

Aero Modeller

March 1974

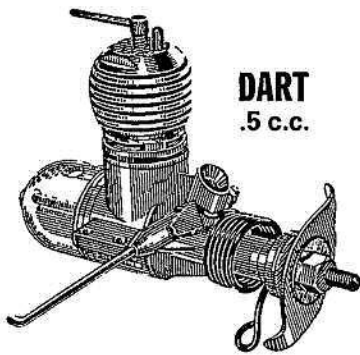
20p (U.S.A. & Canada \$1)

INCORPORATING
MODEL AIRCRAFT

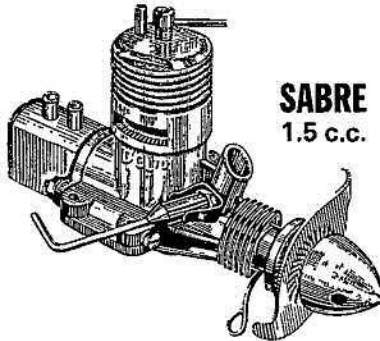


HOBBY MAGAZINE

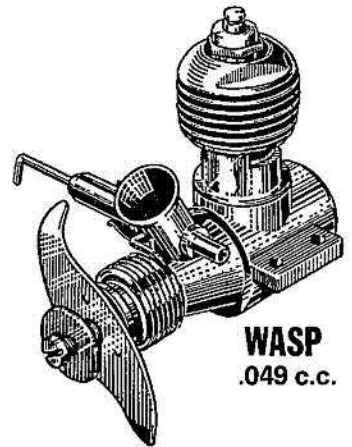




DART
.5 c.c.



SABRE
1.5 c.c.



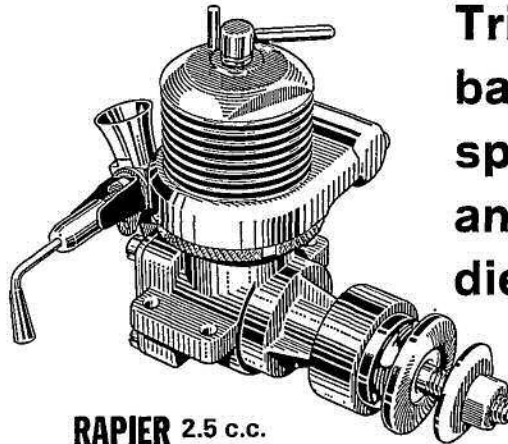
WASP
.049 c.c.

See them at your model shop!

QUICKSTART

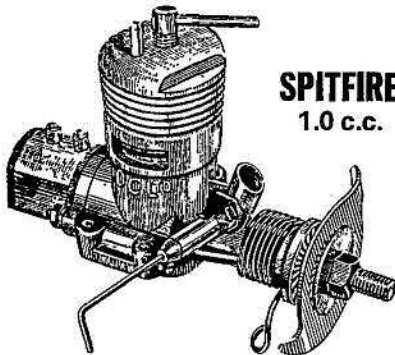
**The Motors
for the Modern
Modeller!
Quality
engineered
for lasting
performance**

**Tried and tested,
backed by full
spares service
and years of
diesel 'know-how'**

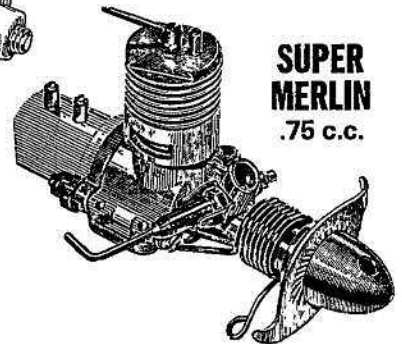


RAPIER 2.5 c.c.

Four versions – Aero stan-
dard or R/C marine, water-
cooled, standard or R/C.

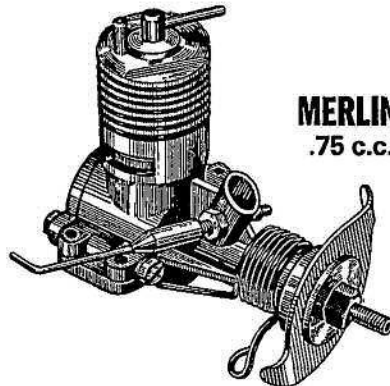


SPITFIRE
1.0 c.c.



**SUPER
MERLIN**
.75 c.c.

**No spares-backing
worries – if you have
a Quickstart you can be
sure of full and continuous
use of your engine**

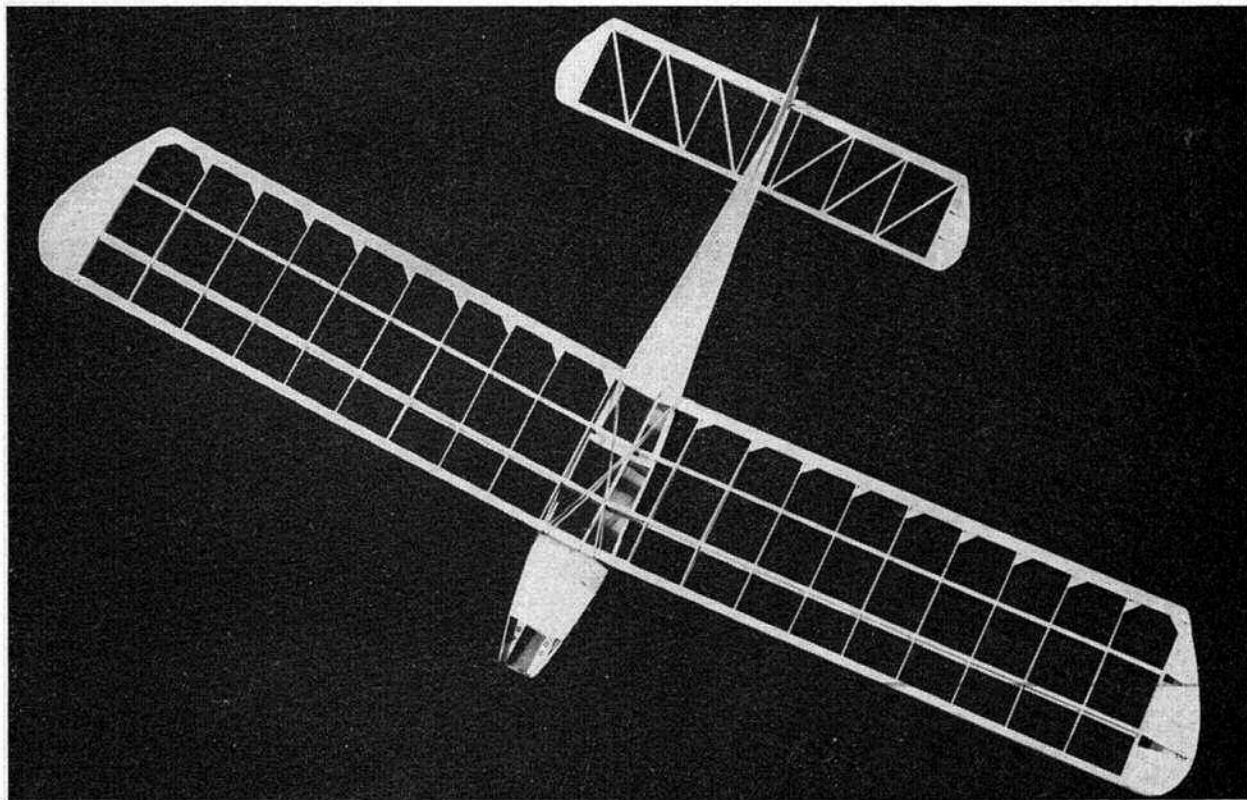


MERLIN
.75 c.c.

**Quality
Reliability
Economy**

**DAVIES-CHARLTON LTD. HILLS MEADOW
DOUGLAS, Isle of Man**

SOLARBO



If you want to build light, then spar-and-rib construction is the answer. The same basic type of built-up airframe construction that revolutionised model aircraft performance over forty years ago. Plus touches of modern know-how. Like diagonal bracing for a warp-resistant tailplane. Gussets to reinforce wing rib-trailing edge joints. (Personally we would have liked to see diagonal bracing or, better still, geodetic ribs, on a 'functional' wing.) 'Five-minute' epoxy instead of balsa cement.

But the basic technique hasn't changed much – and neither has the material. Balsa still grows as a tree, and the wood can be just as variable in quality. No amount of modern machining technique in the preparation of balsa sheet, strip and block can cover that up. That's why the preparation of Solarbo balsa starts right in Ecuador, selecting the best Balsa trees. Selected and graded again at the Lancing factory. *Before* it goes forward for cutting. Double selection as a double safeguard for Solarbo quality. Solarbo machining quality shows for itself. But to be *quite* sure, every piece has to pass final inspection. No wonder Solarbo-built models fly better!

THE HOME OF
GOOD Balsa

SOLARBO

(LIMITED)

COMMERCE WAY
LANSING SUSSEX

ALWAYS ASK FOR

'SOLARBO' BY NAME

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

Buy and Fly the Best...

VERON

DID YOUR GRANDAD LEARN TO FLY IN THE R.A.F. in the Immortal

HAWKER TOMTIT?

NOW'S YOUR CHANCE TO CATCH THE THRILLS BY BEING A RADIO-CONTROL PILOT!

SCALE R.A.F. TRAINER FOR 4-CHANNEL RADIO

Circa: 1928 to 1939. Only 52" span but ample area (wide chord wings) to carry Full House Miniaturised Propo. For motors of .23 up to .40 cu. in. (3.7 to 5.6 c.c.) Plastic Cylinders, Vintage Wheels, Nylon Spinner, Vinyl R.A.F. Decals. All pre-bent wire strutting.

KIT PRICE **£23.56**

OR BE A MODERN PILOT WITH THE 'SKYLANE'

54" span (1372 mm)



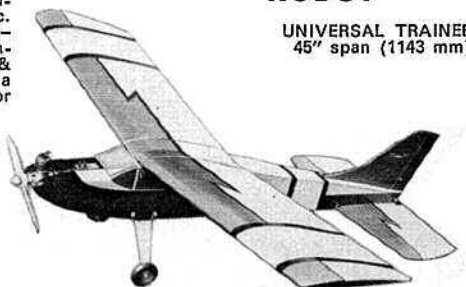
KIT PRICE **£10.15**



'Jet-age' type Swept Fin and Streamlined Decor makes a fascinating model. For motors 1.49 c.c. (.09) for Rudder only up to 3.5 c.c. (.19) for 3 channel - Rudder, Elevator, Engine. Sturdy, stable & responsive. Built like a bank - will last for years!

LOOKING FOR A COMPACT FIRST TRAINER FOR RADIO CONTROL? HOW ABOUT 'ROBOT'

UNIVERSAL TRAINER 45" span (1143 mm)

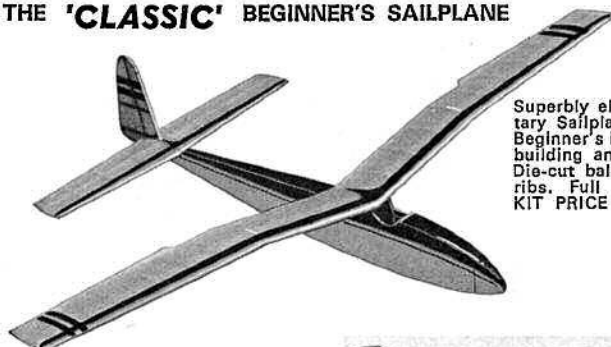


Again designed for 1.49 to 3.5 c.c. (.09 to .19) for Single Channel up to Rudder, Elevator & Engine! Tough, Solid & Everlasting. Still the standard by which all Radio Trainers were set!

KIT PRICE **£7.79**

THE 'CLASSIC' BEGINNER'S SAILPLANE

38" span (914 mm)



Superbly elegant elementary Sailplane - ideal for Beginner's introduction to building and Sailplaning! Die-cut balsa formers and ribs. Full layout plans. KIT PRICE **63p**



ENGINES

Standard and Radio Control

NEW!

11900 Fox 19	3.5 c.c.	...	...	£6.95
21900 Fox 19	R/C	...	...	£9.95

STANDARD

11500 Fox 15	2.5 c.c.	...	...	£5.95
12500 Fox 25	4.1 c.c.	...	...	£7.45
12900 Fox 29	5.0 c.c.	...	...	£8.45
13500 Fox 35	5.9 c.c.	...	...	£8.95
13600 Fox 36	6.0 c.c.	...	...	£8.95

RADIO CONTROL

21500 Fox 15RC	2.5 c.c.	...	...	£8.95
22500 Fox 25RC	4.1 c.c.	...	...	£10.95
22900 Fox 29RC	5.0 c.c.	...	...	£11.95
23600 Fox 36RC	6.0 c.c.	...	...	£12.45

SILENCERS (Open or Closed)

Type A ... £1.88 B ... £2.64 C ... £3.39

FOX GLOW PLUGS

Standard Series for use with Dry Cell

40101 Standard	Short	...	...	35p
40201 Standard	Long	...	...	35p
40502 R/C	Short	...	...	45p
40602 R/C	Long	...	...	45p

2-volt Series for use with Lead-Acid Battery

40103 Standard	Short	...	...	39p
40203 Standard	Long	...	...	39p
40503 R/C	Short	...	...	45p
40603 R/C	Long	...	...	45p

NEW - FOX FUEL FILTERS

90702 LARGE (in-line Type)	...	...	39p
90701 SMALL (in-line Type)	...	...	39p

CESSNA SKYWAGON

23" SPAN (584 mm)
All die-cut and decorated parts! Dead easy to build! Plastic Prop. Pre-shaped Undercart with fitted Wheels. Rubber Motor.

CHAMPION CITABRIA

22" SPAN (559 mm)
EASY-TO-BUILD, FUN-TO-FLY!
KIT PRICE (each) **99p**



MODEL AIRCRAFT (B'MOUTH) LTD - NORWOOD PLACE - BOURNEMOUTH

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

Aero Modeller

INCORPORATING
MODEL AIRCRAFT

March 1974

Volume XXXIX No. 458

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HOBBY MAGAZINE



ALSO MODEL BOATS · RADIO CONTROL
MODELS & ELECTRONICS · MODEL ENGINEER
MODEL RAILWAYS · SCALE MODELS · WOOD-
WORKER and MILITARY MODELLING

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comment

Once more our engravers and printers have squeezed the last watt from a miserly electricity authority to ensure continuity of this magazine. We all look forward to a return to normality, with restoration of the alternate month pull-out-plan feature and a full allocation of pages: but wonder in reality if our modelling world will ever be the same again.

Aside from the energy crisis problems, raw material restrictions and general toughening up on our leisure-spending power, there is another factor looming up which has already had effect in some areas of the model trade.

It is the fluctuation of international monetary exchange. The Pound Sterling has fallen against a rising Dollar, other currencies are devalued, revalued or sent floating. Nett result is that the imported goods prices are as unstable as an F.A.I. power model with a loose tailplane!

Advised prices can only be taken as a guide in many instances and with a lead time of up to six weeks between preparation of prices in advertisements and publication of the magazine, the customer has to accept the fact that increases have to be applied.

In all this gloom there is one bright light. British manufacturers have a tremendous advantage. There are golden opportunities for export of kits, engines and radio equipment. It is now cheaper for modellers on the European continent to fly to London to buy their radio equipment and engines than it is for them to purchase from their local model shop.

on the cover

Few flying models have been so well preserved as has Emmanuel Fillon's classic Wakefield Trophy winner of 1937. Seen at his delightful retirement home at St. Raphael in the south of France, the tone of the tissue and tricolour bands remain bright as ever. Emmanuel holds a very exclusive miniature of the Wakefield Trophy - the only one we know of - and offers his design, published in this issue, as a truly vintage model, still capable of matching many present-day designs in terms of performance.

next month

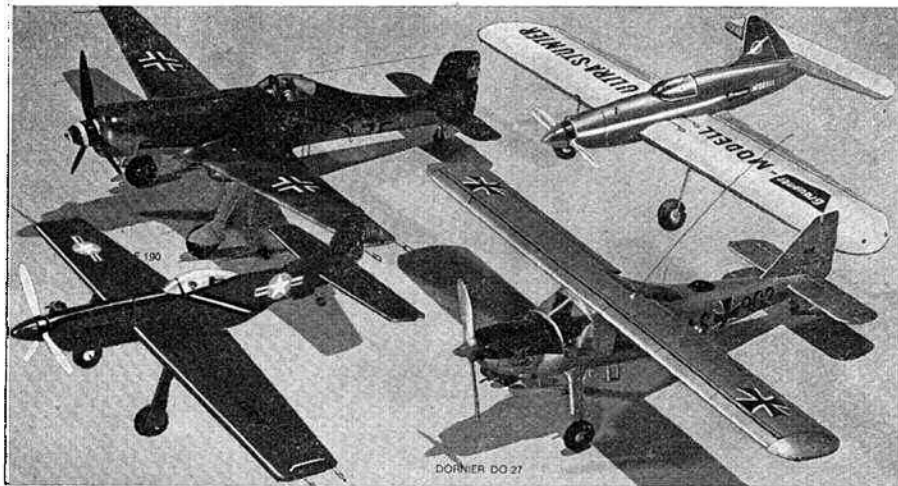
With luck (no promises!) there will be plans of Frank Smart's latest combat design *Hornet 3*, together with a feature on constructing lightweight leading edges for this type of model. Harry Butler brings us up to date on his very practical approach to *electric round-the-pole flying*, while our feature on *Basic Metalwork* continues on the subject of joining metals. We also fly the *Asteroid A/1* glider as part of the *Beginners Series*. All these plus other regular, and not so regular, features are planned for the April issue, on sale March 15th.

Graupner

for top quality!

CONTROL LINE

The FW 190 (engines up to .15) or the DORNIER (.09 engines) for scale fans! ULTRA STUNTER takes engines up to 1.5 c.c. Mustang up to 2.5 c.c. All super de-luxe kits!



Graupner

power

TOPSY 32" span	£5.05
AMATEUR 43 1/2" span	£11.30
TAXI 59" span	£17.95
MINI PIPER 28 1/2" span	£8.70
KWIK FLY MK3 59 1/2" span	£28.85
MIDDLE STICK 55" span	£21.80
CESSNA 177 CARDINAL 61" span	£43.35
Wheel Spats	£4.15
R/C Installation pack	£7.10
TERRY 41 1/2" span	£13.10
BELL 212 HELICOPTER Fuselage Kit	£56.00
Engine & Mech. Kit (HB61 Stamo)	£56.75
Engine only (HB61 Stamo)	£7.60
Engine Silencer only	£46.35
Rotorhead only	£3.20
Main Rotor Blades	£1.15
Tail Rotor Blades (pr)	£3.30
Steering Rotor Blades (pr)	£2.90
Main Rotor Shaft only	

CONTROL LINE

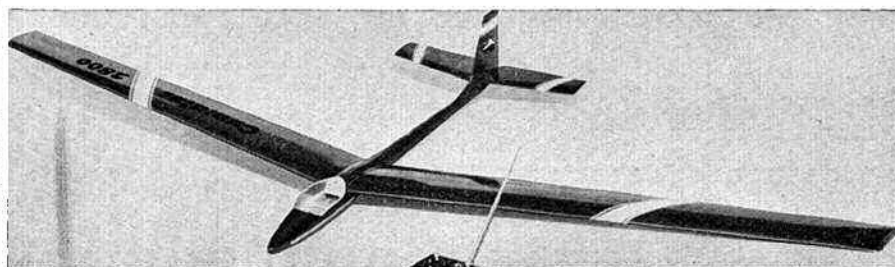
MUSTANG 29 1/2" span	£7.80
DORNIER Do 27 31 1/2" span	£9.70
F-W 190 38 1/2" span	£11.70
KLEMM KL-107B 28 1/2" span	£8.00

Graupner

gliders

BEGINNER 39" span	£4.00
FILOU 50" span	£7.15
Pylon engine mount	£1.30
JOLLY 45" span	£5.30
Pylon engine mount	£1.30
AMIGO 2 78 1/2" span	£12.25
Pylon engine mount	£1.70
Ditto in ABS	£3.40
FOKA 102 1/2" span	£19.75
Canopy 90p Fuselage	£7.50
Wing grommets (10)	£1.40
UHU mark III 43 1/2" span	£3.75
DANDY 63" span	£10.20
Pylon engine mount	£1.30
CIRRUS 118" span	£27.50
Pylon engine mount	£2.10
R/C pack	£4.40
NANCY 48 1/2" span	£6.00
KATY 67 1/2" span	£11.45
CUMULUS 2800 110" span	£62.00
Pylon engine mount	£2.10
R/C pack	£3.60
AS-K14 90 1/2" span	£54.90
Canopy 65p Fuselage	£24.10
R/C pack	£6.00
HI-FLY 90 1/2" span	£19.80
R/C pack	£3.00
Pylon engine mount	£3.40
Electric motor flight pack	£11.80
Installation pack	£4.00

CUMULUS 2800 Superb for towline, slope soaring or powered glider flying. Super de luxe kit includes ready-formed nylon fuselage, balsa-sheathed foam plastic wings and tail, formed cabin, canopy, etc.



CIRRUS 118" span

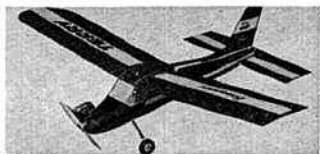
Kit includes finished ABS fuselage, precut wood parts, moulded canopy, etc.



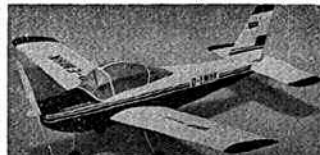
The giant model with the FULL-SIZE SAILPLANE PERFORMANCE! Cumulus puts you in the 'golden wings' class - yet is so easy to build and fly.

NEW! JUNIOR

Span 53 1/4". Model has sheet wing construction with high-performance aerofoil section - plus turbulator (all parts fully shaped), Slick-type fuselage (again shaped), Auto-rudder and demersaliser! The beginner's model that puts you in the expert performance class. Kit £6.80 (and very complete!)



TERRY - preformed wings and tail parts.



BO 209 MONSUN - prefab rubber power.

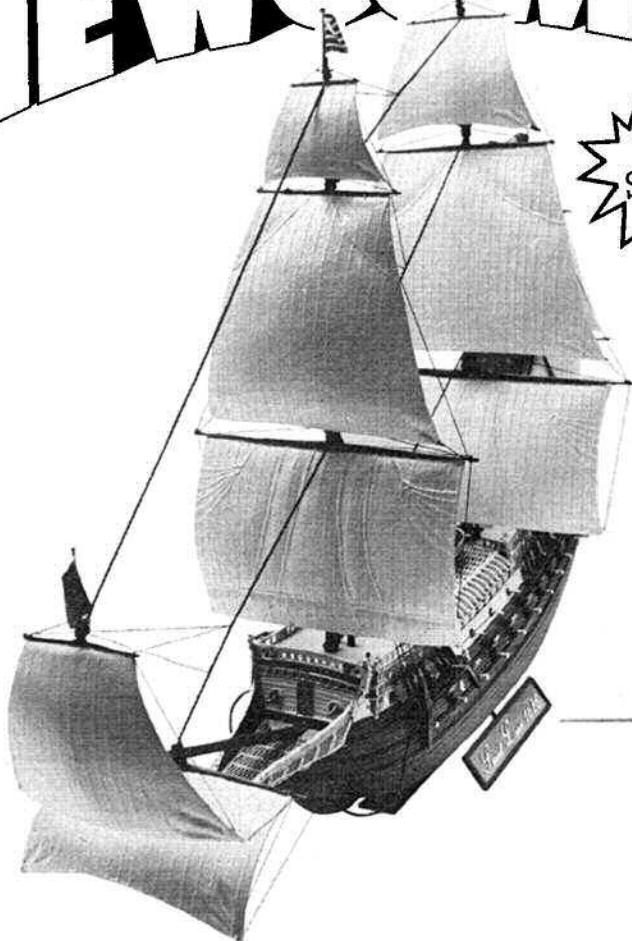
distributed by **RipMax**

see them all AT YOUR MODEL SHOP!

Some descriptions and prices may be subject to change, due to our policy of continual improvement, fluctuating exchange rates, etc

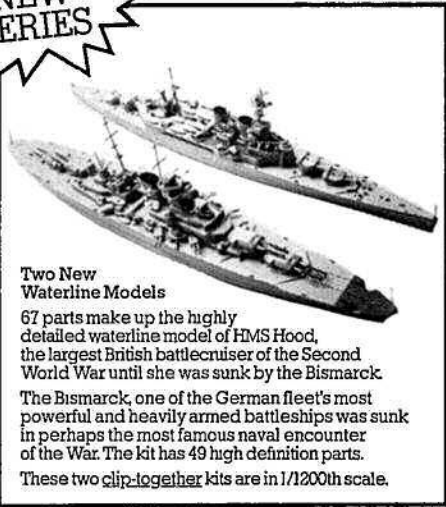
KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

AIRFIX NEWCOMERS



St. Louis
The Dutch-built 60 gun St. Louis warship displaced some 1,200 tons and was introduced into the French Navy by Cardinal Richelieu, to give strength to the existing French fleet. This big scale kit has 189 parts plus sails, rigging and flags.

**NEW
SERIES**



**Two New
Waterline Models**

67 parts make up the highly detailed waterline model of HMS Hood, the largest British battlecruiser of the Second World War until she was sunk by the Bismarck.

The Bismarck, one of the German fleet's most powerful and heavily armed battleships was sunk in perhaps the most famous naval encounter of the War. The kit has 49 high definition parts.

These two clip-together kits are in 1/1200th scale.



SA 341 Gazelle

The SA 341 Gazelle is a streamlined 8-seater military helicopter with the unusual feature of a tail rotor built into the tail fin. The 1/72nd scale kit has more than 40 parts and includes transfers for Army markings.



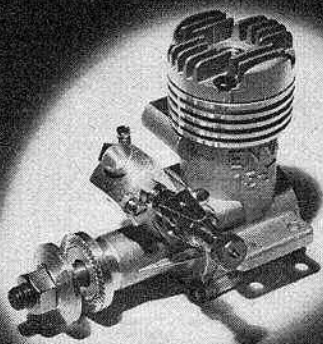
The world's biggest range of construction kits

ENYA

Engines with that little EXTRA
in power ... performance ... and
value for money!!

Each model precision made by
master craftsmen. There's a
size in the range to suit YOUR
next model!!

AT YOUR MODEL SHOP



BORE .590"
STROKE .551"

ENYA 09

(not shown)

AIRCOOLED:

Standard £4.95

R/C version £6.45

ENYA 15

AIRCOOLED:

Standard £5.95

R/C version £7.75

ENYA 19

AIRCOOLED:

Standard £6.95

R/C version £8.80

ENYA 35

AIRCOOLED:

Standard £8.95

R/C version £10.95

ENYA 35BB

AIRCOOLED:

R/C version £15.70

ENYA 45BB

AIRCOOLED:

R/C version £19.60

ENYA 60BB

AIRCOOLED:

R/C version £22.95

SILENCERS:

ENYA 09 ... £1.10

ENYA 15 ... £1.35

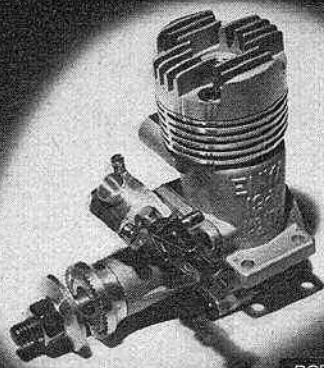
ENYA 19 ... £1.35

ENYA 35 & 35BB

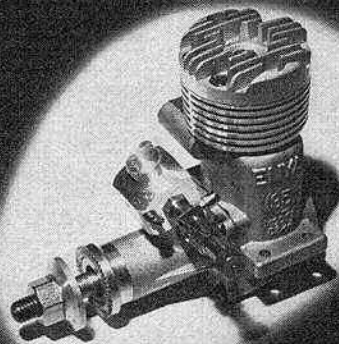
£2.00

ENYA 45BB £2.00

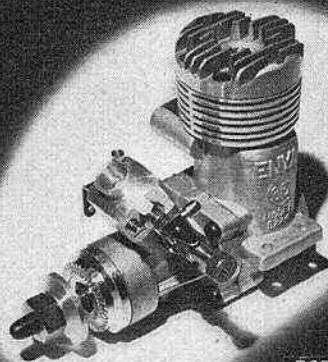
ENYA 60BB £2.70



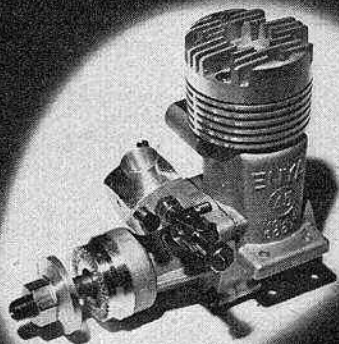
BORE .654"
STROKE .590"



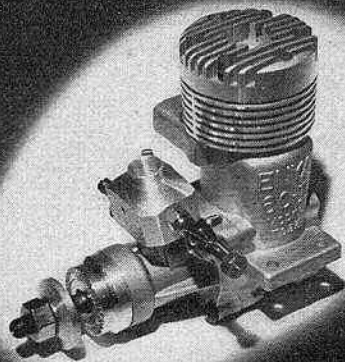
BORE .803"
STROKE .704"



BORE .803"
STROKE .704"



BORE .878"
STROKE .756"



BORE .944"
STROKE .865"

IF IT'S
RipMax
IT'S
GOOD!

distributed by

RipMax

KINDLY MENTION 'AEROMODELLER' WHEN REPLYING TO ADVERTISEMENTS

SUPER Tigre Choice of Champions!

