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FEBRUARY 1971
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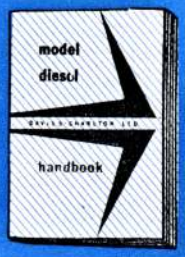

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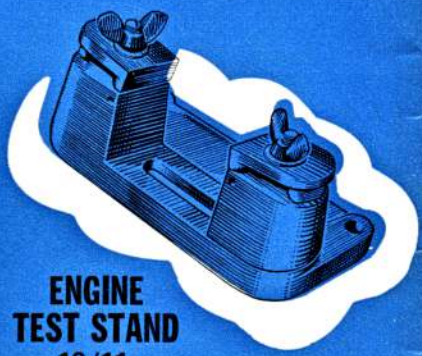

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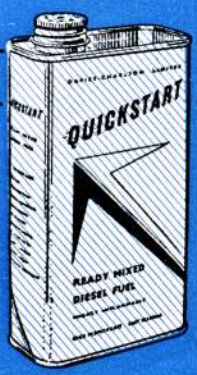

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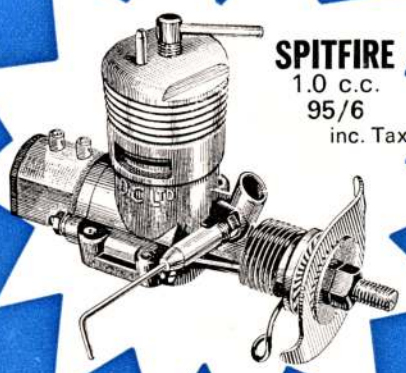

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There is convenient car parking in the side

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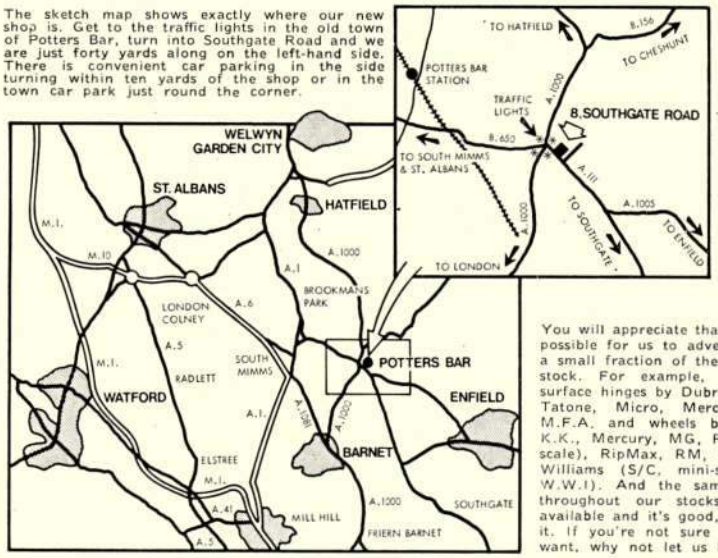

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52" span

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February 1971 Volume XXXVI No. 421

CONTENTS

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COMMENT

The National Press excelled itself on 16th December when the *Daily Telegraph* reported via its New York Staff that 'Radio Controlled Models are adding a dangerous new dimension to the problem of near misses in the crowded airways over America'. The report went on to state that some of the 100,000 models in use were 12 ft. in span, could fly to 27,000 ft. altitude and travel up to 200 miles per hour. The F.A.A. may study the problem. Doubtless Maynard Hill and Bill Bertrand will be able to offer explanations as the individual experts responsible for such record-breaking achievements. Here is a perfect case of the exception being accepted as the rule. No-one would deny that the high flying, high speed, long range model *could* involve risk, but to label a news item with 'HIGH FLYING MODELS IN NEAR MISSES' as the headline is a travesty of justice and an insult to the stringent precautions taken by the U.S. Navy personnel at Dahlgren Air Base where these exceptional flights are monitored.

on the cover

H. C. Quek's unique design style in the semi-scale YAK 9D Control Line stunt model offers a new though simple appearance, as seen on page 72 of this issue.

next month

More on **Goodyear racers** with construction hints and extra 3 views. How to perform aerobatics with simple single channel R/C on rudder-only control. The latest **YAK 18 PS** aerobatic World Champ in true scale data, measured from life at the Hullavington meeting. **Engine Test.** A Free Flight or R/C near scale **Barracuda** plus the regular features, on sale February 19th.

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THE PACEMAKERS/71

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single channel R.C. has FCL

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G. S/Gen 2 Tx & Rx + 2 servos 3PN 3P **£22 6 0**

S. C/Het Tx & Superhet Rx. Relay and Harness **£20 8 0**

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Four positioned output arm, giving push/pull type output or large throttle control giving $\frac{7}{8}$" throw.
A minimum 5lb pull. The Autron is first choice in S.C. Servos.

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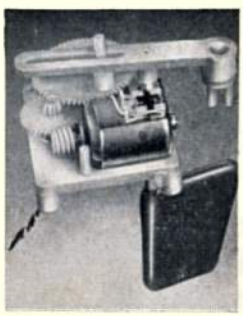
3P. Basically the same construction as the 3PN but gives three positive positions from the motor switch position on the 3PN. High pull characteristics plus a $\frac{1}{2}$" throw for throttle link. **£3-15-0**

3P Marine. The same design as the 3P but with a built in switch unit only needs wiring to the motor and power supply to give forward, stop or reverse, no complicated micro switch assemblies needed. **£3-15-0**

2PN. A very rugged built servo for rudder or steering use only, giving left or right rudder and self neutralising. **£2-0-0**



Autronaut. A new design in servos complete with its own rudder, rudder tube and tiller arm. No complex linkage or installation problem, fits directly into the boat as one unit. Giving left and right function and automatic return to neutral. **£1-17-0**

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Kit includes finished one-piece fuselage moulded in hi-strength plastic.

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£13.13.0

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74½" or 96½" span (Parts for both in kit).

Note: the HS19 CLOU (left) can be built with large span wings for towline flying or shorter wings for slope soaring. Also takes nose-fitted engine for power flying

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KATY A2
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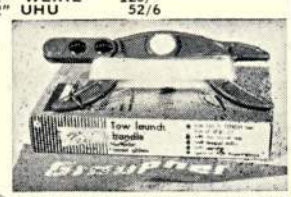
OTHER KITS

79"	AMIGO II	153/–
45"	JOLLY AI	66/–
39"	BEGINNER	53/6
71"	WEIHE	126/–
42"	UHU	52/6



TOWLINE HANDLE and LINE 7/3
TEMPO GEARED WINCH £3.10.6

FILOU ... £4.9.6
Sports type glider of modern design for towline soaring or R/C. A very well prefabricated kit.

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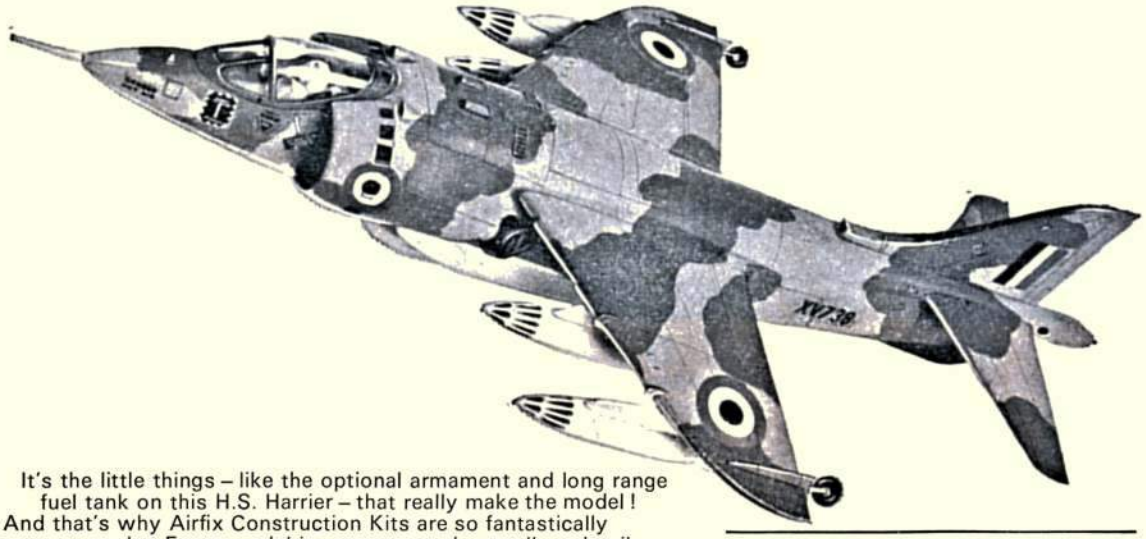
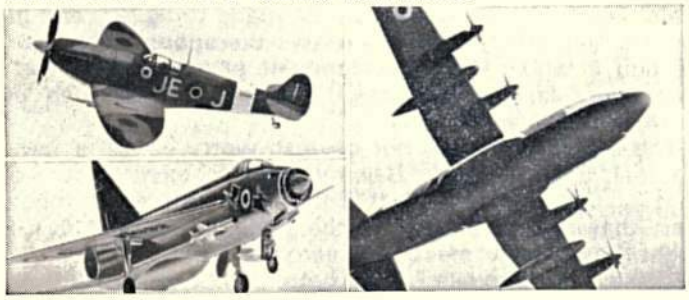


It's the little things – like the optional armament and long range fuel tank on this H.S. Harrier – that really make the model! And that's why Airfix Construction Kits are so fantastically popular. Every model is accurate to the smallest detail – a perfect replica of the real thing! There are nineteen series, each made to a constant scale. Over 300 kits to choose from. From all good hobby shops and F. W. Woolworth. Ask for the catalogue.

Top left: Spitfire. Left: E. E. Lightning. Right: Hercules



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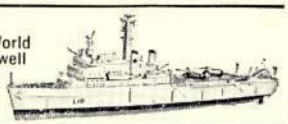

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HMS Victory. Here's a complete book, from the Publishers of Airfix Magazine, on HMS Victory — its history and highly detailed instructions with many illustrations showing how you can add moving parts to your Airfix model.
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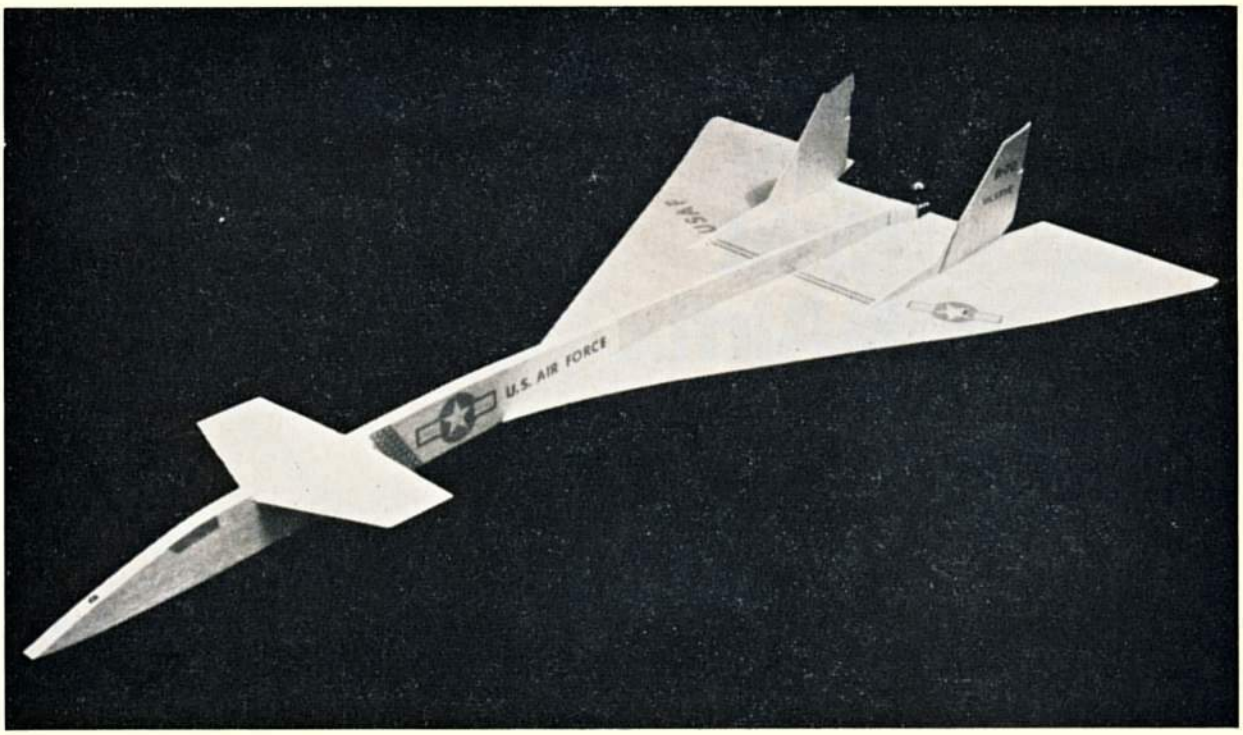


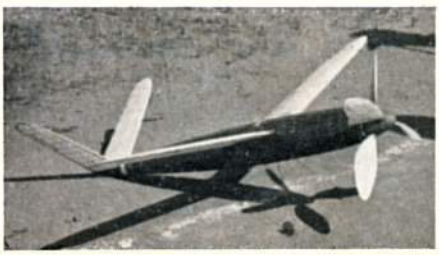
WILL IT FLY...?

One great challenge in aeromodelling is to produce designs that are original. Not just something that *looks* unorthodox for the *sake* of being different, but to try out new shapes, improve on performance, or produce something which is quite out-of-the-rut and really flies well. The opposite of the pure theorist, in fact, who never seems to get beyond the 'paperwork' stage with any degree of success.

Any new, different design is a bit of a gamble. Will it fly properly? Or will it even fly at all? The real answer is to try it and see – and often there are short cuts available. Try out a different shape as a balsa sheet mock up first, to reduced scale. Find out how well it can be made to fly . . . and how it can be improved by cut-and-try alterations. You can run through a whole flight development programme in this way before you finalise the design. And you know then that it will fly.

The one part you do *not* have to worry about is choice of material. It is obviously Balsa wood – so easy to cut, shape, joint . . . light, yet strong. It is the same with every model aircraft that has to be put to the real test – will it fly? Balsa might have been made *for* aeromodelling, or vice versa – because balsa models do fly better. That is particularly true when you use Solarbo – the balsa *specially selected, graded and cut for aeromodelling.*

Contra-rotating props and a butterfly tail on a rubber-powered duration model? The only way to find out is build one and see!



Heard at the HANGAR DOORS

Delegates from 23 Nations attended the F.A.I. Models Commission meeting in Paris on December 3/4th. Those visible here, across the table are: S. Africa, Sweden, Hungary, U.S.A. (Maynard Hill standing as he makes 1971 World Championships offer for R/C) President Sandy Pimenoff of Finland. F.A.I. Director General Charles Hennecart, A.M.A. President John Patton, U.S.S.R. translator. This side of table are Belgium, Austria, East and West Germany.

STAFF APPOINTMENT of Peter Richardson into the editorial chair represents a well deserved elevation for a personality who has rapidly achieved recognition among all branches of aeromodelling for his fair and unbiased observations. Congratulations Pete – from all your fellow M.A.P. staff. May your midnight oil never grow dim nor your pen run dry! Peter's new responsibilities in turn free Ron Moulton for his activities with other M.A.P. titles, notably *SCALE MODELS* and *MILITARY MODELLING* plus the editorial management of *R.C.M.&E., MODEL CARS* and *AEROMODELLER*.

MODEL ENGINEER EXHIBITION 1971 broke all previous records for attendance and was generally agreed to be one of the most interesting yet. A central feature was the water pool with surrounding electric Round the Pole take off strip. This was in constant use by Staff models plus club contributions from Luton, Grantham, Bristol and Debdenaires. Balloon bursting, twin-engined models, stock *Frogflite, Keil Kraft, Guillow, Lindoe* and *Veron* kits were all demonstrated. We will run a photo feature next month. Meanwhile here are the award winners:

MODEL ENGINEER EXHIBITION 1971
AIRCRAFT MODEL AWARDS
CLASS AA (a) **Free Flight Models**
Entry 5. M. Dilly **(A/2 Sailplane)**
(West Wickham, Kent) Highly Commended
Entry 14. M. H. Squires **(Wakefield)**
(St. Margarets, Middx) Commended
Entry 7. M. Fantham **(Coupe d'Hiver)**
(London, S.W.6) Commended
CLASS AA (b) **Control Line Models**
Entry 4. S. Blake **(Argus)**
(Luton) Highly Commended
CLASS AA (c) **Radio Controlled Models**
Entry 15. J. P. Hancock **(Thermal Soarer)**
(Egham, Surrey) Commended
CLASS AB Flying Scale Models
Entry 7. M. Charles **(Jurca Sirocco)**
(Greenford, Middx) Exide Cup and Championship Cup
Entry 6. M. Staples **(Avro 504 K)**
(Cambridge) Bronze Medal
Entry 1. A. J. Briggs **(D.H. Hornet Mk.21)**
Commended
CLASS AC Non-Flying Models
Entry 13. W. A. Vandersteen **(Bristol Fighter)**
(Winchester) Bristol Cup and Silver Medal
Entry 5. C. B. Hall **(Supermarine Stranraer)**
(Bourn, Cambs) Bronze Medal
Entry 14. W. A. Vandersteen **(S.E.5A)**
(Winchester) Highly Commended
Entry 15. J. Wardman **(Supermarine Spitfire Mk. I)** (Leeds) Commended

Visitors to the Exhibition had a preliminary view of the new competition organised by the **Biro/Bic** Company. This is a new venture by the Bic Company to encourage creativity in the use of what would normally be discarded items. A number of models were shown at the exhibition to illustrate the type of model which may easily be produced with ingenuity and skill on the part of the model maker.

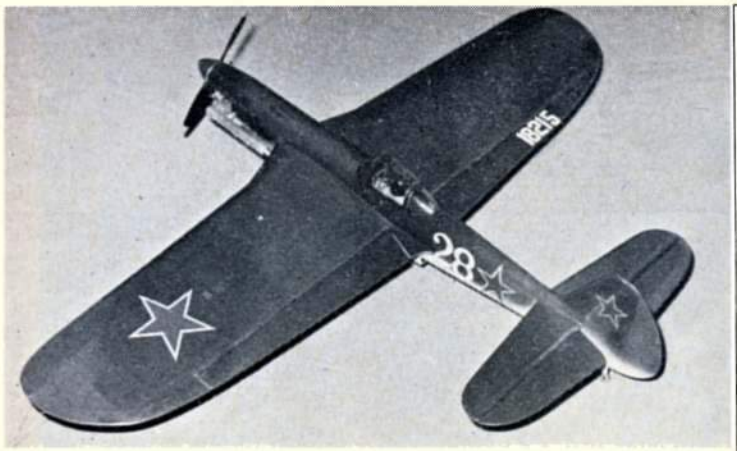
Two series of competitions are planned, one at Senior level which is open to all participants, and another for those under 16 years of age. The competitions will be run on a three-monthly basis where the best model at the end of the set period will be granted a first prize of £25, with second and third prizes of £15 and £10. There will also be a number of consolation prizes for those considered to have merit but which do not win one of the first three prizes. Additionally, those winning the quarterly competition will automatically be entered into the National Championship at the end of the year where the winner will receive additional prize money making a grand total of £250, plus a handsome Championship Trophy, presented by the Biro/Bic Company. The initial reaction may be that to collect sufficient pens for model making purposes may be difficult, however, the Bic pen is by far the most widely used in the country and one pen is sold, each year, for every man, woman and child in the country plus several million additional pens. Because of this it should not be difficult for you to find fairly large numbers of used pens lying about the household or particularly in offices or factories. One word of warning, apart from a limited number of permissible accessories, the models must be *entirely* constructed of Bic pens. Full rules and regulations will be given in all of our model making journals in the March issue.

TAKE CARE. Mick Wilshere, Managing Director of the British end of *World Engines Ltd.*, sent us the following extract from a letter which he received from an Australian customer, Mervyn Bell:

'Well, it has been a long time since I wrote last but on July 6th I had ½ gallon of fuel explode in my workshop and I suffered severe burns to my hands, face and chest and never lost a thing in my shed – modelling-wise. Whilst in hospital someone swiped my combat motors – nitro and a heap of books. I have only just returned back to work after a layoff of 3½ months, I am just modelling again now but I won't be able to go to our Nats at Christmas time as I cannot get fuel into contact with my new skin.'

Mervyn then goes on to say that he will be using his good friend Tom Prosser to fly proxy him.

Mervyn is no beginner and it just shows that the accidents can occur to the experienced as well as the newer modellers. Mervyn currently has an ABC 60 and was turning in a 168 m.p.h. on monoline before the unfortunate experience.



YAK-9D

Semi-scale control-line stunter for 5-6 c.c. engines designed by H. C. QUEK

WHY THE YAK 9D? Unlike the Spitfire, Mustang or the Hien, the Yak 9D has so little to offer in terms of character! However, though simple both in profile and plan form, the Yak 9D was one of the very successful *Yak* series of Soviet aircraft during the second World War.

From the modeller's point of view, the simple lines provide an ideal subject for an easy-to-build, semi-scale model. The design presented here is far from scale, but well finished and decorated should provide immense eye appeal.

Basically, it is a slab-sided model, with no gimmicks in the design. The prototype model had an overall span of 58 in. and used full span flaps. After flight tests the span was reduced by 3½ in. and the flaps subsequently reduced to just two thirds of the span – these two vital modifications were found to contribute towards improving both level flight and square manoeuvres. Wing fairings were added to the original model to improve its appearance.

