

# Aero Modeller

OCTOBER 1967

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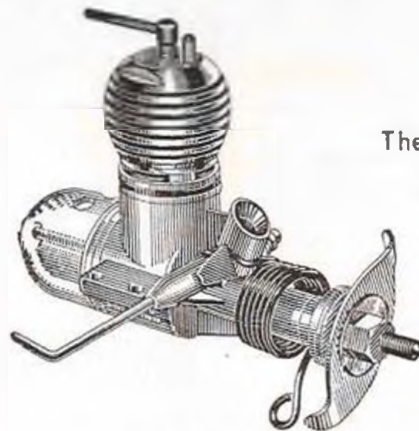


**R.W.D. 8**  
**Super Scale**  
**Plans inside**

# Quality

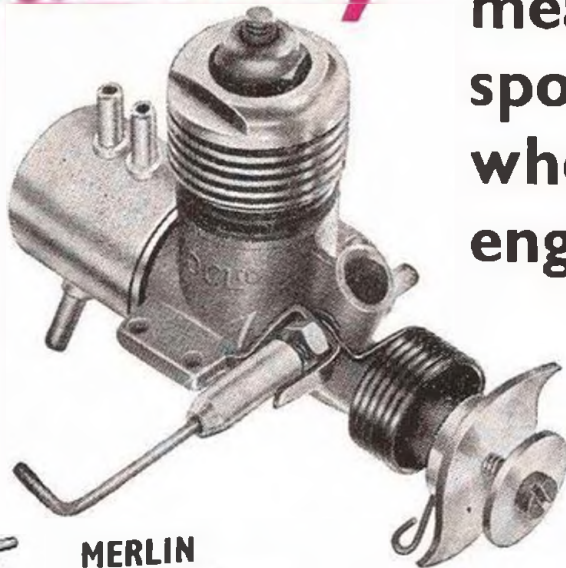
plus

# Reliability

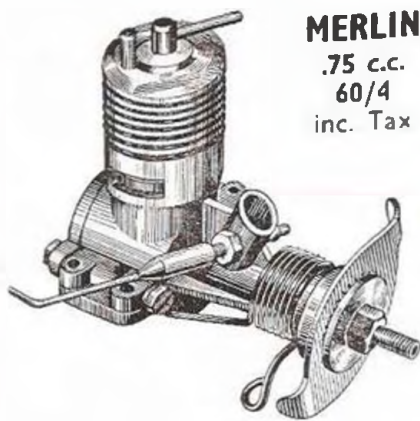


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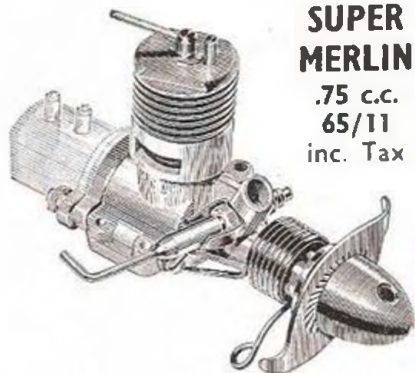
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Highest quality engineering using the latest precision techniques brings you the greatest range of model diesel engines for sports flying. Renowned for ease of starting, long life and consistent operation the "Quickstart" series are also among the quietest of engines when fitted with the inexpensive special silencer exhaust manifold. Marine versions too! These engines can be supplied with water cooled head, and special flywheel for model boat operation. Other specialities in our range include the famous D-C Control-line handle, Test Stand, Nylon Propellers, Quickclip Connector, Quickstart Glowplugs and a full range of spares so that no Quickstart engine owner need ever be concerned about being "grounded".

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# Aero Modeller

INCORPORATING  
**MODEL AIRCRAFT**

October 1967

VOLUME XXXII No. 381

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**HOBBY MAGAZINE**



also MODEL BOATS . MODEL CARS . RADIO CONTROL MODELS & ELECTRONICS . MODEL ENGINEER and MODEL RAILWAY NEWS.

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## COMMENT

Post haste results from the biggest-ever World Championships (270 competitors from 33 Nations) for free flight models brings cheering news of an outstanding British Success. The Power model team, G. French, R. Monks and S. Savini put up a spectacularly consistent performance to gain top team honours. Moreover, George French placed second only to his old adversary Hans Seelig in a thirteen man fly off. Congratulations to each of them! In Glider and Wakefield, our teams, like so many others were troubled with extraordinary thermal conditions. Their position in the results is no reflection on their earnest endeavour and though their star may not be so bright as that of the Power modellers, they also deserve acclaim for valiant effort in the toughest contests we have ever witnessed.

### Power (13 in fly-off).

1. H. Seelig, West Germany	900+240+300
2. G. French, Great Britain	900+240+280
3. B. Fiegl, Italy	900+240+263
4. R. Cherny, U.S.A.	900+240+251
5. P. Spring, Switzerland	900+240+152
10. R. Monks, Great Britain	900+181
17. S. Savini, Great Britain	894

### Power Team

1. Great Britain 2,694; 2. U.S.A. 2,666; 3. Italy 2,612.

### Glider

1. M. Hirschel, East Germany	900+240
2. E. Voros, Hungary	900+144
3. B. Modeer, Sweden	900+143
4. A. Tanyu, Turkey	900+113
5. A. Oschatz, East Germany	899
42. B. Halford, Great Britain	724
48. M. Woodhouse, Great Britain	697
70. R. J. North, Great Britain	573

### Glider Teams

1. Czechoslovakia 2,554; 2. East Germany 2,504; 3. France 2,468; 21. Great Britain 2,004.

### Wakefield (16 in fly-off).

1. M. Sulkala, Finland	900+240+300+238
2. K. Rechlov, Bulgaria	900+240+300+89
3. V. Matveev, U.S.S.R.	900+230
4. E. Melentiev, U.S.S.R.	900+210
5. T. Koster, Denmark	900+207
56. J. Mabey, Great Britain	761
57. L. Burrows, Great Britain	740
67. R. Bailey, Great Britain	700

### Wakefield Teams

1. U.S.S.R. 2,666; 2. Finland 2,663; 3. Italy 2,662; 20. Great Britain 2,201.

## on the cover

The parasol winged Polish Trainer RWD-8 makes a fine model subject for Laurie Bagley's brushes as it wheels above a club field. See pages 532-5 of this issue for fine scale data on this interesting aircraft.

## next month

Full story of both the World Free Flight Championships—the largest ever staged and the Criterium of Aces, top European control line International. Plans for powered round-the-pole scale models, three views of contest designs. Super scale data by Dave Platt on the SBD-5 Dauntless and a whole host of fine features, on sale October 20th.

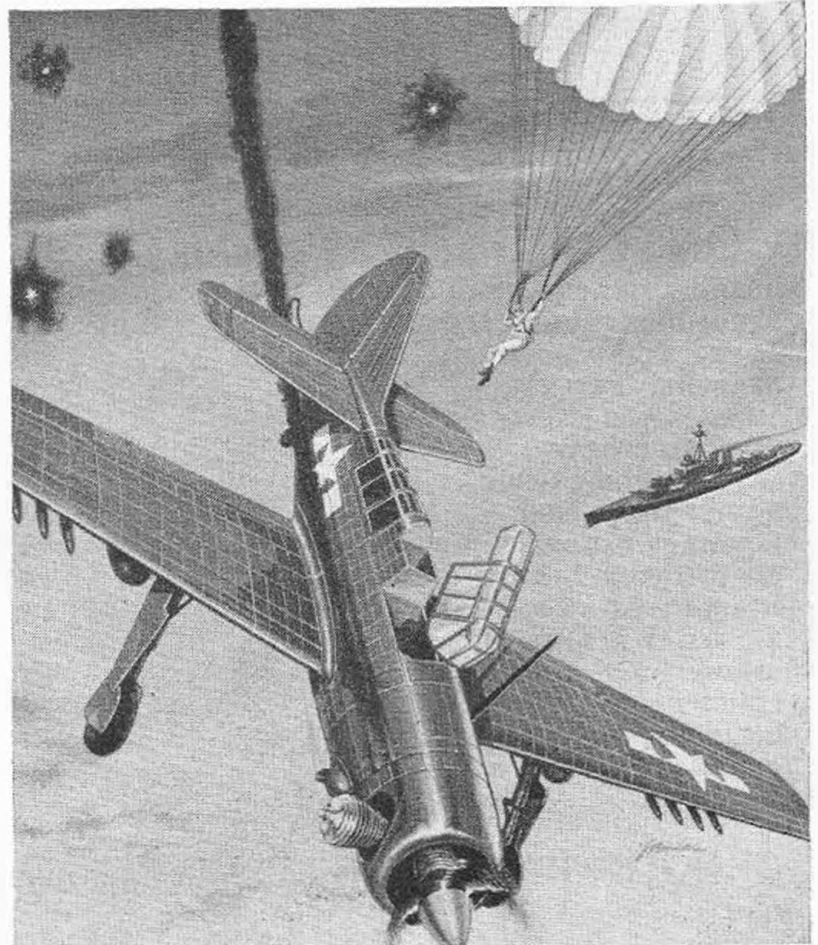


# READY-TO-FLY SCALE CONTROL LINE MODELS



GET FLYING right away with a true scale model powered by a world-famous Cox glow motor. Nothing to build or assemble—the ready-to-fly model of your choice is COMPLETE in every detail, precision made for absolute realism and TOP FLYING PERFORMANCE.

- P-51 MUSTANG FIGHTER** .. £6.15.0  
Wingspan 16". Length 14".
- CURTISS A-25 BOMBER** .. .. £7.12.0  
Wingspan 20". Drops bombs in flight.
- JUNKERS Ju 87d STUKA** .. £7.12.0  
23½" span. Drops bombs, opening canopy, visible fuel gauge, etc.
- SB2C HELLDIVER (illustrated)** £7.12.0  
Wingspan 20". Ejects pilot and 'chute.
- PT-19 FLIGHT TRAINER** .. .. £6.1.0  
Wingspan 22". Length 16½". Also with "QZ" (Quiet Zone) engine £7.12.0
- L-4 GRASSHOPPER** .. . . . £6.1.0  
Wingspan 17½". Length 12½".
- T-28 ADVANCED TRAINER** .. £6.15.0  
Wingspan 18½". Length 14½".
- FLEDGLING TRAINER** .. .. £4.14.0  
Wingspan 16". Tricycle undercarriage.
- CURTISS P-40 WARHAWK** .. £6.15.0  
Wingspan 20". Length 15".
- SUPERMARINE SPITFIRE** .. £7.12.0  
Wingspan 23". Scale cockpit interior, etc.



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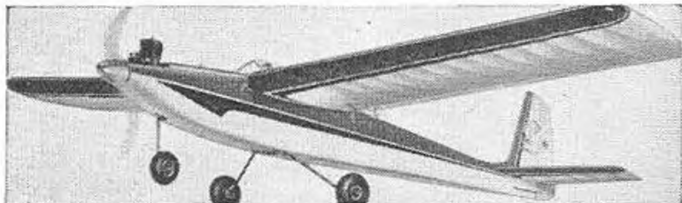
## CARL GOLDBERG MODELS

### SHOESTRING

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Price only £9.17.6



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Most Beautiful & C  
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JNR FALCON 54/6 37" span for single-channel & 049 engines.  
FALCON 56 56" span for single 6 channel 09's to .19.  
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29" SCHOOLBOY s/chan. R/C 38/6  
30" CESSNA R/C scale (02s) 43/6  
27" RASCAL R/C rudder only 32/6  
ROARIN' 20 for 02s and R/C 32/6



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Here's a semi-scale low wing model which really is different! Build a sleek "single" or an exciting "twin" to your choice (flies OK with one engine out and R/C). In two sizes as well. . . .

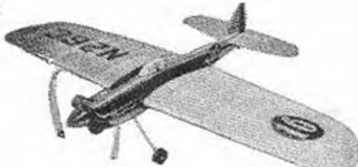
JNR SKYLARK (049 or twin 02's) Super prefabbed kit £3.5.0  
SKYLARK 56 (09's up or twin 09) Super prefabbed kit £7.13.6



37" span JUNIOR SKYLARK  
56" span SKYLARK '56'

### CONTROL LINE STUNT . . . SPORT . . . COMBAT!

- SWORDSMAN 18 (02's-049's) 21/6
- L'IL WIZARD (049's up) 27/6
- JUNIOR SATAN (09's up) 27/6
- L'IL SATAN 16/6
- SHOESTRING (19's-35's) 54/6



SATAN

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### R/C COMPACTS

ALL 'COMPACTS' FEATURE built-up balsa sheet construction, every part die-cut for rapid, easy assembly. These kits are in a class of their own.

29" SCHOOLBOY s/chan. R/C 38/6  
30" CESSNA R/C scale (02s) 43/6  
27" RASCAL R/C rudder only 32/6  
ROARIN' 20 for 02s and R/C 32/6



57" TAURI shown the ideal 'multi' trainer



SCHOOLMASTER (above) 39" span "Compact" for engines up to 1.5 cc.—the IDEAL R/C TRAINER for single-channel up! 71/6

SCHOOLGIRL 32" biplane 65/- R/C or F/F. Fly as mono also.

ALSO THE WORLD'S TOP "MULTI" R/C AIRCRAFT KITS:

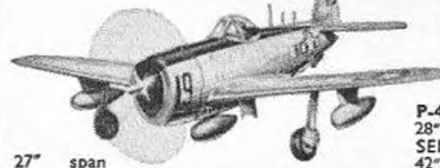
57" span TAURI 239/6 Now with strip ailerons.  
70" span TAURUS 359/6 World's best for full house.

## CONTROL LINE SCALE

These superbly detailed scale model kits include PREFORMED Balsa FUSELAGE SHELLS for easy, accurate assembly. Each model a potential 'Concours' winner—and every one fully stuntable!



1/12 scale for .29-.35 engines



27" span

P-51D MUSTANG . . . super de luxe kit 142/6  
P-47 THUNDERBOLT for .15-.29 engines . 87/6  
P-40 WARHAWK . . . 87/6 28" span for .15-.29 engines  
SEMI-SCALE STUNTERS:—  
42" span HURRICANE . . 65/0  
42" span TIGER SHARK . 65/0

new from Sterling

Here's just two of the FABULOUS NEW STERLING R/C KITS. There are 14 others to see at your local model shop!

### ROYAL COACHMAN

Positively the fastest and easiest to build R/C model yet—every part fully prefabbed, plus hardware, etc. 48" span. £5.9.6



### STEARMAN PT-17

This fabulous model is ONE-SIXTH ACTUAL SIZE and absolutely true to scale (even to aerofoil, section and rib spacing!) Span 65½". Kit includes dummy radial engine etc.

A TRULY SENSATIONAL KIT £21.19.6



### NEW . . . RUBBER or POWER!

Here's another new range of Sterling models—all to scale with built-in automatic "in flight action". Ten different models, 24" to 30" span and prices from 27/6. Check with your model shop!

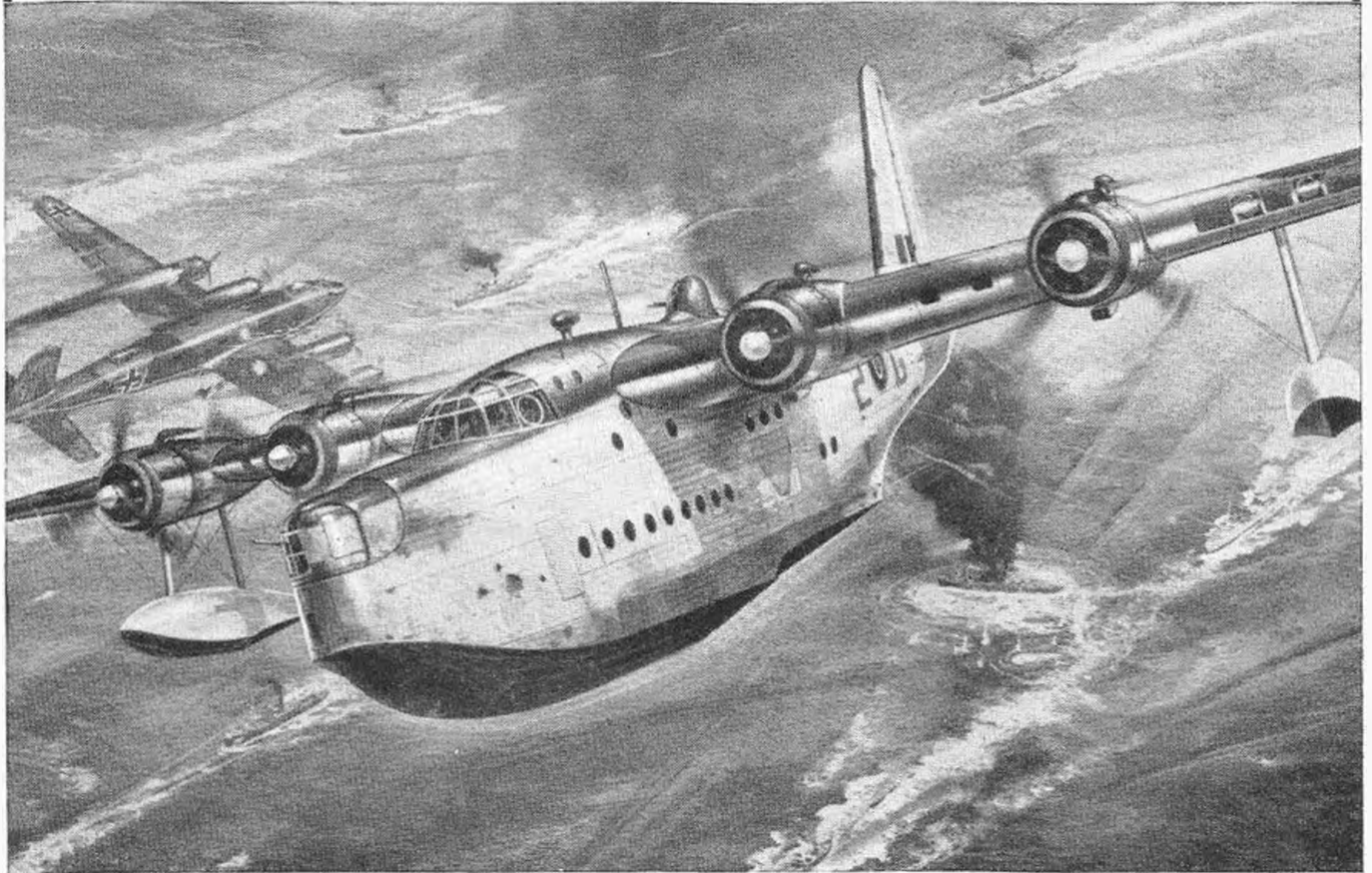


Design-engineered for perfection in performance . . . quality . . . value! All kits fully prefabbed in selected TOP QUALITY balsa and include hardware and fittings, etc. . .

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The famous Short Sunderland 111 was successfully used by RAF Coastal Command—in patrol and rescue operations and against U-boats and enemy aircraft. This magnificent 1/72 scale model consists of 160 extremely accurate parts, including detailed bomb racks, rotating turrets, elevating guns and complete beaching gear. It costs only 11/6: There are over 250 Airfix models in 19 different series. And at prices from 2/3 to 19/6 you can well afford to make all your models just like the real thing!



**AIRFIX** CONSTANT  
SCALE

**CONSTRUCTION KITS**

*Just like the real thing!*

From model and hobby shops, toy shops and F. W. Woolworth

## STOP PRESS

### Douglas Dauntless

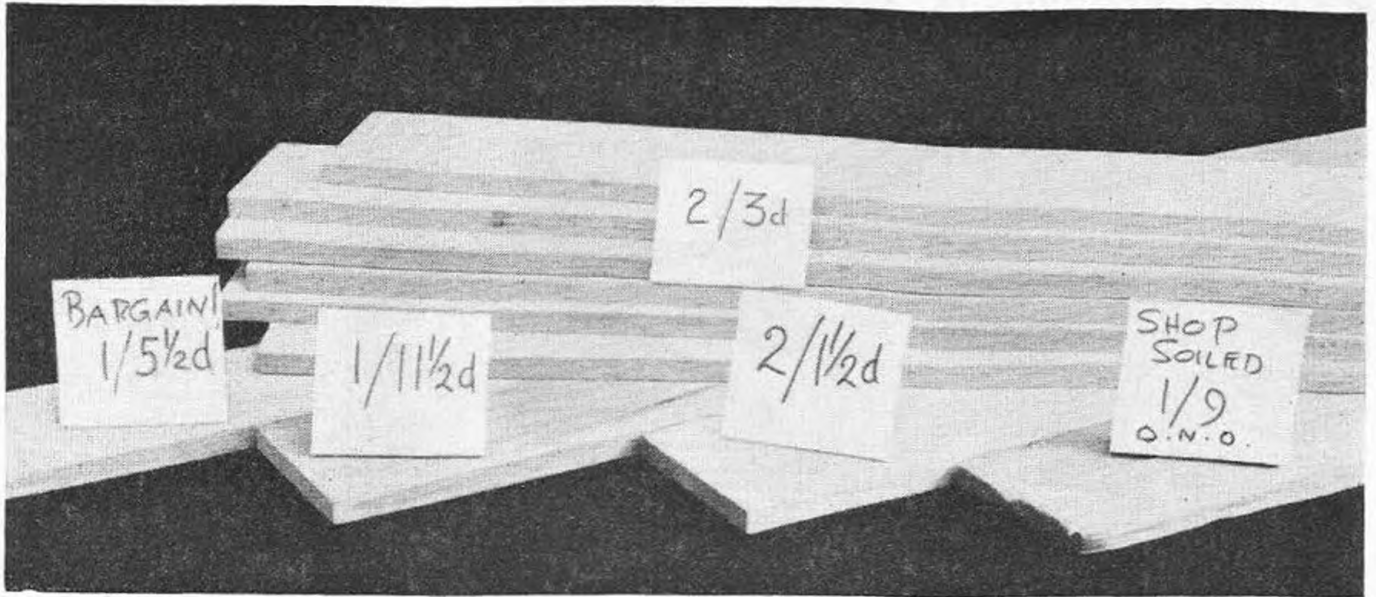
Famous carrier based Aircraft of the Second World War. The 50 part kit makes up into either US SBD-3 or US Marine Corps SBD-5 version.

Fantastic value only 3/6d.



All that's new in modelling!

**AIRFIX MAGAZINE 2/- MONTHLY  
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That's why you can't choose Balsa by price—it's the *quality* which really matters, and you can't have quality control and sell at 'bargain' prices, as well. There's a lot of 'know how' behind producing top quality Balsa and we pride ourselves at Solarbo in being top in that sphere. That's why Solarbo is recognised the world over as the best balsa you can buy—top quality *aeromodelling* Balsa specially selected for the job. And, incidentally, the price of Solarbo Balsa is kept to a practical minimum. We have plenty of other outlets for Balsa which does not come up to aeromodelling standard, so we do not have to account for wastage—and the 'know-how' is thrown in virtually free!

The *real* way to choose aeromodelling quality Balsa, in fact, is simply to ask for Solarbo sheet, strip or block by name. It's the best!

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# Graupner

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## NEW UHU MARK III

A superb new kit with the easiest of easy construction. Price only 34/11



NOW 43" span

BIGGER... BETTER... even EASIER TO BUILD and with a performance that is outstanding for a "beginners" model. A fully prefabricated and very complete kit.

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- 38" span BEGINNER 33/6
- 45" span JOLLY A-1 class 42/6
- 53" span HOBBY (sports) 39/6
- 72" WEIHE 50 scale 89/6

## MINIPIPER NEW FULLY PREFAB KIT FOR 'INSTANT' FLYING

**NEW!**



DE-LUXE KIT only £3.15.0

28" span

AVAILABLE SHORTLY

Order now to be first in your area with this fab. model!

Two-piece injection moulded plastic fuselage with prefabricated sheet wings and tail for 'instant' assembly! Crashproof tongue—and box wing fixing—special 'balancing frame' for preflight trim check (takes the risk out of that first test flight)—wheels, hardware, adhesives all included. For free flight or lightweight R/C!

## CONTROL LINE SUPER SCALE



39" span

FOCK-WULF 190 £4.15.0

A highly detailed model and a superb kit to the best "Concours" standard. Takes engines up to 3.5 cc. A very complete kit.

OTHER MODELS INCLUDE:

- 28½" KLEMM scale lightplane £3.5.0
- 32½" DORNIER Do. 27 scale £3.19.6
- 30" MUSTANG "Quickie" £3.2.6
- 25½" MESSERSCHMITT semi-scale £3-7-6

## AMATEUR

44" span to take .8 to 1.5cc. engines and specially designed for 2- to 6-channel radio. A superb example of kit prefabrication, including formers, full length die-cut fuselage sides, ribs etc. Kit is wonderfully complete, right down to wheels, shaped undercarriage, decals, adhesives etc.



**NEW!**

Price £4.5.0

Radio installation is shown on a separate detailed plan sheet.

## TAXI

A superb 59" span model for multi training, sport or R/C aerobatics featuring "Quickie" construction. Die-cut balsa, balsa-ply and ply parts, other parts pre-shaped or performed... a kit that really is extensively prefabricated! Price £7.7.6

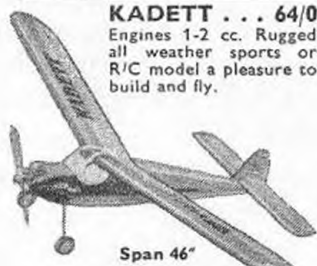
Span 59 in.; length 40 in.; wing area 993 sq. in.; total area loading 10.5-16.4 oz./sq. ft.; total weight (less R/C gear) 2 lb. 14 ounces (approx.); weight (with R/C gear) 4-5 lb.



**NEW!**

## KADETT... 64/0

Engines 1-2 cc. Rugged all weather sports or R/C model a pleasure to build and fly.

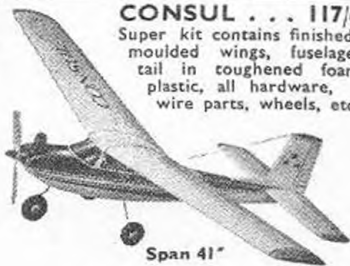


Span 46"

for SINGLE CHANNEL R/C

## CONSUL... 117/6

Super kit contains finished, moulded wings, fuselage, tail in toughened foam plastic, all hardware, wire parts, wheels, etc.

