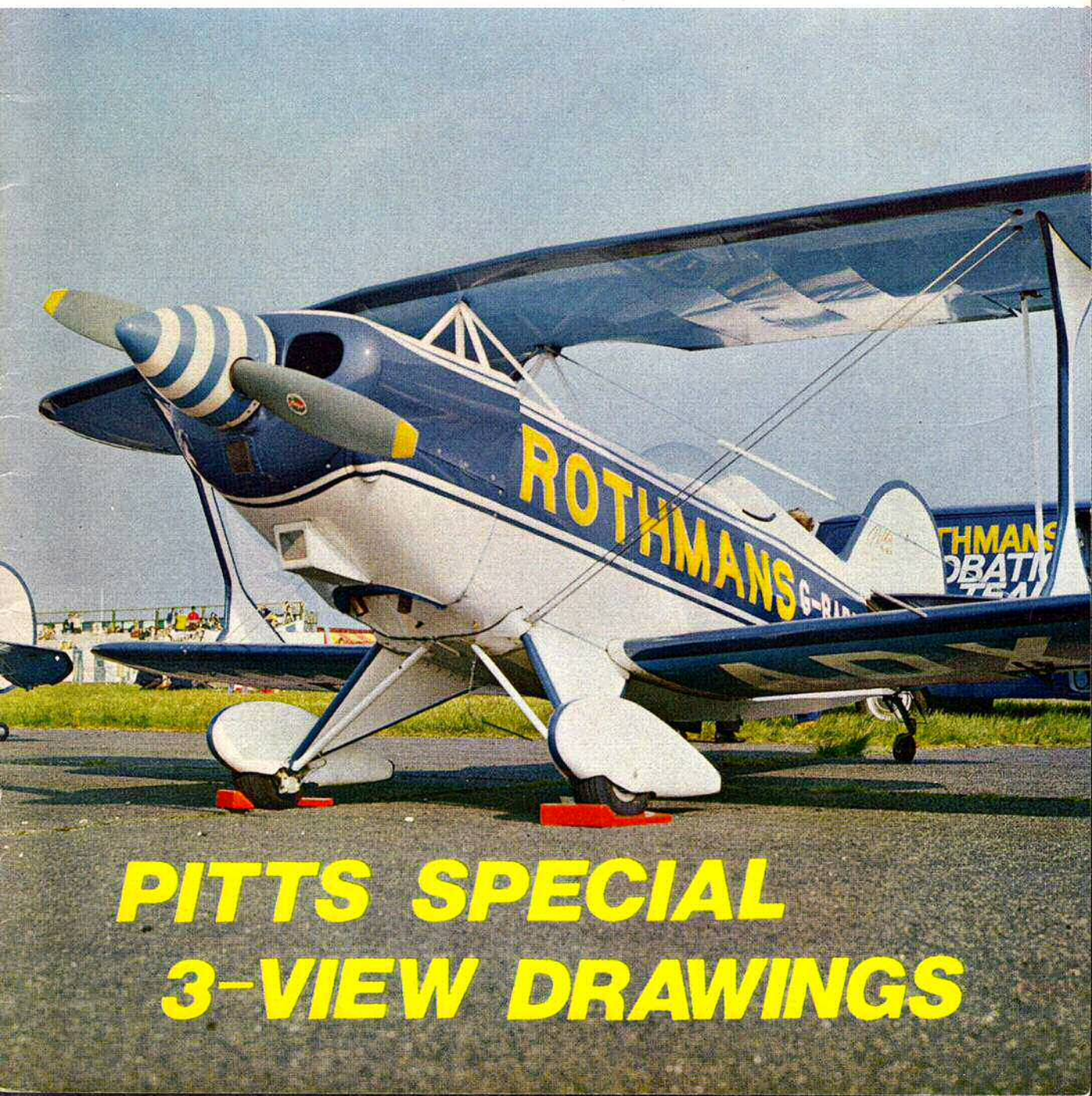
Aero Modeller

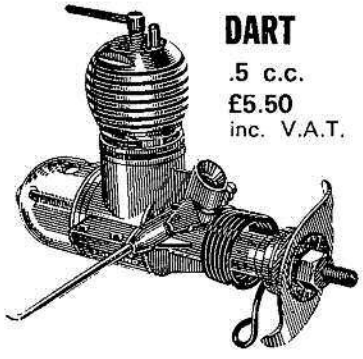
September 1974
20p
U.S.A. & Canada $1

INCORPORATING
MODEL AIRCRAFT

MAP HOBBY MAGAZINE



PITTS SPECIAL 3-VIEW DRAWINGS



DART
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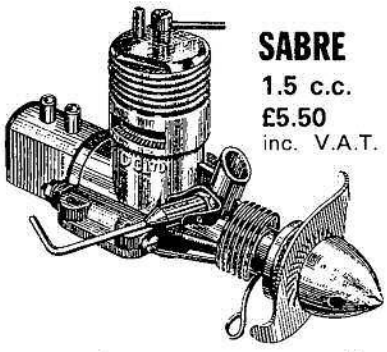
£5.50
inc. V.A.T.



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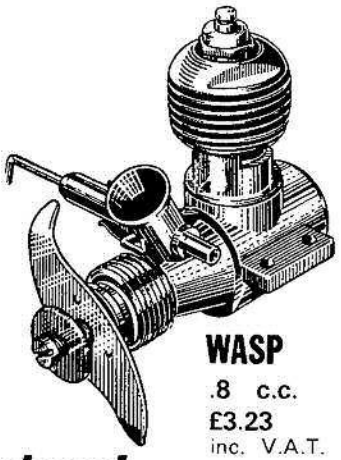

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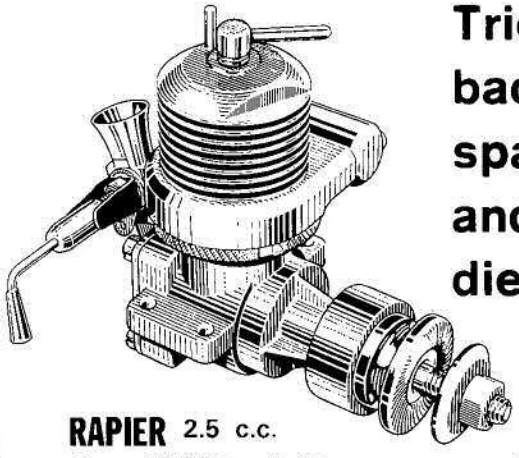
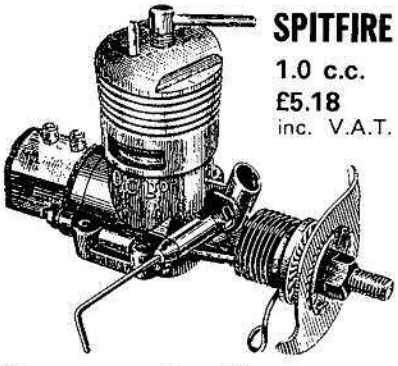
The Motors for the Modern Modeller! Quality engineered for lasting performance



RAPIER 2.5 c.c.
From £9.99 inc. V.A.T.
Four versions – Aero standard or R/C marine, water-cooled, standard or R/C.

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



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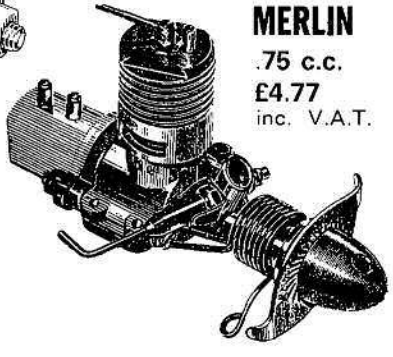
inc. V.A.T.



SUPER MERLIN
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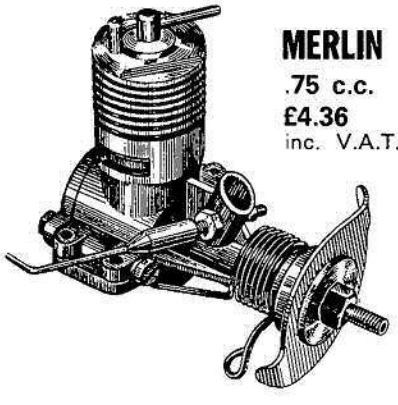
£4.77
inc. V.A.T.



MERLIN
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£4.36
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No spares-backing worries – if you have a Quickstart you can be sure of full and continuous use of your engine

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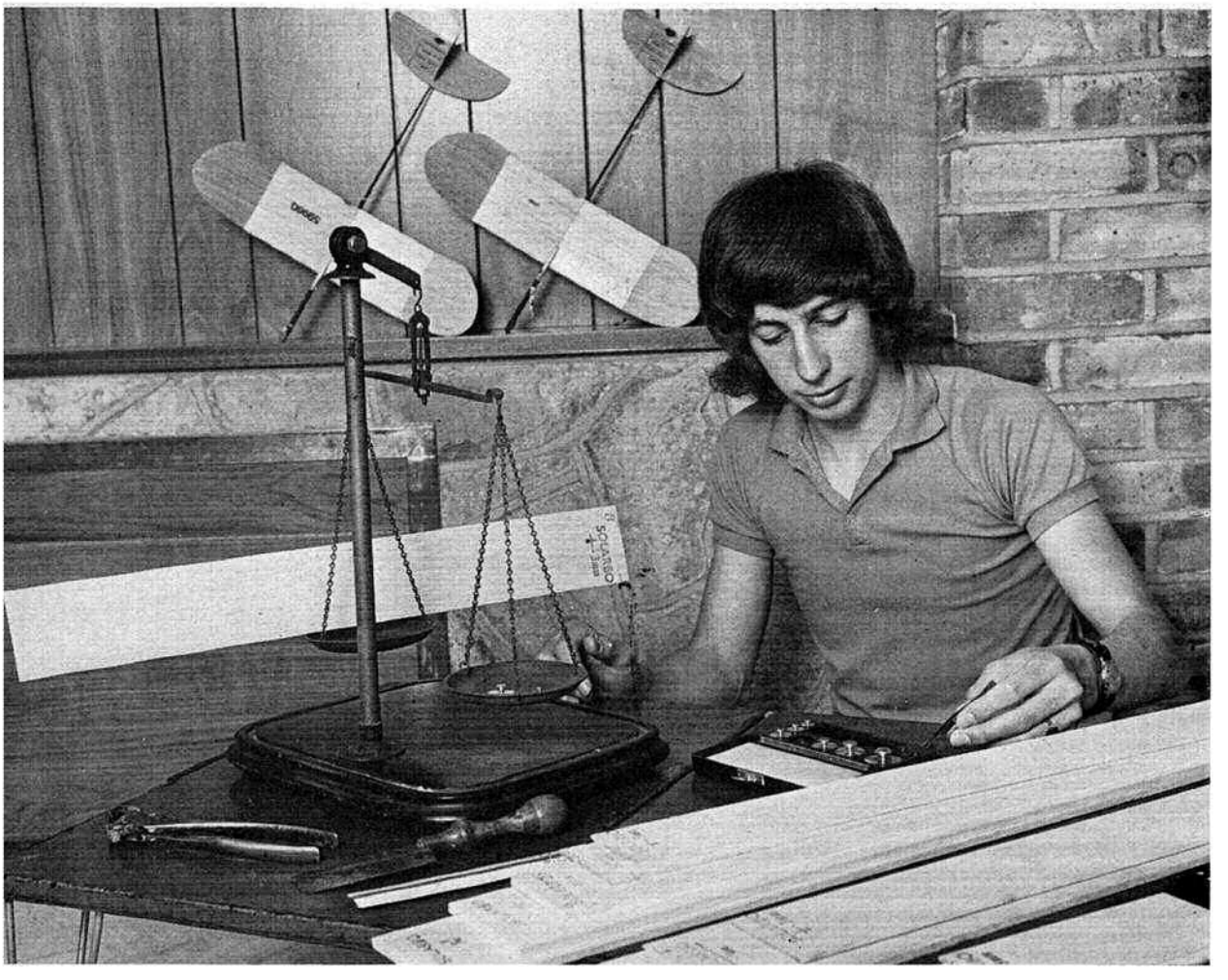


Where performance counts, Balsa selection has to be right. And with all-sheet construction, choice of Balsa can make all the difference to the results obtained. Ask John Tipper, this year's British Nationals H/L glider winner (winning model top right, reserve on left).

'Know-how' counts a lot, too. Selecting minimum weight Balsa combined with the right grain, 'cut', strength and durability. John starts with a pair of really accurate scales and his initial selection of Solarbo sheet to find just the right piece for wings – and another for the tail surfaces. The scales are essential.

So, too, is Solarbo Balsa. John says it has to be Solarbo from the outset to give him the best possible start with a wide range of choice Balsa to select from. Every piece with our own 'know-how' behind it. But we leave it to aeromodellers to prove that Solarbo Balsa models fly better.

Congratulations on joining the long line of 'Solarbo' winners, John!

THE HOME OF GOOD BALSA

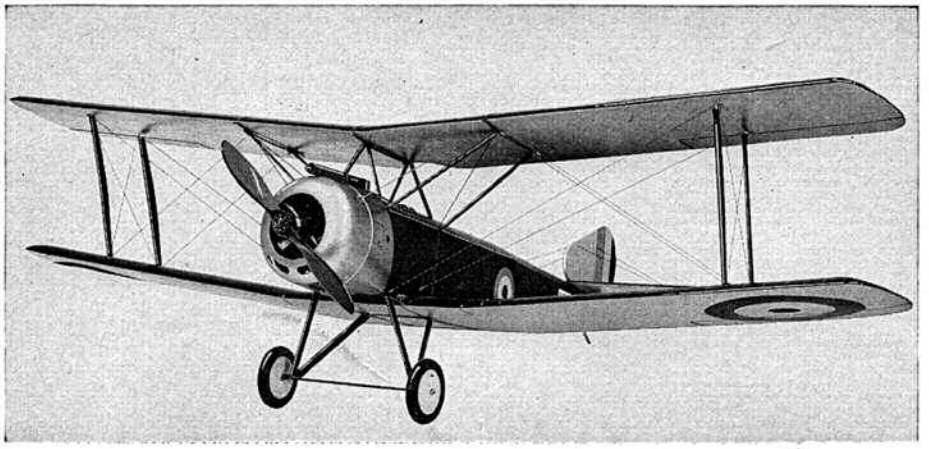
SOLARBO LIMITED

COMMERCE WAY LANCING SUSSEX

ALWAYS ASK FOR 'SOLARBO' BY NAME

"VERON" for VALUE

WHY NOT BUILD & FLY A REAL MODEL AIRCRAFT?



TRY THE

SOPWITH
1½ STRUTTER

'VERY-NEAR-TO-SCALE'
Circa 1916-18
48" Span (1220mm)

Photo of our Prototype Model fitted with 2 Channel Proportional on Rudder & Elevator only (optional 3 on Motor), powered with a 3.44 c.c. 'GLOW-STAR' with Silencer. For 2.5 to 3.5 c.c. (.15 to .19 cu. in.) A.B.S. Vacuum Formed Cowl, Semi-pneumatic Vintage Wheels, Vinyl Decals, Superlative Die-cutting, Preformed Wire Strutting and Super Kitting.

KIT PRICE
£18.27

'POWERED WITH A MERE "19" – I THINK THIS IS THE MAIN POINT – DUE TO THE LOW WING LOADING – IT HAS AMAZINGLY STABLE SLOW FLYING CAPABILITIES GIVING A VERY REALISTIC APPEARANCE IN THE AIR – AND WITH ONLY TWO SERVOS!'
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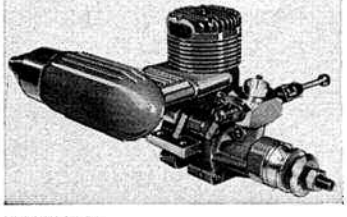
THE FINEST ENGINES FOR YOUR MODELS

CRAFTSMANSHIP AT ITS BEST – BACKED BY THE FACT THAT WEBRA HAVE BEEN THE POWER BEHIND MANY WORLD CHAMPIONSHIP WINS!

BLACKHEAD 61 R.C.



	£.p.
BLACKHEAD 61 R.C.	37.98
BLACKHEAD 61 MARINE	45.46
SPEED 61 R.C.	39.95
SPEED 61 R.C. MARINE	45.80
WEBRA 40 R.C.	28.94
40 R.C. MARINE	34.22
GLO-STAR 3.5 c.c.	12.95
GLO-STAR 3.5 c.c. R.C.	14.50
GLO-STAR R.C. MARINE	16.80
WINNER 2.5 c.c.	10.37
WINNER 2.5 c.c. R.C.	11.34
RECORD 1.5 c.c.	9.58
RECORD 1.5 c.c. R.C.	10.37
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SPORT-GLO 1.7 c.c.	10.56
R.C. CARB SPORT-GLO	3.21

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WITH BLEED	1100/6D	4.30
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40 R.C.	1100/40	3.90
WITH BLEED	1100/40D	4.30
GLO-STAR	1100/3	2.40
WINNER	1100/W	1.73
RECORD	1100/R	1.73
SPORT-GLO	1100/S	2.26

THE MOST Versatile '19' Motors Ever Made!

R.C. GLO-STAR

FULLY BACKED BY SPARES, SERVICE & ACCESSORIES

ALL PRICES SHOWN ARE RECOMMENDED RETAIL

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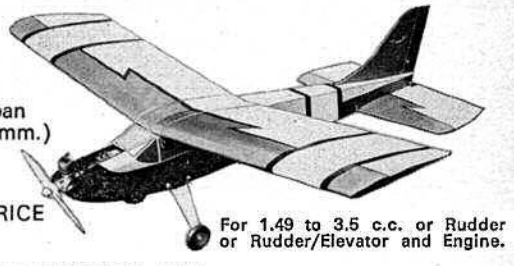
ROBOT UNIVERSAL RADIO TRAINER

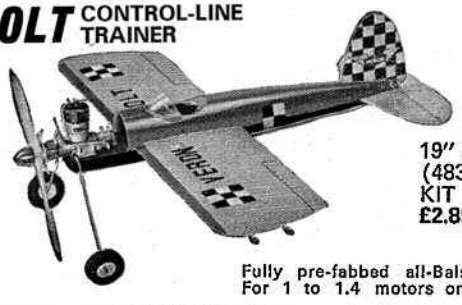


45" span
(1143 mm.)

KIT PRICE
£9.31

For 1.49 to 3.5 c.c. or Rudder or Rudder/Elevator and Engine.

COLT CONTROL-LINE TRAINER



19" span
(483 mm.)
KIT PRICE
£2.89

Fully pre-fabbed all-Balsa parts. For 1 to 1.4 motors on C/Line!

DISTRIBUTED BY VERON - AVAILABLE FROM YOUR DEALER!

WE HAVE A NEW AGENT OVERSEAS!

ORKNEY HOBBY & MODEL (RADIO CONTROL) SUPPLIES
CRAIGIEFIELD HOUSE, ST. OLA, ORKNEY.

Aero Modeller

INCORPORATING
MODEL AIRCRAFT

September 1974 Volume XXXIX No. 464

CONTENTS

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Advertisement Offices: Model & Allied Publications Ltd., P.O. Box 35, Bridge Street, Hemel Hempstead, Hertfordshire HP1 1EE. Tel: Hemel Hempstead 56117.

Subscription Department: Remittances to Model & Allied Publications Ltd., P.O. Box 35, Bridge Street, Hemel Hempstead, Herts HP1 1EE (subscription queries Tel: Kings Langley 62692/3). Direct subscription rate £3 per annum, including December edition and Index, $8 (U.S.) for overseas subscribers.

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MODEL & ALLIED PUBLICATIONS LTD.

P.O. BOX 35, BRIDGE STREET, HEMEL HEMPSTEAD, HERTS HP1 1EE

Tel. Hemel Hempstead 2501-2-3 (Mon.-Fri.)

Editorial Director D. J. LAIDLAW-DICKSON

Managing Editor R. G. MOULTON

EDITOR P. S. RICHARDSON

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STOP PRESS
1974 World C/L Championships, Hradec Kralove, Czechoslovakia

RESULTS

Class F2A – Speed

1.	G. Ricci (Italy)	279 Km/h
2.	U. Dusi (Italy)	279 Km/h
3.	C. Schuette (U.S.A.)	266 Km/h
30.	P. Halman (U.K.)	218 Km/h
39.	D. Smith (U.K.)	213 Km/h
45.	W. Firbank (U.K.)	204 Km/h

(54 entries from 21 countries)

Team results: 1. Italy, 2. Switzerland, 3 West Germany, 10. United Kingdom.

Class F2B – Aerobatics

1.	R. Gieseke (U.S.A.)	5373 pts.
2.	W. Werwage (U.S.A.)	5277 pts.
3.	B. Jurecka (Czechoslovakia)	5211 pts.

Not in fly-off:

19.	J. Mannall (U.K.)	2374 pts.
20.	S.Blake (U.K.)	2368 pts.
24.	J. Newnham (U.K.)	2334 pts.

(47 entries from 18 countries)

Team results: 1. U.S.A., 2. Czechoslovakia, 3. U.S.S.R., 8. United Kingdom.

Class F2C – Team Race

1.	Onufrienko/Shapovalov (U.S.S.R.	8:26 1	*Final times*
2.	Bugl/Straniak (Austria)	8:42 5	
3.	Fontana/Amodio (Italy)	8:44.0	
4.	Heaton/Ross (U.K.)	4:04.5	*Best heat*
11.	Rudd/King (U.K.)	4:19 6	
36.	Tribe/Tribe (U.K.)	4:56.5	

(53 entries from 13 countries)

Team results: 1, U.S.S.R., 2, Austria, 3. United Kingdom.

on the cover

One of the Rothmans' Pitts S-2A aerobatic biplanes taken at the 1973 Biggin Hill Air Fair soon after their introduction to the air display scene. Since that date, they have been seen by hundreds of thousands throughout the length and breadth of the nation, as well as at the Paris Aero Show. To fly with them is a fantastic experience. See drawings and features on pages 491-495 of this issue.

next month

Full report on the 1974 World Control Line Championships, together with details from the recent Vintage Internationals held at Lakehurst, U.S.A. Beginners' features include further details on the use of rubber motors plus how to save money by making items yourself. Plans, too, for Dave Clarkson's 'Simple Sprint' – an F.A.I. racer designed to get the beginners out on the tarmac practising, rather than in the workshop puzzling how everything fits together! All this plus much more in the October issue – on sale September 20th.

Made and printed in Great Britain by Graphic Art Services (Brighton) Ltd., Burgess Hill, Sussex RH15 9EH, for the proprietor, Model & Allied Publications Ltd., P.O. Box 35, Bridge Street, Hemel Hempstead, Herts HP1 1EE. Published by Argus Press Ltd., 12-18 Paul Street, London, E.C.2, to whom all trade inquiries should be addressed. Registered at the G.P.O. for transmission by Canadian Magazine Post.

COX READY TO FLY

P-40 WARHAWK

The famous Flying Tigers, the American Volunteer Group, flew this sleek fighter in many actions over China and Burma. Now Cox brings you this highly detailed replica of the P-40 Warhawk in authentic markings. It is powered by the easy-starting double-ported Super Bee .049 engine with spring starter. The high-thrust propeller is three bladed. Complete with clear cockpit canopy, painted pilot, twin exhausts and tiger shark trim. Control handle and lines are included. Wingspan 20".

P-51 MUSTANG

Premier fighter plane of the U S Army Air Corps in World War II, the P 51D Mustang is faithfully reproduced in this popular high-performance Cox model. Wings and fuselage dissemble upon crashing, then are quickly reassembled for further flying. The Cox Mustang features the famous clear-visibility bubble canopy and is powered by a Cox .049 engine. Complete with starting and flying accessories, including battery, glow head clip with hook-up wires, glow fuel, filter cap with stainless steel filter, filler hose, control handle and guide lines. Wingspan 16".

PLANES with Starter Packs

5464	SUPER STUNTER	£15.50
5564	P-40 WARHAWK	£15.75
5764	P.T. 19 TRAINER	£12.95
6464	JU 87D STUKA	£15.95
6964	P-51 MISS AMERICA	£14.95
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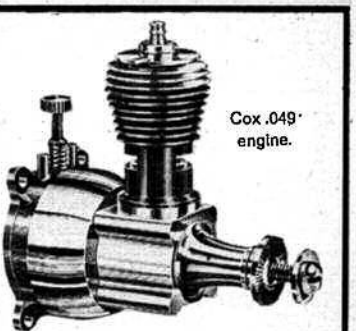
8164	FOKKER D7	£11.50
8364	FOKKER TRI PLANE	£11.50
8664	SUPER SPORT TRAINER	£13.95
8764	BUSHMASTER	£14.50

Without Starter Pack

1800	SPITFIRE MK. VB (ex Canada)	£12.95



Cox .049 engine.

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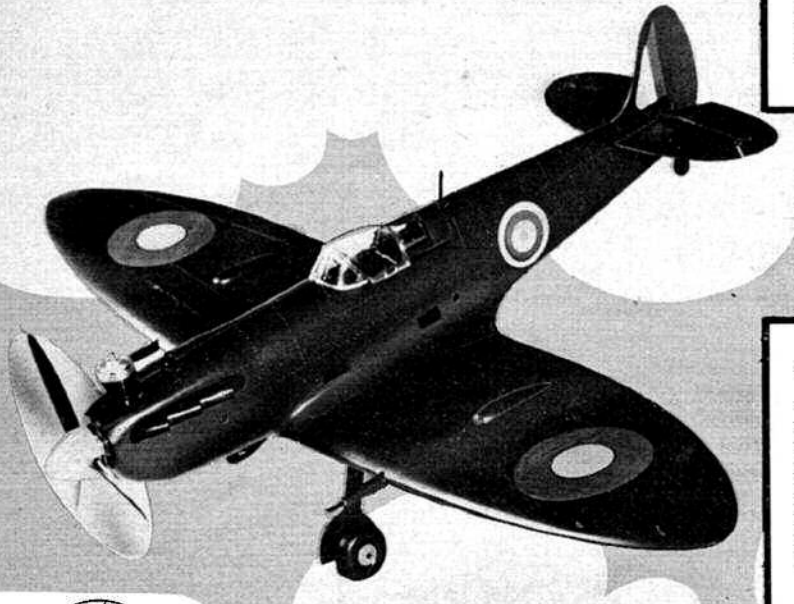
AIRCRAFT powered by .049 engines

COX

Full instructions for flying and maintaining these READY to FLY Models are supplied. Also a complete list of replacement parts. Treat it well and it will reward you with many hours enjoyment.

JU 87D STUKA

Accurate in every detail, this ready-to-fly model carries all the features of this famous plane from the massive inverted gull wing down to the tiny propeller-driven generators. Cox's Stuka features sliding front and rear canopy, rear mounted machine gun, a simulated four inch bomb that can be dropped in flight plus detailed pilot and gunner figures. Comes equipped with easy-to-start Cox .049 engine with spring starter. Wingspan 23¼".



SPITFIRE Mk.VB

This Cox quality model is a high-performance flying replica of the famed Mark V version of the Spitfire. The Mark V was the most popular style of this exciting plane produced. The spirited power provided by the Cox .049 Babe Bee engine gives this model superb performance characteristics closely approximating its versatile predecessor. Fine detailing and authentic camouflaging complete the models realism. Wingspan 23¼".

Obtainable from all good Toy and Model Shops

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THE B.A.C. STRIKEMASTER.

The Strikemaster. The aircraft that leads an amazing double-life.

Because it is this plane, with its powerful close support ability, that is used by the Sultan of Oman's Air Force over the Persian Gulf.

Fast. Manoeuvrable. And incredibly adaptable to any fighting situation. But without its armament the Strikemaster becomes the Jet Provost M.K.5, the plane used by the Gloucestershire-based R.A.F. 'Red Pelicans' aerobatic team.

Its versatility continually being put to the test by spectacular stunts like spins, rolls and bomb bursts!

Now Airfix have produced a fully detailed 1/72nd scale model of the Strikemaster.

This terrific kit includes optional parts and markings for either a Red Pelican Jet Provost or B.A.C. Strikemaster.

A really superb new model, built with all the care and experience of Airfix.

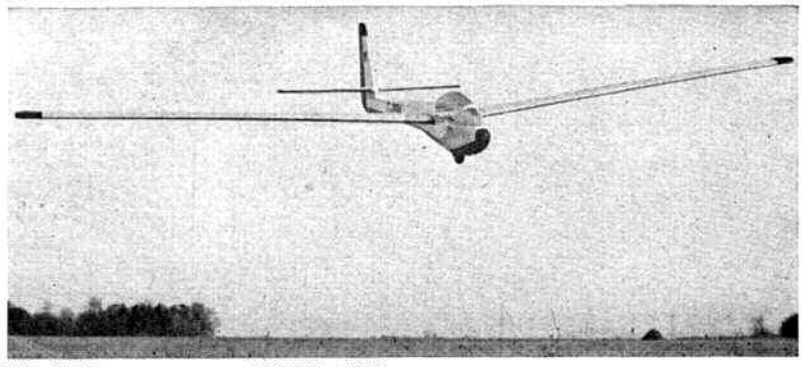
AIRFIX

B.A.C. Strikemaster.
New to the world's biggest range of construction kits.

GET AHEAD WITH Hegi SCHUCO

ALADIN – £22.20 (opposite)

As the photo shows, 'Aladin' looks right in the air. It flies – and handles under R/C – just like a full-size sailplane. An outstanding 86½" span model which we confidently recommend to glider enthusiasts – for sheer pleasurable building and flying!

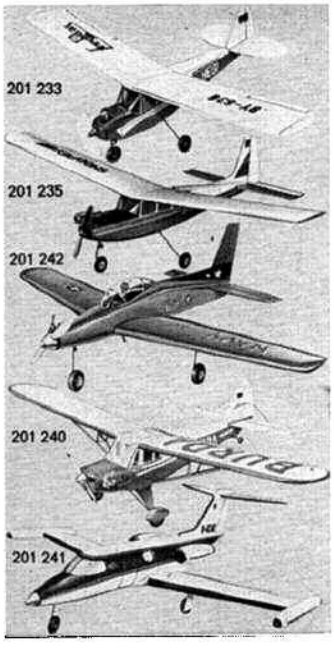


NEW GLIDERS!

JIM 39" span with die-cut and numbered parts, ready slotted TE and easy-to-follow plans. £4.70

DOHLE 47" span, another highly prefabricated kit. £5.55

Both kits complete down to lead ballast, tissue paste, wing fixing bands, etc.



POWER KITS

FRECHDAX (233) ... £9.95

SNOOPY (235) £20.70
58½" span. Ideal for R/C.

