

# MODEL *aircraft*



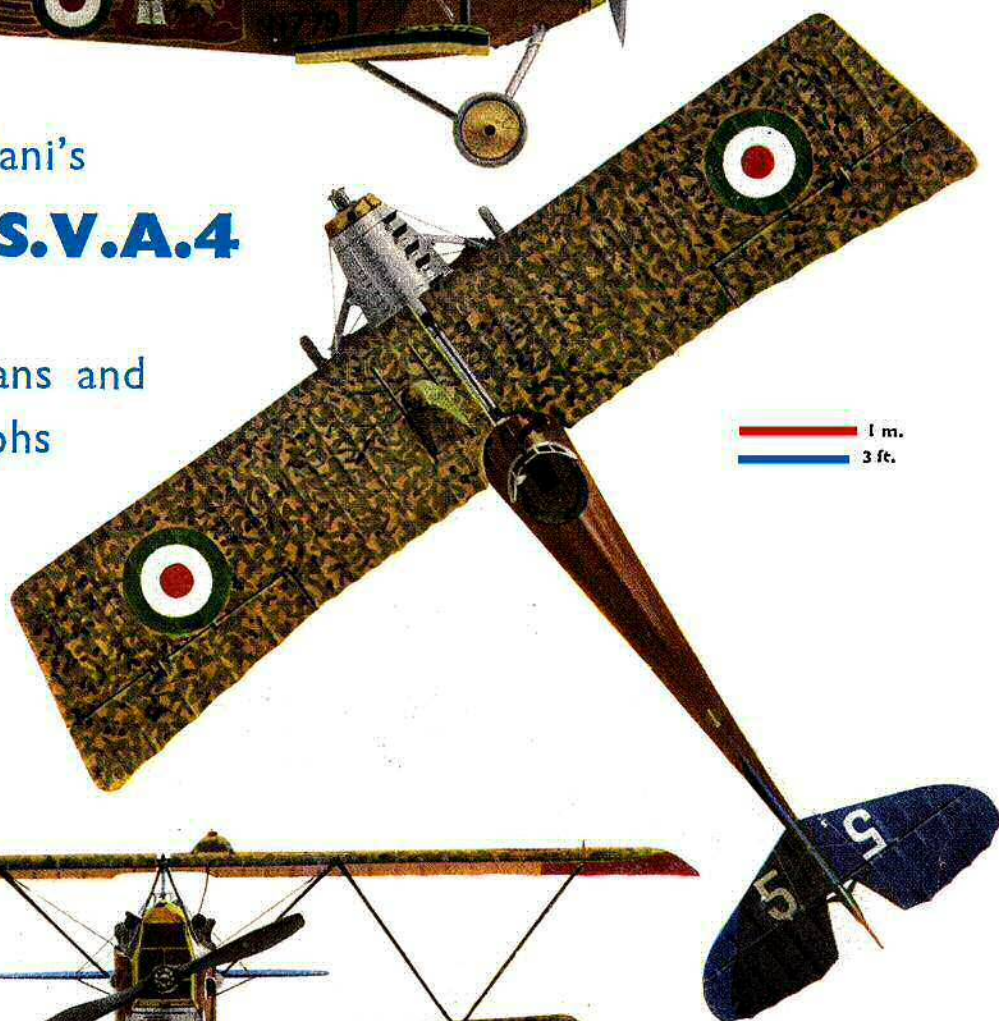
Cesar Milani's

**ANSALDO S.V.A.4**

*plus*

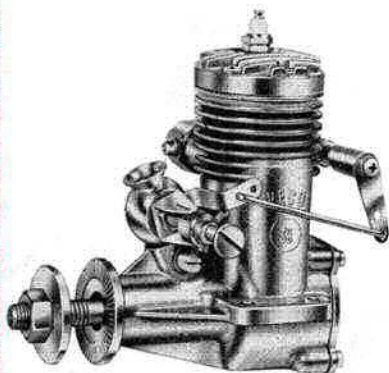
Prototype plans and  
photographs

1 m.  
3 ft.



**SPECIAL CHRISTMAS NUMBER**





### VECO 19 R/C ENGINE

The finest R/C engine available today. Fully variable throttle. The price is right at £6/17/6  
 VECO 35 C 6 c.c. Glow ... £8/5/0  
 VECO 35 R/C 6 c.c. Glow ... £9/15/0  
 VECO 45 R/C 8 c.c. Glow ... £14/18/0  
 As used by U.S.A. Champs

### VECO ALI SPINNERS

Standard 1½ in. ...	7/11
1½ in., 1½ in., 2 in., 2½ in. all at ...	9/6
Standard 2½ in. ...	12/1
1½ in. and 2 in. Needle Nose ...	12/1
Shaft Extension Units ...	7/11
Union Nuts all at ...	9d.

### "PACTRA" FUEL PROOF CEMENT

The only truly hot fuel proof cement available. Large tube 2/6.

### SCHUCO GLIDER WINCH

Takes up to 650 ft. of .027 in. line. Quick recovery with 8 : 1 gearing. £3/6/0.

### ★ D.E.A.C. CELLS ★

We are now sole distributors for these modern batteries for modellers. New range of DKZ 225 and DKZ 500 cells and packs now available.

### ★ ANTEX IRONS ★

Special 6-12 volt model for field repairs	25/-
Mains model for fine work ...	29/-
All sizes of spare bits ...	2/-

National distributors for: Davies Charlton, Quickstart Fuels, engines and accessories. E.D. fuels, engines, R/C and accessories. All Humbrol products. All H.M.G. products.

ALL THE BEST MODEL SHOPS NOW HAVE THE NEW

## Veco Range

IN STOCK

### VECO SCALE WHEELS

As recommended for many C/L and R/C Planes.

2 in. Semi Pneumatic ...	12/1
2½ in. Semi Pneumatic ...	14/6
3 in. Semi Pneumatic ...	19/-
3½ in. Airwheels ...	42/-
4½ in. Airwheels ...	48/-

ALL ENGINE SPARES IMMEDIATELY AVAILABLE

VECO CATALOGUE 6d.

ASK YOUR REGULAR MODEL SHOP TO SHOW YOU THE VECO RANGE TODAY

### RADIO CONTROL WITH MODERN METZ UNITS

IN LOOKS AND OPERATION YOU WILL FIND METZ IS YEARS AHEAD OF ALL OTHERS

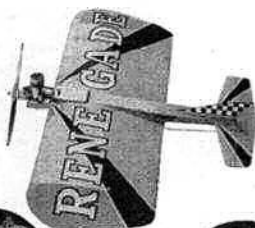
STOCKED AND DEMONSTRATED BY ALL DISCERNING MODEL SHOPS

### METZ "BABY" UNIT

This is a complete single-channel R/C unit designed to give trouble-free operation. No tuning is necessary. Two soldered joints only. Transmitter operates off two U2 cells. Receiver and Servo off one Deac battery. Out of sight range. Complete unit £21/17/0

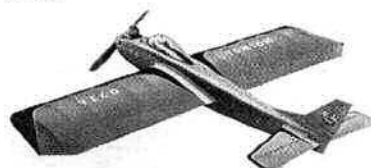
### SCHUCO HEGI STYROFLEX

48 in. span, quick assembly, foam filled fuselage for single or multi R/C. £5/6/0  
 The full range of METZ R/C and Schuco kits are illustrated in the New 1961 Catalogue. Get yours today.



### VECO "RENEGADE"

Stunt or Combat kit for Veco 19 ... £1/15/0  
 VECO 19 (illustrated) ... £5/15/0  
 VECO Tank (illustrated). Wide range for all models.

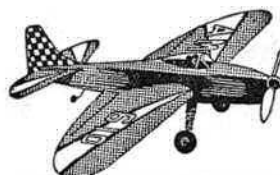


Get started in Stunt with "Little Tom Tom." 28 in. span for 1.5-2.5 c.c. 27/11  
 Or the larger "Tom Tom." 40 in. for 3.5 c.c. 44/-



### "THE WHITE CLOUD"

Top Class R/C kit for VECO 19 R/C and Single or Multi. £6/9/6



### VECO THUNDERBIRD

Bob Palmer's winning stunt model for 29's and 35's. A complete kit. £4/9/0

# BRADSHAW MODEL PRODUCTS LTD.

4 NORTON STREET, SALFORD 3, LANCs.

PHONE: DEANS GATE 2023

THE FIRM OF THE FUTURE

# TOP FLIGHT

## ADVANCED KITS

**LYNX.** Length 22½ in., span 23 in. Metallised plastic wing-coverings; vacuum formed white plastic fuselage shells. No cutting, no painting, no doping. Jet powered by Jetex PAA-Loader motor. Pre-cut balsa panels and wing structure, cement, transfers and instructions. Price, inc. P.T. 25s. 4d.

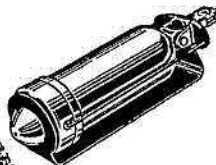
**THERON.** Length 25 in., span 22½ in. "Two-in-one" model: graceful tow-line glider, or flashing jet powered by PAA-Loader motor. All-plastic fuselage; pre-cut balsa with tissue covering for wings, tail-plane, etc. Complete with plan, cement, transfers. Price, inc. P.T. 17s.

**REAL JET POWER.** Jetex motors are safe and simple. Jetex solid fuel is burned within the motor casing and builds up pressure which is forced out through a tiny jet-nozzle—at *supersonic speed*! The motor can be used again and again simply by re-loading with fuel pellets.

**50c MOTOR.** Popular-size motor for small fighters such as P.1, Hunter, Gnat, etc. Use of the Jetex Augmenter Tube further increases thrust by up to 30 per cent. Price of complete 50c motor outfit: 7s. 3d.



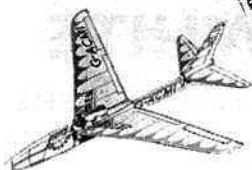
**PAA-LOADER MOTOR.** Larger motor for models like the 23 in. span Lynx, with capacity for up to three fuel pellets to give extra long flight-power. Price of complete PAA-Loader outfit: 19s. 2d.



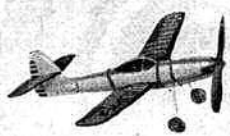
ASK YOUR MODEL SHOP  
ABOUT THE FULL RANGE

**INDOOR FLYER.** Specially designed to fly in a tight, banked circle indoors. Amazingly steady, sturdy and feather-light; no fear of damage to furniture or itself. Rubber-powered. Ready to fly, only 3s. 6d.

**WREN.** Fast, high-flying "Silhouette" model; ready to fly. Complete with Jetex 50C motor, price 11s. 9d.



**CLIPPER.** Crash-proof. Speedy; rubber-powered. Colourful, trim and sturdy. Ready to fly. Complete, only 4s. 11d. (Also: Courier, cabin model. Realistic markings. Complete, ready to fly. Price 9s.)



**40 m.p.h. JET CAR.** Jet-propelled by Atom 35 motor. Complete with own pylon attachment. Beautifully designed, all plastic; choice of colours. Complete with motor, fuel, accessories, etc. Price 16s. 6d.

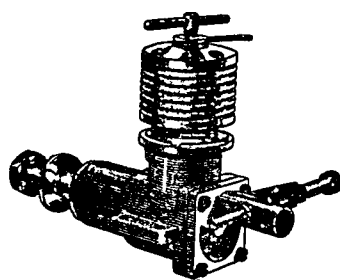


# SPECTACULAR

READY MADE

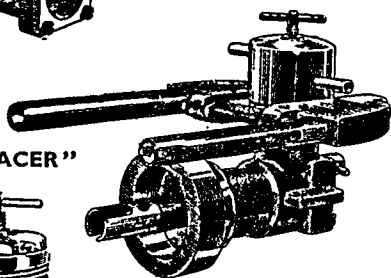
# JETEX

Jetex Kits, Motors, and Fuel, all products of the Jetex Division of: D. SEBEL & CO. LTD., West Street, Erith, Kent. Tel.: Erith 33020. Telegrams: Sebelco, Erith.

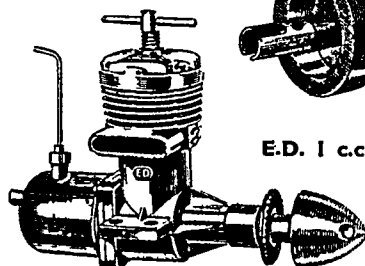
**INSIST ON**

E.D. 1.49 c.c.  
"SUPER FURY"

E.D. 2.46 c.c.  
MARINE "RACER"



E.D. 1 c.c. "BEE"



Leaflet giving full details  
of all E.D. Engines, ac-  
cessories and spare parts  
available on request.

## the finest equipment for the model maker!

Top quality guaranteed equipment specially designed to make the most of your models and improve their all round performance.

### E.D. DIESELS

Illustrated are the latest additions to the famous range of E.D. Engines. The "SUPER FURY" and the "BEE" are both having enormous successes while the 2.46 c.c. "RACER" Marine Engine is in great demand by model boat builders.

Air-cooled or water-cooled versions of all models are available.

### E.D. MULTI-CHANNEL RADIO CONTROL UNITS

Entirely new equipment produced after months of experiment, research and exhaustive flying tests. They are the most advanced Radio Control Units available and are up to the traditional high quality and value always associated with E.D. Products. Write for full details.

**ELECTRONIC DEVELOPMENTS (SURREY) LTD.,**  
ISLAND FARM ROAD, WEST MOLESEY, SURREY.

## LEPAGE'S P.V.A. WHITE GLUE

THE MODERN VERSATILE ALL-PURPOSE ADHESIVE

For bonding Balsa Wood, Plywood, Hardwoods and Laminated Plastics, etc.

Shear strength 2,800 lbs. per sq. in.

No. 21	2 oz. Plastic Bottle	...	2/3
No. 22	4 oz. Plastic Bottle	...	3/9
No. 23	8 oz. Plastic Bottle	...	6/-
No. 121	12 oz. Refill Bottle	...	7/-
No. 122	20 oz. Refill Bottle	...	9/-

Remember there is no substitute for Lepage's!

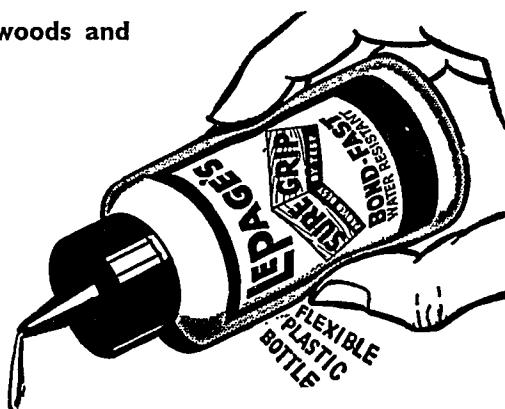
AND

Lepage's Liquid Glue, Super Balsa Cement, Polystyrene Plastic Cement, Multi-purpose Instant Adhesive and Plastic Wood.

A SPECIAL ADHESIVE FOR EVERY PURPOSE

**LEPAGE'S**  
LIMITED

• GILLESPIE ROAD • LONDON • N.5



Non-Sticky • Quick Setting • Non-Toxic •  
Water Resistant • Dries Transparent •  
Mould, Oil and Petrol Proof.



"I THINK I MUST SHOW YOU A PHOTOGRAPH OF MY BEAUTIFUL OIL-FIRED BOILER AND ITS HOUSE"

"THIS NEW BUILDING IS TO COPE WITH OUR RAPIDLY EXPANDING PELMET BUSINESS"

**SOLARBO**

**LTD. COMMERCE WAY · LANCING · SUSSEX**  
 Telephone LANCING 2866-7  
 Telegrams: SOLARBO WORTHING

NO GOOD!  
NO SLIP!  
NO SOLARBO!

Having spent my life as a Civil Engineer until I bought this business my wife gave me three years before I would be back to Engineering. It is now fifteen years, so "Wife's right" was wrong.

Therefore nothing please me more than when we have building going on, for two reasons:-

1. If new buildings are going up things are going well, and
2. I like being my own Architect and Engineer.

I think I must show you a photograph of my beautiful oil-fired Boiler and its' house. I think it is tremendous.

Whilst it's fun for me it seemed to give even more fun to the whole office to see me wandering round the flat roof with a large sheet of Perspex. Whether the interest was on me being busy, or whether there was a sort of hope, like crashes at Speedway Racing, that the wind would blow me and the sheet off the roof, I am not quite sure.

This new building is to cope with our rapidly expanding pelmet business, as we need all our existing factory space for our balsa business which is continually expanding too. It is true we shall no longer be making Mercury kits as, with great regret, as a matter of policy we had to decide, following on certain changes in sales arrangements, that we could not continue to make them.

Although we always put in the kits we produce a little slip saying that the kit contains Solarbo quality balsa wood, I am sure you would know without the slip whether it was Solarbo. Nevertheless, always look for the Stamp - The Solarbo Stamp - and have a glass of Guinness (still no reciprocal advertising - still trying.)

*John Paterson*

Sorry my hand is shaking - I did fall off the roof!

GOLDWAR

ENYOL BALSA

"HAPPY CHRISTMAS!"

AND FOR A "PROSPEROUS" YEAR OF MODEL AIRCRAFT SUCCESSES—ALWAYS ASK FOR SOLARBO—THE BEST BALSA—BY NAME!

... "THE WIND WOULD BLOW ME AND THE SHEET OFF THE ROOF."

WILL HE? NO! HE? BET WHEN HE GETS TO THE ROOF!

# SOLARBO

FABRICATED BY  
**SOLARBO LTD. COMMERCE WAY, LANCING, SUSSEX**

# RADIO & ELECTRONIC PRODUCTS

G. HONNIST-REDLICH, 44 SHEEN LANE, MORTLAKE, S.W.14

Telephone: PROSPECT 9375.

**MINI-REPTONE** fully transistorised relayless receiver with integral battery box and special compound escapement. No soldering—plug-in batteries and escapement cable. Plus matching hand-held Tx. £17.1.6. Mini-Reptone Receiver unit only (complete) £9.12.10.  
**UNITONE**. Single-channel valve/transistor receiver and matching hand-held transmitter. Receiver £7.9.9. Transmitter £9.5.9.  
**REPTONE**. Unit receiver-battery box with motorised actuator. Complete outfit with matching transmitter £15.17.2.



## "MULTI"

### TRITONE

£24/9/3

Three channel Transmitter and Receiver.

### QUADRATONE

£30/8/10

Four channel Transmitter and Receiver.

### SEXTONE

£32/19/1

Six channel Transmitter and Receiver.

### OCTONE

£51/10/9

Eight channel simultaneous Transmitter and Receiver.

**FEATURING**  
 R.E.P. CRYSTAL CONTROLLED TRANSMITTERS.  
 featuring better than 1 in 1000 accuracy and stability.



The PROOF of any R/C equipment is on the flying field. Stuart Uwins chose R.E.P. TRITONE for his Frog "Jackdaw"—a winner FIVE TIMES out of five competitions entered this year. A 100 per cent. success story—with R.E.P. radio equipment.

From components to kits to complete matching transmitter-receiver sets there is contest-proven R.E.P. equipment to suit novice or expert. ★ Send SAE for Price list and further information.

For all

**R.E.P. EQUIPMENT**

WRITE

PHONE 51558

OR CALL

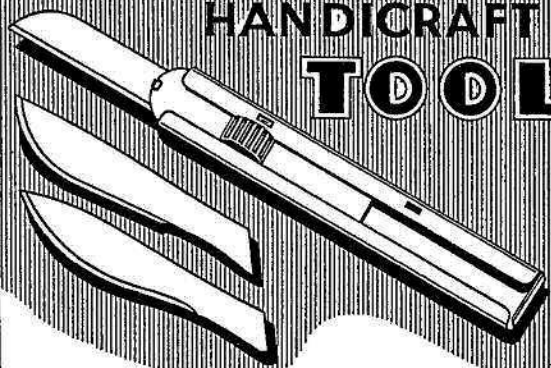
**READING MODEL  
 SUPPLIES**

1, HOSIER STREET  
 READING, BERKS.

*Berkshire's Radio Centre*

H.P. SERVICE AVAILABLE

**RAGG**  
 HANDICRAFT  
**TOOL**



**IDEAL FOR MODELLING**

etc., and quite safe when not in use

**3/9** Complete with three blades of different shapes  
 SPARE BLADES 6d. each.

Order from your usual suppliers and not the sole makers—  
**John & Wm. Ragg Ltd.** NURSERY WORKS  
 Little London Rd., Sheffield 8.



## Cessna "SKYLANE" 54" Span For Radio

This model of the graceful and modernistic American Light Aircraft with its fascinating "jet-age" type swept fin and streamlined decor, commodious cabin and tricycle undercarriage makes it ideal both for Radio Control and Free-Flight.

Suitable for compact forms of beam mounted diesel and glow-plug motors of 1.49 to 2 c.c. for Free-Flight and up to 3.5 c.c. with Radio.

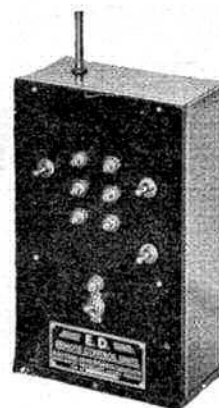
The design permits rudder, elevator and engine speed control with both single channel and "light" multi units, i.e. maximum four channels (possibly six with relayless receivers) dependent upon power and experience.

- Many
- ★ pre-cut and die-cut balsa and ply parts.
  - ★ Spindle moulded engine cowl.
  - ★ Shaped and slotted leading and trailing edges.
  - ★ Pre-formed tricycle undercarriage with
  - ★ Sponge-Rubber wheels.
  - ★ Star features.

price £4·19·6

### E.D. RADIO CONTROL UNITS

The ideal combination with "Veron" kits. "E.D." BLACK PRINCE I and 4 Tx, BLACK ARROW I and 4 Rx, AIRTROL, TRANSITROL, BLACK KNIGHT etc.



*It's* **VERON** *of course!*

MODEL AIRCRAFT (BOURNEMOUTH) LTD.

NORWOOD PLACE • BOURNEMOUTH • HANTS  
Telephone BOURNEMOUTH 43061 Wholesale Only



# IMPORTANT ANNOUNCEMENT!

## The MODEL SUPPLY STORES LTD

(LATE OF 17, BRAZENNOSE STREET, MANCHESTER 2)

HAVE MOVED TO

# GODLEYS 2-8 SHUDEHILL MANCHESTER 4

"SAMMY" NORMAN EXTENDS AN INVITATION TO ALL HIS CUSTOMERS AND FRIENDS TO VISIT HIM AT THE NEW ENLARGED "MODEL SUPPLY STORE" TO SEE THE FINEST AND MOST VARIED DISPLAY OF AIRCRAFT, KITS, BOATS, CARS, TRAINS, BALSA, ENGINES, RADIO CONTROL EQUIPMENT AND MANY OTHER ITEMS OF INTEREST TOO NUMEROUS TO MENTION.

EVERY MAKE OF KIT, ENGINE AND RADIO GEAR IN STOCK. TRI-ANG RAILWAYS, SCALEXTRIC CARS, etc.

★ H.P. FACILITIES AVAILABLE

★ MAIL ORDER BY RETURN

## The MODEL SUPPLY STORES LTD

(Entrance through GODLEYS) 2-8 SHUDEHILL, MANCHESTER 4

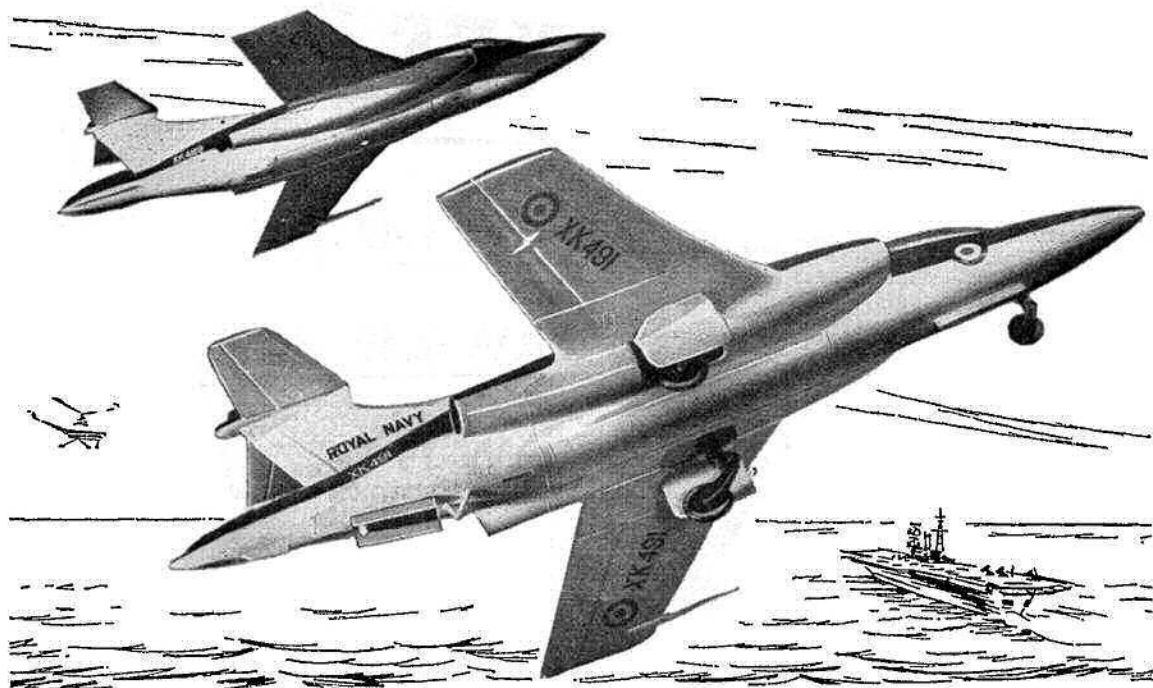
Telephone : BLAckfriars 9432 (5 lines). 2 Minutes from Victoria & Exchange Stations.

OPEN DAILY MONDAY—SATURDAY 9 a.m.—6 p.m.

# MODELSPAN COVERS THE WORLD!

AUSTRALIA • CANADA  
NEW ZEALAND  
AUSTRIA • GERMANY  
DENMARK • NORWAY  
SWEDEN • HOLLAND  
FRANCE • BELGIUM  
ITALY • SWITZERLAND  
PORTUGAL  
S. AFRICA  
etc., etc.

**THE NEW SUPER  
MODELSPAN COVERING TISSUE**



## Just like the real thing!

Believe it or not, the nearer one is the Airfix model of the Blackburn Buccaneer (N.A. 39), 1/72nd scale (Kit 4/6). Behind it is a picture of the real thing.

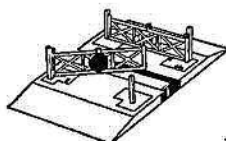
That's how wonderfully realistic Airfix models are. Close attention to every detail gives them their faithful-to-the-original look—makes them true collector's pieces. And every Airfix series is to a constant scale. This means Airfix models look proportionally right, one against another, because *they are right!* You can't beat Airfix for realism—or value.

# AIRFIX

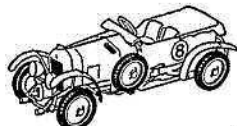
## Constant Scale Construction Kits

From Model & Hobby Shops, Toy Shops and F. W. Woolworth

There are over 100 Airfix models from 2/- to 10/6.

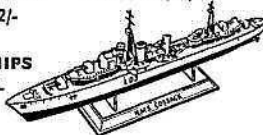


**TRACKSIDE SERIES**  
Level Crossing 2/-



**VINTAGE CARS**  
1930 Bentley 2/-

**BRITISH WARSHIPS**  
H.M.S. Cossack 2/-



**MODEL FIGURES**  
Lifeguard 2/-

A.160

## STOP PRESS!

### Latest Airfix Production



### NEW "SKYKING" SERIES

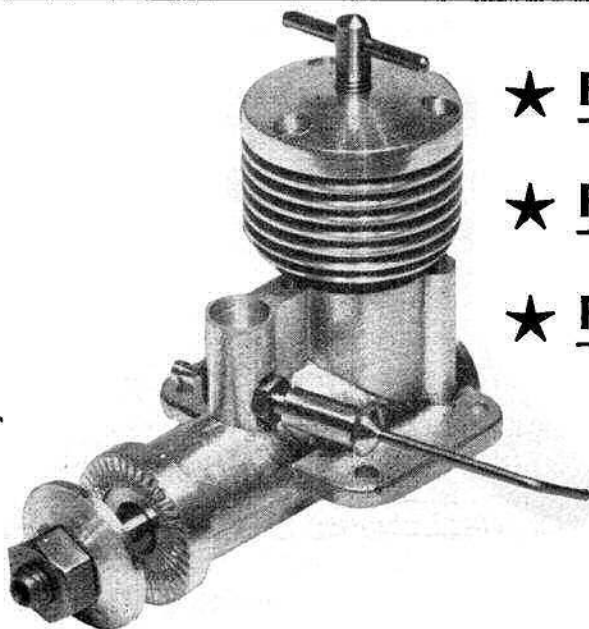
Fantastic value! Amazing detail! The first two in this new 1/144 scale series are:—De Havilland "Comet" 4B (wing span 9 in.)—45 part kit 4/6d. Sud-Aviation SE 210 "Caravelle" (wing span 9 3/8 in.)—44 part kit 3/6d.

