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DECEMBER 1965

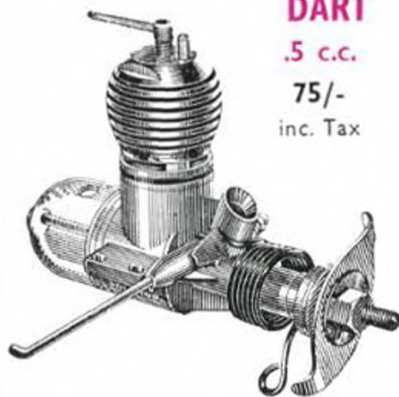
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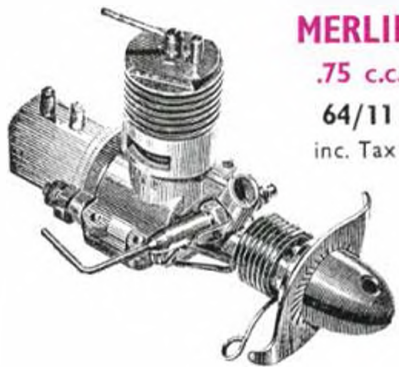


P.47 THUNDERBOLT FEATURE

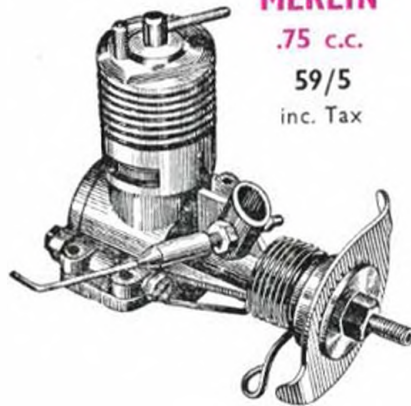
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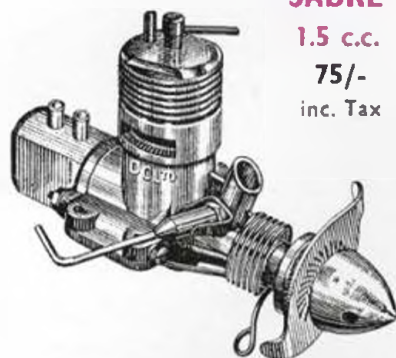


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D. J. Laidlaw-Dickson

EDITOR

R. G. MOULTON

other modelling angles . . .

Model Boats December issue main feature is the free full size plan for a 30 inch long 'Dimarcha' Vosper Yacht, scale $\frac{1}{2}$ in. = 1 ft. Ideal for steering events it is featured on the cover in action by artist Laurie Bagley. Full report on the European Championships with photographs and also the A class Yacht Championships. Beginners Series continues with the construction of a popular kit model, S.S. Olympic is featured as the historic liner and there are drawings of a Frigate, Coastal Mine-sweeper and Thames Tug. The highly popular series on Vane Steering is concluded with this issue, and an interesting article on ship resistance makes this a bumper issue.

December **Model Cars** also has a Laurie Bagley cover, this time portraying the Lola 70, also the Prototype Parade featuring extra fine detail. Also how to construct your Lola 70 from a commercial kit. Other prototype drawings include a 1935 Auto Union, Rennlimousin, and 1931 Alfa Romeo Monza. A fully detailed Scrutineers list provides details on hundreds of cars. Articles and Regular features make this an issue not to be missed.

R.C.M. & E. for December presents a free full size plan of an out of the rut "Pusher" model for single channel aileron control, by the Mini-Super designer. As a change a $\frac{1}{2}$ scale fully proportional Ford Zodiac is detailed as constructed from an Airfix kit. Five radio rallies are covered in detail and more info on the Editor's radio robots is included in 'Robotham Family'. Instant speed control for the boat fans and some useful information on Delta models. Tests on a British multi outfit and imported multi servos make this a bulging Christmas issue.

Please note our new address:

Editorial and Advertisement Offices

13-35 Bridge Street,
Hemel Hempstead, Herts

Tel.: Hemel Hempstead 2501 (Mon.-Fri.)

CORRESPONDENCE anticipating a reply to addresses within the United Kingdom must be accompanied by a stamped and self-addressed envelope. News reports should be submitted to arrive not later than the 15th of each month for publication in the next immediate issue. Photographs should be accompanied by negatives where possible and can only be accepted for use on an exclusive basis for British copyright.

AERO MODELLER

MAP HOBBY MAGAZINE

December 1965

VOLUME XXX No. 359

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cover

Major Robert S. Johnson's famous P.47 Thunderbolt I.M-Q "Penrod and Sam" comes into attack in artist Laurie Bagley's dynamic painting. The subject of one section of G. R. Duval's superbly detailed drawings on the centre pages of this issue, the P.47 maintains our December tradition of presenting a famous aircraft from the past.

next month . . .

Every month a "Bumper" issue. Enlarged with extra pages, plus free plan, the new combined **Aeromodeller** and **Model Aircraft** offers a variety of fascinating features to satisfy all tastes. **Mini-Comet** is a 38 in. highly successful Japanese design for single channel R/C with two wing choices, and it forms the A.P.S. addition to a survey of Japanese R/C modelling. Visit to the Biggin Hill Air Museum, another J. H. Robinson famous racer drawing introduces the French **Bernard V2** which has lines that will attract R/C pylon race, as well as all scale enthusiasts and a description of a fascinating 4 stroke 5 cc engine of advanced design are but three of the articles in store. Regular reading with news from far and wide of all aeromodelling developments will make January issue essential reading for everyone, out on December 17th.

This periodical is sold subject to the following conditions: that it shall not, without the written consent of the publishers, be lent, re-sold, hired-out or otherwise disposed of by way of Trade except at the full retail price of 2/6 or 50 cents and that it shall not be lent, re-sold, hired out or otherwise disposed of in a mutilated condition, or in any unauthorised cover by way of Trade; or affixed to or as part of any publication of advertising, literary or pictorial matter whatsoever. Second class postage rates paid at New York, N.Y. Registered at the G.P.O. for transmission by Canadian Post. American enquiries regarding subscriptions, news stand sales and advertising should be sent to: **AEROMODELLER**, Eastern News Distributors Inc., 255 Seventh Avenue, New York 1, N.Y., U.S.A. Direct subscription rate 29/6 per annum including enlarged December edition and index. U.S.A. and Canada direct rate \$4 **AEROMODELLER** incorporates the **MODEL AEROPLANE CONSTRUCTOR** and is published monthly on the third Friday of each month prior to date of publication by:—

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Merco 29-35-49-61 26/7; O.S. 15-19 27/6; 29-49 30/6, Enya 15-19 19/8; 29-35 26/3. '308' for Cox range, 020 20/0; all others 25/0.

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Midwest

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VK

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Stuka Stunt (19-35)	5	14	6

Goldberg

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Lil Satan (049)	12	6	
Junior Satan (15-19)	1	4	3
Jumpin Bean (049)	14	9	

Jetco

Shark 45 stunt (35-61)	5	14	0
Shark 15 stunt (15-19)	2	12	6
Mustang scale (19-35)	6	9	6

Sterling

Skylark 45 st. (35-45)	5	14	0
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Veco

Thunderbird st. (-35)	5	1	6
Smoothie stunt (29-35)	3	19	11
Hurricane stunt (35's)	5	7	6

RADIO CONTROL EQUIPMENT

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MacGregor			

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Terrystone Rx kit	5	19	6
Tone Tx kit	4	5	0
Tx case and aerial	2	15	0

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Matching tone Tx	11	9	0

"308"

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O.S.

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Futaba

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O.S.

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MK servo 3P engine	4	7	6
OS servo rudder S101	5	2	6
OS engine servo	4	9	6

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Elmic Corporal engine	2	7	2
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O.S. S-25 motor control	2	0	11
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440 bolts to match, pkt. 8	1/3
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Duraconnectors	9/6
Duracollars, set of 4	5/9

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2 in. pilots mil. or civil	8/9
Hinges, pkt. of 4, large	5/0
Hinges, pkt. of 4 small	3/9

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9 x 6 3-blade	13/6
10 x 6 3-blade	13/6

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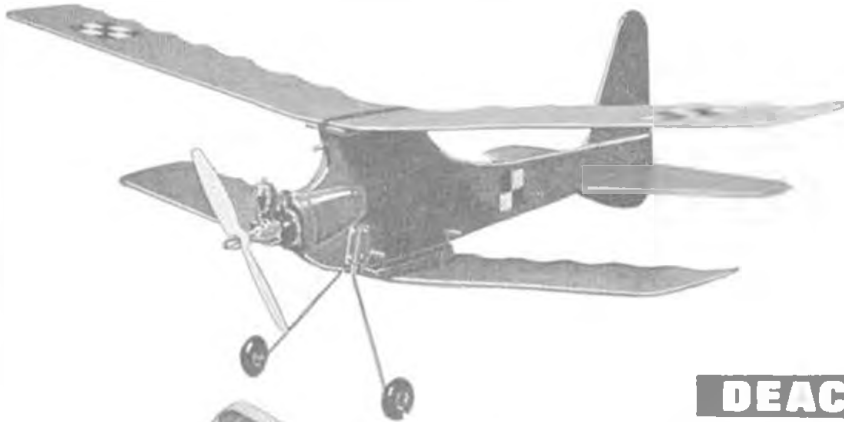


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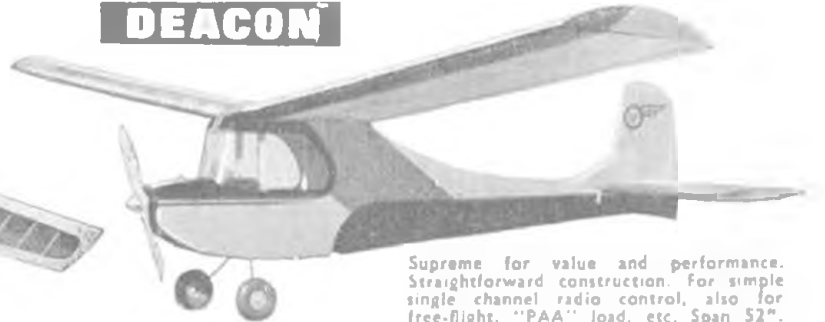
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How Strong is Balsawood? . . .

DENSITY LB./CU.FT.	BENDING			COMPRESSION PARALLEL TO GRAIN:			CLEAVAGE— LOAD PER INCH WIDTH TO SPLIT
	MODULUS OF ELASTICITY	MODULUS OF RUPTURE	ELASTIC LIMIT	MODULUS OF ELASTICITY	ULTIMATE STRENGTH	ELASTIC LIMIT	
6	267	1420	76% - 94% MODULUS OF RUPTURE	309	1060	55% - 80% OF ULTIMATE STRENGTH	35.8
8	435	2480		535	1560		45.6
9	520	3020		648	1840		50.6
10	605	3540		763	2080		55.7
11	689	4080		871	2340		60.6
12	775	4620		985	2600		65.8
14	940	5700		1215	3100		75.5
16	1110	6760		1444	3590		85.5

All values quoted (except Cleavage) in units of lb./sq. in.

1. Compression tests perpendicular to the grain yield a fibre stress at elastic limit of 45 to 100 lb./sq. in. Corresponding Modulus of Elasticity is 21,000 to 80,000 lb./sq. in.

2. Cleavage load shown in pounds.

Balsawood is as strong, or stronger, weight for weight than most other woods, but as is well known its actual mechanical strength varies with density. For those aeromodellers who like engineering 'facts and figures' the table opposite lists typical mechanical properties for the whole range of densities—the first time, incidentally, such a comprehensive set of such figures have been published in this country. These data apply to good quality kiln-dried Balsa with an average moisture content of around 6 per cent.

It is a known fact that the strength of any wood varies inversely with its moisture content. The strength of most woods depends significantly on lignification, or that is to say the natural cement holding together the cells of the wood. Since there is practically no lignin in Balsa, it depends for its strength entirely upon its cell walls. Moisture in the cells plasticises the walls and has a far greater effect on strength in Balsa than with other woods. Thus the way Balsa is processed can have a considerable bearing on its performance.

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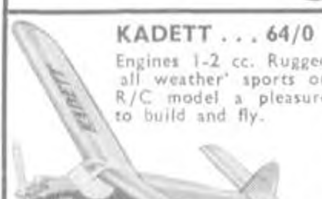

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AEROMODELLER ANNUAL 1965-66 once more sports an attractive Laurie Bagley dustjacket and cover featuring the McDonnell Phantom on an Aircraft Carrier in full colour. Contents have moved more towards special articles in this edition and amongst them we can strongly recommend Doug McHard's Engine Collecting masterpiece "History in the Making"; a curious oddity will be enjoyed in Water Rockets—yes they really do go! Ever more popular radio control has a Basic Single Channel Control article. The design-theory fans have Modern Structures, Understanding Airfoil Data, Nomograms on Drag to keep them happy. More practical people will like Laminated Wakefield Props. More on the Continental 'Standard' Construction method and Why Not Pushers? Ron Moulton presents a survey of Beginners' Models throughout the World.

A selection of model plans from the world's best published includes sailplanes, radio control designs, team racers, stunt and combat planes. Winter Cup models, Wakefields, in fact something of nearly everything, not forgetting a Cox-powered model Airship!

Statistical matter has always been an ANNUAL attraction. We provide results of British S.M.A.E. events up to closing for press, and carry over balance from 1964; in addition pictures and results of World Championships are recorded, including 1965 Free Flight events. The new engines of the year are given a "potted" analysis.

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heard at the HANGAR DOORS



Farewell to Model Aircraft

TO know that the current, December 1965 edition, of our "opposition" journal is to be the last after so many years dating back to introduction by Model Aircraft Supplies of Old Kent Road in September 1932, is rather like watching one's best and most liked competitor lose his model into the blue in the middle of a contest. Never the deadly enemies our continental contacts always supposed, we enjoyed a most happy friendship with all the successive Editors and Staff ever since *Model Aircraft* was developed from the S.M.A.E. newsletter and journal. Having a healthy respect for each other's product, tinged occasionally with professional jealousy for a job particularly well-done, we looked forward to each issue of *Model Aircraft* with more than average anticipation.

True it is that we never agreed on all points, but our editorial distinctions rarely lacked interest for the readers and served to stimulate many a fresh thought. In recent years, what we have lacked in argument has been compensated by common desire to outdo each other in the departments of contest reports, full size plans and coverage of new engines and silencers. We shall certainly miss the sharpening stone which *Model Aircraft* always was for our own editorial carving knife.

Here we must express particular appreciation for the efforts of Norman Butcher who has occupied the

Another Lancaster, PA 474 is flying again. Photographed at R.A.F. Waddington "at home" day in its new coat of dope with strange roundels, it is being re-furbished for film purposes. A nose turret is to be added but the mid-upper so far evades discovery. Anyone got a spare? Ex-College of Aeronautics, this Lancaster is very much non-standard, having been used for aerodynamic research.

Two famous fighters which are preserved by the Hawker Siddeley Group have an equally famous hangar background at R.A.F. Biggin Hill. The recently re-engined Hurricane turns over the taxiing Hart to recapture in 1965 a scene of maybe 26 years back.

Model Aircraft editorial chair for six yrs. and whose practical outlook has played an appreciate part in influencing hobby trends. Norman was a buddy in the early days of control-line and always a most respected competitor as we progressed through all the phases of personal interest from team and stunt to first serious free flight power events, and now to radio control. Beside his magazine work, Norman has been a Chairman of the Model Trade Federation and is of course, Chairman of the S.M.A.E. Any attempt to account for all the good deeds attributed to Norman at this time might sound like a Requiem, so we'll save him the embarrassment. His connections with aero-modelling are far too involved for us to lose sight of him for long and we know that all modellers everywhere wish him every success in his new occupation, whatever it may be.

But transcending our regret at the passing of an esteemed rival as a separate entity, is a terrific thrill at the thought of the new an enlarged *Aeromodeller*, when as from January 1966 *Aeromodeller* will incorporate *Model Aircraft*. This provides a challenge that our staff welcome with enthusiasm, the opportunity to offer a bigger and better magazine, to maintain all that was best in *Model Aircraft* and to combine this with our own most popular features to produce what we like to believe will be the finest modelling magazine produced anywhere in the world in any tongue.

Not limited to the title page, the change brings many new attractions for the reader. Combination of the talents of internationally renowned contributors will bring new regular features of outstanding merit. Full size plans will be a monthly attraction, covering many aspects of the hobby and not in any way overlooking the lone-hand sports flier. Extra pages, plus the recently established bi-monthly colour feature for plastic modellers will make each issue a collector's item. Produced by devoted specialists anxious to please all who enjoy this wonderful hobby, the combined title promises more for your 2/6d than ever before.

Yes—we're sorry to have to do it but that small increase of 6d in cover price over our previous standard monthly 2s. will give us the opportunity of packing the covers with more features for your enjoyment. It brings *Aeromodeller* into line with all our hobby publications, and represents the first increase in price for over six years—not had going these days! Subscription orders already established will be fully honoured for both journals with the introduction of the combined title.

New offices, New title, New printer, New Year . . . no-one could deny that this autumn has been even more hectic than usual,—and we've not even mentioned our enormously expanded plan and book range!



What the change means . . .

Not only have Model Aeronautical Press acquired *Model Aircraft* but also the other interests of Percival Marshall's, that is to say, their long-established *Model Engineer*, which appears fortnightly, and the monthly *Model Railway News*. These two magazines will we trust continue to flourish and expand under our control. We are happy to announce that M.E.'s Technical Editor Martin Evans has joined us and will be playing an even larger part in affairs, whilst P. L. Towers, Editor, and A. J. H. Jenkins his assistant on *Model Railway News* will also be in the team. To round off this very handsome addition to our range of periodical publications, we have the Plans Services of the magazines and the extensive P.M. range of model technical books, where we shall be handling some eighty titles now in print, and have acquired copyrights of a number of others in various stages of production.

Our model "portfolio" will thus embrace every popular aspect of modelling comprising the monthlies *Aeromodeller*, *Model Boats*, *Model Cars*, *Radio Control Models and Electronics*, *Model Railway News* and the fortnightly *Model Engineer*. One of our earliest tasks will be to provide new model plans catalogues, where, in view of the great diversity of interests now covered, it will be desirable to split up our lists into appropriate sections. There will be hosts of other transitional jobs to be done, so that we do ask the indulgence of everyone during this settling in period.

New Distance Record

Another world record was broken by Maynard Hill of Silver Springs U.S.A. on October 2nd, when he flew a radio controlled model 183 miles non-stop from Batavia to Canajoharie, N.Y.