T45 (242) £24.80
51½" R/C sports and trainer for engines up to 6.5 c.c.

BURDA PIPER (240) £29.80
Superb 71½" span scale model.

LEAR JET (241) ... £50.80
61" span for 10 c.c. engines. (not illustrated)

L19 BIRDDOG 47" span £11.80

PIPER TWIN COMANCHE £31.80

CESSNA 210 55" span £22.20

FOKKER D-8 50" span £17.40

AUSTER AIGLET 47¾" span £10.90

GLIDER KITS

PAT (087) £7.40
47½" span semi scale.

SPASSVOGEL (085) ... £6.80
50¾" span hi-performance.

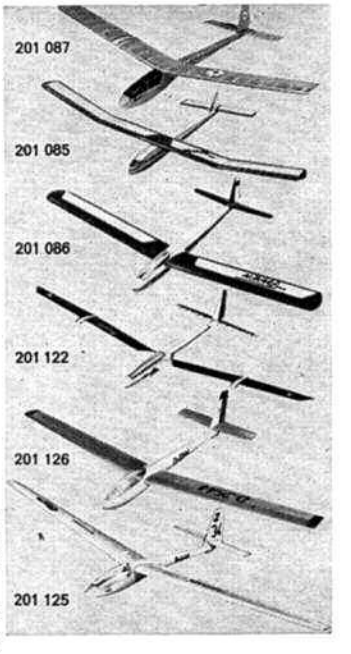
TWEN (086) £8.40
55" span mid-wing soarer.

KADI (122) £16.25
74" span super sailplane.

ALADIN (126) £22.20
86½" span. Ideal for R/C.

ASW-15 (125) £46.40
118" span scale sailplane for free-flight or R/C.

SB-7 90½" (T-tail) ... £17.20
(not illustrated)



DS22

A really attractive model – and simple to put together, too. This kit comes COMPLETE with moulded fuselage and other prefabricated parts, PLUS full mechanical parts.

PRICE £139.50

Training landing gear (optional £7.40

Float kit (ideal for training!) £10.80

FRECHDAX – £9.95

43" span free flight or R/C cabin model for 0.8 to 1.7 c.c. diesels, or 0.49 glow.

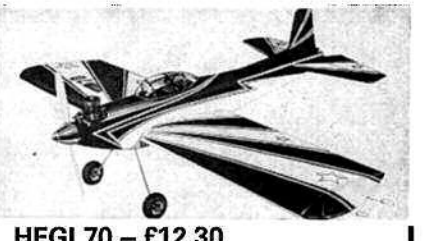
NEW POWER KITS!

FIPSI 31" span £3.85
A really attractive high wing semi-scale model for 0.49s or .5 diesel.

SKYLAB 63" span £41.50
Advanced type R/C model featuring finished foam wing panels. Stable through wide speed range.

NEW KLUNK TANKS!

New SLANT Klunk Tanks in six sizes: 40 c.c. to 500 c.c. ... £1.07 to £1.56



HEGI 70 – £12.30

A stunt control-liner for ab-initio training up to aerobatic contest standard. Pilots speak highly of its smooth response! Span 40 inches. Suits motor sizes from 2.5 c.c. or 19, up to .29.

see SCHUCO KITS at your model shop

IN THE GREAT BIC MODEL-MAKING COMPETITION

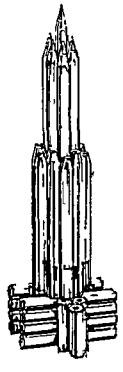
Regd. Trade Mark

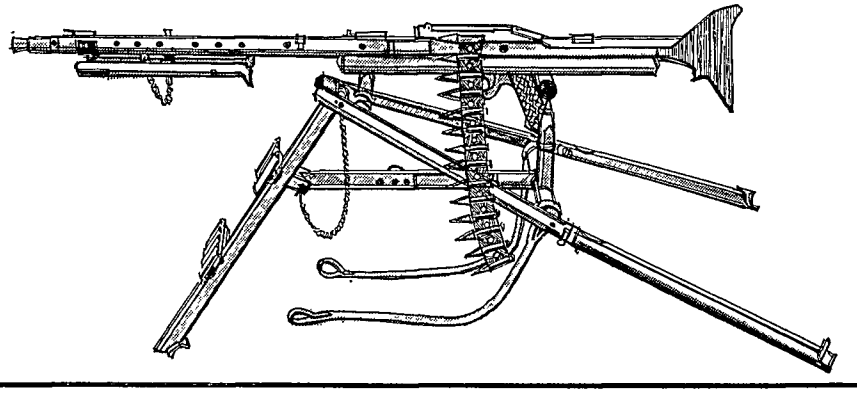
EVERYBODY WINS A PRIZE!

Start collecting your empty Bic Crystal ballpens today! Whip round your friends, bring home the empties from work, then design your model and get building! Your ideas can be simple or elaborate – like two of last year's models, pictured here. And look at the prizes! . . .

- ✳ PORTABLE COLOUR TV
- ✳ PORTABLE BLACK & WHITE TV's
- ✳ CASSETTE RECORDERS

– plus a prize for *every* entry – a pack of 10 Bic Porous Pens!





Simple ideas, or not-so-simple – they all have an equal chance to WIN!

Send this coupon now for your entry form!

BIC Model-Making Competition

Regd. Trade Mark

ENTER NOW!

To The Bic Model-Making Competition,
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Please send me a free entry-form for the 1974 Bic Model-Making Competition.

Name:.....

Address: .....

.....

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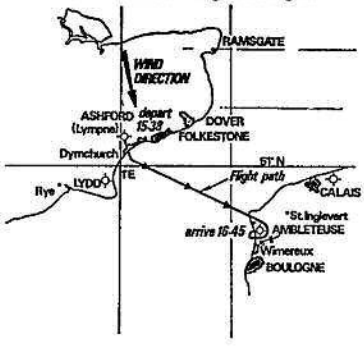
COMPETITION CLOSES 30th NOVEMBER, 1974.

Heard at the HANGAR DOORS

CHANNEL CROSSING by Helicopter is such an achievement it seems remarkable that when it happened on July 17th, the event should have been ignored by the National Press, Radio & T.V. Certainly, they were told all about it. Has aeromodelling become so accepted as part of everyday life that the public expects the 'impossible' to become possible overnight, or was it a case of models being regarded as little, obscure, and of small following when the sub-editors got at the story? The *Daily Express* had their own man in an exclusively privileged position of seeing both departure and arrival, and a top line freelancer from Fleet Street was in the escorting Jetranger. What more might be done to wave the wand?

Anyway, to the facts. RipMax sponsored the attempts, preparing their own *Super Cobra* with Webra Speed 61, Futaba M Radio, and clear plastic side-blister tanks to hold 2.5 litres of G-Max fuel with 5 per cent nitro methane and ML 70 oil. Dave Nieman was the model pilot, paired with Bob Baff of *Alan Mann Helicopters* in a Jetranger. Learning of the attempt, HB engines sent Dieter Ziegler with the specially lightened Graupner *Bell 212* (HB61 Stamo, Varioprop 12 R/C) to join the 'race'. The day before he left, Dieter flew a new World Record distance of 57.5 km from Vilshofen to Straubing-Wallmuehle in 1 hr. 17 min., and the same model was also used for a 1 hr. 45 min. duration record at Munich on July 13th. Three days of unfavourable weather followed. Then, with a following North wind, the X-Channel exercise was set in motion on Wednesday 17th. While the Cobra was unsuccessful for inexplicable reasons, the Bell 212 reached Ambleteuse (Boulogne) after 67 minutes of sheer tension from Lympe (Ashford), Nigel Thornton piloted the 'mother' Jetranger G-BBEU, navigating under the light aircraft corridor across the stretch of 30 miles of rough water, keeping pace at 100 ft. distance from the Graupner model. It was a triumph of pilotage, joyfully recognised by excited French *Douanes* as though Bleriot had come back 65 years after his crossing! During the flight, the HB Stamo consumed 1535 c.c. of fuel, over a nautical distance of 52 km. Actual flight course was considerably greater. Specially stamped mail was carried in the model – what price those covers? Thanks to Max Coote for a seat in Comanche G-ATOY which accompanied the flight, enabling us to observe and time-check this admirable achievement.

Flight plan below illustrates the accomplishment of first ever flight by R/C Helicopter from England to France. French Douanes witness the arrival with a relieved Dieter Ziegler at right.



FREE FLIGHT – WHO CARES? In a pertinent note to the American publication of the *National Free Flight Society*, John Worth who is F.A.I. Delegate for the U.S.A., reminds readers that NOTHING has been done in the U.S. to construct proposals concerning limitation of distance flown by Free Flight.

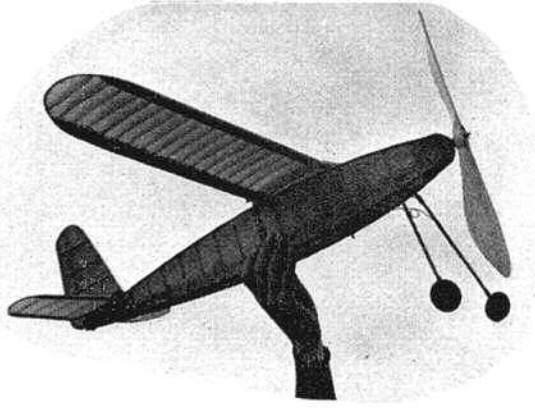
This was the outcome of U.S.S.R. proposals tabled at the 1973 C.I.A.M. re-union. The Soviets proposed 30 m towlines for glider, 25 gr. motors for Wakefield and 5 sec. engine for Power. They asked for 10 flights with 2 minute maxs with fly-off rounds extended by 1 minute increments. These proposals were narrowly defeated. Votes in the F.A.I. Committee were 10:8 *in favour* of 2 minute maxes, 8:9 *against* shorter towlines and 25 gr. rubber motors, and 7:9 *against* 5 sec. power run. The vote for 10 flights was equally divided. Because the votes were so close, the C.I.A.M. wisely referred the propositions back for a one-year study.

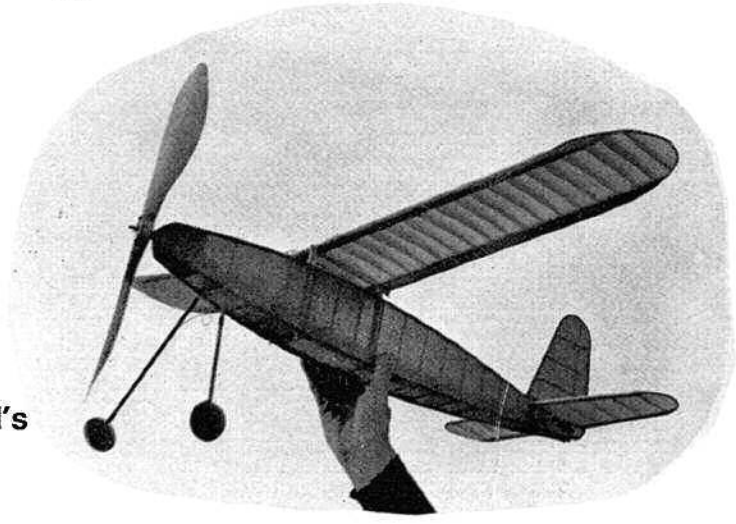
All Aero Clubs are supposed to submit their considerations for inclusion in the 1974 agenda – deadline September 25th.

Are British Free Flighters – like their U.S. cousins, asleep on the switch as John Worth suggests in N.F.F.S. Digest? As this is written, barely seven weeks prior to zero hour for tabling British motions to the F.A.I. we have yet to hear a single note of approval – or a rejection of this constructive approach to the world-wide flying site problem. Pop the fuse and spell out your thoughts F.A.I. men – it's rare that you have so long to ponder such sweeping changes, and already the timer is near to flood-off on decisions that will affect design and tactics through the next phase of F.A.I. regulations. From January 1975 the 'freeze' on specifications is lifted, and mute complacence in 1974 will only bring a 'take what comes' situation.

Write to your F/F Committee Chairman NOW.

WINGS AND THINGS, the 16 mm. colour, sound, film on aeromodelling made by Robin Lehman has won the Grand Prix at the 1974 International Film Festival for Aviation and Space, held at Le Bourget, Paris 17-19th June. Over 60 aviation films were entered, the majority being products of highly skilled professional production units from airlines and aircraft manufacturers. To win the Grand Prix in such competition is a tremendous achievement. Robin's films have also been shown in a weekly series during July on BBC2, and Wings & Things was the first of his remarkable products to appear. It has also been shown on the London Cinema network. All the more reason, therefore, for British modellers to be pleased that a print of the film is held by the S.M.A.E. for showing to clubs in appreciation of the Society's assistance given to Robin in its making.





Len Ranson re-discovers a vintage model with a good performance – Bob Copland's

PARASTAR

BEING A BIT of an oldie myself, I suspect that my interest in the model machines of yesteryear is in part due to unabashed nostalgia for those far-off but very happy days. I am taken back to a time when model flying was basically very simple but had an enormous potential which, for good or bad, has since been realised. Model flying back in 1938 was much more of a picnic and family affair than it is today. Generally, model performance was poor by present day standards, with many model flyers still striving for that magic minute of duration, and a thermal flight something to go into the club record book. This meant that model enthusiasts did most of their flying within the flying field and not outside it, which made for a cosy state of affairs; and with no engine noise or danger, the model plane existed happily side by side with the kite and cricket ball.

Except for the relatively small number of large petrol engined-powered planes, models were on the whole, smaller than they are today, mainly due to the need for portability. Few model flyers in those days had motor cycles, let alone cars, so models had to be compact enough to be carried on a bus or train or even a bicycle. When, in the immediate pre-war years, hundreds of modellers converged upon Fairey's Aerodrome (now Heathrow!) for the Wakefield Trials, they came mostly by public transport, and it says much for their enthusiasm that they undertook their long journeys nursing their model boxes through the hazards of railway junction and bus station.

The great charm of the old model, which we now call vintage, was its distinctive appearance. Free-flight models today are very stratified in design; so refined, in fact that it is difficult to see how they could develop further, whilst the multi-radio model has long since reached the bounds of what can be expected from a model plane. Ultimates, because they are ultimates, tend to look very much alike, with none of those differentiating characteristics by which the old model designs were easily recognisable t'other from which. Models which are built to fulfil a function can be varied and interesting on the way towards that fulfilment, but much of a muchness once the limit has been reached. Motor racing is a case in point. Just compare the colour and variety of the old Brooklands circuit of the 1920's with today's grim procession of ultimate cars, looking, each one, like the result of an accident between a farm tractor and a steamroller. Not that our models today are ugly; they are, indeed, quite attractive in their sleek, purposeful way, but it must be admitted that they mostly conform to well tried and proven formulae from which it would be senseless to depart. Our vintage models may not be nearly so efficient, but come in all manner of quaint and diverting designs.

The real fun of vintage flying, though, comes in searching through the old journals and plans for a model which, to your eyes, 'has something', be it a sense of character or a performance possibility. When vintage events began, several years back, they were held on a duration of flight basis. The entries were widely assorted, but it wasn't long before the experts had pinned down the winning type of model: the late vintage ultra lightweight. These came to so dominate the vintage events that much of the variety which gives colour to these contests was lost. One way out of this was to widen the competitive field by models flying to pre-selected flight times, but this form of competition is not everyone's cup of tea, and some sort of judging, with a 'year of vintage' bonus, might provide another answer.

Personally, my idea of a vintage model is a pre-war design. A view which seems to be shared by our friends in America, who have made a cult of reproducing those huge, pre-war gassies. By contrast, my ambitions are necessarily more limited, covering only the older rubber-driven models. Such models from, say, 1935 to 1939, had a quite modest performance by today's standards and relied for success on the occasional big thermal flight. Often such a flight, in the days before the dethermaliser, resulted in a lost model. Indeed, just prior to the war, when model performances began to improve with the use of larger propellers and heftier rubber motors, fly-aways became something of an acute problem. The only consolation was that, apart from Wakefields, models were generally of small size and simple construction, being replaceable by a 'beaver' builder in a few evenings.

Rummaging through some old model books I came across a 1938 copy of the old *Model Aeroplane Constructor*, a monthly magazine. To my delight it contained a half-size plan of a model that typified the British contest approach in those far-off days. It was a design of Bob Copland's, the 'J. O'Donnell'

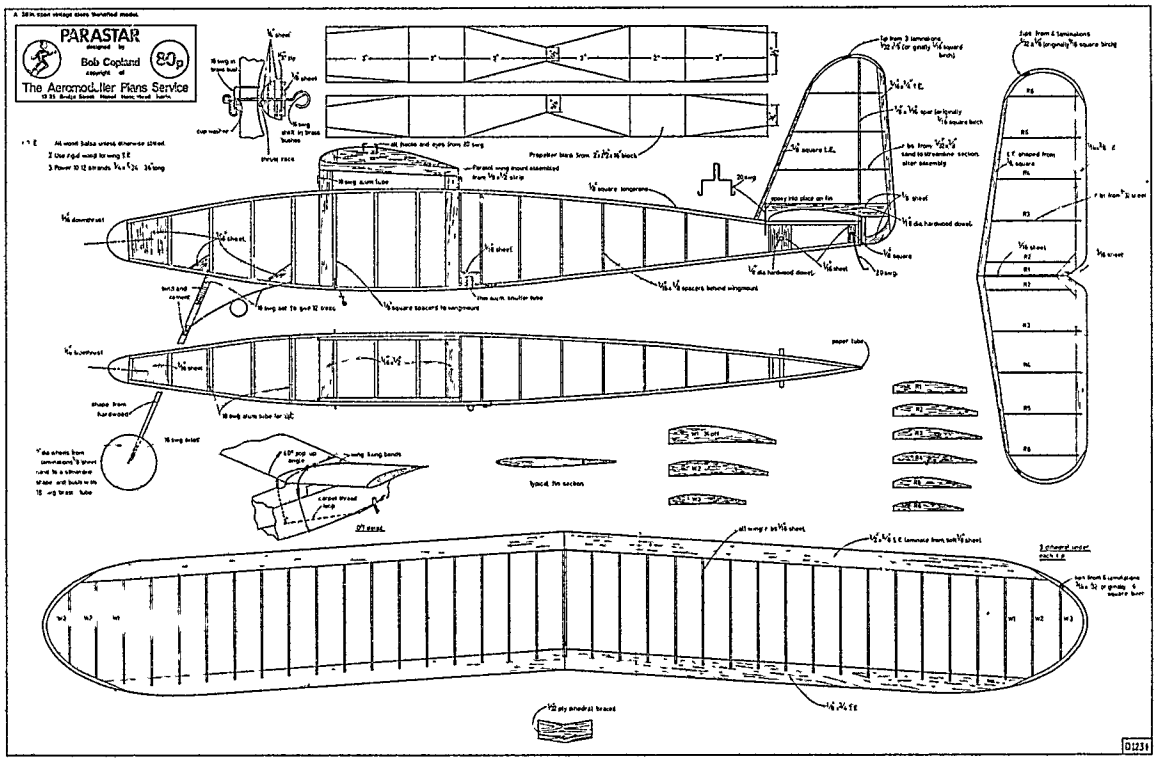
of the immediate pre-war and post-war years. He is known to vintage flyers for his series of streamlined 'GB' Wakefields, but he did produce a number of highly successful lightweight models, of which the model that caught my fancy, the *Parastar*, is one. Although this model at one time held the World Duration Record, it was not as well known as the slightly smaller, but extremely successful *Northern Star*. It is, however, similar in outline but has a parasol wing, then an innovation in model design, and a two spar, close-ribbed wing: a design feature which Bob Copland, together with his eminent contemporaries, R. N. Bullock and E. Chasteneuf, incorporated in a whole series of beautifully streamlined Wakefields.

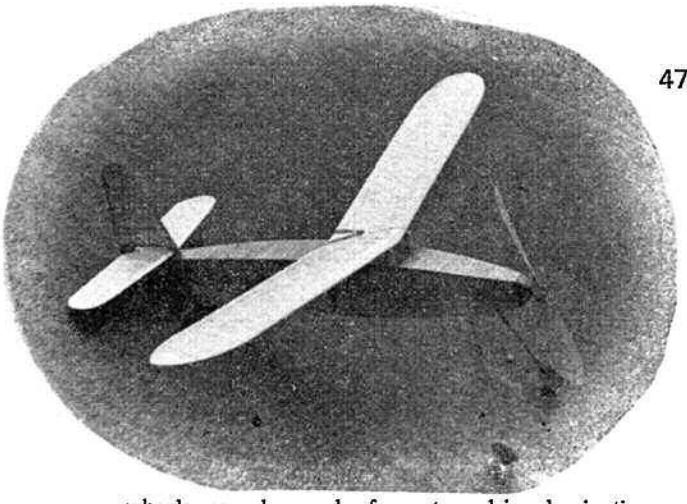
Models, back in 1938, conformed much more to what an aeroplane should look like than they do in these functional times – although Radio has been influential in bringing 'realism' back to the model scene – and the shaped rear surfaces and undercarriages were common to most pre-war designs. Undercarriages (lovely archaic word!) not only served the ends of realism, they were then highly necessary to the ubiquitous rise off ground rule. They also gave protection to the one-piece, free-wheeling propellers. A word here about the *Parastar* propeller, though. Unfortunately the original plan does not include a prop block layout, although the diameter is given as 16 in. and the block size as 2 in. x 1½ in. To cover the omission, I have included a typical layout of the period. The propeller, incidentally, is of interest, as the wide bladed propeller, of which this is one, had only become generally adopted in this country by 1937 after proving their worth in the balmier American air. Many modellers still found such 'paddle bladers' a bit of an extravagance in our cold, blustery weather, and it is significant that in the same issue of *Model Aeroplane Constructor* which included the *Parastar* there were two give-away plans of Wakefield models, both of which sported the old type, narrow-bladded propeller, and one was actually powered by four separate skeins of rubber connected to a series of frontal gears!

Coming to the building of the model this should present absolutely no difficulty for the experienced builder. Just one problem presented itself: the specifying of $\frac{1}{16}$ in. square birch for the wing, tail and fin tips. In spite of the cries we hear to 'bring back the birch' none could be found. I did manage to obtain some spruce of the same section but this was altogether too whippy, so I resorted to a quite permissible alternative of the time: bamboo. I needed this anyway for the undercarriage legs, and I came across some in a shop for garden wares: ten useful-sized sticks for a few pence. I bent the thin strips which I had pared out around a candle flame – just the job to do during a power cut – and found this gave strong, well shaped tips much more authentically vintage than sheet balsa ones, though a bit tricky to stick the tissue to. Regarding the latter material, I fortunately had a stock of Japanese tissue, white and coloured. This was in keeping with materials available at the time, although my own preference is for Modelspan, which is much stronger. Take care, though, not to overtighten if you do use Modelspan. Incidentally, if you wish to use Japanese tissue, Laurie Barr of 4 Hastings Close, Bray, Berkshire, can supply it at a cost of 8p per sheet.

All other materials specified are readily obtainable, except perhaps for the hefty leading edge spar on the wing. This can be made up either by adding a $\frac{1}{8}$ in. backing piece to a strip of $\frac{1}{2}$ in. square or by $\frac{1}{8}$ in. sheet laminations. Just a point about the wing: cut the trailing edge from quite stiff stock, as with no central spars there is a tendency to bowing. The

FULL-SIZE COPIES OF THIS 1/7th SCALE REPRODUCTION ARE AVAILABLE AS PLAN No. D 1234, PRICE 80p. (INCLUSIVE OF V.A.T. AND POSTAGE) FROM AEROMODELLER PLANS SERVICE, P.O. BOX 35, BRIDGE STREET, HEMEL HEMPSTEAD, HERTS HP1 1EE.





wheels can be made from two $\frac{1}{8}$ in. laminations, sanded to a streamlined shape and bushed with brass tube.

A word about the undercarriage. This component was a 'must' on any powered, pre-war model aircraft, and the techniques for making them widely known, but it occurs to me that modern modellers may be uncertain how to fix the wire springs and axles to the bamboo. Well the trick is to loop the wire back on itself at the points of attachment so that a sort of saddle is formed which can be glued (epoxied) and securely bound.

The free-wheeling device shown on the plan appears a little indistinct, but one can simply be provided by bending an offset hook on the front end of the propeller shaft and using this both for the engaging pin and as a winding loop.

One more thing: the fitting of a dethermaliser. These now indispensable gadgets were unknown back in 1938, but as the *Parastar* will all too readily fly away on a thermal it is advisable to fit one and a suitable scheme is provided in the accompanying plan. As with so many vintage models the convenient pop-up tail is just not on. You could fix a parachute, which is a bit of a 'drag', or better still arrange for the wing to pop-up. The wing is tensioned at the rear by rubber bands and held at the front by a thread loop large enough so that when released by the retaining rubber band it gives something like a 40° wing angle to the line of flight. This works quite well.

The rubber motor size given is 14 strands of 3/16 in. which can be translated in modern terms as 10-12 strands of $\frac{1}{4}$ in. Pirelli. Rather than use a mechanical tensioner I plaited the motor. With such moderate power the amount of downthrust is not excessive. It is given as $\frac{1}{16}$ in. on the noseblock, and there should be a corresponding amount of sidethrust. The sliding trim weight is not absolutely necessary; I prefer to use plasticine if any ballasting is required.

I was not too worried whether or not the *Parastar* would fly. I knew from experience that models of this type were generally quite stable and without any particular vice. The centre of gravity is reasonably well forward, about 50 per cent along the chord, (this position should be checked before attempting to fly the model) and the amount of decalage, with 3° positive on the wing and 1° negative on the tailplane, a quite stable set-up. I was also aware that such models could essay quite a tight circle on the climb; spiralling upward rather than describing the generous turning circle we see on models today.

Just as soon as a calm day happened along I took the model over to the local common. In just the merest breath of wind I tried a few hand launches. These were a bit uncertain, although they indicated that the trim was not drastically out, so I put 100 turns on with the winder to see what gives. Very satisfactory: at least the C.G., position was about right, which was a relief. I progressively put on more and more turns and still did not have to alter the original trim, the model climbing nicely in a right-hand turn and repeating the pattern with a rather larger sweep on the glide. The flights were typical of the pe-war period, with the somewhat steep glide giving emphasis to just what the folding propeller had to offer.

I was not altogether satisfied with the 10-strand motor. A good power balance is essential in this type of model, and it was not unusual for pre-war flyers to vary the make-up of the motor to suit varying weather conditions. Thus, a 10-strand motor would suffice in calm, warm air but in windy, cold conditions it would need to be increased to 12 strands to maintain a similar rate of climb. We do not go in for that sort of thing nowadays, and I doubt if it was ever really necessary. It is much better to match the power to the model and rely on a good quality motor in adverse conditions. An over-powered model will perform just as badly as an under-powered one; wasting all too much of the stored energy in prop slip. For general flying a good, well-trimmed model should perform quite adequately on a not too good motor, but a really good one is needed for competition work. It is better to try a new motor than to increase the number of strands. Anyway, I decided to stick with 10-strands and see what happened on full turns.

One advantage of the free-wheeler is that you can trim out the glide without getting the sort of vicious stalls that so often occur with folding prop models. This is because the free-wheeling prop has a dampening effect on a stall build up. Indeed what you have to guard against is an over-elevated condition, in which the model appears in a nice gliding posture but is actually descending very fast – almost a D/T effect. My experience with free-wheelers suggests a fairly generous glide circle, and this seemed to suit *Parastar* very well, although I felt the glide could be improved, perhaps with a slight variation of the fore and aft trim.

The first real try out the model had was at the large Bassingbourn field on the occasion of the St. Alban's Gala. The weather was perfect, with plenty of lift, and I was quite encouraged to see *Parastar* hook its first thermal. It went up in the warm patch in company with a number of modern models, against which it formed quite a contrast with its dangling undercarriage and stubby fuselage. It was a chance to see just how well the pop-up wing D/T worked. To my relief the thermal was neatly unhooked and the model floated safely down.

The beauty of the *Parastar* is that it combines a real old vintage look with a surprisingly good performance. Flights of 90 to 120 sec. should be possible with a good motor, given fair weather conditions, with no great trimming problems to overcome.

Just a final thought. Do not spoil that vintage look by using highly-coloured tissues for covering. British models of the period, particularly those of the Northern Heights and Blackheath Clubs, were either all white or had white flying surfaces and a black or dark blue fuselage. The prop would have a natural wood finish.

topical twists

by 'Pylonius'

illustrated by 'Sherry'

'It's all part of the training for the 'Aerolympics'.'

Rossi Powered

THE LATEST in nation-wide model flying contests is a 'Stop me and Fly One' event, launched by a large ice cream concern, with plenty of lolly for prizes. All can join in; so when next you are out on your flying field and the roar of your engines is drowned by a few jangling, jarring bars of *Greensleeves* or a Viennese Waltz, don't just bridle at the unfair acoustic competition, but get yourself a cut-it-out leaflet, and, of course, a conical cooling device.

The object of the contest is to produce a winning paper aeroplane design. This, however, is easier said than done, since some genius, way back in history, designed a paper aeroplane so simple, efficient and logical that, with all the great advances in aviation since, has never been improved upon. A few ingenious folds and you have an ideal delta wing shape with dihedral to suit, and stabilized by a seemingly self-balancing nose weight and tailpiece. No trimming is required, and however boring the subject matter on the school room paper, it becomes sheer delight when folded up and put to airborne use. This paper aeroplane, over the years, has been the despair of the schoolmaster, the joy of the pupils, and most young people's introduction to the aeronautic arts.

I cannot see the competition doing much to oust this old favourite.

Safe to Look Up

'Stuffed birds? Them aren't stuffed birds.'

'Well, they look like stuffed birds to me.'

'Don't be silly, stuffed birds can't fly.'

'They blinkingwell can. I saw them. They've got radios inside.'

'Couldn't they use some sort of whistle instead.'

'Daft. They are for controlling them – just like model planes.'

'Can't see why they should use stuffed birds – should leave 'em in the glass case where they belong, and fly model planes.'

The First of the Feud

'We wuz robbed,' is a cry we often hear from the contest field. Resentful voices tell damning stories of myopic timekeepers, cretinous judges, lap counting lunatics, and of deserving victories denied by bungling officials.

This sort of thing seems to be an inevitable ingredient in the human drama. You might be sure that when tame pteradactyl was matched against tame pteradactyl someone got whacked over the head with the hind bone of a brontosaurus for some imagined breach of the rules, and, though today, our form of complaint might be more civilised, our anger at being thwarted is just as great.

