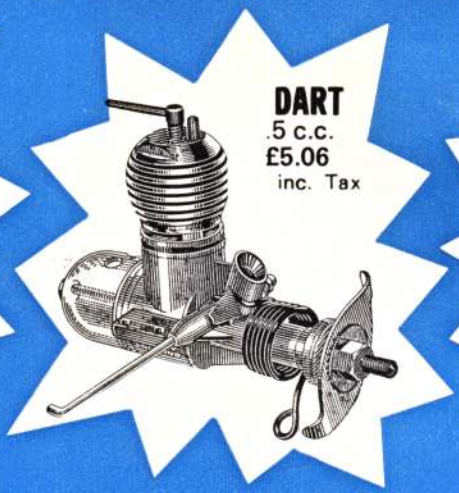
Aero Modeller

JUNE 1971
15p
(USA & Canada 75c.)

INCORPORATING
MODEL AIRCRAFT

AN MAP HOBBY MAGAZINE

SABRE
1.5 c.c.
£5.06
inc. Tax



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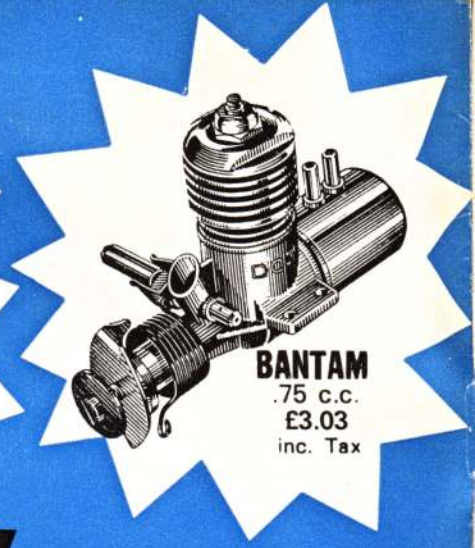

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QUICKSTART

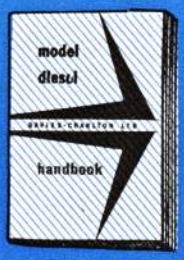
THE GREATEST RANGE OF SPORTS FLYERS' ENGINES

CALL IN AT YOUR MODEL SHOP TODAY

in case of difficulty write direct to

DAVIES-CHARLTON LTD.
HILLS MEADOW, DOUGLAS, ISLE OF MAN

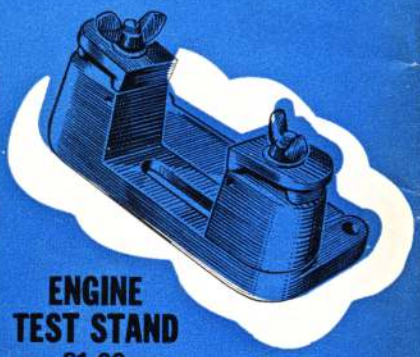
MODEL DIESEL HANDBOOK



Free with every Quickstart diesel this invaluable handbook covers the handling, care and maintenance of model diesels. Prepared by experts, it is well illustrated and an invaluable aid to trouble-free operation.
Send 1/3d. (P.O. or stamps) for your copy – today !

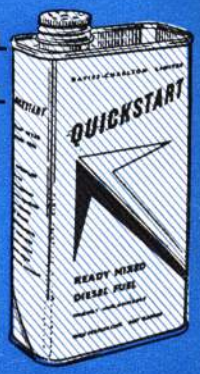
QUICKSTART ACCESSORIES

- CONTROL LINE HANDLE
- SILENCERS
- NYLON PROPELLERS
- FULL RANGE OF SPARES
- QUICKLIP CONNECTOR
- QUICKSTART GLOWPLUGS
- E.G. 98 E. G. 99
- E.G. 200



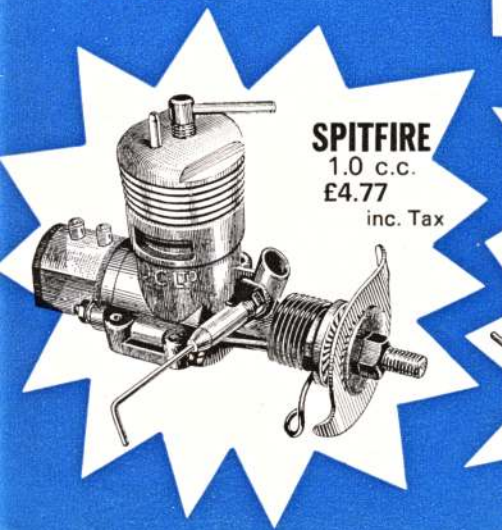
ENGINE TEST STAND
£1.00
inc. Tax

DIESEL FUEL and GLOW FUEL
½ pint 21p



Marine Engines

DART, MERLIN, SPITFIRE, SABRE. ALSO AVAILABLE AS A MARINE ENGINE COMPLETE WITH FLY-WHEEL AND WATER COOLED HEAD



SPITFIRE
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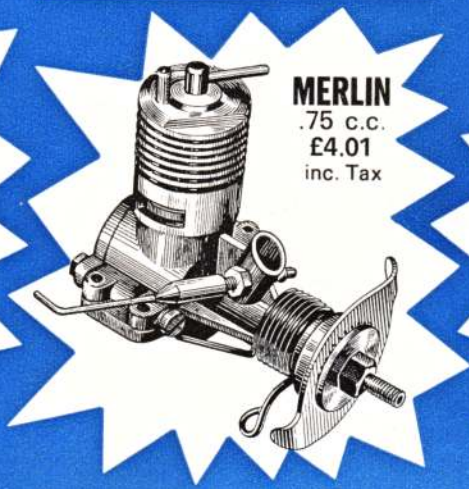

MERLIN
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SUPER MERLIN
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inc. Tax

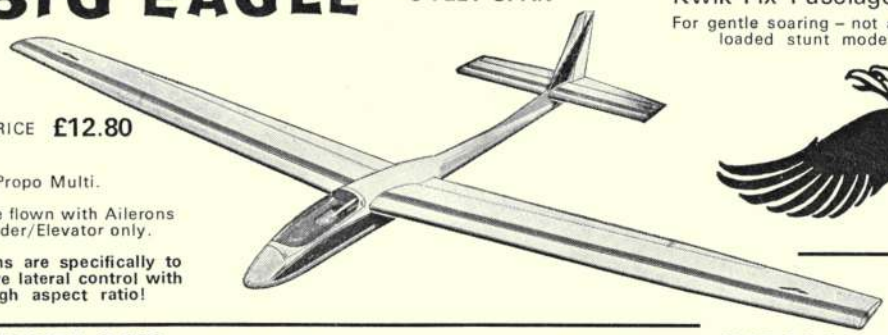
"VERON" for VALUE

EXPERTS' CHOICE – FOR RADIO-SINGLE & MULTI & BEGINNERS' SPORT

"BIG EAGLE" 8 FEET SPAN

Multi-Radio Hillside Soarer
Kwik-Fix Fuselage Structure

For gentle soaring – not a highly loaded stunt model !



KIT PRICE **£12.80**

For 3 Propo Multi.

Can be flown with Ailerons or Rudder/Elevator only.

Ailerons are specifically to improve lateral control with the high aspect ratio!

CHEROKEE C.180 FOR RADIO

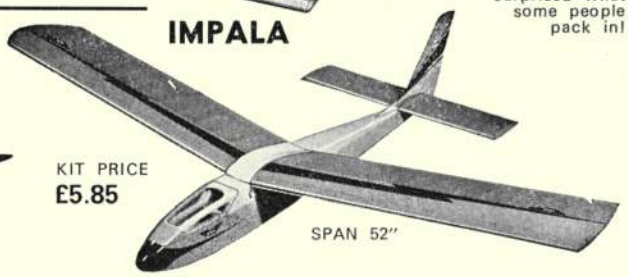
Many Modellists will have seen this model flying at Rallies and appreciate its versatility! Steady enough for training – hot enough for the 'book'. For up to '40' motors.

SPAN 56"

KIT PRICE **£17.95**

IMPALA

Designed primarily for Single Channel but you would be surprised what some people pack in!



KIT PRICE
£5.85

SPAN 52"

THIS KIT HAS ALREADY BEEN ACCLAIMED AS 'THE YEAR'S WINNER' – FOR 4 CHANNEL SCALE!

The HAWKER TOMTIT

SCALE R.A.F. TRAINER
Circa: 1928 to 1939

A truly magnificent Kit ● Pre-cut and die-cut Balsa and Ply Rib and Former parts ● Hardwood Longerons with Ply Web, Balsa Sheet and Strip Assembly ● Scale Plastic Engine Parts ● Vintage Wheels ● Spinner ● Vinyl Decals

KIT PRICE
£22.00

52" span

Only 52" Span but ample area (wide chord wings) to carry Full House Miniaturised 'Propo' – still leaves enough room in the car for the wife and kids! Why did we choose the 'Tomtit'? – well, nobody's ever done it before! Something pleasantly different for a change!

WINGS ARE FULLY CANTILEVER

For motors of .23 up to .40 cu. in. (3.7 to 5.6 c.c.). The first in a long line of immortal Hawker Fighters, the only one with identical planform top and bottom wings – just build 2 wings – and cut the ailerons in the lower wings.

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

DISTRIBUTORS IN CANADA: **ACADEMY PRODUCTS LTD., 51 MILLWICK DRIVE, WESTON, ONTARIO.**
DISTRIBUTORS IN AUSTRALIA: **PIZZEY LTD., 1 CLARK STR., RICHMOND, MELBOURNE.**

Aero Modeller

INCORPORATING
MODEL AIRCRAFT

June 1971 Volume XXXVI No. 425

CONTENTS

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COMMENT

Weather forecasters predict hot sunny spells for the Spring Bank Holiday and this augers well for the British National Model Flying Championships at R.A.F. Hullavington. The traditional event, held once more at this popular west country venue thanks to the generous co-operation of the Station Commander, will attract thousands of aeromodellers from all parts of the Nation. Camping facilities, plus all their attendant amenities have been organised by the S.M.A.E. and will contribute largely to the holiday atmosphere which always prevails. But spare a thought please for those organisers. Please be tidy. Take away those empty cans, or search out a litter bin, and pack that stop watch in case you hear a call for volunteer timekeepers. There is as much satisfaction to be gained by contribution, as there is to participate in any contest. How pleasant it would be if every competitor could return home having helped to run as well as flown in the 'Big' event of the year. Oh – and just to ensure there's no misunderstanding, the radio control events are to take place on *both* days, May 30th/31st. Last month's published programme suggested they were only on the Monday.

on the cover

Janice Ray and Bill Manuel's 'Chobham Hawk' a feature plan in this issue. The nine foot span glider is for rudder-only radio control slope or thermal soaring.

next month

Rollason's Beta racers in super detailed, measured from life, plans by Pat Lloyd. The Heaton/Ross F.A.I. Team racer 'Timeta', Latest Engine News, Australian National Championships. Carlo Varetto's Italian A/2 World Champs team glider 'Gran Zot' plus all the regular features on sale June 18th.

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THE LATEST FROM THE MAINSTREAM TEAM

The most exciting development in radio control equipment as modern as tomorrow. No other equipment offers such exciting features. All units are totally compatible with any other receiver or servos in the Gem range. Simple conversion uprates the Digi 2 or Digi 3 to a Digi 4. All units are designed to work on plug in dry cell batteries or deacs. Servos are of Simprop type and will interchange with the Alpha range. Equipment designed for the modeller to go digital right from the start at a price to suit his pocket, and then add to and improve his equipment as he becomes more experienced.

GEM DIGI 1 PROPORTIONAL on 6 Frequencies.

Another first from Mainstream, a new breakthrough in proportional control at low cost, the Digi 1 gives full proportional rudder control on one servo and 4 motor control positions on the second servo. The Digi 1 Tx operates on a 9V battery the Rx on 4 pencell batteries. The servos are based on the well proven Simprop mechanics. The Digi 1 supersedes the old single channel het type outfit.

Mainstream New Servicing Scheme.

★ All Mainstream Digital Units have a **6 months warranty.**

★ **RSU Scheme for servos and receivers** giving immediate replacement for crash damage or major repairs at 45% off normal price.

★ **Free £1 Vouchers** to be used against RSU units or servicing costs. Example: If you buy a Digi **7**–**£5** a Digi **5**–**£4**, Digi **3**–**£2**, and Digi **2**–**£1**.

PRICES		
TX & RX COMBO		
Simprop Alpha Digi **7**	Tx & Rx	£121·88
Digi **5**	,, ,,	£73·33
Digi **3**	,, ,,	£54·93
2 + 1	,, ,,	£53·55
Nautic	,, ,,	£60·55
Gem Digi **4**	,, ,,	£40·00
Digi **3**	,, ,,	£38·00
Digi **2**	,, ,,	£36·00
Digi **1**	,, ,,	£17·00
Mainstream Supergen	,, ,,	£12·60
SERVOS		
Simprop i.c. mini **S500**	Servo	£15·40
Simprop standard	,,	£12·60
Nautic Winch & Amplifier	,	£19·60
Gem mini servo	,,	£11·00
Gem **1** Amp Servo **G100**	,,	£9·50
Gem **1** Motor Servo **G101**		£6·50
S.C. Autron **3PN**		£3·60
S.C. Autron **2PN**		£2·10
S.C. Autron **3P**		£3·30
S.C. Autron **3P** Switcher		£3·75
Autonaut		£1·95
ACCESSORIES		
Deac **8**/**225DKZ** Gem Tx		£5·00
Deac **8**/**500DKZ** Gem Tx		£6·00
Deac **4**/**500DKZ** Rx		£4·00
4 Cell Battery Box		£0·75
3 Cell Battery Box		£0·75
10 Amp Digital Switcher		£31·00
Neck Strap		£1·52

SIMPROP ALPHA RANGE

The ultimate in radio control equipment, Simprop Alpha Range. Four years continuous development and production to incorporate the best in R.C. Equipment built to the highest standards and the most stringent testing procedure. For the modeller who wants the best from his equipment, Simprop is the first choice.

MAINSTREAM SUPERGEN

MAINSTREAM R/C ACCESSORIES

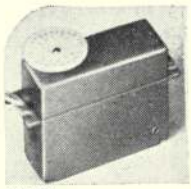
S500 Alpha iC mini servo the finest servo mechanics available today.
Specially designed to give servo performance never before achieved.

G500 Mini Servo Gem Well proven Simprop type mechanics with built in electronics, interchangeable with the Alpha range.

S504 4·8V Deac with Plug & Harness
G504 For Gem or Alpha Rx.

Single Channel: Servos Autron **3PN** gives left or right steering, automatic return to neutral plus third position motor switching.
2PN Autron gives left or right rudder and self neutralising.
3P–three positions for motor control.
3P–Switcher—works off the **3PN** with built in switcher disc to give forward, stop or reverse on an electric motor.
Autonaut–built in rudder and tiller arm. Fits directly into the boat giving left/right and self neutralising.

The only choice for S.C. enthusiasts, the Supergen has frequency channel lock for maximum protection, compact design Tx with positive micro button control.
Rugged relay Rx pre-wired with plugs and sockets and on/off switch which will accept any of the Autron range of servos.



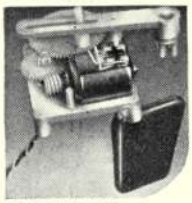
G500

3PN

S500

3P SWITCHER

S504/G504



AUTONAUT

MAINSTREAM THE PACEMAKERS/71 new servicing scheme for the modeller.

★ **All Mainstream Digital Units have a 6 months warranty.**

★ **RSU Scheme for servos and receivers giving immediate replacement for crash damage or major repairs at 45% off normal price.**

The units will be labelled with this description RSU and will be available from any of the Mainstream Main Dealers, the modeller, after serious crash damage or major repairs will be able to take his damaged unit and replace it for an R.S.U. unit immediately. Purchase of an R.S.U. unit can only be effected by a replacement. All R.S.U. units will be manufactured or serviced by Mainstream amd will be up to A.1 standard. The scheme is devised to give the modeller instant replacement in his own local area with the minimum interruption to his flying programme, and is based on the well proven R.S.U. scheme as operated by the Motor Car Industry. This, combined with the possibility of receiving up to £5 worth of free vouchers, allows the modeller freedom of any financial worry regarding any expensive crash or repair damage.

See your local Mainstream Main Dealer and try Mainstream R.C. Equipment for yourself.

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ASHTON MODEL SUPPLIES, 101 OLD STREET, LANCS.

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AVIACOLOUR MODEL SUPPLIES, 466 EASTERN AVENUE GANTS HILL, ESSEX.

BROMLEY
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HULL
REG. BEAUMONT, 150 CHANTERLANDS AVENUE, YORKS.

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19/23 UPPER STONE STREET, KENT

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MODEL CRAFT, 113 MAYFLOWER STREET

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92 BOLD STREET

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READING MODEL SUPPLIES, 5 CHATHAM STREET
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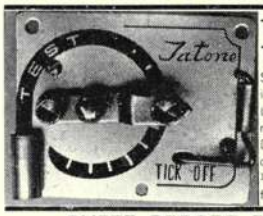
WHITLEY BAY
WHITLEY MODEL SHOP, 67 PARK VIEW
NORTHUMBERLAND

CALLING ALL CONTROL-LINE & FREE FLIGHT ENTHUSIASTS

WE have said before and we are pleased to say again that although we DO specialise in radio-control, we also stock every available item including some of the rarer hard-to-get bits and pieces for the free-flight and control-line men. This advert contains a selection of them.



TATONE TIMERS

Still the favourite commercial timer and the most reliable. D/T **£2.97**, Standard tick-off, ½A tick-off and flood-off **£2.63.**

SUPER RECORD PROPS

We still have a few of these well-made wooden props at the special price of 8 for **£1.00** in the following sizes: 6x7, 6x8, 6x9, 7x6, 7x8, and 7x9. Post and packing 8p.

SIROMETER REV-COUNTERS

A handy resonance type rev-counter for checking motor r.p.m. Ideal for the F/F man for checking r.p.m. on various props, etc. Range 800-50,000 r.p.m. Price **£1.98** in carrying case.

ON THE WAY from JAPAN

We have a shipment of genuine Jap Tissue and lightweight Jap silk on the way from Japan. Price should be about **15p** per doz. sheets tissue 18" x 20", **30p** per doz. sheets 21" x 30" heavy-weight tissue and **40p** per yd. for silk.

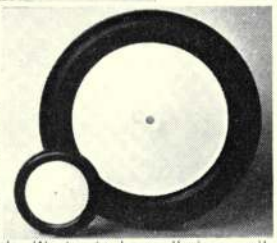
WILLIAMS WHEELS

SMOOTH CONTOUR

Semi - scale. Fine for C/L models.

2¼"	£1.04
2¾"	£1.49
3¼"	£2.05
5¼"	£4.80

W.W.1 and VINTAGE



Tough nylon centres and real circular section rubber tyres. The only wheel for the W.W.1 enthusiast. Deservedly popular for F/F and C/L models. We try to keep all sizes available from stock. 1" **35p**; 1¼" **37p**; 1½" **49p**; 1⅞" **85p**; 2½" **£1.35**; 3⅛" **£2.05**; 3¾" **£2.67**; 4⅜" **£3.35**; 5" **£4.07.**

K.O. SILENCER

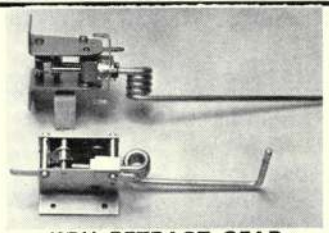
These popular silencers from Switzerland are now recognised as being one of the most efficient as well as one of the most effective in their new form with offset outlet and closed front end. Available at the attractive price of **£3.75.**

FIREBALL GLOWPLUGS

At the very economic price of only **£3.75** a dozen, these are a very good buy indeed. You can, of course, buy them for **34p** each, when they are still good value but not quite so cheap. Reliable and efficient. In three types: Hot, standard and cool. ALWAYS IN STOCK AT 308 **and** Potters Bar.

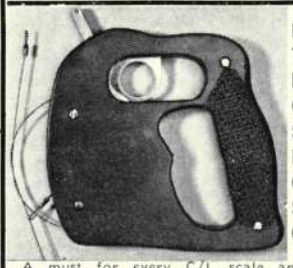
DUBRO HINGES

Having been out of stock of these top quality hinges we thought we'd better let you know that they are again available. Pkts. of 6 **55p**; 15 **£1.25.**



KDH RETRACT GEAR

Unequalled at any price for positive action, reliability and sheer strength. The retract-gear that does NOT collapse under strain. In stock both standard and lightweight patterns. Tricycle gear complete for the three wheels **£23.00.**



ROBERTS THREE-LINE CONTROL SYSTEM FOR C/L SCALE & CARRIER

A must for every C/L scale and carrier enthusiast. A really substantial handle with positive operation of the second control. Handle as shown **£3.75.** Bellcrank unit upright or suspended **£1.94.**

U-REELY

Definitely the de-luxe handle of all time. Comes complete with two 100 ft. lines which reel up into the handle when not flying. Drum has friction and positive stop brakes. Complete **£6.23.** This handle will last a modelling lifetime.

DEVCON 5 MIN. EPOXY

To say that this has been the overnight sensation of the year would be an understatement. We just haven't been able to keep it in stock. But supplies are now assured and we thoroughly recommend it as the fastest and handiest epoxy adhesive there is. Two-part pack complete **44p.**

NITRO-METHANE

Another of those hard-to-find items which we normally have in stock at both shops. This is pure Nitro and NOT blended with a proportion of methanol. **£1.40** for 500 c.cs. CALLERS ONLY PLEASE.

SHOP HOURS

Holloway Road: open daily 9 a.m. to 6 p.m. except Thursday early closing at 1 p.m.
Potters Bar: open Mon., Tues., Wed. and Fri. 10 a.m. to 6.30 p.m.; Saturday 9 a.m. to 5.30 p.m.; Sunday morning 10 a.m.-11.30 a.m. Closed all day Thursday.

NIFTY ELECTRIC FUEL PUMP

New from the States, this is a neat pump ideal for fitting to your field box. This unit it self priming, fills and empties your tank (reversible), operates from 3-4 volts. Line filter and nozzle with 18" fuel line included. Price **£4.97.**

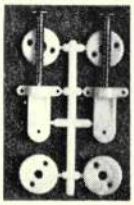
PIRELLI RUBBER

A new shipment of this unequalled rubber strip has recently arrived and we should have sufficient stocks to last the season. Shipped direct to us from Pirelli in Italy, this is in first class condition and is the only rubber for the keen contest flier. Per hanks of approx 1lb. – **£1.75.**

MERCURY ACCESSORIES

NYLON SPINNERS. In red, yellow and black. 2", 24½p; 2¼", 33p; 2½", 38p; 2¾", 45p.

WING FIXING SET



A sound set of parts for wing fixing on scale and other models where rubber bands would be unsightly. Comprises dual threaded brackets with bolts for TE and pair of sockets for ¼" dowel for LE. Complete with illustrated instructions, all screws, etc. **32p.**

TANK VENT SET

Enables you to fill your fuel tank from outside the model with no spilling of fuel in fuselage. Very neat and easy to fit. A real boon. **21p.**

PILOTS

The Mercury 2" scale sport pilot comes with goggles and adds a touch of realism to any open cockpit or cabin model of 1/6th scale. Price **26p.** We also have the 'A' and '½A' hand-painted NATO pilots at **21p** each.

ROSSI TUNED PIPES

These are an exceptionally good, very light weight pipe of real high performance. We have the following in stock at the time of writing this ad, but they are in short supply. 2.5ccs – **£3**; 5ccs – **£3.50**; 10ccs – **£4.00**; special 10ccs manifold **£3.**

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You can order your mail orders from either shop. We will send any goods advertised by us anywhere in the world. C.O.D. on home orders only over £5 in value.

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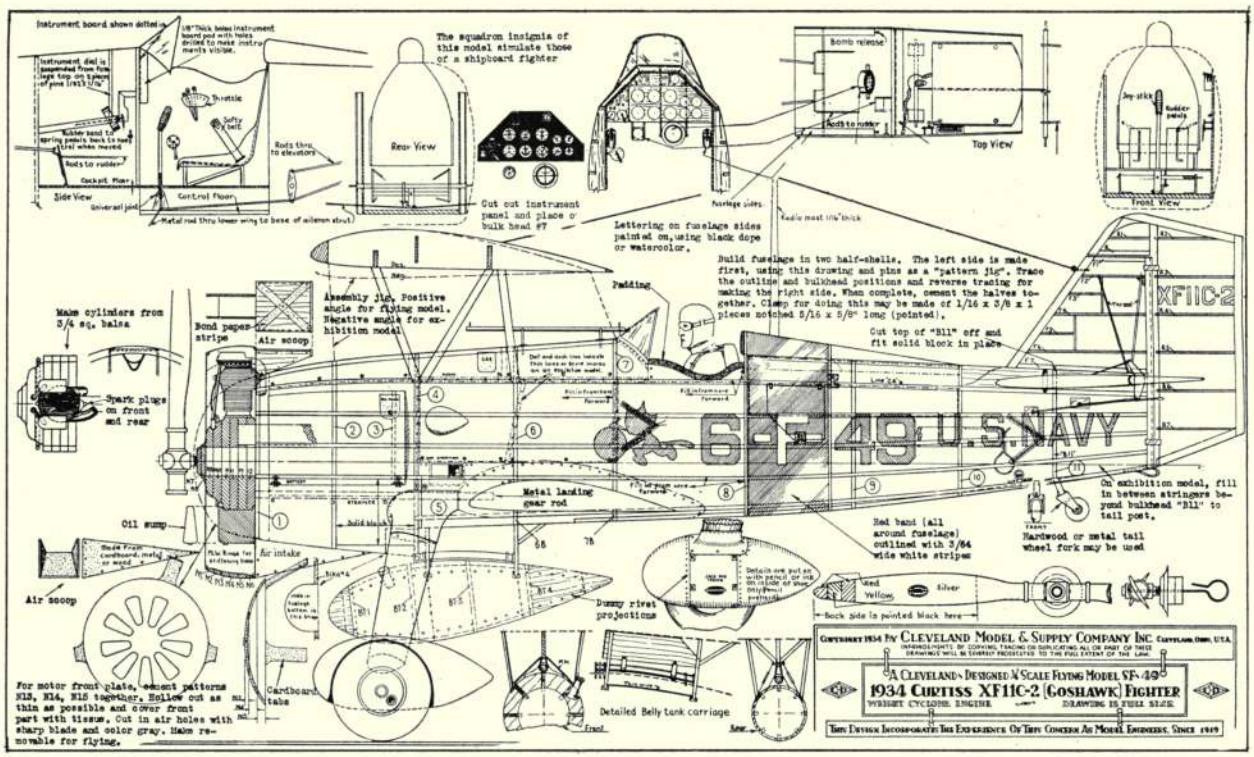


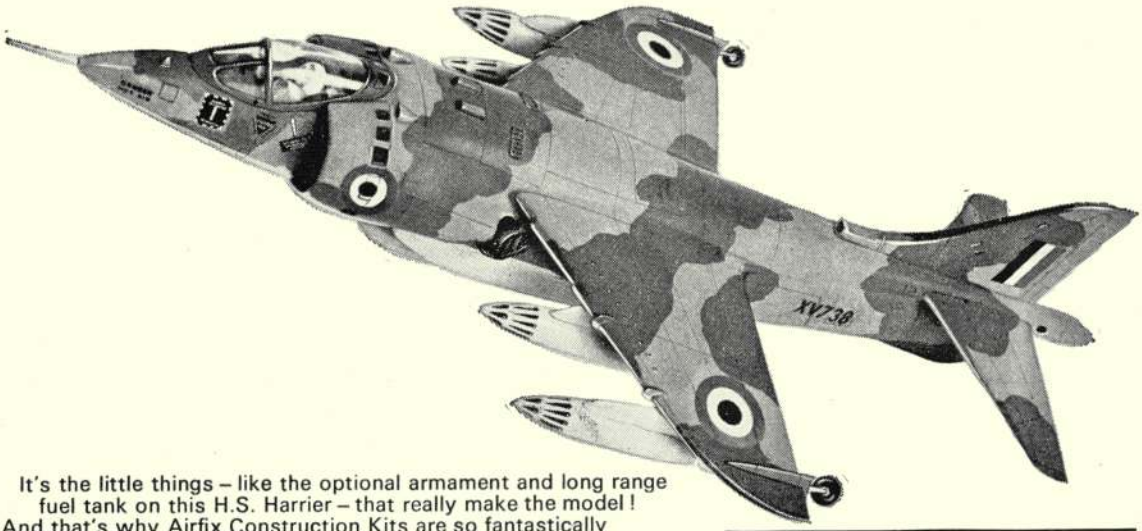
If we can talk of the romantic days of aeromodelling, it was when the Cleveland flying scale model kits were in their heyday – in the nineteen thirties. There have never been models like them – true classic miniatures of classic aircraft, so authentically designed that you had the feeling that you were building a real aeroplane. Ahead of their time – and setting a standard which is still difficult to equal today. Yet, surprisingly, the first of the line – the Great Lakes Trainer – was produced in 1929 . . . before balsa was even known as a modelling material in this country.

