 'Peanut,' two other, larger CO_2 motors, the MJ-70 and the horizontally opposed twin-cylinder MJ-140, are currently in production at Bill's own small factory. Details and prices of these motors and a wide range of accessories to go with them are obtainable from Brown Junior Motors Inc., PO Box 77, Pine Grove Mills, Pennsylvania 16868, USA.

Right: Brown A-23 engine comes complete with prop, gas tank and piping. Piping can, of course, be bent to suit installation. Below: the engine that put powered model aircraft on the map, the 10cc Brown Junior and, mounted on top of its sparking plug, Bill Brown's tiny 'Peanut' CO_2 motor.



Le Rêve d'Icare

France celebrates the Age of Icarus with typical panache at Orly Airport

IMAGINE the main departure/arrival terminal of a national airport such as Gatwick, Heathrow or Manchester decorated with colourful kites from all over the world, having vintage aircraft mounted beside the Departure Board and the galleries filled with priceless aeronautical memorabilia. Then top this with an actual model flying contest *inside* the hall and you have an immediate picture of what actually took place in France for a whole month. Organised by the Aeroport de Paris, *'Le Reve d'Icare'* was a unique experience, combining all those aero-enthusiasms of which France abounds, into one fascinating collection. Orly itself is unusual. One of the few international airports where we can actually see the arrivals and departures and passengers aren't force-fed down corridors into a tube as though the external shape of the aeroplane was an embarrassment, each of the two terminals offered ideal display areas for this remarkable show.

Orly Sud embraced historic documents, engines, rare wind tunnel models, balloons, kites, art, photography and fullsize aircraft. The internal terminal, less busy with just as interesting (seven Dassault Mercures coming and going — a spotter's delight!) had Jean Salis' SPAD and Deperdussin, a Cri-Cri, two sailplanes, microlights and radio controlled scale models of all sizes up to Claude Moreau's 15ft., 73lb enormous Transall. But ... and this is the REAL stuff(!) on the final day (January 16) a ten hour *indoor* contest occupied Orly Ouest departure hall to the absolute delight of thousands of visitors and participating clubs. As organiser Phil LePage commented, it was the finest possible presentation of free flight and indoor modelling which will have long lasting impression on the public, the air transport industry, educationalists and all participants.

As a visiting foreigner, we gained other, equally memorable impressions. All flights were demo's but there were competitions for scale, Peanut, indoor duration, the 'Saint' class and 'Flying Fools'. The latter was more than amusing, it was inspiring for the French flair and initiative it produced. Emmanuel Fillon's couple of 'Turbine' Jets may yet open a new era in rubber powered ducted fans while M

Claude Faix, known internationally for his control-line scale models, excelled himself with the four engined Farman 223-4 (above), Couzinet Re71 (right), Amiot 356 of Air France and a Hanriot 143 Bomber(far right). Each detailed to museum quality, they use Super Tigre G20 engines and were part of the static model display at Orly. Ooh-la la, la tour Eiffel voler? Eh bien M'sieur ... she flies like the proverbial 'elicoptere when Claude Weber remembers to retract his fuselage after releasing the brakes!

Ever youthful Emmanuel Fillon (left) produced a couple of rubber powered 'jets' for the Faus Volants event with tip to tip motors driving a central impeller. Flew well, see inset (below). Workshops covered kite making, aeromodelling and Hot Air Balloons with test flights up the stairwells - would go down well at Heathrow! Below, is but one of three Peanut parades.

Porcher's 'flying fish' with its propulsive flapping tail. A. Landeau's 'Submarine' complete with conning tower and five-blade prop, plus Claude Weber's Eiffel Tower helicopter were enough to put the fun right back into modelling.

E-Z Bee and small film covered indoor duration types were producing five minutes before hitting the ceiling, or convected to the huge windows. Up to five were airborne 'cadets' (Juniors) included, so that spectators in the gallery had a fascinating close view of the activity.

With experts like Fillon, Chaulet, Chabot, Champion, Meritte and Landeau, the guiding hands for keen 'cadets' seemed unlimited. Many of the youngsters were flying the Pottier 100, a Peanut with trike gear, and ideally robust. The design had been circulated by Jacques Delcroix, complete with a full instruction handbook for novices, and it's so inspiring we collected a set for future publication.

We also got to the bottom (or was it the top?) of the new 'Sainte Class.' Actually it's a recent revival of Rene Jossien's post-war category for small indoor models (330mm span) with big fuselages and we got to that one by asking Fillon why his was called 'BB.' Should have known better — it stands for Big Bosom.

Now — about that display in Terminal Three at Heathrow...

Youngsters ('Cadets' in France) sustain gallic enthusiasm for aviation (right) and with typical Pottier 100 (below), all well made and flown to impress the spectators seeing aeromodelling for the first time ever. Full scale exhibits included the SPAD VII (far right).

FROM THE HANDLE

BY JIM WOODSIDE

John Horton's Racing League Tables 1982

Once again, my pleasure to present the fruits of John Horton's 1982 labours. I think we all enjoy the league table game — it adds a little spice to the year.

As you must know by now, points are awarded in descending order from first to third place in most races and down to sixth place in long distance events. Since 1981, teams making the semi-finals but not the final, receive one point. Thus: 1st — six points, second — five points, 3rd — four points.

Class B Team race

Once the premier event on the British scene, 'B' continues to languish with but five races which included the 1000 lap Wharfedale event. Seven teams turned out with Wilson-Gardner maintaining the grip they have had on the 5cc event for the last four seasons, by winning all three contests flown. Gordon Yeldham, one of the most experienced of 'B' racers teamed up with Ron Tribe and achieved a close second place.

Result

1.	Wilson Gardner	Tynemouth	18 points
2.	Tribe Yeldham	Elliotts	15 points
3.	Horton Haworth	Wharfedale	14 points
4.	Toogood Ward	Telford	11 points
5.	Allcock Myszcka	Wolves	5 points
6.	Fitzgerald Williamson	Wharfedale	4 points

½A Team race — 16 teams

The 1.5cc event continues to hold its own with nine events run during the '82 season. The use of the Oliver Cub Schnuerle has become widespread and there is no doubt that this has contributed to a general improvement in race times. However it was the Don Haworth 1.5 Special MkII which set in the best times in the 3:40s. The odd Webra Speedy conversion performed well during the year. It will be interesting to see whether the Australian Sesqui engine makes its mark in the event during 1983. Certainly the Sesqui design will allow the use of 'standard' F2C type equipment which might improve ground handling.

Result:

1	Hill Metcalfe	SCLAMS	26 points
2	Horton Haworth	Wharfedale	22 points
3.	Smith Brown	Feltham	12 points
4	O'Neil Bollen	Elliott	11 points
5	Langworth Broadhead	Wharfedale	9 points
6	Needham Banks	Elliott	9 points

Goodyear Team race

A busy year in GY with 13 events and 30 teams turning out. Certainly the year belonged to Catlow-Jephcott, who showed the value of 'being there' — only missed one contest and won all but three of the remainder. This gave them a record number of points for a single season — 63. This achievement dwarfed the rest. The Nelson N15G (Diesel) has firmly established itself as 'the' engine for the serious competitor. The availability of AAC liners for the front induction Nelson might bring in the first sub-four minute Goodyear heat during '83. While plenty of Rossi F1s and RVs are putting in good performances, the MkIII Rossi as far as I know, has still not made its mark in the event.

Result

1	Catlow Jephcott	Lo'hb'r'ugh	63pts*
2	McPeake Jenkins	Tynemouth	24½pts
3.	Andrews Horwood	Bristol	18½pts
4.	Leeman Horne	Loughborough	18pts
6	Sykes Crabtree	Wharfedale	13pts
6	Walker Ward	Grantham	13pts

*record seasonal points

FAI F2C Team race

Despite being the hardest, expensive, etc. event, F2C had the most events and teams — 16 and 32 respectively.

The Nelson engine continues to hold sway in the event, although at least four teams are using the Cipolla motor with some success, the most notable being Smith Brown. The flying wing model has now established nearly a 100 per cent grip on model design approach. While this is understandable from the race-time standpoint, it certainly makes timing the races difficult especially if all three models are finished in natural wood!

Congratulations must go to Steve Smith and Colin Brown who topped the league for the second season and this time with a record number of points — 57. This represents ten contests, seven wins and three seconds. Impressive. Dave Fry and Nigel Thorpe also deserve mention as in only their second season they took second place with 45 points.