Also new:—Austin-Healey "Sprite," the second in the new Modern Car series.—52 part kit 2/-.

# PAW ENGINES

UP-TO-THE-MINUTE ENGINES OF  
QUALITY AND PERFORMANCE

DESIGNED BY  
GIG EIFFLAENDER



## ★ PAW 1.49

.176 B.H.P. at 17,000 **87/4**  
R.P.M. 3½ oz. For sport, inc. P/Tax  
T/R, F/F, Stunt.

## ★ PAW 2.49

.32 B.H.P. at 15,500 **99/6**  
R.P.M. For Sport, T/R, inc. P/Tax  
F/F, Stunt. 5¼ oz.

## ★ PAW 19-D

Combat Special (3.2 c.c.) .38  
B.H.P. at 15,000 R.P.M. Especially  
developed for Combat. **106/1**  
A must for every Com- inc. P/Tax  
bat Circle. 5½ oz.

Manufacturers & Distributors :

**PROGRESS AERO WORKS**

CHESTER RD., MACCLESFIELD, CHES.

PARAGUAY · ARGENTINE · PORTUGAL · YUGOSLAVIA · SOUTH AFRICA · SWITZERLAND · BELGIUM · ITALY · NEW ZEALAND · AUSTRALIA · INDIA · THE CONTINENT · HOLLAND

**SUPPLIES THE WORLD!**

**Equado**  
BALSABOOD

More and more satisfied clients the world over receive their regular shipments of Equado—such is the popularity of this fine balsa wood used by modellers everywhere. Equado balsa wood is supplied in metric and English sizes.

TRADE PRICE LISTS ON APPLICATION TO SOLE MANUFACTURERS AND SHIPPERS

**E. LAW & SON (TIMBER) LTD.** 272-274 HIGH STREET · SUTTON · SURREY · VIGILANT 8291-2



**Learn  
a skilled trade  
and earn  
good money  
as an apprentice  
in today's R.A.F.**



### **Why an R.A.F. apprenticeship?**

These two apprentices are working on the radar equipment of a jet fighter. They do the same job, they have the same interests and they're the best of pals. Just over two years ago they were both at school. Now they are earning nearly £6.10.0 a week all found. In less than a year they will be fully qualified and by the time they are 21 they could be Corporal Technicians earning £17.17.0 a week with full allowances. Just before they left school these two

young men looked around at the apprenticeships offered by industry. Few of them covered their particular interests, and most of them took five years. An apprenticeship in the R.A.F. offered them a wide choice of trades including radio and radar—something they were both very keen on. It is also one of the best-paid apprenticeships in the country—and only takes three years because you get down to the job right from the word go. They had no trouble making their choice.

THE FUTURE IS WITH THE R.A.F.

The  
Royal  
Air Force

### **The R.A.F. can train you in any of these trades:**

Aircraft Engineering, Radio Engineering, Armament Engineering, Electrical & Instrument Engineering, General Engineering, Ground Signalling, Mechanical Transport, Accounting and Secretariat, Supply, Dental, Nursing Assistant, Photography, Catering.

*Please send me, without obligation, illustrated booklets giving details of training.*

NAME .....

ADDRESS .....

.....DATE OF BIRTH.....

*Send the completed coupon to:—*

**R.A.F. Careers Information Centre (MAC 142B)  
Victory House, Kingsway, London, W.C.2.**





*"United States Army and Air Force Fighters 1916-1961" is published by Harleyford Publications Ltd., Letchworth, Hertfordshire, England, with the co-operation and approval of the Department of the Air Force.*

*This book covers the period of development of American aircraft from the Curtiss S-3 to the Convair F-106A. Thus, it includes three wars—that of the 1914-1918, that of the 1939-1945, and the Korean War—and brings the reader right up-to-date to the late summer of 1961.*

*Half the book consists of a narrative, illustrated by over 250 photographs, in which the development of America's Army and Air Force fighter aircraft provides an epic story against the background of events in the first half of the twentieth century.*

*There are 1/72 scale three-view tone paintings of 70 aircraft representative of the industrial effort of the American Aircraft Industry.*

*All these paintings are to the same scale, and provide easy visual comparison between the aircraft (13 occupy double-page spreads) and thus the changes in relative sizes and shapes are readily apparent.*



presented by HARLEYFORD PUBLI

**THE BRITISH ARMY AND  
FIGHTERS 1916-1961**



by Lt Col U.S.A.F.; E. F. HEYN (Capt U.S.A.F.),  
M. J. F. BOWYER and P. BERRY

and by BRUCE ROBERTSON

by W. F. HEPWORTH M.S.J.A.

by D. CARRICK, FRANK YEOMAS and PAUL R. MATT

by D. A. RUSSELL M.I.Mech.E.

**BOROUGH" PUBLICATION**

*The next section of the book contains a further 44 photographs; groups of variants of the better-known types, and the lesser-known experimental types. Then follows a 12-page section in which 333 Fighter/Fighter Interceptor/Fighter Bomber Squadron Badges are reproduced. Never before have all these badges been reproduced in one book.*

*Finally, there is a 16-page schedule of no less than 430 different aircraft types, sub-types and experimental designs, together with the names of the firms who produced them, crew numbers, aircraft type, significant date of delivery, type and horsepower of engine, maximum speed, wing span, length, loaded weight, quantity produced and their appropriate serial numbers.*

*A total of 256 pages, over 300 photographs, 70 1/72 three-view tone paintings, reproductions of 333 Squadron Badges, and over 100,000 words of text. Illustration on cover and as inset in full colours.*

*Book contains 256 pages all glossy paper size 8½" x 11½", weight nearly 2½ lbs. Binding is in real cloth on heavy weight millboard with silk head and tail bands—a book that is bound to last you a lifetime!*



**CATIONS LTD. — Christmas, 1961**



# R.S. FOR RELIABLE SERVICE

## ★ POPULAR ENGINES

Cox Pee Wee 3 c.c. glow ...	39/2
Veco 19 3.2 c.c. glow ...	115/-
Veco 19 R/C 3.2 c.c. glow ...	135/-
Veco 35C 6 c.c. glow ...	165/-
Enya 19-2 3.2 c.c. glow ...	88/8
O.S. Pet 1.6 c.c. glow ...	47/6
O.S. Max 15 multi ...	145/8
Merco 35 6 c.c. glow ...	121/6
Merco 35 multi ...	155/-
Eta 29 VIC 5 c.c. glow ...	142/-
PAW 1.5 c.c. diesel ...	87/4
D.C. Bantam 0.8 c.c. glow ...	38/5
A.M. 15 1.5 c.c. diesel ...	63/11
A.M. 35 3.5 c.c. diesel ...	73/11
Super Tigre Jubilee 2.5 glow	118/-
E.D. 2.5 c.c. Racer diesel ...	82/7
Johnson 35 Stunt Supreme	170/-
Frog Viper 1.5 c.c. D ...	80/3
A.M. 15 Multi speed ...	70/8
ED Super Fury 1.49 c.c. ...	79/6
Holland Hornet 0.8 c.c. glow	65/-
PAW 3.2 c.c. diesel... ..	106/-
Eta 15 2.5 c.c. diesel ...	119/6
New Enya 15 1.1 D ...	130/-
ME Heron 1 c.c. diesel ...	47/3
Cox Tee Dee 0.010 ...	77/6
Cox Tee Dee 15 ...	124/-

## OVER 200 NEW ENGINES TO CHOOSE FROM

### A NEW ENGINE?

The HUSTLER 10 will fill the bill. 1.8 c.c. glow engine with many new features. Light weight 2½ oz. Easy starting. More powerful than many 2.5 c.c. engines. Long life. Fitted with (removable) speed control for R/C. £2/15/0. delivered.

## ★ METZ R/C ★

Metz "Baby" Tx, Rx, and new Mecatronic servo ...	437/0
Metz 3 channel Tx and 3 channel relayless Rx ...	752/-
Mecatronic 2 channel servo	158/6
Mecatronic 1 channel servo	92/3
Complete 3 channel unit ...	1000/-
All new 1961 equipment	

### ALL OVERSEAS ORDERS

are acknowledged by Air Mail and forwarded free of tax. H.M. Forces orders—post free. In G.B. no postal charges on orders over 20/- C.O.D. SERVICE AVAILABLE

## Phil Breitling's Fabulous F-51 MUSTANG

Now kitted by Sterling to give you the finest scale model available today for multi channel, R/C and 35 to 60 engines, 66". £12/18/6. Delivered.

## ★ BRITISH R/C ★

"Reptone" Unit ...	£15/16/6
"Unitone" Unit ...	£16/15/0
Quadratrone "Unit ...	£30/ 7/0
"Sextone" Unit ...	£32/17/9
"Octone" Unit ...	£51/ 8/3
Black Prince 1 ...	£18/13/0
Black Prince 4 ...	£31/10/0
Black Prince 6 ...	£35/ 0/0
Black Prince 8 ...	£49/10/0
(Xtal Simultaneous)	
E.D. P.C. 1 Tx. ...	£5/18/0
E.D. Airtrol Rx. ...	£7/ 4/0
E.D. Black Knight Tx. ...	£6/18/9
Ivy Receiver Kit... ..	£1/19/6
Ivy Basic Tx. ...	£6/ 9/6
Ivy Tone Tx. ...	£6/19/6

## ★ ★ ★ SPECIAL OFFER ★ ★ ★

### LIMITED QUANTITY ONLY. BRAND NEW ENGINES AT BARGAIN PRICES

O.S. Max II 35 6 c.c. Glow ...	Now	£3/10/0
O.S. Max II 29 5 c.c. Glow ...	Now	£3/5/0
K. and B. Torp 45 R/C Cromard model. Very few at		£9/0/0
Webra Record 1.5 c.c. diesel. Latest model ...		£2/5/0
Webra Mach 1. 2.5 c.c. diesel. Latest model ...		£2/15/0
Webra Bully 3.5 c.c. diesel. Latest model ...		£3/0/0
Webra Bully 3.5 c.c. Glow. Latest model ...		£3/0/0

Spare parts available for all the above.

## ★ TOPLITE "ORION" KIT ★

The finest multi kit available today. Don't miss this chance of a lifetime. £7-10-0 only. Delivered.

## ★ POPULAR ACCESSORIES ★

Johnson GL-18 Glow Plugs	6/-
Veco Glow Plugs ...	5/2
AM and DC Glow Plugs ...	4/2
Steerable nose wheels ...	69/6
Celspray Airspray ...	9/6
Araldite Glue ...	6/-
Jap Silk per sq. yd. ...	6/-
Nylon in blue, red, yellow per 1½ sq. yd. ...	7/6
K.S.B. Mechanical Timer ...	31/6
K.K. Airwheels all sizes	
Drome Airwheels all sizes	
Bruka 200 and 300 c.c. tanks	20/-
Xacto Burlington Chest ...	103/-
Xacto 82 Knife Chest ...	37/-
Schuco Glider Winch ...	66/-
Quickclip Glo Connector ...	5/5
P.L.I. Dope, now ...	4/6
Cox Pee Wee Glo Head ...	6/6
Viscount Undercart complete with 2½" wheels ...	18/3
Telescopic Aerials 36" ...	12/6
Telescopic Aerials 60" ...	25/-

## HIRE PURCHASE TERMS

We can accommodate you on any order over £8. One-fifth deposit—balance in 6-12 months. Write for quotation today.

## ★ NEW DEAC CELLS ★

New improved DKZ cells now replace older DK type.	
DKZ 1.2 volt button ...	5/8
DKZ 225 3.6 volt pack ...	20/-
DKZ 225 4.8 volt pack ...	27/-
DKZ 225 6 volt pack ...	33/-
DKZ 225 7.2 volt tapped ...	41/2
DKZ 225 charger ...	20/-

### A Selection Of

## ★ IMPORTED KITS ★

Topflite Nobler Stunt ...	89/-
Topflite Junior Nobler ...	59/-
De Bolt Zonic Cruiser ...	190/-
Pascha 67" R/C Glider ...	53/3
Sterling Mambo 48" R/C ...	73/9
Veco Firebird Rat Racer ...	35/-
Veco Mustang Scale C/L ...	89/-
Veco "Smog Hog" 72" R/C	329/-
Veco White Cloud 57" R/C	129/6
Guillou Explorer 56" R/C...	156/-
Graupner Piaggio Scale R/C	99/6
Schuco K8B Scale Glider ...	106/-
Graupner Satellit 48" R/C...	105/-
Trudon Vagabond 59" R/C	125/-
Privateer 60" R/C Seaplane	79/6
"Buster" R/C Pylon Racer	99/-
Many others available	

## ★ SECOND-HAND ENGINES ★

We are selling more and more second-hand engines which proves the popularity and dependability of the famous R.S. Second-hand Engine Service. The following prices will give an indication of prices we offer on good used engines towards exchange for any modelling goods.

E.D. Bee 1 c.c. ...	22/6
Mills .75 c.c. ...	25/-
E.D. Super Fury 1.49 c.c. ...	32/6
E.D. Racer 2.46 c.c. ...	32/6
D.C. Merlin .76 c.c. ....	20/-
D.C. Sabre 1.49 c.c. ....	22/6
Cox Pee Wee .3 c.c. ...	17/6
Merco 35 6 c.c. ...	55/-
PAW 1.5 c.c. ...	35/-
A.M. 15 1.5 c.c. ...	25/-
A.M. 25 2.5 c.c. ...	30/-
Frog 150R 1.5 c.c. ...	25/-
Frog 349BB 3.5 c.c. ...	35/-

Comparable offers will be made on any other engines in good condition. Our latest second-hand engine list is available on request and contains many interesting bargains. All S/H engines carry a Money Back guarantee.

## ★ VECO PRODUCTS ★

Veco Thunderbird Tanks ...	9/6
Semi Pneumatic Wheels 2" 2½"—14/6. 3"—19/-	12/1
Airwheels 3½"—42/-	4½"—48/-
Shaft Extension units ...	7/11
Standard All Spinners 1½"	7/11
1½", 1½", 2" and 2½" all at	9/6
2½" Standard Spinner	12/1
Needle Nose Spinners 1½"	
and 2" only ...	12/1
R/C Clunk Tanks 4 oz. ...	12/-
R/C Clunk Tanks 6 oz. ...	14/6
R/C Clunk Tanks 8 oz. ...	15/3
Pressure Fittings ...	4/9
Jet Assemblies ...	7/11
Standard L.R. Glow Plug ...	5/2
Porcelain L.R. Glow Plug ...	7/11

## ★ POPULAR KITS ★

Frog Jackdaw 60" R/C ...	117/6
Viscount 54" R/C 1.5-3.5 c.c. ...	112/6
Super 60 R/C 2.5-5 c.c. ...	97/6
Frog Spitfire C/L 1.5 c.c. ...	19/9
KK Snipe 40" F/F 1 c.c. ...	19/9
KK Gazelle C/L 1-1.5 c.c. ...	19/10
FW 190 scale C/L 2.5 c.c. ...	25/6
Junior 60" R/C 2.5-5 c.c. ...	58/-
Matador 48" R/C 1.5-2.5 c.c. ...	25/3
Velox 44" F/F or R/C 1 c.c. ...	39/6
Aerona Sedan 65" R/C ...	70/6
Tiger Moth 33" 0.5-0.8 c.c. ....	33/-
Frog S.E. 5A Scale 1.5 c.c. ...	32/6
Frog Tempest Scale 2.5 c.c. ...	48/2
Spectre Stunt 2.5-3.5 c.c. ...	37/6
Marquis Stunt 1.5-2.5 c.c. ...	32/6
Monarch Stunt 2.5-3.5 c.c. ....	34/10
Viper Stunt 1-1.5 c.c. ...	17/6
Crusader Stunt 5 c.c. ...	69/6
Fire Bird Stunt 2.5-3.5 c.c. ....	24/6
Talon Combat 2.5-3.5 c.c. ...	24/6
ME 109 Scale 1-1.5 c.c. ...	28/6
Spitfire Scale 2.5-3.5 c.c. ...	36/7
Lightning De Luxe Twin	73/6
Contest Empress Glider 79"	29/-
KK Caprice Glider 51" ...	15/9
Phoenix Glider 60" ...	35/-
Galahad R/C 1.25-2.5 c.c. ...	36/-

OVER 1,000 KITS IN STOCK  
SEND FOR LISTS

NORTH, SOUTH, EAST OR WEST—THE R.S. SERVICE IS THE BEST  
**ROLAND SCOTT LTD.** 147 DERBY ST., BOLTON, LANCs. Tel: 27097

# MODEL *aircraft*

DECEMBER 1961

No. 246

VOLUME 20

The official Journal of the  
SOCIETY OF MODEL  
AERONAUTICAL  
ENGINEERS

## IN THIS ISSUE

Here and There 375

Ansaldo S.V.A.4 377

Latest Engine News 382

Wings Club 384

H.P. 115 386

Plane of the Month 388

Engine Test 389

Cox Tee-Dee 049

Roving Report 391

Topical Twists 392

Pantophobia 393

Over the Counter 394

Radio Topics 396

Readers' Letters 399

Recent Rallies 400

Club News 401

Published on the 20th of each month  
prior to date of issue by

PERCIVAL MARSHALL & CO. LTD.  
19-20 NOEL STREET, LONDON, W.1.

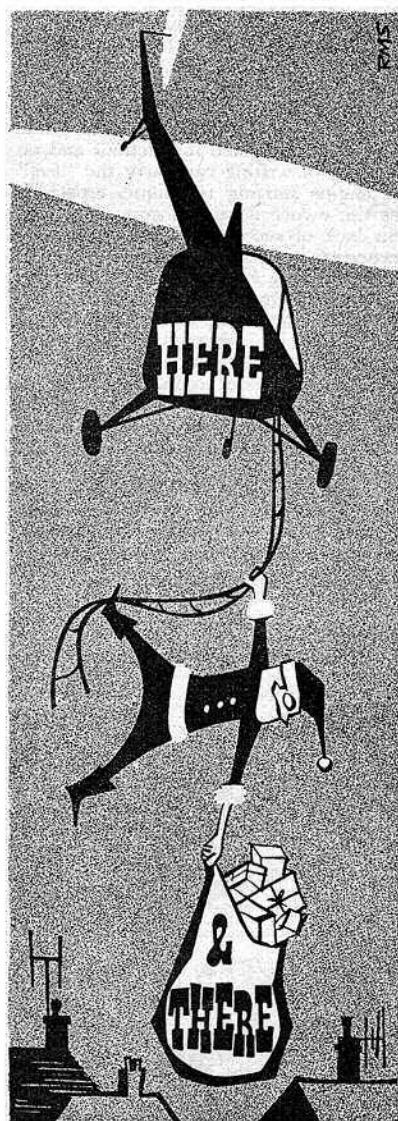
Telephone: GERRard 8811

Annual subscription 22s. post paid.  
(U.S.A. and Canada \$3.)

© Percival Marshall & Co. Ltd., 1961

*Season's Greetings  
from the Editor  
and Staff of*

**MODEL AIRCRAFT**



**T**HIS being the season of Christmas presents, many modellers will doubtless be receiving, as a present, their first motor. Many will also experience frustration in their endeavours to see their new possession running. However, the method adopted by Chuck in the cartoon below—reproduced from our companion journal *Model Engineer*—is not recommended, even if the provocation is as great!

Starting engines is a knack, which is easily acquired—with a little patience. The quality of modern mass produced engines is such that it is seldom that a faulty one reaches the market, yet, in point of fact, a very large proportion of those sold are returned with the comment "It won't start."

Just as in each individual's opinion of his own prowess, there are no bad drivers on the road, so, with model engines, if it won't start then it is faulty. Any reputable model shop will demonstrate an engine running and give a purchaser hints on starting technique. However, many motors are purchased from shops without such facilities, or by mail order, or are received as gifts.

In this case all the tyro has to guide him are the printed instructions and no amount of writing can carry the "feel" of engine starting technique, especially as the owner is seldom convinced that his lack of success is due to a lack of expertise in himself, not a fault in the motor. Only a demonstration that the motor will start and run, convinces the beginner that it is he who must learn the technique. This emphasises the advantages of patronising a shop which gives such a service to its customers, or, if one is not available locally, of contacting the nearest club, or group of fliers, who will doubtless be pleased to demonstrate their own ability.

These points were learnt the hard way. Many years ago, when even beginners' motors could be real brutes, we purchased our first motor. It was an Italian diesel and the only instructions were in that language. No one was able

to give any advice, but the suggested fuel formula was translated and made up and the motor mounted firmly (as shown in sketches in the instructions) on the garage bench. It was tanked up and after two or three flicks it burst into life. Aghast at the din and smell, we approached it gingerly and closed the needle valve to stop it.

Twelve days later, after spending at least two hours each evening abortively flicking and the other 22 hours nursing sore fingers, it was again coaxed into life. Amazingly when it stopped, it was refuelled and restarted with no trouble at all. Ever since we have had no trouble in starting engines of any type, so please don't say "my motor won't start." Rather say "I can't start my motor—why?"

The answer is to persevere—the results are well worthwhile.

### Common Market challenge

**T**HE entry, should it come about, of Britain into the Common Market will obviously affect the choice and price of Continental products available in Great Britain over the counter. Whether this will have any profound effect on the trade as a whole is doubtful, as, with the exception of certain radio equipment, engines, and useful accessories, there are few home produced items, especially kits, available to the Continental modeller, that our own manufacturers do not already produce cheaper or better.

It would seem, therefore, that the demand for British products abroad will, with the raising of restrictions and tariffs, increase greatly. We hope so, but at present, there is little indication that our products enjoy wide distribution. In a recent visit to Europe, we called in model shops in France, Belgium, Germany, Holland and Denmark and, in all cases, British products were only noticeable by their absence.

Frog obviously realise this, because their gaily coloured van, already familiar to rally goers here, recently made the overland journey to Stockholm, with a



The colourful and much travelled 'Frog' van, being unloaded at Harwich on its return from the Continent.

load of made-up models for display at an exhibition organised by their Swedish representative, Bertil Beckman, well known to all who attend International meetings for his impeccable turning of an English phrase. At every stop en route a crowd would gather to peer at the models, while in Stockholm the driver, Frog engine designer George Fletcher, was introduced to the leading model shops and also gave flying demonstrations of the models. This enterprise has certainly brought one manufacturer's name before potential continental customers.

Of course, at International meetings the greatest demand is for specialised products, but that there is general interest in British goods is shown by the ready selling and exchanging of items which are to us commonplace. There is a demand for British products, limited only by lack of knowledge of what is produced and lack of direct availability from shops. Entry to the Common Market could well be the biggest boost the trade has ever received—it only remains for the challenge to be met.

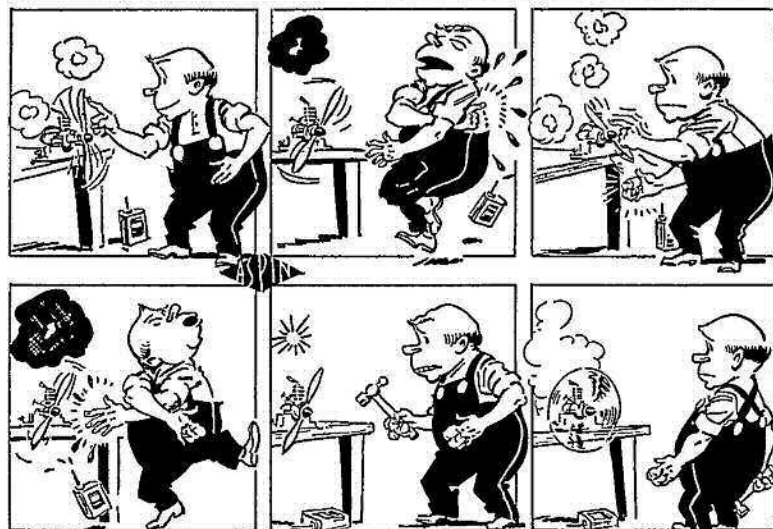
### The Ansaldo on the cover

**S**CALE models have always had a steady following and a really well constructed example will be the centre of attraction at any meeting or exhibition. One of the greatest exponents of C/L scale models is Captain Cesar Milani and it is with great pride that we present this month plans and details of his latest masterpiece, the Ansaldo S.V.A.4.

To assist the builder to produce as exact a replica as possible, we are also featuring comprehensive prototype drawings and, most important, a cover painting by P. Del-Orco showing the exact colouring of this beautiful aircraft.

### CHUCK . . .

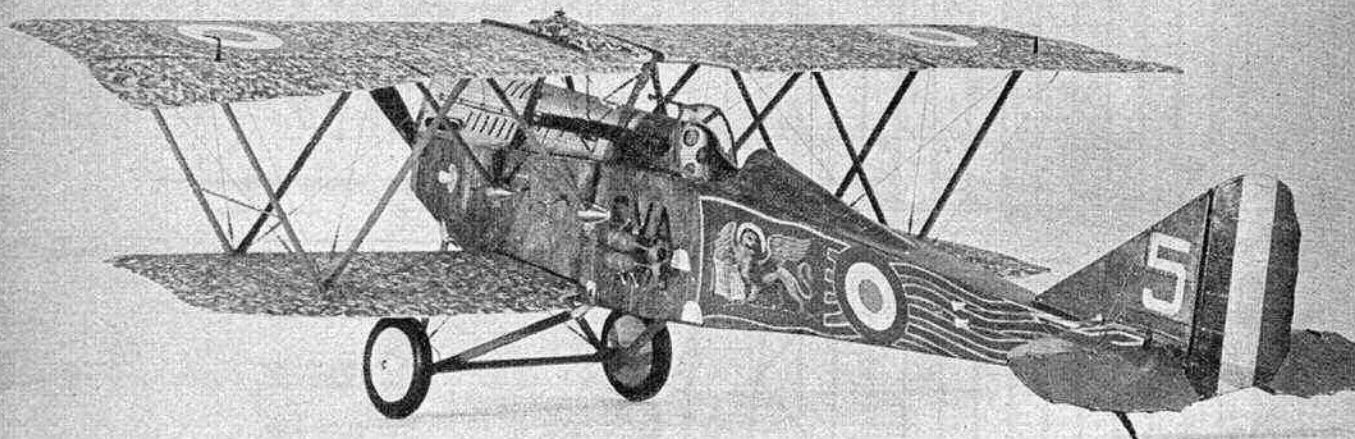
### . . . THE MUDDLE ENGINEER





# Cesar Milani's

# ANSALDO S.V.A.4



**F**OLLOWING the feature on Capt. Milani's scale models which appeared in the March 1960 edition of *MODEL AIRCRAFT*, we received many requests for working drawings. At that time no such drawings were available, but we are now able to present plans for the latest of the Milani Masterpieces—the Ansaldo S.V.A. 4. This model won a silver medal at the 1961 Model Engineer Exhibition and its excellent flying performance has been widely demonstrated.

This is the second model of the Ansaldo that Capt. Milani has built as, since completing the first one, much prototype data has come to light, revealing errors in the original model. The *Ansaldo* featured here, is the result of much careful research and is really authentic. It is not an easy model to build, although simpler than most of the designer's other eye catchers! But for those who are looking for a certain scale contest winner, or a really worthwhile model on which to lavish their modelling skill, the *Ansaldo* is the answer. A unique feature of this model is the method of assembling the main components—they are all bolted together in the true prototype fashion and

may be removed and replaced as required.

We would emphasise that *constructionally*, it is a subject for the advanced builder only and quite unsuitable for a novice, although the accurately completed model is a real dream to fly and quite without vices.

## Fuselage

This is undoubtedly the trickiest bit of the aeroplane, since there is no continuously flat surface from which to work! The section changes from rectangular at the nose, to triangular at the tail and both top and bottom longerons are curved. There are several possible methods by which the basic frame can be built, but the one we suggest is that shown on the drawings.