Of course, it was balsa that made such models possible. No other material would have been suitable for built-up stringered fuselages, wings and tail surfaces with authentic rib positions, in $\frac{3}{4}''$ and $\frac{1}{2}''$ scale. Balsa – plus superb design engineering by Ed Packard – made museum quality scale construction possible. And the choice of prototypes was equally exciting – over 200 different models before C-D kits ceased production.*

Cleveland Models had a decade start on us in the use of balsa as a standard aeromodelling material, but our attitude is very similar. For the last thirty years we have maintained that only the best is good enough for aeromodellers. Like C-D, we have made a worldwide reputation for ourselves as suppliers of true aeromodelling quality balsa. The sort of balsa that makes better models.

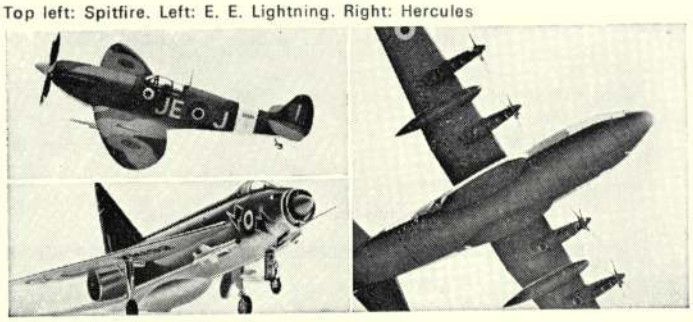
**Many original C-D plans to $\frac{3}{4}''$ MASTER scale (1/16 full size) are still available, some with printed wood, but most with patterns (no kits). For details, contact Ed Packard direct at Cleveland Model and Supply Company, 4506 Lorain Avenue, Cleveland 2, Ohio, USA.*

Get every detail right with Airfix



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. 17p. 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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Warships from World Wars I and II, as well as modern liners and historical ships.

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A RARE OPPORTUNITY TO JOIN A LEADING COMPANY IN THE MODEL TRADE

Due to rapid expansion over the last few years, we wish to create two new positions at our North London premises. Although a general interest in modelling would be useful, technical or commercial knowledge of model products is not necessary since full training will be given.

VACANCY 'A' for a young person in teens or early twenties (possibly a school leaver) with the following qualities:

(1) Exceptionally quick and meticulously accurate at simple calculations.
(2) A 'tidy' mind that takes pleasure in keeping records neat and conscientiously up to date.
(3) Quietly confident of his own abilities and be prepared to accept responsibility.
(4) Absolutely reliable with common sense.

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(1) Willing to be a 'troubleshooter' and 'Jack-of-all-trades'.
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(4) Ability to get jobs done and without fuss or unpleasantness.

If you think that you would like to fill one of these vacancies will you please write to the address below: c/o The General Manager, stating vacancy 'A' or 'B' and giving the fullest information as follows:

(a) Age and details of education including G.C.E.s, etc. obtained.
(b) All positions held with other companies and a brief description of the work involved and salary.
(c) Your reasons why you believe you have the qualities listed under (1), (2), (3) and (4) – please list your answers (1), (2), (3) and (4).
(d) Any references or other information you would like us to consider.
(e) The approximate salary you would wish to be paid.

Please list your answers (a), (b), (c), (d) and (e).

RIPMAX LTD., 80 HIGHGATE ROAD, KENTISH TOWN, LONDON, N.W.5

Radio Models

BUMPER ISSUE

June R.C.M. & E. will be an enlarged 76 page issue, incorporating an eight page R/C car supplement to cover the Easter R/C car meeting organised by *Model Cars* and *R.C.M. & E.* magazines, plus a kit review of the *Heathkit Spectre R/C car*.

Aircraft enthusiasts receive their fair share of the editorial space with special features which include plans for a 68in. span Class 2 scale *Fokker Eindekker* for 6-10 c.c. engines and rudder/elevator/throttle controls. Further aircraft features include a pictorial coverage of the *Toledo R/C show* in U.S.A., a feature on *R/C helicopters* and Part One of an introductory course on *R/C thermal soaring*.

Regular aero R/C features include *Straight & Level* with news of the final 1971 R/C team selection trials, *Sport & Single*, plus *Throttle Benders Union* for pylon racing enthusiasts.

Boat enthusiasts are not forgotten in this edition which carries our regular *Wave Lengths* column, plus Part 5 of Bob Jeffries series on *R/C Yachts*.

As if this is not enough, June issue is rounded out with Peter Chinn's *Radio Motor Commentary, Commercial Developments* and *Test Report* which this month analyses the Waltron 4 digital propo system.

JUNE ISSUE – ON SALE MAY 14th

From newsagents and model shops or direct, price 15p+3p. Model & Allied Publications Ltd., 13-35 Bridge Street, Hemel Hempstead, Herts.

Now £100,000 INSURANCE

MODELLERS' ACCIDENT PROTECTION • MAP

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We are happy to announce that our already well-known third party insurance for readers has now been increased to offer indemnity of £100,000! This magnificent insurance scheme which covers modelling activities within Great Britain, Northern Ireland, Channel Islands and the Isle of Man, has been negotiated with a leading insurance company. It is sufficiently embracing to cover all forms of model activity. It is equally applicable to free flight models, control line models, radio control models, aircraft, boats and locomotives.

All that is necessary for you to do to obtain the benefits of this magnificent cover is to complete the forms at the right of this announcement, sending the first part to us together with your remittance of 5/-, which covers you for one year, and handing the second part to your usual magazine supplier. Whether or not you already have an order in hand for the regular supply of your magazine, this form should still be handed in and your dealer will adjust his requirements according to whether you are a new customer or merely continuing your old arrangement.

This insurance is the prudent thing for every modeller to take out, but it is a sad fact until now, although the governing bodies of the hobby have offered this cover to their members, something like 90 per cent of the modellers in the U.K. have never taken up this opportunity and are operating 'without insurance protection'. By joining M.A.P. 'Modellers' Accident Protection' you come into the world's BIGGEST MODEL CLUB. For your initial subscription you obtain a lapel badge for identification and transfers to put on your model.

Complete the form and send off at once. We will send you back your membership card, lapel badge and waterslide transfers immediately.

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with the _____ issue. (*Delete as applicable) _____

Name _____

Address _____

PART II of the Form should be completed and sent to us at the address above left, together with your remittance of 5/-. **PART I** should be handed to your usual supplier, either newsagent, model shop, bookseller or wherever you normally expect to get your magazine.

PART 11 to be sent to M.A.P. Ltd.

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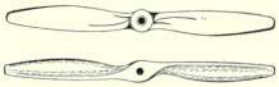
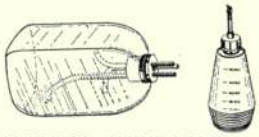
RipMax

RIPMAX-KAVAN ACCESSORIES



NYLON PROPELLERS

5 x 4	16p	7 x 4	24p	8 x 4	32p
8 x 6	32p	9 x 4	39p	9 x 6	39p
10 x 4	45p	10 x 6	45p	11 x 6	49p
11 x 6	49p	11 x 7¾	49p		
Fibreglass Prop 11 x 7¾					54p



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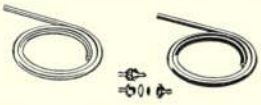
4 ounce	72p	6 ounce	76p
8 ounce	80p	10 ounce	85p

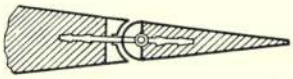
Large 14 ounce 90p

Squeeze Bottle with twist cap 49p

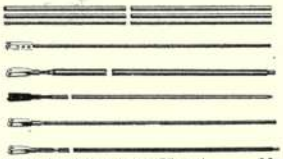
Screw-Adjusting Aileron Horns	33p
Differential Aileron Horns (2)	49p
Flat Nylon Hinges (pkt. 10)	40p
Short Nylon Horn (pair)	15p
Medium Nylon Horn (pair)	16p
Long Nylon Horn (pair)	17p
Nylon Wing Fixing Bolts (2)	30p
Rubber Wing Seatings (pair)	39p



Take-apart Fuel Filter	30p
Rubber Fuel Tubing (40")	16p
Silicone Fuel Tubing (20")	39p
Hot Glow Plug (red)	49p
Warm Glow Plug (yellow)	56p
Cold Glow Plug (blue)	65p
Super Glow Plug (green)	74p
Speed Glow Plug (black)	82p
Painted Pilot 1¾"	54p
Rubber 'Chicken Finger'	39p



¼" Control Surface Fairing (32" long, pair)	24p
5/16" ditto (32" long, pair)	33p
⅜" ditto (32" long, pair)	40p



Black Kwiklink with 5" rod	10p
Silver Kwiklink with 5" rod	16p
Silver Kwiklink with 10" rod	20p
Nylon Kwiklink with 10" rod	8p
Black Kwiklink only (pkt. 2)	16p
Silver Kwiklink only (pkt. 2)	24p
Nylon Kwiklink only (pkt. 2)	12p
L'wt. Snake & nylon K/link	24p
L'wt. Snake & silver K/link	40p
H'wt. Snake & silver K/link	49p
K/link with Large Connector (2)	33p
K/link with Small Connector (2)	33p
Small Snake Tube only (white)	8p
Small Snake Tube only (gold)	10p
Large Snake Tube only (white)	12p
Small pushrod end cap (pkt. 2)	15p
Medium pushrod end cap (pkt. 2)	16p
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1¾" dia. pr.	68p	2" dia. pr.	76p
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Long	£1.80

STEERABLE GEAR

with brake £2.25

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1¾" dia.	54p	2" dia.	62p
2¾" dia.	70p	2½" dia.	79p

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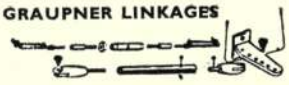
2¾" dia.	70p	2½" dia.	79p

GRAUPNER LINKAGES



Metal linkage set	37p
Moulded linkage set	27p
Extension tubes 20" x 5 mm.	17p
For above 20" x 7mm.	17p
Quick-Clip linkage (pair)	27p

STERLING

FOKKER D-7

Super De Luxe Kit **£26.85**

Span 58½" one sixth full size!

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1971 RIPMAX GANGSTER!

48" span fully aerobatic model for modern proportional radio and .29-.40 engines. Wing area 460 sq. in. Flying weight from 3 to 5½ lb.

This SUPER NEW KIT contains ready-built foam-plastic wings complete with u/c mounting, servo box and finished tips . . . all balsa and ply parts pre-cut and numbered, formed u/c, tank, hardware, etc.

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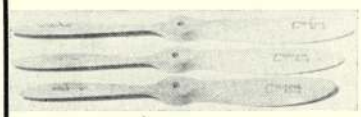

9 x 6	27p	11 x 7½	30p
9 x 7	27p	11 x 8	30p
9 x 8	27p	12 x 4	33p
10 x 5	28p	12 x 5	33p
10 x 6	28p	12 x 6	33p
10 x 7	28p	13 x 4	36p
10 x 8	28p	13 x 5	36p
11 x 4	30p	13 x 6	36p
11 x 5	30p	14 x 4	40p
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11 x 6½	30p	15 x 4	44p
11 x 7	30p	24 x 6	£2.95

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2" ... pr.	62p	2¾" ... pr.	£1.05
2¼" ... pr.	67p	3" ... pr.	£1.23
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2½" ... pr.	97p	3½" ... pr.	£1.50
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Ripmax 'KBK' Tru-Spin Airwheels

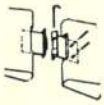
¾" ... pr.	16p	1½" ... pr.	39p
1" ... pr.	22p	1¾" ... pr.	44p
1⅛" ... pr.	28p	2" ... pr.	49p
1⅜" ... pr.	34p		

Nylon Hub Tru-Spin Airwheels

1½" ... pr.	47p	2" ... pr.	63p
1¾" ... pr.	54p	2⅜" ... pr.	79p

RAND HINGES

Precision made . . easy to fit . . .four types to suit all models.



3/16" Neutral Axis (pkt. 4)	16p
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Engine mount plate	37p
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Just insert control rod wire, swing and snap to secure! Positively the best hook-up item yet!

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Graupner 90° Nylon Crank (2)	24p
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Horn with Snap-on Link	37p
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SEE THEM ALL AT YOUR LOCAL MODEL SHOP!

G45 SPACE COMMANDER

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THE SENSATION OF THE U.S.A. AND THE CONTINENT NOW AVAILABLE IN LIMITED QUANTITIES IN GREAT BRITAIN.

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THE MOST COMPETITIVELY PRICED EQUIPMENT OF ITS' CLASS IN THE WORLD.

The G45 Space Commander is the most advanced equipment of its type in the world.

FIRST with A.B.S. moulded transmitter case.

FIRST with low component count transmitter circuit to give maximum reliability.

FIRST with sticks integral with case.

FIRST to provide this class of equipment at the right price.

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the guiding influence...

MR 300 CODAMAC
Fully automatic S/C transmitter. Does the thinking for you – electronically! "Out of sight" range with any MacGREGOR receivers. Escapements or Servos. (Quick Blip). **£13.50**

MR 200 POWERMAC
The same power-packed Tx as the CODAMAC but controls reduced to basic push button for manual coding. **£8.50**

MR 50 and 60 SUPERMAC
A truly revolutionary design in miniature superhet receivers. Maximum sensitivity, noise rejection and super selectivity with unique MacGREGOR facility of plug-in Crystals on 12 spot frequencies.

Relayless for escapements **£8.95**
Relay version for servos etc. **£10.50**
Prices include crystals.

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Fully pretuned sub-miniature superregen receivers for the smaller budget where interference from other modellers is not a problem.

Relayless Version **£4.50**
Relay Version **£5.95**

Inclusive Combo Prices

* MR 360 Codamac Tx and Supermac Relay	£22.95
* MR 350 Codamac Tx and Supermac Relayless	£21.50
MR340 Codamac Tx and Minimac Relay	£18.50
MR330 Codamac Tx and Minimac Relayless	£16.95
* MR260 Powermac Tx and Supermac Relay	£17.95
* MR250 Powermac Tx and Supermac Relayless	£16.50
MR240 Powermac Tx and Minimac Relay	£13.50
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** Includes matched pair of superhet crystals (extra crystals £2.75).*

Ask your model dealer or write direct to us for illustrated catalogue

MacGregor Radio Control,
Canal Estate, Langley, Bucks.
Sole U.K. Distribution by Ripmax Limited

Heard at the HANGAR DOORS

CONTRARY TO COMMENTS published in 'Club News' last month, we hasten to assure readers that *JETEX* power units and propellant pellets are certainly available, and at most reasonable prices. We apologise to Messrs. **KeilKraft,** the distributors and to **Sebel Products,** the manufacturers, for publication of an opinion that Jetex had disappeared from the scene. This is far from the case, as the full size plans in this issue bear out. True it is that Jetex competitions have not been held for many years in the U.K. – though the 'Rocket' class as it is known is a regular feature of the U.S. National Championships. We hope that more modellers will experiment with this inexpensive means of realistic jet-reaction propulsion and hope to publish some practical features on Jetex operation in an early issue. Sackcloth and ashes have been heaped on 'Clubman' who is now weeping into his grey beard for losing touch with a vital segment in Aeromodelling.

★ ★ ★

A SNIPER ruined a flying session for an Essex Model Club in mid-April when he shot down schoolboy Stephen Walker's radio controlled model. He was out flying with other members of Havering Model Club in the blue sky over the old Hornchurch airfield, when a shot rang out and the plane suddenly started spinning. It buried itself about ten inches deep in the field and a bullet was found embedded in the receiver. The incident is being investigated by the Police. 16-year-old Stephen of Eyhurst Avenue, Elm Park, is working part-time to pay back the money he borrowed to build the model.

NATIONAL PRESS feature on April 12th was covered extensively when *ten* emergency service vehicles raced to a field near Aylesbury to search for the reported wreckage of an aircraft. A call to the Police reported that a plane had been seen crashing. Five fire engines, an ambulance and four police cars raced to the spot. Eventually, Michael Watts was found with his model, a mere 36 inch wingspan .049 powered free flight model (which the *Daily Sketch* said had a 15 cc engine!) and suffering from a spiral dive. Michael's reaction was reported as, 'It gave me quite a shock, it was a tremendous turn-out for a tiny plane'.

BOOMERANG enthusiasts will be pleased to learn that the 'Society for the Promotion and Avoidance *(love that bit!)* of Boomerangs' is well established and the second edition of its Journal is already distributed. Potential boomerangers who wish to join S.P.A.B. are invited to send the nominal £1 ($2.40) fee to the secretary, Major C. Robinson, 12 Stoneham Close, Reading, Berkshire.

FROM P.1127 to HARRIER is the theme of an illustrated talk (with short film) to be given by John Farley, A.F.C., C.Eng., A.F.R.Ae.S., Deputy Chief Test Pilot, Hawker Siddeley Aviation, Dunsfold, when he will be Guest Speaker at the Wednesday, June 9th, 1971, meeting of the London Society of Air-Britain. Visitors may attend without prior notification; Lecture-theatre, Holborn Central Library, 32-38 Theobalds Road (near Grays Inn Road intersection), W.C.1. Time 7 to 9.45 p.m. After a summer break the next meeting will be Wednesday, September 8th, same time, same place.

DATES NOT TO MISS IN JULY are Sat/Sun, July 17th and 18th, when the *Flying for Fun* rally takes place for the fifth time at Sywell, Northants. Homebuilts will be there in profusion as well as preserved veteran aircraft, and an air display by the *BARNSTORMERS* will be featured on the Sunday. S.M.A.E. members will provide a static exhibit as well as a contribution to the flying display. Then on Saturday, 31st July, the Army Aviation Centre at Middle Wallop, near Stockbridge, Hampshire, will hold its annual Army Air Day. Events will include static and flying displays with British and N.A.T.O. participation.

LOCAL AUTHORITIES have only too often legislated against model flying on the basis of its nuisance to a neighbourhood. Frequently these have been applied without the local clubs taking action – and more often than not it is a case of the club not being aware of the situation. Public notices of intent to ban or alter regulations are not among the most attractive news items in the local papers, but it pays any club to keep an eye on those curt statements hidden away on the back pages. When public action is involved, the matter becomes front page news, of course, and recent events in Reigate serve to illustrate how modellers can uphold their rights. The Council sought to ban glider flying from Colley Hill but they reckoned without Colin Thompson. He protested loudly from the public gallery at a Council meeting and on behalf of Surrey modellers has insisted that the Council have not the right to institute a ban in this case. Good for Mr. Thompson – if only there were more like him!

AIRCRAFT PRESERVATION is a continuously booming business in these days of shrinking aviation industries and few propeller types. Each week our post brings news of a 'new' discovery: but the current postbag takes the prize for exclusivity. Lester Weaver of Polo, Illinois, U.S.A., owns a Junkers Ju52/3M! Moreover, it's a genuine original B.M.W. engined version, extracted from Equador after a tussle with the Military Government who were reluctant to release it. Originally salvaged by a German pilot out of Norway, it is in excellent flying condition despite its age.

TECHNICAL ADVANCES GALORE are to be discussed at the Fourth Annual Symposium of the National Free Flight Society. Among the many topics covered are tests on rubber motors, varying from break-in procedures to winding techniques, and methods of measuring the energy output of a motor. Aerodynamic and inertial balancing of propellers in addition to methods of gearing motors are described, together with the presentation of ordinate tables/drawings of some 81 new airfoils. This lively group are also concerned with the problems of engine and rubber powered free-flight scale models as well as a method of locating wayward models by means of sub-miniature transmitters carried within the fuselage.

Obviously of much interest to contest fliers and theorists alike, a report of this Symposium will be made available from N.F.F.S. at a cost of $3.50 surface mail or $4.50 airmail. Those interested should write to their newsletter editor Annie Giesking at 1333 South Franklin Street, Denver, Colorado 80210, U.S.A.

CHOBHAM HAWK

A 108 in. wingspan glider for thermal or slope soaring with single channel radio control

by
Bill Manuel

CHOBHAM HAWK is the outcome of some twenty years of experience (including own-designed full size gliders), and although the designer has flown 'multi' radio control, he still prefers the simplicity and challenge of rudder only control.

This large model with its modern (modified Wortmann FX 61) wing section may be used both as a slope or a thermal soarer, so the builder is presented with a practical flying machine whether it be windy or calm! The 'T' tail is in keeping with modern trends and its simple yet rugged structure should be well within the capabilities of any modeller with a little previous experience of similar models.

Naturally the best form of control is proportional radio, the designer having used a single-channel Simprop unit, imported from Germany, as there was no other similar equipment available. However, this position has now changed as **Waltron Electronics** have introduced the Mini 1-2, and **Mainstream** have likewise produced the Gem Digi 1 – both very reasonably priced and ideal for this model. Should you prefer to use the conventional (and cheaper!) form of 'bang-bang' single channel, then plan the position of your equipment and any modifications which may be needed before cutting out any balsa.

It will be found useful to have a quantity of wooden clothes pegs handy when building this model, as they make very good temporary clamps, especially when cut-back at the ends so that they nip the joint as soon as they are applied. Also, some $\frac{1}{8}$ in. plywood blocks, size $\frac{1}{2}$ in x $\frac{3}{4}$ in will come in useful, as will a softwood block size $1\frac{1}{2}$ in x $1\frac{1}{2}$ in x 9 in long, with one face bevelled to 18°.

Commence building by cutting out two fuselage sides from 1mm or even $1\frac{1}{2}$mm plywood and adding all longerons and uprights, but omitting the $\frac{1}{8}$ in x $\frac{1}{8}$ in posts at the rear end, as shown in section F2. Cut out the 1mm ply floor to shape and glue on top of the lower longerons, followed by the noseblock and cross braces forward of the wing trailing edge. This completes the first stage of construction. The fin and rudder structures are next to be made, and the plan should be carefully studied to reveal their construction.

Make up the spars complete with the hinges – these are set up on the bench with their centre lines all the same height above the bench, together with the rudder trailing edge (not yet shaped). At this stage, the fin leading edge and nose ribs, together with the two ribs shown in the plan glued to the top and bottom of the fuselage – are omitted. Cut rectangular rib blanks to length and glue in position. The tailplane platform backbone is also glued in after removing this structure from the bench. Add the platform packing. Now shape the two ribs sections A-A B-B, and using a sanding block, shape the remaining rib blanks.

The fin assembly is now glued to the fuselage thus completing section F2. Fuselage top and bottom sheeting is now added, noting the grain direction, followed by the fin and sub-fin sheeting. Fit the rudder, ensuring that there is 30° free movement in both directions, although 20° is sufficient for flying. Add $\frac{1}{4}$ in. nose skid, gluing securely.

The tailplane is flat-bottomed and may be built directly over the building board. Pin the lower centre section leading and trailing edge sheeting to the plan, followed by the leading edge and spar. Cut out all the ribs and glue in position. Next add the top spar and insert 1/16 in. sheet webs between ribs at the trailing edge and 1/32 in. at spar positions. Sand the structure smooth, then add the remaining top surface sheeting, followed by cap strips and tip blocks.

Now for the wing. First make the 'master' keeper, and from this make six keepers (wing joiners) from 16 s.w.g. dural, leaving them slightly oversize for final fitting.

Templates for rib profiles, spar profiles etc. should now be made – make the spar profile templates from $\frac{1}{8}$ in. ply, one for the wing centre section and one for the outer wing panels. Make up the main spar and leading edges together with the beech lined strips for wing-keeper boxes. Construction of the spars is best done in a jig, made simply by tacking the ply blocks around the profile template and fixing in the master keeper. Start with the centre wing spar and fix the balsa webs only half way along the spar length. Remove the spar from the jig and turn it round and complete the other half in the jig – the reason for this is that we are working with only one keeper. Remember that the outer wing spars are handed – a jig for each is required. The master keeper is used again for the

FULL-SIZE COPIES OF THE 1/9th SCALE REPRODUCTION ARE AVAILABLE AS PLAN No. RC/1125, PRICE 75p (15/-) INCLUDING POSTAGE, FROM AEROMODELLER PLANS SERVICE, 13-35 BRIDGE STREET, HEMEL HEMPSTEAD, HERTS.