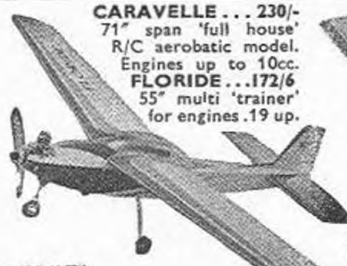


Span 41"

SINGLE or 2-CHANNEL

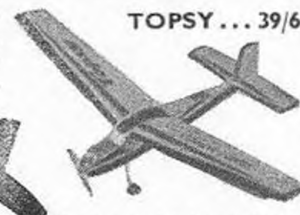
## CARAVELLE... 230/-

71" span 'full house' R/C aerobatic model. Engines up to 10cc. FLORIDE... 172/6 55" multi 'trainer' for engines .19 up.



for 'MULTI' or PROPORTIONAL

## TOPSY... 39/6



32" span model for engines up to 1 cc. Super sports F/F model, also ideal for single-channel R/C.

## THE NEW FOKA SAILPLANE... £8.15.0

SUPER DE-LUXE KIT

Look What you get in this wonderful new kit—a FINISHED one-piece fuselage in hi-impact plastic; other parts in balsa and ply mostly diecut; shaped wire parts, cement, tissue, decals canopy, miscellaneous parts.



Specially designed for 2- to 6- ch. radio or lightweight proportional. Also fly without radio, if you prefer.

GIANT SIZE towline (or slope soaring) SAILPLANE (102" span) with ultra-modern QUICKIE CONSTRUCTION. Weight ready-to-fly (less radio gear) 42 oz. Wing area 710 sq.in. Length 46 in.



THESE SUPERB GRAUPNER KITS ARE SPECIALLY DESIGNED WITH RADIO CONTROL IN MIND and include fully detailed radio installation plans, etc.

OTHER R/C SAILPLANES:— SCHLEICHER K-10 scale 79" span 132/6. Kit includes FINISHED PLASTIC FUSELAGE AMIGO II 79" span towline soarer 97/6. Pylon mount available (16/-) for auxiliary power.

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with detachable nose "power egg".

Ideal for 6-chan. radio.

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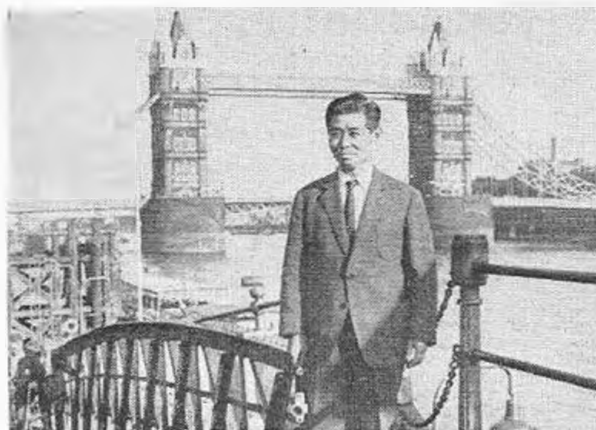
# Heard at the HANGAR DOORS

**RISING SONS** of the Far East, V.I.P. visitors from Japan this month were, first, Takeo Ezawa, Picture Editor of *Radio Control Technique*; then, four days later, Shigeo Ogawa, President of the world famous Ogawa Model Mfg. Co. Ltd., and his engineer, Kazuhiro Mihara. Takeo was the reporter who arrived in Corsica from Japan via Moscow! On a limited budget he found his cheapest way to Europe was by steamer to Siberia, Tu 114 of Aeroflot from Kharbarosk to Moscow, train via Warsaw to Vienna then plane and boat to the R/C Champs. Since then Takeo extensively toured Italy, Germany, France and Austria, came to see us, and "Blands Latch" for the motor racing, then home again via Belgium, Denmark, Sweden, Finland and the U.S.S.R. Good luck to Takeo, a young journalist whose enterprise puts him ahead even of Frank Zaic's famous exploits as far as globe trotting is concerned.

Our friends from O.S. were less restricted in budget but a glance at their packed flight schedule was enough to send a shudder up our own travel hardened spines! Must hand it to the Japanese for stamina! We found Mr. Ogawa and his aide/interpreter Mihara among the most charming and interesting people we have met in this model business. They have seen the world and learned of the respect for their products. Their anxiety to seek criticism and earnest endeavour to satisfy the modellers was most impressive. O.S. have a staff of over 100, produce nothing but model engines and radio control, and must surely qualify for being the biggest in the business. From this country they moved on into Europe to meet Bologna—who subsequently told us how much he enjoyed their company.

**ITALIAN INVITATION** to Indoor fliers comes in the announcement of the "Urbe Cup" to be

Shigeo Ogawa,  
President of O.S.  
realised a life long  
ambition when he  
visited London.



competed for in the Rome Sports Palace, October 6-9th. Notice was received too late for entries requested in this issue to arrive prior to August 30th, but we have no doubt that prompt action by anyone interested would be accepted. The vast hall measures 112 ft. high under a domed ceiling of 164 ft. diameter. Max span allowed is 25½ in. under the F.A.I. ceiling height rule. This is also to be the scene of the 1968 World Championships for Indoor models. Entry fee for the Urbe Cup is 15,000 Lire and enquiries go to Aero Club di Roma, Aeroporto del P' Urbe, Italy.

**WHIRLYBIRDS CHALLENGE** comes from Germany, where Simprop-Electronics announce a contest to be run in the autumn of 1968 for Radio Controlled Helicopters. A list of proposed manoeuvres is available on enquiry. It includes horizontal flight in all directions, hovering and precision landing. This is an enormous challenge as the full-size manufacturers decided long ago that dynamic model helicopters were too much of a handful to warrant more expenditure, and we have yet to hear of any R/C Helicopter that does more than fly in a rather indiscriminate pattern. Get to it designers! The prizes are generous: first £400 approx. down to fifth £35. Details from Simprop, 4834 Harsewinkel, West Germany.

**OUR REQUEST** for identity of the constructor responsible for the fine model of a Hawker Demon illustrated in the *Model Engineer* Exhibition announcement, June issue, has produced a large crop of replies. Most have told us that it was entered by Peter M. H. Lewis, author of several fine reference books in aviation and designer of several "Model Aircraft" scale models. Then we were told it was

produced by I. O. Newton, of Luton, for the 1949 *M.E.* Exhibition—and it's not a Demon but a Hart! Photo evidence leads us to the belief that it is Mr. Newton's model. Wouldn't it be fine if Mr. Lewis could produce his Demon and Mr. Newton the Hart for the 1968 *M.E.*? See YOU there?

**CELEBRATION** of the 50th Anniversary, on August 2nd, of the first Deck Landing on H.M.S. *Furious* by Squadron Commander E. H. Dunning, D.S.C. in a Sopwith Pup took place at the Shuttleworth Collection Old Warden during a fine air display. The collection Sopwith Pup (née Dove) showed its paces in direct contrast to the roar and bluster of a H.S. (Blackburn) Buccancer. A painting of the original Pup, landing on the converted Cruiser, was commissioned from our cover artist Laurence Bagley and presented to the Fleet at a commemorative function on August 2nd in London.

**STOP PRESS** results from Liege, Belgium, where the "Criterium des As" was held August 25-28th, gives great encouragement for British Control-line flyers. Hughes and Turner missed the Team Race final by only one fifth of a second and Brian Jackson was fourth in speed, beaten only by the Hungarian ace and creating a new British record of 146 m.p.h.

Winners were: Stunt, M. Vanderbeke (Belgium) 1st.; J. Gabris (Czech.) 2nd.; J. Kari (Finland) 3rd. Team Race, H. Stockton/D. Jehlik (U.S.A.) 1st. (4:32 & 9:36); Hasling/Hasling (Denmark) 2nd.; Molnar/Kuti (Hungary) 3rd. Speed, I. Toth 1st.; G. Krizsma 2nd.; M. Sebestyen 3rd. (all Hungary)—full details next month.

# Aeromodeller Scaledate

OLD WARDEN . . . . AUGUST 6th

SUPPORT for our all scale rally at the home of the Shuttleworth Collection of veteran aircraft near Biggleswade exceeded all expectations. The contests attracted more participants than at the National Championships, the airfield was dotted with dozens of groups of sport-scale fliers and the onlookers arrived in thousands.

Thirty-seven entered the three flying model classes, more than half of them radio controlled and a full third of them newcomers to the scale scene. More than a hundred were entered in the static scale section run by I.P.M.S. and the standard of some of these much modified plastic kit models borders on the incredible.

At any time one could see the whole range of scale models airborne. Austers, Moths of all types, Spitfires, Blackburn Mono's, SE5's and the inevitable Flying Flea were there to delight the eye.

The quality of the radio flying was probably the best we have experienced at any scale meeting. Only one model was retired—through mechanical fault and practically every flight terminated in a spot landing back at the take-off patch. Even the roughness of the field grass was forgiven (improvements are planned) as entries scraped off to cheers of approval. Each model and its flight was judged on strictly personal opinion basis by David Ogilvy and the Editor, who "cooked up" the idea of the rally. R/C pilots were free to do as they wished within the bounds of safety. Particularly inspiring were the flights by Frank Van den Bergh with his "Midget Mustang" which excelled in high speed aerobatics, "Doc" Henley who put his Stampe through some indescribable "full of everything" manoeuvres; Dennis Hammant who made a Sterling Kit Spitfire fly and look exactly like a Spitfire; and Arthur Lalley with his breathtaking Beaufighter. Last to fly, and the perfect climax, the Beau roared off, toured "clean" and "dirty" with U/C demo's and landed as close to the crowd as anyone would dare.

Just as R/C held interest, so, too, did the interspersed free flights. Den Thumpston produced his first-ever model, an aged Avro 504 and made the second best flight of the day! Particularly heartening were the new names. P. Tranfield's Spitfire—a piece of highly skilled artwork in itself, P. Bullivant's converted KK Hurricane with Cox .010 which (on its first-ever flight) disappeared in the direction of "up", and A. Freeman's "supersonic" Auster JS. In the control line area, the entry was fewer, but not lacking in quality. Dusty Miller produced a Stearman PT17 to show his versatility and his clubmate Clive Hall won the class with a fine Jungmeister. (More than half the sports and contest fliers were bipes!)

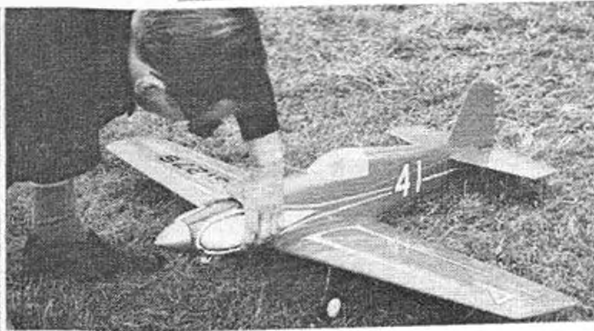
David Ogilvy and the Editor after presentation of Shuttleworth Trophy for best replica of Shuttleworth type in the contest to Terry Manley of Brough. Below: John Wilkinson of Iyer Heath won static scale Trophy with much modified "Vimy".



## Results

- Free Flight**  
 1. E. Coates, Bucker Jungmann  
 2. D. Thumpston, Avro 504  
 3. T. Manley, Bristol B2b.
- Radio Control**  
 1. A. Lalley, Bristol Beaulighter  
 2. N. Butcher, Fokker DV11  
 3. D. Bryant, Fieseler Storch.
- Control line**  
 1. C. Hall, Bucker Jungmeister.  
 2. H. Carter, Meyer Little Toot  
 3. D. Miller, Boeing Stearman PT17.
- Static**  
 1. J. Wilkinson, Vickers Vimy.  
 2. J. Chiaman, Focke Wulf Condor Shuttleworth Trophy  
 T. Manley, Bristol F2b.

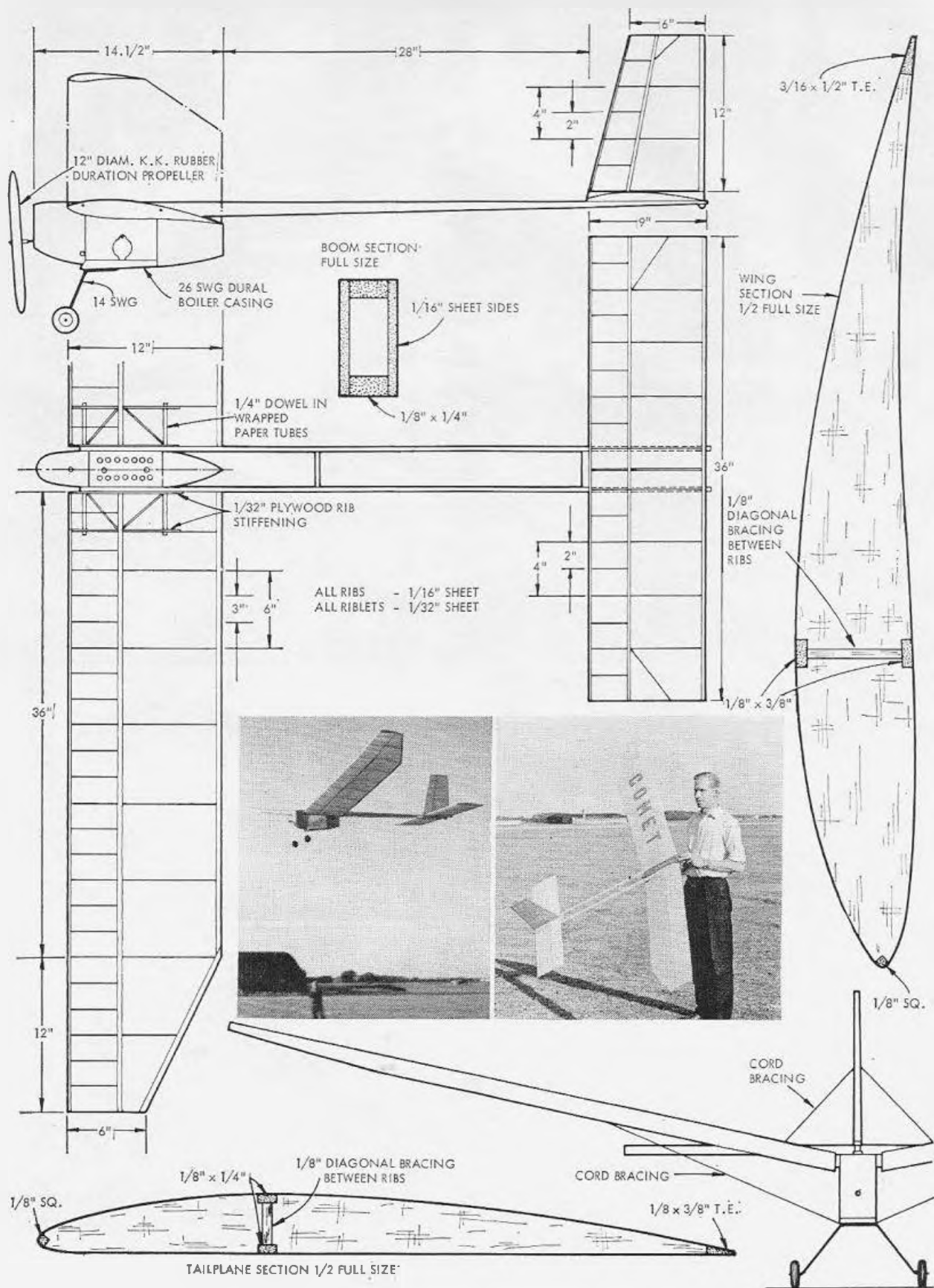
Right: Derek Banister launches Avro Tutor for Luton clubmate Dan Bateman. Luton stalwarts helped in field preparations—many thanks lads! Below, left: Arthur and Mrs. Lalley prepare the thundering "Beau" and right, Frank Van den Bergh's spectacular Midget Mustang—both models equipped with Kraft R/C gear.

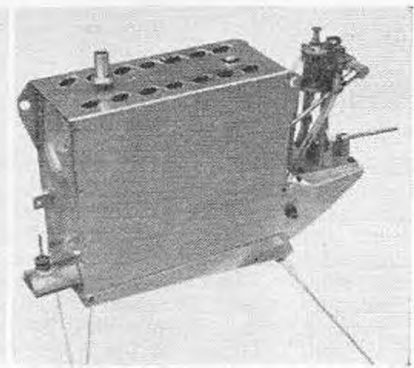
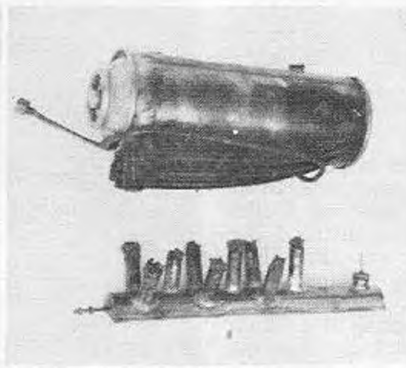
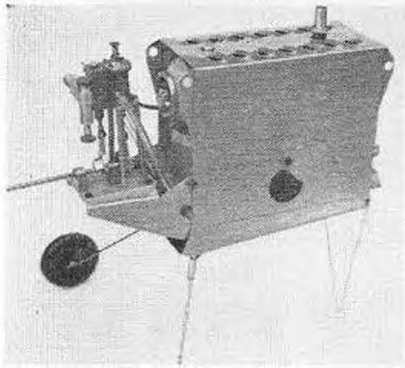




At top, a section of the display compound with models waiting to fly illustrates the wide variety of subjects and excellent support for the first of what we hope to be annual meetings. Quartet of fine models below are (round the clock) Terry Melleney's Piper Cherokee which sits on sprung gear and rolls well; G. Smith's well prepared single channel Sopwith Snipe—equal top scorer for scale points with Den Bryant's famous Fieseler Storch; P. J. Wright's amazing Beardmore WB IV Shipboard fighter, magnificently prepared with rudder only and one of many Moths—this time by N. Matthews in Amy Johnson's colours—for rudder only. 45 per cent of the R/C entry were single channel—who said there's no interest?

# "Comet" – most remarkable model of 1967





# Steam Power!

Story of an achievement  
by D. E. PARKER

**T**HE STORY of this steam powered model aircraft really began over thirty years ago, when, as a schoolboy unable to afford the price of a Brown Junior, I was attracted by the idea of steam power which appeared to offer the advantages of cheap do-it-yourself manufacture and quiet reliable running.

However a number of experiments with oscillating cylinder engines and tin can boilers eventually convinced me that a steam plant of high enough power/weight ratio was a project that would have to wait a time when I could devote a much longer period to development and when far better workshop facilities were available.

And so the idea simmered quietly in my mind until at the beginning of this year I suddenly decided to do something about it. First, a few facts about the propeller thrust which could be obtained from a given boiler heating area were necessary. An old double acting oscillating engine of 7/16 in. bore and stroke dating back from those early days was fitted with a nylon propeller, mounted on a test bed with a simple spirit heated boiler and suspended on strings so that the thrust could be easily measured. The results were most discouraging! The thrust amounted to only about half an ounce for a power plant weight of 14 oz., the heated area of the boiler being about 8 sq. ins. I considered that I should aim for a thrust of at least 6 oz. as a practicable figure, and that the boiler and engine together should not weigh more than twice to have any chance of success.

It seemed likely that a more efficient engine could be made without too much difficulty which would reduce the amount of steam required, and so it proved. A lightweight slide valve double acting

Upper photos show the power unit, burners and boiler; below are nose details to illustrate the value of streamlining. Last reports of success with airborne steam appeared in 1913 issues of "Model Engineer".

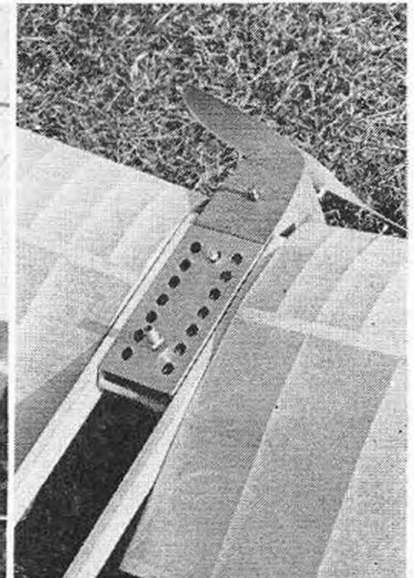
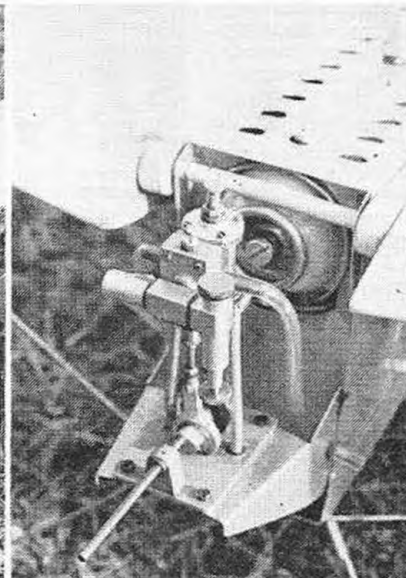
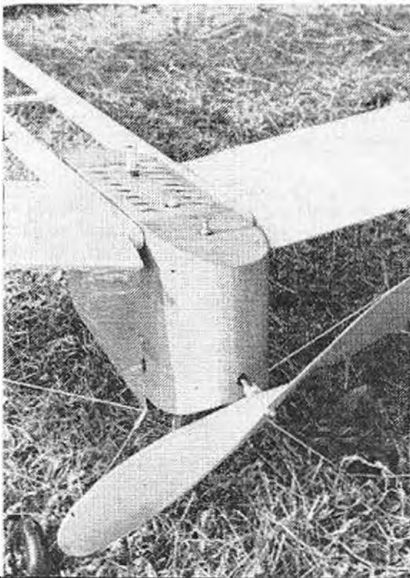
engine of 1/2 in. bore by 9/16 in. stroke was designed, making the maximum use of aluminium and magnesium alloys. The cylinder had to be of brass but the piston was made of dural with a bronze sleeve shrunk on. In order to reduce friction, no packed gland was used for the piston rod and a displacement type lubricator was incorporated. The port timing was such that steam is admitted just before T.D.C. and is cut off at three quarters of the stroke. When this engine, which weighed 3 1/2 oz., was tested with the same boiler, the thrust was found to have doubled. A 12 in. KK plastic duration propeller was now used for these trials and for all subsequent running.

The next stage obviously was to develop a boiler weighing not more than 9 oz., with a heating area of 48 sq. ins.

Sources of heat other than a meths wick burner were tried, e.g. bottled gas, paraffin blow lamp and solid fuel (picnic stove type), but all had disadvantages which made them less suitable in practice for this particular application. The simplicity of a spirit burner is in fact a very real asset.

A boiler of the water tube type seemed to offer the most promise with its relatively large heating area. Flash steam and centre flue boilers were considered and rejected; the former because of the extra weight of pump plus water container and the uncontrolled degree of superheat, and the latter because of the large unheated outer surface.

The boiler drum had to be of steel in order to obtain the necessary strength from light gauge materials. I intended to make it of stainless steel, but was unable to obtain this in thin enough sheet (.010 in.) and therefore started experimenting with Aerosol cans. These proved to be surprisingly strong and most satisfactory once one or two snags had been ironed out. The final boiler utilises a 6 in. x 2 in. diameter can which is fitted with nine 1/2 in.



## Aero Modeller

diameter by 26 s.w.g. brass water tubes in two banks. Each tube is silver soldered to a machined brass downcomer, and all are silver soft soldered to the drum. One of the snags referred to concerned the wrapped seams of the can, and these are now silver soft soldered having been partially opened out, cleaned and closed up again.

Some superheat is provided by taking the steam pipe from the front of the boiler back through the flames and out through the front of the casing.

A nine wick burner of .005 in. brass shim fires the boiler. The conventional arrangement whereby the spirit is in a container at one end, feeding to the wick tubes through pipes, could not be used as the changing attitudes of the aircraft could starve one end of the burner. The necessity of having the meths container within the boiler casing then resulted in increasing quantities of meths vapour being emitted due to the heat, and occasionally frantic efforts to smother the ensuing blaze.

Eventually, the solution was obvious. I had been attempting to isolate the flames from the slipstream with the idea of making the burning independent of airspeed. As soon as I fitted a forward facing intake leading to below the wick tubes, I found that the slipstream both cooled the burner and provided ample air for the combustion of any quantity of meths vapour. It needed only a trial run to find the right intake area for a nice hot steady flame. The performance of the boiler was improved out of all recognition by this simple alteration which made it possible to contain a flame in a small space with little risk of setting fire to the surrounding airframe. The stage had then been reached when a boiler weighing 9 oz. was providing 8 oz. of thrust with the safety valve blowing off steadily at 40 lbs./sq. in.

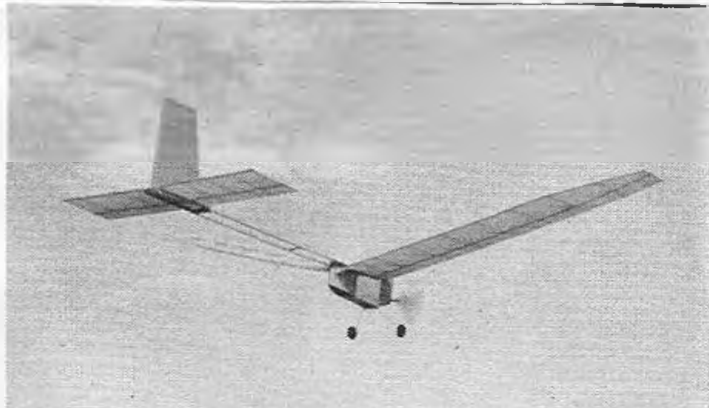
It was now time to consider the design of the rest of the aircraft. Fundamentally, the problem was similar to that involved in man power flight—the need to provide an airframe able to lift a power unit of very low power/weight ratio. This means minimum structure weight, and flight at low speeds making a large wing area necessary. In my case, I felt that a wing span of 8 ft. with a chord of 1 ft. was the largest practicable. The undercambered section is similar to R.A.F. 32 and has a full depth built-up spar. It was logical for the wings and tail to be plugged into the boiler casing which is the stoutest part of the model.