But why have competitions? If only we could just fly for fun all would be sweetness and light, if perhaps a bit stodgy, but the old ruinous competitiveness is there from the start. The first contest of all, as far as model flying was concerned, was fought mainly in the workshop – man to man – in producing a model that would actually fly. Whereas now, for record-making purposes, you need a calendar, a stop-watch would have been a bit of an extravagance in measuring that first hop. But, even at that, you might be sure some ten, rotating wing, loser complained of the model being pushed, hoisted or in some way unfairly levitated.

Nowadays, models levitate themselves all too ably, and what with the speed out of hand deceiving the laggard human eye, judges and timekeepers have a pretty grim time of it. Take for instance, the apparently simple business of timing a free flight model until it disappears from sight. Now, it is a curious fact of human optic variation that of any given number of people viewing a distant model (mostly the flyer's mates) it is only the timekeeper who loses sight of the model before a winning time is recorded. Of course, he'd feel a right Charlie if he admitted to this visual deficiency, although he may have felt pretty sure it had dived behind a tree some two minutes back. But with his confidence undermined, he'd conclude that what you actually saw diving behind the tree was just a liverish spot, the result of too much breakfast.

Out of Control

They are returning to the fold. I don't mean that they are taking up paper aeroplanes again, however munificent the prizes, I mean that some of the radio flyers are taking a respite from ulcer producing to savour once more the joys of free flight.

There are, of course, advantages in free flight, however old hat some may think it to be. For one thing, you are a bit more your own man. I mean you are not dependent on commercial gadgets to the same extent as radio. If your F/F model goes wrong it is back to the drawing board, but with radio it is back to the manufacturers. Moreover, a radio model is radio first and model second, with the humiliation of everyone knowing that you are no radio genius, but bought all the gubbins in a shop.

What is more, free flight keeps your wallet fat and your figure slim – radio otherwise.

1974 AEROLYMPICS

LAKEHURST. USA

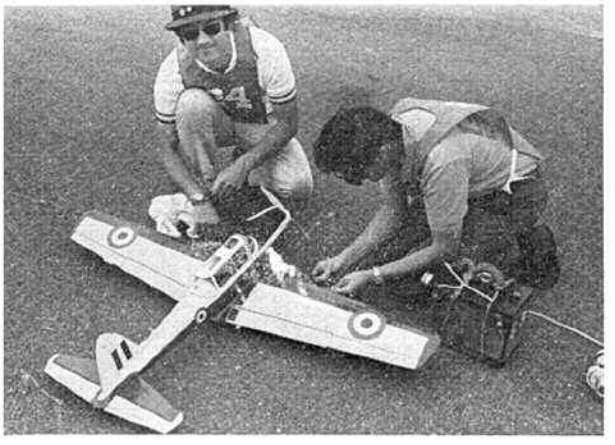
TEAM and INDIVIDUAL VICTORY FOR U.S.S.R. IN CONTROL-LINE SCALE CHAMPS

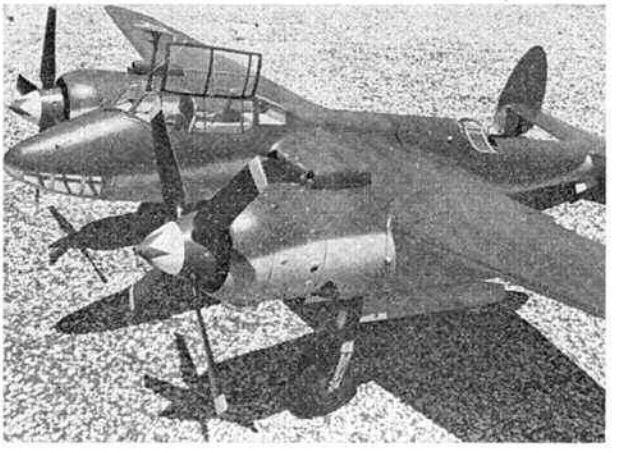
Flanked in heading picture by the largest hangar in the world and the National flags of participants is the preserved Grumman F-11F Tiger, from the U.S. Navy 'Blue Angels' aerobatic team, permanently exhibited at Lakehurst's gateway.

CONCERTED effort took 49 determined British modellers to participate in the A.M.A. combo of a triple World Champs, two Internats and an Old Timer Nats, despite the failure of an all-European charter. Thanks to Pan American, the hazards of model transportation were resolved, and thanks again to the W.R.A.M.S. and other New York Clubs plus A.M.A., our party was welcomed at J.F.K. air terminal and whisked for free by air conditioned coach to Lakehurst, 50 miles south in the New Jersey Pinelands. This vast airbase, 5 airfields in one, the original International Airport of the U.S.A., and scene of the Hindenburg disaster was approached with an air of expectancy. Five huge airship sheds, one of them able to gulp Cardington as though it were a minnow, and a commendably large area of dilapidated airfield promised ideal facilities. Alas, we were to be disillusioned.

This was, at the outset, the most impromptu set of events ever seen. Moreover, the spartan accommodation was unfavourably compared with that of any European Army/Navy, the temperature and humidity reached levels that were higher than the 90 degree forecasts, and the geographical spacing of HQ, Mess, Billet and Hangar were such that those without a car were faced with a daily assault course walk to the contest. But what disturbed most was the evident lack of pre-planning and the dependence of the 50,000 A.M.A. membership on just one or two of the HQ staff. As the week progressed one

Zlin Akrobats by Mick Reeves (upper) and Mike Gretz below left: were closely matched, and same size. Reeves' is 6 lb. for H.P 40, Gretz' 8½ lb. for Webra 61, each with working flaps, U/C, throttle, etc. Below: is the Stormovik by Poland's Podgorski, was 2nd in '72, tenth this time, was to have entered a Tu-2.



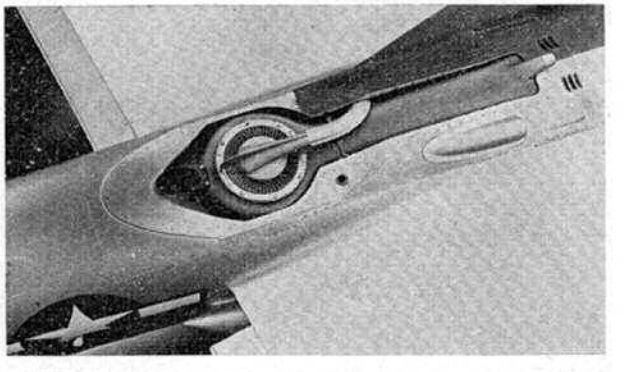


Vic Willson and Mick Reeves prepare the Chipmunk, 53 in. span, OS-40 uses 4 lines, one for throttle, another for flaps. Upper right: the Russian Tu-2 by Konchenko, beautifully surfaced with fine U/C, cockpit and prop detail. Below: it is Mike Stott's Grumman F-7F being restrained by Stott Sr. Has two OS-40s, 60 in. span, uses digital decoder system on lines for multiple operations.

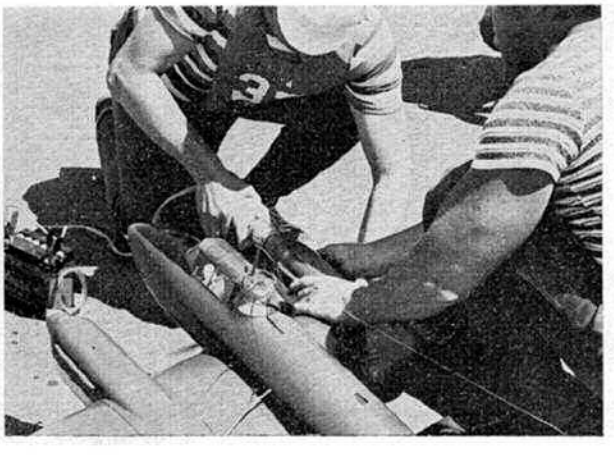
began to appreciate that where we pre-delegate, Americans improvise. As they have to travel vast distances (California is just as far from Lakehurst as is London) the 'on the spot' habit is inherent and improvisation becomes a skill in which Americans excel and accept. So by the time static judging – all 32 hours of it (!) was concluded on the fourth day after arrival, control-line scale flying was well established by a skilful field organisation.

The U.K. C/L team *(see R.C.M.&E. for the R/C event report)* was M. Reeves (Zlin 526A), H. Venables (Fokker EV/DVIII) and V. Willson (Chipmunk). Mick Reeves' Akrobat was in its third C/L World Champs. It won in 1970, was 8th in '72, and this time his static score was down by 10 per cent, illustrating tougher judging standards. Repeat appearances by a Russian Pe-2 and Polish Il-2 were similarly marked lower than before. In fact, the reappearance of the Il-2 was surprising as a Tu-2 had been entered. Was it dropped to avoid a clash of types as happened at Toulouse with two Stormoviks? This time the Russians had a Tu-2 but their star was the incredible Antonov 14. For three days Kramarenko overhauled every servo, contact strip, mechanical link and working part of his flying machine while Krasnourutski and Sirotkin fielded questions and incredible offers for the gems of engines which were freely studied in its nacelles.

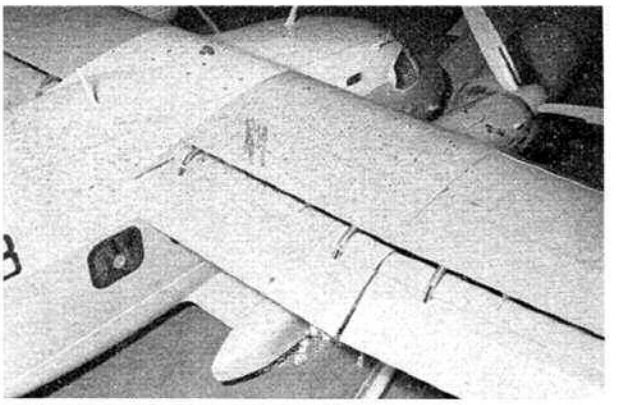
Nothing had been seen of the '72 Champ Ostrowski's entry. It was kept from view to the last moment and when it came, one respected why it was underwraps. A factory-fresh P-38 with exhaust driven turbines, electrically fired rockets and superb finish is not the kind of model that takes kindly to fingering – especially when it's 78 in. span. When points were posted the An-14 had just 167 advantage over the

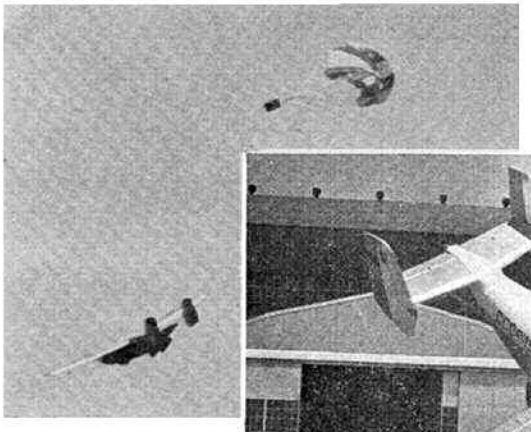


Right: ST-61 exhaust in Ostrowski's P-38 is ducted through scale turbines, other detail of this remarkable model seen below, with owner checking throttle operation. Below left: is Russia's Tokarev, quick to find use for Matty Sullivan's generously donated starter on his Pe-2. (Two Super Tigre 61s.)



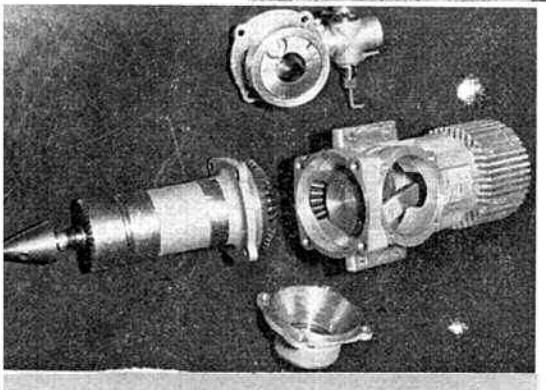
Kramarenko's Antonov 14 had everything from illuminated instruments to rollout slotted flaps (right) and drooping ailerons factory showroom exhibit that flies!

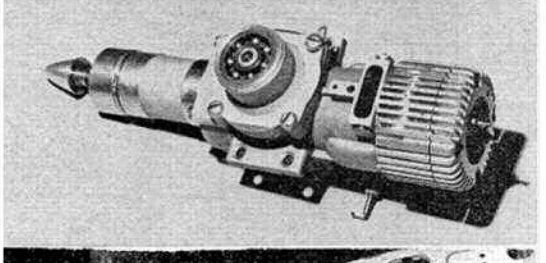


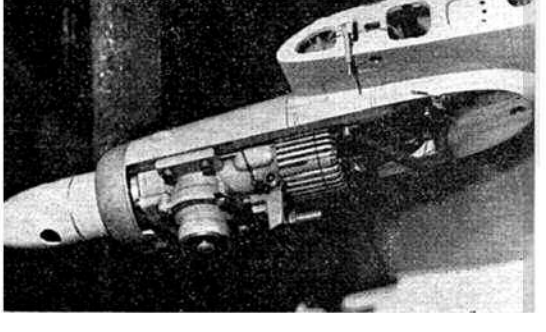


Triple supply paradrops were part of the An-14 repertoire, with flaps slightly depressed to reduce speed, and Krasnorutsky motors throttled to a hum.

World Champion and his grey/white flying machine, every part a functional precise replica of the full-size with perfect scale finish. Antonov signed the scale drawings as authentic!





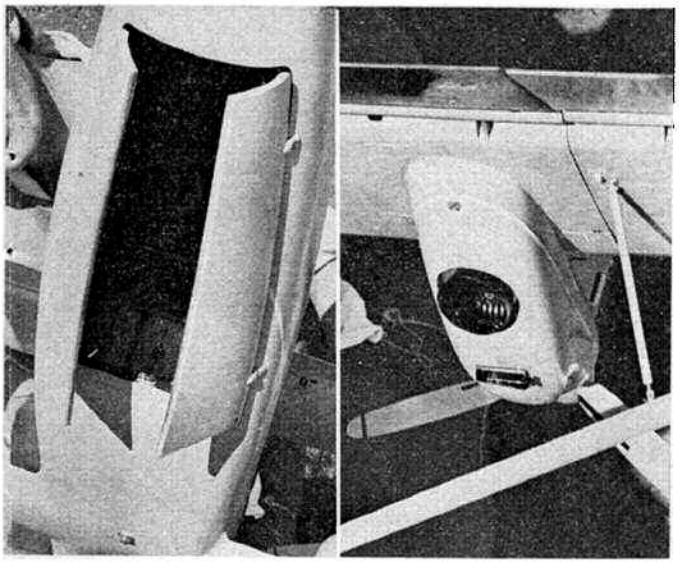


P-30. Not quite as devastating was Bill Harney's Zero, another crammed masterpiece. The U.K. static placings were 5th, 7th, 12th with every chance of improving in the flights.

Drawn first, 'Ven' Venables made a 'safe' flight with the limited options open to a W.W.I parasol, which broke the ice. It was significant that he scored much less than the Russian Pe-2 or the Polish Stormovik with their retract gear which immediately followed. Flaps, bombs and such refinements can boost a score quickly. The An-14 was all as expected. Parachutes, touch and go, slow flight, gear up, gear down for clearly best flight so far. Both the Stott Tigercat and Jurek's Mosquito went single-engined for moderate scores, then Harney's Zero nosed over, Willson's Chipmunk gave up at three laps and against a blackening sky laced with lightning Mick Reeves made a hasty (and gusted) flight which had 3rd best score thus far. The Tu-2 was on the line when the squall hit. Rain has a new meaning for some who hadn't seen the kind that bounces back 6 in. and has sea salt in it! This postponed the round effectively for a re-start next day.

Dried out, the Tu-2 re-opened proceedings without spectacle, to be followed by Mike Gretz and his Zlin which performed faultlessly to make what was to be the top scoring flight of the Champs. The P-38 called an attempt, and the Zero's undercarriage dropped when it shouldn't. With Round one over, the order was the An-14 well ahead of the U.S. Zlin.

Specially made for the An-14, and not, surprisingly, to be put into production, the 'in-line single' seen dismantled, assembled, and installed at left is the hottest single piece of modelling merchandise we've ever seen. 1:1 bevels transfer stub shaft motion to drive shaft, drum valve induction is via exhaust coupled throttle, twin plugs in recessed head, Schnuerle porting, and minimal frontal area are its unique features.



They saw the lot! Five judges, R to L, Zwahlen, Weber Thumpston, Aarts and Carroll judged all of C/L plus R/C at Lakehurst, 32 hr. on static, 30 hr. on flight, not a bad working week! Left: more An-14 detail, the cargo doors with parapaks inside and the nacelle where turbo exhaust is used for cooling.

was for overtaking the An-14. He was 93 pts. better than Gretz who was now pushed to 3rd and could hardly improve.

Round 3 opened with Mick Reeves first to fly. He need have no concern for the Tu-2, which (like the P-38 which suffered

TEAM RESULTS U.S.S.R. – 13818·5 POLAND 11682·5
U.S.A. 12345 U.K. 10673
CANADA No show

CONTROL-LINE WORLD CHAMPIONSHIPS (SCALE MODELS) F4B

Place	*Name*	*Country*	*Aircraft*	*Fidelity*	*Craftsmanship*	*Complexity*	*Static Total*	*Flight One*	*Flight Two*	*Flight Three*	*Total Score*
1	Valery Kramarenko	U.S.S.R.	ANT 14	1104·5	1117·5	473	2695	2600	2543·5	2680	5375
2	Jerzy Ostrowski	Poland	Lockheed P-38-L-5LO	1022·5	1036·5	469·5	2528·5	—	2092	—	4620·5
3	**Michael Reeves**	**U.K.**	Zlin Akrobat 526A	867	750	258·5	1875·5	2167	2564	2698	4573·5
4	Michael Gretz	U.S.A.	Zlin Akrobat 526A	791·5	766·5	247·5	1805·5	2722·5	2456	2505	4528
5	Victor Konchenko	U.S.S.R.	Tu-2	825	834	428	2087	2090	2269	—	4356
6	Ivan Tokarev	U.S.S.R.	Pe-2 '	596	634	390·5	1620·5	2419	2467	2321	4087·5
7	Bill Harney	U.S.A.	A6M5 Zero	902·5	998	317·5	2218	1366	1858	1699	4076
8	**Horace Venables**	**U.K.**	Fokker EV/DVIII	717	696·5	260·5	1674	1206	1924	2313	3987
9	Mike Stott	U.S.A.	Grumman F7f Tigercat	583·5	496·5	289	1369	2019	1475	2372	3741
10	Lech Podgorski	Poland	I1 2-3M	694	612	352	1658	1805	1947	1864	3605
11	Zbigniew Jurek	Poland	De Havilland Mosquito VI	668·5	553·5	342	1564	1438	1893	—	3457
12	**Victor Willson**	**U.K.**	De Havilland Chipmunk	266·5	224	141	631·5	—	1481	1414	2112·5

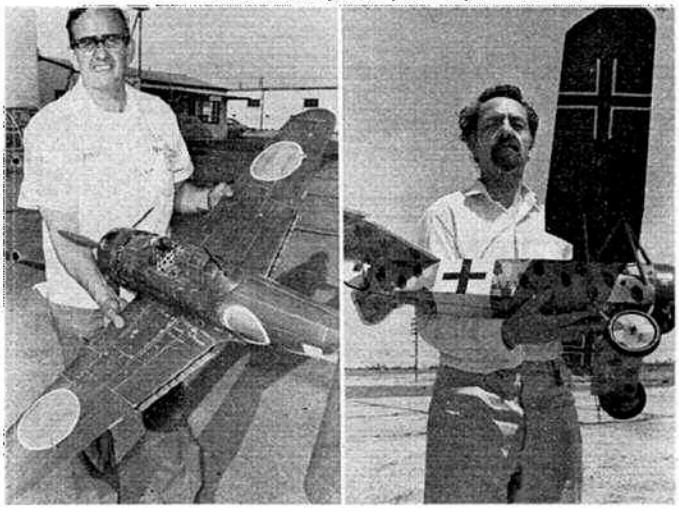
then the Tu-2, Reeves' Zlin and the Pe-2 following.

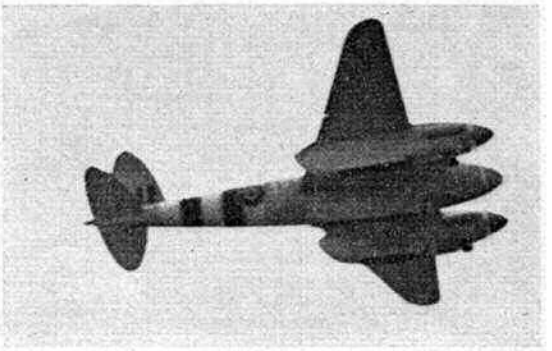
Round 2 found improvement in all scores except the An-14 and for good reason. The Russian transport was accelerating for take-off when the wheels retracted! However, there is so much power in those engines, Kramarenko was then able to STOL it! Mick Reeves concluded a fine flight with some free style aerobatics to ease the tension and Venables developed a blipping motor taxi control that sounded just right, while Vic Willson got in his score with the weighty Chipmunk. So too did Ostrowski with the virginal P-38 but uneven motor control and main gear collapse ruined whatever chance there

Bill Harney's Zero, loaded with detail; 'Ven' Venables' Fokker EV, admired for throttle control and camouflage; and Jurek's Mosquito, U/C not quite retracted.

under the pull-test) was retired and if he could score 2,653 he could even leapfrog to 3rd place. By revising his options, showing excellent inverted and loops plus a landing in very gusty conditions . . . . he made 2,698, within 48 pts. of beating the P-38s total scores! The An-14 further improved its total, and Mike Gretz made a fine try to restore his 3rd place, but he had to give best to the older and lighter Zlin. Remarkable flights by 'Ven' and the DVIII where everything went exceptionally right, and for Mike Stott at last with the troublesome Tigercat, pulled these two up from under the luckless Poles. The Mossie finally went out by ramming its own toolbox!

So in the reckoning we were 3rd, 8th, 12th in individual, 4th out of 4 international teams. We're pleased, the results are a fair reflection but we're also sad that so few Nations bothered to enter and one that did failed to show. R.G.M.





World Champion Ryszard Czechowski from Krakow, Poland. Above: Polish team collect Langley Trophy.

POLAND SWEEPS ALL AT INDOOR WORLD CHAMPS

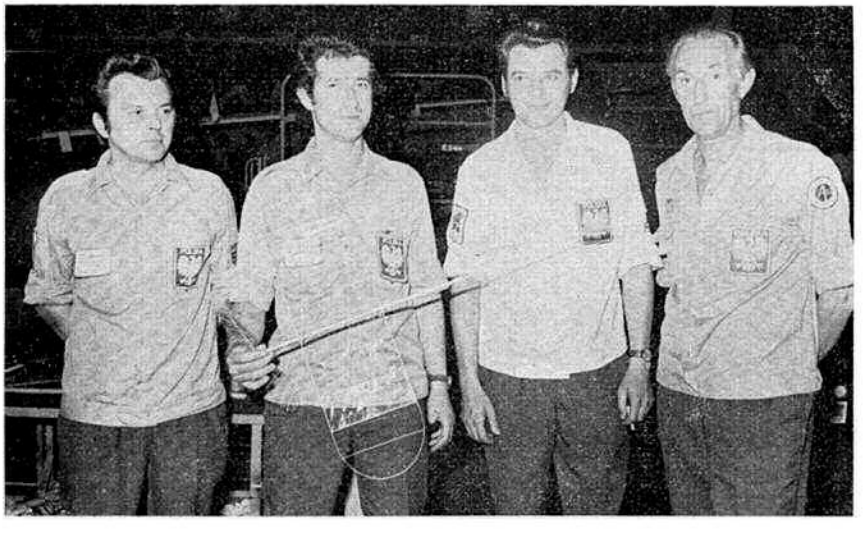
LAKEHURST and its five gigantic hangars was the Eastern Seaboard centre for lighter than air craft. Today, the vast *Hindenburg Hilton* and its companion pair of black metal hangars are used for other purposes near the entry to the Lakehurst complex, while a mile away, across the apron and runways that once saw the pride of the U.S. Naval Air Squadrons, there are two silver cocoons. They stretch a thousand feet long, their ogival section and windowless smooth exterior giving them the appearance of some gigantic form of wartime refuge, for their shape is unlike that of the early and better known airship – or Zeppelin – sheds.

The 1974 World Champs took place in one of these horizontal silos known locally as Hangar No. 5. One should be correct and say in *part* of the hangar, for instead of fodder, the silo was busily occupied with a wide variety of fixed and rotary wing aircraft under maintenance. Further, at least a third of the floorspace was caged by a ten foot fence and held stores plus the huge Gondolas from Goodyear's Z.P.G airships, the last of the elephantine semi-rigids, now in store for a future Lakehurst Museum. Around the brick walls of the sideline offices were large notices that jarred the memories of many competitors (for the average age was over 40) directing workers to *Air Raid Shelters* still as prominently warning as though painted yesterday! Complete lack of side windows and reliance on widely spaced bulbs at high wall level made visibility a strain until one became used to the low light value, and then became aware of Hangar No. 5s differences.

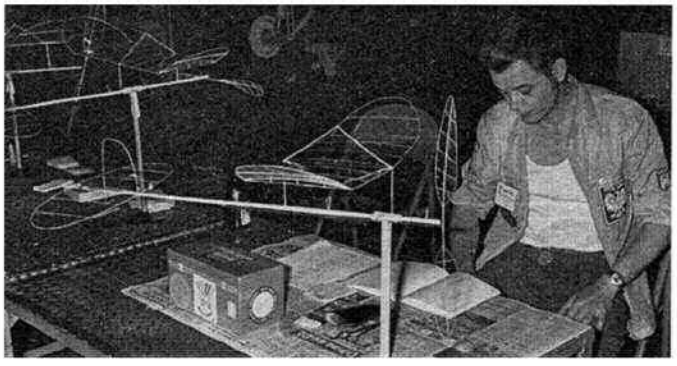
First, the Greek arch cross section, though producing a statistical 185 ft. height at its peak, effectively cut-off a large segment of what is ordinarily usable at, say, Cardington. Second, without apparent access to gangwalks, or permanent staff riggers, there was no hope of manual recovery from a hang up. Third, the structure was wooden, and as time would tell, almost insectivorous in nature as it had a nasty habit of clinging onto its prey as though to hold it forever when contact was made.

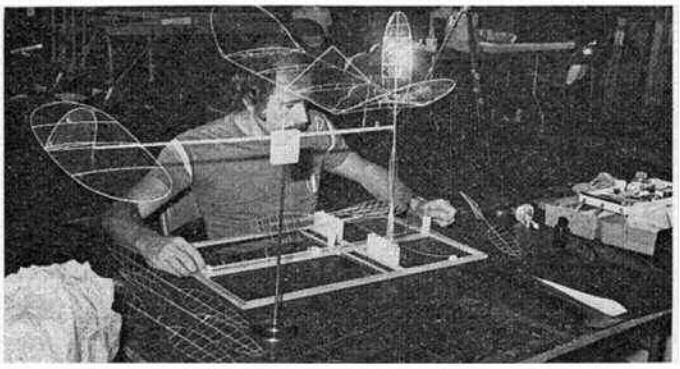
But the volume was vast, and had in its time seen thousands of historic indoor flights for it has been a valued facility of Eastenors over the years, and is the 1972 Champion, Pete Andrews' own home base. With 90 degrees outside, the first impression was of a cool interior but this was deceptive. Humidity was high, and the air 'treacly' by British standards.

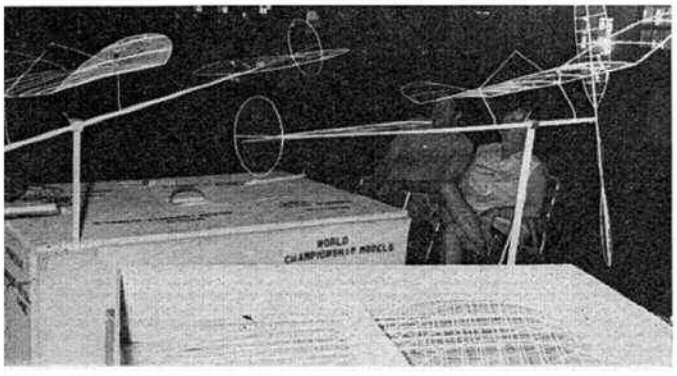
It was into this atmosphere that the nine full-teams and two individual representatives from the Netherlands and Australia joined their hosts on July 2nd. Once more there was no Hungarian team, and three from '72 did not attend, Rumania, France and Yugoslavia. To compensate, Switzerland came to learn and we hope their experience, like that of Japan in '72 will encourage others.

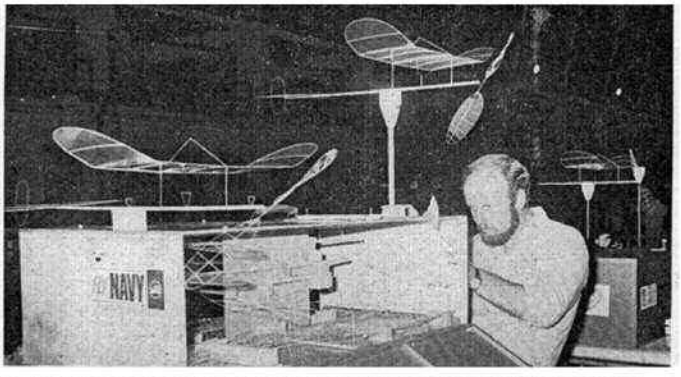


Victorious Poles at sweltering Lakehurst. Poland originally offered to host the 1974 Champs, the team may well have wished for cooler European Halls but their consistant high times showed superiority from round one. (L to R) Edward Ciapala, R. Czechowski and Sylvester Kujawa with experienced manager Zdzislaw Szajewski (right).









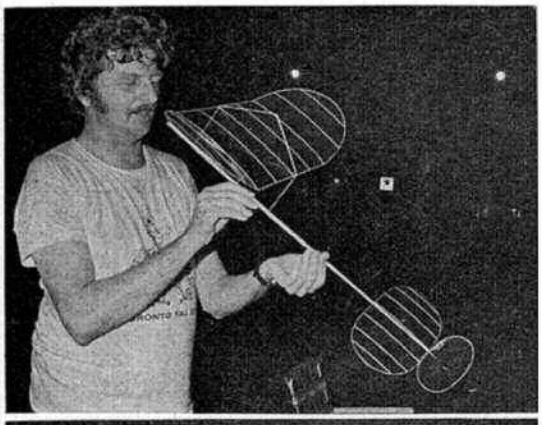
The very nature of an Indoor model makes it the most fragile man-made device imaginable.