THE NAME THAT STANDS FOR SPEED & POWER

We are writing this advert copy whilst being driven down the Autostrada from Milan to Bologna by Mr. J. Garofali of Super Tigre. The writer has spent a day in the new factory at Pianoro and has been brought up to date with the current activity.

The new X15 is definitely scheduled for completion at the latter end of November. Some of the parts are already assembled and only await the final pieces before completion. All of this first batch of fifty destined for England are of the tuned pipe type and the price of approximately £23 including tuned pipe is expected.

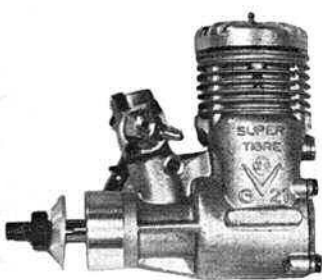
At the recent Italian championships the X15 did 238 k.p.h. on F.A.I. fuel on two lines .04mm diameter. The X29 did 258 k.p.h. and both are new Italian records. The factory at Pianoro is now working flat out to achieve 7,000 engines per month after the delays earlier this year.

The shipment of G21/29, 35, 40 and 46 engines, together with X15 R.V. Diesels are at present clearing Customs at London Airport.

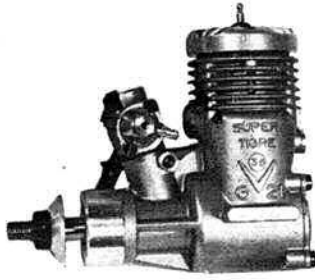
The picture below shows the four G21 series motors, one of the nice points about these is the interchangeability since all use exactly the same crankcase casting and hence fit the same engine bearers or radial mount. It is very versatile to have a 5 c.c. motor giving out .5 b.h.p. to a .46 cu. in.-7.6 c.c. motor giving out .88 b.h.p. and weighing approximately the same.

The G21/29 and 35 motors are a lap piston type and the G21/40 and 46 are ring motors. Both types feature a chrome liner for long life. All four motors have the Mag. III carburettor with the thimble control idle needle for lowest possible tick-over.

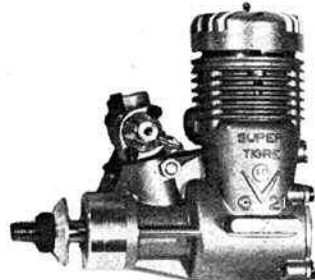
FOUR OF A KIND



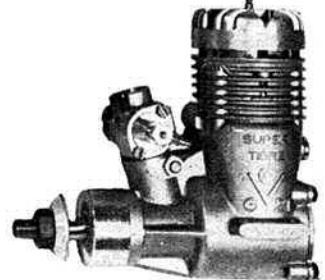
G21/29 F.1 R/C £17.55



G21/35 F.1 R/C £18.62



G21/40 F.1 R/C £18.62



G21/46 F.1 R/C £19.60

THE SUPER TIGRE RANGE

G20/15 D	...	...	...	£11.40	G15/19 CAR	...	...	...	*... £21.28	ST.35 Std.	...	...	...	*... £12.16
G20/15 D R/C	...	...	...	£14.02	G21/29 R.V. ABC	...	...	...	*... £19.82	ST.35 S R/C	...	...	...	*... £15.80
G20/15 G	...	...	...	£11.40	G21/29 F.1	...	...	...	*... £14.02	ST.51 R/C	...	...	...	*... £19.66
G20/15 G R/C	...	...	...	£14.02	G21/29 F.1 R/C	...	...	...	*... £17.55	ST.56 R/C	...	...	...	*... £21.08
G15 F.1 w/spinner	...	...	...	*... £14.50	G21/35 F.1	...	...	...	*... £14.28	ST.60 R/C	...	...	...	*... £22.25
G15 F.1 R/C	...	...	...	£18.13	G21/35 F.1 R/C	...	...	...	*... £18.62	G60 F.1 R/C	...	...	...	*... £28.10
G15 R.V. D	...	...	...	£18.02	G21/40 F.1	...	...	...	*... £15.30	G71 F.1 R/C	...	...	...	*... £28.68
G15/19 F.1 R/C	*... £18.13	G21/40 F.1 R/C	*... £18.62	G60 R.V. Racing	*... £35.12
G15 R.V. G	£18.02	G40 ABC R/C	*... £21.97	G60 Marine	*... £38.63
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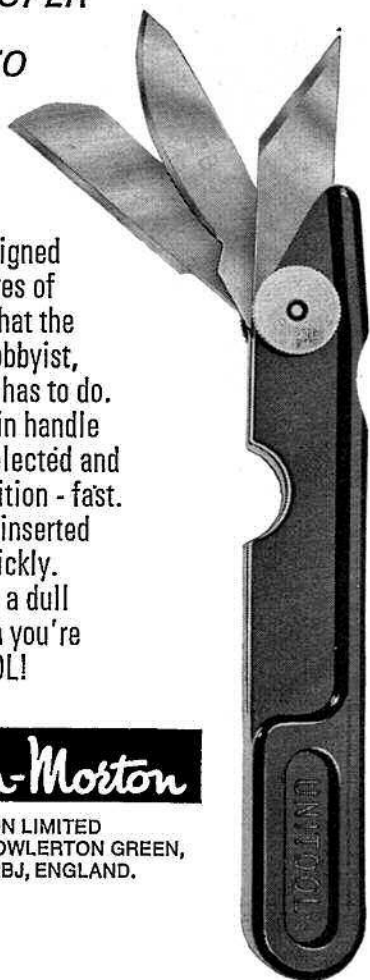
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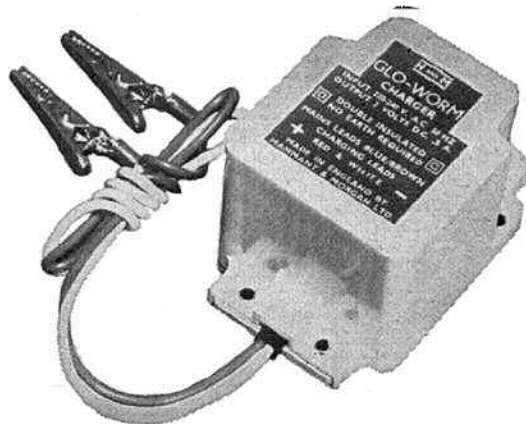
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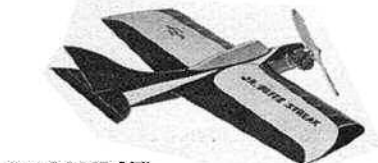
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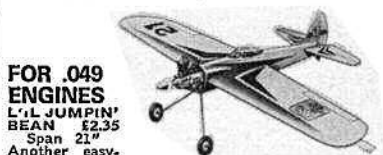
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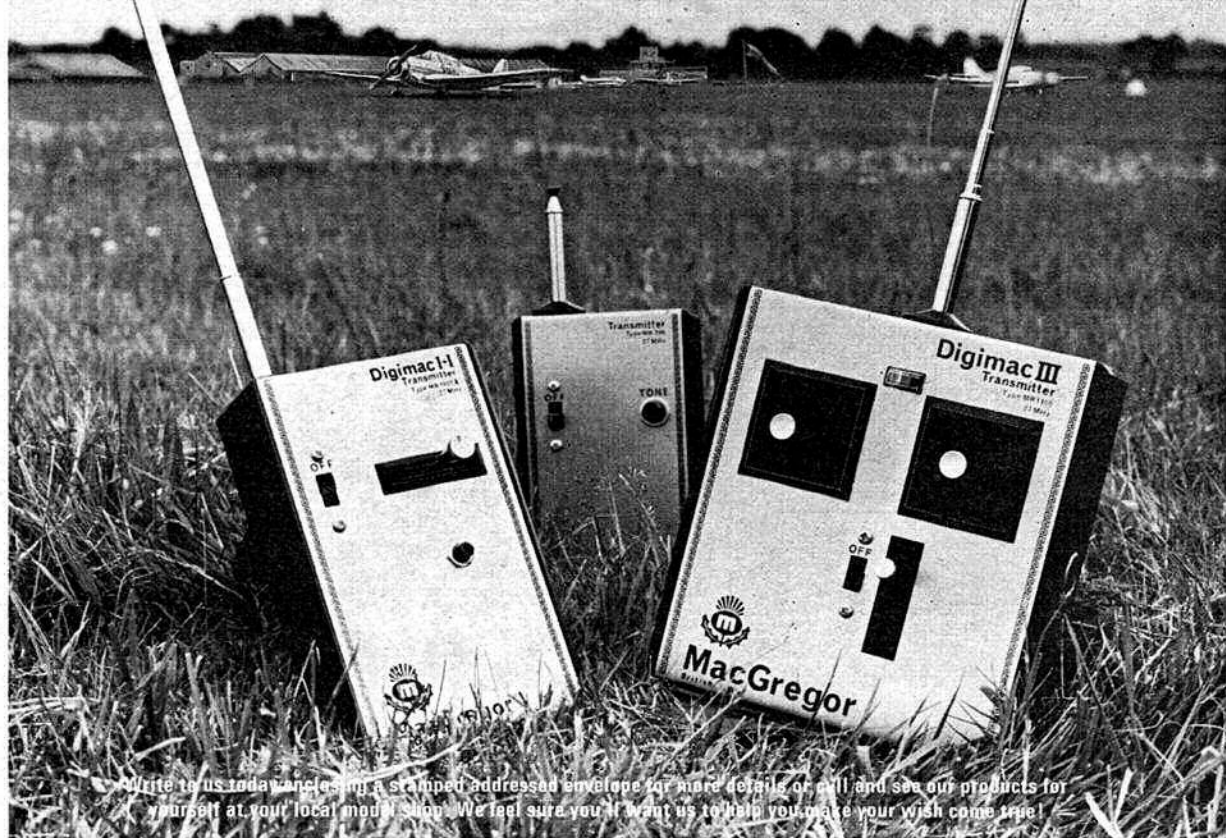
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Heard at the HANGAR DOORS

1974 WORLD CHAMPIONSHIPS planning is proceeding rapidly in the U.S.A. This is developing to be a great event for many interests. In addition to world championships for *indoor* and *scale* models (both radio and control line) there will be international contests for *R/C pylon racing* and *thermal soaring* events. Because of this variety of activity, the total programme is now being called the **Aerolympics**. The dates are 1-7th July 1974 and the location is Lakehurst Naval Air Station in the State of New Jersey, 40 miles south of New York City.

In addition to the events described, there will also be a contest on the Air Station, 2-4th July, for *Old Timer* (vintage) free-flight models, including radio-assisted models. This is basically a contest for U.S. aeromodellers but the activity will surely be of interest to Aerolympics participants.

Note: one entry fee of \$50 (including meals and accommodation) covers *any* and *all* Aerolympics events, *except* 'Old Timer' - those who pay to enter one event may also enter the other events at no extra charge, subject only to the eligibility requirement of each event.

Since the indoor and scale events are of World Championship category, only one three-man team per country is permitted (separate teams for control-line and radio control scale, one team for indoor). For pylon racing, thermal soaring, and a special indoor contest, unlimited entries will be permitted from all countries *except* the U.S.A. (entries from the U.S.A. will be limited, if necessary to assure maximum international representation).

To ease transportation problems for participants outside America, arrangements have been made for a specially chartered aircraft. This will be a McDonnell-Douglas DC-8-63 operated by a leading airline, and will depart ex-Frankfurt, Sunday, 30th June, calling at London prior to arriving at New York. From New York, buses will carry the 248 passengers and baggage to

Lakehurst.

The return journey will use similar calls and facilities about 9th July. Fares, subject to economic conditions prevailing will be in the region of \$220 or equivalent.

Advantages of the charter are numerous. Firstly, it provides use of the DC-8 hold, a very large and most useful baggage area, hence the selection of this aircraft type. This means models travel *with* the teams and do not have to be shipped separately, which is an expensive business. Secondly, being non-profit, the charter breakdown equals ABC fare offers in this peak period of the year. Thirdly, as was proved by the very successful operation Friendship of 1971 the convenience of group travel from central pick-up points in Europe to the ultimate accommodation in the company of the world's top modellers is an incomparable experience, rarely possible and certainly to be regarded as the opportunity of a modelling lifetime.

The charter flight schedule provides for several days after the Aerolympics for sightseeing and visiting in the U.S.A. Assistance will be provided by the organisers for booking of travel and lodging arrangements during this period.

Interested parties who have not received the A.M.A. questionnaire on the Aerolympics and charter trip should write *immediately* for details to: Academy of Model Aeronautics, 806 Fifteenth Street, N.W., Washington D.C. 20005, U.S.A.

WITH DEEP REGRET, we have to report the death of Maurice Hunt, Vice-President and Founder Member (in 1930) of the Bournemouth Model Aircraft Society. He was a very keen and active modeller and indeed a successful competitor in his early days. In May 1942 he gained the British R.O.G. record with a flight of 2 minutes 37 seconds, and the following year took the R.O.W. record with the same model re-equipped with three floats and named *Seagull*. The record achieved was 1:46.

Rubber-powered scale and speed models were amongst his interests, and he pioneered the use of a plug-in front fin on the then heavy slope soarers to prevent them from turning back into the hillside. In the mid-30s he designed and constructed a three cylinder radial electric solenoid motor, complete with pistons, connecting rods and common crankshaft which functioned quite well, but lack of a suitable lightweight battery prevented it from being used as the power unit in his large balsa lightweight models.

For many years his home was the regular meeting place for the B.M.A.S. Committee and the generous hospitality of both Maurice and his wife will long be remembered by older members of that Society. To his wife and family, we join his friends in offering our sincere sympathy.

CORRECTION: In the January issue we announced that the *Criterion des Aces* international control-line competition had been provisionally scheduled for July 1974. Unfortunately, our information was incorrect - the meeting to be held at Verviers in Belgium is not until 1975 - which 'spaces out' the World Championships events nicely once more! Apologies for any inconvenience caused.

Maurice Hunt with his model seaplane 'Seagull' at Queens Park pond, Bournemouth, after breaking the existing British R.O.W. record with a flight of 1 minute 46 seconds. Overall length of model 39½ in., with a wing span between 5 and 6 ft. and weighed 10 oz. Used twin skein motor.





Emmanuel Fillon's

1937 WAKEFIELD WINNER

perfect for vintage enthusiasts,
whether contest-minded or not!

Emmanuel Fillon, 1937 style – is this how the well-dressed free-flyer of 1974 could look? Maybe he will set off a whole new fashion trend in the coming year. . . .

THE 1937 WAKEFIELD International Trophy competition, held at Fairey's Aerodrome (better known nowadays perhaps as 'Heathrow' – where model flying is certainly no longer permitted . . .) was particularly memorable as being the first truly international meeting. Incredibly, M. Fillon, the eventual winner, still has the actual model today where he photographed it at his retirement home in the South of France. Vintage competition fliers will be pleased to know that this model certainly conforms with S.M.A.E. vintage rules – the plans were originally published in the December 1937 issue of the French magazine Model Reduit d'Avion. However, those who have a liking for vintage designs but not for some of the complicated and certainly out-dated constructional methods employed, should note the suggested alternatives marked on the plan where appropriate. These still retain the vintage 'flavour' without the hair-splitting accuracy demanded by some vintage contests. The choice is yours!

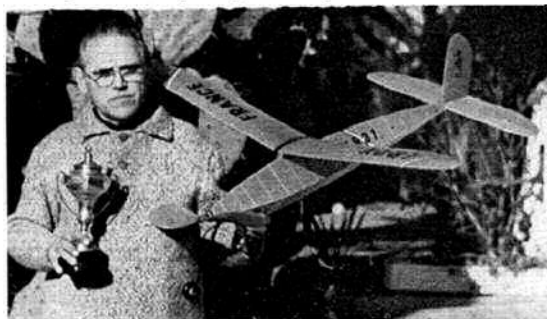
To recapture the atmosphere of the 'serious' competition flying of the day, what better than the following report, taken from the September 1937 issue of Aero Modeller?

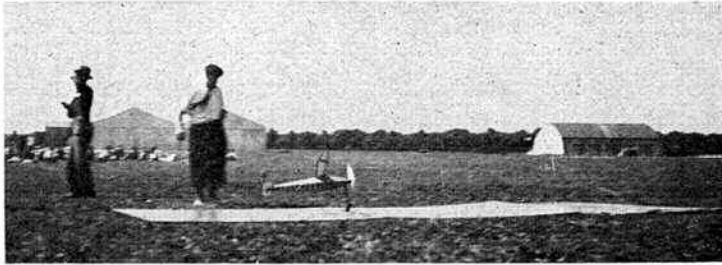
'I am glad to be able to assist in this movement, a rivalry between nations which is pure enthusiasm and goodwill.' With these words Lord Wakefield further evinced his appreciation of the fine international spirit which aero-modelling arouses; the Wakefield International Contest on August 1st, won by M. Fillon, of France, with an average of 253.23 sec., was, perhaps, one of the finest examples yet seen. In previous contests the international atmosphere has been lacking in both entries and personal contact, foreign machines usually being flown by proxy. This year twelve nations entered, and of these nine sent men and machines.

The early morning weather showed little prospect, wet and a refreshing wind, and it was with dampened spirits that we made our way down the Great West Road in the early hours. The delight of the contestants can best be imagined when, at about 11.30 a.m., the sun broke through with ever-increasing intensity. (This seems a typical prelude to competitions, as we remember that the '36 trials in America were held under similar circumstances.)

To those 'not in the know' the constant arrival at the field of different foreign competitors was somewhat staggering; for so many years have countries made rash promises, and then on the actual day just the usual French, U.S.A. and British teams would appear! This year the world was represented *en masse*, the countries entered being France, New Zealand, U.S.A., Sweden, Holland, Germany, South Africa, Belgium, Canada, and Norway. As was per-

M. Fillon today seen in front of a magnificent cactus plant outside his South of France home. Same model as that in the heading picture too – how many others have models 37 years old, especially in such pristine condition?





The 1937 caption reads 'le depart' — and how can you enlarge on that! Note the portable take-off strip employed.

FULL-SIZE COPIES OF THIS 1/4th SCALE REPRODUCTION SHOWN BELOW ARE AVAILABLE AS PLAN No. D.1216, PRICE 85p (INCLUDING POSTAGE AND V.A.T.) FROM AEROMODELLER PLANS SERVICE, P.O. BOX 35, BRIDGE STREET, HEMEL HEMPSTEAD, HERTS HP1 1EE.

haps only natural, the Yankee boys come in for most of the attention. Frank Zaic, perhaps the best-known modellist in the world, was one of the first to try out his machine. Very nicely built, it had twin rudders, monocoque fuselage, and a spinner.

Resplendent in peaked cap and uniform were Messrs. Fish and Bodle, Akron representatives, whilst Alvie Dague, of Tulsa, Oklahoma, and Mr. Beadleman formed the remainder of the American contingent. Soon the 'golden voice' of Mr. J. C. Smith, S.M.A.E. Competition Secretary, was heard over the 'mike' calling all contestants in, and, taking the opportunity of the 'lull' we made some sketches of the salient features of some of the foreign aircraft.

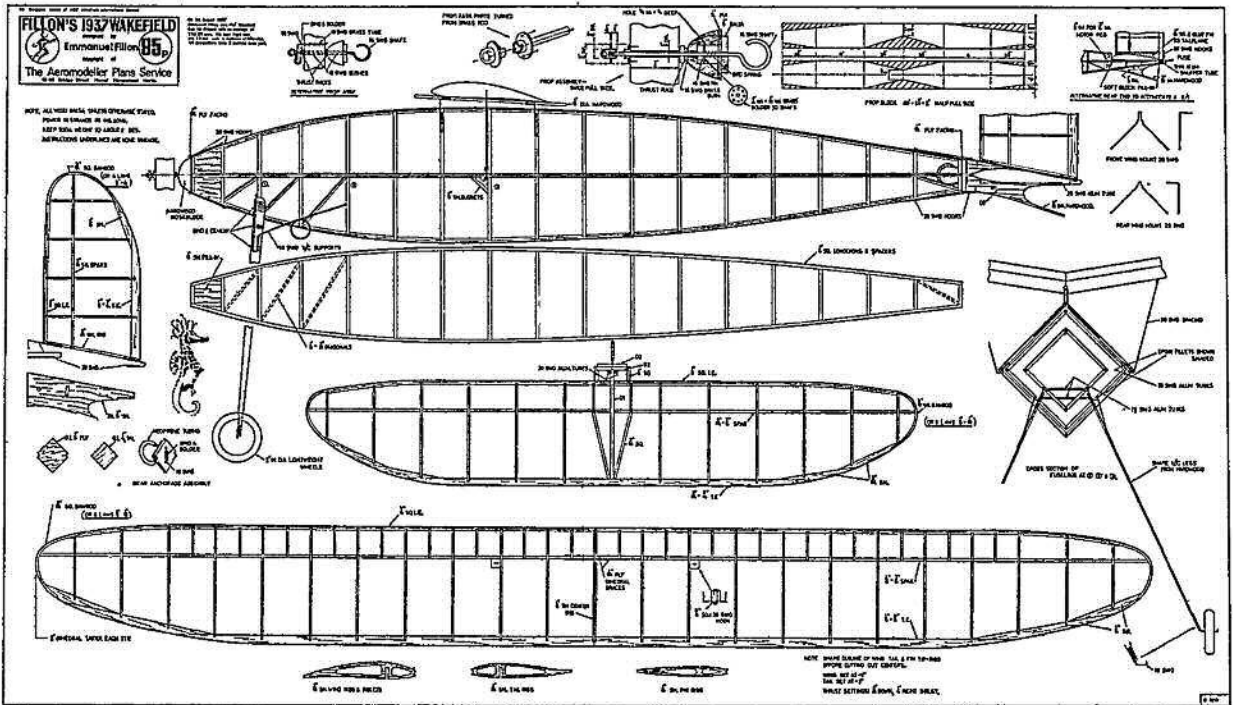
Soon the competition was under way. First off was France. The designs were not unorthodox, having flat-sided fuselages, with airscrews of a design first made popular by early American efforts. All were finished orange, with French tricolour stripes running across the wings and fuselage. The climb was fairly slow but steady, and in the air the impression was given that a 4 oz. job rather than 8 oz. was flying.

The Swedish entrant provided the first surprise. Whilst he wound up a study of the machine was made. The fuselage was very long, with a resultant large cross-section. Mounted on the top of this was a wing of unfamiliar design to British eyes. Of fairly high aspect ratio, about 10-1, seventy-five per cent of

the surface was flat with no dihedral. The remainder in the form of wing tips was sharply inclined upwards, and gave the machine perfect stability. Twin rudders were also employed. Mr. Anderson then placed his machine on the board and released the prop. We were surprised! The model positively whistled across the ground and then pulled up to a terrific steep climb to about 200-300 feet. The spectacular nature of this flight earned a round of applause, and it was evident that some pretty stiff competition was going to be put up.

Next, the New Zealand entry had a little trouble and, unfortunately, had to retire.

Americans seem to have a perfect passion for making models at the last moment, and Mr. Bodle built his entire machine, bar the airscrew, while he was in England, staying up till 4 a.m. on the Sunday to finish it. His second flight with it put up 199.4 sec. Of the American entrants two employed polyhedral wings, while the others were of conventional design. Mr. Fish kept his rubber on ice to store its energy; he was using 26 strands of 1/8 in. brown rubber in a single skein turning an 18 in. x 1 1/2 in. x 2 in. airscrew. How the fuselage could withstand so much 'juice' is amazing! Mr. Struck's machine, flown by Beadleman, was a diamond fuselage job with a midwing-taper. When launched the torque was so great that after taking off the model performed two rolls vertically





before straightening off to a steep climb!

Mr. Fish was using a torque balance for recording the turns in his motor. The balance was hooked on to the propeller shaft, and when the requisite turns were obtained the balance weight would rise. A very cute idea!

The Belgians, of whom little model work was known, came to the fore with a vengeance. In general lay-out similar to the U.S.A. design the Belgian job had a climb just as fast and steep, with an even better glide. A Belgian entrant had a monocoque fuselage, spinner, spats, and a strut-braced wing, but unfortunately had some trouble with his rubber slipping the hooks.

The German entries were neatly built, and gave smooth, very fast flights, and appeared to be employing hardwood airscrews. One machine had an airscrew 20 in. in diameter. An unusual design of theirs which was not very successful, was a low-wing with knock-out panels, a peculiar flattened fuselage of large proportions, and a tail plane mounted high in the rudder. One of the German machines was timed out of sight overhead. It is of interest to note that they were using a synthetic white rubber.

Against all these fast jobs the English models took a back seat when it came to spectacular flying, although Mr. Leadbetter's machine was extremely fast. Mr. Bullock had lost his original model in the Wakefield Trials, and had built an entirely new machine. This is worth mentioning, as his model was beautifully finished, with no trace of hurry or skimmed work. All control surfaces were hinged and the fuselage was faired to a round section with stringers. In the air the machine was a picture of grace, rising smoothly with no wobble or deviation, and making a large sweeping circle, climbing all the time. There was a complete lack of brute force about the design, and the durations he obtained were the result of sheer good flying. (Mr. R. Bullock won the trophy in 1929.)

Some excitement was caused by an unusual French entry coming to the take-off board. Employing two propellers running simultaneously, one at the front and one at the back, the aircraft had no wheels, but took-off quite successfully on three wire skids. Unfortunately, bad luck followed it, for just after taking-off the rubber burst or slipped its hooks, holes appeared in the fuselage, and, amidst a shower of wreckage, the machine fell out of control to the earth some 100 feet below! (It appears that 'push-pull' designs require careful synchronization of airscrews, otherwise there is a tendency for the rear to slide round if it develops too much thrust.)

The Dutch team were fortunate in having with them the well-known modeller, M. Van Hattum, who, in conjunction with Pelly-Fry, produced a great number of designs some years ago. (M. Van Hattum also designed some excellent wing sections for model work.) The Dutch machines were very nicely built, mostly of the twin rudder type, a low-wing job which flew quite well, and a cabin job. They seemed a trifle under-powered, however, and their take-offs were rather laborious.

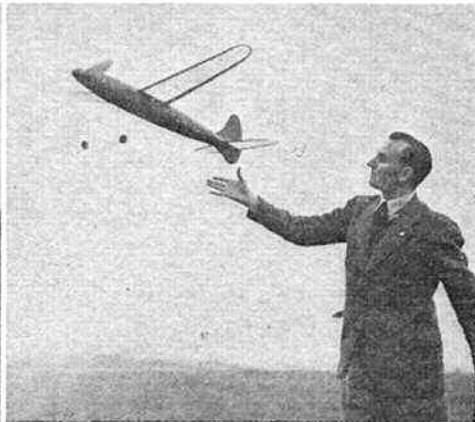
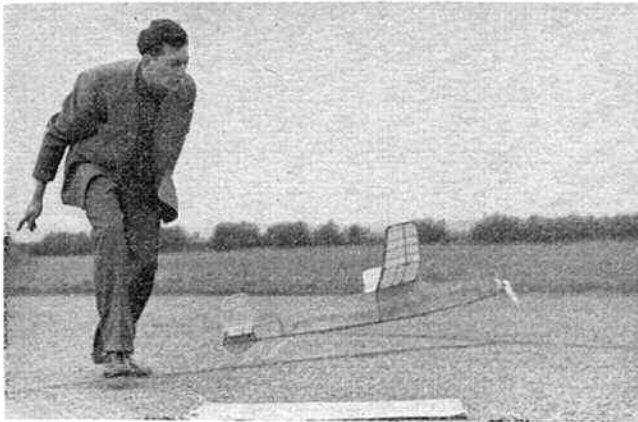
The Canadian jobs were exceptionally well finished; in fact, the one Mr. Rushbrooke was flying was so neatly made that 'Rushy' must have felt quite at home flying it. The general design was a flat-sided cabin fuselage in glossy red. Wings, straight in centre, with upturned tips, flying surfaces finished with silver tissue; very fast performer. On one occasion we observed two machines in the air together, a French and U.S.A. The French job had struck a 'riser', and was going up rapidly. The other was only about 200 feet away and circling in the opposite direction, could get nothing at all, and was descending rapidly! (This serves to show how easily competitions are won and lost!) The sole Norwegian entrant was an extremely beautiful job, and was quite a surprise to many. The machine, however, was badly trimmed with regard to its line of thrust, with the result that the first burst of power was lost in a series of terrific stalls, after which it would level out and start 'going places'! Late in the afternoon, in order to speed up results, Mr. Smith declared the contest free-for-all, and instead of coming in strict rotation it was a question of 'first come, first served'. This appealed mightily to the Americans, and almost as soon as the words were spoken Bodle was out on the board with a couple of timers, and winding up! With things moving so fast it was almost impossible to check everybody's flight; in fact, on one occasion, five models were in the air together. M. Fillon, unaware that he had won the trophy, was scouring the countryside for it, and the model was eventually found by M. Denois, who returned in a highly excited condition, waving the model above his head! We must say that the trophy could not have gone to a more deserving winner, as the French have put up determined efforts to obtain the trophy for the past four years, sending a team of models and one man, M. Vincre, over to the States with the British team last year.