The model was flown at an altitude of between 1,000 and 1,500 ft. along a west-east course parallel to the New York Thruway Maynard operated his Dee Bee C.L.5 radio control transmitter from the back seat of an open convertible.

The flight, which took 3 hrs 20 min., was monitored by Thruway Traffic Supervisor Kenneth Hayill in a following car. Helped by a 20 m.p.h. tailwind Mr. Hill's Merco .61 (with Gee Dee Pike silencer) powered *Stretcher* had an average ground speed of 55.5 m.p.h.

Weighing 10.5 lbs fully fueled at takeoff, the 7 ft. 6 in. span model was launched from a farm field near Batavia. After landing in a field near Canajoharie Thruway exit, the model weighed about 8 lbs. indi-

As Christmas approaches, we at Aero-modeller offices send greetings and best wishes for a happy and prosperous New Year to all our readers—happy flying!

Editor: Ron Moulton, Assistant: John Franklin, Secretary: Pat Silver, Art: Peter Swann, Tracing: Elspeth Creighton & Susan Knight, Photography: Oresta Lenkiwska . . . plus, of course, all your friends in *Aeromodeller Plans Service*.



Square loops were among the manoeuvres executed during the Biggin Hill air display by this much modified D.H.82 "Deacon" G-AOAA. Is this a case of radio control and control line schedules showing full-scale what can be done?

cating enough fuel remained to fly another 150 miles F.A.I. regulations, however, require that the landing spot be designated in advance. Mr Hill chose a distance that would break the old record by 18 per cent.

Currently Maynard Hill holds the world R/C closed course distance record set in June with flight of 174 miles, and shares the R/C Glider speed record with team-mate Ben I. Givens, Wheaton, Md., at 23 m.p.h.

A full account of the new record will appear in our February issue, it is a fascinating story of achievement that refutes the opinions of several who have already doubted the possibility of covering such a distance at so fast a speed, even with a sports car!

Coupe d'Hiver

Aeromodeller will organise another postal competition for rubber driven models to the Coupe d'Hiver (Winter Cup) specification to be held early next year, and will also arrange for personal participation of a group of British modellers at the French International contest near Paris at the end of February. Those who have an interest in either event are requested to send a stamped, self-addressed envelope for details. Dave White's "Baron Knight" in this issue was the winning model in last year's postal contest.

Maynard Hill's "Stretcher" after it completed the closed course record. The cross country wing does not carry the tanks. Instead, the fuel is carried in a fuselage tank of brass lined balsa because leaks developed in the epoxy covered wing tanks.





1½ ins. to 1 ft.—one eighth scale model of a famous early light plane with the flight characteristics of the full-size.

De. H. 80

PUSS MOTH

by F.G. Longbon



Not very often do we get so enthusiastic over a scale design as with this fine flier—for here is a subject that performs as well as it appears.

WHEN in 1928 the private flying movement began to demand the comfort of a cabin after training on the famous Gipsy Moth, De Havillands created the D.H. 80A PUSS MOTH.

It was new in many ways although a derivation of the larger Hawk Moth. The Gipsy engine was inverted and by September, 1929 (long time ago, eh!), the first Moth Mk. 1 was ready. The design was

Nose view below with the 'Naylor Air Service' on the upper cowling with Baltic Blue overall colour scheme represents the Puss Moth with which Aero-modeller staff were particularly familiar in immediate postwar years at our previous offices at Eaton Bray Sportsdrome, Nr. Leighton Buzzard, Beds. Heading photo is typical of realistic flight by the Puss Moth which has been seen at nearly all rallies over the past two years.



extremely clean and performance exceeded expectation though production was delayed until a metal tube fuselage was developed to meet demands outside G.B.

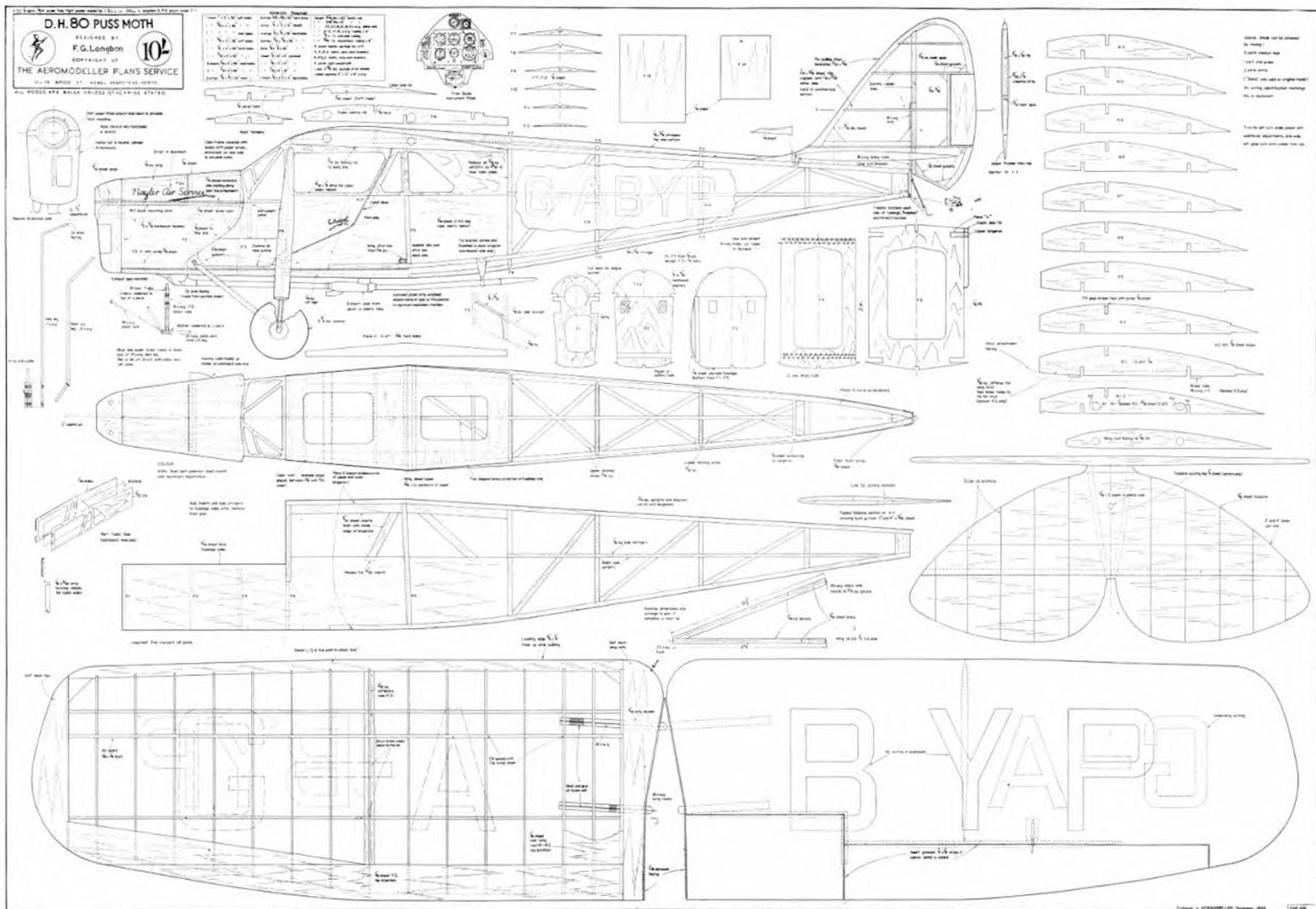
Orders accumulated from all quarters of the world but a series of wing failures in Australia, South Africa, Canada and in Europe called for an N.P.I. and R.A.E. investigation. Famous pilots Glen Kidston and Bert Hinkler of distance flight fame were among those to lose their lives. It was proved that in turbulent conditions at high speed, flutter could cause a wing breakage. Balance changes in the controls, larger rudder and rearranged strut bracing eliminated the risk: but for all time the D.H. 80 was condemned in places like South Africa.

Record Breaker

Puss Moths created incredible records in long flights and among the most famous was G-AAZV "Jason II" used by Amy Johnson for a flight to Tokyo via Moscow, G-ABXY "The Hearts Content" flown by Jim Mollison for the first solo East-West crossing, and Amy's G-ACAB "Desert Cloud" used by her for out and back records from London to the Cape of Good Hope.

Continued on page 576

Full size copies of 1/8 scale reproduction opposite are available from Aeromodeller Plans Service, 13/35, Bridge Street, Hemel Hempstead, Herts., price 10/- post free. The completely detailed stage by stage instructions leaflet is included with each plan. This model should be within the capability of anyone who has already built a simple power model.



PUSS MOTH (continued)

The Puss Moth survives in Australia, Great Britain and Canada but the subject of our design met an untimely end on the middle of our old airfield location at Eaton Bray, Bedfordshire. Owner Joan Nayler (to become Mrs. D. A. Russell) was lucky to escape as the aircraft caught fire on landing. "Widget" was a pretty machine that gave pleasure to many joy-trippers, our earlier staff included, and we're pleased to say that Fred Longbon's fine replica with scale structure looks every part like the real thing.

Construction of this fine model has been devised to satisfy both the scale "buff" who likes to attend to the last detail, and the more casual enthusiast who cares more for flying than building.

Design details

Complete building sequence instructions are issued with each copy of the full size plan so that we can describe the salient points here for the interest of scale model builders in general.

First, the scale is one-eighth, a popular size to suit popular engines in the 1.5 cc. class with moderate power driving a 9 in. diameter prop, revving at about 8-9,000 r.p.m.—the aim for realism and safe flight.



Underside view of Fred Longbon's model shows a dummy exhaust pipe beneath fuselage and wing struts, etc. Note how the engine is totally enclosed and the registration lettering is spread across the wings outside the strut fairing strips.

Next, the structure is all "Knock-off". Wings are on short locating dowels, retained by elastic bands through cross tubes and the tail surfaces similarly detachable. We've seen the original in action at many '64 and '65 rallies and the only damage has been an occasional tissue tear. Note the side view of the fuselage and how a $\frac{3}{8}$ in. sheet balsa panel extends from nose to wing trailing edge, the rest of the fuselage having liberal diagonal bracing. The tailplane is solid sheet balsa, shaped from $\frac{1}{4}$ in. thickness to a symmetrical streamline section. One can afford the slight extra weight to allow for balance. Cabin windows have a neat system of assembly with acetate sandwiched between a balsa and a ply frame, adding both strength and scale effect while the undercarriage is made to give telescopic "oleo" leg action for shock absorption.

Scale surfaces

In the wings, close rib spacing is realistic and strong while a sheet trailing edge and stout leading edge withstand hard knocks (as we have witnessed). For additional effect, the surface lines for the wing fold flap, and ailerons are engraved into prepared inserts.

Here's a scale subject that looks and flies as it should and we expect to see many like it at the 1966 scale model meetings.

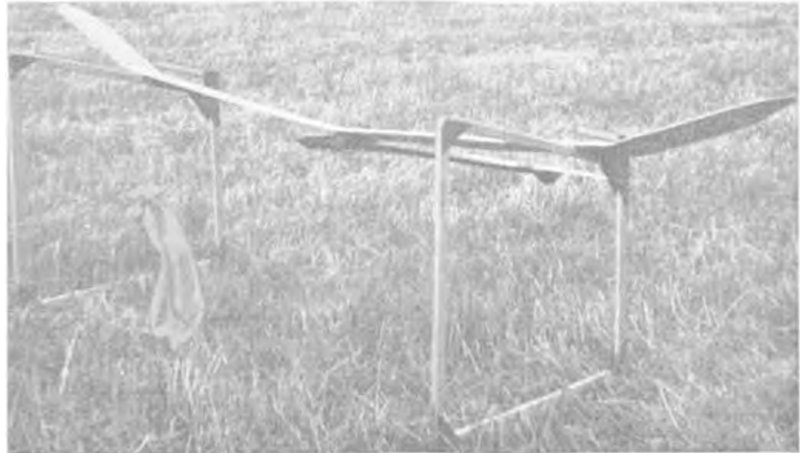
Structural details of the Puss Moth illustrated at top, the nose section with shock absorbing undercarriage, framework for windows and "gull" effect where the wing joins cabin roof. In centre view, cabin windows are obvious and also marking on top of the starboard wing which has been placed nearest camera. This photograph serves to illustrate how the Puss Moth can be packed away into a relatively small space by virtue of detachable wings.

At bottom a side view which could almost be of the full size machine which shows how faithful Fred Longbon has been in adhering to true scale in every possible respect.

SELF LAUNCHING for Gliders

By L. Baguley

Laurie's A/2 resting on its launching rack at left is all ready to go with tow line (and pennant) hooked up.

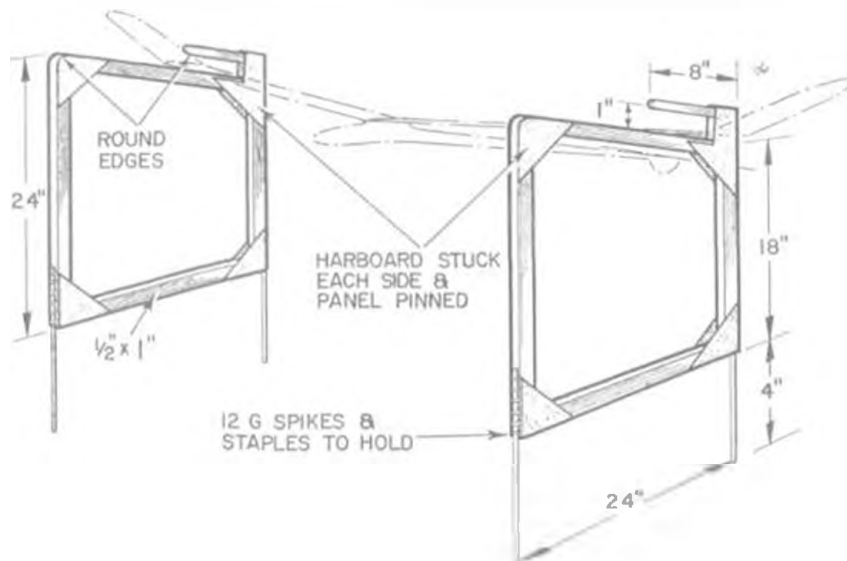


THIS simple device was designed to enable A2s to be trimmed during summer evenings without having to rely on other people to assist. The basic idea is that the two frames are pushed into the ground by their wire spikes at a correct spacing for the model, which is then slid into position supported by its wings (see the photograph). The line is reeled out and the model simply towed up after an initial sharp tug to release it cleanly. Construction is elementary and no trouble should be experienced if the sketch below is followed.

The general technique is to place the frames where your launcher would be, spaced about 48 in. apart for a typical A/2, about 4 in. closer than the dihedral breaks for a polyhedral wing, and at least 12 in. further apart than the tailplane span. This ensures tailplane clearance and that the tips do not get caught up. The frames should be level with each other in the direction of the line, facing directly into wind. If this is not done, the drag on each wing when sliding forward will be uneven so the model will "walk" sideways due to a cross wind. This may seem complex but they rarely take more than one minute to install unless very stony ground is encountered when the spikes take a bit of pushing in!

Place the model centrally in the frames and right back in the retainers ensuring that no long grass will foul the tailplane. Reel the line out into the wind laying out evenly and not jerking the model forward. To tow the model simply give a sharp tug to pull the model out cleanly and then tow normally.

The above should come very easily in practise providing that the instructions are observed. Other London Area glider flyers have used the device with no trouble. The half dozen unsuccessful launches out of many hundreds most of which were the author's—were all caused in the "early days" by not obeying one of the rules, particularly that of a wide enough spacing to miss the tailplane. Al Wisner has successfully towed an 8 ft. span glider using an A/2 setting. The only snag apparent has been the "walking" sideways on windy days when the model has been lifted against the retainers and slid across. A suggestion to cure this has been foam rubber to hold the model down until pulled out. However, this has not proved too serious a problem with a little care, and the frames have had their major use in calm evenings when self launching and reeling out while running has been out of the question owing to space and physical limitations.



Structure at left with glider superimposed ready for launching. Constructed from hardwood the framework is secured to the ground with 12 s.w.g. wire spikes stapled to the uprights.

MOTOR...MART

At left: twin ball race Fox .36 X BB Combat.
Right: latest from O.S. the Max-H 40 R/C
for pylon racing fans.

Eta Elite

THE latest version of the Eta 15 from Ken Bedford to supersede the present Mk. III is the **Eta Elite**, distinguished by its gold anodised cylinder head, propeller driver and spinner nut. External shape and castings are unaltered with the exception of the intake, now bored to $\frac{1}{4}$ in. I.D. The piston liner is honed in a different manner to the Mk III and this is the most important change, the actual fitting and method of honing the piston and liner is a closely guarded Eta secret, but we can reveal that it has the advantage of a straight bore liner, but with reduced varnishing tendencies. The cast backplate incorporating the venturi has an "open" jet needle valve assembly and the rotary rear disc valve face that until now was machined and anodised with a retaining lip around the edge has had its face cut back and a .036 steel facing plate added. This is secured in place by the clamping action of the rotor screw which has a left hand thread. This should give a very low friction fit to the rotor backplate and once it has been set to the correct gap very little further attention should be needed, also the timing can be adjusted if desired. The $\frac{1}{4}$ in. diameter shaft

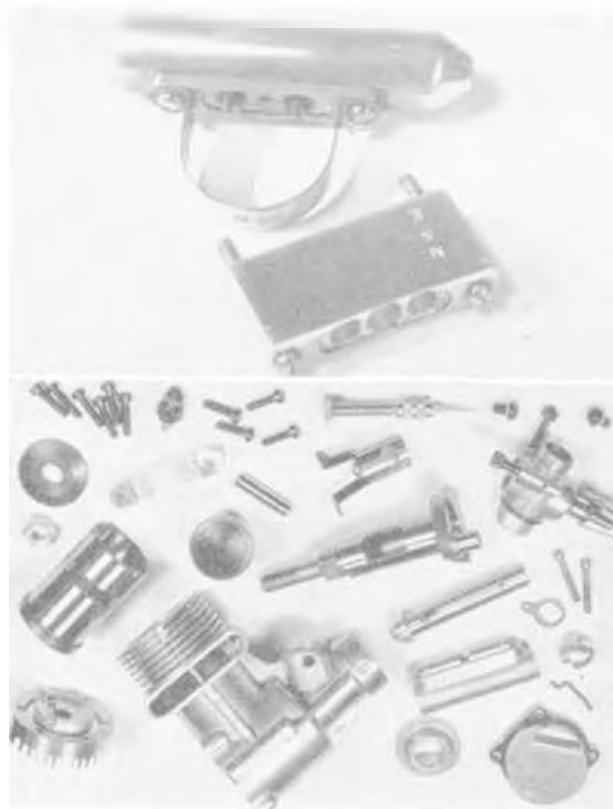
has been scrapped, also the rear ballrace and the plain bearing sleeve between the two races.