Span is restricted in the F.A.I. class F1D to 650mm, or 25.59 in. and the weight must be at least 1 gram or 0.0353 ounce. Since duration is the target and even thousandths of ounces are critical, it will immediately be appreciated that the miniscule structure, though braced with finest nichrome wire and resilient to minor jarrings, is one heck of a problem child when it comes to transportation. Typical experience was that of Laurie Barr. He packed eight models. They were loaded under supervision into a 747 'Igloo' along with team-mate John Blount and Reg Parham's boxes at London (Heathrow) and on delivery at the Kennedy Terminal New York only two were wholesome! John lost three models, Reg was lucky. So the spare pre-practice day after arrival was very much taken up with repairs. Fresh film was made on the billet floor, a polythene sheet making a shallow tank sunk into a wooden frame and after a somewhat stressing start, the U.K. team restored status as best it could.

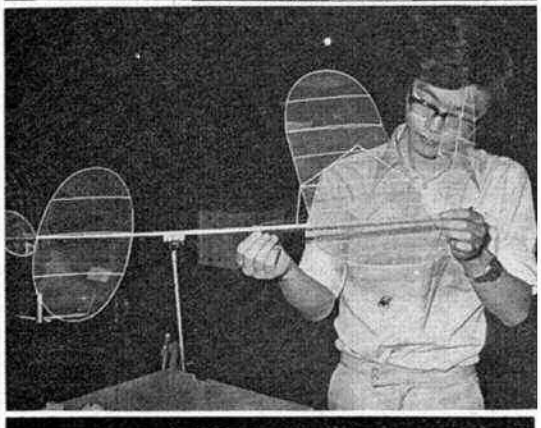
Event Director, Bob Champine had the contest arrangements pre-planned but somehow along the line it was forgotten that modellers needed to work at their airframes and be able to see what they were doing! Here a little International improvision took over, and the U.S. Army maintenance benches, lights and stools were taken over by quick impressment.

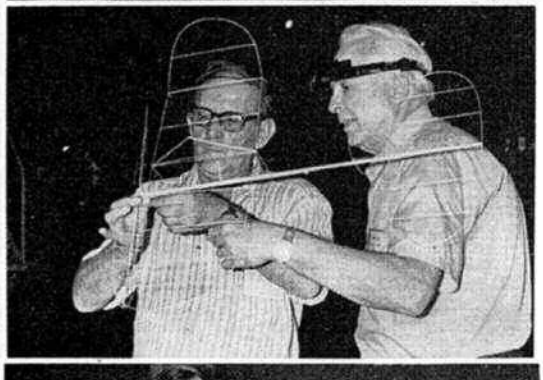
That was the site, and we hope, a word picture of the atmosphere, – now to the event. The Championships were

Top left: Man at work—Kujawa (4th) studies his performance tables, every flight recorded with motor performance and size. Top right: A. Frioli of Italy checks his range of props, six in this pic. Lower top left: Reg Parham's angled wing struts allow symmetrical wing to carry off-centre fuselage stick. Lower right: is 1971 Champ Jiri Kalina of Czechoslovakia with his model box/work bench. Below Jiri is the jubilant Californian Larry Cailliau, after his last flight which made sure of 2nd place for U.S.A. team. Right: Pirelli headgear, (and in the case of Reg Parham who was bravest), Pirelli shorts, on the U.K. team of Reg, John Blount, Manager Butch Hadland and Laurie Barr. Fourth spot was a credit to them.



Left: John McGillivray, Canada's free flight all rounder, checks assembly, unlucky not to break 30 min. twice, came 11th. Below left: Japanese newcomer and youngest competitor 19 year-old Toshiaka Minagawa did well at 17th, above are his teammates S. Nonaka and J. Sakoda.





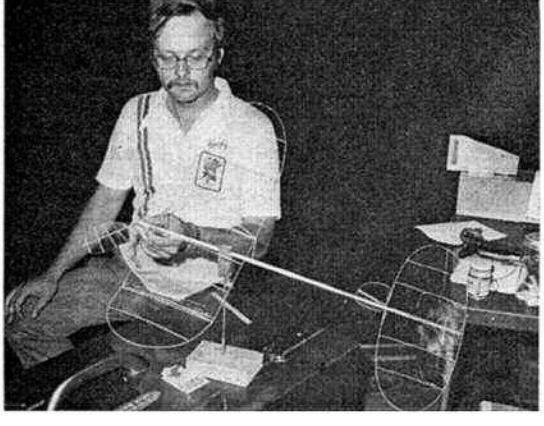
scheduled to have practice sessions all day Tuesday, July 2nd, and each morning of Wednesday, Thursday, Friday with two rounds, each of 3½ hr. to start from 1 p.m. through to 8 p.m. in those afternoons. Competitors in this class can make six flights, the better two of which score. They may use any number of different models but *every* launch is a flight and only a collision gives one the opportunity for a second attempt.

British experience was to find the air remarkably dense, because of high humidity, and the first cure for this is to increase the motor cross section. An average standard is .043 in x .055 in. stripped by rotary cutters from stock flat rubber. Expert modellers carefully check each made up motor for its cross-section, weight, torque on specific winding (approx. 2,000) and log performance results in a record book. Otherwise, one is more than physically groping in the dark when flying indoor!

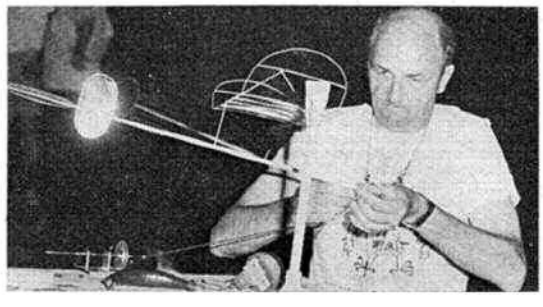
Practice claimed many models. Drift (until an end door was finally closed) and the arched walls were hazardous. One answer is to check out on a half-motor, using a wire spacer to balance the weight of replaced rubber and getting equivalent torque from 50 per cent turns to assess climb. Theoretically an 18 min. flight on this device should mean 36 min. on a full motor. Effectively these tests made by Laurie Barr and the U.K. team were not confirmed.

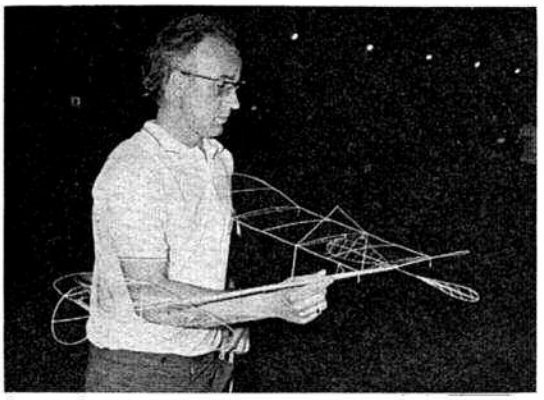
When Round One eventually started, after an hour of 'Who'll go first', John Blount broke the tension and was first to be hung up only 10 min. 41 sec. later! He was to repeat the misfortune in the evening for 12.14. Reg and Laurie were better off but way below their best, and of all the teams, only one could really smile after the first two-rounds of day one, and that was Poland who had all three members over the half-hour barrier.

Day two saw a change with both the Czechs and U.S.A. getting all their members over 30 min. for at least one flight but the Poles were not displaced, though Kujawa was suffering the hang-ups of lesser mortals. John Blount scored 36 sec. after a stalled touchdown on Round Three, but got away for 29 min. plus on his fourth, while Laurie Barr fell foul of an adamant timekeeper when said to have steered with the Helium balloon line for over the 15 sec. permitted at one time. But this was really nothing to what was to come to Reg Parham on the last day in Round Five.

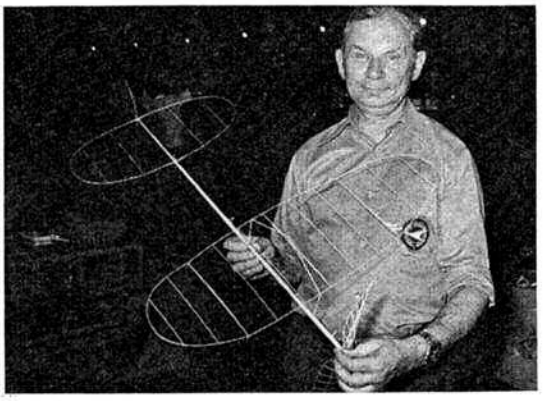


Above left: John Triolo and Manny Radoff attend to Boyd Felstead's Australian entry. Lower left: Bucky Servaites, U.S. all-rounder, four times the Grand Nat'l Champ, came close to being a World Champ this time, was 2nd. Below: Another all-raunder, Mike Thomas working on his motors to improve his times.





German Champion, Horst Tiemann found Lakehurst tough, was eventually placed 27th.



Werner Wetzel of Germany, best of his team at 21st.

Things had been going well for almost all teams. The Poles were dominant. Czechowski had made 34 min. in four out of five launches, his team-mates close in support. Most were beginning to find the Lakehurst formula and for some Nations; Japan, Switzerland and Germany there were new 65cm class records. Reg Parham was high in the arches along with '71 Champion Jiri Kalina of Czechoslovakia, each set for a good light. British optimism extended to a 40 min. flight by Regl Then the rains came. *And how!*

Control Line outside had a twenty minute forecast of a line squall with hail approaching Lakehurst (which still caught everyone napping on the circle) but indoor in its enclave was perhaps thought to be sheltered. Certainly a windowless cantilever structure like Hangar No. 5 *appeared* adequately protective. Alas no! Within seconds the whole central area of the vast shed was curtained off from the rest by a sheet of water, taking with it the airborne models and causing havoc on the benches. Disaster was never more plainly evident to the stricken participants. You don't, – *can't* pick up an indoor model and run for shelter *inside* a hangar! Even now we believe that much of that rainfall was internally created as humidity went 'over the top' for nowhere could any-

LANGLEY TROPHY TEAM AWARD

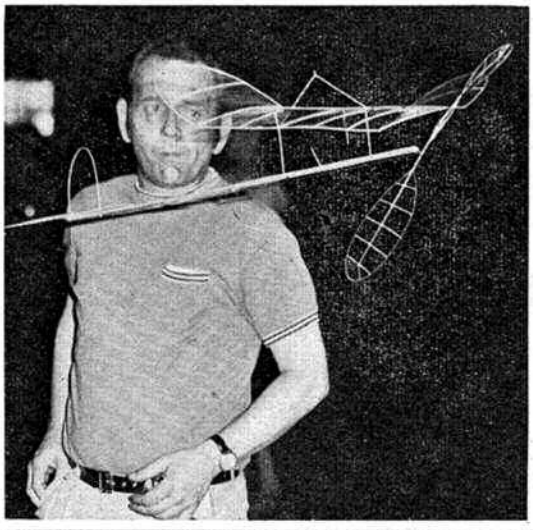
	Country	Points		Country	Points
1st	Poland	203:55	7th	Italy	158:52
2nd	U.S.A.	194:10	8th	W. Germany	155:37
3rd	Czech.	192:00	9th	Japan	138:41
4th	**England**	**181:17**	10th	Switzerland	111:06
5th	Finland	169:30	11th	Australia	48:38
6th	Canada	168:01	12th	Holland	42:46

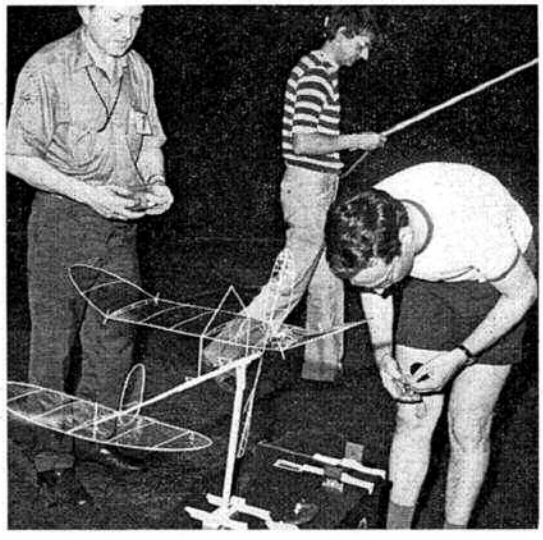
1974 INDOOR WORLD CHAMPIONSHIPS

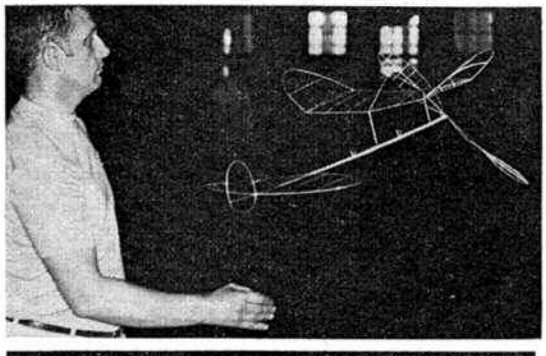
FAI Class F1D

C.S. Rushbrooke Trophy

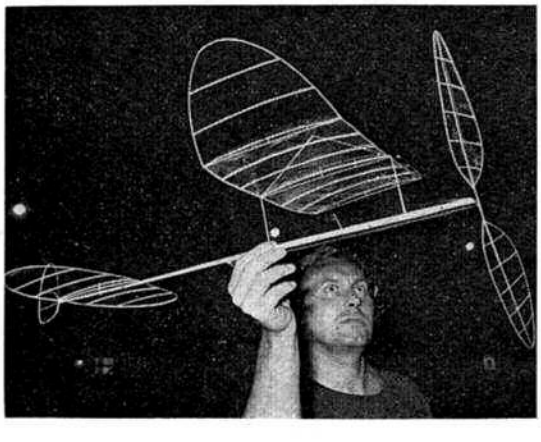
Place	*Name*	*Nation*	1	2	3	4	5	6	*Best* 2
1	R. Czechowski	Poland	34:27	34:50	29:01	34:56	34:53	33:34	69:49
2	B. Servaites	U.S.A.	33:59	6:56	33:40	32:44	25:54	33:51	67:50
3	K. Rybecky	C.S.S.R.	21:51	31:32	14:49	19:39	30:27	35:44	67:16
4	S. Kujawa	Poland	29:45	32:34	9:39	28:26	34:32	9:55	67:06
5	E. Ciapala	Poland	27:52	31:01	32:49	17:43	34:11	30:25	67:00
6	M. Andrews	(1972 Champ)	31:12	20:23	33:56	0:14	32:03	31:10	65:59
7	E. Chlubny	C.S.S.R.	22:38	31:23	23:52	28:55	26:47	33:04	64:27
8	E. Stoll	U.S.A.	30:56	26:07	28:59	8:43	29:01	33:08	64:04
9	**J. Blount**	**U.K.**	10:41	12:14	0:36	29:01	28:25	33:16	62:17
10	L. Caillau	U.S.A.	6:54	8:02	33:31	26:19	13:24	28:45	62:16
11	J. McGillivray	Canada	29:36	19:15	32:22	12:20	28:54	00:15	61:58
12	**L. Barr**	**U.K.**	24:41	21:07	28:48	13:58	26:49	32:22	61:10
13	J. Kalina	C.S.S.R.	15:05	8:33	33:02	12:35	27:15	26:45	60:17
14	P. Nore	Finland	15:06	20:02	28:08	31:43	2:42	26:38	59:51
15	**R. Parham**	**U.K.**	23:48	0:20	21:32	28:20	28:11	29:30	57:50
16	H. Raulio	Finland	22:00	23:17	31:20	25:54	24:24	25:17	57:14
17	T. Minagawa	Japan	21:15	27:13	28:52	15:58	21:41	19:13	56:05
18	A. DeMello	Canada	0:14	6:33	24:35	25:56	15:51	29:07	55:03
19	C. Cotugno	Italy	25:29	0:05	17:40	26:16	26:06	28:10	54:26
20	A. Frioli	Italy	7:48	25:22	12:30	15:42	19:32	28:44	54:06
21	W. Wetzel	Germany	12:53	0:20	27:30	21:10	25:21	26:24	53:54
22	K. Vogler	Germany	21:51	22:07	27:06	26:29	8:51	23:55	53:35
23	H. Erofejeff	Finland	14:58	18:51	19:54	24:16	24:53	27:32	52:25
24	M. Thomas	Canada	23:01	6:34	13:22	26:48	11:29	24:12	51:00
25	F. Migani	Italy	19:45	18:54	26:36	7:48	23:44	9:19	50:20
26	B. Felstead	Australia	21:55	25:45	21:12	0:05	22:51	17:37	48:36
27	H. Tiemann	Germany	21:07	23:18	21:35	21:48	24:50	8:38	48:08
28	D. Siebenmann	Switzerland	20:45	0:17	15:45	22:00	0:14	22:07	44:07
29	C. Wolthoorn	Netherlands	21:15	21:31	16:17	16:58	12:04	9:26	42:46
30	F. Tapernoux	Switzerland	19:04	14:37	19:29	2:14	12:17	22:29	41:58
31	J. Sakoda	Japan	15:13	—	17:36	6:55	20:12	21:37	41:47
32	S. Nonaka	Japan	19:49	15:58	20:16	20:31	16:17	0:04	40:47
33	W. Heise	Switzerland	6:32	1:19	2:14	14:44	5:46	10:17	25:01







Above: Hank DeKat, who older readers may recall from Eaton Bray International days, managed the Dutch team of one, Cornelius Worthoorn, who is sorting out his rubber. Above left: Czech Eduard Chlubny releases for his last and best flight of 33:04. Left: John Blount launches for a hang-up in the rafters in the first contest flight at Lakehurst.



one show us how it got in from outside. And outside . . . . it was straight from a John Wayne 'South Seas Hurricane' epic.

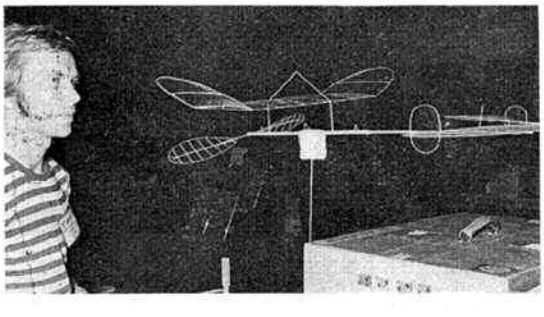
So the 'last' day became the penultimate day and those caught out were permitted a re-fly, along with others unflown in Round Five plus everyone for Round Six, on the Saturday (otherwise scheduled for an Open International to start).

Water was still puddled on the floor, despite the 90 degree temperature when play resumed next day and perhaps it was the sight of that H_2O that encouraged the British models, for each was to turn in a personal Lakehurst 'best' on the final sixth round. John Blount made a fine 33:16, Laurie Barr 32:22 and only a drift in the wire caged store area which demanded a spot of steering checked Reg Parham at 29½ min. For the host U.S.A., Cailliau and Stoll each pulled back with better flights after disappointments to secure a second place to Poland, but it was Rybecky the Czech who made the best flight of all to score 35:44 in the last moments of this memorable Champs. Strangely this was within three seconds of his best at Cardington in '72 where he was second.

The Champions decided, Lakehurst was not over. More long sessions of Open Class and record attempts wound up the week, and we shall report on the strange variety to be seen, next month.

For the teams it was pack for home – and yet more hazards therein. The patience of the indoor modeller is infinite, and needs to be when travelling. We hope John Blount will have replaced his mashed parts for the August 17/18th Indoor Nats at Cardington, – where, if all Internationalists' wishes are to come true, the '76 World Champs will take place in the pleasant temperate climate of Bedfordshire. R.G.M.

Above left: Francois Tapernoux kept a Swiss scullcap on (for luck?), learned a lot by misfortune and tuition of experience at Lakehurst. Left: Italian Ferdinando Migani about to release for a hang-up in the arched rafters. Below: Penti Nore, best of the Finns, still only found form on three flights, was 14th.



An American Came . . .

Dave Clarkson catches up on the control-line scene in the U.S.A. from Charlie Johnson

Charlie Johnson caused quite a stir when he flew his Nemesis II combat model at the Nats. The sight and sound of a hot '40' running on a pen bladder tank, giving a perfect run, certainly turned many heads and quite a revelation it was too after seeing British attempts at 'Class B' combat.

AN UNEXPECTED but most welcome entry in the '74 Nationals at combat was American Charlie Johnson, from San Diego in Southern California. Charlie was fifth at last year's U.S. Nationals in A.M.A. Combat, so he is no mean flier. Perhaps the most impressive machine I have ever seen was hoisted every now and then during our Nationals by Charlie – an A.M.A. size combat model, the *Nemesis II*, powered by a K&B 40F. One indicator of the U.S. combat scene is the fact that Charlie once won a $300 first prize combat contest (yes £125!).

Anyway, talking to Charlie – your typical U.S.A. control-line fanatic – was most educational because besides combat he also flies Rat and Goodyear (events we know) and the Californian specialities Slow Rat, Slow Combat, etc. As expected, all U.S. control-line seems to be flown using glow-motors essentially because this is traditional, but also because nitro is cheap at $5.80 per gallon (approximately 35p a pint) and so are glow motors; besides which, glow motors on 50-70 per cent nitro are faster than diesels (don't last long, but they are faster).

Goodyear

To win these days requires the use of a Rossi 15N with re-worked head on a 6¾ in x 4 in. prop and 70 per cent nitro (speed) fuel. First flick starts are still essential, as are truly well built strong models that will withstand the 115-120 m.p.h. speeds and 26-28,000 r.p.m. that the engines obtain. The Americans are strong on scale fidelity, not permitting side cheeks or any motor cowling behind the motor, and also insist on 2-wheel undercarriages.

A.M.A. Combat

A rather 'Kamikaze' event with an average fighting time of less than 30 seconds per bout! The 'kill' system is operated whereby a string cut immediately wins the bout, and so the following-style 'nibble cuts' is unknown. Models used (like Charlie's *Nemesis II*) are built to give ultimate flying characteristics with little regard to crash resistance – if you crash, you lose – especially since no spares are permitted. Speeds of 110-120 m.p.h. are common using high nitro fuels in typically a Super Tigre G21/35 FI twirling a 9 x 6 in. wooden prop. With speeds like these, safety rules (such as no mechanics inside the flight circle, etc.) have to be enforced – and are.

Rat Race

Perhaps the ultimate control-line event. For safety reasons it is now flown mostly two-up as speeds are often above 150 m.p.h. following the arrival of Scheurle-port 40s like the H.P., O.S., K&B, O.P.S. and Super Tigre X series, with the first on the scene, the H.P., still reigning supreme. Again high nitro (speed) fuels are universal and many fliers use Bartels G.F.R.P. props particularly the 10 x 8½ in. pylon racing prop clipped to 8-8½ in. dia. Models are speed models with an undercart, i.e. fully-cowled motors with, in California, inverted motors and rearward wheels.

Slow Rat

A really friendly sounding event in which whipping is still allowed. This is not an A.M.A. event – the A.M.A. now enforce strict flying standards as per F.A.I. Team Race The rules call for 35 size motors running on suction feed in 300 square inch wing area, profile fuselaged models equipped with a 1 oz. (28 c.c.) tank. Lines and laps are as for our class 'B' team race, so current American standards of 105-108 m.p.h for 36 laps (heats) or 47 laps (finals) are excellent. The Super Tigre G21/35 FI is again popular in this event, which is flown over grass.

With their ('Kamikaze'*) approach to combat, it remains to be seen whether the Oliver powered *Titan*, like Richard Evans used to humiliate Vernon Hunt with in the Nats. semi-final, will be outclassed by the Americans when they really have a go. Charlie is threatening to return seriously next year with a platoon of shock-troops after this year's scouting mission, so maybe we will know soon (i.e. before the 1976 Combat World Championships). But if we run Rat again (no silencers, please!) I would give my left arm to see an American Rat fly. As far as Goodyear goes – even Dave Rudd would be speechless!

John O'Donnell's

FREE FLIGHT COMMENT

Ray Monks with balsa-box fuselaged F.A.I. power model, which he used at the Area Centralised Meet – he also used another version with a Laurie Burrows' glassfibre fuselage. This latter version topped the two-day event at Scunthorpe.

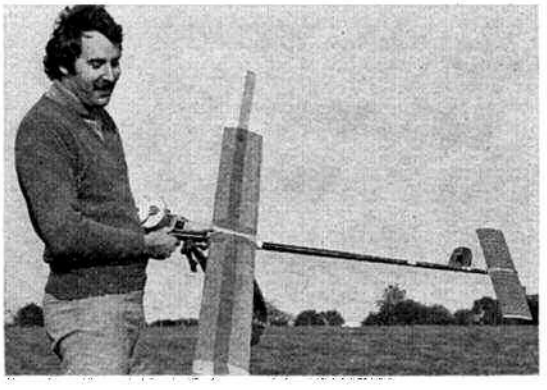
THESE 'COMMENTS' are very much mini-length due to the requirements of the World Championships reports, and at the risk of boring non-contest minded readers, we cover some of the domestic events before they read too much like ancient history.

The first such event is the third S.M.A.E. Area Centralised Meeting held at various Area venues on May 5th. From what I hear the weather was bad over much of the country, particularly the eastern side. John Godden reported that the Northern Area had cold, windy and occasionally showery conditions at Driffield, and scores in keeping. Every glider flier had a flight of under a minute! Les Bramley reported similar weather at Watton, plus an entertaining account of Barry Halford surviving a series of D/T timer failures in F.A.I. power to record his Area's best score.

Elsewhere, the weather was a little better and the winning scores were respectable enough. Dave Hipperson flew with the Western Area at Wroughton and won the **Gamage Cup** for open rubber with a 5:23 fly-off. The model landed near a well populated nature trail in otherwise open country and could not be located! Derek Wain was second with a fly-off of 4:41 at the same venue. Third place went to Trevor Grey (3:31) flying at Ashdown Forest in weather that *Seadog* laconically described as 'diabolical'. The only other flier to max out was last year's winner John Carter who spiralled in at Chetwynd on the crucial fly-off. Chetwynd appeared to have been luckiest with the weather, and Pete Harris seized the opportunity to win the **Halifax Trophy** for F.A.I. power. He flew a straightforward model recently re-engined with a Rossi, and managed a 20:28 total despite an early D/T on one flight, and being a few seconds 'short' on another. Bob Bailey was second, presumably flying at Bassingbourn, while the next two places both went to Southampton members flying at Beaulieu, John Hook and last months cover personality Phil Ireland. Plugge point considerations were undoubtedly contributory to there being a fairly respectable entry in this event – 38 compared with ten less in the Gamage.

The Open Glider results were very close, and could so easily have been very different. Tony Young won with a 4:15 fly-off at Beaulieu, just one second ahead of Dave Greaves who used a very conservative D/T setting at Barkston Heath, perhaps through not realising that the wind had dropped. Third place went to Brian Nicholson flying at Chetwynd and clocked off o.o.s. at 3:20 with everyone except the timekeeper still being able to see it. Some even saw it D/T at around 5½ minutes! Incidentally, the N.W. had a five-way glider fly-off (thanks to there also being a domestic event that some flew separately) but only Brian found lift! Throughout the country there were 70 fliers in glider – but only eight trebles.

Brian Nicholson flew at Chetwynd and placed third in the National results of the S.M.A.E. Area Centralised competition. Flew out of sight of the timekeeper too soon. . . .



One week later saw the **Vulcan's Rally** at Elvington (reported in my July column) and also the S.M.A.E. 'Novices Easy B' indoor event in Cardington. The latter meeting was a double innovation, providing not only formal competition in Cardington (as distinct from the usual trimming sessions) but also one with restricted entry. Anyone who had previously won any Indoor Rubber duration event was excluded from entry, together with the present British team members.

This combination made for a very successful and quite well supported event. The Indoor Subcommittee were justifiably pleased as attendance and activity were well above the 'norm' for Cardington. Dave Yates of Wigan supplied me with a report that Laurie Barr augmented.

Dave estimated the turn-out as 40-45 people of whom 19 flew in the contest. During trimming it was obvious that the standard was going to be high. Most models seemed to be variations on Laurie's kit or the design he had published in *Free-Flight News*. The Wigan participants were the only ones to use tip dihedral.

The contest ran from 12.30 until 6.00 and for the first hour or so there was sufficient drift to produce 'hang-ups' in the girderwork. The experts did a good job of recovering using 'met balloons'. Scores during this period were around eight minutes. Most of the high times came between 2.00 and 4.30 when the top of the 'shed' was lit by the sun, and the drift changed direction and reduced.

Butch Hadland started competing late and soon proved to be far and away the best. He flew Laurie Barr's 'F.F.n' design, lightly constructed to weigh 0.034 oz., and possessing a medium-fast climb and a long cruise. He had two flights over 12 minutes and was an easy (and worthy) winner. His model and flying showed the value of much precious flying at Brize Norton and Cardington.

Pete Farrimond and Dave Yates progressed through rubber and propeller changes to eventual second and third places, with best flights of just under ten minutes apiece. Third place was in fact a tie between Dave, and Laurie's son Andrew, both totalling 19:04 for their best two flights out of five.

Many models had trouble on launch, due to structural distortion when fully wound. This is particularly true of the lighter models. One interesting incident occurred when an over-powered model 'dead-sticked' at considerable altitude, only to have the rubber detach itself from the prop shaft and dangle from the rear hook. The model then descended backwards canard-fashion in a stable three minute glide!

Prizes were S.M.A.E. plaques, with additional awards of Indoor materials donated by Laurie Barr. Repercussions of this meeting include much increased interest in the forthcoming Indoor Nationals at Cardington, August 17/18th. and the sub-dividing of the Easy B event into Expert and Novice classes. Clearly modellers like contests in which they 'stand a chance'.

The next contest was the **British Nationals** at Little Rissington which I reported at some length in last month's *Aero-*

Modeller. Nevertheless certain comments are still of interest.

Free-flight contestants found that a new procedure had been instituted for flight cards. These were issued 'blank' apart from the competitor's (Nationals entry) number that was filled in as the card was issued. The flier was expected to add his name, address, club and other details. This is clearly an 'organisation and methods' approach to reduce the organisers' clerical work, and to avoid the wastage of effort and materials normally extended upon the many pre-entries that never actually materialise.