Formers A to G are drawn out on  $\frac{1}{8}$  in. ply, carefully marking the datum and centre lines—this is very important. The engine you are to use will determine the spacing of the engine bearers and, obviously, this measurement will not necessarily be the same as that shown on the plan. The original employed an Anderson Spitfire spark ignition engine, of about 11 c.c., the power output of which is approximately equal to a good glow .35 and one of the variable speed

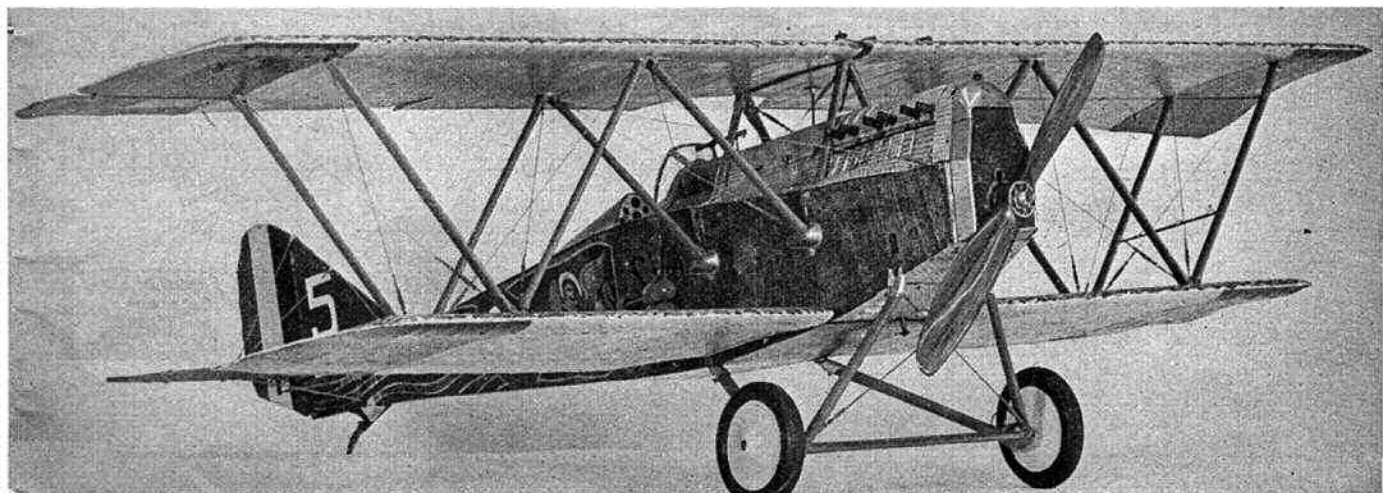
R/C .35 or .45 engines currently popular, would be an ideal choice.

Fuselage construction is commenced by laying the drawing over a flat board and covering it with waxed paper. The two lower spruce longerons are carefully steamed to shape, over the spout of a boiling kettle, working very slowly and being careful not to break the wood fibres in the process.

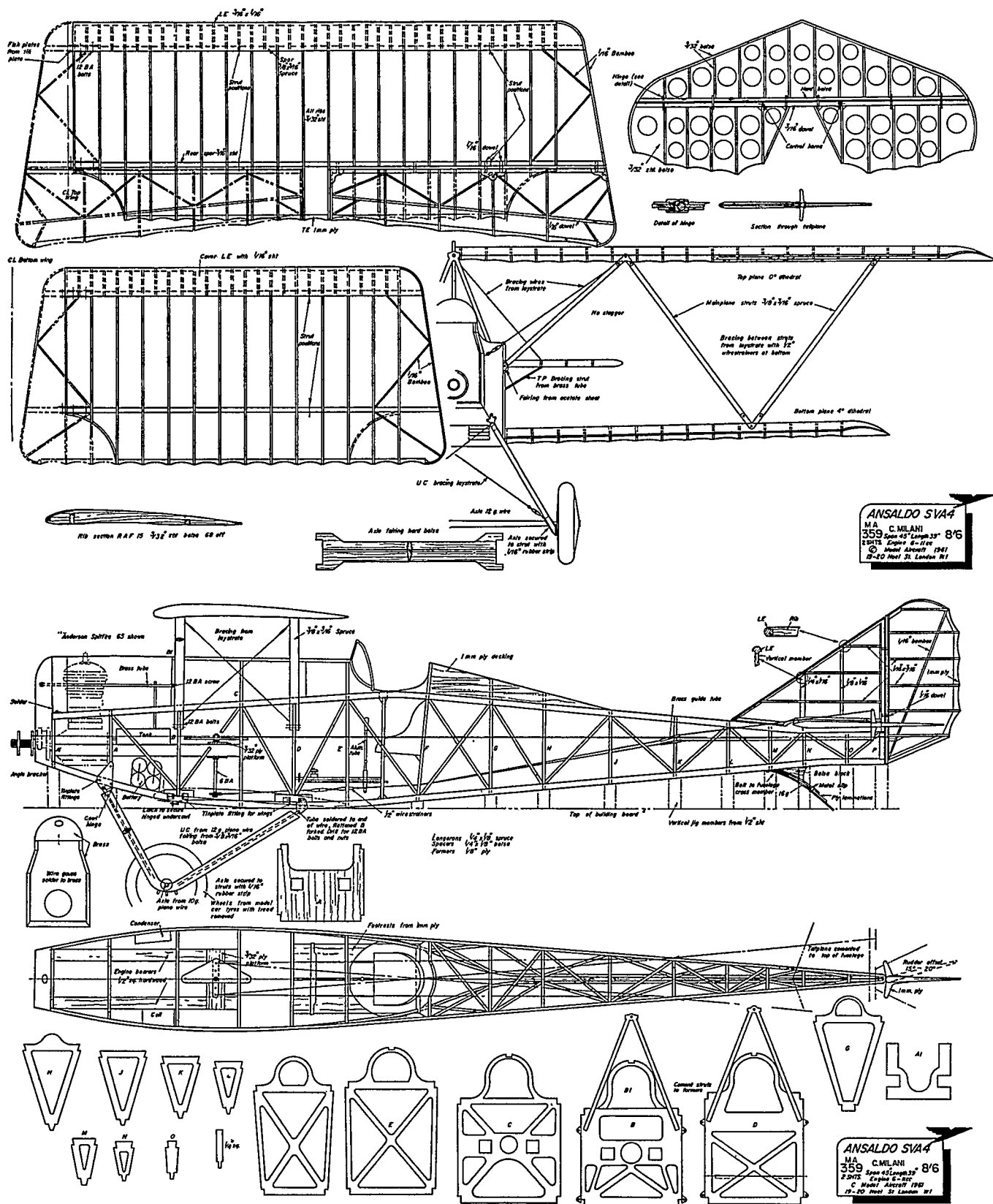
Now, over the plan view, securely fix the accurately made  $\frac{1}{8}$  in. thick fuselage jig blocks (see side view). Draw vertical lines on the blocks to indicate the exact fuselage centre line and former widths, and pin the pre-shaped lower longerons in place. When satisfied that these are accurately positioned, glue formers A to D in place, being careful to keep them perfectly upright. A piece of  $\frac{1}{8}$  in. sq. balsa temporarily cemented behind the lower edge of the formers will enable them to be pinned in position.

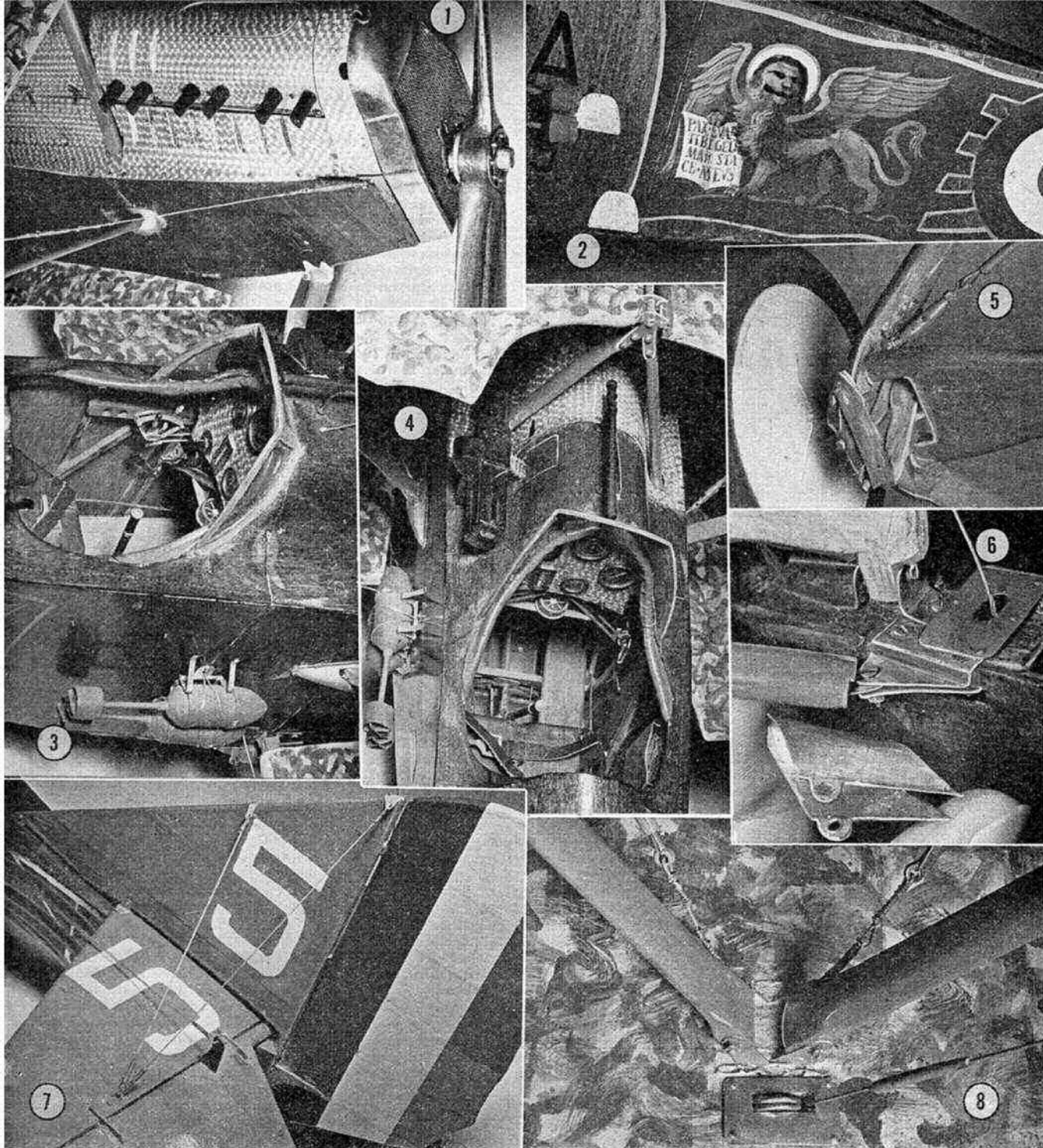
Glue the  $\frac{1}{8}$  in. sq. sternpost in place and hold it securely upright, with props of wood pinned down to the board. Now steam the upper spruce longerons to shape—do not attempt to bend them without steaming—glue in

*Continued on page 380*









At the time of going to press the Ansaldo drawings, shown in the small scale reproduction opposite, were incomplete. The final plans will include additional perspective constructional and detail sketches.

**FULL SIZE WORKING DRAWINGS ARE OBTAINABLE FROM YOUR LOCAL DEALER, OR BY POST FROM THE "MODEL AIRCRAFT" PLANS DEPARTMENT, 19-20, NOEL STREET, LONDON, W.1. PRICE 8s. 6d. (TWO SHEETS) POST FREE**

1. The aluminium cowlings, exhausts and brass radiator are clearly shown in this view. The "machine turned finish" is achieved by using a tiny wire brush in a power drill. Note the numerous louvres.

2. A close-up of the striking insignia which appears on both sides of the fuselage. The colours are shown on the cover.

3 and 4. The cockpit area. Many useful details are shown here, including upper wing fixing brackets, the anti-personnel bombs, and the moulded plastic cabane strut fairings.

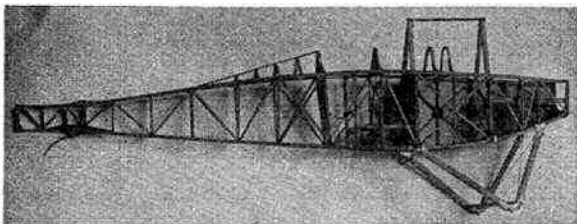
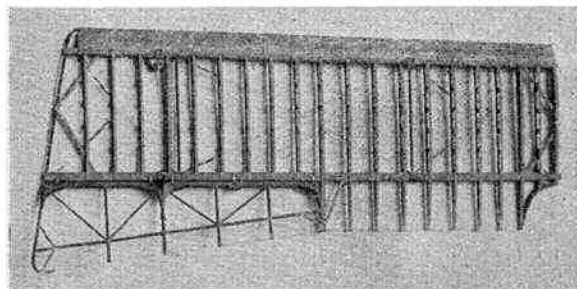
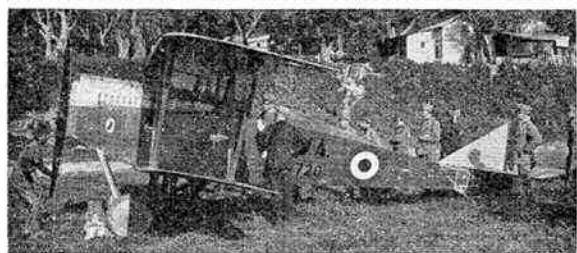
5. The rubber band shock absorbers on the undercarriage and the undercarriage

bracing lower fixing.

6. An underside detail showing the lower wing rear spar fixing and the rear undercarriage leg anchorage plates. This attachment is covered by the aluminium fairing, shown alongside, with the 12 B.A. clamping nut and bolt removed.

7. The rigging brackets and elevator hinges are clearly shown in this photo, as also are the elevator horn and double lay-strate operating cables.

8. The lower rear interplane strut fixings and the dummy aileron cable and pulley. Note the turnbuckles on the rigging.



## The full size S.V.A. 4

**D**ESIGNED by Ing. Verduzio and built by the Savoia Verduzio Ansaldo Company, the S.V.A. was probably the most famous of the Italian W.W.I aircraft. Very versatile, it was used as a fighter, a light bomber and, due to its long range, was also employed for reconnaissance missions. Although of unusual shape, the Ansaldo was beautifully proportioned and consequently one of the most handsome aircraft of this period.

Of the six squadrons equipped with S.V.A.s, the most famous was the 87th "Serenissima" Squadron, which had the Venetian Standard with the Lion of St. Mark, painted on the sides of its aircraft.

In June, 1918 Lt. Locatelli completed a photo reconnaissance flight to Zagreb—a total distance of 560 miles. However, it was the 630 mile return flight to Vienna, when the squadron was under the command of the famous poet Gabriel d'Annunzio, that is most noteworthy.

This flight took place on August 9th, 1918 by ten S.V.A. 4s, with d'Annunzio in an S.V.A. 9 (a two seater variant of the 4). Taking off from San Pelagio at 5.50 a.m., three aircraft were shortly forced to land due to lack of pressure in the main tanks, but the remaining eight arrived over Vienna at 9.20 a.m., dropped leaflets from a height of 250 ft., and landed safely at San Pelagio at 12.40 p.m. A flight of 6 hr. 50 min.

### Data S.V.A. 4

Wingspan: 31 ft. (top), 25 ft. 5 in. (lower). Chord: 5 ft. 5 in. (both wings). Length: 26 ft. 8 in. Weight: 1,529 lb. empty. Motor: S.P.A. 220 h.p. Max. speed: 143.5 m.p.h. at ground level. Ceiling: 22,000 ft. Normal endurance: 3 hr. Fuel capacity: 45 gal. Armament: two Vickers guns.

Photos from top to bottom show an S.V.A. 4 "in the field" and two framework shots of a scale model S.V.A. 4 built by the manufacturers.

*Continued from page 377*

position and fix to the sternpost. The remaining fuselage formers, from E to O are now glued in place between the four longerons, being careful to see that they are upright and "square" across the fuselage (note that former F slopes slightly backwards).

At this stage, there may be a tendency for the fuselage to distort and temporary supports from the board may be necessary to correct this. Former A<sub>1</sub> is next glued in place, followed by the engine bearers and diagonal braces. The elevator may now be built and cemented to the rear fuselage, squaring it up carefully.

Leaving the fuselage assembly still fixed to the board, install the bellcrank system and control cables, complete with their very necessary tension—adjusting turnbuckles. These cables pass through brass tubes fastened to former L. Ensure that there is no binding and that the control system works smoothly.

With the fuselage still fixed to the building board, temporarily fit the inwards sloping cabane struts. These are slotted over the formers—the lengths being shown on the former pattern. The top ends of these struts are joined together by means of tinplate plates, exactly over the centre line.

To simplify this assembly and provide a positive jig for rigging the top wing, the following procedure is suggested.

Spot cement a piece of  $\frac{1}{4}$  in. sq. balsa

exactly upright on the centre line of formers B and D. These pieces should extend above the tops of the formers by about  $2\frac{1}{2}$  in. Now cement outside the fuselage, to each side of formers B and D, four upright pieces of  $\frac{1}{4}$  in. sq. balsa, cutting them to correspond with the exact height of the underside of the wingspars, at these points. The measurements should be taken from the fuselage side view. There will now be six uprights in position. Two further pieces of  $\frac{1}{4}$  in. sq. balsa should be cemented (fore and aft) outside the outer uprights exactly flush with their upper ends. This now forms a temporary trestle and the wings, when resting on it, will automatically assume their correct height and incidence. The centre uprights will give the exact point at which the cabane struts are joined. The fuselage may now be removed from the building board, and the  $\frac{1}{4}$  in. sq. jig blocks cut away.

### Wing Construction

This is comparatively straightforward and orthodox, but before assembly, bolt the tinplate wing root attachment plates to the wingspars. Pack the spars up to the correct height and then cement the ribs in place. The wing tips are steamed to shape from either dowel or bamboo. After removal from the plan, the tinplate wing strut attachments are bolted in place (two on each side of the spars).

The uncovered wings are temporarily

assembled to the fuselage, with all struts, etc., and the strut plates are then soldered together at their correct angle.

### General Constructional Notes

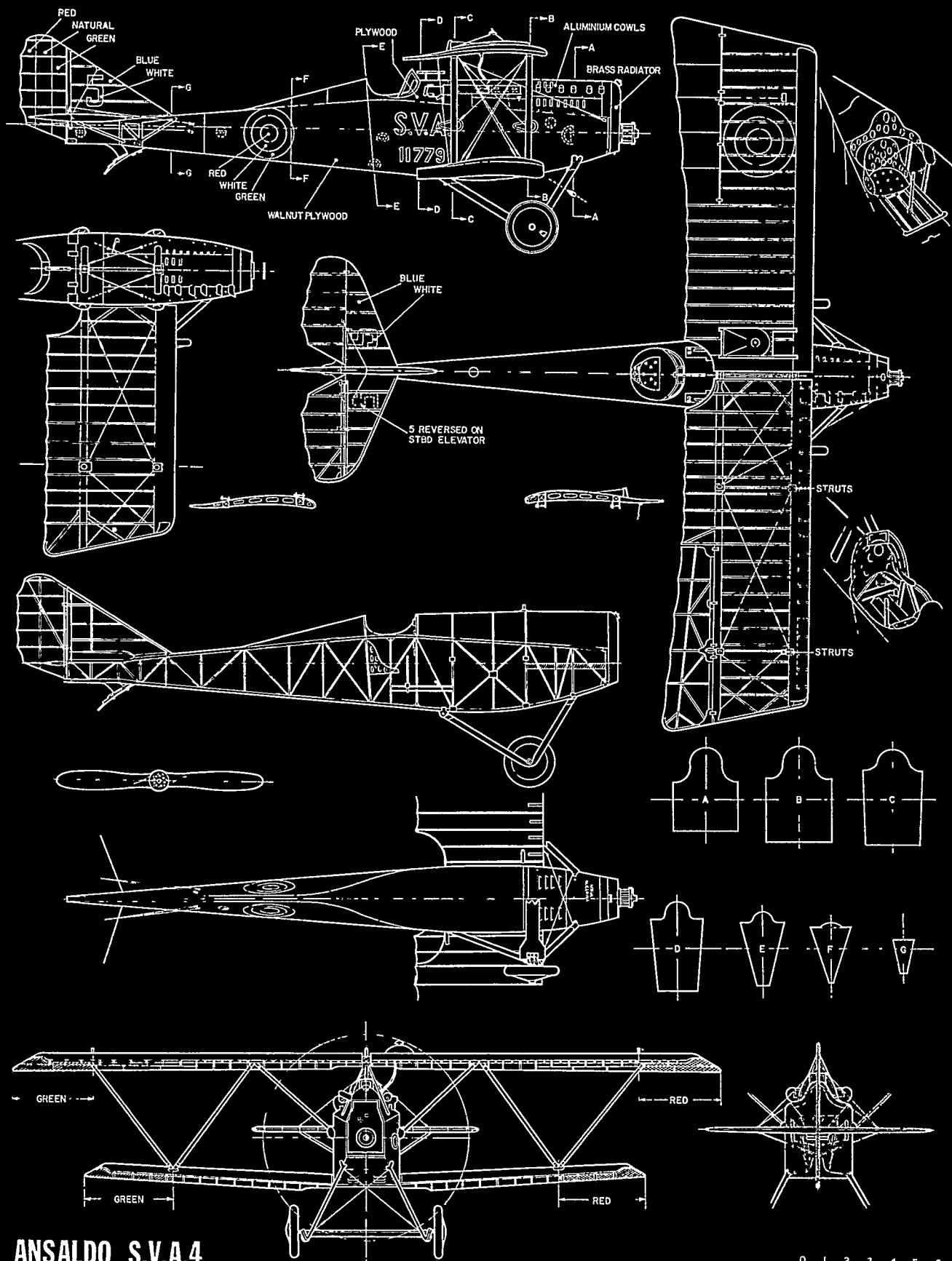
Since the fuselage is chiefly constructed of hardwoods, balsa cement is not really a satisfactory adhesive. We recommend Aerolite 306 or a similar glue.

Rigging wires and control cables are all tensioned with small turnbuckles, which are obtainable from model shops dealing with marine accessories. About two dozen will be required.

All the components (wing, tail, undercarriage struts, etc.) are assembled exactly as in full size practice—by bolting together, the numerous attachment plates being fixed to the wooden frame with 10 or 12 B.A. steel bolts. A tapping size hole is drilled in the timber and the bolt is forcibly screwed through, cutting its own thread as it goes. Araldite may be used to strengthen the fixing and in many places it is possible to use a nut on the bolt, to further secure the attachment.

Metal cowlings are hand beaten from aluminium and bolted in place. The radiator is built up from brass, but should you prefer, of course, the dual curved radiator top may be carved from wood. Nylon covering is used throughout.

The extent of the exterior and interior detailing, will be entirely up to the individual builder and much information can be gleaned from our prototype drawings and cover painting.



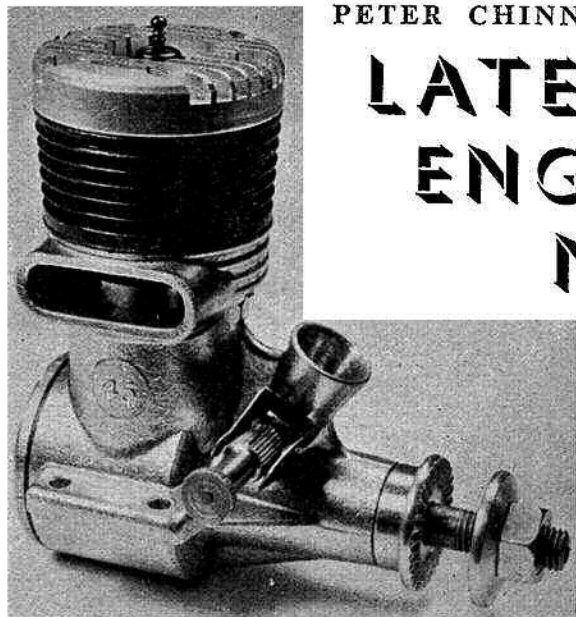
**ANSALDO S.V.A.4**

0 1 2 3 4 5 6



PETER CHINN'S

# LATEST ENGINE NEWS



matter of course for stunt work, by the two most notable model engine design establishments in Eastern Europe; M.V.V.S. in Czechoslovakia and M.O.K.I. in Hungary.

The Czech M.V.V.S. .35 was, of course, described quite some time ago

in MODEL AIRCRAFT when we managed to obtain one of the original 20 engines produced by M.V.V.S. A few days ago we were also lucky enough to get hold of a new Hungarian stunt motor, the first to reach this country and, allegedly, a M.O.K.I.

Actually, although this latter motor was obtained for us in good faith as a M.O.K.I., we must confess to some doubts as to its true identity. The engine carries no identification marks, but bears little resemblance to last year's M.O.K.I. M-2 stunt motor and is rather more "commercial" in its design and construction than one would expect of a M.O.K.I. product. Certain minor constructional character-

istics are, in fact, reminiscent of the Alag and, more particularly, the lesser-known Proton dicels that were imported into the U.K. from Hungary for a short period, some three or four years ago. Whatever its origin, however, the engine is certainly worthy of a short description.

As our photos show, the layout is fairly typical of the simpler types of stunt .35 engines. The diecast crankcase and main bearing housing unit includes a medium-sized transfer passage, a long carburettor intake and is bronze bushed for the crankshaft. The hardened crankshaft has an 11 mm. dia. journal (i.e. approximately 7/16 in., or the standard size favoured for .35's prior to the present trend towards larger shafts) and a 6 mm. dia. hollow crankpin. The shaft has a full disc web with machined-in crescent counterbalance and the prop driver is taper fitted. The gas passage through the shaft is bored to 8 mm., but the rectangular valve port is quite small ( $\frac{3}{16}$  in. long) and, used in conjunction with an orthodox round intake, gives a 180 deg. induction period timed for 40 deg. ABDC to 40 deg. ATDC.

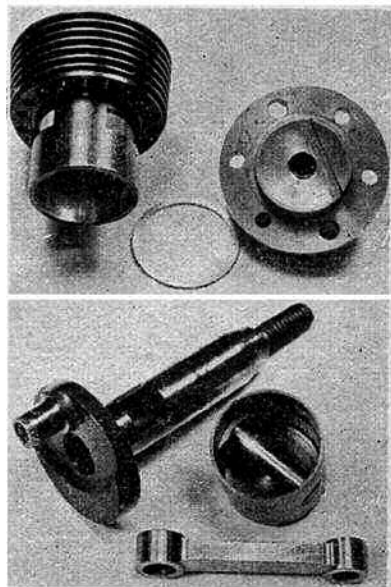
The piston is very light (complete with con-rod and gudgeon-pin, it weighs less than  $\frac{1}{4}$  oz.) and the gudgeon-pin bosses are very small so that only about  $\frac{1}{8}$  in. of each end of the gudgeon-pin is supported length about  $\frac{1}{8}$  in. between each side of the con-rod eye and the piston. The gudgeon-pin is, however, of reasonably larger diameter (5mm.). The unhardened cylinder has integral cooling fins and is conventional except for a profusion of lightening holes passing vertically through the fins. Two head screws tie the cylinder, fore and aft, to the crankcase and four short supplementary screws secure the head to the cylinder. In addition to these six holes, however, there are 12 more, spaced in

It is a strange thing that, even when authority makes no rules for us, we still tend to conform. For F.A.I. speed, F/F and team-racing, the F.A.I. has fixed the maximum size engine we may use. For C/L aerobatics we can use any engine we like, yet, to look at the entry in almost any international contest, one might assume that the F.A.I. had decreed that we must all use .35's.

The use of a 0.35 cu. in. engine for stunt work quickly became customary in the United States during the early 1950's, following the wide acceptance of the Fox .35. A few other American manufacturers began offering stunt .35's and were followed by a handful of outside manufacturers, notably two in Japan, one in Australia and one in Italy (most of whom were, to some extent, depending on U.S. or U.S. influenced markets) and, more recently, of course, one (Merco) in Great Britain. Actually, the number of stunt .35's made throughout the world (even taking in the U.S.) is very small beer on a percentage of total production basis. The 0.35 cu. in. displacement is, to say the least, an odd one—more so in European terms, at around  $5\frac{1}{2}$  c.c.