The new shaft is stepped up from $\frac{1}{8}$ in. diameter to 8 mm. at the rear of the front ballrace to create a step that allows it to clamp at the rear of the ballrace and the tapered propeller driver collet to clamp at the front, so eliminating the Mk III problem where the collet was forced back onto the front race if the propeller was drastically over tightened, leading to a seized up ballrace. Rear ballrace has increased I.D. to take the new shafts rear diameter and it has been found that the plain bearing sleeve between the ball-races is no longer needed so this has been discarded. The price remains the same as before at £7 8s. 6d. The silencers have also been modified by springing them out of round so they are force fit over the extractor tube to prevent them becoming loose and falling off in the air. From an engine picked at random but without the luxury features of the new shaft and backplate we obtained the following Bench running from new on 8 x 4 Stant, 15,600 r.p.m. After an afternoon's flying in an F.A.I. racer we were getting 94 m.p.h. for 35 laps with a double sided Eta silencer and Glasflugel propeller. Checks were then made to test "international" performance without the silencer and with some more running it made a consistent 98 m.p.h. for 34 laps and made 100 m.p.h. at times but not consistently. At this stage the engine was checked for r.p.m. and it made 16,100 on the Stant 8 x 4. Back on the workbench we rubbed the varnish off the liner and piston with the finest steel wool we could find and re-ran the motor. After this treatment it was turning 16,600 r.p.m. on the 8 x 4 so this should give it an air speed of 103-105 m.p.h. in the air, when next flown. When removing the contra piston it must be tapped from the underside out through the top of the liner and not the bottom as the Mk. III. Our sample, the only version fully run-in, is stated by Ken Bedford to be the fastest Eta 15 he has ever seen and this should be the standard of all Elite's to come from Eta's in the future. One engine was ruined when a soap pad used for washing up was used to de-varnish it, so be warned—use only fine steel wool!

O.S. Max-H29R

Imported and distributed by Keil Kraft, the latest 5 cc. O.S. racing engine from Japan is extremely impressive in all respects. The crank case is a very clean die casting that incorporates the front housing and cylinder finning. With large webs and strong proportions all over, and the underside of the bearers machined parallel the crankcase incorporates a massive transfer passage and large diameter stub air intake. The shaft of massive diameter has a large bore transfer port, induction only being possible when the engine is run on pressure. Supported on two ball-

Top: Super Tigre 2.5 cc. silencer from '308' sturdy fitting with extension piece if needed. Below: parts of O.S. Max-H 40 R/C illustrates one piece crankcase and large shaft port intake.





McCoy .19 R/C has blue cylinder head, cheap at 99/6d. in G.B., not the most powerful .19, but good value.



Another twin ball race combat .35, this time from O.S. is very well made, and has a large bore air intake.



Latest Japanese speed engine, the O.S. Max-H 29R open jet, integral spinner, twin ball race, pressure feed.

As the whole assembly is very free and smooth. A nicely made spinner is included, this being a fixed part of the engine, the spinner backplate taking the place of the propeller driver. The machined alloy venturi has a $\frac{1}{8}$ in. bore and is held into the crankcase by the open jet assembly that as a nice touch has a right angled fuel line connection on the opposite side to the needle. The backplate has a transfer passage clearance slot cast in and a central protruding boss that was seemingly intended as a pressure tapping nipple. However, the pressure tapping is now one of the backplate securing bolts with an extended fuel nipple, and naturally hollow. The baffled piston has the top heavily relieved to a depth of $\frac{1}{16}$ in. and is a nice free fit all the way up the liner. Cylinder head is die cast with a brass inset for the glow plug thread and has deep finning. Intended only as a speed engine the O.S. Max-H29R weighs 8 ounces and costs £10 12s. 6d.

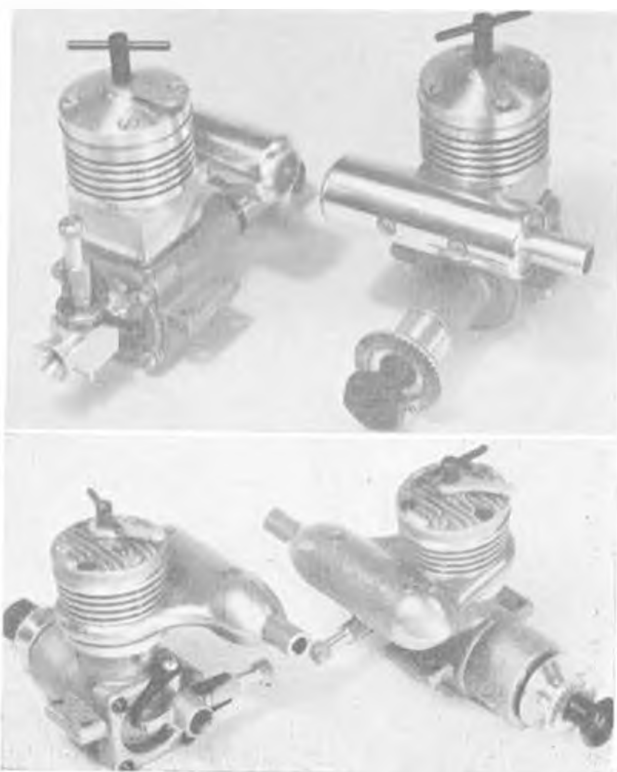
O.S. Max-H35C

Essentially the same as the 29 speed engine the 35C has a flexible needle valve and spray bar with conventional propeller driver and propeller nut instead of the machined spinner used on the speed engine. Intended for pressure use only in combat models, this would appear to be aimed at the U.S. market where their rules dictate a large capacity nitromethane burning engine. The piston is relieved to the same depth as the 29 but this does not extend so far down the skirt. The crankcase, head, shaft, backplate, piston and liner are similar but with modifications to get the extra capacity and power at lower r.p.m. As in the 29, the cylinder head is retained by six bolts and the back plate by three bolts and one hollow pressure tapping bolt that enters the crankcase at the base of the transfer passage. Plenty robust enough for the rough and tumble of large combat flying this engine once again has excellent fits and sells at £8 17s. 0d. in G.B. Total weight is $7\frac{1}{2}$ ounces, slightly lighter than the 29. A very nice extra is the traditional rubber exhaust port plug supplied with each engine to keep the dust of the workroom and flying field out of the more delicate parts when the engine is not in use, other manufacturers please note.

New ED engines

Once the foremost British engine manufacturers and holder of many world records E.D. Ltd., whose engines have included such top motors of their time as the *Hunter*, *Competition Special*, *Racer*, *Bee*,

Super Fury, not to mention the marine variants, are now back in limited production. Under new management headed by Mr. Day, an active Esher M.A.C. flier, the *Hunter* and *Racer* are the only two engines to survive the rather hectic E.D. history of late; but many spares are still in stock for all the other engines at reasonable prices. At their new home in Surbiton, Surrey, the *Racer* and *Hunter* of 2.46 and 3.46 cc. capacity respectively are both sold in R/C and standard version, a silencer being integral with each engine. The *Racer* has a simple rotating brass barrel air restrictor placed between the rear disc and the needle valve and this proves effective as we found when a friend fitted one to a "Ohm 8" design. Feeling very "rough" as purchased, they do run in to smooth running and are very reliable power plants for general sport flying. For those whose interest includes boats as well, a marine version of each is also available. Including silencer they retail as follows. *Racer* £4 12s. 6d., *Racer* R/C £5 7s. 6d., *Hunter* £5 10s. 0d., *Hunter* R/C £6 7s. 7d. They are intended for the sports flier as opposed to contest fliers and each engine includes a comprehensive installation leaflet and guarantee.



Now on sale again the E.D. Hunter at top is shown in R/C form and standard form complete with unusual silencer location. Below: R/C and standard Racer with Webra silencers fitted as standard.

Your FULL-SIZE plans

THIS model, first designed and built in early 1964 has achieved a certain measure of success and obtained the following 4 places out of 4 contests entered: South Midland Giala 3rd, Aeromodeller Postal Event 1st, East Anglian Rally 1st, and Woodford Rally 2nd. It is reasonably simple to build and anyone who has built a rubber model before should have no difficulty in getting near maximum flights without any assistance from thermals. It has a very fast climb for the 20 second motor run and needs careful adjustment for optimum performance.

Commence construction by building the wing and tail surfaces then these will have time to "settle" whilst the rest of the model is being made. On the plan, only one wing centre panel is shown but if the right hand panel is traced on to greaseproof paper this can be turned over and used to build the left hand panel. Remember to only use wood light enough to keep the complete airframe under the 2.46 ozs. required by the formulae. All flying surfaces should be covered in Jap tissue (if obtainable) but if light-weight Modelspan is used remember to dope sparingly. When building the fuselage, the sheet sides of the motor tube must be covered and doped IN-SIDE before construction, this will stop the fuselage soaking up lubricant and help avoid splitting in the case of snapped motors. The fuselage is built square, and then fitted on one edge to form the diamond shape. Decide which edge is to be top, stick the pylon on vertically in the position as shown and then add the pylon formers to each side to make the $\frac{1}{2}$ in. sheet side, you will need a template and this can be cut from postcard to the exact shape, then transferred to $\frac{1}{2}$ in. light sheet. The pylon must be made in



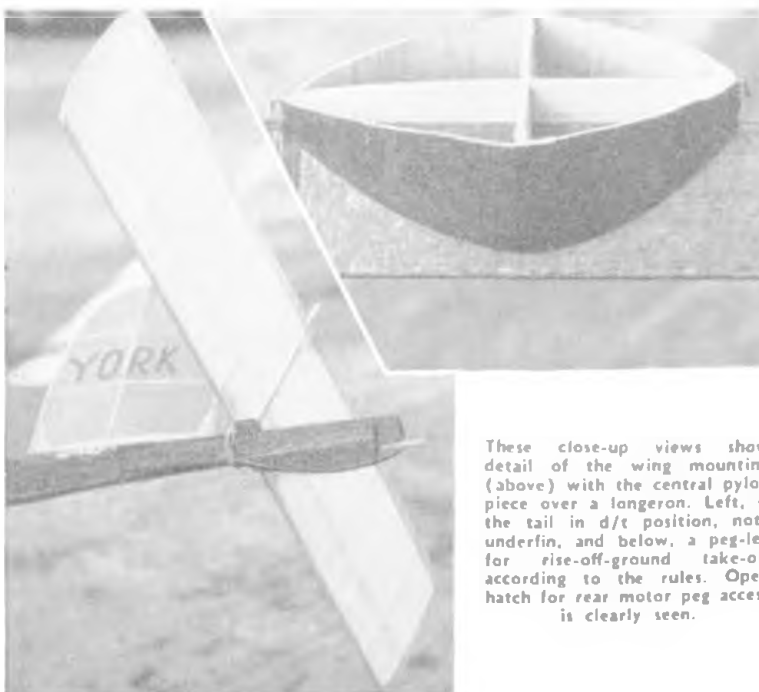
BARON KNIGHT

this way as this gives the required cross sectional area. Fin supports are triangles of $\frac{1}{8}$ in. balsa stuck to the base and then sanded to match the symmetrical section of the rib. No undercarriage is shown, but a length of light $\frac{1}{8}$ in. square balsa in a box or a piece of 20 s.w.g. wire in a tube will provide the leg for R.O.G. If you want a more streamlined job it is quite simple to fix up a retractable leg out of a piece of tapered $\frac{1}{8}$ in. square spruce.

Care should be taken making the propeller, as this plus the motor makes up the heart of any rubber model. The moulding block is easy to make and extra care taken here will pay-off in the finished blade. The 3 laminations for the blade should be glued together with a cold water glue such as Cascamite, (balsa cement could be used but only as a last resort) and left firmly fastened to the former for about 3 days. After this remove from the block and add the dowel hub. When this is set, smooth the hub into the blade and reinforce the joint by smearing cement liberally over where the dowel and blade join. Drill a large hole in the hub and put a piece of 18 gauge tubing through the dowel, filling the hole with Cataloy, Ardite or similar resins. Before this dries and Cataloy dries quickly, set the blade up on the pitch triangle with the tubing held horizontal by two blocks on the base board, to which the triangle should be stuck. When this has been set, remove, trim down and sand blade to airfoil shape. Finally cover and dope blade, solder to cross piece and balance with lead.

Trimming should be undertaken on a calm day and the glide adjusted to a flat wide right hand trimming circle before any power flights are attempted. Don't put all the turns on at once but build up to maximum power gradually. Avoid overdoing the right hand thrust and even a little left thrust may be necessary on full turns to get the steep spiral climb as on the original. Finally, a note on contest flying. To succeed the motor must be wound right up to the breaking point and this calls for new motors every flight. I run mine in once up to 50 per cent turns and after that about 110 per cent for my flights. You may get two contest flights out of a motor treated in this way but they are suspect on the Second Flight. I average a snapped motor every 3rd flight but the motors are cheap and the results justify the effort.

—Dave White



These close-up views show detail of the wing mounting (above) with the central pylon piece over a longeron. Left, is the tail in d/t position, note underfin, and below, a peg-leg for rise-off-ground take-off according to the rules. Open hatch for rear motor peg access is clearly seen.



An outstanding Combat model, the "Dominator" does as its name implies, dominate at the most of the contests it is flown in. Developed by members of Outlaws M.A.C. over several seasons it has been flown in the main by Peter Smith, Mike Davis and Tony Degg. Even other top combat fliers who have built their own club derived designs for many seasons have constructed "Dominators", the most successful being Moggs Morris, of Northwood. One other well-known combat flyer has dared to add a remote tail-plane and twin booms and this now goes under the name of "Barly Bird" or something like that.

As all combat enthusiasts will know, Pete Smith and Mike Davis represented Britain at the Criterium of Aces International meeting along with Baz Burnstead, of Northwood. Pete by some terrific flying with his "Dominator", defeated all comers to win the combat for Britain in fine style, and in the process showed the other Nations just how and what to fly.

AND DOMINATOR

A top notch Combat

wing for 2.5-3.5 cc. engines

Designed by Mike Davis

Construction notes and tank details are printed on our free plan for handy reference so we will not delve into that aspect here. Combat models must combine light weight, manoeuvrability, speed, strength and also be quick and cheap to build, so a low aspect ratio was chosen as it gives a stronger wing for its weight. The tapered leading edge was from an idea by Tony Degg who also helped in some of the detail design. Flat wing section gives easy building on the board, ample room for the tank and accurate fixing for engine mounting pod. A smooth wing section without sag between the ribs and the swept leading edge give high airspeed and is a dis-

Close up of engine mounting pod shows Oliver Tiger installed on Dural faced engine bearers. Oliver manifold fitted to reduce the noise.



Mike Davis poses with his Dominator after taking third place at Burtonwood, note the simple and functional lines. Fellow clubman Pete Smith took first place at the same meeting also with a Dominator.

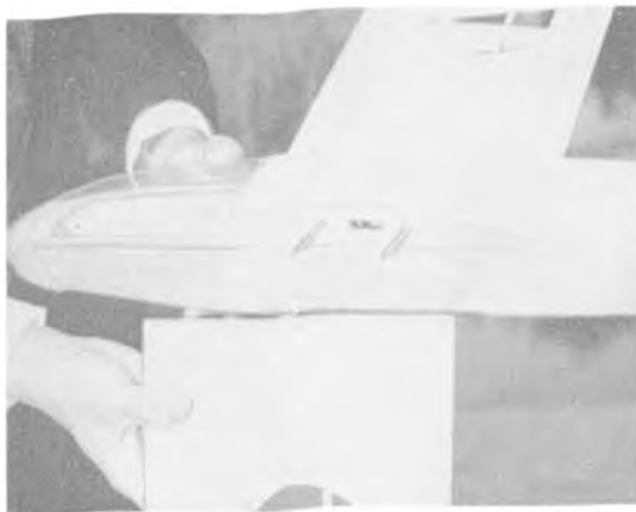
inct advantage in windy conditions. No spars are used as they disrupt the smooth wing surface, and are unnecessary on a wing of this span. Construction lends itself to easy repair. Should the leading edge become broken, a length of $\frac{1}{2}$ in. square strip can be glued in the slot behind the break, restoring its original strength and ensuring lack of warp. The tank is very important, the one on the plan being used for two years with good results, sized to give a six minute run with silencer-equipped Oliver Tiger.

Materials Required

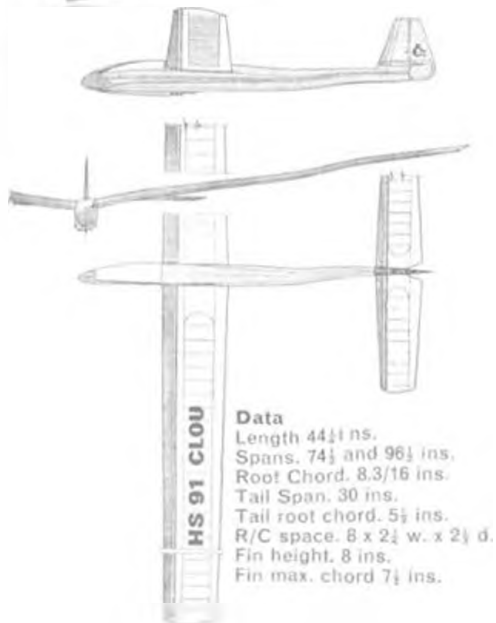
- 1 sheet $\frac{1}{4}$ in. x 4 in. x 36 in. medium balsa.
- 1 sheet $\frac{1}{4}$ in. x 4 in. x 36 in. hard balsa.
- 1 sheet $1\frac{1}{16}$ in. x 4 in. x 36 in. medium balsa.
- 1 strip $\frac{1}{8}$ in. x $\frac{1}{4}$ in. x 36 in. medium balsa.
- 1 strip $\frac{1}{4}$ in. x $\frac{1}{4}$ in. x 13 in. hardwood bearer.
- 1 sheet $\frac{1}{4}$ in. x $\frac{1}{4}$ in. x 24 in. plywood.
- 1 sheet $1\frac{1}{16}$ in. x 2 in. x 64 in. plywood.
- 1 sheet $\frac{1}{4}$ in. x 2 in. x 64 in. medium balsa.
- 1 sheet $\frac{1}{4}$ in. x 3 in. tinplate.
- $3\frac{1}{2}$ inches of $3\frac{1}{16}$ in. dia. dowel rod.
- 1 length 14 s.w.g. piano wire x 9 in.
- 1 length 20 s.w.g. piano wire x 8 in.
- 1 length heavy weight Laystrate x 32 in.
- 1 length $\frac{1}{4}$ in. O.D. copper tubing x 5 in.
- 1 length $\frac{1}{4}$ in. O.D. brass tubing x 4 in.
- 1 2 in. nylon or steel bellcrank.