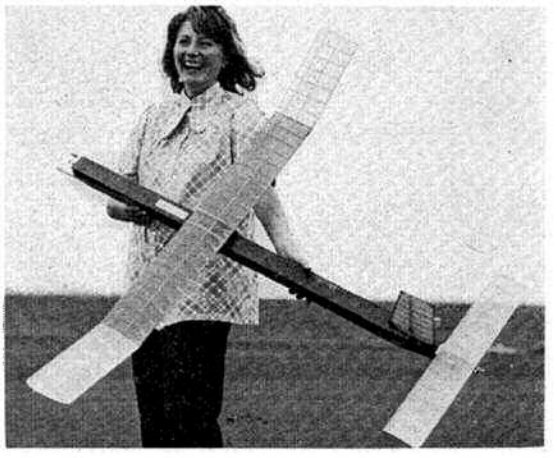
This new system would seem to remove most of the justifications for pre-entry. In the light of the cost of the Nationals pre-entry paperwork (as given in the May issue of *Model Flying*) the whole concept would appear overdue for a rethink. The biggest Galas have no difficulty with field entry, and I am sure that competitors would rather see the money spent in arranging pre-entry re-allocated to provide some prizes.

The events themselves ran very smoothly – no mean achievement at such a large meeting, and indicating a very realistic appraisal of the situation, the work involved and a decision as to what should be done and what omitted. The last included any form of processing (apart from an optional weight check of Coupe d'Hiver) – an operation that often amounts to little more than a token gesture that still takes much effort. The only real change to the F/F arrangements as detailed in *Model Flying* (as distinct from the erroneous version in the official programme and elsewhere) came in the reduction of the number of F.A.I. Power flights from seven to five. The published timetable was adhered to with commendable accuracy. It is only just to say that administration was in the hands of the S.M.A.E. F/F Subcommittee, with Dave Tipper (Chairman) and Paul Masterman being particularly active. The mini-events in the afternoons were staffed by 'volunteer' clubs but the morning and evening sessions were directed by the sub-committee itself.

The part played by the weather can hardly be over-emphasised, and needs to be remembered before the early-and-late arrangements are advocated as a universal panaceal

The Nationals showed that there are rules that require some revision. Line-crossing in glider events is an example. With well over a hundred A/2 fliers trying to launch in close proximity there were bound to be line crossings and worse. Even so it was apparent that some competitors appeared to strive for tangles so as to insure against poor flights (by using the re-take option). This technique appears to be spreading, yet is difficult to prevent without penalising the innocent. The latest move to apportion blame is hardly a solution to a problem that is largely caused by the use of a starting line.

Another rule that requires a change is that of requiring S.M.A.E. numbers to be carried on the wing upper surface. This rule is now redundant having fallen into disrepute after a couple of protests concerning incorrectly marked models were rejected. At least one Nationals winner had no numbers whatsoever on his model – as can be seen from last month's photographs.



Runner-up in the Women's Cup at the Nationals, Mrs. Linda Hopper achieved a minute longer in the rubber fly-off than her husband! The 55 x 5 in. wing uses thickened Benedek section. Total structure weighs 3½ oz.

RESULTS:

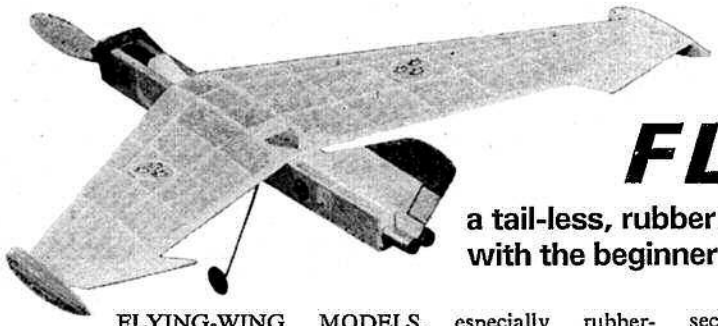
3rd S.M.A.E. Area Centralised Meeting, May 5th, 1974.
Gamage Cup (open rubber) 28 scores, 4 in fly-off: 1. D. Hipperson (Croydon) 9:00+5:23; 2. D. Wain (Bristol & West) M+4:41; 3. T. Grey (Sittingbourne) M+3:31; 4. J. Carter (Falcons) M+0:18.
Open Glider 70 scores, 8 in fly-off: 1. A. Young (Croydon) 9·00+4:15; 2. D. Greaves (Birmingham) M+4:14; 3. B. Nicholson (Liverpool) M+3:20; 4. T. Dilks (Falcons) M+1:41.
Halifax Trophy (F.A.I. Power) 30 scores: 1. P. Harris (Evesham) 20:28; 2. R. Bailey (St. Albans) 19:52; 3. J. Hook (Southampton) 19:39; 4. P. Ireland (Southampton) 19:10.
Plugge Cup after 2 events: 1. Southampton, 516 points; 2. Norwich, 454 points; 3. St. Albans, 435 points; 4. Crockham, 423 points.

S.M.A.E. Novice 'Easy B' Indoor Contest – Cardington, May 12th, 1974.
Easy B Indoor Rubber. Total of best 2 from 5 flights: 1. C. Hadland, (R.A.F.M.A.A.), 24:13; 2. P. Farrimond (Wigan) 19:14; 3. D. Yates (Wigan) 19:04; 3. A. Barr (Hayes) 19:04; 5. M. Page (Peterborough) 18:33; 6. N. Zotov, (R.A.F.M.A.A.), 17:27.

John Carter launches for the Gamage Cup fly-off – this critical flight was a disaster for him, as the model spiralled-in at Chetwynd.

Walt Hodkinson was another to take advantage of the better conditions at Chetwynd, reaching the fly-offs with his Jim Baguley designed 'Meanderer'.

Pointing his F.A.1. power model skywards is Pete Harris who topped the Area results to win the Halifax Trophy. Flew at Chetwynd with model now Rossi equipped.



FLI-WING

a tail-less, rubber powered sportster, designed with the beginner in mind by . . .

RAY MALMSTRÖM

FLYING-WING MODELS, especially rubber-powered ones, seem to be a rather neglected type. This is rather a pity, because a flying-wing model will fly as well as any other more orthodox model aircraft – moreover they are delightfully stall-free when correctly trimmed. Because of their different 'profile' in the air flying-wings always attract attention on the flying field, so if you are feeling in need of a bit of attention!! – and some real flying, here is *Fli-Wing*, designed with YOU in mind.

Fuselage

Build two identical fuselage sides over the plan. Add 1/16 in. sheet pieces A.B.C.D. and gussets E.F. (Sketch 1); join fuselage sides with cross-pieces (see plan). Use a set square to avoid twists – Sketch 2. Add pieces G.H.J.K.L.M. and end-plate N. Cover with lightweight tissue, leaving open at wing position, and under bay at end for rubber motor access. Water shrink and give one coat of clear dope, thinned 50%.

Form the main undercarriage from 20 s.w.g. wire, bending the top portion, preferably in a vice, to give the backward angle to the legs. Fit lightweight 3/4 in. diameter plastic wheels, retained by a piece of tight-fitting electrical plastic tubing, or a blob of cement. Form the nose wheel leg in the same way. Cut a small wheel from 1/2 in. sheet balsa, sand to section, give two coats of dope, and retain on leg as for main undercarriage. The undercarriage units are cemented to pieces J.K. and retained in position by three layers of tissue doped on. Insert a length of 1/16 in. diameter dowel through holes in piece D. The cockpit canopy can be cut (as we did on our original *Fli-Wing*) from the end of a clear plastic toothbrush container or use a small commercial bubble canopy.

Fin

Cut from 1/16 in. sheet. Round edges and give one coat of clear dope. Cement to fuselage pieces L.M. and plate N. Cut and shape from block the two exhaust tubes P, and cut off a rear piece from each (Sketch 3). Hollow out the main section tubes and give a coat of clear, then silver dope. Cement exhaust tubes to end plate N. Do not cement rear piece onto tubes at this stage.

Noseblock-propeller Assembly

Cut noseblock (Q) and spigot (R) from 1/2 in. sheet. Cement together, drill to take a length of aluminium or brass tubing (internal diameter to fit 18 s.w.g. wire). Cut two 1/32 in. ply discs, and cement to front and rear to lock tubing in place (Sketch 4). Give noseblock three coats of clear dope, after sanding to shape. Bend a winding hook at the end of a length of 18 s.w.g. piano wire. The original model uses a *Veron* 5 in. diameter balsa propeller. These propellers are ready carved, and only require the back of the blades to be sandpapered a little to give a concave section, reinforced through the centre hole with a short length of aluminium or brass tubing, and given three coats of clear dope, sanding lightly between each coat. Unfortunately, these props are now no longer made, although your local shop may still have some in stock. As an alternative the *KeilKraft* 5 in. diameter plastic prop may also be used. Mount the propeller on the 18 s.w.g. length of wire, slip on two cup washers and finally the noseblock. Then form the hook for the rubber motor. Add a drop of oil to the propeller shaft and make sure it revolves freely.

Assemble the free-wheel as shown on the plan. Fit the noseblock propeller assembly in place, making sure that it is a good push fit, but not *too* tight.

Wing

The wing is built in two outer panels and a centre-section which are constructed over the plan. Use the 3/32 in. sheet wing rib jig to obtain the correct incline of the wing panel roof ribs (R1-Sketch 5). Assemble completed panels to centre-section, noting reinforcing piece S on centre-section. Use the wing dihedral jigs (3/32 in. sheet) to ensure that you have equal dihedral under each wing tip – Sketch 6. Sandpaper leading- and trailing-edges to correct section, and cover with lightweight tissue, water shrink, and give one coat 50/50 dope and thinners. Pin each panel, raised on small balsa blocks, to the building board while drying to avoid those old enemies – warps! Cut two ailerons from thin card, score lightly along the dotted lines, and bend to the angle shown on the side view, and cement to the *undersurface* of the wing tip trailing edge. You may have to adjust the angle of the ailerons during test flying but the angle shown is the one we have on our original model. Cut the tip fins from 1/16 in. sheet, round edges and give one coat of clear dope. Cement tip fins to wing-tip ribs (R7) as shown in Sketch 7. Cement completed wing in place.

Balancing

Before balancing *Fli-Wing* make up a 9 in. loop of 1/8 in. flat rubber strip, lubricate well, and install between the propeller drive hook and rear dowel rod. To balance the model tie a length of cotton to a pin, and push the pin into the centre-section piece S at the Balance Point shown on the side view. Add weight inserted in the hollow exhaust tubes (P) until the model balances level.

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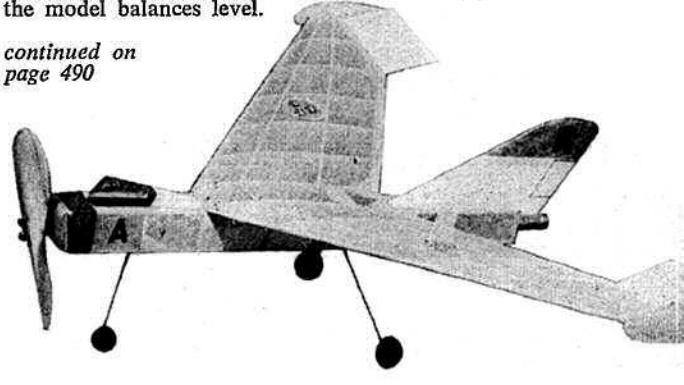
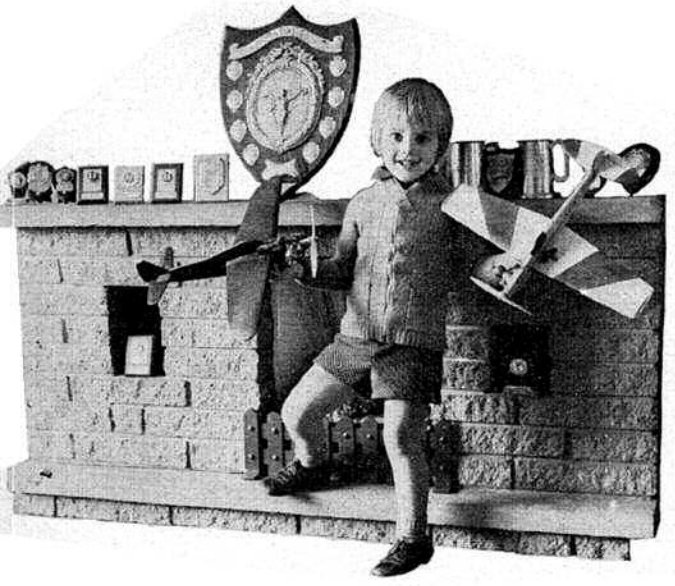




DEERFLY and SHOESTRING

A pair of Mini-Goodyear class control line racers, designed by BERNIE LANGWORTH

FOR SOME TIME now there has been a need for an uncomplicated class of racing where Juniors and Seniors alike can compete on an equal footing. *Mini-Goodyear* has proved to fit the bill without losing any of the fun and enjoyment of the other racing classes.

The origins of *Mini-Goodyear* really go back to Ray Malmström's *Ole Tiger* design published in the December '69 *Aeromodeller*. Members of the Morley club proved this model good to fly and almost indestructible; a natural for a Junior contest class. Soon other designs were tried with success; drawings and an early set of rules were published in Ron Firth's *Model Aircraft Gazette*.

Obviously benefits of the class are firstly the low financial outlay required. Secondly, the models are easy to build requiring a minimum of engineering and soldering skill, and thirdly as they use small engines, the noise output is less, permitting competitions on local flying fields, which also eliminates vast travelling expenses for a competition.

Rules are plain and straightforward; and consist simply of the following:-

1. *Models are two-thirds the size of S.M.A.E. Class Goodyears, i.e. scale 1 in. to 1 ft., minimum wing area 66 sq. in.*
2. *Power, up to 1.5 c.c. engines.*
3. *Commercial 7½ c.c. team race tank to be used (vents may be modified to suit motor or model).*
4. *Undercarriage optional. (Practice has found that models are better* without *when flown over grass).*
5. *Line length is 40 ft. from centre of handle to centre of model.*
6. *Colouring etc., optional.*
7. *Races over 100 laps (heats), with 200 lap final.*

In practice these rules have proved even better than first imagined. The size of the model is such that a small 0.8 c.c. engine is quite capable of pulling one round with excellent range (possibly only one stop during heats), yet the heaviest plain bearing 1.5 c.c. will *just* fit without being too nose heavy; ball-race engines virtually eliminate themselves due to their weight. In fact speeds obtained with 'hot' plain bearing 1.5's have been so high on the 40 ft. lines that piloting three-up was very 'hairy' indeed, and even experienced team race fliers have walked out of the circle noticeably rubber-legged! To date no one engine has proved superior and top times have been recorded with a wide variety of power plants, but a 1 c.c. capacity would appear to be a good compromise between speed and range.

A good heat time in our area is about six minutes in an actual race, and the only requirement needed to get such a time seems to be an easy starting engine. So if you own an engine between 0.75 c.c. and 1.5 c.c. which starts readily, you are probably onto a winner. My *Deerfly* has done the fastest heat to date (5:39) powered by a Frog 150!

Construction

Using the following steps a model can be built in as little as two hours.

L SIZE PLANS + FULL SIZE PLANS + FULL SI

Start by cutting the wing blank from ¼ in. medium sheet balsa and sand to correct outline. Fit the ⅜ x ¼ in. hardwood bellcrank mount insert, then cut out inboard tip and pin to wing ready for shaping. Mark out the centre section as this is best left square to position in the fuselage, and sand wing section, keeping the leading edge rounded and not going too sharp with the trailing edge, thus ensuring a nice sturdy wing. Cut out the ply lead-out guide and sandwich between the inboard wing and tip, preferably using five-minute epoxy.

Next cut out the fuselage profile with the bearer slot the correct spacing to suit your engine. Epoxy ⅜ in. sq. engine bearers into place. While these set, cut out the ply nose doublers, centring around the ¼ in. wing slot. Stick the doublers to the fuselage and place under a heavy weight until set. Meanwhile cut out the tailplane, sand to section shown and slice off the elevator. Give final sanding to the elevator edges and attach with ½ in. tape hinges. Epoxy ply elevator horn into place.

Return to the fuselage and attach 1/16 in. sheet fin. Sand fuselage to a slight taper towards the tail and blend the fin into the fuselage. Cut a slot to accept the tailplane, ensuring a tight fit, but do not glue at this stage. The 'Vee' cut out for the elevator has been found to be the best method of ensuring a sturdy elevator. At this stage the all-important C.G. position can be approximated. Slide the tailplane into position and hold the engine onto the bearers with

continued on page 490

Eric Coates'

FLYING SCALE COLUMN

Dennis and Gary Binnie made this 1/12th scale free-flight Lancaster and were pressed into a test flight at Old Warden. Rear C.G. caused zoom and stall crash after take-off. Spanned 102 in., and used a pair of Fox 25s for power.

FOLLOWING THE best weather at the Nationals for years, the Gods also smiled benignly on the *Aero-Modeller Scale Meeting* held, as usual, at Old Warden on June 16th. This was very welcome after several windy, 'soggy' years in succession, and although not flat calm the wind was light throughout the day enabling free flight models to be flown without too much trouble. However, engine runs had to be kept reasonably short to keep the machines within the rather limited confines of the airfield boundary and several models were alas carried away to lodge in neighbouring trees. These somewhat hazardous flying conditions tended to keep top-class scale models at home and more knock-about machines were to be seen airborne than would be the case at a more 'formal' S.M.A.E. meeting.

Having to drive from almost the Scottish Border that morning it was 1.30 p.m. when I arrived and, after a quick lunch, was immediately plunged into 'judging' the F/F section. This year, therefore, I had no time to observe any of the C/L and R/C flying. The following C/L report is therefore courtesy of the Editor, while the radio control side of the affair will be dealt with in the September issue of *Radio Control Models and Electronics*.

Judging is hardly the correct terminology. I was asked, assisted by Terry Manley and Dave Clarkson, to pick out the best three from the scores of models which were informally flying all afternoon. A very difficult task indeed! In selecting our 'winners' we first and foremost put the emphasis on a regular and realistic flight performance. When a model caught the eye it was then examined statically to see how it 'squared up' in scale appearance.

In our opinion the most consistent and realistic flyer present was the *Fieseler Storch* of T. Brewer. This was to the 1/12th scale *AeroModeller Plan* (FSP669, price 50p) by Whittaker, powered with a D.C. Merlin. It flew very steadily for dozens of flights throughout the day, the flight appearance only being marred by too much dihedral which, from my experience of this prototype (20 years ago) I would say was unnecessary.

The smallest regular performer present, which was awarded second prize was the diminutive 14 in. span Brown CO_2 powered *S.E.5a* of P. Smart. I had seen this model perform very well before inside the Cardington Airship Shed but it seemed equally at home in the blustery (to a small model) conditions of the great outdoors. We awarded third place to last year's winner – the huge *Do.18* flying boat of A. C. Jansen. Although somewhat more battered than a year ago, this grand old machine still sails the skies in a most majestically stable manner.

So much for the winners, and I must say that any one of another dozen flyers were very close and may well have been selected by other judges whose personal fancies may have been different. What of the others?

Without doubt the most ambitious F/F model present was the colossal (8 lb. 4 oz.) *Lancaster* of Dennis Binnie. The construction was relatively light with a stringered fuselage reminiscent of the Towner/Astral designs of the war years. Ample power was provided from a pair of Fox 25Rs fitted to the inboard nacelles – the other props merely freewheeling. Remarkably, no automatic stability devices had been fitted – only a simultaneously fused cut-out to both engines. Not surprisingly, therefore, the one and only

Left: Grab a fistful of undercarriage and heave! Another Aero-Modeller plan takes to the air – this time a Sopwith Snipe (Plan No. MA.339, price 75p).

Right: Vic Wilson's C/L Spitfire Mk 9 spans 64½ in. weighs 10½ lb., and uses a throttled Super Tigre 71 for power. Large size makes it look most impressive in flight.

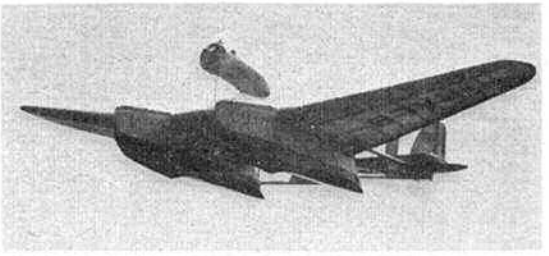
flight ended in disaster – the huge machine rose from the short grass after only a brief run, reared up into a stall turn, before crashing earthwards to the accompaniment of rending balsa. Not to be deterred, Mr. Binnie vowed to repair the machine and try again – with, I hope, a more forward C.G. and at least pendulum throttles!

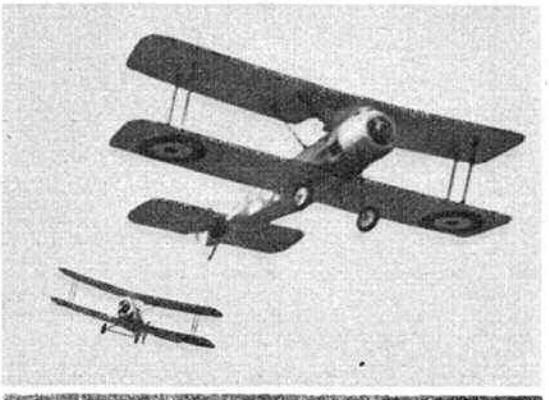
The twin-hulled S.A. Marchetti of D. Collins, also present last year, flew consistently still with the peculiar rapid pitching action but otherwise stable. A 1/12th *Camel* powered by an Embee 75 built by Dave Kew was performing remarkably well for this difficult subject. The lateral stability with scale dihedral, i.e. 0 degree on the top wing, was amazing. Another apparently stable machine, but definitely underpowered, was the Cox 049 powered 40 in. *Hurricane* built from A.P.S. plans by John Eggs. Also underpowered, and overweight I am afraid, was R. Hibbert's *Gladiator*, for a change in the colours of No. 73 Squadron. Several rubber models were also in evidence but the wind tended to be just a little too gusty for them to show off their best performances. Perhaps the nicest was the 48 in. span *Bristol Monoplane* built from Eddie Riding's design, dating back 30 years or more, by D. Banks. Beautifully finished in red lightweight Modelspan tissue, it only weighs 10 oz. The initial flights looked most promising. Another nicely finished rubber model was the *Rearwin Speedster* built by Andrew Moorhouse from the original *Peerless* drawing of before the war, now marketed by Cleveland. Andrew also had another old Riding design – the *Missel Thrush* published posthumously by A.P.S. after Eddie's tragic death in 1950.

The number of F/F scale models flown that day must have been well into three figures so it is impossible to describe them all. What I have gives a fair cross-section of what was present on an almost perfect scale day.

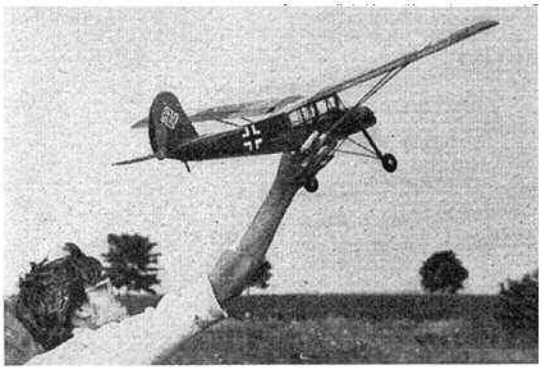
Support for the control-line side of affairs can only be described as bigger and better – literally in many cases, as there were some huge models to be seen! North Norfolk modeller Anthony Nelson produced his enormous private airforce consisting of a 66 in. span *Vickers Viscount*, powered by a pair of O.S. 10s and a pair of O.S. 15s, his *C130 Hercules* spanning 88 inches with two Merco 61s providing the urge, and which performed so well last year when it displayed its parachute dropping facilities. In addition there was his 1/17th scale, Super Tigre 56 powered *Hunter F6*, which measures 60 inches from tip to tip and which has now successfully flown since its 'untried' appearance at the last Old Warden meet, plus of course came this year's *piece de resistance* – his 1/7th scale *Lightning Mk6*. This is a real eye-catcher – and massive too! The 12 lb. monster is fitted with an O.S. 80, and took around 1,100 hours to construct. No retracts are fitted (it would take quite some unit to support this size of model) but the undercarriage is well sprung. Finished just before the meeting, Anthony spent the whole day trying to obtain a suitable (14 in. diameter) prop. At last he succeeded, but as he hurriedly made preparations to test fly (on *double*-heavyweight Laystrate lines!) found the elevator horn had failed. A great pity as everyone longed to see it perform!

However, never ones to be outdone, and trying hard to retain the *Jack Carter Memorial Trophy*, the Guildford Model Flying Club, represented chiefly by Mike Ennis, produced a 67 in. span *Arado 234-C*, tipping the scales at around 6½-7 lbs. Two Enya 35 R/Cs are fitted to this unusual subject which features wings covered in 1/32 in. ply and a drop-off undercarriage

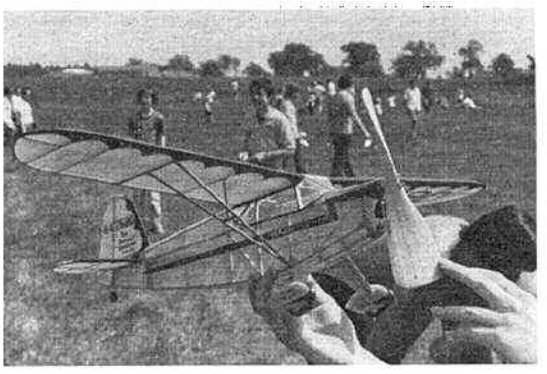




Top picture shows D. Collin's F/F S.A. Marchetti making yet another flight across Old Warden's grass. Below that are Dave Borbin's and Brian Cordwell's Sopwith 1½ Strutter flying two-in-a-circle shortly before Dave tried a wing over with inverted pullout. . . . Above are a pair of ducted fan jobs; David Nelson's winning Meteor being seen in the foreground, while Mike Kulczyk's Caproni Campini is seen behind. This latter weighs just 5 lb. and is powered by an O.S. Wankel turning a balsa impeller blade. Unfortunately, the retract u/c was a little too delicate to risk take-off from grass. Below is seen Mike Ennis with his two Enya 35s powered C/L Arado 234C – quite a monster!



Tim Brewer's Fiesler Storch, built from AeroModeller plans, is a veteran of over 100 flights, using a D.C. Merlin .75 c.c. engine for power. Looked most attractive in its Dark Green/ Light Green and Duck Egg Blue colour scheme.



Andrew Moorhouse built this well finished, rubber powered. Rearwin Speedster from the original pre-war Peerless drawings, which are now marked by Cleveland see Classified Ads page for details.

unit. A bomb release is fitted, while in the future it is intended to release a V1 flying bomb (which itself is powered by an AM15 diesel) in flight. The rather complicated release mechanism (which involves raising the V1 high above the Arado on a gantry-like affair) has been made, but not yet fitted. Despite this, he was awarded fourth place for his efforts.

Winner of the Jack Carter Trophy was in fact David Nelson with a really challenging subject – his ducted fan ¼th scale *Gloster Meteor*. The two K&B 40s produced sufficient thrust to take off from the short-mown grass despite overheating troubles from one engine, and it looked truly magnificent in the air.

Perhaps less spectacular, but certainly more true-to-scale than the aforementioned models, were the *Albatros DV* and *Avia B534* of Messrs. Ashfield and Cordwell respectively, which filled second and third places. David Ashfield's model was not the model he flew last year, but an enlarged version (1¼ in.-1 ft.) spanning 52 in. which placed second at the recent Nationals. Wal Cordwell also flew his 'Nationals' machine – the *Avia* having been carefully, and neatly, repaired after a previous 'incident'.

The huge variety (over 40 models) present, naturally prevents a more detailed appraisal of 'who flew what' but it must be admitted that it was a refreshing change to see a model performing aerobatics – in particular Dave Morbin and Brian Cordwell broke the 'monotony' with some nice flying from their Sopwith 1½ Strutters – although unfortunately this ended after an all-too-brief, two-in-a-circle bit of aerobatic work. Without retracting undercarriage, bomb release or some other gimmick, the average C/L scale flight is somewhat less than exciting, especially as so many are under-powered and/or overweight. More flying and less building perhaps is called for?

FLI-WING *continued from page 486*

Flying

Carry out all glide and power-on flight tests over long, or soft grass, on a calm day. Trimming is carried out by altering the angle of the ailerons. Bend the ailerons up slightly to correct a dive, lower them slightly to correct a stall. Turn adjustments are effected by raising the aileron on the same side as you require the model to turn. Right aileron raised for right turn, left aileron raised for left turn. With a satisfactory straight glide achieved, wind on about 150-200 turns on the test motor. *Fli-Wing* should climb away, make a short flight and come in on a flat glide. If the model stalls under power insert a 1/32 in.-⅛ in. square strip along the top of the noseblock. If it dives insert a 1/32 in.-⅛ in. square strip along the bottom of the noseblock. Under power *Fli-Wing* may (ours did not, by the way), turn sharply to the left under torque (model viewed from the rear). If so add a 1/32 in.-⅛ in. strip to the left-hand side of the noseblock as shown on the plan.

With satisfactory flights on the test motor, you can now discard it, and install the flight motor. This is two loops of ⅛ in. flat rubber strip, 14 in. long, or one loop of ¼ in. flat rubber strip, also 14 in. long. Well lubricated and run-in, these motors should take about 600 turns. Take your time trimming your model, and in a very short time you'll be 'flying on a wing' – and no prayer necessary!