Having regard for the fact that a large number of successful model designs have been published for .35 engines in the U.S. and that modellers in other western countries who have built these models have needed engines for them, there is, perhaps, some justification for a certain amount of one-track mindedness in regard to stunt engines. But, to revert to the theme of our opening sentence, is it not a rather remarkable illustration of the model fraternity's conformity, that even the East European countries are also showing signs of adopting the .35? The .35 glow engine appears to have been accepted as a

Heading—the new Australian Glo-Chief 45. Below: Hungary's new Stunt 35. Right: parts of the same motor. Note extensively drilled cylinder fins and small gudgeon-pin bosses in piston.



pairs, between the head screw holes, around the cylinder. The cylinder head is an alloy diecasting having a shallow hemispherical form, recessed for the piston baffle. In contrast to most other engines of this size and type, a screw-in crankcase backplate is used.

Our sample was found to be rather tight both as regards piston and shaft fit and will require further running before any engine tests can be carried out. We hope, however, to give some indication of the engine's capabilities in due course.

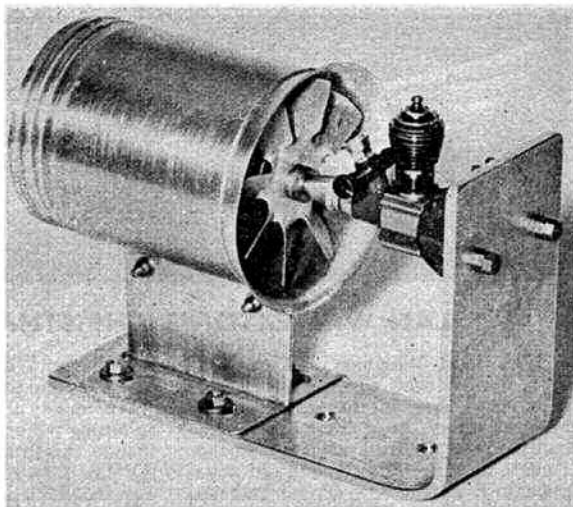
\* \* \*

In some minor respects resembling the Hungarian .35 just described, is the new Glo-Chief .45 from Australia. It too, for example, has a screw-in back cover and uses the same system of head and cylinder attachment, but is rather better finished. We are indebted to the well-known British stunt flier, Frank Warburton, for the opportunity of examining this engine, which he recently received from Gold Trophy winner Brian Horrocks, who is shortly returning to his native Australia.

This engine is the latest effort of Gordon Burford, who, for a dozen years or so, has been Australia's most successful model engine producer and whose products have ranged from the early Gee-Bee diesels, through the subsequent "Sabre" diesel and glow engines, to the present "Taipan" diesels and "Glo-Chief" glow motors. It was, of course, a Glo-Chief .49 that Brian Horrocks used for his "Gold" wins in 1959 and 1961.

The Glo-Chief .45 is typical of Burford practice and unlike most current production engines, uses a gravity diecast crankcase. Gordon Burford & Company are, themselves, diecasters and the accuracy and finish of the Glo-Chief casting is to a higher standard than one often associates with gravity castings. The rest of the engine is fairly conventional. The lightweight piston has a relieved lower skirt section, being a lapped fit only for the upper 2/5ths of its length. It has an internal annular rib above the gudgeon-pin to preserve piston roundness and aid heat dissipation. An unusual feature, the fully-floating gudgeon-pin is solid and has no end-pads. The cylinder has integral finning and

Right: Mr. W. Benson Ball, whose series of articles on ducted fans and jet propulsion aroused so much comment, has recently been experimenting with the little Cox .010. This is an ideal powerplant for ducted fan use and as our photograph of the unit on its test stand shows, it could be accommodated in a very compact model. Although only in an early development stage the unit shows great promise and we will report further when flying tests have been made.



appears to be of a leaded steel. Porting is conservative. The cylinder head is machined and has three deep fins. The connecting-rod is of machined alloy and on the example examined, was rather a sloppy fit on the crankpin—in marked contrast to the main bearing which was very closely fitted to the shaft.

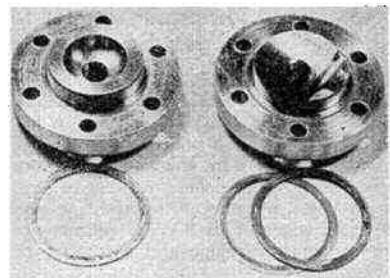
A remarkable feature of the Glo-Chief .45 is its extremely light weight, which is only a little over 7½ oz. At least two noted British stunt contestants have told us that they are in favour of using a larger engine for future competition, the main idea being that, with the present high standard of stunt flying and the need for impressing the judges with a larger and/or more elaborate type of model, a little greater "lugging" power to turn a larger prop is needed. The Glo-Chief might possibly be the answer for such a model, while, since it weighs no more than most .35's, it could also be used as a replacement in many existing models designed for .35's. Attempts to increase power by increasing cylinder capacity, while keeping overall size and weight to the levels of a smaller displacement engine, often bring compli-

cations in the form of increased vibration and inadequate cooling. We have yet to discover whether such objections apply in any degree to the Glo-Chief .45 but, having regard to Gordon Burford's long experience with glow engines in the .19-.49 cu. in. group, we would assume that they have been adequately taken care of.

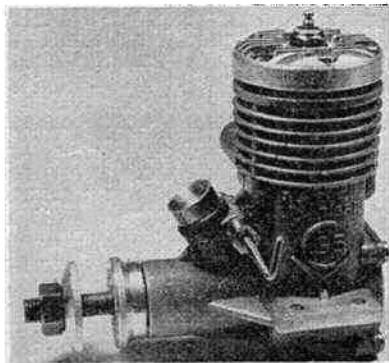
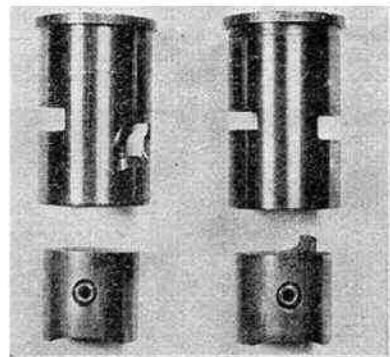
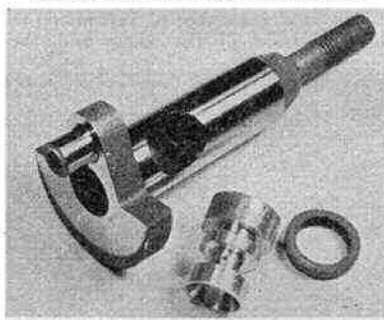
\* \* \*

Next month we will be testing the new Super-Tigre C.35 stunt engine and this motor has a companion model, the C.35 combat engine. These motors were, it seems, designed concurrently. That is to say, neither is a mere adaption of the other and, whereas most combat versions of stunt .35's have tended to follow certain established patterns (e.g. squared and enlarged rotary valves,

*Continued on page 390*



Externally identical, stunt and combat versions of Super-Tigre C.35 (left) are identified by "S" on head of former, to be tested next month. Photo below shows the robust, generously ported crankshaft and four-jet carburettor choke of C.35. Right: essential differences between combat and stunt versions; combat parts on left.





## ★ ★ ALAN WINTERTON'S CHRISTMAS PARTY ★ ★

FOR most Wingmen and certainly for all who live in the British Isles, Christmas is the time for the fireside. Once, on a coral island, I so badly missed the traditional hearth that I made up a fire of sorts with old newspaper. Even there, everyone gathered indoors, as in England, and pretended that it was just the sort of night for good King Wenceslas to be abroad.

Draw up your chairs then, and join the party.

The members of the Little Splashing Model Aircraft Club have oddly varied tastes in tea. When I had a cup with them one cold night a few weeks ago, I found that half of them took no sugar, a quarter of them no milk, a third of them milk and sugar, and two of them neither sugar nor milk.

How many members were there?

During the English winter there is usually too much wind and rain for flying. Altering one letter at a time, can

you change WIND into RAIN in four moves (making six words altogether)?

We have a crazy chap at Little Splashing who says that he wants to change his name from SMITH to JONES. Can you show him the quickest way in which it can be done, altering a letter at a time?

Ever since my R.A.F. days I have been fond of codes. Here are 12 numbers which have been written as words and then coded as figures:

653, 083502, 7913, 035, 59530335, 5953, 79702, 43135, 7970335, 086, 595302, 431350335.

Each figure represents a letter and each group of figures spells a number, such as ONE or TWO. A Wingman whom I know, finished the decoding in three minutes. I wonder if you can beat him?

As you probably know, a Magic Square is one containing numbers which add to the same total across,

down or along the main diagonals. I have been able to make one from these numbers:

2	4	6
8	10	12
14	16	18

But I can't remember how the numbers were arranged. Perhaps you can help me?

In this Magic Square, too, something has gone wrong:

13	4	2	16
6	11	7	10
12	5	9	8
3	14	15	1

Three numbers have changed places with each other. By switching them back, you can restore the magic.

This is an addition:

7	2	1	3
3	4	6	5
2	3	5	4
5	8	9	3
18	9	2	5

The figures in each line can be rearranged, without any transference from one line to another, in such a way that the four lines will add to the same total.

You will find the answers to all these problems here next month.

After having inflicted these headaches upon you—as though there were not enough headaches at Christmas already—I wish all of you everywhere a wonderful time.

ALAN WINTERTON.

## THE HANDLEY PAGE H.P. 115

A profile model for the Jetex 35 or 50  
FULL SIZE PLANS APPEAR OVERLEAF

HERE is a simple little profile model of Britain's latest research plane that you can put together in less than an hour. All you need is a piece of softish  $\frac{1}{16}$  × 3 in. sheet balsa, about 16 in. long, for the wing, a piece of  $\frac{1}{8}$  in. sheet balsa, big enough for the fuselage, a 12 in. piece of 22 S.W.G. piano wire for the undercarriage and a small tube of cement.

The fuselage is cut out first and notice the way the grain runs on the fin which, of course, must be made separately. After cutting out the wing parts and

cementing them edge to edge, mark the centre line on piece "D," and cement the fuselage and fin to the wing. Make sure that everything is "square" and not leaning over to one side.

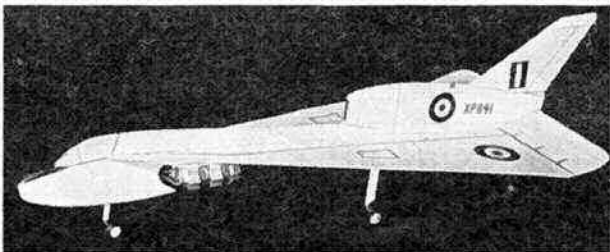
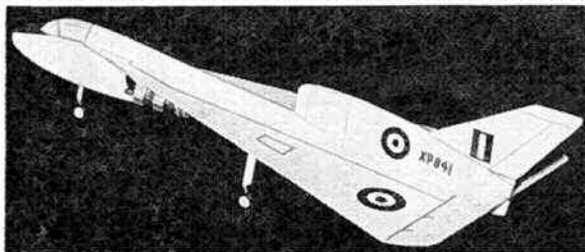
Now fit the engine mount plates and the downthrust wedge, which is shaped from a spare piece of  $\frac{1}{8}$  in. sheet and is very important. Don't forget to cover the area around the motor with asbestos paper, to protect the model from the heat.

The undercarriage is cemented to the underside of the wing and the

joint may be strengthened by cementing strips of tissue over the wire. Make the wheels by cutting out discs of  $\frac{1}{8}$  in. balsa and cementing tiny pieces of celluloid or acetate to each side, afterwards piercing a hole exactly through the centre.

With the empty motor in position, support the model at the point shown, when it should balance horizontally, add small weights if necessary to achieve this.

If the correctly balanced model stalls under power add more downthrust and if it will not climb—remove some of the downthrust. The H.P. 115 can, of course, be used without the motor as a catapult glider, but don't forget to balance it first!





## Wingmen Write . . .

I have just completed my first flying model—a Keilkraft *Spitfire*.

I have been keen on aeroplanes for many years, but, only when my mother bought me my first copy of *MODEL AIRCRAFT* did I become interested in modelling aircraft. I am now deciding what model to buy next. I hope to get the *Frog Petrel*.

Yours sincerely,  
STUART KING.

Chapel-en-le-Frith,  
Cheshire.

I thought you might be interested in this photo showing me holding my K.K. *Slicker*, which is powered by an E.D. Comp Special. I was given both kit and engine whilst I was on holiday in



London. The fuselage and fin are covered with red tissue and the wings in white. I have also built and flown an O.D. profile fuselage control-liner which handled extremely stably.

Yours sincerely,  
ROBERT HORWOOD.

Bristol, 6.

## Pen-Pals Wanted . . .

Allan Robert Burley is 13 years old and lives at 78, *Merridale Street West, Wolverhampton, Staffs.* He would like a pen pal from any English speaking part of the world, interested in stunt and combat flying.

Christopher Stevenson-Wright, 169, *The Parade, Island Bay S.2, Wellington, New Zealand* would like to exchange letters with someone in England or America.

Anderi Norman, *Batmansgatan 9, Kalmar, Sweden*, is interested in C/L stunt and F/F sports models and wants an English pal with similar interests.

Victor Lambourn, 100, *Budleigh Crescent, Welling, Kent*, would like a pen friend, preferably from Germany, mainly interested in rubber and glider models.

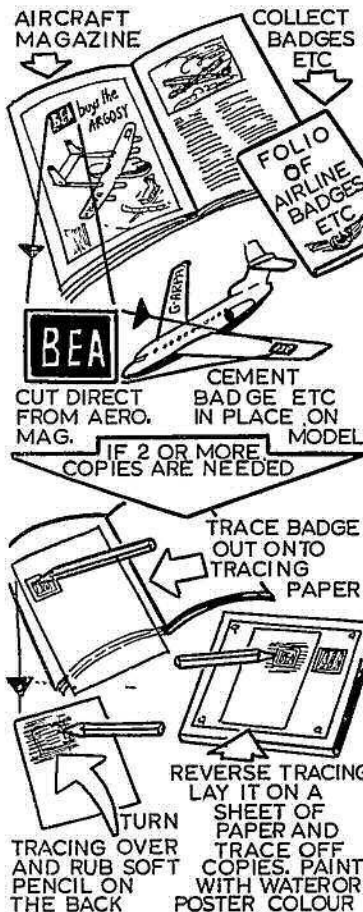
Howard Mortimer, 18, *Skipton Crescent, off Skipton Road, Harrogate, Yorks.*, is especially keen on scale models and would like to correspond with another enthusiast.

## Decorating Those Small Scale and Sheet Models

IMPROVE YOUR MODELLING  
with this month's



Useful as waterslide transfers are, there are many occasions when a special airline crest or badge is needed to give your model that "extra-real" look. To those not over-gifted in the artistic line, here is a suggestion. Very often aeronautical magazines dealing with full size aircraft, carry advertisements which include in their subject matter, drawings of badges, crests, etc., as carried on the nose, wings, tail assemblies of airliners. These crests are quite often in colour. Why not collect all likely advertisements into a folder? When you want an airliner crest or badge you will quite likely find something suitable in your collection. Frequently, it is possible to cut the insignia straight from the advertisement and cement it directly on your model. The sketch shows how to trace off a crest and transfer it to paper, if you should require more than one copy. A small brush and water or poster colour will complete the job, and provide you with really authentic looking insignia for your small scale and "quickie" sheet models.



## Turn Over for the Full Size H.P. 115 Plans—▶

Dear Alan Winterton—I am between 10 and 16 years of age and would like to become a member of the Model Aircraft Wings Club. With this coupon I enclose a postal order (overseas readers should send an International Money Order as local postal orders cannot be cashed in England) for 1/- to help cover the cost of the badge, transfers and membership book. All membership applications must be on this form.

Name in full.....

Address.....

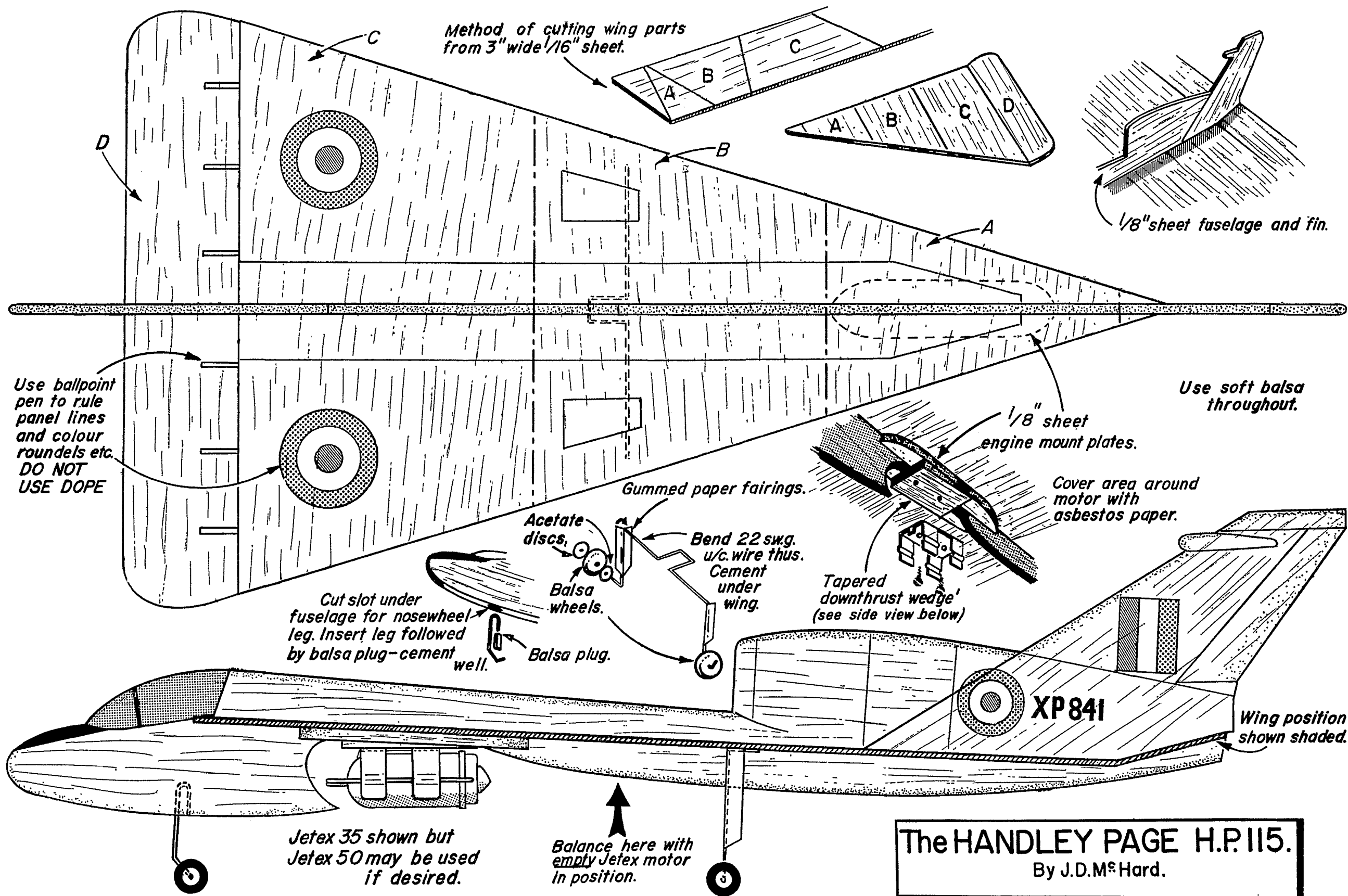
Year of birth.....

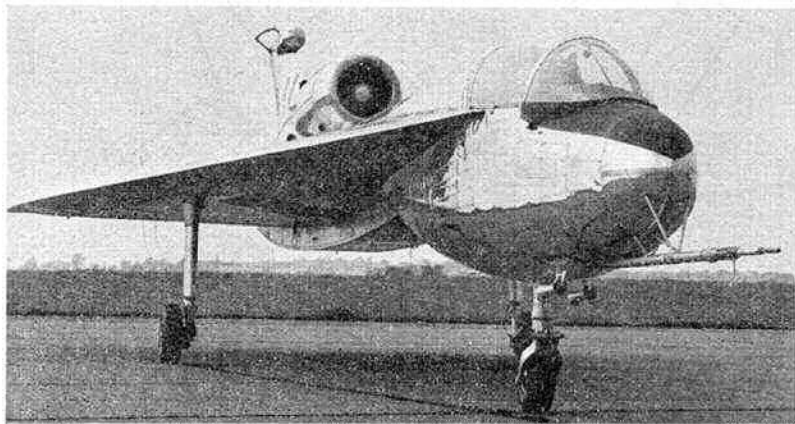
School or College.....

Name of other club or clubs to which I belong (if any).....

Send to—MODEL AIRCRAFT WINGS CLUB, 19-20 NOEL STREET, LONDON, W.1.







## Handley Page's **H.P. 115**

**A**FTER the first flight of the H.P.115, on August 17th this year, Handley Page commented that it had already done its most important job, merely by proving that a man could fly in an aeroplane with such a wing.

Aircraft which earn this kind of remark are usually "hot" and rather frightening. But when the 115's test pilot, Sqn. Ldr. Jack Henderson of the R.A.E., landed after the 31-min. first flight, he said that he had felt confident enough to explore most of the basic handling characteristics and was reported as "brimming with enthusiasm."

Equally significant to readers of *MODEL AIRCRAFT* is the Jetex H.P.115 featured elsewhere in this issue. Such a simple to trim model would hardly have been possible had the full-size aircraft relied on complicated arrangements of leading-edge flaps, trailing-edge flaps, slots, spoilers, air-brakes and similar devices to stay right way up from take-off to touch down.

The H.P.115 is itself virtually a piloted "scale model" of the slim delta wing shape proposed for Britain's first supersonic airliner. What is more, it was built only after Handley Page had spent years testing small-scale models in its wind tunnels. Many of the latter were flexible models of an entirely new kind, which enable scientists and

engineers to study flutter speeds and the effects of structural distortion on stability and control far more easily than with old-type rigid models.

Of course, the H.P.115 is intended to carry on this research only at comparatively low speeds. No performance figures may be published, but its 1,900 lb. thrust Bristol Siddeley *Viper* 9 turbojet is unlikely to give it a top speed much over 300 m.p.h. This does not matter, as a wing like this, with a leading-edge sweep of 74° 42', creates greater problems at low speeds than in cruising flight.

So far as we know, no other aircraft has ever flown with such a high degree of sweepback, the nearest being the 69° sweep of the Short *SB.5* in its latest form. Most people were surprised to see that the wing has a straight leading-edge, without even conical camber at the tips, as it is generally expected that the wings of a delta supersonic airliner will have an ogival, or curved, planform. However, Handley Page have a few tricks up their sleeve, as the 115's leading-edge is detachable and the present form will be replaced by all kinds of fancy shapes during the future test programme.

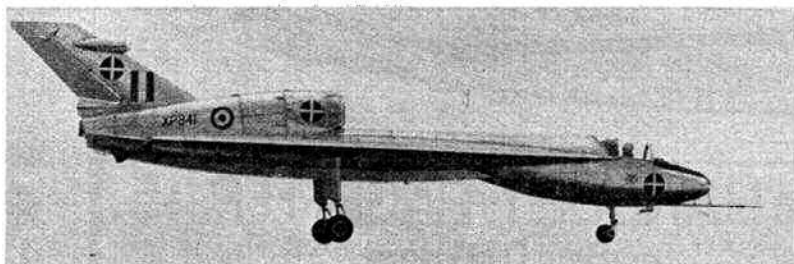
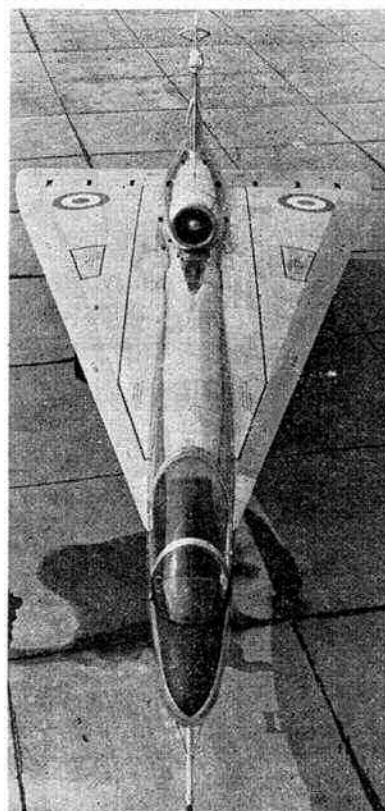
The position of the engine air intake also might seem strange, as deltas invariably land nose-high, which would

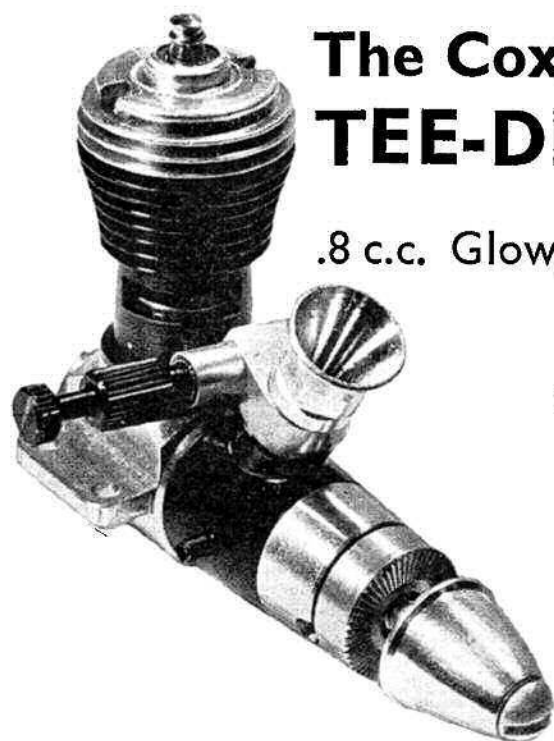
appear to blank off much of the airflow into the intake. The answer is that in a slim delta of this type the airflow separates from the leading and trailing-edges so that the wing is, in effect, permanently stalled and dependent mainly on vortex lift. As a result, an adequate supply of intake air is always provided by the vortex flow.

Structurally, the H.P.115 is straightforward and all-metal, except for the rudder and full-span tab-controlled elevons which are fabric-covered. Apart from the pilot's unpressurised cabin nacelle, the fuselage is a shallow, flat-bottomed structure of little significance. The tricycle undercarriage is non-retractable and there is a large perforated air-brake ahead of each main wheel unit.

Equipment includes a Martin-Baker ground-level ejection seat, an anti-spin and braking parachute in a housing above the jet-pipe, and a camera in a fairing on the leading-edge of the fin to photograph wool tufts on the wing during flight. The behaviour of those tufts will not only be interesting but may even be vital. No other nation has yet put into the air a shape designed specifically for a supersonic airliner, and the H.P.115 is, therefore, giving Britain a head start in the development of one of the most important and prestige-packed aircraft in flying history.

*Dimensions:* Span 20 ft.; length 45 ft.; wing area 430 sq. ft.





# The Cox TEE-DEE .049

.8 c.c. Glowplug motor

"... the quite  
phenomenal b.h.p.  
of 0.145 at  
21,000 r.p.m."

**S**ELDOM has one manufacturer introduced, simultaneously, a range of so many interesting new motors as did the Cox Manufacturing Company when they announced their new "Tee-Dee" line of 0.010, 0.020, 0.049 and 0.15 cu. in. motors earlier this year. The incomparable .010 (M.A. Engine Tests, June 1961) captured the imagination of all modellers by its tiny size and fantastic operating speed; the .15 (M.A., September 1961) has been the immediate choice of a larger number of F/F contest modellers from far and wide and one of them won this year's F/F World Championships in Germany. The .049, the subject of our present report, is no less an achievement by the Cox design staff and is already well on the way towards putting the Cox name back in the forefront of "Half-A" contest flying.

The .049 should be of particular interest to British F/F enthusiasts at the present time, in view of the increasing attention now being given to "Half-A" contests. British "Half-A" rules allow engines of up to 0.85 c.c. and it is worth noting here that this will also permit the use of the Cox .049's new companion model of 0.051 cu. in. (0.835 c.c.). The .051 is a slightly over-bored (0.004 in.) version of the .049 and was introduced to enable, by means of interchanging engines, a single model, or model design, to be used in American class "A" as well as "Half-A" contests.