At 30 oz. the total weight came out at more than I had hoped for but less than I had feared, being made up as follows:

Power unit complete with boiler casing, burner, prop and undercarriage: 20 oz. Mainplane: 6 oz. Tail unit and booms: 4 oz.

A check run with the balsa fairings fitted fore and aft of the boiler casing proved satisfactory with only slight charring at a few points, and so the stage was set for the great experiment. Sunday evening, 23rd July, was perfect; calm, warm and sunny, and saw the whole family plus cameras at R.A.F. Woodvale in the company of numerous members of the Liverpool and District M.A.S.

After a few precautionary photographs with the model all in one piece, and a couple of test glides, 3 oz. of water and  $\frac{1}{2}$  oz. of meths were poured in. The wicks were lit somewhat carefully with all that doped tissue a few inches away, and the water was soon heard to boil. After a few turns of the prop to clear condensed water from the engine it spun freely, rapidly increasing speed. I waited briefly for the safety valve to blow and then launched the model, not sure just what was going to happen. It flew!



Bottom to top. Lighting the wick, topping up, hand launch . . . and away! Onlookers tell us they "were besides themselves with excitement". Can appreciate this—just imagine that hot vapour trail!

"Comet" climbed away steadily in gentle slow circles passing again and again over our heads in that calm air with the merest sound from the propeller and escaping steam and leaving a short misty trail from each of the twin exhausts and the safety valve. Then, as the fuel became exhausted, the power grew less and "Comet" descended slowly, gliding in to a perfect gentle touch down. It was a great moment.

# Readers' Letters

The editor is not bound to be in agreement with any view expressed.

## Get rid of rules ??

Dear Sir,

There's been a lot of talk just lately about aeromodelling being "not what it used to be" I agree, but in a different vein. Forget 600 hour finishes, 25 year building projects—just say that a model is built to do one thing—fly(!) My chief beef is contest flying. I'm not against contests, don't get me wrong. I've just had my fill for a while—of fiddling around until the early hours trying to build a model that won't be disqualified at the Rally. Suddenly I realise I get a lot of fun down at the local flying field. What I'm getting at is, go on, your—rules. As an ex-Club Secretary, I've spent hours trying to encourage flyers, especially juniors, to enter a contest. Their answers vary from "I can't be bothered" to "Where can I get use of a machine-shop?" After several years of C/L flying, contest and otherwise, it's only recently that I've got together even the basic tools to build a decent team racer. I've had kids ask what they need to fly say, 1/4A, T/R and after showing them the rules, they're not interested. In fact the only Club Contest we ever managed were R/R, because these are about the only C/L planes—contest wise, *within the scope of the average modeller*, apart from combat, where you need to fly rather than bend over a lathe. I wondered how many people will attempt modifying an ETA à la Don Jehlik, as per August *Aeromodeller*? Once most people see what sort of gear the top-lads use in T/R, they put their stock Oly's and Etas back in the box and go fishing.

After the success of R/R and the failure of T/R at the Nats. I wonder if it's a good idea to "Ratize" T/R. Let's face it, at the moment most anybody can build a good rat without even knowing what engine—tuning, etc. is all about. So a decent 40 glow is £10+? In my experience if a junior (they're the ones we've got to be interested in) wants to do something badly enough and can do it with money he'll do it. I did!

What I say is this: minimize T/R rules. For example, scrap using areas and fus: dimensions, tank capacity, wheel-size, etc., keep cowed engine, cockpit, and general semi-scale lines. Have two compulsory stops per 100 (or 90) laps. Take an example from America 1/4A Proto-speed and make only stock engines usable. In other words, start every entrant off on the same foot. Everyone will use engines which are more or less comparable to everyone else's and the models (for T/R) can still look like aircraft. Okay,

so in a while makers will charge double for a super-power "stock" engine? It's only money (!?!!) and believe me, if that's all people need to do a hobby these days, they're happy. I aim most of my criticism at T/R, but I'm sure interest can be upped in ALL branches of contest aeromodelling if people weren't put off by restrictive formulae, and lack of tools.

I'm sure that there'll be a howl protest from certain quarters, but if it means that juniors can fly at a meet with a chance to win, as far as I'm concerned, it's a good idea.—Must close now, so I can finish polishing my ETA's and their machined mounts for next season! Oh well, at least some of us never say die!  
Birmingham, 20. G. Bryant.

## Scale at the NATS

Dear Sir,

I have just read the August issue of *Aeromodeller* and, in particular, the comments on R.C. scale at the Nats. As owner of the "Comper Swift" mentioned as one of those that didn't get to the start line, and also as one who has been directly concerned with the organisation of the Bristol Rally for some years may I make a few observations on the conduct of R/C scale competitions and the National R/C scale in particular?

In the planning of our own rally, R/C scale is acknowledged as of major spectator interest and is usually timed to coincide with maximum crowd density. Invariably, there are major hold-ups largely due to lack of flying experience with some of the models entered and it becomes a real problem to keep spectator interest and a personal nightmare to our contest director who has to work to a strict time-table. I have every sympathy with the scale modeller who has put many hours of work into his creation and I can well understand his reluctance to write it off before a major contest. I also have equal sympathy with a public which has paid to be entertained and I think we, as scale modellers must face up to our responsibilities in these circumstances.

May I suggest the suggestion that a "trial" run of R/C scale aspirants be held before the Nationals? The rules for this trial to be sufficient to ensure that the model will start within a given time, fly safely and land within a reasonable distance of a given spot.

If this is deemed impractical why not a "Certificate of airworthiness" to this effect signed by a minimum of two S.M.A.E. members, to be produced with the entry form for the Nationals proper.

Can we also see a much more effective static presentation at the Nationals? Perhaps the models could be set out in a long line accompanied by a type-written "blurb" about the model and its full-sized counterpart. Close-study of scale models is of real interest to the spectators and the convenient presentation of these models ought to receive priority treatment on the hands of the organisers.

My Comper Swift was wrecked completely on its fifth flight before the Nats. Like its full-sized counterpart it was inclined to roll with torque, doubly so with an all up weight of 9 lb. which was out of all proportion to its area of less than 4 sq. ft. I had only one consolation—had I survived to see the Nats, it could have caused a very nasty accident.

Your new scale feature is first-class and I congratulate you on the first subject. I have tried to get information on the YAK 18 series to little avail and I was delighted to see the article in September.  
Bristol, 4 D. Sheppard.

## ... response

Dear Sir,

The response to my letter was very gratifying, particularly as my ideas were well supported.

Undoubtedly the most enjoyable reaction was the accolade of attention by Pylonius.

What magnificent rhetoric, not just a paragraph either but sustained from start to finish, taking us through Red Guards, Leonardo da Vinci and hen-pecked husbands. See how bravely he replies for the "establishment", how cleverly he uses the oldest trick in the book—ridicule when reasoned agreement or facts are too strong, how he replies not the basic proposition but to the emotional side issues with the consummate skill of a politician.

Yes indeed, I acknowledge a truly professional masterpiece and offer him my grateful thanks for demonstrating publicly and eloquently the smug, self-righteous head in sound attitude I am complaining about.

This debate could go on for a long time but I have one last point to make.

There must be some deep psychological reason for so many of my writers to get steamed up about 600 hours fuselage finish. It was just one of many points made to build up my arguments and hardly the serious plank but it certainly touched a raw spot—interesting isn't it?

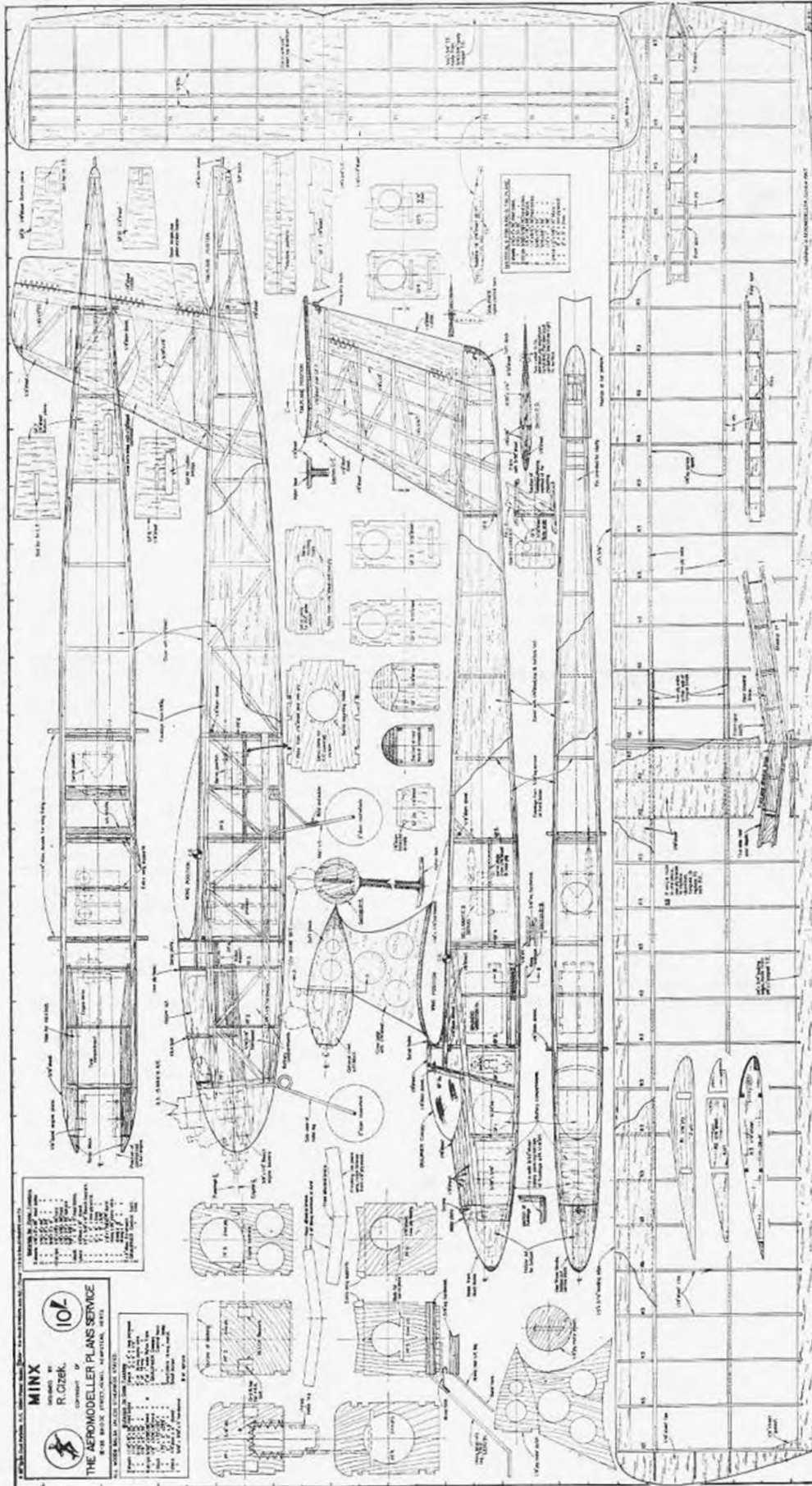
Devon.

A. D.

## and a very last word

Dear Sir,

Sorry I am so late with my reply to Mr. A. D. Corbett's criticism in the June issue of *Aeromodeller*. Anyhow, L. G. Temple's "Celestial Horseman" hardly seems to be an appropriate illustration of Mr. Corbett's views: as far as I know the superbly constructed "Horseman" has never flown!  
Glasgow, W.2. N. Kadmon.



Part No.	Description	Material	Quantity
1	Fuselage	1/8" Ply	1
2	Wing	1/8" Ply	2
3	Control Surfaces	1/8" Ply	2
4	Landing Gear	1/8" Ply	2
5	Motor Mount	1/8" Ply	1
6	Propeller	Wood	1
7	Ballast	Lead	1
8	Receiver	Radio Shack	1
9	Antenna	Wire	1
10	Switch	Radio Shack	1
11	Batteries	4 AA	4

**MINX**  
 DESIGNED BY  
**R. Cizek**  
 COMMANDER OF  
**THE AEROMODELLER PLANS SERVICE**  
 8145 BRIDGE PLAZA, WASHINGTON, D.C. 20014

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FULL SIZE COPIES OF THIS 1/6th SCALE REPRODUCTION ARE AVAILABLE FROM A.P.S. PRICE 10/- POST FREE. QUOTE PLAN NUMBER RC 941 WHEN ORDERING.

Alena Cizek poses with her father's "Minx" in its radio control glider guise, note the hatch clip on nose and general neatness of this well made model.

"Minx" in its radio control power aerobatic form, the same flying surfaces are used for all the versions. Larger fuselage for power version accepts a variety of R/C equipment including lightweight multi or pulse proportional.

"Minx" has two piece wings for ease of transportation and uses an O.S. Max .09 (1.6 c.c.) engine, in this version, a power pod for the glider version takes 0.8 c.c. engines. 2.5 c.c. is suggested for aerobatics with the power model. Graupner equipment employed for all prototypes.

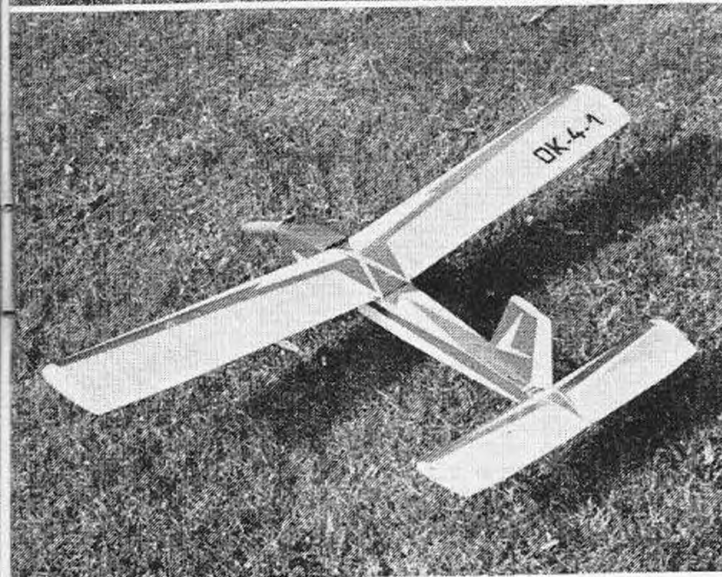
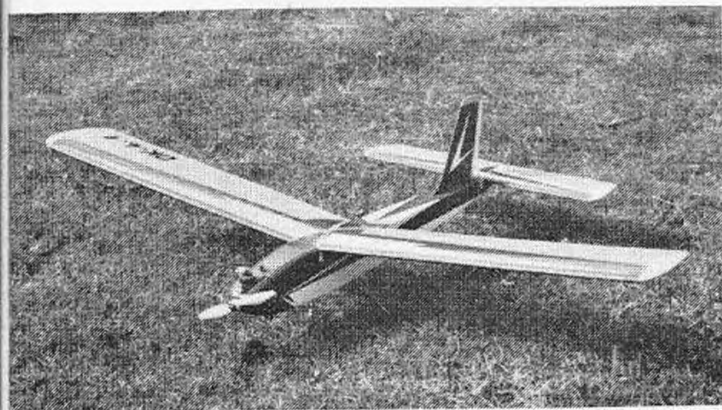
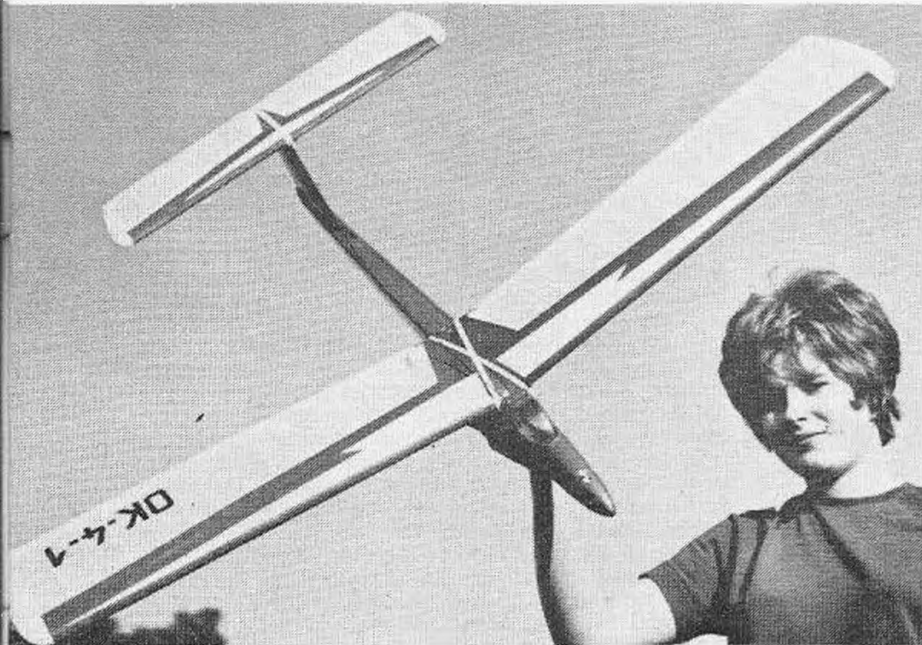


# Minx

- GLIDER
- POWER
- MOTOGLIDER
- FREE FLIGHT
- RADIO CONTROL

MULTI-PURPOSE 52 INCH  
SPORTS DESIGN

by Rad Cizek



**V**ERSATILE is the best word one can use to describe "Minx"—a multi purpose model capable of being flown in three ways, each using the same wing and tailplane. By constructing both fuselages an engine power pod equipped "Minx" can quickly be converted on the flying field to an R/C glider for tow-line launching and thermal soaring. When the thermals are weak just add the power pod. The acrobatic fuselage takes the standard wings and if made to take the same radio equipment this is an ideal case for the transferable radio units as advocated by David Boddington in *Strictly Simple*, June '66 *Aero Modeller*. Two engine sizes can be used, the popular .049 (.8 cc.) class for the power assisted glider and .09 to .15 (2.5 cc.) engines for the acrobatic version. Alternatively "Minx" can be constructed for free flight if the radio installation details are ignored, it is a fine glider and therefore forms a good introduction to R/C. Build now and fit R/C later!

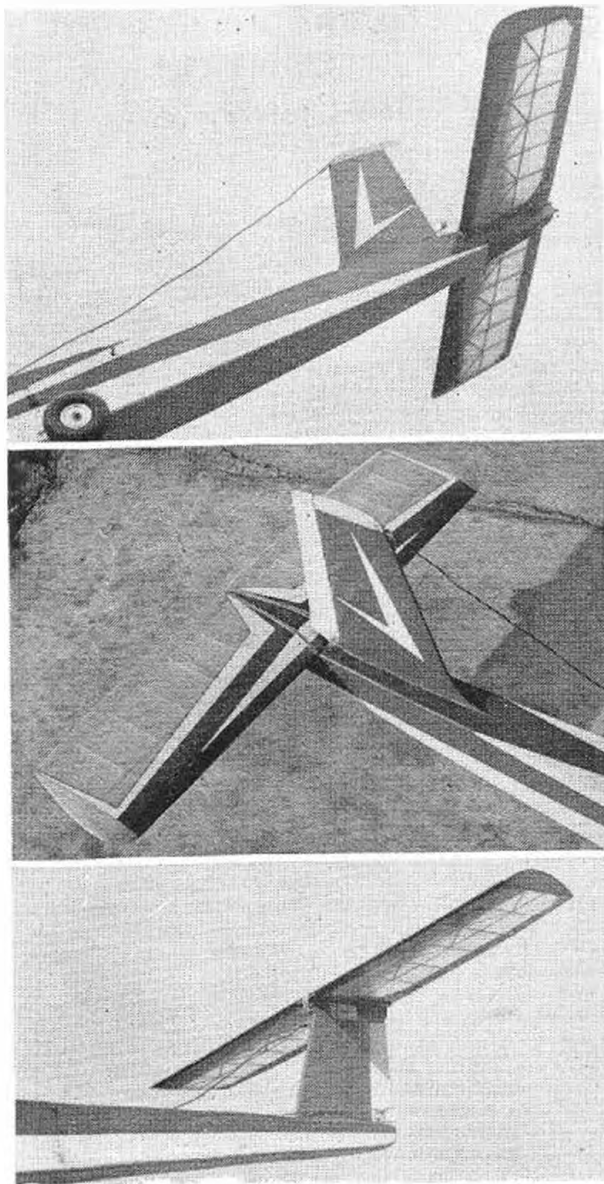
With just one plane, an absolute novice could start with the free flight version and learn the principles of basic trimming, then go on to the glider and power assisted radio version, which is very forgiving and docile to lessen chances of mishap in the first few flights. Finally the acrobatic power version with the larger engine and tricycle undercarriage can be flown to the full when the radio technique has been mastered. Let's waste no more time and start building, right now, for this is exactly what so many aeromodellers have been waiting for.

Study the plan carefully and note which (if not all) version(s) you are going to construct. The materials required to build the different versions are listed separately for this reason.

Commence construction with the two wing halves which are common to all the variants. Cut all the ribs from 1/16 in. sheet then pin the leading and trailing edges down, packing the leading edge up with 1/16 in. sheet, also pin the lower spars to the plan on the building board which should be flat. Cement all the R3 ribs in position, then add the top spars. When dry, cement in plywood tongue box webs in

place, followed by R2 then R1 cut a cardboard template to angle the ribs onto, for the dihedral angle. It should be noted that the wing is in two parts with tongue joiners in the centre section. Add the 1 mm. plywood webs centrally between the spars and each rib, then sheet the centre section and upper leading edge. Remove the wing halves from the building board, cement the centre section underside sheeting in place, add 1/16 in. sheet tips then sand both halves smooth, and shape the leading edge strip to the section on the plan.

The tailplane construction is similar and this is assembled in exactly the same way as the wing, except that it's in one piece, of course! Shape the trailing edge to section with a razor plane prior to pinning to the building board. Now decide which fuselage you are going to construct. We will deal with



Top, the power model rear fuselage. Removable tailplane has cross bracing struts on this early model. Centre, Aerial is attached to fin which has a generous area. Above, the glider with "Tee" mounted tailplane on top of the fin.

the glider or power assisted version in detail. The aerobatic version being very similar, with the exception of the engine bearers, tricycle undercarriage and its larger size, employs the same construction system.

Cut and fret all the formers, then build two side frames over the plan with 3/32 in. longerons and uprights. When dry remove these from the plan and cement the 1/16 in. sheet fuselage side skins onto them. Make sure you cement the skins to opposite frame sides or you will end up with two left or right hand sides! Laminate and carve the nose and tail blocks then cement GF4, 5, 6 in place on the fuselage sides and draw the aft and forward fuselage ends together onto the balsa blocks, bind with Sello-tape until set. Spring the nose sides slightly to add GF1 and 2 and then the 3/32 in. top and bottom spacers. Install the radio control equipment for a check upon fitting, and add the pushrods, then remove the R/C gear leaving the pushrods inside the fuselage. Fit the tow hook assembly and Rx false floor then all top and bottom (cross-grain) sheeting in place, and some block for the wing leading edge fairing. Plank the removable hatch area and add canopy or use the "G.T. Models" moulded one piece cockpit and hatch with balsa formers at front and rear. Cut slots in the top sheeting at the fin base to allow fin structure to be slotted in later.

The built-up fin has the central frame-work flat over the plan, with stringers cemented on one side and then removed from the building board for the other side stringers to be added. Cement the 1/8 in. x 1/16 in. rib strips in place and 1/16 in. sheet over GF7 at top. Cement the 1/8 in. tailplane platform in place and sew rudder in position. Liberally apply cement to the protruding leading and trailing edges and spar the insert fin into fuselage making sure that it is vertical.

The optional power pod has the centre core fretted from 1/8 in. plywood with lightening holes (shown dotted on the plan) cut out, and the plywood engine mounting plate is keyed and glued to it. Cement the medium block fairings in place and 1/16 in. sheet side skins to cover lightening holes. Select two pieces of firm 1/8 in. sheet for the pylon base mount and cement them to the base while curved over the completed wing. The wing surface should be protected with greaseproof paper while the cement sets.

Now that you have discovered that it is quite simple to construct, "Minx" is now ready for finishing. After making sure all the controls work and fitting all horns, etc., and hatch retaining catch, remove these and apply one coat of clear dope to the entire structure. Sand smooth and cover the wings, tailplane and fin with lightweight silk (nylon is too heavy) or heavyweight Modelspan tissue, then apply three coats of clear dope. Cover the entire fuselage with lightweight Modelspan tissue and apply three coats of sanding sealer. Rub down to a smooth finish with fine grade flour or garnet paper and apply the colour scheme of your choice. If an engine is to be used, fuel proof the model, however, if a diesel, use Humbrol enamel and the fuel proofer is not needed.

If you have never flown an R/C model before ask an experienced enthusiast to help you on the first attempt. Don't be bashful, everyone had to start sometime. Remember those vital field checks. Are the batteries still O.K.? Is the Rx on? Are all systems functioning correctly? Lastly, but not least, is your name and address label still clearly readable? You do have one on there, don't you?



"He believes in a good finish"

### The Centre Section

**P**ATIENCE is sometimes rewarded, if only in small ways (as modeller said when his lost model came back through the letter box), and it is comforting to think that, after all these years of solitary campaigning, someone has at last agreed with me about the foolhardiness of launching power models from car parks.

I cannot say that over the long patient years I did not have some misgivings, some doubts about my peculiar, perhaps unique point of view. Everyone else, it seemed, were only too happy to see the car park being used as a launching pad, and if the missile gave them a near lethal miss they were all excited giggles. Even so, I kept faith in the belief it wasn't me who was crackers, and that some day someone would agree with me. Thank you, friend. The long vigil has been worthwhile.

Incidentally, some years ago I remonstrated with a bloke (I'm a proper old nuisance like that) for using the car park rather than the airfield. It turned out that he wasn't just a bloke but one of the top model boys, and was too flabbergasted at my impudence even to reply. Later, however, I noticed groups of his cronies were coming to stare at me in unbelieving surmise.