Result

1	Smith Brown	Feltham	57pts*
2.	Fry Thorpe	Feltham	45pts
3.	Wilson Gardner	Tynemouth	31½pts
4	Gray Haycock	Feltham	30 points
5	Langworth Broadhead	Wharfedale	19½pts
6	Heaton Woodside	Sharston — CM	16pts

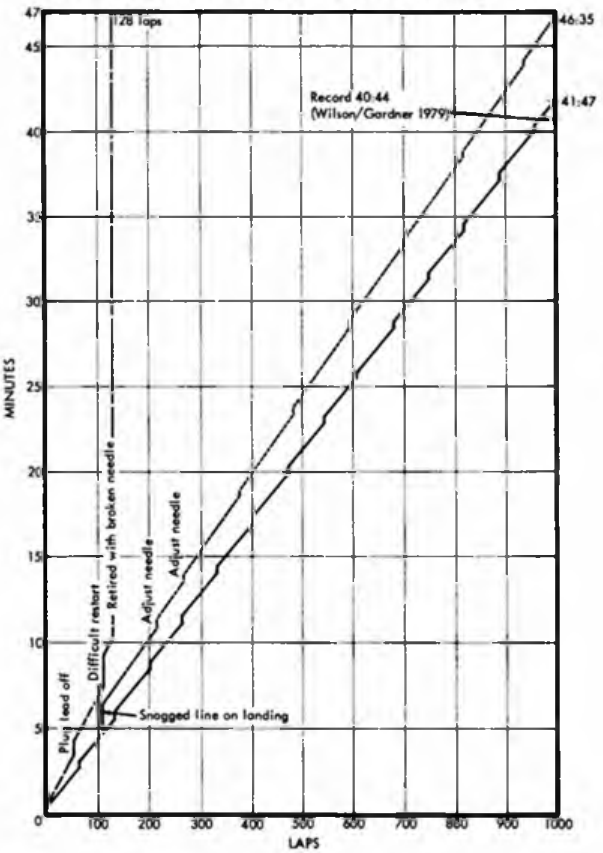
*record seasonal points

Best 1982 teams based on four classes

1.	Smith Brown	69pts	F2C Nats and League Champs
2.	Catlow Jephcott	63pts	GY Nats and League Champs

Finalists of the European Cup, Utrecht 1982. Left to right: Heaton-Woodside 2nd, Metkemeijer Bros. 1st, Van Uden Bros. 3rd.

1982 Wharfedale 1000 C/L Class Racing



3. Wilson Gardner	49½pts	'B' Nats and League Champs
4. Horton Haworth	46pts	Nats. ½A Champs
5. Fry Thorpe	45pts	
6. Langworth Broadhead	35pts	
7. Hill Metcalfe	33pts	½A League Champs
8. Gray Haycock	30pts	
9. Needham Banks	26pts	Best team flying all classes
10. Toogood Ward	25pts	

Best Clubs in 1982

1. Feltham	180½pts	Best F2C
2. Wharfedale	124pts	Best ½A and B
3. Tynemouth	91½pts	Best B
4. Loughborough	70½pts	Best GY
5. Grantham		

Not much doubt about this one. Congratulations Feltham — what will you do in '83 without Ed Needham?

All Time Greats Class by Class

You will remember that under the new system, previously obtained points will not be carried forward and hence the achievements of successful teams will stand until beaten.

Class 'B' since 1972

1. Wilson Gardner	141
2. Nixon Campbell	84
3. Heaton Ross	74

½A Team race since 1975

1. Horton Haworth	114½
2. Langworth Broadhead	80½
3. O'Neill Bollen	57

Goodyear Team race since 1970

1. Horton Haworth	183
2. Jarvis Needham	162½
3. Clarkson Daly	160½

F2C FAI Team race since 1975

1. Smith Brown	192
2. Heaton Ross	165½
3. Langworth Broadhead	152

Best 'All Rounders' based on three classes from four since 1975

1. Horton Haworth	Wharfedale	391½
2. Wilson Gardner	Tynemouth	346
3. Heaton Ross	Norwest	253½

Congratulations to all teams and clubs concerned. The season certainly saw some notable achievements. Let's hope '83 will be just as interesting and competitive.

Finally, sincere thanks to John for all the hard work of compilation — no less than five end of season summary sheets, not to mention the innumerable interim sheets over the season. Why not drop a word of thanks along with your contest results to: John Horton, 10 Lawn Avenue, Burley in Wharfedale, Ilkley, Yorks LS29 7ET.

Nelson competition engines

Henry has been busy over the winter and several new items are now available.

1. Henry has been able to inspect at first hand, one of Suraev's engines and as a result has produced an alternative liner for the 2.5. This has 'advanced' timing — that is the ports remain open longer than on the standard unit. At the higher revs employed using smaller props (~155mm) the longer transfer period allows adequate passage of fuel, albeit at a more ragged setting. Hopefully lap times in the mid 18s per ten laps should be possible.

Advanced timed liner-piston	$60.00
Matching head	$20.00

AAC liners are now available for the N15G in both its glow and diesel versions. These liners will be available in 'standard' and 'advanced timed' versions. Customers should state their preference.

N15G F/F	$160	N15G-AAC	$175
N15G Speed	$170		
N15G Diesel	$170	N15G-Diesel AAC	$190

3. As a result of research into 1.5cc engines, a small number of sleeved down engines will be available. This will have a titanium shaft and magnesium backplate which should compensate to some extent for the slightly 'gross' size for a 1.5.

N15D (1.5) $220 (liner is AAC)

Also as a result of the legion effort Henry has almost wiped out the backlog of orders which meant that one year's wait was the norm. However new orders should be dealt with in short order.

I was interested to note that in his latest newsletter Henry emphasised the need for excellent models in order to bring out the best from any engine. This aspect is often paid lip service but in fact construction is probably more important than design, within broad limits. In short, if a CB14 overtakes your Smith Wing, the reason is likely to be higher RPM encouraged by rigid strong construction rather than straight taper wings versus curved trailing edges.

Enquiries to: Nelson Competition Engines, 729 Valemont Drive, Verona, PA15147, USA.

Erratum

In the 'Aeromodeller' report on the 1982 Control Line World Championships, a photograph of an engine credited to Theo Georgiadis was printed. This is not the case. The engine was made by J. E. Albritton and Walt Perkins of the USA although Theo did make the integrated backplate filler system. However, Theo has been inundated with enquiries and prospective orders. All parties would like to make it clear that no plans exist for commercial production and that no further correspondence in this vein should be directed to Australia on this matter. Our apologies to all concerned. However, for the curious a sketch of the motor is here appended.

Three Sisters Control Line International 1983

About this time of year many of you will be laying plans for the coming season. Could I encourage you through the column, to put Three Sisters on your schedule? The event is now well established with an excellent site, good organisation and really desirable medals and prizes.

This year the contest, held as it is on June 18th & 19th will be one of the few occasions to fly top level competition before the European Control Line Championships in Utrecht. All categories will be flown — speed, aerobatics, team race and combat. Preliminary entry forms and details are available from this writer at: 29 Calderstones Road, Liverpool 18, England.

See you there!

SMAE Centralised meetings

The tank limit in F2C is to be reduced to 5cc effective January 1, 1984. Rather than wait for the World Championship year, the Control line sub-committee have decided to run two meetings in this season to the 1984 rules. The first of these will be the August centralised meeting (provisional date August 7). The second meeting will be the September Team Trials.

The August meeting will provide valuable guidance as to the effects of the tank rule in practical racing and help formulate our attitude to the long term acceptibility of the new regulations.

Northern Area Winter Rally January 23, '83

This year's contest was held in clear calm conditions but with temperatures which can only be politely called chilly. Not that the temperatures did much to slow things down as there were a sprinkling of 3:40s. Ev. Davies, who was flying a clip-board, anticipated January '84 and organised three rounds for all teams. Nixon-Campbell put in the bogey time of 3:54 to make the final. The day also saw some old faces making a reappearance. Dave Clarkson was out with his 'new man' Ed. Needham and Huwie Lorrimer teamed up with Bernie Langworth for the day. This was a happy circumstance for Martin Sladdin as his teaming with John Broadhead won the day.

Result F2C

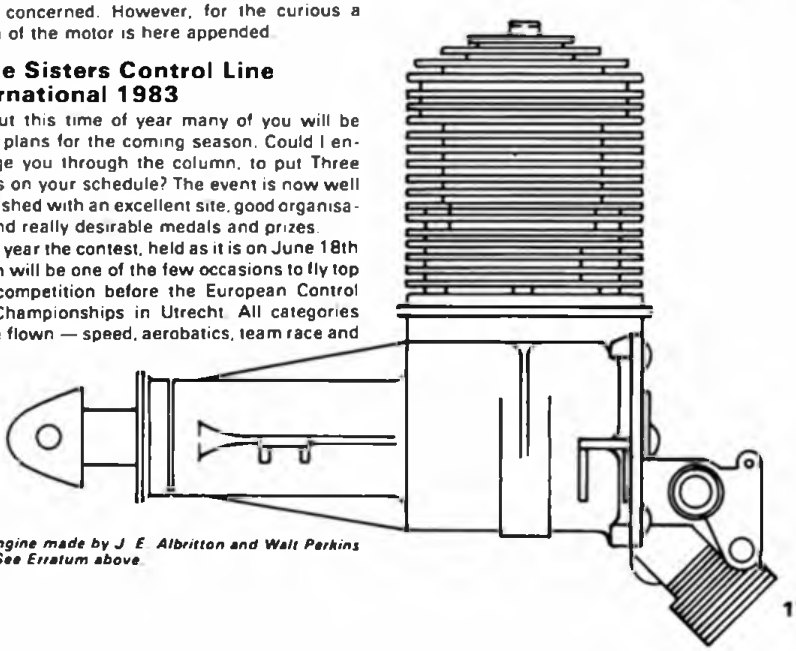
1. Sladdin Broadhead	7:31.6
2. Wilson Gardiner	7:39.6
3. Nixon Campbell	8.04

Goodyear Team race ten entries

Like F2C, Goodyear was flown to three rounds with 1982 League leaders Catlow-Jephcott organising the event. Most teams seemed a little rusty in equipment and technique. The Dalglish Bros. had a clear lead until, helped by many solo laps, McPeake-Jenkins put in a 4:22 using a Rossi RV.