Just how far the Tee-Dee .049 is ahead of average 0.8 c.c. engine performance is seen in our performance curves. For those who find prop r.p.m. figures easier to understand,

however, it is perhaps, worth quoting a few r.p.m. figures that were obtained with a typical "sport" type .8, for comparison, on the same props, after the T-D .049 tests. These were as follows: 7 x 4 Power-Prop 8,500 (Tee-Dee 11,500); 7 x 3 P.A.W. 9,250 (Tee-Dee 12,400); 7 x 3 Top-Flite 9,850 (Tee-Dee 13,000); 6 x 4 Top-Flite 11,700 (Tee-Dee 16,000); 6 x 3 Top-Flite 14,000 (Tee-Dee 18,300); 5 1/2 x 3 Tornado 14,600 (Tee-Dee 19,800); 5 x 3 K.K. Nylon 15,000 (Tee-Dee 21,900). Just for the record, it is worth remembering that to obtain the 4,300, 5,200 and 6,900 r.p.m. increases represented in the three last pairs of figures requires h.p. increases of approximately 122 per cent., 148 per cent. and 211 per cent. Fantastic as it may sound, this is hard fact.

The general design of the Tee-Dee .049 closely follows that of the Tee-Dee 15 and, of course, is unlike previous Cox contest .049's in that it employs shaft induction instead of the reed-valve system used with so much success on the Cox "Hopper" series and widely copied elsewhere. In order, therefore, not to repeat, in detail, a description of the basic design which

applies to the other Tee-Dee models already described in MODEL AIRCRAFT, we will recapitulate only the main points and then note the details and dimensions applying specifically to the .049.

Briefly, the Tee-Dee is distinguished by an unconventional design of shaft induction with a very large rectangular valve aperture and shaft port and a large accumulator chamber between the carburetor and induction valve. The carburetor has triple peripheral jets and includes a well designed needle-valve, the adjusting knob of which can be located in several different positions, left or right, to suit individual model installation. The cylinder is typically Cox with twin opposed exhaust ports and two internal transfer flutes positioned between them, giving well advanced transfer timing.

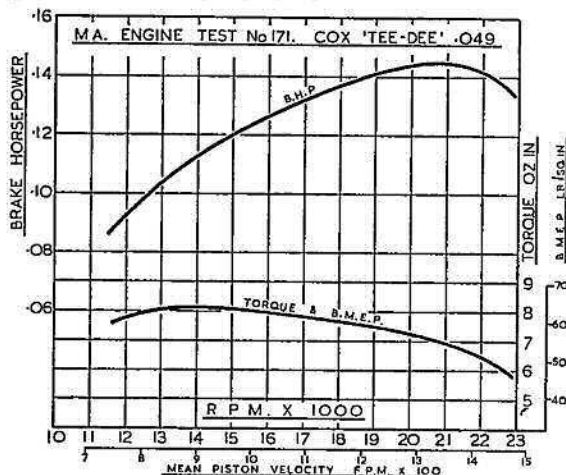
While the cylinder components of the Tee-Dee .049 closely resemble those of the previous Thermal Hopper and Space-Hopper .049 engines, there are a number of changes. The transfer flutes have been slightly enlarged and the former hemispherical type cylinder head has been replaced by one with the curvature reversed—in other words it is now a "belled" conical shape.

Reverting to the all important induction system, the crankshaft has a diameter of 9/32 in., permitting a 3/16 in. gas passage and the crankshaft port, 11/32 in. long, is the largest to date on a "Half-A" motor. This latter, registering with a 3/16 in. wide intake aperture in the plain main bearing gives a valve timing of 50 deg. ABDC to 45 deg. ATDC.

Like other current Cox engines, the Tee-Dee .049 uses no castings, all metal parts being machined. These engines are, of course, manufactured by highly advanced production techniques and the accuracy and finish of individual parts are to extremely high standards.

## Specification

Type: Single-cylinder, air-cooled, reverse-flow scavenged two-stroke cycle, glowplug ignition. Crankshaft type







The parts of the Cox Tee-Dee .049.

Nitrex (30 per cent. nitromethane).

Air temperature: 67 deg. F.

Barometer: 29.7 in Hg.

#### Performance

The Tee-Dee .049 was very definitely much happier when allowed its head—in other words, when permitted to turn

at at least 17,000 r.p.m. This is not to say that the engine lacks power when loaded for lower speeds. One of the remarkable features of the .049's performance is its ability to turn comparatively large props (e.g. 7 × 4, 7 × 3) faster than any other engine of similar capacity. However, it is apt to become a trifle uneven and for r.p.m. to wander slightly on such props, whereas it smooths out at above 17,000 and is absolutely rock steady at speeds around the b.h.p. peaking speed of 21,000 r.p.m. The fastest we had the .049 turning was 23,000 and it seemed quite prepared to go on at this speed indefinitely.

rotary valve induction with sub-piston supplementary air induction. Provision for rotary-valve timed pressurised fuel system.

Bore: 0.406 in. Stroke: 0.386 in.

Swept Volume: 0.499 cu in.=0.817 c.c. Stroke/Bore Ratio: 0.951:1.

Weight: 1.5 oz.

#### General Structural Data

Crankcase and main bearing sleeve machined from extruded aluminium alloy bar with screw-in rear cover. Hardened and ground steel crankshaft with crescent counterbalance, 9/32 in. dia. divided main journal and 7/64 in. dia. crankpin. Shaft end knurled for pressed-on gold anodised alloy prop driver and tapped for prop retaining screw. One-piece non-hardened steel cylinder, blued on external surfaces and screwed into crankcase. Lightweight steel piston with ball and socket joint to hardened steel connecting-rod. Screw-in alloy cylinder head with integral glow filament and seating on soft copper gasket. Moulded front housing and carburettor boss secured with alloy lock ring. Screw-in carburettor intake with gold anodised reversible needle-valve body having steel thread insert for blued steel needle. Beam mounting lugs.

#### Test Conditions

Running time prior to test: 1 hour.

Fuel used: KK Record Super-

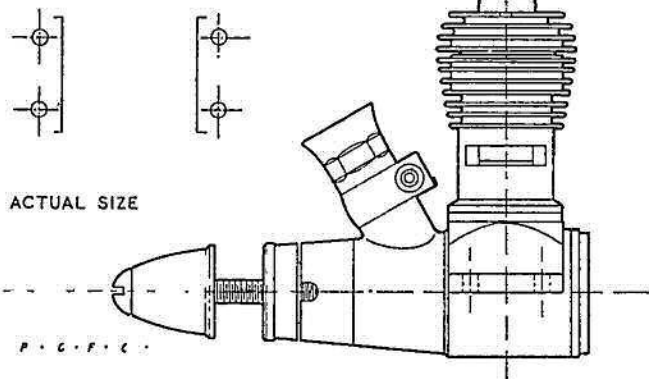
Starting, we thought, was not quite as foolproof as with the reed-valve Space-Hopper but was, nevertheless, good, irrespective of prop size. Port priming was used for cold starts but the Tee-Dee re-started readily even on the smallest props, when warm, following intake choking only. The needle-valve was positive in operation, easy to adjust and its sensible ratchet device held all settings firmly.

The actual torque developed by the Tee-Dee .049 was the highest yet recorded in this series for a 0.8 c.c. engine and reached a maximum of 8.1 oz. in. at around 14,000 r.p.m., equivalent to a brake mean effective pressure of approximately 64 lb./sq. in.—a figure which, a few years ago, would have seemed impossible with a Half-A glow engine. The decline of the torque curve was at an almost constant ratio up to 20,000 r.p.m. and resulted in the quite phenomenal b.h.p. of .145 at 21,000.

All these figures were obtained on Record Super Nitrex fuel which, containing 30 per cent. nitromethane, gives similar performance to the maker's own recommended blend, TD Racing Fuel. Power is, of course, quite appreciably reduced on ordinary low-nitro, or "straight" glow fuels.

Power/Weight Ratio (as tested): 1.55 b.h.p./lb. Specific Output (as tested): 177 b.h.p./litre.

#### COX TEE-DEE .049



## LATEST ENGINE NEWS

Continued from page 383

pressure feed, bigger intake passages and, sometimes, raised compression ratios) the differences between combat and stunt versions of the Super-Tigre C.35 mark quite a different approach.

In the C.35 combat the entire induction system is exactly the same as the stunt engine—the main casting is unaltered, the same venturi insert with its moderate 4.5 mm. bore, the same crankshaft—all are retained. Instead, a new cylinder liner, piston and cylinder head are used. In place of the conventionally ported cylinder and deflector

piston of the stunt engine, a porting system similar to the revolutionary Super-Tigre G.20 Jubilee with flat crown piston is employed, the only difference being that the exhaust opening does have a slight lead over the transfer instead of being symmetrical as in the G.20. The cylinder head, on the other hand, is different from both the G.20 and the C.35 stunt and is of the squish-band type, rare in model engines.

This is interesting because, for the first time, it gives us the chance to compare, performance-wise, a conventional baffle piston, normally ported cylinder with the unique porting system (admittedly slightly varied) which has

been so successful in the G.20 Jubilee. We hope to offer some results of comparative tests in due course.

\* \* \*

Pocket test reports: Fox Rocket .35, 1961-62 version: only slightly more power than original Rocket but more docile. Fox 40: exceeded expectations, thirty per cent. more power than the above for thirteen per cent. greater capacity. Dynamic 049: peppiest diesel .8 to date, if not the easiest starting. K. & B. 35C: a good engine and a hot one, score three plugs. O.S. Max 29X: another hot one, score: 1 shattered 9 × 4 wood prop.



# ROVING REPORT

THE A.M.A. Official Results of the 30th National Model Airplane Championships, held at Willow Grove Naval Air Station, Pennsylvania, runs to some 44 pages and contains many interesting statistics. Each event at the U.S. Nationals is sponsored: in most cases by one of the model firms but also by aviation companies or other supporters of model aeronautics. The A.M.A. report, therefore, not only contains the names and performances of the first five place winners in every event and class but also includes, for the benefit of the sponsors, a note of the makes of equipment and materials used by the first three.

In a few cases, one or two items of this latter information are missing, but a very clear picture of the popularity and success of different makes of equipment (some of it well known in the U.K.) can be gleaned from study of this interesting report.

For example, of 138 American engines used by the place winners, Cox was the most popular make with a total of 32 listed. Fox had second place with 29, followed by 26 K. & B.'s, 23 Holland Hornets, 19 McCoy's, 4 Johnsons, 2 Doolings and one each of Arden Atwood and Lee. Of 21 imported makes that placed, there were 8 O.S., 6 Super-Tigre, 2 Oliver and Enya and one each of Eta, Rivers and Taifun. K. & B.'s were the most widely used glowplugs with a total of 46 and, discounting engines with built-in glow filaments (Cox and Holland Hornet), the next most popular plug among the place winners was the Herkimer O.K. used by 32, followed by Johnson (9), Champion and McCoy (5 each), Fox (3) and Ohlsson and Veco with one each.

Speed enthusiasts will note with interest that of the 51 place winners in 17 classes spread through six events (Half-A, A, B, C, Jet and Proto) more than 80 per cent. used monoline—either the Stanzel original set-up or variations on it. In class A speed (for F.A.I. 2.5 c.c. engines but with nitromethane permitted) all nine place winners (i.e. 1st, 2nd and 3rd in Junior, Senior and Open) used monoline. Five had K. & B. 15R engines and four used Super-Tigres. Fastest speed was in the Senior class

**AUSTRALIA.** Norman Bell caught this interesting study in individual reactions as Les Heap's radio model dives for a group of fliers.



with a Super-Tigre at 139.26 m.p.h., followed by a very good Junior speed at 133.87 with a K. & B. and 132.69 by F.A.I. team member Bob Lauderdale with a Super-Tigre in the Open class. All three used K. & B. plugs, Stanzel monoline and the little advertised but well established and picturesquely named "This-Is-It" racing fuel.

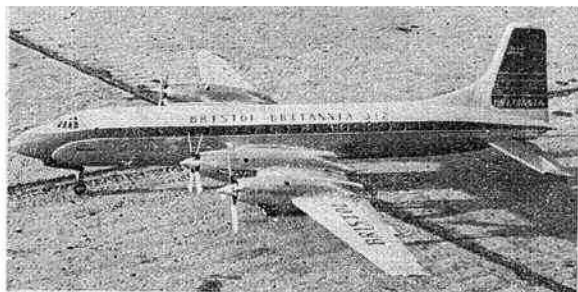
Best speeds in class B (5 c.c.) were in the Open class won with a home made special at 152.35 m.p.h., a Fox 29X second at 151.45 and a Dooling 29 third at 147. They used, respectively, K. & B., Herkimer and Champion plugs and Rev-Up, T.M.H.K. (Japanese) and Grish props. Fox 29's largely dominated the Junior and Senior groups. The big stuff (10 c.c.) was virtually a McCoy 60 benefit with Bob Lauderdale clocking 163.57 to achieve the best time using a Herkimer plug and Grish prop. Second and third highest speeds were set with K. & B. plugs and Grish and Rev-Up props.

\* \* \*  
Lieut. David L. Cotton, U.S.A.F. who, as we mentioned last month, has been doing very well with an M.V.V.S. 2.5/1959, has sent us some notes on the A.M.A. eliminating trials recently held to select a U.S. speed team for next year's World Championships. The final trials, on October 1st, were area-centralised events held, simultaneously, at Huntsville in Alabama, Wichita, Kansas and Los Angeles, Calif. Four flyers, qualifying from earlier trials, competed at each venue. Lt. Cotton was one of the contestants at Huntsville, together with Bob Lauderdale, Steve Wooley and Tom McDonald, and he reports as follows:

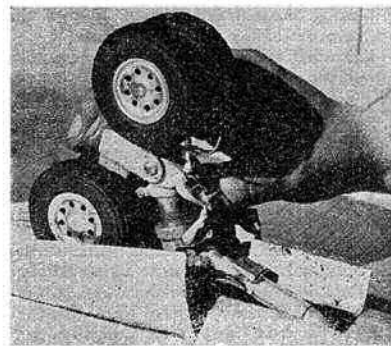
"At Huntsville if it rained all day. I threw the rod in my M.V.V.S. on my first attempt and as I did not have my second engine with me, was wiped out at the start. Lauderdale's first official was 123.98 and his second 125.11 flown in heavy rain. His prop was a 6 x 7 Tornado. The best McDonald could do was 112 and Steve Wooley turned 118.86. Lauderdale told me that the previous weekend, both he and McDonald had several consecutive flights in the 125-127 range. Wooley also said he had flown his two-line plane at 127 several times. All engines were Super-Tigres.

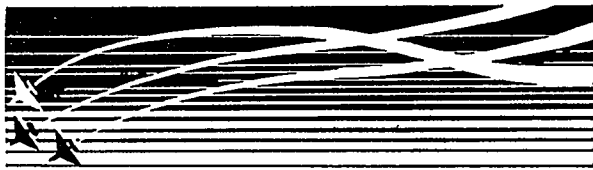
"I called Bill Wisniewski for the Los Angeles results. Speeds were slower than I expected. Chuck Shute was highest with 120.92. Bob Carpenter was next with 119.82 then Jim Nightingale with 119.72 and Wisniewski slowest with 117. All engines were K. & B. 15R's, except Nightingale who ran an engine he had made. I next called Dale Kirm for the Wichita results. Dale was top qualifier with 118.86 K. & B. 15R). Two of the other flyers wrecked their airplanes and did not get any official flights. One of them did turn in a test flight of 123 and then wrecked his model when he attempted an official flight. Weather was worse than at Huntsville, temperature 40 to 50 and wind 20 knots."

The U.S. team, therefore, will be Lauderdale, Shute and Carpenter with Nightingale as first reserve. Lauderdale and Nightingale were, of course, members of the victorious U.S. team at the last World Championships.



**POLAND.** Two more pictures of the remarkable 7-ft. Britannia built by Jansz Kuszelek, first illustrated in our February issue. Model took three years to build, has four Sokol 5 c.c. engines with throttles. Retractable undercarriage was built up from specially made aluminium castings.





## TOPICAL TWISTS

by pylonius

### Not on the Cards

You would never suspect that the Criterium of Aces was anything but a rather lush gambling joint. But this Big Deal actually refers to the C/L beat up they hold each year on the Continent. Reminiscent of a Venus Saucer station, the site, to British eyes, was right out of this world. It left no doubt that the modeller abroad not only moved in the best circles, he flew in them, too.

Strange to relate, all this splendour arises out of the simple acceptance of the fact of model flying being as much a sport as kicking a ball about. This is just as foreign to our way of life as local councils having money to spend on anything but fancy litter bins and concrete lamp-posts. When we approach our local council for model flying facilities the matter is usually referred to the Child Welfare Association, or to the Sanitation Dept., for the possible use of the Municipal Rubbish Dump on non-collection days only.

Now, in view of recent comments on the sartorial turn out of our teams it would hardly be wise to hold an international event on a Rubbish Dump, as there might be difficulty in distinguishing between the British competitors and the local dustmen. Our only future hope lies in getting some sort of sponsorship. But who? Well, we can discount the model trade right away, for they, like the mustard people, make their money from the stuff that's left on the kitchen table. They would hardly be interested in the few flying field types who get the model business such a bad name.

We could, of course, get our application on the National Playing Grounds list, somewhere below the Marbles Association, but first we should endeavour to obtain recognition of our hobby as an adult pastime. Now, if you can get the nursery game, Lotto, raised to adult stature by dressing it up with a smart American name, perhaps we should work on these lines.

What about Wingo, the latest aerial game from across the pond?

### Ladies First

The very latest gimmick is the fully operational lady modeller. These are now being produced on an international scale; each country vying with the other to display the most formidable, deadlier than the male, deterrent. Our American friends, second to none in international oncupmanship, set all male opposition reaching for the dishcloths with the very latest in high powered feminine virtuosity. While we've been all agog at the sight of a girly figure cavorting with a man sized power model as the very utmost, the Americans have been grooming their majorettes for a breakthrough into the rough and tumble of the team race arena.

Knowing what sort of aerial manoeuvres they can do with a heavy baton, a C/L handle would be mere kid's stuff. But, at least, a bit of graceful, centre circle, juggling would make a welcome change from the lumbering, judo practice that goes on at present.

### Left in the Wake

Olde Tyme model aeronauts everywhere will be sorry to hear that the last bastion of the kitchen table enthusiast, the rubber model, has now fallen to the implacable forces of mechanised know-how. The days when the fireside hobbyist could dream of winning the

Wakefield with nothing more lethal than a razor blade and pair of pliers are over. For the top international honours today you need a fully equipped workshop and a degree in Technology.

This much becomes evident from a review of the business end gadgetry to be seen on the rubber jobs at this year's world champs. The old Edwardian idea of poking a bit of piano wire through a brass bush is strictly for the more junior beginner. To get anything like the frictionless drive necessary for that three min. plus flight, you need precision engineering of the highest order, not to mention the right commercial connections for obtaining the special ballraces.

Who's for tennis?

### Pure Invention

Further information, as requested, on the pre-war German helicopter featured in last month's issue.

The contraption is, in fact, the innards of an early washing machine. And, if you would care to study the accompanying photographs, you will clearly see the archetypal mechanisms of the primitive paddle action and the built in mangle. Now, as the machine was built in the days before washboards were taken over by the Musicians' Union, and when white was just plain white, there was no public demand. So, just for the fun of the thing, the inventor decided to enter it in the local model contest. The rest is history.

### Non-Secret Weapon

At least the F/F championships clearly proved that our foreign rivals have little to learn from us in the development of the anti-model meeting. In fact, the strategy followed closely the principles outlined in the notorious Pylonius Plan X, which was devised to achieve a 90 per cent. elimination factor under average weather conditions.

The choice of the tree encircled, microscopic airfield could not have been bettered, while the downwind flying arrangements and competitor harassing tactics were technically perfect. Had the wind been operating at normal, model blasting velocity, this would have been the most successful anti-model model meeting ever, with organisers and friends enjoying maximum freedom from the model flying nuisance which all too often spoils an otherwise jolly festive occasion.

### Fangs for the Warning

As the first modeller to discover Chobham Common said, as he stood Cortez-wise on the brow of the Clump, "Snakes Alive!" And, that just about sums up the situation today, with vicious vipers lying in wait on the wayward modeller. Fortunately, the biological development of the modern contest flyer has made him the fastest bit of fauna in this wild life sanctuary, and we can be certain that, when chased by a viper, Norman Elliott moved at an even higher speed than his namesake, Herb.

Wild life on the Common is a constant joy to the naturalist. Venturing near the sand-choked Clump he might catch a glimpse of an aged Rattler surrounded by a group of the Armbanded Clockbird. Listening close he may even hear the deathly tick of the Minute Adder, or the despairing moan of the Lesser Spotted Flyaway. Given luck he might even see the Hooked Sidewinder in the act of devouring the fluttering fuzz, and perhaps catch sight of the Wunz Bittern as it migrates to more congenial pastures.



## Pylonius's Christmas Fayre

# PANTOPHOBIA

— A seasonal frolic for the under 5 cc.'s —

*Fairy Godmother:*

What better for a Christmas romp  
Than to hold an open power comp.,  
Where engines, running over-lean,  
Decorate the festive scene  
With bits of model, coloured bright:  
Yellow, red, spectator white.

But, where to fly? Ah, that's the rub.  
For us, too oft, the official snub.  
And even Chobham's simply crawling  
With horrid snakes—so, to West Malling,  
Where to show our flight ability  
On England's green, U.S. Facility.

The runway's clear, the storm has gone,  
So bring the first contestant on!

(Enter Aladdin, complete with lamp—  
Red hot favourite, last year's champ.)

*Aladdin:*

Now, come on, Genie, show some smoke!  
Try a spot of engine choke,  
Then set those timers, six in all,  
Before our thermal goes off boil.

(But his heart's not in his work.  
The model gives a violent jerk,  
Then a wiggle and a whirl,  
To change into a dancing girl.)

*Fairy Godmother:*

Well, here's a funny looking fella!  
Oh, silly me, it's Cinderella.  
Now, through her sisters, most unkind,  
Her "Out of Sights" were out of mind.  
But when she wrote, with rude address,  
A letter to the model press  
In fairest hand (for her print's charming)  
Disclosures that were most alarming.  
Which put her status, overdue,  
One up on Mavis, even Sue.

(Her model, to her great distress,  
Lands upon the Sergeants' Mess.  
But we cannot dwell upon her fate—  
The contests running three hours late.)

*Fairy Godmother:*

Next to fly, if I remember,  
Is Peter Pan, our junior member.  
For forty years he's been flying  
Beginner's kits—or rather trying.  
And only once flew out of sight,  
When the stage hand pulled the rope too tight.



"—to change into a dancing girl."



"—we cannot dwell upon her fate—"



"—Peter Pan, our junior member"



"Demands a warning count-down time"

*Peter Pan:*

Coo, what a rally! Very shoddy,  
With one fat fairy as Governing Body.  
I'm pretty sure they wouldn't stand  
For that in Never Never Land,  
Where ten officials to the model  
Wait to serve and mollycoddle  
All of those who fly for fun—  
P.R.O's and everyone!

(Conditions being much too rough,  
Peter goes off in a huff,

To begin his letter of complaint:  
"What fings used to be, they ain't...")

*Fairy Godmother:*

Another one to have a crack  
Is the beanstalk wallah, Blow You Jack.  
His mode of flying—very dim—  
Is from the car park, out of trim.  
We know his climb, of wide acclaim,  
Won him the goose of gilt edged fame.  
But watch his dive, and trust to luck  
That you can make a sudden duck.

(At the engine's mighty blast  
The fearful crowd falls back aghast—  
Surely such ballistic climb  
Demands a warning count-down time!  
But ere a second had elapsed  
The centre of the wing collapsed.  
And now the subterranean snout  
Will need a spade to dig it out.)

*Fairy Godmother:*

The last to make a contest flight  
Is Tiny Tim, the poor wee mite.  
Why, he's more patches on his back, see,  
Than adorns the wing of the Mk. I Maxie.  
Seems to me it's not too funny  
To take from him the entry money—  
Even the car borne gentry start to holla  
When asked to cough up half a dollar!

(His model, of dimension modest,  
In many ways is quite the oddest,  
For, in spite of what it lacks in size,  
Unlike the rest, it really flies  
With consistent form, and, what is more,  
Easily makes the highest score.)

*Fairy Godmother:*

Well, Tiny Tim has shown indeed  
Point Seven Five is all you need  
To give a climb both safe and snappy  
And to make other airfield users happy.

# OVER THE COUNTER

THE year of 1961 has not been particularly notable for any startling developments in the trade field. One or two trends have, however, been noted, among them the acceptance by the public of the larger, more complex and, therefore, more expensive kit. Three such kits that immediately spring to mind, are the *Frog Jackdaw*, the *Veron Viscount* and the *Kielkraft Super 60*. These are all radio jobs and reflect the rapidly increasing interest in this branch of our hobby. Customers have been "conditioned" to higher priced kits, following the freeing of import restrictions and the consequent appearance on the market of American radio kits, filling this obvious gap in the British manufacturers' catalogues.

The same remarks broadly apply to the radio equipment itself, but despite the bewildering variety of equipment now being imported from both America and the Continent, our own manufacturers' order books are healthy, and prices are very competitive.

Research and development in all fields has been steadily progressing and the fruits of these labours will be evident during the coming year. Many are the new projects in every branch of our hobby, from R/C scale models to plastics, that will appear in 1962 and we confidently look forward to a really bumper year ahead.

## New for Christmas

Jetex have a winner with their little rubber powered *Indoor Flyer*, a

picture of which appears right, with designer, previous Wakefield winner, Bert Judge. The model was first demonstrated at the Toy Fair earlier this year and aroused considerable interest as it flew round the demonstrators!

The *Indoor Flyer* comes ready to fly, being completely finished, even to the correct wing warps and already threaded rubber motor! A lot of very useful trimming experience can be had from this tough little model, as the wing and rudder settings are adjustable, the effects of various settings being immediately apparent and applicable to larger models.

The living room is large enough to fly this model in and at only 3s. 6d., it is an ideal gift for the youngster,

The benefits of a really rigid, heat dissipating, motor installation via a metal full or half pan, have long been exploited by speed fliers, more recently by team race enthusiasts, until now they are even being used on F/F models. A range of pans which should cover practically any application, is manufactured by **Paul Pomadi** of 372, Heath End Road, Nuneaton, Warwickshire.

The pans in our photograph below are for (1) 5 c.c. motors (Eta, Dooling, etc.) 15s. (2) 2.5 c.c. motors (Eta, Oliver, Rivers, etc.) 15s. (3) 1.5 c.c. motors (E.D. Super Fury, P.A.W., etc.) 11s. (4) 5 c.c. motors (Eta, Dooling, Torpedo 29R, etc.) 15s. (5) 5 c.c. motors (Eta, Dooling, Torpedo 29R, etc.) 15s. (6) 10 c.c. motors (McCoy 60, etc.) 15s. (7) 2.5 c.c. motors (Torpedo 15R, etc.) 13s. 6d. (8) 2.5 c.c. motors (long crankshaft) 9s. (9) "B" T/R Eta 29. 15s. (10) F.A.I. T/R universal (Eta, Oliver, Rivers, etc.) 15s. (11) F.A.I. T/R Eta 15. 13s. 6d. (12) F.A.I. T/R Oliver, Rivers, 13s. 6d. (13) 1/2 A T/R



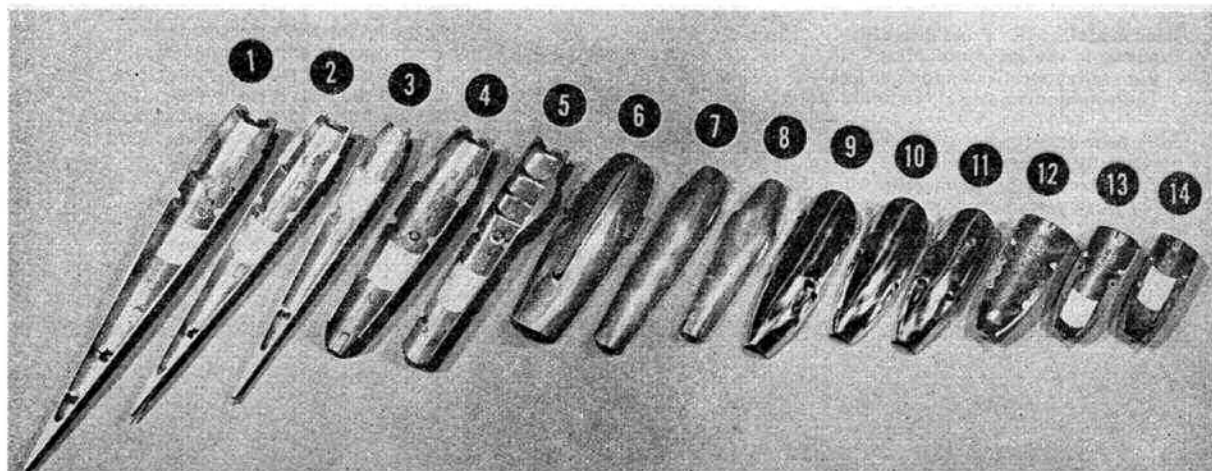
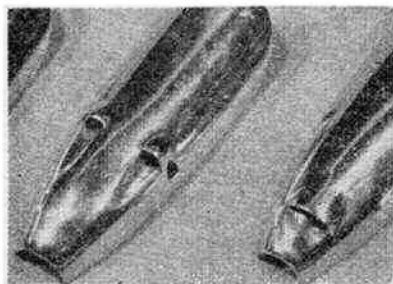
Oliver Cub, 11s. (14) 1/2 A T/R P.A.W. and E.D. Super Fury, 11s. Not illustrated, is a motor mount for F/F or R/C, which consists of a pair of mounting lugs cast integral with a 2 1/4 in. sq. backplate—cost 6s.