It is always worthwhile making a careful selection of the various grades of wood required. Using very carefully selected wood the weight distribution was found to be just right on the original model – no ballast being necessary to achieve the correct centre of gravity position.

Carefully cut out all the wing ribs from light quarter-grain wood. The sections used are grossly modified NACA 0018 airfoils varying in percentage thickness from R1 to R14.

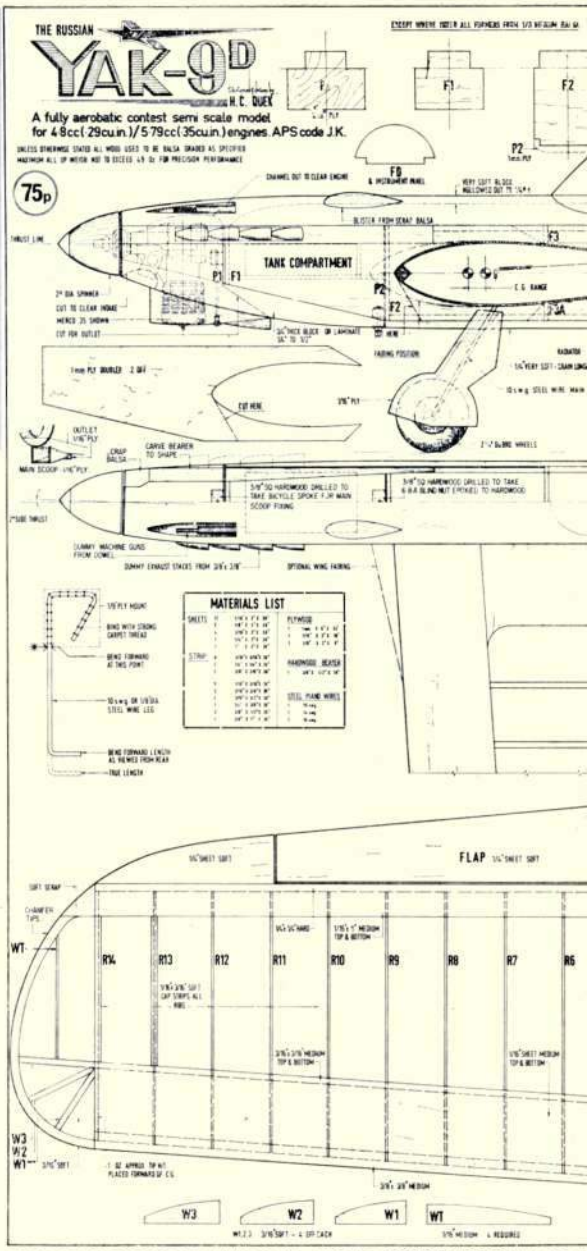
The wings are built flat on the building board. Pin the bottom $\frac{3}{16}$ in. sq. main spars in position, then pin all the ribs in position. Level up the T.E. of the ribs with scrap pieces of balsa. Next mark and insert the $\frac{3}{16}$ in. sq. top spars. Pin ¼ in. sq. to trailing edges of the ribs and ⅜ in. sq. to leading edges of ribs – still without using any glue. Check alignment and when satisfied that it is absolutely true – with no twists etc., spot cement all the cross points and allow to dry thoroughly. Finally, cement top ½ in. x $\frac{3}{16}$ in. joiner in position.

With the wings still pinned to the board, add the $\frac{1}{16}$ in. L.E. and T.E. sheeting to the top surface before cap stripping the ribs with $\frac{3}{16}$ in. x $\frac{1}{16}$ in. soft balsa.

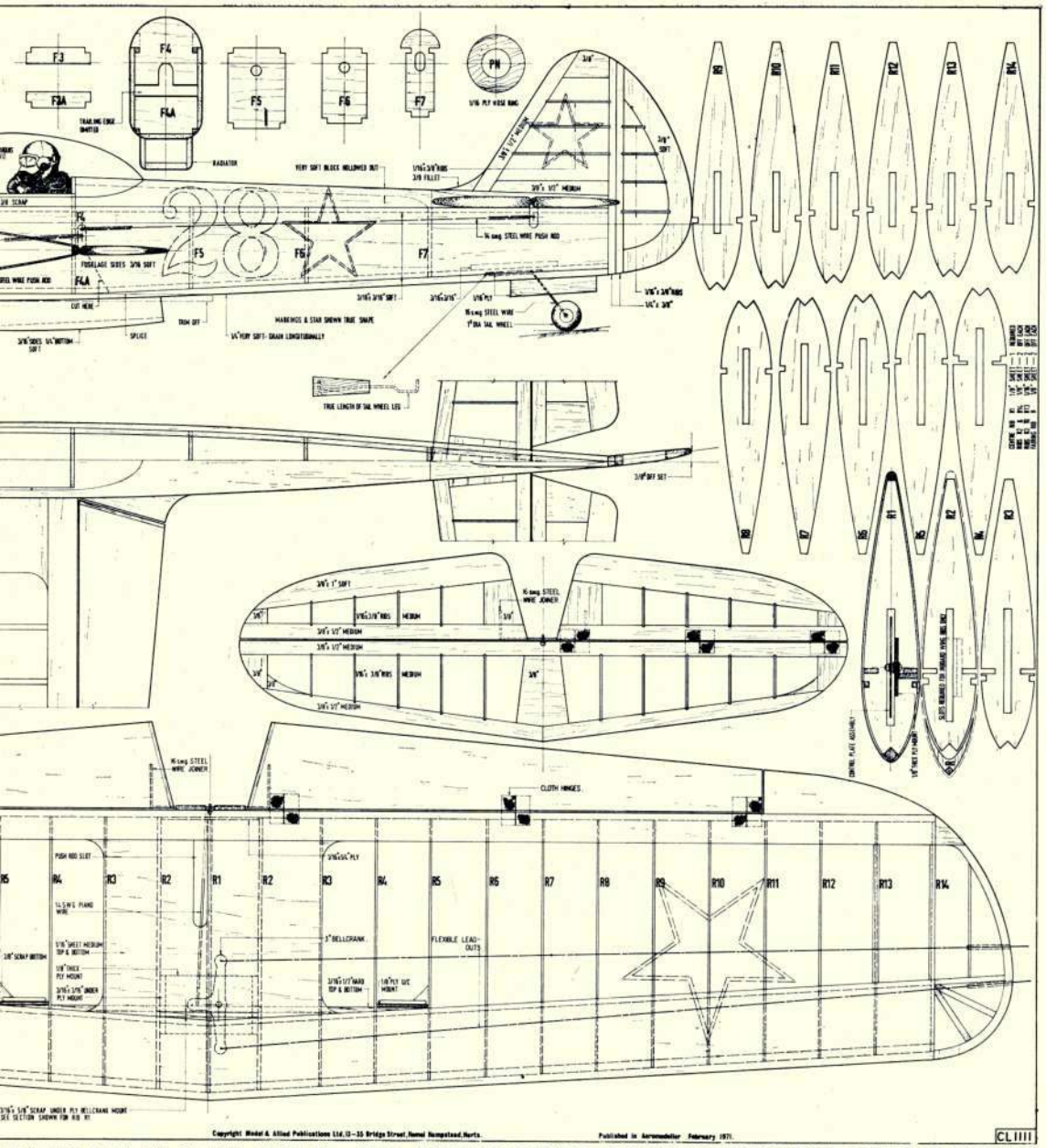
When dry, remove from board, turn over, and preferably pin wings to the board to check alignment. Add the ½ in. x $\frac{3}{16}$ in. joiner and secure the wing tip weight as shown. Sheet the L.E. and T.E. and add the cap strips as before. Sheet cover underside of centre section. When dry, remove wings from boards and build on the wing tip.

Sand T.E. of wings to section shown. Cut and sand flaps to section, add flap horn, then hinge to wing. Install the bellcrank mount complete with the control assembly.

Connect the bellcrank to the flap horn with a 16 s.w.g. pushrod, before sheeting the top of the centre section. The complete wing may now be sanded thoroughly all over.



FULL SIZE COPIES OF THIS 1/6th SCALE REPRODUCTION ARE A
STREET, HEMEL HEMPSTEAD, HERTS.



LABLE AS PLAN NO. CL/1111, PRICE 75p$_{\tau}$ (15/–) INCLUDING POSTAGE, FROM AEROMODELLER PLAN SERVICE, 13-35 BRIDGE

Leave the main undercarriage assembly until last to keep it out of the way! Do not substitute solid sheet for the tailplane – it must be kept light.

Notch the leading and trailing edges to take the $\frac{3}{8}$ in. x $\frac{1}{16}$ in. ribs. Build both the tailplane and the elevators flat on the board. Sand to section when dry.

Fix elevator horn and elevators to tailplane to complete assembly.

Laminate two sheets of $\frac{3}{16}$ in. or use $\frac{3}{8}$ in. sheet to form the rudder trailing edge. Cut and notch the L.E. and T.E. to take the $\frac{3}{8}$ in. x $\frac{1}{16}$ in. ribs. Build fin and rudder separately, but flat on the drawing. Sand to section when dry.

Cut the $\frac{3}{16}$ in. fuselage side and the 1mm ply doublers to shape, then glue the doublers in position. Lay flat, weight and allow to dry. Shape hardwood engine bearers and epoxy to the fuselage sides. Cement the two $\frac{3}{16}$ in. sq. longerons to the top edges of the fuselage sides.

Cut away the undersides of the fuselage as indicated to accept the wing. Add all formers except F3A and F4A – check for squareness, and allow to dry. Mark and drill the engine bearers to suit your engine – note offset. Cement wings and tail assembly to fuselage, checking for accuracy, and allow to set overnight. Link up controls to elevators, then cement F3A and F4A in position.

Refit the cut-away portion of the fuselage sides – splice the joints with scrap $\frac{1}{8}$ in. hard balsa. Add the two $\frac{3}{16}$ in. sq. longerons to the lower edges of the fuselage, then add the tailwheel leg assembly. Sheet underside of fuselage

from the tail end towards, and up to, approximate position of F4A. Allow to dry. Sand forward edge of sheeting to blend in with forward fuselage sheeting.

Install the engine and spinner, and spot cement fuselage dorsal block. When dry, carve and sand to shape, then remove block and hollow out before finally repositioning and cementing block permanently in place. Remove engine and spinner, square-up nose end and add on the ply nose ring.

Cement fin and rudder in place, noting rudder offset. Build on belly scoop as shown.

The wing fairings are optional, but may be added to improve appearance. Begin by cementing the crescent-shaped riblets 'R' to the external faces of the fuselage sides at the root of the wing L.E. Allow to dry. Add on scrap $\frac{3}{16}$ in. sq. false L.E. from notch at 'R' to wing L.E. at R4 – when dry sheet over top and bottom with $\frac{1}{16}$ in. sheet.

The cowl and tank hatch may now be tackled. Begin by laminating a piece of $\frac{1}{4}$ in. and $\frac{1}{2}$ in. sheet to form the cowl block (or use $\frac{3}{4}$ in. soft block). Cut out the aperture for the engine's cylinder head, and spot cement to fuselage. When dry carve and sand to shape. The cowl is attached at the rear by a 6 B.A. screw, screwing into a blind nut epoxied to a piece of engine bearer. At the front, a bicycle spoke is used as shown.

The main scoop can be constructed from $\frac{1}{16}$ in. ply, but an alternative method is to bend it from tinplate which is then epoxied to the cowl block. The outlet is from the same material, and is soldered to the main scoop. A hole is provided in the main scoop for the glow plug access.

The three external faces of the main scoop are now 'cladded' over with scrap $\frac{1}{8}$ in. balsa – use an 'impact' adhesive for this. Sand to shape when dry and finally tissue over.

Sand the complete model thoroughly before cementing the main u/c assembly in place.

Cover wings, tailplane, fin and rudder with heavy-weight Modelspan tissue, the remainder with light-weight Modelspan.

The method for finishing follows standard practice described in so many other designs – and this is really up to the builder's choice. *Profile Publication No.* 185 offers excellent colour schemes for the Yak 9D, and is well worth studying before applying colour.

Finally, add the wheels and install a fuel tank to complete the model – not forgetting to check the C.G. with an empty tank.

SMAE CONTEST CALENDAR 1971

March 21st — **1st AREA CENTRALISED MEETING**

	AREA VENUES
F.A.I. Glider	K.M.A.A. Cup (PL) (SC)
Open Power	Frog Senior (JC)
Open Rubber	

March 21st — **1st CENTRALISED C/L MEETING**
Stunt, Rat Race, Combat, Speed

April 25th — **2nd AREA CENTRALISED MEETING**

	AREA VENUES
F.A.I. Power	Halfax Trophy (PL) (SC)
Open Rubber	Gamage Cup (JC)
Open Glider	

May 30th — **BRITISH NATIONALS**

1st Day

Open Rubber	M.A. Trophy (SC)
Open Power	Sir John Shelley Cup (SC)
F.A.I. Glider	(7 Flights)
Tail-less (R/G/P)	Lady Shelley Cup
Junior (R/G/P)	Frog Junior (JC)
C/L Aerobatics	Gold Trophy
C/L Scale	Knokke No. 2 Trophy
Handicap Speed	Model Aircraft No. 1 Cup
½A Team Race	R.A.F.M.A.A. Trophy
Combat	Whitney Straight Trophy
Goodyear T/R	
Coupe D'Hiver	
Junior Kit Contest	C. Hamley Cup

May 31st

2nd Day

F.A.I. Rubber	(7 Flights)
F.A.I. Power	(7 Flights)
Open Glider	Thurston Cup (SC)
½A Power	
F.A.I. Team Race	Davies A Trophy
'B' Team Race	Davies B Trophy

Mouse Race (under 0·99 c.c.) Class 1 & 2
Women's Cup (R/G/P)
Combat (continuing from 1st day)
Speed (continuing from 1st day)

F/F Scale	Super Scale Trophy
Vintage	To S.M.A.E. Rules

A/1 Glider, R/C Multi, R/C Scale, R/C Pylon
Junior C/L Stunt Contest

June 13th — **3rd AREA CENTRALISED MEETING**

	AREA VENUES
F.A.I. Rubber	Weston Cup (PL) (SC)
Open Power	White Cup (JC)
Open Glider	

July 18th — **2nd CENTRALISED C/L MEETING**
½A Team Race, F.A.I. Team Race
Goodyear T/R, Speed

August 8th — **4th AREA CENTRALISED MEETING**

	AREA VENUES
Team Glider	M.E. Cup (PL) (SC)
F.A.I. Power	Astral Cup (JC)
Coupe D'Hiver	

August 21st/22nd — **CENTRALISED F.A.I. F/F MEETING**

September 12th — **5th AREA CENTRALISED MEETING**

	AREA VENUES
Team Power	Keil Trophy (PL) (SC)
F.A.I. Rubber	Gutteridge Trophy (JC)
A/1 Glider	

September 26th — **ALL SCALE MEETING**

September 26th — **C/L TRIALS FOR 1972 WORLD C/L CHAMPIONSHIPS**
Stunt, F.A.I. Team Race, Speed

October 3rd — **6th AREA CENTRALISED MEETING**

	AREA VENUES
Team Rubber	Farrow Shield (PL) (SC)
F.A.I. Glider	S.M.A.E. Cup
½A Power (JC)	

NO DATE — **SOUTHERN GALA**

Open Rubber	Flight Cup
Open Power	Short Cup
Open Glider	Pilcher Cup
½A Power	Quickstart Trophy
Chuck Glider	

½A Team Race, F.A.I. Team Race
C/L Aerobatics, Combat

NO DATE — **NORTHERN GALA**

Open Glider	C.M.A. Cup
Open Power	Hamley Trophy
Open Rubber	Caton Trophy
A Team Race	Wharfedale Trophy
B Team Race	Budapest Trophy
½A Team Race	E.T.A. Trophy

(PL) Plugge-Club Championship events
(JC) Junior Championship events
(SC) Senior Championship events

topical twists

by 'Pylonius'
illustrated by 'Sherry'

'Car Park? This is the flying field'

No Heart for Clubs

It can be heavy weather running a model club, mostly because of the heavy weather. You arrange the annual club comp., the first for five years, for the following Sunday after getting all signals go from the long range weather forecasts same as you have for the past five years, and the promise of a good turn out, with even a ten per cent swing, from the various polls, and what happens? One dirty big shower – and it rains as well.

Heavy weather, too, in the clubroom, mainly coming through the hole in the roof. Lucky to get the place, though. Bit better than the corner of the crypt they had up to last week. Well, we might have been a bit of a scruffy lot, but that didn't excuse being dragged off and given a free bath and a bowl of soup.

Once we get the roof patched up it will be home from home. And only five quid a night, not counting the tip to the caretaker and the guard dog's supper. Why, at the youth club it cost you a tanner every time you went to inspect your tank. And you weren't safe doing that, since you had to run the gauntlet of the future residents of Wormwood Scrubs. All that was missing was old Fagin. We had the Oliver.

Now that you have the clubroom, which, on a two-hour basis, is burning up the new pence faster than a cab meter at London Airport, you have to use the time constructively. But how to strike a note of unity among all the splinter groups? And, can some of those groups splinter (see flying field litter warning). The multi boys are looking down their noses at the handle waving greasers and the chuck-it-and-run peasantry, and the free flighters are glaring at the control liners and holding their noses, but you could hardly blame them for that. There is only one way to achieve unity: 'Eyes down. Look in.'

Possibly the most successful sort of club in these unclubbable times is the club run on strictly impersonal, solid business lines. No playing the gallery here with a novelty event evening, or giving way to any new generation drivel by holding junior tuition courses. The member just whacks out his large blob of cash to pay for the flying facilities – and that's where his involvement ends. No threatening letters about non-attendance at the weekly verbal punch ups, and none of those ghastly club competition fiascos, where you either turn up to survey an aggressively empty flying field, or the other entry is matching your kit job with a specially prepared machine and a fully rigged thermal detector. And you don't need two guesses who he might be.

Yes, without a doubt, the non-club is the club of the future.

A Frequency too Frequent

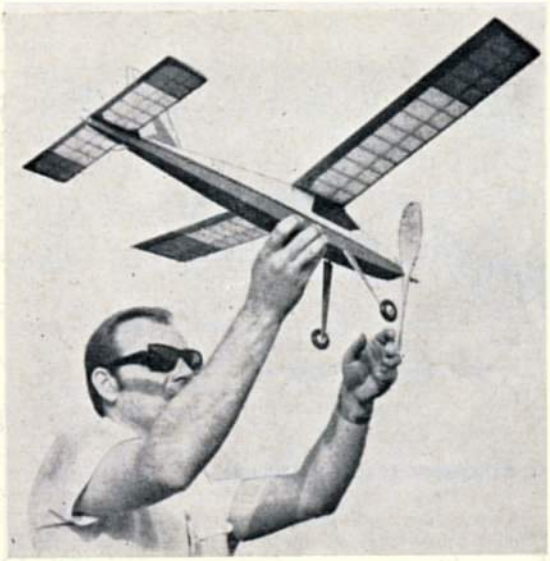
In these days of do-your-own-thing individualism it is hard to believe that, at one time, the model movement was a close knit brotherhood rather than a collection of close nits. The merest waggle of a recognisable model wing was more than equal in fraternal feeling to a Masonic handclasp, and an open model box was as eloquent as the sign language of a Trappist monk.

This, of course, was way back in those bold, brave days when the model plane, or rather the production of one, was a challenge to the handy man hobbyist's craftsmanship and ingenuity, instead of being, as now, a challenge to his hire purchase resourcefulness. 'Dig Deep' is the watchword of the radio modeller of today, both in terms of his pocket and the nuzzling of terra firma with the business end of his model.

Which brings me to my point about the modern individualistic approach to our once chummy hobby. Take, for example, the early days of Radio when it was all one cosy conclave of aerial togetherness. It was all 'after you, Claude' and bags of self-control, even if the other control was almost as invisible as the lumpy signal. Nowadays, though, every radio flyer has his own little camp, and if someone else is fool enough to be on the same frequency colour that's his hard luck, Then again, the modern contest flyer insists upon his own particular set of rules, and if it weren't for the fact that he was flying half a mile downwind he'd tell control in no uncertain terms who decides what is a test flight. I'm not certain what individual tricks they get up to in the C/L circle but it must be something equally self-assertive – probably a one-for-his-nob lap counter.

Ohm James

I read that a somewhat exclusive multi radio club is graciously extending its membership to the simple hill folk at a much reduced rate. But this sudden concern for the thermal soarers is not quite as altruistic as you may think.The fact is that the flying field car park is becoming a bit too crowded, with the Rolls and Bentleys taking up too much wheelbase space. What is more, the radio telephones with which these mobile lounges are equipped can do dire things to the aerobatic multi. It is estimated that a call by a wealthy member to his stockbroker could account for two radio models.



Your Two

ORLIK and

a simple 33½" span rubber-powered model of attractive appearance and good performance.

designed by Miroslav Rohlena

IF THERE IS ONE thing that is missing from the average flying field, it is the sight of an attractive, cabin type of rubber model, valiantly churning skywards, with its stubby undercarriage legs pointing down at Mother Earth. Change it! Just see the interested faces when you prepare to launch *Orlik* – you may even get a volunteer retriever or two!

Whether you are a beginner in need of experience in building and flying such craft, or a modeller of many years standing in search of a little pleasure once again, *Orlik* is the model for you!