CHOBHAM HAWK

designed by **W. Manuel**

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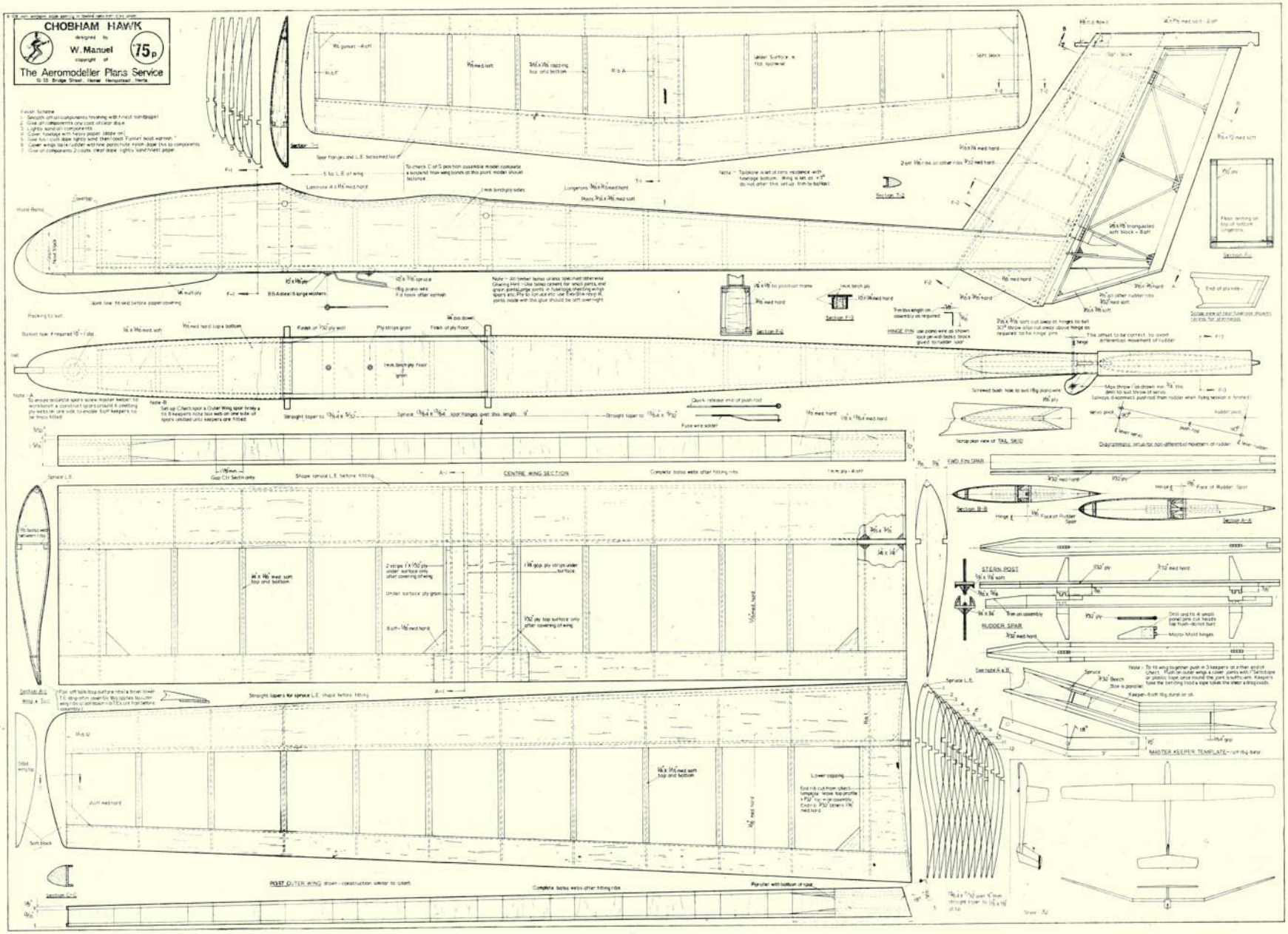
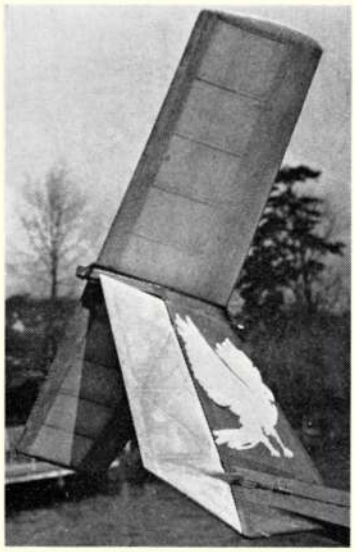
The Aeromodeller Plans Service

13-15 Bridge Street, Hemel Hempstead, Herts.

75p





The 'T' tailplane is strongly supported atop the very rigid fin assembly. Rudder is shrouded by the trailing edge of the fin – minimal turbulence being created in this fashion. Note also the home-made adjuster – very simple to alter and far cheaper than its commercial equivalent.

Below right, the method of joining the wing tips is clearly evident – three strips of dural are a tight fit in the wing box or keeper. After assembly the joint should be covered with adhesive tape for extra security.

outer spars. Now fit the six keepers as shown on the plan, using extra care for this operation. Having completed the spars by adding the ply web omitted from the boxes, the keepers can be inserted and spars checked for ease of assembly, any slight tightness can be eased by rubbing keepers on a wax candle. Cut out all wing ribs from quarter grain stock and cut trailing edge strips to width. Now set up the centre wing spar and trailing edge strip on the building board. The spar should be vertical and straight. Fix the softwood block at 90° to the spar at one end and fit the end rib, repeating this at the other end of the spar – now all the other ribs may be fitted. Add the 1/16 in. sheet infill between the ribs at the trailing edge, sand flush, then glue the upper T.E. strip in position. The leading edge is now glued in position. When dry the structure is lifted from the board and the spar webs added. Carefully sand as required and fit the bottom L.E. sheeting, making sure that the wing is lying flat. Now add the upper sheeting followed by all the cap strips. The outer wings are made in exactly the same manner using the block with the 18° face for the end ribs.

These notes are really only intended to outline the construction procedures, many little problems will no doubt arise, but an application of logic (and careful study of the plan) and they will disappear! The various components being now ready for covering, follow the notes on the plan, using the finest grade of nylon you can buy and don't forget to add the 1/32 in. ply rubbing strips at the wing centre section after covering – give these a coat of dope after fixing.

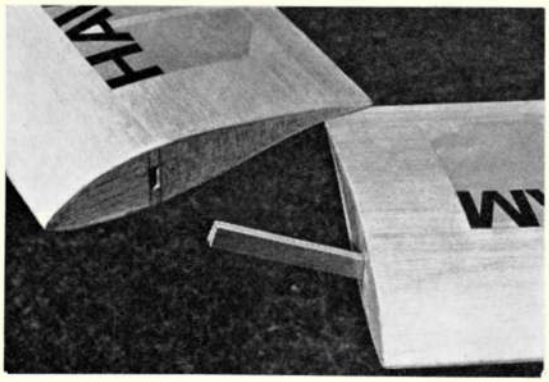
When attaching the wing and tailplane to the fuselage, make up some rubber bands from an old inner tube, these are the most suitable bands for large models.

To check the centre of gravity, install the radio equipment, and assemble the model, then suspend from the wing rubber bands as shown on the plan. Any lead ballast required can be strapped to the nose block temporarily When the ballast is known, the hole to accommodate it can now be bored in the noseblock – keep this hole as small as possible and make provision for addition or subtraction as dictated on the flying field for fine trim. Cover hole with plastic tape.

Now for the flying. Try a few hand launches on gentle, sloping ground (always using the radio) and satisfy yourself with the trim, which should be close to a stall. When this is satisfactory, slope soaring can be started immediately.

For thermal flying the designer recommends a catapult launch as being the safest and most efficient method. Use 25 yards of ¼ in. dia. rubber bungee with 150 yards of 35 lb. breaking strain nylon fishing line.

For transporting the model it is best to pack both the wings and tail in one bag and the fuselage in another. Ideally these two bags are made from lightweight tent canvas with a zip at one end. These are easy to stow and with your model aboard the car you will find yourself taking much more interest in the countryside, looking for a likely soaring site!



Contest calendar

May 23rd	**ST. ALBANS M.A.C. THERMAL SOARING RALLY**, at Nomansland Common, Wheathampstead, 10.30 start. No super regen.
May 30th/31st	**BRITISH NATIONALS** at R.A.F. Hullavington, Wilts.
June 5th	**CROYDON EVENING CONTEST**, F.A.I., R/G/P, at 6 p.m., Chobham.
June 6th	**CROYDON F.A.I. GALA**, F.A.I., R/G/P, Round 1 ends 12 p.m., Chobham.
June 6th	**SEVENOAKS R/C RALLY** at Edenbridge, Kent.
June 6th	**YORK M.A.S. RALLY**. Open R/P, A/2, Cd'H, Chuck at R.A.F. Elvington.
June 6th	**S. MIDLAND AREA THERMAL SOARING RALLY**. Multi and single. Pre-entry 20p to G. Dallimer, 6 Angel Way, Stevenage, Herts. Field entry 25p. Venue Bassingbourn.
June 13th	**HAYES-FELTHAM C/L MEET**. F.A.I., T/R, Goodyear, Combat at Charville Lane, Hayes. Details J. Carson, 35 Yeading Court, Masefield Lane, Hayes, Middx.
June 13th	**S.M.A.E. AREA CENTRALISED MEETING**. F.A.I. Rubber, Open P/G. Area venues.
June 20th	**AEROMODELLER/SCALE MODELS/R.C.M.&E. ALL SCALE RALLY** at Old Warden, Biggleswade, Beds.
June 20th	**ST. ALBANS M.A.C. SUMMER GALA**. Open R/G/P, Chuck Glider, Vintage. Three rounds, start 10.30 a.m. Venue Chobham Common.
June 20th	**SOUTHAMPTON C/L STUNT** at Beauliegh Airfield, 11 a.m. Pre-entry (25p) to G. Alison, Kestrel, Church Lane, Fawley, Southampton.
June 20th	**CHESTER M.A.C. CLYWD SLOPE SOARING**. Open glider, R/C single channel, Inter and Multi. Pre-entry for R/C only (by 7/6/71) to C. R. Filtness, 26 Raymond Street, Chester, 25p. Also social, Saturday, 7.30 p.m. at Custom House Inn, Watergate Street, Chester.
June 20th	**BURTONWOOD CRITERIUM**. C/L H'cap Speed, F.A.I. T/R, Goodyear, Stunt, Combat. R/C Pylon Racing – F.A.I., F.1, Open Novice. Pre-entry (radio only) 40p to M. Barker, 5 Norton Avenue, Penketh, Warrington. C/L events 25p on field. 10.30 start at Burtonwood.

topical twists

by 'Pylonius'

illustrated by 'Sherry'

★ ★ ★

'Use your model box top as a workbench . . .'

Then repair to . . .

A recent article on flying field repairs (not to the terra firma but to the models that bounce thereon) serves to illustrate just what sort of manic devotion you have to bring to model flying in order to stay in the race. In fact, if the authorities are thinking of printing a warning on cigarette packets I don't know that they shouldn't also apply one to the model kit – something on the lines of it being injurious to a normal way of life.

The newcomer to the hobby may blithely think that once the model is completed in all its glistening glory he will have left the drudgery of the building board behind him, and rejoice in the innocent belief that his model will continue to be a thing of joy and beauty for ever. But if that is what he imagines he is sadly deluding himself, for if on that very first flight he gets his model back in one whole piece he must either be carrying the right sort of rabbit's foot or he has carried out the test over a field of foam rubber.

However, given that he has exercised sufficient restraint not to have whacked full revs on his power model, wound his rubber motor to the limit or towed up his glider at a gallop, he should get away with a repairable bit of damage; always provided, of course, that he hasn't left out the fuselage spacers which he mucked up during building and had put the wing ribs in the right way round ("But, surely, if I'd have put them in the wrong way the model would have flown backwards, and just take a look at that nose . . .")

On the time honoured basis that you never get something for nothing in this life, the thrill of achieving flight is somewhat offset by the fact that aerial balance can be a pretty precarious thing, and it's a long way down when the equilibrium goes awry. This can happen at the most inopportune times; usually at a point when the greatest – back to earth – impact presents itself. Then, of course, the model plane, in order to attain levitation rather than sheer momentum, is inclined towards that fragility which comes of minimal weight considerations. The exception being that heavyweight monster that keeps whistling past your left ear, and which defies every known law, including the law of the land.

Fortunately, most models can be repaired on the spot (though not advised in certain radio events) which was what the article was all about. If not, there is always a jolly bonfire to look forward to. Still, for those who find the rigours of the workbench all but unbearable – and the growth of the luxury, pre fab kit trade suggests that such people exist in their work shy thousands – the idea of taking the workbench to the flying field, where all should be fun, in the shape of the model box top is too frightening to contemplate. But all should be well when these kits reach the hundred pound mark, they will be of unbreakable plastic.

Weighty Matters

I read a letter a month or two back which blamed a spate of radio crashes, not on to the gremlins, power line induction or phantom transmitters, but to the miniaturisation of radio equipment. Even if the little people aren't responsible for radio disasters at least the modern gear seems to be made for them. Back in the bold old days the radio gear used to come in cocoa tin size and gave reliability plus, but now they are dispensed in Oxo cube volume they are sensitive to almost everything, from the song of the cuckoo to the chatter of the bits of wire on the rudder.

Not being too well versed in what makes a transistor transist or a condensor condense I cannot exactly give an authorative opinion on size/reliability values, but having tried my fumbling hand at the soldering of a fairy sized radio circuit I couldn't help thinking at the time that if the plugs, switches etc., were four times as big the increase in bulk and weight would go unnoticed in the rather voluminous fuselages which all the radio designers seem to opt for.

Certainly as far as weight is concerned something's a bit screwy somewhere. After the boffins have gone to all that trouble to get radio gear down to the barest ounce I insulted their ingenuity by packing a pound of lead in the nose of my gliders.

Getting the Bullet-in

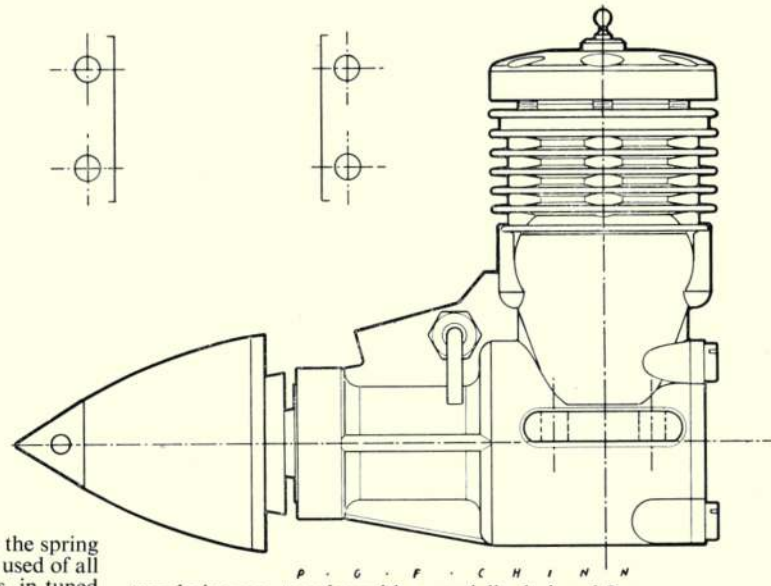
Seems I boobed over my 'one man band' sympathy for the lonely, undersubscribed, editor of the club newsletter. He took not too kindly to my playful remarks and fired off a few shuddering broadsides between the monthly reminder about subs and the latest obstacle to using the local flying field. Point is, though, I was only taking their word for it. All too often their pleas for articles fall on engine deafened ears, and I was praising them for their single minded devotion in keeping the editorial flag flying.

Anyway, it gave them the chance to get worked up about something, and to fill up a few paragraphs in the process.

ENGINE TEST

SUPER TIGRE G.15-F1

by Peter Chinn



THE SUPER-TIGRE G.15 was introduced in the spring of 1964 and very soon became the most widely used of all 2·5 c.c. contest engines. During the mid-sixties, in tuned versions such as the German Miebach-Zilliken modified "MZ" G.15, it was popular for FAI speed and only during the past two or three years has it given place, in this category, to the rear induction G.15-RV. For FAI free-flight, the G.15, now known as the G.15-FI ("FI" for "front induction"), is still just about the most popular choice.

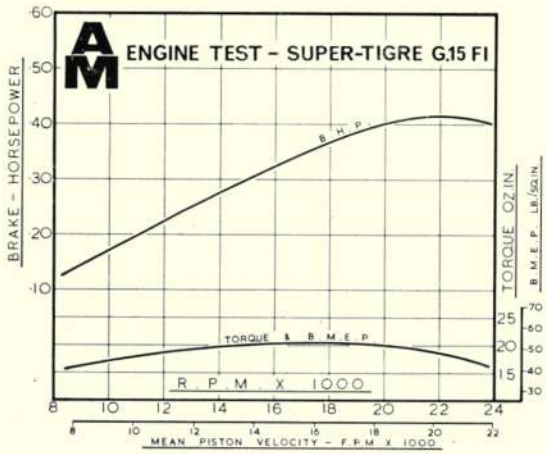
Just over five years ago, a report on an early model G.15 was featured in this series. This more than confirmed the outstandingly high potential of the G.15 even in standard form. As was stated at the time, the engine reached the highest specific output ever recorded in the **Aero Modeller** *Engine Test* series.

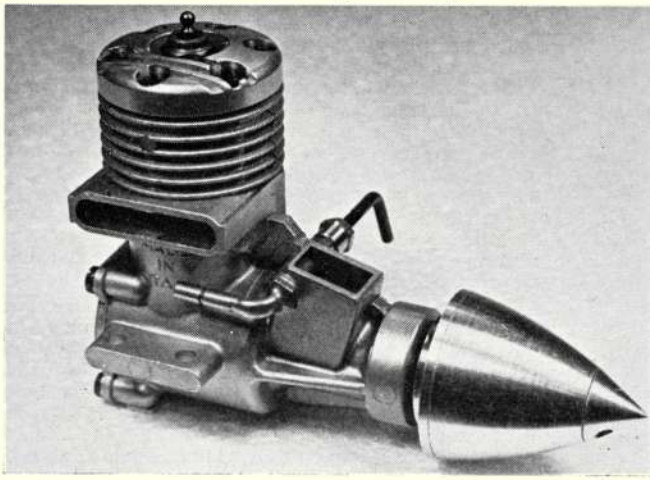
Subsequent to this report and following the increasing use of tuned pipe exhaust systems for C/L speed (and, to a lesser extent, for FAI free-flight), the manufacturer made a number of modifications to the original design, including the adoption of a modified main casting incorporating a wide flanged, narrow-port exhaust duct suitable for fitting a tuned pipe system. Also during this period, a rear rotary disc valve version was introduced, primarily for C/L speed work, and this also had the flanged exhaust stack. It was later offered in an "ABC" version (ringless aluminium piston running in chromed brass sleeve) and, to complete the conversion to a purely 'speed' engine, piston/cylinder assemblies re-ported for tuned pipe use, together with a specially designed Super-Tigre pipe and exhaust elbow, are currently obtainable.

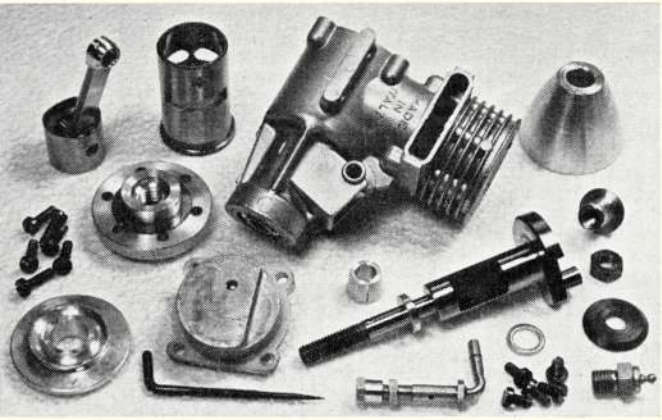
With the FAI ban, as from January 1971, on extended exhaust systems for international class free-flight, however, there has been a reversion in the current G.15-FI to the original G.15 layout, insofar as a wide exhaust port is again used and the exhaust system attachment lugs have been machined off. Current Super-Tigre policy appears to be to concentrate on the G.15-FI in free-flight trim and on the G.15-RV in control-line speed form.

Our report, this month, deals with the latest G.15-FI. Although, outwardly, this engine looks only a little different from the original G.15 featured earlier, very few parts have, in fact, remained unchanged. The crankcase, for example, has been beefed up here and there and the transfer passage slightly widened at the bottom. The cylinder liner is longer and the cylinder-head, still with fins on the exhaust side only, has a machined squish band. The piston is lapped over its entire skirt length (instead of having a short relieved portion at the bottom) and the padless gudgeon-pin is located at both ends by circlips in the piston. (The earlier gudgeon-pin had a circlip at the front end only and had aluminium pads at both ends.) The conrod has much larger oil holes at the big end and now has an oil hole at the small end as well.

The crankshaft is basically unchanged but has a slightly thinner crankweb and shorter main journal length. As on







other more recent ball-bearing Super-Tigre engines, the shaft is axially located by a 2 mm. thick alloy distance piece between the shoulders of the main journal and the rear of the inner race of the front ball bearing. The rear of the alloy split taper collet (on which the prop driver is mounted) abuts against the front of the inner race of the front bearing to eliminate end-float. and all thrust loading is thereby taken by the front bearing.

As on all G.15s produced during the past few years, the prop driver incorporates the backplate of a machined alloy spinner assembly. A more recent external change is the omission of a venturi insert. This increases the effective choke area by more than fifty per cent to approximately 65 sq.mm. and requires the use of a pressurised fuel system. The G.15-FI is equipped for this via a screw-in backplate nipple providing an untimed (low pressure) system. The needle-valve assembly is unchanged and features a spraybar installed in the rear wall of the intake so that only half its diameter is exposed.

The rectangular intake remains fully offset in the direction of rotation, its left side being immediately above the crankshaft axis. Mixture from the carburettor therefore enters the shaft tangentially and with the direction of rotation. Due to the completely rectangular shape of both the crankshaft port and the bearing aperture, very rapid opening and closing of the large rotary-valve occurs and maximum use is made of the induction period which begins at 37 deg. ABDC and ends at 57 deg. ATDC. There is also a sub-piston air induction period of approximately 60 degrees at the top of the stroke. The exhaust and transfer periods occupy 137 degrees of crank angle.

Performance

Since the G.15-FI is intended primarily for FAI free-flight, under the revised rules of which any form of exhaust extension (including silencers as well as tuned pipes) is expressly prohibited, all running and tests were carried out with an open exhaust. For running-in and most of the testing, fuel to the regulation FAI formula of 75 per cent methanol and 25 per cent castor-oil was used exclusively. This was supplied from a sealed metal tank pressurised from the backplate fitting.

Our test engine was a perfectly standard unit supplied from the distributor's stock and had not been checked prior to being submitted for test. We have to admit that we were more than a trifle surprised to find that it fell somewhat short of the performance of the earlier G.15 tested in this series. The engine still peaked at extremely high speed – but lacked the latter's torque. It seems probable that our test motor was below par while the earlier one was possibly a bit above average.

The G.15-FI nevertheless remained a very powerful engine – *provided that it was not overloaded.* As the curves show, torque, very poor at the bottom end, actually increases all the way up to 17 or 18 thousand revs and, on any prop which limits rpm much below such speeds, power is remarkable only for its absence. Thus, on an 8x4 Top-Flite nylon, the G.15-FI could barely manage to struggle up to 12,000 rpm static. On a fast 8x4 Power-Prop (wood) it went up to 15,200 while, on a 7x4 Top Flite wood it began to really come alive and just topped 18,000 rpm. This is probably the minimum static rpm at which to aim for maximum contest performance. The peak of the power curve was reached at 22,000 rpm where an output of approximately 0·41 bhp was delivered. At these high speeds, the G.15-FI ran much more crisply and evenly than at lower speeds where, probably due to the poor fuel atomisation provided by the large choke area, running was somewhat unsteady.

Since it is feasible to resort to a more powerful fuel for open contests, some checks were also made on a hot fuel containing 50 per cent pure nitromethane. This raised maximum torque by 17 per cent and peak bhp by approximately 20 per cent. On both fuels the engine began to consume glowplugs when pushed above 22,000 rpm.

Cold starting was generally good. Hot restarts were less rapid on straight fuel but remained good on nitro.

Power/Weight Ratio (as tested):

1·22 bhp/lb on FAI fuel,less weight of spinner assembly.

1·45 bhp/lb on 50 per cent nitromethane fuel, less weight of spinner assembly.

Specific Output (as tested):

166 bhp/litre on FAI fuel.

198 bhp/litre on 50 per cent nitromethane fuel.

SPECIFICATION

Type: Single cylinder, air-cooled glowplug ignition two-stroke with crankshaft rotary-valve and dual ball-bearings.

Bore: 15 mm. (0.5905 in.)

Stroke: 14 mm. (0.5512 in.)

Swept Volume: 2.474 c.c. (0.1510 cu. in.)

Stroke/Bore Ratio: 0.933:1

Checked Weight: 163.7 grammes (5.77 oz.) including 10.2 grammes for spinner shell and nose cone.

General Structural Data

Pressure diecast aluminium alloy *crankcase/cylinder/main bearing housing* with drop-in steel *cylinder liner*. Detachable *rear crankcase cover* secured with four screws. Hardened nickel-chrome steel *crankshaft* with 10 mm. dia. main journal, 7.5 mm. gas passage and 5 mm. dia. crankpin, supported in 5 mm. i.d. 6-ball brass caged ball journal bearing at front and 10 mm. i.d. 7-ball brass caged ball journal bearing at rear. Flat crown lapped cast-iron *piston* with annular stiffening rib below gudgeon-pin holes. Tubular 4 mm. dia. hardened gudgeon-pin located by circlips in piston. Machined aluminium alloy unbushed *connecting-rod* with lubrication holes at both ends. Pressure diecast aluminium alloy *cylinder-head* secured to main casting with six screws. Copper cylinder head gasket, 0.2 mm. thick. Machined aluminium alloy *prop driver* combined with spinner backplate, mounted on shaft via aluminium split taper collet. Machined aluminium alloy spinner shell. Brass spraybar assembly mounted in rear wall of intake. Provision for crankcase pressurised fuel supply via screw-in brass nipple in backplate.

TEST CONDITIONS

Running time prior to test: 1½ hours

Fuel used: Test 1: 75 per cent methanol, 25 per cent Duckhams racing castor-oil.
Test 2: 50 per cent pure nitromethane, 20 per cent methanol, 5 per cent nitrobenzene, 25 per cent Duckhams racing castor-oil.

Glowplugs used: Maker's long-reach platinum filament as supplied.

Air temperature: 14 deg.C (57 deg.F)

Barometric pressure: 29.7 in.Hg.

Looking every inch the classic biplane, the author's one twelfth scale Sopwith 1½ Strutter is very hard to distinguish from the full size in this low-angle shot – only the airscrew and prop nut identify it as a model. Note how provision of a pilot completes the realism.