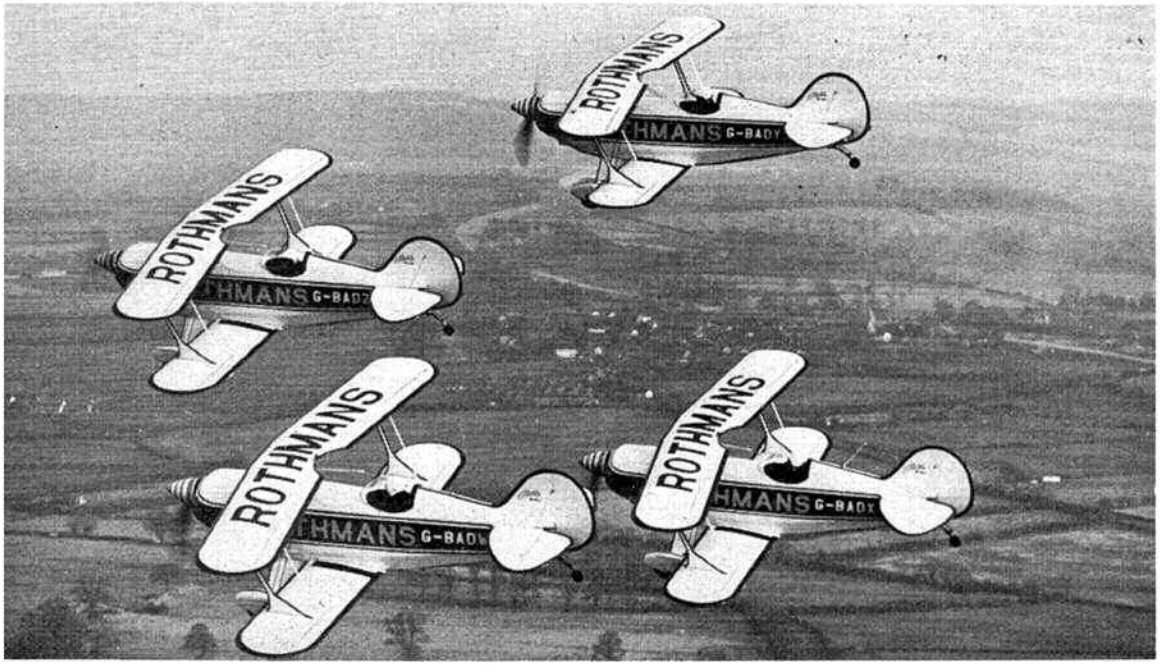
MINI-GOODYEAR *continued from page 487*

elastic bands. Lightly hold the fuselage between finger and thumb to determine the balance point and mark with a pencil. From this mark measure ¾ in. back towards the tail, and mark again. This rear mark will be the approximate C.G. position with the wing and pushrod fitted. Cut the wing slot through the fuselage starting at the forward mark.

Drill the bellcrank mount and fit pivot bolt, slide wings and tail into position and establish pushrod length. Put double bends at both ends of the 16 s.w.g. pushrod – this ensures there are no soldered joints to come adrift during a race. The pushrod is then manoeuvred into the separated elevator horn and bellcrank, the tailplane slotted into the fuselage and the bellcrank onto the pivot. Check that the pushrod is the correct length, giving neutral elevator. When everything is satisfactory the wing and the tail can be epoxied into position, bellcrank lock nuts added, then the whole model given a final light sanding.

The originals were finished with two coats of polyurethane varnish onto the bare wood and the colour scheme added. A nice bright colour scheme is highly recommended, this not only adds to the appearance but makes the lap counters' job easier.

Attach the tank and finally position the engine to give the desired balance when complete with 7 x 4 or 7 x 6 nylon propeller.



AIRCRAFT DESCRIBED NO. 226

PITTS S-2A SPECIAL

described and drawn by Pat Lloyd from 'life' measurements

THE ROTHMANS team, now in their second season of air displays around the country, have decisively proved that their diminutive blue and white Pitts S-2s are the ultimate in air-show machines. However, in these days of increased environmental awareness and anti-pollution measures, it must be admitted that not all are in favour of that howling exhaust note and the billowing white trails emitted by this spectacular stirring 'G' machine.

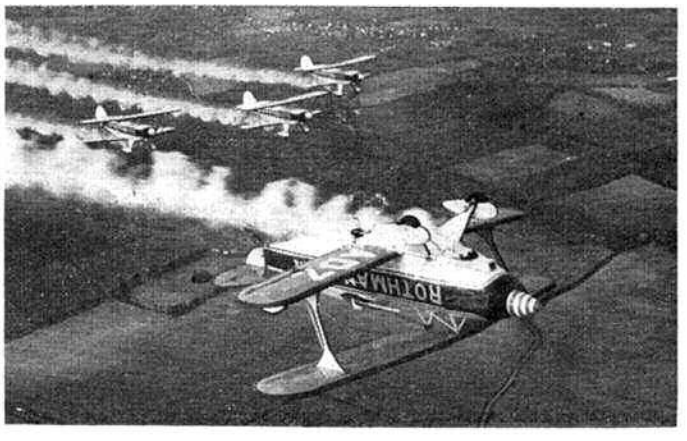
The term 'diminutive' is, of course, only true when used in comparison with perhaps the co-starring service display aircraft such as the Gnats, Provosts or the occasional Phantom. Anyway, those Pitts Specials are parked near the crowd for better reasons than just to be out of the way!

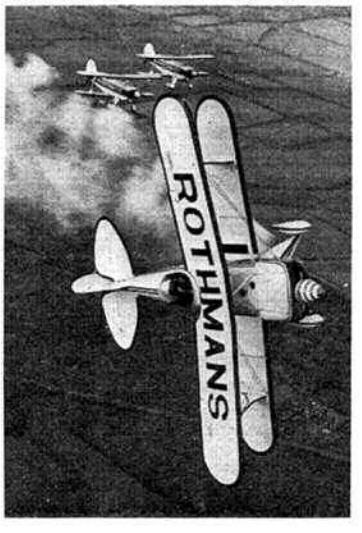
Of course, the true progenitor of the two-seat Pitts is the really small single-seat S-1 (which at some future date will be presented in *AeroModeller*), born way back in 1944. Since then, steady improvements have been made to airfoils, then by steps through power increases, rigging angles, four ailerons, etc., to the point when a high performance two seater could be said to have practically evolved itself.

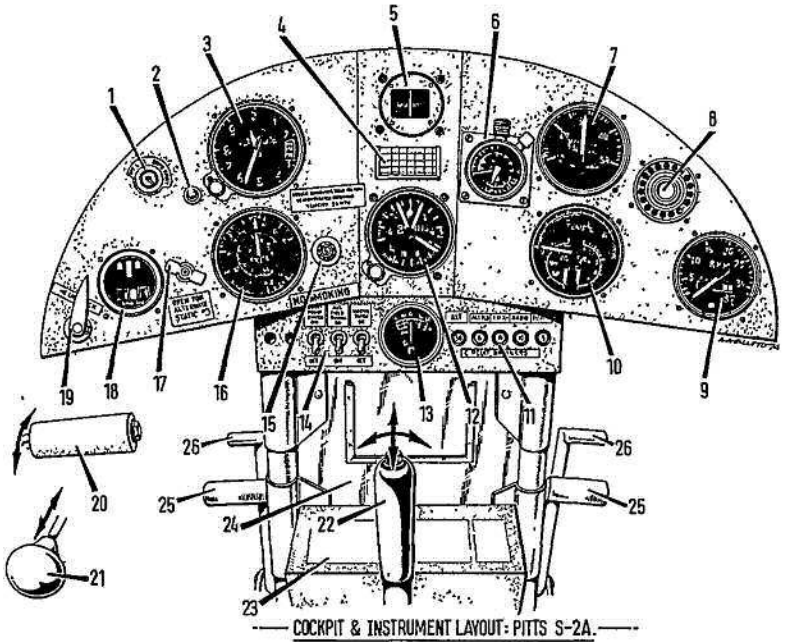
Work on the first S-2 was commenced by Curtis Pitts and engineer Gene Dearing in 1964. The prototype first flew in 1966. Right from the start, the S-2 model was intended as a production line machine, even though the task of certification of a fully aerobatic, competition-worthy machine for 'off the shelf' sale to anyone, was a radical step to say the least.

The design was approved by the F.A.A., and work started at an old plant in Afton, Wyoming, producing the first production S-2 in 1971 – aptly named *Big Stinker*, after the really early success of Betty Skelton's

Manx Kelly, inverted, and holding knife-edge formation for our camera near the home base at Booker. Acceleration of the Pitts S-2 is not really appreciated until you see it air-to-air!







—— COCKPIT & INSTRUMENT LAYOUT: PITTS S-2A. ——

1. Master Magneto switch.
2. Warning lamp.
3. Altimeter.
4. Compass deviation card & holder.
5. Compass.
6. Chronometer/Stopwatch.
7. Manifold pressure gauge.
8. Stall warning horn.
9. Revolution counter.
10. Temp, Oil & Fuel pressure gauge.
11. Circuit Breaker panel.
12. Accelerometer, 'G' Meter.
13. Ammeter.
14. Master switch panel.
15. Starter button.
16. Airspeed Indicator. (Knots & M.P.H.)
17. Alternative Static inlet control.
18. Roll & Slip Indicator.
19. R.P.M. Control for constant speed prop.
20. Throttle lever.
21. Carburettor Mixture control.
22. Control column, Microphone button on top.
23. V.H.F. Radio pack.
24. Front seat backrest.
25. Rudder pedals.
26. Independent toe brakes.

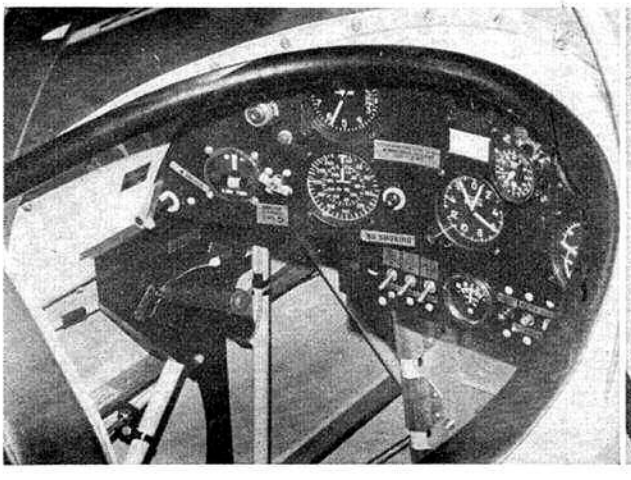
The man himself! Curtis Pitts on one of his rare visits to England (above) while no closer please Manx Kelly (below) – a whole neg close up!

S-1 *Lil' Stinker* in 1948-50.

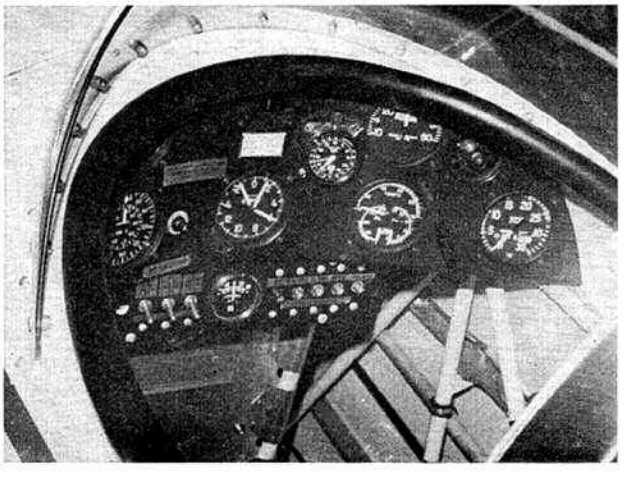
Since then business has boomed, with sales to aerobatic personalities like Art Scholl, Jim Holland, and the person who must rank as Pitts' best customer, Manx Kelly, who is European agent, and runs the five Rothmans machines, in addition to the Canadian-based Carling O'Keefe brewery-sponsored team.

As for the machine itself, the S-2 originally had a 180 h.p. Lycoming fitted, but is now discontinued. The drawings depict the S-2A, with the 200 h.p. engine and a Hartzell constant speed prop. These make a lot of difference in vertical manoeuvres, and of course the 200 h.p. helps Manx make that take-off torque roll of his seem so effortless!

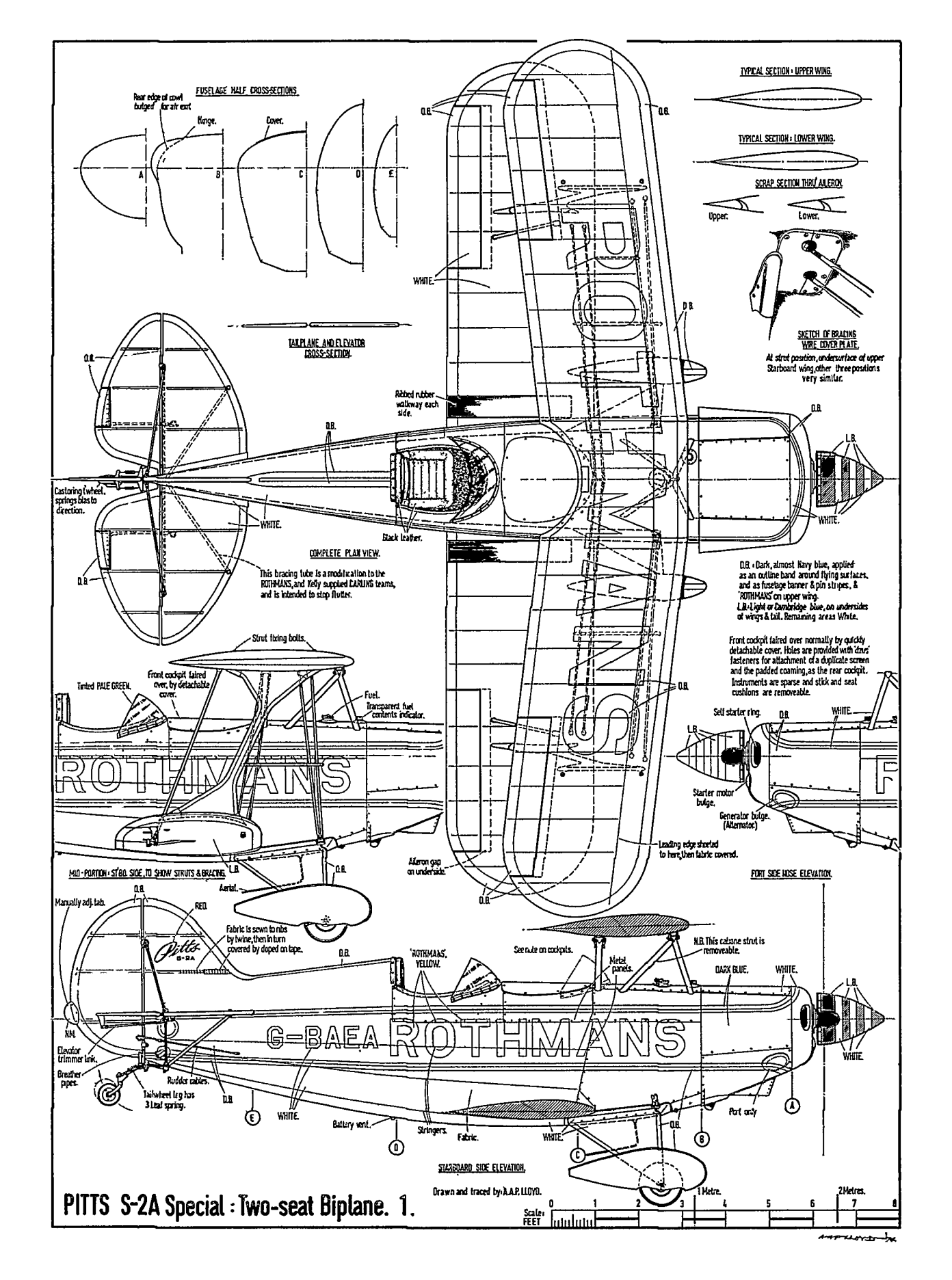
The fuselage is completely conventional; a welded tube frame with metal decking on top with wooden stringers along the sides to 'pad out' to the characteristic Pitts look, the whole being fabric (Dacron) covered. The Lycoming is hidden inside metal panels, the top rear edge of which are bulged slightly to afford an



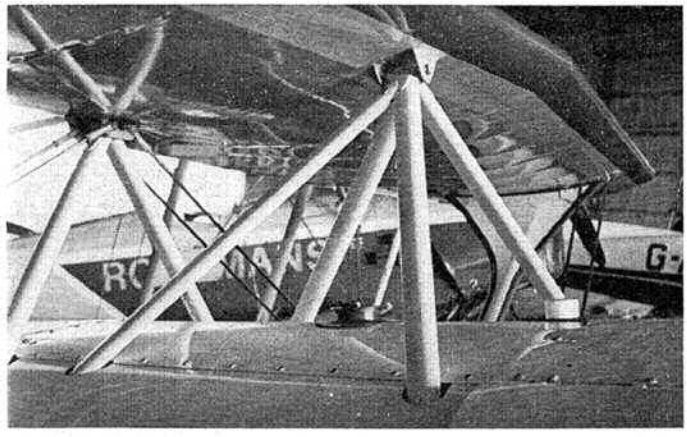
Curved panel – see above, with larger than usual throttle grip at left. Rudder pedals not visible, are beside the front seat.



Right side of cockpit with internal tube structure and wooden stringers prominent. Vital engine instruments are the three on the right.



PITTS S-2A Special : Two-seat Biplane. 1.



Centre section attachment (above) and the cowling air outlet (left) are details not usually appreciated by modellers.

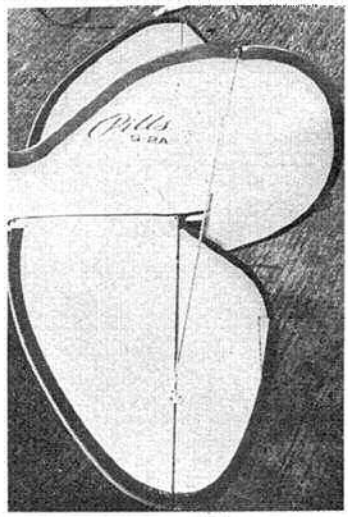
air exit. The integrally constructed fin is made from tube, as is the rudder and tailplane/elevator assembly – the whole again being Dacron covered.

Wings are of the spruce two-spar type, with built-up ribs; the assembly being internally wire braced. Leading edge is sheeted back to the forward spar with alloy – this material also being used in 'Vee' form for the trailing edges, and alloy also forms the aileron 'skeletons'. These completed units are also Dacron covered, and a high standard of finish is applied to the airframe, some 18 coats of Butyrate dope, before the customer's chosen colour scheme. Finally, the landing gear comprises two 'trestle' shapes pivoted at the fuselage tube, and cushioned by bungee cords internally at the firewall; each of the legs carries a disc brake and a glassfibre spat.

The whole conception of the S-2A is perhaps that of an 18-20 per cent larger S-1, and an extremely conventional aeroplane . . . until one watches it perform in expert hands.

REPRINTS OF THIS FEATURE, WITH LARGE DYELINE PRINTS OF THE ORIGINAL 1/12th SCALE DRAWINGS ARE AVAILABLE FROM AEROMODELLER PLANS SERVICE, P.O. BOX 35, BRIDGE STREET, HEMEL HEMPSTEAD, HERTS HP1 1EE. PRICE 80p., (INCL. V.A.T. AND POSTAGE). QUOTE PLAN NUMBER 2962 WHEN ORDERING.

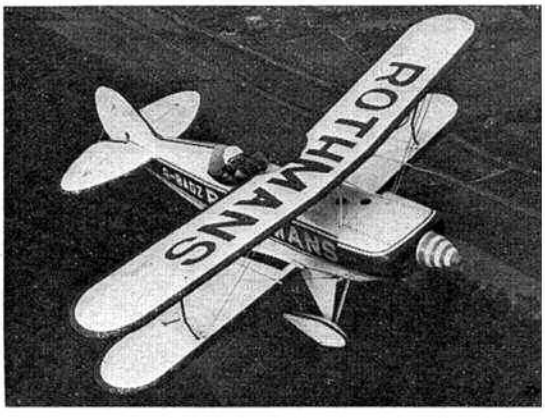
Elusive tail shape caused by straight tube junction root ends, not the elipse commonly supposed. Tail now strut braced as well as wire braced.

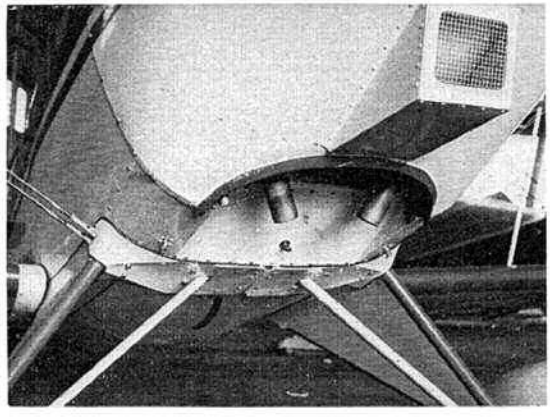


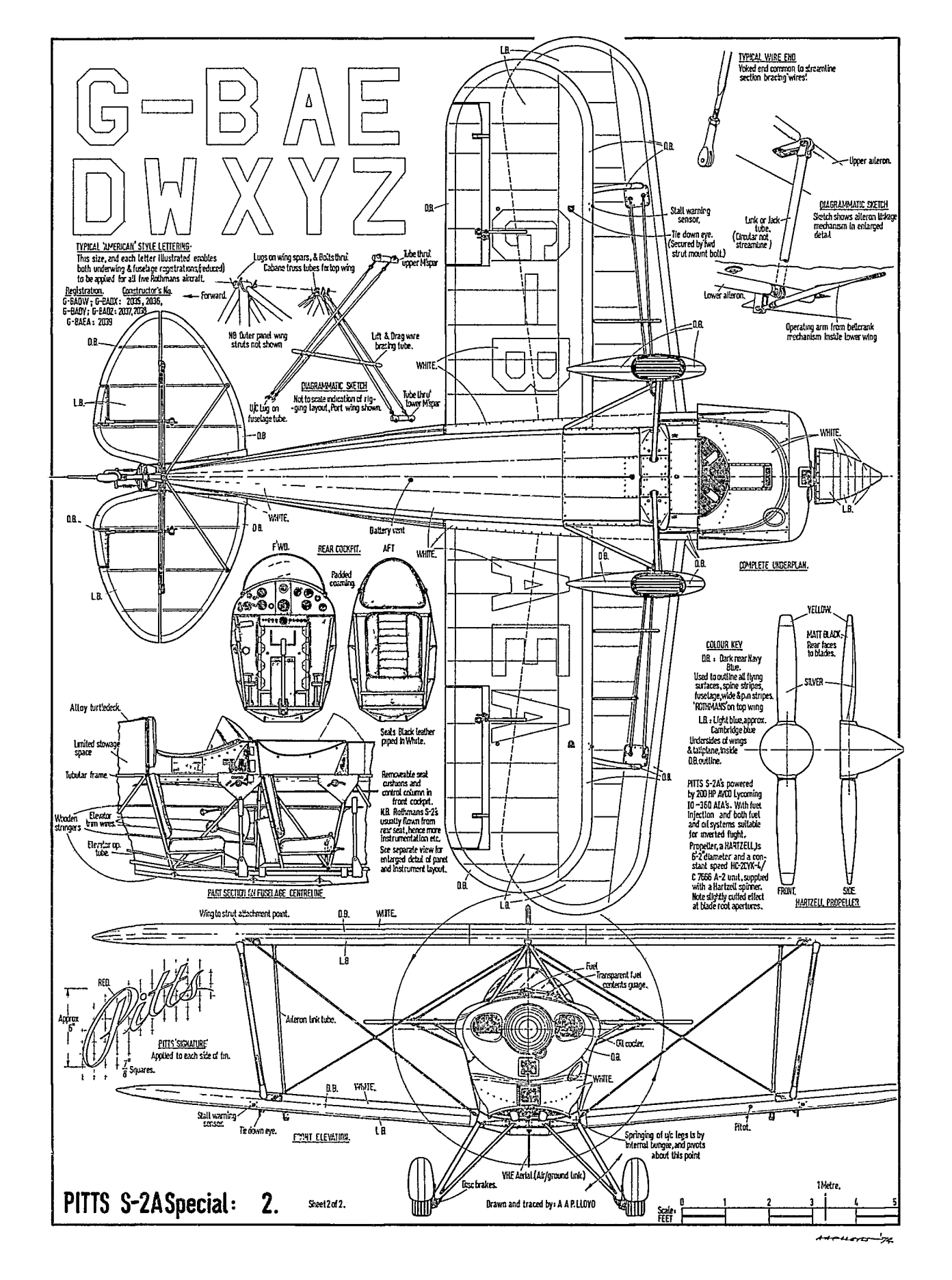
Details:

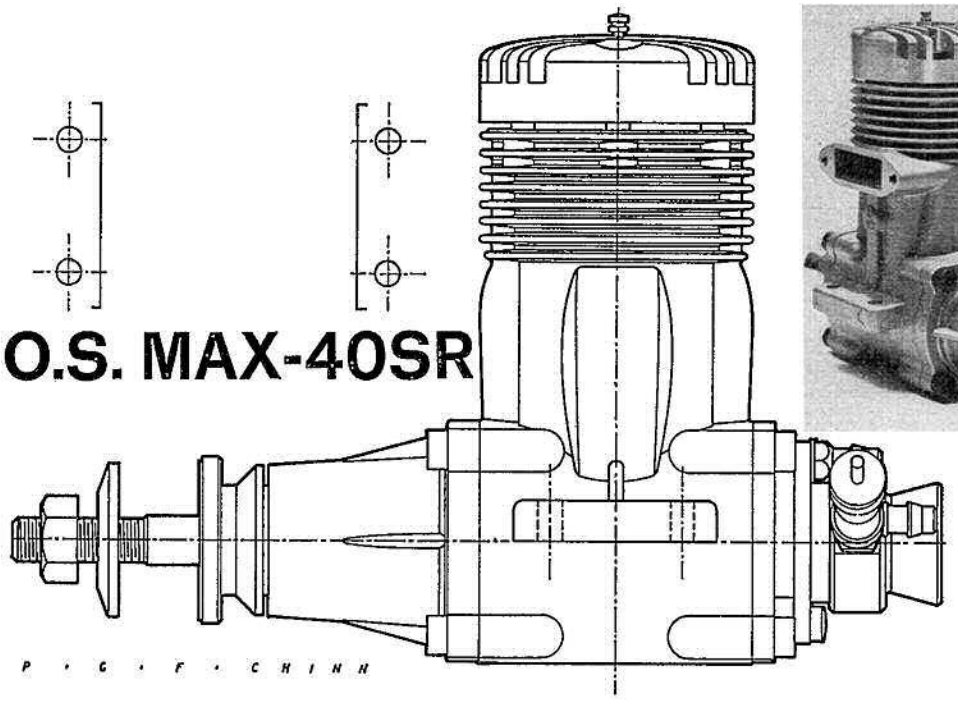
Span 20 ft. 0 in. (Upper)	*Cruise* 152 m.p.h.
Span 19 ft. 0 in. (Lower)	*Height* 6 ft. 7 in.
Top speed 157 m.p.h.	*All-up weight* 1,500 lb.
Length 18 ft. 9½ in.	*Stall* 58 m.p.h.
Wing area 125 sq. ft.	*N/Exceed* 203 m.p.h.

In rare straight and level below left; close up of exhaust area also shows where the smoke comes from (diesel oil introduced into exhaust).

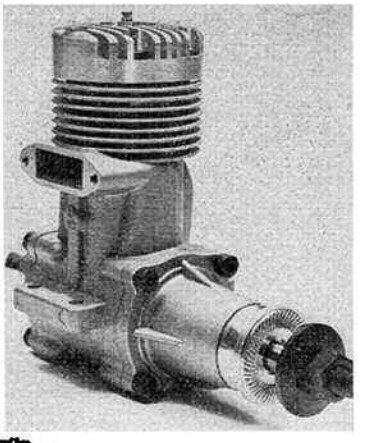





G-BAE
DWXYZ
TYPICAL 'AMERICAN' STYLE LETTERING.
This size, and each letter illustrated enables both underwing & fuselage registrations, (reduced) to be applied for all five Rothmans aircraft.
Registration. Constructor's No.
G-BADW; G-BADX: 2035, 2036,
G-BADY; G-BADZ: 2037, 2038
G-BAEA: 2039
Forward.
Lugs on wing spars, & Bolts thru'
Cabane truss tubes for top wing
Tube thru' upper M'spar
NB Outer panel wing struts not shown
Lift & Drag wire bracing tube.
DIAGRAMMATIC SKETCH
Not to scale indication of rig-ging layout, Port wing shown.
U/C Lug on fuselage tube.
Tube thru' lower M'spar
D.B.
L.B.
WHITE.
Battery vent
F'WD.
REAR COCKPIT.
AFT
Padded coaming
Alloy turtledeck.
Limited stowage space
Tubular frame
Wooden stringers
Elevator trim wires.
Elevator op. tube.
Seats Black leather piped in White.
Removeable seat cushions and control column in front cockpit.
N.B. Rothmans S-2's usually flown from rear seat, hence more instrumentation etc.
See separate view for enlarged detail of panel and instrument layout.
PART SECTION ON FUSELAGE CENTRELINE.
TYPICAL WIRE END
Yoked end common to streamline section bracing wires.
Upper aileron.
Stall warning sensor.
Tie down eye. (Secured by fwd strut mount bolt.)
Link or Jack tube. (Circular not streamline)
DIAGRAMMATIC SKETCH
Sketch shows aileron linkage mechanism in enlarged detail
Lower aileron.
Operating arm from bellcrank mechanism inside lower wing
COMPLETE UNDERPLAN.
COLOUR KEY
D.B.: Dark rear Navy Blue.
Used to outline all flying surfaces, spine stripes, fuselage, wide & p.n stripes. 'ROTHMANS' on top wing
L.B.: Light blue, approx. Cambridge blue
Undersides of wings & tailplane, inside D.B. outline.
PITTS S-2A's powered by 200 HP AVCO Lycoming IO-360 A1A's. With fuel injection and both fuel and oil systems suitable for inverted flight.
Propeller, a HARTZELL, is 6'-2" diameter and a constant speed HC-2YK-4/C 7666 A-2 unit, supplied with a Hartzell spinner. Note slightly cuffed effect at blade root apertures.
YELLOW.
MATT BLACK. Rear faces to blades.
SILVER
FRONT.
SIDE.
HARTZELL PROPELLER
Wing to strut attachment point.
Fuel
Transparent fuel contents guage.
Aileron link tube.
Oil cooler.
Pitot.
Stall warning sensor.
Tie down eye.
FRONT ELEVATION.
Springing of u/c legs is by internal bungee, and pivots about this point
VHF Aerial (Air/ground link.)
Disc brakes.
RED.
Approx 6"
PITTS 'SIGNATURE'
Applied to each size of tin.
8" Squares.
PITTS S-2A Special: 2.
Sheet 2 of 2.
Drawn and traced by: A A P. LLOYD
1 Metre.
Scale: FEET
0 1 2 3 4 5



O.S. MAX-40SR

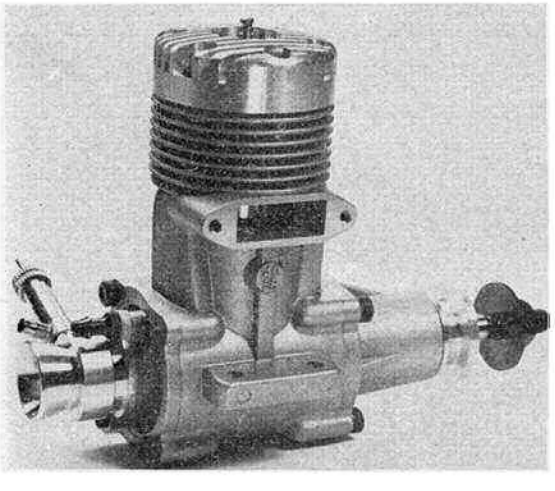


ENGINE TEST by Peter Chinn

THIS COMPLETELY new O.S. engine features a number of departures from previous O.S. practice. It is, for example, the first O.S. production motor to feature Schnuerle loop-scavenging. It is also the company's first racing type 40 and their first 40 to use rear rotary valve induction.