Construction is very basic and can be completed by the raw beginner, provided he takes his time and exercises a reasonable amount of care. As this is not a contest model, wood selection is not critical, but it is advised to choose medium-to-soft wood throughout, and to 'match' such items as fuselage sides, spars etc. to prevent distortion.

Start with the wings, making the starboard panel first. Cut the trailing edge to length and notch to accept the ribs before pinning down over the plan. Pin the lower $\frac{1}{8}$ in. x $\frac{3}{32}$ in. spars to the plan, again cutting to length. Glue the lower $\frac{3}{32}$ in. ply dihedral braces to the spars. Cut out all the ribs, and mount them in position, followed by the leading edge and remaining dihedral braces. When quite dry, add the top spars and $\frac{3}{32}$ in. sheet gussets.

When this has dried, lift the wing tip $5\frac{1}{2}$ in. off the building board, to suit the dihedral angle, and build the port panel in the same fashion. Finally, add the $\frac{1}{16}$ in. sheeting between the ribs at the centre section (top surface only), followed by the soft block wing tips.

The tail plane is equally easy to build. Pin the L.E., T.E., and bottom spar to the plan, add the ribs, the top spars, gussets and tip blocks before removing from the building board.

The fuselage uses all sheet construction for simplicity and strength. Cut the sides from $\frac{1}{16}$ in. medium sheet, and mark the positions of the formers F.6 and7. Cut F.7 from $\frac{3}{32}$ in. balsa and F.6 from $\frac{3}{32}$ in. ply. Bind and cement the 16 swg u/c to F6 as shown. Cement both formers to one fuselage side, allow to dry, then add the opposite side – checking for squareness. When the glue has set, bring the tail together, as well as the nose around F1 and 2. Drill the holes in the fuselage sides for the various dowels, then add the reinforcing pieces/gussets as shown. The top and bottom $\frac{1}{16}$ in. sheet may now be added. Cover the fuselage with lightweight tissue and apply two coats of 50-50 dope/thinners before adding the $\frac{1}{8}$ in. square wing mounting strips and the tailplane stop. Build the fin, cover with lightweight tissue and again apply two thin coats of dope, then add to the fuselage – after removing the tissue on the joint face. Add the tail skid and u/c fairing to complete the fuselage construction.

The propeller should be carved from soft balsa block for the best performance, but if this seems beyond your means a commercial 10 in. plastic or balsa prop could be used. Apply 2-3 coats of dope or sanding sealer to the prop and noseblock, sanding between each. Carve the soft balsa nose block to shape, and add the locating pieces F4 and 5. Cement the 16 swg. brass bush in position then assemble the shaft/free wheel unit. Make sure that the prop is able to spin freely when the stop catches the motor hook.

The flying surfaces may now be covered with lightweight tissue, and 2-3 coats of 50-50 dope/thinners applied, taking care to avoid warps – pinning down if necessary. Colour trim should be restricted to colour tissue doped on – paint should only be used to indicate door and window outlines.

Make up the motor from 12 feet of $\frac{1}{4}$ in. flat rubber, divided into three loops to form six strands. Install the motor, and pin the nose block in position temporarily before test gliding. Check the C.G. position, then launch into a light wind and note the flight pattern. A stall is corrected by packing up the leading edge of the tailplane, a dive by packing up the trailing edge. Adjust until a flat glide is obtained. When this happy state is achieved, add a few turns and test under power, altering any tendancy to turn by packing around the nose block. If all is well, wind on maximum turns and launch gently into wind – then put on your running shoes!

Free Plans!

LITTLE DEER

29½" span T-tailed, free flight power model for .5 c.c. engines . . . designed by Jack Allen

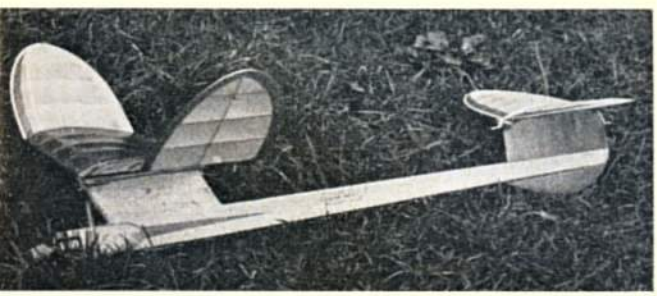
WHEN ATTENDING THE 1969 World Champs the author was very impressed by Karl H. Rieke's unusual Power design, using a high mounted tailplane. The climb and performance of this particular model was really good, and Jack at once decided that this was the type of F.A.I. design that he should build, so on returning home he set about drawing a small model to test the handling qualities.

This is how *Little Deer* came into being. No trimming difficulties whatsoever were encountered and many an afternoon has been spent on the local common – flying for fun! He is now flying a similar F.A.I. model, and, it too is really a success.

Building *Little Deer* will be seen to be very simple – it was kept this way as something quick and expendable was required, Jack also being rather impatient to see the results! At things turned out he was very pleased with both the performance and handling.

Build all the flying surfaces first as this gives them time to 'cure'. Commence with the wing, building it flat on the plan in four sections, leaving out dihedral ribs. Select some hard spars for the centre section and medium L.E. and T.E. Pin these on to the plan and place ribs in position. When the panels are complete, join tips to centre panels and set tip dihedral, then place tip dihedral ribs in position. When both panels are set, join in the centre and set main panel dihedral. Place rib in centre section, and add all the gussets from scrap sheet. Now fit top main spar and sand leading edge to shape.

The tailplane is built in the same way. To save material the T.E. can be made from ¼ in. x 3/32 in. T.E. stock, by slicing into three equal strips approx.



1½ in. from centre line on both sides. Cement before pinning down.

Pin L.E. and T.E. flat on plan placing scrap 3/32 in. sheet inside tips, before placing ribs in position. Make a cut at the centre line and set dihedral. Fit the top spar last and leave to set – then fit gussets at centre and trailing edge. Use P.V.A. glue throughout to minimise warps.

Start fuselage construction by shaping the engine bearers. Cut the lower one at an acute angle to make a really long joint to the main ¼ in. x ¼ in. longeron. Pin main framework to the plan, not forgetting to taper off the longerons from L.E. of fin to zero. It is important to set the engine bearers to a width that suits the motor you intend to use. When the frame is complete, cover both sides with 1/16 in. medium sheet and when completely set, remove from plan. Cut cheeks for the engine pod from ¼ in. sheet, and cement on either side of the fuselage. Carve and sand to shape. The wing mount can be fitted, this is from 3/32 in. hard sheet with grain running across the pylon. Use hard balsa or Obeche 3/32 in. x 3/32 in. for the runners.

Cut out both sides of the fin – these must be cut very accurately as this governs tailplane incidence which is very critical. Now cement in position bottom fin, rib and fin centre spar, making sure that this is square with the pylon. Fit the top rib and when set, cement both sides in position using P.V.A. glue. When completely dry, cement front and rear tailplane mount in position – dowels can be fitted when building is complete. Remember the snuffer tube under rear mount and D/T limit line on opposite side.

Cover entire model with lightweight tissue and apply three coats of dope, diluted with 50 per cent thinners. If using a glow engine, take care to carefully fuelproof the fuselage. Pin the structure down when doping so as to avoid warps creeping in.

Before flying, check that the wing warp is as stated and that the C.G. is in the correct position. Hand launch the model over long grass to test glide, which should be long and shallow, gently turning to the right. Turn is best adjusted by tailplane tilt. Pack up T.E. or L.E. of tailplane until the glide is correct.

Initial power flights should not be of more than four seconds power run – this will give you some idea of what the model is going to do – it should climb with a gentle right turn. The recommended prop for a .5 c.c. diesel is a nylon 6 in. x 4 in.

Interlude in IRAN

Peter Russell describes his adventures in Persia

FOLLOWING in the footsteps of Alexander (the Great, not the one with the famous band) and Phil Smith, Mike Birch and I went to Iran, sometimes called Persia. Whichever you call it, it is like Tipperary, a long way to go.

It was in early October that the Editor asked if I was free and willing to go to Persia on the 22nd, had I got anything flyable? It seems that the head of the Iranian Aviation Training Organisation, General Raffat, was in England on a buying mission and had intimated to interested parties that he wanted two experienced modellers to go to Iran to give demonstrations of control-line and radio control flying, culminating in a display in the Amajadieh Stadium at the Shah's birthday parade, with the Iranian Royal Family in attendance. It turned out later that we were, in fact, to do two such displays, the second a week later at the Crown Prince's birthday parade. My partner was to be Mike Birch. The wily Birch was taking a couple of kit models, plus a *Moonglow* trustingly lent by Stewart Uwins, and leaving his own models at home. At that time, I was in the middle of an up-rating course for my pilot's licence, so with no time for any sort of preparations, I had to take my well-used *Striker 2B*, the *Straight and Level* trainer that Andy Hobbins and I are developing for **R.C.M.&E.**, plus a big Merco 61 powered control-line stunt model (which was the biggest of my models, oddly enough) and a P.A.W. 19D combat 'wing'.

Is there an undertaker in the house?

The packing cases necessary to transport the models turned out to be the approximate size and shape of coffins. There were no brass handles, however, as it was felt that such embellishments bordered on the flamboyant, and anyway, there was the question of weight. I packed mine by making two 'racks' out of 1½ in. foam styrene, each a tight fit in the box, about a foot from each end, and with suitably shaped holes and slots to accommodate wings, fuselages and so on. The case was thus in a 'semi-aerobatic' category, in that it didn't matter if it was turned wrong way up. Persia being a bit of 'terra incognito' as far as I was concerned, I made diligent enquiries about the conditions there and most of my advisers seemed to think that altitude would be the big problem, 4,000 feet being the lowest altitude at which we were to operate, and at that, with the air pressure about 80 per cent of that at sea level, not only engines, but aerodynamics and *homo sapiens* were likely to be well below normal performance. I had one or two vague recollections of hearing about people flying quite successfully at heights a good deal greater than this, in places like South Africa and Mexico, but we couldn't take chances, so I put a Merco 61 in the trainer and prepared to operate the other models without silencers. Mike also intended to fly without silencers, and had brewed up a medium nitro-fuel in place of the strictly 'straight' juice that we normally use (although the nitro should take care of the lower *density* of the air, by supplying oxygen, it doesn't compensate for the lower *pressure*) and had a Merco 49 in the K.K. *Student*, with 61s in the *Moonglow* and *Intruder*. One solicitous friend advised me that it was 'quite cool' in Iran at this time of the year and suggested that I take some warm clothing.

Where were you on the morning of the 22nd, sir?

The operation started with a bit of comedy at the airport, when the nice lady behind the ticket counter discovered that our tickets had been made out 'Tehran to London'. She said, 'Have you come from Tehran this morning?' We said no we hadn't, but she still looked puzzled and said, 'Are you sure?' This was too much for Mike, who said, in his 'refined' tones, that could be heard at the other end of the terminal, 'Peter, would you please cast your maind back to last naite, and tray to remember if we were in Tehran? Ai had the impression we were in London'.

Soon after that our Iranair 707 was emerging, dipping, into bright sun-light, after climbing through 10,000 feet of best British clag, and we were on our way. I had not had a ride in one of the big jets before, indeed it was something of a novelty to be sitting in a flying machine and not having to worry about which way to point it. I was much impressed by the take-off acceleration and climb, and a bit surprised by the fact that we appeared to reduce to half power at about 500 feet ('noise abatement', y'know), yet still kept going up. There was another odd sensation when we made our first landing. Far from any sensation of speed, I got the impression that we were a bit slow, and wished the pilot would put the nose down a bit, especially when we lined up with some rather sporty turns. The illusion was probably caused

by the very low noise level and the very big size of the aeroplane. That be as it may, our ground speed for the final 1,300 n.m. leg from Rome to Tehran was 680 – there's no doubt about it, this is the way to travel.

Arriving at Mehrabad airport just after midnight, though our watches showed 20.35, Mike and I were pleasantly surprised to find two car loads of the ever-thoughtful Iranians waiting to greet us and escort us to our hotel, the four-star 'Marmar' in the Avenue Zahedi, but not before we had dropped in at the I.A.T.O. headquarters to check that the models had arrived safely.

The game's afoot . . .

Next morning we went back to the H.Q. in the Shahreza, which could be described as the Champs-Elysees of Tehran, for a conference with General Raffat and his heads of departments, all Colonels, plus his civilian director, Reno Chalian, in order to discuss the programme for the tour. The General himself is a man of great courtesy who at the same time leaves nobody with any doubts about who is running things! A Micro-bus with driver (we wouldn't have dared to drive ourselves in the Tehran traffic!), the cheerful Aghaye Azari, was allocated to us for our travels in and around Tehran, and in view of our anxieties about the altitude, the General arranged for us to first have a leisurely acclimatisation session at a near-by military airfield. Although only 10 in the morning, it was already distinctly warm. My fuelling/starting/servicing device is fitted with a thermometer, but I never did note the temperature – I imagine it must have been in the eighties though – warm clothing, indeed!

Mike and I were soon rigged and airborne and after a few exploratory manoeuvres, found that the *Striker* and *Moonglow* seemed completely unaffected by the altitude, we didn't even adjust the carbs. On the approach, the *Striker* seemed to be steaming in a bit, but it burns up quite a lot of runway even at sea-level. The *S & L* handled just like at home, climbing like the proverbial, though Mike thought the aileron response of the *Student* was a bit marginal at approach speeds. He hadn't flown it enough to decide whether this was due to the altitude or was inherent in the aileron design. Since there appeared to be plenty of power, I put all my silencers back on and flew that way for the rest of the tour. Mike hadn't taken his, mainly on my advice, I'm afraid, so had to put up with the exhaust efflux spraying all over his models, just like the bad old days.

After that, we were flying displays every day, sometimes two in the day, mostly in the Tehran area but with trips to Isfahan and Shiraz as well. At most displays we would start with a 'show off' flight with one of the 'hot ships', then do lots of dual with the trainers, using Stewart Uwins' new dual control system. This way we were sometimes able to give as many as five or six enthusiasts a good stir on the poles on a single flight. Samplers of the dual system ranged from the Deputy Operations Officer of the I.I.A.F., Colonel Azarbarzin, through Phantom and glider pilots, down to young Iranians who hadn't flown radio before. Ex-Iranian C/L champion and current R/C champion, Keywan Razavi was allocated to us as guide/philosopher/friend/interpreter/general dogsbody, and he got quite expert at rigging and de-rigging as well as flying. He celebrated his nineteenth birthday by climbing the 'S & L' until it was just a little speck, which makes it about 3,500 feet above ground level, or 7,500 feet above sea level. Co-owner Hobbins has always had a bit of a yen for altitude flying, but he isn't likely to get it higher than that.

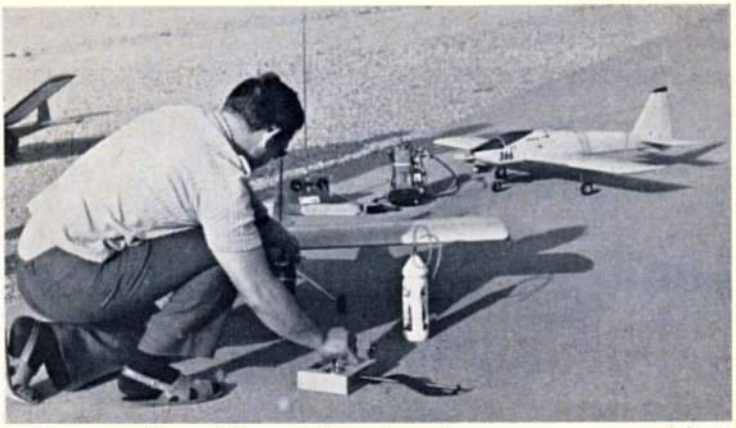
Bricks on strings

With two quite sophisticated R/C models carving up the sky in fancy aerobatics and a chance to sample the handling of the trainers, there might have been a tendency for the Iranians to regard flying around on two wires as a bit old hat, but it wasn't like that at all. They showed great interest in control-line models, and we never failed to get a round of applause after a flight with the big stunter. It is just the right type of model for this sort of thing, of course – big, impressive and flying on 75 foot lines. Even on these, it was almost lifting me off the ground on wing-overs and overhead eights. In truth, the line tension was a bit too much for comfort, and I had to reluctantly decline to fly at sites where shorter lines would have been necessary. One great thing about these big control-liners, apart from the majestic appearance of the manoeuvres, is the fact that you can do such beautiful landings with them – even I, who have flown control-line very little in the last ten years.

The 'Stadd-yoom'

Quite a different matter was our commitment for the Royal Birthday parades. I think Mike and I must have shown some slight signs of anxiety at the prospect of performing before many thousands of people, including the Iranian Royal Family. The event itself was something like a combination of our own 'Trooping of the Colour' and the May Day parade in Moscow and the site would be considered quite impossible for model flying, in the normal way. However, the General had indicated that he was very anxious for us to do the display, but made it clear that the final 'go/no go' decision was ours. The Amjadieh Stadium is perhaps not quite as big as Wembley, but it is very similar in other respects with a high, steep and continuous amphitheatre surrounding the arena with quite a lot of high obstructions. Even with the control-liner there were problems, minimal clearance and getting the lines in and out

No real need to embellish these photos of Pete Russell in action out East – his fine text covers the story so well.



Mike Birch, the ever irrepressible radio control expert and a fine ambassador for British Aeromodelling who performed so well in Iran, as Pete Russell's text describes.

with literally thousands of people marching around, being just two of them.

For radio, it was a good deal more difficult. Just flying through the Stadium needed some pretty hair-line judgment, and it would have been the easiest thing in the world to have clobbered one of the high obstructions while aerobating. For the landing, since a straight-in approach was out of the question, a bit of dainty pirouetting around the inside of the arena was the only way to do it. Also, since it wasn't possible to stop in the distance available, Sea and Air Scout Director Nosar Afsari was delegated to 'field' at the far end, a sort of human arrester-gear.

In spite of all the snags, the two flights went without a hitch and we each got a round of applause as we landed. When we saw the re-run on the Iranian telly, it looked even dicier. The models appeared to be flashing about so fast that the camera operator was having difficulty in keeping them in his sights for more than a few seconds at a time.

Every silver lining has a cloud round it

During the whole of the tour, all the equipment performed faultlessly, I didn't even have to change a plug. The only trouble we had was when we wrote off two models in quick succession, right at the end of the tour. First Mike had his *Moonglow* roll-in on take-off. At this particular site, the Imperial Club, about 6,000 feet amsl., the 'mush' coming through on the monitor was noticeably louder than we had noticed at lower altitudes and we assumed this to be the cause. Later, when we were starting the control-liner, Mike, who was holding it, suddenly let go and leapt six feet in the air – it was on fire. In the bright sunlight you couldn't see the flames, only the Monokote rapidly disappearing and the charred wood underneath!

Aeromodelling in Iran

This is on a sort of nationalised basis, in that there are no model shops, and all supplies are bought from the I.A.T.O. headquarters in Tehran. Mr. Chalian showed me around his stores and asked for my professional comment on the stocks. I thought these were very good, though perhaps previous advice from visiting British and American modellers had resulted in stocks orientated towards the experts, rather than the vast majority of average modellers. Mr. Chalian and I also spent some time devising a set of rules for the forthcoming Iranian Nationals. These consisted of shorter versions of our schedules for control-line and radio control flying, plus a simple free-flight 'ratio' event.

The modellers themselves are numerous and keen but would benefit by having more people of Keywan Razevi's calibre to guide them.

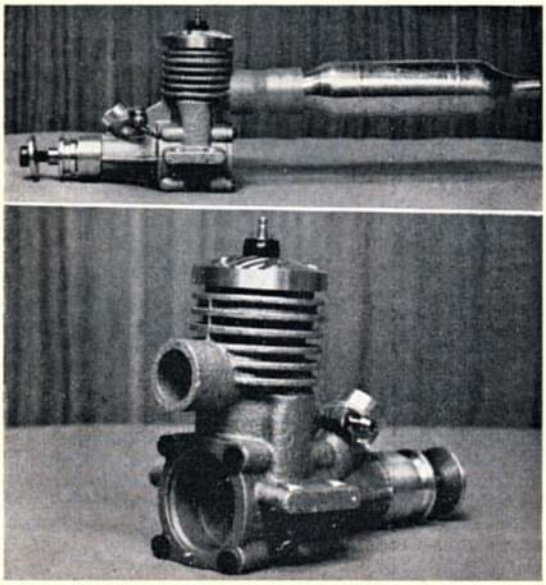
As elsewhere, flying sites are a problem. There was the time when they flew at Mehrabad on Sunday mornings (Sunday falls on a Friday in these latitudes, by the way) and Keywan told us the story of the time he lost control of his *Robot* and it flew off in the general direction of Tehran. He had horrible visions of at least the permanent loss of the model, or at worst, a traffic pile-up. He was still pondering what to do when a taxi appeared with a completely unmarked Robot inside. The model had landed in one of the city's public squares, and the taxi driver, who had been on his way to the airport anyway, had brought it back – it had only been away about twenty minutes!

Currently, the Tehran modellers gather at Doush-antapeh Gliding School, early on Friday mornings. Mike and I went along to one of these sessions, which looked very much like a Sunday morning session in the U.K., excepting the fact that they don't have to bother about the weather! Here we met all the locals, including Monsieur Hagens, a Parisian radio engineer who helps the Iranians with their servicing problems. Later, we were introduced to Colonel Ghomghami, head of the Gliding School. This is equipped solely with all-metal *Blaniks*. When we were offered a ride, I was wondering how I was going to signal the winch, as I couldn't see any bats or signal lamps. Keywan, who is also a glider pilot, saw I was puzzled, and said 'radio'. You mutter a Farsi expression to get 'take-up slack' and 'O.K.' to get 'all-out'. You can cut out the wing-waggling and tail-swishing to get more or less speed, too, of course. Swish.