WAKEFIELD CUP RESULTS, 1937

				AVERAGE
1	E. Fillon	...	France	253.23 secs.
2	R. Bullock	...	Great Britain	194.53 "
3	R. T. Howse	...	Great Britain	193.46 "
4	Chabot	...	France	157.6 "
5	R. Clasens	...	Belgium	156.83 "
6	B. Anderson	...	Sweden	155.73 "
7	M. McKinney	...	Belgium	155.05 "
8	G. Stark	...	Germany	151.83 "
9	K. Schmidtberg	...	Germany	147.65 "
10	A. Dague	...	America	145.1 "

ENTRIES

South Africa	...	4	Great Britain	...	6
Canada	...	3	Holland	...	5
New Zealand	...	4	Germany	...	6
France	...	6	Belgium	...	3
America	...	5	Sweden	...	5
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THE VINTAGE SCENE reviewed by Jim Moseley

PRESENT DAY interest in Vintage flying stems largely from the enthusiasm of a few veteran modellers in the United States who, after much reminiscing about the 'good old days', built replicas of favourite pre-war designs and fitted them with long-disused spark ignition engines. The subsequent operation of these aircraft caused so much interest amongst others that with little delay the numbers of such models taking the air increased rapidly, with a consequent demand for plans and power plants. As interest grew, a natural outcome was a desire for a basis for competition and it was eventually resolved that designs published before December 1942 would be eligible for classification as 'Oldtimers' (as such are known in the U.S.A.) with separate classes for petrol engined cabin and pylon models.

In recent years enthusiasm for this type of flying has grown explosively throughout the United States and the original conception has expanded into a comprehensive schedule in which the original classes are supplemented by others for eligible designs powered by modern engines, rubber and glider sections, an 'Antique' class for pre-1939 designs, reduced-scale TD.020 replicas and, not least, the 'Texaco' event. This is based upon the economy/duration contests sponsored before the war by the oil company then of that title and flown to the rules of the day which allowed a $\frac{1}{4}$ oz. of fuel for each 1 lb. of model weight. The resulting flights often exceeded an hour in duration and covered many miles, the timekeepers following by car until such time as the machine landed or passed from sight. For geographical reasons alone this is one aspect of the sport unlikely to be seen in this country!

Radio control is also moving into the Oldtimer sphere, despite mixed feelings from some quarters,

Heading pictures show (left) a somewhat younger Denny Allen (perhaps better known as D. J. Allen of 'Merco' engine fame), releasing his own designed Wakefield, while to his right is Bob Copland launching his 1951 model which featured a 'fully enclosed' feathering prop. His 1946 Wakefield is available from the AeroModeller Plans Service as order no. D121X, price 60p.

Right: 'Old Timer' events are popular in the United States - here, Jim Adams of Santa Anna, California starts up his spark ignition Super Cyclone 60 powered 'Scram'. Short nose utilised to compensate for the heavy engine and its attendant 'accessories'.

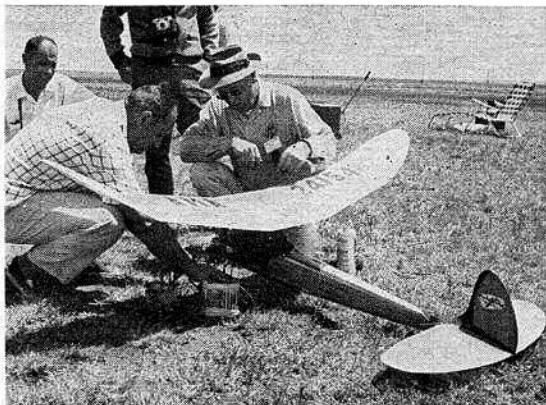


although there appear to be sound reasons in some respects in that models can be operated from confined sites which would be impractical for F/F usage.

It might be thought that this activity is largely based upon sentiment and would tend to be supported by the older modellers but the sport is firmly established with people of all ages participating with equal enthusiasm. Specialist clubs and national bodies now exist to co-ordinate efforts, to hold national centralised contests and social functions and to spread the gospel in various newsletters and magazines; at least one professional publication devoting considerable space to the monthly publication of a suitable plan together with photographs and reports of Vintage activity.

In Britain, however, Vintage flying has evolved rather differently, the class being introduced initially at club level and gaining prominence ten years or more ago by introduction into various rally programmes. A flurry of activity in the London area subsided after but a few seasons, but the class has received continual and strong support in both the Bristol region and in the North of England, initially under rather more stringent rules than those subsequently adopted by the S.M.A.E., and both the contests and the types of model flown differ widely from those of the Americans.

In general British model development before the war had not progressed to the same extent as across the Atlantic, particularly in the Power class, where many of the craft were rather primitive in design and often handicapped by heavy engines of low power output, and activity was eventually brought to a standstill by the banning of flying of such models for the major part of the war years. During this period, with attendant shortages of materials, much of the modelling activity centred upon rubber-powered aircraft



Renowned American vintage enthusiast Sal Taibi (left) helps John Pond get his 'Comet Sailplane' into the air. Super Cyclone 60 used for power, running on methanol-based fuel.

with a trend to small, economical duration machines, scale and semi-scale models, and once again progress in development was rather slow with the exception of that of the efficient, but complex, streamlined Wakefield, which approached its design peak during these years.

However, shortly after the war a revolution in rubber model design took place with the introduction of small lightweight models fitted with single-bladed folding propellers and highly undercambered wing sections, which displayed considerably enhanced performance over their predecessors. Concurrently the small diesel engine was appearing on the scene in ever-increasing numbers and the American pylon layout was eagerly adopted in the quest for performance despite its condemnation by the purists who considered that any powered craft lacking a cabin was an abomination!

Similarly the demise of the heavily loaded streamlined glider was marked by the introduction of lightweight designs demonstrating far greater performance capabilities, with a trend to giant airframes of ten to twelve foot span, although these soon gave way to the more economical and easily handled A/2 layout, following the adoption of this Scandinavian specification for international competition.

When the question of rules arose for Vintage events it was agreed that the designation should apply to designs published or kitted prior to December 1950, promptly amended to January 1951 to cater for those featured or advertised in magazines of that date which were, in fact, on sale the previous month. In general it is required that models should be built as per the published plan although various modifications are allowed enabling the use of more modern materials in place of those now difficult to obtain, i.e. Spruce instead of Obечи, balsa laminations in place of bent cane, etc. Minor modifications may be made to facilitate the fitting of a tip-up tail D/T system and it is permissible to substitute fixed undercarriage legs for retracting, or twin legs in place of mono-leg fittings. Local strengthening for handling purposes or to take the strain of fixing bands is also allowed but, unfortunately, the rules do not specify the extent to which such work may be taken.

To sum up, the model is expected to be an aerodynamic replica of the published design, identical in proportion, dihedral, wing section, thrust datum, etc., but with detail amendments permissible which in

themselves give no performance advantage, with a ban on all types of automatic trim changing systems (with the exception of gliders) unless shown on the original plan. Specific requirements for each class are as follows:

(a) *Rubber-powered aircraft:* The propeller block size must be adhered to as must be the type of air-screw shown, i.e. folding, freewheeling, single or twin bladed, although freedom of choice is allowed in tensioning devices, freewheel clutches, hooks, etc. Similarly, the builder is free to use whatever length, size or weight motor he desires as long as no alteration is made to the rear anchorage point shown on the plan, and gears are only permitted if shown thereon. Models must rise off ground from a normal three-point position.

(b) *Gliders:* Any glider may be fitted with an auto-rudder operated by means of towline release, the line itself being restricted to a maximum length of 250 ft.

(c) *Powered aircraft:* Minor alterations to permit installation of alternative engines are in order and modern engine timers are permitted. Models must r.o.g. from a conventional three-point position and those powered with engines designed before January 1951 are allowed a motor run of 20 seconds, later engines being restricted to 15 seconds only.

Traditionally, Vintage contests are flown 'all-in' with no separate classes and it might be thought that power models or gliders would have an advantage, with the long engine run or towline permitted. This has not necessarily been borne out in practice as many of the early power designs are somewhat marginal in stability and the climb pattern often leaves much to be desired. Similarly, many gliders are not the easiest to bring to full line height despite the use of an auto-rudder, and competition scores over the years have shown fairly balanced results, all classes having their successes but with an apparent edge to the rubber-powered craft in the long term.

In this respect it is interesting to note that many builders of rubber models appear to show preference for the lightweight, single-blade folder design and the larger Wakefields are rarely seen. For a modeller considering an initial foray in the field, or one perhaps considering Vintage as merely another type of contest in which to compete, then the lightweight is to be recommended, being quick, simple and cheap to build and capable of very satisfying performance, although it is felt that the Wakefield designs of the

Sal Taibi with his Forster 29-powered 'Poser', one of the best performing vintage power jobs - note the streamlined appearance.



period would prove better contest propositions with their higher potential and greater consistency.

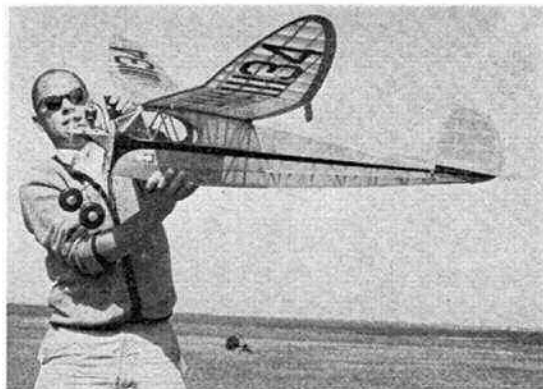
The powered craft are almost invariably equipped with diesel or early glow plug engines of comparatively small capacity, spark ignition engines being conspicuous by their absence. Modern engines are rarely seen which may be due to the problems of balance and trimming arising from reduced weight and increased power output compared to equivalent capacity counterparts of yesteryear, rather than to the restricted power run allowed.

It would be wrong to assume that as the rule book caters only for the duration type of machine, models built to this end represent Vintage flying in its entirety for it is likely that a greater number of enthusiasts fly sports designs upon their local fields and gain little notice outside their immediate circle. It is amongst these people that the petrol engine still remains in popular use and powers many replicas of the larger pioneer machines evolved before the war and such are notable for the interest aroused in spectators, whether modellers or lay public, on the few occasions when their builders gather at a centralised venue.

In recent years the *South Bristol Club* has attempted to encourage interest and participation by replacing duration events at their rallies with alternative Precision contests, the nature of which enables all types of Vintage aircraft to compete on an equal basis and this move has proved most successful in practice. The principle is that the entrant makes a qualifying flight in excess of a predetermined minimum time, making a normal landing; dethermalised descents or out of sight flights do not qualify and a further attempt must be made. The resulting score is then multiplied by the number of flights required by the contest and the contestant with his remaining flights, plus the first, then attempts to produce this total score, the winner being he who most accurately achieves his target. No restrictions are made on engine runs, amount of rubber used or on towline length although all powered craft must take off from the ground.

This scheme was tried experimentally in the Northern Area in 1972 at a club rally and proved moderately successful although it was soon realised that careful attention to the final flight could cancel out earlier variances and still bring the final total very close to the objective. Accordingly the rules were amended the following year in as much as every recorded flight was individually expressed as a percentage error of the initial score and these errors then totalled upon completion of the flights. By this means it is necessary for the entrant to place greater emphasis upon his knowledge of the model and the popularity of the move was reflected in an entry list almost double that of the previous year. This does provide an interesting and relaxed event embracing sport and contest models alike, and has been proven by impromptu competitions between enthusiasts at subsequent flying meetings.

The prime requirement of an 'Oldtimer' is the acquisition of a suitably appealing plan from which to work and, as a result of the interest shown, a very wide range of drawings is now available from various sources. The *Aero Modeller* Plans Service has a number of eligible and very suitable designs in its Plans Handbook No. 1, particularly in the 'X' list, from which plans are available to order. A further vast list of available drawings may be obtained for a small fee from John Pond, 4135 Avati Drive, San Diego, California 92117, U.S.A. John, an avid 'Oldtimer'



Would look better with a cow! Bill Bruninsa with his Forster 29 spark ignition-powered Comet Clipper — these old engines can still be purchased, but try to avoid paying 'collectors' prices' by choosing specimen with less than perfect exterior condition.

enthusiast, has been the mainstay of Vintage progress in that country and has amassed an enormous collection of full-size plans, copies of which are available upon application at most reasonable prices. In addition, most Vintage flyers maintain personal magazine and plan files and almost without exception will make every effort to assist others to locate a specific requirement, which co-operation is perhaps one of the more satisfying aspects of this field of aeromodelling.

Vintage engines may be located fairly readily although prices for some types have tended to become inflated. If the builder is content with a mechanically good specimen of relatively common make and is not perturbed by a chipped fin or scuffs and scratches, then a variety of diesel and petrol engines are available from collectors, specialist dealers and fellow enthusiasts at rather more realistic prices than those asked for mint-condition collector's pieces.

Above all, to fly Vintage for the first time, whether for sport or competition, introduces one to a bygone and relaxing age of modelling, whereby *pleasure* can be taken in the performance of machines of individual shape and character, far removed from the stereotyped designs of the present day, and without the pressures and expense of constant development and replacement of such models, involving the builder in a circle of activity in which friendly co-operation and participation is the general rule, and surely the basic purpose of all aeromodelling endeavour. Fly Vintage '74!



Another fine 'period' Wakefield — displayed by Britain's H. MacPhee with his trophy which he won at a Pennsylvania Championship, the model being proxy-flown by Bob Grable.



MODEL ENGINEER EXHIBITION, 1974

A view down the centre of the main hall shows the elevated position of the electric round - the - pole flying track which stretched from balcony to balcony, and provided a line length of approximately 26 ft. Other halls featured military models, engineering displays, etc., while the attendant swimming pool made a useful marina for model boats.

THE SHOW marched on! Despite restrictions on lighting due to the power crisis, the crowds still poured into Seymour Hall to see the vast array of all forms of modelling, albeit hampered by the three-day working week and lack of reliable train services.

And they were not disappointed with literally thousands of models on display, ranging from 'live steam' locos to military dioramas, beautifully crafted clocks to plastic scale models. Yes, even a few flying model aircraft - a very few. In fact, just 14 flying models appeared; but at least that is an increase of more than 100 per cent over the previous year. Why are aeromodellers so modest when it comes to exhibitions? Any local club could muster a better showing than that, and remember, this is a

chance to let some 40,000 members of the public see what aeromodelling is all about.

Awarded top prize in the 'Flying non-scale' category was Ken Sinfield's superb R/C helicopter and not surprisingly either, this highly original design with its twin contra-rotating blades is most unorthodox and beautifully constructed; a real example of precision engineering. Next to this piece of involved 'ironmongery', an A/1 glider may seem to pale into insignificance, but the excellent construction and attention to detail apparent in Martin Dilly's machine did not go unnoticed, receiving a 'Commended' award. The judges for the scale flying category had a relatively easy task - Vic Driscoll's superb *Westland Wapiti* being clearly the best, so it was then just a question

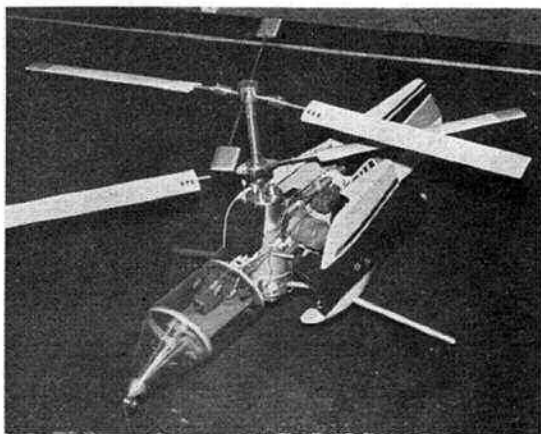
of marking the others down from this ideal! Quite how Vic manages to put in so many flying hours with this free-flight model yet retain its 'brand new' finish is a complete mystery - by rights it should be an oil-soaked wreck by now! Vintage enthusiast John Blagg produced a couple of delightful rubber models - an *A.B.C. Robin* plus a *Bristol Type 91 Brownie* - the latter seemingly just crying out for a CO₂ engine! At the opposite end of the weight scale, Albert Briggs produced a massive four engined (Oliver Tigers) R/C model, the test bed for his *Boeing B-17G Fortress* which unfortunately could not be completed in time for the show.

Of the Junior entries, J. G. Dickison produced the most interesting pair, one being a C/L model built entirely of aluminium sheet riveted together; interesting although extremely heavy for its 1.5 c.c. diesel. The other model, a C/L stunter had very attractive, modern styling and was most original in concept.

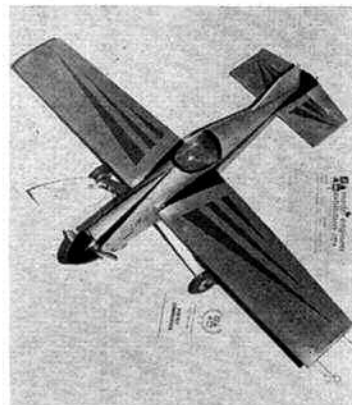
Tony Woollett's *D.H. Moth Major*, a petite 1/36th scale scratch built polycard model had already obtained for its builder the title of 'IPMS Champ' for the second year running, and not surprisingly it gained a Silver Medal. Other notable Woollett entries were the 'scratchbuilt' *Bristol MID*, gaining him the *Bristol Cup*, (the model is finished as the 1922 Aerial Derby winner, G-EAVP in red and black livery as well as a fine *B.A. Swallow* also in polycard. Championship Cup winner for the second year in succession was K. Wagner whose magnificent *Beagle 206* scratchbuilt cut-away model was worthy of a museum display case. Vintage types proliferated: the fine Short 184 Seaplane scratchbuilt to 1/72nd scale by S. F. Newman, won a 'Highly Commended' from the Judges and rightly so - the Short is a complicated aircraft and needs careful modelling.

Vic Driscoll's fine-flying *Westland 'Wapiti'* looks as well as it flies, and was a comfortable winner in its class. Nice combination of practicality and scale fidelity.





Left, involved (and ingenious) engineering on Ken Sinfeld's helicopter won him the highest award of a silver medal - model seen here with port side glass-fibre cowl detailed to reveal the 'works'.



Right, interesting metalwork project of Junior modeller J. G. Dickison, novel but rather overweight!

Fine WW2 types in 1/32nd scale, a *Mustang* and an *Me 262* made by M. Philpot were other class winners where the use of an airbrush was most evident!

With the emphasis on scratch-building or heavy modification, this year's 'solid' contingent went a long way towards demolishing the well voiced cliché 'toys for boys' often associated with the plastic kit by the uninitiated.

The only other chance the public had of seeing real aeromodelling (oh dear! Are we showing a prejudice against those plastics after all?) was on the S.M.A.E. stand, manned by volunteers from the London Area. A very good display too, with three widely differing types of models - Mike Billington's 40 class speed record holder, Mike Birch's *Capricorn* R/C aerobatic model which he flew at the World Champs, and Trilby Taylor's FAI class indoor model. In addition, a large screen projector continuously showed colour photographs of all types of models. To augment this, experienced modellers were on hand to answer queries on modelling and Society matters.

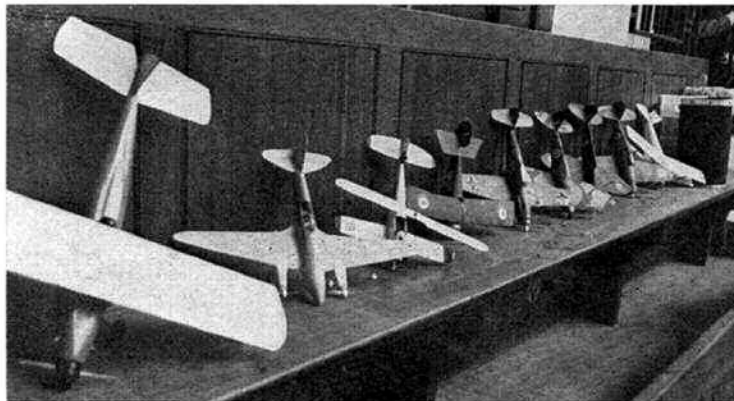
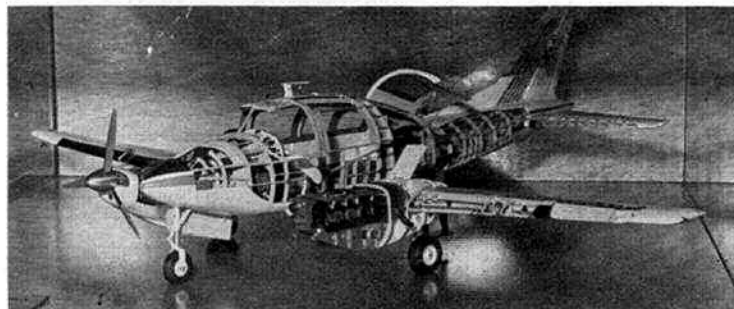
Then, of course, there was our own electric round-the-pole flying demos, equipment courtesy of the Grantham club once more. The models employed were the old and trustworthy *Voltswagons*, now refitted with Johnson 36D motors in lieu of the now non-existent Mabuchi 36s. Very good they proved too, in fact, we only 'con-

sumed' three motors in ten-days continuous flying - thanks *Harry Butler Models* for making these units available and thus enabling RTP to continue!

During the week we had visits from the Luton, Hemel Hempstead and Coventry clubs, while on each Saturday a vast army (air-force?) of models and fliers appeared from the Grantham club to provide variety; balloon bursting, 'combat' three-in-a-circle, laps and many scale models made a good impression on the crowds. In fact, there has never been such interest shown in these models by the public and many were the questions asked concerning this

form of flying, mainly by people lacking adequate facilities for normal flying, as well as from anxious parents who dislike the noise of modern i.c. engines which Junior employs! Indeed, so great was the interest shown that we shall shortly be featuring an article on some rather different approaches to this 'back garden' form of flying.

Next year? More aircraft model please - let's show the public that we are alive and well, and strong in numbers! No need to be ashamed of your building standards either, the average club model would certainly not be out-classed - what is needed is purely more support. Crack your whip, club secretaries and P.R.O.s!



Top picture shows K. Wagners really ambitious project - a 'cutaway' version of the *Beagle 206*, constructed from metal and plastic card. Quite a model! Lower picture shows just some of the R.T.P. models in evidence on the Saturday when up to 30 aircraft were displayed, covering all types from twin-engined scale models to an autogyro!



The newly elected Committee (left to right) Dave Stapleton (technical secretary), Dave Hewitt (records officer), Ian Bracken (competition secretary), Ken Collins (vice-chairman), Jack Hartley (chairman), Norman Couling (actually retired secretary, but helping George Lynn - on his right - who now takes over that position), Ted Roycroft (treasurer), Mike Birch (P.R.O.) and Pete Freebroy (F.A.I. delegate).

S.M.A.E. ANNUAL PRIZEGIVING

Grand Hotel, Leicester - December 1st, 1973



Mrs. Jean Collins, wife of the vice-chairman charmingly undertook to present the trophies. At left, top to bottom, the recipients are David Barnes (Frog Junior Trophy), Jim Mannall (Gold Trophy for aerobatics - again!) and Derek Dowdeswell (Whitney Straight combat trophy). Above, Trevor Payne with the Keil Trophy award for the Northampton club, and below, records officer Dave Hewitt collects the Plugge cup on behalf of the Southampton club.



Thanks, fellas!



Top: Surprise guest of honour was American John Worth, Executive Director of the A.M.A. who was presented with a certificate of honorary membership. Above, Mike Birch seems happy with his collection! Won R/C Trophy, Aeromodeller, and Sid Allan Memorial Trophy. At left, Trilby Taylor displays her award - the Ladies cup.



Jack Hartley (he's the one in beard and glasses!), Chairman of the Society, presents three retiring stalwarts with digital clocks as a token of esteem for their many years of hard service for the membership. At top, Ron Moulton retires from post of F.A.I. delegate, below him is Sid Lawton looking pleased to have lost the strain of the Treasurer's job, and at bottom, Norman Couling - probably the most hard-working Secretary the Society has ever been fortunate enough to have.

Even the music for the ensuing dance had an aeromodelling flavour - hiding behind that trumpet is C/L scale enthusiast Bob Ivans - sorry, now promoted to 'Sir Robert Ivans'! Keep blowing Bob - great!

Didn't he do well? Malcolm Ross lies buried beneath that silverware all earned by himself and pilot Derek Heaton for team racing events.





John O'Donnell's

FREE FLIGHT COMMENTS

(Slightly 'dated' due to power restrictions squeezing this column out of the February issue)

Janet Grey gingerly holds husband Trevor's open rubber model; placed second at St. Albans' Winter Gala.

ANYONE interested directly or indirectly in the free-flight contest scene must have realised that active participation involves considerable travel. As aeromodelling has diversified into various branches over the years, so the interests of clubs have changed, with free-flight tending to disappear as a 'sports' or fly-for-fun activity. In consequence the day of the club, or even inter-club, contest is well and truly over. Those keen on competition can still find plenty of it - but only at the price of touring the country! I wonder how many such modellers have ever added up all the miles! Even though I miss some contests, I get to more than most people and nowadays average over 5,500 miles a year in the process.

These aspects come to mind as I am writing this in the midst of official pleas for fuel economies - not to mention the threat of petrol rationing. It is more than ironic to be reporting the multiplicity of contests held at the end of the 1973 season! First however, some thoughts for the future would seem appropriate.

Already the S.M.A.E. had decided that the newly instituted January area-centralised events could be flown decentralised if petrol was rationed. Personally I feel that this approach is hardly a real solution. Whilst most people can find somewhere to test-fly, few have the type of facilities required for three minute maxs. in any sort of wind. There is a world of difference between the size of field required for calm weather testing with short D/Ts and that needed for a contest. Some areas have such difficulty in obtaining adequate facilities for the S.M.A.E. area-centralised meetings in mid-summer that they give up and travel to fly with their neighbours.

If travel is severely restricted, attendance at minor meetings is bound to fall dramatically and they could easily degenerate into 'non-events'. The S.M.A.E.'s, 1974 programme is very much 'the mixture as before', and could hardly continue unaffected. I reckon that decentralisation would result in a very mediocre response, and hence I would favour more drastic revision. Cancelling the area and other minor meetings, and concentrating effort into staging a set of really worthwhile Nationals/Trials/etc. would seem a better policy. This would leave clubs and areas free to cater for local interests at whatever level was both appropriate and practical.

* * *

Leaving prophecy to take up history, it is fitting to commence with the sixth (and last) S.M.A.E. Area Centralised Meeting of 1973. This was held on 7th October and from what I've heard most areas had overcast conditions with little drift. Even so, all was not equal and the individual successes of N.W. fliers at Chetwynd demonstrated the advantages of a warm bright afternoon and less mist than elsewhere at fly-off time.

There was considerable interest in the Farrow Shield (team rubber), partly in its own right and partly as the final event to decide the Plugge Cup for the season's Club Championship. In the conditions generally prevailing the open rubber models had little difficulty in maxing, and there

were 40 trebles from an entry of just under 100. Even allowing for clubs having to nominate their teams beforehand it is still amazing that there was only one club with a perfect score. This was Bristol and West, flying at R.N.A.S. Merryfield near Ilminster, and who capped their four trebles with over 23 minutes total in fly-offs - a real example of overkill! The team comprised Derek Wain, Hamish Gunn, John Bailey and Dick Cummings - whilst I understand their efforts were co-ordinated by Elton Drew to achieve a real team success. I even received a photograph of the winning team - courtesy of Derek Wain.