Result

1. Daglish Bros.	Whitefield	4:32	9:31
2. Miller Schofield	Whitefield	4:43	9:54
3. McPeake Jenkins	Tynemouth	4:22	10:13



T.R. Engine made by J. E. Albritton and Walt Perkins USA. See Erratum above.

SCALE MATTERS

by Alan Callaghan

David Deadman's Campus A23 powered CO. 'Puss Moth' is a simple conversion of Eric Coates' APS rubber design. Plan No. FSR 1211 price 95p + 35p post & packing from Aeromodeller Plans Services.

Another Puss Moth

That miniature gem of a CO_2 motor, the Campus A-23, has yet to make as large an impact on the small scale flying scene in the UK as at first it was anticipated. Substantially smaller than a standard Telco, Humbrol, or Brown single cylinder motor, it was designed mainly to power models of approximately peanut scale dimensions, i.e. 300-400mm span.

Although a normal CO_2 motor is quite feasible as a powerplant in a peanut scale subject to be flown outdoors where an abundance of power can be very useful, as can a field of impact-absorbing soft grass, such a combination flown indoors is rather a handful to control. With the scores of peanut scale plans that have appeared in print around the World, the possibilities for using as small a motor as the A-23 are attractive and plentiful, but still it has been something of a rare sight to see one actually in use on the flying fields or indoors.

A neat conversion of an existing APS design was recently completed for the A-23 by David Deadman using Eric Coates' design for a rubber powered DH Puss Moth which appeared as a full-size plan in Aeromodeller December 1973. David is an enthusiast for models with knock-down constructional features, but this one is an exception, being built as a one-piece structure. Little deviation was made from the original plan except in the motor installation. The filler nozzle to the tank — always a problem to accommodate — is left visible between the undercarriage legs and the exhaust pipe where fortunately it does not detract too much from the overall appearance.

The colour scheme featured on G-ABLS is black fuselage with silver wings. Wing registration letters are black but those on the fuselage are gold and these were sprayed using a mixture of gold enamel paint with cellulose thinners. I have frequently used ordinary matt enamels in cellulose thinners in the past with successful results but have always fought shy of using either silver or gold or the gloss finishes in this way. Apparently the metallics can work just as well as examination of this model revealed. Frisk film was used as a masking medium for all of the letters.

An extra problem was the gold pin-striping to the edges of the fuselage and outlines of the fin and rudder. A reasonably quick method of doing this was achieved by using gold surfaced Sellotape which was cut into narrow strips of the required width by laying it down on a piece of hard, non-porous material such as formica or glass and cutting with a scalpel and steel rule. It was found possible to work the resulting strips around quite tight curves, such as on top of the motor cowling, with reasonable ease by slowly working a small section at a time before burnishing down. The metallic surface is somewhat delicate and rubbing has to be very gentle to avoid having the gold film lift off. Once all the lining was in place, the entire fuselage was given a thinned coat of Tufkote fuel-proofer to seal the striping and achieve a high gloss. At around 450mm span (18ins.) the Puss Moth weighs approximately 26 grams ready-to-fly and is a handsome little machine.

Fuselage Structure

Building any scale model from scratch has many problems if good and accurate 3-view drawings of the subject are not available. Nine times out of ten it is possible to find a 3-view of any subject you care to name by using a bit of dogged determination and a logical method research. If the subject is a rare bird, however, the odds are similarly stacked against the drawings having all the details one really needs such as accurate fuselage cross-sections. Literally hundreds of drawings are published that, although they will adequately illustrate an article on the full-size aircraft, seldom provide details such as these, and the accurate builder is left with a problem.

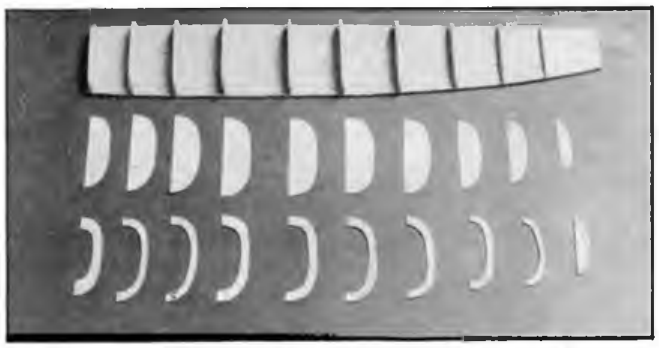
Where it is possible to see prints of the original factory *working* drawings (not publicity handouts) then fuselage sections are easy to establish. Where they have been drawn and measured from the full-size subject, one can be reasonably confident, except that any small errors will not become obvious until someone tries to build from them and so a certain degree of scepticism over their accuracy should be maintained. Measuring and surveying an aircraft is not the easiest of tasks. On a relatively simple model of a compound curved fuselage no cross-sectional references are available at all, the following method may be found to work quite well.

Working from the side elevation, cut a piece of balsa or stiff card to the exact profile of the fuselage ignoring all but the basic fuselage itself, i.e. spinners, fin and rubber, canopies, etc. Mark out on this the positions of all the formers required, and working from the plan view, cut a series of rectangular blanks in balsa measuring one half the width of the fuselage by the height of the relevant former. These can be of quite thick balsa, say 2.5mm on a 300mm long fuselage. Glue the former blanks at their respective places on what has effectively become the fuselage keel.

Now using a scalpel and a very sharp eye, working from what photos you may have of the full-size aircraft, carve away carefully at each former until by looking along the length of the fuselage to see each successive one behind the other, you will then see the cross-sectional shape of the fuselage beginning to emerge. Refine the shapes by using a sanding block large enough to cover three or four formers at a time and work up and down the length of the formers rather than across, since this may break them from the keel. It is possible to get a reasonably good set of well-matched shapes working in this way and with some practise is almost as quick to do as to describe. Once you have settled on the final shapes, trace around them onto postcard, numbering as you go, and then cut these patterns out. Leave the originals on the keel since further modifications may be necessary as you work out wing and tailplane fixings as construction of the model progresses.

No mention has yet been made of notching the formers for stringers, etc . . . Anyone who has previously built a model with pre-notched formers will know why, since invariably the notches will be misaligned and wavy stringers will result. A better technique is to (1) glue the formers in place on the fuselage keel strips pinned over the plan (at top and bottom in the example illustrated), (2) work out the

Dave Day's Peanut Sorrell Guppy ultralight built from Model Builder plan. Weighs 10 grams with rubber. Covering is Jap tissue sprayed with enamel over cellulose.



Left. Peanut scale ultralight Brown 'Miss Los Angeles' racer is covered in condenser paper and weighs 9 grams with rubber motor. Above, this jig was used for working out the shape of the fuselage formers on a Peanut scale Brown 'Miss Los Angeles' racer by the author (details in text)

stringer routes by taping a piece of 2.5 square balsa in place just below the line of the stringers exact location, letting it follow a natural route. (3) using this as a guide, take a fine needle file and make a notch on each former above the strip. (4) remove the guide strip and glue this first stringer in place. (5) remove the frame from the plan and repeat the operation on the other side of the fuselage. You should now have a basic fuselage consisting of top and bottom keels, a full set of formers, and a stringer at each side at the widest point. Re-align any former found not to be at 90° to the keel. Carry on using the guide in the same way for subsequent stringers and glue them in place in matched pairs. You will be surprised how easy the whole job becomes as you build 'in the hand' rather than on the board as you go along. This method was used on the 'Miss Los Angeles' ultralight peanut model, shown in the photo, for which only the sketchiest information was available on cross-sections. It proved to be a relatively easy way of getting a reasonably accurate fuselage shape and was not as time consuming as it may seem at first.

Wingtips in Bamboo

Elsewhere in this issue is featured a full-size plan for a peanut scale Hawker Fury that uses bamboo for curved wing and tailplane tip outlines. In the very small sections used, bamboo has a very high strength to weight ratio and is well worth considering wherever hard-edged surfaces are required. For quite some time now there has been on my own building board, a CO_2 powered Eastbourne Monoplane on which the wingtips curve in two directions at the leading edges. Laminated sections would have been too thick for scale, steamed balsa was not strong enough but bamboo proved ideal. The shapes were achieved by dry heating over a candle flame and manipulating the strips without a former by trial and error. The material came from a cane about 40mm diameter and was stripped using a Stanley knife and a heavy metal straight edge. It was then sanded down to the dimensions required — just under 1.5mm square. Although the model is as yet unfinished, the wings, now covered, are over three years old and the tips have remained quite true to shape during this time.

Occassionally an excellent supply of bamboo of roughly 2mm diameter can be found in oriental place mats for the dining table, and these are usually quite inexpensive to buy. Alternatively, roller blinds for windows are another source but one would need to build an awful lot of wingtips to justify the expense of these! Garden cane is a cheap source once you have perfected the technique of splitting it down.

Autogyros

Model autogyros are not the commonest of sights on flying fields anywhere these days but in the last few years they have been something of a specialised study for Bill Hannan and Warren Shipp in California. One of Warren's models is shown in the photograph being held by Captain Frank T. Countney. The model is a Cierva C6c in peanut scale and is rubber powered. Frank Courtney, who died recently at the age of 88, actually test flew the original full-size machine and also demonstrated it in Germany and Spain. He learned to fly with Claude Graham White, was shot down by Max Immelman during the First World War, and later was retained as a test pilot by many British and American aircraft companies, as well as being responsible for testing many other early Cierva experimental machines.