Mike revealed hitherto unsuspected talents by flying the *Blanik* very nicely, including the landing, though I don't think he has ever had any formal training. 'Fly one, fly 'em all,' sez Mike.

So ended an extremely pleasant, interesting and, I think, mutually profitable visit. Mike and I would like to express our thanks to all those kind Iranians who supported our efforts, took us into their homes and out to night clubs, and especially to General Raffat and his organisation, who, as a final 'goody' sent us off on a once-in-a-lifetime sight-seeing trip to Persepolis, about 1,000 km each way, as the 727 flys, on our last Sunday in Iran. I would also like to add a word of appreciation about Mike. We all know that he is a very competent model flyer, but he is also the ideal travelling companion. You just have to be cheerful when Mike is around.

Peter Chinn's latest engine news



The new 'G-7' version of the Czechoslovakian MVVS 2.5-RL, with revised main casting. Engine has standard port timing for use with MVVS silencer shown.

The Turbocraft P-80

In the immediate post-war years, a number of jet engines, all working on the pulse-jet principle (the practicability of which had been dramatically demonstrated during the war by the German V-1 'flying bomb') appeared on the model market. The first of these, all of which used straight petrol as fuel, were the American Minijet and Dynajet. They were followed by the British Juggernaut and Decojet, the Japanese OS-Jet and Tiger-Jet, the West German BMW Jet, the East German Victoria MD-1 and by a few others, plus many home-made examples. Only the Dynajet, OS-Jet and Tiger-Jet proved commercially viable and have been produced in reasonable numbers.

Recently, a new pulse-jet has appeared in the U.S. known as the 'Jet-Stick'. Mick Wilshere of World Engines Ltd obtained one of these and he sent it along for our inspection. Like all pulse-jets, it is of quite simple construction, comprising an alloy valve head with reed-valve intake system and a stainless steel combustion chamber and resonant exhaust tube. Unlike all previous model pulse jets, however, it is equipped with a means of reducing thrust.

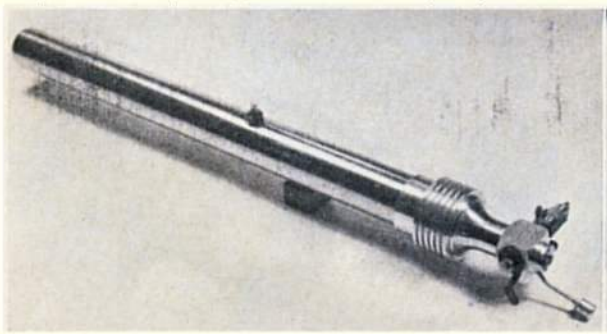
This consists of a Kavan throttle type carburettor, slightly modified, fitted into the engine's air intake. The modification simply consists of passing a drill through the airbleed hole and drilling through the throttle barrel so that air can enter through this hole when the throttle is open. A $\frac{3}{16}$ in. o.d. plated brass tube is inserted in the airbleed hole in the carburettor body and is locked in place by the airbleed screw. The outer end of the tube is fitted with a threaded connection to which a tyre pump or compressed air line can be attached – the usual way of starting a pulse jet.

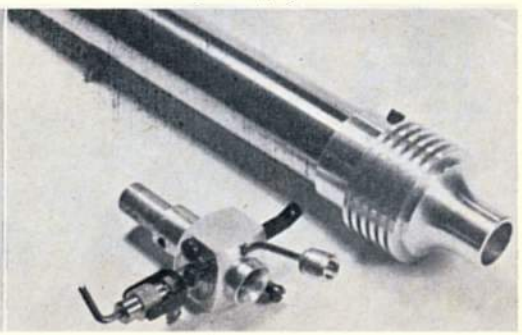
In the past, the majority of commercial model pulse jets have been equipped for spark ignition – i.e. a sparking plug to which an external battery and trembler coil are temporarily attached to get the engine running. An exception was the Tiger-Jet Model M-1 which used a special heavy-duty glowplug. The 'Jet-Stick' also uses glow ignition; in this case an ordinary (Fireball) model glowplug.

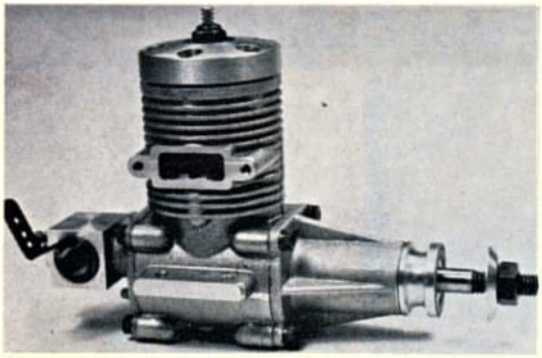
Most model pulse-jets have no

The new Turbocraft P-80 'Jet Stick' pulse-jet engine. Weighing only a little over 6 oz. it is claimed to be more powerful than previous commercial model pulse-jets.

Close-up of the 'Jet Stick' valve head with modified Kavan carburettor removed. P-80 is first model jet to be fitted with a means of varying thrust.

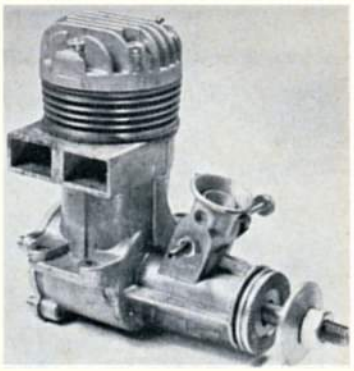






Left, pre-production model of the new H P . 4 0 R pylon-racing engine. See February issue of RCM&E for details. A C/L rat-racing version is also expected.

Right, now in its third decade of production, the Fox 59 still has its traditional cylinder and head design. This is the latest improved model.



Latest production model of the 2½ c.c. Kosmic K-15 in its diesel version. A future contender for FAI team-racing and C/L Goodyear racing honours?

adjustable controls – not even a needle-valve to establish the optimum fuel/air mixture strength. The Jet-Stick has a needle-valve, plus the Kavan carburettor's provision for adjusting part-throttle mixture strength. The maker claims that it is also possible to vary the engine's pulse frequency. This is achieved by sliding the carburettor (which is attached to an $\frac{11}{32}$in i.d. brass sleeve) into, or out of, the valve head.

The 'Jet Stick' has an overall length of 14½ in. and a maximum diameter (valve head) of 1·37 in. The combustion tube has an o. d.of 1·005 in. The engine weighs a very modest 174 grammes (6·14 oz.) yet Turbocraft claim a maximum static thrust of 5 lb. (By comparison, the Dynajet Red-Head, the most successful model pulse-jet to date, weighs 15·3 oz and claimed s.t is 4¼ lb.). The maker states that the static thrust of the Jet-Stick is reduced by about 75 per cent on half-closing the throttle. 'Flame-out' is said to occur when the throttle is about two-thirds closed.

The list price of the 'Jet-Stick' is $49·95 in the U.S. and if, therefore, the engine is imported into the U.K., the price is likely to be quite high. Anyone who has not had previous experience of model pulse-jets is warned that they are extremely noisy and need intelligent and careful handling. We must also point out that models powered by this type of engine are excluded from both the SMAE third party insurance cover and the M.A.P. scheme and that few insurance companies will entertain providing cover at all – even for control line use.

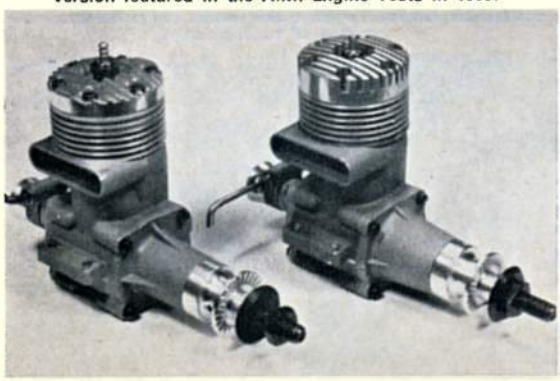
Fox Stunt 59 improved

The Fox 59 has a capacity of 0·585 cu. in. or 9·59 c.c. Nowadays most model aircraft engines as big as this are designed either for radio-control or for control-line speed. The big control-line aerobatics engine of this size, as represented by the Fox Stunt 59, is now something of a rarity, although some 10 c.c. R/C engines do make quite good C/L stunt motors.

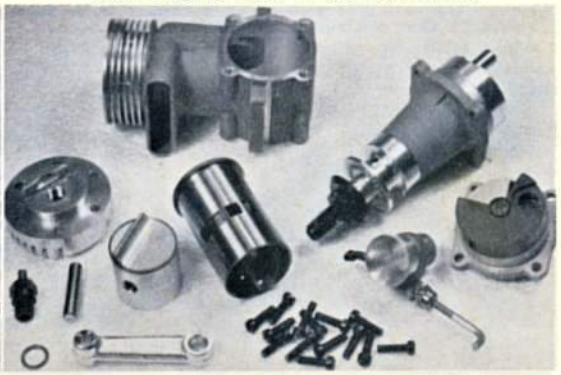
The long history of the Fox 59 was briefly dealt with in L.E.N. last year. Since that time, certain modifications have been made and we have received a sample engine from Duke Fox which it is intended to feature in the **Aeromodeller** *Engine Test* series in due course. This revised version of the Fox Stunt 59 has improved crankshaft balancing and a larger diameter crankpin. A stronger connecting-rod with a wider small end bearing is also featured and more robust castings are used for both the crankcase and the cylinder head.

Like most American model engine firms, the Fox Manufacturing Company do not make silencers for their products but the U.K. importers of Fox engines, Irvine Engines of New Barnet, are offering silencers of their own manufacture including one for the 59. This is a simple cylindrical expansion chamber that is machined

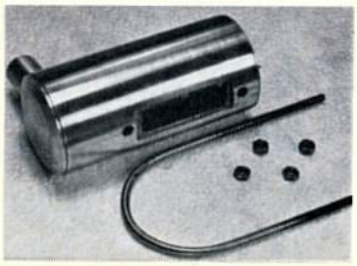
The most successful rat-racing engine of recent years has been the rear-induction K & B Torpedo 40. Shown on right is the current Series 70R model, alongside the Series 69R version featured in the A.M. Engine Tests in 1969.



Parts of the K & B Series 70R. Note revised 'squish-band' type cylinder-head and more robust front housing. Cylinder head finning is deeper on the latest version.



Left, the 1970 Fox 59 fitted with Irvine silencer. Note the characteristic position of glow plug for this engine – lying almost horizontal to the head, on the transfer side.



The Irvine silencer for the Fox 59 is reasonably effective and, on test, reduced rpm only 300-400 on typical props. Various sizes are available to suit the many engines which he markets, as well as other popular makes. Prices range from £1.75 to £2.50.

to butt against the rectangular Fox exhaust duct, held in place with a U-bolt type strap around the cylinder casting. The expansion chamber is of generous volume (approximately 4 cu. in.) with a good size outlet pipe that causes a moderate power loss while quietening the 59's fairly strident exhaust note 'quite considerably. The silencer adds 2·58 oz. to the 11·83 oz. of the engine, giving a total of just over 14·4 oz.

For the benefit of anyone who has already purchased one of these new Fox 59's, it is worth noting that this latest version, which has reduced compression ratio, appears to be not too fond of a straight methanol/castor-oil fuel mix. The Fox company recommends the use of Fox 'Missile Mist' fuel (not normally obtainable in the U.K.) and we found that, operated on anything much milder than this, the 59 lost rpm when the battery lead was removed from the glowplug. After running-in, our Stunt 59 ran best on fuels containing not less than 15 per cent pure nitromethane.

Fox 78

The latest model to be announced by the Fox Manufacturing Company is the '78 R/C', a development of the existing Fox 74 R/C. Actual piston displacement is 0·7854 cu. in. or 12·869 c.c., derived from a bore and stroke of 1 in. x 1 in. The engine is, in fact, a 'stroked' version of the heavyweight Fox 60 and 74 models (0·907 x 0·937 in. and 1 x 0·937 in. respectively). It features twin ball bearings, twin plug head and the distinctive Fox multi-jet carburettor.

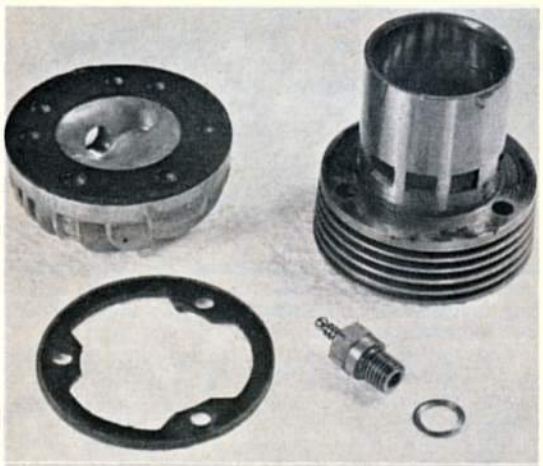
Kosmic K-15 Diesel

Deliveries of this new Italian engine began a few weeks ago and Sportimpex of Milan, the people responsible for both home and export distribution, tell us that the engine's initial reception has been good. As previously mentioned in these columns, the Kosmic, initially called 'Komet', is made by the firm responsible for the go-kart engines of that name and is obtainable in both glowplug and diesel versions.

The photograph shows the latest production model K-15 diesel with revised cylinder-head and Sportimpex quote the following prop. rpm figures, obtained from their own tests of one of these motors.

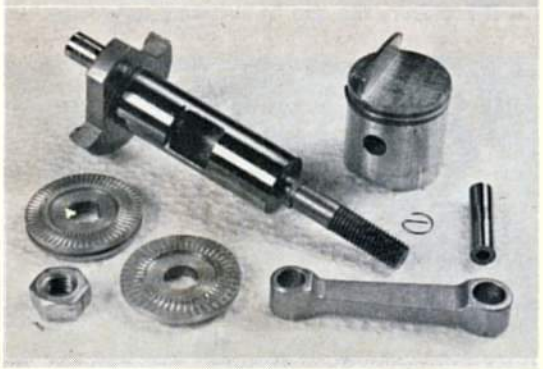
7 x 4	Power Prop wood:		19,400	rpm
7 x 6	,,	,,	16,500	,,
8 x 4	,,	,,	17,000	,,
8 x 6	,,	,,	13,800	,,
8 x 5	Top-Flite	,,	13,000	,,
9 x 4	,,	,,	13,200	,,
9 x 6	,,	,,	10,400	,,
7 x 8	,,	,,	14,800	,,

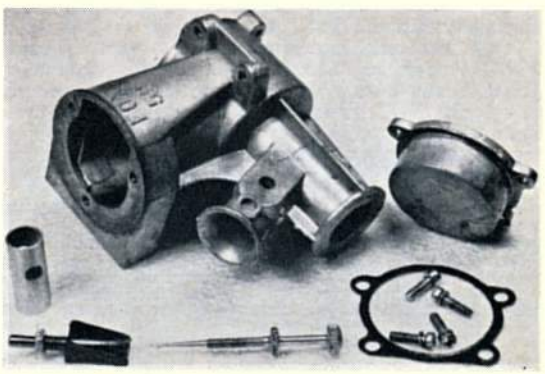
Unless the exact same example of each prop is used for comparative tests, prop rpm figures, even when accurately measured, are not a very reliable means of comparing engine performance but, even taking this into account, the above figures do appear to indicate a performance in the top bracket of 2·5 c.c. diesels.

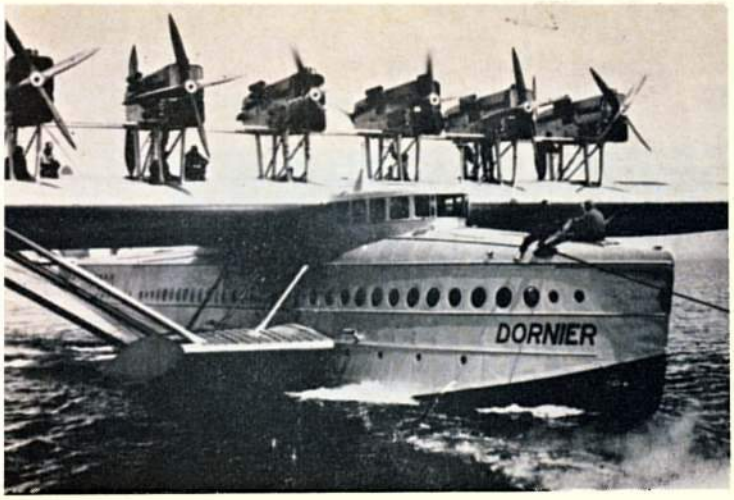


Cylinder and head of the Fox 59. Plug hole in side of head was used on original Fox 59 24 years ago.

Below left, the moving parts of the Fox 59. Crankshaft and connecting-rod have been improved. At right the strengthened crankcase of newest Fox 59 is shown. A bronze bushed main bearing is used.







AIRCRAFT DESCRIBED No. 200

DORNIER DO-X

BUILT AT DORNIER'S, then newly-established Altenrhein, Switzerland, factory in 1926, the enormous 12-engined Dornier Do-X represented a huge technical advance, and heralded a new era of large-size aircraft for continental and intercontinental flights.

Initially, of course, when Prof. Dornier submitted the plans for his gigantic flying boat in the mid-twenties, his ideas were met with a great deal of scepticism – many experts failing to believe that it would ever take off from water, and that even if it could, the payload would be too small to be economic, while long journeys over the sea would be out of the question.

Well aware of the problems (the 'X' of the type designation Do-X refers to 'an unknown quantity') Claude Dornier carefully noted the weight of every single item to be used, as not only was the overall weight critical, but so was the centre of gravity location. A completely new departure in aeronautical engineering practice was established when he built a full size wooden mock-up of the new craft, thus giving the designers of the interior an exact impression of the shape and the size of the space available. Much emphasis was placed on using only 'technically proven' ideas for the machine in order to avoid all unnecessary risks, and every component was thoroughly tested during the design stage for the same reason. Static tests were completed on the tandem engine layout for Bristol licenced Siemens & Halske 'Jupiter' radials of 500 h.p. and the combined efficiency of the two propellers calculated. The wing spar structure was stress tested on a very highly advanced test bed for that period. The radial engines were very neatly streamlined on pylons and had an interlinking auxiliary 'wing' between them.

Any doubts as to the machine's flying ability were dispelled when the first flight was made on July 12th 1929. A few weeks later, further flights were achieved with 170 passengers aboard – although this was exceptional. Under normal circumstances the Do-X was to carry only 66-72 passengers in much greater comfort. Seats were arranged in groups and a bar, smoking room, writing room, sleeper compartment and lounge were provided!

In November 1930 a tour of North and South America was started, which included two Atlantic crossings, the trip terminating in Berlin on May 24th 1931. By virtue of its size the Do-X could never be protected, and it covered some 28,000 miles during these test and demonstration flights, mainly at low altitudes, due to its inability to climb high!

Twelve 625 h.p. Curtiss *Conqueror* engines were arranged in tandem, after the Jupiters were found lacking, and the Italian Navy purchased two of the Do-X-II variants powered by a dozen 550 h.p. Fiat A.22R 12-cylinder, water cooled engines. Normal fuel capacity was 3,500 gallons, with an oil capacity of 100 litres in each nacelle, and a further 1,300 litres carried in the hull. The change of engines brought a crude, exposed strut mounting and removal of the auxiliary wing.

The low aspect ratio (5:1) wing was constructed with three spars and light alloy ribs. The leading edge and walkway beneath the engines were corrugated light alloy sheet, while the remainder of the wing was fabric covered. Narrow chord ailerons were also fabric covered, but their auxiliary balancing planes, set above and forward of the ailerons, were sheet metal covered.

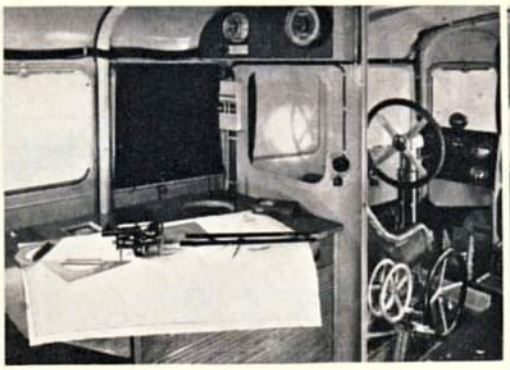
A sesquiplane type of tail surface was utilised, with the elevator attached to the top plane, again being balanced with servo-planes. The rudder also had balancing planes – one either side. The fin, balancing rudders and tail planes were light alloy sheeted, the elevators and rudder fabric.

Typically Dornier shaped, the two-step hull featured sharp knife-bows with a concavely curved bottom to the first step, which was then v-shaped with a lessening, included angle up to the rearmost step. The hull top is rounded and runs parallel to the thrust line from the rear of the wing to the tail. At

Pullman interior a trifle rococo by modern western standards though Aeroflot might approve, seriously, one must admire this advanced accommodation for 1929, a feature not repeated in flying boats for many years after. Certainly gives scope to the flying scale modelling enthusiast who wants to build big (needs to with 12 engines!) and lay carpets on the cabin floor!

Opposite, the fabulous Do-X (with Conqueror engines) on tow to moorings with four engines idling. An anchor was fitted to the nose at this time – not subsequently evident.

Right, the Captain's cabin with navgator's chart table laid out and the two control wheels positioned before miniscule instrument panels.