Other clubs suffered on occasion from a wrong combination of fliers, notable being St. Albans who had four individual trebles - but only sixth team place overall. Both second and third places (Leeds A and Norwich A) went to teams with two maxs and two near misses apiece. From Lez Brambley's report on the East Anglian activities it is clear that Norwich were interested primarily in the Plugge. By dint of having members fly Wakefields they were able to field two full teams. Naturally the best scores came from their proper open models - Paul Masterman doing their longest fly-off of 5:30 with a hastily assembled and wound reserve after the fuselage of his No. 1 model collapsed under the strain of full turns.

It is appropriate to record that Norwich's efforts were successful in winning the Plugge. They took the lead right from the first Area meeting and managed to stay in front all year. They did have extra fliers this year - recruited from the Havering club. Successive places in the Plugge had fluctuated all year, with the final sequence proving to be Southampton, Leeds, St. Albans, Northampton and Richmond.

Individual positions in the Farrow Shield fly-off showed a clear win for John Carter who got some thermal help at Chetwynd to record over eight minutes with a conventional 300 sq. in. model. Second best fly-off came from Derek Wain with around 6½ minutes, whilst Russell Peers was the only other flier to get over six minutes. There were few surprises elsewhere in the results - although I am intrigued as to why three East Grinstead fliers should retire after one max. apiece!

The A/2 glider event for the S.M.A.E. cup attracted over 100 entrants - and was decided by the amount of lift that was available. I proved to be in the right place (Chetwynd) at the right time, and won the event for the third time in five years. Having broken one A/2 and lost the other at the previous Sunday's Liverpool Gala I had spent much of the intervening week on repairs! The effort was justified by seven maxs, and a 2:26 fly-off. As an aside this fly-off was only good enough for third in the N.W. Area's domestic open glider event, flown on a three-flight basis.

Runner-up in the S.M.A.E. Cup proved to be Tony Cordes flying with the N.A. at Topcliffe where the lift was reported as very weak and only good enough to 'scrape' maxs. Nevertheless both Tony and Ewan Jones did six maxs. apiece. In between (on the National scene) was John Boon who launched just a little too soon on a flight at Chetwynd.

Third event of the day was the trophyless contest for ¼ A power. There were five trebles recorded out of 31 scores. National winner was Russell Peers with a 3:59 fly-off from his lightweight gadget-less design. He was 'lucky' in the sense that one of his maxs. landed at three minutes exactly! Runner-up was Derek Smalley flying a TD 049 '¼ A Train' at Watton, whilst Julian Hopper took third at Bassingbourn. Although they both belong to East Anglian clubs, Stanstead is much nearer to the London Area venue! It is aspects like this that make the area-centralised contests turn out to be rather different to the local 'get-togethers' envisaged!

* * *

The York Club certainly picked the wrong day for their F/F Rally at Elvington on 14th October. Whilst there are plenty of wet contests there are very few indeed where it

literally rains from dawn till dark. This occasion however was one such example – and attendance suffered in consequence. The host club must have been relieved that this year it had dropped the traditional A/2 event with its guaranteed £10 prize, and had staged instead open events with unspecified awards.

Although unpleasant, the weather was, in fact, quite flyable. There was little wind and the rain was rarely much worse than a heavy drizzle. Although the morning was probably the best time to fly, there was understandably little inclination to do so – and most activity came in the final hour or so of the contest.

One of those who left things till late was John Boon, who eventually unpacked his ultra-lightweight 1½ size 'Caprice' and proceeded to win glider with three up-and-off flights of around 2:40 a time. There was only one max. recorded in the whole of the glider event – by Tony Cordes who eventually placed fourth. Terry Dilks could have max'd on his first flight but D/T'd prematurely. Nevertheless he persevered to end up in second place. Jim Moseley made three early flights to take third.

Chuck glider saw Ewan Jones win yet again – but with a mere four seconds lead over Pete Bayram who made a surprise reappearance on the contest scene. Pete flew the same distinctive design that he favoured nearly a decade ago – elliptical surfaces and underslung fin. All the other events needed the customary fly-offs.

Open Rubber had six in the fly-off and was won by Russell Peers with a few seconds under five minutes – well ahead of second-placed Mike Sanderson of Grimsby. Third was John Carter, despite stalling down on glide, just ahead of John Turner.

Russell made it a double win by taking Power with a 4:24 fly-off from his K&B 40 model – exactly a minute in front of Brian Martin's ETA 29 Ronitube model. Third place went to Alan Cooper who dropped 11 secs. below a treble, mainly due to too short a motor run on his American-style 40 powered model.

Mini had been flown to K factor rules – intended to equalise the chances of ½ A, Coupe d'Hiver and A/1 glider. The idea is constantly criticised – both by those baffled by the mathematics (i.e. multiplying scores by 1.3 for Cd'H, 1.2 for A/1 gliders, and 1.1 for 5.1 oz. 'A/1s') and those who think their favourite class is being penalised. In the final analysis, fly-off scores were 'factored' to give very close results – surely a justification of the concept. Tony Cordes was the Mini winner with 2:06 actual time (2:31 factored) flying his third 'Little Minney'. I was placed second with my delayed-prop-release Coupe d'Hiver, getting 1:54 increased to 2:28. Third was John Hanson with an 'old rule A/1' with the best time, but smallest factor. He did 2:11 airborne to score 2:24. Considering these scores were made in drizzle, although the gliders did get just a touch of helpful air, the 'handicap' would seem reasonably fair. There have been mutterings that the 'factor' gives my Coupe too much advantage, but on straight duration this event would not have gone to a fly-off and I would have moved up a place in consequence!

* * *

Two-day F.A.I. events now seem an accepted part of the S.M.A.E. calendar – mainly as a result of pressure from F.A.I. enthusiasts who have campaigned for such events run to the full schedule of 7 flights, rounds, starting line, etc.

Unfortunately their requirements would also seem to include calm weather, as enthusiasm and participation rapidly dis-

Keith Proctor's open rubber model gets a last-minute wipe down and a D/T check before launching at the York rally. Not ideal weather conditions!



Below left, Mike Sanderson doesn't look too pleased as he takes the strain on John Turner's model – the D/T man picked the right job though, a broly is needed to protect the fusel

appear at the first sign of rough conditions. This is paradoxical as the F.A.I. specifications were designed to produce robust models of limited performance, with numerous flights introduced to promote consistency.

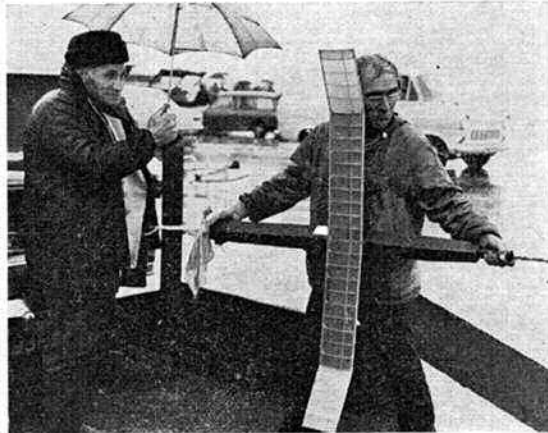
The two-day F.A.I. meeting held at R.A.F. Strubby over the weekend of 20-21 October brought out these points in almost a text-book manner. There was quite a fair turn-out with plenty of test-flying activity before the contests commenced on the Saturday morning. The wind was hardly strong, and there was lift enough for those able to detect it. Initial participation was keen enough.

As the day progressed the weather deteriorated. By mid-afternoon and the third glider and power rounds it was decidedly windy, with a change in direction that took models well out of the 'drome. Finally it started to rain in time for the fourth Wakefield round – the last that day. There were suggestions that the flying be abandoned, but the counter-view prevailed. Those who did fly found that their models were tossed about in turbulence prior to vanishing into the mist and rain at 80-100 seconds. The best Wakefield score this round was a little over two minutes! At this stage there were a handful of perfect scores – Bill Parker in A/2, and Roger Baggott and Ray Monks in Power. The glider fliers were probably thankful that it had been decided early in the day to postpone the fourth A/2 round from its scheduled time on Saturday to early on the Sunday. This saved flying the round in near-darkness!

Sunday morning started bright and early, and in what most entrants would call a howling gale! There was a fearsome casualty rate amongst those who braved the elements, and a large number of immediate retirements. The use of binoculars for timing enabled Terry Dilks and myself to record good scores and move to the top of the A/2 list.

The power round that followed saw Russell Peers go out and max. with his Rossi-powered, sheet-surfaced, Ronitube model – and the rest of the entrants give up without a fight. It appears that the exponents of this class prize their fancy and expensive machinery to the extent of being unwilling to risk them under adverse conditions. Jack Allen, who persevered to the extent of making a nominal flight sometime on the Sunday (just to move up into second place) even removed his Rossi and fitted a G15 for this purpose. Russell subsequently made another max. in the fifth round and returned with an undamaged model just to show what could be done!

Wakefield and A/2 continued with a rapidly decreasing number of fliers! I managed to fly both classes thanks to having help in retrieving. Glider turned into a battle between Terry Dilks and I when we both max'd in the fifth round. The models went a long way but proved easy to locate. Mine was in a field full of bullocks – and had been trodden on by one of them! Since my spare was still 'missing' from an earlier contest I was forced to attempt a repair to both a broken tailplane and a squashed wing tip. This held together for another flight – but then veered off when attempting my seventh round tow. Damage was confined to finishing off the tailplane. A 'repair' was effected by tacking a piece of the broken tail onto a Wakefield tailplane – using both 5-min. epoxy and, when this proved reluctant to set, cyano-



acrylate. Knowing that the tails involved had the same airfoils – and that my A/2 is very insensitive to tail incidence – I was more confident in the outcome than most of the onlookers. I launched in the last minute or so of the round and managed a comfortable, if lifeless, flight that went over a downwind hangar at 1:40 or so. This was more than sufficient to win as Terry Dilks had dropped score on his last two flights, despite or because of changing models following a line cross with the only other model in the air.

Third place went to Dave Truluck of the R.A.F., over three minutes behind Terry, but extremely fortunate to be in contention at all. Dave had arrived at Strubby just as the first glider round had ended, but had successfully pleaded that S.M.A.E. publicity and round times were ambiguous (since F1A was erroneously described as rubber) and was allowed to fly late! Fortunately the person most affected, fourth man Pete Freebrey, is on the F/F sub-committee and presumably was involved in the decision.

Meanwhile Wakefield had continued with but a handful of fliers. Bob Wells eventually won, using one model throughout, and making three steady flights in Sunday's wind. I changed to my old diamond models and made up a lot of leeway to place second – thanks to maxs. in the last two rounds. It was nearly dark when Dave Yates found the model for me! The third to sixth places were very close indeed with John Cooper, Ron Green, Trevor Grey and Mike Duce all being within a seven-second spread.

There will be many quick to claim that windy weather contests such as these prove nothing. I could say with equal truth that calm, sunny, thermal conditions prove just as much! Personally I regard the weather as being part and parcel of contest flying, and would oppose moves to abandon flying part way through an event just because it had become windy. If this ever becomes policy then few people will bother to attend meetings if the forecast is bad!

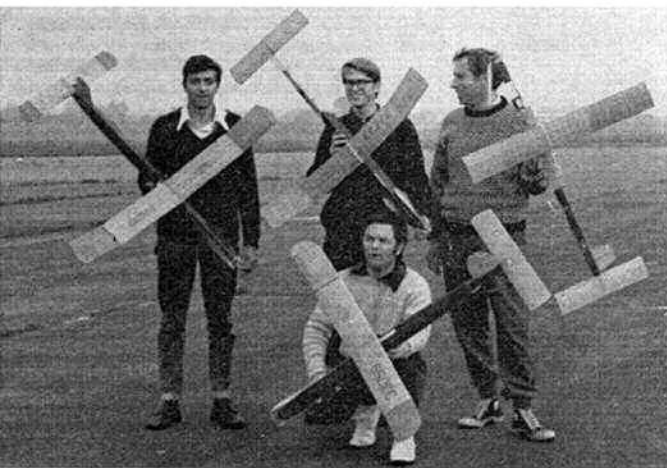
★ ★ ★

The next weekend saw the final S.M.A.E. outdoor event of the year – the Southern Gala at Odiham. It also provided an unfortunate date clash with the long established Northern Area F.A.I. Rally at Topcliffe. Despite the relative distances of the two venues from my home, I went to Odiham. There was only one reason for this decision – my need for one more respectable score to clinch the S.M.A.E.s Senior F/F Championship. John Cooper was in contention and would unquestionably overtake me if I missed the Southern Gala. As things turned out I justified my long drive by winning the Senior Championship, thanks to reaching the rubber fly-off with my 'Scream' vintage model, whilst John Cooper failed to score a third max. by just a few seconds. This situation proved decisive, which was just as well since I was very 'off form' in glider.

It is appropriate to record that the corresponding Junior title went to Timothy Bergel who flies as a Country member but is a member of the Magdalen College club where he has the influence and help of Andy Crisp. Tim flew both glider and power at Odiham, and scored sufficient points to add to his Nationals score (where he reached the rubber fly-off) to win the Junior Championship. Runners-up were N. Tillet of St. Albans, and Andy Chilton (Crookham).

The Southern Gala itself was something of a disappointment. The airfield was hedged with restrictions – the most obvious being a complete ban on the running of engines prior to mid-day. In fact this proved to be only the beginning. Flying was stopped on four separate occasions at the request of the R.A.F. but without any visible reason. There were helicopters downwind, right in the D/T dropping zone, but they only ran an engine once. The P.A. system was

The Bristol and West M.A.C. team which won the 1973 'Farrow Shield' consisted of (left to right) Derek Wain, Dick Cummings, Hamish Gunn and (kneeling) John Bailey.



Winning trio of the F.A.I. power event at the Richmond Gala. On the left is Anglia's Peter Bond who placed second; in the middle, fellow club member Ray Collins who won the event, and at right third placed Ken Faux of St. Albans.

quick to request modellers to stop flying once the R.A.F. had fired their red Very light – but I never heard it used to tell us to resume. I could make much of the implications inherent to being asked not to climb over the 'Security fence'. Whilst appreciating that we can only gain some sites on sufferance, I would question the decision to hold a widely advertised national event at such a limited venue. A less ambitious meeting would be more in keeping with the available facilities.

Fortunately ideal flying weather made up for much. It was calm enough for there to be 21 in the rubber fly-off, and there were plenty of strong thermals for twenty patient fliers to max. out in glider. In fact all events were decided on perfect scores. Even chuck glider, flown to the present S.M.A.E. scheme of five flights with a one minute max., saw Pete Bayram max. out for a comfortable lead over Andy Crisp and Bill Houghton.

The actual fly-offs were held with ten-minute periods, and in rather misty conditions. A number of flights undoubtedly lost valuable time through disappearing either in the air or as soon as they dropped below the skyline.

The rubber fly-off for the 'Flight Cup' was topped by John Carter with 6:17 – making his third S.M.A.E. rubber win this year. The model was the same 300 sq. in. model used in the 'Farrow', conventional in every way except perhaps for the use of 18 strands of Pirelli. There was a tie for second place at 5:38 between Alan Jack and Derek Wain, whilst fourth spot was filled by Gerry Ferer.

Large lightweights were the correct models for the glider fly-off, held in very dead conditions. John Boon won the Pilcher Cup with his 1½ 'Caprice', but only by a mere three seconds ahead of J. Stead of Southampton flying a similar style machine. Subsequent places went to high aspect-ratio A/2's flown by Nigel Clark and Bryan Spooner, plus a particularly good 'Wichita' style model of Jon Clements.

Trevor Payne took the 'Short Cup' for first in power with a very good fly-off just short of six minutes. Next in line were Ray Monks and Russell Pears, both with K&B 40 powered models, and Dave Pym with his smaller but very fast design. Dave went on to top the ½ A Power event (Quickstart Trophy) by a scant two seconds from Julian Hopper, with Derek Wain making up the fly-off trio.

Meanwhile there had been plenty of activity at the other end of the Country, where the Northern Area F.A.I. Meeting was in progress. Stand-in comp. sec. Ken Attiwell sent me copies of the score sheets, and Ron Pollard provided a lengthy report that I will attempt to summarise.

The contest was run in rounds, commencing at 10.30. The first two flights had to be completed by noon, the next by 1 p.m., and at 45 minute intervals thereafter. The contest did not use a starting line and hence there was tactical flying throughout the event. Initially conditions were almost ideal, being calm with barely sufficient lift for gliders to clear three minutes. The third round saw a breeze spring up and force control to move. There was also rain and poor visibility for a while. Conditions improved for the fourth and subsequent rounds.

In glider the top positions alternated throughout the day between Dave Barnes, Ewan Jones, Tony Cordes and Dave Yates who finally placed in the order given. Brian Barnes and Keith Procter started well but failed to keep up the pace. Dave Barnes' winning glider has a silk covered Dvorak-style wing, 'Osprey' wing section, Russian circling tow hook – and plenty of practice behind it! Ewan Jones flew a vee-dihedral model, whilst Tony Cordes used a couple of the models he took to Weiner Neustadt.

Wakefield saw Ron Pollard establish an early lead, and hold it to an eventual first place with a 90 second margin.

over Mike Woodhouse. Ron flew the model he built for the championship, but didn't fly there. As usual Mike flew one of 'Wiskas' design, whilst third placed Bob Hymers flew a high A.R. design with a very long movement arm and small tail. This has an exceptional glide but suffers somewhat on climb.

There were only four scores in F.A.I. Power - but two were 21 minutes! The fly-off was held in poor conditions and was won by John Godden with 2:38 off a short eight second run. Doug Scott had experienced difficulty in locating his model after its seventh max, and barely got back in time to over-run! John used a well trimmed orthodox model with a G15, whilst Doug's Rossi-powered model had a tapered and fully sheeted wing. Third in power was Alan Cooper who dropped score early on, but continued in the hopes of mistakes by the opposition.

November contests were at the other end of the country, and for a variety of reasons, I had to miss them all. First was the annual Richmond Gala held on 4th November at Bassingbourn aerodrome. Two reports were received concerning this meeting; one together with photographs from Trevor Grey, and a very much later one from organiser Nigel Clarke.

The turnout was fair by today's standards, with support spread evenly enough over the three F.A.I. classes. The 'mini' events were much less popular! Weather was varied, and ranged from blustery and cold to mild and calm, with a sudden rain-storm at one point.

F.A.I. events were run using five rounds with 15-minute breaks; competition was keen but very open. Last year's 'double' winner Mike Woodhouse concentrated on Wakefield to good effect and won this class again with a clear lead over Dave Greaves. Power also stayed in the home area with Roy Collins and Paul Bond taking top two positions - Ken Faux was the only other person to clear 14 minutes. Tony Cordes topped A/2, with Martin Dilly and Garry Madelin in the next two positions.

Gary also won A/1 - with five two-minute maxes - but proved very marginal on weight when processed 'on the field'. The organisers withheld the award until a post contest check showed that the model was legal. The fact that it was checked at all is praiseworthy (and highly unusual) and the final verdict was that Gary's model was three grammes over the minimum weight. It would seem that spring balances are convenient but hardly sufficient for accurate processing!

Julian Hopper won 1/4 Power with a convincing treble, whilst Ewan Jones won yet another chuck glider event. Coupe d'Hiver had low scores with S. A. Taylor proving the winner.

The day was concluded with a prize presentation of trophies for the F.A.I. winners, plaques and a selection of modelling goods. The latter was handed out on a 'choose your own' basis.

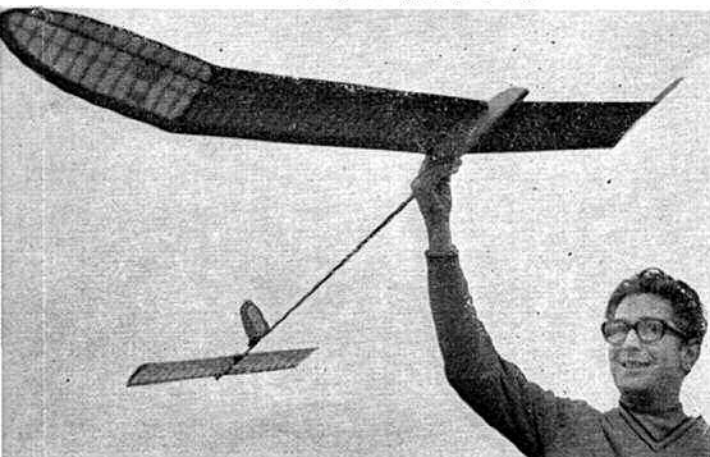
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The following Sunday saw the Crookham Open Gala at Beaulieu. I received a report and results from Gary Madelin written two or three days after the event!

Although fairly windy and cold, plenty of sun and good visibility made the day quite pleasant. The hosts were rather disappointed with the low entry but considered that a clash with a thermal soaring contest and a 'no entry' policy were contributory. Nevertheless, they refrained from flying to provide adequate organisation and timekeepers.

The Glider events proved the keenest competition in the up and down conditions. There were only two trebles in Open Glider, but 'two maxes and a down' filled third to seventh positions. In the fly-off, Al Wisher, apparently now

Leeds Club member Tony Cordes won the A/2 event at the Richmond Gala. No prizes for guessing that the fuselage is a 'Ronytube' glass-fibre rod!



Tim Bergel clinched the Junior Champion title by recording good flights in both glider and power at Odham which together with his rubber fly-off score at the Nationals gave him the required number of points. Glider shows Andy Crisp influence, while power model is none other than the trusty Dixielander.

back in the contest circuit with friend Norman Elliott, produced a 10 ft., 24 oz. model but found only mediocre air to record 1:53. This allowed Jon Clements to run down his timer before making a 2:06 with his Wichita-style model.

A/1 produced some good flying and seems to be having a run of popularity. Phil Ireland won with a perfect score, but was little in front of Albert Turner. Cliff James started with four maxes, but 'fell off' the line as his final flight to drop to fourth. Surprise third place man was Ian Keynes using Wakefield components on a g/f rod fuselage, and reputedly making his first max with the paint still wet!

Open Power needed a fly-off between Derek Wain and Stuart Godwin. The former's O.S. 19 model had an impressive climb and out-glided Stuart's G15 Dixielander. Derek also won Rubber despite losing one model on his first max. Norman Elliott and Alan Jack dropped one flight apiece to come second and third.

Chuck Glider had a low entry but a good winning score from Pete Bayram. Second place went to Martyn Cowley flying to 'bubbles'. Coupe d'Hiver had but two entrants with S. A. Taylor repeating his previous week's success.

Prizes were good with cups and replicas to the Open event winners, and plaques to the runners-up. Merchandise awards were featured, thanks to the generosity of KeilKraft, Solarbo, H. J. Nicholls, H.M.G. and Swann Morton. There was even a best junior prize awarded to Tim Bergel flying Power.

* * *

The St. Albans Winter Gala was held at Chobham Common on 25th November, with Trevor Grey again supplying a report. Turnout was mediocre, perhaps due to a bad weather forecast combined with the Government's request to keep off the roads on Sundays.

Moderate lift led to fly-offs in the three Open events. However, A/1 had the most support, with Ian Keynes topping the results in this class. Andy Crisp and Ian Dowsett won the other two mini events - H.L.G. and 'Coupe' respectively.

The fly-offs were held in cold, wet conditions that ran to a few snow flurries. Considering this, the top times in Power and Rubber were exceptional at 5:43 (Peers) and 6:35 (Elliott) respectively.

Apart from the rather informal Boxing Day event still to follow, this was almost certainly the last Chobham Rally - although some factions believe mini competitions would still be practical. Its continued use for trimming is a different story!

* * *

Finally, it would be fitting to conclude with some brief remarks on the outcome of the C.I.A.M. meeting held late in November. It is almost possible to give the story as one of 'no change'. Certainly none of the radical proposals to alter the Wakefield, A/2, and Power specifications were approved. We are not yet afflicted with ten two-minute flights and rules to suit! However the meeting recognised that the distance flown by models in windy conditions does constitute a real problem, and thus has been referred back to the F.A.I. F/F sub-committee for discussion and ideas.

Other rejected ideas included various limitations on the time a flier could wait with his timekeepers before flying, a return to 80 grams. Coupe d'Hiver models, and altering

continued on page 142

SHEET CONSTRUCTION

Trevor Faulkner details the method, step by step

SHEET CONSTRUCTION is not new; its advantages such as rigidity, warp resistance, tear resistance, profile fidelity, etc., are well known, as for that matter are its disadvantages which include weight, cost, building technique and lack of flexibility.

This feature aims at describing ways by which these disadvantages may be minimised; unfortunately, it can only offer longevity to offset the cost factor. The 'step-by-step' analysis concludes the article because I feel it is appropriate to first understand WHY something is advocated. The flying surfaces upon which this sequence is based form, in essence, a replacement for the model which was described in the May 1968 *Aero Modeller* and which was lost on the last flight whilst winning the Clwyd Senior Glider Award in 1973. They conveniently incorporate undercambered and flat-bottomed sections, and follow closely competition - proven features (including flights at an Ivinghoe meeting where other free-flight models remained prudently boxed).

Weight:

As balsa varies quite radically in its density as well as its other qualities, it is apparent that selection of material is most important. This will allow the builder not only to approach target weights rationally, but will also avoid 'one wing heavy' finished products. The writer's approach is to weigh every sheet of material on the same scale as soon as it arrives. The greatest quantity of timber used will be of the soft or medium-soft type, and for this, *my scales* read 1 oz. for a $\frac{1}{8}$ in. x 6 in. x 36 in. sheet. For models where, because of the need to keep to the very minimum end of the density range, $\frac{1}{8}$ in. sheet is employed, the very lightest British-produced sheet I have ever been able to buy weighed $\frac{1}{2}$ oz. for $\frac{1}{8}$ in. x 6 in. x 36 in. This, I was assured by the suppliers, was the lightest stuff they were able to cut economically, and the sheets had witness marks on them left by the saw, illustrating how easily the material 'picked up' any slight tooth deformity. It did, however, make most satisfactory flying surfaces for Wakefields (pity the rubber was not as good!).

A factor relating to wood density but not always appreciated is the rapid increase in weight of the softest material if dope is allowed to be assimilated without any attempts at control. This brings us to our second stage (after selection by weight and grain type) in the preparation of materials; namely, sealing the surface.

If we can keep the dope as a skin on the surface of our sheets, we are less likely to affect either their flexibility or their weight. In the first instance, the cellular configuration of the balsa will not be hoarding heavy cellulose instead of much more flexible air, and as cellulose is also heavier than air, the second condition is satisfied. Keeping the dope out is easy. Give the outside of each sheet a coat of Polycell wallpaper paste. This 'raises the grain' and also puts a very

light film of this form of cellulose over the pores in the wood. When this is dry, sand just sufficiently to remove the risen grain. Now give a thin coat of 30/70 (dope/thinners) with some drops of castor oil added. This assists the wood to remain FLEXIBLE, and prevents its curling much when drying. When this coat is dry, sand lightly again, and if at all possible, leave the sheets weighted on a flat surface. This will facilitate covering with paper, the next stage.

The easiest way for me to cover flat sheets with paper is to use a *thin* coat of Polycell worked through the tissue from the centre to the edges; this allows a reasonable working time and enough shrinkage, yet does not inhibit the subsequent coats of dope from 'fusing' nicely with the first coat to be given to the sheet. One point is worth watching carefully: as soon as the tissue is touch dry, weight the sheet down on a flat surface. This will allow the paper to shrink out any small wrinkles and will also prevent the sheet from curling. When this has been done, the sheets may be given a further coat or two of our 30/70 mix, sanding between each (of course, decoration may be added at this stage, but the major benefit is that the sanding processes are so much more controllable with the job flat).

The sheet sizes we have assumed to have been already determined, the methods of fixing or arranging leading and trailing edges decided, and the detailed shaping of sheets to have been resolved. The diagrams show several of the many variations on the aeromodelling themes, in general, the simplest constructions favouring smaller or lighter models as the amount of adhesive used is considerably less. As the typical airfoil shape has greater curvature forward of its centre chord point, intelligent wood selection and examination of sheet can often reward the builder by prompting him to choose or use sheets varying in flexibility across the grain. The more malleable pieces facilitate easy nose section curves, the increased stiffness of the remainder being ideal for trailing edge purposes.

In very wide wings, or where the wider sheets are unobtainable or too expensive, sheet can be satisfactorily joined edge to edge, even down to $\frac{1}{8}$ in. thickness. Paper applied as described reinforces the job, and provided that the edges are true, success is assured for such amalgamations. Selection of wood, bearing in mind the criteria described above, can really approach the ideal.