1965 Dominator Successes

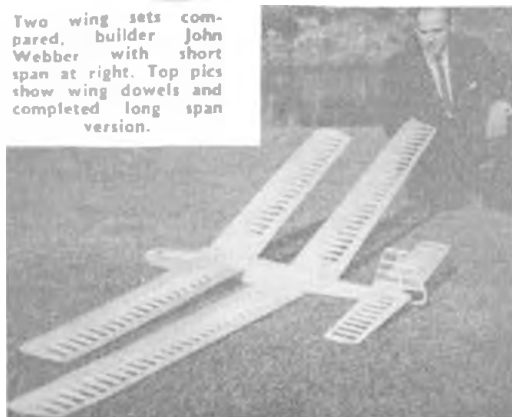
- 1st, Team Trials.
- 1st, Criterium of Aces International.
- 1st and 3rd, Wanstead Rally.
- 1st and 3rd, Burtonwood Criterium.
- 3rd, British National Championships.
- 1st, Uxbridge Rally.
- 2nd, Finchley Gala.

**Graupner**

HS 91 CLOU on test



Two wing sets compared, builder John Webber with short span at right. Top pics show wing dowels and completed long span version.



The H.S. 91 Clou multi-channel radio controlled sailplane has been designed as a high performance model for thermal soaring or aerobatics by engineer Hans Schumacher. A remarkable feature of the Clou is its ability to be adapted to operating under any weather conditions. This versatility is achieved without tedious modifications by simply attaching either the long-span wings of 96½" or the clipped wings of 74½" span, thus a single model is capable of meeting widely differing requirements. The kit contains material for building both types of wings.

Contents of the kit leave little to be desired, the balsa sheet is of good quality and the die cutting, still a new thing for Graupner, excellent. There are one or two plywood ribs which had to be cut out with a fret saw. Instructions number some 25 pages and are most comprehensive. Together with the plan sheets there is little left to the imagination.

Little difficulty will be experienced in constructing the fuselage but one important point is worth noting, the bending of the two tubes which take the wing dowels must be very carefully arranged as this governs the dihedral of the wings and their relative angles.

The instructions for building the wings (long or short span) are very clear, but they do take some considerable time to construct. Once again, alignment of tubes for wing dowels must be given full care and attention in fixing.

A jig is assembled before commencing work on the Stabilator (all moving tail-plane). This makes construction very easy, and perfect alignment is assured.

The weight of total airframe uncovered with large span wings was 19½ ozs.

Total weight of airframe covered with clipped wings and radio installation is 2 lbs. 5½ ozs, the larger span being only 1½ ozs. heavier.

This is a beautiful model both to look at and to fly. First tested with long wings from a slope in calm weather it flew as though on rails and then with short wings into a breeze it rode the wave well. Landings were no hazard for the high aspect ratio wings—the only part to suffer was surprisingly the supposedly unbreakable plastic nose which can also be a cowling for a power assisted version. This shattered on hitting an unwelcome obstruction and is replaced with a block of balsa.

Verdict: hours of building and flying time in silent pleasure for £9 10 6d. well spent

All moving tail and large rudder are ideal for slope or thermal soaring. John Webber installed Remcon 12 R/C using Controlaire servos for rudder/elevator. With Graupner R/C gear, installation is very simple, having Trimomatic servo in elevator push-rod.



AIRCRAFT DESCRIBED Number 146

Republic P-47 "THUNDERBOLT"

Described and drawn by G. R. DUVAL.

Right: Major Robert S. Johnson and his favourite "Jug" known as "Lucky". This was a faster than average P-47 in which he destroyed 23 aircraft, and which was used by other pilots for further victories. Sandpapered and waxed glossy, it was lost in cloud collision with three other P-47s while Johnson was on a 24-hour leave in London.

Below: variety in markings for a formation of early P-47s. Yellow outer circle on National Star insignia and white identification bands are applied in different combinations.



DESIGNED by Alexander Kartveli, the Republic XP-47B first flew on May 6, 1941, eleven short months after the U.S.A.A.F. issued a requirement for a "super fighter" to incorporate the lessons learned from air warfare in Europe. The design had progressed through the XP-47 and 47A, both abandoned on the drawing board.

The new machine emerged as a six-ton monster with a 40 ft. wing span, powered by a 2,000 h.p. turbo-supercharged Pratt and Whitney radial engine driving a four-bladed propeller, the armament consisting of six or eight .5 in. machine guns. Despite a maximum speed of 400 m.p.h. and a service ceiling of 40,000 ft, few people outside the Republic factory really believed that this huge machine could meet European fighters on equal terms. History was to prove otherwise.

The whole production programme was accelerated by America's entry into the war, and as a direct result, the 56th Fighter Group received P-47B's for development testing in the field. Many accidents occurred, with some fatalities, and the latter would have reached much higher numbers but for the Thunderbolt's massive construction, which protected its pilots during some fantastic and spectacular crashes—hence the nickname "Juggernaut" or "Jug". Due to the machine's enormous acceleration in a dive, the Thunderbolt became one of the first aircraft to encounter compressibility, and it was not until November, 1942, that two pilots experienced this and lived to make a report.

In January, 1943, the 56th Fighter Group arrived in Britain, equipped with the latest model, the P-47C, which had an extended forward fuselage and also belly shackles to accommodate a ventral fuel tank. The internal fuel capacity had been increased as well, for one drawback of the Thunderbolt was its short range. The 56th was soon supported by the arrival of two more Groups, the 78th and 4th, the whole force retaining a few of the older P-47Bs. The first operational mission was flown on April 8, 1943, and others followed, but contact with the Luftwaffe did not take place until April 29, when all three Groups met the Germans over Holland and lost several machines for no score. However, the Americans were not slow to gain combat experience, and led by such stalwarts as Zemke, Schilling, Johnson, Gabreski, and others of similar calibre, they began to make steady inroads into the Luftwaffe strength. The prob-

Centre view is a 135 Squadron RAF Thunderbolt 11 at Chittagong, in November '44. Note small roundel in two blues (IWM Photo CF 205). Bottom picture is a shorter fuselage P-47B in US Army colours with national insignia as used up to May, 1942.





lem of short range still existed, for the official belly tanks were unsatisfactory, and so some of the pilots designed a new tank which was manufactured in impregnated paper by Bowater-Lloyd of London, and used in thousands until improved metal tanks became available, the extra fuel allowing the Thunderbolts to escort Fortresses and Liberators on bombing missions, eventually to Berlin. The Groups were steadily re-equipped in 1943 with the P-47D, the major production model, externally identical to the P-47C except in minor detail, but fitted with water injection, which allowed a war emergency rating of 2,300 h.p. from the engine, "paddle blade" propellers being fitted to transmit the extra power into performance.

Later P-47Ds were fitted with stiffened wings to permit the attachment of underwing pylons, each capable of mounting a 1,000 lb bomb or equivalent weight fuel tank. All this time, the Thunderbolt had suffered a lack of all-round visibility from the cockpit, and this was dealt with by cutting down the rear fuselage and fitting a bubble canopy, the prototype of which was a canopy borrowed from a Hawker Typhoon. An immediate success, this modification appeared on the P-47D-25 and all subsequent machines, the loss of keel surface being compensated later on the P-47D-27 by a dorsal fin. Towards the end of 1943, the Thunderbolts returning from escort missions flew low to strafe targets of opportunity, and their speed led to the adaption of the machine for its ideal task—that of fighter-bomber.

During 1944, the Thunderbolt became operational in all active war theatres, except Alaska, and served with the Free French and Russian forces, as well as the U.S.A.A.F. In September, 1944, the Thunderbolt entered service with the R.A.F. in South East Asia Command, fighting alongside the P-47Ds of the U.S.A.A.F. 10th Air Force. 340 early P-47Ds, with

framed canopies, and 490 P-47D-25s served in sixteen Squadrons of the R.A.F., the early models being known as the Thunderbolt Mk. I, the others as Mk. IIs. With the advent of the V-1 flying bomb, a special high speed version was produced in Europe, its engine modified to produce a maximum power of 2,800 h.p. which provided a speed of 470 m.p.h. This was the P-47M, which formed the basis for the final version, the P-47N, intended for long range service in the Pacific and fitted with redesigned wings.

Overall, the Thunderbolts dropped 132,000 tons of bombs, expended over 135 million rounds of ammunition, and destroyed 4.6 enemy aircraft for each P-47 lost. From D-Day to VE Day in Europe, they destroyed 9,000 locomotives, 86,000 railway wagons, and 6,000 armoured vehicles. A truly impressive record.



Top: One of many P-47Ds preserved in Brazil, this one is serial 4107 at the 1st Gruppo de Caca, Santa Cruz. Right, at top: Now preserved at Wright-Patterson base, the rebuilt P-47 with civilian registration N5087V was flown by Republic test pilot Glenn Bach throughout Britain, France and Germany at '63 air shows. Seen here at Paris. Next is 12th USAF (Italy) "Torrid Tessie" P-47D-30 (IWM Photo IA. 61177) P-47 with invasion stripes is Lt Col. F. E. Gabreski's, with 28 victories. (IWM Photo EA.28889). Bottom: RAF Thunderbolt Mk. 11 with long range tanks in the far east (IWM Photo CI 837).

THE REPUBLIC P-47 THUNDERBOLT

Technical Data

Manufacturers Code: RA Republic, Evansville RE Republic, Farmingdale G Curtiss-Wright, Buffalo

Specification (P-47D-25-RE)

Total Production 16,000 aircraft.

Power plant One Pratt and Whitney R-2800-59 two-row radial, developing 2,000 h.p. rated, and 2,300 h.p. max

Span: 40 ft 9 5/16 in.

Length Hamilton propeller—36 ft, in Curtiss propeller—36 ft 1 1/2 in. (P-47B—34 ft. 10 in.)

Wing area 300 square ft.

Armament Six or eight .50 Browning machine guns, up to 2,500 lb of bombs, or ten 5 in. HYVAR rockets.

Max. loaded weight: 17,500 lb.

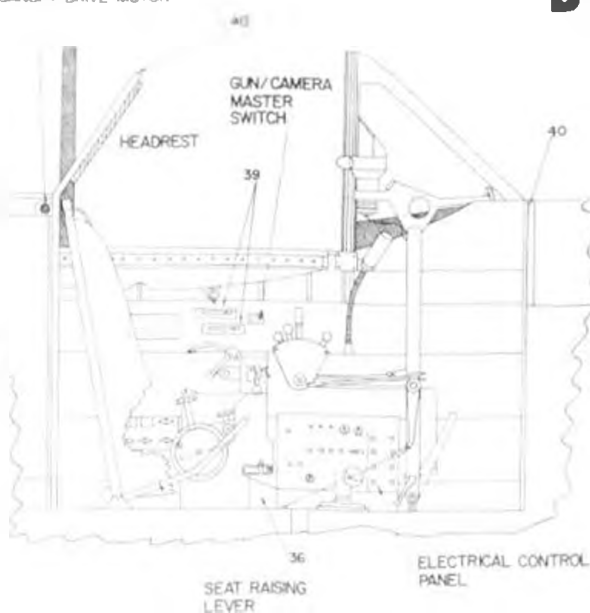
Max. speed: 429 m.p.h. at 30,000 ft

Range 950 miles at 10,000 ft

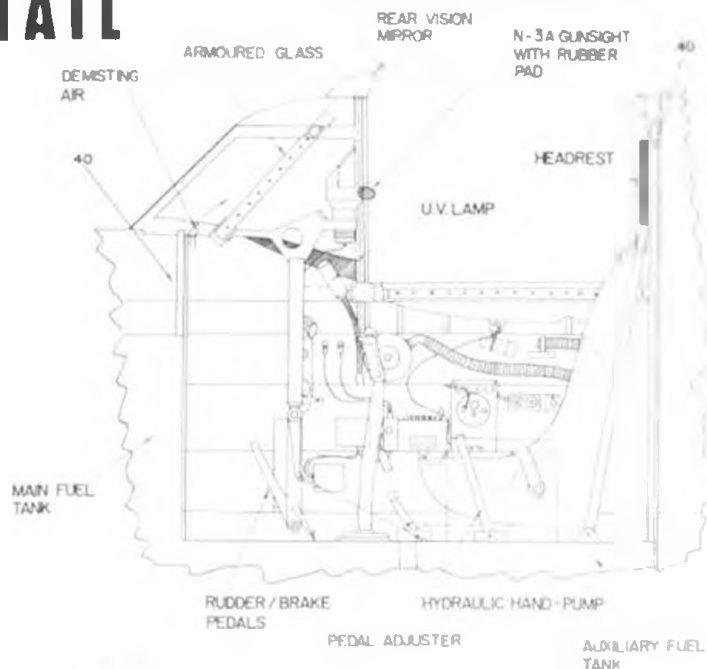
P-47 COCKPIT DETAIL

LEFT SIDE - BUBBLE CANOPY

CANOPY DRIVE MOTOR



RIGHT SIDE - FRAMED CANOPY



KEY

1. AIRSPEED INDICATOR
2. ALTIMETER
3. DATA PLATE
4. ARTIFICIAL HORIZON
5. VERTICAL SPEED INDICATOR
6. STARTER SWITCH
7. SUCTION GAUGE
8. CARB TEMPERATURE
9. R P M
10. OIL PRESSURE TEMPERATURE
11. PRIMING PUMP
12. GILLS CONTROLS
13. OXYGEN PRESSURE
14. OXYGEN REGULATOR
15. V H F RADIO CONTROL
16. DETROLA RADIO (RADIO RANGE)
17. TAILWHEEL LOCK
18. DESTRUCTOR BUTTONS
19. MAP AND DATA CASE
20. CYLINDER HEAD TEMP
21. MANIFOLD PRESSURE
22. FUEL PRESSURE
23. COMPASS
24. TURN AND BANK
25. DIRECTIONAL GYRO
26. CYLINDER HEAD TEMP
27. SUPERCHARGER R P M
28. PROPELLER DE ICING
29. FUEL CHANGE
30. TRIMMERS
31. BOMB/TANK RELEASE
32. THROTTLE



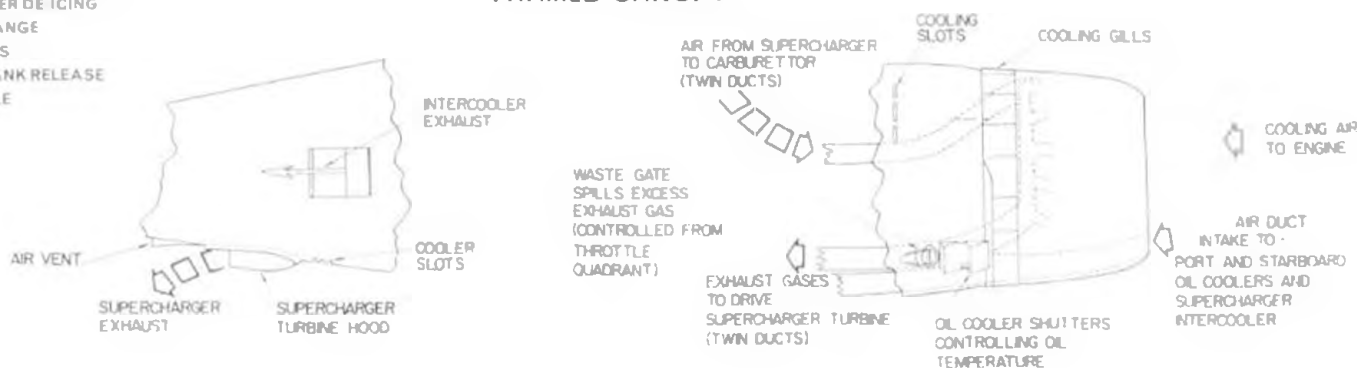
GUNSIGHT BRACKET

33. MIXTURE
34. PITCH
35. SUPERCHARGER CONTROL
36. FUEL COCK
37. FLAP AND UNDERCART CONTROLS
38. IGNITION SWITCH
39. OIL COOLER AND INTER-COOLER SHUTTER CONTROL
40. ARMOUR PLATE
41. PARKING BRAKE
42. ELEVATOR TRIM

NOTE

THIS IS A TYPICAL COCKPIT LAYOUT INSTRUMENT POSITIONS OFTEN VARIED AS A RESULT OF MODIFICATION

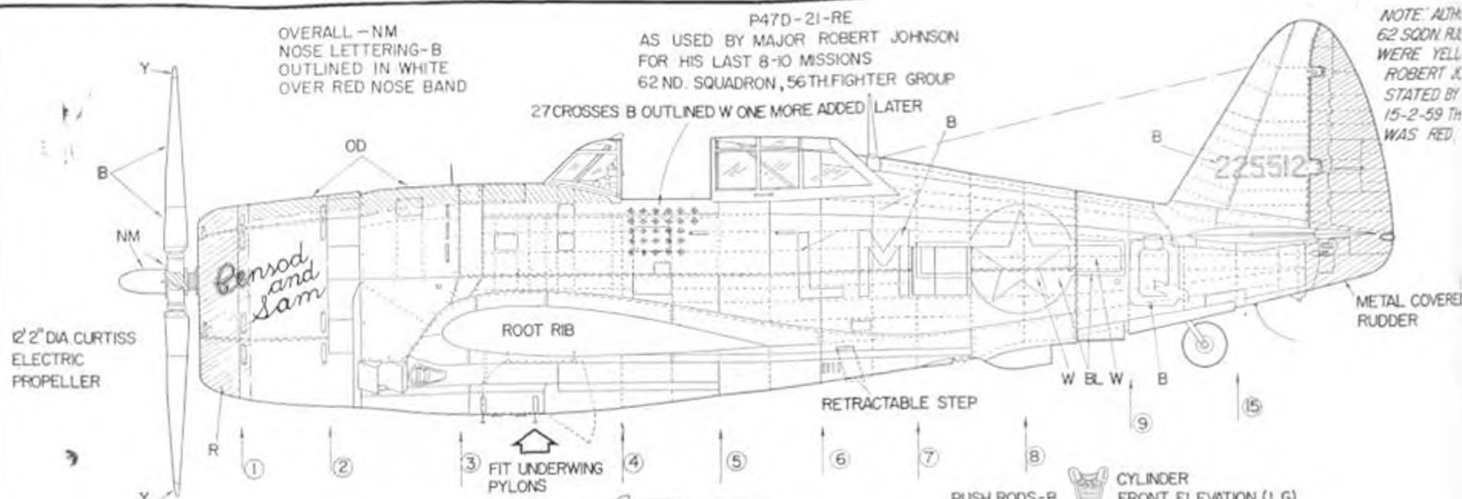
GENERAL VIEW (SEAT REMOVED) FRAMED CANOPY



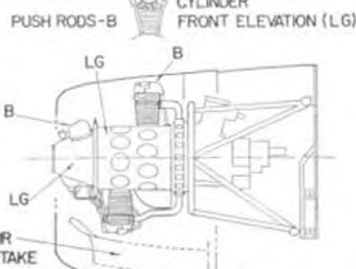
OVERALL - NM
NOSE LETTERING-B
OUTLINED IN WHITE
OVER RED NOSE BAND

P47D-21-RE
AS USED BY MAJOR ROBERT JOHNSON
FOR HIS LAST 8-10 MISSIONS
62ND SQUADRON, 56TH FIGHTER GROUP

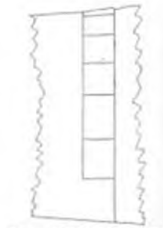
NOTE: ALTHOUGH
62ND SQUADRON
WERE YELLOW
ROBERT JOHNSON
STATED BY
15-2-59 THAT
IT WAS RED.