"What's the matter?" I asked, "I haven't got two heads. Come to think of it, I'm lucky to have this one."

### Far Sighted View

Someone, in all seriousness, has suggested that Timekeepers be given a small stipend for their services, say sixpence per flight timed. This, it is suggested, would keep the time and eye lotion boys happy and ensure they were in plentiful supply.

Personally I cannot see that the idea would work out. Like tennis umpires the best timekeepers do the job for love. And there would be less money passing hands than love if the professional timekeepers were to clock an o.o.s. at sub max time. To counter this sort of thing we would have Timekeepers Unions, with militant leaders demanding time and a half payment for maximums and double time for fly-offs. Then again the Timekeepers would have to be licensed under the Commons Act (Vagrant Earnings) 1610, and all remunerations impounded by the local authority.

Better to keep the present system of all the chummies timing each others models—at least it makes for maximum efficiency.

### Steam Radio

"Steam Radio" might be a sardonic way of describing radio of the pre-pop genre, but it could well apply in a more literal sense if the 'latest' form of model power, old fashioned steam, catches on. Seems that a jet pilot model flyer has at last achieved

# TOPICAL TWISTS

by 'Pylonius'

illustrated by 'Sherry'

his 32-year-old dream of building the world's first steam driven model aeroplane. Whether or not his history in reverse model will trail clouds of glory we must leave to a bemused posterity, but at least it trails such a glorious cloud of steam in its struggling wake that it has acquired the slightly ironic name of 'Comet'. Surely, though, it is deserving of a more appropriate appellation. "Watts Up" is a possible and "Beeching's Folly" another.

### Radio Rodeo

Problem with Radio today is not so much control of the machine as control of the gaga public it attracts. Once the magic box boy's get the gear on display and flex a beckoning wing or two the pop-eyed public rolls up in its hundreds for all the fun of the rubbernecking rodeo. And they don't just crowd around they crowd in, with baby feed bottles out-numbering the fuel cans, and the landing area not showing a single blade of untrodden grass. Thus, when the Wizz Mk. 2 comes triumphantly back to base after a breathtaking paroxysm of aerobatics there is a frantic attempt on the part of flyer to clear a space amongst the sprawl of crawling babies, picnicking families and cavorting dogs. At this point the puaudit followers on the side-lines wax eloquent on the need for official crowd control, although if anyone with so much as an armband put in an appearance they would be ready with cries of "Police State!"

Of course you dare not suggest that flying out of peak picnicking hours might help to solve the problem. Cars, babies and doggies are usually pretty inert at 7 o'clock in the morning, and at that time it should be happy landings all the way with John Citizen and his car borne hordes not yet astir. But that sort of logic might explode the myth that the radio flyers are going through their routines for the private fun of it instead of doing it purely for the audience value.

### Scowl Flying

Still in a tetchy old mood let me answer the Scale flyer who takes me to task for a few naughty words I said on Scale the other month. Now, I don't dispute that his Scale models fly beautifully, but it isn't the attitude of the models I derided: it's the attitude of some of the people who fly them, and a few who don't get that far.

These people seem to exhibit a grovelling abasement before the great god of full size aviation, offering the splintering little sacrifices as tokens of their cringing loyalty. They don't seem to accept that the model plane can exist as a flying machine in its own right although the model plane was the first man-made craft to take the air, even if some of the early purists stuck the odd eagle feather here and there as a sign of respect to the 'real thing'.

### Graupner Wankel Engine

IT SEEMS that there is a very real possibility of a model Wankel type rotary-piston engine being available commercially in the not too far distant future. Fred Militky of the German Johannes Graupner concern has recently been demonstrating a prototype engine in a modified Graupner "Taxi" (59 inch high-wing R/C trainer normally intended for .15-.35 cu. in. engines) with some encouraging results. The engine is of compact appearance, its radially finned circular casing blending nicely into the front end of the model, and has a throttle type carburettor mounted underneath.

The prototype is claimed to develop about 0.5 bhp at 13,200 rpm, which is comparable with the output of a reasonably good .35 R/C engine, although weight is appreciably higher at 367 grammes (13 oz.). It is thought, however, that it will be possible to bring the weight down to around the 270 gramme mark, i.e. 9½ oz., in the eventual production version. This would certainly make the engine more competitive with existing reciprocating engines on a power/weight ratio basis (always assuming that the power is not, in fact, less than the figure claimed).

There remains the question of throttle control and, perhaps, more important, of durability and reliability, having regard to the fact that the matter of achieving and maintaining satisfactory gas seal between the piston and cylinder is of such great importance with engines of this type. However, the Graupner engine is said to have been under development for some six years, which suggests that most of the major problems may now have been sorted out.

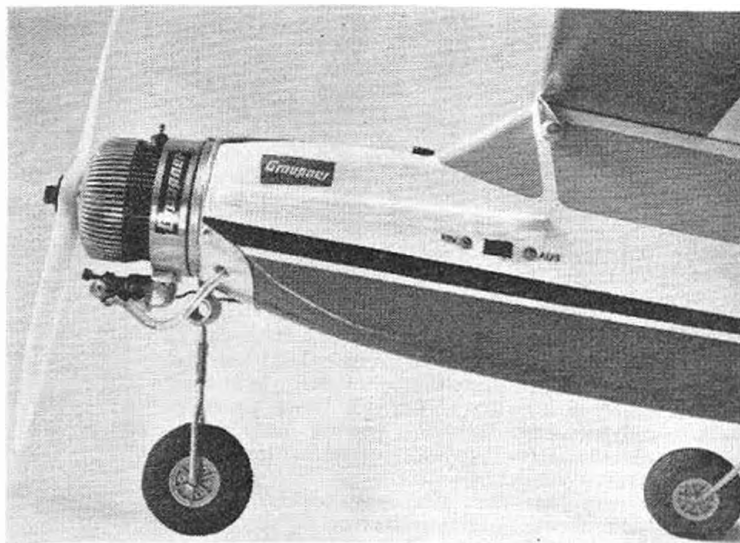
The name of the individual, or company, responsible for the design and construction of this motor is, as yet, unknown to us. Graupner, of course, are distributors rather than manufacturers (their Taifun engines, for example, are made for them by a separate company) and it is clear that the successful commercial production of such an engine will call for very high standards of precision engineering, probably involving some special and complex machinery.

A few one-off Wankel type motors have been built with varying degrees of success, both in Europe and the United States and, also in Germany, the Webra firm have been working on a slightly different type of rotary piston engine. This one is intended to have an operating speed of around the 25,000 rpm mark with an estimated output of approximately 1.0 bhp and is the only other project, of which we are aware, for which eventual commercial production is envisaged.

### Improvements to the McCoy "Custom" series

In the June issue we promised to give some performance figures on the new 1967 model McCoy 19; the first of the revised "Custom" series engines. In fact, a slight spot of bother was encountered with the two test samples of this engine and our report has, therefore, been delayed pending the outcome of investigation by the manufacturer.

To state the position briefly, we had no trouble with the 19 when propped for



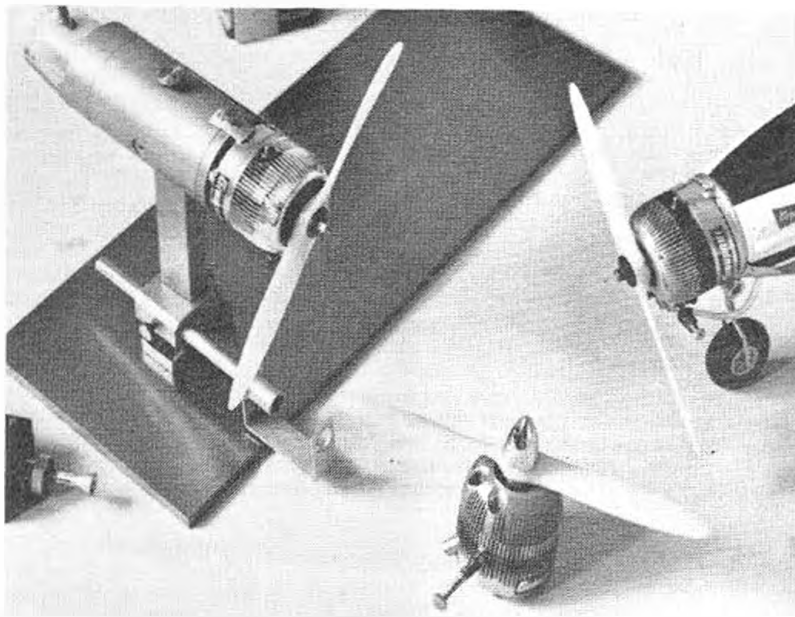
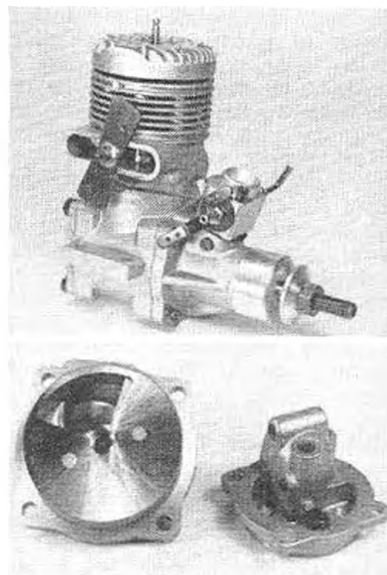
## Latest Engine News

### By Peter Chinn

Above, the prototype Graupner "Wankel" type rotary piston engine fitted to a Graupner "Taxi". .42 cc. capacity, this version peaks at 12,000 r.p.m. and produces 0.4 b.h.p.

Right, based on the Super Tigre G.60 casting used for the 10 c.c. S.T. rear induction racing engine is the new G.60FI-R/C heavyweight with front rotary induction. Power is said to be between that of the lighter S.T. 60 R/C shaft valve motor and G.60 R/C disc valve model. Said to be the solution to the Super Tigre disc valve troubles. New backplates for G.40/46/51 and G.60/71 have riveted on ground steel plate approx. 1 mm thick.

Below, three experimental "Wankel" type engines from Graupner, note how streamlined and neat they look, a very neat test stand too. Throttled and standard version both have needle valve units at the bottom of the engine.



speeds up to its peaking speed (12,000 rpm on 5 per cent nitro fuel, where an output of 0.27 bhp was recorded—without silencer) but when running at about 13,500 rpm, the engine came to an abrupt stop and, on investigating the cause, it was found that the piston had picked up. A repeat series of tests was therefore conducted on a second engine to enable the performance graphs to be plotted. After this, the faster runs that had been made on the first engine were, as an experiment, repeated on the second motor and, at just below 14,000 rpm, this engine also seized, the piston having picked up in almost exactly the same place.

It should be mentioned that speeds of 13,500 to 14,000 rpm are faster than one would normally require to run these motors. They were necessary in this case only to enable the torque and bhp curves to be accurately plotted. Both engines had, however, been adequately run in, were being operated on a fuel of more than ample lubricant content and without an excessively lean needle setting. The symptoms were not, in any case, those of overheating and tightening up: both engines had been extremely free.

We communicated our findings to the makers, the Duro-Matic Products Company, and, in due course it was confirmed that, although this problem had not occurred in any of the pre-production engines, there had since been several other instances of the same trouble occurring in both the new 19 and the new 35 models. At this point Duro-Matic immediately halted production while a solution was sought. The answer has been to hard-chrome the piston. All current production 19s now have this feature and by the time these words are read, the 35s will also be coming off the production line with chromed pistons.

For the 19, the best prop for general use, including C/L stunt and free-flight, would seem to be a 9 x 5. Our test models averaged 10,250 rpm on a Top Flite wood prop of this size. Possible alternatives, allowing revs to get closer to the peak, are 9 x 4 for free-flight and 8 x 6 for control-line.

### Barbini 2.5 c.c. range

As we mentioned in the July L.E.N., there is a possibility of the Italian Barbini engines reappearing in the U.K. These include four different models in the popular 2.5 cc. class, as illustrated plus a 1 cc. model. We have no further news of the projected .40 cu. in. "Good-year" engine, at the present time.

The design of the B.40 series 2.5 cc. engine goes back to 1956 but it is still interesting in many ways. Externally, the current models all look rather similar, largely because all are based on a common gravity diecast crankcase. As can be seen, however, two are diesels whereas the other two are glowplug models and, in each type, there is a choice of a plain bearing "sport" model or a ball and roller bearing "contest" type.

These four B.40s are identified by suffix letters, i.e. B.40-TR, B.40-TN, B.40-TV and B.40-TB. These letters refer to the colour of the cylinder fins, e.g. *Testa Rossa* ("Red Head"), *Testa Nera*

("Black Head"), *Testa Verde* ("Green Head"), etc. Compared with the early versions of the B.40, the current models are somewhat more robust. A new crankcase with bigger mounting lugs, heavier webs, bigger carburettor intake and thicker material sections throughout is now featured. There are also some minor internal modifications.

At the time when the original B.40s were introduced, these Barbini engines marked a break from orthodox 2.5 cc. design and they are still quite distinctive. The cylinder, for example, is of the reverse flow scavenged type with two very large transfer ports, placed fore and aft and inclined at a 45 degree angle through the cylinder wall. To further aid a smooth gas flow into the combustion chamber, the piston crown, which has a shallow conical shape, is chamfered where its edge registers with the transfer ports. The piston itself employs a light tubular gudgeon-pin retained by wire circlips in the piston bosses and the connecting-rod is of nickel-chrome steel, extensively machined and heat treated.

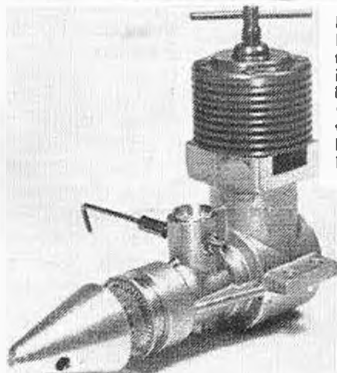
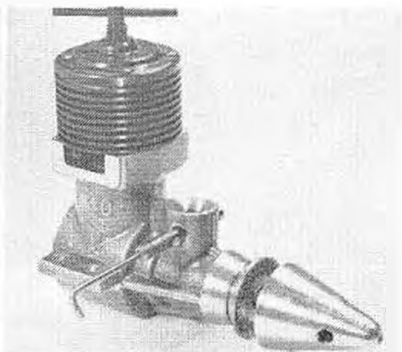
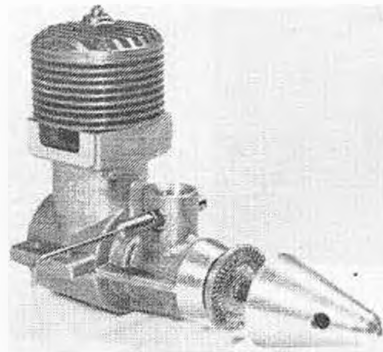
In the case of the TN and TR models, the most interesting features are the bearings. The crankshaft runs in a caged roller bearing at the rear end and in a ball journal bearing at the front, a most unusual combination. Equally uncommon, the big end of the conrod incorporates a needle bearing.

Bore and stroke dimensions are not the 15 x 14 mm. common for 2.5 cc. engines on the Continent. All four B.40s have a bore and stroke of 14.5 mm. x 15.0 mm. Weights range from 4.8 oz. for the B.40 TV to 5.4 oz. for the B.40 TR.

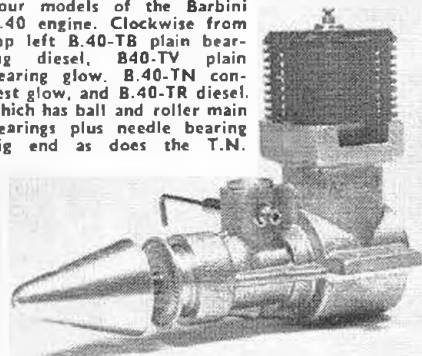
A curious point concerning these engines is that the manufacturer's leaflet recommends fuel mixtures of unusually low lubricant content (after running in), namely: 18 per cent castor oil for the glow engines and 15 per cent, only, for the diesels.



Above top, the new McCoy "Custom" stunt .35. These McCoy models are now fitted with hard chrome plated pistons. Above, the Barbini 1 cc. looks rather "thin" by modern design standards.



Four models of the Barbini B.40 engine. Clockwise from top left B.40-TB plain bearing diesel, B.40-TV plain bearing glow, B.40-TN contest glow, and B.40-TR diesel, which has ball and roller main bearings plus needle bearing big end as does the T.N.



# МОДЕЛИСТ- КОНСТРУКТОР

## News of Modelling activity in the Soviet Union

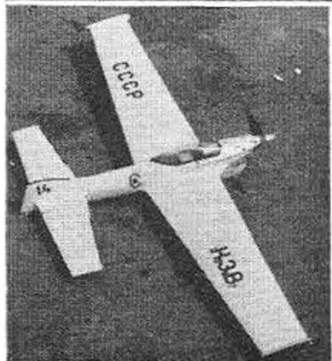
**T**RANSLATED from *Wings of the Motherland*, this feature indicates the serious endeavour, on broadest lines, by modellers of the U.S.S.R. to expand aeromodelling activity. The Moscow Club has produced World Champions such as Sirotkin Chkourski, Averianov and many famous International Class competitors. This article emphasises their united purpose.

### The Motto—Solidarity

Muscovites Contribution to the Anniversary. To commemorate the 50th Anniversary of the Great October Uprising the Moscow Aeromodelling Club took the following decisions:

1. To attract 20,000 young Muscovites to aeromodelling with the help of regional and primary organisations of the U.S.S.R. during the Anniversary year;
2. To train 1,500 sportsmen with official ratings, including 1,100 young people, 200 instructors, 15 masters and master candidates;
3. To create or break 5 records by setting up 2 world and 3 all-union records in different classes of model aircraft.
4. To further aeromodelling knowledge.

The Muscovites' motto is bringing pride to the Motherland by achieving new sporting successes in the pre-October competition.



A sharp sleek looking new F.A.I. team racer by Zolotoverch and Kobets. Note the completely circular pan front and neat ducting with the deep fuselage fairing in with the wheel, they should have a pilot as well. Speed ranges from 107-97 m.p.h. for 33 laps and their recent times are 4:26, 4:33 and 4:35, (in the U.S.S.R.) on 7 c.c. tanks!

The real test of mastery was Spartakiada which is dedicated to the 50th Anniversary of the Soviet State. Those aeromodellers who successfully competed in the first stage of the competitions are on their marks for the finals. The championships for different classes of models are now taking place.

The Combat event is on. Sergie Pashkin and Aleksei Zolotov are the finalists. The former is from Kiev's 800 School, and the latter who is in his last year at school from Krasnopresenskii. Victory depends on speed and aircraft manoeuvres. Aleksei has taken the initiative. The manoeuvres of his model are more skilfully effected and he has hit his opponent's streamer several times. He is now the champion of Moscow. Sergei Pashkin and Vladimir Chernetsov a member of Moscow's Young Pioneer Palace take 2nd and 3rd place. The finalists were awarded their masters' certificate and the runner-up a second class masters certificate.

The Combat event demands daring, resolution and will—qualities which are essential for these sportsmen in the future. More and more young modellers are attracted to these competitions. There were 60 such entrants—1½ times more than in 1966.

Valerii Litvinov, Master of Sport, is chief arbitrator. He sets an example to the competitors. He is the No. 1 aerial combatant, winner of Spartakiada's heats, and champion of the Soviet Union. Valerii took the first steps into aeromodelling when he was a member of the Uzlovzyz Aero-Club near Tula, he then became an instructor and 4 years ago gained his masters certificate. In 1963 and 1966, he was the aerial combat champion.

Litvinov is the trainer of Moscow's combined control-line team. Thanks to this tutor-trainer E. Mosyakov, S. Zhidkov and numerous others have gained their masters' certificates. He is constantly engaged upon perfecting the technique of this sport and is always participating in large competitions.

This experienced Judge trained Victor Yogov and Aleksei Tvorogov on this very same control-line circuit in Moscow. They and other members of the club passed through the 'Litvinov School' and have already accomplished great things.

The most popular competitions were the indoor and true-to-scale non-flying models. 14 teams—145 school-boys—contended for the championship. Those who had received thorough training did best, in this case the Young Pioneer Palace teams of Dzerzhinskii and the Central Station of Young Technicians of the Russian Federation. The captains of the winning teams were A. Victorchik, A. Tarakanov and V. Es'kov. The first place for individual rating was taken jointly by Vitalii Kostanbayev from Kiev and Vladimir Trokhin from Dzerzhinskii.

The competitions showed the increasing interest being displayed by schoolboys in building models of experimental aircraft, e.g. TU 104A, YAK-3, YAK-18PM, IL-2, MIG-15, and other foreign aircraft. The best models were those made by the

clubs from Kuibyshev, Kiev, the Young Pioneer Palace and the Central Station of Young Technicians. Baranov were awarded prizes for their models. In Evgenii Spivak, Vladimir Samoilenko and Sergei the experimental aircraft class Nikolai Kosolapov, Aleksei Turbin and Sergei Baranov shared first place.

From previous meetings it would appear that more emphasis is being placed upon instruction. More than 1/3 of the participants (205 in all) exceeded the official rating. These young aeromodellers have made their first contributions to the October fund of sporting achievements; 80 new sportsmen with official ratings. Vitalii Kostonbayev, Nikolai Filonenko, Sergei Lesin and Valerie Bystrov, all fulfilled the requirements for first-class rating.

The members of the combined Moscow teams are putting all their effort into the competition. A new model is to be used in the finals of Spartakiada. Honoured Master of Sport U. Sirotkin and Master of Sport U. Sokolov are entering a twin-jet model of the TU-16. It is nearing completion and was tested in June. The control-line models are equipped with resonance silencers, these speed enthusiasts intended to increase air speed by 8-10 m.p.h.

The Muscovites plan to build and test new types of miniature engines; 5 with a piston displacement of 6 cc. and 10 2.5 cc. glow-plug and diesel engines. This project is being headed by Master of Sport V. Litvinov and V. Smolyanov. 5 of the engines have already been built.

A new 10-channel proportional radio control unit developed by Master of Sport E. Mosyakov is now being tested.

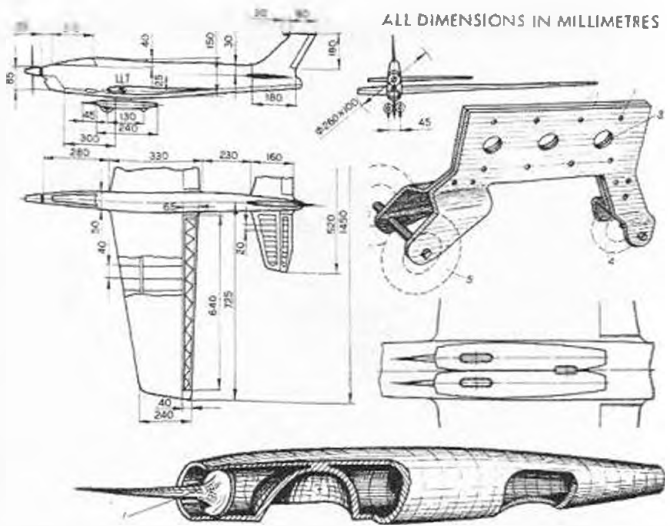
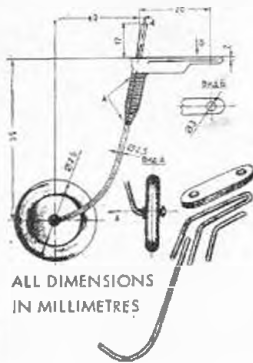
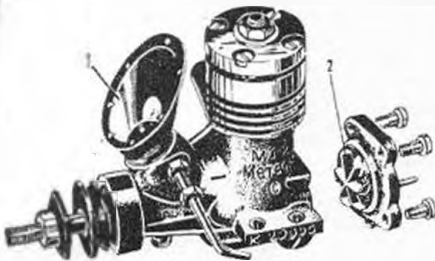
The Muscovites are concerned with making the Anniversary of the Soviet State a success.

**A New All-Union Record**

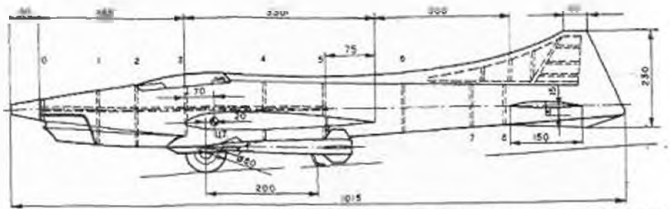
Ergenii Kondratenko from Kharkov is well known for his aerobatic flying skill. On many occasions he has taken his place on the pedestal of honour to receive prizes for his successes in All-Union and international competitions. A Master of Sport, an Honoured Ukrainian trainer, he is now preparing the combined republic control-line team for the major events. For the first time Kondratenko has decided to try his hand at something which is new to him. He entered a radio controlled model aircraft in the heats of the All-Union Spartakiada.

His debut was a success; once again he took his place on the pedestal of honour. A new speed of 84.1 m.p.h. was recorded in the book of sporting achievements. This was the speed which his radio controlled model attained in level flight and commemorates the 50th Anniversary of the Soviet State.

Below, the modified Meteor M.D. 2.5 with extended venturi and backplate agitator. Right the construction methods for an A.P.S. Fresco undercarriage leg, hitherto unknown.



U.S.S.R. stunter with tandem U/C inside mock jet engine pod. By W. Jehorow.