Part IV Fuselage Construction

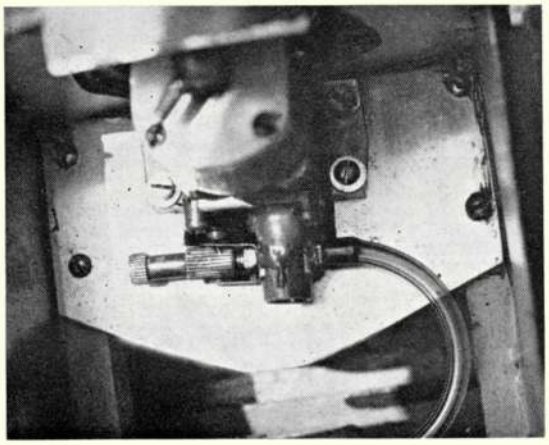
FLYING SCALE MODELS

by Eric Coates

IT IS NOW TIME that we get down to examining the structure of the free flight scale model. In general this is very similar to any other type of F/F model, except that often parts which are stressed to a higher degree than is normal call for the substitution of hardwoods, or metal, where balsa would be normal practice. With a scale model one is stuck with the shape provided; unlike on a functional flying model where very often the design is a compromise between aerodynamics, strength and lightness. As balsa possesses the highest strength to weight ratio the shape can be adjusted accordingly so that it can be utilised to the maximum. Unfortunately with scale models very often balsa just is not strong enough, within the confines allowed, and stronger and unfortunately heavier woods have to be resorted to. The structure of a scale model should not only be strong but, just as important, flexible. A structure that deflects when it hits the ground awkwardly will be much lighter than one strong enough to stand the blow rigidly – by making a flexible structure we can crack the weight/strength vicious circle mentioned in an earlier article. The best materials from which to base a flexible structure are spruce and piano wire; both of which are used in considerable quantities in our models. Balsa, however, remains the most common material and must be used wherever possible to keep the weight to a minimum. Plywood also figures largely in the structure of a scale model – this must be of the highest aircraft quality: 2 mm. for bulkheads and 0·8 mm for decking being the most useful thicknesses.

Modern adhesives form a very important part in construction today and have really made possible great advances in the scale modeller's art. Twenty years ago, when cellulose balsa cement was the only adhesive available, the joining of wood to metal was a nightmare of binding with cotton of every single fitting. Epoxy resin adhesives have mercifully changed all that although, for very highly stressed wire to wood joints, some binding assistance still doesn't come amiss. P.V.A. 'white glue' is a far better adhesive for spruce than balsa cement, as indeed it is for the majority of balsa joints, especially when sheeting. The fact that it does not shrink when drying prevents warping of delicate structures fabricated from 1/32 in sheet.

Let us now consider the fuselage structure in detail. Fuselages can be simple box or round sections covered in fabric, plywood or metal – they are usually a combination of some, or all, of these features. A good example being the Hawker Nimrod – this features a basic box on which formers and stringers are superimposed at the aft end and metal panels (on the original) used at the nose end. In general we should try to stick to original form of construction as closely as possible. Therefore if the original was fabric covered we should represent all ribs, stringers and structure that shows through and cover



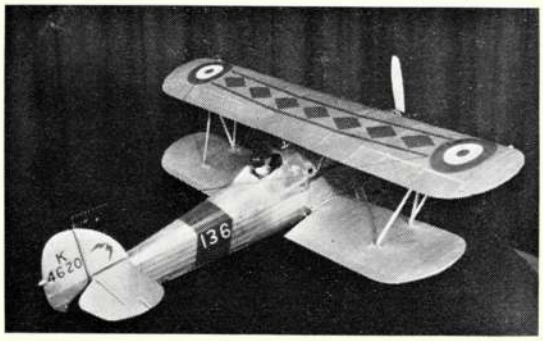
An unusual engine for free flight scale use is the ETA 15 diesel, seen here mounted on a 10 gauge light alloy plate in the nose of the Eric's S.E.5A. Few scale models use engines of such power and capacity, but the large wing area of this subject required an engine capable of turning a large propeller. Judging by the 'shaved' cylinder fins, this motor has seen life in an F.A.I. team racer!

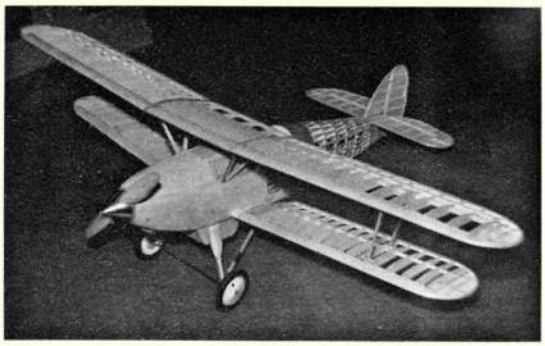
with tissue and silk (we shall deal with covering fully in a future article). If the original structure was covered with ply then we should use either thin ply or, better still sheet balsa, if suitable. Generally ply is more suitable for the decking of fuselages, particularly if there are a lot of cut outs, as sheet balsa tends to split under such circumstances. Although heavier a lot of this weight can be recovered, as only a very sparse supporting structure is required. Similarly if the original had metal stressed skin covering then balsa sheet, or ply, should be used. If the prototype was painted then no further treatment is required, but, if the metal was left natural then some form of metalising, of the wood covering will be necessary – this too will be covered in a later article on finishing.

Selection of material for the longerons depends upon the size and construction of the fuselage. On aeroplanes between about 30 in and 50 in. span, $\frac{1}{8}$ in. sq. is the most common size for box type fuselages. Hard balsa is good enough for the smaller models, but spruce is the most universally used material. On large models $\frac{3}{16}$ in. sq. is sometimes used, if strength demands it, but it generally looks too heavy through the covering. If the fuselage is multi-stringered, to give a rounded form, as on the Nimrod, then balsa longerons should be used to save weight but the stringers, $\frac{1}{16}$ in. sq. or $\frac{3}{32}$ in. sq., dependent on the size, should be spruce. Balsa stringers are too brittle for the amount of handling a scale fuselage gets also they tend to pull-in over the years, due to the tension of the covering, giving the horrid "starved horse" appearance.

Formers should be varied according to the loading they will receive. One should not be afraid to make really beefy structures at the nose end as weight saving is a waste of time forward of the C.G. Ballast very often has to be added in any case on the average short nosed model. Conversely the structure should be as light as possible aft of the C.G., as remember, one quarter of an ounce saved at the tail end can prevent up to 2 oz. of ballast being added in the nose. Good solid ply formers 2 mm, (or even 3 mm in larger models) thick should be used to carry the engine bearers and undercarriage. The bearers should be of good section, $\frac{1}{2}$ in. x $\frac{3}{8}$ in. for a 1·3 c.c., and if possible glued to the sides of the fuselage – it is usually sheeted with $\frac{1}{8}$ in. balsa, between the longerons, in this region. If the fuselage is wide enough, and it usually is, the engine is not mounted directly on the bearers, but attached, via a 10 s.w.g. light alloy engine plate, which not only promotes a very strong structure but allows the thrust line to be altered fairly easily if found necessary, as so often is the case, when trimming. If the side thrust has to be altered more than a degree or so then usually a new engine plate is necessary. This, however, is infinitely

Completed Hawker Nimrod clearly displays the multi-stringed rear fuselage. This model uses a 'flattened' bi-convex section, as described last month, which makes building easier, while slowing down the flying speed.





Uncovered view of a Hawker Nimrod reveals sturdy structure. Light construction of a scale model is essential – the old axiom of 'the bigger they come, the harder they fall' is most true. Good example of a typical scale fuselage-sheeted frontal portion with fabric covered, multi-stringered rear.

better than slotting the holes in the bearers which would be the case if the engine was mounted direct. Slotted holes not only weaken the bearers but the engine very often alters its thrust line in a heavy landing – which then results in an even heavier landing next flight! A new engine plate also allows the crankcase to be displaced sideways, if the side thrust is to be altered, so keeping the crankshaft emerging through the same hole in the front of the fuselage and not through the first exhaust stack!

All the basic structures at the front of the fuselage, i.e. the ply formers, bearers and fuselage sides should be glued together with an epoxy resin. I have found no other type of glue to be strong enough to withstand the constant battering from heavy handings and the effects of diesel fuel over the years.

Formers, aft of the wings, should be very light – $\frac{3}{32}$ in. or $\frac{1}{16}$ in. being quite strong enough – if any are required at all. Similarly cross members, which should be spruce at the front, should be medium balsa aft of the wing.

Undercarriages

This is one of the most important items on a scale model and often requires the greatest figuring out. The problem being that the full sized aircraft's gear is designed to land on a smooth surface, at stalling speed, in which the vertical component is of far greater importance than the horizontal, or drag, component. The U/C is therefore designed to have a considerable vertical travel and very little, if any, horizontal travel.

Unfortunately a free flight model is not able to choose a nice smooth place to land nor is it able to stall, or flare as it is generally known, at the correct moment. It therefore lands at a speed considerably in excess of scale; particularly if it is pointed downwind at the time as is usually the way of things. Our horizontal, or drag, component is usually very much greater than our vertical component. We therefore require our undercarriage to have a large amount of horizontal travel; with very little vertical travel – converse to what the scale structure we wish to model was designed.

On very light models one can ignore the problem and produce a rigid structure, with no backward travel, as I did on my Sopwith $1\frac{1}{2}$ Strutter built over a decade ago. This model was built to 1/12 scale and weighed about 16 ozs. when new, which is probably about the limit for an unsprung (in the backward sense that is) U/C. The model lasted for some 8 years of fairly intensive flying although occasionally the rear struts buckled and had to be re-

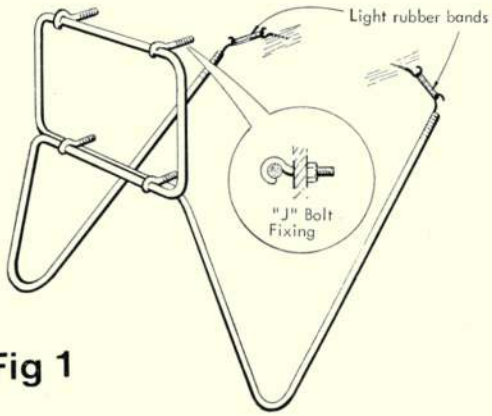


Fig 1

straightened. The only springing the unit possessed was of the scale, vertical, variety, i.e. double fixed spreader bars keep the two U/C Vees apart and a split axle is hinged in the centre. The springing is provided by rubber bands lashed round the ends of the axle and spreader bars. The only snag with these being that they rot with the fuel, which runs down the legs, and require regular replacements.

For models heavier and larger than the "1½" then some form of backward springing is a must if we are not to be continually repairing the U/C. I have tried many forms of springing, on various models, but have yet to find anything which approaches the torsion bar in performance. Irrespective of how many struts and stays the U/C may have, it will always possess a pair of main legs; which are usually more or less vertical and carry the wheels. These legs should form the working part of the torsion bar undercarriage – all the remaining struts etc. can be regarded as collapsible ornaments.

Fig. 1 shows a typical torsion bar undercarriage, as may be applied to a 'V' undercarriaged machine. The U/C is bent from one piece of 12 s.w.g. piano wire (use 10 s.w.g. for larger models) and is then secured to a 2 or 3 mm ply former with J bolts. It is best to extend the engine bearers back to this former so that the torsion loads can be distributed more efficiently into the fuselage structure. 'J' bolts can be easily made by cutting the head off a 1 in. long 6 B.A. screw, heating it up to red heat with a torch, whilst held in a vice and bending the end to shape with pliers.

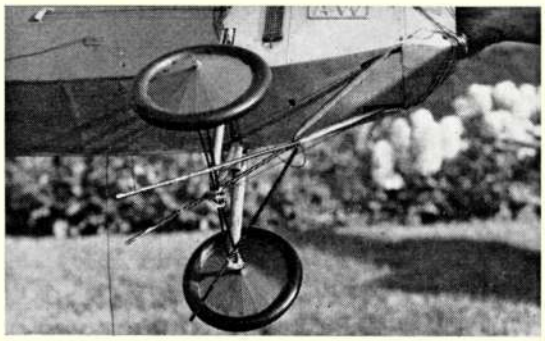
All landing loads are absorbed by the twisting of the wire in the double section at the bottom of the fuselage. An undercarriage of this type will take a slight "set" the first time it is bent but, thereafter, will always return to the same "set" position. It is therefore advisable to bend the U/C with the legs having a slightly forward rake; so that when the "set" takes place the legs are at their correct angle. The rear struts are continuations of the main legs, bent back to form a Vee and made extra long so that they pass through slots in the bottom of the fuselage and serve no structural purpose; merely sliding through the slots when the main legs bend back. I have found that these rear legs tend to "thresh about" in a heavy landing, if they have no location, so I always solder 20 s.w.g. hooks to their ends and keep them pulled against the front of the slots; by means of light rubber bands stretching from these hooks to a suitable anchorage on a bulkhead. I must emphasise however that these bands are not a part of the springing system. The torsion bar absorbs all the landing loads. A 12 or 10 s.w.g. axle is attached to the apex of the Vee – either sprung by rubber bands, as previously described, or bound with fuse wire and soldered. Balsa fairings epoxied and bound, either with cotton, or strips of tissue, complete the undercarriage.

Cabanes

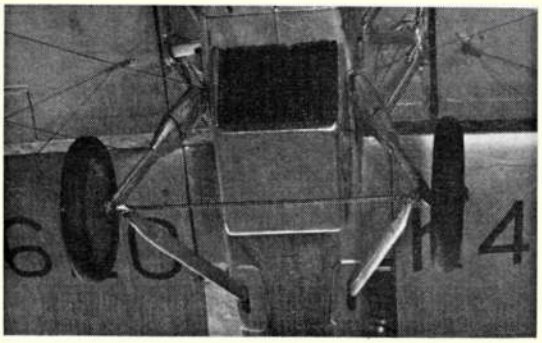
The structure which holds the upper wings, of most biplanes, above the fuselage is known as the cabane. It usually is attached to a short section of wing known as the centre section, as on the Nimrod, or the main planes may be attached directly to it as in the case of the 1½ Strutter. Sometimes in cabin biplanes such as the D.H. Hornet Moth both the upper wings are attached directly to the top of the fuselage.

Where applicable a good strong, yet flexible, cabane structure is the heart of a successful model biplane. The only suitable material for its construction is piano wire, balsa fairings are added, where necessary, purely for appearance. The design of the cabane of the prototype we are modelling should be studied very carefully to see how the loads, carried by the centre section, are taken to the fuselage structure. On a model the cabane structure will be subjected to considerable twisting, sideways and inertia loads, imparted by the wings in an awkward landing. It is therefore imperative that every wire is made to work, just as on the original, if our centre section is not to collapse early in its lifetime. To make a four strutted structure and omit the bracing wires, or use elastic thread,

Collapsed undercarriage on Terry Manley's Armstrong Whitworth FK8 illustrates how main legs do all the work while the remaining struts are virtually 'collapsible ornaments'.



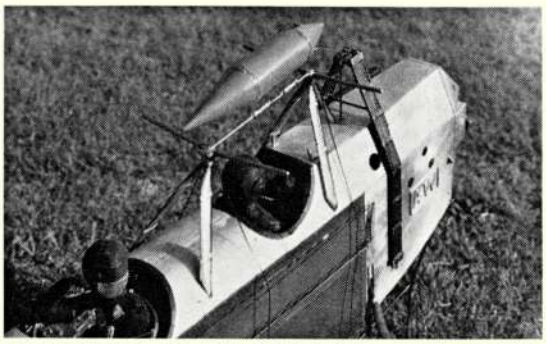
View of the Hawker Nimrod's undercarriage clearly shows a working example of the unit drawn in figure 1, and described in the text. Balsa fairings are epoxied to the 10 swg legs.



is just not good enough – Fig. 2 illustrates a typical cabane structure; showing how each bracing wire is anchored to do its particular job. Of course a bracing wire can only stabilize the structure in one direction (with the wire in tension) and another similar wire, usually the opposite diagonal, must take the reverse load. The scantlings, also indicated on Fig. 2, are suitable for a single seater of about 36 in. span or a two seater around 46 in. span (about 1/10 scale for 1914-18 jobs). For larger machines the wire sizes should go up a couple of gauges i.e. the U/C and dowels should be 10 s.w.g. and the cabane struts made from 16 s.w.g. It will be noted that the front of the cabane and the U/C coincide on the same former. This is very often the case. This former is the most heavily loaded on the entire model and, as mentioned earlier, if at all possible the bearers should run back into it. Everything in this region should be glued with epoxy.

The brass tube at the bottom of the cabane struts is threaded on to the wire prior to bending. The fore and aft cabane struts are then bent as individual pairs and great care should be taken in getting the lengths of the cabane struts exactly right as they control the incidence of the upper wing. The brass tubes are then epoxied to the fuselage structure and allowed to set for 24 hours before any further work is done on the cabane structure. At this stage the fore and aft struts should be able to revolve freely in their respective tubes, which is essential because it allows the completed cabane to "work" without cracking the epoxied joints. The wing dowels are now bound to the top of the cabane struts with fuse wire, and soldered.

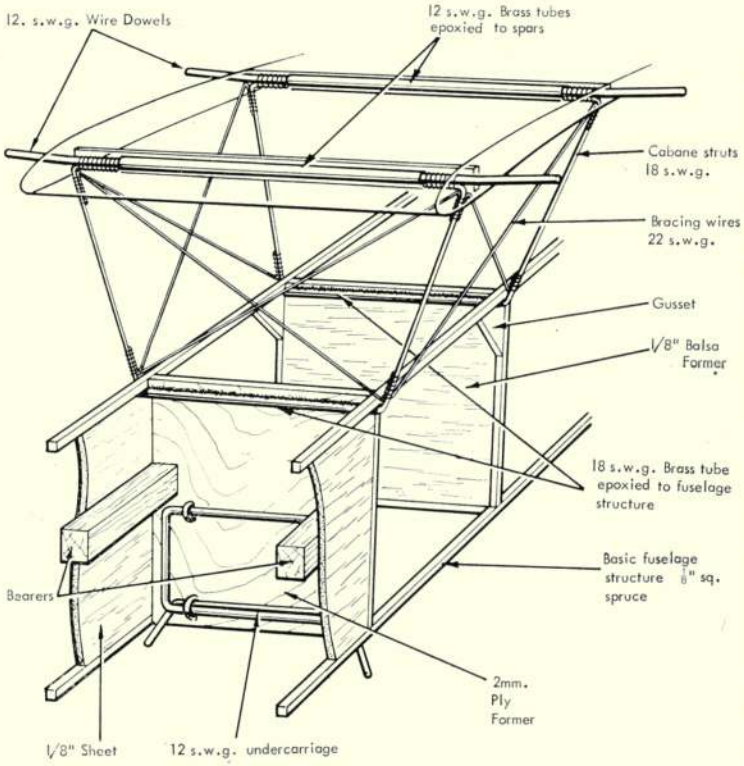
After experimenting with many types of wing fixing, I find the piano wire dowel superior to all others for biplanes. They should protrude about 1 in. from the centre section and locate in brass tubes epoxied to the spars of the respective wings. I shall deal with wing fixing in detail in a later article.



Another view of the A.W. FK8 illustrates a typical centre-sectionless model. Both the figures are carved from balsa – a painstaking job, but one which is well rewarded when properly executed. Nothing looks worse than an empty cockpit when the model flies past the judges!

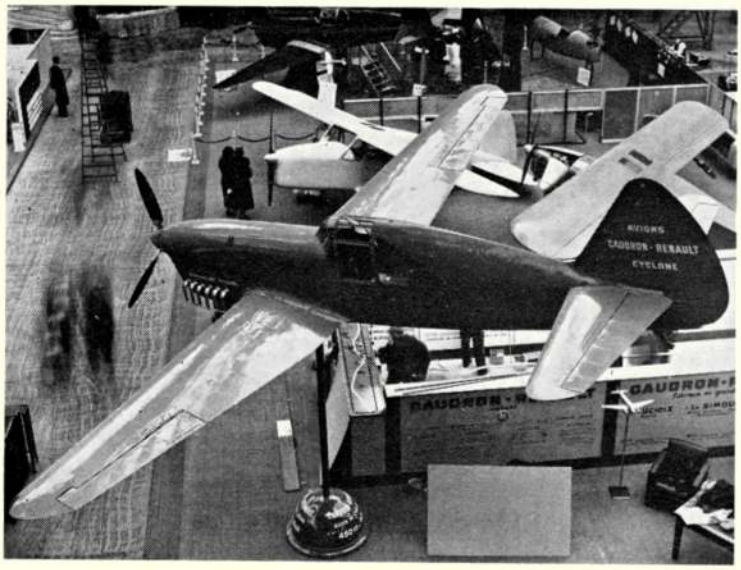
It is advisable to make the centre section structure at this time and this should be built along the lines of the mainplanes; the structure of which will be dealt with later. The centre section should be offered up to the wing dowels and the incidence checked, and then they may be epoxied together. It is advisable to omit any sheeting of the centre section structure at this stage. Finally the bracing wires are accurately bent to shape and bound and soldered to the cabane struts – the centre section can then be completed and the fairings epoxied to the cabane struts.

Figure 2. Typical biplane cabane, shown with fairings omitted for clarity.



It is usually most convenient to construct the cabane on to the basic box fuselage before any top decking, cockpits, etc., are fitted; even if this does make top sheeting more difficult after the bracing wires are in place. If a centre section is not fitted the cabane structure is much simplified. In this case, such as with the F.K.8, the cabane struts are much heavier gauge wire (12 s.w.g.) bent over and crossed at their apex to form the wing attachment dowels. A single 14 s.w.g. wire holds the fore and aft struts apart – it goes without saying that a good soldered joint is essential at each apex.

All cabanes are variations of the above two themes and it cannot be stressed too much that a good job should be made of this part. If a wire is bent a bit too long, or short, throw it away and make another – if the cabane is not right the model is doomed to failure. It is one part of the model where weight cannot be saved. Piano wire is heavy but nothing approaches it for strength and flexibility, so it is useless to try to substitute lighter materials; they will not stand the bashing a cabane structure gets.



AIRCRAFT DESCRIBED

CAUDRON RENAULT C.R.714

described and drawn by Harry Robinson

AT THE 1938 SALON DE l'AERONAUTIQUE in Paris, the Societe Caudron-Renault displayed a slender low-wing monoplane powered by an aircooled V12 engine. This was the CYCLONE, an extensive development of the C.710 fighter which had first flown in 1937 with a fixed undercarriage and fin/rudder of semi-circular outline, was modified with a retractable undercarriage as the C.713, and destroyed in February 1938 when the tail broke up during a vertical dive.

Nevertheless the C.713 was well reported in the aeronautical press and appeared in retouched photographs and arrangement drawings with a triangular fin/rudder, a tailplane of reduced aspect ratio and an armament of two 20mm cannon. A further C.710 prototype was modified to incorporate these changes and became the CYCLONE, with the wing-mounted cannon removed and a "retractable" undercarriage arrived at by detaching the fixed legs of the C.710 and covering the holes with duralumin plates. Column-mounted in a shallow banked dive the CYCLONE appeared most impressive with a claimed maximum speed of 480 km/h (298 mph) from its 450 hp Renault 12R-01 engine.

Both the C.710 and the CYCLONE had been designed under the technical direction of Ing. Marcel Riffard who after the crash of the C.713 assigned its redesign to Georges Otfinovsky, head of Caudron's *Bureau des Prototypes*. Following the Salon the CYCLONE appears to have been modified as C.714 No. O1 with a retractable undercarriage, under-wing armament trays and a square-cropped rudder tip. However, photographs show this aircraft as retaining the C.710/713 wing and other features of the earlier types and it is evident that the armament trays have been added by retouching. It seems likely that the CYCLONE was fitted with a genuine retractable undercarriage generally similar to that of the first C.713, had its rudder tip cropped and after several modifications to cooling air intakes was sold to Soviet Russia.

By the middle of 1938 the French Government was convinced of the value of Marcel Riffard's light fighter in the Armee de l'Air modernization programme. Built almost entirely of wood with a minimum of strategic materials the C.714 required only 5,000 man hours for its construction against 12,000 for the Morane MS.406. Mass-production of the C.714 was discussed with the Air Ministry and it was decided to fit the alternative armament of four 7·5 mm machine guns and a wing of modified profile. On November 5, 1938 the Air Ministry placed a firm order for 20 aircraft with an option for 180 more and in January 1939 the contract was amended to a firm order for 120 machines. Constructed at a Renault factory on the outskirts of Paris and assembled at Guyancourt the first true CR.714 was rolled out in June 1939.

Prominent differences from C.714 No. 01 were the redesigned outlets for cooling air, fairings over intake manifolds, a stronger, redesigned engine mounting and the curved rudder tip which produced the graceful shape so characteristic of the CR.714. The wing was an entirely new structure with an airfoil of reduced camber and more round-rounded leading edge, a more rounded tip shape and landing flaps of narrower chord. Two continuous box spars with birch plywood webs and laminated flanges carried ribs of birch five-ply with spruce cap-strips and stiffeners. The undercarriage was longer and mounted further forward than on the C.713; wheels were fitted with Messier hydro-pneumatic brakes

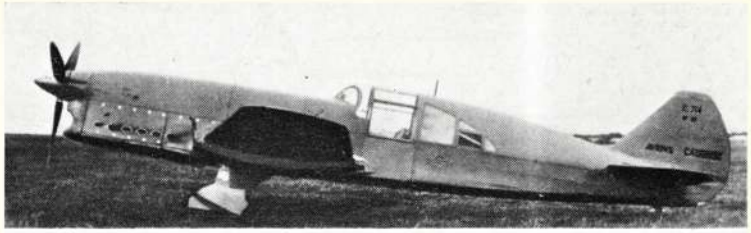
Opposite: 'Flight' photo of the CYCLONE at the 1938 Paris Show. It is not known whether this was supposed to be C.713 or C.714 and only the name has always been used for it.

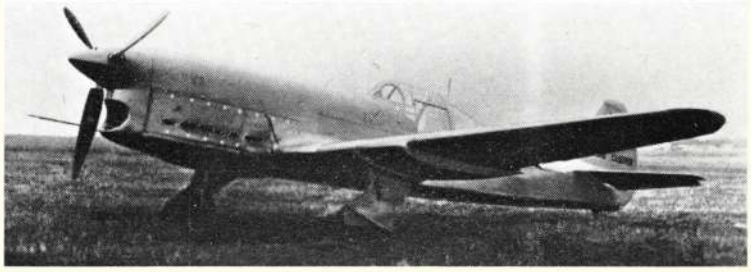
Right: Two views of C.714 No. 01. It is evident that the underwing armament trays in this view have been added by retouching. (W. Green collection).

Below: Close-up of Groupe 1/145 aircraft in May/June 1940. (J. B. Cynk collection).