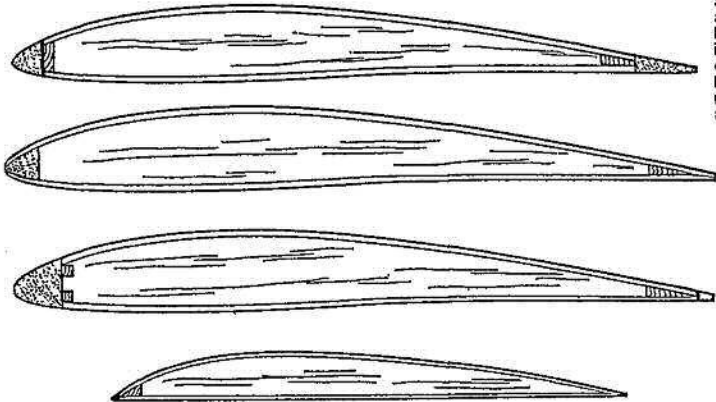
Flexibility

This factor really takes us over into the realms of model design, and of necessity, an appreciation of the loads to be sustained by the structure we wish to create.

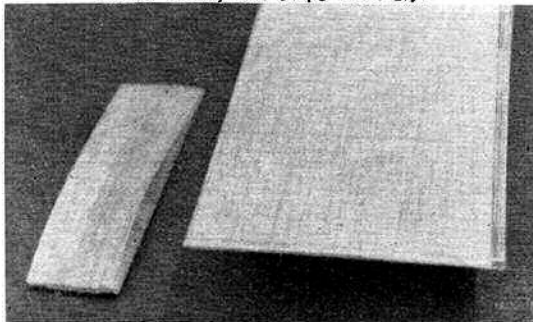
Flight loads operate mainly in the vertical plane, being most severe under conditions of launch (compressing upper surfaces) and under dethermalised conditions, compressing undersides.

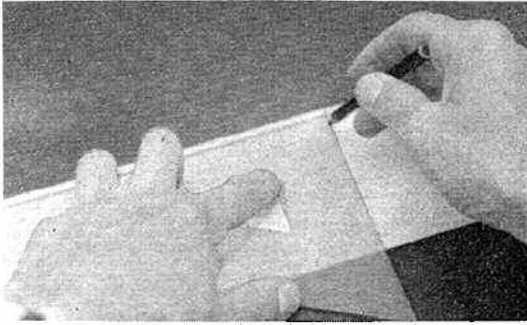
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SUMMARY OF STAGES: Firstly decide on design features and sizes of components, then weigh and match the sheet balsa. Apply Polycell and sand lightly when dry. Dope (using plasticiser), then sand. Apply tissue (and tissue decoration if required) and dope; later, sand lightly. **KEEP ALL PREPARED SHEET FLAT FROM NOW UNTIL USE.** Make up rib block (see below), coating edges with thinned contact adhesive. Add leading edge stock to lower sheet (also shown below) and shape when dry.

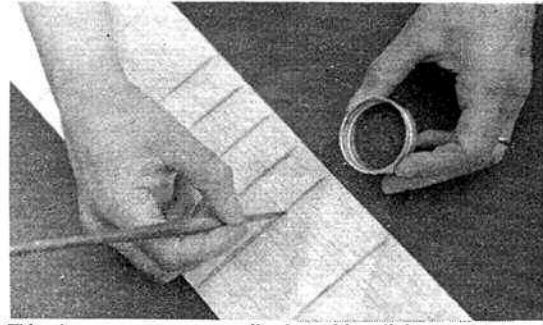


VARIATIONS IN CONSTRUCTIONAL METHODS

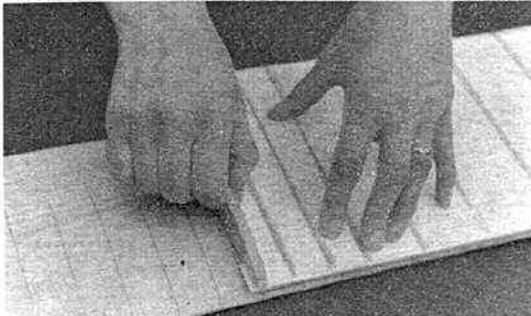




Continue by drawing in rib positions on the lower sheeting, using a soft pencil and set square abutting against the leading edge material. Chamfer trailing edge if necessary (see diagram).

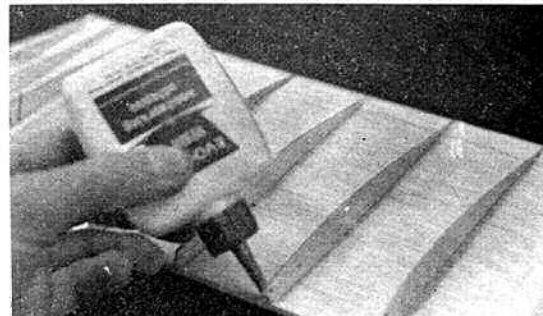


Thin down some contact adhesive with cellulose thinner and apply to rib positions with a fine brush. If necessary, apply two thin coats, the first will penetrate the wood fibre far better than the adhesive used 'neat'. Strength is perfectly adequate.



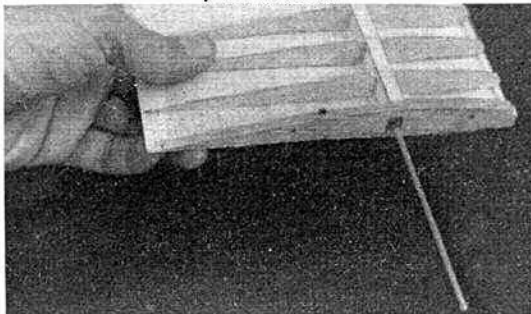
Separate the ribs from the block in the correct order and gently press into position on the lower sheet over a suitable support. Take care to position the ribs accurately first time - 'contact' cements really do adhere on contact!

Install wing joiners if featured, using balsa wood to block up the distance between the levels of the top and bottom sheets as shown. Set to dry on a flat surface; joiner in place in tubes.

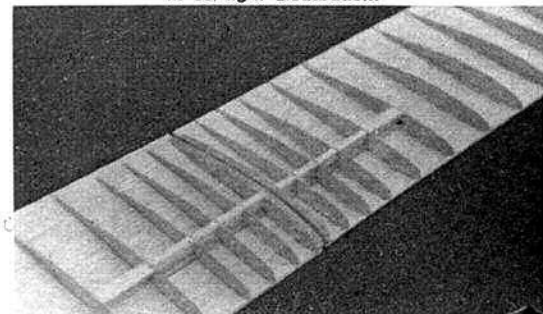


If considered necessary, joints between the ribs and leading edge can be reinforced with a fillet of P.V.A. glue - either used 'straight from the bottle' or thinned with water and applied via a syringe.

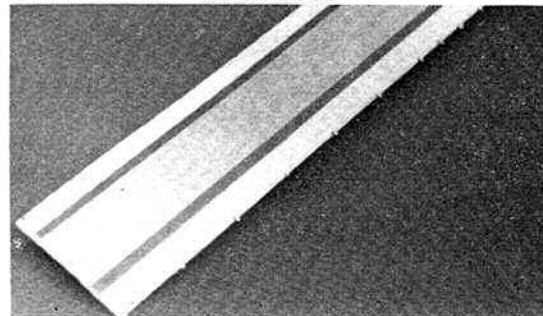
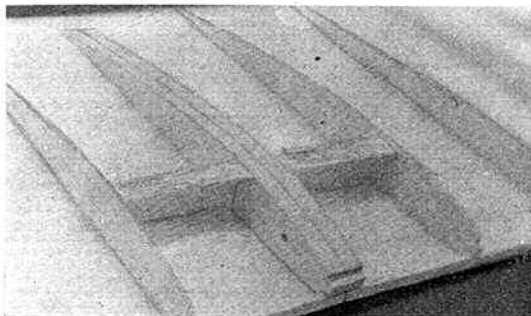
Another view of the blocked-up wing dowel tubes - note how the blocking extends past the length of the tubes and tapers off at the end (in foreground) to avoid sharp changes in strength distribution.



Add polyhedral web reinforcement (see below), before adding upper sheet, remembering to apply P.V.A. glue to T.E., webs, blocking, etc. - a 'slip sheet' of plastic or tracing paper helps in aligning upper and lower sheets. Note use of thicker ribs at breaks to allow for later chamfering to match dihedral angle.



With panels completed, trim off L.E. and T.E., then if design demands it (refer to sketch) flush off the edges with glass-paper block to add 'real' leading and trailing edges. Chamfer ribs at joining faces, dihedral breaks, etc., then complete by adding keys, facings and 'wearing points' in hardwood or ply. Weight permitting, apply thin coat of dope with no castor added.



There is, to my mind, nothing to beat wire wing joiners to take care of such loads. Under an extreme condition the wire will deform, but its replacement is easy and rapid. Impact loads are well withstood by sheeted surfaces. The crumpling which may result is not hard (usually) to repair, and in competition work sufficient strength remains in the rest of the structure to allow paper profiles to be taped in place, and flying may continue. The most difficult eventually to cater for is the cartwheel landing, which plays havoc with upper surfaces in the region of polyhedral joints. The usual malady is the chordwise compression fracture and I feel it best to introduce a web (vertical), full rib depth at this point on both sides of the angle. A further small section between the ribs and at 90° to the web gives added joint area with the top sheet. The whole point here is the provision of local strengthening to allow tip loads to be transferred directly to the flexible joiner. There has, in my experience, been no need for braces - just a cemented, chamfered solid rib, with nylon as an outer wrap for extra toughness.

Technique

We succeed or fail in this activity as applied to sheet construction by the quality of our shaping, marking and gluing. Shaping concerns ribs, perhaps leading edge sections, perhaps trailing edge parts. Ribs should be blocked for best results, and rib blanks stacked in the order of subsequent use. This avoids slight discrepancies between section profiles being noticed by extreme end ribs being juxtapositioned. (Even with parallel chord wings, rib templates can be unevenly worn, assuming original congruency.) Harder quarter

grain stock should be used for ribs likely to take extra loads, e.g. near centres, joiners, or dihedral breaks. The ribs can stay in a block until after coating with impact adhesive (see below) if this is employed.

Marking involves an accurate set-square or try-square, a soft, clean marking pencil, and an accurate eye directly over the part of the job being marked.

Gluing. Non-shrink glues are imperative. If you build under-cambered sections, you'll find contact adhesives necessary; for flat or convex jobs I would still advise their use, particularly as described. I had originally used this type of adhesive with some misgivings as to longevity; after eight years examples are 100 per cent perfect, which is more than one can say about the products of Dagenham, Longbridge or Luton! Most contact glues are petroleum products; so are most cellulose thinners. Dilution of the adhesive can give ideal characteristics, so that a small watercolour brush can lay down thin lines of glue exactly as required. Additionally, layers of glue can be built up to exactly the required strength, the first one penetrating the wood fractionally more than would the original recipe from the tin or tube. Before starting in earnest, experiment with dilutions of your impact adhesive; if you do add a little too much solvent, evaporation soon provides the solution (literally!). For edge to edge joints, use P.V.A. glue, introduced if required in diluted form with a syringe. Now that the reasoning behind the selection of materials, design features and methods has been seen, their application in the illustrated example will be easy to follow, and assist modellers in their individual building projects.

FREE-FLIGHT COMMENT *continued from page 139*

the penalty for throwing the winch to being an 'attempt'.

There were some changes. F.A.I. standard fuel is now defined as 80 per cent Methanol 20 per cent lubricant (as distinct from 'castor oil'). Wakefield weight is now specified as 190 grams structure and 40 grams rubber (as compared with 230 grams total), the starting line is to be at right angles to the wind direction and the round can be interrupted to rotate the line should the wind change. (Dare I think my protest at the F.F.N. International has been remembered?) Just when these changes apply should be evident from the official minutes as and when they became available.

F.A.I. Power models are to continue using ten-second runs, as the suggestion of reducing this was rejected. Incidentally, the same pair of timekeepers are to time all power fly-offs taken in sequence. The idea is to keep 'reaction time' at a constant throughout. This gives some advantage to those drawn late as they might be able to establish whether the timers are 'quick on the trigger' or the reverse.

For those anxious to plan their holidays well ahead, the venues of future World Championships might be of interest. The 1974 Indoor Champs are to be held in the airship hangar at Lakehurst, New Jersey, U.S.A. - which should be quite a surprise to many people. The Americans themselves went to the trouble of holding a relatively low-ceiling trials for their Indoor Team! The three-way outdoor championship in 1975 are to be held at Plovdiv in Bulgaria. Finally the 1976 Indoor Champs are subject to a provisional offer by the S.M.A.E. to run them at Cardington.

RESULTS:

S.M.A.E. 6th AREA CENTRALISED EVENTS, 7th October 1973
Farrow Shield - (Team Rubber): 1. Bristol & West 36:00+23:14; 2. Leeds A 35:44; 3. Norwich A 35:35; 4. Stanstead 35:27. Farrow Shield - Individual Results (98 scores, 40 treble maxes): 1. J. Carter (Falcons) 9:00+8:06; 2. D. Wain (Bristol & West) +6:37; 3. R. Peers (Falcons) +6:10; 4. D. Morley (Liverpool), P. Harris (Eversham) +5:50. S.M.A.E. Cup - A/2 Glider (108 scores): 1. J. O'Donnell (Whitefield) 21:00+2:26; 2. A. Cordes (Leeds) 20:45; 3. J. Boon (Falcons) 20:33; 4. E. Jones (Sunderland) 20:20. 1/2 A Power (51 scores, 5 treble maxes): 1. R. Peers (Falcons) 9:00+3:59; 2. D. Smalley (Norwich) +3:11; 3. J. Hopper (Stanstead) +3:04; 4. Faultless (Walsall) +2:26. Plugge Cup - Season's Club Championship: 1. Norwich 1449 points; 2. Southampton 1273 points; 3. Leeds 1224 points; 4. St. Albans 1182 points.

S.M.A.E. NATIONAL FREE FLIGHT INDIVIDUAL CHAMPIONSHIPS

Senior (700 points possible): 1. J. O'Donnell (Whitefield) 604 points; 2. J. Cooper (Southampton); 3. A. Jack (Southampton); 4. P. Stewart (Crookham); 5. R. Peers (Falcons), Junior: 1. T. Bergel (C/M); 2. N. Tillet (St. Albans); 3. A. Chilton (Crookham).

YORK RALLY, R.A.F. ELVINGTON, 14th October 1973
Open Rubber (14 entries, 6 in fly-off): 1. R. Peers (Falcons) 9:00+4:52; 2. M. Sanderson (Grimsby) +4:05; 3. J. Carter (Falcons) +3:56. Open Glider (18 entries): 1. J. Boon (Falcons) 7:55; 2. T. Dilks (Falcons) 7:38; 3. J. Mosley (Leeds) 7:31. Open Power (11 entries): 1. R. Peers (Falcons) 9:00+4:24; 2. B. Martin (Tynemouth) +3:24; 3. A. Cooper (Leeds) 8:49. Mini (K factor, 11 entries): 1. A. Cordes (Leeds 10:00+2:33); 2. J. O'Donnell (Whitefield) +2:28; 3. J. Hanson +2:24. Chuck Glider (5 entries): 1. E. B. Jones (Sunderland) 4:45; 2. P. Bayram (C/M) 4:31.

S.M.A.E. 2-DAY F.A.I. MEETING, R.A.F. STRUBBY, 20-21st October 1973
A/2 Glider (F.I.A.), (70 entries, 50 scores): 1. J. O'Donnell (Whitefield) 16:59; 2. T. Dilks (Falcons) 16:46; 3. Truluck (R.A.F.M.A.A.) 13:39; 4. P. Freebrey (Northwood) 13:23. Wakefield (F.I.B.), (49 entries, 32 scores): 1. R. Wells (Anglia) 15:55; 2. J. O'Donnell (Whitefield) 15:22; 3. J. Cooper (Southampton) 14:22; 4. R. Green (St. Albans) 14:17. F.A.I. Power (F.I.C.), (27 entries, 13 scores): 1. R. Peers (Falcons) 14:55; 2. Allan (Crookham) 9:19; 3. R. Baggott (Birmingham), R. Monks (Birmingham) 9:00.

S.M.A.E. SOUTHERN GALA, R.A.F. ODIHAM, 28th October 1973
Flight Cup - Open Rubber (59 entries, 43 scores, 21 trebles): 1. J. Carter (Falcons) 9:00+6:17; 2. A. Jack (Southampton), D. Wain (Bristol & West) 5:38; 4. G. Ferer (Leicester) +5:30. Pitcher Cup -

Open Glider (82 entries, 55 scores, 20 trebles): 1. J. Boon (Falcons) 9:00+2:48; 2. J. Steel (Southampton) +2:45; 3. N. Clark (Richmond) +2:35; 4. J. Clements (Bristol & West), B. Spooner (Croydon) +2:30. Short Cup - Open Power (49 entries, 26 scores, 9 trebles): 1. T. Payne (Northampton) 9:00+5:58; 2. R. Monks (Birmingham) +5:16; 3. R. Peers (Falcons) +5:08; 4. D. Pym (Walsall) +4:57. Quickstart Trophy - 1/2 A Power (35 entries, 15 scores, 3 trebles): 1. D. Pym (Walsall) 9:00+3:52; 2. J. Hopper (Stanstead) +3:50; 3. D. Wain (Bristol & West) +3:23; 4. P. Scrivens (Cheltenham) 8:56. Chuck Glider (5 x 1 min; 23 scores): 1. G. Bayram (C/M) 5:00; 2. A. Crisp (Oxford) 4:35; 3. W. Houghton (Richmond) 4:26.

NORTHERN AREA F.A.I. MEETING, R.A.F. TOPCLIFFE, 28th October 1973
A/2 Glider (30 entries): 1. D. Barnes (Liverpool) 20:02; 2. E. B. Jones (Sunderland) 19:51; 3. A. Cordes (Leeds) 19:44. Wakefield (5 entries): 1. R. Pollard (Tynemouth) 20:31; 2. M. Woodhouse (Norwich) 18:58; 3. Hymers (Darlington) 17:18. F.A.I. Power (5 entries, 4 scores): 1. J. Godden (Leeds) 21:00+2:38; 2. D. Scott (Morley) 21:00+over-run; 3. A. Cooper (Leeds) 19:50.

RICHMOND GALA, BASSINGBOURN, 4th November 1973
A/2 Glider (5 flights): 1. A. Cordes (Leeds) 13:42; 2. M. Dilly (Croydon) 12:51; 3. G. Madellin (Crookham) 12:15. Wakefield (5 flights): 1. M. Woodhouse (Norwich) 14:17; 2. D. Greaves (Birmingham) 13:23; 3. J. Punter (Hayes) 12:48. F.A.I. Power (5 flights): 1. R. Collins (Anglia) 14:41; 2. P. Bond (Anglia) 14:25; 3. K. Faux (St. Albans) 14:18. Coupe d'Hiver: 1. S. A. Taylor (C/M) 7:04; 2. L. Ranson (Anglia) 5:05. 1/2 A Power: 1. J. Hopper (Stanstead) 9:00; 2. E. Vye (Market Harborough) 7:36. A/1 Glider: 1. G. Madellin (Crookham) 10:00; 2. H. Thompson (Richmond) 7:38. Chuck Glider: 1. E. B. Jones (Sunderland) 4:50; 2. D. Barnes (Liverpool) 3:55.

CROOKHAM GALA, BEAULIEU, 11th November 1973
Open Glider: 1. J. Clements (Bristol & West) 9:00+2:06; 2. A. Wisler (Croydon) +1:53; 3. J. Steel (Southampton) 7:24. Open Rubber: 1. D. Wain (Bristol & West) 9:00; 2. N. Elliott (Croydon) 8:36; 3. A. Jack (Southampton) 8:19. Open Power: 1. D. Wain (Bristol & West) 9:00+5:16; 2. S. Godwin (Southampton) +3:18; 3. R. Peers (Falcons) 8:30. Coupe d'Hiver (5x2): 1. S. A. Taylor (C/M) 6:52; 2. M. Cowley (Northampton) 5:49. A/1 Glider (5x2): 1. P. Ireland (Southampton) 10:00; 2. A. Turner (Southampton) 9:47; 3. I. Kaynes (Croydon) 8:49. Chuck Glider (5x1): 1. P. Bayram (C/M) 4:04; 2. M. Cowley (Northampton) 3:21; 3. J. Tipper (Lee Bees) 2:31. Best Junior Score: T. Bergel (C/M) 7:40 (power).

ST. ALBANS WINTER GALA, CHOBHAM COMMON, 25th November 1973
Open Rubber: 1. N. Elliott (Croydon) 9:00+6:35; 2. T. Grey (Sittingbourne) +3:12; 3. J. Hooper (Stanstead) 7:35. Open Glider 1. A. Wisler (Croydon) 9:00+2:00; 2. M. Dilly (Croydon) +1:56; 3. P. Williams (Richmond) 8:49. Open Power: 1. R. Peers (Falcons) 9:00+5:43; 2. A. Crisp (Oxford) +3:40; 3. P. Busket (Sittingbourne) +2:00. A/1 Glider: 1. I. Kaynes (Croydon) 9:07; 2. G. Madellin (Crookham) 8:52; 3. M. Wood (Croydon) 8:39. Coupe d'Hiver: 1. I. Dowsett (Northwood) 6:12. Chuck Glider: 1. A. Crisp (Oxford) 4:46; 2. A. Sopp (Maldenhead) 4:38; 3. J. Hopper (Stanstead) 4:35.

LATEST ENGINE NEWS

By Peter Chinn



Left, the OPS 40-SLA Standard. Side exhaust, shaft-valve induction and standard port timing. At right is the OPS 40-SPA Standard with rear exhaust, shaft valve induction and standard port timing.



The OPS 40 Project

In the January issue we mentioned the 1974 Italian OPS 40 range which, so far as standard (control-line and free-flight) engines are concerned, consists of five models. As we explained, these models comprise (1) a front-induction, side-exhaust version; (2) a rear-induction side-exhaust version; (3) a front-induction, rear-exhaust version; (4) a rear-induction, rear-exhaust version and (5) a rear-induction, rear-exhaust model with timing modified for tuned pipe operation.

Certain parts are common to all five engines. For example, the cylinder-head, connecting-rod, gudgeon-pin, prop-drive assembly and the venturi and needle-valve assembly, plus all screws.

Certain other parts are common to two or more versions. In fact,

in addition to the parts mentioned above, it is only necessary to have two main castings, two crankshafts, two front housings with bearings, one plain backplate, one backplate with disc-valve and two cylinder-liners (with matched pistons), plus tuned pipe and adaptor, to enable any one of the five engines to be assembled. Indeed, one could, if so minded, come up with one or two other, non-listed, variants, such as a shaft rotary-valve, rear exhaust tuned pipe engine. Also, with the aid of one of the OPS R/C carburettors, any one of the engines can be converted to throttle control, although this, of course, will generally be of interest only to radio-control enthusiasts.

This interchangeability of parts has allowed the manufacturer to offer the OPS 40 as a 'kit' complete with screws and gaskets, enabling all the variants to be

constructed. The kit is fairly expensive, but is much less costly than buying several complete engines, the cheapest of which is £25.50 and the most expensive £30.60.

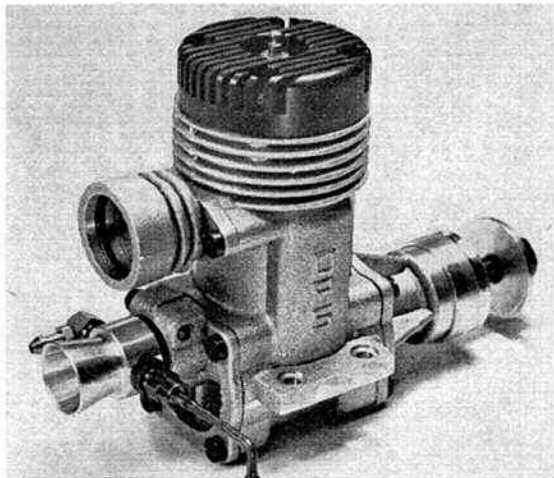
Features common to *all* OPS 40 engines are as follows:

Bore and Stroke: 21.6 mm x 17.8 mm.

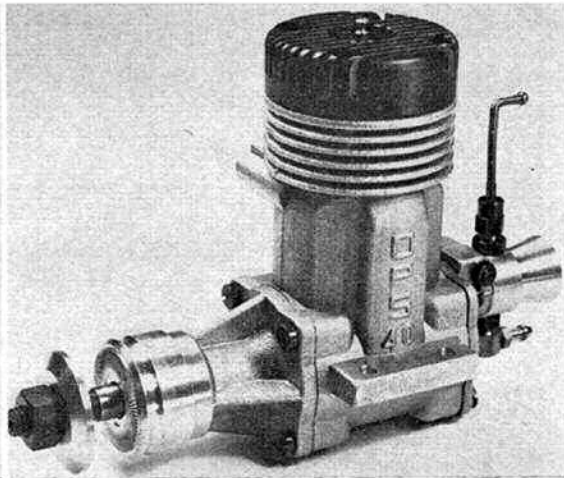
Swept Volume: 6.523 c.c. or 0.3980 cu. in.

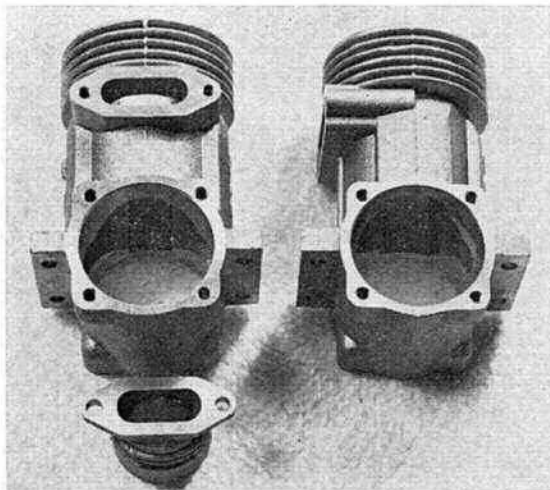
Porting: Schnuerle loop scavenge system with flat deflectorless piston crown. Single unbridged exhaust port flanked by two main transfer ports angled to direct gas flow to opposite side of cylinder. Third port located diametrically opposite exhaust port, steeply inclined upward through cylinder wall and opening 2-3 degrees after main transfers to sweep gas upward to scavenge combustion chamber. Full skirted piston without port

OPS 40-SPP Standard. Rear exhaust, disc valve induction and standard port timing, shown with exhaust adaptor normally used with piped version.



OPS 40-SLP Standard. Distinguished by its side exhaust, disc valve induction and standard port timing.





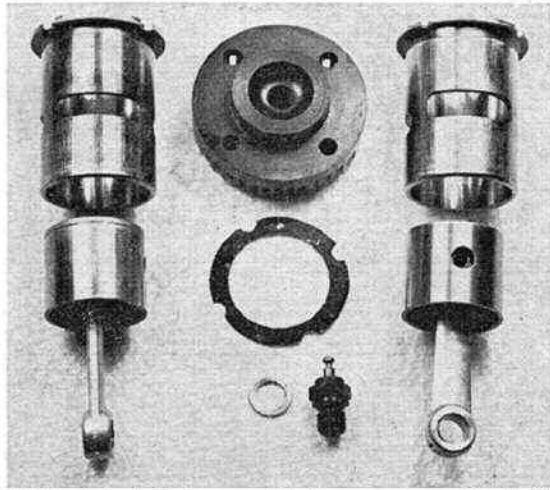
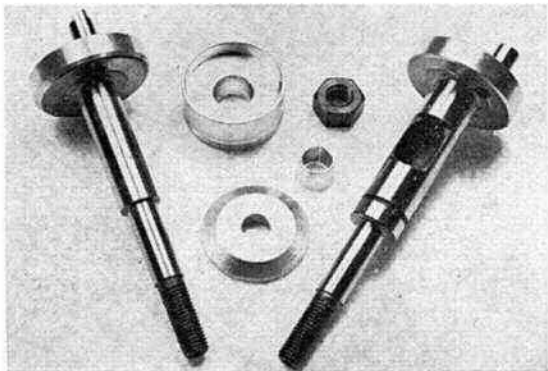
The two types of OPS 40 main casting on which all versions are based. Very robust proportions evident from these pictures. Adaptor for tuned pipe seen below casting on left.

windows or cutaways.

Cylinder-liner and Piston Construction: 'ABC' type, i.e. ringless aluminium piston running in brass cylinder-liner having chromed bore. (Brass liner has coefficient of expansion closer to that of aluminium than does a steel liner. As a result, liner expands to maintain more constant piston/cylinder clearance - enabling piston to be closely fitted to cylinder without compression-ring - and to also maintain closer contact with surrounding cylinder casting for better heat dissipation. Chromed bore reduces wear and risk of scuffing.) Cylinder wall thickness 1.7 mm. Bare piston weight 8.2 grammes.