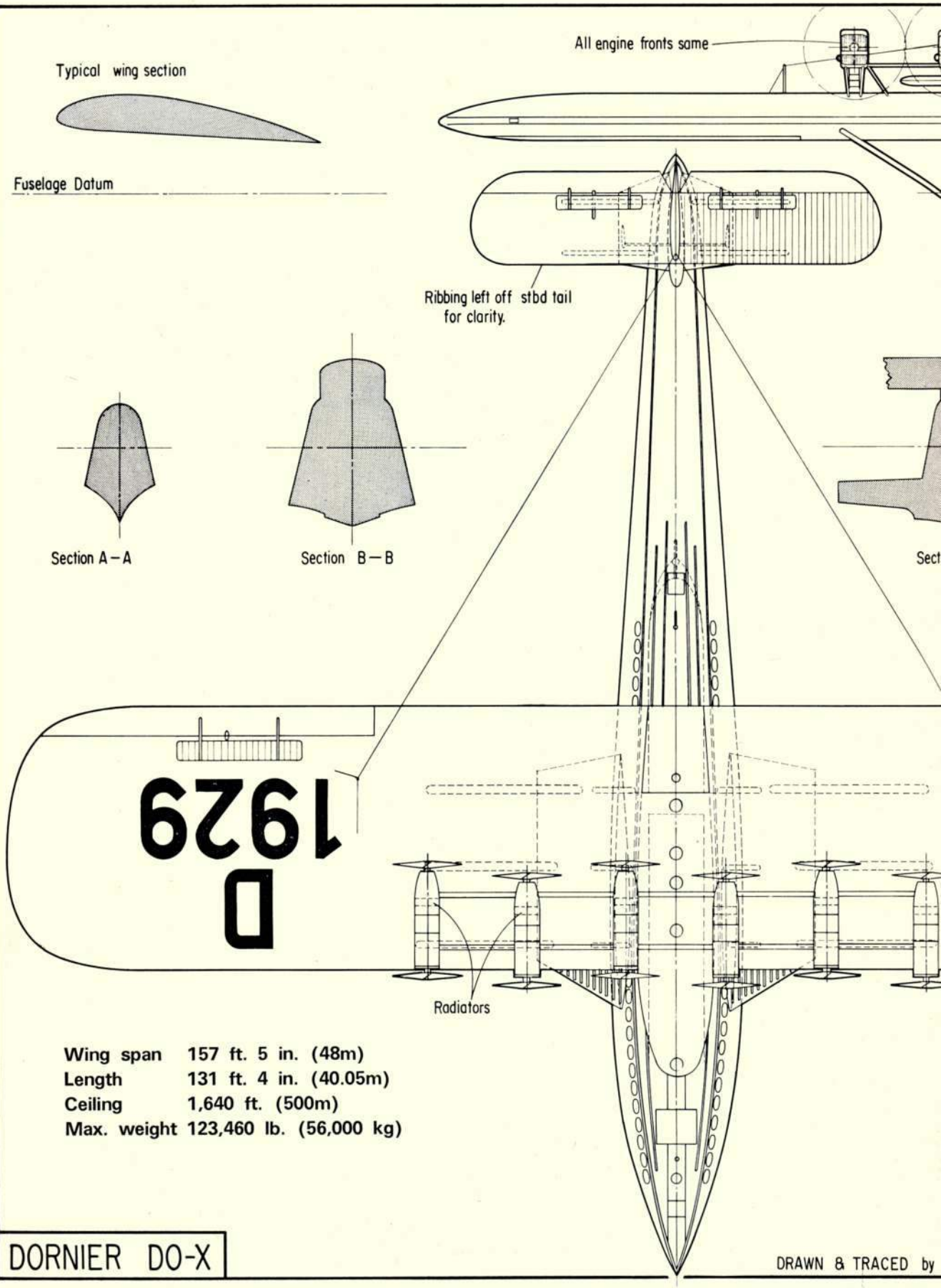
Beached in Africa during its lengthy but successful journey to the Americas the Do-X looks forlorn in spite of tropical surroundings. During the journey it survived many mishaps – including a fire.

the front step, and running forward at a large angle of incidence lie the 'Dornier-Stummel' or sponsoons, which gave lateral stability on the water, as well as providing part of the wing bracing structure.

The crew had excellent accommodation with first-class visibility. Two pilots sat side by side in a totally enclosed deckhouse forward of the wing, and behind was situated the Captain's cabin and navigating room. Aft of this lay the engineer's compartment, where the engine controls and instruments were located. Yet further aft, the wireless room could be found. Below this deck lay the passenger accommodation, and below that, the fuel tanks and store.

Undoubtedly, the Do-X was in advance of its period – not until 20 years later did the American flying boats of Boeing and Sikorsky origin inaugurate scheduled services on the long Pacific routes – and even these machines borrowed such features as the stub wings which had proved themselves on this early flying boat.

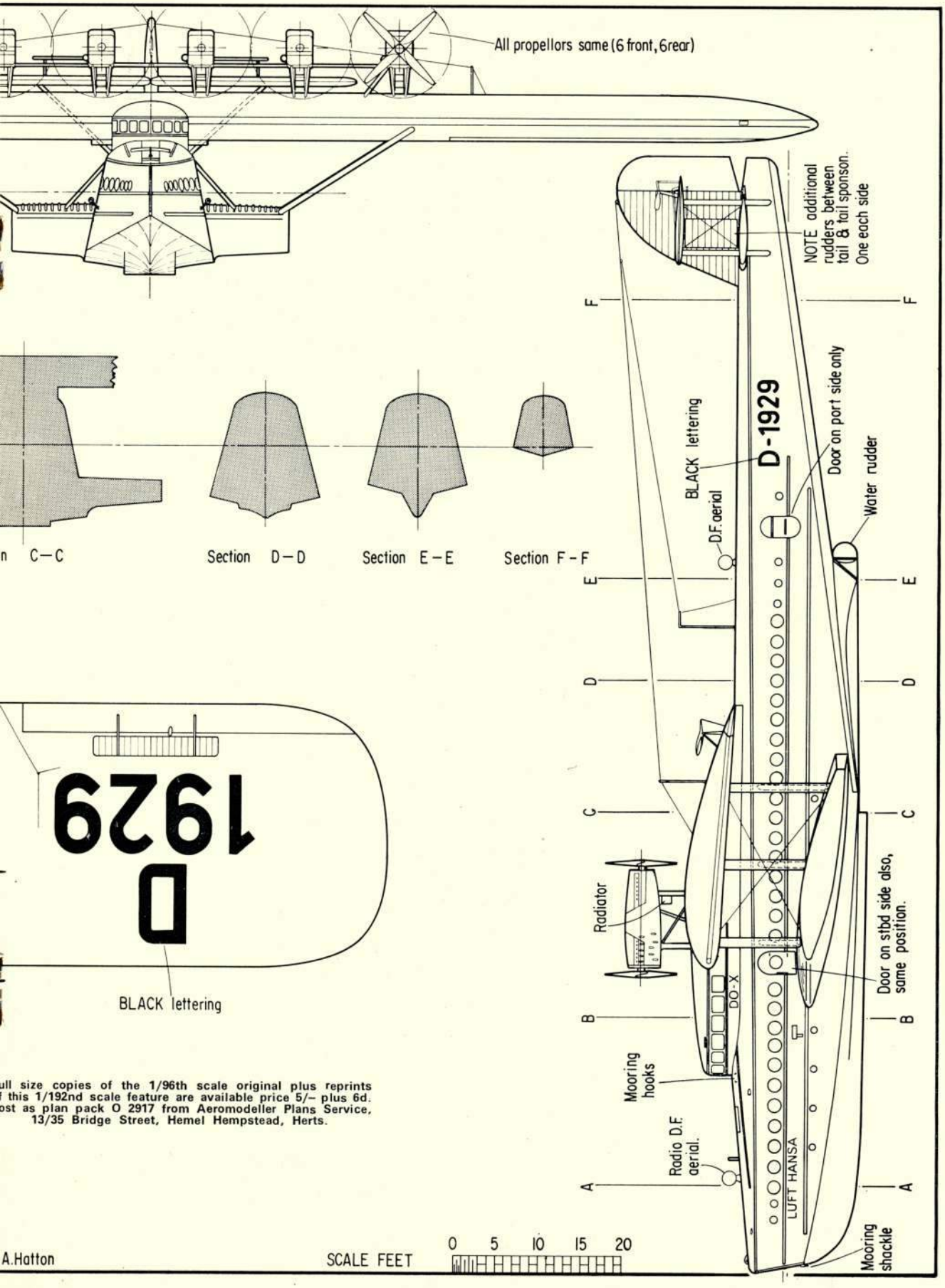
In its later form, the Do-X carried Lufthansa insignia on the nose and featured radiators within the pylon struts for the rear engines. The Do-X was subsequently bombed out at the Berlin Museum during the war and although other exhibits have since reappeared at Wroclaw, Poland, the parts of the Do-X have gone forever.



Wing span 157 ft. 5 in. (48m)
Length 131 ft. 4 in. (40.05m)
Ceiling 1,640 ft. (500m)
Max. weight 123,460 lb. (56,000 kg)

DORNIER DO-X

DRAWN & TRACED by



ull size copies of the 1/96th scale original plus reprints
f this 1/192nd scale feature are available price 5/- plus 6d.
ost as plan pack O 2917 from Aeromodeller Plans Service,
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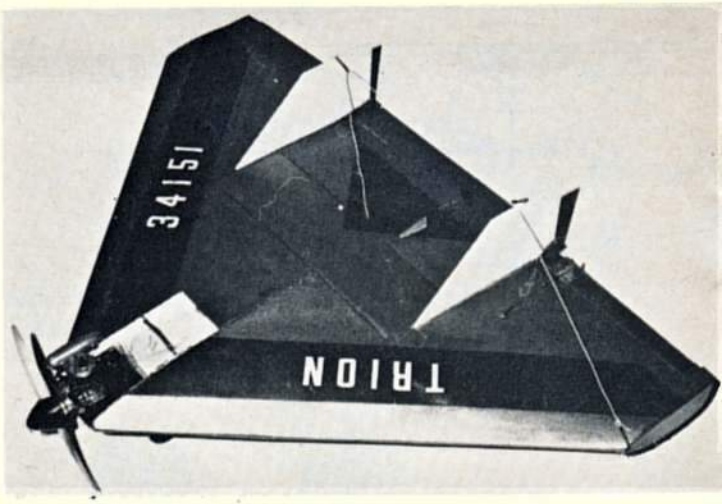
A.Hatton

Delta Design

and general thoughts on the tailless configuration

by R. H. WARRING



The delta shown above was built as a test bed for an R/C speed project – here powered by an O.S.19, but destined for a 40 or 60. Model uses an 'upside-down' section (that is the underside has greater camber than the top) – this being in order to obviate the need for a reflex section. Moderately successful, although the ailerons had to be drooped to achieve take off and provide low speed handling.

FOR YEARS aircraft designers – both model and full-size, have flogged the 'tailless' aeroplane theme, mainly on the basis that an 'all wing' aeroplane should be more efficient because it eliminates the extra drag and weight of such appendages as wings and tail units. Not until the arrival of the true delta layout, however, did the tailless aeroplane really come into its own.

The ordinary tail-less aeroplane employs either a swept-back wing or a straight wing (Fig. 1), the former nearly always producing the most stable model. For a straight wing to be stable, then the section used must itself be a very stable one – usually having the rear portion turned up quite sharply or *reflexed*. Even so, it will never be quite as stable as a conventional wing-tail layout, nor are the wing sections necessary very efficient, compared with the best shapes for model wings.

The swept-back wing gains its stability from the fact that the wing tips are made a 'stable' section – either by washout (decreasing the incidence), or changing the section to a reflexed one. In effect, the front part of the wing is the main lift producer, and the rear part (on each side) acts rather like a conventional tailplane.

In both cases the result can be a stable flying wing, but not a very efficient one. In fact, to make the stability anything like as good as a wing-fuselage-tailplane combination of good proportions, its actual flight performance will suffer quite a bit. Despite claims to the contrary, flying wings do not make outstanding gliders, nor are they as consistent as their more orthodox counterparts.

The delta wing was arrived at by increasing the sweepback still more and then joining the two tips, resulting in a much better structural arrangement (Fig. 2). It is called a 'delta' wing after the Greek capital letter 'delta' which is written $\triangle$.

The main difference between a delta wing and a sweptback wing is that for the same area, the span of the delta wing is much smaller. This is best expressed in terms of aspect ratio which, for normal wings, is the ratio of span to the chord. On tapered or similarly awkward-shaped wings, aspect ratio is best found by dividing (span)^2 by the area. Thus in Fig. 2 the area of the wing is span x chord and so

$$\text{the aspect ratio is } \frac{\text{span} \times \text{span} \times \frac{2}{2}}{\text{span} \times \text{chord}} = \frac{2 \times \text{span}}{\text{chord}}.$$

This holds true for all truly triangular wings.

In terms of the actual sweepback angle of the delta, chord=span/2 times the tangent of the angle of sweepback (θ). Thus the aspect ratio becomes equal to 4 divided by the tangent of θ, which is a very simple formula for arriving at the angle of sweepback required to produce a given aspect ratio.

Normally, reducing the aspect ratio of a wing reduces its maximum lift and increases its overall drag. Once you get down to very low aspect ratios, however, such as 2 or less, the wing behaves in quite a different manner and begins to become *more* efficient. Thus the delta, in spite of its very low aspect ratio, does not suffer from the performance loss

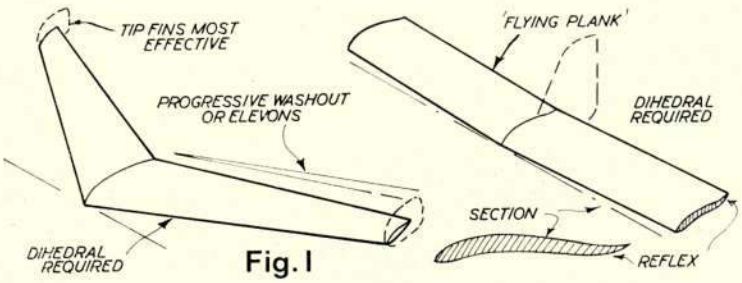


Fig. 1

associated with normal swept-back or low aspect ratio wings.

Its stability characteristics are also quite different. For one thing, the stalling point of delta wing is quite high – round about 40 degrees as compared with the 10 degrees of a normal model wing. It is also quite stable in the lateral sense, since sweepback is equivalent (although to a lesser degree), to dihedral in producing recovery from a sideslip. Thus a normal delta will seldom, if ever, require dihedral. Dihedral effect is built right into the wing shape.

The Dactyl (available from APS as TG/326, price 30p) is a typical tailless glider and uses elevons for stability, as well as sweep-back. Note use of small tip fins.

With regard to directional and spiral stability, however, the delta is not quite so happy. To keep it flying straight and 'on course' it generally needs a fin of generous area, the smaller the sweepback the larger the fin required. Even so, it can still be a bit tricky in turns.

A low aspect ratio wing also has one further disadvantage. Since the span is short the wing will roll quite readily, so it is not so good at coping with torque, thus the delta is more suited to jet power than it is to being propeller-driven. However, that is not to say that a prop-driven delta is not a practical layout. It is – provided the sweepback angle is not too large, and provided that excessive power is not used. In other words, it is quite suited for a sport model layout but would likely prove very troublesome if 'contest' performance was aimed at. There is also another good reason against the delta layout for a 'contest' performance design – the glide is poor by comparison with orthodox layouts. The delta wing produces less lift than an orthodox wing at all angles and although it may eventually produce the same or even higher maximum lift, this is at an angle where the drag is also fairly high.

The question of what happens when a delta is overpowered shows up quite well on Jetex-powered models. This is because with a constant thrust engine (the jet thrust), the *power* of the engine goes on increasing with increasing speed. Hence the model tends to fly faster and faster under power, the jet engine becoming more efficient all the time. This is just like coasting downhill on a bicycle where the thrust is the same all the time (the pull of gravity), but you go on accelerating so that your speed continually builds up throughout the run. Speed always aggravates stability problems so the model, after a smooth launch, builds up speed until it perhaps goes into a series of tight loops or a spiral dive.

Looping problems are aggravated by the fact that to be really safe, a delta needs a reflex trailing edge. This gives that necessary margin of longitudinal stability to combat disturbances in flight. Normally this reflex is made adjustable by fitting 'elevons' to the trailing edge which are turned upwards an equal

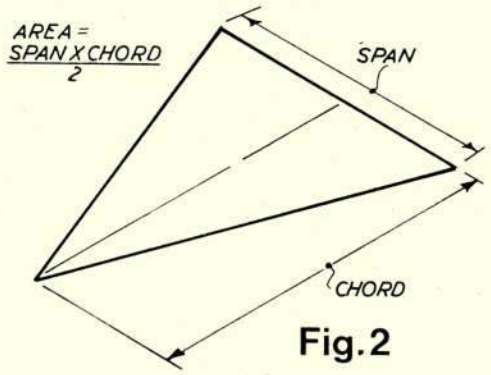
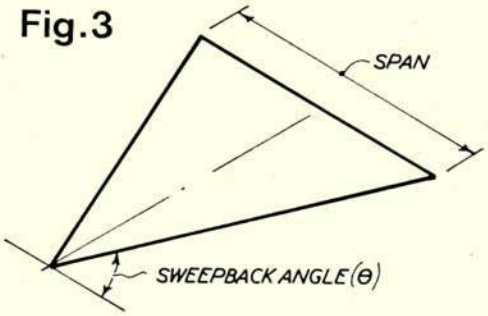


Fig.2

Fig.3



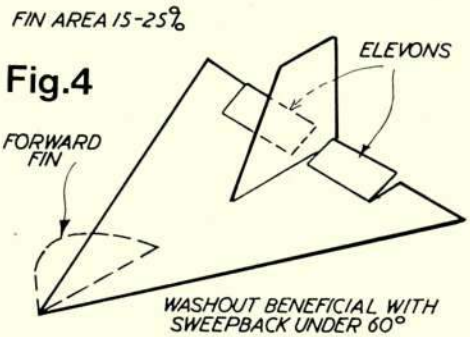
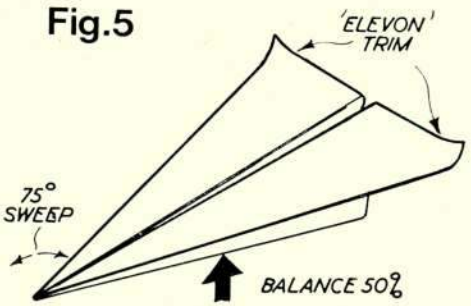
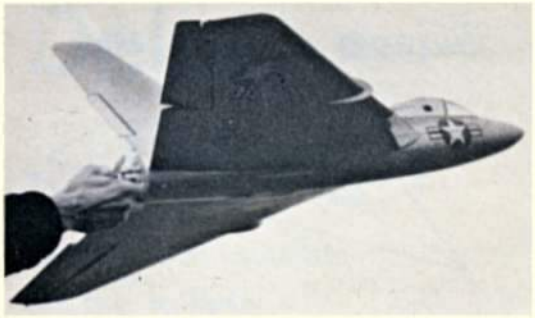


Fig.4

Fig.5





The Opus (A.P.S. plan No. U/910, price 45p) uses a large, fixed elevator which acts as a reflex wing section. A large underslung fin is used, in addition to the wing fences.

amount. If they are not adjusted equally they will induce a turn, which may build up into a spiral dive under power.

With adjustable elevons, the balance point of the delta can be varied over a considerable range. C.G. position is far from critical, except for the fact that the more negative setting you have on the elevons (corresponding to a forward C.G. position), the more likely the model will tend to loop under power.

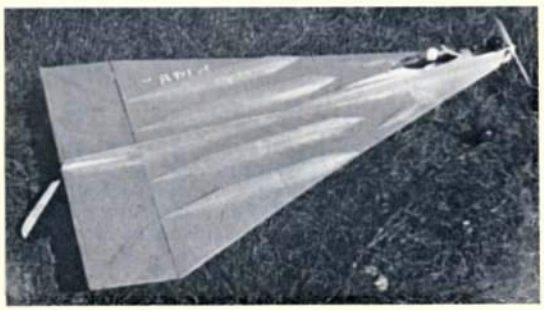
The traditional paper dart is as good a flyer as most model aeroplanes and has a C.G. position of one half its length. Sweepback angle is approximately 75 degrees and perhaps some slight 'elevon' trimming may be necessary in order to get a flat glide. The same C.G. position (half the chord) is about right for all deltas, regardless of sweepback angle, using just enough elevon trim to flatten the glide. Then take care of power-on trim by mounting the motor with down thrust or, in the case of Jetex power, try using a deflector vane in the jet.

Anything less than about 45 degrees sweepback is inadvisable for a delta. The stability of deltas within this range – say 40 to 50 degrees sweep – is also improved with a degree or so of dihedral plus progressive washout along the whole of the trailing edge of the wing. Because of the longer span, such layouts are best for propeller power. Fin area required is about 25 per cent of the wing area (maximum).

For jet power then, 60 to 70 degrees sweepback is preferred when neither dihedral, nor washout is required, except that there is still the need for elevon trim. Fin area can be reduced to 15-20 per cent and spiral stability is often helped by fitting a front fin. If the model persistently rolls with a front fin, then the front fin is too large. A front fin will definitely help keep the nose up in turns.