Below left: Rear three-quarter view of C.714 No. 1. One of a number taken at Guyancourt in June 1939. (Monsieur Georges Otfinovsky photograph).

Bottom left: Finish aircraft with light blue swastika National markings (Kalevi Kesinen collection).





and carried on conventional full forks. Most production aircraft used half-forks only.

Fuselage structure consisted of two birch plywood side panels with longerons and uprights of spruce glued to their inner faces, two parallel external stringers and spruce crossmembers and diagonals with generous plywood gussets. Upper and lower deckings of Elektron magnesium were screwed to false longerons held by shakeproof nuts. The welded steel tube engine mounting carried a powder type fire extinguisher and was attached to the longerons through steel plates. The fuel tank occupied the fuselage behind the dural/asbestos firewall and the oil tank was mounted in the port wing-root leading edge and connected to a tunnel-type oil cooler beneath the engine. The supercharged V12 Renault 12R-03 engine, identical to the 12R-01 except for a carburettor permitting negative-G manoeuvres, produced 450 hp at 2,500 rpm at 3,600 m (11,800 ft) and turned a three-bladed electrically operated variable pitch Ratier propeller. The pilot's seat was adjustable in height, canopy side panels slid downwards for entry and exit, while the roof could be jettisoned in flight. Tail surfaces were of similar wooden construction to the wings and the tail skid was rubber sprung.

Delivered without armament or military equipment, the CR.714s could not exceed 470 km/h (292 mph) and needed twelve minutes to reach 5,000 m (16,400 ft.) The Messerschmitt Bf.109E reached this altitude in little more than six minutes and because of the CR.714's inadequate rate of climb its production was limited to 83 aircraft – but when the German invasion began on May 10, 1940 only eight were fully operational. The Polish "Warsaw Squadron" then in training at Bron became *Groupe de Chasse I/145* (the only unit of the Armee de l'Air to fly the CR.714) and by May 22 was stationed at Villacoublay with 20 Caudrons on strength. Before seeing action the Groupe's aircraft were grounded on May 25 because of "lack of equipment and constructional defects", but with no alternative aircraft available patrols continued with the CR.714.

The Groupe moved to Dreux and on June 8 five Caudrons attacked 15 to 20 Bf. 110 southwest of Rouen. Five Messerschmitts were shot down without loss but most of the CR.714 were no longer serviceable. Patrolling the Seine valley at maximum strength on the 9th, 17 aircraft under Groupe Commander Major Kepinski attacked about 50 Dorniers escorted by up to 20 Bf.109. One Dornier and three Bf.109s were shot down for the loss of three CR.714s and their pilots and several more Caudrons rendered unserviceable. South of Dreux the following day 12 aircraft under Maj. Kepinski attacked about 12 Bf.109s escorting 15 Dorniers. One Messerschmitt and two Dorniers were shot down but Maj. Kepinski was badly wounded. Under the command of Capt. Laguna the Groupe began moving westwards before the German advance and by June 20 was forced to evacuate the airfield at Rochefort and embark from La Rochelle for England. From a total of 39 Caudron CR.714s only eleven remained of which just eight were fully operational.

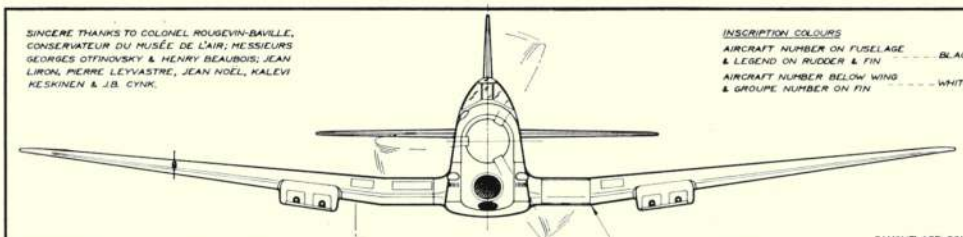
Capt. Laguna reported the CR.714 as well designed and produced and although kept in the open throughout the campaign, the wooden structure showed no sign of warping. However with no production testing by Caudron-Renault, all breakdowns and malfunctions unavoidably occurred in squadron service – at times rendering the aircraft totally unserviceable. The Renault engines were very sensitive to excessive r.p.m. which twice resulted in seizure.

Eighty CR.714 were promised to Finland but only six were delivered and the fate of the remainder is uncertain. As take-off and landing runs proved too long for Finnish airfields, also because of its relatively light armament and several mechanical defects, the CR.714 was not used operationally in Finland. One example used for training aircraft mechanics is preserved at Vesivehmaa awaiting restoration.

Although manoeuvrable, stable and without major vices, lack of power coupled with inadequate armament and a relatively fragile structure prevented the Caudron CR.714 from becoming a first-class fighting machine.

The author gratefully acknowledges the assistance of Jean Liron, Jean Noel, Pierre Leyvastre and Jan Bartkowski in preparing this article.

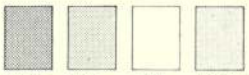
SINCERE THANKS TO COLONEL ROUGEVIN-BAVILLE, CONSERVATEUR DU MUSÉE DE L'AIR; MESSIEURS GEORGES OTFINOVSKY & HENRY BEAUBOIS; JEAN LIRON, PIERRE LEYVASTRE, JEAN NOEL, KALEVI KESKINEN & J.B. CYNK.



INSCRIPTION COLOURS

AIRCRAFT NUMBER ON FUSELAGE & LEGEND ON RUDDER & FIN — BLACK

AIRCRAFT NUMBER BELOW WING & GROUPE NUMBER ON FIN — WHITE



CAMOUFLAGE COLOURS – MATT FINISH

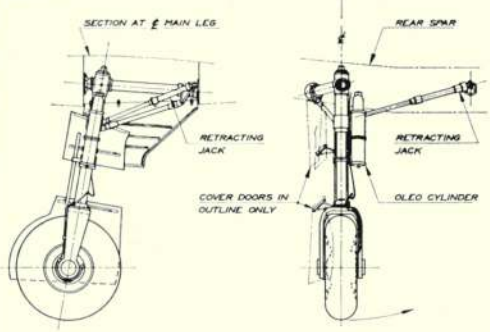
INSIGNIA COLOURS

UNDERCARRIAGE OF c/n 8533 WAS AS SHOWN. MANY CR.714's CARRIED THE WHEEL ON A HALF-FORK

OIL TANK OF c/n 8533 WAS NATURAL METAL

CAMOUFLAGE COLOURS BLEND OVER A BAND APPROXIMATELY 25 mm (1") WIDE, WITH NO HARD EDGES.

TO AVOID CONFUSION, NO CAMOUFLAGE HAS BEEN SHOWN IN FRONT VIEW



STARBOARD UNDERCARRIAGE LEG FULLY EXTENDED & UNDER NO LOAD

TWICE BASIC SCALE

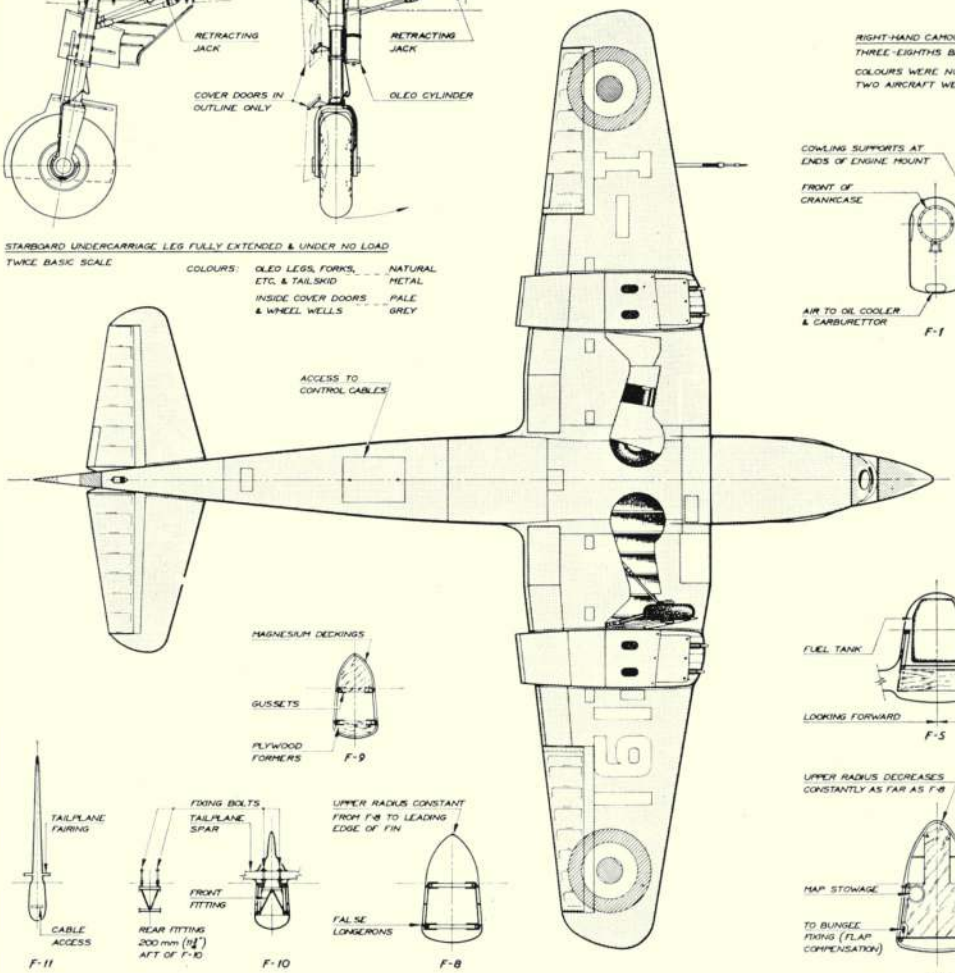
COLOURS: OLEO LEGS, FORKS, ETC. & TAILSKID — NATURAL METAL

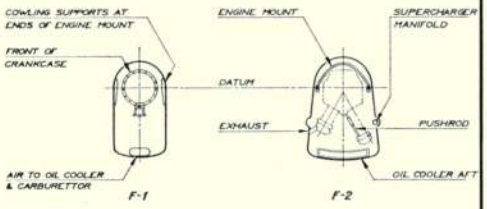
INSIDE COVER DOORS & WHEEL WELLS — PALE GREY

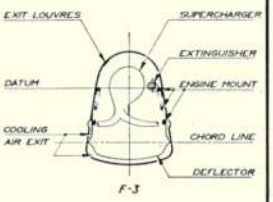
RIGHT-HAND CAMOUFLAGE LAYOUT OF CR.714 No 1 c/n 8533.

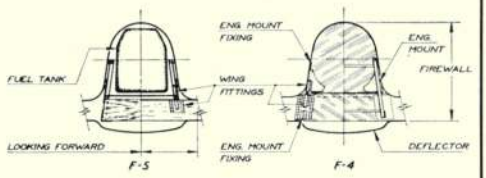
THREE-EIGHTHS BASIC SCALE.

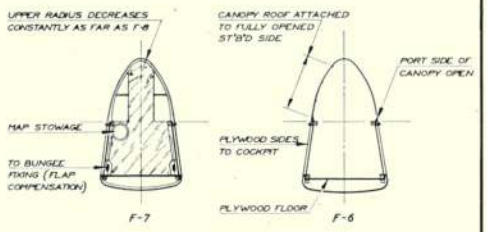
COLOURS WERE NOT APPLIED TO ANY SET PATTERN & NO TWO AIRCRAFT WERE SIMILAR.

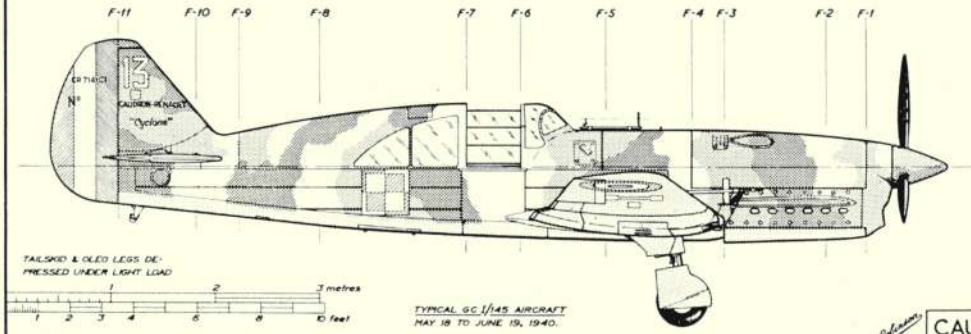




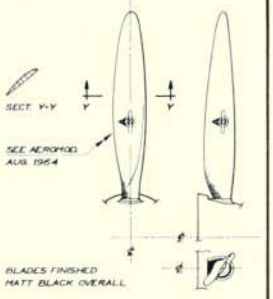








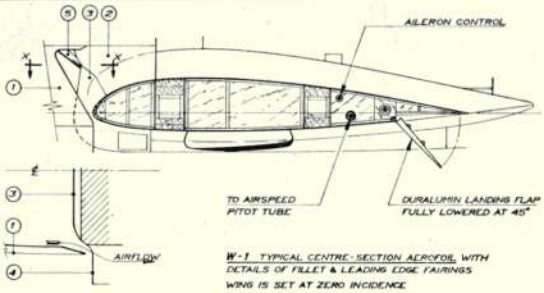
TYPICAL GC.I/145 AIRCRAFT MAY 18 TO JUNE 19, 1940.



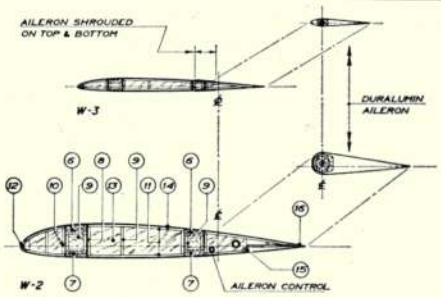
PROPELLER BLADE IN COARSE PITCH

TWICE BASIC SCALE

CAUDRON-RENAULT CR.714 (SHT. 1)



REF	ITEM
1	ENGINE COWLING SIDE PANEL
2	REAR SIDE PANEL
3	DEFLECTOR
4	WING ROOT LEADING EDGE
5	ENGINE MOUNT



W-1 TYPICAL CENTRE-SECTION AEROFOIL, WITH DETAILS OF FILLET & LEADING EDGE FAIRINGS
WING IS SET AT ZERO INCIDENCE
ALL WING SECTIONS ARE TWICE BASIC SCALE

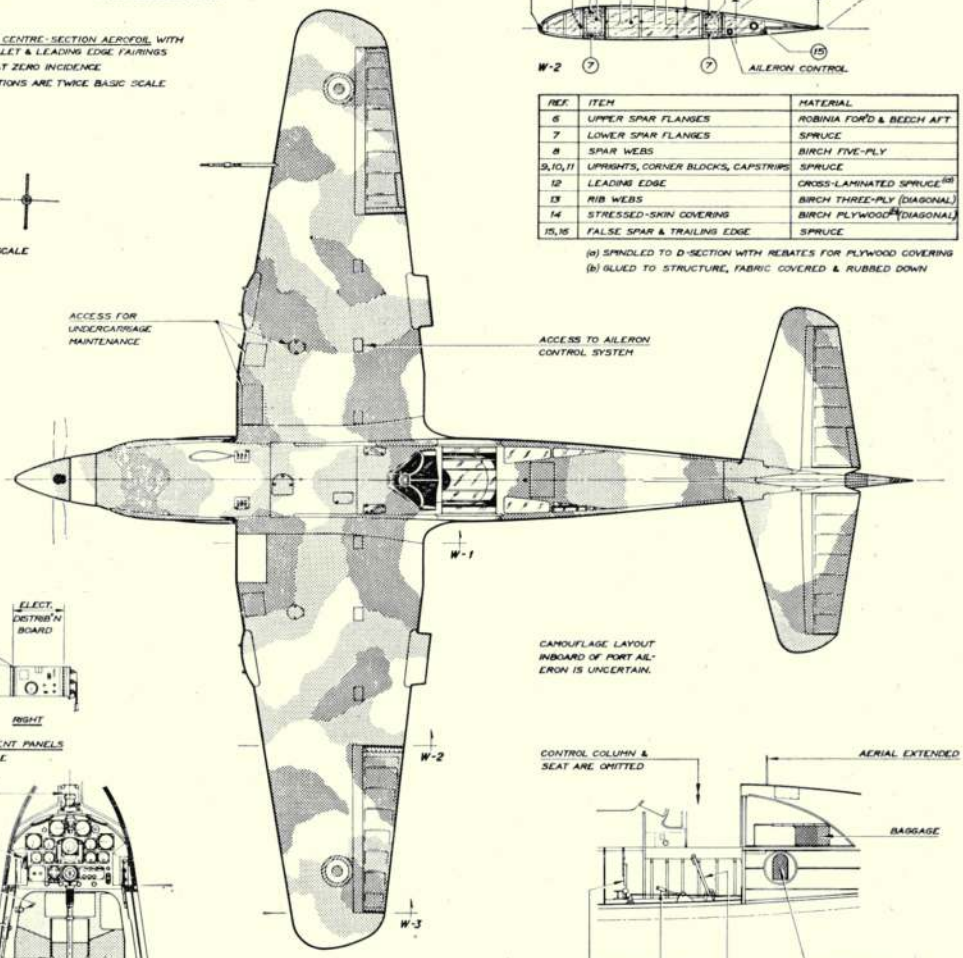
REF.	ITEM	MATERIAL
6	UPPER SPAR FLANGES	ROBINIA FOR'D & BEECH AFT
7	LOWER SPAR FLANGES	SPRUCE
8	SPAR WEBS	BIRCH FIVE-PLY
9,10,11	UPRIGHTS, CORNER BLOCKS, CAPSTRIPS	SPRUCE
12	LEADING EDGE	CROSS-LAMINATED SPRUCE (a)
13	RIB WEBS	BIRCH THREE-PLY (DIAGONAL)
14	STRESSED-SKIN COVERING	BIRCH PLYWOOD (b) (DIAGONAL)
15,16	FALSE SPAR & TRAILING EDGE	SPRUCE

(a) SPINDLED TO D-SECTION WITH REBATES FOR PLYWOOD COVERING
(b) GLUED TO STRUCTURE, FABRIC COVERED & RUBBED DOWN

AIRSPEED PITOT TUBE: TWICE BASIC SCALE

TROUGH WITH GUN REMOVED

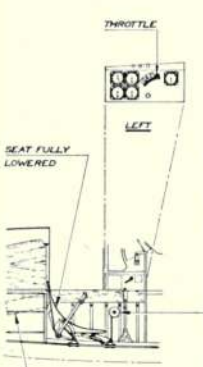
MUZZLE OF OUTBOARD MACHINE GUN
TWICE BASIC SCALE



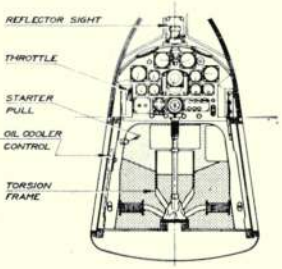
CAMOUFLAGE LAYOUT INBOARD OF PORT AILERON IS UNCERTAIN.

COCKPIT COLOURS

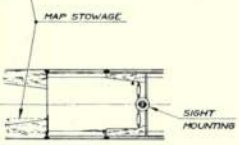
ALL SURFACES, INCL. REAR-VIEW CUT-AWAYS	PALE GREY
INSTRUMENTS	WHITE DIALS, BLACK BODIES & MARKINGS
CONTROL COLUMN & OTHER LEVERS	BLACK



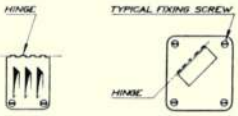
LATERAL INSTRUMENT PANELS
TWICE BASIC SCALE



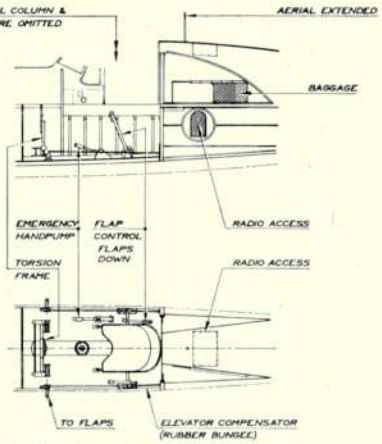
SECTION F-6 LOOKING FORWARD
TWICE BASIC SCALE



PLAN AT DATUM



MAGNETOS INSPECTION DOORS VIEWED NORMAL TO CURVE AT MIDPOINT
INSTRUMENTS
THREE TIMES BASIC SCALE



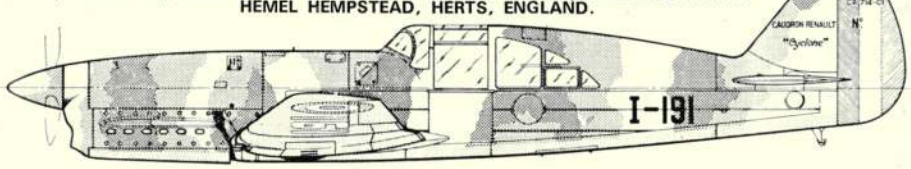
PLAN OF COCKPIT FLOOR (TO SECTION F-7)

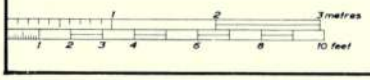
*ALL DIMENSIONS ARE TAKEN FROM ORIGINAL CAUDRON-RENAULT DOCUMENTS

DATA

WINGSPAN	8·970 m (29'-5⅝")
LENGTH	8·632 m (28'-3⅝")*
PROPELLER AXIS ABOVE GROUND	1·589 m (5'-2½")
RUDDER HEIGHT	1·213 m (3'-11¾")
NETT WING AREA	12·5 m² (134·5 ft²)
ROOT CHORD	1·800 m (5'-10⅝")
TIP CHORD	·900 m (2'-11½")
TAILPLANE SPAN	3·300 m (10'-9⅝")
PROPELLER DIA	2·160 m (7'-1")
WHEEL TRACK	2·530 m (8'-3⅝")
EMPTY WEIGHT	1 400 kg (3 086 lb)
LOADED WEIGHT	1 750 kg (3 858 lb)

REPRINTS OF THIS 1/72nd SCALE DRAWING PLUS DYELINE PRINTS OF THE 1/24th SCALE ORIGINALS ARE AVAILABLE AS PLAN PACK JH2924, PRICE 50p, FROM AEROMODELLER PLANS SERVICE, 13/35 BRIDGE STREET, HEMEL HEMPSTEAD, HERTS, ENGLAND.





ALL VIEWS EXCEPT STARBOARD ELEVATION SHOW FIRST PRODUCTION AIRCRAFT c/n 8533, ASSEMBLED AT GUYANCOURT IN JUNE 1939.

Robertson MAE.Th

CAUDRON-RENAULT CR.714 (SHT. 2)

John O'Donnell's

Free Flight Comment

Crookham Contest Modellers were the London District inter-club winners last season – an event decided at a single contest, and not throughout the year as was mistakenly quoted in a recent 'Club News'. Seen here (l to r) are Garry Madelin, Roger Madelin, James McNeil, George Welsh, Andrew Chilton (with trophy), Fred Chilton, Peter Stewart, Geoff Smith and Smith Junior – a potential member of the club and whose main interest appears to lie in Open Rubber. Aiming to keep the trophy in the 'family' lads?

'TON UP', or some such remark, *must* be the start of this month's article. It is the *hundredth* feature that I have written on a monthly basis, first for *Model Aircraft* and then for **Aeromodeller**. To those readers who feel that their personal correspondence is 'written in blood' I can only remark that some editions of this column have been no different!

Following a remarkably quiet winter from the contest goer's viewpoint, the 1971 season effectively opened with the **Crookham Gala** held at Chobham Common on 14th March. The long layoff, combined with a very nice flying day, made for a good turnout and participation. For March, the day was warm and sunny, with a calm morning being followed by a certain amount of breeze in mid-afternoon. Strong lift prolonged some flights sufficiently to give recovery troubles.

Re-entry was allowed, and helped boost the total entry to 139 spread over six events. There were 197 maxs recorded altogether – with trebles accounting for 132 of them! Only events not to need a flyoff were ½A power and chuck glider. Even the former had its perfect score – by winner P. Thompson. Unusual rules of *three* flights only, all scoring, were used for chuck glider. These, in fact, are the S.M.A.E. rules – but Galas commonly count only part of a larger number of *launches* (and thereby avoid arguments about 'attempts' and what to record when both are under 20 seconds) Under the rules in force, Bill Houghton's first place score was good.

Not surprisingly 'open' glider had the largest flyoff with twenty qualifiers. This is presumably why it was held first. It took some time to marshal the participants, obtain sufficient timekeepers, and troop a short distance to the best launching spot. There was no time wasted, however, once the start of the 15 minute flyoff period was signalled. Mike Woodhouse towed up immediatly, and released almost as soon as his A/2 reached the top of the line. As it was obviously in lift, even if weak, another half dozen fliers promptly 'piggy-backed'. Five out of the seven models held the thermal – and proved to be the top placers in the event. Justice was, for once, *seen* to be done as Mike emerged as winner – flying a rather new looking fibre-glass rod version of his *Wichita*.

The result could well have been different as second-placer Terry Dilks had his 1½ size *Caprice* D/T prematurely whilst well in sight – despite pre-checking his timer. Mike Coomes and Jim Baguley also cleared the five minute mark. Jim was said to be using an old expendable model for the flyoff. This approach makes an interesting comparison to those who changed to models having better performance and/or visibilitv.

The *other* glider flyoff to decide the A/1 event was a very liftless affair. Jim Baguley won with a straightforward square-tipped design with a balsa fuselage. Second place went to P. Island whilst I managed third with a model so old that it is sometimes suggested that it should be flown in Vintage instead. Whilst the fuselage *is* old enough, dating back to my F.A.I. motor-glider record holder of 1950, the wing only goes back to 1959, and the 'Melinex' mirror-finish tailplane is brand new!

Little thermal activity was evident in the six-way power flyoff, won quite convincingly by John West's very fast *'Dixielander'* derived G15 model. Second place went to Russell Peers whose ETA 29 *Woodpecker* glided well off an over-safe 8 second power run. He is now flying for the 'Falcons' contest group following the disbanding of the Congleton club. Third place was a tie between Nigel Clark's O.S.19 powered model and Derek Wain's ETA 29. F.A.I. style design. Dick Johnson used a G15, whilst Danny Jarman was down to a reserve having lost his first model after 15 minutes O.O.S. earlier in the day.

Last and rather too late to be satisfactory, was the rubber flyoff. With a little more drift (at about 10 m.p.h.) than the other deciders, and with rapidly failing light there was inadequate visibility. The air was quite helpful and I should think that the top eight models were all timed out of sight. Three or four participants had a different sort of trouble – crashes just after launch. I can only speculate whether these were due to gusts, turbulence or 'flyoff turns' affecting the trim!