All are very cleanly cast in an aluminium alloy and certain pans for specific motors, incorporate a cast in air intake/crankcase cooling vent (see close up photo of Eta 15 and Oliver Tiger T/R pans left.) For the lazy, or those without suitable facilities, the pans can be supplied with the outsides buffed to a very high, scratch free, polish for an extra charge of 2s. 6d. each.

Mr. Pomadi will supply the trade, for orders of 12 or more, at the usual rates and will be pleased to quote for special designs.

**Bradshaw Model Products** are importing a most useful range of quality products for the modeller, a selection of which are shown in the photo opposite.

No. 1 is a Veco 4 oz. polythene "clunk tank" for R/C which appears to be most efficient—price is 12s. No. 2 Pactra C.77 hot fuel proof cement 2s. 6d. No. 3, from the German Schuco firm, is a first class 8-1 geared glider winch, light and robust, 63s. No. 4 is a Veco 4 oz. baffle tank price 9s. 6d. No. 5 a useful 1/2 in. engine extension unit, giving just that extra bit of crankshaft length to allow scale engine cowling, 7s. 11d. This can be used in conjunction





with No. 6—a beautifully spun  $2\frac{1}{2}$  in. aluminium spinner 9s. 6d. The Veco glow plug (No. 7) costs 5s. 2d., and No. 8 is one of the already familiar semi pneumatic Veco wheels, a  $2\frac{1}{2}$  in. pair costs 14s. 6d. Item 9 is a really first class fully pneumatic inflatable Veco airwheel. These wheels have rather heavier walled tyres than most currently available similar wheels, a good ribbed tread and metal hubs, perfect for R/C, a  $4\frac{1}{2}$  in. pair costs 48s. Finally the two brazed control horns (No. 10) will be eagerly snapped up by both R/C and C/L modellers. They cost 1s. 9d. each.

\* \* \*

Seen for the first time at the Southern Counties Rally, was the prototype of the new **Veron R/C scale Cessna Skylane**.

This is a really delightful model, with a wingspan of 54 in. and suitable for single channel or light multi equipment, as well as for pure F/F.

We understand that the kit will be on sale by the time this issue is on the bookstalls and it will be reviewed by us as soon as it is available. Early indications are that it will be cheaper than Veron's earlier *Viscount* and just as complete.

Another Veron kit, very different from the *Skylane* is the *Pinto*, a 20 in. span " $\frac{1}{2}$  A" team racer. This model is now on sale and, in traditional Veron style, is very extensively pre-fabbed, the construction of the model is really only a matter of assembly and finishing.

Materials in this kit are absolutely first class and cannot be faulted. Complete with metal spinner, sorbo wheels and heavy moulded cockpit cover, the *Pinto* costs 33s. 9d.

\* \* \*

Two new plastics this month, both airliners and both from **Airfix**. They are unique in that they represent the first departure of this company from their rigid adherence to  $1/72$ nd scale. The models are of a B.E.A. *Comet* and an Air France *Caravelle*, each to  $1/144$ th scale (exactly half  $1/72$ nd). They are the first two in a new range of models of "larger" prototypes to this scale, to be known as the "Skyking" series.



Hitherto, models of big airliners and bombers have, in the larger scale, been both expensive and bulky and this new small scale, will enable many new aircraft to be modelled. Whether the choice of scale will prove popular only time will tell, but the first impression is that they have gone too far. After all, there are already a number of larger aircraft modelled to  $1/96$ th and this scale allows much more detail than  $1/144$ th, without making the model unduly big. So it looks as though those who have started  $1/96$ th collections, will have to start all over again.

The *Caravelle* and *Comet* are nice kits, featuring one or two new departures from established practice, such as the transfer trim strip over the transparent windows, the openings for which are punched out after application, with a special tool supplied.

\* \* \*

**Corgi** toys are now producing a range of  $1/200$ th scale aircraft models called "Vapour Trials." They are

mounted in a most novel manner by means of a flexible wire inserted in tail end, the other end being fixed to a transparent plastic sucker, which can be attached to any smooth non-porous surface.

The first four models in the series are the English Electric *Lightning*, Hawker *Hunter*, Gloster *Javelin* and Supermarine *Scimitar*. We have examined the *Lightning* and find it very accurate. An interesting feature is the inclusion of an alternative set of markings; transparent cockpit covers complete the effect and each model costs 2s.

\* \* \*

**Ed Johnson** has a new line that will be particularly interesting to all builders of the larger free-flighters, especially R/C modellers.

It is a nylon covering material called Modelweave and one of its many desirable properties is a very close weave, discouraging the dope from penetrating to the underside and forming

*Continued on page 398*

Right: the "Caravelle" from the new Airfix range.

Lower right: Phil Smith's prototype "Skylane"—a new Veron kit.

Below: Veron's pre-fab "Pinto" kit—a  $\frac{1}{2}$  A team racer.



# RADIO TOPICS

**P**ICKING out the main trends and developments in 1961 is relatively easy—provided one sticks to R/C progress in this country. The year just ending, for instance, has seen the final acceptance of “multi” as the only practical method of achieving consistent performance to an advanced standard; the sweeping impact of imported equipment (mainly American, and Orbit in particular); and the adoption of the 1960 world-championship model, the *Orion* (and derivatives thereof) as a “standard” for multi-channel design. The availability of reliable “multi” equipment and proven designs in kit form, means that virtually anybody, with the necessary £150 or so to spend, can now produce a model far above 1960 performance standards in this country. How long that particular “anybody’s” model will last, however, still very much depends on his ability as a modeller—and, equally, the ability to pilot a relatively “hot” craft. The accent has been on more power and more speed to increase the scope of manoeuvrability—which can be particularly good for trade, when such a model is let loose under inexperienced guidance.

Less spectacular, but rather more attractive, there has been a considerable increase in the R/C scale model. Again “multi” is the logical choice for complete control, but for purely flying for fun—in suitable weather—rudder-only seems more attractive with a scale job, than with a basic “R/C trainer.” There must remain a considerable following for “rudder only” and single-channel work, as it is the only type of radio flying the vast majority of enthusiasts can hope to afford. More’s the pity, therefore, that this event was deleted from the 1961 British Nationals

programme. That may be a “sign of the times,” but is far from being a sign of what the radio enthusiasts want.

Contest flying has, in fact, become extremely specialised. Although there are the means available for dozens of people to fly a full stunt schedule, practice and “know-how,” are still prime essentials. That is why the same four or five names always turn up at the top of the list and it will take more than just a comparable model to beat them. You don’t buy that sort of experience with the radio equipment and the kit.

On the world picture, 1961 has seen the relayless receiver being accepted as the “standard,” particularly again for “multi,” where it offers so many advantages. Besides eliminating the relays and relay contacts, the reed bank in a relayless receiver works at much lower peak currents, so that contact troubles should be a thing of the past.

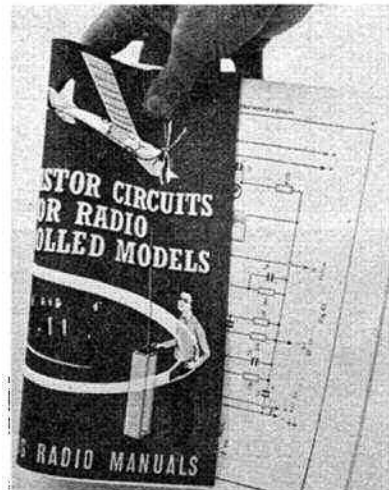
Considerable technical progress has also been made in other spheres. The superhet receiver is now an established production item, with all the advantages of “spot” tuning and the ability to operate several models simultaneously on the 27 megacycle band without interference, provided they all use different “spot” frequencies, of course! The fully transistorised receiver has more or less proved itself, although most manufacturers seem still to prefer to retain a hard valve for the detector stage on multi receivers. The fully transistorised transmitter—virtually unthinkable a year or so ago on account of lack of availability of suitable power transistors—is also a practical proposition and has been produced commercially.

Proportional systems, by and large, appear mainly to have been neglected during the past year. Most people, seeking more advanced control systems, have found that “bang-bang” multi gives all that they need. The old favourite, “Galloping Ghost,” persists as the “poor man’s multi” equivalent, but has not achieved any spectacular success as far as we are aware.

Quadruple proportional, utilising two modulated tones (two proportional channels) transmitted alternately, and

varying rate (one additional proportional channel) and cycling time (the fourth proportional channel) has appeared in a packaged unit by Electrosolids (Space Control). Representing what is virtually the ultimate in proportional control requirements, it has not proved an easy system to fly and maintain control. Perhaps, therefore, there is a logical limit to what is needed in a complete control system—at present covered adequately by 10-channel multi. You can get by with eight channels, if you are prepared to accept a bit of “stepping,” or lack of smoothness in many manoeuvres.

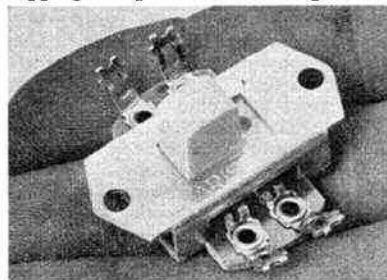
Model designs, as we have mentioned, have largely centred around the *Orion* configuration, although some notable exceptions have appeared, showing that high-wing and shoulder-wing layouts are by no means dead. The tricycle undercarriage, with steerable nosewheel, has started to take over from the conventional tailwheel undercarriage, becoming virtually a must on an American contest model, to qualify for “ground manoeuvring” points. Wings have become thinner for more speed—which we do not entirely agree is a progressive development. Power has been increased—the “49” is a standard for advanced aerobatic work—which is a good thing. The present idea now seems to be to produce a model with the highest possible rate of roll, even if this does mean clipping the span and interfering with a



Left: good reading for the bod. with a yen for home-built circuits and equipment. This new Bernard Radio book deals with transistor circuits for radio control, written by long-time model enthusiast Howard Boys.

Top right: new type double-pole slide switch features positive snap action. Unaffected by vibration and will not fall to pieces! Available from Ed. Johnson.

Right: Richie Power Pack has been designed specially to match Orbit receivers. A complete packaged unit, including DEAC battery, it provides 30 v., 1, 2 v., 2.5-0-2.5 v. and 1.2 v. “trigger” output to power receiver and all servos.



good "overall aerobic" layout.

Design, in fact, is getting less critical, with plenty of power and a full complement of controls available. Flying—and aerobatics—tend to rely more on brute force, displaced in various directions by the control surfaces—plus a fast enough reaction time on the part of the pilot, not to over-control. This, if carried to extremes, will not necessarily make for better aerobic flying, particularly from the onlookers', which includes the judges at competitions, point of view. As a spectacle, the aerobic performance of a modern jet fighter, is not as attractive as that of the mid-1930 biplanes, although it is a considerably more efficient aeroplane. The same could happen with R/C models.

\* \* \*

The first example of the new Orbit relayless 2-10 channel *superhet*, was seen in this country at the South Coast gala a month or so ago—not in a model, just for attracting custom! At any rate it has since been sold, put in a model, checked out after installation and worked straight away, as originally set up in America and, as far as we can see, there is no reason why it should not continue to do so indefinitely. This, in fact, should make just about the most completely foolproof receiver available for operation on any of six "spot" frequencies, for simultaneous formation flying, pylon racing, etc. The price in this country (ex Ed. Johnson) is £44 inclusive of tax, and duty paid. The one receiver serves any number of channels up to 10—just hook up the appropriate number of transistor-amplified servos. For anyone who can afford it, an automatic choice.

\* \* \*

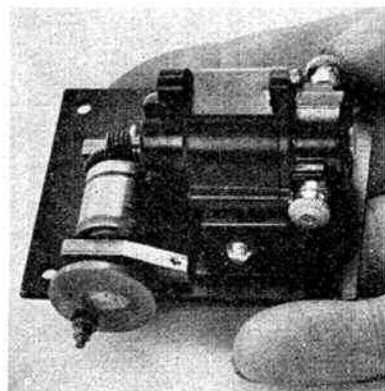
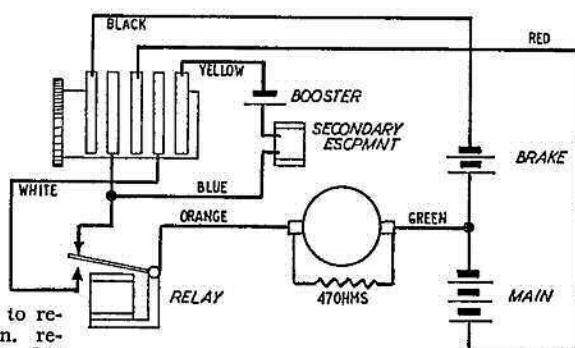
There will also be a British *superhet* on the market in the New Year. Radio and Electronic Products have developed a *superhet* front end, which will couple to their *super-regen.* circuits. We are not quite sure yet whether this will be put out as a complete *superhet* receiver; or as a *superhet* front end, to convert a *super-regen.* receiver to *superhet* operation, with both of the latter units available separately. About the only thing against *superhet* is cost, so the

Right: O.B.M. miniature compound-action motorised actuator for single-channel. Self-neutralising action with "quick blip" switching for auxiliary control. Mighty Midget motor. Distributed by Ripmax Marine Accessories. As supplied has soldered-on wires and cover over switching wipers, also 47 ohm suppressor across terminals.

*superhet* cannot hope to replace the *super-regen.* receiver completely, for although susceptible to interference, the latter is, more or less, comparable in performance.

Just to show that the single-channel boys are not completely neglected after all this talk of expensive equipment, we have considerable pleasure in mentioning the new O.B.M. servo. This is a motorised self-neutralising actuator with a compound action—i.e. giving selective "right" and "left" rudder positions, like a conventional S-N compound escapement, with "quick blip" switching for an auxiliary escapement (e.g. motor speed control). Basically, it consists of a slightly modified "Mighty Midget" motor, driving a switching drum and crank disc, via worm and gear reduction, the whole mounted on a plastic baseplate measuring  $2\frac{1}{2} \times 1\frac{1}{2}$  in. The switching drum consists of a turned brass core and an external brass sleeve, the two bonded as one unit by "potting" in Araldite and finally machined overall. Switching is provided by five phosphor bronze wipers.

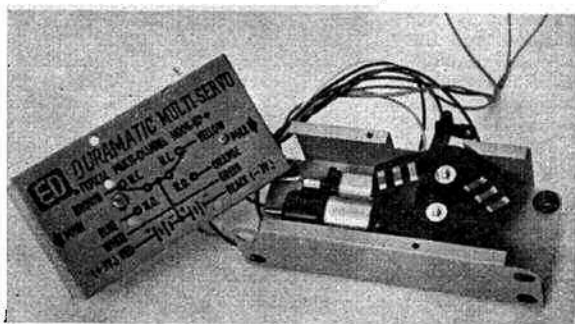
The O.B.M. servo was developed, primarily, to do all that a compound escapement will do, with the greater reliability of electric motor operation and greater force output. Considerable attention has also been given to eliminating the limitations present with motorised actuators for single-channel operation. The speed of operation (i.e. in arriving at a selected control position) is directly comparable with almost any compound escapement. The tendency for motors to "hunt" about a neutral and not come to a dead stop, is overcome



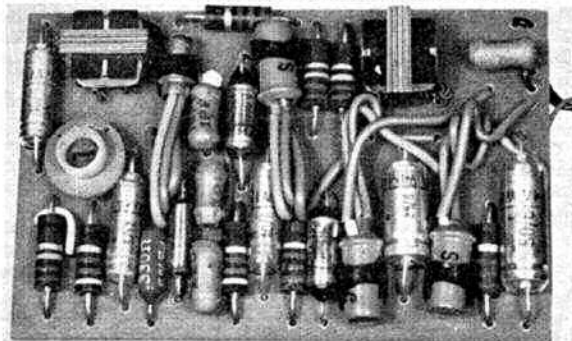
by a "sniff back" switching action, bringing in a second reversed polarity battery, to ensure positive stopping—see Fig. 1. Current is drawn by the motor only when moving to a control position or back to neutral—taking something like 250 milliamps, under load, on 3.6 volts.

Recommended operating voltage is 4 volts (e.g. two Magnacells), or three or four DEAC 450's (3.6 or 4.8 volts). The "sniff back" battery can be a single cell (2 volts or 1.2 volts). More power for the secondary escapement wired to the "quick blip" switching contacts, can be provided by including a "booster" battery, as shown in the circuit diagram. This should not be necessary in the case of a genuine 3 volt escapement (e.g. a typical American type), but would be necessary on an escapement which

Below: E.D. Duramite—the Bonner "Duramite" servo assembled over here from American-manufactured parts and absolutely identical in performance, as far as we can judge. The standard choice for a "multi" servo—now readily available in Britain.



Below: MacGregor fully transistorised relayless tone receiver, shortly to be put out as a kit, price £5/19/6. Designed to operate on one 3-4.5 volt battery with 500 milliwatt output.





requires a nominal 4.5 volt supply for consistent operation, since escapement coil and motor are in series when the escapement is being operated.

Altogether, a thoroughly practical and useful "compound" actuator for single-channel work, which should give really reliable service. It is not excessively heavy either (2½ oz.). The only specific recommendation we would make, is that the servo should always be mounted vertically. If mounted horizontally, we can visualise the "Mighty Midget" leaving its moulded-on base in a crash landing.



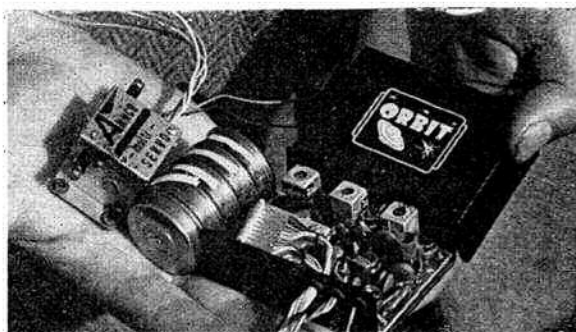
Left: Metz three-channel tone transmitter-receiver-actuator set. Fully transistorised transmitter works off three 1.5 volt dry batteries. Single 6 v. battery powers receiver and both servos. Filter circuits (not reeds) and largely "potted" receiver. Most impressive on initial test, we shall be rendering a full report shortly. Available ex-Roland Scott and Bradshaw Model Products.

Just for fun—especially as it is Christmas time—we pick the Tri-ang "Trionic" electronic construction kit, as an ideal purchase for the R/C modeller, who is also a family man with a young son. Basically, this kit consists of plug-together components to assemble on a variety of printed circuit bases and a series of elementary broadcast receivers, starting with a simple crystal set, through a single transistor receiver, plus a regen. version and added transistor amplification. Components are somewhat unrealistic in being fitted in large plastic mouldings, but each plugs

into position on the circuit board (again far from an ideal method of connection!) and so assembly of any circuit requires no soldering. Also, any set can be easily broken down and reassembled on the next panel, and so on.

Results achieved depend very largely on a good aerial and earth—also on being in a good district for reception—but this is just the job for getting "junior" interested in basic radio, as well as being instructive to father, whose knowledge of the radio side may be scant, even if he does fly R/C models successfully!

Below: the new Orbit 2/10 relayless receiver held in the hand together with a DEAC battery pack sufficient to operate the Rx and all the actuators! Also shown is the new Ancco lightweight multi-servo, weighs only 1.2 ounces and develops a thrust of over 3 lb. designed for 1-4 volt operation. Power take-off ¼ in. linear travel with push pull arm extending from both ends. Size 1½ in. x 1½ in. x 1 in. Price in G.B. £5/4/- The Medco reed unit used in the Orbit receiver is beautifully made precision job. Coil resistance 3,000 ohms for valve receivers or 75 ohms for transistor receivers. Price in G.B. of this reed unit separately is £7/17/6.



## Over the Counter

Continued from page 395

"runs." Despite its density it is not at all heavy, especially when it is appreciated that it requires far less than the normal quantity of dope to fill the grain. At the recent Southern Counties meeting, we noticed John Singleton's *Jackdaw* which was covered with Model-weave and were amazed to learn that the really excellent finish was obtained with only one coat of clear dope! Only one colour is at present available—a rather distinctive orange—very visible! Price is most reasonable at 8s. 6d. per yard 56 in. wide.

\* \* \*

The latest from Frog is a 42 in. span towline sailplane called *Ventura*. As usual the kit is fully die cut and assembly is quite straightforward, presenting no difficulty to even a raw beginner. It is in fact an ideal subject for the novice, and makes up into a most attractive model. The price is 16s. 3d.

\* \* \*

With the current shortage of nitromethane, due to the embargo on its shipment (a situation which is now gravely affecting the production of nitromethane based commercial fuels in

the U.K.), there is an obvious place for a good quality alternative, that is capable of offering some of the advantages nitromethane content fuels.

Such a product is E.D. Universal Nitrated Glow Motor Fuel. In place of nitromethane, this contains another additive of the nitroparaffin group. The fuel is, of course, based on methyl-alcohol (methanol) and is blended with a generous percentage of B.P. castor-type lubricating oil.

The fuel, as its name suggests, is intended for use in all types of glowplug engines. The nitro content is not excessive for any type motor and the fuel can also be safely used as a running-in mixture, without risk of overheating. On the other hand, compared with a straight methanol and castor-oil mixture, it offers a small but definite power increase and a noticeable improvement in flexibility.

We have tried E.D. Universal in a wide variety of engines over the past few months and have found it entirely satisfactory. It is sold in half-pint (10 fl. oz.), blue-labelled, screw-capped cans with filler spout.







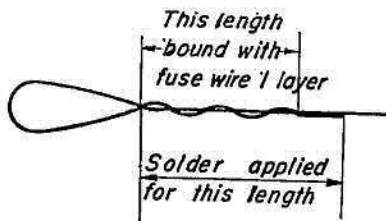
# LETTERS

## to the Editor

### New Zealand comments

SIR,—Two items in the May, 1961, *MODEL AIRCRAFT* have moved me to take out my crayons and write you.

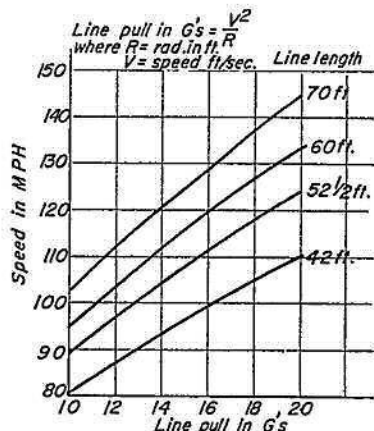
The first, my hobby-horse as N.Z.M.A.A. readers will know, concerns C/L wire strength. I did some research on this in 1959, which led to an alteration of local rules. The only point in Kevin Lindsey's article with which I do not agree concerns the end loops. I have had no trouble with the loop shown below, in either flying or pull tests. The



main thing here is that there should not be a too abrupt change in cross section area.

The figures I obtained, for Berkeley 0.010 in. stainless steel single strand and Light Laystrate three strand breaking strains, were 28 lb. and 34 lb. average, respectively. A handy rule I devised to give approximate breaking strains is based on a breaking stress of 134 tons/sq. in. Take the radius of the wire in thousandths of an inch, square it and this gives breaking strain in pounds. e.g. 0.010 in. wire. Breaking strain =  $(5.0)^2 \text{ lb.} = 25 \text{ lb.}$

The graph (top right) gives the pull in G's at various speeds, on the standard line lengths. It should be used in conjunction with breaking strain figures, to determine the line diameter which should be used. Each line should be capable of withstanding the pull, because if one line breaks, the other will hold and the model will not career off into the crowd. Monoliners should use a safety factor of at least two. Incidentally,



the graph shows that the 20 G pull test has its limits and is nearly useless for 10 c.c. and jet speed.

Secondly, I have noticed that readers usually decry the diesel for stunt work. While I admit that the glow-engine is easier to use, diesels can be tuned so as to give the same type of quick-slow running. The point here is that diesels are usually released slightly over-compressed and gain revs in the air. In executing a manoeuvre, the plane slows and the power from the engine sags, causing embarrassment to the pilot! If, however, the engine is tuned for peak revs when hot on the ground, it will miss appreciably in level flight, but will even out in manoeuvres. I have used this method with the 2.5 c.c. Burford Sabre and 3.5 c.c. Allen Mercury and once completed 30 or more outside loops after a line break without the engine once faltering.

Yours faithfully,  
ALLAN CLARKE.

Pukekohe,  
New Zealand.

### Gen wanted

SIR,—I wish to appeal for reminiscences and general information concerning the world's first operational jet fighter—the Me.262—(photo below) upon which I am preparing a book.

This Luftwaffe fighter saw limited service in the Low countries and more extensive use over the German homeland, from July 1944 until the cessation of hostilities in May 1945. Very little has ever been published on this last phase of

the air war and although I have recently received help from the German authorities, notably by being allowed to research in the archives of the Luftwaffe-Studiengruppe at Hamburg/Blankenese, due to the majority of the contemporary records having been destroyed or otherwise lost to public view, the only satisfactory way of tracing the combat history of the Me. 262 is by enlisting the aid of those who were actually involved with, or affected by, the introduction into service of this revolutionary aeroplane.

I am most anxious to contact any ex-R.A.F. personnel (or other Allied aircrew for that matter), who met this machine during the course of their wartime flying duties and can provide details of actions involving Me. 262's from logbooks, diaries or other documents, of the period.

It would also be most interesting to hear from ground personnel, who were stationed on the continent during the advance into Germany, who may have experienced bombing attacks by these aircraft, others holding photographs of captured specimens taken at overrun airfields and technicians and pilots, who were intimately connected with this type during trials held at Farnborough and elsewhere, after the war.

All possible care will of course be taken with any photographs or documentary material loaned by correspondents.

Yours faithfully,  
RICHARD P. BATESON.

16, St. Mary's Grove,  
Chiswick,  
London, W.4.

### Model found

SIR,—Yesterday a Veron Cardinal landed near my house which is situated north of Portsdown Hill, near Portsmouth. Would the owner contact my address or 'phone Cosham 77923.

Yours faithfully,  
R. C. HOWES.

2, Serpentine Road, Widley,  
Portsmouth, Hants.

### Thanks !

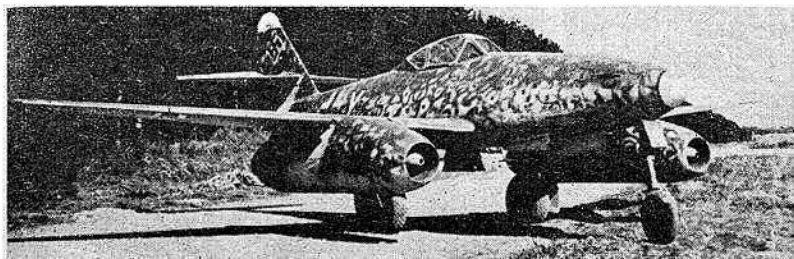
SIR,—On behalf of the speed enthusiasts in my club, I would like to thank Dick Taylor and his fellow members of the Brixton club for the tremendous amount of work they have put into the many S.M.A.E. speed meetings, including the Trials and Nationals, this year.