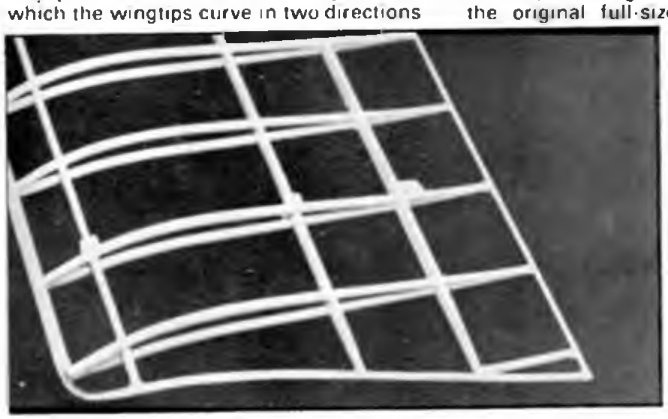
* * *

Bill also writes to inform us of an International Contest which is to be held in Belgium on 20th and 21st August. Proxy peanut entries are invited and models will be flown in separate categories for duration and scale. Why not give your model an airing abroad even though you may not be able to attend in person. Details are available from F. L. Van Hauwaert, Grand Place, 1, 52, 4110 Flemalle Haute, Belgium.

SMAE Scale Contest Diary

1st May	Croydon Aerodrome	C. L. Scale, Stand off
17th May	RAF Odiham	F. F. Scale, Class II & Rubber
12th June	RAF Colerne	C. L. Scale, Stand off
24th July	RAF Abingdon	C. L. Scale, Stand off & Scale Racing
11th Sept	RAF High Wycombe	C. L. Scale, Stand off

For further information concerning all of these events contact Vic Willson on Reading 471964.



Wingtip on Eastbourne monoplane by the author is in bamboo and curves in two directions at the leading edge. Wing chord is 100mm (see text for details)

The late Captain Frank T. Courtney with Warren Shipp's Peanut Cierva C6c Autogyro. Courtney tested the full scale machine and demonstrated it in England, Germany, Spain. Note rotor reflection in his eyeglass.

Aeromodeller PHOTO PRIZE FEATURE

Fliar Phil tells you how to enter our Photo Feature and 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. As many details as possible should be given about the model and its construction. Send all entries to: Aeromodeller Photo Prize Feature, PO Box 35, Wolsey House, Wolsey Road, Hemel Hempstead, Herts., HP2 4SS. Photos will be returned after publication.

The Aeromodeller's first photo-contest aroused so much interest that Fliar Phil has been delighted with the photos you enthusiastic aerobods have been sending in. Keep 'em coming! Now fasten your seat belts, and let's take-off with this month's entries for Aeromodeller's second contest.

Photo No. 1

Despite the current vogue for R/C (and FP has nothing against R/C models!) — what can *really* beat a 'no noise,' 'no mess' well behaved rubber powered job? This is an Evans designed 'Wakefield' type, with Colin Joyner, who gets it up into the wild blue yonder! Mr. Smith of the West Midlands submitted this excellent photo.

Photo No. 2

Twin-motor rubber jobs are still fairly rare, but here is a most imposing 'twin'. Authentic camouflage and markings impart that 'real thing' look. Fliar Phil is assured that it flies as well as it looks. A fine model from Mr. J. Beresford of Trowbridge, Wilts.

Beresford of Trowbridge, Wilts., actually by the original designer the late Rupert Moore.

Photo No. 3

Mr. Warhurst of Derby informs Fliar Phil that he only needs less than full power from the PAW 80 up front, in his KK Snipe to obtain excellent flights. The Snipe is a business-like model and this photo shows off its functional lines well.

Photo No. 4

All the way from Rome comes this fine photo of a popular subject with 'scale buffs' — the Fokker Triplane. Power is a Cox TD 020 (diesel version). Pietro Frillici (apologies if I have spelt that wrong Pietro!) sent it, and adds that it was designed and built by his son.

Photo No. 5

This photo recalls the halcyon days of the Fury, Hart and Demon — beautiful figures — that guarded the freedom of our realm in the '30s. This Hawker Demon by Mr. Barbour of Gloucester, span 47in. weighs 4½lb. with a four channel radio. Superbly finished in the colours of 604 County of Middlesex Aux. squadron, FP has no hesitation in awarding it this month's camera.

Photo No. 6.

A pity there is no second prize for it would deservedly go to this fine model F4U Corsair. Span 18in. weight 2¼oz. power Telco CO_2. An imposing photo indeed from Mr. Iliffe of Nuneaton. A real work of art!

Photo No. 7

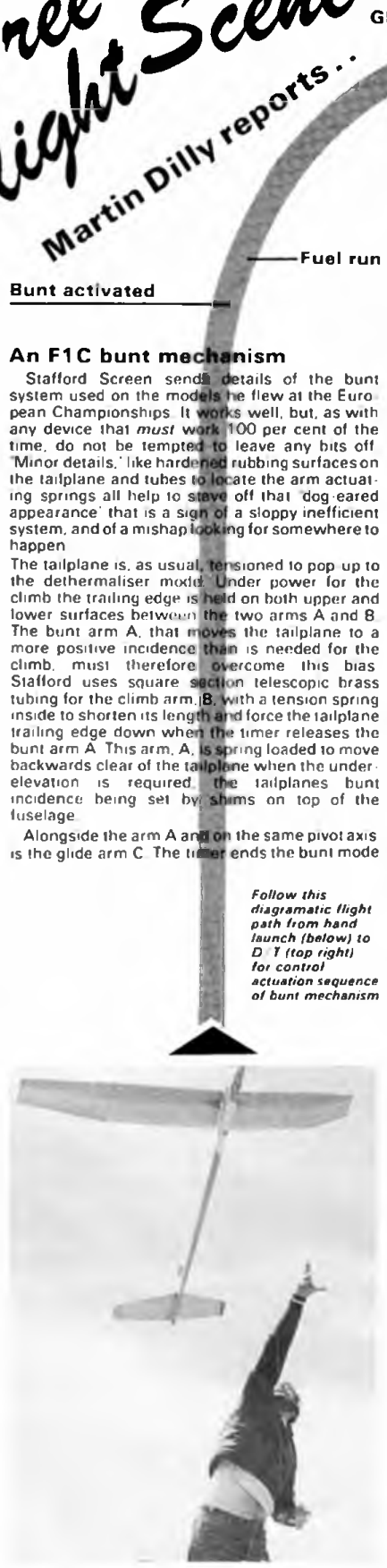
Fliar Phil feels that this photo from David Carpenter of Southampton shows real imagination in the way he has posed his D.H. Puss Moth. A real change from the usual grass and sky backgrounds. Looks as if it is over the Atlantic! A well constructed model, but unfortunately David has not let FP have any details of size, power, etc., but says its flight performance is very good.

Before closing the Hangar Doors this month, how about some photos of un-orthodox chaps? (canards, autogyros, ornithopters etc.). Don't be 'negative' take 'positive' action (what a pun!) and let Fliar Phil be 'seeing' from you.

Ray Malmström

Free Flight Scene

Martin Dilly reports . . .



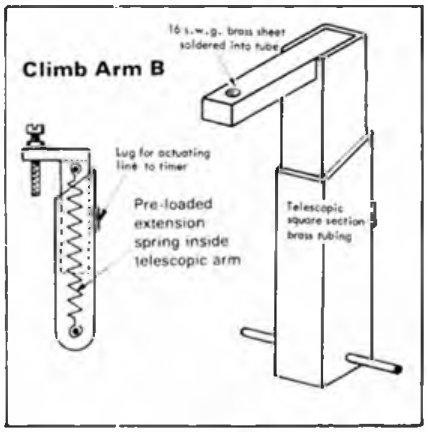
Follow this diagramatic flight path from hand launch (below) to D/T (top right) for control actuation sequence of bunt mechanism

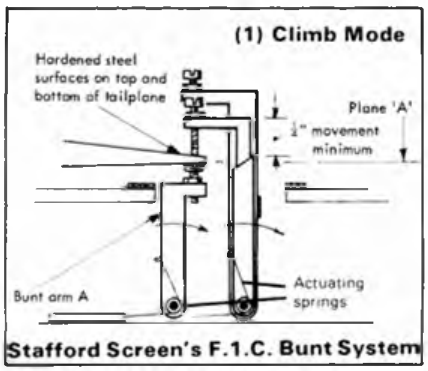
An F1C bunt mechanism

Stafford Screen sends details of the bunt system used on the models he flew at the European Championships. It works well, but, as with any device that *must* work 100 per cent of the time, do not be tempted to leave any bits off. 'Minor details,' like hardened rubbing surfaces on the tailplane and tubes to locate the arm actuating springs all help to stave off that 'dog-eared appearance' that is a sign of a sloppy inefficient system, and of a mishap looking for somewhere to happen.