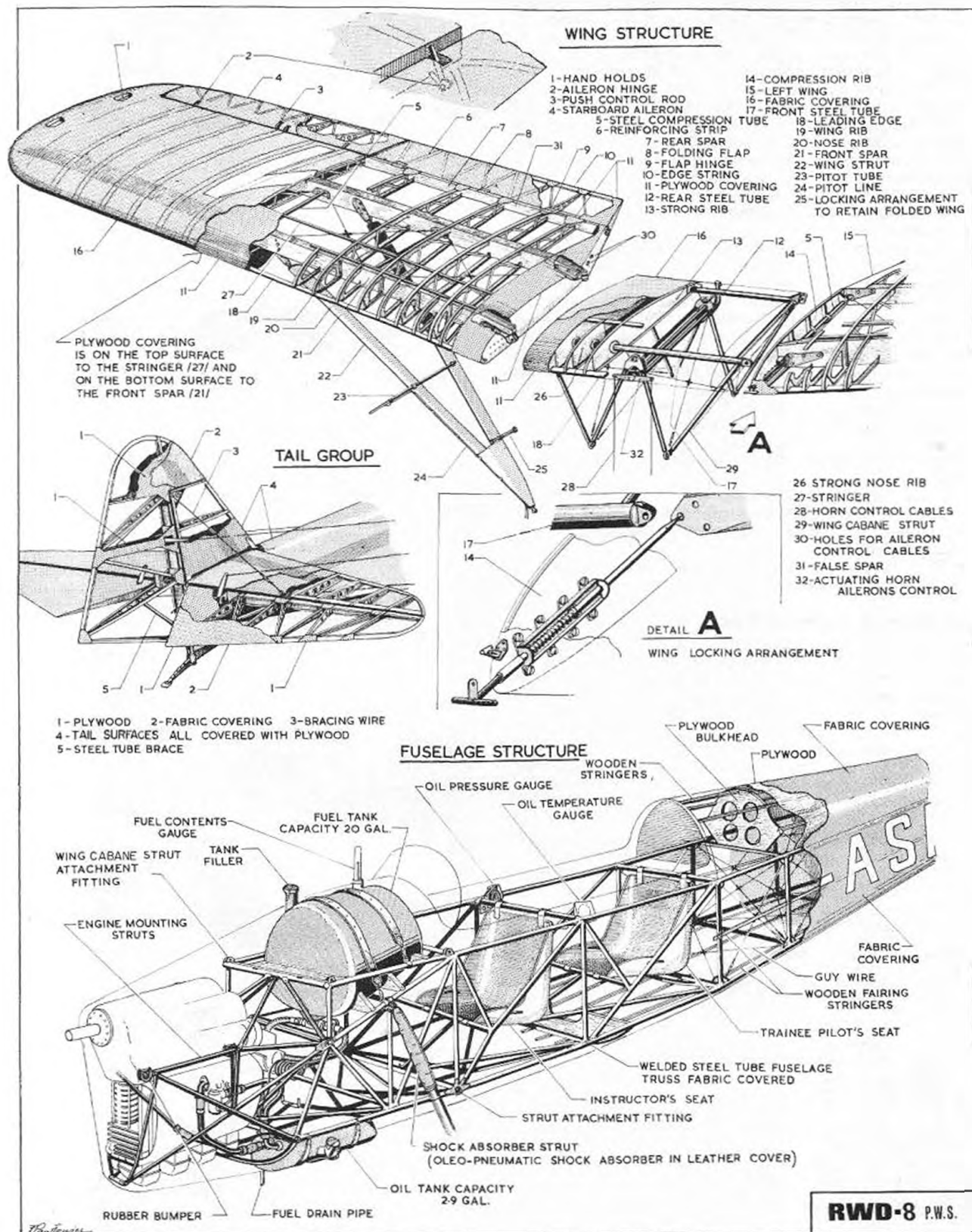


Jet style control line stunter with mono wheel undercarriage and rocket skids. By A. Klemenow.

**Engine Developments**

During tests on the Meteor M.D. 2.5 cc. glowplug engine at the C.A.M.L. Works in the U.S.S.R., where the engine is produced, an extended and belled end venturi and backplate agitator were developed. Normally the Meteor M.D. turns a 7 1/2 in. dia. x 4 in. pitch propeller at 16,500-17,000 r.p.m. The venturi extension (velocity head intake) increased this to 18,500 r.p.m. The backplate agitator, similar to an open centrifugal pump accelerates the fuel air mixture in the crankcase to the velocity of the agitator tips. This forces the fuel/air mix through the transfer ports, and increases the Meteor performance to 19,500-20,000 r.p.m.

Third in our series of subjects specially selected for





scale modelling

# RWD-8 PWS

drawn by Felix Pawlowicz

THE PARASOL winged RWD-8 two seat Polish primary trainer is one of many designed by J. Drzewiecki, S. Rogalski and S. Wigura, the men who created some of the most popular and famous touring aircraft (RWD), prior to World War II. These included the RWD-6 used by Zwirko-Wigura, winners of the "III Challenge de Tourisme International" 1932. Winners of the "IV Challenge" in 1934 on the RWD-9 were Bajan-Pokrzywka. The special long-range touring aircraft, RWD-5 bis, was flown across the South Atlantic in 1933 by S. Skarzynski. Each of these provided a pedigree for what was to become the standard Polish Trainer—and an ideal subject for scale modelling.

The prototype RWD-8 flew first in 1932, with a Cirrus 110 h.p. engine, and after that date the RWD-8 was produced in large numbers for Polish Aeroclubs, civil and military schools. Most of the early wartime pilots received their initial flying instructions in RWD-8s. Several of them were in fact used in the 1939 Polish Air Force as liaison aircraft with one

Above right, views of standard production RWD-8 DWL showing the factory colour scheme and folding wing arrangement, also seen below in rear view. Bottom photograph is a rare bird VQ-PAG (Palestinian registration)—one for the collectors and historians!

Reprints of this feature, with dyeline prints of the 1/24th scale original are available as plan pack AH 2871 price 2/6d. plus 6d. postage from Aeromodeller Plans Service, 13/35 Bridge Street, Hemel Hempstead, Herts.



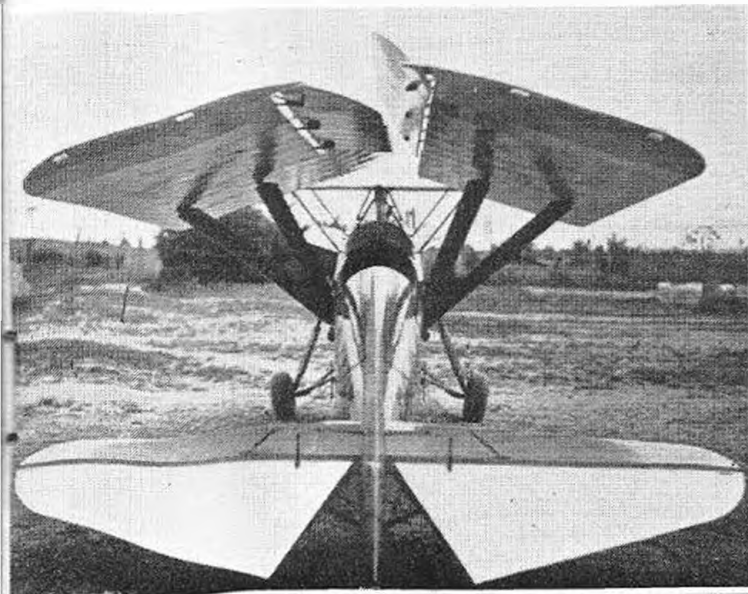
machine gun. RWD-8s were also manufactured under licence in Czechoslovakia, Yugoslavia and Esthonia.

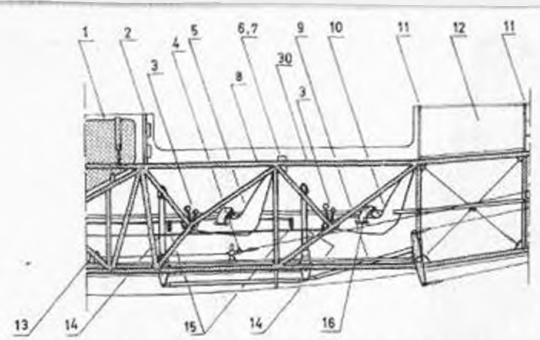
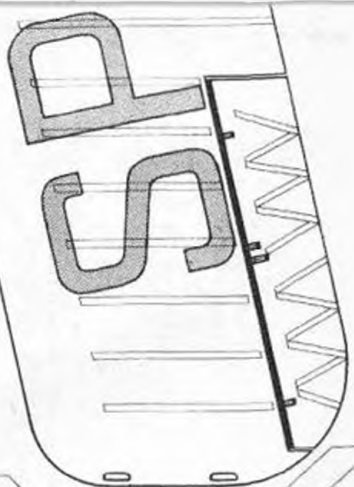
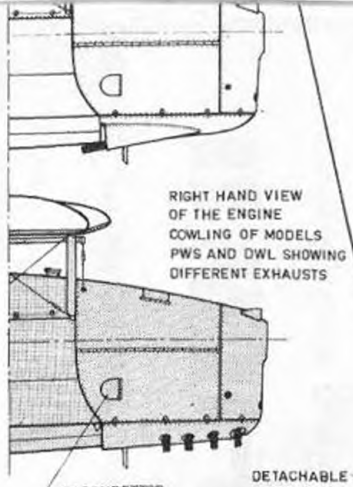
Produced in three main versions, with minor differences, the basic variant was the RWD-8 DWL, manufactured by Dowiadezalne Warsztaty Lotnicze in Warsaw, RWD-8 PWS and RWD-8a were manufactured by Pedlaska Wytwornia Samolotow in Biala Podlaska. All three versions were powered by the licence-built Czechoslovakian Walter-Junior in line engine, known as P.Z. Inz-Junior 4 of 110 h.p. Only one experimental aircraft was powered by a Polish radial engine, the 110 h.p. Nowkunski G. 594.

Construction of the RWD-8 was an all wooden structure fabric covered. The 12 degrees swept back wing had two box spars and warren braced ribs. The wings were braced externally by V-struts of streamline section (steel tubes with a wooden fairing). Slotted ailerons gave particularly smooth and light control. One very attractive feature of the RWD-8 common to many pre-war aircraft was the ability to fold the wings. This reduced total span to 11 feet width. A unique mechanism had been designed to allow the wings to be folded over the fuselage, without disconnecting the controls.

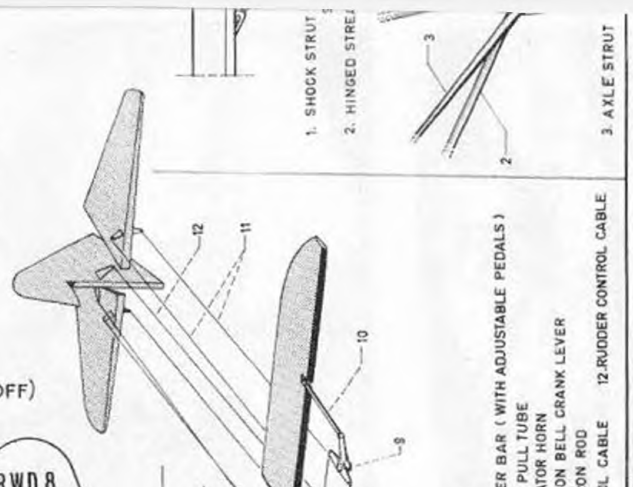
The fuselage was a welded steel tubes structure, wood faired and fabric covered. The wide track undercarriage with oleo-pneumatic shock absorber gave very safe landing characteristics. Possessing light wing loading and low landing speed the RWD-8 was very well suited to operations from restricted areas.

It was also employed for glider towing and with a stalling speed of only 43 m.p.h. earned tremendous respect among the legion of Polish aero engineers and pilots who are today spread throughout the aviation world in executive posts. As a modelling subject it is already thoroughly proved, for in August, 1944 *Aeromodeller* introduced a 2/15ths scale plan for a 67 in. span model. The design has not been up-dated and the plan carries vintage details for installation of a petrol-ignition engine. Those who wish to build their own modifications into the design for a modern engine and radio control will find the plan most helpful. It is F.S.P.X. 174, price 13s. 0d. from Aeromodeller Plans Service.

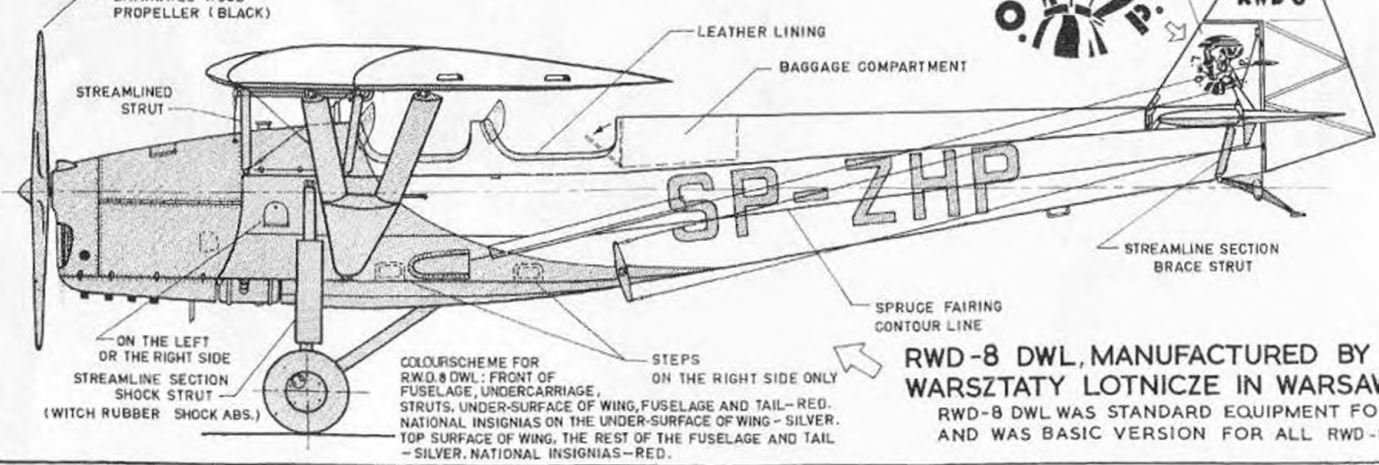
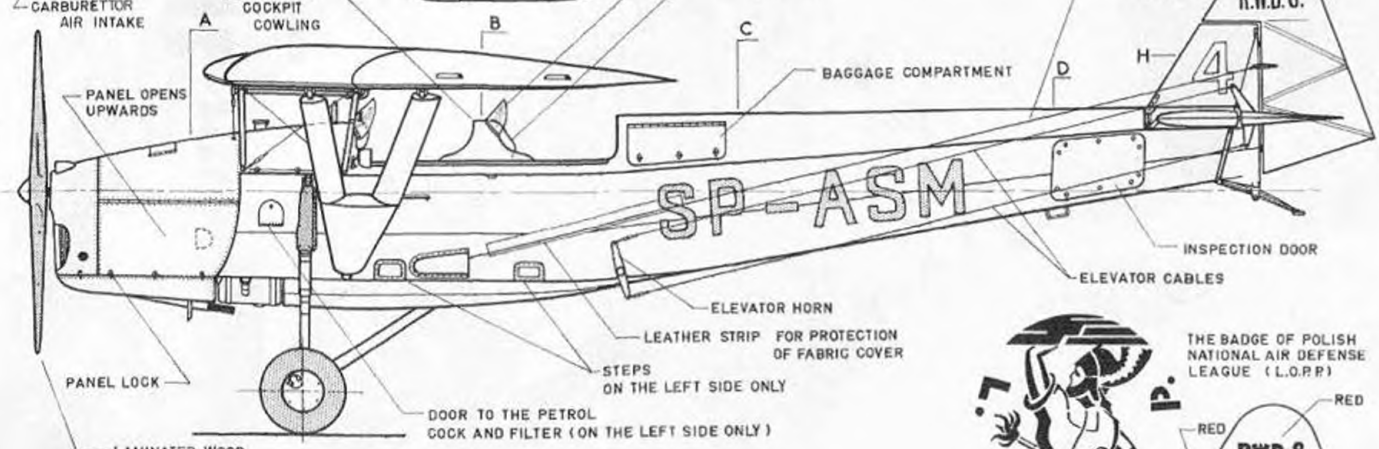




**DETAILS OF THE COCKPIT**  
(VIEW WITH COCKPIT COWLING TAKEN OFF)



**DIAGRAM OF FLYING CONTROL**



THE BADGE OF POLISH NATIONAL AIR DEFENSE LEAGUE (L.O.P.P.)

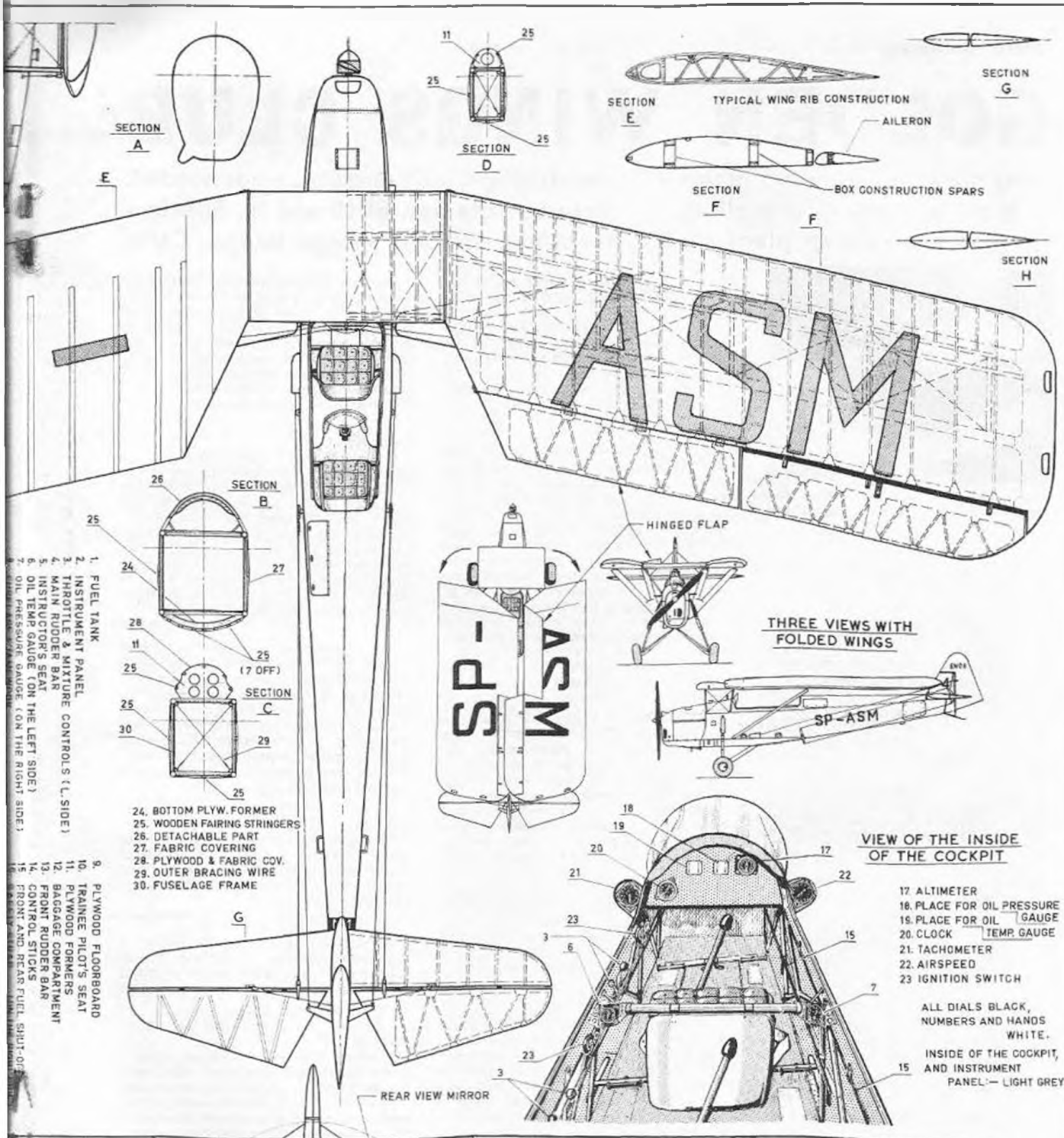
- 1.AILERON BALANCE CABLE
- 2.AILERON CONTROL CABLE
- 3.HORN CONTROL AILERON CABLE
- 4.BALL BEARINGS
- 5.CONTROL STICK (DETACHABLE)

DRAWN BY FELIX PAWLOWICZ MELBOURNE

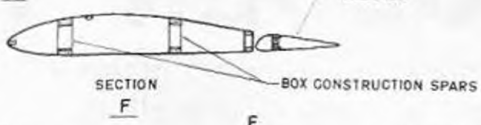
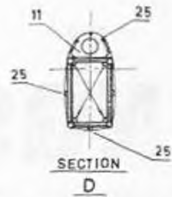
**RWD-8 PWS**  
**PRIMARY TRAINER**

**RWD-8 DWL, MANUFACTURED BY DOSWIADCZALNE WARSZTATY LOTNICZE IN WARSAW TO 1939**

RWD-8 DWL WAS STANDARD EQUIPMENT FOR POLISH AEROCLUBS, AND WAS BASIC VERSION FOR ALL RWD-8 MODELS.



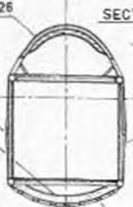
SECTION A



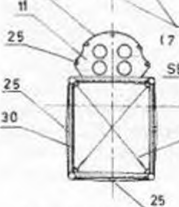
SECTION G

SECTION H

SECTION B



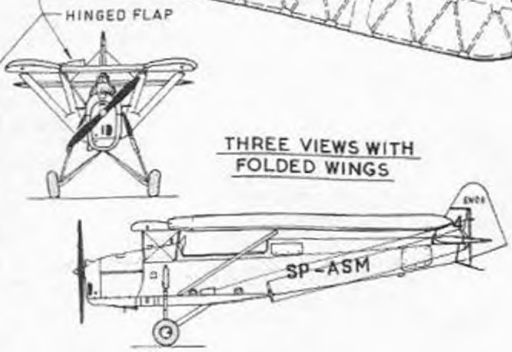
SECTION C



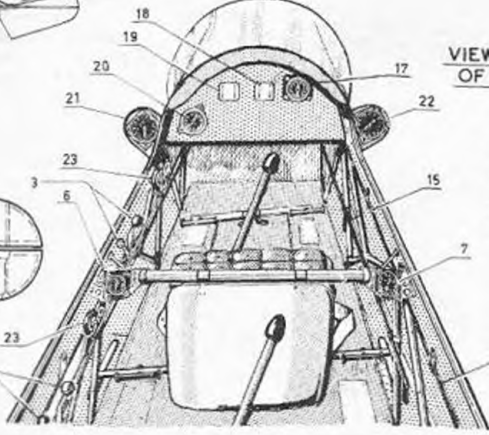
1. FUEL TANK
2. INSTRUMENT PANEL
3. THROTTLE & MIXTURE CONTROLS (L. SIDE)
4. MAIN RUDDER BAR
5. INSTRUCTOR'S SEAT
6. OIL TEMP GAUGE (ON THE LEFT SIDE)
7. OIL PRESSURE GAUGE (ON THE RIGHT SIDE)
8. PLYWOOD FLOORBOARD
9. PLYWOOD FLOORBOARD
10. TRAINEE PILOT'S SEAT
11. PLYWOOD FORMERS
12. BAGGAGE COMPARTMENT
13. FRONT RUDDER BAR
14. CONTROL STICKS
15. FRONT AND REAR FUEL SHUT-OFF

24. BOTTOM PLYW. FORMER
25. WOODEN FAIRING STRINGERS
26. DETACHABLE PART
27. FABRIC COVERING
28. PLYWOOD & FABRIC COV.
29. OUTER BRACING WIRE
30. FUSELAGE FRAME

THREE VIEWS WITH FOLDED WINGS



VIEW OF THE INSIDE OF THE COCKPIT



17. ALTIMETER
18. PLACE FOR OIL PRESSURE GAUGE
19. PLACE FOR OIL TEMP GAUGE
20. CLOCK
21. TACHOMETER
22. AIRSPEED
23. IGNITION SWITCH

ALL DIALS BLACK, NUMBERS AND HANDS WHITE.  
INSIDE OF THE COCKPIT, AND INSTRUMENT PANEL—LIGHT GREY

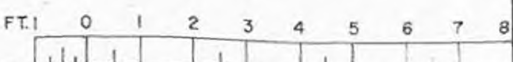
ALL MODELS OF THE RWD-8 HAD THE SAME WING STRUCTURE, SPAN, AND FUSELAGE DETAILS, ONLY WITH MINOR CHANGES, SHOWN ON THE DRAWING. RWD-8a PWS MODEL SAME AS RWD-8 PWS, EXCEPT AUXILIARY PETROL TANK IN WING CENTRE SECTION, AND UNDERCARRIAGE WITH RUBBER SHOCK ABSORBER (RUBBER DISCS) IN HOUSINGS (ROUND SECTION)

COLOUR SCHEME NOTES

ENTIRE FUSELAGE, UPPER & LOWER SURFACE OF WINGS, TAIL, ALL STRUTS AND UNDERCARRIAGE:—OLIVE GREEN. ALL METAL PANEL AND ACCESS DOORS:—SILVER (ALUM.) NATIONAL INSIGNIAS, NUMBER AND MANUFACTURER'S STENCILING:—WHITE.

POWER PLANT: P.Z. INŻ.  
— JUNIOR 110 HP

Thanks to W. S. Meus for use of photographs



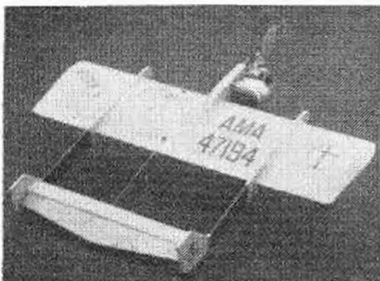
REGULAR SECTION LINE STEEL STRUT

19.8 x 7.15 DUNLOP TIRE (LOW PRESSURE)

CIRCULAR SECTION

# GOLDEN WINGS CLUB..

Why not join this grand junior Aeromodelling Club? Qualifications needed, a keen interest in modelling and between the age of 10 and 16. Specials for you are:- cheap plans, model transfers, Golden Wings Badge, Card.



Paul Conway's twin boomed "Dusty Five" sports control line model from Canada, a good flier.

Dear Sir,

Having been a control line enthusiast for over four years now, I did not have the good fortune to be a beginner when your organisation was formed. However, I can only say that I am nonetheless proud to be a member, and, although I shall soon be 16, I shall continue to read the Golden Wings page and, no doubt, use many of the helpful hints offered. You deserve only the heartiest thanks and congratulations from all the young beginners whom you have saved from discouragement and needless expense.