There proved to be a tie for first place between Mike Fantham and Russell Peers with neither recovering their model that evening. The latter's 260 square inch wing design is light with lots of rubber – 5 ozs made up into 18 strands so as to get sufficient power from present-day Pirelli. As far as I know everyone else retrieved their models – although I had to leave a wing in a tree overnight.

There is no doubt that the Crookham Gala was a most enjoyable and successful meeting – run by a club that tried to run a worthwhile contest. To this end they refrained from flying so as to provide organisation and timekeepers. They also forwarded me comprehensive results and comments. That they can also fly as a club was demonstrated over the last Christmas weekend, when they won the L.D.I.C.C. with a minute lead over Richmond. The accompanying photo shows the complete club membership!

March Winds might be something of a stock description – but it still describes the weather for the first **S.M.A.E. Area Centralised Meeting** held at various venues throughout the country on the 21st of the month. Once again it was apparent that the weather can vary appreciably across (or up and down) England – and that this plays a decisive part in the outcome.

The East Anglian area provided all the winners at the corresponding meeting last year. This time it was the turn of the North West Area flying at Chetwynd, near Newport, Shropshire. Despite a good stiff breeze all day they produced top scores in the A/2 (K.M.A.A.) and open power (Frog Senior) events – plus the top three in open rubber.

Top in A/2 was Mike Reeves flying two of his *Humplehounds* and damaging both in the process. His aggregate could have been even more impressive except for a very bad last flight attributed to wing warp or flex induced through 'shattering' much tissue in rough landings. This is a common enough problem with 'Modelspan' as the covering frequently goes brittle with age. Russell Peers won *both* the other events although at the cost of losing in dense woods the *Woodpecker* he has flown non-stop for the last three years. He also damaged three other models – but had the 'breaks' in a different sense as well. Joe Barnes maxed out in Rubber but wrecked the model in the process. A completely untrimmed reverse meant no flyoff. Third place went to John Carter despite, or because of, being clocked off five seconds under a max when well up on his second flight. This inspired Russell to change to a bigger model than the one with which he started.

I made the mistake of believing Manchester Weather Centre's forecast for the two sides of the Pennines, and

went to fly with the Northern Area at Topcliffe. There it started quite windy – and rapidly worsened until it was all but unflyable by the time there was any real chance of the lift needed for a glider. In A/2 only Henry Tubbs and I had the experience (dare I say half a century of contest flying between us?) essential for the conditions. No-one else made more than a single flight, and very few attempted even that. I managed to demonstrate that my A/2 wings are stronger than the 33 lb. breaking strain nylon line I use – but two such breaks cost me a flight. Rubber and power scores at Topcliffe were very low – but represented surprising perseverance from those involved.

Elsewhere there were also tales of wind and woe. As the A/2 contest counted for both the season's club and individual senior championships it attracted entries in consequence. Crookham announced that they intended to join the **Plugge** 'race' this year, and started well with 16 year old Garry Madelin topping the London Area at Chobham and placing second in the national results. George Sharp, now back in the London area and flying for Croydon, was only a few seconds and one place behind. Nevertheless Birmingham who won the Plugge last year are obviously keen to repeat their success, and recorded *four* very good scores at Chetwynd to start off in the lead.

Perusal of the results indicates that conditions were bad enough to make many well-known names conspicuous only by their absence. It also confirms that 1970 National Champion John Cooper and clubmate Trevor Payne apparently meant what they said about not trying again for the title. John is now a country member which means he cannot fly in the team events, whilst Trevor neglected A/2 to concentrate on power – where he placed second in the Frog Senior. This cost him an ETA 29 version of his taper-tip, geodetic structure design. It was not only windy at Henlow – the direction was poor for retrieving!

Not everyone regards the National events as of importance, and certain areas run additional domestic events to cater for local interest. The most extensive 'extras' are probably those run by the North Western Area who lay on open rubber, glider and power, plus chuck glider, events at every area – centralised meeting. 'Doubling up' these and the S.M.A.E. events is possible where appropriate–but not every one wishes to do this. At the meeting just described, 16 fliers entered both the national and the N.W.A. glider events, whilst a further 9 flew only in the latter. Without the cheap entry provided by the contestant's licence scheme I am sure that the S.M.A.E. contests would have attracted even less of the total. For this situation to exist there is undoubtedly something lacking in the national events.

Easter Sunday provided a choice of two free-flight meetings, one at Chetwynd and the other at Chobham. The **North Western Area** have abandoned the concept of their once regular two-day 'public' Easter Meeting – but were able to stage a modellers' event at Chetwynd. This comprised the three open classes and chuck glider.

This meeting was blessed with ideal and almost unbelievable flying conditions. Once the early morning mist eventually cleared, activity was almost feverish. There proved to be little need to rush, as it remained calm all day. Contest control was moved three or four times to cope with variations or even reversals of the wind drift – and the desirability of keeping models within the airfield. Chetwynd is a small all grass 'drome, surrounded by the inevitable farmland and several woods. In the conditions this was no trouble at all.

Maxs were commonplace event though lift could be very deceptive. There were enough downdraughts to finish several competitors' hopes – especially as re-entry was not allowed. Trebles were recorded quickly enough in rubber and glider – but were slow to appear in power. This is a direct reflection on the standard of power flying – a subject currently being debated in *The Message* – newsletter of the N.W. Area.

Chuck glider is not a minor event in the N.W. but is a hotly contested event with several specialists taking it very seriously. Scoring is on a basis of the best 5 out of 9 launches and flying is often tactical. In order to keep track of official verses test flights a launching box is being tried out. Official flights must not take place inside, and test flight outside this area. Not surprisingly top places went to Roy Roberts (now with Wigan) and Barry Kershaw who placed in that order. Eric Higham took the remaining prize.

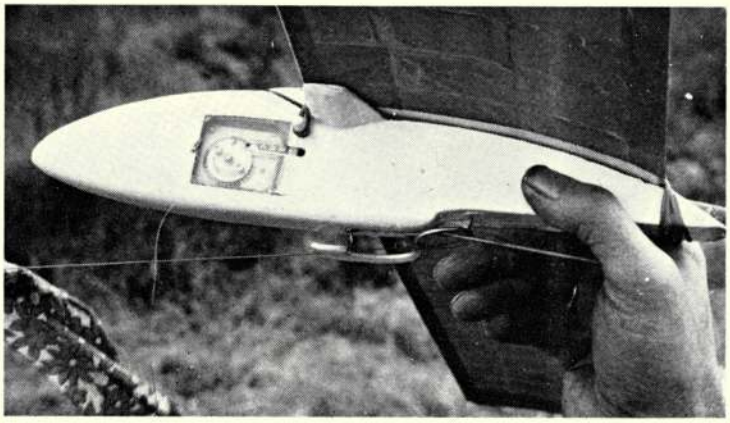
The other events were all decided by flyoffs – and these proved to be rather drawn-out. Gilder was the first away, with two large *Caprice* lightweights amongst the usual array of A/2's. Phil Owens launched first and looked sufficiently promising to tempt Terry Dilks to follow. John Boon, in attempting to release near Terry's model, hit it with his line, thereby costing Terry some valuable height. John himself was able to release in weak lift and slowly sank for just under six minutes. Tony Evans and Dave Yates found more positive lift shortly afterwards to take second and third positions. They were flying conventional A/2s. Pete Oliver tried to use their lift – but his pennant failed to drop when he released his line (*legal* in *open* I should add). His *Sans Egal* derivative glided for several circles trailing 164 feet of nylon before Pete caught the free-end. He then re-towed the model and found strong lift – only to find he could not get the model off the line. The post-mortem showed that the short line extension between ring and the timer release pin had fouled the anti falloff hook and become wedged. This incident caused some discussion regarding attempts on flyoffs – correctly considered as 'one shot' affairs. Surprisingly Terry Dilks was not granted a reflight following his collision. This would have appeared justifiable, and possible inside the flyoff period.

This is the third flyoff that John Boon has won with the same scaled up *Caprice* and a similar model is being considered by other people. So far only Terry Dilks has produced anything similar and his is not as light as John's original, being 10 ozs. a.u.w. compared with 8 ozs! These figures give the clue to the success of these models compared with other big gliders. Merely scaling up an A/2 is not *significantly* helpful. Going bigger at 40% of the wing loading is another matter. Whilst obviously calm weather models, they certainly look practical enough for the right conditions. John in fact finished a slightly stronger duplicate (with a D/T timer instead of fuse!) in the early hours of Easter Sunday, and used it for his treble.

The power flyoff had only three participants, and of these Ray Monks had qualified with 'trim' flights of his latest F.A.I. power model. This is intended for Sweden, and features sheeted surfaces in the best German style. He produced a Cox 15 open model for the flyoff, only to have it spiral in disastrously on a precautionary check flight. Ray looked more amazed than upset.

The actual flyoff was delayed by a wind change of 90 degrees that necessitated a walk across the drome by those involved. As Roger Baggott and Russell Peers launched simultaneously this provided an opportunity for direct comparison. Both used ETA 29s. Roger's model was about F.A.I. size and was much faster than Russell's larger *Woodpecker* – but did not have as good a power pattern. Nevertheless Roger had an appreciable height advantage that was reflected in a minute more duration. Ray reverted to his F.A.I. model and turned in a very good flight – terminated by a rather cautious D/T.

It took an hour to run these two flyoffs and organise the rubber one. With a dozen participants, timekeepers posed the usual problems. There proved to be enough volunteers to be allocated one to each competitor, who then provided the other timer. Unfortunately the light was fading, and turned the event into something approaching the visibility



Long-time glider enthusiast Dick Twoomey uses an internally mounted timer visible through a perspex window on his *Sparrowhawk A/2* – see January issue, page 25. Very 'trendy' tow-line flag does not aid performance noticeably but the 'anti-fall-off' loop on the tow ring is a definite help and is simply a piece of neoprene fuel tubing slipped over the line. This arrangement is unusual in that a separate line from pennant to timer is visible so that the fuel tubing and pin do not appear to operate the timer.

Currently well on form, Russell Peers (now with beard – to help him blend in with Chobham's foliage?) launches a new version of his ETA 29 *Woodpecker* for second place in the Crookham club's fly off.

contest so often decried. There was less than half a minute between second and eighth.

Frank Elton emerged as winner primarily by being almost wound up when the start of the flyoff period was signalled – and hence able to launch well before anyone else. His model drifted differently and slower than the opposition and held climb height until a stall developed at about four minutes. This made the rest of the flight easier to see! His model was similar but much lighter than his 1970 Woodford winner, and is roughly Wakefield wing area. It utilised 12 strand motors for the comp., but Frank added an extra loop for the flyoff. This improved the climb and explains the stall! Runner-up was John Carter, with just one second lead over Rex Lennox (making a return to the contest world after a 4 or 5 year layoff – and still flying his old models). Russell Peers experienced the rubber fliers' nightmare – a motor break just *after* he had withdrawn the winding tube – but got his reserve away in time.

Prizes were cash made up from the entry fees – and proved to be double the amounts guaranteed by the N.W. Area. Awards extended to the top *three* juniors – an arrangement almost unheard of these days.

Meanwhile back at Chobham, the **North Surrey Aeromodellers** were not so lucky with their rally. Details of this meeting were supplied by Malcolm Lambert:

"The **N.S.A. Spring Gala** was held on Easter Sunday, April 11th, with sunny weather marred by strong gusting winds. An early change in wind direction meant resiting the contest control area.

Open Glider attracted the biggest entry and was won by Jim Baguely, beating Colin Morris by a second, with Gregory third. Open Rubber presented retrieving problems for Bruce Edwards and Lou Burrows – Bruce eventually winning with two maxs and a short D/T final flight. S. M. Taylor did extremely well to gain second place flying a very small 'open' model.

Andy Crisp won Open Power with a 1:39 lead over Danny Jarman. C. d'Hiver, which attracted no less than 14 entries, was won by Dave Tipper, who wisely elected to fly later on in the afternoon.

As a note of interest, ½A Power was cancelled (1 entry), so an additional event, A1 Gliders, was put on by popular request. Hand launch glider was won by host club member M. Keevil, with a new model which featured a Solarfilm covered, built up wing and clockwork D/T timer."

The subject of open rubber rules is always good for argument, with viewpoints ranging from one extreme to the other. Some are happy with the event, whilst others consider it a farce. Late flyoffs, as just described, can be as unsatisfactory as early thermal influenced ones.

I have had details of an alternative approach to the open rubber contest from the North Surrey Aeromodellers. They did not try these ideas out at their Easter event, but intend to do so later in the year. The draft rules supplied to me are comprehensive and cover many possible, if not over-likely, contingencies. Unfortunately, this makes the rules too long to quote verbatim so I will have to attempt a summary.

Basically the concept is to make *five* flights, *without* a max, disregard the best and worst, and total up the remainder. Detailed points include the absence of 'attempts', i.e. all launches count, and the allowing of any number of models. Furthermore, flights not taken mean that the worst of those made is disregarded.

These ideas are quite radical, and the implications are interesting. I can see these rules being expensive on models in any weather, whether calm and thermally or just plain windy. The sort of model required may well be different to that usually flown. Before attempting to predict what might happen, it might be as well to see the idea tried in practice. It is certainly encouraging to see ideas that go deeper than merely altering the number of flight or the max employed – and which don't suggest the abandonment of open in favour of F.A.I.

CROOKHAM GALA, CHOBHAM COMMON, 14TH MARCH 1971

RUBBER: 13 in flyoff, 21 entries. 1 (Equal) M. Fantham (Richmond) M+6:48, R. Peers (Falcons) M+6:48. 3 B. Edwards (Richmond) M+6:25. **GLIDER:** (20 in flyoff, 52 entries). 1 M. Woodhouse (Norwich) M+6:00, 2 T. Dilkes (Spitfires) M+5:34, 3 M. Coomes (East Grinstead) M+5:17. **POWER:** (6 in flyoff, 23 entries). 1 J. West (Brighton) M+5:59, 2 R. Peers (Falcons) M+4:59, 3 N. Clark (Richmond), D. Wain (South Bristol) M+4:02. **A/1 GLIDER:** (4 in flyoff, 24 entries). 1. J. Baguley (Hayes) M+2:06, 2 P. Island (Southampton) M+1:52, 3 J. O'Donnell (Whitefield) M+1:47. **½A POWER:** (10 entries). 1 P. Thompson (North Surrey) 9:00, 2 P. Harris (Evesham) 8:43, 3 M. Keevil (North Surrey) 8:12. **CHUCK GLIDER:** (3 from 3, 9 entries). 1 W. Houghton (Richmond) 3:39, 2 A. Crisp (FACCT) 2:49, 3 A. Fathers (C/M) 2:00. **BEST JUNIOR:** A. Fantham (Richmond).

N.W.A. EASTER MEETING

RUBBER: (12 in flyoff). 1 F. Elton (Leeds) M+6:47, 2 J. Carter (Spitfires) M+6:00, 3 R. Lennox (Birmingham) M+5:59. **GLIDER:** (7 in flyoff). 1 J. Boon (Falcons) M+5:55, 2 A. Evans (Liverpool) M+4:49, 3 D. Yates (Wigan) M+4:38. **POWER:** 1 R. Baggott (Birmingham M+5:42, 2 R. Peers (Falcons) M+4·50, 3 R. Monks (Birmingham) M+4·20. **CHUCK GLIDER:** (5 from 9). 1 R. Roberts (Wigan) 5:32, 2 B. Kershaw (Wigan) 5:16, 3 E. Higham (Liverpool) 4:18.

NORTH SURREY AEROMODELLERS SPRING GALA, 11TH APRIL 1971

OPEN RUBBER: (5 entries). 1 B. Edwards (Richmond) 8:03, 2 S. A. Taylor (CM) 7:16, 3 L. Burrows (Blackheath) 5:40. **OPEN GLIDER:** (27 entries). 1 J. Baguley (Hayes) 8:53, 2 C. Morris (St. Albans) 8:52, 3 J. Gregory (Hayes) 8:32. **OPEN POWER:** (8 entries). 1 A. Crisp (FACCT) 7:40, 2 D. Jarman (Brighton) 6:01. **CD'H.:** (14 entries). 1 D. Tipper (St. Albans) 5:04, 2 A. Crisp (FACCT) 4:29, 3 R. Johnson (St. Albans) 4:14. **A/1 GLIDER:** (7 entries). 1 Hayward (Croydon) 4:25. **½A POWER:** Event cancelled. **H.L.G.:** (entries) 1 M. Keevil (NSA) 2:37, 2 A. Fathers (CM) 2:32, 3 M. Dilly (Croydon) 2:12.

FIRST AREA CENTRALISED EVENT, 21 MARCH 1971

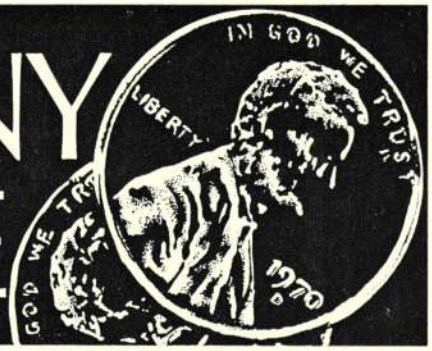
F.A.I. GLIDER K.M.A.A. CUP: (*71 entries*). 1 M. Reeves (Whitefield) 16:33, 2 G. Madelin (Crookham) 15:24, 3 F. G. Sharp (Croydon) 15:18. **OPEN GLIDER – FROG SENIOR:** (*15 entries*). 1 B. R. Peers (Falcons) 9.00+3:11, 2 T. Payne (Northampton) 8:40, 3 B. Sinclair (West Lancs.) 7:00. **OPEN RUBBER:** (*16 entries*). 1 B. R. Peers (Falcons) 9.00+2:22, 2 J. Barnes (Liverpool) 9:00, 3 J. Carter (Spitfires) 8:55.

DE-BRIEFING, CHELTENHAM, 1971
"An y' kin break y' mutther's 'eart – na, then, me beauties, let's 'ave no more o' this 'ere hinexperience!"

YOUR THREE FREE PLANS

1 Dave Linstrum's simple tissue-covered indoor model

PENNY WISE



THE ORIGINAL THOUGHT behind the name of this model was the old saying of "penny wise and pound foolish".

The *Penny Plane* event was conceived by Erv. Rodemsky as a really simple event with a minimum weight requirement (equal to one U.S. Copper Penny – hence the name – which weighs approximately $\frac{1}{8}$ oz. resulting in sturdy structures. Further limits are imposed on the wing span (18 in maximum projected) and motor stick length (10 in max. – overall length of the fuselage not to exceed 18 in) all of which limit performance. Despite these restrictions, designs in the U.S.A. have been surprisingly original, and even outright beginners have had most encouraging results. Although the rules permit bracing, it is seldom used – the 'secret' really seems to be getting a reliable airframe with the right combination of motor (rubber cross section and length) for the props being used. This class is quite a challenge to the expert to get good times from relatively heavy airframes, so it is interesting to them as well. Times of five minutes are good when there is a 30 foot ceiling height.

Use the lightest wood available for your *Penny Wise* – it may be built with light indoor-weight or regular 'out door' stock. However, if you use normal 'outdoor' stock the model may go overweight.

Make the wing first, noting alternative sizes of wood for novices which are easier to handle, cutting ribs from quarter grain. Use a minimum of glue throughout to save weight – which means that joints must be accurate to provide sufficient strength. Note the $\frac{1}{4}$ in. wash-in at the L.E. of the port tip.

Cover the wing with Jap tissue or condensor paper (available from Laurie Barr) – but be sure to pre-shrink the paper on a frame before covering, and to cover in a dry warm room – this prevents warps from creeping in. Check that the port wing wash-in remains after covering – this is most important as it holds the left wing up in the power turn. No other warps are used.

The tail plane has no ribs, and is formed simply by pinning a temporary spacer in position at the centre section, soaking the L.E. and T.E. in water in order to enable them to bend without breaking, then splice at the tips. Cover with condenser tissue, but do not remove the centre spacer until **after** the tail is glued to the fuselage.

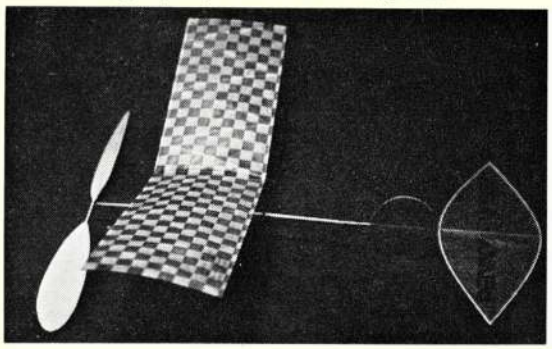
Cut the motor boom from straight-grain wood and add the tinplate bearing, followed by the motor hook. Note the angle of the tail boom – glue this joint well. Let 1/16 in i.d. tissue or aluminium tubes into the fuselage to accept the wing mounting posts.

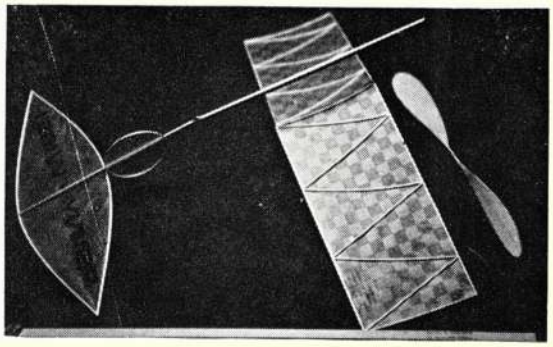
Mould the 1/32 in square strip for the fin around a cardboard disc former – soak the wood first to make this possible. Cover with condenser tissue.

Cut the two prop blades to shape, then add the camber as shown on the plan. Use hard, straight-grain wood for the prop hub – taking care not to split it when adding the prop shaft.

Glue the tail to the fuselage (removing the tempory spacer when the glue has set) then add the fin and glue the wing posts to the wing. When dry insert them in the fuselage tubes – the incidence may be adjusted by moving the posts up or down. Assemble the motor, check the C.G. position (and the all-up weight) then off to the building with the highest ceiling which you can find!

Covered with chequerboard tissue, Dave Linstrum's original takes on a sporty look. What could be simpler than that tail surface? Spread of components at right has the 'go' or 'no-go' stick, with balance weight at end for checking that the model weighs at least the equivalent of a United States copper penny. Stick is 18 in. long balsa.





2 Chris Matsuno's CHICKEN SHIP for PAA-loader units

JETEX MODELS are largely an ignored class in the world of aeromodelling, perhaps because they have rather a 'Kids Stuff' image, but they can, with skill and patience be developed into a highly competitive free-flight class. In the United States there is still a 'Rocket F/F' class, and it received over a hundred entries at the 1970 Nationals.

The largest engine allowed under A.M.A. rules is the '150' or PAA-Loader, so naturally this is the only one used for contest work. With three fuel pellets, the engine weighs 1½ oz. and produces just 2 oz. of thrust for 16-18 seconds. Obviously, with so little power, weight is at a premium – your model must not weigh more than 2 oz. – preferably half an ounce lighter.

In Chris's opinion, a rolled tube fuselage is the best solution, but if such a structure 'scares' you (unjustifiably) a built up fuselage could be substituted – in which case use a minimum of formers and only three sides ($\frac{1}{32}$ in. light balsa) to reduce weight. The motor is mounted below the fuselage as points are not given for loops . . .

To make a rolled tube, carve and sand a length of $\frac{5}{8}$ in. square balsa to a circular sectioned, tapered rod. Try to make it really round and with as straight a taper as possible. Not easy, but possible! Carefully select a sheet of light, quarter-grained balsa, and dope on a layer of Jap tissue – this prevents it from splitting. Cut out a blank the length of the balsa former, allowing $\frac{1}{8}$ in. overlap on the circumference. Soak this block in hot water for at least half an hour. Now take the blank and try slowly bending it around the former. If you hear a creaking sound, put it back into the hot water and allow to soak some more. When soft enough, check the circumference–trimming the edges if necessary. Using 1 in. wide strips of gauge bandage, bind the blank to the former, and leave to dry overnight. When the gauze is removed, the blank should hold its shape.

Remove the former, and run P.V.A. glue down the inside seam from top to bottom. Glue outer seam with P.V.A. or a *slow drying* cement to prevent warps and shrinkage. Do not be tempted to place bulkheads in the tube – they are not necessary and obstruct the D/T line.

Now epoxy the aluminium snuffer tube in position, and use the same adhesive to attach the motor clip to the $\frac{1}{16}$ in. ply mount. Carve the nose and tail cones from soft balsa, cement in place and add the tailplane mount.

Cut the fin from $\frac{1}{32}$ in. medium sheet and glue in place. Construct the pylon and glue to fuselage – checking alignment.

The problem with wings for these models is making a simple, strong, light, warp free structure. The wing and tail shown on the plan meet these requirements and is straight-forward in construction – it is even safe to water shrink the tissue when covering, without worrying about warps. Build in the polyhedral as shown in the wing. Cover the flying surfaces with Jap tissue and apply two/three coats of 50-50, dope-thinners.

When the fuselage, wing and tail are completed, make several test glides in calm air with the empty engine (on its mount) retained by an elastic band. Adjust motor position until a flat glide is obtained, then cut a portion out of the bottom of the fuselage and cement the mount in place. The increased weight of a loaded engine will then offset the increased lift caused by higher speeds when gliding in actual flight.

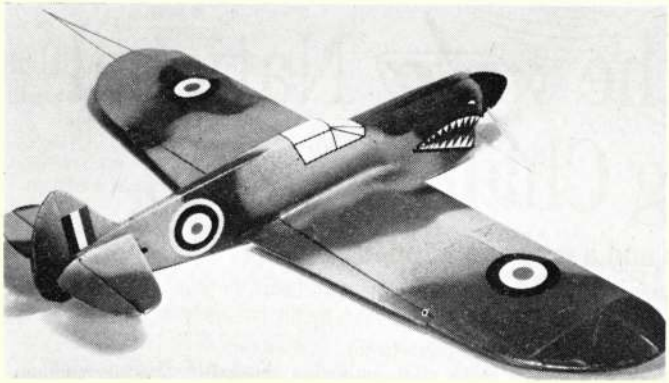
Try to pick a calm day for trimming your *Chicken Ship*. As the model is so light (at least it should be!) wind is definitely not good for it. Make sure that the wing and fin are free from warps, and use a little tailplane tilt for turn (the model flies left-left, or right-right, take your pick!) Load the engine with two pellets, ignite, and wait a couple of seconds until a steady hissing sound can be heard – then launch. A Jetex powered model should always be launched 'softly', otherwise it may stall before the engine has built up thrust (the motor will continue to build up thrust and accelerate until the fuel is burnt out). This means that the turn-trim will not have much effect right after launch (thus making it fly straight and tend to stall out) and will have more effect as it speeds up (which can lead up to a power spin).