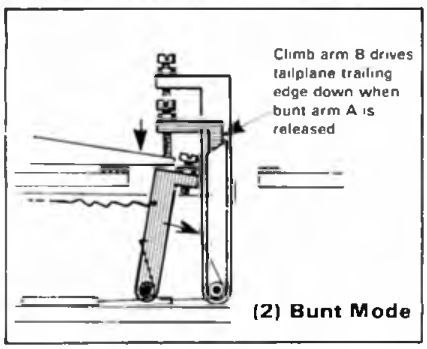
The tailplane is, as usual, tensioned to pop up to the dethermaliser mode. Under power for the climb the trailing edge is held on both upper and lower surfaces between the two arms A and B. The bunt arm A, that moves the tailplane to a more positive incidence than is needed for the climb, must therefore overcome this bias. Stafford uses square section telescopic brass tubing for the climb arm, B, with a tension spring inside to shorten its length and force the tailplane trailing edge down when the timer releases the bunt arm A. This arm, A, is spring loaded to move backwards clear of the tailplane when the under-elevation is required, the tailplanes bunt incidence being set by shims on top of the fuselage.

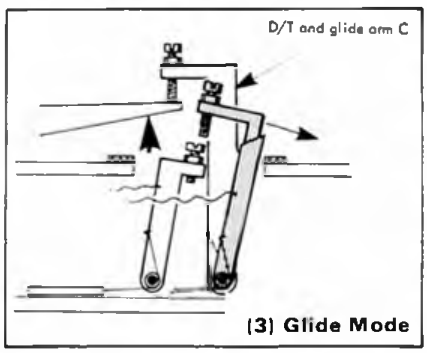
Alongside the arm A and on the same pivot axis is the glide arm C. The timer ends the bunt mode by releasing arm A, which is pivoted back by its arm actuating spring and the tailplane pops up until stopped by this glide arm, which is held forward till the final operation of the timer releases it, allowing the tailplane to pop-up to D/T the aircraft. Each of the arms has a 10BA screw and locknut at its tip to adjust the incidences for the various modes. The lower ends of the three arm actuating springs are located in tubes epoxied inside the bottom of the fuselage, but are free to slide in them. To prevent wear under engine vibration, the upper and lower surfaces of the tailplane are protected where the setting screws meet them by small pieces of hardened carbon steel shim. Stafford heats these to cherry red, oil quenches them, and then puts

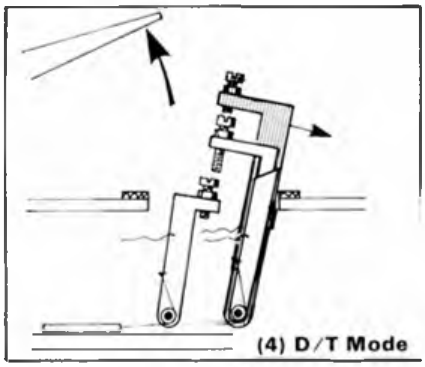


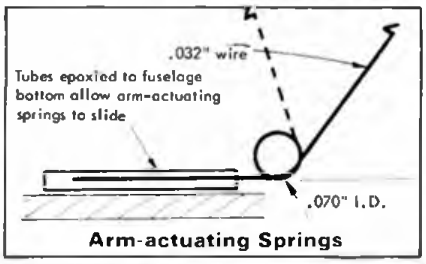


Stafford Screen's F.1.C. Bunt System









Tailplane with hardened surfaces on top and bottom of trailing edge is held between climb arm screw and bunt arm screw during climb.

Tailplane is driven down against fuselage top (or shims on it) by climb arm, now contracted by its internal spring, when the bunt arm is released to retract rearwards.

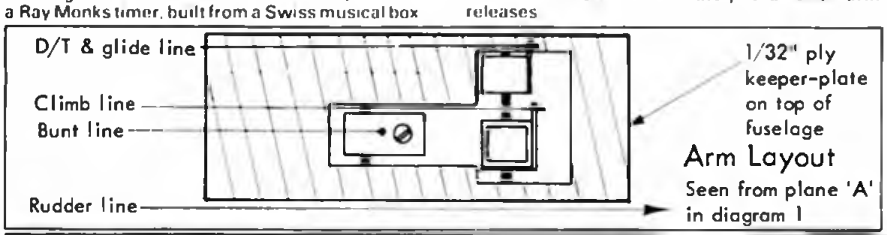
Climb arm is now released to pull rearwards off the tailplane, which is pulled up against the glide setting screw by the D/T actuating bands.

The Ray Monks built timer on Stafford Screen's F1C aircraft in the launch configuration. Note the Laystrate lines permanently attached to the timer arms, they pull tight via an over-centre action. The D/T arm (top right) is held down by the 88A screw latch on the bunt arm, to prevent premature D/T action. Note also the locating slots to prevent circumferential movement of the arms caused by friction from the timer disc.

them in an oven at Gas Mark 8 before bringing them slowly down to room temperature.

As an idea of the critical adjustments on today's F1C aeroplanes, our flyers at Zulpich were finding that half a turn of a 10BA screw was making a noticeable difference to climb trim, that is about six thousandths of an inch! Even with a carefully balanced propeller, there will be some vibration and friction between movable surfaces; anyone who has seen the friction burns on the wing of a power model where the hold-down bands force it against the pylon wing-mounts will attest to that.

Going to the front of Stafford's aircraft, he uses a Ray Monks timer, built from a Swiss musical box movement, rather than the more usual Seelig. The photo shows that all actuating lines are held captive to the arms on the timer, and are pulled tight by an over-centre action; note also the *double* light alloy tube crimpers that secure the Laystrate lines' loops. To prevent premature D/T operation under power, normally fatal to power models, the D/T arm (top in the photo), that runs in the timer scroll is held down by a transverse latch — actually an 8BA screw — on the u/t arm. This way, the worst that can happen if the arm comes out of the scroll under power is that the model will D/T immediately the u/t arm releases.



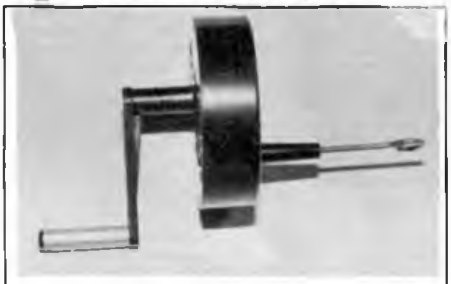
International Contest Flying

One of the most enjoyable parts of model flying is taking part in overseas competitions, it is, if you like, flying for fun *par excellence*. Most foreign contests are entered on the CIAM's calendar of Open Internationals, which imply that certain standards of organisation will be met, and that the event is run with the approval of the country's national aero club. Unlike World and Continental Championships, which are limited to teams from the various nations within the FAI, an Open International can be entered by anyone holding a current FAI competition licence, you can easily get one yourself from the SMAE, with no aptitude test or other qualification needed. Before you fly, your models must have been processed, i.e. checked for wing area, and any other limits laid down by the FAI for the class you intend to compete in. This is normally done by arrangement with the various SMAE Area competition secretaries, who then issue you with a model specification certificate for each aircraft you may possibly use. At the same time the various parts of the model are marked with small FAI processing stickers, so it is clear which certificates apply to which aeroplane. There is a small fee to cover the cost of this, currently £1.00 per model. These certificates last the life of the aeroplane, so the job need not be done every time you wish to compete abroad.

When you arrive at the competition, which must be pre-entered, the organisers should then check the models against the certificates, but will not normally do any area checking except in the case of winners, they will, however, weigh the models and the rubber motors. Often the degree of smooth organisation at these contests is something of an eye-opener to us who fly in Britain. Timekeepers are provided, sometimes accommodation is included in the entry fee, and often there is a closing banquet and prizegiving. Give it a try in 1983. Watch the Aeromodeller Contest Calendar for details.

DAVE DAY'S SHOP TALK

The latest in products for the modelling scene



SAMS 16:1 Winder

For indoor flyers, this new winder by RMS Tooling will be very useful since it has a ratio of 16 to 1, thus speeding up winding considerably. It is not recommended for use with motors stronger than 2 strands of 1/8in. flat rubber. Price £10.85 from SAMS.

Balsa Hardness Gauge

Older readers of Aeromodeller will remember the name J. H. Maxwell as appearing on numerous articles in connection with aerodynamic theory and in connection with the Low Speed Aerodynamics Research Association (LSARA). Mr. Maxwell has now formed a small company to manufacture useful accessories for the modeller, the first of these being a balsa hardness gauge.

Operation of the unit is very simple. It is merely pressed against the balsa until a pre-determined load point is reached, the number of indentations made is counted and translated into balsa hardness via a conversion chart.

Available from J. H. Maxwell, 14 Upper Craigs, Stirling, FK8 2DG, Scotland. Price £11.85p post free in U.K.

ST.60 Stunt

With the current rend towards larger and larger C/L Stunt models, attention is now turning to .60 size engines. One such engine is that recommended by Claus Maikis for his 'Savoy' design (January '83 Aeromodeller) the Super Tigre ST.60. This engine is now available in this country from Tigre engines or Micro-Mold, price £44.42.

Bearing conversions

Racing Models of 1 Melrose Avenue, Whitton, Middlesex, are offering bearing conversions which are claimed to give extended life to the bearings used in model engines. The conversion utilises a new bearing cage made from a special material containing flurocarbons and graphite.

Cost varies from £5.00 to £8.00 depending on bearing size, plus VAT, postage and your old bearing.