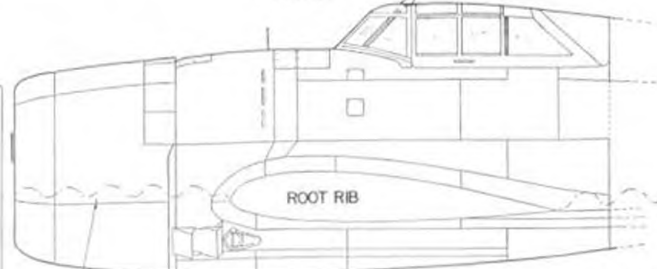
CYLINDER FRONT ELEVATION (LG)



GILL ARRANGEMENT OF P47D-II-RE



- COLOUR KEY
- NG - NEUTRAL GREY
 - OD - OLIVE DRAB
 - B - BLACK
 - BL - BLUE
 - R - RED
 - CY - CHROME YELLOW
 - W - WHITE
 - GD - DARK GREEN
 - LG - LIGHT GREY
 - DSG - DARK SEA GREY
 - AB - AZURE BLUE
 - DB - DARK BLUE
 - NM - NATURAL METAL



P47B NOSE DETAIL - REAR FUSELAGE AS P47D
FIT 12' 2" DIA CURTISS ELECTRIC PROPELLER
NG BELOW (ALL UNDERSURFACES)
OD ABOVE (ALL UPPER SURFACES)

LM-Q INSIGNIA PORT UPPER WING ONLY

BL W BL W

PITOT HEAD PORT WING ONLY



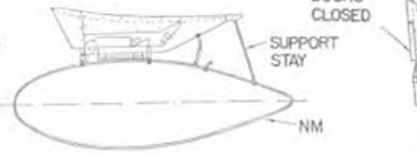
MX-W INSIGNIA PORT UPPER WING ONLY

150 U.S. GALLS TANK AND PYLON FROM OUTBOARD

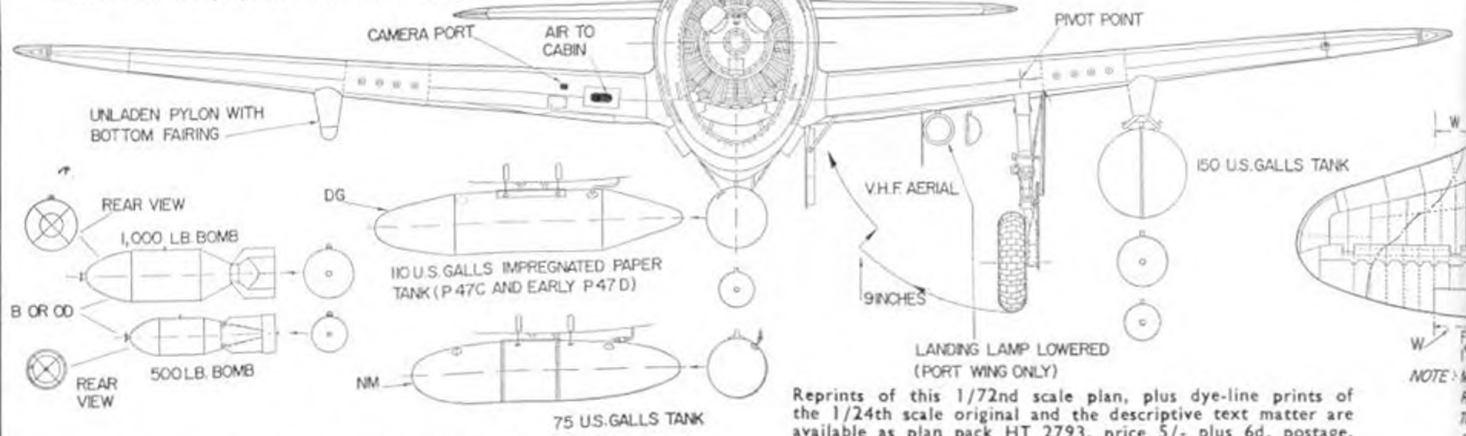
INTERCOOLER DOORS CLOSED

SUPPORT STAY

NM



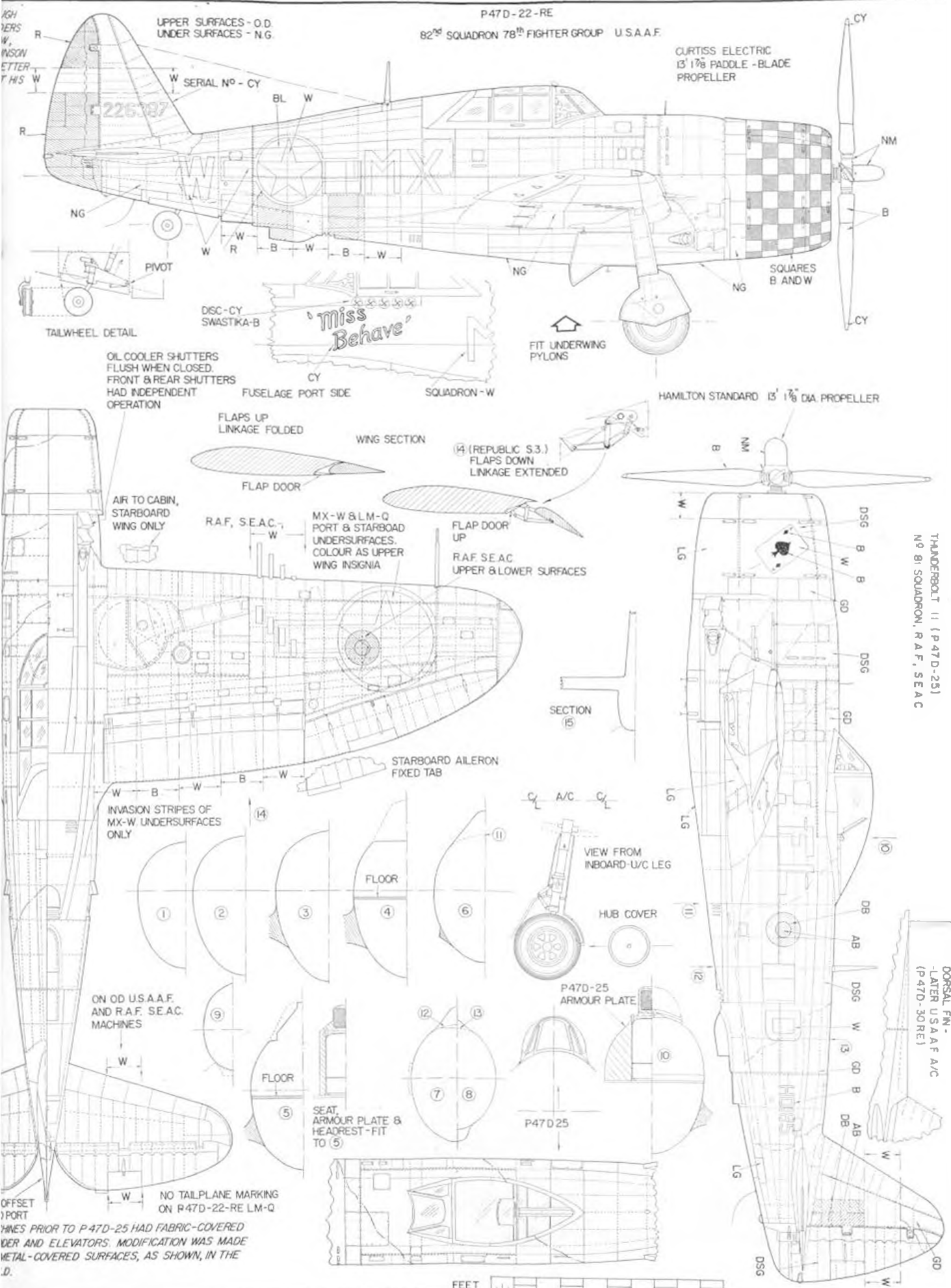
Neutral Grey is a shade lighter than Humbrol Sea Grey.
Light Grey is a mixture of one part No. 30 Humbrol Dark Green and two parts of Humbrol No. 31 Slate Grey.
Grateful acknowledgment is due to the assistance of David Brazelton, who provided considerable research material for the preparation of this drawing.



Reprints of this 1/72nd scale plan, plus dye-line prints of the 1/24th scale original and the descriptive text matter are available as plan pack HT 2793, price 5/- plus 6d. postage, from Aeromodeller Plans Service, Hemel Hempstead.

REPUBLIC P47 THUNDERBOLT

CURTISS ELECTRIC
13' 17/8 PADDLE - BLADE
PROPELLER



THUNDERBOLT 11 (P 47 D-25)
Nº 81 SQUADRON, R A F, SEAC

DORSAL FN -
-LATER U S A A F A/C
(P 47D-30RE)

Aeromodelling



R. H. WARRING



G. HARRY STINE

TOP of the poll for a very large proportion of the aeromodelling fraternity must surely be the **RADIO CONTROL MANUAL**, compiled by Henry J. Nicholls, and Tony Dowdeswell. It answers many of those initial queries which so few experts are qualified to answer and in so doing, provides an invaluable 186-page handbook that will be a constant reference source. Here at last is a single volume that introduces the various forms of radio control for aeromodelling in a style that is understandable for the novice and highly readable for the experienced. Leading experts like Ken Willard deal with single channel, Pete Waters on Multi, Geoffrey Pike on Proportional, Den Thumpston on Scale, Peter Holland on simple proportional systems (suerly the "coming" thing) and the compilers adding more than their whack with as impressive a compilation of data tables and plans as could ever be imagined to cover all that's best in the world of Radio Control. Sixteen shillings would be soundly invested in this compact 5 1/2 in. x 8 1/2 in. Manual produced by Model Aeronautical Press Ltd.

Museum Press have just published a comprehensive introductory handbook on **AEROMODELLING** by Ron Warring. Covering all the basic phases of the hobby, and supported by good initial grounding for any newcomer, it should be very popular in libraries, but, at 25s., a trifle expensive as a personal purchase. The sections on Glider operation, propellers, covering and trimming will be specially appreciated as they deal with these "mysterious" aspects for the detached novice in a most informative manner.

Last month's Rocketry features came just too early for announcement of G. Harry Stine's **HANDBOOK OF MODEL ROCKETRY** which is published by Collet, of New York, at \$4.95 as a paperback, or \$6.95 cloth back. Superbly printed by offset process this 303-page 5 1/2 in. x 9 in. guide to one of the most rapidly developing hobbies in all parts of the world except Great Britain, is the official handbook for the National Association of Rocketry in the U.S.A. No one could fail to be impressed by the (dare we say it) down to earth coverage of this involved subject by Harry Stine. His lucid style is spattered with a new and amusing jargon. *Eggonauts* set forth to rocket their first "model" live biological payload

Recommended

(LPB) *Nose-Blows* are neither fisticuffs nor the results of a heavy cold, they are detachable nose-covers for delayed descent. A *minibird* is a small boost-glider, a wind tunnel is a *breeze box*. All of which adds up to the fact that there's a lot to be learned about MR and this is *the* book for *rocketgen*.

Contrasting with the tightly packed Rocketeer's handbook is **WAR PLANES IN BATTLE DRESS 1914-18** by H. D. Hastings and Paul Parker, Jr. Between solid 11 x 15 in. covers, are but 19 thick card leaves, spirally bound so as to open flat. Almost every leaf is blank on one side, and eight sides have upper, lower and port side views of aircraft ranging from the Berg D.I. to the Sopwith 1 1/2 Strutter. These are colour wash paintings, each portraying the individual markings of a particular pilot. Unhappily placed opposite large photograph reproductions which invite comparison, the colour views miss the stamp of authenticity when they diverge in obvious detail such as the shape of an emblem. Supporting text is jaunty, and pictures indistinct though rare. At \$9.95 or £4 through G. K. Scott, it's a pricey volume wed rate in the luxury-conversation-piece class.

Peter Bowers, Boeing engineer, home-builder extraordinary, aviation historian and power model pioneer, contributes **CLASSIC MILITARY BIPLANES** through the British agent G. K. Scott, of 2 The Broadway, Frien Barnet, London, N.11, at a modest 12s. 6d. Over 100 photos support the fact-filled text in 139, 5 1/2 in. x 8 in. pages which have thin card covers. The subjects are all of U.S. origin, including the DeHavilland D.H. 4 as manufactured in the U.S.A. Descriptions are brief, but to the point.

One book from the U.S.A. which offers more between covers than any other comparable publication is Volume 1 Number 1 in the **SMITHSONIAN ANNALS OF FLIGHT**. The imported price of 6s. 6d. is fantastic value and reflects on the fact that *a)* the author is Louis S. Casey, Curator and Head of the Flight Craft Dept. of the famous Smithsonian Institution of National Air Museum of the U.S.A. and *b)* it is produced by the U.S. Gov. Printing Office. The subject? A full account of the first non-stop coast to coast flight across the U.S.A. and the aircraft which made the trip, the *Fokker T.2*. Though little known in Europe, the T.2 is a fine modelling subject, having the lines of a vintage duration model. Beautifully detailed diagrams by H. A. Fisher leave nothing to doubt and for good measure there are five companion 3-views of the Fokker D.VIII and the FII, FIII, FIV in support. In all, nine plates of diagrams we'd have been proud to publish ourselves.

More about progress—perhaps for the morbid, in **GREAT AIR DISASTERS** by Lloyd Mallan in Faw-



Fokker T.2

Reading

cett Book No. 517 price 5s through J Beaumont, 11 Bath Street, London E.C.1. Dealing with the tragic affair of the Lockheed Electra disasters, the Grand Canyon mid-air collision (and four others!), also a South American incident, the text is graphically authoritative, carrying both first hand eye witness accounts and a question and answer report verbatim from the investigating court. Photos are a grim reminder of risks, but would not put us off flying! 144 pages measure 6½ x 9½ in. and are filled with text and illustration in the usual Fawcett style.

This is the age of the collector. Aviation is reaching the stage where to talk of a TSR-2 is to reminisce on the past, and items from the World War One are positive works of art. Bob Holman of San Bernadino, California, is coping with the demand for specialist scale drgs. to 1/12th or 1/6th size for flying models of W.W. I fighters plus the F.W.190 and Henkel He 100. He has also produced the first of his **CLOSE-UPS**, dealing with the Fokker D VII. No price is set, but it should be around 7s. 6d. for these 16 page portfolios which measure 8½ x 11 in. The D VII is "Covered" by 28 large reproductions of good photographs, showing various markings and structural detail.

Which brings us to the new **PROFILES**, appearing at the rate of 6 a month and expanding. Colours of their D VII are at great variance with not only the photos used in the same booklet but also our own recent *Jagdstaffel Markings* series. But this is small criticism for a series that astounds with its intricate detail and admirable presentation. Of all the 48 we've seen, the Spitfire I & II in Number 41 appeals greatest for its standard of drawing and colouring. Bound into volumes, one can now obtain Nos. 1-24 for £3.8s. as a handsome library edition.

World War I Aero Publishers, Inc., of West Roxbury, Massachusetts, U.S.A., have launched their Volume I, No. 1 in a series with 24 7 in. x 10 in. pages between stiff covers dealing exclusively with the Pfalz company and its products. Authors Grosz and Krueger are leading lights among German researchers, and the U.S. publishers have chosen well to establish the \$1.95 booklets with their stamp of authenticity. Seven drawings cover factory views of D III, D VII, D VIII and D R I so that modellers of Pfalz types have an excellent reference book.

Still with it! World War I again, and Geoffrey Norris's **THE ROYAL FLYING CORPS, A HISTORY**, published by Muller, is a most readable account of the origins and exploits of a great Service. An unusual selection of photographs on the 12 art plates adequately support the 256 text pages of the 5½ in. x 9 in. volume which collects a series of



aerial warfare stories to depict the trials and tribulations of those times. An F.E. 2b which hit a barrage cable and slid vertically, all the way to a tree top landing leaving the crew unhurt. Martinsydes and B.E. 2C's in the desert up against the Turkish forces, home defence against the Zeppelin raiders, these are the sort of story source that Geoff Norris has exploited in an educational manner.

Twelve years ago, Macdonalds introduced **THE AIRCRAFT OF THE WORLD** by William Green and Gerald Pollinger. It reappeared in revised edition two years later and ever since has been a constant reference source for aircraft identification. Now the third edition has appeared, and for 95s. we have a 360-page (8½ in. x 11½ in.) mine of information that will never disappoint the browser.

What's a Hirsch H.100, a MAI-62, a Centaur 101 or an Alon Aircoupe? These are a few of the many shapes to be found as new gems for even the most keen eyes. Silhouettes of many and a section on replica and veteran aircraft add to the attraction. Definitely a book to have and treasure for ages.

Last, but by no means least, a book we enjoyed more than most this month is Air Commodore Allen Wheeler's **BUILDING AEROPLANES FOR THOSE MAGNIFICENT MEN**, published by Foulis at a modest 15s. Ninety-four 7 in. x 10 in. pages of offset printing provide some of the most entertaining literature we've read for many a day. Few cinema-goers will appreciate the tremendous story behind those "Mag. Men" aircraft in the 20th Century Fox film. Structurally difficult and aerodynamically decadent, the replicas were designed, built and flown in spite of many upsets within virtually six months from the order to start. This achievement brought with it a succession of hilarious and serious incidents which Air Commodore Wheeler relates with a fine touch of dry humour: "... one could turn left if one over banked" ... "Although the Antoinette could take off at only 22 m.p.h. or with the tail well up at 25 m.p.h., this slow flying characteristic is no satisfaction at all to the pilot who finds himself slowly rolling over towards the inverted position 150 ft up". These two quotes are a sample of the absorbing and well-illustrated text. Well worth it and the ideal inexpensive suggestion for that Christmas gift.