Cylinder-head: Deeply finned, machined from bar stock and anodised black. Bowl shaped combustion chamber surrounded by wide (3.6 mm.) squish-band.

Crankshaft for SLP and SPP (left) and SLA and SPA (right). Prop drive parts common to all models.



'ABC' piston/cylinder assembly for non-pipe engine (left) and similar components but with 'pipe' timing for SPP Speed/Piped engine at right. Head common to all.

One 0.3 mm. composition head gasket.

Connecting-rod and Gudgeon-pin: Forged aluminium alloy connecting-rod, 35 mm. between centres. Plain unbushed small-end. Bronze bushed big-end with two oil holes. 5 mm. o.d. fully-floating hollow gudgeon-pin retained by wire circlips in piston. Connecting-rod weight 3.4 grammes. Gudgeon-pin weight 2.0 grammes.

Crankshaft: Internally counter-balanced crankdisc with aluminium sealing rim.

Prop-drive Assembly: Cup type machined aluminium alloy prop driver fitted to shaft via alloy split taper collet. Alloy prop washer. Steel $\frac{1}{4}$ UNF hexagon prop nut.

Venturi and Needle-valve Assembly: Machined aluminium alloy venturi with 9.5 mm. i.d. choke. Brass right-angled jet. Threaded

steel needle mounted in bifurcated brass needle block with steel gland nut. Effective choke area: 54 sq. mm. approx.

OPS 40-SLA

This is the front induction, side exhaust model. In addition to the features mentioned above, it has the following:

Main Casting: Full length cylinder casing in unit with crankcase barrel and with side exhaust duct.

Cylinder-liner: Standard (non-pipe) type.

Crankshaft: 12 mm. o.d. main journal. 7 mm. front journal. 6 mm. o.d. hollow crankpin. 9 mm. i.d. gas passage fed from rectangular valve port 14 mm. long.

Front Housing and Bearings: Cast aluminium front housing incorporating a 12 mm. i.d. intake boss with parallel sided bearing

Front housing and backplate assembly for SLP and SPP engines (left) with SLA and SPA units (right) and carb. unit common to both.



aperture. Cotter-pin type intake venturi anchorage. One 12 x 24 mm. 10-ball steel caged ball-journal main bearing and one 7 x 19 mm. 7-ball brass-caged ball-journal front bearing.

Backplate: Rear cover only, deeply recessed.

Checked Weight: 309 grammes -- 10.9 oz.

Measured Cylinder Port Timing: Exhaust: 77 deg. BBDC to 77 deg. ABDC. Main transfer: 65 deg BBDC to 65 deg. ABDC. 3rd port: 63 deg. BBDC to 63 deg. ABDC.

Measured Rotary-valve Timing: 40 deg. ABDC to 45 deg. ATDC.

OPS 40-SLP

This is the rear-induction, side-exhaust model. It has the following features:

Main Casting: As for the 40-SLA.
Cylinder-liner: Standard (non-pipe) type.

Crankshaft: 0.375 in. dia. main journal, 7 mm. dia. front journal. 6 mm. dia. solid crank-pin with drive spigot for rotary-valve.

Front Housing and Bearings: Short cast aluminium front housing containing one $\frac{3}{8}$ x $\frac{7}{16}$ in. 7-ball steel caged ball-journal main bearing and one 7 x 19 mm. 7-ball brass caged ball-journal front-bearing.

Backplate and Rotary-valve: Cast aluminium backplate with 12 mm. i.d. intake boss. Cotter-pin type venturi anchorage. Counter-balanced valve disc of $\frac{1}{8}$ in. thick phenolic-resin laminate mounted on steel pin pressed into backplate.

Checked Weight: 311 grammes -- 11.0 oz.

Measured Cylinder Port Timing: As for 40-SLA.

Measured Rotary-valve Timing: 45 deg. ABDC to 64 deg. ATDC.

OPS 40-SPA

This is the front induction, rear exhaust model. It has the following features:

Main Casting: Full length cylinder casing in unit with crankcase barrel and with rear exhaust duct.

Cylinder-liner: Standard (non-pipe) type.

Crankshaft: As for 40-SLA.

Front Housing and Bearings: As for 40-SLA.

Backplate: As for 40-SLA.

Checked Weight: 317 grammes -- 11.2 oz.

Measured Cylinder Port Timing: Exhaust: 75 deg. BBDC to 75

deg. ABDC. Main transfers: 63 deg. BBDC to 63 deg. ABDC. 3rd port: 61 deg. BBDC to 61 deg. ABDC.

Measured Rotary-valve Timing: As for 40-SLA.

OPS 40-SPP

This is the rear-induction, rear-exhaust standard model. It has the following features:

Main Casting: As for 40-SPA.

Cylinder-liner: Standard (non-pipe) type.

Crankshaft: As for 40-SLP.

Front Housing and Bearings: As for 40-SLP.

Backplate: As for 40-SLP.

Checked Weight: 323 grammes -- 11.4 oz.

Measured Cylinder Port Timing: As for 40-SPA.

Measured Rotary-valve Timing: As for 40-SLP.

OPS 40-SPP Speed/Piped

This is the rear-induction, rear exhaust model for use with tuned double-cone exhaust pipe. All components as for 40-SPP above except:

Cylinder-liner and Matched Piston: Special liner with extended exhaust period for use with tuned pipe.

Special Exhaust Adaptor for fitting OPS tuned pipe.

OPS Tuned Pipe: Nominal length from exhaust port: 32 cm.

Checked Weight: 377 grammes -- 13.3 oz. including OPS tuned pipe.

Measured Cylinder Port Timing:

Exhaust: 79 deg. BBDC to 79 deg. ABDC. Main transfers: 61 deg. BBDC to 61 deg. ABDC. 3rd port: 58 deg. BBDC to 58 deg. ABDC.

Measured Rotary-valve Timing: As for 40-SLP and 40-SPP.

A word about port timing. It will be noted that when cylinder port periods for the rear exhaust versions were checked, these were found to be less (by an average of approximately 4 degrees of

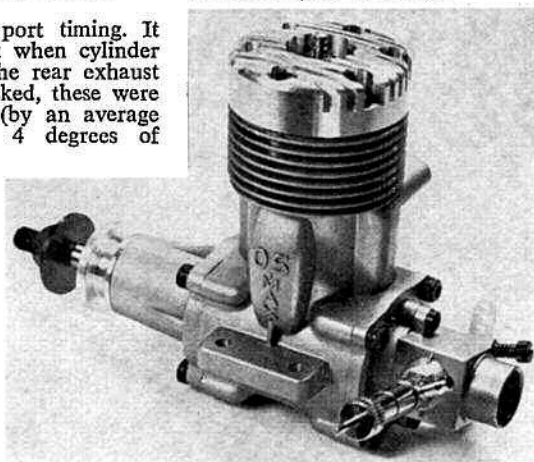
crank angle) than when the same cylinder/piston assembly was fitted to the side exhaust engines. This was due to slight differences in the machining of the two main castings which resulted in the liner being located about 9 thou. higher in the side-exhaust casting, thereby raising the ports relative to the piston travel.

For this reason, the exhaust period of the standard side-exhaust engines appears to be uncommonly lengthy (154 deg.) for non-piped motors while the exhaust period of the piped engine is quite modest at 158 deg. Fitting the piped engine's liner and piston experimentally to the side exhaust casting confirmed these findings with an increase in the exhaust period to 162 deg. However, the necessary closure of the transfer ports well in advance of exhaust port closure, to gain the super-charging effect of the pipe, remains; relative to the transfer period, the exhaust period of the piped engine is twelve degrees longer than that of the standard engines.

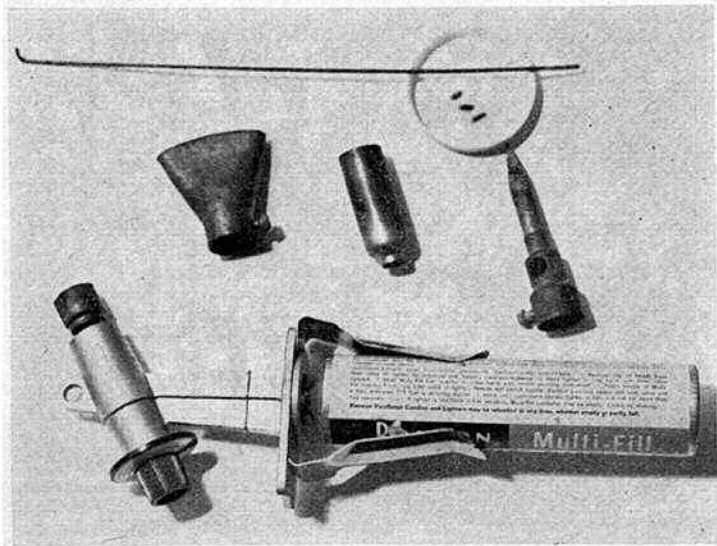
We hope to run, in due course, a full performance test on one of the new OPS motors for inclusion in the A.M. Engine Test reports.

O.S. Max 40-SR

Latest addition to the ultra high-performance .40 cu. in. engine market is the O.S. Max 40-SR from Japan. The first production O.S. to have Schnuerle porting, it is beautifully finished and differs from its rivals in its use of rear rotary drum valve induction. Intended primarily for R/C pylon racing, deliveries to the U.K. are likely to be severely limited over the next few months. Further details to follow.



The impressive new O.S. Max 40-SR racing engine. Majority of these engines will be going to Japanese and U.S. markets over next few months but a small number will be made available in the U.K.



BASIC METALWORK

Part III

by Bill Burkinshaw,
concerning the joining
of metals

A butane torch such as the Ronson Varafame (left) is ideal for hard soldering, while the substitution of a copper bit also enables it to be used for soft soldering. Useful for field repairs too. Available from ironmongers or do-it-yourself shops.

IN THIS SECTION I will deal with the various different methods of permanently holding together pieces of metal that are readily available to the 'table top' modeller.

The most common method used by the aeromodeller is soldering (soft soldering as against hard soldering - see next section). Not only is it the most commonly used, it is often the most commonly abused to judge from the number of leaky and very heavy fuel tanks and 'drop-off' pushrods seen on control line models. Before giving some tips on soft soldering a brief explanation of the theory and 'chemistry' of the process might help. Soft solder is an alloy of tin and lead, the more tin the alloy contains, the lower the melting point (and greater the cost). Melting point varies from approximately 180°C-300°C depending upon composition. When molten solder comes into contact with clean metal it alloys or combines with the surface of the metals to be joined and when solid a permanent joint is made. It has a tensile strength of approximately 4 tons per square inch, so you can see that the joint made should be very strong - in fact it should mean that two one inch square bars soldered end to end could support a weight of some 4 tons.

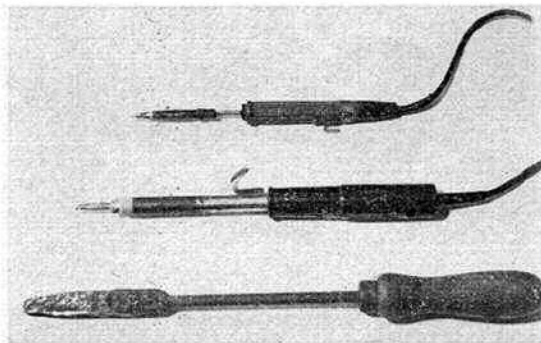
Two points in the above description give the clues which will solve most causes of soldered joint failures: they are **MOLTEN** and **CLEAN**. Only molten solder will adhere to clean metal properly; even though a piece of metal looks clean it is not if it has been in contact with the air around it. Oxygen in the atmosphere reacts with the surface of the metal to produce oxides which coat the entire surface of the metal, and solder will not adhere to oxide. So the first thing to do is remove oxide and then prevent it from reforming. The solder is kept molten by using a sufficiently large 'iron' for the job in hand.

The iron is basically a heat store which is used to melt the solder and also to heat up the article to be soldered to

a temperature that will not cool the solder and cause it to solidify when it comes into contact with it. This means that the iron used must be of adequate size to heat up not only its own 'bit', the solder, but also the object being soldered as well. Conversely the iron must not be so large that it damages the components being soldered, e.g. transistors and similar electronic components. The answer to these conflicting requirements is to have more than one soldering iron. I personally use a small electric iron of 10 watts for electrical work and a plain gas-heated copper bitted iron for larger work although this does mean that a gas cooker needs to be available. However, if your home does not boast a gas cooker, an electric iron of 60 watts rating would be necessary.

The formation of oxides is prevented by using a flux. The cheapest way to solder in the long term is to buy a stick of solid tinman's solder and a tin of resin flux, e.g. *Fluxite* for electrical work and *Tinplate* plus a tin of *Bakers fluid* for steel, brass and copper although solder can be obtained with both resin and acid flux cores. The flux has a dual action; it helps to lift oxides off the metal surface, and also by melting over the clean metal, it prevents air from getting to the surface and causing further oxidation. Some metals have the ability to oxidise more quickly than others, so they require fluxes with a more powerful action. Tin is slow to oxidise and a resin flux can be used on it; brass, copper and steel should be soldered using an acid flux. The acid fluxes remain active after soldering has finished and residues will corrode components if not washed off. This is, of course, a good reason for not using acid fluxes on electrical and electronic work as the working of residual flux would not do a radio receiver very much good! I have not mentioned the soldering of aluminium yet because it requires special solders and fluxes. Ordinary tin/lead solder cannot be used not can fluxes of the

The equipment for soft soldering: at left, is a variety of solder and below, a selection of soldering irons, the top two electrical, the bottom one consisting purely of a copper bit which must be heated in a gas flame.



FLUXITE BAKERS FLUID type be used. It is possible to obtain the necessary materials for soldering aluminium in small quantities although they are fairly expensive. *Camping Gaz International* make packs of solder and flux for aluminium and the cost would be approximately £1.25 for both. My local hardware dealer informs me that any Gaz retailer should have no difficulty obtaining supplies of these materials. I have not used Gaz's brand of aluminium solder but I have used the industrially available equivalent and provided the particular brand instructions are followed carefully, results have been very successful.

After this preamble some practical tips. Firstly, soldering together a fuel tank shaped up from tinsplate. You will need:

- (a) Prepared parts for the tank: all parts bent, holes drilled, vent pipes cut to length.
- (b) Pair of pliers (used to pick up the hot tank).
- (c) Soldering iron (60 watt electrical type).
- (d) Resin cored solder or tin-man's solder and resin flux.
- (e) Bakers fluid.
- (f) Emery cloth or old file.
- (g) Vice and blocks of wood.

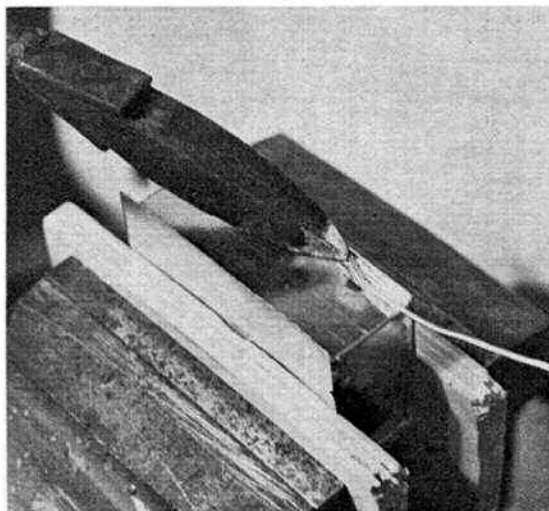
Method

1. Tin the soldering iron, a procedure necessary from time to time as the iron's bit becomes pitted and dirty. To tin, heat up the iron and melt a few blobs of solder into the tin of flux. With an old file or emery cloth shape up the bit of the iron whilst it is still heated until you see clean bright metal and have corrected any deformation, then quickly plunge the iron into the flux tin onto one of the previously melted blobs of solder. There should be a great cloud of smoke and a horrible smell. When you can see again, the surface of the iron should be coated with a bright, clean layer of molten solder. Repeat when necessary.
2. Using blocks of wood as insulators clamp the tank parts in the vice using wood blocks to prevent the large lump of metal that is the vice from 'soaking up' all the heat from the soldering iron.
3. Smear a thin layer of flux along the tinsplate joints to be soldered. Leave the soldering of the brass and copper tubes for the moment.
4. Dip the iron into the flux then melt a small quantity of solder onto the tinned bit.
5. Place the iron firmly into contact with the start of the joint line to be soldered.
6. Wait for a few seconds (very important this. The iron must have time to heat up the metal and melt the flux.)
7. Now draw the iron slowly along the length of the joint. A smooth fillet of solder should be deposited behind the iron as it moves along. If the solder does not flow cleanly you probably did not wait long enough for the iron to heat the work initially.
8. Allow solder to cool. It is possible to note the difference between the shiny surface of molten solder and the dull surface of the solidified solder.
9. Repeat as necessary.

Fixing Tank Vents and Soldering Piano Wire

Brass and copper tube as well as piano wire really do need an acid flux for best results when soldering. I know ordinary resin cored solder will make a joint, but remember those leaking tanks and drop-off pushrods? The first essential is to clean up the area of the joint with emery cloth. Yes, even if you only finished the shaping and emery clothed it yesterday. Having done this proceed as for steps 3-5 with the additional step of washing off flux residues when the job is completed. This is necessary anyway with a fuel tank as I do not think that even resin flux is a recommended ingredient of either diesel or glow fuell Remember with a fuel tank to check for leaks at this stage by placing fingers over all the vents and immersing the tank in hot water - the heat causes the air inside the tank to expand and force its way out of any holes. Incidentally, it is not a particularly easy task to solder a tank before the vent holes are drilled as the heat from the iron expands the air in the tank and causes difficulty with sealing the last little bit of the joint.

There are, of course, instances when one feels that plain soft soldered joints are just not strong enough, e.g. heavy gauge wire undercarriages, cabane struts and propeller hubs. If the means are to hand, the first alternative would be hard solder (more later) but as is often the case cost of necessary materials is prohibitive or you have run out of matches to light the gas and soft solder has to do. The joint can be very successfully reinforced with a binding of wire before soldering so that when soldered the wire binding becomes bonded into the joint completely. The most commonly used material for the reinforcement is fuse wire but this is not the only material. Strips of tinsplate wrapped round the joint or a piece of tube slipped over the two components can also be used (Fig. 1). Whichever method is adopted it is essential if full benefit is to be



Soldering up a fuel tank - note how the work is insulated from the jaws of the vice with wooden blocks. Failure to do this would result in a very poor joint, as the mass of the vice would cool the tank so much that the solder could not 'run' properly.

obtained, that the reinforcing is completely bonded in. If piano wire is being reinforced, acid-flux must be used to ensure that the piano wire is soldered inside the wire, etc. binding.

If the tube method is used the joint should ideally be 'sweated'. To do this the ends of the wire should first be cleaned off with emery-cloth, then coated with a layer of solder all over. Then, if possible, the inside of the tube should be emery clothed. The rods and tube inside are assembled with plenty of flux inside and the whole assembly is then re-heated with the iron from the outside until the heat conducts through and fuses all the solder together inside the joint. On really big work of this nature a bunsen burner or butane gas torch would be played over the outside of the assembly until the solder ran. If necessary feed in extra solder during the sweating process until it is seen to run out of the opposite end of the joint. This method can be used to solder straps onto fuel tanks, etc. by tinning both the strap and tank, placing the tinned surfaces together then applying heat and pressure with a soldering iron until melted solder is seen to ooze from the edge of the joint. Still on the subject of soft soldering there are several handy tips that might help to alleviate a certain amount of frustration which I can pass on at this stage. They are:

- (a) *Cutting and soldering Bowden cable:* this is a multi-stranded steel cable which is frequently used for R/C model control linkages and also for flexible leadouts on control line models. The secret is to tin the cable in the area of the point to be cut before cutting. If you do not do this the cable tends to unravel itself when you cut it, meaning punctured fingers when trying to re-wind it or a Bowden cable with a strand missing. Use plenty of Bakers fluid and really let the solder soak well into all the strands of the cable. Allow to cool, then cut with side or end cutting pliers. Now whatever you wish to join to the cable can be joined and then very thoroughly clean off residual flux because it tends to be trapped in between the strands of the cable and corrosion will set in very rapidly.
- (b) Similarly, when soldering *multi-strand electrical flex*

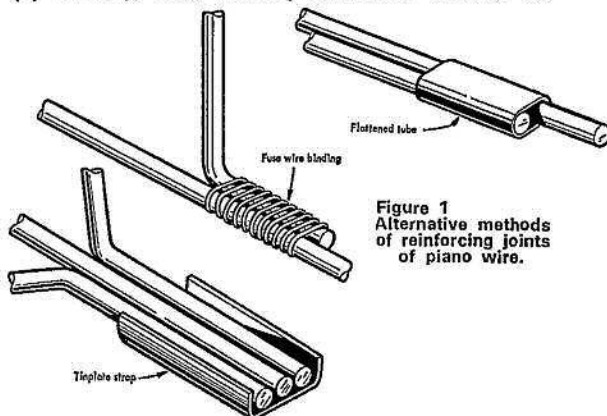


Figure 1
Alternative methods
of reinforcing joints
of piano wire.

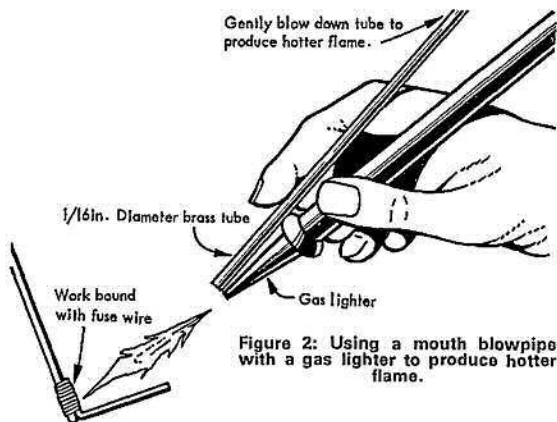


Figure 2: Using a mouth blowpipe with a gas lighter to produce hotter flame.

onto R/C slide switches for example, even when the strands are firmly twisted together as you try to poke the end into the minute hole in the tag on the switch the odd strand seems always to escape. So - bare the core of the flex, being careful not to remove any of the multiple, tiny wires it is made up from, then twist tightly together. With resin cored flux, tin the bare end then shape the tinned flex into a little hook, and hook over the tag. A touch with the hot iron and the job is nearly done.

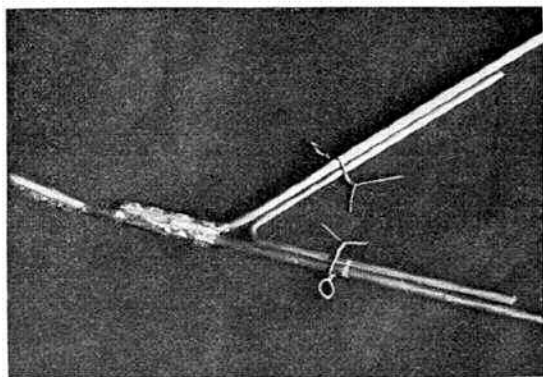
(c) *Soldering on wheels* so that they revolve and push- rods so that they push. The difficulty here is that the easiest way to solder on the wheel is to turn the model on its side so that neither the wheel nor the retaining washer falls off. Unfortunately, under the influence of gravity the collet or washer falls down the wire and when soldered is hard up against the wheel thus preventing rotation of same. To overcome this difficulty, and also to prevent the iron from spoiling the now very common plastic wheel hub of those £1.00 per set wheels, place the wheels on the axle, then place a piece of thick brown paper or thin card onto the axle, followed by the washer and finally solder on. On removing the paper there will be clearance between the washer and wheel and burn marks will be on the discarded paper (see Fig. 3). The same method can be applied to soldering pushrod and leadout connections at bellcrank and control horns.

(d) *How to gauge the heat* of a soldering iron heating up on the gas stove? Insufficient heat will have obvious results and overheating will completely oxidise the coating of solder on the bit (carefully tinned prior to start of working) necessitating yet another tinning and a further reduction in the size of the copper bit. This one is very simple, look at the colour of the gas flame heating the bit; when it goes bright green around the copper bit the iron is at the correct temperature.

Hard Soldering

Having mentioned hard soldering several times I suppose I had better mention some basic points so that the experimenter can have a go. Hard solder (or silver solder as it is sometimes called) is an alloy of mainly silver and copper. It is obtained in rod ($\frac{1}{8}$ in. - $\frac{3}{32}$ in. - $\frac{1}{4}$ in. dia.) and $\frac{1}{2}$ in x $\frac{1}{8}$ in. flat strip commonly. Different grades are available which have been very precisely alloyed and have stated melting points. By taking advantage of the differing melting points it is possible to make several subsequent joints close together without the first falling apart as subsequent joints are made. This property is not really of very great importance in the context of aeromodelling, but the very great strength of joints without recourse to binding and other reinforcement is. I always make my own needle bars jets, spraybars, etc. and hard solder the needle into the brass thimble. The press-fit type and even soft soldered examples are prone to come adrift. Also brass control horns onto elevator and flap joiners where the joint area is very small and soft solder could fail. The solder does need a flux - there are self-fluxing varieties around but the varieties generally available need a flux. The fluxes used are based on Borax which can be obtained cheaply at a chemist and used on its own mixed with water. The solder has a melting point depending on grade from 600°C-800°C so obviously a soldering iron will not do. A blowlamp of some sort is necessary to heat the metal for joining. Butane torches such as the Ronson Varaflame, methylated spirits 'French blowlamps' or even a gas jet or meths burner and mouth blowpipe can be used (see Figure 2).

Some preparation of the pieces to be joined is necessary. Firstly the pieces of metal - brass, copper, steel or piano wire - are cleaned thoroughly with emery cloth. Then a simple system of holding the parts temporarily together must



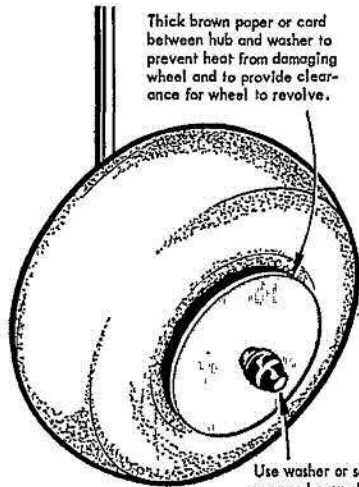
Best way to hold pieces of piano wire together during the soldering operation is to use twists of soft iron binding wire as shown in the picture above - this is quick, easy and does not conduct the heat away. Forget Sellotape, it melts . . .!

be devised. The usual way is to hold the pieces together with soft iron binding wire, such as the wire used for holding packing cases together. Having held the pieces together the flux is then mixed into a thick creamy paste with water. As I said, Borax can be used or a proprietary brand such as Johnson & Matheys *Easi Flo*. This paste is then applied to the area of the joint. Be sparing with the spreading of the flux because the solder will flow everywhere there is flux. Clean the solder with emery cloth and cut some small pieces off the stick, with side cutting pliers size $\frac{1}{4}$ in. long., $\frac{1}{8}$ in. dia. if using $\frac{1}{8}$ in. wire. Allow two such pieces for a butt joint 1 in. long between two pieces of 10 swg wire. Place the solder in the flux on the joint. Now fire up your heating appliance and commence to heat the joint area gently. The flux/water mixture will commence steaming and should be heated gently to avoid bubbling which could cause the pieces of solder to fly off. When the water has all boiled off, heat more strongly until firstly the flux melts and then the solder melts and flows into the joint. Bear in mind that steel will be almost red hot at this point and small brass articles can be melted with a butane torch. When the solder has solidified it can be quenched in cold water and flux residues cleaned off. For those really interested in further information on soldering and brazing there is an M.A.P. book on this subject entitled *Soldering and Brazing*, price 50p.

Incidentally, when it comes to buying the various items listed in this and previous articles, it is well worth contacting Whistons, of New Mills, Stockport, Cheshire, who are a marvellous source of supply for all manner of tools, materials, metals, plastics, flex, nuts, bolts, washers and many ex-government surplus odds and ends. Their catalogue is well worth getting and even the saving on an order for 6 and 8BA bolts would make it worth your while to pay for the necessary stamp, etc., to get one. Whilst on the subject of sources of supply, *Maple Models* (Prop. Steve Blake, control line stunt expert) of 16 Maple Road, Luton, Beds., are able to supply most of the tools and materials including silver solder, fluxes, tinsplate and, I believe, some non-ferrous (copper, brass, aluminium) metals by mail order.

To be continued

Figure 3: Soldering wheel retaining washers.