Sweepback angles approaching 80 degrees usually result in a model which is very prone to roll and spirally unstable, as well as becoming relatively inefficient. Also the smaller the delta the more critical it becomes as regards adjustment. A perfectly true delta wing – e.g. a 60-degree delta, will trim out and fly quite well, once adjusted carefully, with the C.G. at about 60 per cent – and will fly equally well upside down as right way up, often changing its flight pattern during the course of a single flight. This characteristic is retained by many other delta models, particularly those liable to be drastically upset during flight – e.g. a prop-driven delta with a large propeller which causes it to roll; or a past-the-vertical stall recovery resulting in the model flattening out in inverted flight. Nevertheless, as sports models, deltas are a lot of fun and certainly worth experimenting with.

A sports-flying machine, the Delta 707 (A.P.S. No. RC/649, price 50p) again uses large fin area, and has elevons for stability. Near ideal layout accounts for its excellent flying characteristics.



FEDERATION AERONAUTIQUE INTERNATIONALE

INTERNATIONAL AEROMODELLING CALENDAR
WORLD CHAMPIONSHIPS
1971

June 30-July 6	Gothenburg, SWEDEN	Free Flight
September 14-22	Doylestown, U.S.A.	Radio Control

CONTINENTAL CHAMPIONSHIPS

July 9-13	Pecs, HUNGARY	European C/L Championship and Criterium of Aces
September 4-5	Ravenna, ITALY	F.A.I. Speed only

INTERNATIONAL OPEN EVENTS

(Unlimited entry)

March 7	Helsinki, FINLAND	Free Flight
April 11-12	Hradec Kralove, CZECHOSLOVAKIA	Speed, T/R, Stunt, Scale, Combat
April-May	Brno, CZECHOSLOVAKIA	Combat
May 8-9	Rozendaalshe-heide near Arnhem, NETHERLANDS	Amsterdam Cup Free Flight
May 20 23	Wr. Neustadt, AUSTRIA	Hans Kratky Cup, Free Flight
May 22-23	Dubnica n. Vahom, CZECHOSLOVAKIA	European Criterium Model Rockets
May 29-31	Dornbirn, AUSTRIA	Rheintal-Cup R/C Multi
June 10-12	Vienna, AUSTRIA	Int. Control-Line Cup 1971. Speed, T/R2.5, TR/5, Combat
June 12-13	Dorvar Heide bei Duren GERMAN FED. REP.	Eiffel-Pokal Free Flight
June 26-27	Sezanne, FRANCE	Criterium Pierre Trebod Free Flight
July 3-4	Munchen, GERMAN FED. REP.	Free Flight
July 3-4	Brno, CZECHOSLOVAKIA	Indoor
July 10-11	Osijek, JUGOSLAVIA	Rockets
July 30-August 1	Piestany, CZECHOSLOVAKIA	R/C Multi
August 7-8	C. Budejovice, CZECHOSLOVAKIA	R/C Multi-hydroplanes
August 12-15	Kraiwiesen, AUSTRIA	Igo Etrich Cup, R/C Multi
August 17-20	Debrecen, HUNGARY	Hajdu Cup Indoor
August 21-22	Sezimovo Usti, CZECHOSLOVAKIA	Free Flight
August 28-29	Wr. Neustadt, AUSTRIA	Kolibri Cup Free Flight/Magnet Gliders
September 4-5	Helsinki, FINLAND	Control Line
September 19-22	Lesce Bled, JUGOSLAVIA	Bled Cup, Multi
September 23-26	Lienz, AUSTRIA	Dolomite Cup R/C Multi
September 25-26	Bochum-Harpen, GERMAN FED. REP.	Control Line
September 26-28	Gyor, HUNGARY	RABA Cup, F/F Power only
October 2-3	Bendern, LIECHTENSTEIN	R/C Multi

INTERNATIONAL LIMITED EVENTS

(For N. Ae.C. Nominees)

May 29 30	Gorizia, ITALY	Graupner Cup, R/C Multi
May 30-31	Genk, BELGIUM	Pylon Race, Formula 1
June 24-26	Alicante, SPAIN	Free Flight
June	Reggio Emilia, ITALY	R/C Glider
August 21-22	Asiago, ITALY	Europa Cup, Magnet
September 19	Lugo di Romagna, ITALY	Gold Cup, C/L Team Racing only

Left, Michael Hook holds elder brother Johns *Faital* – Super Tigre G.15 RV uses 7" x 4" Bartel fibreglass propeller. John was second in Astral '70 and placed first in the St. Albans Winter Cup contest.

FREE FLIGHT COMMENT

By John O'Donnell

THE 1970 CONTEST SEASON didn't really end – it merely merged into the beginnings of the 'Winter Rallies'.

Richmond's Winter Gala was held at Chobham Common as early as 8th November – Remembrance Sunday. The hand-out information drew attention to the two-minute silence at 11 o'clock and requested that no engines be run at that time. A comprehensive range of events was scheduled enhancing all the usual 'open' events (if the description can include A/1 and Coupe d'Hiver).

An early change in the wind direction meant resiting the contest control with a resultant delay in events getting under way. The lack of ground drift was deceptive as models at any height were soon well across the common. Before long the wind picked up sufficiently to give recovery troubles either with woods or the 'tank factory' (now the M.V.E.E. rather than the F.V.R.D.E.) and predictable effects on the competitors.

This probably explains why none of the events needed a fly-off – even though two were now with perfect scores. The rubber event started with nothing but maxs being recorded. Discretion soon slowed this procession, with only Russell Peers persevering to a treble despite losing one of his 260 sq. inch 'performance' models when it faded into the morning mist on its first flight. Runner-up was Dave Digby with two maxs and a 1:45. This was the only non-max rubber flight and may well have been deliberate, intending to take an easy second place rather than aiming for a fly-off win. Paul Masterman in fact stopped with two maxs, rather than risk a third flight.

The other treble was done by Ken Smith in winning A/1 glider. If he had doubled-up his flights with open glider he could have taken that as well. As he didn't, I collected first place in open glider with five seconds short of three maxs – although at the cost of leaving one of my A/2's inside the M.V.E.E. for nearly three weeks. Second was Jim McNeill who flew very early and very much 'on his own'. Jack North came third with the help of his own bubble machine for lift indication.

Open Power was won by Fred Chilton with a ten second lead over John West's G15 powered *Dixielander* development. Their scores, however, were exceeded by Bob Bailey flying in ½A power.

Coupe d'Hiver had the closest result – a one-second win for Mike Lambert over Coghlan. The winning model was lost O.O.S. on its last flight through a combination of strong lift and late D/T.

Final event was chuck glider – not as well supported at Chobham as in the North – and convincingly won by Mike Fantham. Successive places were closely fought.

Mention must be made of a certain well-known name in control line circles – Freebrey of Northwood – who managed two third places!

Having an A/2 to collect from its finder, I had no hesitation in making another visit to Chobham three weeks later despite very wet weather and dismal conditions. The 'competitive' attraction was the **St. Albans Winter Gala** featuring three separate F.A.I. events, plus three 'minor' events.

It was only on arrival that it became apparent that the F.A.I. events were in rounds – the published announcements had omitted this information. Even with the customary longer first round (10 until noon) this must have handicapped some entrants. Heavy rain up to 11 o'clock made for a slow start, but a short break caused the events to start rolling. Nevertheless, many first round flights were made in decidedly wet conditions.

I saw little of this gala, spending most of the day searching a downwind wood for my A/2 after its second flight. Failure to find it, plus the just collected model being too wet and warped to use, ended my participation. All I accomplished was finding Russell Peers' and Ray Monks' ½A power models, thus enabling them to fight out the top position in that event. Ray's winning model has 'elliptical' wing tips and tail in the style of his current F.A.I. designs – whilst Russell's design has simple squared off surfaces, Warren-girder ribs and generally very light construction (for an a.u.w. of a shade under 5 ozs.).

Flying could not be described as of particularly high standard and F.A.I. scores were remarkably low. Only four maxs were scored out of over 100 recorded F.A.I. flights. Jim Punter's win in A/2 was remarkable in that he won by a clear minute, yet only made four flights through arriving too late for the first round. In contrast Jim Baguley started well with two good flights (one from each of his

Right, winner of the Wigan chuck glider contest was Barry Kershaw, seen here test gliding his new model after the competition. Note tip weight. Below left, team-race pilot Derek Heaton was a surprise entrant – tuning up your whipping arm Derek? Below right, Tony Slater (second place) adjusts the D/T on hs reserve model after completing official flights with D/T less models. Swing-down nose and D/I positions chosen to avoid trim change.

pylon, balsa fuselage models), but could not maintain his lead.

Coupe d'Hiver was flown to three flights with a two minute max, hand launched. Top place went to Dave Tipper, with a straightforward box fuselage model, despite a poor launch on one flight. Runner-up was Bill Houghton with his unique design featuring a tail boom from the *top* of the pylon – not to mention 'Melinex' covered surfaces. At least he had no worries about getting the model wet.

There is little I can say about the other events except to quote results, so perhaps I could refer readers direct to the tabulated information at the end of this article.

Gordon Hannah of the host club, who supplied results and the like after the meeting, reports that they consider the contest 'to have been a great success, largely due to the stalwart efforts of Jim McNeill and George Fuller who, in best fairground tradition, cajoled people into entering despite the fact that scores rapidly became illegible on the rain-soaked scoreboard . . . the wettest part of all was the handling out of the trophies to the winners'.

In contrast to the multiple event meetings just described, there was a one-event meeting on 13th December. This was the **Wigan Club's Winter Chuck Glider Contest**, held on a hilltop park just outside the town.

There is currently quite substantial interest in chuck glider in the North, and this contest attracted 23 entries from throughout the N.W. area. Certainly it does raise the question of whether too many events at a particular meeting merely spreads the same people rather thinner over more events.

Equally it is becoming apparent that chuck glider, like most other categories, is becoming dominated by specialists. A glance at the results of the Wigan meeting will certainly confirm this. The said specialists not only have the technique and models, they also watch the conditions and fly accordingly.

At the event in question conditions varied throughout the four hours (11 a.m. to 3 p.m.) the contest was open. Initially the drift was downhill, and good flights were possible despite indifferent visibility. Later the day became bright and sunny but a change in wind direction took models over a slight rise shortly after launch. I was surprised how few competitors bothered to move to a better vantage point where their flights could be timed right down. Perhaps they were more concerned with avoiding the fate of Roy Roberts and another whose models were run over after alighting on a downwind road.

Contest winner was Barry Kershaw with the glass-fibre rod fuselage, low A/R design depicted in last month's *Comments*, and also presented in plan form in the *The Message* recently. Scoring was on the total of the best five out of nine launches – and all five of his scoring flights were over the minute mark.

Runner up was Tony Slater who considered the event well worth the trip from Shropshire where he now lives. He managed the event's only max – which perhaps added emphasis to his post-contest testing of a hinged nose D/T on a reserve model. Third was Mike Reeves who would be the last to claim great prowess with this type of model. He did well by virtue of two 'assisted' flights, launched *from the right place*. Nevertheless, he was well pleased with his model, the Dick Mathis (or should I say Fast Richard?) *Phlash* design from *Flying Models*, and reckoned it the most forgiving model he had yet flown. Glide was reasonable despite the semi-symetrical wing section used.

Fourth and top Junior was Dave Barnes, flying an unfashionable shaped model with constant chord inner panels and elliptical tips.

Prizes must be mentioned as they comprised seasonal 'consumables' plus cash – and were very well received.

There was an interesting demonstration after the contest, when Barry Kershaw tried throwing Mike Reeves' model – and showed the benefits of increased arm power on the altitude attained. Launching technique is obviously essential, but a strong right arm is more than useful.

Readers may have noticed in last month's *Club News* a reference to the **Brighton Club's Floatplane Contest**. Although run regularly as an S.E. contest, there is now some thought being given to making it open to all. In consequence John West has sent me details together with photographs taken by Ian Lucas.

Even back in the 1950's floatplane events were hardly common, but they were a feature of the S.M.A.E. programme (the *Lady Shelley* being the award) and the All-Britain rally at Radlett. Since then Brighton believe they have been the only club to continue this type of event in this country. They tried various locations – mostly dew ponds on the South Downs.

Recently, the *provision*, on their area flying ground of Ashdown Forest, of an ideal pond (intended for fire-fighting) has stimulated ideas of an 'open' (in the other meaning to that usually intended) 'hydro' event. To sound out interest I have been asked to give the idea some publicity and see what develops.

Rules are straightforward. The contest is run on normal duration lines except that R.O.W. is required, plus a floation test. Engine run for powered models has been set at 15 seconds.

Consequently, models are conventional designs with floats added. The full-size twin pontoon style is unsuitable for

Left, John West demonstrates the noble art of launching with his float-equipped *Dixielander;* after hasty repairs to the engine bearers.

Below, ready, steady, go . . . Ken Winstanley and helper launch his rubber-powered flying boat. A long forgotten technique, necessitating the use of old-fashioned footwear!

quick take-offs, and *three* smaller floats are invariably employed. These are usually disposed two forward and one rear for rubber models, and the *reverse* for power! Insistance upon a 'normal take-off position' appears intended to avoid V.T.O. but gives difficulties with modern power techniques usually unsuitable for horizontal launch attitudes. What is needed is a model with an old-fashioned spiral (or 'loopy') climb that gets its nose up quickly. It is significant that John West keeps an ancient *Dixielander* purely for this R.O.W. application – and uses the trim just described.

The last event Brighton held was on 11th October, 1970, and was favoured by good weather, and a surprisingly large entry. There were five rubber models (including a flying boat), and a similar number of power models, from a total of eight people. The inevitable troubles reduced scores to half the number possible. Power was won by John West whilst rubber had a tie between Tony Grantham and Fred Boxall. This was resolved in Tony's favour through Fred having lost his model on its last flight.

Should anyone be interested in trying out this form of flying a few pointers might assist. Floats are better on the *large* size, and should be designed to rise out of the water rather than to move through it. This can be helped by having the attachment struts well aft on the float, and *allowing* the float to increase incidence when moved forward.

When I flew this type of model (for record purposes, not competitively), leaks in floats were always a problem. Nowadays the use of expanded polystyrene foam floats with suitable covering should provide a most practical solution.

RICHMOND WINTER GALA

Open Glider *(24 entries):* 1. J. O'Donnell (Whitefield) 8:55; 2. J. McNeill (St. Albans) 8:33; 3. J. North (Croydon) 8:05. **Open Rubber** (7 entries): 1. R. Peers (Congleton) 9:00; 2. D. Digby (North Surrey) 7:45; 3. P. Masterman (Havering) 6:00. **Open Power:** 1. F. Chilton (Crookham) 8:48; 2. J. West (Brighton) 8:38; 3. D. Jarman (Brighton) 7:30. **½A Power** *(6 entries):* 1. R. Bailey (St. Albans) 8:55; 2. C. Hadland (RAFMAA) 7:22; 3. P. Freebrey (Northwood) 4:28. **A/1 Glider** *(10 entries):* 1. K. Smith (Croydon) 9:00; 2. A. Rose (Southampton) 8:12; 3. P. Freebrey (Northwood) 5:20. **Coupe d'Hiver** *(7 entries):* 1. M. Lambert (North Surrey) 7:28; 2. Coghlan (Havering) 7:27; 3. M. Shepard (St. Albans) 7:14. **Chuck Glider** *(6 entries):* 1. M. Fantham (Richmond) 4:56; 2. W. Houghton (Richmond) 3:58; 3. M. Keevill (Leatherhead) 3:46; 4. A. Crisp (FACCT) 3:41.

ST. ALBANS WINTER GALA

FAI Glider (5 x 3): 1. J. Punter (Hayes) 10:42; 2. J. Baguley (Hayes) 9:40; 3. M. Coomes (East Grinstead) 8:55. **F.A.I. Rubber** (5 x 3): 1. L. Burrows (Blackheath) 9:07; 2. A. Grantham (East Grinstead) 8:26; 3. J. Blount (Croydon) 8:25. **F.A.I. Power** (5 x 3): 1. J. Hook (Southampton) 10:00; 2. A. Child (Brighton) 7:20; 3. K. Taylor (East Grinstead) 6:12. **A/1 Glider:** 1. D. Wylds (Crawley) 4:52; 2. G. Madelin (Crookham) 4:05; 3. M. Dilly (Croydon) 3:53. **Coupe d'Hiver** (3 x 2): 1. D. Tipper (St. Albans) 4:59; 2. W. Houghton (Richmond) 4:46; 3. P. Masterman (Havering) 4:33. **½A Power** (3 x 3): 1. R. Monks (Birmingham) 8:41; 2. R. Peers (Congleton) 7:18; 3. A. Chilton (Crookham) 6:56.

WIGAN WINTER CHUCK GLIDER CONTEST

1. B. Kershaw (Wigan) 6:02; 2. A. Slater (Leatherhead) 5:12; 3. M. C. Reeves (Whitefield) 4:11; 4 + Top Junior, D. Barnes (Liverpool) 3:48. *(23 entries, best 5 from 9, 1:30 max).*

BRIGHTON D.M.A.C. HYDRO CONTEST

Rubber: 1. A. Grantham (East Grinstead) 6:29; 2. F. Boxall (Brighton) 6:29+model; 3. W. Gravett (Brighton) 6:22. **Power:** 1. J. West (Brighton 4:10; 2. D. Jarman (Brighton) 4:02.

What's the word on GOODYEAR?

Profile scale racing updated by Jim Kloth Part One: design choice

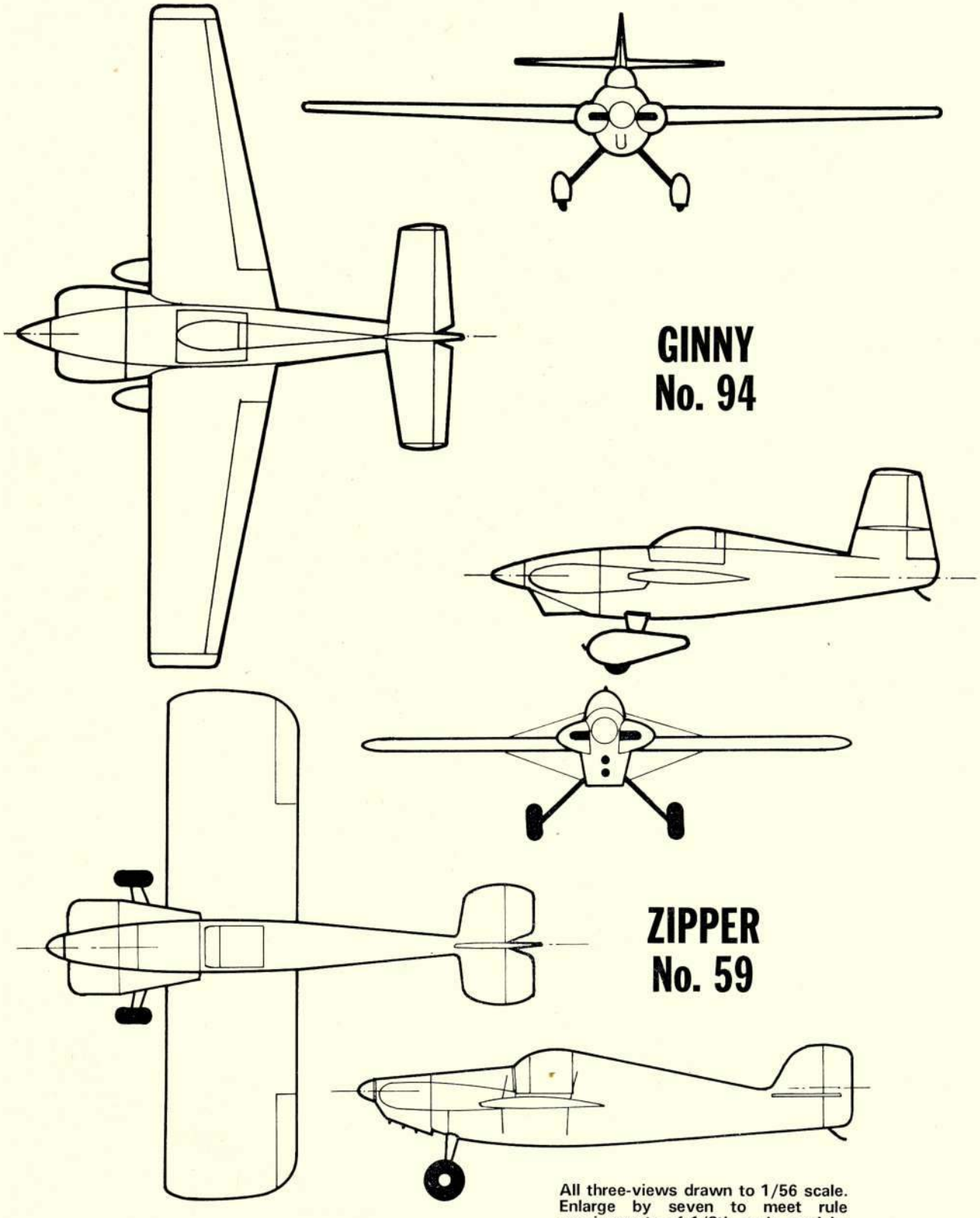
THE GOODYEAR, or Scale Racing, event is now growing in popularity following a very slow start. The increasing costs, speeds, and technological demands are reducing the number of Rat Race contestants just as they did in the Speed events, all to the benefit of Goodyear. Fewer newcomers are willing to brave the dangers of learning how to hang on to a hard-pulling Rat amidst the fast paced action in the centre of the circle. Present speeds require a finely honed, hair-trigger response lest one momentary slip reduce all competing models to instant scrap. The flying debris is not only a hazard to the competitors but also to the spectators. The smaller size and lighter weight of Goodyears do not represent such large cash outlays nor safety hazards. The physical strain on the pilots is greatly reduced but action still remains fast paced since the lines are shorter, making the slower speeds seem faster. Best of all, the models look like real airplanes with all the colour and brightness of full-scale Pylon Racing, because the rules require it.