CLOSE-UPS



FOK. DVII





HOW ARE team racers developing these days? Last month's Aeromodeller drawing of the 'Pec Wit' racer (which a reader informs us should be called the 'Snipe') by Boris Chkourski has aroused much comment on the semi-scale ruling. In fact the Russians once produced an aircraft with this 'inverted' cabin layout, this being the crew compartment on a transport, certainly not on a single seat racer! Most builders seem to consider the semi-scale rule as one of the last requirements when 'designing'. This is clearly obvious from a brief look around the racing circles at any rally.

The heading photograph shows two models of yesterday by Peter Wright the *Wrangler Six* having a K & B Torpedo 29 and the *Wrangler A* a Super Tigre, 2.5 cc. The 'A' racer is now of course obsolete by current rules but we think all racing fans will agree that both have a refreshing line and look as intended, like aircraft. Cockpits are meant to give a pilot forward vision and many models these days do not allow this unless the poor pilot has two eyes in the vertical plane instead of horizontal. And who has ever seen an aircraft *without* a vertical tail surface unless a steeply angled vee tailplane is fitted? Time we started to concentrate on retaining both appearance and streamlining.

Propeller Pitch Calculator

Jurgen Lenzen of Germany has constructed a propeller pitch calculator for checking the trueness of propellers, so we tried it at the Criterium of Aces, with interesting results on commercial propellers *Hm!* A base board is slotted as shown from Paxolin into 14 or so stations and to this a Lormica pitch indicator scale is attached with a pivoting angle bar. The scale is divided into the same number of stations so that when the propeller is fixed to the keyed brass support and placed in, say, station three the angle bar is set against the blade angle and read off on scale station three. If the propeller is reversed the other blade can be checked against the first and the two angle readings should be the same. If not, the usefulness of the pitch indicator has been proved. The instrument can also be used to advantage to check propellers for true pitch.

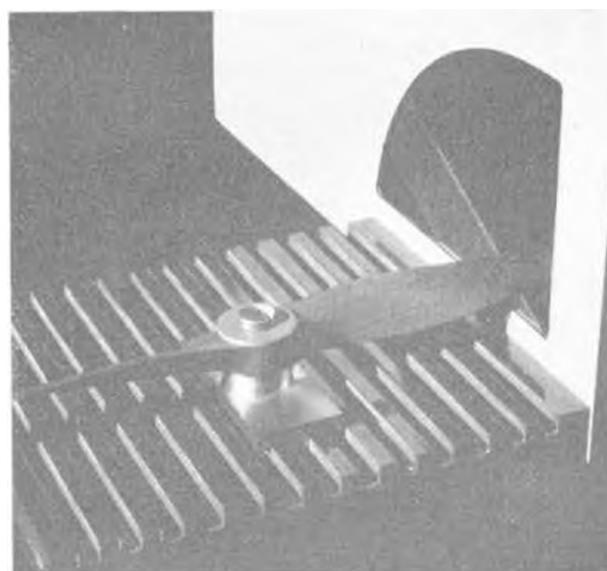
Mans Hagberg on remote Compression Adjustment

A major operational problem at most International team race contests is created by lack of test flying facilities. This makes compression settings hard to predict for the

entrant in unfamiliar climatic conditions, finding the correct engine setting is difficult enough even if one manages to test fly, for the delay of repeated tests with a minor adjustment each time is neither satisfactory nor consistent with efficiency.

A solution to this problem is to fit a remotely controlled compression adjustment. The needle setting can then be found almost at leisure, and the compression manually adjusted before the heat so that a reasonable start and acceleration is assured. Fine corrective adjustment is then carried out in flight by the pilot who can be instructed on a walkie talkie (provided a legal frequency is used) to increase or diminish the compression ratio by pushing a handle mounted self neutralising switch backwards and forwards, as happened at the 1965 Criterium of Aces in Belgium.

Here, pilot Goran Alseby flying the Swedish team entry with mechanic Mans Hagberg attending to his modified I TA Mk II demonstrated the system. Electrical power, from a battery in the pilots jacket passes through the lines to a motor on the engine bearers. This drives a lead screw to alter the angle of an L shaped lever with sufficiently powerful momentum to push the contra-piston



A thick hub Tornado Plasticote propeller is seen placed in station 7 of Jurgen Lenzen's propeller pitch indicator with the angle bar set against the blade in top photo. Below: the angle bar is set against blade with the scale, station 7 being on the right.

into the cylinder. Engine compression is sufficient to return the contra-piston as the lever is withdrawn for reverse adjustment. An Allen headed screw offers over-riding manual adjustment of the compression.

Since the voltage and resistance ratings of the electric motors vary with load and r.p.m. we must select the servo motor according to mA rating at maximum efficiency.

The standard F.A.I. flying wires, necessary internal wiring, cables, switches etc., have a combined resistance at about 100 ohms. An average small 1.5 - 2v motor has a stalling current well in excess of 1 amp, and a servo motor in the 6v range usually needs 500-1000 m.A. Ideally the Marx Microperm 1000 just needs 240 mA and idles on 40mA, being suitable for 6 - 24v supply.

To supply 2 amps through those 100 ohms of resistance you need 200v and the lines tend to get hot at 2 amps and above. To supply 500 mA, 50v is needed and to supply 240 mA just 24 volts. Thus a nominal 30v supplies 250mA without the motor and around 200 mA with the motor connected into the circuit, which assures plenty of power.

The parts needed to construct this system are as follows:— 30 volt power supply, two way switch, Microperm 1000 electric motor 6-24 volt, Graupner 1 05 motor gear box, 3 mm ballrace, plugs, jacks, cable and three, Allen headed screws. Also the following hardware: Delrin for gear casing, Dural for spacer, sheet metal for mountings, glass fibre and resin for control line handle. Ammeter, 100 ohms low resistor and pinion wheel from a 1 05 motor or gear box.

The Microperm motor must be equipped with a pinion wheel salvaged from a Micro T 05 motor gear box. To fit this, the motor is connected to a 10 - 20v supply and the shaft carefully ground down to 0.80 m.m. diameter for a tight fit in the pinion wheel.

By cutting away the rear face of another gear box (141.1 or 485.1 ratio is optional, the 485.1 one tending to give a rather slow response) the pinion wheel can be made to engage the outermost large wheel of the gear box. The gear box is then coupled to a 3 m.m. diameter lead screw. All this is fitted into a casing turned up of aluminium alloy or better still, Delrin plastic. This casing also contains a 3 x 10 m.m. ballrace to act as a bearing for the lead screw. The casing is pivoted on two 3 m.m. Allen headed screws as seen in photos to allow for compression screw movement.

A link bar with a nut on the rear end to run on the 3 m.m. diameter lead screw is attached to the L shaped main lever (Split to take link bar and 3 m.m. dia. pivot). The lever is cut from 5 m.m. Dural and the other end has a 3 m.m. compression screw with Allen head, for rough setting and emergencies. Between the compression screw and the contra piston a 7 m.m. high brass or dural spacer is fitted for alignment. All screws should be fitted with 0.5 m.m. piano wire keepers as on the Taifun Orkan cylinder head to prevent movement.

The handle is from four layers of glass fibre, moulded over an oval section paper tube which fits around a two way self neutralising switch of Japanese origin like a multi-channel radio control lever. Line connectors are heavyweight stranded cable and a jack plug is fitted at the



Side view of Eta 15 shows L shaped lever with compression screw, also motor casing pivot screw. Left: lead screw and link bar that connects to lever are seen between engine and motor/gearbox. Note extended plastic engine intake tube. Right: Mans Hagberg warms engine with walkie talkie in foreground and Allen key in his mouth ready for manual adjustments.

pilot end to connect the 30 volt power supply that is made up of ten - 3 volt dry cells in a pack. These batteries will last a complete season but a 100 ohms fixed resistor should be used occasionally to check the conditions of the flying wires and power supply. A jack plug is located inside the fuselage to allow the system to be checked.

Possibilities of this system are manifold but it should be remembered that it will not be of any advantage except to anyone already proficient with an existing "standard" model. Basically very simple, many gadgets could be actuated on this principle. A variable needle valve setting, or a retracting undercarriage that goes up and

At right the glass fibre Glasflugel propellers described in October issue. Top one is as moulded with all the "flash" still attached. Below it a prepared, balanced version ready for use, note fibre grain in blade.

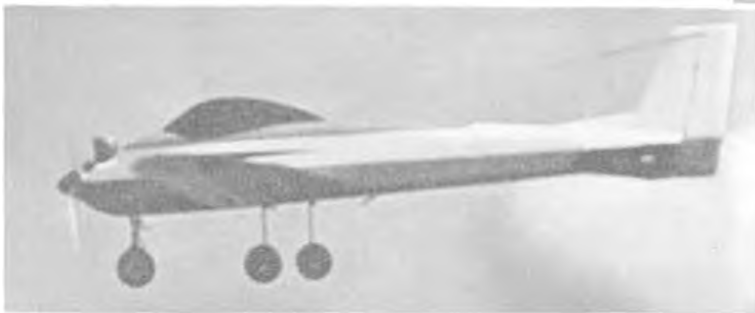


See how they fly!

A selection of photographs by
Otger Schmolinske from the
World R/C Model Championships



Above: Fritz Bosch from W. Germany flew the stubby "Delphin" 62 in. low wing own design with Simprop proportional radio gear, Super Tigre 60 engine, to 12th place. Has vertical whip aerial.



From Edmonton, Alberta in Canada, Harold Tom brought his "Cutlass" original design with Kraft proportional radio to place tenth. Nosewheel has a serrated surface brake device and the engine is a Super Tigre 60



All the way from Japan, Sousuke Kato flew his "Super Thunderbird" with Orbit proportional radio and Super Tigre 60. His brother Masahiro has identical equipment and they placed 19th and 29th.



Jasper Von Segebaden from Sweden was eleventh with his "Mustfire" and Bonner Digimite gear plus Merco 61 Model is now killed and will be distributed in G.B. Similarly equipped model was also entered by J. Levenstam of Sweden who placed 26th.



Dr. Ralph Brooke of Seattle, Washington, USA became World Champion with his Merco 61 powered "Crusader" design and Orbit proportional radio gear. Large spinner and inverted engine help to make a jet-like shape.



Second place in the World Champs. went to Belgian Chris Teuwen flying his "Trouble" design with Bonner Digimite radio and Super Tigre .56 power. Chris is another to use the vertical whip aerial.

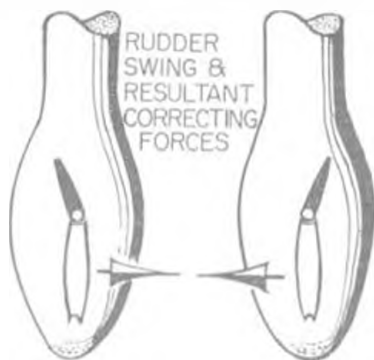


Above is Canadian Ron Chapman's beautiful all-gold "Norseman" which came 7th with C & C proportional and Merco 49 while at left is 4th place P. Stephensen's "Maximum" flown with Merco 61 and Bonner Digimite.

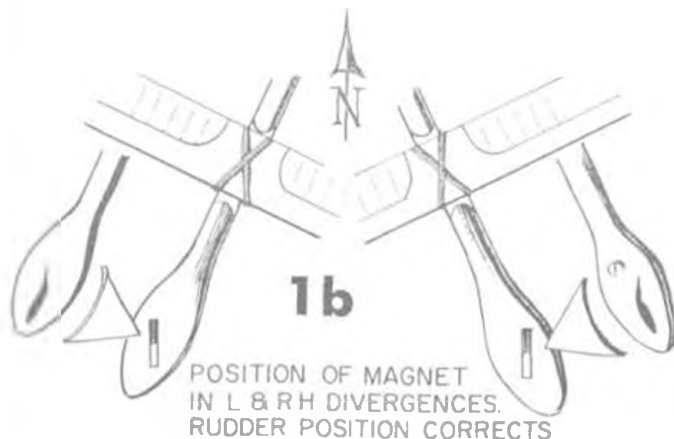


PRACTICAL MAGNET STEERING

Nineteen teams from five Nations produced 80 entrants for the "Coppa Europa" on Melchsee-Frutt, Switzerland over August 21 - 22nd. They were all flying Magnet Gliders to the newly approved F.A.I. International Rules—a class which deserves further study and is described in this feature.



1a



1b

THE fundamental aim of magnet-steering is to guarantee into-wind flight. Applications of this aim may result in differing flight patterns, but this first requirement is of paramount importance (i.e. model unable to hold a steady into-wind course will be unlikely to prove successful if other directional configurations are tried).

Diag. (1) Illustrates the systems functions: first, the correcting force applied by the moving rudder. Secondly, the position sought by the permanent bar magnet under similar divergence.

In Diag. (2) Schematic arrangement is illustrated. It must be emphasised that as the builder of the system will more fully appreciate the finer points of construction if he undertakes to lay out final bearing positions, etc., himself; only the most essential

explained by **Trevor Faulkner, A.R.C.A.**

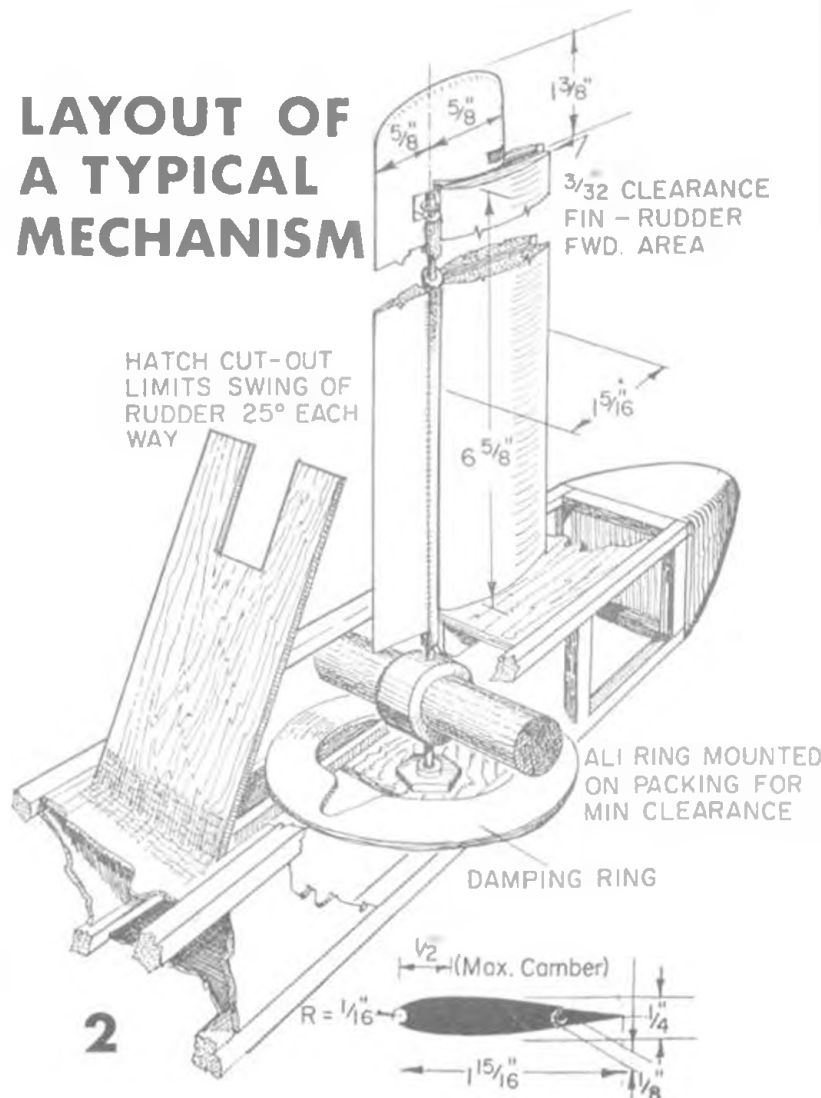
measurements are quoted. These should be regarded as sacred until a degree of experience has been acquired.

Construction

The most easily obtainable bar magnet unit is the Graupner. (Messrs. Ripmax are able to supply to special order at 17s. 6d)

The unit is known as Part No. 3600 and comes as

LAYOUT OF A TYPICAL MECHANISM



2

a complete packet assembly consisting of the parts shown in *Diag. (3)*. Always check the package contents (errors can occur) and then test the fit of the lower bearing shaft in the bronze ring. Should the pin be sloppy, discard it and make a substitute from piano wire of around 16 s.w.g. Drill out the ring for a push fit on the new pin.

The bronze ring must be filed out until the magnet bar is a good fit, but before pushing it home finally, select lengths of absolutely straight wire and either aluminium or brass tube of an inch diameter to match. Now drill the second hole in the bronze ring for a push fit on your selected length of wire, ensuring that the holes top and bottom of the ring are in line. Original holes are usually lined up, but maybe off-centre. My own method is to drill out both holes to be a push fit on 16 gauge wire as a matter of course: the lower pivot is then fabricated from the same size wire as its upper counterpart. Assemble the magnet in the ring and add the pivot and the wire axle. Balance the unit using a non-ferrous support (*Diag. 4*) and then find and mark the N pole (*Diag. 5*).

Plane the rudder from quarter grain medium balsa of hard stock. Using the edge of a sheet rather than a strip to avoid distortion. Sand evenly before parting from the main sheet. Cut your aluminium or brass tube to the exact length required, smoothing the top end as shown (*Diag. 6*).