With the model now ready to go, the only drawback is the engine and its operation. Misfires can occur fairly frequently unless anti-damp precautions are taken. Store both the fuel and the fuse in glass jars – a small bag of silica-gel crystals are a great help. The fuel pellets absorb moisture and lose efficiency rapidly, so avoid flying on wet or humid days if at all possible.

Wicks are another potential source of trouble. Check the quality by seeing if it will bend and coil without cracking or breaking. Light a small piece to see if it burns brightly (like a sparkler) – if not, don't use it. If it burns well, but will not coil, use it as a straight lead-in piece.

The instructions supplied with the motor tells you how to load it but as an additional point, it is not necessary to pull out the wire core of the wick, as it will either be blown out or melt within a few seconds.

After each day's use, take the engine apart and thoroughly sand off all the residue. Wash the parts in warm soapy water, then dry thoroughly. This prevents the residue from building up, and prolongs the unit's life.



PLAN 3 KITTYWASP

A special Aeromodeller staff design for the coming D.C. Wasp .049 and other small engines

FOR SOME TIME NOW, we have been of the opinion that what is really lacking in our Plans Service is a design for an attractive control line *stunt* model to suit the smaller engines. With the acquisition of a pre-production version of the Davies-Charlton Wasp, a .8cc glow engine, no excuses were left – so, voilà – the *Kittywasp*!

The model is based on the Curtiss P.40 Kittyhawk which possesses many suitable features for a control liner, not the least being the 'sharkmouth' colour scheme! Primarily, *Kittywasp* is designed as a stunter, not a trainer, so care should be taken to select the lightest grades of wood possible, and a fairly powerful motor should be used. However, it is very easy to fly, so a beginner could use 'harder' grades of wood, a lower powered sports engine and still have fun, although the aerobatic performance would be rather limited.

As the 'Wasp' was an entirely new engine, we were uncertain of its power characteristics, so a few bench runs were undertaken. A Heathkit 'Thumbtack' rev-counter showed that this engine turned a Davies-Charlton 6 in. x 4 in. nylon prop at more than 15,500 r.p.m. (using 15% nitro fuel) – and subsequent checks with actual production motors showed an increase of around 500 r.p.m. – obviously quite a potent engine.

The only unusual feature of this model is the 'open' fuselage cowl (or rather, duct). This is for two reasons – access to the engine for the glow plug clip is easy, and the side profile of the model remains intact without recourse to having a detachable cowl or side-winder mounted engine. Naturally, cooling is no problem! Construction is very simple and quick – the prototype was built in a few evenings' work, although we cheated a little by using quick-setting epoxy adhesives extensively which while rather expensive enables a great saving in time to be achieved. Components used are all easily commercially available and little wood is required, so the model is cheap (for these days!) to build.

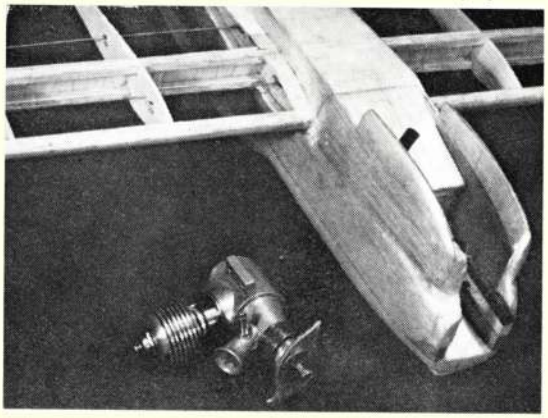
As is normal practice for stunt models, begin with the wing. This is achieved by first cutting out all the wing ribs, preferably using a template cut from 1/16 in. ply. Take a strip of 3/4 in. x 3/16 in. pre-shaped trailing edge and remove a strip 1/4 in. wide from the thinnest portion. Cover the plan with polythene sheet to protect it, then pin the trailing edge and lower spar into position. Now glue the ribs in position, followed by the top spar and leading edge. With the wing still pinned to the building board, add the 1/16 in. webbing between the ribs. When quite dry remove from board, add the wing tips, bellcrank assembly, followed by the tip weight and leadout guides.

Cut the flaps from 3/32 in. sheet, remove the end portions and glue these to the trailing edge. Make the flap joiner from 16 s.w.g. piano wire and brass sheet (this may be obtained from any model shop stocking 'Riko' slot racing accessories). The horn should preferably be silver soldered to the wire, but if this is beyond your means, then soft soldering will suffice. Check this joint for strength. Epoxy the flap joiner in position then reinforce the joint with a nylon patch cemented in place. Hinge the flaps with nylon tape, then connect the pushrod, and complete the centre section sheeting.

Cut the 1/4 in. x 1/4 in. bearers to shape and epoxy glue to formers F.1. and F.2. – not forgetting to install the fuel-tank at this stage. It is a tight fit! Drill the holes to suit the engine being used, and make the two mounting plates as shown or use 'blind' 8 B.A. nuts. Cut out the two basic fuselage sides and glue to the bearer assembly. When dry, join at the rear, then add formers F.3. and F.4. – checking that the fuselage is true.

Glue the fuselage top cowl block in position, then shape to section. Now glue the wing to the fuselage, making sure that it is a good fit, and that the components are square to one another. Add the 1/4 in. balsa tail mount, followed by the tailplane itself. Make the elevator joiner in the same way on the

Continued on page 331



Close-up of the nose reveals open cowl sides for ease of access to engine without spoiling side profile appearance. Remember to add fuel tubing to tank during early stages of building . . .

Announcing the BiC National Model Making Championship

Regd. Trade Mark

If you have a few used ball pens and a creative mind . . . prove it!

Even when they are the world's finest ballpens, as Bic undoubtedly are, they have to run out of ink sometime! For years a further use has been sought for those empty barrels, destined after gallant service to end their days in sideboard or office desk, side by side with less worthy writing instruments.

And here is the answer!

Because Bic Crystals write first time every time there are far more sold in the U.K. than any other model. In fact, each year a Bic Crystal is sold for every man, woman and child in the Country with a few million more for good luck.

Where do they go to?

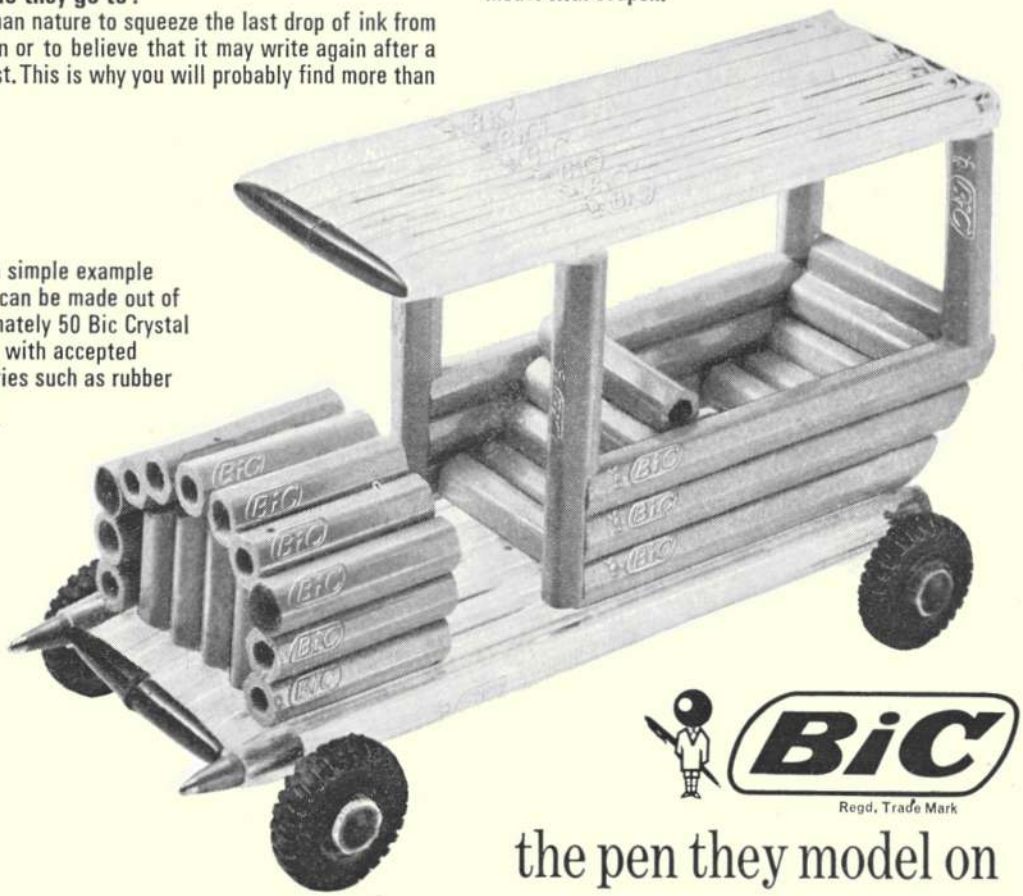
It is human nature to squeeze the last drop of ink from a ballpen or to believe that it may write again after a short rest. This is why you will probably find more than you expect in your own home. In offices and factories you should find them by the hundred.

All you have to do . . .

. . . is to start collecting used Bic Crystal medium and fine ballpens now so that you may complete a suitable model and enter the competition.

There will be cash prizes for the best models every three months, both senior and junior and finally the best modeller overall at the end of the year will be awarded a further cash prize of £250 and the handsome Bic championship trophy.

Take your time, read the rules overleaf, then send your model with coupon.



This is a simple example of what can be made out of approximately 50 Bic Crystal ballpens with accepted accessories such as rubber wheels!

BiC

Regd. Trade Mark

the pen they model on

GOLDEN WINGS AEROMODELLER MODEL CLUB

The club for 10 to 16 years old

JUNIOR CONTESTS AT 1971 NATIONALS

Over the past few months, details have appeared on this page concerning the Junior Kit and the Junior Stunt contests to be held at the Nationals – and by now all hopeful, would-be competitors should have built their models and be familiar with flying them – if not they had better hurry up! All that remains now is to remind competitors that having located the control point for their contest (Junior Kit at the upwind end of the field, Junior Stunt near the control-line area) they should make their entry and familiarise themselves with the contest procedure.

Free-flighters, remember your rubber bands, D/T fuses, matches, winders, towline etc., and control-liners do not forget such essentials as handles, lines and fuel! It really is amazing just what can be forgotten – it not being unknown for a glider enthusiast to arrive at a contest without any wings . . . .

One final point – never be afraid to ask for help or advice from an older modeller. It is quite likely that he is longing to assist and is just waiting for such a request! This, after all, is the best way of learning to progress, and thus enjoy your hobby more fully.

Dear John,

I am having some trouble with my D.C. Bantam in a KeilKraft Phantom Mite. I had been running the engine for some time when I found that due to vibration and several crashes, the nut securing the spraybar was loose and the hole had swivelled round so that it was visible from above. I tightened the nut up and restarted the engine on the correct needle setting. The engine started extremely rich, spraying fuel from the air intake. The revs diminished and although the engine had had a few 'two stroke' bursts, it eventually petered out. Can you please tell me how to remedy the situation?

Alan Smith

New Barnet Herts.

The rich running is due entirely to the fact that the spray bar has revolved. The Bantam uses a spray bar which has only one hole drilled in it, and this should point downwards, facing the crankshaft, and thus not visible when looking down the venturi.

Many engines have two holes, opposite each other, in the spray bar – in which case they should point fore and aft, thus again not being visible.

Dear John,

I have recently come into possession of a petrol spark ignition engine and a clockwork timer. I do not know the capacity of the engine but it has a 12in. x 4in. propeller and on the crankcase is stamped HALLAM, POOLE. It stands 3in. high without the 3/8in. spark plug. The fuel is taken from the tank which is screwed on to the carburettor. The exhaust port is on the right hand side of the engine looking from the rear.

I bought a K.K. coil and condenser for it, but I do not know how to wire it up or what kind of battery to use. The timer has an arm on it which unwinds like the second hand on a watch and it pushes a metal strip off a contact, thus breaking the circuit. I would like to know how to wire it up.

S. McWhirter

Newtown Stewart, Wigtownshire.

Two versions of the Hallam spark ignition engine were made, the 'Nipper' which was a 5.4cc sideport engine, and the 'Hallam 9', a 9cc engine of similar configuration.

Full details on operating a spark ignition engine are given in **Model Aero Engine Encyclopaedia,** *obtainable from this address, price 90p.*

Dear John,

As a member of the Air Training Corps, I have always wanted to make a model of the D.H. Chipmunk, in which we are given 'air experience'. I have now built your plan for a control line version (MA/247), to be powered with a PAW 19D. My only trouble now lies in fuel proofing the model. I have painted it all over with silver enamel paint, but when ever I try to apply fuel proofer, the colour goes very streaky, even when I have left the paint to dry for at least two days.

Is it possible to fuel proof this type of finish?

Wantage, Berks. *A. Chapman*

Metallic enamel paints are always tricky to fuel proof, as the addition of this item tends to soften the finish, causing the streaky marks such as you have found. The only solution is to spray on the fuel proofer. If you do not possess a spray gun, then I suggest that you purchase a can of **Humbrol** *Spray fuel proofer, available in both matt and gloss finishes.*

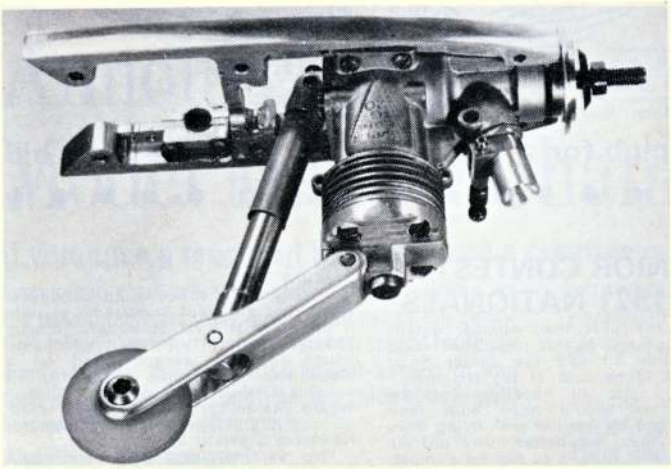
Dear John,

I have just finished building the Revell 1/32nd scale F4U-1 Corsair, and am rather pleased with the result so far. I now have to paint the model, and wondered how it is possible to avoid having a 'hard' joining line between the dark blue upper surfaces and the off white undersides – which would result if masking tape were used.

Huntingdon, Herts. *J. Page*

Achieving the correct impression of 'overspray' where the two contrasting colours meet can be done quite easily, without recourse to expensive aids such as an air-brush or Aerosol.

Take a piece of plastic foam, preferably the hard, close-celled variety, and apply some of the required paint – a relatively dry mix is advised. Apply this foam just behind the leading edge, then roll it forward slightly, just beyond the centre line. The best effect is achieved if the sponge is dabbed along the line; light or heavy pressure gives subtle or dense effect as desired. This method could also be used to repeat exhaust stains or weathering effects.



Martin Shelley's team-race 'package' as described in the text. Although the main undercarriage leg seems very bulky, this will not matter as only the lower half of the wheel protrudes from his unconventional model.

Control Line News

Canny Scots

A recent visit from a Scottish enthusiast, Martin Shelley, revealed some very interesting and superbly machined pieces of 'hardware'.

Firstly, he produced a 'pipe' conversion of an MVVS 2.5cc glow engine, which is still under development. The normal rear-facing exhaust port has been machined away, the neat manifold replacing it. As yet, the motor has not been re-timed to suit the Lindsey pipe, but should be an interesting addition to speed contests when fully sorted.

Another motor, this time destined for team-race use, is a Super Tigre G.15 with a Cox Tee Dee .049 front housing bolted on the backplate to provide drum induction. This is a fairly 'conventional' conversion, but Martin has a rather more unorthodox approach in that the crankshaft is from a front induction S.T. This shaft has had the induction hole filled with 'Molyslip' to provide better lubrication (being sealed at the countershaft) as the crankcases of these motors can be prone to breakage when consistently subjected to operation with lean needle valve settings – which, of course, results in less lubricant being fed to the engine.

His 'piece de resistance' though is probably his team race 'hardware package'. This consists of a crutch machined from aluminium to which is bolted a Super Tigre G20/15. This is modified only in respect of the breathing – a Cox needle valve 'ring' is used on a home-made venturi, with just two peripheral jets.

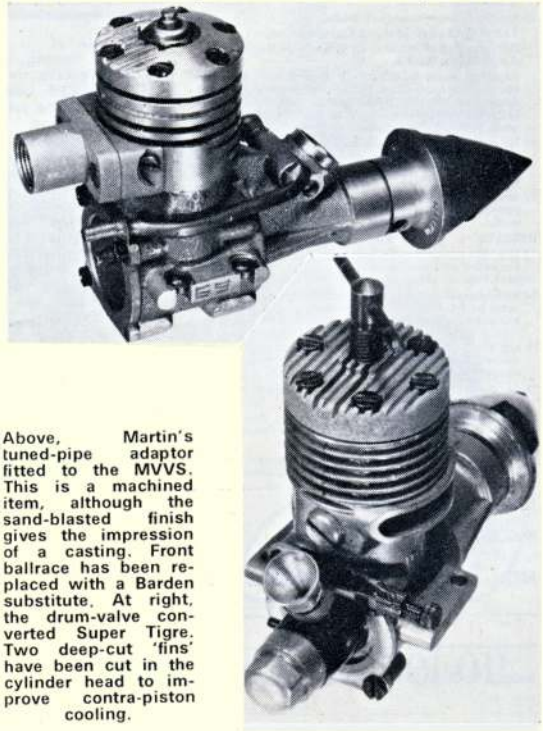
A very solid undercarriage leg (machined from aircraft quality dural) is pivoted on the rear of the cylinder head and is then sprung by an 'oleo' leg which is attached to the engine backplate. The oleo leg contains a spring and neoprene stops to prevent 'bottoming' shocks, while the cylinder head acts as a pivot stop. The whole unit (tank/engine/crutch/undercarriage) weighs just 9½oz. Reasoning behind this unusual layout is that it is intended to be used in an equally unconventional model, where the underside of the fuselage will be vacuum formed from polycarbonate, which has little strength but is, of course, very light.

The complete model, which Martin hopes to complete in time for the Nationals, weighs just 17½ oz. so look out for a T-tailed, delta model around the F.A.I. circles!

Three Legged Rats?

Intriguing item (which could have some relevance over here) attracted our eyes in Bill Netzeband's 'Round and Round' column from *Model Airplane News*.

Apparently, the South Californian flyers have been trying to tame the 150 m.p.h. rat racers to a more sane (!) 120 m.p.h. and have encountered some difficulty in doing so. Firstly, K & B provided some ¼in. diameter venturis to suit their engines, but the speed reduction was a disappointing 5-8 mph. No-one removed the pressure feed systems, and engine reliability improved significantly. Next F.A.I. 80-20 and 75-25 fuel was tried, but again the big drop in performance eluded the experimenters. An attempt to use a



Above, Martin's tuned-pipe adaptor fitted to the MVVS. This is a machined item, although the sand-blasted finish gives the impression of a casting. Front ballrace has been replaced with a Barden substitute. At right, the drum-valve converted Super Tigre. Two deep-cut 'fins' have been cut in the cylinder head to improve contra-piston cooling.

3/16in. dia. intake failed as a proper needle setting could not be achieved when pressure feed was used.

Following this lack of success ,a direct approach will be made in '71. The fastest airplanes in a heat will be spot checked, and if they exceed 120 per, the team(s) will be obliged to land immediately – making engine shut-offs mandatory, as well as necessitating additional organising staff, watches etc.

Will this 'system' catch-on in this country? We certainly hope not as this would seem to produce a pitman only race with models lapping at a consistant 119.9 mph! Actually, with this artificial speed limit, who needs to fly – just have an engine starting contest with no danger whatsoever.

Whilst agreeing with the need to reduce the speeds of the 'ton and a half' models (but how many are there?) this does seem a poor approach. Surely, a simpler system would be:

(a) Reduce engine capacity (unpopular probably with contestants and engine manufacturers, and unlikely to have any really lasting effect due to tuning progress, merely increasing costs).

(b) Specify a maximum diameter silencer exhaust outlet – as despite all the 'fancy' silencer shapes and designs, it seems that basically the maximum power/best silencing depends mainly on the 'size of the 'ole at the back'. This would still allow the best teams to fly fastest, would be relatively simple to 'process', and you never know, may relieve headaches and help regain flying sites . . . two fairly useful side benefits.

(c) Specify a minimum wing area – anyone who can fly a 500 sq. in. wing at over 120 mph deserves to win.

If the American plan catches on we forsee a large increase in the sales of throttle control systems, to be operated when the checking stop watch is clicked on!

Throttled 'Cat'

An interesting letter from Peter Miller of Suffolk provided the following information and sketch on fitting throttle control to that very popular model the *Consolidated Catalina* (available from Aeromodeller Plans Service as CL/606, price 50p) – not such an easy task as the pylon mounted wing and twin engines each produce problems.

The model in question was chosen partly because of the builder's preference for this type, and also as it would prove to be an ideal subject for club flying displays, the tricycle undercarriage preventing all dangers of 'untidy' nose-overs on landing! Peter considered throttles to be essential as spectators soon became bored with a model simply flying round and round, no matter how big or spectacular it may be.

His 'Cat' is powered by a pair of Enya 19 TVs which provide ample power, in fact he finds half-throttle is adequate. At a recent display, the flight circle was situated over long grass with only a fifteen yard take-off strip. Despite this, three landing approaches were made when the outer engine cut, the model climbing away happily on the remaining motor. The final approach was dead on target, and the brakes (Micro-Mold, operated from full down elevator movement) stopped the machine from running off the end of the strip into the 'rough'.

The complete control system is actually very easy to make and install as well as being extremely effective. The bellcrank is of the type developed by Mick Reeves (as detailed in the November 1968 issue). The elevator bellcrank is mounted normally, but the throttle bellcrank has the operating arm pointing towards the inside of the circle, and from here a rod goes to an intermediate 90° bellcrank mounted in the bay forward of the main unit.

The intermediate bellcrank is mounted on a piece of scrap bearer fitted between F3 and F4 so that the bellcrank lines up with the middle of the pylon outer lamination (L/H) which has a groove cut in it, and the shaded portion cut away (see drawing). A rod is fed through the groove with a clevis end at the top. This completes the fuselage installation, apart from making sure that everything moves freely and that the clevis end moves its full and correct travel.

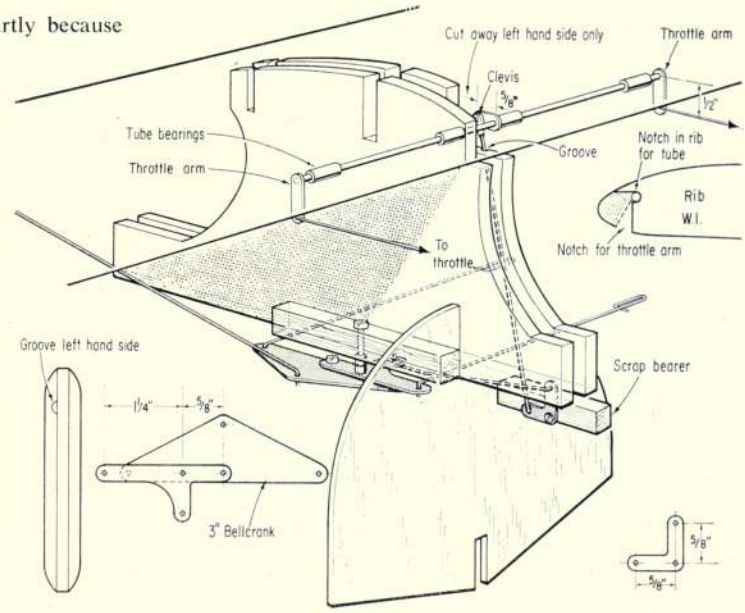
The mechanism in the wing consists of nothing more than a torque rod with three horns, the outer two at 90° to the centre one, and four or more pieces of brass tube as bearings.

The outer horn's position is decided by the engines to be used, the torque rod is fitted in grooves cut in the ribs in the corner of the leading edge. The L/E is then fitted and the bearing tubes epoxied to the ribs, the bearers and L/E are then trimmed and notched to clear the horns and the tanks positioned to do the same. Clevis rods are led through the former and checked for free and correct travel.

When you are ready to fit the wing, cut a small hole over the end of the push rod and check. Adjust the clevis until you have full travel on the horn then cement the wing in place. Final setting is done on the engine clevises.

Racing at the Nationals

A message from Derek Heaton, Chairman of the S.M.A.E. control line sub-committee reads, that all the team race heat flight times will be worked out prior to the events. Copies of all heat times will be available from 5.00 pm onwards on the Saturday at the team-race control tent. These will inform competitors of their flying time – late arrivals will be disqualified . . .



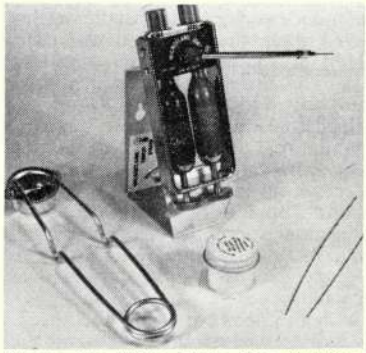
TRADE NOTES

IN CONTRAST to recent *Trade Notes* features, this month's review is concerned primarily with modelling tools rather than accessories for the models themselves. and in consequence, the price tags have risen somewhat!

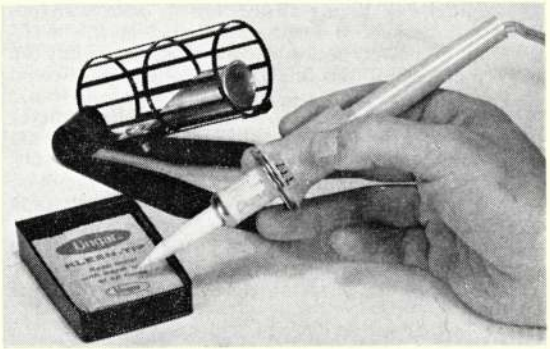
From **Tottenham Model Raceways Ltd.** (367-369 High Road, Tottenham, London. N.17) who are well known in slot-car racing circles, we have received a sample of the *Dremel Motor Tool* kit - a name which readers of American magazines will immediately recognise. This consists of a very neat, hand held, motor unit of only 1½" diameter fitted with a minature chuck to accept a wide variety of accessories, which included buffers, cutting discs, grinders, sanding discs and cutters - all in various grades and sizes. The small size and low weight (9 ozs.) of the unit enables it to be held with the finger tips for precision work - aided by a metal shield supplied to facilitate this. The motor is a high power unit working at 115 volts (thus requiring a step-down transformer, which is available at an additional £2) and provides ample torque - no fear of stalling on even the toughest of applications.