Enclosed are photographs of two of my models. The first is a 44 in. span Northrop Gamma 2E scale model from Musciano plans, the engine is a McCoy 29.

The second model is *Dusty Five*, a 36 in. wingspan, twin boom sports model off my own drawing board. The engine is an O.S. Max .19 III in the side-winder position. I am happy to say that she is a very reliable and fun filled flier. Vancouver, Canada. Paul Conway

Dear Sir,

I have nearly completed my *Veron Cardinal* free flight model. In the instructions it says that the model should be covered and doped with engine bay fuel before locating the engine. Please could you tell me what engine bay fuel is and does, and why have they told me to put it on.

Also could you advise me whether I should cover the model with tissue or silk and what kind of silk is necessary. Thank you.

Farnborough, Hants.

A. Jewell

**SPECIAL PRIVILEGE**  
**OFFER** exclusive to  
Golden Wingmen

The instructions mean that you should fuel proof the engine bearers (bay) before you put the engine in place. This is a clear varnish that stops the fuel soaking into the wood and rotting it away. You can cover your model with silk or tissue but in your case we think tissue would be advisable as silk requires a knack to apply correctly and tissue is far cheaper.

Dear Sir,

Thank you for my membership to your club. I wanted to become a subscription member to your magazine but I don't know how to send the money, because I am an overseas member to wings club, you please write to me about it. I want to send photos of my models to your publication. I have a great interest in aeromodelling and have recently constructed a *Mercury Marvin* for an AM 10. I want to make a pen friend in London. I have made a number of solid table top models and am searching for scale plans, for all this money exchange problems arise. Please write to me about subscription, pen friend and about engine. Bangalore II, India.

R. Alagawadi

Scale plans are available from the Aeromodeller Plans Service for most popular aircraft. The packs mostly cost 2/6 each plus postage and a complete list will be sent free of charge to all Golden Wings Club members who want one, please enclose a stamped addressed envelope. A subscription to Aeromodeller for 12 monthly copies costs 35/- and you can send this by International Money Order. The AM 10 diesel engine can be obtained from most model shops so I suggest you contact one of the model shops who advertise in Aeromodeller. From time to time we have a pen friend section in the magazine and you should wait until you see one advertising who lives in London.

Dear Sir,

Although I have read the *Aeromodeller* for a year I have only just applied for membership to your club. I recently purchased a pile of back numbers from an uninterested friend, which I find very interesting and informative. Also I wonder if you would be so kind as to advise on a problem, my father accidentally filled my *Davies Charlton Spitfire* with my *Keil Kraft Record Methanex* and then tried to start it. Is it possible for me to clean this engine as I have never done this before, or should I send it back to the makers. I have two gliders, the *Mercury Swan* and the *Keil Kraft Invader* both of which fly well and a 1 cc. powered control liner the *Contest Kits Spitfire*. I also have a slightly modified A.P.S. *Mandy*. Also do any model manufacturers make a kit for the *DFS Reiher Glider*, and if so how expensive is it?

Ealing, London.

A. G. Fletcher

The glow plug fuel will need washing out but a complete strip down is not needed. Immerse the engine in a container full of petrol then turn it over a few times to flush it out. After flushing, oil all the moving parts. You can remove the back-plate and then lubricate the crankpin/rod bearing. There may be a kit for the *DFS Reiher glider* on sale in Germany.

Dear Sir,

Being a member of the Golden Wings Club and a keen modeller for two years, I hope to start radio control flying. Do you think these are a good choice? R.C.S. Mk. III, Elmlic Compact, A.P.S. *Timber* and the AM 10. I have five control line models and some free flight, one being the *Keil Kraft Chief*, do you think it is suitable for radio control. I am a member of our local club, the *Chesterfield Skyliners M.A.C.* Holmewood, Derbs.

A. Froggatt

The combination you list for starting in radio control, sounds just about ideal, but Lumpers would be a wiser choice than *Timber* for a first radio model. The *Keil Kraft Chief* is not suitable for radio control. You should remember that any F1F model that has to be converted to radio control is not a novice's model, as the conversion requires you to rely on past experience for most modifications.

Dear Sir,

This is my first letter since I joined the Golden Wings Club. I am a proud owner of an AM 10 diesel engine and want to get a silencer for it. Would you suggest a silencer. Helston, Cornwall.

L. Wilkinson

There is no need for us to suggest a silencer as the AM silencer on sale at your local model shop is an excellent unit and designed to be fitted and operated on your engine.

Dear Sir,

I joined the Golden Wings Club a few months ago and there are some points on which I would like some help.

I own an AMCO .87 cc. diesel ref. no. 4623. I have lost the cylinder head combining the cooling fins and compression screw. The carburettor has snapped off at the cylinder without doing any damage to the cylinder wall. Where can I obtain a new cylinder head, is the engine repairable and if so where can it be repaired? Can a spring starter be fitted to the engine? Please could you let me know the cost of a spring starter and cylinder head, also the cost of the engine repairs.

I also own an E.D. 2.0 cc. Competition Special. I would like to build a trainer, stunt combat model for this engine to fly control line with. Please could you let me have names and prices of suitable

10/16/57

2d. in the 1/- Rebate plan purchase coupon for Golden Wings Members G.W. No. ....



# How to join

Just fill in the handy coupon at the foot of this page and post it with 2/6 to J. Bridge.

plans and kits to suit my requirements.

A few weeks ago I sent away to you for a plans list. I received a list of plans from the U.S.A. Have you any plans from Great Britain, such as those given away in the *Aeromodeller* every month, as the American plans do not give a very wide choice of aircraft to suit the types I would like to build or to suit my engines. Caernarvon, N. Wales. C. Wingrove

The engine you are talking about in your second paragraph sounds like an Amco .87 cc. diesel that went out of production many years ago. We can only offer general advice to club members and for the repairs and costing suggest you contact Gig Elfflaender at Field Bank, Chester Road, Macclesfield, Cheshire, who is renowned for his skilful engine repairs and rebore. The 2 cc. E.D. Competition Special is no longer a Contest engine by any standards. This engine is dated and to the best of our knowledge there are no control line kits or plans specifically for this engine. We have *Plans Handbook* price 2/- that illustrates and describes all the Aeromodeller plans; this handy reference book also contains a list of the world's engines and many useful data sections for the novice.

Dear Sir,

I have just started to build plastic models for display in my bedroom and have been having troubles. I can follow the instructions quite well but some of the parts don't fit very well. As they are made lots of the parts have a thin layer of plastic protruding from them that does not do anything at all and gets in the way when I am glueing all the bits together. Also can you tell me how to fill in the gaps you get when the wings are joined to the body. I have one set of paints and these are very shiny. Can you tell me how I can make them flatt or matt as the kit instructions call it. Leeds, Yorkshire.

D. French

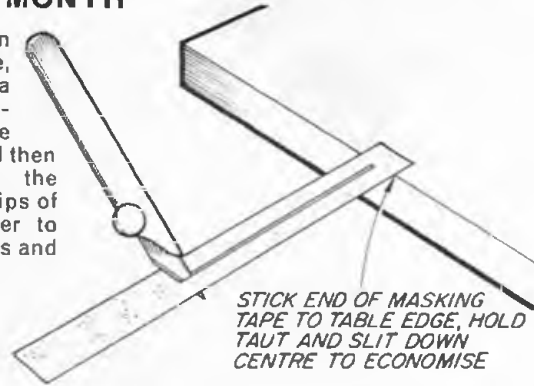
The parts don't fit very well as the thin layer of plastic you are talking about, called "flash", needs to be trimmed off. This is caused by some of the plastic poured into steel moulds that has seeped between the two mould halves. A filler called "Body Putty" is available at your model shop and this can be squeezed into the gap and flushed off after it has dried. The body as you call it is the fuselage when one is talking about aircraft, the term body is applicable to cars. To make a small quantity of your gloss paint matt, mix a little talcum powder into it, this will take the gloss off.

Dear Sir,

I have just bought a two volt wet cell accumulator from my local ex-government stock shop to operate my glow plug engines. This was a good buy at 4/- and it's very robust. Can I also use the 1.5 volt plugs with it or will they burn out? The

## TIP OF THE MONTH

To economise when using masking tape, cut it in half with a knife blade by sticking one end on the edge of a table and then cutting it down the centre. Thinner strips of tape are far easier to apply round corners and compound curves.



STICK END OF MASKING TAPE TO TABLE EDGE, HOLD TAUT AND SLIT DOWN CENTRE TO ECONOMISE

local shops say they can only charge up motor car and motor cycle type accumulators and not my small sort. Can you tell me where I can get this done. I have seen several chargers for radio control batteries and the larger car batteries. Is one made for two volts? Cromer, Norfolk.

A. Wells

The Ex-Government stock shops can yield some good bargains for modellers and we ourselves have also used the same type of accumulator. You have to keep trying all the local shops to get one who will charge it for you. We have found that the smaller firms are much more likely to oblige.

Dear Sir,

Enclosed is a photograph of myself holding my Veron Tipsy Nipper which is powered by an M.E. Heron. It is my first radio control model. I am using a Futaba F.T. 3A transmitter, and the Futaba F 237R receiver. I have not yet flown my plane, but I am hoping it will fly well. Coventry, Warwicks.

M. Bedding



M. Bedding with his well built Veron Tipsy Nipper powered by an M. E. Heron.

Dear John Bridge,

I am between 10 & 16 years of age and would like to become a member of the "Golden Wings Club". With this application I enclose postal order (International Money Order) for 2/6d. to cover cost of the enamel club badge, two coloured transfers and membership card.

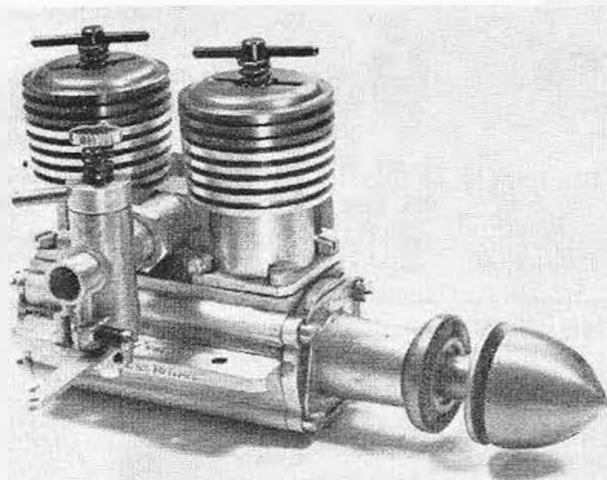
NAME IN FULL .....

ADDRESS .....

YEAR OF BIRTH..... SCHOOL.....

NAME OF ANY OTHER CLUB OR CLUBS TO WHICH I BELONG (if any) .....

SEND TO:- GOLDEN WINGS CLUB, AEROMODELLER, 13-35, BRIDGE STREET, HEMEL HEMPSTEAD, HERTS.



## ENGINE TEST

By Peter Chinn

### TAPLIN TWIN Mk.III

*An 8cc alternate firing twin cylinder diesel engine*

**T**HE Taplin Twin Mk. III is the latest version of an engine that first appeared at the end of 1958. In fact, the origins of the Taplin Twins go back—if memory serves us correctly—to 1953, when Lt. Col. H. J. Taplin flew a 4 c.c. inline twin diesel in one of his then well-known "Radio Queen" high-wing cabin models and also built a water-cooled version that was used to power an R/C boat. Later a 5 c.c. version was made.

These early 4 c.c. and 5 c.c. prototypes of the Taplin Twin used piston and cylinder assemblies of the old 2 c.c. E.D. Competition Special and 2.5 c.c. Mark III diesels, had plain bearing crankshafts and no throttle control. Modified E.D. cylinder/piston assemblies were also incorporated in the first production engine, the 7 c.c. Mark I of 1958. The cylinder was basically E.D. Hunter but with the addition of an intake-port (since all Taplin Twins are of the 3-port or cylinder induction type) and with a smaller exhaust port. The 7 c.c. Taplin also incorporated a ball-bearing mounted crankshaft and an excellent barrel throttle carburettor.

In 1962, the Taplin Twin Mk. II was announced. In this model, the cylinder bore was increased from 0.666 in. to 0.705 in., bringing the actual total volume up from 6.92 to 7.99 c.c.—i.e. a "49". At the same time, the new cylinders were hard chrome plated. The front outer bearing, which had been a bronze bush on the Mk. I, was replaced by a caged needle-roller bearing and the crankshaft was nickel plated. At the time when this engine was announced—in both aircooled and marine versions—the aircooled model was shown with a rather attractive finning arrangement embracing both cylinders, but this version does not appear to have been put into regular production. The majority of engines sold were, it seems, watercooled marine models.

The Mark III, introduced earlier this year, is now an "all-Taplin" product—i.e. none of its parts is sub-contracted and the engine is made entirely by Dinton Engineering Ltd., a subsidiary of Col. Taplin's Birchington Engineering Company. Introduction of these engines was actually intended some three years ago, but, due to Taplin commitments in other engineering fields, production had to be delayed until now.

The main differences between the Mk. II and the Mk. III are in the cylinder design. Instead of using integral fins and having the head attached with six screws, a separate finned aluminium jacket is used with a screw-on head. This also enables the same basic cylinder assembly to be used for the marine

model, the aircooled jackets being readily interchangeable with water jackets. The prop drive assembly is also easily exchanged for the handsome flywheel and fabric disc universal joint of the marine version.

Taplin Twins are not, perhaps, as plentiful on the flying field as on the model boating lakes. The engine is, admittedly, a trifle on the heavy side for most types of model aircraft. It has, nevertheless, been used with some success in scale control-line models and, provided that one is not aiming at the sort of model and performance (e.g. a heavy scale model, or high speed aerobatic machine) that demands the power/weight ratio of a modern R/C glow engine, there is no reason why it should not be used successfully for multi-channel R/C work. After all, it was a Taplin Twin that, not so very many years ago, powered the model that held the world R/C distance record. A large area, fly-for-fun sort of model, such as the Smog Hog, is probably the best type of R/C model for the Taplin Twin.

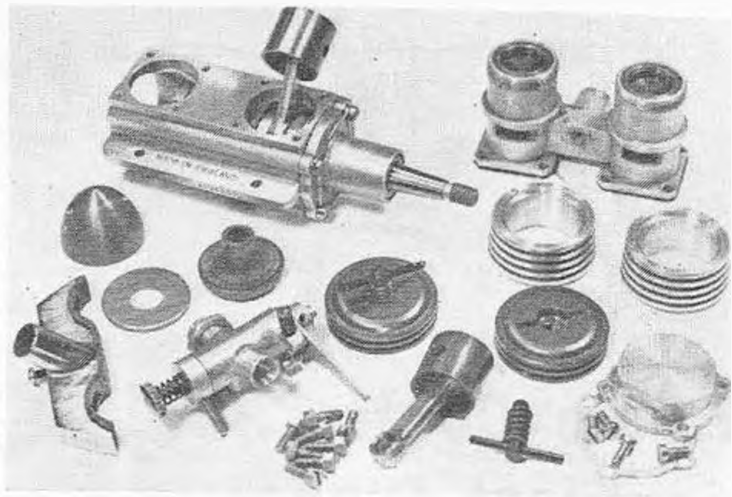
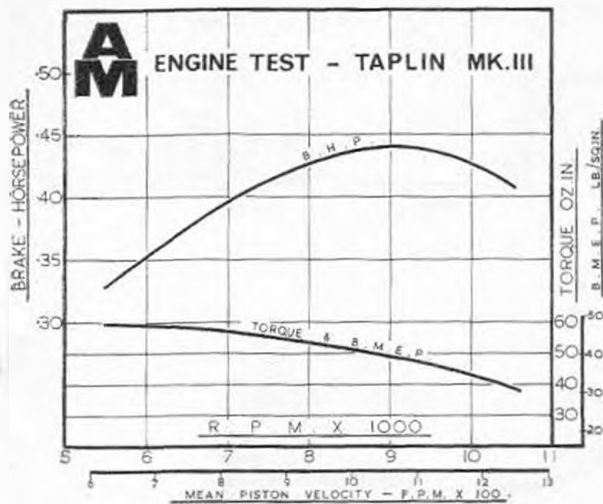
The main attribute of the Taplin Twin—apart from the rather attractive novelty of a twin cylinder motor is the very much smoother running it offers by comparison with a single cylinder motor. This, of course, is due, firstly, to the better balance of the twin cylinder layout and, secondly, to the less violent torque fluctuations resulting from having two firing strokes per revolution.

Brief structural notes on the Mk. III are contained in the data panel. In the design, the engine continues the basic layout adopted in the original production model. Since the engine is of the inline, alternate firing type two-stroke, each cylinder has to have its own primary compression (crankcase) chamber and these are, therefore, separated by a centre bearing assembly and the crankshaft is made in three parts.

#### Performance

Our tests on the Mk. III followed shortly after we had been testing a large single cylinder diesel and, by comparison with this, the vastly smoother running of the Twin was most striking. The Taplin was also much more docile to handle. Another characteristic of the alternate firing twin is the impression that it gives of running very much faster than the tachometer actually shows. This, of course, is due to the higher frequency exhaust note produced by the alternate firing layout.

Starting was very easy and, using a 14x6 prop, we had the Twin started within a couple of flicks from cold, following the procedure recommended in



the maker's leaflet. Frequently, the engine would start on one cylinder only and the second cylinder would then be brought in by increasing the compression adjustment.

Big props, like the 14x6 we have mentioned, are well suited to the Taplin, which is at its best when given plenty of work to do. Our tests indicated a peaking speed of 9,000 r.p.m. and there is no point in using a prop smaller than 12x6 for R/C or its equivalent (say 11x8) for C/L. Our test motor turned a 12x6 PAW Trucut prop at 7,700 r.p.m. and a 13x5½ Top-Flite at 7,600 r.p.m. A prop (such as an 11x6) which allows static r.p.m. to approach the 9,000 mark will mean that the in-flight r.p.m. will be well above the peaking speed, with a resultant loss of b.h.p. Moreover, since the aircooled model runs a good deal hotter than the water-cooled engine, temperature may, at these excessive revolutions, become high enough to soften the sweated joints securing the induction manifold to the cylinder.

On the bigger props, too, throttle response was much better and the Taplin would throttle down to a safe 2,500 r.p.m. and still pick up to full power without misfiring. An excellent range of intermediate speeds was also obtained.

To sum up, this is an interestingly different engine. While its peak power and power/weight ratio fall somewhat short of 8 c.c. glow engine standards, it is just about the most powerful model aircraft diesel

now available and has none of the harshness that one normally associates with large capacity model compression ignition engines.

**Power/Weight Ratio (as tested) 0.40 bhp/lb.**

**Specific Output (as tested) 0.55 bhp/litre.**

**SPECIFICATION**

**Type:** Twin-cylinder, in-line, alternate firing, air-cooled, loop-scavenged three-port type two-stroke cycle, compression ignition. Ball journal and needle roller main bearings. Throttle type carburettor.

**Bore:** 0.705 in. **Stroke:** 0.625 in.

**Swept Volume:** 0.4875 cu. in. = 7.989 cc.

**Stroke/Bore Ratio:** 0.887:1

**Weight:** 17.5 oz.

**General Structural Data**

Diecast aluminium alloy barrel type crankcase with central division housing two 3/8 x 7/8 in. ball bearings. Detachable diecast aluminium alloy crankcase nose housing one 3/8 x 7/8 in. ball bearing and one 3/8 x 9/16 in. cased needle roller bearing. Detachable rear crankcase cover plate attached with four screws. Three piece nickel-plated crankshaft with front and rear cranks press fitted at permanent assembly with centre bearing. Hard-chromed steel cylinders each secured to crankcase by means of base flange and four screws and connected by soldered-on brass intake manifold. Lappe-Meehanite c.i. flat crown pistons with 5/32 in. dia. solid gudgeon-pins red tained by circlips in piston bosses. Separate machined aluminium alloy finned cooling-jackets retained by machined aluminium alloy cylinder heads screwed on to cylinders. Forged aluminium alloy connecting rods with bronze bushed big ends. Machined aluminium alloy prop driver fitted to taper on propshaft. Machined aluminium alloy spinner nut. Diecast aluminium alloy carburettor body screwed into boss in intake manifold and locked by hexagon nut. Barrel type throttle valve with idling and airbleed adjustment screws. Chromium plated, fabricated brass exhaust manifold suitable for connection to separate silencer.

**TEST CONDITIONS**

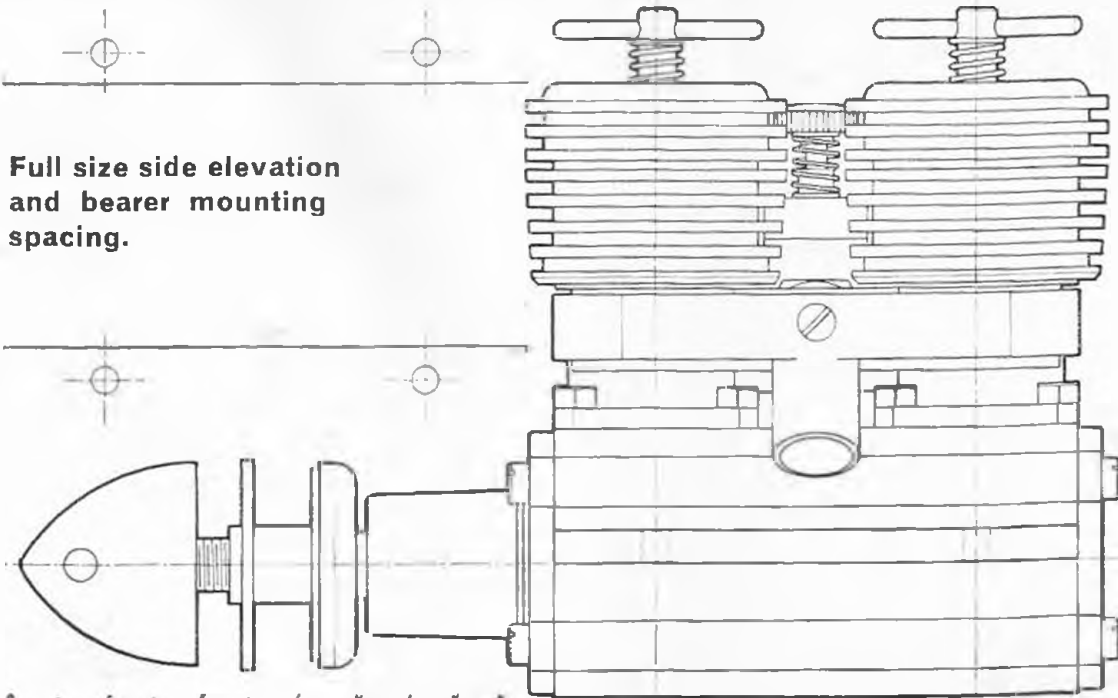
**Running time prior to test:** Approx. two hours.

**Fuel used:** Maker's recommended standard mixture—i.e. 37½% Ether, 37½% Kerosene, 25% Castor-oil.

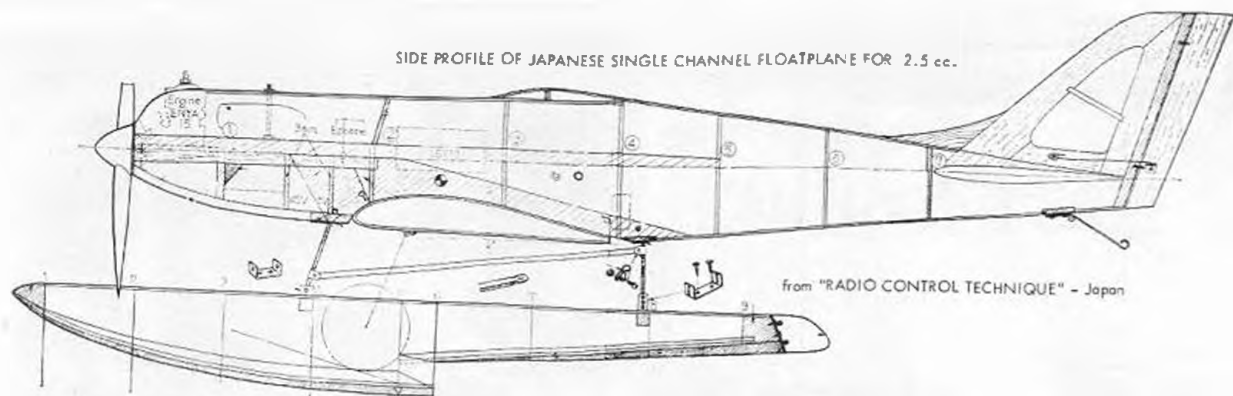
**Air temperature:** 65 deg.F.

**Barometer:** 30.05 in. Hg.

**Silencer type:** Nil (Exhaust manifold only).



**Full size side elevation and bearer mounting spacing.**



from "RADIO CONTROL TECHNIQUE" - Japan

# Radio Control Float Planes

Concluding David Boddington's description of water based flying experiments

TO COMPLETE this article on the problems of trimming floatplanes, as suggested by Willem Aarts, we have to consider directional stability. The difficulty we encounter here is a basically unstable situation, as the model accelerates and changes direction, due to the relative positions of the water resistance point (W.R) and centre of gravity of the model (See Fig. 1). Let us consider the model accelerating for take off and veering to the right due to the lack of a water rudder or fin to correct it. With the unstable arrangement described, the model builds up its swing to the right but, due to the mass inertia, it will also try to skid sideways in a similar manner to a racing car sliding round a bend at high speed (see Fig. 2). However, the water resistance on the side of the left float will prevent this and, as the C of G is higher than the water resistance point, the left float is pushed down into the water, the right float comes out of the water resulting in the model adopting a "feeding duck" attitude.

To prevent this wing occurring, the floats should be fitted with water fins or rudders. The latter are preferable as they also allow the model to be taxied with reasonable directional control. Avoid excess use of rudders during take-offs otherwise instability could again become a problem.

## Construction of Floats

There are three forms of float construction that I know of, and which have given satisfactory results.

- 1) Conventional built balsa and ply construction.
- 2) Expanded polystyrene, veneer covered.
- 3) Commercial, vacuum formed, plastic floats.