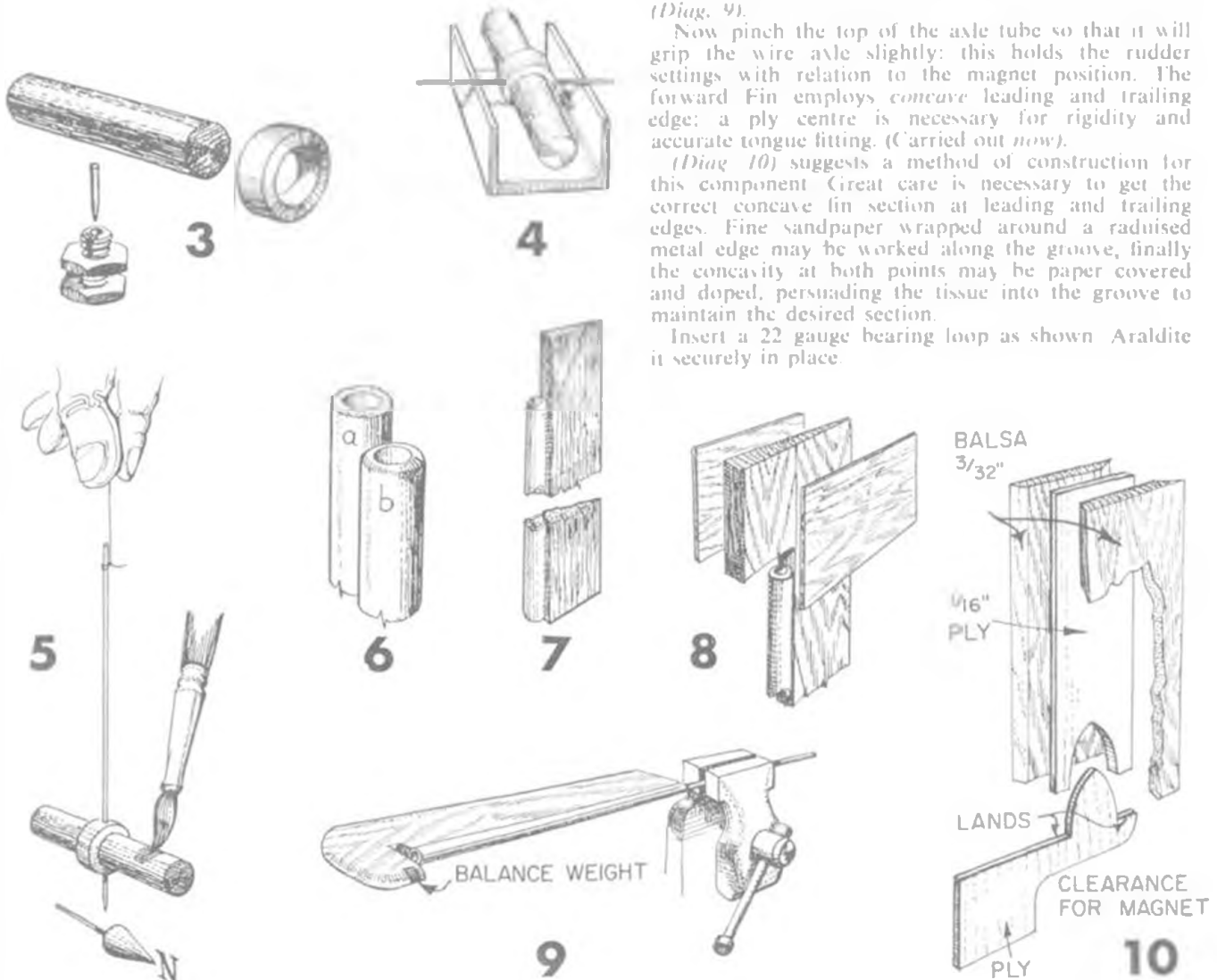
Author and his Swiss Koelliker design with all sheet Jedelsky airfoil and curved plate fuselage. Koelliker markets the Swiss steering unit made by Herr Moor of Lucerne. See next pages for other views.

Tack cement your tube to the rudder strip. When the "tacks" are dry, an equal cement fillet is added either side of the joint (*Diag. 7*). Build up the forward (balance) part of the rudder, sandwiching the joint between $\frac{1}{4}$ in sheet sides, their grain lying as shown (*Diag. 8*). Shape the rudder and sand to a streamlined section; cut out a clearance area at the top end of the tube. Dope and covering are added before balancing the rudder with a small lead insert (*Diag. 9*).

Now pinch the top of the axle tube so that it will grip the wire axle slightly: this holds the rudder settings with relation to the magnet position. The forward Fin employs *concave* leading and trailing edge; a ply centre is necessary for rigidity and accurate tongue fitting. (Carried out now).

(*Diag. 10*) suggests a method of construction for this component. Great care is necessary to get the correct concave fin section at leading and trailing edges. Fine sandpaper wrapped around a radius metal edge may be worked along the groove, finally the concavity at both points may be paper covered and doped, persuading the tissue into the groove to maintain the desired section.

Insert a 22 gauge bearing loop as shown. Araldite it securely in place.





Swiss Koelliker design soars above snow capped Alps at the International "Europa Cup" event, won by Werner Berger of Zurich with total of 21 mins. 18 secs. in five flights. Note Jedelsky "standard" wing, feature in '65 Aeromodeller Annual gives more information on this construction.

Hanging the Magnet

With the wire loop in the upper fin and your lower bearing, position the magnet axle. This must be as close to the fin as possible without fouling the trailing edge.

Build your tongue component into the fuselage nose, position the fin carefully, making sure that "it sits" on the ply lands. Take a preliminary sighting to fix the lower bearing position approximately. If the lower bearing is mounted on a small plate of ply, it can be moved about to determine the best position for it to occupy. Assemble the fin-rudder unit seat and the pivot-pin in the lower bearing and establish

the optimum bearing position. Pin your plate in place and check again, if all is correct cement the plate in place.

(The above directions pre-suppose a conventional fuselage structure: If longerons are not part of your model's anatomy, build suitable balsa "rails" in the existing structure.)

As this is likely to be your first magnet-steered model, I would advise that your building methods should be chosen to allow you to see the working parts at all times whilst construction is under way. When you know that the magnet swings freely and reacts correctly every time, the unit may be passed as 100 per cent foolproof and faired in.

One refinement worth employing is that of an aluminium "damping plate". This may take the form of a disc fitting as closely below the magnet as possible compatible with its fit movement.



The aluminium steadies the magnet swing, reducing any tendency to over-correction. This is particularly useful when wind speeds are high as straight flight loses less headway in oscillations.

The photograph shows how the fin/rudder/magnet units are fitted. Your housings for the unit should give ample space for manipulation, adjustment and fitting. With the units described, it may help to shape the damping ring as shown, whilst a slightly larger access hatch than shown could be employed. (Note that the hatch serves as a "stop" for sideways rudder movement. This is less likely to be damaged than projecting horns from the fin).

An experimental "First" model should not be simply a pensioned-off A 2 glider. Flying surfaces must be warp free as the magnet will have enough to do when correcting the direction flight of a perfectly built model. However, A 2 size is certainly right, (the International Comp. class is for this size model).

At left, Author's magnet unit and balanced nose vane with fixed fin view shows how unit is fitted into a modified standard glider.



Fuselage lengths may vary to some extent, but average about 90 per cent wing span. The stabilizer may be heavy by A/2 standards as this allows a good nose movement to be employed even with the fixed weight of the magnet well formed. The model shown in the photographs employs G. Dallimer's "Sceptre" wings and tail units (AEROMODELLER, October, 1961).

Fuselage moments are shown as employed. These are "safe" and have given stable flying under varied conditions, but no claim is made for outstanding efficiency compared with lightly developed competition models. Also featured is a 2 piece fuselage of rolled tube construction. This allows D/T landings on slopes and generally rough areas without ill-effects.

Recent Developments

Continental enthusiasts often employ magnets somewhat shorter than the Graupner product in order to lessen overall drag in the nose section and reduce inertia. With such components it is of supreme importance to eliminate friction losses as far as possible, and to this end ball-pen points bearing on instruments type jewels are used.

The whole unit of rudder/magnet/fin is made detachable using a circular "deck" which fits into an alloy damping "canister"; this in turn carries the

You are on a suitable slope, the wind is favourable what next? Place the model on the ground lining it up into the wind. Adjust the relative positions of rudder and magnet until the rudder tends to occupy a central position. Move the model slightly left and then right to observe the rudder reaction. When its response appears correct, launch directly into wind and observe the flight direction. Crabbing to either side shows readjustment to be necessary: direct into wind flight shows all to be well.

Simple duration flying depends upon this trim being matched to wind speed by variations of wing-loading or aerofoil sections. Very light winds may necessitate circular flights into wind, a rather more complex subject. Some coverage of one method of flying this way is given in AEROMODELLER of April 1955.

We in Britain have been slow to indulge in this fascinating aspect of slope soaring. The availability

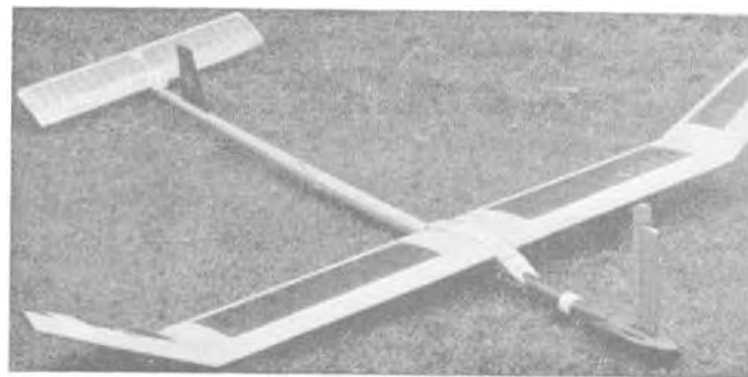


At left, the Italians await a turn to fly at the "Europa Cup" event on slopes 30 miles south of Lucerne in Switzerland. Next year's event will be in Germany, and Italy holds the '67 contest near Verona. Above is another view of the author's Koelliker Ko II which he has modified with extra 16 sq. in. tail and 15½ ins. added to rear fuselage.

of suitable bar magnets and of Continental expertise should be instrumental in overcoming this lethargy. (AEROMODELLER has published Championship designs in both magazines and Annual form).

Finally, I would like to pay tribute to Hans Gremmer, that originator of magnet steering in this form and the author of the first article on the subject printed in an English magazine. His cheerful and helpful correspondence and comments during the period of my first essays in the sport have been of inestimable help. I know he would feel amply rewarded if more British Modellers found enjoyments in the way he pioneered so ably, so why not try? If you can't run to superhet gear or hate waiting for a turn to fly your radio slope-soarer or even occasionally get tired of the flat monotony of airfields and yearn for the hills, this may be THE thing.

Author's first magnet model, winner of free flight soaring event at Ivinghoe Beacon on October 10th and the subject of much interest.



lower bearing. If you can obtain or spin suitable alloy containers the system appears very attractive. It may, however, not be quite so crashproof as the method described.

Models tend to follow A/2 practice with undercambered stabilisers and high aspect ratio wings: however, according to one source, the modeller matters most, competitions still being won by 7 or 8 year old models.

Flying

Let us now go out for an imaginary session with your new model.

It has already been trimmed for straight flight with the rudder secured centrally, (a rubber band around the fuselage and bearing against the rudder will do this), the bearings have been lubricated and the magnet swings freely.



Colouring and Markings
for scale models of the

THUNDERBOLT

suggested by R. C. Jones

THE P-47 "Thunderbolt" is well represented by the plastic kit manufacturers and without doubt the best of these is that to 1/48th scale produced by "Hawk" company of America to 1/48th scale. At the moment this is only available in their "multi-textured plated" finish which is rather too bright to look realistic, however this finish does provide a superb surface for enamel paints and the alternative parts



in this kit giving a choice of a "Razorback D" or "Bubble" version make this an attractive proposition for the modeller seeking a basis for a truly detailed model. Markings in this kit are of Major Glenn T. Eaglestone's Aircraft when Commander of the 345th Fighter Group 9th A.F. "Bubble" version, together with decals for a "Razorback" of the U.S.A.A.F. in the Burma theatre.

In 1/72nd scale "Frog" offer a "Razorback D" which is an excellent little kit, though some attention is required with file and sandpaper to obtain a genuine "razorback" effect on the upper rear fuselage sections and to remove the scored lines which indicate the position of the transfers. Also to 1/72nd scale is the Revell kit of the "Bubble D" which although very accurate in outline and detail suffers from an excess of "clydeside" sized rivets and panel detail. Markings in the latter kit being for the 82nd Fighter Squadron, 78th Fighter Group, 8th A.F.

Each of the above kits are suitable for the simple modifications that are necessary to make a "conversion" to all but the last of the "Thunderbolt" range, this being the P-47N which is virtually a totally



different aircraft. Camouflage applied to P47s from the early B C types through to the later "Ds" was almost invariably olive drab and medium grey undersides, the latter shade being almost identical to M.A.P. "Sea Grey Medium", the camouflage demarcation lines are clearly shown on our drawings, and a 4 in. "blending" line was common.

Prior to their departure for the U.K. in January 1943 the 56th F.G. flew P-47Bs in standard finish star insignia in four positions, camouflage demarcation being wavy style sweeping up sharply to meet the tailplane leading edge. The extreme forward panel on the cowling was red back as far as the first panel joint line, serial 15999 appeared in white across the

Above: the Hawk "Thunderbolt" to 1/48th scale made by Alec Gee with transfer markings provided for Major Glenn T. Eaglestone's aircraft. Photo below shows the actual machine with crewman on wing to guide the pilot, who has limited forward visibility. (IWM negative FRA 10214.) At left is the Revell kit model to 1/72nd scale of an aircraft in the famous 82nd Fighter Sqdn., 78th Group, based at Boxted, Essex.

fin, and number "24" was also in white forward of the fuselage insignia 18 in. high with this number repeated on each side of the cowling 9 in. high. Propellor hubs natural polished metal.

On arrival in the F.T.O. the "B" was still used for "working up" and early sorties over Europe—basic colouring was the same, but the fuselage insignia had a thin yellow outer surround added, and the cowling tailplane, fin and rudder, but NOT wings, had the white id bands painted on. Squadron codes were soon introduced and "IM-R" in white, with the serial 27970 in yellow across the fin was a typical 62nd Squadron aircraft. The colourful group id



markings appeared later on all 8th and 9th A.F. aircraft.

A natural metal finish P-47D "Razorback" of the 361st Fighter Group was seen with the codes "E9-D" in black, star and bar insignia, black identification bands around fin and rudder and tailplane, and the yellow cowling which together with the code "E9" indicates the 376th Fighter Squadron, serial 225969 in black across fin below i.d. stripe. This unit being used for penetration escort duties just prior to D-Day. An attractive model would be the P-47D "Razorback" flown by Captain Roddy U.S.A.A.F. 348th Fighter Group, 342nd Squadron of the 5th A.F. in Pacific area. This was olive drab and neutral grey with the entire vertical flying surfaces, fin and rudder in white, the serial appearing in yellow 276059 over a small o.d. panel. Star and bar insignia appeared in the usual positions and commencing at a point above the outlet panels in the fuselage sides and sweeping down and back again just aft of the outlet below the rear fuselage appeared two 3 in. wide white stripes 2 in. apart, also the entire cowling below the line of what would be the anti-dazzle panel paint on a natural metal aircraft was also white as was the propellor hub. Well forward of the fuselage insignia port and starboard appeared the i.d. code "H34" also in white 18 in. high, the "H" on the port side commencing directly beneath the rear panel of the cockpit glazing.

R.A.F. version

An R.A.F. Thunderbolt II (P-47D Bubble) was similarly finished to that of the 81st Squadron as drawn, codes however were "RS-U" in white, port and "U-RS" starboard, serial was 11D288 in black, usual white cowling and identification bands, azure blue roundel blue 18 in. diameter insignia in all six positions and just forward of the hinge line on the fin against the white band appeared the unit crest—a small Palm Tree in brown trunk, 6 dark green leaves sprouting from its top, all on an oval pale blue ground, the height of this being approximately 6 in. (See photograph on page 583.)

Another very attractive and little known aircraft was the P-47D (Bubble) flown by the Free French A.F. "GC Lafayette" 2nd Escadrille in 1945. These were overall natural metal, with black anti-dazzle panel fore and aft of the canopy, tapering to a needle point at the root of the fin. The forward cowling panels were red. Blue, white, red stripes appeared on the rudder just above the trim tab, these being the same size overall as the R.A.F. style fin flashes. Directly below the cockpit was a "Stork" emblem, white body, black trailing edge to wings, red bill and legs. The code was "squared off" "9" 18 in. high, followed by a "V" 24 in. high, then aft of the roundel an 18 in. high letter "Q", this being reversed on the starboard side i.e. "Q" aft of the roundel and "9V" forward of same, roundels were of the French style, with blue inner, white then red with a thin yellow surround to those on the fuselage sides. Serial 420925 appeared across the fin slightly below the line of the rudder stripes. Propellor hub was natural metal, black propellor blades with yellow tips.

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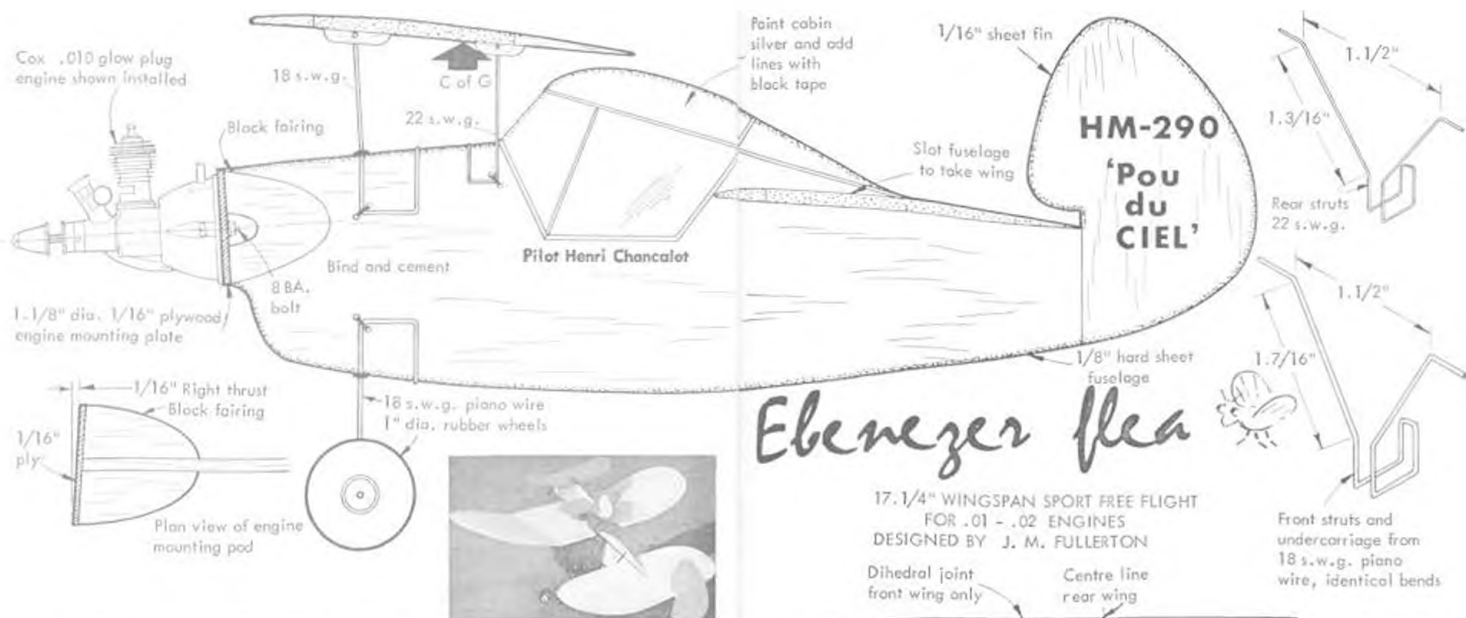
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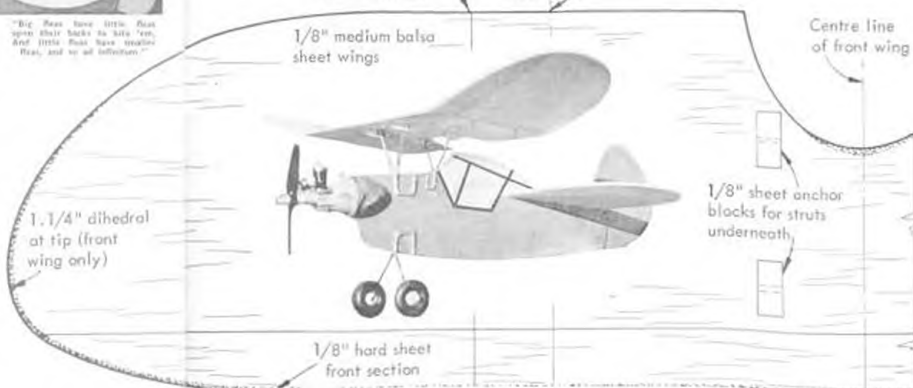


Ebenezer Flea

17. 1/4" WINGSPAN SPORT FREE FLIGHT
FOR .01 - .02 ENGINES
DESIGNED BY J. M. FULLERTON

Dihedral joint
front wing only

Centre line
rear wing



Especially designed for modellers who just itch to try something different

PROBABLY the most intricate of the famous Flying Flea series, the H.M. 290 design was first released by Henri Mignet in 1946. A number have since been built by amateurs in various parts of the world, and with some modifications, the design is still current as the H.M. 360.