Supplied in a tough, grey plastic carrying case, containing some twenty accessories plus spares, the outfit retails at £25.50, or the motor unit may be supplied separately for £18.00. Spares and accessories are also available separately - replacement carbon brushes incidently cost 75p. per pair. As can be seen, this is certainly a product in the 'luxury' class with regards to both use and price, although no doubt the owner of such an item would quickly find many uses for it, until it becomes an indespensable part of his workshop.

Another 'de luxe' tool, again perhaps with rather limited applications to our hobby, is the *Micro Flame Gas Welding Torch,* which is obtainable from **H. J. Nicholls Ltd.,** 308 Holloway Road, London. N.7. As the name suggests, this is a miniature, hand held, oxygen/butane gas welding torch, which will also make very strong brazed or silver-soldered joints, and is thus ideally



Above, the Micro Flame Gas Welding torch. Item on the left is a flint igniter. At right, the Ronson Blow Torch and accessories are now available with the 'giant economy size' gas container. Below, the lightweight Ungar soldering iron has the stand and bit cleaning pad available as optional extras.



suited for the scale modeller constructing such items as cabane struts, undercarriage units etc. - although it must be remembered that large areas of metal will conduct away the heat too quickly for an efficient joint to be made.

The outfit is extremely complete - but so it should be with a price tag of £16 - and comprises of a frame unit complete with nozzles and valves to accept the gas bottles, which are the approximate shape and size of 'Sparklet' tubes. Six oxygen and three butane cylinders are supplied as well as two different sized tips, spark igniter, tool stand, silver solder flux and rods as well as most comprehensive instructions. Life expectancy of the oxygen cylinder when welding varies from 10 to 20 minutes, depending on the size of tip used - the butane lasting 2-3 times as long at these temperatures.

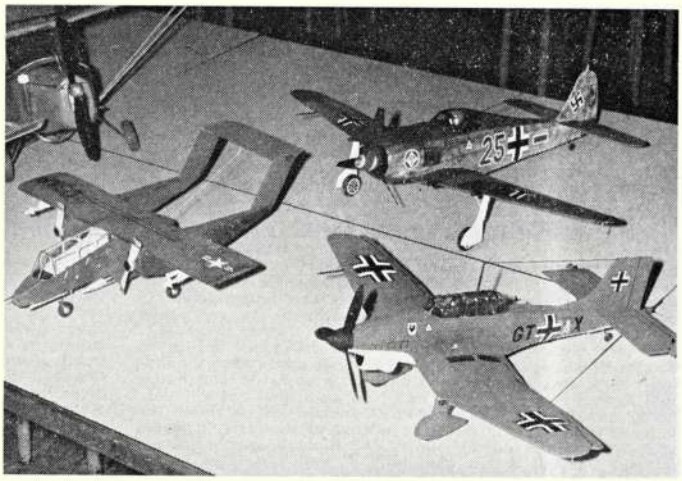
Neatly packaged in a moulded plastic case, this is no toy but a very practical, precision tool of great use to all who utilise metal in their modelling.

Much lower in the price scale is the *Ungar Soldering Iron,* obtainable only from **Davenport and Fordham Ltd.** (3 Thames Street, Poole, Dorset) - who are also better known to model car racing fans. These 47 watt irons are imported from Canada, and are extremely light and compact for this rating, finding favour with the slot-racers

Continued opposite

Conveniently-sized Moto Dremel tool provides many accessories to suit the modeller and is most useful when working with block balsa or gaining access to 'awkward' locations where a normal hand drill would not reach.

CLUB NEWS



The Luton club's 'Concours d'Elegance' contest produced many varied entries, including the three electric-powered round-the-pole models shown here. The OV-10A on the left is a particularly commendable effort from a Junior member – twin-engined and built from 'scratch'.

NOW THAT THE POSTAL STRIKE is thankfully past us we can get back to our usual fullsome coverage of the club scene. And surprising what purpose and vitality there is to be found there considering the pessimistic comments we hear of the decline in the aeromodelling movement. True, the broadening scope and popularisation of the hobby has called for much re-adjustment and re-thinking, but club life as a whole seems to be surviving remarkably well.

Perhaps to give point to the foregoing we welcome a new club to these columns, the **Guisborough & D.M.C.** Mr. David Smith, the P.R.O., who writes to us from Redcar, Teesside, informs us that the membership is some 40 strong, half of which comprises the radio section. The control line section comes to a round dozen in numbers, leaving but a handful engaged in freeflight sport and boating. The club has the use of three flying fields, but nature and location not given. A number of club comps are on the agenda with a junior 'any type model' event as a starter. A club shield awaits allocation to a suitable event. Silencers are compulsory, and we are told that the club chairman, a public health inspector, has a noise meter, but we can only guess whether or not he operates this in his official capacity. Could be something to do with the pollution of earholes.

Again from bonny Scotland comes news of yet another new club. Bob Forrest of the newly formed **Cumbernauld M.F.C.**, tells us that the club exists only on an informal basis at present, but before structurising it would like to contact modellers in the Cumbernauld-Falkirk-Stirling area. The group at present consists of ten members, mainly R/C and control line. The members meet every Sunday at their Fannyside Muir flying field. No less than ten square miles of space, and with all that distance to lend charm there is no particular noise problem. Any interested party should contact Bob Forrest on Cumbernauld 21057.

The backlog of the postal strike having now caught up with the February issue of *Marsh Gas* we have that and the March issue to hand. The magazine is the bulletin of the **South Essex M.A. Soc.**, and is under the general editorship of Mr. C. J. Prime. Good news given in the February issue concerns the Leigh Marshes flying site. A meeting was held of all the interested model flying groups and the authorities concerned, the result of which was the forming of an association of site users which will decide upon the pattern of use of the area. Flying space is becoming exceedingly tight in this over-developed corner of our island, and organised preservation such as this is to be welcomed. Not so welcome, apparently, were some rather over-saucy remarks concerning club mag editors which appeared in *Topical Twists*. A real lambasting for Pylonius here, of which the most telling argument against his assertion of mag editors taking up the job as an excuse for not building models is the production by the *Marsh Gas* editor of a model wing. I am sure the gentleman concerned would be only too pleased to counterblast the counterblast in his own name if invited to do so. The club appears to combine all-round interest with a lively agenda of talks, meetings etc. Mr. Prime can be reached on Southend 43190.

Exhaust Fumes, the newsletter of the **Speke M.A.C.**, is not without a measure of wit, claiming as it does to incorporate the 'Devonshire Gazette for Men Only'. Very forthright stuff this (Speke and be damned!) from a now fashionable scarifying of Pylonius to the continuing saga of Eli Vator and his girl friend Belle Crank, not forgetting the sensational unveiling of the Dick Dastardly flying machine. The latter event was part of the club Model Night held at the community centre. Festooning the billiard table were more serious attempts at aeromodelling art including two r.t.p. efforts; a *Skyvan* and a *Superfreighter*, whilst a benchful of Combat and Goodyear jobs added a more aggressive touch. And on the subject of Goodyear, the idea of a r.t.p. Goodyear event is something new to me, but this is publicised as the next club comp. No profile allowed and 'Eyeball Scale'. Classes for .020-.049, .010-.020, and electric. Mention of a Radio Drug Smuggling contest to be held on Dover Beach not to be taken too seriously.

Having been inveigled into building, of all things, a model boat, I took more than a passing interest in comment on things that float aquatic rather than aerial in *The Scimitar*, newsletter of the **Buckaneers Model Club**. But whether the interest is planes or boats club members have a strong and active committee to represent them, from Bob Rutty, the chairman to the general committee members, and if the weighty 1971 calendar is anything to go by they will certainly be fully extended. Just how a little help all round

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for this "heat without bulk" facility. The handle/element costs £1.05 and spare tips £1.76. In addition, two useful accessories are available, a bit-cleaning sponge mounted in a tray (75p) and an iron-holder (£1.31) which should prevent all likelihood of a charred bench.

Yet a further 'heat source' available to the hobbyist is the *Ronson Blowtorch*, which consists of a metered jet fitting onto a large (replaceable) aerosol-type container of 'Hi Heat' butane gas. There are many uses for this device, including both soft and silver soldering which is made very easily by the fine, easily controllable, flame which is produced. This is a very useful feature when it is important that the flame spread is not wide - as occurs with some similar appliances or 'conventional' blow torches. As an example of its usefulness, a competition at the recent R/C car racing meeting was very glad to borrow our sample for 'on-the-spot' beefing up of his front suspension by silver soldering wire braces in position. The very detailed booklet provided advice on all aspects of soldering, wire and sheet metal bending, annealing etc., as well as many other more mundane tasks of interest to the D.I.Y. addicts. In addition, three attachments are available to fit the general purpose head - these being a 'solid' soldering tip, flame spreader and a diffuser head.

The whole tool is well made, easy and convenient to operate, carries a year's guarantee and is excellent value for £2.25.

can overcome the teething problems of that first radio model is described by Pete Smoothy. The job he made of his Super 60 earned high approval from fellow members, but when it came to the maiden flight the radio equipment went all coy on him. Undismayed he phoned McGregor's and was advised to bring (postal strike) the receiver along for testing which was duly carried out. However, he wisely decided to go superhet and got an on-the-spot swap. Back at the flying field, and under the expert guidance of Mike Parrott, he got in that critical first flight. Although the trim was not quite bang on very little damage was sustained in the rough landing, and another aeromodeller had earned his wings.

Whilst the **Leicester M.A.C.** is not desperate for flying space, having the use of Wymeswold and Arnesby, they are plotting away at the idea of getting their very own field of some 8 to 10 acres. And who can blame them? There is no doubt that radio models in particular can only operate in comfort where the fliers have full control of the area. It is not an activity which mixes too well with other diversions, and tenancies, however benignly granted, seem always in danger of sudden termination. But it all starts at the building board, and here the club has run a useful Winter Building Competition. The event was held on a dual basis; points being first awarded for uncovered frames and later for the finished model. Leading at the uncovered stage is K. Reilly with an *Old Bill* semi-scale W.W.I Biplane (and I always thought Old Bill was a bus) with B. Perk's *Antares* Wakefield close behind.

We are not told in the **Wolves M.A.C's** newsletter just what sort of a spread is Pendeford Airfield, but the club seems pleased to have acquired the use of it. Warning: only fully paid up and fully insured members eligible. The usual flying venue is at the Glacier Boulder, Cannock Chase, where, appropriately enough the first free flight comp of 1971 was held on an icy day. A goodly turn out for the event from this largely C/L club. Tony Marshall won the event with a K.K. *Scorpion*, and by way of consoling, the also-rans gave them a demonstration of his .87 c.c. Amco autogiro. And on the subject of old engines, others knocking around the club are a Kemp 2cc. diesel, an E.T.A. 5 diesel, a Reeves petrol engine and an E.D. Comp Special, minus carburettor. Other news is that Stan Perry and Bill Hatfield have been taking C/L models to work and flying them in their lunch time. Diet is three flights and a cup of coffee cum methanol apiece. And a word of advice from Dave Day on how to avoid giving the furniture a coating of balsa dust: sit in the bath and switch on the extractor fan, if you have one. It makes for a clean job.

Ron Hughes, who writes up the **Watford Wayfarer's** newsletter, is in agreement with some remarks we made the other month about the isolation both from the movement and other clubs which can affect the sport-flying only club. In order to widen the contacts of his own club he intends to fix up some friendly fixtures with neighbouring clubs. An idea which might well appeal to other clubs which are becoming perhaps a bit inward looking. Outward looking, though, are the contest prospects of some of the leading radio lights of the club. Dick Allen doing the book with his *Galahad* and Tony (who?) flying an 'armour plated' design. On a lower level there is the member who tried a flick roll with a *Heinkel* (one of their planes . . .)

Not long off the launching pad and now with all systems go is the **South Norfolk R.M.A.C.** This all radio club stresses that the emphasis is on flying rather than talking about it. Fees are very modest for this type of club: just one pound basic with extra for S.M.A.E., membership either associate or full. Interested parties can contact Peter Jenkins at Redgrave, Diss, Norfolk.

Bit of controversy over the result of the East Anglian Area 'All-in' F.A.I. comp. The two Anglia club Collins, Ken and Roy, battled it out for the top place with their power models. Ken who, apparently, had some trouble with his model on the fourth flight, elected to fly his Wakefield for the fifth flight. Since this was an all-in event, where all things should be equal, this action would have appeared to have been in order in the absence of a particular rule to the contrary. However, since it appears customary to stick to one class of model in such events a rule defining this has been hastily introduced. Nevertheless, good flying by both these able exponents. Reported in the area newsletter is the sad demise of the Manningtree club in spite of all the sterling efforts of Secretary, Chris Elsey. Chris has now joined the **Colchester Club**, and is editing an excellent club magazine. Doug Sargent of the same club has also got something quite big in circulation: a four-engined *Avro Shackleton* which took 150 hours to complete, just beating my chuck glider record.

Suffolk is not a highly populated county, and we seldom hear of any club in that flat expanse of country, but we now have a letter from Mr. F. Clarke, giving news of the **Waveney Model Flying Club.** The club has a 60 strong membership whose interests seem to cover every department except free flight. No information on airfields given, so it may be that the locale is not conducive to free range flying. Anyway, an idea of what the club had to offer in the way of flying machines was demonstrated at the 'Bring a Model' night. This took the form of a Senior and Junior Concours. Winners were a scale *Tempest 11*, an unspecified radio model, and, of all things, a model torpedo boat – in a separate section though. Perhaps the highlight was an impressive arraignment of six semiscale *Chipmunks* of the club Display Team. Each is throttle controlled and has a 'Mick Reeves' type control system.

Not much to cull from the **Scottish Aeromodeller Association** newsletter; mostly information of a local nature. We do not hear much from over the border these days, but the calendar of events seems to indicate that plenty is going on.

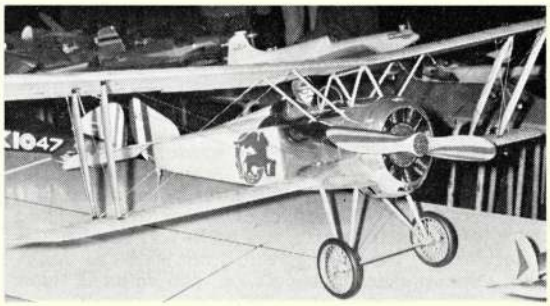
Small field flying is a talking point in the northern *Model Aeroplane Gazette*. It is suggested here that the only way free flight flying can survive is by giving publicity to the smaller class of model, i.e., A/1 Glider, Coupe D'Hiver and Chuck. **Halifax M.A.C.** has already run a successful chuck glider event and a small rubber powered contest, resulting in an increase in membership and a show of interest from people involved in controlled forms of flying. The Coupe D'Hiver International event recently held in France is given good coverage here by Ron Firth. It is the sort of thing that demonstrates just how popular and satisfying small field flying can be. Anyone who has tried his hand at a Coupe D'Hiver model will, like me, be aghast at the sort of performance the top international boys can squeeze out of the small loop of rubber allowed.

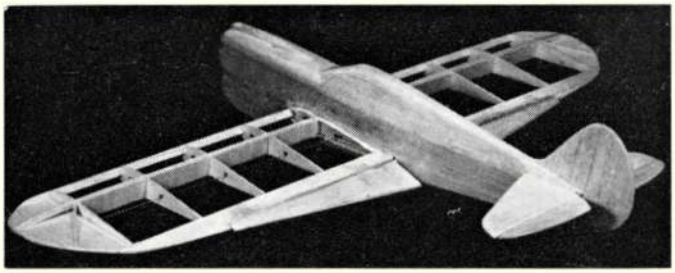
Do we run too many small contests? Someone writing in the **Belfast M.F.C.** newsletter *Nitro* is in no doubt about the answer. In fact, he believes that competition flying, far from stimulating interest as it is generally believed to do, has just the reverse effect, leading to staleness, particularly where it is the same bunch of people doing the same thing, with a third place the worst that can happen to any one of them. There is a great deal of truth in this, but then again, to many competition flyers the small rally is their idea of flying for fun; if the weather is not conducive to the fun they just don't fly, which is hard luck on the organisers. Really flying for fun, though, is to put the scale lavatory seat and the flying carpet through their hilarious paces. Iain Wyllie's 'carpet' made a few welcome circuits (he should next try a Hoovercraft) but for Frizell Matchet's 'lavatory seat' things did not pan out. Back on the contest scene, the club welcomes the decision of the **Elliott M.E.C.**, to send a team to the Northern Ireland C/L champs. They will be guests of the Belfast boys, who will provide free accommodation.

Those of you who remember the insignia of a somewhat vapourised vulture hovering over the slogan 'Fly F.A.I.', reproduced in our March issue, may wish to know a little more about the Toronto F.A.I. group who sport the emblem. The news sheet gives notice of a double event to get the season under way: *Spring Thaw '71* and *Spanish Fly Postal Meet*. The latter is a traditional Nordic event (A/2 gliders), although some may think the play of words in dubious taste. Unlike our own country where the weather is mediocre all the year round, in Canada they greet the coming of spring with rather more enthusiasm; as the first bird song penetrates the ear muffs, out come the models from the deep freeze.

We are not the only people with inflation problems. In common with many clubs in this country the **Mashonoland Model Club** of Salisbury, Rhodesia, is to have an E.G.M., on the question of a suggested rise in membership fees. And they have flying field troubles, too. It's not just a question of pushing a few elephants to one side, although they surely must have a bit more elbow space.

Another competitor in the Luton club's contest was Peter Neate, who normally takes the cup for first place. This year was no exception – his superb R/C version of the Hanriot HD1 proving a worthy winner. Wheels are built up, spoke by spoke, control runs lie inside the struts, hand-carved prop, etc., etc. make it a likely contender at this year's Nationals.





Left, uncovered view reveals simple nature of this model. Note vertical grain on the wing spar webs, which produce a very rigid structure. Sheeted – in cockpit area also aids strength – and is easier to build!

Below, the *Kittywasp* with its familiar 'Sharkmouth' decor – Profile Publications No. 35 provides many different colour schemes for the Curtiss P40, Roundels, etc., obtained from a Keil Kraft transfer sheet, while entire model was sprayed with a 'Cellaspray' bulb-operated unit.

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flap, and install. Cut a slot in the fuselage side for the pushrod, then connect the flap and elevator horns.

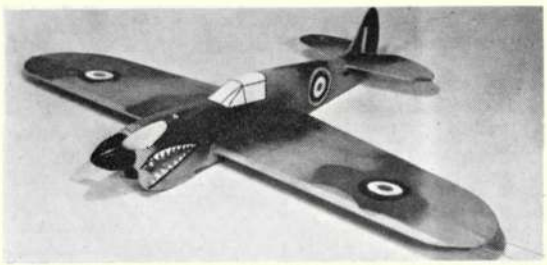
Add formers F.5. and F.8. and when dry, add the upper cowl sides – these may be trimmed over length and later sanded to match the 3/32 in. sheet spine which is glued on last.

Glue the 1/16 in. balsa 'cockpit glazing' in position, followed by the fuselage sides previously removed for the wing access, followed by the bottom sheeting – grain crossways. All that remains now is to cement the 1/16 in. balsa duct in position, the 1/32 in. ply cowl side reinforcement pieces and the 1/4 in. sheet around the nose. Sand the nose to a smooth finish to blend into the spinner, and sand a 'V' shaped recess to separate the lower cowling outline.

Finally sand all over and cover the entire model with lightweight tissue, followed with 2-3 coats of dope (sanding sealer on the fuselage and tail) taking care not to warp the surfaces. The fin followed by the rudder (noting the offset) is now added and sealer applied.

Many colour schemes are available to choose from and a glance at the Aero Modeller Plan Pack No. 2884 (price 35p) will give you some good ideas as well as providing marking details. Profile Publication No. 35 will also provide plenty of inspiration for adventurous builders – but do keep the weight down if top performance is required.

With the model finished (and fuel proofed!) check the C.G. position, unravel 30-35 feet of your single strand steel lines (no Terylene please – it stretches too much) and you are all set for Kitty-Wasping!



Continued from page 330

W.M.C. Patter, from the **Willamette Modellers' Club**, seems to have gone all 'indoor'. Meetings are held in a hall with a 26 ft. ceiling. High enough, apparently, for 6 to 9 min. flights. And just to encourage the newcomer to the sport a simple indoor plan is included together with an article on how to trim the flimsy beasties.

Advertised in the *South Island News*, a contest modellers newsletter from New Zealand is a complete prop hub mechanism of the lock pin type. All that sweat and strain removed for just seven dollars. Comes from New Mexico. Not that the serious flyers appearing in the SIN pages would be induced to take the easy way out. At least the Wakefield team members would be well advised not to do so – I think there's a rule somewhere! Mention here of the despatching of the N.Z. models for the World Champs. Appears they have arrived for I saw a couple the other day.

Mr. Lawrence W. Hoffman writes to us of aeromodelling activity in that island fastness called **Taiwan**, but which was formerly Formosa. He tells us that no club as such exists on the island, although a number of Taiwanese modellers get together at weekends for flying sessions. No hint given on the type of models flown or what difficulties are encountered in obtaining the 'goodies' so essential to modern style model flying. Quite a number of countries are very restricted in this direction, although it is possible to knock up a reasonable sort of glider from the most unpromising materials. But I am digressing. Coming back to the Taiwan situation, Mr. Hoffman is now trying to form a club, but first some sort of flying space will have to be rented, and space is very much at a premium in this densely mountainous country. Good luck to him, however, and we hope that he will give news of a thriving club when next he writes.

THE CLUBMAN

When in the May issue I made some comment about the fluctuation in popularity of Jetex flying, it may have been construed as applying to the present time. Let me say, however, that my remarks were made in the context of the situation as I saw it in the 1950s, and I did not make it clear that my words did not apply to the present day. I now understand that both units and fuel are available and reasonably inexpensive. I for one am looking forward to a resurgence in this form of flying.

Another round of news and views next month.

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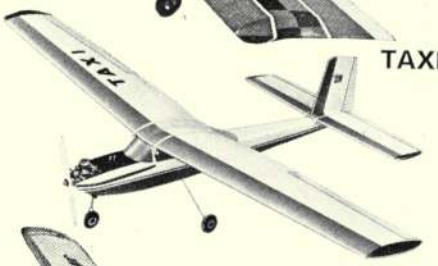

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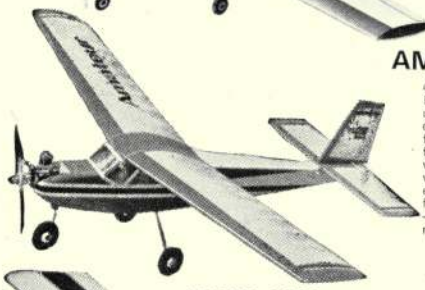

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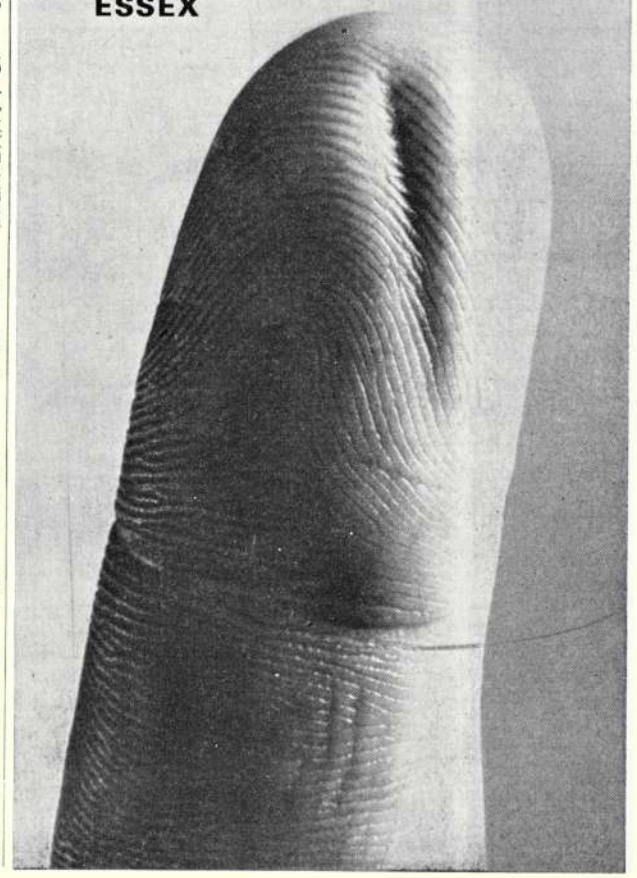

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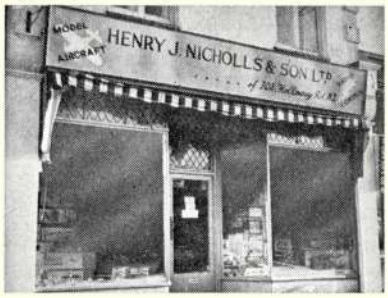

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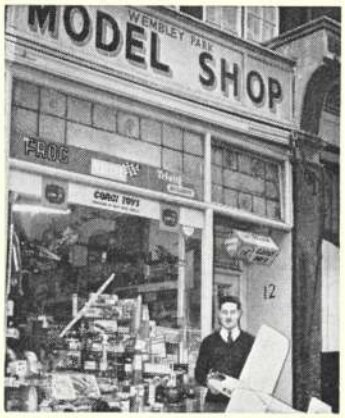

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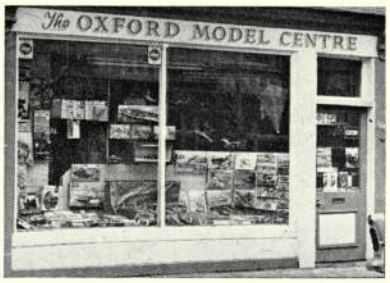

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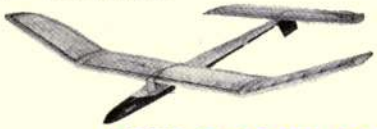

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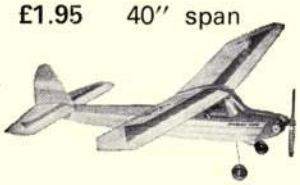

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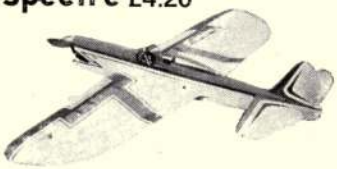

40½″ span

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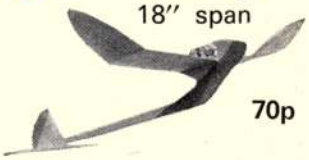
JETEX 50 POWER

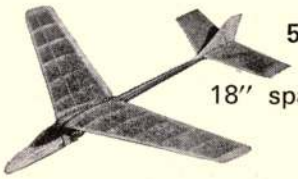
Space-jet
18″ span



70p

Hi-jet £1.25
21″ span

Sky-jet 50



50p
18″ span

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JETEX 50 POWER

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