The far sightedness of the Professional Race Pilots Association members, when they drafted the original rules (before W.W.II) has given modellers an ideal event. We have a class of airplanes restricted to a similar size – the engine displacement limit also suits our method of classifying events. Enough different Formula 1 airplanes, as they are now known, have been designed and built to allow us a wide choice of subject without any penalty, and modifications to the various full size pylon racers over the years further broaden the scope to choose from. Good sense was demonstrated by the model rule makers in allowing the necessary size-modifications of control surfaces for improved flight characteristics. This renewed interest in the modelling of real airplanes might even bring about rule revisions in other events – FAI Team Race could require full fuselage models of the Formula 1

Top left: John Phipps displays his Cox Tee Dee .15-powered 'Ginny'. John is a newcomer who has yet to learn which wing the license number belongs on. Note weakness of high mounted tailplane position. Pretty design otherwise.

Centre: three of the author's Goodyear stable. Copeman Oliver Tiger Mk. IV powered hollow wing and fuse 'Buster'; HP-15D Cosmic Wind II; and ST G20D-powered 'Bonzo'.

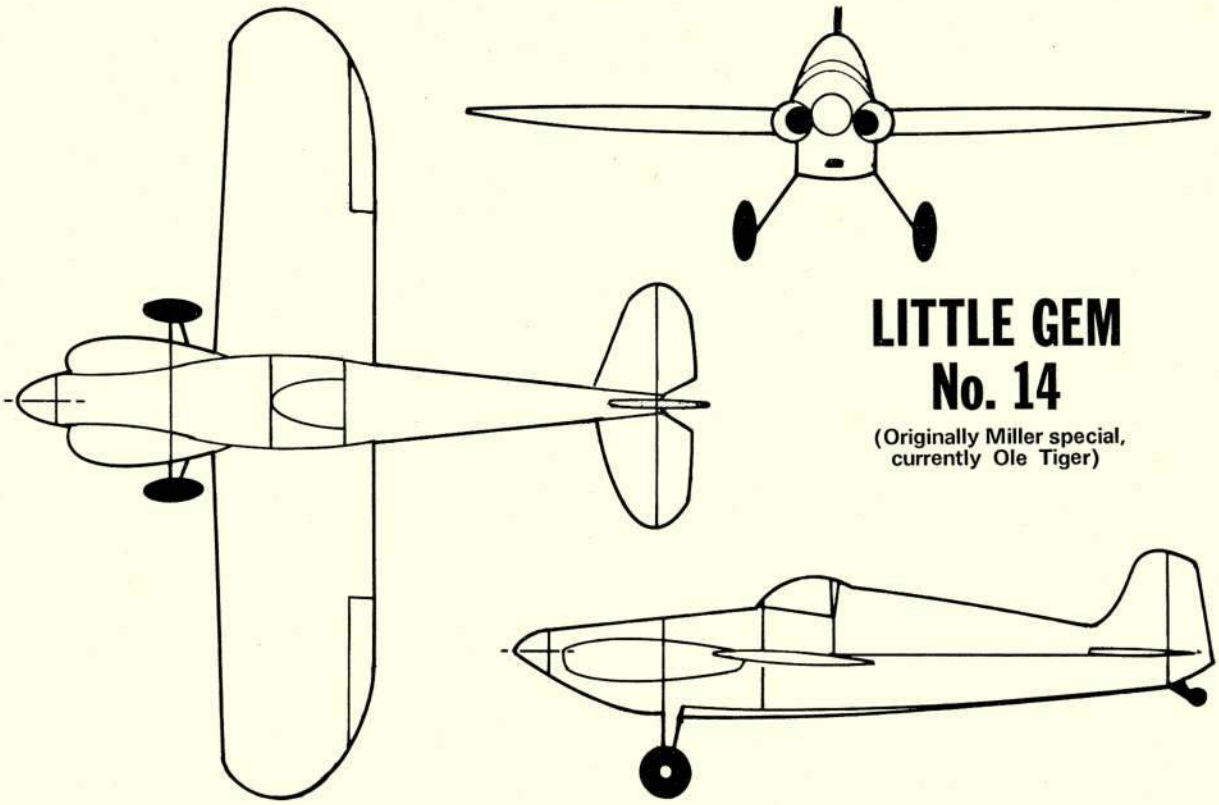
Bottom: ST G15FV Glow-powered Cosmic Wind 'Lil Tony' shows some of the problems of the low wing design. Wing has dihedral to get lead-outs in the proper place. Bellcrank through fuselage is a complex mounting problem. Model is fast but durability is lacking through its structural problems.



GINNY
No. 94

ZIPPER
No. 59

All three-views drawn to 1/56 scale. Enlarge by seven to meet rule requirements of 1/8th scale models.

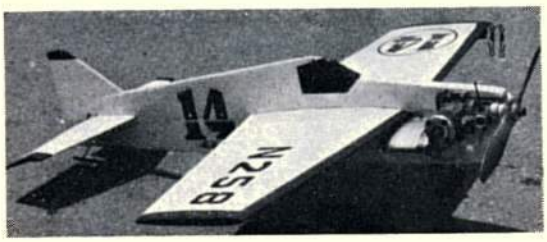


LITTLE GEM No. 14

(Originally Miller special, currently Ole Tiger)

type instead of the rule stretching, weired looking beasties flown today.

The successful growth of any model event is dependant upon the availability of kits and designs suited to it. To date, the Dumas *Ole Tiger* is the only kit on the market, but is not within the 5% of scale requirement and not yet available in the U.K. The AMA Scale Contest Board recognized the need for kits of this type to support the event, and ruled a special exception to allow it to compete. A few other designs have appeared in magazines but the choice is still fairly limited, but this is not as great a problem as it might seem. The simple profile model, as required by the rules, is very easy to reproduce and is not beyond the capability of the average modeller. Many 3-views of the various possibilities have been published during the past 20 years and can provide the starting point in making a selection. Some, like the *L.I.T. Special*, obviously do not lend themselves to copying for conversion to model competition. Its shape is not only complex, but it is also quite large. Let's examine some of the criteria which would govern our choice.



Close-up of 'Ole Tiger' shows difficulty of fitting tank and fuel system to this design.

The engine will be the most important component in our system. Many different engines will satisfy the rule requirements. They are all the same displacement (in America the rules state 2·5cc, but under British rules 3·5cc is allowed), but vary widely in size, shape and weight. We may also choose between the diesel and glow types, so it would be wise to first determine which particular engine will be used. The profile fuselage rule requirement demands that one carefully considers the shape of the nose as most Formula I designs feature high thrust lines and sloping noses. A design must be chosen which will allow adequate engine mounting. Some of the wider engines might find their left mounting lug hanging out in space! The rear-venturi type engine will require a longer nose moment arm to provide space for the venturi and tank to be fitted ahead of the wing. Also, a long nose moment design might be a better choice for a diesel which prefers a long, thin tank for best performance, a glow engine tank must be of larger capacity but can be wider, especially if a pressure fuel system is used. Space must also be available for the proper routing of fuel lines and the accommodation of filters and fuel shut-off devices.

The engine is also the largest single mass in our system and its C.G. will lie on, or very near, the model thrust line. This will have a great effect on the flying trim of the model. The flat surfaces of a profile model cause tremendous extra drag should the flight attitude be nose out, banked in, or banked out. Minor trim adjustments can be made to correct small deviations in flight attitude but a design with these problems built in should be avoided – I rule

out all low-wing designs for conversions to model form. The control-line lead-outs should lie in, or close to the wing. A low-winger would require leadout guides stretching up to the thrust line to avoid having the model fly in a banked out attitude. This could be compensated for by various methods but all involve extra work, extra drag, and structural problems. A few designs have extra long nose moment arms – these would be alright for a very light engine but would probably require the adding of weight to the tail to move the C.G. back to the proper location. The nose out flight attitude of a very forward C.G. presents all of the flat fuselage side to the airstream to quickly eat up engine power.

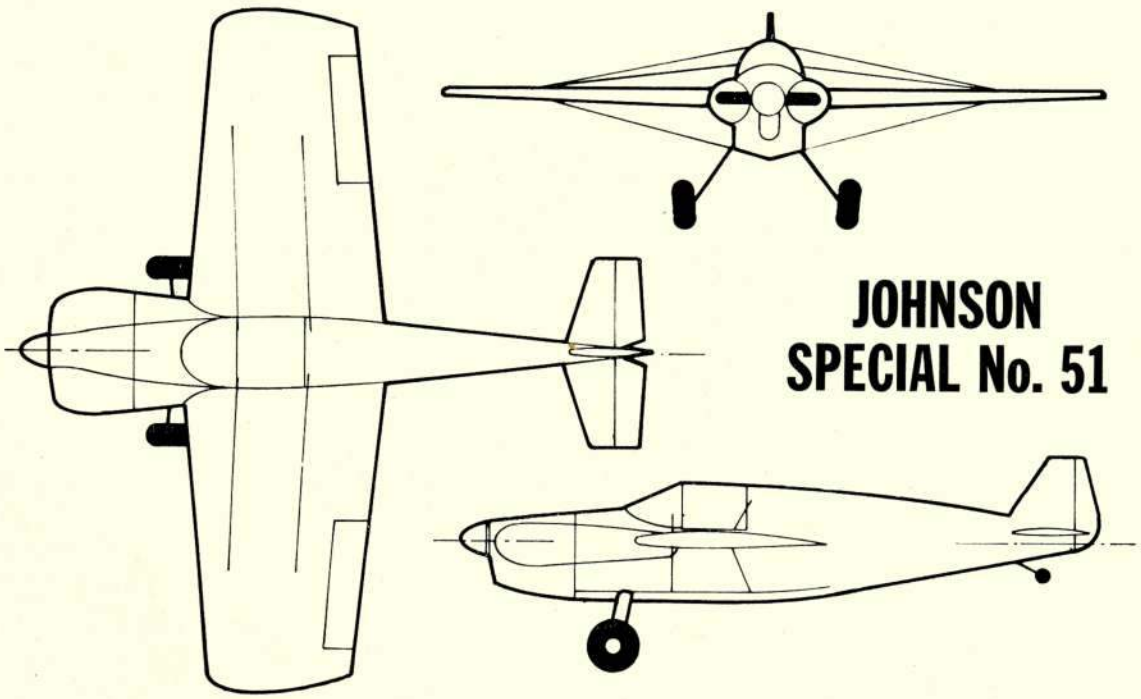
The size of the scale tail-plane is not too important – the rules allow increasing the area up to 25% of the wing area, provided that the outline remains the same shape. This permits the changes sometimes necessary to provide a good control about the pitch axis. The location of the tail might be worth considering. Some versions of *Rivets* and the very pretty *Ginny* have their tailplanes mounted above the fuselage – structural problems encountered in solidly mounting the tail on a profile fuselage are bad enough without aggravating the situation. The high mounted stab could cause added complexity in the control system also.

Design selection based on wing shape can lead you into all sorts of confusion. The airfoil can be anything you like. The symmetrical or semi-symmetrical seem the best choices since the wings are necessarily large and provide adequate lift. Outline is something else again. Most FAI Team Race designs favour a high aspect ratio for low drag and the narrow chord wings in our sizes and speeds are supposed to fall into a performance area which gives low drag. Low aspect ratio wings, again in our size and speed range will edge into that area where drag goes up rapidly. Then along come Stockton and Jehlik with their *Jefe* and it goes fast enough to win it all, and with great regularity! I gave up trying to fathom all this and turn to other considerations as aids in making a choice. Wing catches are hard enough without bucking the extra hazard of a swept back leading edge, anyway parallel leading and trailing edges are the easiest to build. Epoxy a $\frac{1}{8}$ in. dia. hardwood dowel to the front edge of your wing blank and you add an extra spar and provide a tougher leading edge to resist damage from pit-stop catches. It also acts as an aid in shaping the airfoil. The dowel idea can also be used with slightly swept or curved leading edges but requires a little extra work. A higher aspect ratio wing will resist torquing-in on take-off better than a low aspect one, as well as providing a larger target for the pit-stop catch. A low aspect ratio would allow a thinner airfoil and could be shaped from $\frac{3}{8}$ in. wood. The high aspect designs would require a thicker section, say $\frac{1}{2}$ in., to avoid speed-robbing wing flexing.

Wing location is another influencing factor. A strong rigid engine mount allows the engine to deliver more of its power. The cheek cowl, if it stretches back into the wing, provides the opportunity of using the 'deep beam' effect to stiffen the whole nose section, so now the engine is rigidly supported and can deliver all of its power.

Landing gear location is another point to consider in our selection of a design. Most designs have the undercarriage mounted in the fuselage to relieve us of the problems of supporting a wing mounted gear. The rules require that the landing gear exit the model in the scale location, but it can then be bent to a position which might better suit our needs. Long wire landing gear struts will add considerably to the drag so it would be wiser to choose a design on which they can be kept short – another difference here being evident between our rules and the A.M.A. is that we permit a monowheel u/c. *Buster* and *Bonzo* have their gear placed well forward like a two-wheeled Rat Racer. *Cosmic Wind II* has an aft positioned gear as on a Stunt ship. Both types work well but some of the intermediate position designs might cause trouble.

To be continued next month



JOHNSON SPECIAL No. 51

CLUB NEWS

Stan Broughton, a modeller from wayback recently returned to the hobby, explains this semi-scale Luton Minor to Roger England at their club's display at the South Manchester Models Group Exhibition.

TO MOST PEOPLE, who are town dwellers, the pestilences that the farming community suffer are just something to read about in the newspapers, but they are often forcibly brought home to us model flyers who have a particular interest in the open pastures.

Our first report underlines this fact, as it comes from the **Syke M.A.C.** (Nr. Rochdale, Lancs.) who depend upon the local moorland for flying space. A farm in the area is affected by fowl pest, and because of the risk of contagion, flying has been temporarily suspended. This means the postponement of the Annual F/F Trophy event which was to be held in November. In point of fact this was just one event in a series, wherein the person with the best 50 flight aggregate is deemed the winner. Good idea this as it does give reward for enthusiasm as well as expertise. And something on the winter agenda, a bit out of the usual, is the building of two models as prizes for a March contest. Very commendable also is the sending of a three man delegation to the Area A.G.M., and looking forward, a future project is the raising of a fund for a proper club room. All this under the chairmanship of Keith Lord, who is only 14 years of age, and who sent us this well set-out, correctly spelt, report. To keep the club dynamic more members are required. Must be between 10 and 16 though, so get back you old fogies. Master Lord's address is 1 Dewhurst Road, Syke, Lancs. May I suggest, though, that he ropes in a few elder statesmen to give a bit of mature authority to the club when needed.

Looking back over the year with something of satisfaction is the **Heswall M.A.C.** (No stranger to these columns). Most branches of flying have found the 1970 season to be a rewarding one. There has been a pleasing resurgence of interest in free flight, particularly rubber, whilst both Radio and C/L have remained in reasonable good health. However, the display side of C/L is said to have been too active, meaning probably that the demos have put too much of a strain on club resources. Suggestion for an A.G.M., appetiser is a rubber powered helicopter event. This should tax the ingenuity of the keenest modeller, especially if it is an indoor event. It would seem that the free flight revival is still in its early stages, for, at an F/F comp. held at the tail end of the season, the models flown were mainly of the popular kit variety, but no doubt we shall see some Wakefields and A/2's blossoming forth next season. Personally I would nominate the Coup D'Hiver type model as a second stage project; very tame to fly and almost indestructible.

A club feeling around for a sense of style is the **Bristol Phoenix M.A.C.** At present Radio dominates the air, but interest is also strong in C/L and F/F. What sort of club is needed to weld the various branches into some sort of unity is the particular problem which concerns the club secretary, Mr. J. N. Horrill. At one time there was talk of disbanding the club, but members decided unanimously to continue. Certainly there doesn't seem to be any lack of facilities in the club; there is mention of access to Whitchurch Airport and the possibility of creating a slope soaring section.

The **Speke M.A.C.**, is one of many clubs which seem to have benefited membership-wise from publicity given in these columns. Mr. P. Burgess writes to tell us that there has been a considerable increase in membership following publication of the last report. Mr. Burgess goes on to tell us that the club enjoys many favourable amenities through its association with the Speke Neighbourhood Centre. There is, for example, the use of a metal working shop equipped with a lathe and pillar drill, and also a small 'indoor' hall. On top of this the club have produced its own, very lively news-sheet. Frontispiece is the cartoon figure of a hapless model flyer sucking an enormous and particularly gory flicking finger. Inside, for your delectation, is the continuing saga of Eli Vator and his girl friend, Belle Crank. Seems the club has quite a few flying sites at its disposal; seven for Control Line and two for Radio.

Unlucky for some, but certainly not for the **Flying Druids,** is the appearance of their number 13 news-sheet. Even so, the newsletter editor is keeping his fingers crossed. Winter activities include a series of lectures on R/C model design and construction which is being given by Mr. John Singleton. And a cautionary word offered on fast revving props. The r.p.m. of modern engines is such that the tip speed of a nine inch prop at 10,000 r.p.m., is 276 m.p.h. Advice here is to keep well clear, and never lean over the model so that your eyes are in line with that whirring demon of invisibility.

We sassenachs seldom get much news from across the border, so very welcome is the letter we have received from Mr. T. Laurie, the F/F comp. sec. of the **Clyde Valley Flyers.** A keen but small group of club flyers recently won the Caley Shield for Team R/C, F/F and C/L. They have also claimed a few F/F trophies, with junior D. Dation making his presence felt on the contest field. There is a quite active R/C group, albeit still a bit rough round the edges, but this could be remedied by a bit of contest experience, after which, it is hoped, they will be topping the lists. C/L is sporadic at present, but coming more into prominence.

A report from Tony Ridkin, P.R.O., of the **Bath M.A.C.** gives news of club successes at the November Area event at R.A.F. Hullavington. Jim Lister and Stewart Lodge won Rat, averaging 5.55 in the heats and 10:30 in the final to beat the South Bristol and Glevum outfits. Jim's model had a 5 year old G20/15D mill up front, using a 7 x 8 Tornado cut down to 6½ in. The model did 90 m.p.h. over 66 laps on a 35 c.c. tank. Odd manoeuvre which eliminated Tim Cobbald from Combat was his opponents model going between his lines. Norman Keat and Tony Rudkin decided it was too windy for speed flying, and instead won an impromptu vintage event with an 'Ion' kit model.

The **Three Kings Aeromodellers,** the resident C/L performers on Mitcham Common have sent along, together with their monthly *Bulletin*, a copy of the South Mitcham Residents' Association's Newsletter. This includes an article by a Mr. N. J. Chapman, in which he endeavours to illuminate the mind of John Citizen with the meaning behind the strange rituals he sees upon his local common; explaining that waving a fist at a dummy bird is only one means by which the sect gives expression to its beliefs. There are such things as Free Flight and Radio, which, like the Great

Bustard, require special, large enclosures; perhaps thereby suggesting that he, John Citizen, should be thankful that Mitcham Common is too small for anything but control line. But small or large the Three Kings maintain a healthy presence on this urban flying site, although it would not do for them to fly after dark as they appeared to do at the London Area Gala. The grope and gyrate session came in the Goodyear Final. Pyrotechnic effects were provided by the spark showering tail skids. And this very symbolic of the hotting up of these Racers generally. The times put up, it is suggested, is what is now to be aimed for by the aspiring Goodyear flyer: 8 km, that is 80 laps on a 52 ft. 3in. line, in 3 min. 56sec., and 16 km (160 laps) in 8 min. 18 sec.

The amount of preparation that goes into a modern free flight design is such that the degree of tolerance allowed for trimming is very limited. Indeed, in glider design the model should virtually fly straight off the drawing board, and this was demonstrably the case when Ian Wyllie of the **Belfast M.F.C.**, flew his new *Synthesizer* A/2 at Bishopscourt. All it needed was some turn correction. The model is featured in the November issue of *Nitro*, the newsletter of the Belfast Club. The name *Synthesizer* was chosen because of the number of ideas brought together in the design. Although the number of enthusiasts are none too numerous in this now highly publicised corner of the world a good standard is always maintained, and there is even talk of some of the lads getting to the World Champs in Sweden later this year.

The bumper issue of *The Circuit*, which I have before me is alas, the last regular issue to be published. In future it will only appear at Christmas in a special edition. Anyway, a really grand finale, all 37 pages of it, full of plans, articles and cartoons. But even if the newsletter is folding up the club goes on as strongly as ever. We are told that disaster threatened in the early part of last year when there was a shattering exodus of members, including the whole committee. Happily the nerve of the survivors held, and with new members forthcoming throughout the season the club finished the year in good fighting fettle. If there has been a slackening off of activity at all it is because of members forsaking the home ground to do battle in outside contests. Mainly it has been the Combat boys who have featured prominently in the contest circles, gaining many honours, including a third place at the Nationals.

A report to hand, rather belatedly, is from the **York M.A.S.** The club, which is well-known for its free flight activities, is now rather swamped by Radio; this activity being the preoccupation of some 50 per cent of the membership. Not surprising, since Radio has now become synonymous with sport flying. Free flight, though popular, has been somewhat inhibited by the lack of a regular flying site, but even so the free-flighters have been keeping the best traditions of the club alive with successes in many of the major rallies. Peter Whitehead, for example, placing third in Glider both at the Tynemouth and Woodford Rallies. Star performer, Dave White, has had too many domestic commitments for a very active contest season, but did at least get a third in the A/1 Glider at the N.A. Vintage meeting. Better things expected now that the club has acquired a permanent flying field. For the juniors there is a competition based upon the building and flying qualities of any class of model. A handsome trophy awaits the lucky winner. Not much to report on the C/L front, handles being grasped by only a few junior members.