The latter type, produced in America called the GEE BEE line, are made of lightweight polyethylene and come finished complete with hardware. They are suitable for attaching to conventional landing gear and are manufactured in three sizes for models from .020 cu. in. power to those weighing up to 8 lbs.

It may be advisable with the larger models to coat the underside of the floats with glass fibre to prevent puncturing of the plastic by unseen pieces of flotsam or is it jetsam?

Conventional balsa and ply construction is similar to that used for an all sheet fuselage remembering

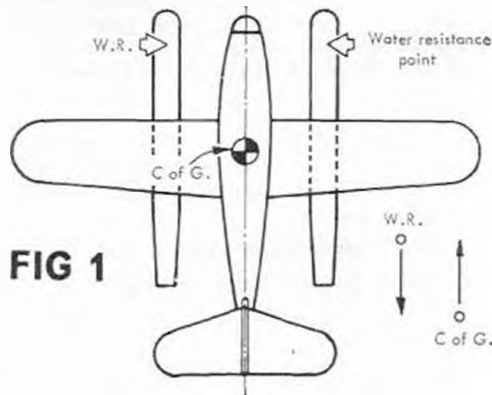
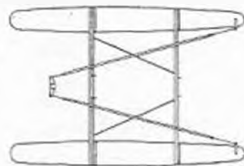
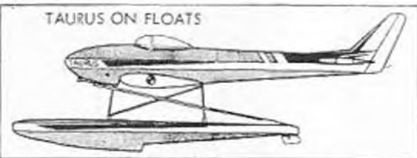


FIG 1

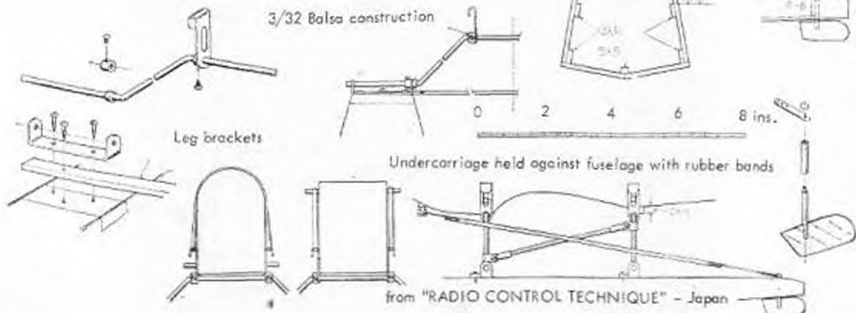
ARRANGEMENT OF NOSELEG STEERING CONTROL ADAPTED TO TWIN RUDDERS



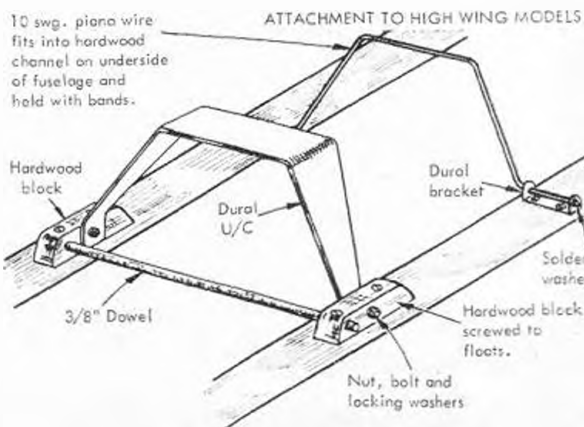
TAURUS ON FLOATS



3/32 Balsa construction



from "RADIO CONTROL TECHNIQUE" - Japan





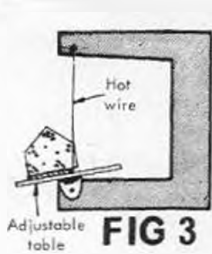


FIG 3

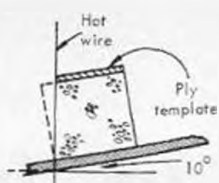


FIG 4

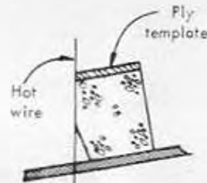


FIG 5

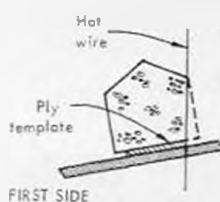


FIG 6

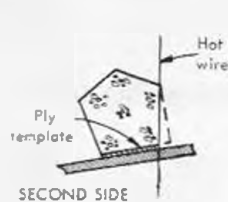


FIG 7

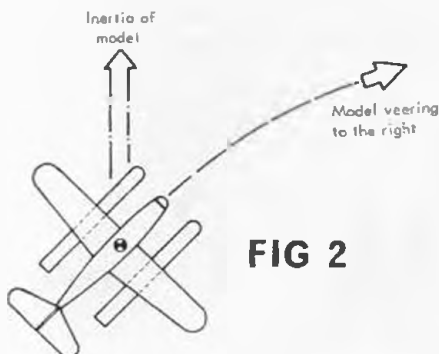


FIG 2

to use a glue that is waterproof. Attachment points for the floats should be well reinforced as these have to take quite a pounding. Again the use of glass fibre on the underside and nose of the floats can help to minimise damage and the whole of the floats are best covered in nylon and liberally doped and fuel proofed.

My own preference is for floats with an expanded polystyrene core covered with a mahogany veneer. These are simple to make, light in weight and quite robust. The cores are cut on a vertical hot wire cutting machine with an adjustable table. A ply template is cut of the side view of the float and this is pinned to one side of the block of polystyrene. The cutting table is adjusted to give a cut of 10 deg. out of the vertical to allow for the vee'd bottom of the float. When this cut has been made, the process is

repeated for the opposite side of the block. Accurate cutting is necessary to obtain an even centre line of the vee'd bottom. A further ply template is cut to the plan view of the top of the float and Sellotaped to the top of the block at the ends of the template. The sides of the floats are then cut, again using the 10 deg. angle, the template being in direct contact with the cutting table (see sketches 3 to 8). Always leave a "lead in" on the ply templates to allow for the speed of cutting to be correct by the time the actual area of float is reached. The cores are covered with veneer, using a contact adhesive such as Aviette Kits "Styro bond", in a similar method to covering polystyrene wings. Before covering is commenced hardwood mounting blocks (engine bearer material) must be installed in the required positions. P.V.A. glue is ideal for this purpose. The two sides are covered first and trimmed and sanded accurately to the edges followed by the top and bottom. The bottom surfaces covered in two parts, i.e., forward and aft of the step, it is necessary to cut a narrow vee in the centre to the front of the veneer for the forward part of the float to allow for the curvature. Use  $\frac{1}{8}$  in. plywood to seal the rear of the float and the step and hard block balsa for the front.

Joints of the veneer should be reinforced with heavy weight tissue or nylon or the whole of the float can be covered.

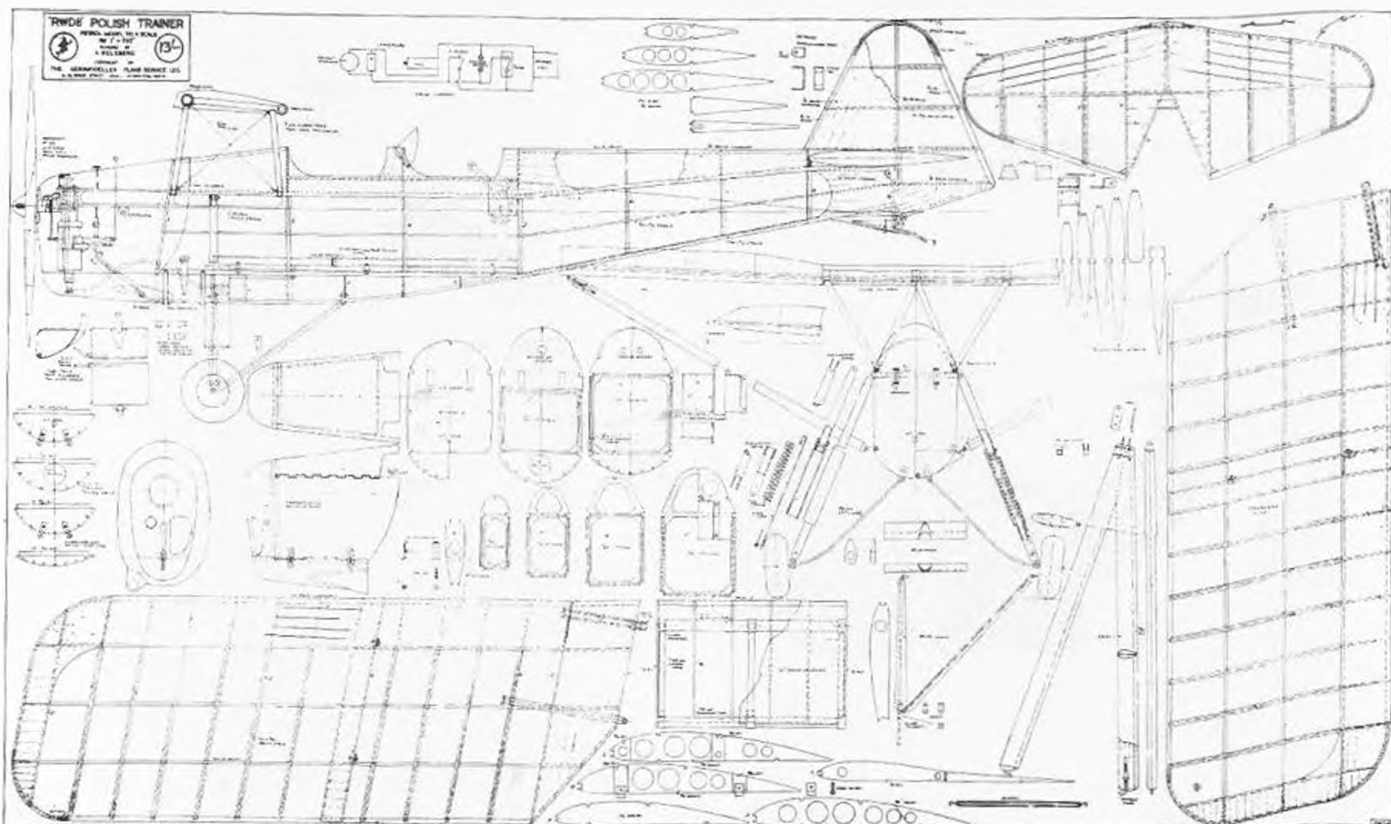
#### Method of float construction

Various methods of float attachment can be used and the sketch shows the best method, found to date, for high winged models.

### RWD-8 FLYING SCALE PLANS. An A.P.S. oldie ideal for F/F or R/C conversion

FULL SIZE COPIES OF THIS 1/10th SCALE REPRODUCTION ARE AVAILABLE THROUGH AEROMODELLER PLANS SERVICE AS PLAN F.S.P.X. 174, PRICE 13/-.

Note, this is a vintage plan, that has not been updated for R/C.





**A**LTHOUGH small "Japp" has a big performance, don't dare to discard her as a novelty model. Far from it, she is fast and highly aerobatic and because of her small size, always attracts a crowd whenever flown.

The prototype, although flown with a Webra Picco single channel pulse proportional outfit, is suitable for other lightweight single channel outfits with small escapements or as a free flight model with the Cox .010 engine.

Nearly all the components can be cut from only two sheets (!) of  $\frac{1}{8}$  in. x 3 in. x 36 in. balsa, 1 mm thickness was used in the original but this is not generally obtainable in this country. (The prototype was made by a Yugoslavian modeller in Norway.) Take great care to position all the components exactly as the illustration on the drawing or all the parts will not fit on. Study the plans carefully and decide which version and engine you are going to use. The Cox TD .010 provided ample power in the original and the integral Cox tank gave a two-minute flight time, quite long enough. If you intend to do aerobatics it's advisable to install the optional stunt tank behind the engine mounting former, with the fuel feed line by-passing the integral tank. For free flight add an external graduated tank to reduce the engine run, as this size of model soon goes O.O.S.

Tom Prukner shows diminutive size, note the Webra Picco Pulse Proportional transmitter.



## Your two free plans

A 20½ inch wingspan single channel radio control model for .010—.020 engines.

# ★ JAPP *and* By Tom Prukner

The prototypes construction took some five hours and with the exclusive use of P.V.A. "white glue", drying time was longer than anything else. Commence construction with the wing. Note the angled ribs, and boxed leading and trailing edges as used in A/2 glider construction. Cut all the leading edge riblets, the main ribs and root/tip ribs. Pin the lower leading edge sheeting down flat over the plan then glue the front riblets and tip ribs in place. Note that the centre section is flat, this is built separately to the two wing panels. Now glue the  $\frac{1}{8}$  in. sheet spar in place, followed by the top sheeting. Add the leading edge strip and a D section structure that forms the front half of the wing panels will result. Leaving the leading edge structure pinned in place, pin the lower trailing edge sheet to the plan, glue the  $\frac{1}{8}$  in. x  $\frac{1}{2}$  in. strip in place then add the trailing edge top sheeting, having bevelled the rear edge prior to commencing construction. With both the trailing edge and leading edge in position, glue the angled ribs in place and when dry remove both panels from the plan. Construct the centre section over the plan, sheet the lower surface then add the two piece ribs, followed by the trailing edge structure, dihedral brace, leading edge and top sheet. Block the wing panel tips up 1½ in. with the centre section edge level against a square table edge and sand the sheeting to the dihedral angle. Now glue the wing panels to the centre section with 1½ in. packing under *each* tip rib.

Cut the tailplane from  $\frac{1}{8}$  in. sheet, add cross grain tips and sand smooth. Cut the fuselage sides, top and bottom and doublers from  $\frac{1}{8}$  in. sheets and engine mounting former from  $\frac{1}{8}$  in. plywood. Bind the undercarriage in place, cementing well. Glue the fuselage side and bottom doublers in place, then the reinforcing strips to take the place of formers. Glue the two fuselage sides to the engine mounting formers, add cross bracing strips, then when dry cement the bottom in place. Now cement the fuselage top on, followed by the tailplane and fin. Add the nose sheeting around the engine bay and install radio equipment. Note the servo mounting tray, shaped this way for the Webra Picco unit only. Remove the R/C gear and cover the entire model with one coat of 50 per cent thinned clear dope then lightweight tissue all surfaces, including the fuselage. This tissue covering on the fuselage imparts great strength and prevents the sheet splitting with minor knocks. Decorate with bright colours of your choice as an aid to visibility.

## presented in this issue

A 26 inch wingspan control line sports model for 1.5 c.c. engines.

- ★ Working flour spraying hopper
- ★ Three line control handle details
- ★ Easy to fly and simple construction

### By Ian Barrett

**L**OOKING for an unusual subject for a control-line model? Then how about a semi-scale working crop-duster that is mildly aerobatic and yet simple enough for a beginner to fly?

It was the original intention to produce a true scale model, but after examining the various designs flying today, their contours and excess of "struttery" ruled them out for a low powered model. The only way round the problem was to design a new one! The outcome was "Dusty", a simple low-wing design of conventional layout. The finished model disguises the fact that there is a straight taper in plan from nose to tail, and the only curved sheets used in the model are those over the wing leading edge.

The dust hopper is of ample size and as it lies over the centre of gravity of the model, dumping the load in the air does not upset the trim. An engine bearer running through the compartment transmits vibration, so agitating the powder and assisting dumping of the load. The cambered wing section shortens take-off when the model is loaded, and makes possible a long glide when the engine cuts.

Construction of the model is easy, provided that it is tackled in the correct sequence. The primary unit consists of the engine bearers, ply formers, undercarriage and tank. Use strong binding thread to fasten the wire to the former and bearer, and cover with Araldite. When the engine unit is complete and dry, bolt on the two bellcranks, ensuring that they do not foul each other. The fuselage sides and the remaining formers can then be added.

Cement in place the floor for the dust hopper, taking care that the door is a good fit, without binding. Couple up the linkage to the small bellcrank, and check its operation. It is most important that

the door will close completely under the force of the small compression spring.

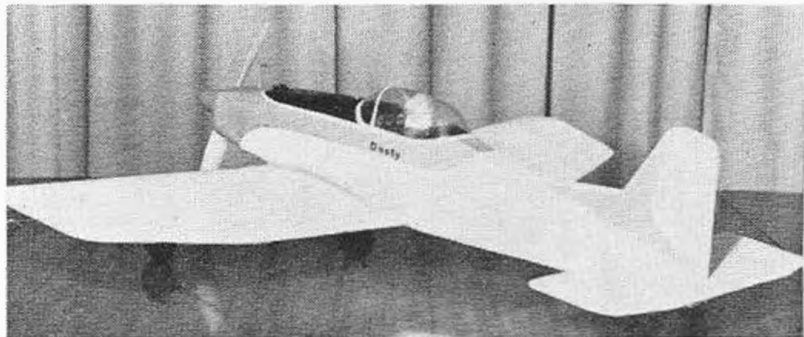
The remainder of the fuselage can now be completed, together with the tail surfaces. Before fitting the canopy, the inside of the cockpit should be painted black, and if desired, an instrument panel and pilot added. The original model had a "flying farmer" complete with bald head and ginger beard. He was made from papier mache over a "Plasticine" form, the clay being scraped out after the paper had dried. Poster paints were used for the colour, and the beard was flocked as supplied for model railway layouts.

Wing construction is quite straightforward. Dihedral is only incorporated for the sake of appearance.

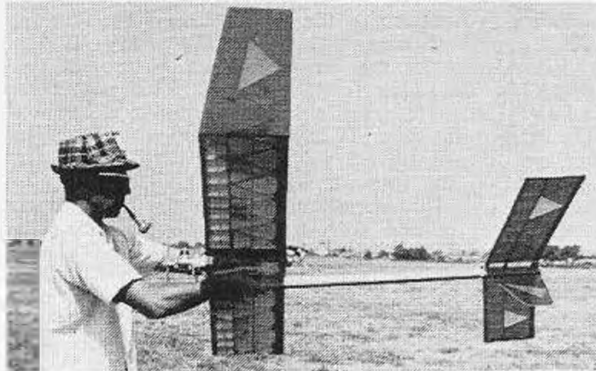
When attaching the wings to the fuselage, cut away the upper centre section sheeting to clear the control system. The lower sheeting is best left until the wing is fastened to the fuselage, and the control system checked for correct working. Feed in the lead-out wires to the bellcrank, not forgetting the spring on the wire for the hatch. This can conveniently be made from a spring found in a retractable ball point pen. It is compressed between two washers, one soldered to the wire and the other cemented to the inboard wing rib. There should be sufficient initial compression to keep the hatch shut.

A special handle with a third line will have to be made—the one shown is simple to make and comfortable to use. When flying the model, do not pull too far back on the middle line, otherwise tension may be lost on the control wires!

A final word of warning. After filling the hold with powder (french chalk, flour, salt, etc.) and starting the engine, do not check the third line operation until you are airborne!



Attractive lines are quite deceiving as all the sheeting is uncurved for simple construction, she really looks like a crop duster too. To add the final touch of realism just empty the hopper in the air!



## John O'Donnell comments on Free Flight at the U.S.A. National Championships

IN this day and age Continental holidays and overseas travel are commonplace. Nevertheless, there were many raised eyebrows amongst my friends and colleagues when they learnt I was planning to go to California! Perhaps surprisingly aeromodelling provided not only the incentive, but also the means to make this venture possible.

The American cost-of-living being roughly double (or even higher than!) ours, combined with the current restrictions on travel allowances, makes a "private" trans-Atlantic visit virtually dependent on having relatives or friends "over there". In my case it was Frank Monts (for whom I have flown proxy in the last two Coupe d'Hiver at Chavenay) who made the trip possible.

The "Aeromodeller" is hardly the place for a travelogue, but some aspects of the journey are relevant. The luggage allowance on Trans-Atlantic flights is a mere 20 kilogrammes (44 lbs.) per person. My two model boxes and their contents took just half of June's and my combined allowance. The remainder had to include "essentials" such as rubber motors, winder, glider winch, etc., as well as clothes for three weeks. Somehow we managed it!

The Manchester to New York flight was followed by another to Wichita, Kansas, where the Monts live. This "internal" flight involved a plane change at St. Louis where Dave Linstrum and Carl Fries met us, and made the 40 minute stop all too short.

After a couple of days in Wichita to settle down and recuperate (from the panic to get ready as much as from the journey) we started on the third stage. This comprised a three day, 1,400 mile drive halfway across America. Of the drive itself I had better say little, except that it included hundreds of miles of flyable countryside.

American automobiles are notoriously large by English standards, but still wouldn't contain six persons (Frank, wife Marjorie, daughter Cathy, son Dick, plus June and I), assorted luggage and all the models. The usual American solution is a trailer, but the Monts improved on this by filling their second car (a Volkswagen) with models and hitching it behind their station wagon. This not only served instead of a special trailer, but provided a supplementary car for use in California.

An immense illuminated sign at the turning into the Naval Base left no doubt that it was N.A.S. Los Alamitos and that it was host to the "36th National Model Airplane Championships". It also set the correct impression that both the A.M.A. and the U.S. Navy had spared no effort to provide extensive organisation. By British standards, everything connected with the Nats was almost over-organised—it was certainly a very far cry from our do-it-yourself attitude.

One traditional, and well known, feature of the U.S. Nats is the provision of a workshop hangar, complete with benches etc., and available for use twenty-four hours a day. It wasn't quite as large as I had been led to expect, but it was difficult to find empty table space when we arrived. The tales of modellers spending the Nats week building in the hangar were partly substantiated by the numbers of partly completed (or even just started) models in evidence.

There was one puzzling feature about the modellers in the hangar. The majority of them were free flight, almost no radio control fliers. Presumably the latter can either operate from their cars or prefer to keep everything in their motel.

The hangar housed the A.M.A. administration and publicity staff and provided a convenient site for the posting of notices, results and the like. There was also a large and well fenced-off enclosure for impounding scale entries after processing. This area also served to display (and issue) some 500 trophies—not to mention a Honda motor-cycle for the "Grand Champion".

The programme for the week-long Nats started with Monday devoted to Registration. Entrants received an envelope containing an assortment of hand-out information plus labels to be affixed to person and car. The latter really worked when it came to priority parking. (Traffic was controlled by the Navy).

Top: "Miss Model Aviation" Tere Rich, poses with John Keigler's "Antique" winner and replica "Texaco" Trophy. Centre: Webb Russell holds "Me Too" by Bob J. Combs with a Super Tigre .19, balloon tank and 720 sq. in. area. Left: Carl Redlin with 7th place Open Rubber model. The entire fuselage is covered with aluminium "Mylar" film. Carl won A/2 glider.



Left: Dick Neugebauer gives his class "B" Gas model a V.T.O. release. Dick had trouble and this flight over-ran. Above: Richard Loones works on his free flight scale P.40 in the hangar fitted out with workbenches. Power is a Cox .020. Right: A/2 models were processed by the Navy, this included weighing and measuring for all models.

Processing took place in the hangar during the evening prior to the event. This involved the presentation of F/F (and C/L) models for inspection, measurement if appropriate, and rubber stamping with the event designation. A.M.A. cards were also inspected. This was a terribly time-consuming business (especially for F.A.I. events) and involved much standing-in-line. The only short-cut I saw was a line of unattended F.A.I. power models queuing on behalf of their owners well before processing should have commenced. I'm not sure whether this was applied method study or merely the only class of model heavy enough to be left safely on the draughty hangar floor.

On the face of it much of this processing seemed superfluous to me. Non-specification models could be stamped (to discourage use of unallowed reserve) at the contest control on the day—and membership should surely have been checked when entries were submitted. The "unofficial" events scheduled inside the Nats structure certainly used "field" processing. I am told that the processing also served to sort out any difficulties with entries.

Free-flight commenced on the Tuesday with the indoor events being held in the airship hangar at Santa Ana — only a few miles from Los Alamitos. The hangar was in very good condition and just a little smaller (if my memories serve aright) than Cardington. It was large enough for I.H.L.G. (Indoor chuck

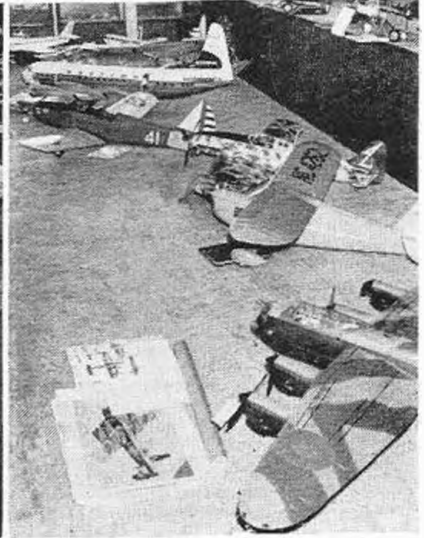
glider) to be held at one end and the microfilm and tissue events at the other. A few birds flitting between the rafters appeared to bother no-one.

I saw nothing particularly novel in the stick (microfilm) and tissue events except some very competent steering by use of a helium filled balloon. Joe Bilgri won open stick with what he described as a low score of about 33 minutes for his best flight. The cabin (fuselage) models were interesting as they have not been particularly plentiful in England. The retention of R.O.G. for this class puzzles me (especially in view of some launches I witnessed) but at least it gives variety to the photographs.

The I.H.L.G. event impressed me more if only because it is years since I last saw this type of model flown properly—and then only by two or three people. At Santa Ana a number of people could undoubtedly throw very hard indeed and were getting very high in consequence. Lee Hines' reputation is well-known and whilst I didn't see his winning flights (made fairly late) I did see him testing. The climb of his (and some other) models is a lot straighter than I expected—but recovery at the top is still very good.

Outdoor F/F events started on the Wednesday and continued until and including Sunday. Official flying was allowed from 8.00 a.m. to 5.00 p.m. on Wednesday, Thursday, and Friday and 7.00 a.m. to noon on Saturday and Sunday. The early close was

At left: John O'Donnell receiving his glider trophy at the Oklahoma State Champs at a contest held after the Nationals. Centre: Class A Gas entrants queue up in the workshop hangar on the night before processing. Right: a general view of the scale line-up in the compound. Note the documentation for the Lancaster in the foreground.



to allow for the afternoon (full size) air show.

The weather conditions at Los Alamitos were commonly predicted to start calm and overcast with plentiful "dew" thermals. A sea-breeze should have started at 9-10 o'clock, freshening to what the Californians call wind (10-15 m.p.h.) by 11-12 o'clock and continuing until nightfall.