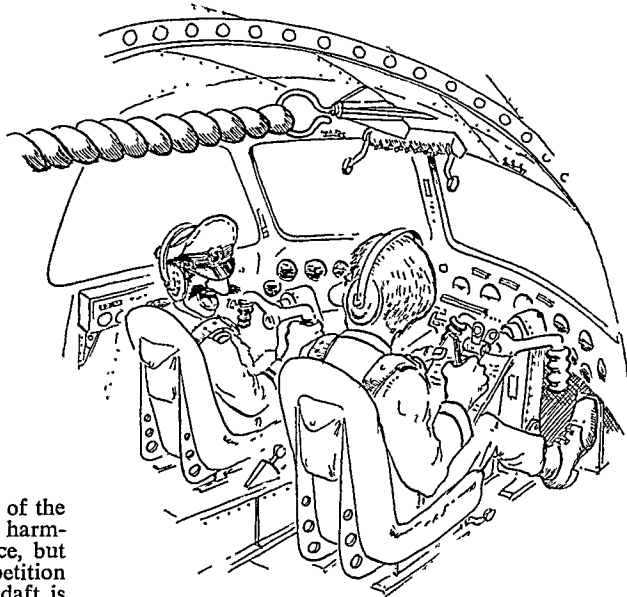


Use washer or soft copper wrapped around axle and soldered to retain wheel.

topical twists

by 'Pylonius'

illustrated by Sherry



Turbulent Issue

I realise it now: to build a replication of one of the brighter performing models of yesteryear is a harmless, though perhaps inconsequential, indulgence, but to use such pseudo antique devices for competition purposes is just plain daftness. And just how daft is only too evident in the argument and counter argument that has been going on over the equippage of these nostalgic *non-sequiturs* with modern flight aids. Generally, the language used in the debate is too obscure and rarified for a simple soul like me to clearly understand, but what does emerge is the indisputable fact that there is no such animal as an un-modern model. To build and fly a vintage model 'as per' would involve the blanking out of all knowledge of evolutionary advance from the year of its vintage onwards. Take just one thing. Back in the vintage days the anti-spin prescription was a heavy dose of underfin, whereas some ingenious mind has since discovered that a more effective remedy is a spot of in-wash on the starboard wing. Now, if the pure in heart official did detect such a modern innovation on a competing model, he would have the devil's own job to prove it: *What d'you mean, wash-in? It's just a random warp. Models in those days were full of 'em. Come to think of it, they still are.'*

It's not only model flyers who are hooked on the phoney vintage business. Take antique cars. The London to Brighton run would not go so smoothly if the entrants used 1904-type oils and petrol on 1904-type roads. And, again, that genuine Spitz-Bach has been so reconditioned over the years that the only genuine part left is the brass handle on the brake.

Sound and Fury

When asked what object he would like to have on his desert island, apart from the essential survival equipment of eight gramophone records, a radio 'castaway' replied that his radio-controlled model plane would be very fine company.

His choice was, no doubt, warmly endorsed by the public at large, who would be hard put to think of a better operating zone for a radio model than a desert island, however distressing the incursion might be to the seagulls and Man Friday. Truth is, though, all the desert islands have long been urbanised, and the first thing our castaway friend would see as he waded ashore with his gramophone and radio equipment would be a large notice: *Powered model planes are prohibited . . .*

Areas of Belief

I was amused, but at the same time bemused, by a bit of debunkery that appeared in *Radio Control Models & Electronics*. The arch-debunker was one of those formidable intellectual beings called an aero-

'I don't mind the fuel shortage so much, it's the smell of rubber lubricant I can't stand.'

dynamicist – a word not to be lightly spoken, particularly with National Health teeth. By way of a conciliatory gesture to us lesser mortals, he calls himself just plain Fred. Now, what Fred is debunking, with rare wit, is a thing called Decalage. This is not, as many of you might think, a reference to plunging necklines, but rather to plunging thrustlines. For years the idea of fore and aft dihedral – except for chuck gliders which are infidel – has been held as a strict tenet of belief in the model world. But it's all an old pilot's tale, says Fred. It's the weight up front that makes for happy model flying, not the wing and tail tilt. Only when you get the C.G. forward enough to require a bit of wing or tail incidence does your flight pattern end up in the model box and not on the end of a shovel.

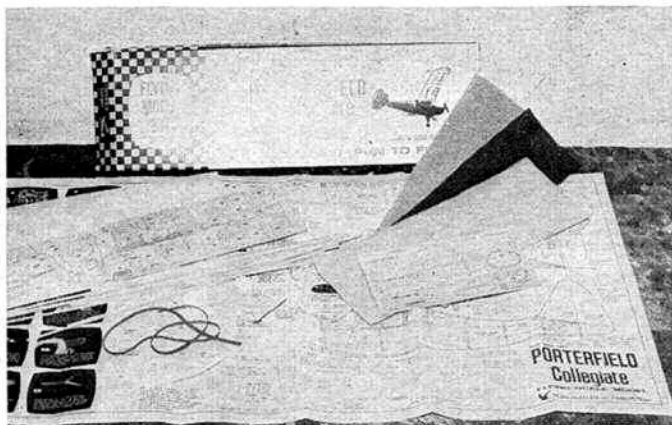
I have a feeling that Fred, whom I remember as an old Fairloopian, is right. Until 1950, and even beyond, it was believed with absolute conviction that model survival, like that of any species, depended upon a deeply-inflated cross section, and you only have to thumb through some old model mags to be overwhelmed by the expectant look of the models.

Cloth ears

Up to now, the noise-making flyer who disdains the engine silencer as a sop to gentility, has bravely borne the misery of having his ears acoustically gouged; a discomfiture which has manifested itself with a bad-tempered snarl at anyone who might timidly object to the ghastly row he was kicking up. Now, with the new-style 'ear defenders' he can enjoy the best of both worlds; he doesn't have to suffer his own engine noise, and he can't hear anyone complaining about it..

Quality Folk

We are told that any failure we might have in the international field cannot be blamed on to poor quality balsa. The stuff they sell in our model shops, we are told, is as good as you will find elsewhere in the world. But just how good your selection may be depends not so much on the density of the stock as the thickness of your skin or the brassiness of your neck, for, in search of the gold amid the dross, you should travel from model shop to model shop with a pair of scales and a density gauge.



FLYING SCALE COLUMN

By Eric Coates

WHEN I REVIEWED the Peck Polymer series of 'Peanut' scale kits last October, I commented how much better the American miniature enthusiast was catered for than his British counterpart. Happily, more and more of the better quality American products are becoming readily available to the British modeller, thanks to the enterprise of John Stennard, with his self-styled *Small Scale Service*. Last year in these columns I mentioned that I built my CO₂-powered *Ryan P.T.* from a kit produced by the Tern Aero Co. of Chicago. I was very impressed with it and suggested to John Stennard that these models would be an excellent series to add to his catalogue. I am pleased to report that three rubber-powered kits in this range are now available from this source, being the *Porterfield Collegiate*, *Tiger Moth* and, of course, the *Ryan*. All are 17 in. span, the former will sell at £1 and the latter two at £1.25 each.

Tern Aero, I am informed by a regular reader of this column, Alan Jordon, is quite a small company launched about four years ago by Vito Garofalo, one-time chief designer to *Comets*, and needless to say, all Tern models are designed by Vito himself. To quote: 'they have all been designed to be a delight both to build and fly', which, after all, is what aeromodelling is all about!

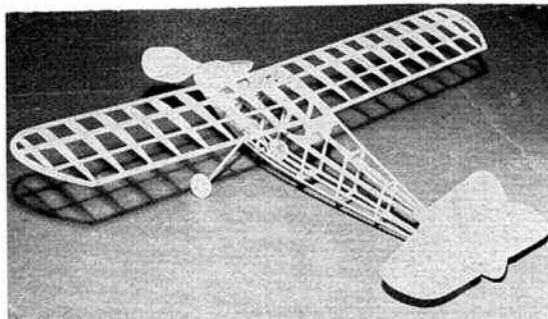
I recently received the *Porterfield* and the *Tiger* for review. I built the easy one myself over Christmas and passed the *Tiger* over to fellow club member Norman Hudson to produce. Norman is not a dyed-in-the-wool scale type but has much experience with rubber models. His verdict was the same as mine — one of the most pleasant building tasks he has undertaken.

The kits are very complete, containing ample superb quality wood, three sheets of coloured tissue, the finest 6½ in. diameter paddle-bladed plastic pro-

pellor I have ever seen, ready-formed prop shaft, nylon nose bush, lightweight plastic balloon wheels and celluloid plus a very clear detailed plan, with all the parts marked out full size, so that you can make as many duplicates as you like. These are not 'prefab' kits, but the quality of both balsa and linework of the printed sheet is so high that it is indeed a pleasure to cut out the many small parts.

Being primarily designed as flying models, scale accuracy cannot be regarded as anything approaching 100 per cent, but they are as good, or better, than most of the competition in this department. All three models feature enlarged tail surfaces simply cut from 1/32 in. sheet and somewhat exaggerated dihedral. Possibly the *Ryan* is the most accurate. I don't know enough about the *Porterfield* original to comment, but the *Tiger* is by far the least accurate of the three; which is a pity because it obviously will have the greatest appeal to British modellers. The fuselage shape is not very accurate at all on this model but Norman improved the appearance a lot by fitting a cardboard cowl and wing slots. The wings are very good on all three machines featuring many more wing ribs than is usually found on this class of model. The *Porterfield* and *Tiger* both fly extremely well under rubber power and I expect the *Ryan* would do if similarly powered. All are ideal for CO₂; for those fortunate to possess such a unit. My *Ryan* outperforms my wildest dreams for such a small machine and I look forward to more kits being produced by

Layout of the kit contents of the Tern 'Porterfield Collegiate' in heading picture reveals that this is not a 'prefab' item, but printed sheet is very well executed and quality is high throughout.



At left, the uncovered Tern 'Porterfield', as built by our columnist, reveals 'standard' construction employed, while at right is the finished product which flies extremely well, aided by the very efficient plastic 'paddle' propeller supplied.



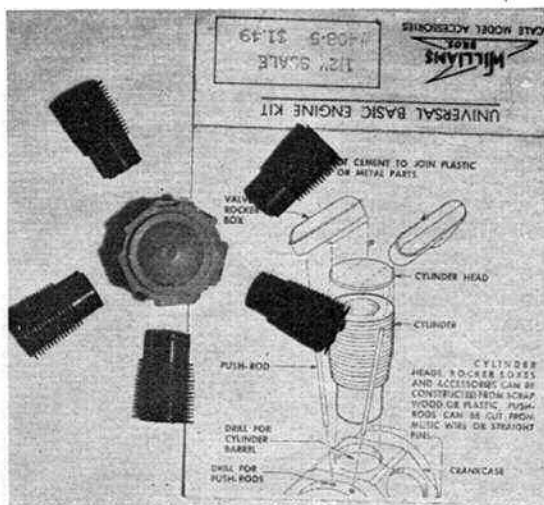
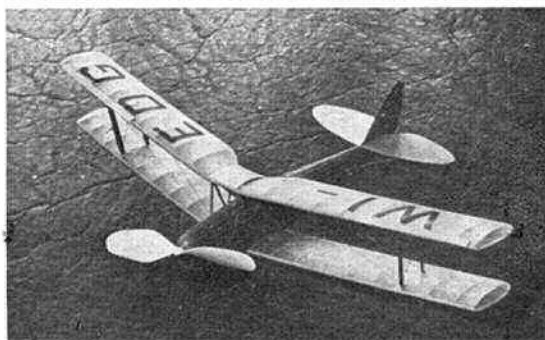
the Tern Co.

Whilst on the subject of small rubber scale kits, suitable for younger modellers, it has been suggested to me by another reader, Peter Lumsden, that perhaps moulded expanded polystyrene could be used for fuselages and even wings on such kits. He cites the example of a rubber-powered *FW. TA 152* recently described in *American Aircraft Modeller*. I personally cannot see this method being used commercially for rubber kits, it would be too expensive and too heavy, I think. The aeroplane described was some 48 in. span and sheathed in 1/32 in. balsa. Without the balsa outer skin polystyrene is virtually useless: it has no strength and will not take decoration very readily. Skinning polystyrene is hardly a mass production exercise, particularly on complicated fuselage shapes. A pleasant thought though.

Before leaving John Stennard's offerings I must mention the superb little *Williams* plastic radial engine kits he now stocks. These are available either as a complete kit, i.e. plastic crankcase and cylinders to make 5-, 7- or 9-cylinder engines, or the cylinders are available separately. They are made in 1/8 in., 1/4 in. and 1/2 in. to 1 ft. scales, so are ideal for indoor and small outdoor jobs. Although not cheap (75p for a 5-cylinder radial engine kit 1/4 in. scale), they are beautifully moulded and for anyone who has struggled making dummy cylinders for an inter-war fighter, such as a *Gamecock*, worth every penny! The extra weight in the front is also useful, for radial-engined machines are inevitably short-nosed.

I have also received in recent weeks, further drawings from *Golden Age Reproductions* who specialise in reprints of the best drawings of the rubber-powered scale jobs of the thirties. Way out in front for quality and accuracy are the reprints of the *Peerless Co.* In the latest batch are two dating back to 1934 - an *S.E.5a* and a *Supermarine S6B* to the usual 1/2 in. scale employed by this aptly-named manufacturer of yesterday. The *S.E.5a* is obviously reasonably simple to build and bound to be a good flyer, but as a challenge to building ability though, there cannot be a much more formidable task than the multi-stringered fuselage and floats of the Schneider machine! What a pity kits of such complexity are still not offered. In comparison the plan for the *Douglas Y10-43* by *Scientific* produced in the same year looks obscenely crude! Also available are 1/4 in. scale reproductions from *Model Airplane News* of the *Gypsy* and *Leopard Moths*. Definitely in the semi-scale category the con-

The three balsa laminations of the balsa wheel after turning to a round section by using an electric drill gripping the 'Neptune's fork' tool shows on the right, with the finished product seen at left.



Top picture shows the Tern 'Tiger Moth', built by Norman Hudson, and which he found a pleasure to make. Above, the latest from Williams Brothers, the 1/12th scale radial engine kit, ideal for indoor or small outdoor scale models.

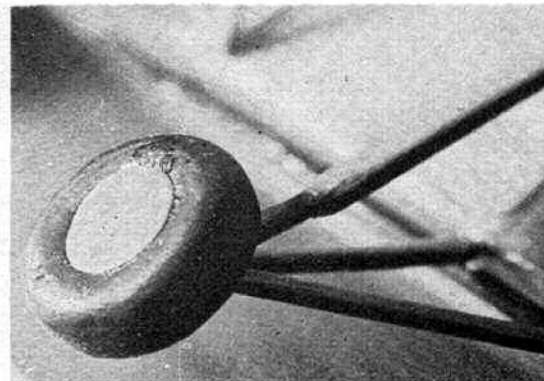
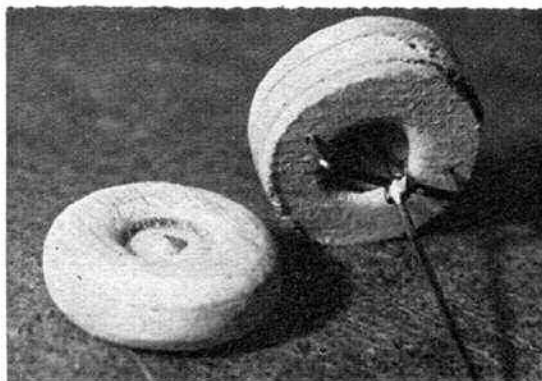
struction is relatively strong and simple, and both should make excellent flyers.

Miniature Wheels

One of the problems in making small flying models is obtaining suitable wheels; particularly really light

continued on page 156

The completed article mounted on the author's Puss Moth shown approximately twice actual size. Light in weight, and cheap tool





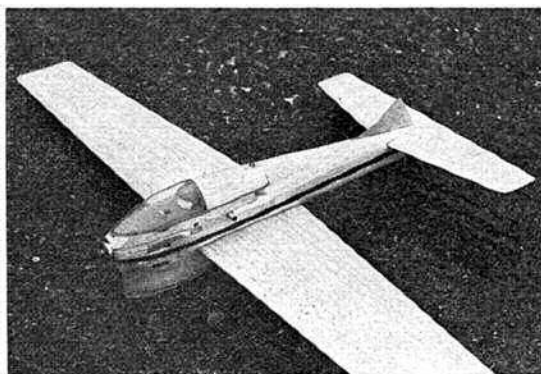
VIEWPOINT – Nose-Skids for Goodyears

As a keen and enthusiastic member of the S.M.A.E. for quite a few years, it was a great disappointment to me that the S.M.A.E. Council finally approved, at the third time of asking, the banning of nose-skids for Goodyear racers. I have been a user of nose-skids since 1970 and can honestly not remember ever 'collecting' someone else's lines with the nose-skid or receiving complaints about damage to lines since that time. I am a strong believer in nose-skids, as are many other competitors in the U.K. (particularly in Goodyear where of the top teams, only Place/Haworth did not use one). Of course, as an experienced pilot, the loss of nose-skids will not cause me too much difficulty – I will just have to learn a new style. I am not sure that novice pilots will be able to adapt quite so easily. I believe that the weight of correspondence received by the S.M.A.E. from its members was vastly in favour of the retention of nose-skids for Goodyear – so, WHY BAN NOSE-SKIDS? Where is the evidence upon which the S.M.A.E. decision was based? Is there any? I think not.

Of course, the argument against nose-skids is that they destroy or damage other people's lines. As I said above, I have no personal experience of such damage or destruction. Let's face it, if you collect someone's lines then he *must* have had handle or wingtip off the ground (I was disqualified at Woodford 1971 on this basis) and should have been disqualified. As far as scraping damage is concerned – do an experiment for yourselves; stretch out a set of lines and scrape over with a nose-skid and look for any significant damage; there will be none! As far as I know the S.M.A.E. C/L technical committee neither sought competitors' opinions, took any notice of competitors' letters, conducted any experiments of their own, nor in fact did any of them use nose-skids in competition. In short, the decision was made contrary to all reasonable opinion and fact; it was made entirely based on prejudice and ignorance.

What is it about nose-skids that makes me express such strong feelings about their banning? Nose-skids are a safety feature in that they allow slower and more certain 'catches' than are possible using a true rearward or C.G. wheel position with nose-skid. Some really 'star' pitmen do not need the assistance afforded by nose-skids but most do, especially, again, the novices. It appears that in the so-called 'expert' classes of 1/4A, F.A.I. and B team race the novice

Heading pictures show Jack Muncaster with one of his typical F.A.I. racers. Jack, the ever cheerful pitman half of the Langworth-Muncaster team, is renowned for his superbly-built racers and the speed with which he churns them out! This K&B 15 diesel-powered version took around two weeks, yet the craftsmanship of the natural finished machine is obvious. Prefers to use short steel blocks to mount his engine upon, rather than the usually preferred cast alloy crutch. Currently flying a Bug! 15 – should be really competitive in '74 once more. At right, is this wheel inboard enough? Unusual wheel position on Everitt/Cookes' Good-year – 4 in. inboard of thrust line!



BETWEEN THE LINES

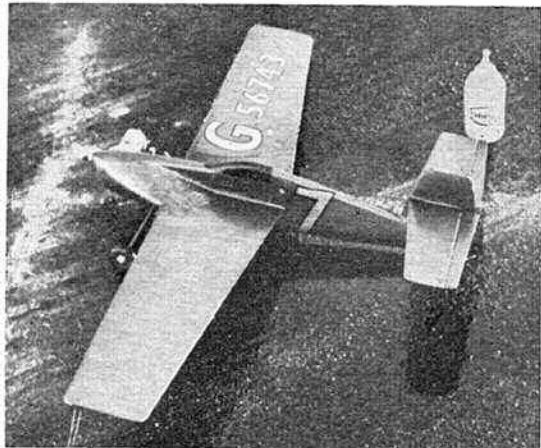
News and views on the control-line scene, aired by DAVE CLARKSON

assisting nose-skid is allowed, whilst in the 'beginners' class the nose-skid is now banned. In all of the racing classes, Goodyear is the class that has really benefited in safety standards from the almost universal adoption of nose-skids – and now the S.M.A.E. bans them!

Because of a previous procedural decision by the S.M.A.E., the banning of nose-skids must be enforced for the whole of 1974. Let us hope that the newly-elected S.M.A.E. C/L Technical Committee will view the contest scene a little more carefully than its predecessor and will allow the use of nose-skids again in 1975 for Goodyear. Certainly in 1974 my nose-skids stay in place on my *Sprint* F.A.I. racer.

Goodies Directory

It is a fact that many contest requisites, particularly for the racing and speed events, are not standard commercial products freely available at our model shops; I am talking about such items as wheels, filling systems, propellers, single-strand lines, motor tuning services, motor pans and crutches, etc. Most of us eventually get to know of how these can be obtained by word of mouth at contests. I am not sure that this is entirely satisfactory either for the producers of such 'goodies' or more particularly for us users, especially newcomers to contest modelling. Therefore, I hope to publish soon a 'Goodies Directory' listing what and where for as many useful items as possible. Please(!) would suppliers of goodies write to me giving details of what they can supply, preferably (but not essentially) with a photo of the goodies in question. If enough suppliers respond, I hope that the 'Goodies Directory' will be a really useful list and of benefit to us all – so, details of goodies A.S.A.P. please.



South African Postal F.A.I. – T/R Contest 1973 Results

Throughout last season Basil Menges, that well-known South African control-line competitor, has been the organiser of an International F.A.I. class Team Race postal competition. Derek Heaton (to whom I am indebted for this news) acted as the U.K. post box, and surprise, surprise, won the contest. The rules were that one's best heat time each month for six months as recorded in open competition were recorded and the best four times averaged. The 1973 results as published by Basil were:

Place	Country	Team	Average Time
1	U.K.	Heaton/Ross	4:29
2	W. Germany	Bader/Kaul	4:42
3	U.K.	Clarkson/Daly	4:49
4	S. Africa	Parsley/Hamilton	5:11
5	U.K.	Sutherland/Woods	5:13
6	U.K.	Everitt/Cooke	5:25
7	S. Africa	Menges/Roberts	5:30
8	S. Africa	Koch/Duncan	5:42

Congratulations to Basil for organising this contest and congratulations to Heaton/Ross for so decisively winning. Let's have the contest again this year Basil, I like seeing my name in print!

The Americans are coming

Good news about the way now being open for a Combat World Championship wasn't it? Let us hope for some really 'professional' organisation – like the *Daedelus* club does in Holland for the International. Nothing destroys a combat contest more than bad organisation and poor rule application.

On the same subject, I received a letter from Phil Granderson, Editor of *Round and Round* in the American *Model Airplane News* magazine. Phil wrote essentially in his capacity of leader of the 'Jive Combat Team' in the U.S.A. on the J.C.T.'s own coral pink notepaper complete with the J.C.T. slogan:

You ain't gonna get much action 'cause the J.C.T.'s the main attraction.

Apparently, Phil took some small objection to my implication that all foreigners were afraid of we British, and has thrown down the glove.

Quote – *Know ye all that your foreign brothers over here in the U.S.A. are far from afraid. We are, in fact, just itching to get at you British.*

Shades of the Boston Tea-Party! Quake, lads, THE AMERICANS ARE COMING – who else!

Seriously, Phil writes that F.A.I. Combat is gaining in popularity in the U.S.A. and has, in fact, been flown unofficially at the U.S. Nationals for the past two years. Phil is very keen on combat himself and would welcome correspondence with fellow combat fanatics over here in England.

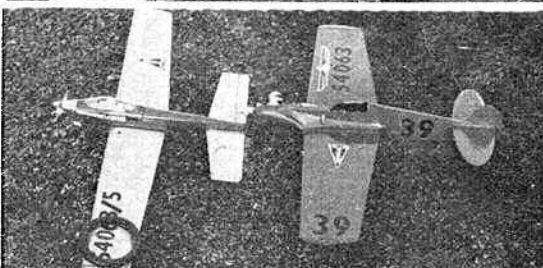
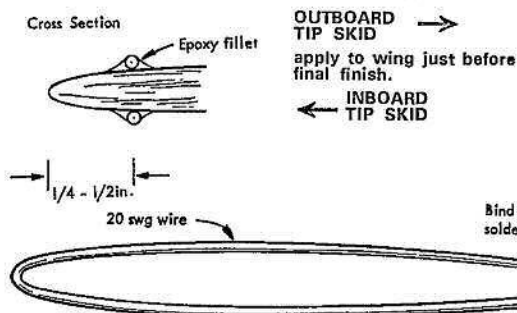
In the same vein, Gary Frost writes to say that he enjoys reading about combat flying in this magazine and tells us that combat fliers in the U.S.A. have organised themselves into the 'Miniature Aircraft Combat Association', which has amongst its goals to make combat an official F.A.I. World Championship event (relax fellas, the rules are now official) and to send a U.S.A.-Canada team to a World Championship in Europe in 1974 (is that possible?).

He ends, saying that the M.A.C.A. team challenges anyone and everyone to a World Championship contest, and would be glad to hear any views on how to persuade organisers to arrange such a meet, as well as any other combat topics. Write to him at 22 Glynn Drive, Florissant, Missouri 63031, U.S.A.

P.S. Remember my exhortation to Dave Wiseman about always being second; well, he went and won at Cranfield – my ears are still ringing. Best of luck in 1974, Dave! (But keep your voice down a bit, please!)

MAKE IT EASY – Bent Wire Tip-Skids

I always used to find tip-skids a real problem – bits of tinplate epoxied on sooner or later fall off, bits of ply or glass-fibre wear through quickly and buried wire skids eventually fatigue off. All of these have happened to me –



Top: another of R. Parsons' unconventional stunters – this biplane stunter, known as 'Wunderbird III' makes an unusual and refreshing sight at the contest circle. Above, first in Goodyear (the 'Deerfly' is M.V.V.S. 2.5TRS-powered) and second in F.A.I. (K&B 15-powered 'Sprint') at the Winter Rally for our columnist who built these models – motors and mechanics by John Daly.

maybe John leans on the model a bit hard at pitstops; however, I suspect that most of us have similar trouble.

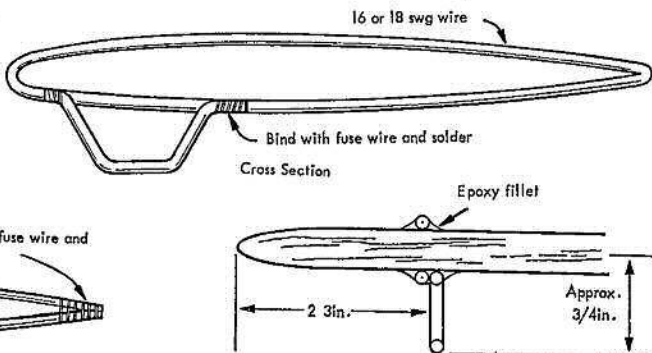
The easiest way to put on tip-skids, and a way that I find 100 per cent satisfactory, is to epoxy bent wire ones around the tips. I use two different types for the inboard and the outboard tips, seen in sketches below. Both types are bent from one piece of wire (work it out for yourself) until they tightly fit the tip. Now remove the bent skid from the tip and bind and solder together the free ends. Wash off all flux using a toothbrush and toothpaste, dry and 5-minute epoxy into place. Smooth the epoxy down with a clean finger to give nice, smooth uniform fillets around the wire.

The inboard tip-skid protects the tip during pitstops, when it is supposed to be on the ground – remember? And also stops the tip splitting if your machine leans on it hard during the pitstop. The outboard tip skid does the same but also, because it hangs down a bit, acts as a catching aid and also keeps the outboard tip up a little to make the catch easier. Since the outboard tip-skid is a catching aid, I recommend that it is mounted 2-3 in. inboard of the tip and that it should be a really tight fit on the wing and well epoxied down to absorb catching loads.

I realise that the finished article is a little ugly and may also be somewhat 'draggy', however, these bent wire tip-skids really are practical – they work and last remarkably well. One last advantage is that the sort of loop hanging down from the tip-skid is great for carrying the model by and also for hanging the model up with in the 'den' between contests. Have you ever trod on a favourite model whilst fumbling to put the light on? I have, so I always hang them up these days; maybe you have trod on one too, so hang them up – conveniently by your bent wire tip-skid.

Team Race Rules – Again?

O.K., so I booped in the January 1974 edition of this column in my little exposition of the difficulties of overtaking. Rule 10.13(c) allows a maximum of 2 laps hand off chest whilst overtaking and not $\frac{1}{2}$ lap as I had assumed. The effect of this boob is to reduce the required speed differ-





A study in obstruction - Roy Everitt holding up Mike Daly in a fashion perfectly 'legal' under current rule interpretations.

ential for a legal overtake to 6 per cent; that is, if the model you want to overtake does 25 sec./10 laps, your model must do 23.5 sec./10 laps. Now there are quite a few models that do 25 sec./10 laps in the U.K. and some very few that do 24.5 and even 24 sec./10 laps but none in 1973 that did 23.5 sec./10 laps, so all of you quick lads should never have recorded a time last year!