Must give you this bit of dramatic verse from Ron M. Magill, which appears in *News of the North*. The North being the uppermost island in the New Zealand group:

Screaming, screaming, screaming,
Straining to be free,
Cogs and crankshaft turning,
Given liberty.
Ten seconds of pounding power,
Then the sweeter sound of silence,
Minute after minute,
Up there in the blue,
Till the trio comes together,
The model, the max and you.

I don't get the 'cog' bit however. Perhaps I should cog-itate further. The issue is much taken up with the description and availability of such delicacies as Tatone timers and fibreglass fuselages. Personally I would never put too much expense into a free flight job as I suffer from model-myopic vision. Just show me two blades of long grass and I'll demonstrate the disappearing model trick.

From the **North Lincs. M.A.C.**, Hon. Secretary, well-known scale exponent, Eric Fearnly, comes news of a truce between the warring factions within the hobby. Tigers lay down with the lambs when North Lincs., a limited membership, Radio only group, invited the **Grimsby and D.M.A.C.**, free flight and control line troglydites, to help fill up the model stand at the Hobbies for All exhibition ,held at Cleethorpes. Show a huge success, but the heat produced by the thronging mass of visitors gave point to the wine makers stand being close by. The professional style model stand was the gratuitous work of Ted Scoles, who put into the job the sort of flair that goes into his excellent radio models.

What better excuse could a newsletter editor give for a long summer break than that he was busy building model aeroplanes. Lucky him! Still, its nice to see *The Thermal* rising up again to give us news of the top contest club, **St. Albans M.A.C.** The editorial discusses some of the less salubrious aspects of free flight contesting: gamesmanship, rule bending and downright cheating. The inferance is that some top flyers are out for success at any price, and are up to all the tricks and subterfuge to achieve this end. Since there is little glory and even less booty attached to a contest success, why is it so all important to win, particularly as the main satisfaction in winning is proving something to yourself? The club is well pleased with Bob Bailey's success at the second Free Flight Trials, where he pulled up from an also ran position to gain a place in the British team. Bob Bailey also helped to notch up some useful points in the Keil Power Trophy. A win in this event and a second place in the Farrow Shield brought the club up to second place in the Plugge Cup. Leading club contest flyer is George Fuller with 301 points. Bob Bailey has 247 and G. Hannah 204. However, there are still a few events to go. The club has a lively agenda to beguile the winter days. Can't imagine what a *Fools Flying Night* is, but at least a Towing competition in March should provide a warm up for the coming season.

A newspaper cutting which appears in the November/December issue of the **North Western Area's** *The Message*, gives the story of a Tiger Moth radio model found floating in the English Channel by a German ship. The model went out of control over the Dee marshes, some 400 miles away. The model, which was fairly intact, apart from the dummy pilot, who is presumed to have bailed out, got back to its owner, Mr. Brian Price, because someone had read about the missing plane in a model magazine. A very up to date chuck glider design appears in the newsletter. The fuselage is basically a slim glassfibre tube with an upper fairing of cedar added. Looks quite promising. Free flight thoughts by Brian Hooley tend to debunk the use of fancy aerofoil sections. He just files a metal template to what he thinks is a good shape. I should imagine his good shape is rather slimmer than those in current use thirty years ago. If there were no theorists around we should still be flying lumpy wings. I am also surprised at his claim that the performance of power models have not improved since 1948. I remember when the Americans brought those new style K & B Torpedo engines to Cranfield. It set a new non-spiral style of climb which left the old corkscrewing models gasping for air. And for startling news there is the 150 m.ph. Rat Racer. Just imagine holding on to that hot potato as it slices past the other models in the circuit.

Colourful jargon is not the strong suit of us British, so when you hear of such stirring events the *Boeing Hawks Power Bash* and the *1970 Misery Meet* you will guess that we have jumped a few thousand miles westward to the land of **Balsa Bashers** and **Cement Squeezers.** Report of the aforementioned events appears in *W.M.C. Patter*, the newsletter of the **Willamette Modelers Club of Oregon, U.S.A.** Five stalwarts of the club arrived at the motel in the evening where Jack Schafer readies his modified Starduster. He was finished around 1 a.m. after much hooraying and stuff, then, up early, in the a.m., we galumphed off to Harts Lane for the Bash . . . And here some geographical cross cutting to make this world a smaller place: the published plan, *Adagio*, by P. J. Allnutt of Toronto, was taken from our own *Free Flight News!*

Described in *Windsock*, the All West Coast Newsletter from **Aeromodellers Western Australia Inc.**, is the flight of the first Australian C/L model way back in 1946. A 6 ft. F/F Scale *Rearwin Speedster* was chosen as the guinea pig following ecstatic reports from the U.S., of the wonder of U-control. The model had a 5 c.c. petrol motor up front which might have given enough line tension had not someone had the bright idea of giving the model left rudder in order to make it fly in a circle. As it was the model was more free flight than controlled during that memorable pioneering flight. But it was the first.

Question raised in *Torque*, the magazine of the **Christchurch M.A.C.**, of New Zealand, is whether inset spars have any merit over the usual edge wise type. Verdict: not so strong with a dubious aerodynamic advantage. The plan published, incidentally, that of Orschatz's World Champ Wakefield, shows both methods combined in a full depth girder spar along the whole wing. Looking again at the plan of this model it would seem that a turbulator effect is achieved by a small low set leading edge which just asks for tissue sag betwixt the ribs. Refreshing to see that free flight still retains its popularity in the antipodes, but whether this is due to the high cost of radio gear is another matter.

Don't forget to keep up to your winter building programme.

The Clubman.

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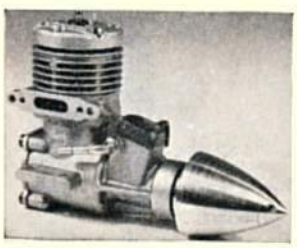

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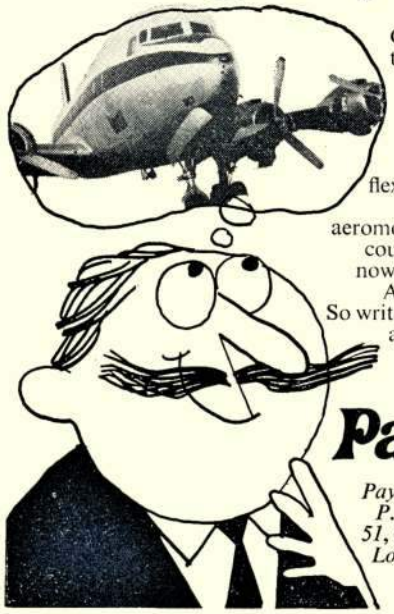

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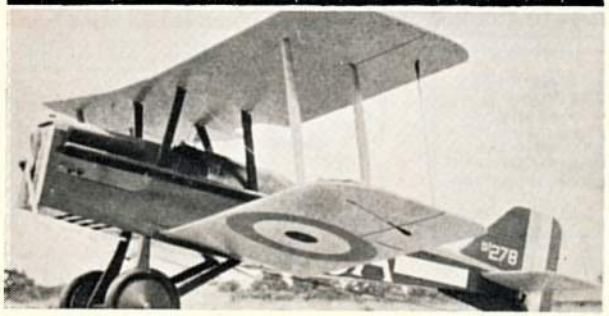

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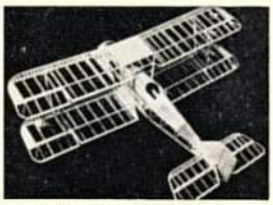

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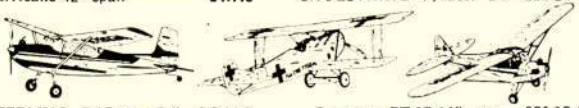

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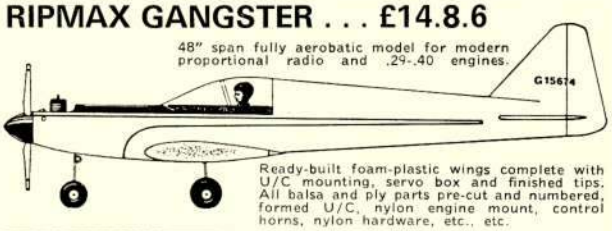

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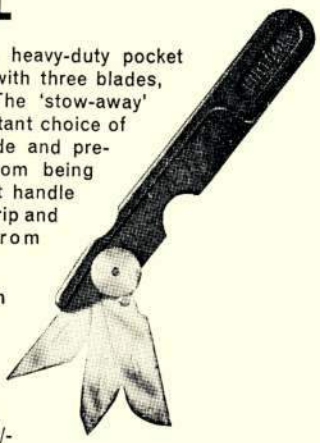

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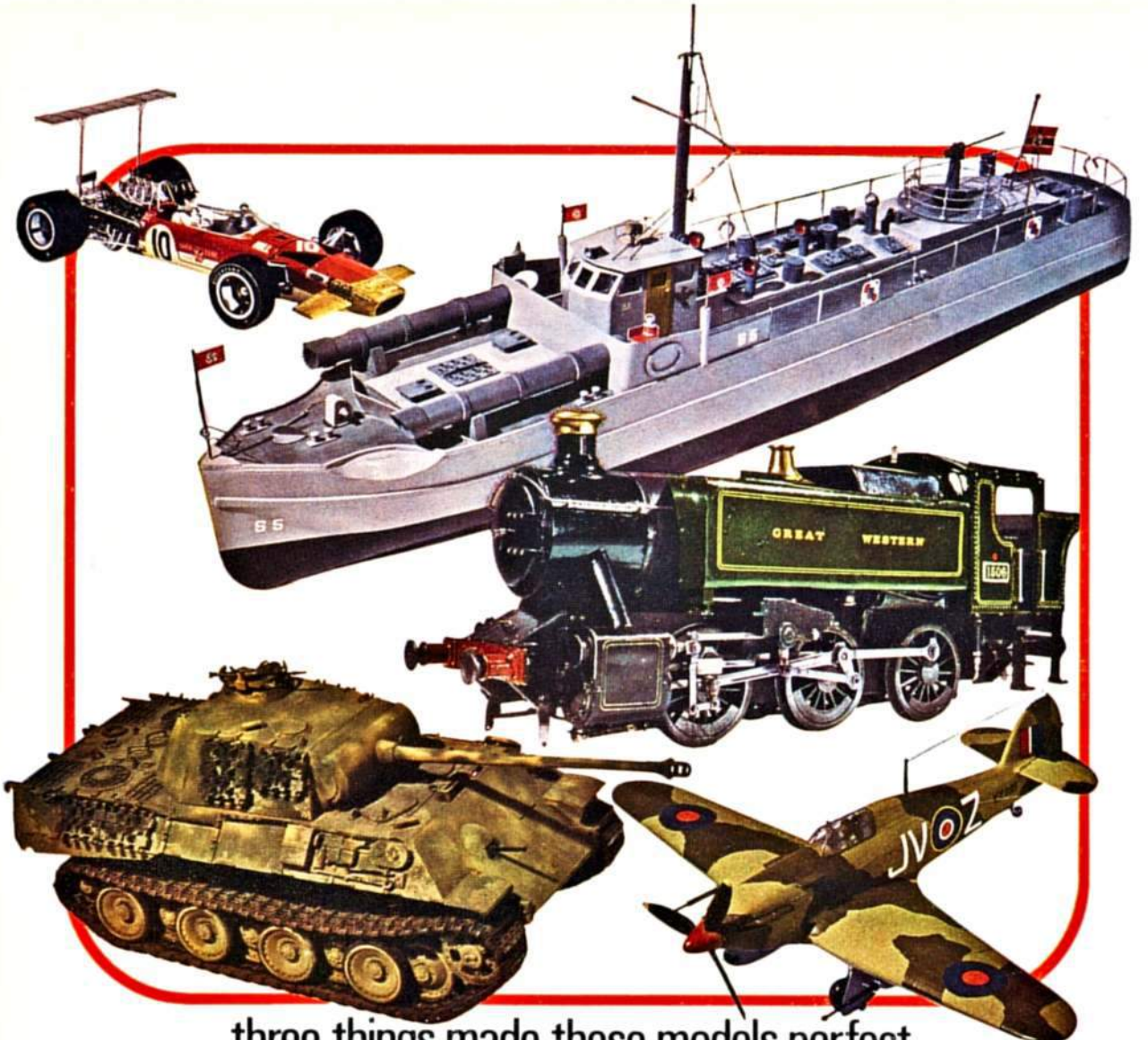

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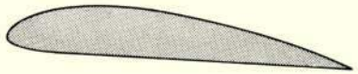
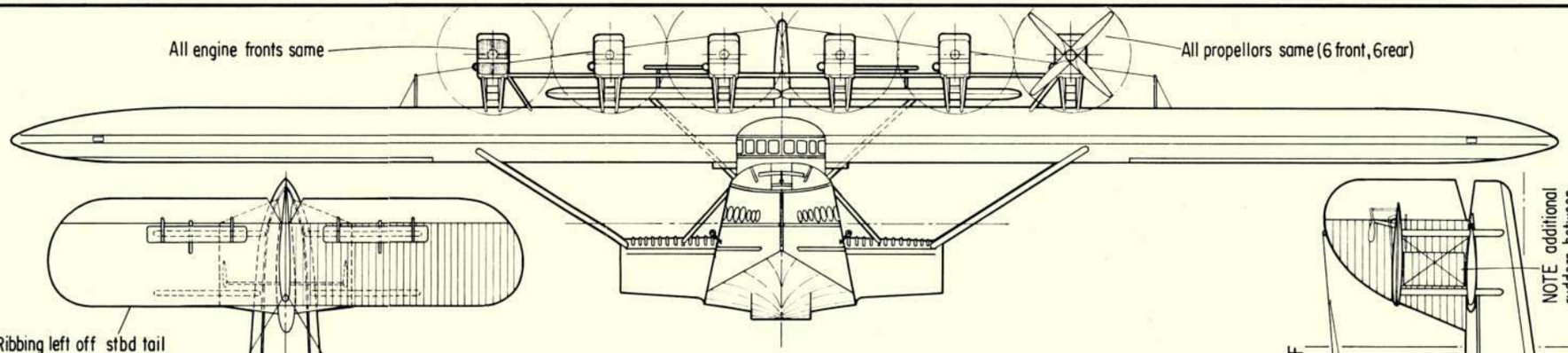
Typical wing section



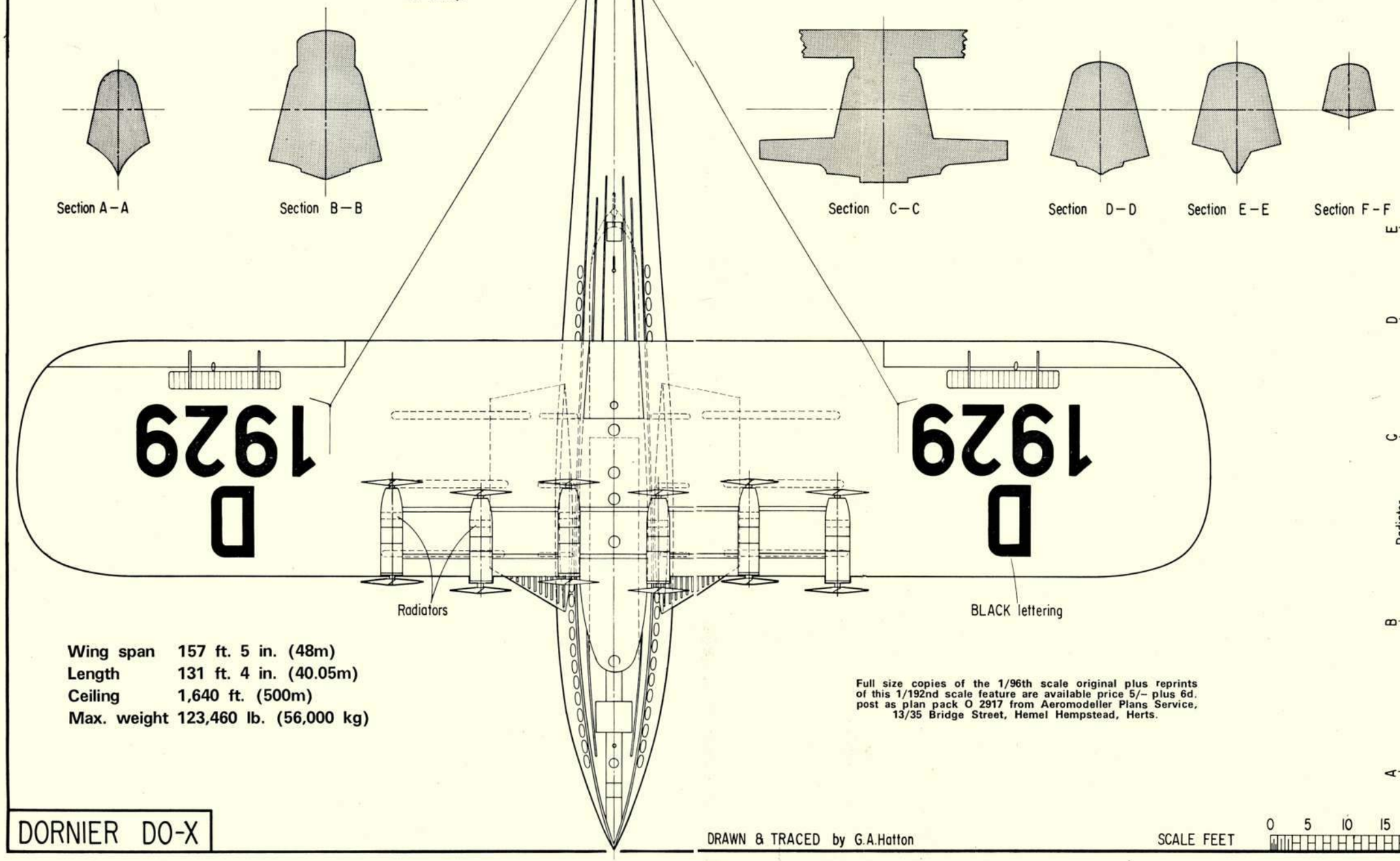
Fuselage Datum

All engine fronts same

All propellors same (6 front, 6 rear)



Ribbing left off stbd tail for clarity.



Section A–A

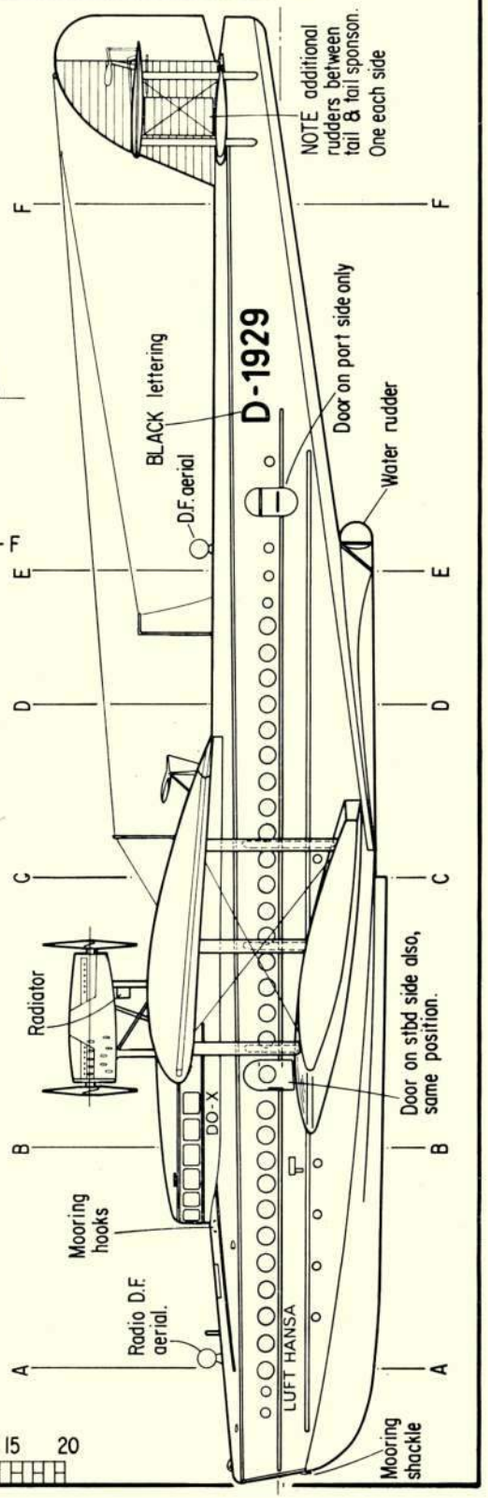
Section B–B

Section C–C

Section D–D

Section E–E

Section F–F



Wing span 157 ft. 5 in. (48m)
Length 131 ft. 4 in. (40.05m)
Ceiling 1,640 ft. (500m)
Max. weight 123,460 lb. (56,000 kg)

Full size copies of the 1/96th scale original plus reprints of this 1/192nd scale feature are available price 5/– plus 6d. post as plan pack O 2917 from Aeromodeller Plans Service, 13/35 Bridge Street, Hemel Hempstead, Herts.

DRAWN & TRACED by G.A.Hatton

SCALE FEET 0 5 10 15 20