The engine is aimed primarily at the radio-control pylon racing and control-line rat-racing classes. It may also be of interest to those looking for a motor of extremely high power/weight ratio for the larger type of contest free-flight model. It is exceedingly well finished inside and out and, as we shall see in a moment, has a performance that entirely fulfils the promise of its technical specification.

The 40SR has the same bore and stroke as the current O.S. Max 40 R/C shaft valve engine. However, beyond this and the fact that it has dual ball bearings and a Dykes ringed piston, it has little in common with its front induction brother. Instead of a one-piece body casting with integral front end, for example, it has a unified cylinder casing and crankcase barrel with detachable front housing. Not needing a large diameter shaft main journal to accommodate a large bore gas passage, the maximum shaft o.d. is reduced from 13 mm. to $\frac{3}{8}$ in. (9.52 mm.). Interestingly, the shaft *is* $\frac{3}{8}$ in. o.d. – not 9.5 mm.: it runs in English size ball bearings (of Japanese manufacture) rather than metric sizes; these being chosen because bearings of more compact outside dimensions were available in the English size. The shaft itself has a full-disc type web with peripheral counter-balancing slots each side of the crankpin.



By comparison with other .40 cu. in. racing engines (all of which are of the disc valve type) the Max 40SR is unique in using a drum type rotary valve. In this it follows the Max H60 and H80 rear induction engines. The O.S. Experimental Department tried various disc valves in prototype 40SR engines but could find no advantage performance wise and presumably because of their greater experience with drum valves, decided to stick with the latter. The valve is of the 'reverse drum' pattern – i.e. the outer end of the valve is open and the actual valve port is within the crankcase. This brings the intake venturi exactly on the engine's centre-line and to enable the needle valve to clear the engine bearers, it is angled upwards.

As one expects of an engine intended for racing performance, the 40SR is generously ported in the interests of free breathing at high r.p.m. The venturi has a very large throat (10 mm. i.d.) and, after allowing for the jet, this gives an effective choke area of some 65 sq. mm. A pressurised fuel feed is, of course, essential and provision is made for this through an untimed tapping from the crankcase. From the throat, the venturi gradually opens out to coincide with the valve rotor i.d. (11.2 mm.) and mixture is released into the crankcase through a large rectangular valve port timed to remain open for some 220 degrees of crank angle, closing very late at 67 deg. ATDC.

The exhaust period is also very long at 156 degrees. The transfer timing, on the other hand, is more conservative with the two main ports opening for 118 degrees of crank angle. The third port opens only about two degrees later. The port design follows the orthodox Schnuerle layout of a centrally bridged exhaust flanked by two transfers angled to direct the incoming charge towards the opposite side of the

cylinder where it is then joined by the flow from the third port. The third port has its top edge inclined steeply upward to sweep the charge up into the combustion chamber and thereby assist in scavenging the exhaust gases from the cylinder. Like the O.S.40 R/C, the 40SR uses a single Dykes type piston ring and phosphor bronze bushes in the piston bosses as well as both ends of the connecting rod.

Performance

In view of the present confusion resulting from the lack of a firm ruling as to what constitutes a legal silencer for pylon-racing engines, this is the one and only O.S. motor with which the manufacturer does not supply a silencer. The exhaust duct has tapped holes that will enable an HP 40 silencer to be fitted, but we found that, on the 40SR, the HP silencer caused a quite surprising power loss at high r.p.m. (it actually raised output slightly at the lower end) while offering negligible noise suppression and all tests, therefore, were (as in the case of our report on the K&B 40-S earlier this year) conducted without a silencer in order to obtain a true assessment of the engine's potential.

According to the manufacturer, the 40SR is intended primarily for operation on high nitro content fuels but, in order to assess the engine's capabilities for F.A.I. class pylon racing, a series of tests were first made on straight 4 to 1 fuel. Torque and r.p.m. figures plotted on this mixture indicated a maximum output of just over 1.35 b.h.p. at around 20,500 r.p.m. This is slightly above the best levels previously recorded for a stock racing .40 on F.A.I. fuel and, in terms of prop. r.p.m. should mean a gain of up to 300 r.p.m. at the peak. This was confirmed by subsequent prop r.p.m. tests. Static revs on a 9 x 7 Top Flite speed prop cropped to 8¼ in. (much-favoured for pylon racing) were 17,800.

Switching to a fuel of 50 per cent nitro rating (specifically, K&B Speed Fuel), substantially improved torque over the whole load-speed range and raised the maximum b.h.p. to 1.65 at the same peak. Taking into account the differences in atmospheric conditions at the times of testing, this is at least equal to the best performance previously obtained for a racing 40.

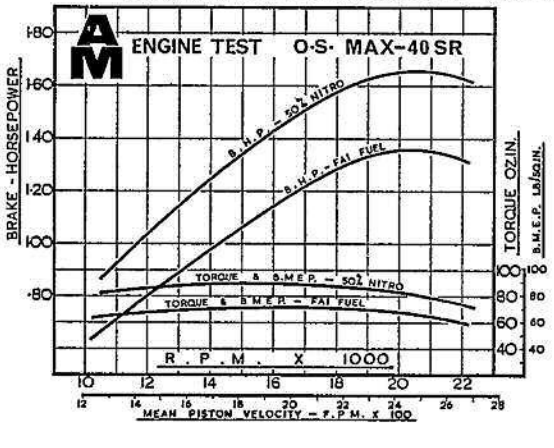
The 40SR proved easy to start and ran very steadily, especially on K&B Speed Fuel. Vibration levels, clearly indicated with our Frahm meter, were notably low and the test motor proved to be surprisingly economical on glowplugs: even on 50 per cent nitro, one O.S. No. 9 plug lasted all through the dynamometer tests, including several full tank runs at 22,000 r.p.m. The fact that, in stock trim, the 40SR has a lower compression ratio than some of its rivals (approx. 11.7:1 geometric, according to our measurement) and a piston-to-squish band clearance of approximately 12 thou., may have something to do with this.

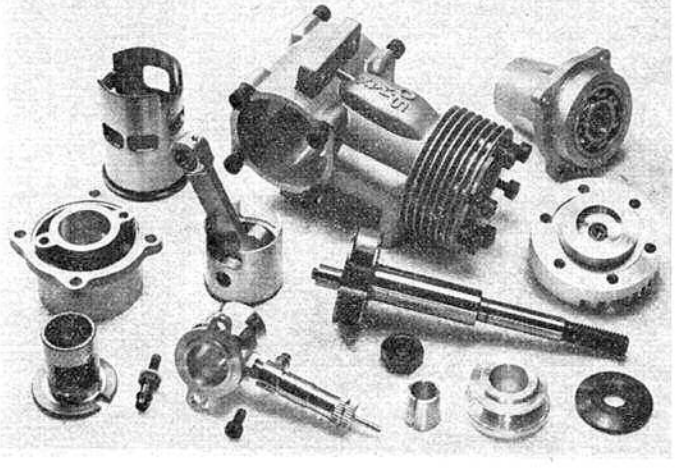
SPECIFICATION
Type: Single-cylinder, air-cooled glowplug ignition Schnuerle loop scavenged two-stroke with rear rotary drum valve and twin ball bearings. For operation on pressurised fuel feed only.
Bore: 21.2 mm. (0.8346 in.)
Stroke: 18.4-mm. (0.7244 in.)
Swept Volume: 6.495 c.c. (0.3964 cu. in.)
Stroke/Bore Ratio: 0.868:1
Checked Weight: 275 gr. – 9.7 oz.

GENERAL STRUCTURAL DATA
Pressure diecast aluminium alloy *crankcase barrel and cylinder casing* with drop-in hardened steel *cylinder liner*. One-piece hardened steel *crankshaft* with open peripheral slot counterbalancing and 5.5 mm. dia. *crankpin* having 3.0 mm. dia. spigot for rotary-valve drive take off. *Shaft* supported in one ⅜ x ⅞ in. Koyo steel-caged *ball journal bearing* at rear and one ½ x ⅜ in. NMB steel-caged *ball journal* at front. Pressure diecast aluminium alloy *front housing*. Deflectorless flat crown aluminium alloy *piston* with Dykes type *piston ring* and bronze bushed gudgeon pin holes. Hardened tubular 4.5 mm. o.d. *gudgeon pin* retained by wire circlips. Machined aluminium alloy *connecting rod*, bronze bushed at both ends, with oils slit in small end and two oil holes in big end. Pressure diecast aluminium alloy *crankcase back-plate* and *rotary valve housing*. Hardened steel drum type *valve rotor* 13.4 mm. o.d. and 11.2 mm. i.d. with large rectangular valve port. Flange fitting machined aluminium alloy 10 mm. i.d. *intake venturi* with special needle valve assembly. Screw-in backplate nipple for fuel pressurisation system. Machined aluminium alloy *cylinder head* with 12.8 mm. dia. bowl-shaped combustion chamber and 4.2 mm. wide squish band. Recessed 0.4 mm. soft aluminium alloy head gasket. Machined aluminium alloy *prop driver* mounted on brass split taper collet. Cylinder head, crankshaft housing and rear housing attached to main casting with chromium-molybdenum socket head cap screws.
Also included
(a) Allen key for assembly screws.
(b) Spanner for needle valve locknut.
(c) Screw-in backplate nipple for fuel pressurisation system.

TEST CONDITIONS
Running time prior to test: 1 hour approx.
Fuels used. (i) 25 per cent Duckhams Racing Castor oil and 75 per cent methanol. (Running in).
(ii) 20 per cent Duckhams Racing Castor oil and 80 per cent methanol. (Test 1).
(iii) K&B Speed Fuel – approximately 50 per cent nitromethane. (Test 2)
Glowplugs used: O.S. No. 9 medium reach, platinum filament.
Air Temperature: 20°C (68°F)
Barometric Pressure: 1008 mb (29.77 in. Hg.)

Power/Weight Ratio (as tested – less silencer)
2.24 b.h.p./lb. on FAI fuel.
2.72 b.h.p./lb. on 50 per cent nitromethane
Specific Output (as tested – less silencer):
209 b.h.p./litre on FAI fuel
254 b.h.p./litre on 50 per cent nitromethane





BETWEEN THE LINES with Dave Clarkson

Western Area F.A.I. Gala – *7th July – R.N.A.Y. Wroughton*

Unusually for Wroughton – an airfield right on the top of a hill just south of Swindon – the weather was beautiful, being warm and sunny with little wind. These conditions were almost perfect for the two events flown, F.A.I. Team Race and F.A.I. Combat but, due to a clash with the London Area C/L meeting, entries were quite low even though the Combat event was one of the selections for the '75 U.K. team.

F.A.I. Team Race

The heats produced numerous good times viz.

Clarkson/Daly (Norwest) 4:44 K&B
Horton/Haworth (Wharfedale) 4:48 ETA
Sutherland/Woodside (Norwest) 4:55 G.15 RV
Daly/Howard (Norwest) 4:57 K&B
Cooper/Green (St. Albans) 4:59 G.15 RV

Both K&B's should have been quicker especially John and myself who suffered a badly undercompressed run. Graham Howard missed a catch in his heat thereby putting himself and pilot Mike Daly out of the final by just 2 sec.

The final was a fiasco with both Norwest teams retiring with broken models allowing John Horton and Don Haworth to finish solo in a slowish time of 10:20 using their unusal flying wing model.

Combat

Because of flying only one event this day, I was able to get a look-see at Combat. The *Titan* of Dave Wood was less impressive than usual, essentially because so many people are now flying copies including such notables as Frank Smart and Vernon Hunt. In the second round Dave used his second line equipment against Derek Dowdeswell and this proved to be his downfall since eventual winner Dowdeswell was on top form. The pacifier fed G.15's of John Hammersley were again by far the fastest models present – I get the impression that a glow powered *Titan* would be almost unbeatable for speed and manoeuvrability.

The final between Vernon Hunt and Derek Dowdeswell was one of the best bouts that I have seen for some time with Derek's improved 'Pink Panther' having the edge at height but Vernon's 'Titan' copy being better low down. Two well taken cuts each meant that ground time decided the result which was in Derek's favour.

Richard Evans ran this event with commendable firmness but nevertheless with the good nature that we have come to expect from this 'gentleman' of the Combat circle.

The Stockport Combat Rally – *Worth Meadow, Stockport*

The Stockport Combat Rally held on Sunday, 14th July, attracted 40 entrants including one American flier and was mostly members of the Stockport, Sheffield, Preston, Glevum, Alfreton, South Bristol and A.C.E. clubs. The weather, much the same as last year, started off cloudy with a little drizzle but improved during the day to become sunny in the afternoon although it remained breezy all of the day.

The contest started at 10.30 flying off bouts from the preliminary and first rounds whilst waiting for some of the pre-entries to arrive. We wish to thank the Stockport police for directing lost aeromodellers to the difficult-to-find airfield who had become scattered all over Stockport!

A surprise during the first round was 13-year-old Peter Degg of Alfreton beating Mick Chilton, the '72 Nats winner. The bout in this round between Alec Herring and Steve Malone provided excitement with a total of nine cuts; Alec emerging the winner taking five of these cuts.

The second round produced the best bout of the day and deservedly both competitors were applauded at its end. This bout was between Thomas of the U.S.A. flying a scaled-down 'Nemesis' A.M.A. Combat design powered by a G.15 on a pacifier and Dave Wood of Stockport flying his renowned Oliver powered 'Titan'. The bout was basically a flight between the speed of Thomas against the manoeuvrability of Wood who finally won with three cuts solely due to skill. The fastest bout of the day was between two G.15 users, Hammersly and Roberts, with Roberts winning out in this his third Combat contest.

The final between Richard Evans flying a 'Titan' and Derek Dowdeswell was unusual because after 4 min. flying the result was an exact draw and, therefore, had to be reflown. In the re-fly Richard Evans won to take the Mainstream Trophy, plaque, cash and sponsor prizes. Other placings also richly rewarded were:

2nd Derek Dowdeswell (Glevum)
3rd Dave Wood (Stockport)
4th P. Roberts (Sheffield)

Thanks are due to the Model Shop (Manchester), Pegasus Models, Solarfilm, Solarbo and George Copeman for their kind sponsorship in the form of prizes.

As perhaps a sign of the times, nine of the 40 entries used glows (1 MVVS and 8 G.15s) and three of these were left by the quarters. A Taipan 2.5 Schnuerle glow was being run-in during the con est and this sounded really ferocious. Increasing competance in the pitting of glows was noticed.

Salzburg International *13-16th June 1974*

Some fine results here including a new World Record by Louis Bilat of Switzerland in F.A.I. Speed of 259 km/hr (with a back-up flight of 257 km/hr to show that it was no fluke). This is an amazing speed for 2 x 0.4 mm. lines (161 m.p.h.) and Louis deserves all congratulations for this fine effort, achieved using a Rossi (surprise, surprise!).

Also speedy to say the least were the F.A.I. team race lads who finished off with a very tight and fast final which was won by the Dutch Metkemeyer brothers.

	Heat	Semi	Final
1. Metkemeyer bros. (Holland)	4:29	4:26	8:44
2. Fischer – Nitsche (Austria)	4:19	4:21	8:50
3. Bugl – Straniak (Austria)	4:12	4:14	8:51

Also quick were 4th placers Fontana Amodio of Italy with a 4-21 heat. All of these top four used Bugl motors. Fontana-Amodio managed a win in the 500 lap F.A.I. – TR race in 21-55 (equals five heats in the low 4-20's) to head off Paul Bugl with a 22-51 and follow Italians De Angeles – Massari who finished 3rd in 22-57.

German C/L Nationals *8-9th June 1974*

This event served as the final selection trial for the German team for the World Champs and therefore visiting Danes Hasling-Siggard stood down from the F.A.I.-TR final even though they were fastest in the semis with a 4-21. (An example of sportsmanship that should be applauded.)

Results were:-

F.A.I. Speed

1. Rolf Meibach (Rossi) 233 km/hr
2. Emil Rumpel (Rossi) 236 km/hr
3. Josef Frohlich (Rossi) 219 km/hr

F.A.I. T/R

1. Lenzen – Rumpel (Rossi)	4-14	4-30	9-03
2. Brendel – Glodeck (Rossi)	4-51	4-31	9-26
3. Bader – Kaul (Bugl)	4-35	4-40	9-36

Emil Rumpel suffered a bad start in his fast heat and subsequently injured his catching hand quite badly which slowed his pitting considerably in the later stages of the contest. He apparently turned down an offer of 1000 DM (£170) for his motor afterwards.

Other events held were Stunt (two entries), Scale (seven entries), and Combat with a respectable entry of 20.

Having just spent a week in the company of Messrs. Rudd & King, ye Editor was gently (!) reminded that a serious error was made in the August issue – on the 'winners' picture page, credit for topping the Goodyear event was given to Fry/Smith, when in fact David and Richard won. Sorry folks – but at least we sold an extra copy of that issue to Richard's wife. . . And incidently, who said Richard was the quiet one?

C/L in Australia

Received a letter from Stuart Thomson in Melbourne giving some results and information on the recent Victoria State Champs and the New South Wales Champs. Apparently they all fly over grass there (still) for the racing and speed events, I have yet to discover whether this is from choice or necessity, however it must slow racing times quite a bit which makes some of the times recorded most respectable.

In the N.S.W. Champs the first two Bugls in Australia were seen in F.A.I.-T/R and not unnaturally came first and second with times of 9-54 (Oddy/Richard) and 10-18 (Kerr/Shing) followed by a G-20D in hands of Wilson/Vella. More results for the Victoria State Champs.

F.A.I.-T/R
1. Kidd/Stewart (ETA) 10-22 (best heat 4-48).
2. Davis/Davies (Taipan) 11-38.
3. Wilson/Vella (G20D) 12-24.

CLASS C-T/R
1. Kerr/Bourne (ST29 ABC) 6-35.
3. Wilson/Vella (OS H29R) 9-18.

¼A-T/R
1. Wilson/Vella, 9-20.
2. Davis/Davies, 9-50.
3. Tilley/Noakes, ret. 45 laps.

F.A.I. Speed
1. B. Treagus, 133.2 m.p.h. (New Record).
2. I. Podopivec, 127.5 m.p.h.
3. M. Cook, 116.2 m.p.h.

Stunt Contests

There seems to have been quite a revival of interest in this class this year with quite a few contests being held. Here are the results of just two of them:

Burns Brown		Elliot	
1. J. Mannal	1832	1. P. Tindal	2056
2. J. Heanan	1793	2. J. Lynch	1941
3. P. Tindal	1773	3. K. Burton	1891
4. J. Lynch	1728	4. J. Lambert	1806

John Lynch at 58 Grosvenor Road, Rush Green, Romford, Essex RM7 0Q2, is compiling a sort of Stunt League table which I hope to publish at the end of this year, so would all organisers send their results to John to assist him in this.

One word about the Burns Brown Contest not concerned with Stunt is that due to a thunderstorm the Combat event was not finished, so would all who were left in the last ten please finish it off at the S. Midland Rally at Cranfield on September 22.

Emil Rumpel prepares his superfast Rossi 15 racer – the same old model he used at our Nationals, but now with better cooling for the motor. In background are his pilot Jurgen Lenzen, and everkeen Dane, Werner Siggard (right).

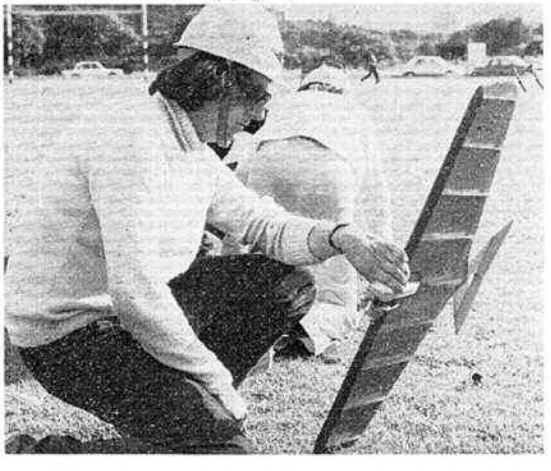
F.A.I. Team Race Rule Change Proposals

It has become obvious in the past year or so here in the West and perhaps for a longer time in Russia that some modification to the present rules may be desirable. This is because the very best competitors are now achieving over 40 laps (perhaps up to 50) at very high speeds. Indeed speed achieved now seems to be 'suction limited' i.e. around 4 mm. dia. choke, and yet most adequate range is still obtained.

One proposal (from Russia) was to reduce tank size to 4 or 5 c.c. and this, no doubt, would have achieved the aim of pulling the range of the very best competitors down to 25 laps at today's speeds. This proposal is fraught with problems, particularly with regard to tank measurement (it is just possible, with great care, to accurately measure a 7 c.c. tank, with a 4 or 5 c.c. tank the care required for sufficient accuracy would be beyond what can be achieved on the field) and also would definitely make this fine event a 'super experts only' event. For these reasons the C.I.A.M. have not accepted this Russian proposal.

Now a second proposal has come from Switzerland which seems to get over the objections to the Russian idea. The Swiss proposal is to introduce the notion of compulsory pit-stops and to eliminate altogether tank volume requirements. Whilst this does eliminate tank measuring and also is kind to the non-expert (it puts them on the same footing) it does not solve the problem of the super motor. Instead of shelling out great quantities of Geld for a Bugl (or better!), the demand would be for Rossi's or X-15's and for Nitro. I am afraid that the introduction of compulsory pit-stops would do F.A.I. Team Race no good at all (we already have a mini-Rat Race in the form of Goodyear) in that it would become, like Rat and Goodyear, a search for maximum horses. Instead of cheating on tanks, we would have cheating on motor size — much more difficult for most organisers to check, and beginners would be just as badly off.

For these reasons I hope that the Swiss proposal (like the Russian one) will not be adopted. A pity perhaps, but we must keep to the principle of F.A.I. Team Race i.e. that of ultimate efficiency with minimum opportunity for cheating. The present rules are not perfect but, in my view anyway, are fairer for the vast bulk of competitors than have been the modification proposals I have seen so far. A case for some more thought?



Left: Mick Lewis takes his turn at pitting, helping fellow club mate Derek Dowdeswell to win at Stockport meet with his Pink Panther design. Below: eventual winner Derek Dowdeswell is flanked by Richard Evans (left) and Dave Wood.

JAPANESE MODEL TRADE DEVELOPMENTS

Impressions from a brief visit to Tokyo and Osaka

by RON MOULTON

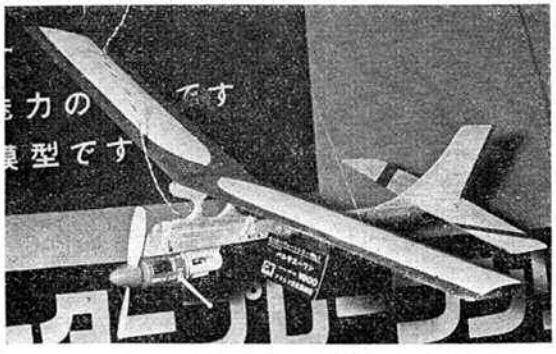
COMPARATIVELY little is known in Europe of the volume of aeromodelling activity in Japan. Every modeller is familiar with the exported products; engines, radio control, accessories and kits but few have any appreciation for the intense industry expended by the Japanese to support not only the world-wide exports but also a huge domestic market. Japan has half the population of the United States concentrated in an area equal to California. It has seen rapid change in standards of living, and individual prosperity and has a hard currency which influences the stock markets of the world. In such a situation it is no wonder that a healthy model industry should supply a huge modelling population and that competition has produced high standards of manufacture and performance.

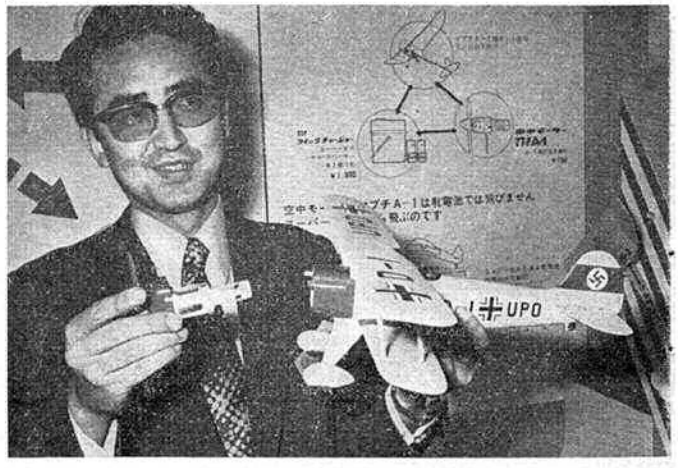
A visit to each of the major engine factories, O.S. in Osaka and Enya near Tokyo, who between them make 1,200-1,300 engines daily, will make a special feature to appear later. Suffice to say here that each has new designs in abeyance for 1975. They are currently engaged in the latest Enya 40 and O.S. F60GR Black Head which introduce new features and improved power. Production methods at these factories, though completely different, arrive at the same insistance on quality.

Well over a third of the output from O.S. goes to the domestic market, even more from Enya. Comparative prices at exchange rates prevailing during our visit ranged from £8 for an Enya 19TV to £23.85 for a .60 III IV. An O.S. 40RC costs £15 and a Schnuerle 40 is £24.60.

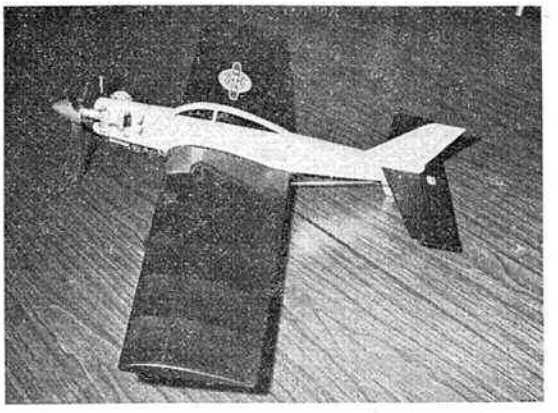
Radio control is dominant but there is a strong following for control-line with many kits for trainers, among them several which combine plastics with balsa construction. Plastics play a very important part in Japanese kits. Moulded fuselages, cowls, wings

Below: Typical kit offered for Mabuchi electric power unit seen with Akira Ohnishi and He 51 electric scale model at right. Beda 5 influenced S-18 is a Mabuchi styrene RTF experiment for pulse rudder, electric power R/C by their designer Tuchimochi.





Far left: Osaka model shop run by Mr. and Mrs. Takamatsu has stock from all over the world, similarly at Radar, Hong Kong, which we visited en route. Mail order expert Mr. Lai can supply almost anything in aeromodelling. Right: Plastic fuselage built-up wings in C/L trainer kit.



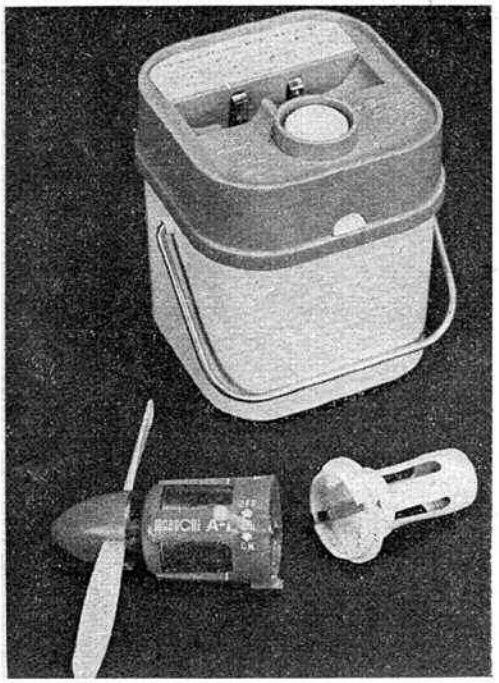
and accessories are included in most of the kit ranges. Kato has even gone so far as to make a rotary moulder which produces fuselages for radio control in one seamless shape – not even halves to join!

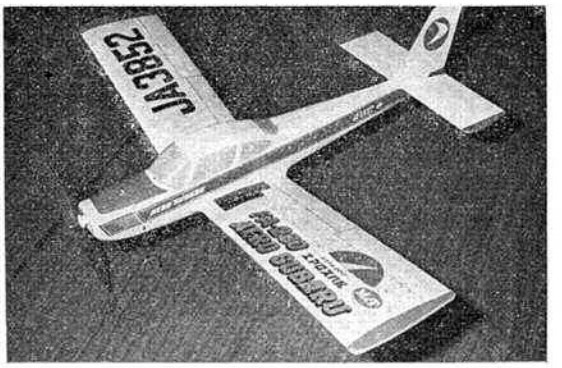
But the traditional fretsaw is still well employed. Batteries of chattering saws were cutting ribs and bulkheads at Pilot kits when we visited this warren of productivity in Osaka. They have a range which embraces all categories of model, even includes model boxes too! These are lightweight veneer finished with dandy handles, large enough for free-flight, or in one case specially designed for radio with compartments for wings, fuselage (tail attached) and transmitter. The concept is brilliant. Another Pilot line which looks great is the Mermaid flying boat for R/C, 40s with ABS moulded fuselage and power pod and a plastic covered foam wing which makes it almost ready to fly. But Pilot have not forsaken balsa, many of their kits, long established and new, are specifically billed as balsa kits.

Scale models by Ikuta and Marutaki cover many of the W.W.II fighters, while Kato adds lightplanes to the P.38, Tony and Zero in his range. These are, of course, R/C but almost all the W.W.II fighters are also covered in the Kyosho range of control-line scale kits. This company has a 3m Cirrus, and a power-assisted glider on smaller lines which are aimed at the Sports flier. They, like many other manufacturers have obviously been included in the Mabuchi scheme to popularise electric power. Readers may recall our appraisal of the Mattel 'Super Star' ready-to-fly and the suggestion that its power unit would have other applications.