Taking these calculations a bit further, let us examine the effect of piloting styles on overtaking, that is the style adopted by the slower pilot.

Angle of Lines to Chest	Speed differential required
90° to left	19%
45° to left	12½%
Straight-out	6%
45° to right	Negligible

I think, that this adequately illustrates what 'blocking' is about. It is obvious to me (but not to most organisers) that 'Russian' style flying is a 'manoeuvre to impede the overtaking pilot' as described in rule 10.13(m) and should lead to disqualification of the offending pilot; a bit severe I know, but then life is, isn't it?

Mouth - or The Big 'I'

It has occurred to me in the past few months, particularly as I lay in bed recently recovering from an illness, that this column has been nearly all 'me'. That is, my famous mouth has done all of the mouthing-off in the 'view point' section, my brain has produced all of the bright ideas in the 'make it easy' section; I have written all but one of the contest reports and all but one of the 'specials'. Whilst I like seeing all of this 'me' in print (one day, I fancy, my head will grow so much that I will become house-bound!), I suspect that some of you readers just may want a bit of variety; that is some alternative to 'Clarkson on Goodyear and F.A.I.' may be desirable. Write in lads (care of dear old Pete Richardson at H.Q. if you like or to me direct at 31 Conway Road, Cheddle Hulme, Cheshire SK3 6DB), I promise to acknowledge everything - can't be fairer than that, can I? I would just love to get my blue pencil really moving over page after page. A few pages on anything relevant to control line will be appreciated from anyone.

Seriously, I get by with a little help from my friends (heard that before somewhere) but would love some from my enemies and from fellow control-line nuts throughout the world.

DOMESTIC NEWS - A new name on the contest scene

Largely in the interests of encouraging self-improvement much on the lines achieved by the *Wharfedale* and *Feltham* clubs in the past - it really worked well for them, perhaps it will work for us, who knows? Now we shall be able to speak with one voice in and on behalf of the North West with respect to flying sites and contest organisation for the racing events. The new club is to be known as *Norwest* and is 100 per cent affiliated to the S.M.A.E. It has been formed by amalgamating part of the *Stockport* club with the *Leigh* club - two famous names which we are sad to say goodbye to, ah well! Progress is progress I suppose.

Membership comprises nearly all of the successful racing teams in the North West, viz: Heaton/Ross, Berry/Pritchard, Sutherland/Woodside, Clarkson/Daly, Everitt/Cooke, Daly/Howard, and one or two others including Roger Bridge (remember his Dooling 29 in 'B' T/R last year?). Club slogan is - you've guessed it - *North West is Best*. We shall be making a real effort for massive contest successes in 1974.

Wharfedale Winter Rally

The first comp of the year and also the first 'no nose-skid' Goodyear event. In addition to the advertised events of FAI-T/R, Goodyear and Combat a mini-Goodyear event was run, these mini-Goodyears (max 1.5cc motors, 40ft. lines, scale 1in.=1ft.) fly very well and seem to make good trainers since four-year-old Paul Goddard flew his excellently!

Goodyear had 15 entries and was notable for its high degree of carnage due to take-off and landing incidents. Evidence of this carnage is the fact that the 1st, 3rd and 5th fastest in the heats flew in the final (2nd and 4th - no models left) and in the novice final only two teams flew (and not very far as it turned out) since all other novices had damaged models. Biased as I am, I attribute this high carnage to the lack of nose-skids; certainly the weather conditions were not bad and, in my opinion, could not have caused such carnage. With Place/Howard having badly damaged their PAW 3.5 Special powered *Johnson Special* when their lines bound-up and Daly/Howard having a distinctly 'off' day with their ST G15 powered *Deerfly*, we flew out comfortable winners in a slow final.

Results:

Open Final

1 Clarkson/Daly (Norwest)	11:09
2 Everitt/Cooke (Norwest)	14:53
3 Walker/Woodhead (Nottingham)	retired

Novice Final

1 Panton/Carr (N. Sheffield)	Not far!
2 Fitzgerald/Darnes (Halifax)	Not as far!

FAI-T/R had a low entry of only nine and was entirely uneventful with the three 'class' teams entered reaching the final with the following moderate heat times.

Clarkson/Daly	4:56	<i>K & B 15 (converted)</i>
Place/Howard	4:59	<i>Haworth ETA</i>
Langworth/Muncaster	5:03	<i>Bugl 15</i>

The final featured the retirement of Place/Howard when their model ran-in (no nose-skid Don?) and very 'robust' flying by Bernie Langworth - Bernie claimed that it was 'enthusiastic' - to beat us by one lap, thus in the photo only Jack Muncaster is shown! Now if we hadn't had two very short first tanks etc. . . Ah well! It was very nearly two first, just wait until the K&B runs in after its recent re-bore.

Results:

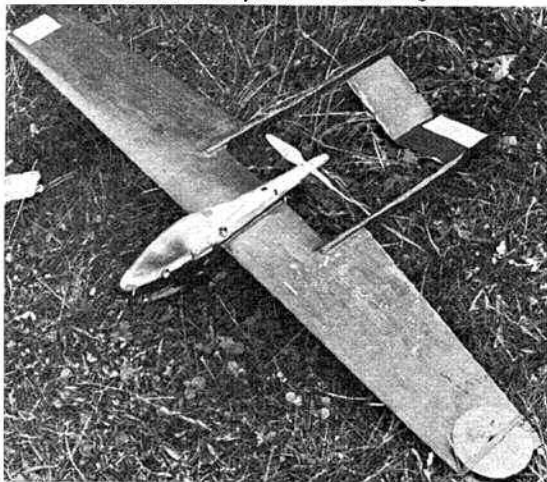
1 Langworth/Muncaster	(Wharfedale)	10:42
2 Clarkson/Daly	(Norwest)	10:45
3 Place/Haworth	(Wharfedale)	retired

Combat had a moderate entry of 20. As a result of re-flying the first round losers and, perhaps a lack of urgency on behalf of organisers and competitors, time dictated that the names of the last 16 were put into the hat and drawn to give the quarter finalists. Despite this procedure, the contest was not finished when darkness fell, in fact, only two of the quarters had been flown, so back into the hat went the remaining names and the following result was drawn.

Results:

1 D. Marshall (Leicester)
2 D. Wood (Stockport)

Unconventional F.A.I. racer by Luis Petersen of Denmark, uses long-shafted Bugl 15 so that mass of engine is over the centre of gravity. Note 'V' tailplane which doubles as rear skid. Pusher layout is theoretically superior and easier for this left-handed pitman to restart engine!





CLUB NEWS

The Heswall M.A.C. is a very active club and have as their biggest project the building of a club house, for which they are receiving a council grant. Rest of cash to come from flying displays, exhibitions, etc. Here the Chairman of the local council judges the club's Concours d'Elegance contest.

UP TO DATE the winter, which threatened so much, has been quite mild and eminently flyable. What, however, has prevented myself at least from taking more advantage of the conditions is the petrol situation. I have not had the nerve to venture farther than the local common in case the return journey might have turned out a pushing operation. We can hope, though, that the position eases during the year and petrol rationing is not imposed.

Our first report comes from Cheshire, sent by Mr. B. W. Davies of the Heswall M.A.C. The A.G.M. last November marked the end of a most successful year. Among the various annual awards given out by the Chairman of the local council and his wife was one for Concours D'Elegance. This went to Mr. John Skinner for his outstanding C/L PZL Wilga. The model has already earned a countrywide reputation for its C/L Scale Cup win at the 1973 Nationals and for taking the *Shuttleworth Trophy*. Competition came from B. Sambrook's P51 Mustang which had placed third at Woodford. Models on show covered all branches of the hobby, with the Junior section of the 70 membership well in evidence with some good, workmanlike models. Friday night club meetings get down to the nitty gritty with illustrated talks and instruction. Several building projects have been undertaken, and currently there is a turn-out of six *Top Teen* and three *Warlords*. These projects go down well, but require a helpful tutor. The biggest building project, however, is that of the £3,000 Club House. The formidable sum of money is being raised by club displays, exhibitions, etc., plus a grant from the local council. Moving-in day should be sometime in the Spring. The ever-obliging council have also consented to level the club C/L site and to lay a 100 ft. by 6 ft. strip, presumably for R/C. But trouble on the F/F and R/C farmer's field site. A local authority is trying to have flying stopped on two points: complaints of noise and failure of the club to obtain planning permission. The latter has been applied for and the Council have agreed to attend a demo in which all engines will be equipped with commercial silencers. The club's situation has been well aired in the local press and has also found its way into radio and T.V., and this has given rise to much public support.

Much further south, we come to a report from the Godalming & D.M.F.C. Tim Stanley, the P.R.O. tells

us that the club is not particularly competition-minded, concentrating mainly on Sport flying of all types. During the winter months activity has turned to the great indoors, where the club is lucky in having the use of a reasonable hall next to the clubroom. Good thermal conditions are provided by visits of the local Amateur Operatic Society, over which the models drift on wings of song. R.T.P. is popular, with two club pylons in operation. When things warm up outside, the club has several flying sites on tap - one for small rubber models is right alongside the clubroom, and there is a good Radio Soaring site at a nearby common. One of the highlights of the past year was the club's part in the *Guildford Model Engineering Society Exhibition*. It was felt that the club stand was a great success. New members are always welcome at the Wilfred Noyce Youth Centre, Godalming, from 7.30 onwards on Friday evenings.

A word or two about the display activities of the Nottingham M.A.C. All flying is C/L, with F/F and Radio on static display. The usual flying programme, surface permitting, involves Combat, Rat Racing, Stunt, Scale, Autogire and a battle scene with four aircraft involved (*Stuka*, *Messerschmitt* and two *Kittyhawks* in desert colours). Exploding tanks and bombed buildings on the ground add to the realism and spectacle. At one fete, opened last year by Miss *United Kingdom*, the young lady demonstrated she was not only a pretty face for she took over a Combat handle under the tuition of lucky Rex Stevenson and flew several quite competent laps, with two loops and a wingover thrown in for good measure.

Beat the gloom news from the newsletter of the Wafford Wayfarers M.A.C. Undismayed by the petrol difficulties putting the kybosh on to those long-distance flying field jaunts, members have been making much of the local moor, with models like John Sharman's large-size *Cherokee* adding a touch of welcome colour. Members who use synthetic-based glow fuels are reminded that they should prime their engines with a light oil after use as the synthetic oil does not leave behind a protective film on the working surfaces. And on the subject of tips, might I offer one of my own. A pleasing, protective finish can be imparted to rubber and other smallish models by giving a light, quick coat of fuel proofer. The weight increase is negligible. Small scale models might also benefit from

such treatment.

A club making a comeback after a lapse of some ten years is the **Reading & D.M.F.C.** The club was reformed at a meeting held in the latter part of last year, and appears to have every prospect of success with no less than 60 members attending. Mr. Martin Dance, P.R.O., informs us that club meetings are held on the first and third Tuesday of each month at the St. Barnabas Church Hall, St. Barnabas Road, Emmer Green, Reading, starting at 7.30. Club activities venture beyond model aircraft to take in other model interests, such as boats and cars. To get the club under way flying-wise, an Icicle fly-in was held on Russell's Water Common on December 30th. A pleasantly balmy day with a good attendance. We are not told what scope the common allows, but another site is under negotiation.

Mr. J. J. Carolan sends along a report on the **Hatfield M.A.C.** The club has an unusual division of interests; an almost equal amount of enthusiasm between radio control Sport and control line Combat. This, we are told, makes for interesting conversation on club nights. The club is lucky in having permanent clubrooms at a local youth centre; thanks to the generosity of the local council and the foresight of one particular member. Facilities are so good that some members do all their building at the centre – and the rent is reasonable. Members have not yet got round to any serious contest flying, although I would say that this was essential for sustaining Combat interest, but have been to Holland two years running and also in France. The trips have resulted in a marked improvement in flying ability. The club disdains all the formal paraphernalia of meetings and agendas, feeling that that sort of thing tends to whip up bad feeling, but concentrates on the pure joy of flying. The R/C people have a good site at a local farm, where relations with the farmer are of the best; the flyers respect his crops and he doesn't plough in their models. Woods, dopes, thinners, etc., are available from the club store at amazingly low prices, not to mention the club's own cheap brand of fuel. More-

over, discount facilities are available at local shops. The heart and soul of the club is 'Honest Dave' Fairbank, the club treasurer. He has served the club for 20 years, and would be happy to meet new members at the Breaks Youth Centre, Hatfield, any Friday.

A bit late to hand is the November issue of *Model Aeroplane Gazette*. In publishing the plan of a 1938 Scale Leopard Moth, a new 'thing' seems to have been introduced: vintage scale. The *Leopard Moth* is rubber-powered, and due to its simple, light construction it could well fly up to the standard it set in establishing two British records. A letter in the mag. expresses concern over the use of specialised components, commercially obtained. He suggests that separate contests should be held for the commercial mock-ups as opposed to the wholly (or almost) home-built model. I, personally, am against the expensive commercial component or fitting, particularly where these are machine turned or prepared to finer limits than the average, not so wealthy, modeller can emulate.

One way to drum up suitable prizes for the big events is hinted at in the *New Zealand Newsletter*, the voice of the N.Z.M.A.A. Clubs are asked to 'adopt' a particular event, and then go about raising funds for a whack of prizes. A good idea, this. One of the failings of model competition, in my opinion, is the general poverty of the prizes. Human beings are materialists as well as noble, and the prospect of a healthy hand-out at the prize table could stimulate interest and fatten up the entry lists. Quite a useful article in the newsletter on the subject of our old enemy, noise. The general impression is that venturist-type silencers do not give enough muffle, whereas a few inches of tail tube knocks the decibels down quite a bit. It seems to me a pity there is not some legislation to restrict the sale of noise-making gadgets. All such items, whether they be lawn mower motors or model aircraft engines should comply with some reasonably set standards of noise level.

Not much in the postbag this month. What about it, P.R.O.s? **Clubman**

FLYING SCALE COLUMN

continued from page 151

balloon section wheels. Most commercially available wheels, even if of the correct section, are far too heavy. I encountered this problem when making my *Puss Moth* last year and decided to make my own.

I decided that laminated balsa would be the only material strong and light enough for the purpose – shades of Solarbo adverts! The problem being working the stuff into an acceptable shape, and not possessing a lathe, my first attempt more closely resembled an egg with toothache than a wheel! I therefore evolved a crude method of turning, using my electric drill.

First, three discs of balsa are cut from 3/32 in. hard balsa slightly larger in diameter than the finished size of the wheel. A 3/64 in. diameter hole is then carefully drilled in the centre of each disc. The holes in the outer discs are then opened up to the inner tyre diameter, first by drilling and finishing with fine sandpaper wrapped round and glued to a suitable piece of dowel. The two outer discs are now firmly glued to the centre disc, using balsa cement, and left at least 24 hours to dry.

A driving tool looking something like Neptune's fork is now fabricated from 18 swg wire, the two outer prongs being sharpened to points. One end of

the centre shank locates in the hole in the central disc and the other is gripped in the drill chuck. The outer prongs are pierced into the tyre sections of the outer disc and the whole thing is then spun up in the drill, which should be firmly clamped to the bench. The wheel section is formed by holding a small sandpaper block or even a well-supported balsa knife, used as a turning tool, against the rapidly-revolving wheel blank.

When 'turned' to the correct section, three coats of sanding sealer are applied, sanding between each. The wheel is completed by epoxying a 20 or 22 swg brass tube bearing to the hole in the central disc. A final coat of matt black is then applied. On the *Puss*, after the wheel was soldered on to the axle a celluloid disc, painted red, completed the job.

1974 S.M.A.E. Scale Technical Committee

One change from the 1973 Committee: J. Adams of the Maidstone Club, replaces Denis Bryant. The remainder of the Committee, i.e. Mick Charles, Cesare Milani, Denis Thumpston, Roy Yates and myself continue in office. After several years of chairing the Committee, Denis Thumpston is taking a well-earned rest and I take on this responsibility for 1974.

Contest Calendar . . .

March 17th	S.M.A.E. 2nd AREA CENTRALISED. F.A.I. (F1A) Glider, Open R/P - Area Venus.
March 24th	S.M.A.E. 1st C/L CENTRALISED. Cancelled.
March 24th	S.M.A.E. R/C AEROBATIC. Venue R.A.F. Cottesmore (Provisional).
March 31st	C/L STUNT COMP. At Rickmansworth, Herts. Details from Glan Alison, 62 Berry Lane, Rickmansworth, Herts. Tel. Rick. 72676.
April 7th	LONDON GALA. Venue Bassingbourn (Show S.M.A.E. Cards at main gate).
April 7th	S.M.A.E. INDOOR SCALE. Venue Cardington.
April 7th	N. BERKS R/C 1/4 PYLON RACING. Venue Nr. Garford on A388 Wantage-Oxford Road. Pre-entry 50p to P. Clarke, 7 Candwell Close, Grove, Nr. Wantage, Berks.
April 14th	S.M.A.E. 1st INDOOR MEET. Venue Cardington.
April 14th	S.M.A.E. THERMAL SOARING. Venue to be advised.
April 14th	S.M.A.E. R/C PYLON RACING. Venue North Luffenham.

April 14th	ELLIOT C/L SPEED MEET. F.A.I., 2.5 Open, 5 c.c., .40 & .60 c.c. at Elliot Bros., Airport Works, Rochester, Kent.
April 14th	NORTHERN AREA VINTAGE & PANNET MEETING. Vintage Duration Open Power (Pannet Trophy) A/1, Cd'H, S.M.A.E. members only at R.A.F. Topcliffe, Yorks.
April 20-21st	S.M.A.E. 2-DAY F.A.I. MEET. Qualifying - European Champs. FIA, FIB, FIC (Jnr. Champs). Venue Strubby.
April 28th	S.M.A.E. 2nd C/L CENTRALISED. F.A.I. T/R, Combat, 1/4 T/R, Stunt, Speed. Venue R.A.F. Little Rissington.
April 28th	S.M.A.E. R/C AEROBATICS. Venue Cottesmore (Provisional).
April 28th	MALVERN SOARING ASSOC. CROSS-COUNTRY SOARING TASK EVENT. West Malvern. Pre-entry 50p (40 max.) to A. Hobkirk, 216 Northwick Road, Worcester WR3 7EH.
May 5th	S.M.A.E. 3rd AERA CENT. FIC (Power) Open R/G - Area venues.
May 5th	LONDON AREA C/L MEET. F.A.I., Goodyear T/R, Combat. Venue Charville Lane, Hayes.
May 12th	S.M.A.E. 2nd INDOOR MEET. Venue Cardington.



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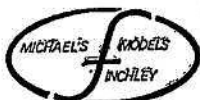
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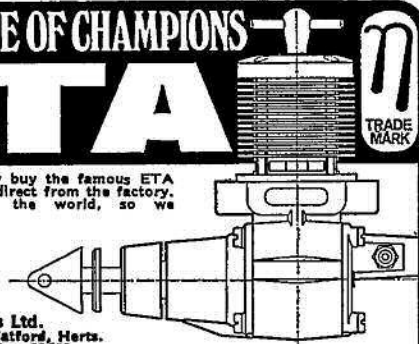
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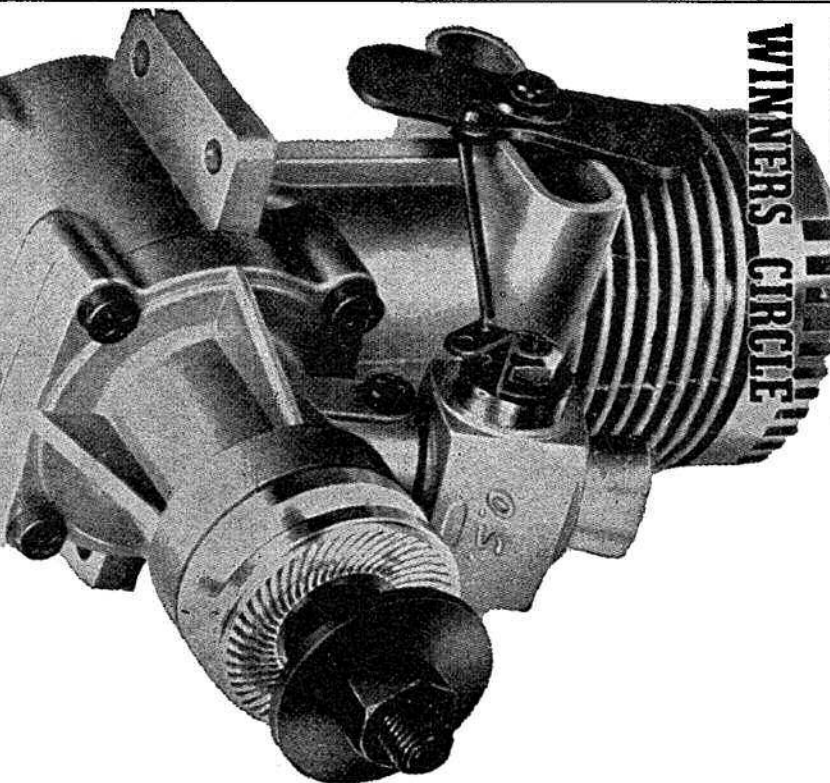
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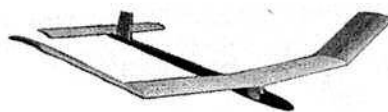


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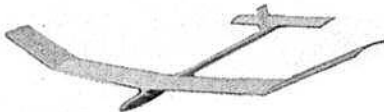
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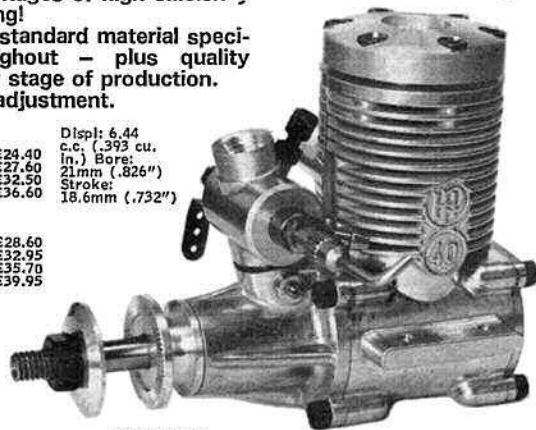
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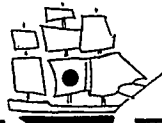
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6.0v	5.0 ounces	£4.70
7.2v	6.0 ounces	£5.55

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1.2v	0.5 ounce	58p
2.4v	1.0 ounce	£1.25
3.6v	1.5 ounces	£1.85
4.8v	2.0 ounces	£2.50
6.0v	2.5 ounces	£3.15
7.2v	3.0 ounces	£3.70
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1.2v	1.0 ounce	80p
2.4v	2.0 ounces	£1.80
3.6v	3.0 ounces	£2.70
4.8v	4.0 ounces	£3.65
6.0v	5.0 ounces	£4.60
7.2v	6.0 ounces	£5.45

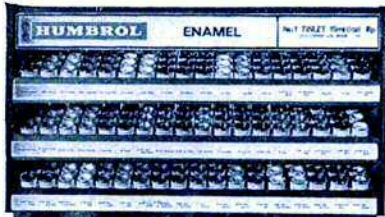
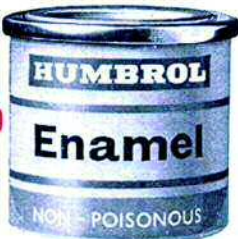
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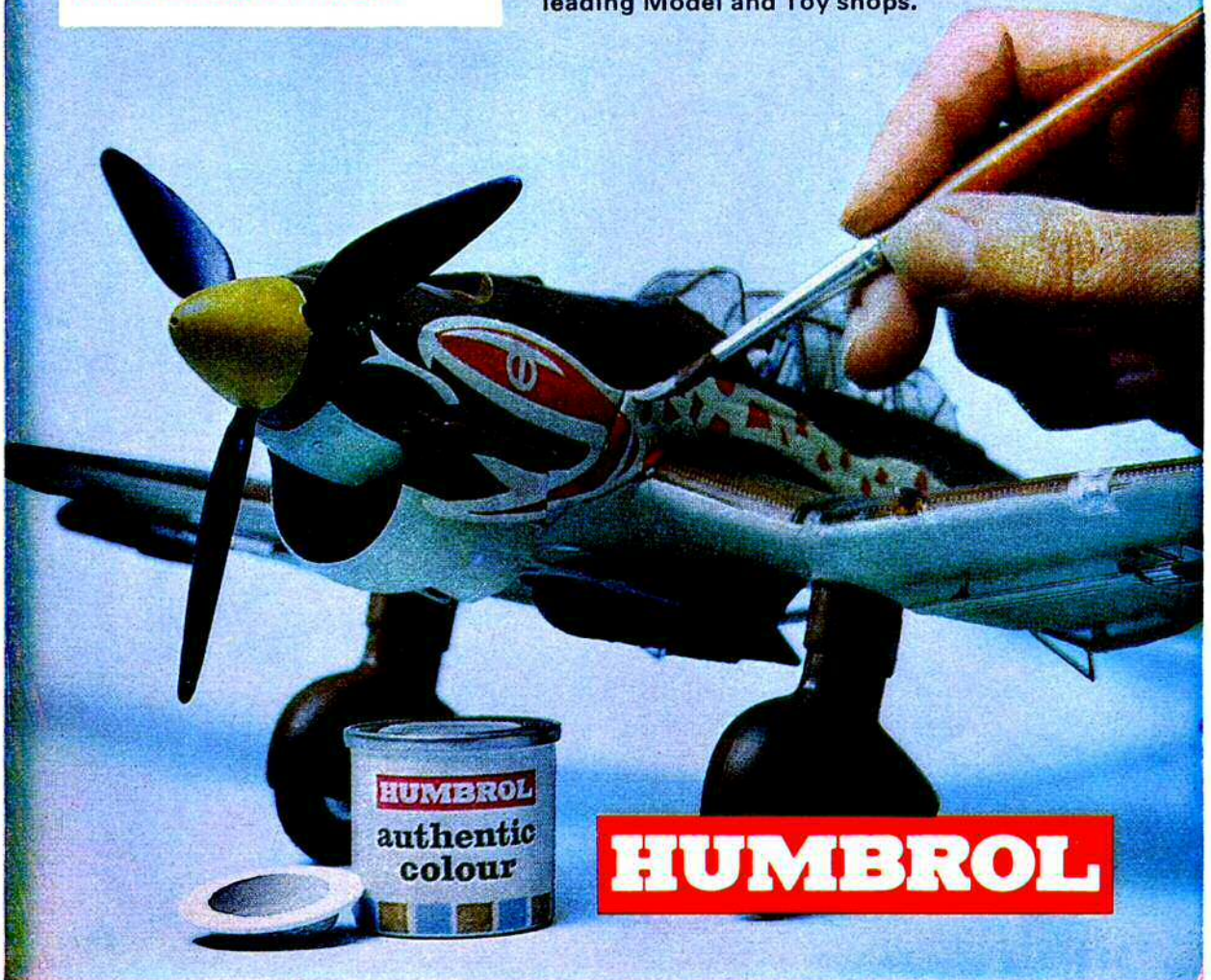
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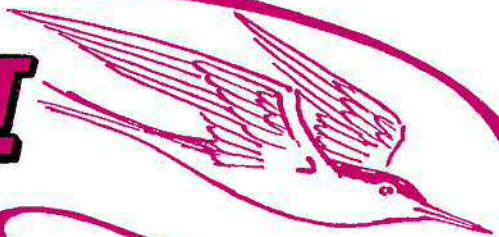
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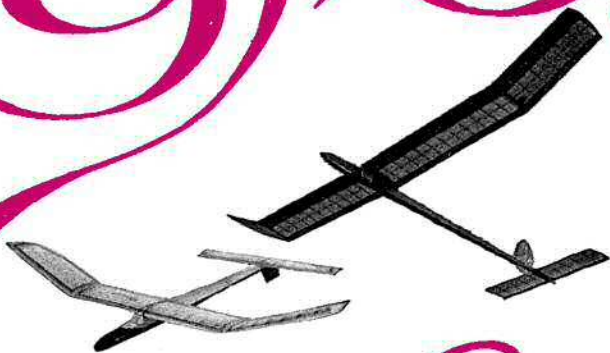


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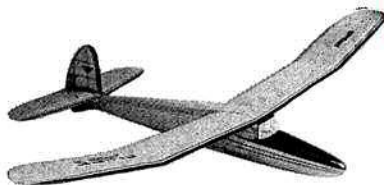
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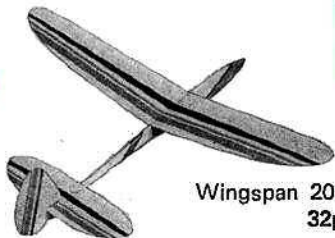
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