Dunham Engineering Conversions & Castings

Now well-known for their replica 'Mechanair' engine, Dunham Engineering are able to undertake the conversion of any existing two or four stroke glow motor to spark ignition. Illustrated is their conversion of the 'Magnum' four stroke engine where fitting the contact breaker cam to the engine camshaft makes for a very neat installation. Prices: Any two-stroke £25.00. Magnum or Webra T4 £30.00, Coil £7.50, Condenser £2.00 Spark Plug £3.00, all prices should have VAT added.

Dunham are also producing crankcase castings for two motors in the MAP Plans range, these being the Sparey 5cc diesel (Plan MM122) at £2.00 and 'Topsy', a 0.3cc diesel (Plan E/992) at £2.95.

Available from Dunham Engineering, 12 Lawns Avenue, Tontine, Orell, Wigan WN5 8UQ.

Dunham 'Valkyrie' Diesel

Dunham Engineering, well-known for their 'Mechanair' replica engine, are now producing an original design model diesel engine, the 5.3cc 'Valkyrie.' While outwardly of what might be called 'traditional' appearance, the motor is quite unique in that it is a side port motor, with rear mounted carburettor/tank unit, but of modern design using up-to-date technology.

Side port motors are renowned for easy starting and flexibility with the ability to swing large propellers. Manufacturers performance include 4,300rpm on a 15in. × 6in. prop, 6,500 on a 12in. ×6in. and 9,000 on a10in. × 6in. Silenced and throttled versions are being developed. Checked weight of the motor illustrated is 13½oz.

Each motor carries a no quibble guarantee and, with an eye to the collectors, will be numbered and certified. The 'Valkyrie' is available from the Dunham Engineering Co., 12 Lawns Avenue, Orrell, Wigan,WN5 8UQ, and costs £86.00 plus VAT.

All those who plan to attend this year's Vintage Day at Old Warden will be interested to learn that the motor shown will be presented as one of the prizes at that event.

Thunder Tiger Accessories

A large range of accessories have recently been introduced by Thunder Tiger. Those of particular interest to Aero-modeller readers are as follows:

Tachometer — This is a photo-optical unit which is used by pointing it at the propeller disc and has 3 ranges: 0-8,000; 0-16,000 & 0-32,000 and has a selector switch which enables it to be used with 2, 3 or 4 bladed propellers. Power is supplied by a 9 volt PP3 type battery (not supplied) Price £29.95.

Kwik-Klip — A clothes peg type glow plug connector supplied complete with leads and crocodile clips for connection to a 1.5-2.0 volt battery. Price £1.35.

4 Way Box Spanner — A useful spanner for 8m, 9m, 10m and 12m metric threads. Price £1.25.

All the above are distributed by Irvine Engines and available from model shops.

Tow Line Chute

Tow-line parachutes in various sizes, windstocks, plus any similar item to special order, are available from Towncrafts, 18 Waverly, Bracknell, Berks. Prices for standard items: small parachute £3, medium 'chute £4, 12 panel medium 'chute £5, a 36in. windstock £4, and towline pennants 80p.

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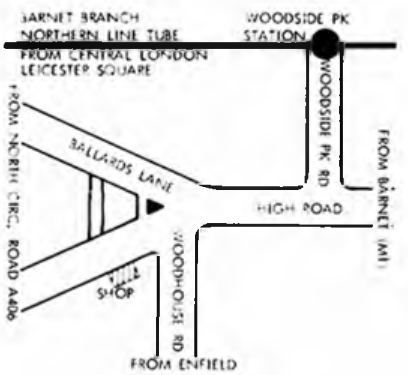

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Designed by John Stroud

Stoneleigh Class Building Instructions

Use PVA for all wood joints. PVA is usually dry enough to continue construction after an hour or two although it needs to be left overnight to completely dry.

1. Mark out the wing parts on a sheet of 6mm medium balsa. Cut out and glue the parts together using pins and elastic bands to hold in place. Leave to dry.

2. Mark out the formers F1, F2, F3, bellcrank mount and tail skid on a piece of 3mm ply. Cut out the parts very carefully with a fretsaw.

3a. Beam mounted engines

Make-up or buy a fuel tank of a suitable size. Cut two engine bearers to the correct length and drill the engine mounting holes. Bolt the engine to the bearers and carefully solder the nuts to the keep plates. Slide on **F2**. Put the fuel tank in place and mark the position of the feedpipe on **F2**. Remove **F2** and drill the feedpipe hole. Assemble **F2**, the fuel tank and **F3** onto the bearers and check that the fuel tubing will have a clear run to the engine. The engine should be as near to **F2** as possible without making the fitting of the fuel pipe, silencer etc. impractical. Firmly glue the assembly together with the engine in place using packing to secure the tank if necessary. Check that the bearers run truly parallel and leave to dry.

3b Radial mounted engines

Drill **F2** to suit engine. Bolt the engine to **F2** with a tin plate backing piece behind the nuts. Very carefully solder the nuts to the tin plate without getting solder on the bolt threads. Alternatively the nuts can be anchored using an epoxy glue. Grease on the threads will stop the epoxy sticking where it is not wanted. Cut out a 6mm balsa former the size of **F2A** and glue it to the back of **F2**. It will be necessary to drill the balsa backing to allow for the nuts and bolts. Leave to dry firmly pressed together.

4. Mark the fuselage sides, tailplane, elevator and fin parts out on a piece of 3mm medium balsa. Cut out all the parts to shape. Pin the two fuselage sides together and trim and sandpaper to exactly the same shape.

5. Cut two undercarriage mounting blocks to length. Assemble these along with the engine mounting, F2 and the fuselage side with ample glue on all the contact surfaces. Hold firmly together with pins and weights (or in a large vice) whilst leaving to dry overnight.

6. If iron-on film is to be used, cover the hinge surfaces of the elevator and tailplane with a strip of covering. Sand items to outline and round off the edges. Fit together using commercial hinges or the sewing methods.

7. Offer the wings to the fuselage assembly and trim where necessary to obtain a true fit. With the wings on a flat surface, glue the two items together. Check very carefully that they are square to one another and that the top of the fuselage is perfectly parallel to the flat surface by measuring its height at the nose and tail from the flat surface. Leave to dry thoroughly overnight.

8. Bolt the bellcrank to its mounting plate and place inside the fuselage. Mark and cut out the leadout holes and the push pull rod exit hole. Bend a suitable bicycle spoke to make a push-pull rod and try it in place. Bind and solder the leadout wires to the bellcrank. Try the mechanism with the tailplane and horn temporarily held in place. Adjust where necessary to give the free movement shown. The control movement is of vital importance, and do not move on until this step is perfectly satisfactory.

9. Glue the bellcrank mounting plate in place and add the fuselage spacer at the wing-root. Pull the fuselage together at the rear and glue whilst holding it closed with a clothespeg. Pin and glue the tailplane in place and leave to dry.

10. When dry, double check the control system and then cover the bottom of the fuselage with 1.5mm balsa sheet. The top of the fuselage can be made from 12mm sheet or built up using offcuts from thinner pieces. Carve roughly to shape and remember to cut a slot at the back for the fin. Glue top deck in place and add the fin and its strake. Note the fin offset.

11. Offer F1 to the nose. Trim the nose so that F1 sits square and has 2 or 3mm clearance with the spinner and propeller fitted. It is a good idea to then glue F1 in place by holding with the spinner alone. Glue and pin the tail skid in place.

12. Fill in round the bottom of the engine with scrap balsa and carve roughly to shape. If it is intended to cowl the engine, try building a 1.5mm ply frame first and then fill in the shape afterwards with balsa scrap. Each engine used needs a slightly different cowl but the principle of building a fairly strong frame first and then filling it in is always a good one.

13. Glue the 1.5mm ply undercarriage plate in place. Make two saw cuts in the wing as shown, cut out the wing guide from 1.5mm ply and glue in place. Add the wing tip weight to the outboard wing. On the prototypes this was done by carefully drilling the tips with a 2.5mm drill and inserting two inch nails with the heads removed.

14. Remove the engine and block up the tank pipes to keep out the dust. Carve and sand the whole model to shape. Cut out an acetate windscreen and epoxy in place.

15. Bend the undercarriage wire to shape and bind and solder it together whilst held in place on the model.

16. When selecting the method of finishing, bear in mind that some iron-on coverings only have a limited resistance to diesel fuel. Whichever method is used, first paint the inside of the engine bay with a good coat of fuel proofer. Block the bolt holes to stop the proofer getting into the nuts and setting. If an iron-on finish is used, it can be applied without further finishing.

17. For paint finishes give the model a thorough rub down with fine sandpaper and then cover it with lightweight 'Modelspan.' Tissue is fairly easy to put on with ordinary wallpaper paste. Leave to dry overnight then give a good coat of full strength dope. A smooth finish can then be built up using a dope/talcum mixture with a little colour added. Using fine sandpaper, the colour helps to judge how much to rub back between coats. The final finish can either be applied using dope or household polyurethane. Unless you are a good artist, colour schemes and decoration should be kept simple using masking and trim tape wherever possible.

18. It is essential to give a coat of fuel proofer to painted models and a good idea to give extra proofing to the vulnerable areas of an iron-on finished model.

19. Finally, solder up the lead-out ends and check the balance point. If it is not within 2mm of the point shown on the plan, add ballast as necessary. The '60' prototype was fitted with a fairly heavy 2½oz engine and silencer. It needed some lead bolted to the tail skid to move the balance point back to the position shown. The prototype '60' weighed 500 grams and the '45' 250 grams.