The giant speed entry at the Nationals was an indication of the boost these meetings have given to British speedmen.

Yours faithfully,  
KEVIN LINDSEY.

P.R.O. Hayes & D.M.A.C.

The Editor does not hold himself responsible for the views expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters.



# RECENT RALLIES

Wanstead Combat Rally—report and photo by J. Franklin

Exactly 100 entries were received, 67 in class "A" and 23 in class "B." The heats ran smoothly and nearly to time. The "A" combat was of good standard, and B. Bumstead was clearly the winner, flying very cleanly and accurately.

Class "B" showed a promising start, but lack of practice in engine starting and model design soon showed up. The final was three up on 60 ft. lines. The "Laindon Boys" must be congratulated on being 1st and 2nd first time out. The winner, L. Moorcroft was flying an enlarged *Dongus* with a Fox Black Head Combat special.

Wanstead M.A.C. would like to thank all competitors for making this a most enjoyable meeting and for keeping the flying field clean. In the light of this we hope to make this an annual event.

## RESULTS

Class "A" Combat—1. B. Bumstead (Worthing Bald Eagles); 2. I. Bone (Northwood-Kenton).

Class "B" Combat—1. L. Moorcroft (Laindon); 2. M. Taylor (Laindon); 3. K. Fuller (Hayes).

South Coast Gala—report and photo by J. D. McHard

The South Coast Gala, or to give it its more accurate title—Southern Counties Rally, was held this year at West Malling in Kent. This is a joint R.A.F./U.S.A.F. field and very operational—in fact the start of the contest was delayed for two hours to allow a U.S.N. *Constellation* to take off!

Weather conditions were very changeable and the wind direction generally unfavourable for the F/F boys, which factors contributed to the comparatively low times.

Prizes were presented by Lt. Willett whose assistance in obtaining the use of the field, and in liaison work during the event were most valuable.

## RESULTS

Power—1. G. Fuller, St. Albans, 9.00; 2.

Heading photo shows Surbiton power flyer Vic Jays with his latest Nordic "Jaytu" at the Croydon Gala. Below: L. Moorcroft, who won the Class B at the Wanstead Combat Rally. Below Centre (top): Dave Posner's 1/4 A power winning "Mini Weaver" at the Croydon and South Coast Galas. Cox Tee Dee-pressurised, driving 3-blade prop. Top right: from the Irish R/C Meeting, Henry Dagg (2nd place winner) releases Dr. Charles's "Bootsraps." Lower centre: Mike Burrows with his "Wireworm" Mk. II, featuring the shortest nose at the South Coast Gala. At the same meeting, with the longest rubber job, was Les Mitchell (bottom right).

P. Barrett, Vickers, 8.03; 3. A. Mussell, Farnham, 6.50.

Rubber—1. F. Boxall, Brighton, 9.00; 2. P. Hedgeman, Hayes, 7.49; 3. R. Holmes, Blackheath, 6.52.

Glider—1. M. Burrows, St. Albans, 7.38; 2. D. Carroll, 7.37; 3. D. Butler, Surbiton, 7.01.

1/4 A Power—1. D. Posner, Surbiton, 8.26; 2. M. Burrows, St. Albans, 7.57; 3. A. Fathers Abingdon, 7.22.

Tailless Glider—1. J. Marshall, Hayes, 5.29; 2. J. Kay, Hayes, 5.08; 3. F. Brench, Hayes, 2.10.

Chuck Glider—1. A. Young, St. Albans, 2.19; 2. A. Slater, Epsom, 1.55; 3. J. Whitaker, Tun. Wells, 1.10.

Team Racing—1. D. Allen/A. Cooper, W. Essex, 6.20; 2. J. Hall, Belfairs, 9.48.

Radio (Multi)—1. E. Johnson, 2.452; 2. F. van den Bergh, 2.338; 3. P. Leach, 2.026.

Irish R/C Meeting—report and photographs by J. Carroll

Baldonnel Aerodrome, venue for the post-war Irish Nationals, saw the first all-radio contest to be held in the Republic, on September 24th. Sunshine prevailed and a 10 m.p.h. breeze gave little bother.

Flying a venerable Junior 60, with Frog 500 and Ultratron Rx, Reggie Orr of Dublin overcame his lack of penetration, to narrowly beat another local, Henry Dagg who flew an E.D. Hunter powered *Royal Rudderbug*, again with Ultratron Rx. Both used the Bellaphone Tx belonging to Dr. Charles, whose serpentine r.o.g. with *Bootsraps* scattered spectators and contestants alike.

Our visitors from the "Wee North" had a goodly collection of models, mostly using R.E.P. radio gear, the most impressive being Ken Stewart's *Mercury Galahad*, Webra Mk. I and modified Reptone Rx, which showed the lowing set-up to be at no great disadvantage; certainly the r.o.g.'s were almost perfect. Two *Whirlwinds* were also noticed, E.D. Fury powered, sporting twin fins to obviate the blanketing effect of the large cabin on the original single-fin.

To round off what we hope to be the fore-runner of many reciprocal get-togethers between North and South, Dagg flew his magnificent O.S. multi 35 powered *Smog Hog*, with R.E.P. Sextone and Duramites, to set many a single-channel addict thinking "bigger and better."

Croydon Gala—report and photographs by M. Dilly

The weather man said this year's gala would have four-eighths cloud, sun, and winds gusting 30 knots; in fact there was complete cloud cover at 500 ft., a flat calm and heavy drizzle. However, the rain stopped around midday and the cloud lifted a couple of hundred feet, to enable some quite reasonable times to be made.

The system was to do four threes and then



increase by a minute for each fly-off. In fact, a fly-off was only necessary in Open Power, but top times in general were quite close.

Cox Tee-Dees and three bladed props predominated in the 1/4 A event, won by Dave Posner's pressurised specimen in his *Mini-Weaver*; in second place was Mick Burrows of St. Albans, with a fast climbing non-pressurised 190 sq. in. lightweight.

In the Open power seven people did four threes, J. West of Brighton repeating his last years win with a *Dixielander*. Dave Posner unfortunately set his D/T for 3 1/2 min. on his first fly-off and would certainly have done an easy four otherwise.

## RESULTS

Rubber—1. Rowe, St. Albans, 11 : 53; 2. R. New, C.M., 11 : 40; 3. Wells, Hornchurch, 11 : 34.

Power—1. J. West, Brighton, 4 x 3's; 4 : 00; 4 : 40; 2. P. Buskell, Surbiton, 4 x 3's; 4 : 00; 4 : 4. 3. D. Posner, Surbiton, 4 x 3's; 3 : 51. (Seven in fly-off.)

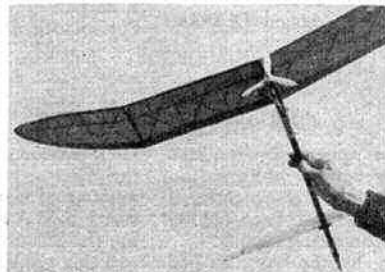
Glider—1. Woods, Cambridge, 10 : 37; 2. Hughes, Hornchurch, 9 : 57; 3. Wisner, Croydon, 9 : 46.

1/4 A Power—1. D. Posner, Surbiton, 11 : 45; 2. M. Burrows, St. Albans, 11 : 42; 3. D. Butler, Surbiton, 11 : 25.

Slope Soaring—A. Wisner, Croydon, 3 : 03. Gala Champion—M. Burrows, St. Albans.

Northern Area all F.A.I. Meeting—C/L Events—report and photographs by J. Horton. Rivers Trophy (Team Race). This was by far the best supported event, with entries from as far away as Scotland and Leicester. It was run by members of Wharfedale Club.

The general standard of flying still leaves room Continued bottom of next page





# CLUB NEWS

## NOVOCASTRIA M.A.S.

We had quite a lot of publicity recently with our members, Dave Glodien and Terry Barley, making four appearances on television. Apparently the final programme, which included a film of members in action, created quite a lot of interest locally.

## SOUTH-WEST R/C M.F.S.

After a bad start, through being denied the use of Dunkswell Aerodrome at the last minute and having to find an alternative site, our Open Rally was quite successful. E. Johnson won "multi" and J. Singleton was top in "single."

## CHEADLE M.A.S.

Indoor flying is absorbing the interests of members and we have "rediscovered" R.T.P. duration. There is a mad scramble now for condenser tissue and 1/32 in. square rubber. Six models are currently flying at the club room at A.T.C. H.Q., Bank Street, Cheadle, and we would welcome any new members to drop in on Tuesday nights to join the fun.

## WHITEFIELD M.A.C.

At a recent local carnival, we gave two half-hour C/L displays, and attracted by far the most attention of all the shows. There were about 10 flyers, and—very important—pre-selected pit crews. A newspaper reporter found the P.R.O. later in the evening, and as a result, we had a good write-up in the local newspaper.

A 1,000-lap marathon rat race was held to keep the C/L contingent busy. Heats of 250 laps gradually cut down the competitors to J. Jones and Jeff Edmunds, the latter proving victorious after 1,000 gruelling laps in the final heat.

The all-F.A.I. meeting at Rufforth was a most successful day for the club: Tom Jolley placed first in Stunt, J. O'D second in Wakefield, J. Entwistle third in A-2, and Bill Bailey fourth in Power.

## BRIXTON D.F.C.

With the winter evenings here club nights are growing more and more popular, as we have facilities for engine running, and indoor R.T.P. flying. Anyone interested in joining the club, should contact R. L. Taylor of 7, Kellett Road, S.W.2.

## SOUTH EASTERN AREA

The final round of the R.A.F.A. Shield competition was again blessed with good weather and there was the usual spate of thermals and lost models.

Despite an all out effort by the Crawley club, Tunbridge Wells held on to their lead and became winners for the fourth consecutive year.

Points: Tun. Wells 142½, Crawley 107½, East Grinstead 85, Medway 35, Horsham 15, Leatherhead 10.

## BAILDON M.F.C.

Juniors are really in the news. Mick Proctor placed second in the fly-off of a Northern Area Open Power competition, run concurrent with

the Keil Trophy, and John Pencheon, in his first competition season, beat all the so-called experts at a further Area Open Power competition flying a very fast climbing O/D AM35 powered model of 360 sq. in., 12½ oz. weight.

At the Northern Gala, Messrs Tubbs, Tidswell and Miller were all in the Rubber fly-off. Henry Tubbs placing second, while at the N.A. F.A.I. meeting, Henry won Wakefield by piling 120 per cent. turns on for each flight!

## WHARFEDALE M.F.C.

Members of the Wharfedale club staged a display for the patients of the Wharfedale Children's Hospital at Menston. In spite of the windy conditions some very interesting combat and stunt flying was arranged, and proved to be a great success.

Our International T/R team returned somewhat disconcerted after their unsuccessful European trip. Les Davy, who had to return home half-way through the meeting, as his mother was fatally ill, wishes to thank all the British team members and supporters for their help and encouragement, and we know his many friends will wish to offer their condolences in his sad loss.

Over 30 members attended the Northern Area's "all F.A.I. meeting" at Rufforth. Richard Place, home from R.A.F. Hemswell for the day, won F.A.I. speed with his pressure head O.S. Max 15 Mk.1 powered model and Ken Long was second with a standard *Tigress VI* team racer. The Long/Davey team also won the F.A.I. T/R event in 4:50 after qualifying for the final with the fastest time of the day—4:41.9.

For the de-centralised S.M.A.E. competition, the Davy/Long team entered a ½A version of their *Tigress/Dalesman* design, powered by a "very new" Oliver Tiger Cub. The model did 162 laps on its first tank and later in the race, set a new unofficial British record for a 10 mile race with 8:27. In practice they were doing 100 laps, non-stop in 4:16 and 4:06 (10 c.c. tank).

The F.A.I. T/R event suffered from lack of support, but Les Davy's *Tigress VII* returned 4:34 to top the N.A. results.

## E. GRINSTEAD & HORLEY M.F.C.

A merger of our two clubs into one has resulted in an active membership of 22, but of course we have twice that number "on the books." As a result of the merger we now have two excellent flying grounds: a large area of fields between Lingfield and Blindley Heath for F/F, and a playing field at Horley for C/L.

Winter indoor meetings are now in full swing; we meet at the Grammar School, Windmill Lane, East Grinstead on Monday evenings—new members welcome. Indoor team-racing with scale rubber models is the rage, and times so far have been pretty fast.

## HAYES & D.M.A.C.

Our team of L. Barr (Rubber), J. Baguley (Glider) and J. Marshall (Power), met Surbiton's team in the semi-final of the London Area knock-out Cup, and had an unexpected win.

At the South Coast Gala, our tailless enthusiasts placed 1, 2, 3. The best flight by a tailless was a 2.46 by John Kay with a very original and well tested all sheet A-2.

The weather was quite pleasant for the Hayes Gala held at Chobham, apart from a stiffish breeze. No fly-offs were needed, in fact several models went o.o.s. inside the 3 min. limit.

## RESULTS

**Rubber**—1. A. Young, St. Albans, 8.00; 2. C. Jackson, Surbiton, 7.53; 3. G. Fuller, St. Albans, 7.25. **Glider**—1. M. Giffen, N. Kent, 6.27; 2. D. Roche, Anglia 6.20; 3. D. Butler, Surbiton, 5.37. **Power**—1. C. Simeons, St. Albans, 9.00; 2. M. Rieley, Bristol, 8.17; 3. M. McLean, Essex, 5.37. **½A Power**—1. M. Burrows, St. Albans, 7.01; 2. G. Cornell, Croydon, 6.20; 3. D. Posner, Surbiton, 5.27.

## SOUTH BRISTOL M.A.C.

Recently a film unit approached the club with a view to making a television advertisement, for a well-known washing powder, using model aircraft as the subject.

The member first approached, Fred Newman and his wife, spent several days of anxiety, as the film boys arranged and re-arranged their furniture for the filming of the domestic scenes. A small band of the more adventurous members turned out one Saturday to be filmed in action (flying of course). An interesting day was spent by all present, especially Fred Newman who was wandering about wearing a dazzling white shirt.

We have since heard that the shots were successful and the film will be on the television anytime now. We hope aeromodellers will find it interesting—all 20 seconds of it!

## NORWICH M.F.C.

Members interested in F.A.I. F/F events, are practising hard for the postal competition which has been arranged with the Montreal M.F.C.

## CHRISTCHURCH M.A.C.

From complaints about noise received from a local resident, it appears that some modellers—who are not in the club—have been flying C/L models at all hours of the day and night. If these "bods" could get in touch with the secretary at 57, River Way, Christchurch, Hants., arrangements could be made for everyone to go flying together, otherwise we will probably lose the use of the field completely.

## MEDWAY M.F.C.

Although at present lacking in numbers, the club spirit is as high as ever and the younger members are improving in their modelling. Newcomers are welcome and should contact the secretary S. Ramsden, 355, Canterbury St., Gillingham, Kent.

## CHANGE OF SECRETARY

**SWINDON M.A.C.** J. Saunders, 24, Bessemer Close, Swindon, Wilts.

**YORK M.A.S.** D. Gilchrist, 21, Melwood Grove, Acom, York.

**LOUGHBOROUGH GRAMMAR SCHOOL M.A.C.** M. E. Widall, 167, Rudland Road, West Bridgford, Nottingham.

## NEW CLUB

**EAST GRINSTEAD & HORLEY M.F.C.** L. Fuzzard, The Stone House, Felcourt, East Grinstead, Sussex.

for improvement although retirements were largely due to mechanical failures mostly in motors.

There was no question about the Long/Davey team being the worthy winners of the "Rivers Trophy," but the dice for second place was very close. The Novocastrians just beat Hinckley by 0.8 sec., only about 1/3 of a lap in it!

**Results**—1. Long/Davey, Wharfedale, 4:49.8; 2. A. Laurie, Novocastria, 5:47.3; 3. T. Ellis, Hinckley, 5:48.1. (20 entries, 15 flew.)

Stunt had a low entry, but a very appreciative group of spectators. Judge Pete Russell gave top marks to Tom Jolley of Whitefield, although Frank Warburton of Bolton led in round one.

**Results**—1. T. Jolley, Whitefield, 5.250; 2. F. L. Warburton, Bolton, 4.980; 3. G. Higgs, Bolton, 4.170. (Five entries, four flew.)

Speed. Unfortunately the S.M.A.E. pylon did

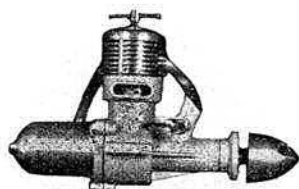
Right: Ken Long and Les Davy with the Rivers Trophy with, far right, runners up, A. Laurie and S. Peart, also with an Eta 15 model.

not materialise and this event became a bit of a farce with only four entries. However the Halifax lads did there best to see that nobody whipped.

**Results**—1. R. Place, Wharfedale, (O.S. Max

15) 171.5 k.p.h.; 2. Long/Davy, Wharfedale, (Eta 15 in team racer) 151.2 k.p.h.; 3. W. Fairbanks, Worksop, (Rossi Super Tiger) 111 k.p.h.



**CHOOSE THE BEST***The new improved***M.E. "HERON" 1 c.c. DIESEL**

53/6 Inc. Tax

Marine Version  
71/11 Inc. Tax

DISTRIBUTION:—

Home: E. KEIL &amp; Co. Ltd.

Export: MODEL EXPORTS Ltd.

MANUFACTURED BY:—

**MAROWN ENGINEERING LIMITED**

Glen Vine

Isle of Man

**DON'T FORGET DAD!**

V.I.P. Car Racing Set £8.19.0

*All Spares and Accessories***NYLON FOR MUM!**45 in. wide — Yellow, White,  
Blue, Turquoise. 7/11 per yard**SOMETHING FOR JOHNNY!**

The New VERON PINTO

 $\frac{1}{2}$ A T.R. Fully pre-fab. 33/9*Remember—We are Aero Engine Specialists***SHEEN MODELS**

263, Upper Richmond Road, East Sheen, S.W.14

PRO 4353

**Don't  
Just STICK it!  
use**

**"O-MY" Balsa  
CEMENT**

**and WELD IT!  
6° 10° 1 1/6**






**—You couldn't ask for  
finer tools—**

## THE SENIOR KNIFE ▼

Beautifully made, perfectly balanced for ease and comfort in use, this precision cutter makes light of all the aeromodeller's cutting and shaping problems. The four different blades are safely stowed in the handle when not in use.

### 6/6 COMPLETE

Spare set of  
4 blades: 2/-.  


## THE JUNIOR KNIFE

A handsomely finished light-weight cutter with reversible blade housed inside the handle.

**3/6**

Spare blades: 1/-.

## THE AEROMODELLER'S POCKET KIT ▼

This compact outfit, designed specifically for work on model aircraft parts, contains the Junior knife, round abrafile and U and V gouges, all fitting the handle. 6/9.



**Christmas Presents? Birthdays Coming?**  
Send for illustrated leaflets on Presentation Kits, Tools and Accessories:—

# MULTICRAFT LTD

35 Clipstone Street, London, W.1

## JOHNSON'S the name

Immediate Delivery. New low prices.

### RADIO CONTROL EQUIPMENT IN STOCK

#### R.E.P.

6 Reed Units	£2/10/0
Relayless Receiver (as used in Mini Reptone)	£9/9/0
Mini Uniac Servo	£2/12/9
Printed Circuit Transmitter Kit	£1/0/6
Aeromodeller Receiver Kit	£3/4/0
Unitone Single Tone Transmitter	£9/5/5
Crystal Controlled Transmitter	£11/12/5
Reptone Tone Transmitter	£7/8/6
Unitone Single Channel Receiver	£7/9/6

#### Electronic Developments

Octave 8 Reed Unit	£3
Black Prince Single Tone Transmitter	£11/3/0

All other R.E.P. and Electronic Developments equipment to order.

#### ACCESSORIES (Always in stock)

Valves—XFY 34	15/-
Transformers New Ardent 1001	9/6
Recommended, White, Double Pole on/off slide switch 3/-	
Orbit Type, 2 way, Transmitter lever switch	21/-
Wire, multi-strand, 8 colours...	5d. per yd.
Multi-Pin Plugs and Sockets, 2 pin to 9 pin.	
Model Weave Nylon Orange Only	8/6 per yd.

#### AMERICAN EQUIPMENT DEPARTMENT

Orbit Single Tone Transmitter	£14/2/6
Min-x	£12/15/9
Orbit 10" Channel Transmitter	£51/9/0
Min-x	£48/16/6
Min-x 6	£28/13/6
Min-x 6 Relayless Receiver...	£21/6/3
Min-x Single Tone Relay Receiver	£11/12/6
Orbit 10 Relayless Receiver	£32/19/0

British Duramite Servo...	£4/10/0
Graupner Unimatic Servo (Single)	£2/13/3

#### DEAC BATTERIES

225 Size	500 DKZ
1.2 V. ... 4/6	1.25 Volts ... 8/3
2.4 V. ... 11/-	2.5 V. ... 19/-
3.6 V. ... 15/6	3.75 V. ... 28/-
4.8 V. ... 21/-	5 V. ... 38/-
6 V. ... 26/-	6.25 V. ... 48/-
7.2 V. ... 31/-	7.5 V. ... 57/-
Mains charger 20/-	Charger ... 25/-

Supplied tapped as required. Transmitter Deacs also stocked.

Orion kit. Limited offer.	£7/10/0
Supers-Tigre 51 R/cs chromed.	£9/19/11

#### THE NEWEST ORBIT

ORBIT Superhet Receiver—All Transistor—6 Volts—10 Channel—Relayless—Medco Reed Unit—Choice of 6 R.F. frequencies. All frequencies may be operated at one time for formation flying, yacht racing, etc., £44/0/0 tax paid. Needs Crystal Controlled Transmitter

All prices quoted include Tax and Duty where chargeable.

Overseas enquiries invited for Tax free prices—fastest delivery—personal, expert service and advice from a practical and successful competition flyer.

A MERRY XMAS to all my friends and customers. Don't forget—World R/C competition in 1962. My guess, at Cranfield in August.

**ED JOHNSON (RADIO CONTROL)**  
LARKHILL, WILTSHIRE, ENGLAND

Phone before you call: DURRINGTON WALLS, 366

# Some Recent "MA" Plans



## M.A. 355 Me. 109E

price 6s. 6d. post free. The designer with his model (description below.)

(All prices include postage)

### GLIDERS

#### M.A. 350. THYRTE, by R. I. Godden

4s. 6d.

An elegant glider to the International A.1 formula. Span 56 in., length 33 in. (July 1961.)

### CONTROL-LINE

#### M.A. 351. KLIPPER, by J. Billbrough

2s. 6d.

A simple and strong flying wing C/L trainer/combat model for 1-1.5 c.c. motors. Span 24 in. (August 1961.)

#### M.A. 354. ALTAGERRA, by A. Philn

7s. 6d.

Stunt model for .35 motors. Span 56 in., length 35 in. (September 1961.)

#### M.A. 356. ELLIPITAS, by M. Turner

3s. 6d.

Profile C/L trainer for 1-1.5 c.c. motors. Span 36 in., length 20 in. (October 1961.)

### RADIO-CONTROL

#### M.A. 331. LOOPSTICK, by C. P. Lovegrove

7s. 6d.

A R/C contest model especially designed for use in conjunction with "Galloping Ghost" equipment. Span 49 in., length 39 in. Suitable for 2.5 to 5 c.c. engines. (June and July, 1960.)

#### M.A. 352. PIKA, by W. Lister

7s. 6d.

Single channel radio model for 2.5 to 3.5 c.c. motors. Span 58 in., length 36 in. (August, 1961.)

#### M.A. 357. HALF-TONE, by D. Platt

4s. 6d.

Simple, attractive, single channel radio model for .8 c.c. motors. Span 36 in., length 25 in. (November, 1961.)

### POWER-DRIVEN

#### M.A. 353. FOKKER D.8, by M. F. Hawkins

4s. 6d.

Lively and tough replica of famous World War I parasol monoplane fighter for .5 c.c. motors. Span 27 in., length 20 in. (Sept., 1961.)

#### M.A. 355. Me. 109E, by S. Cole (two sheets)

6s. 6d.

Attractive F/F scale model for 1.5 c.c. motors. Span 40 in., length 35 in. (October, 1961.)

#### M.A. 358. TUBBY, by C. Read

3s. 6d.

Attractive F/F biplane for the Cox .010. Span 20 in., length 18 in. (November, 1961.)

## Latest American Plan

M.A.N.  
87

**PIPER PAWNEE.** A 36 in. wingspan super-detailed C/L scale model for .19 to .29 engines (3.5 c.c. to 5 c.c.). All controls including throttle, ailerons, flaps and crop-dusting unit can be operated from the cockpit. A certain contest winner.

**CURTISS TRIAD.** A 35 in. wingspan C/L model of the U.S. Navy's first amphibious aeroplane. A really unique "string 'n wire" antique.

Two full-size plans on one sheet.

Price 7s. 6d. post paid.

**PERCIVAL MARSHALL 19-20 Noel Street, London W.1**

# *In Stock* **NOW—**

New from LINDBERG—

Black Arrow (Hawker-Hunter)  $\frac{1}{4}$  in.  
scale 13/9, p.p. 1/6.

Corsair now motorised,  $\frac{1}{4}$  in. scale  
13/9, p.p. 1/6.

Available again — B17G Bomber  
 $\frac{1}{8}$  in. scale, 33/11, p.p. 2/-.

## REVELL

Sopwith Camel 1/48th 23/6, p.p. 1/6.

Spad 1/48th 23/6, p.p. 1/6.

German V2 Rocket 15/11, p.p. 1/6.

## HAWK

1/72nd Scale A24 Attacker Bomber

1/72nd Texan Trainer

1/72nd Corsair F4U-1D

1/72nd Douglas Dauntless

1/72nd Supermarine Swift

1/72nd Skyray F4D-1

1/48th German V-1 Rocket

1/48th Mr. Mulligan

All at 5/11, p.p. 1/3.

## UNIVERSAL MODEL CENTRE

28, LOWER MARSH, LONDON, S.E.1

Early closing: Thursday.

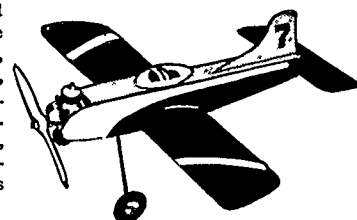
Tel.: WATERloo 1007.

# H.M.G. PRODUCTS

## PUK-KA CLEAR AND COLOURED DOPES

Puk-ka Clear Dope gives tissue a transparent, light but flexible, tough cellulose finish, fully waterproof with just the correct tautening properties.

Puk-ka Coloured Dope, in a wide range of colours, gives a long-lasting, lightweight finish. Dries in 10-15 mins. Covers completely, with smooth, brush-mark-free, high gloss finish.



## MARINE ENAMELS AND VARNISHES

The actual paint as supplied for sea-going yachts now packed for modellers. Protects your model against sun and sea and gives a first class finish which lasts and lasts. In a wide range of colours:



## EASILY THE BEST EASIEST TO USE

### OTHER H.M.G. PRODUCTS

H.M.G. "One Pack" Hot Fuel Dope. Straight from the jar! No messy two-pack procedure, just apply to your model for a perfect fuel proof finish.

H.M.G. Polystyrene Cement. Welds two polystyrene surfaces together.

H.M.G. Heat and Waterproof Adhesive. For all porous surfaces, except rubber. Used extensively by museums, etc. where permanent invisible joint is required.

H.M.G. "Puk-ka" Balsa Cement. Modellers' favourite for years—fast setting, of immense strength.

H.M.G. All purpose Clear Adhesive. For all non-porous surfaces, or where instant contact adhesion is required.

### H. MARCEL GUEST LTD.

Riverside Works, Collyhurst, Manchester, 9.  
Telephone COLlyhurst 2644 & 1536.