In practice the wind certainly followed its prescribed pattern but until Sunday the mornings were sunny and hot very early, giving lift and sink right from the start of the contest. This weather pattern produced intense and early activity as most participants were anxious to fly in the early morning calm. Timekeeping was performed by Navy personnel (with briefing before Tuesday's events). Even with only one timer per flight this situation produced a lengthy queue of entrants waiting to fly. Events with large entries such as  $\frac{1}{2}$ A Gas (over 200) or with checking holdups, such as glider, were obviously the worst affected.

As motorised retrieving (by automobile but *not* motor cycle or push bike) was allowed it was very easy to spend most of one's time "in line". The use of clubmates and helpers as stand-ins in the glider event reached such an extent (one entrant had five friends equi-spaced in the queue) that notices were posted for the rest of the week stating "Only contestants with planes allowed in line".

Furthermore, "to give everyone a chance to fly", a starting rule was enforced. This gave a competitor just three minutes to launch (or start towing) once he had a timer and had reached the launching area. Failure constituted an "attempt". The only exception allowed was a broken motor in a rubber model. The net result was little opportunity for either picking the weather or tactical flying.

Despite the heat, thermals were nothing like as strong or as numerous as I would have expected. In fact they seemed small, sparsely distributed and short-lived—and far from amenable to my detection technique.

The American magazines will undoubtedly quote the results and scores in detail. Perhaps interpretation will be eased by my pointing out that most events are flown to three 5:00 maxs with either progressive (for Gas) or unlimited fly-offs. Exceptions were Rocket and O.H.L.G. flown to 4:00 maxs, and of course F.A.I. events flown to five threes. The top score of the meeting was achieved in "C" Gas where the winner managed the ten minute max but not the eleven.

Mention must be made of the "unofficial" events organised by groups of enthusiasts and providing very popular additions to the programme. These events comprised Indoor Rubber Scale, a variety of Old Timer events, and Coupe d'Hiver.

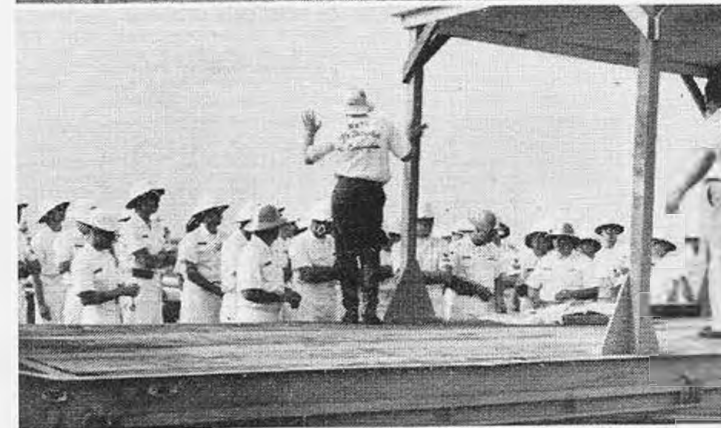
The siting of the F/F events was correct for the prevailing wind but even so models flown in the windy afternoon could and did outfly the airfield. Praise is certainly due to the very efficient recovery service, complete with vehicles and walkie-talkies, provided by the Navy.

The quality of flying varied as might be expected at any large meeting from poor to extremely good. I would say that in the straightforward R/G/P events the best British models would be more than comparable with the best Americans. However we use a very different approach. This is especially noticeable in the power events where U.S. models are very large and light for equivalent size engine. Many climb quite slowly, but some were faster than I would have expected.

On the flying side I had a rather hard week, mainly due to engines that didn't like the heat! The models themselves seemed to have travelled quite well and remained practically "on trim". I just wasn't very good at finding Californian lift! Nevertheless, as awards went to the top 10 per cent or so, I collected five trophies out of the six events in which I flew. In chronological sequence "places" were 14th in  $\frac{1}{2}$ A Gas, 5th in Glider (A/1 and A/2 combined), 4th in Rocket, 8th in Unlimited Rubber and 2nd in Coupe d'Hiver. The other event I flew was Wakefield.

From my personal angle the most memorable aspect of the meeting was not the contest but number of American modellers who introduced themselves, and their interest in my presence, activities and writing. I never realised I had so many ready-made friends.

Right, top to bottom: 1911 Fokker Spider by Dr. Bob Jones is very well made and has a Cox .020 Pee Wee. Carl Fries with his modified Orbiteer and four year old Condorian. The signpost at junction of the main and airfield roads is illuminated at night. Note the model addition. Navy time keepers are briefed on their duties for the glider event, these Navy personnel staffed the event. The large airship hangar at Santa Ana, very suitable for indoor flying, a short trip from Los Alamitos.



## CLUB and CONTEST NEWS

### Display and Junior Contests

Leicester M.A.C. who have a full inter-club contest calendar think that junior members are put off with all the seniors competing, so they are now having a junior-only contest. Several club members have put up the prize money and transport has been arranged to the flying site. A control line display at the Linden School had perfect weather conditions and a large crowd watched the flying of Combat, Stunt and Scale models. A reasonable sized display of static models were exhibited in the classrooms and both D. Neal and J. Archbold had many questions to answer. Little boys, as ever, would fiddle with the models and many youngsters had a surprise when the propeller fell off a rubber job, less motor!

### Hot Air Displays

Fleet and D.M.A.C. have recently performed three displays. The first at the Fleet Carnival was in torrential rain and the evening performance had little better luck with the weather. The programme was started with a hot air balloon (from the Aeromodeller plan) and this was a great success, flying right out of the carnival ground. Following items were an Autogyro, three biplanes, a solo stunt flight, a vintage stunter with a 10c.c. ignition engine and finally a combat display. Another display was at the Crondell Fete where Basingstoke, Godalming and Fleet were represented. Radio control single channel and multi, control line combat, scale and stunt being flown to supplement the full size air display and free fall demonstration. The following week a further display was given for Technigraph and Telegraph Sports Club, who insisted in donating five pounds to club funds as well as feeding the display team. The club enjoy very cordial local public relations and at one carnival a local farmer asked why they had stopped using his field!!! Their local inn the 'Prince of Wales' gave them the use of a hall for a recent open meeting and the membership decided against a membership limit so the club is now open to newcomers again.

### New Club

A new modelling cub has recently been formed in Barry. Any freelance modellers in the area should contact the secretary K. G. Griffiths, 122 Merthyr Dyfan Road, Colcot. Barry, Glamorgan.

### Airport Display

The South Eastern Area who organised the modelling side of a display and contest to go with the Popular Flying Association Rally at Rochester Airport report superb weather and an appreciative crowd. They had 13 entries in a single channel spot landing contest and Ian Vaus (Sevenoaks) proved the eventual winner with a 78 in. error. Chas Atkins (Elliot) had the first fly-away and 25 flights were made in the two rounds. The Surrey R/C Club had a 25 minute spot for multi demonstration flying and the smoke trails really stood out against the clear blue sky. They impressed everyone present including the modellers from other clubs.

### Irish Control Line Nationals

This year's Irish Control Line Nationals at Casement Aerodrome on July 1st and 2nd had ideal weather conditions on the first day but rain and strong winds caused several prangs on the second. A team racing attracted six entries and the fastest heat went to Dean/Brennan with a two stop 4:30 using an Oliver Tiger Cub powered model and a cut down Bartels 7 x 8 glass fibre propeller. In the second round J. McNally made 4:39. The three-man final resulted in a win for P. Deane with 10:16, followed by J. McNally at 11:33 and J. Black third with 11:53. F.A.I. team racing was poorly supported with 8 entries. The fastest time in this class also went to Dean/Dickson at 5:22, with three pit stops. J. Bolton was getting plenty of laps but only recorded 5:31, good enough for the final. The other finalist was P. Brennan at 5:30 with a Super Tigre G.20 D powered model, unlike the other two who both used Eta Eites', all three used Top Flite 7 by 8 speed propellers and polyurethane finished models. In the final P. Brennan crashed leaving P. Deane to win at 11:35 and I. Bolton in second position with 13:18. In class B team racing the finalists were Dean/Dickson (3:42 in heat), Bolton/Brennan (4:12) and Molloy/Hand (6:18). All the teams used nylon propellers with airspeeds of about 100 m.p.h., on straight fuel. The final was a disaster when P. Brennan stepped out of the centre causing both Molloy and Deans models to crash. Bolton/Brennan were disqualified and the other two placed in the order of laps covered, P. Deane winning with 75 laps. The engines used varied from Eta 29s to Super Tigris and Oliver Tiger Majors. Combat attracted the largest entry and was flown on both days, with the novices gradually being overcome by the regulars. The eventual finalists were G. Dickson and G. Hand, with Dickson the final victor using one of the new P.A.W. 2.5 cc. diesels. The Dominator design from A.P.S. was popular, so were Oliver Tigris. Scale with three entries suffered from the high winds. J. P. Shortt won with a B25 Mitchell followed by T. D. Wilson with an overpowered P-38J Lightning. A D.C.3 by Ken Collins placed third. F.A.I. Stunt was also affected by the wind and line tension down wind was so great that G. Bolton had the controls pull out of his Nobler and spread itself all over the runway. P. Deane lost himself in the overhead eights but maintained a sufficient lead to win, flying the model he used at the last World Champs. G. Dickson was second and G. Bolton third.

### Glasgow Hornets

Seven members of the Glasgow Hornets attended this year's Nationals from their 29 strong membership. Although out of luck with contest placings they had a good time and enjoyed the Novelty event, they also sampled the film show. The Scottish C/L Nationals held at East Fortune on June 18th held little better luck for them. To start with, things looked hopeful with six out of 16 entries in Combat, however only one was left at the end of the first round as his opponent's engine failed to start, he did not get through the next round. The Brown/Craig team returned a slow time in Rat Race. Many lessons were learnt and everyone gained points for the club championship. Three members tried their hand at the Scottish R/C Nationals on July 2nd a Leven with A.P.S. Ohm-8 models for single channel but they stayed unassembled as the other six single channel models were all flyaways due to the high winds. Barry Purslow and Geoff Franklin flying in Multi really left an impression behind.

### South Eastern Area Contests

Following Graham Gates visit to England, one time member of the Southern Cross A.C., and now chief airframe designer at Piper Aircraft in Florida, U.S.A., two separate challenge contests have been accepted. Both postal, the A/2 fliers led by Area Comp. Sec. Norman Couling will meet a Piper team and the Florida State A/2 team will fly against a team headed by Nick Neave. A bottle of "houch" is at stake for both three round contests. The first round has been flown off and Nick Neave's team scored 30:57 in Florida's 35:35. Norman Couling's team scored 30:16 and they await the Piper score. At the Area Centralised meeting on June 18th, the S.E. Area had plenty of lift, but large holes as well, and no one managed a full house. Junior member Philip Davies (Crawley) folded his A.P.S. Aiglet gliders wings but swift work on the model box top soon put things right. Another attempt folded the Aiglets wings yet again, making it three times in a week. Pete Cameron topped the White Cup with 7:56 and F. Boxall the Weston Cup with 12:47 in their Area.

### East Midlands Contest

A control line contest for member clubs of the East Midland Area, organised by the area committee at Wigley on June 11th saw wins for A. Lord (Doncaster) in Combat, Muffitt/Wright (Thurnscoe) in Team Race, Penton/Smith (North Sheffield) Rat Race, A. Hill (Thurnscoe) in Novice Stunt, and R. Clarke (Thurnscoe) for the Chuck Glider.

### St. Albans News

To date St. Albans club members have had little success in contest this year. However Pete Putnam did well to place third in the N.W. Area Easter Meeting for F.A.I. Glider and Dave Tipper has again demonstrated his consistency by placing fourth in the trials. Bruce Rowe won the "Aeromodeller" Postal Coupe d'Hiver whilst some of the more affluent members were spending much time and effort to no avail in Paris. George Fuller topped open power at the East Grinstead Gala, he now has six fully trimmed power models with more to come. One unusual project is the construction of two dynamic lift airships by Don Edwards and Pete Outram, but the prevalent winds make testing dates uncertain. Indoor flying is popular, the best attended meetings being in the club room. Entrants were given a sheet of 4 x 3 x 1/32in., and 6in. of 1/8in. sq. Points were awarded for originality and duration. There were 13 entries, all different ranging from a Wright Flyer to a McCrutton machine. After many fly-offs Mike Burrows won from Peter Beer by 0.1 seconds, Mikes' model was a helicopter with a good flight of 4.1 seconds.

**Coming Events, and latest changes.**

- September 17 *South Midland Area Gala.* College of Aeronautics, Cranfield, Beds. Radio Control, Control Line and Free Flight events. All classes except B T R, speed and scale.
- September 17 *S.M.A.E. Event.* Area Centralised. Team Rubber (Farrow Shield), F.A.I. Glider (S.M.A.E. Cup), Open Power and 1/2 A Power.
- September 24 *Luton and D.M.A.C. Slope Soaring Rally.* Ivinghoe Beacon, Nr. Dunstable, Beds. Single control pylon race, 5 min. flight time, 2 flights. Multi control, 5 min. flight time, 2 flights. Aerobatics, 2 loops, 2 bunts, tail slide spin (three turns). Entry restricted to 30 in each class. Free flight Glider and Chuck Glider also Magnet Steering. Pre-entry to D. W. Bateman, 14 Ridgeway Drive, Dunstable, Beds. No power models, please!
- September 24 *Midland Area Rally. Cancelled.*
- September 23/24 *R.A.F.M.A.A. Championships.* R.A.F. Hullavington, Wilt. Wakefield (Thurston) open to civilians on 24th. Three flights in rounds, starting early!
- September 30 *Mid Essex Rally.* Doctors Pond, Dunmow, Essex. Combat, R/C boat balloon bursting, statics.
- October 1 *South Coast Gala.* R.A.F. Tangmere, Nr. Chichester, Sussex. Open R/G/P, combined F.A.I. Radio Control, Open Pylon Race, Limbo, Scale, Control Line, Stunt, Combat, 1/2 A, F.A.I. T.Race. Pre-entry 2/6d. to Area Secretary, 7 The Green Walk, Willingdon, Eastbourne.
- October 1 *South Bristol Autumn Gala.* R.A.F. Hullavington, Wilt. Combined Vintage, Combined F.A.I., Chuck Glider, Coupe d'Hiver.
- October 7/14 *Leicester S.M.E. Exhibition.* St. Marks Church Room, Belgrave Gate, Leicester.
- October 8 *Northern Area Vintage Contest.* R.A.F. Topcliffe, Yorks. Vintage, A/I, Coupe d'Hiver and Open Power for the Tony Pannett Trophy.
- October 8 *Scottish Gala. Cancelled.* Contact T. Preston, 53 N. Gile Terrace, Edinburgh 12.
- October 8 *Wanstead Stunt Rally.* Croydon Airport Works, Purley Way, Croydon. Tarmac surface, Field Entry.
- October 8 *Wharfedale 1000 Lap 'B' Team Race.* R.A.F. Rufforth, Yorks. Pre-entry to:—L. Davey, 14 Lansdown Close, Baildon, Yorks.
- October 15 *S.M.A.E. Southern Gala.* Barham Downs, Near Canterbury, off A2. NO Control-line team racing, only Combat, 1/2 A, R.G.P., Chuck Glider, and Multi-R/C.
- October 22 *Northern Area F.A.I. Meeting.* R.A.F. Topcliffe, Yorks. R/G/P, Combat, T/R, Stunt, Scale. Pre-entry 2/6d. to H. Tubbs, 70 Carr Manor Road, Leeds 17.
- October 22 *Imperial College Control Line Rally.* College Sports Ground, Sipson Lane, Harlington, Hayes. 'A' Combat.
- October 29 *Wanstead Control Line Rally.* Charville Lane, Hayes, Middx. Stunt and Rat Race. 100 mile Rat Race Marathon. 1,500 laps. 58 foot lines. Pre-entry essential. 10/- Senior, 7/6d. Intermediate, 5/- Junior, to R. Ives, 15 Falmouth Ave., Highams Park, London, E4. S.M.A.E. cards are essential or NO FLY.
- October 29 *St. Albans Winter Gala.* Chobham Common, Surrey. Coupe d'Hiver, A/I, and combined F.A.I.
- October 29 or November 5 *Northern Gala.* tentative dates, to be run at Elvington or Carnaby, details next month.

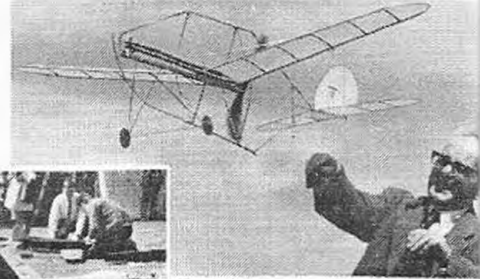
**Essex Club 23 Strong**

The present membership of Harlow M.F.C. is 23 and they meet regularly on Friday nights at the Moot House, the Stow, Harlow. Meetings are at 7.00 for Juniors and 8.15 for Seniors. The club has its own workshop, also the use of a canteen and bar and has two flying fields available. All types of models are flown with a large group of sports flyers in all classes, also a small band of contest flyers have regularly attended contests. The East Grinstead Gala was the last contest and several members flew a Keil Kraft "Gipsy" built by J. Wardel was lost. New members are always welcome and should contact A. Hawkins, 182 Church Leys, Harlow, Essex.

**Film Exchange**

Arthur Gorrie, P.R.O. of the Model Aeronautical Association of Queensland would like to exchange loans of films in 16mm. or 8mm. with British Clubs on any form of modeling, especially the Nationals or any International events. Local films are also of great interest and they have several interesting films to show of Australia. Any interested clubs should contact Arthur at M.A.A.Q., 604 Stanley Street, Woolloongabba, Brisbane, Australia.

At the Nats our camera caught Arthur Rippon landing his 45-year-old design pusher, below, the S.M.A.E. President A.V.M. B. A. Chacksfield admires R.C. models and at right Flt Lt. MacMonagle, ex-pathfinder, studies Dr. Henley's Bulldog.



Above: A.V.M. Chacksfield, Henry J. Nicholls and Wing Commander Douch, Stn. Cdr. of Hullavington chat with Scouts who helped with light refreshments at Nats. At right, Eddie Keil watches Dave Platt's re-building progress on the fated Dauntless.

**Watford M.A.C.**

Although not in the contest results as often as they used to be, Watford M.A.C. are still active with inter club contests and displays. Their most recent display was at Rickmansworth Grammar School on June 26th, with control line models. The club's Spot Landing contest was well supported and local model shop owner Don Baxter took top spot with 55 penalty spots followed by Alf Beckham with 87 and Roy Harding with 274, flying the club model.

Left: S. Eastern Area Exec's. Nick Neve, Norman Couling, Pete Cameron, Les Fuzzard, and Ian Lucas caught relaxing at their annual "Noggin & Natter." Below: S. Midland Committee, Derek Giles, Ron Moulton, Edgar Clark, Dick Edmonds and Trevor Payne, missing is the Secy. John Stevens.





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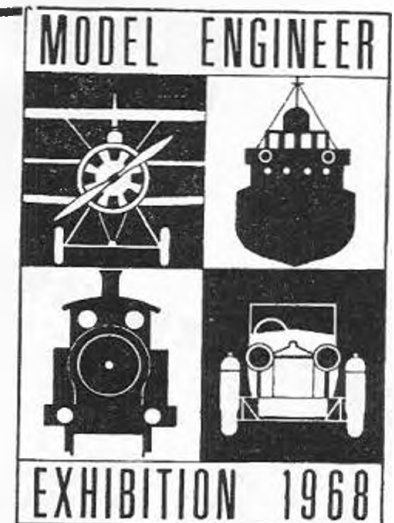
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COMPETITORS are advised that entry forms are now available as this issue appears. Closing date for entries will not be coming up for some time, but early entry would naturally assist the organisers, and ensure the widest possible variety.

EXHIBITORS from the trade are informed that brochures and detailed stand application forms are ready. Potential exhibitors are warmly invited to write for details of what will be the first major exhibition for several years.

Entry forms and trade exhibitors' brochures are available from the Exhibition Organiser, M.A.P., LTD., 13-35 Bridge Street, Hemel Hempstead Herts.



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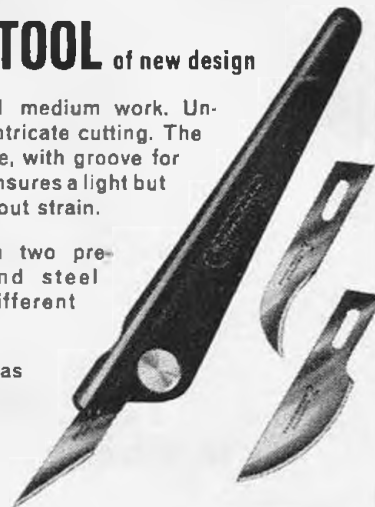
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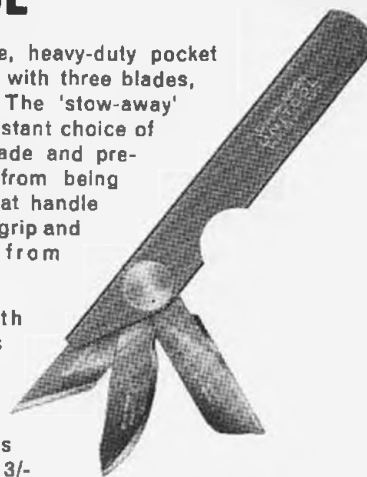


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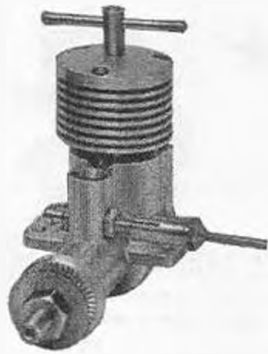
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G21/35 RV	10	0	0
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G21/40 STD	6	18	6
G40 RR	10	0	0
G21/40 RV R/C	12	15	0
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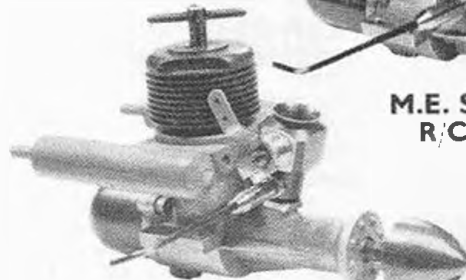
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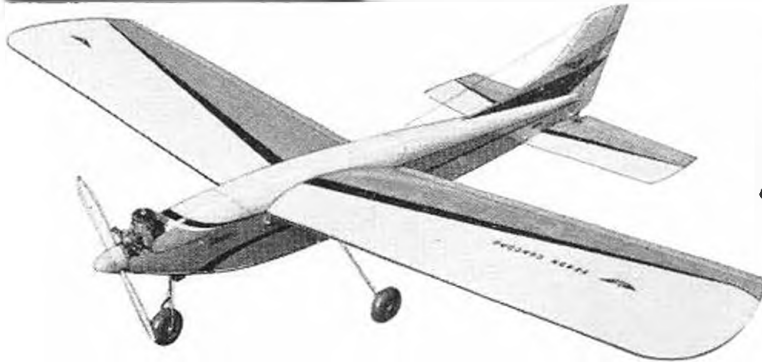


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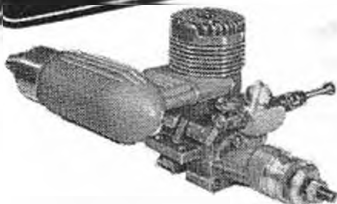
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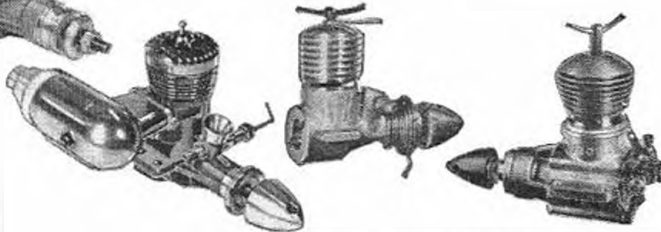
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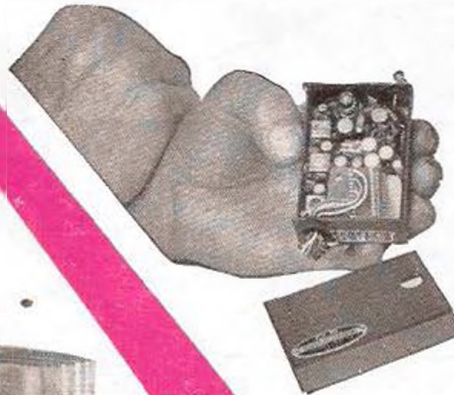
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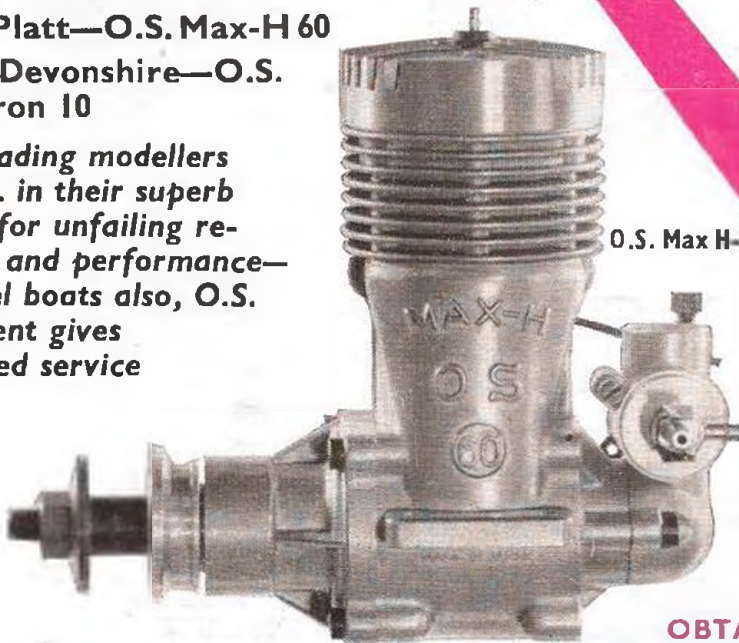


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