Flying instructions

By far the best way to learn to fly is from an experienced flyer. However in case you cannot find one, these tips might help. Choose a calm day for your first flight. The models will take off from short grass or tarmac although tarmac can be very unkind in a crash. Lay out the lines and check they are free from kinks and not twisted round one another. If there is a slight breeze, set the model up to start its take-off run with the wind. This allows the model to take off and build up speed downwind ready to fly upwind when there is a possibility of slack lines if the speed is too slow.

Start the engine and tune it for a smooth fast run. Most engines need to be about a quarter turn open from the fastest and leanest needle setting. If the engine is only at half power, the model will be difficult, if not impossible, to fly.

With your helper holding the model, go to the centre of the circle and check that the controls are working and that you are holding the handle the right way up i.e. pulling the top line makes the elevator move up. When you are satisfied, signal your helper to release the model and hold your arm rigid at the wrist and elbow, only allowing movement at the shoulder.

Do not be in a hurry to lift the model off the ground as soon as it starts its take-off run. Let the speed build up for a few yards on the ground and the model should fly itself off the ground. Keeping the wrist and elbow locked, move the whole arm to keep the model flying between two and three metres high. A small movement quickly is the way to fly — not large movements too late. The knack comes quite quickly — like learning to ride a bicycle. The problems to avoid are over-control, flying too high and worst of all — panic.

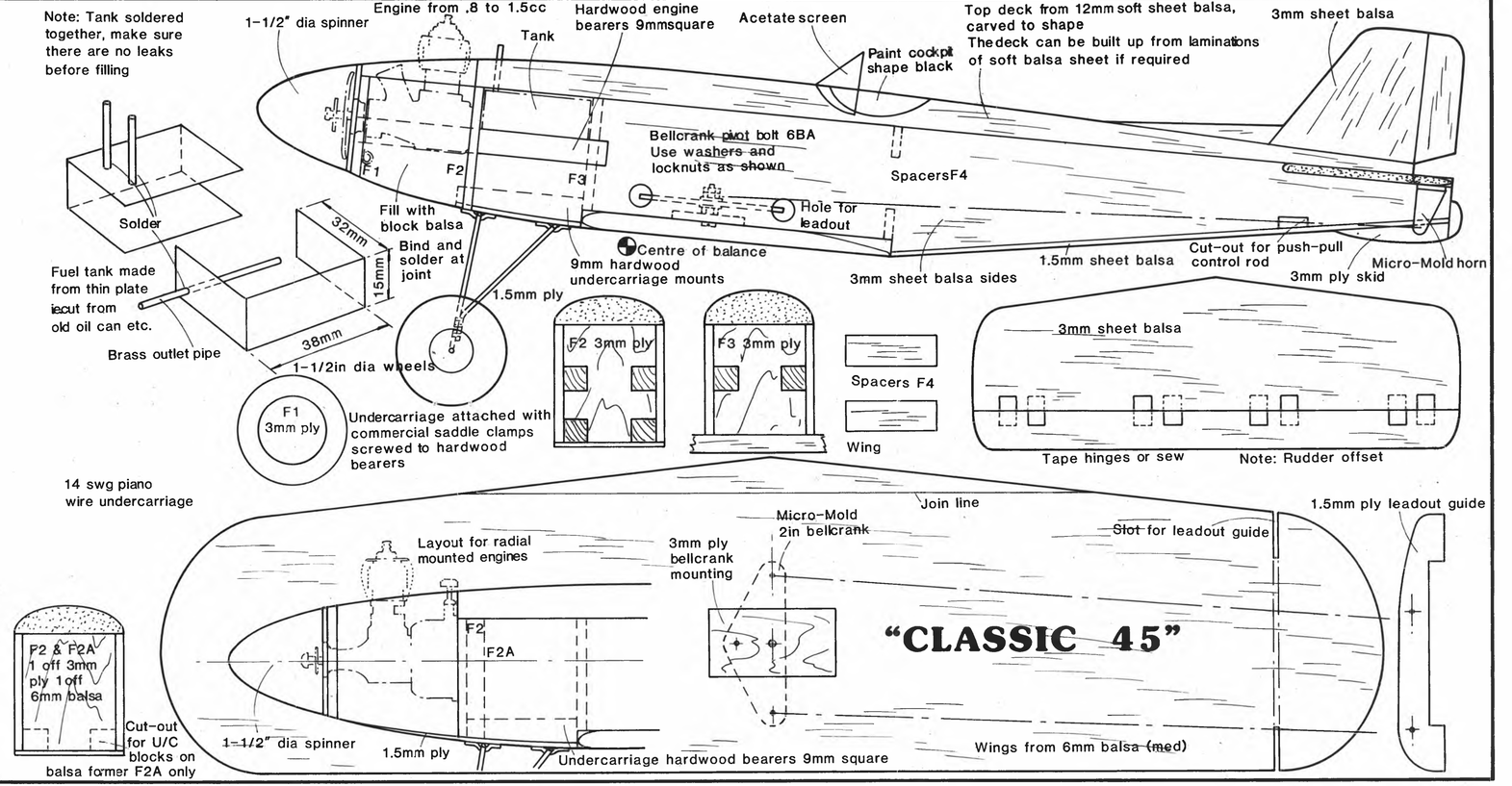
When the engine shows signs that it is about to run out of fuel, bring the model down and try to fly about one metre from the ground. These trainers have very little gliding power, so as the engine stops, land the model quickly whilst you still have plenty of airspeed.

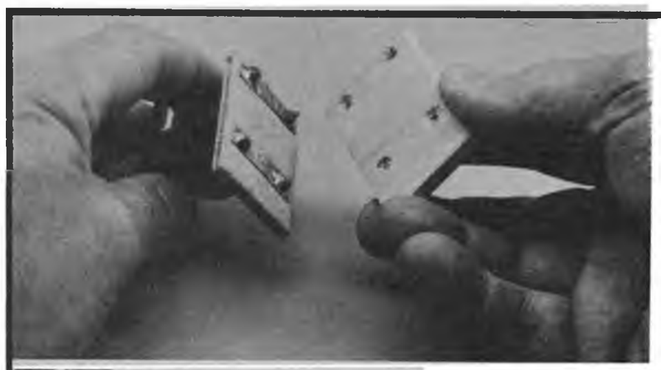
MATERIALS LIST

	Classic 45	Classic 60
6mm medium balsa	36in. × 3in.	36in. × 4in.
3mm medium balsa	36in. × 4in.	36in. × 4in.
12mm medium balsa	14in. × 1½in.	17in. × 2in.
3mm ply	Offcut roughly 8in. × 3in.	
⅛in. ply	Offcut roughly 3in. × 3in.	
Nuts and bolts	4 nuts and bolts to fit engine and one to secure bellcrank.	
Bearer wood	2 off 5mm × 8mm × 95mm	2 off 12mm × 9mm × 130mm
Spinner	1½in.	1½in.
Wire	36in. 12 swg	
Wheels	1½in.	2in.
Laystrate	To make lines as required. Use heavyweight or double thickness lightweight for leadouts	
Horn	One plastic horn and fixing screws.	
Link	One control link to fit spoke thread	
Bellcrank	2in. bellcrank	
Solar film finish	As required to obtain colour scheme plus small tin of fuel proofer.	
Paint finish	Clear dope, shinners, coloured dope, fuel proofer and tissue.	
Glue	One tube of PVA glue	
Acetate sheet	Offcut 2in. × 2in. approx	
U/C clamps	Set of 4 small clamps and fixing screws.	
Fuel tank	Size to suit engine. Can be made as shown on the plan from tin plate, as bought complete from a model shop	

GUIDELINES FOR PROPELLER SIZES AND LINE LENGTHS

Model	Engine size in Cubic centimeters (cc) and cubic inches (cu.in.)	Use the prop size recommended by the engine manufacturer. If not known, try these	Suggested line length and type
Stoneleigh Classic '45'	.8-1cc OR .049-.060 cu.in.	6in. × 3in. OR 5in. × 4in.	25ft.-30ft. Lightweight Laystrate or nylon cord
	1.5cc OR 10cu.in.	7in. × 4in., 8in. × 4in. OR 7in. × 6in.	30ft.-40ft. Lightweight Laystrate
Stoneleigh Classic '60'	1.5cc OR 10cu.in.	7in. × 4in., 8in. × 4in. OR 7in. × 6in.	30ft.-40ft. Lightweight Laystrate
	2.5cc OR 15cu.in.	8in. × 4in., 8in. × 6in. OR 7in. × 6in.	50ft. Lightweight Laystrate

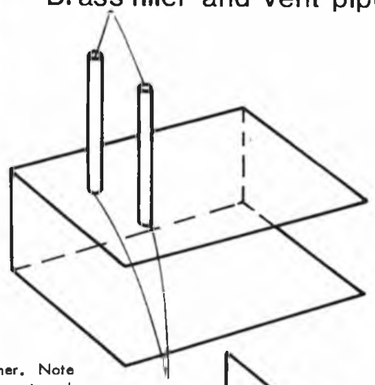


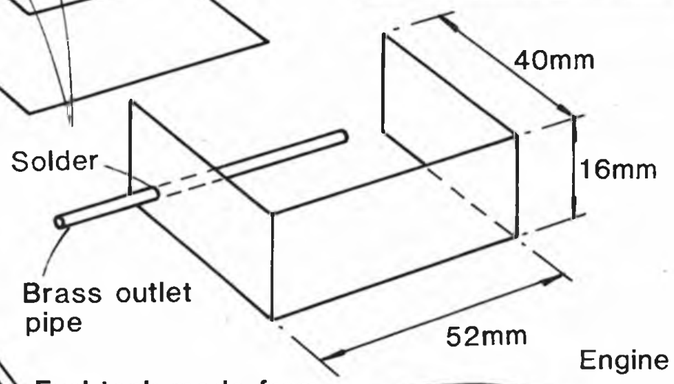


Above; Engine radial mount former. Note the tin plate strips soldered to the nuts and sandwiched between rear former to hold in place. Left; Space is limited for fitting the motor. This photo shows a simple method of holding the screw to the screwdriver (using a piece of rubber sleeving) so that the screw can be easily located in the confined space.