# YOUR BEST MODEL SHOPS



## Readers

YOU CAN DEAL WITH  
THESE MODEL SHOPS  
WITH COMPLETE  
CONFIDENCE

## Retailers

ADVERTISE ON THESE  
PAGES TO REACH THE  
LIVE MODELLERS IN  
YOUR TOWN

### BIRMINGHAM

Tel.: Northern 5569

#### *The Model Mecca*

204-206, WITTON ROAD, 6  
A 100% Modelling Shop. Aircraft kits, etc.  
Trix "OO" L.M.S. Co. "O" gauge. 5 and 5a buses pass door  
WRITE, PHONE or CALL

### DARTFORD

#### *Modern Models*

49-51, LOWFIELD STREET, DARTFORD, KENT  
Whether you call or whether you post, we claim we've got more stock  
than most

### BIRMINGHAM

#### *Ballard Bros.*

FOR ALL MODEL SUPPLIES  
133, SCHOOL ROAD, BIRMINGHAM  
Not just specialists—enthusiasts!

### GLASGOW

Tel.: Central 5638

#### *Caledonia Model Co.*

479, ARGYLE STREET, C.2  
THE engine repair specialists. EVERYTHING for the enthusiast,  
with personal attention from GEORGE LEASK, A.M.I.B.E.

### BRIGHTON

Tel.: Brighton 27963

#### *Arthur Mullett Ltd.*

16, MEETING HOUSE LANE, BRIGHTON  
World wide Mail Order Service  
Radio control, boat and aircraft specialist. Personal and dependable  
service at all times

### GUILDFORD

Tel.: Guildford 2274

#### *E. Pascall (Guildford) Ltd.*

105, WOODBRIDGE ROAD  
Stockists of all leading makes. Personal Service for all Modelling  
Enthusiasts

### BRISTOL

#### *The Model Airport*

51, COLSTON STREET  
Get your supplies from the leading M.A. shop in the town

### HARROW

Tel.: HAR 0347

#### *The Model Shop*

9, PINNER ROAD, HARROW, MIDDX.  
Stockists of many foreign engines and specialists in mail order. Wide  
range of kits always in stock

### CARDIFF

Tel.: 52906

#### *Bud Morgan*

THE MODEL AIRCRAFT SPECIALIST  
22/22a, CASTLE ARCADE  
SEND 4d. IN STAMPS FOR MY PRICE-LIST

### HONG KONG

Tel.: 62507

#### *Radar Co. Ltd.*

2, OBSERVATORY ROAD, TSIM SHA TSUI, KOWLOON  
The most complete stock of aeromodelling and hobby supplies in the  
Far East. Agents for German Graupner, Italian Super-Tigre and  
Sole Agents for O.S. engines and R/C equipment

### COVENTRY

Tel.: 40707

#### *The "Enterprize" Variety Stores*

19, FAR GOSFORD STREET  
21, BRIXHAM DRIVE, WYKEN  
If it's advertised within it's obtainable from Coventry's No. 1 Hobby  
shops... Full mail order service by return. S.A.E. for free lists...  
"Plastics" our speciality. Also at 59, Long Street, Wigston, Leics.

### HOUNSLOW

Tel.: Hounslow 0041

#### *Poulton's Model Shop*

79, HIGH STREET  
HOUNSLOW, MIDDX.  
Model aircraft, boats and trains. No charge for technical advice,  
engine runs or radio checks

### DARLINGTON

Tel.: 66399

#### *Handcrafts*

31, BONDGATE, DARLINGTON, Co. DURHAM  
Boats, Model Railways, Aircraft. Everything for the Modeller.  
Send S.A.E. for lists

### IPSWICH

Tel.: 51195

#### *East Anglian Model Supplies*

37, UPPER ORWELL STREET, IPSWICH  
Kellkraft, Varon, Mercury, Frog, Skyloade, Plastics, Boats, Engines,  
Solarbo, etc. Full postal service—Home or Abroad



**LIVERPOOL, I**

Tel.: Royal 7562

**Lucas's (Hobbies) Ltd.**

7, TARLETON STREET, LIVERPOOL, I

*The Shop with a reputation for models***LONDON, N.7**

Tel.: North 4272

**Henry J. Nicholls Ltd.**

308, HOLLOWAY ROAD, N.7

*M.A. enthusiasts' complete stockist. Britain's No. 1 Model Shop.  
H.J.N. will be pleased to see you***LONDON, N.W.1**

Tel.: GULiver 1818

**Ripmax Limited**

39, PARKWAY, CAMDEN TOWN, N.W.1

**THE RADIO CONTROL SPECIALISTS***All Requirements stocked PLUS Personal Mail Order Service***LONDON, E.3**

Tel.: ADVance 5274

**Bow Model Supplies**

543, ROMAN ROAD, BOW, E.3

*For all Model Aircraft Supplies and all the Latest Plastic Kits Releases***LONDON, S.E.1**

Tel.: WATerloo 1007

**Universal Model Centre**

28, LOWER MARSH, S.E.1

*Complete range of Latest Plastic Kits and Keilcraft***LONDON, S.E.1**

Tel.: Hep 3482

**Model Aircraft Supplies Ltd.**

29, OLD KENT ROAD, S.E.1

*The oldest established model aircraft shop in London.  
Personal service with satisfaction***LONDON, S.E.4**

Tel.: Tideway 8292

**Model Supplies**

328, BROCKLEY ROAD, S.E.4

*Agents for Revell, Airfix, Keilcraft, Mercury***LONDON, S.E.22****Dulwich Handicraft and Model  
Aero Supplies**

22, UPLANDS ROAD, S.E.22

*Kits, Aircraft and Boats and all accessories***LONDON, S.W.18**

Tel.: VANDyke 7062

**J. G. S. Clarke**THE MODEL SHOP, 46, BROOKWOOD ROAD,  
SOUTHFIELDS, LONDON, S.W.18*Stockist of: Keilcraft, Veron, Frog, Mercury, Airfix, Tri-ang Kits,  
Engines and accessories  
Early closing Thursday 1.00 p.m.***LONDON, S.W.20**

Tel.: LIB 3062

**Model & Tool Supplies**604, KINGSTON ROAD, RAYNES PARK,  
LONDON, S.W.20*Fine range of aircraft, boats, trains and accessories***LONDON, W.2**

Tel.: Paddington 0827-8-9

**THE COMPLETE MODEL SHOP****Burleigh's**

303, EDGWARE ROAD, W.2

*All your wants supplied by return  
BURLEIGH, OF EDGWARE ROAD, LTD.***LONDON, W.4**

Tel.: Chiswick 0858

**Jones Bros. of Chiswick**

56, TURNHAM GREEN TERRACE, W.4

*1 min. Turnham Green Station (Dist. Line)  
THE SHOP WITH THE STOCK  
OPEN SATURDAYS 9 a.m.-6.30 p.m.***LUTON**

Tel.: Luton 7858

**Aeromodels**

59, WELLINGTON STREET

*Model Aircraft and Railway Specialists***MANCHESTER**

Tel.: Blackfriars 3972

**The Model Shop**

13, BOOTLE STREET, DEANS GATE

*We have EVERYTHING in stock for the aeromodeller: Kits,  
Engines and Accessories***NEWCASTLE**

ESTABLISHED 1924

**The Model Shop**

(NEWCASTLE UPON TYNE) LTD.

18 BLENHEIM STREET, Tel.: 22016  
NEWCASTLE UPON TYNE, ENGLAND  
*Pioneers of modelling with 33 years' experience...  
Our Expert Staff are at your Service***OXFORD**

Tel.: 42407

**Howes Model Shop**

LARGEST STOCK IN THE MIDLANDS

CALL, WRITE OR PHONE

9-10, BROAD STREET

*Mail service by return***ST. HELENS**

Tel.: St. Helens 3972

**George Webster (St. Helens) Ltd.**THE MODELLERS' RENDEZVOUS, 37, DUKE  
STREET, ST. HELENS, LANCs.*All leading makes of kits, engines, etc., in stock. Mail order by return  
Aircraft List 6d., post free***STAFFORD**

Tel.: 420

**John W. Bagnall**MODEL CRAFTSMEN'S SUPPLIES  
SOUTH WALLS (ROAD)*The 100 per cent. Model Shop since 1936 is well worth a visit.  
Sales and Service with Satisfaction*

## STOCKTON-ON-TEES

**N. & W. De Vries**

(TEES MODEL SUPPLIES)

7 & 8, SILVER STREET, STOCKTON-ON-TEES  
Keilkraft, Veron, Mercury, Frog, Ripmax, Radio Control, Engines,  
Boats, Cars, Railways, Plastics

## SUTTON

Tel.: Vigilant 8292

**E. L. S. Model Supplies**

272, HIGH STREET, SUTTON, SURREY  
Surrey's Hobby Centre. By return Postal Service  
Complete stock of all M.A. requirements

## SWANSEA

Tel.: 53646

**Redana's Model Shop**

73/74, KINGSWAY (By Plaza Cinema)

Comprehensive stocks of Boat and Aircraft kits. Radio Control  
Engines and accessories. TRIX/TRI-ANG, WRENN/SCALEXTRIC  
Sets and spares. All makes of Plastic Kits, etc., etc.

Remember — REDANA'S for personal service

## WALSALL

Tel.: 23382

**S. H. Grainger**

CALDMORE MODELS

108, CALDMORE ROAD,

Everything for the modeller. Aircraft—Railways—Boats—Electric  
Cars—Repairs—Rebores—Overhauls—Spares.  
Radio Control. Part Exchanges.

## WATFORD

Tel.: Watford 3522

**H. G. Cramer Ltd.**

172a, HIGH STREET, WATFORD

The leading stockist in the area

## WELWYN GARDEN CITY

**H. A. Blunt & Sons Ltd.**

38, FRETHERNE, ROAD,  
WELWYN GARDEN CITY, HERTS.

A complete range of flying and plastic Model Aircraft Kits and accessories

## WEMBLEY

Tel.: Arnold 5564 & 7737

**Venture Sports**

38, COURT PARADE, EAST LANE, WEMBLEY,  
MIDDLESEX.

In stock—Model Aircraft Kits—Engines—Boats—Scalextric Roadways  
—Tri-ang—Wrenn Railways—and all plastic kits.

## WOLVERHAMPTON

Tel.: 26709

**Models & Hobbies**

19, ST. JOHN STREET, WOLVERHAMPTON

Beginners and experts are welcome. We have all the best in modelling

## CLASSIFIED ADVERTISEMENTS

Advertisements with remittance should be sent to Classified Department,  
Model Aircraft, 19, Noel Street, London, W.1, by 25th of month  
preceding publication date.

Private 3d. per word, Trade 6d. per word; minimum 12 words. Use  
of Box No. 2s. 0d. extra. Displayed Classified Advertisements (in-  
cluding Situations Vacant): 35s. per single col. inch (col. width 2½ in.).  
Series discounts: six insertions, 5 per cent.; twelve 10 per cent.

## FOR SALE

**P.A.W. ENGINES**  
for quality and performance

Stop Watches from 52/6 (Wrist and Pocket), ex-Government.  
Twelve months' guarantee. Send S.A.E. for list. Genuine Bausch &  
Lomb 7 x 50 Binoculars, £3 deposit and terms over 12 months, or  
£26 10s. cash.—Dept. M.A., UNITED TECHNICAL SUPPLIES LTD.,  
29, Tottenham Court Road, W.1.

**BARGAINS:** End of production run, PATHFINDER  
UNITS, the original Magnetic Glider Steering Device. Complete  
compass switch and actuator, 10/-. RUDDERMAG... one-  
way Actuator and Motor Cut-off. A useful movement for  
other R/C installations, 5/. All post free... only a few left...  
Send P.O. at once to:

**WOODSIDE MODEL AIRCRAFT SUPPLIES**  
72, Shirley Road, Croydon, Surrey

Binoculars—U.S.A., NAVAL 7 x 50. Value £60 for £24.—CHARLES  
FRANK LTD., Saltmarket, Glasgow. Phone BELL 2000.

Latest Black Prince 6 ch. Tx and Rx, crystal controlled, soft  
switches, only few months old, seen working, cost £37, bargain £26.  
—BROWN, 169, Albion Street, Southwick, Sussex. Southwick 2748.

A.M. 35 40/-, Frog 150 R., E.D. Bee, Mills 75, E.D. Pep, all 30/-  
o.n.o.—DIAS, 21, Orchard Close, Fetcham, Surrey.

## AEROPLANE PHOTOGRAPHS

Over 7,000, including 1914-18 Warplanes, latest U.S.A. and  
British jets.

All photographs 5½ x 3½ in. 10/- per dozen, postage 6d.

Send 1/- for list and specimen. State subjects required.

We also have thousands of Railways, Ships (Mercantile and R.N.),  
Trams and Buses.

**REAL PHOTOGRAPHS LTD. (Dept. M.A.),**  
Victoria House, Southport.

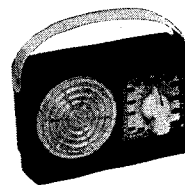
## 'CAPRI' ALL TRANSISTOR RADIO

All Transistor Radio with  
carrying case. Miniature loud-  
speaker design. Covers all  
medium waves.

Very reliable. Works for  
months off 8d. battery. Can  
be assembled in an hour or  
two using our simple as ABC  
pictorial open-out step-by-

step plans. Complete set of parts including miniature  
speaker—everything—only 27/6 plus 2/- P/P (C.O.D.  
extra). Parts can be bought separately. Demon-  
strations Daily—Money back guarantee. Send now.

**CONCORD ELECTRONICS (Dept. M.A.I.)**  
210 Church Road, Hove, Sussex.



## APPEALS

Greek Refugee Orphans. U.N. worker in North Greek Refugee  
orphanage wants to teach model aeroplane building to 120 boys.  
URGENT need KITS. Would much appreciate any materials to:—  
JOHN RIVERS, U.N.A., Fihates, Thesprotia, Greece.

## PUBLICATIONS

Catalogue No. 41. Over 4,000 items, Electrical, Mechanical,  
Material, etc. 9 in. x 3 in., S.A.E. please.—K. R. WHISTON (Dept.  
MAS), New Mills, Stockport.

For all your  
**MODEL AIRCRAFT**

needs come to

**JOHN PEPPER (HANLEY) LTD.**

*Piccadilly, Hanley*  
**STOKE-ON-TRENT**

**NEW—Pli ROYAL ECONOMY SIZE**  
**GIVES 3 TIMES MORE COVERAGE**

Price 11/6d.

Standard size, price 4/11d.

Use Super Pli and add Distinction to your Craft.

Full Pli Range of Brilliant Colours and Clear.

Obtainable from your local Model/Handicraft Shop.

**STEVENSONS AEROSOLS LTD.**

CLUB GARDENS WALK • SHEFFIELD 11 • ENGLAND

**GIVE YOUR MODEL THAT 'FINISHED' LOOK  
BY USING THE MODERN SPACE FILLERS**

**BRUMMER**

**WATERPROOF STOPPING** (Green label for exterior use)  
Impervious to sea water. Tins 2/5 Tubes 2/9

**YELLOW LABEL STOPPING** (Interior use)  
Tins 2/- Tubes 2/9

Specially made for filling in cracks, holes, splits, etc.  
Adheres firmly to wood, iron, brass screwheads, glass  
and fibreglass.

Made in all colours. Do not sink or drop out.

**WOOD GRAIN FILLER.** Tins 2/3 & 4/10

From Model and Hobby shops, Ironmongers, Ships Chandlers  
or write for stockist.

Insist on BRUMMER—it'll never let you down.

Brummer Ltd., Oyster Lane, Byfleet, Surrey. Byfleet 43636

**IT'S A WINNER!**

**RADIO CONTROL OF MODEL AIRCRAFT**, now in its third edition, has proved a best seller and is now accepted as a standard work on the subject. Its author, G. Sommerhoff, is well known in this connection and the book is unsurpassed for the amount of practical information it contains. Here are some Press notices: "Packed from cover to cover with good clear and concise facts . . . full of practical hints and tips."—**AERONAUTICS**. "Includes full constructional details for all equipment needed."—**AIR POWER**. "Mr. Sommerhoff is to be congratulated on such a practical treatise."—**THE TECHNICAL JOURNAL**. Price 7s. 6d. from booksellers or model shops or 8s. post paid from the publishers, Percival Marshall & Co. Ltd., 19-20, Noel Street, London, W.1. (U.S.A. and Canada \$2.00 post paid.)

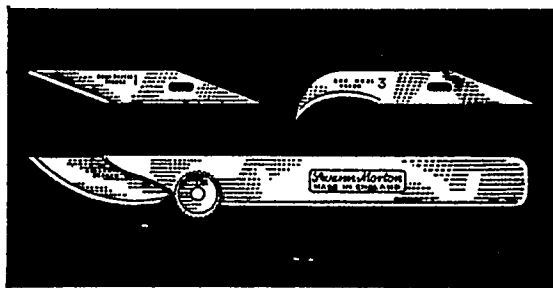


**Swann-Morton**  
**AIDS TO SKILL**

SWANN-MORTON tools for the handyman  
are made in Sheffield from the finest materials.

**The Swann-Morton CRAFT TOOL**

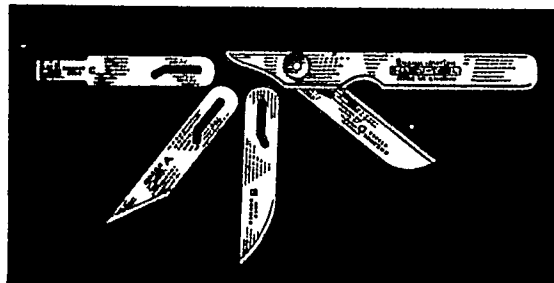
For light and medium cutting of all kinds, including the most intricate work. The two detachable blades are of finely tempered sharpness. A flat handle gives correct upright grip and ensures that the tool won't roll away when laid down.



Price per set (with one each Nos. 1 and 2 blades) 2/6. Spare blades (3 shapes available, Nos. 1, 2 & 3) 6 for 2/6.

**The Swann-Morton HANDI-TOOL**

An all-purpose knife with 4 sturdy blades of enduring sharpness. The blade in use stows away in the handle when the job is done—a valuable safety feature. The flat handle prevents accidental rolling when the tool is put down, and makes sure your grip is a firm one.



Price, complete with 4 blades 5/-.  
Spare heavy-duty blades 6 for 3/-.

**TRADE ONLY**

Manufactured by

Swann-Morton (Sales) Ltd • Penn Works • Sheffield 6 • England

431



# GAMAGES

## 1962 MODEL BOOK!

132-Pages Fully Illustrated. Packed with Facts, Figures, and Photos of Aircraft, Trains, Boats, Cars, plus details and prices of the hundreds of models and all the latest Plastic Kits in Gamages model Department.

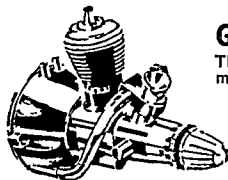
1/- Post 6d.



## COX—THIMBLEDROME GLOW-PLUG MOTORS

They are produced in the most up-to-date model engine plant in the world. Every part is made to the highest degree of accuracy from the finest available materials.

**TEE DEE .010 cu. in. (0.164 c.c.)**  
New rotary crankshaft induction.  
The world's smallest production engine. **78/10**



Post & pkg. 1/6.

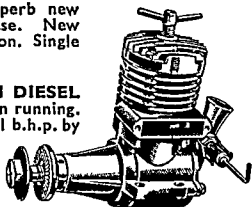
Also **BABE BEE .049 cu. in. (0.8 c.c.)**. A fine unit at popular price. **39/2**  
**PEE WEE .020 cu. in. (.0328 c.c.)** **39/2**

## FROG DIESEL MOTORS

Illustrated is **349 DIESEL**. A superb new engine having extra strong crankcase. New type porting with rear rotary induction. Single ball-bearing crank-shaft. **80/6**  
Nylon exhaust seal.

Also available **FROG 100 MK. II DIESEL**. Easy to start and extremely flexible in running. Wide speed range. Develops over 0.11 b.h.p. by independent test. Superbly finished with gold anodised **54/2**  
cylinder head.

A Presentation Set, complete with spinner, nylon tank and airscrew. **60/4**



Post & Pkg. 1/6.

**GAMAGES, HOLBORN, LONDON, E.C.1** **HOL. 8484**

## MODEL AIRCRAFT SUPPLIES LIMITED

**29 OLD KENT RD., LONDON, S.E.1**

Telephone: **HOP 3482**

Mini Reptone RX and TX ... .. **£17/1/0**  
Easy terms for all R.E.P. equipment

Keilkraft Super 60 ... .. **£5/7/0**  
Frog Jackdaw ... .. **£5/19/2**  
Merco 35 R/C or 29 ... .. **£7/15/0**

Frog Attacker ... .. **£5/14/1**  
Merco 35 or 29 ... .. **£6/1/6**

All orders over £2 sent post free.

**TD.010** ... .. **£3/19/0**

**We can supply all Keilkraft 4/3d. scale kits and Veron 3/10d.**

New from Veron—Viscount 54" span  
R/C model ... .. **£5/14/0**

K.K. nylon props, full | Send 6d. in stamps for  
range stocked. | latest list.

## ELECTRONICS!

### Key to YOUR Future?

An exciting career—a New Hobby—  
Your own spare or  
full-time **BUSINESS?**



New experimental  
course includes big  
kits for building test  
gear and a complete  
AM/VHF receiver.



**FREE BROCHURE FROM**

## RADIOSTRUCTOR

**DEPT. G 126 · READING · BERKS.**

## 'ELMIC' Announces!

The New Commander and Corporal R/C Escapements  
will be available shortly

**COMMANDER** Selective left and right with switch for motor control. Nylon governed movement. Built-in rudder linkage.  
Weight  $\frac{1}{4}$  oz. and  $1\frac{1}{2}$ " wide. 3-6v. operation. couplings.

The most positive escapement available.

**CORPORAL** Motor control unit for use with Commander. Adjustable stroke. Override shock absorber  $\frac{1}{4}$  oz. complete and  $1\frac{1}{2}$ " wide. 3-6v. operation.

**WATCH FOR RELEASE DATE OF THIS PERFECT MATCHING PAIR FOR SIMPLE RADIO CONTROL**

**Don't Dabble — Make it  
A REALLY EXPERT JOB**  
with

**Celspray**



**CELSPRAY** Spray Guns are used all over the world by model makers. They will spray cellulose, lacquer, paint, etc., giving a first-class finish. Precision made and guaranteed 5 YEARS, and are absolutely indispensable to every model maker.

**10/6** Others at 9/6, 10/-, 11/-, p. & p. 1/3.  
Obtainable from **HALFORDS, HOBBIES and Model Stores** or direct from  
**CELSPRAY Ltd. (T.3) Beechwood Rise, North Watford, Herts. Tel: Watford 26284.**

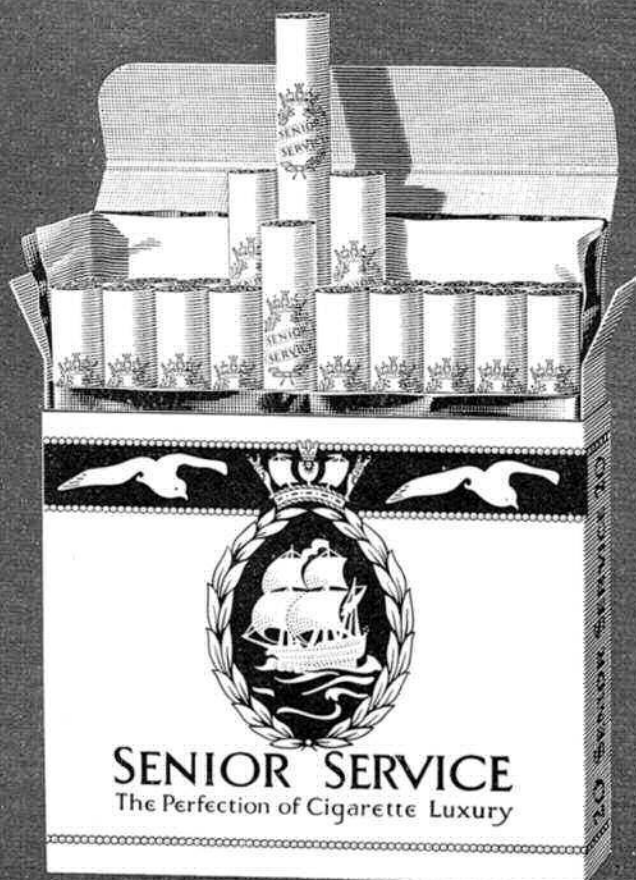
## AVIATION BOOKS

We specialise exclusively in books and magazines on every aspect of aviation, together with photographs and plans of aircraft. Thousands of new and second-hand books and nearly a quarter of a million magazines in stock. First class postal service. Send 1s. stamp for catalogue. Books bought, sold and exchanged.

We are only open to callers on Saturdays, from 9 a.m. to 6 p.m. Buses 269, 641, Green Line bus 715 pass the door. Tube to Wood Green, then bus.

**B** **BEAUMONT AVIATION LITERATURE**  
2a, Ridge Avenue, Winchmore Hill, London, N.21

THE  
OUTSTANDING  
CIGARETTE  
OF THE DAY



WELL MADE • WELL PACKED

VIRGINIA TOBACCO AT ITS BEST

# "ALL THE BEST" for Xmas!

HAVE FUN WITH ONE OF THESE

## SUITABLE ENGINES

MERCO 29	...	£5. 19. 6
MERCO 35	...	£5. 19. 6
A.M.25	...	£3. 10. 10
A.M.35	...	£3. 12. 10
E.D. RACER	...	£4. 2. 7
E.D. HUNTER	...	£4. 2. 3
P.A.W. 249	...	£4. 18. 0
P.A.W. 19D	...	£5. 4. 6

## R/C EQUIPMENT

E.D. BLACK PRINCE I	...	£18. 13. 0
Complete outfit	...	£18. 13. 0
R.E.P. MINI-REPTONE	...	£16. 16. 5
Complete outfit	...	£16. 16. 5
R.E.P. REPTONE	...	£15. 12. 5
Complete outfit	...	£15. 12. 5

## SUPER 60

For RADIO CONTROL  
and FREE FLIGHT

Wingspan 63 in.  
For motors  
2.5 c.c. and over

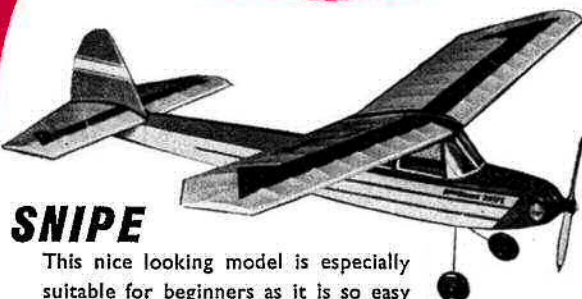
A large plane that is quite easy to build. Although designed for radio control the SUPER 60 is equally at home as a normal free flight model



Kit contents include—

- Ready cut and shaped parts
- R/C Aerobatic Fuel Tank
- Pre-formed landing gear
- Full size plans (2 sheets)
- Illustrated instruction booklet

£5. 7. 0



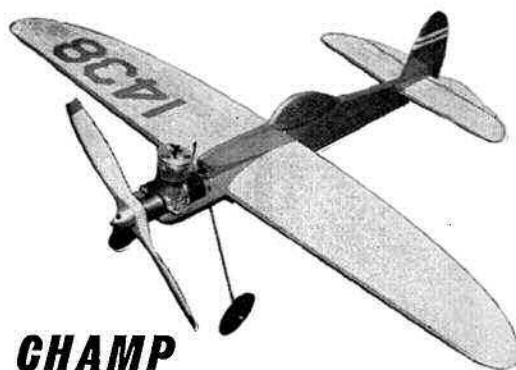
## SNIPE

This nice looking model is especially suitable for beginners as it is so easy to build and fly. It has been designed specially for .5 diesels and .8 glow motors and is capable of real contest performance. The kit contains die-cut parts for speedy and accurate assembly. Wingspan 42 in.

21/6

## SUITABLE ENGINES

A-S 55	...	£2. 15. 6
COBRA 049	...	£1. 19. 6
D.C. BANTAM	...	£1. 17. 9
D.C. DART	...	£3. 4. 11
E.D. BABY	...	£2. 17. 5



## CHAMP

This attractive control line trainer, for motors up to 1.5 c.c., takes only a few hours to build as all parts are cut to shape and all wire parts are pre-formed. Wing span 20 in.

14/10

## SUITABLE ENGINES

M.E. HERON	£2. 13. 6	E.D. BEE	£2. 16. 3
A.M. 10	£3. 1. 0	D.C. SPITFIRE	£2. 16. 8

# KEILKRAFT

The Greatest Name in model kits

The above prices include Purchase Tax but not special tax surcharge

Buy KEILKRAFT at your local model shop