The motor, gearbox and batteries became desirable spares, but no spares were available. Now Mabuchi themselves have recognised the potential and in the A-1 have launched a plastic-cased motor which direct drives a plastic 114mm dia. 57mm pitch prop. The unit weighs 1¼ oz. and clips on to the front of its battery holder which in turn has moulded slots to fit on a fuselage. Batteries are two rapid recharge cells of the Nickel Cadmium type, 1.2v 100 MaH, made by Sanyo as the N-6U. Total flying weight is 2½ oz. With the unit, one should have the special Quick Charger which takes four high power size D cells and incorporates a recess for the Cadnica airborne batteries while they are being charged. Timing of the operation is simply controlled by a push-button contact switch on the case. Put in 30 sec. charge and you get about 10 sec. of power

continued on page 503





Left: The Mabuchi A-1 and Quick Charger battery holder just released on Jap market Clip-on airborne battery case holds two rapid recharge Ni-cad cells and then becomes motor mount. Right: all styrene RTF rubber semi-scale Subaru flies extraordinarily well.

CLUB NEWS

FREE FLIGHT CONTESTS may not be spectator events, but still they provide an exciting display of model flying skills and techniques for those people who make the journey to the remote fields where, for the needs of the sheer space required, they are now held. The thing that gives the free flight event its particular quality is the quantity of flying that goes on throughout the day, with models disappearing into the blue (or the grey) at great height. Then, again, the score board, which the hard pressed officials always make a prominent feature of F/F contests, is always kept up-to-date to give, at a glance, the state of the flying throughout the day. I thoroughly enjoyed my day out at the S.M.A.E., Club Championships at Stradishall in June, which deserved greater support than it got.

The summoning of support, and the pitfalls thereof, is a theme in our first report, sent in by Mr. G. M. Dance, P.R.O., of the **Reading & D.M.A.C.** He tells us that the first event to be held by the club on its flying field off Richfield Avenue, attracted only a small entry of six. But this was a *Junior kit* event, and did not get the early publicity so necessary for the building up of enthusiasm in such contests, and, again, the weather was not all that encouraging. Even so, six entries in a club junior event is relatively quite good. A. Bunker was the proud winner of a D.C. Merlin engine, and kits (all presented by a local model shop) went to second and third places, with all entrants receiving a year's free membership. Juniors number around 20 in a total membership of just over 100, which includes a few car and boat men, but most operate in the upper element. The club has now completed a probationary three months on its new flying field, and by the time this appears in print will know if permission for use has been extended. The club hopes to put on a big static and flying display at the huge Reading show in August.

A letter from the **Maidenhead Model Makers Club** is proud to inform us that the club had a winner at the Nationals when Alan Sopp made a happy and accurate landing on the Carrier Deck to win the event for the second consecutive year. Another winner was the club auction, where broken combat models and items like record-players came under the hammer. They went at ridiculous prices, but boosted the club funds by a handsome £21. Another auction is on the agenda, as also is the club unorthodox event, in which the most entertaining flight wins. There is also a full-size Aircraft Recognition competition, plus various r.t.p., and indoor activities. New members welcome. Come along any Friday night to the club hall in Holman, Maidenhead, or phone Twyford 345348.

P. Burgess, the Secretary of the **Witham (Essex) M.A.C.,** reports that the club has had quite a good year. Membership has steadied around the 25 mark, and is pretty active. Plenty of life, then, on the club fields during the light summer evenings, particularly in the much strengthened radio section, where there is a noticeable improvement in the flying of the younger members. On the C/L side of things, stunt is the main attraction, and is the only activity which has taken members to outside contests, Alan Church, for one, getting a merited 23rd place in the Nationals. At the Colchester Club Gala members got together with a local cine group to make a 16 mm. sound film of the club competing on that day. The results, eagerly awaited, have been held up by a film processers strike. In the early part of the year the club held its first ever contest. It was for C/L stunt, and the seven entrants included Steve Blake and Peter Tindall, with Steve coming out on top. It is hoped to make this event an annual affair.

It's all in smudgy mauve print, but *The Informer* newsletter is the pride and joy of the **Long Eaton & D.M.A.C.** Kit Spackman, the gallant Editor, cannot always hope to get the upper hand of the ancient Banda machine, which has a reject rate of 75 per cent, at least not every month, so it looks as if the sheets that do come out will appear only on a quarterly basis. Now I forget who deciphered Linear B, but I wish I had his help on Informer One, but I did discern that the club had a go at the Nationals, with a good try in Combat and a valiant half-way up the list attempt at R/C Thermal Soaring. I also gathered that the club had the use of a farm-type field, and there is a hint or two of some club premises. The club mower cuts down the tickly growth to ensure the smooth operation of pylon events and such, and a lively R/C and C/L programme has been drawn up for the summer..

Expanding membership and wider competition interests in the **Concorde M.A.C.,** has compelled Secretary Robin Morton to take on a little more help, according to the latest newsletter. The 22 members are a pretty active lot, covering free flight, C/L and Radio on the factory field. A Power Duration event brought out a tidy field of four, and was run on a ratio basis, engine run to duration. Winner was Pete Holding, flying a *Gaucho*. As a follow up to this event, Don Moorhouse 'entertained' by flying and crashing both his *Gyron* and his twin-engined *B70*. Not too badly, we trust. At the same time Robin Morton's *Ro-Dart* autogiro flitted merrily overhead. At long last the club has obtained tenancy of an airfield building as a clubroom. Members have been invited to give a static and C/L display at the Moreton-in-the-Marsh Show in September. Should be good publicity both for Concorde and the club.

Doing the contest circuits during the early part of the season was more of a battle against the elements than the matching of skills against other clubs, according to the chilling recital of wintry winds and ruinous rains in the **Three Kings** *Court Circular*. And, coming after all that spirit dampening weather, the sunburst Nationals must have been a pleasant relief. Wal Cordwell made the remark of the month in his *Between the Lines* column. In these days of football hysteria he bravely referred to the hallowed sport as 'that stupid game'. He did have good reason, though, for a late kick-off considerably delayed the start of the club demo at the Olivetti Show at Hindhead. A good show, nevertheless, as an hors d'œuvre to the hot air ballooning and the ox roasting.

P.R.O., John McAlroy reports a very fair Nats for **the Wharfedale & D.M.A.C.,** with Horton/Haworth, Barker/Hill and Devenish/Davy appearing in the top C/L placings. Need we say that the members who made the foray to Little Rissington all had a good time. In the more sedate environs of the garden party

and fete the Display Team has been adding its own brand of excitement. Only C/L though – space too restricted for the wireless type of control. Demos are not without their comic incidents, witness Bernie Langworth getting wound up with wire from toe to knee. Eventual destination of the model not given, but disaster was avoided. Seems the club is growing at a fantastic rate, with inquiries by phone and letter flooding in. *Yorkshire Post* publicity plays its part. A big Radio section is building up, and though good relations are maintained with the C/L side, it is attracting people away from dizzy circulating to dizzy heights. More members bring more problems, not least of all a need for more and preferably better flying sites.

Master P. A. White, aged 14, is trying to start a model club in the Shrewsbury area; so far without much success. He does not state the type of models he flies, but anyone sharing a similar club interest can contact him at 167 Monkmoor Road, Shrewsbury, Salop.

Beautiful clarity of type is the special feature of the new style *El Torbellino* newsletter from the **San Diego Orbiteers.** And good type needed if I am to read the very alien to us contest programmes. Imagine a club turnout for something like the SCIF Champs at Elsinore, where the events went like this: 020 Replica, Commercial Rubber, Scale Rubber, Old Timer R/C. And at Chapparel Field you would be expected to fly AMA and Peanut, Jumbo and 20 second Gas. Just work that lot out. Plenty of our European Coupe d'Hiver flying in the club, though. They fly to 100 second maxes on the new 100 gramme models and to a 120 on the old 80 grammers. Experience there, as here, though, seems to suggest that the weight increase has not affected performance adversely. It's still a question of good trim and good rubber.

Another familiar transatlantic newsletter sporting a new look format is the **San Valeers** *Satellite.* This Californian club is an all free-flight affair; proving that there are some enclaves of resistance against all pervading Radio. How do we fare over here for wholly F/F clubs? We hear a lot from all-Radio, all-C/L and mixtures, but never from a strictly non-control grouping. Take consolation, though, we are not the only ones to suffer from the variscosity of motorways over flying fields; they've pushed one through the famous Basin, making things a bit dicey for the gas-free flighters.

Clubman

Contest Calendar.....

August 30th to September 1st	**INTERNATIONAL R/C THERMAL SOARING** at R.A.F. Halton, near Aylesbury, Bucks. Entry forms from G. Dallimer, 10 Angle Ways, Stevenage, Herts.
September 1st	**NORTHERN AREA RALLY.** Nearly all classes of F/F, C/L and R/C! 10 a.m. start at R.A.F. Elvington, Nr. York (B1288 road, 7 miles S.E. York).
September 1st	**ASHFORD R/C RALLY.** Class 1 Scale Fun/Novelty, Team & Demo events. Individual demos are invited. Details: M. Tate, 60 Towers View, Kennington, Ashford, Kent (Tel: Ashford 26459). Proof of R/C licence and Insurance essential.
September 8th	**S.M.A.E. 6th AREA CENT.** Team Power, F.A.I. Rubber A/1. Area Venues.
September 8th	**LONDON AREA C/L MEET.** F.A.I., Goodyear & Combat at Charville Lane, Hayes.
September 8th	**THREE KINGS OPEN DAY** C/L stunt, scale and carrier at Croydon Old Aerodrome, off Purley Way, Silencers essential.
September 21-22nd	**F/F WORLD CHAMPS 1st TEAM TRIALS.** Venue U.S.A.F. Scunthorpe. All entries to be received by August 31st – details S.M.A.E. Comp Sec. Ian Bracken, 100 Torcross Road South Ruislip, Middx HA4 0TF. S.A.E.
September 22nd	**SOUTH MIDLAND AREA RALLY.** F/F: Open R/G/P, Scale, H.L.G., Junior Kit, C/L: F.A.I., Goodyear team race, Stunt, Combat, Scale, Junior Stunt. R/C: Class 2 Scale (Brown & Blue freq. only). R/C Thermal Pylon Racing (R.O.Y.G. freq.) Pre-entry for Thermal Pylon (50p) and details from N. Webb, The Bungalow, Fritwell, Nr. Bicester, Oxon. Venue: Cranfield, Bedfordshire.
September 28th	**S.M.A.E. NORTHERN GALA.** Venue R.A.F. Rufforth.
September 29th	**S.M.A.E. 6th INDOOR MEET.** Venue: Cardington, Beds.
October 5-6th	**F/F WORLD CHAMPS 2nd TEAM TRIALS.** Details as for 1st Trials.
October 6th	**S.M.A.E. ALL SCALE MEET.** R/C (F.A.I.), C/L & F/F at R.A.F. Little Rissington, Glos.
October 13th	**S.M.A.E. 7th AREA CENTRALISED.** Team rubber, F.A.I. glider, ½A Power – Area venues.

JAPANESE MODEL TRADE

Continued from page 500

run. Local cost is £1.15 for the A-1 and £2.75 for the charger and two cells.

Just about every Japanese small kit manufacturer has a design out for the A-1, some of them archaic in outlook, almost straight from the old *Boys Book of Models* stuff. Others, notably Mabuchi themselves, have seen the potential of electric *scale* (see photo) and have elegant pylon designs not unlike the Goldberg Zipper or KK Super Slicker, using plastic foam wings. We watched demos which showed remarkable power.

R/C electrics is also in Futaba's programme. They have a motor, also for direct drive, and RTF foam plastic airframes, but the Graupner *Hi-Fly* appears to be more popular. Float planes might be rarities to us, but to the maritime Japanese they are second nature for R/C or C/L. Float kits come in many sizes and materials. Similarly, the airboat (prop driven) hydrofoil is popular and the modellers have a good choice of kits and fittings.

In the accessory lines one discovers novelties, such as a 9v charger (for airborne packs in the Futaba electric power) which plugs into the car cigarette lighter socket. Or exhaust extensions by Hinode which go on silencer ends, carrying away the mess from the fuselage. Or stands in which to rest transmitters not in use (sand or shingle riverside sites are often used for R/C). Or a Jetex equivalent in A and B sizes, or real flying saucer kits, but NO lightweight Jap tissue, NO rubber and light silk at £1.20 a square metre in the country of its source!

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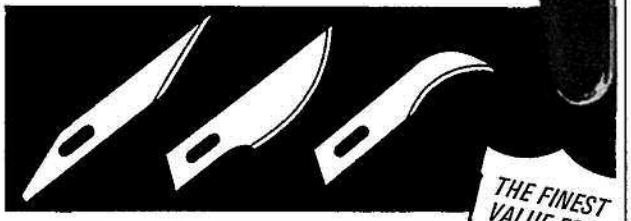

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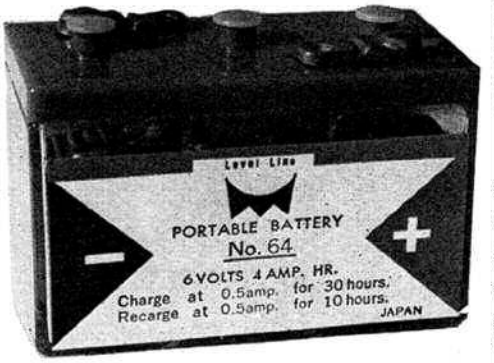

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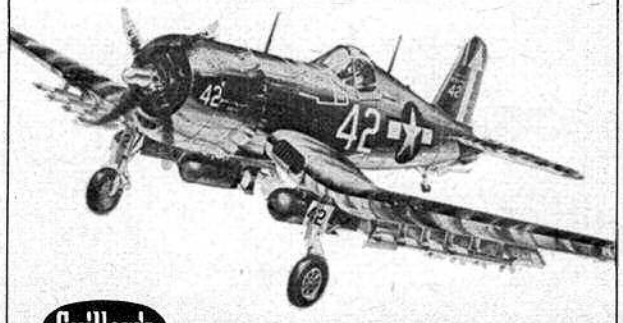

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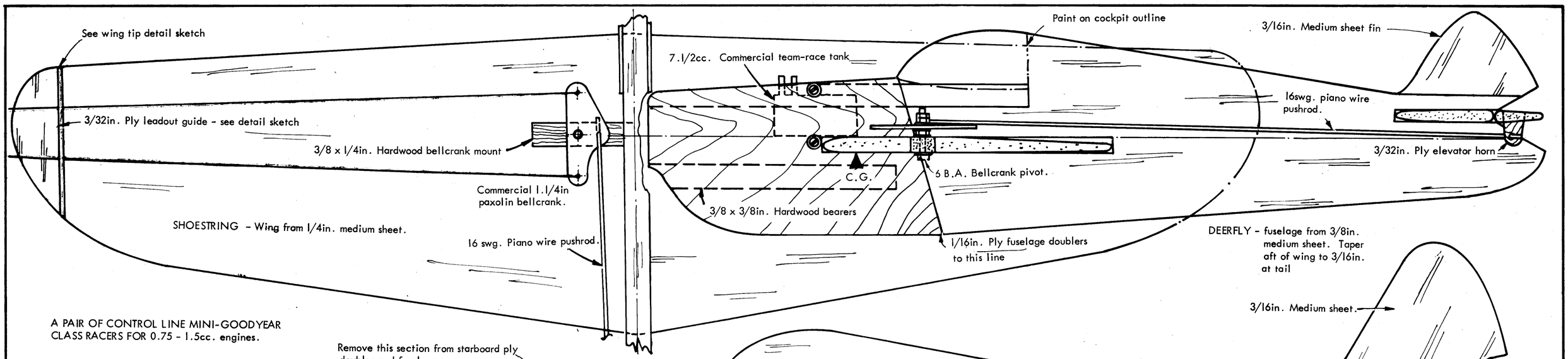
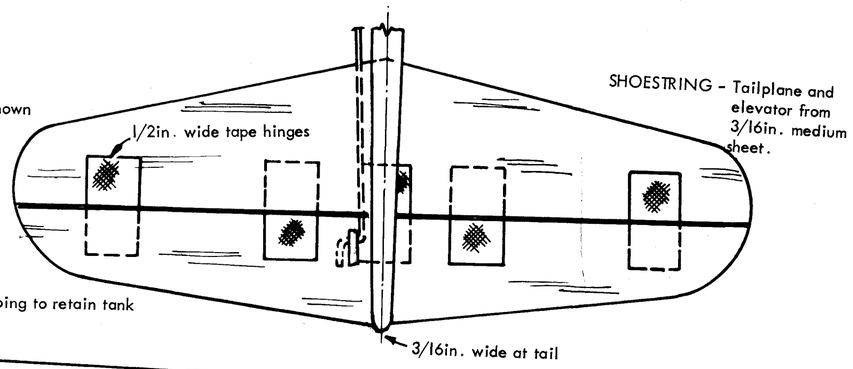
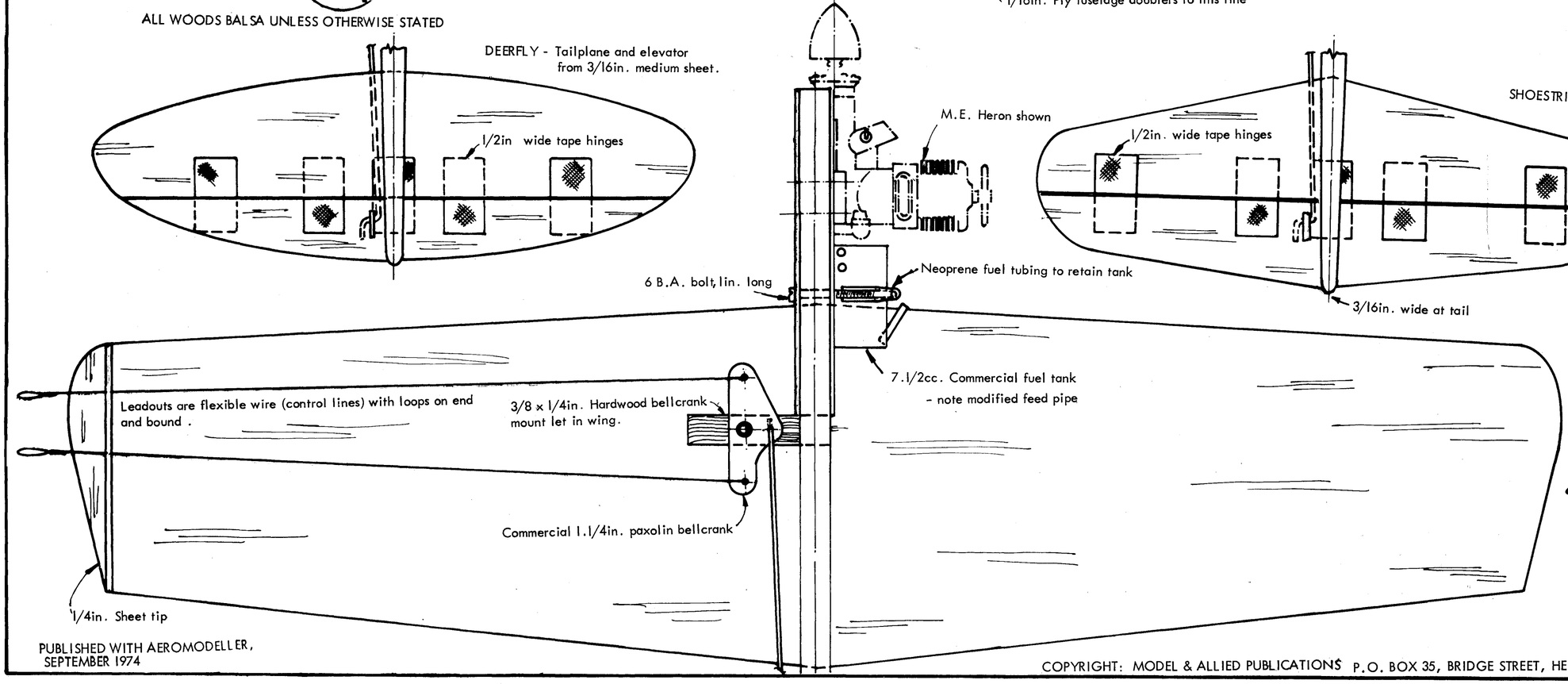
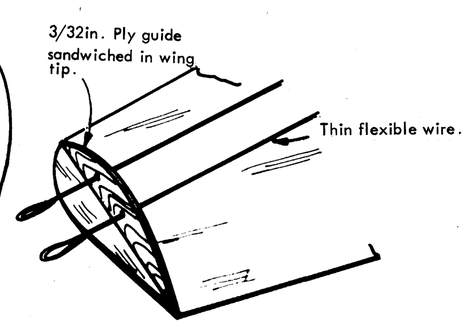


NOTE: Leave centre section of wing and tail "square" when shaping so that they will accurately fit the cut-outs in the fuselage.







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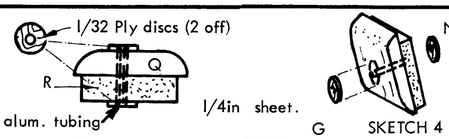

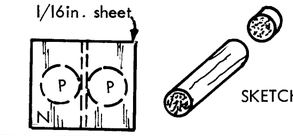

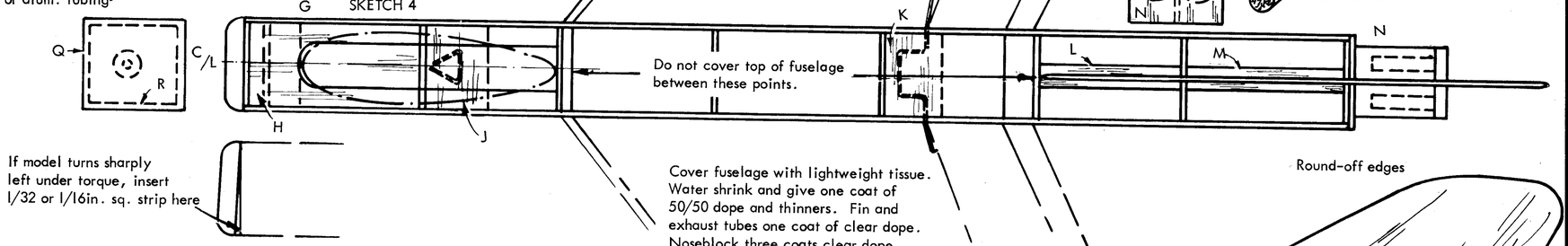

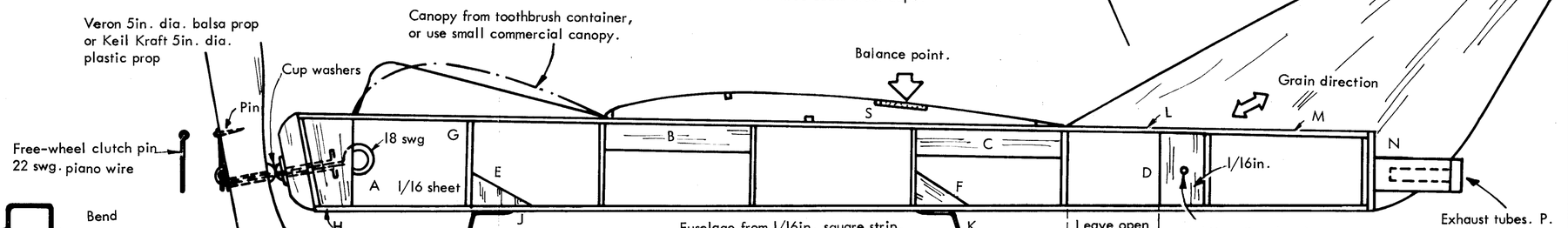

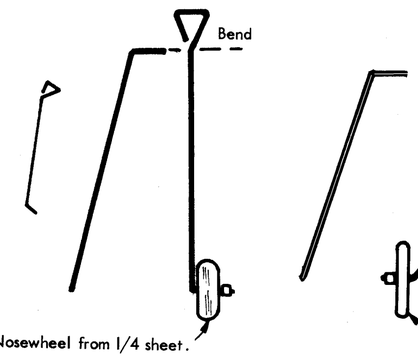

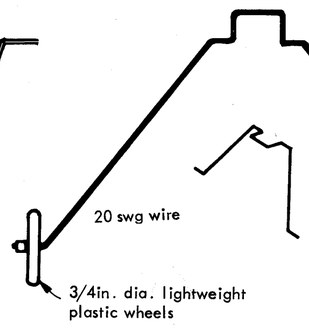

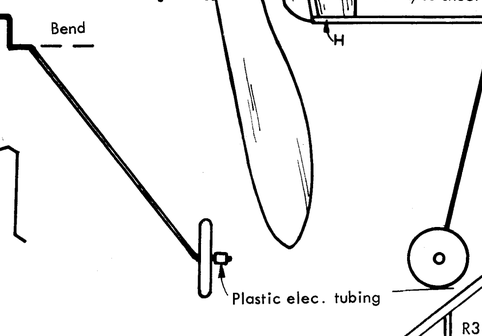

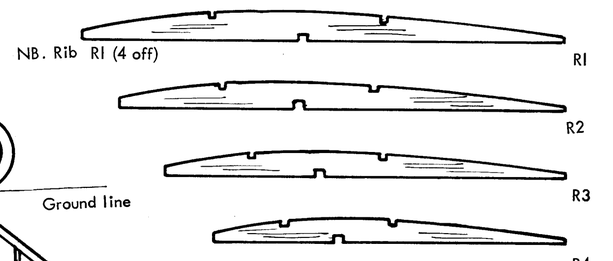

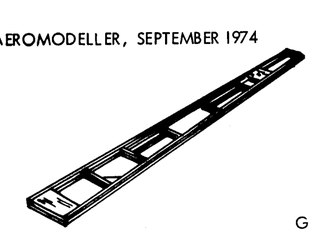

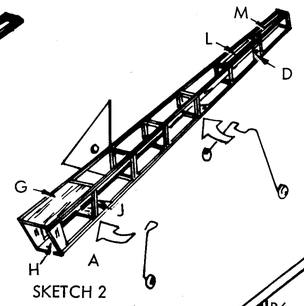

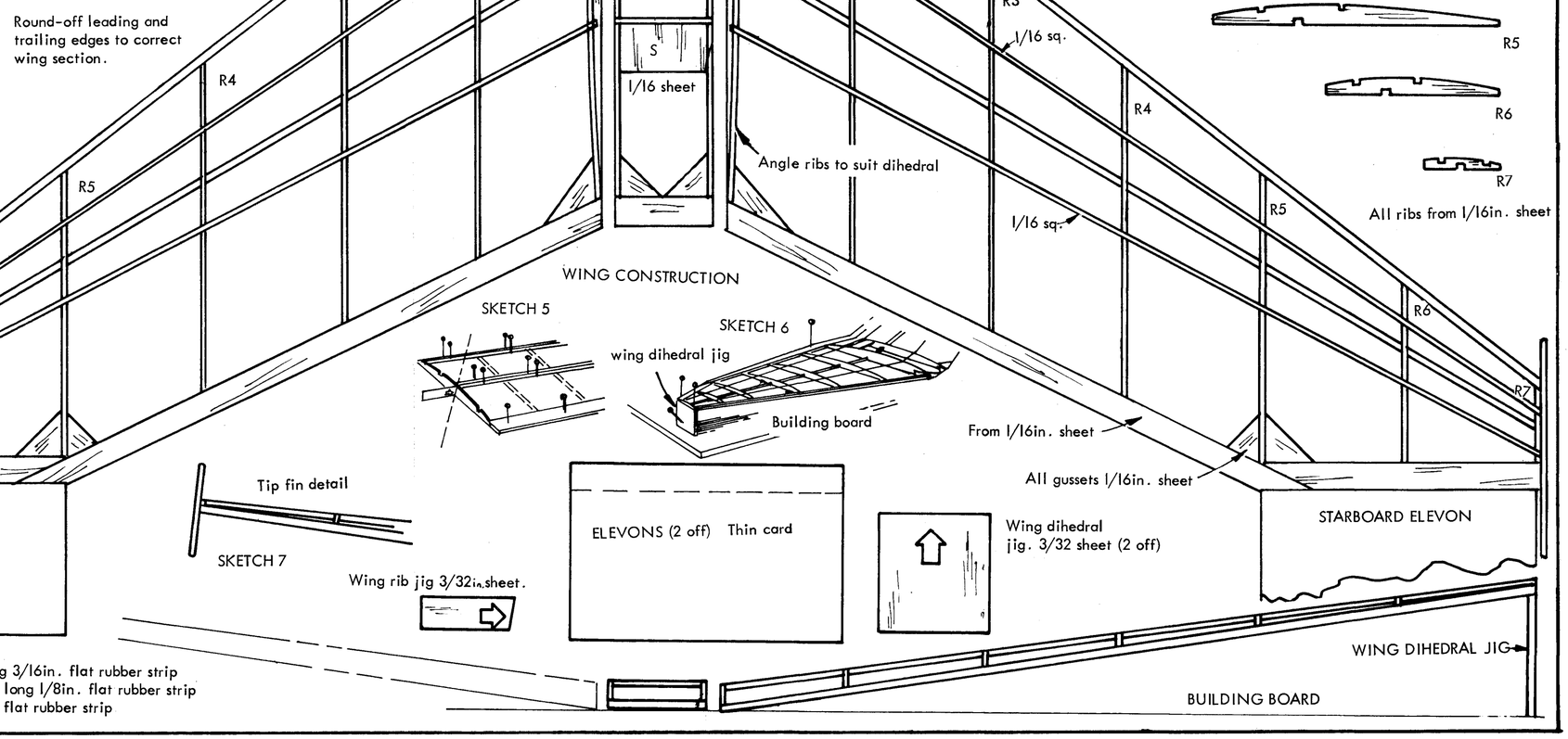

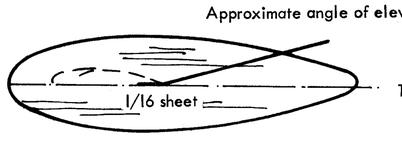

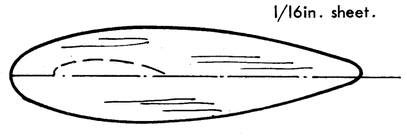

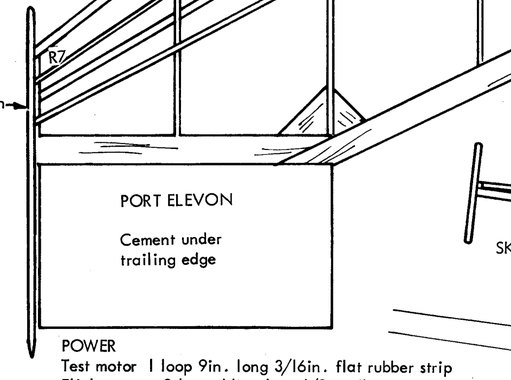

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