Locating the leadout guide into the wing slots. Make sure this is a tight fit before gluing into place. This guide also helps to give rigidity to the wing cross section.

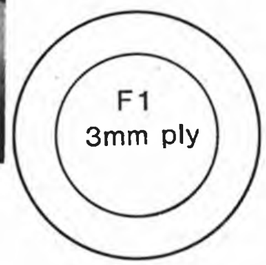
Brass filler and vent pipes

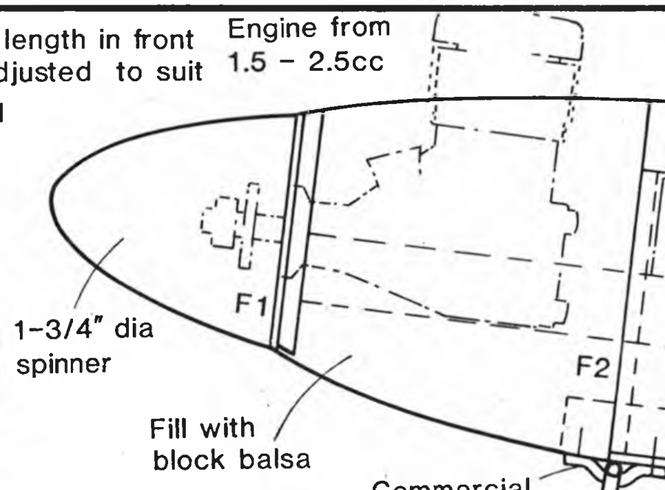


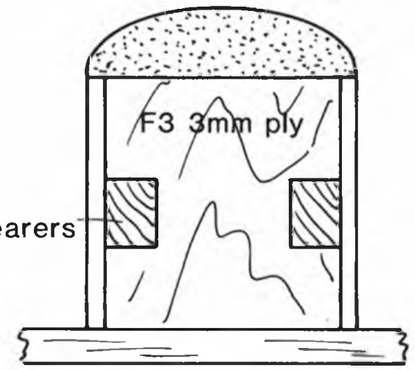


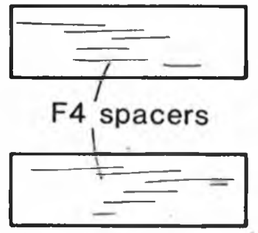
Note: The nose length in front of F2 can be adjusted to suit the engine used

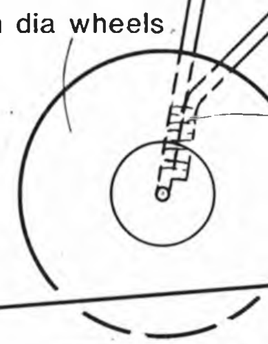
Engine from 1.5 – 2.5cc



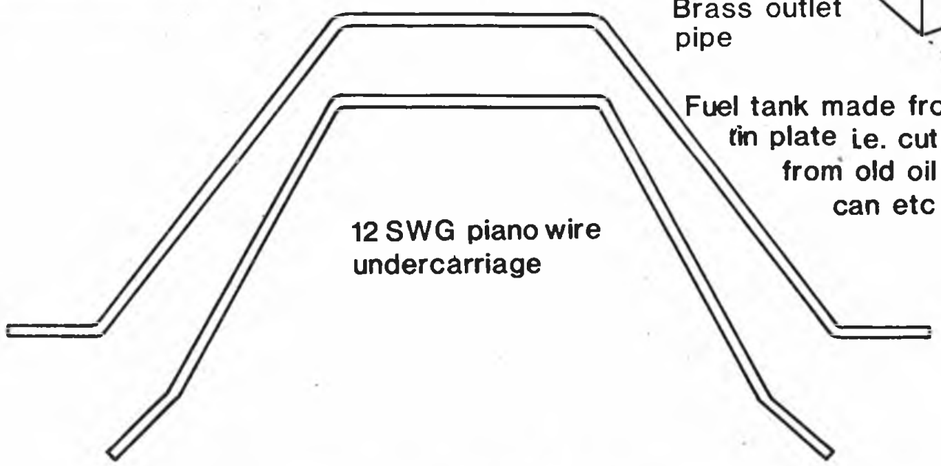




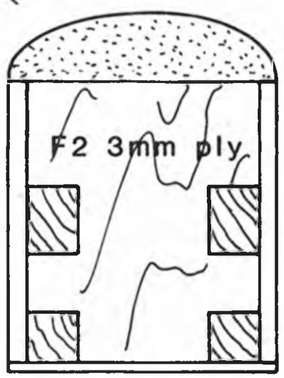


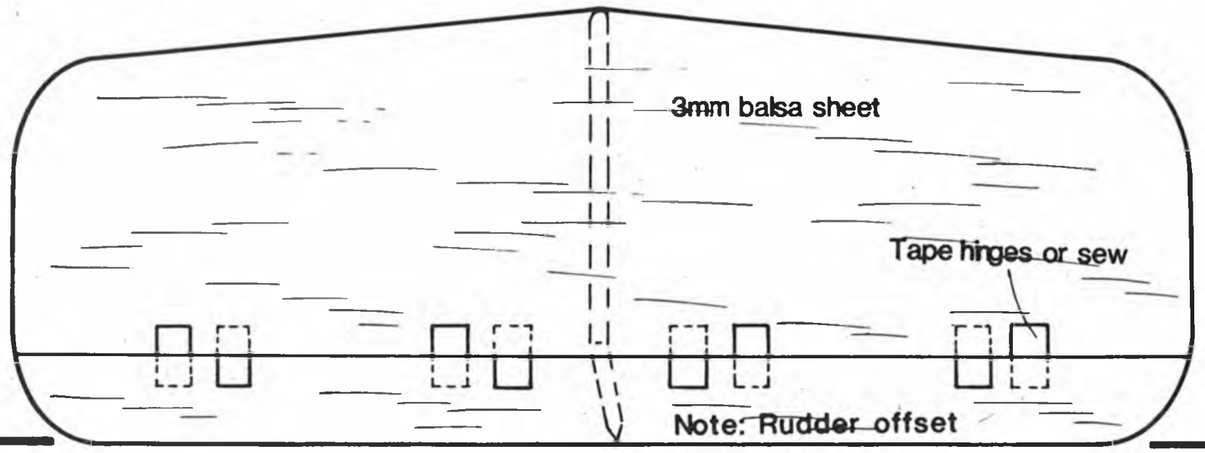


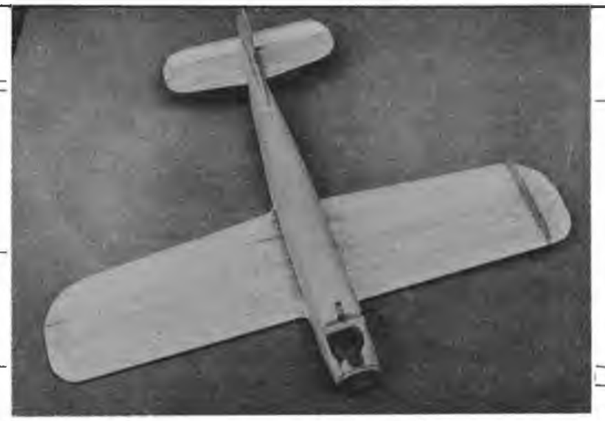
Wing



Fuel tank made from tin plate i.e. cut from old oil can etc







The completed frame of the model ready for finishing.

"CLASSIC 60"

Fuel tank

Hardwood engine bearers

Acetate screen

Paint cockpit shape black

Top deck from 12mm soft balsa carved to shape. The deck can be built up from laminations of soft balsa sheet if required

3mm sheet balsa

3mm sheet balsa sides

Bellcrank pivot bolt 6BA
Use washers and locknuts as shown

Hole for leadout

F3

F4 spacers

1.5mm ply

Centre of balance

14 swg piano wire undercarriage

Bind and solder joint

Side view of pushrod end

Push-pull control from 16 swg piano wire or use bicycle spoke and commercial horn connector

1.5mm sheet balsa

Cut out for push- pull rod

3mm ply skid

Micro-Mold horn

3mm ply bellcrank mounting

Hole for 6BA bellcrank pivot

1.5mm ply leadout guide

Wing joints

Slot for leadout guide
Make small and enlarge until guide is a tight fit

2in Micro-Mold bellcrank

Bellcrank mounting

Wing from 6mm balsa (med)