The wings of our model are each made from two pieces of 1/8 in. sheet, with a hard leading edge and lighter rear section. They are sandblasted to a flat bottomed airfoil section, and the tips of the front wing only are given a dihedral angle, the joint being strengthened with several coats of cement.

Take care bending the wire struts to ensure that your wing fits square and at the correct angle of incidence, which is 1/4 in. positive to a straight edge laid across the undersurface of the rear wing. Do not fix the rear strut to the fuselage until flight testing is completed. Hold it temporarily with a pin so that the wing angle may be trimmed by sliding the strut up or down on the fuselage as required.

Fleas are notoriously sensitive to the C.G. position, so when your model is completely assembled and painted, check to ensure that you get it balancing at the point shown, using nose or tail ballast as required.

The original had a strong left turn tendency under power, which was overcome by using right thrust as shown, and about 1/4 in. right rudder, to give a left turn on the climb and a right circle on the glide. The Cox .010 gives more than enough power for a model of this size, so for the first few flights at least, have the propeller reversed, with the curves (face) to the rear. To limit the motor run, the tank may be half filled by tilting the model on its side when fueling up.

Due to its compact layout, the Flea is almost indestructible, and a little perseverance should have you turning in fine flights. On the other hand, if it will fail to "Come up to scratch" (shoulder) you can always try Flea powder!

"Big Flea have little Flea
spare their backs to little Flea,
And little Flea have treasure
Flea, and so all together!"

THE L.S.D. OF RADIO CONTROL Vs FULL-SIZE FLYING

By ROGER ALTON

We're not suggesting our hobby is expensive but this is the controversial viewpoint of one who turned from Radio Control to full size gliding.

AEROMODELLING is a way of life, and having followed it from the age of eight, it was a momentous decision when I changed to full size flying. This decision was determined by the actual cost, and the results gained from the money spent.

I had a Space Control System, and I found that I was pending an average of 30s. per week on new propellers, aircraft repairs, etc.; 15s. per week on depreciation, and 15s. per week on fuel and plugs. The most flying I did was about 1½ hours per week, so that the costs work out thus:

Kit costs, repairs, propellers, etc.	£1	10	0	per week
Depreciation, radio, engines	15	0	per week	
Fuel and plugs	15	0	per week	

	£3	0	0
Cost of 1½ hours flying	£2	0	0 per hour

The Foresters M.F.C. (now Nottingham Radio Control Society) was then flying at Tollerton Aerodrome, and I had enquired about the cost of powered flying. This was £5 15s. 0d. for a Chipmunk or £3 10s. 0d. for an Auster, both per hour—obviously very much more expensive than my modelling. Then I met a Tiger Moth owner, who told me of a Gliding Club at Swinderby, Lincs., so I went to have a look and enquire the cost.

Gliding is an aeromodeller's sport. Most of the gliders in current use are built like a radio control model, the wings being partly plywood covered, the remainder with linen and then doped overall. Being lightly built (4 cwt. unladen for a 50 ft. span glider), minor damage is suffered occasionally, and the aeromodeller's "building urge" is entirely satisfied by helping with this repair work. I find great satisfaction in repairing a glider and then flying it. My first solo was delayed for two weeks because someone had "bounced" the Tutor, and I spent over 15 hours in the repair and rigging section prior to my soloing.

Well-known gliding aeromodellers include Derek Piggott, formerly C.F.I. at Lasham Gliding Centre; Peter Russell, and Henri Stouffs, of Belgium, the latter representing his country in the World Gliding Championships at R.A.F. South Cerney this year.

Now for the cost of gliding, or rather the lack of cost. The average aeromodeller, with his knowledge of the effects of the control surfaces, should be able to go solo after 30-40 launches in the 2-seater glider. These launches cost 4s. each at Swinderby, for about 5 minutes' duration. This makes a cost to solo standard of 18, with 3½ hours flying time. This time could be increased for no extra cost, by thermal soaring, since the launch fee pays for the first 10 minutes flying. Soaring is not essential at this pre-solo stage, since circuit planning and landing practice are the major requirements. The first and second solo flights qualify for A. & B. Gliding Certificates.

After 30 solo launches in the training glider, the new pilot is becoming interested in soaring, and at this stage transfers to a more advanced single seat Grunau or Eon Baby. In this, he should get his "C" Certificate fairly soon, and possibly his "Silver C" height. This will represent the first year's gliding. The cost, therefore, is as follows:

Club membership	£8	0	0	per year
Cost to Solo standard	£8	0	0	for 3½ hrs.
Cost of Solo flying at 24s. per hr.	£19	16	0	for 16½ hrs.
	£36	4	0	for 20 hrs.

George E. Burton, once a keen A/2 glider flier when with the Outlaws (Cannock) club, was in the British team competing at the World Gliding Championships, R.A.F., South Cerney, in June. Top scoring Briton, George placed a creditable fifth in the Standard Class, flying a Dart 15. At right is Derek Piggott, member of Croydon MAC for years, was CFI at Lasham, pilot in the "Mag. Men" film, now flying WW 1 replicas for the "Blue Max" in Ireland and a highly esteemed aerobatic pilot.





Rudolf Linder, only modeller ever to win the coveted A/2 Glider Championships twice in succession (1954 and 1955) and a German designer whose work is widely used in present day models. Co-designer of the remarkable plastic and balsa "Phoebus" made by Bolkow, Rudi was placed eighth in the Standard Class of the last World Gliding Championships with a strap-on tailwheel. At right is Belgian Henri Stouffs, noted European Control-line Champion in Stunt and also a team race winner and speed flier. Champion Glider pilot in Belgium, Henri was in the National Team at the World Championships, and placed eleventh in the Open Class, flying a Ka-6R.



This represents a cost of just over 36s. per hour.

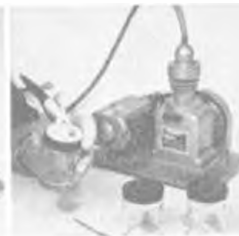
The logical sequence to this is to join with two or three others to form a syndicate to operate one's own glider. This will involve a capital outlay of

£250 each and £30 per annum in upkeep (insurance, C. of A., etc.). This applies to my Olympia 2B trailer, which is an ideal first step in private ownership. With your own aircraft one pays for the launch alone, so that upkeep can be offset against soaring time. Assuming 20 hours flying per year, and 4s. per launch, this is still below 40s. per hour.

Finally, my own experience, both in aeromodelling and gliding, has shown me that, unless personally airborne, the sense of freedom and exhilaration cannot be equalled. The decision to turn your tail to your gliding site, and set off to an unknown landing field, ranks, to my mind, amongst the major thrills of our fully explored and "antiseptic" world.



Something for the workshop at Christmas?



We recall our envy on visiting an American Air Force Officer's home in this country and seeing him demonstrate "instant soldering" on a 12 s.w.g. undercarriage leg. He was using a pistol grip "dual heat" type soldering gun with automatically fed core solder, and a job that takes minutes with traditional irons was completed quicker than the time it takes to read this sentence! Now the Weller Electric Corp., of the USA and Canada, are exporting through their Sales and Service department at Horsham, Sussex, a similar instrument suitable for all aeromodelling jobs. It comes in a very neat plastic case with carrying handle and expanded polystyrene packing that locates cleaning brush, job positioning probe, spare bits, spanner, solder, the gun and its flex so that all can be stacked away neatly when not in use... and the cost is £3 12s. 6d. You'll need one of those shaving plug adaptors for the flat pin plug, and we thoroughly advise extra purchase of the smoothing and cutting tools, otherwise the full advantages of the instrument are not realised. For just as one can "instant solder", so can the tool be used to mould plastic with the smoother, or weld plastic parts, or cut styrene (including expanded polystyrene) like a knife through soft butter using the cutter tip.

The 3302 Weller gun (above) does not have auto feed; but that is no handicap as it allows a better measure of control for some modelling tasks. As the trigger is squeezed it connects the 240 volt circuit to the copper element and within seconds the tip is hot enough to transfer solder to the job. Additionally, the trigger has a two-stage action with a slight "click" distinction to indicate two degrees of heat. Ideally suited to dab soldering of radio components, it's a time saver that will earn its keep in any active workshop and comes with a one-year guarantee.

Practically every model maker wants to have a spray gun and then discovers that the compressor needs a pressure

reservoir, which needs a gauge and a safety valve and a water trap and to do justice, a model maker's spray gun of the De Vilbiss MP type. This costs quite an amount and also needs space on a proper mounting board. Answer to the problems of space and cost is found in the Miller "Atlas" spray unit now distributed by Ripmax as the "Maxi-Spray and Shading Brush" for a combined price of 116 9s. 3d (above right).

This is a unit known as the constant bleed type, where the compressor is free running and delivers a high pressure to the open end of a rubber supply tube. No reservoir is needed, and when the flow of pressure is diverted through a jet, it builds up to approximately 30 lbs per sq. inch to provide adequate force for the kind of fluids we employ to atomise, e.g., dopes, polyurethane, epoxy paints and enamel. As sold through general sources, the Miller unit has a metal syphon gun with trigger operation (above left). This tends to give a splatter, and is more suited to domestic work so the "Maxi-Spray" has a Miller Shading Brush of the type used by artists for finer work. Here, the forefinger is the controller, and acts as an on-off valve over the constant air bleed orifice. The effect is good when properly adjusted, and a choice of jet nozzles permits a range of density. We understand that it will cope with anything up to a multi-channel R.C. model to give a professional style finish. Having been spoiled for more years than we can remember by the De Vilbiss MP gun and all its paraphernalia, we were initially sceptical when this little 6 1/2 lb unit came up for test. Happily, our suspicions were totally unfounded and now that we have seen a renowned scale modeller adapt his MP gun to the Miller compressor (£11 17s. separate from spray gun) by simply cutting a finger or thumb controlled air bleed hole in the feed tube we are distinctly envious that he enjoys silent operation indoors as distinct from our banishment to the garden shed.

ROUND THE RALLIES

.....

An end of the season
report of interest-
ing model meetings.

R.A.F. Champs

Quality, certainly not quantity was the feature of this year's Bebdon meeting for the R.A.F. M.A.A. Champs. on October 2 - 3rd. Overseas postings of many keen modellers, and a general fall of interest in all but free-flight and radio led to low entries. Conditions were practically perfect, and provided numerous max's though strangely enough, no full scores were returned. Sgt. Reith of Boscombe Down proved to be the power king, winning both Open and F.A.I. events and Sgt. Hadland from Brize Norton similarly captured the lead in both Open and A/2 glider classes. But it was Cpl. Harvey (Brize Norton) who topped the Victor Ludorum points with firsts in A/1 Glider, 1/4 A Power, Wakefield the hectic Scramble, and a second in Open rubber.

Only one entrant in stunt and speed, three in F.A.I. Team Race and none in the once very popular 1/4 A Team Race is an indication of the control line support.

Radio drew as big, or even bigger entry than ever and the introduction of a Pylon race gave Cpl. Biddlecombe (Thorney Island) another win after he had topped the multi-stunt event. Here, the standards of single channel began to show improvement, in particular Sgt. Rimmer's (Topcliffe) winning flight with a *Super Sixty* type showed what can be done in the way of pattern flying on rudder only.

Transport Command won the honours and R.A.F. Brize Norton became top aeromodelling Station.

On Ivinghoe Slopes

Oct 3rd was the day for the Luton and D.M.A.S. Annual Slope Soaring rally at the picturesque 'Beacon' and with the wind blowing into the bowl with tricky spillage to catch the unwary, it became the best supported and most interesting rally of its type yet held in the South. Entries were high in number and quality (See picture report in December R.C.M. & E.) with many new faces appearing on the scene. Trevor Faulkner really demonstrated that he knows what he is talking about in this issue by winning the free flight event with the only Vane—or Magnet—Steered entry, beating last year's winner Don Edwards (St. Albans) who relies on sweep back. All

the way across the sea from the Isle of Wight K.G. Humber won Multi, leading British free flight Champion Dick Godden (who also had a novel 46" 13 1/2 oz. simple single control model that shows a new approach to slope work). The Engel L-100 Kit was present in several examples and what a beauty it is for realism. Sid Sutherland's (West Essex) was having a trim session and George Fountain's from Luton was being worked up after the event. Expanded polystyrene wings, sheet wings, large monsters and tiddlers all went to make a great scene which we venture to predict will become larger year by year.

Halton Capers.

The selectors pin finally settled upon October 10th for the Northern Heights Gala at R.A.F. Halton. Perhaps it was the indecision on the date or maybe the lateness in the season but anyway there were fewer modellers in the field this time—and if anything, a larger crowd of on-lookers. As ever, it was a day with clear skies and wind that could only just be called brisk. Free Flight recovery from the small field was a hazard, cemetery, reservoir, orchard and private estates taking their toll. Some vowed they'd not fly there again, but we've heard it before—and keen modellers always return to the N.H. meeting because of its unique friendly atmosphere. It's always a place for the unusual and even R/C Spot landing was no exception. When we witnessed an all-sheet "flying banjo" darting hither and thither then making a fluttering descent to the spot we really did know we were at Northern Heights Gala! Roger Hargreaves with Citizen Ship and Denis Thumpston (Grundig) were able to fly simultaneously with their superhets and succeeded in placing 1st and 2nd in a large entry! Den's model was entering its second thousand flights. Built to test Grundig gear, the semi-scale camouflaged *Twin Fin* uses an AM 25 and 4 channels on Ailerons and Elevators but still execute a remarkable pattern. Max Coote was proving he knows what he sells by flying Citizen Ship proportional to 4th place and his young son did well when he borrowed dad's gear and *Keil Kraft Super 60*.

Combat was ding-dong from start to finish. One finds it difficult to understand how winners are defined when standards are so close, and the pace is so fast. In absolute contrast Chas Crawley of Mill Hill produced a flash-

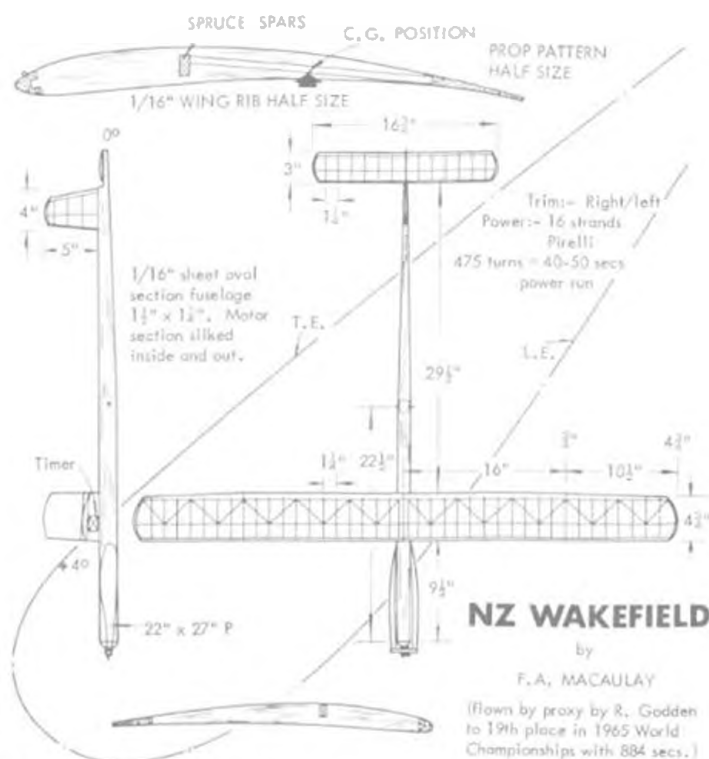
1. Chas. Crawley, of Mill Hill, discovered this compressed air unit in a junk shop. Weighs 9 oz. with wire bound cylinder. Using modern design of wing and tail, plus standard Kell Kraft plastic prop, it flew at Northern Heights Gala as seen in 2. 3 is "Push Moth" with designer Charles Boddington, full size plans in Dec. RCM & E. 4. Spot landing R/C winner at N. Heights, Den Thumpston with 65 in., 3 lb., AM25 powered "Twin Fin" using Grundig radio on elevator and ailerons, Bellmatic servos. 5. John O'Donnell collects the magnificent gold trophy, the "Queen Elizabeth" Cup at Halton. 6. "Flying Banjo" is Ken Merryfield's Cox .049 powered 1 1/2 lb. R/C entry at Halton with MacGregor gear and Conquest Esc. Ken is Secretary of Rotary Hose M.R.C. from W. Hordean, Essex. 7, rounding up Northern Heights pics is power winner George Fuller with "E type Dixielander". (We note that similar model won U.S. Nats. open event). 8. Andrew Longhurst was winner of Combat at the Wanstead Rally with own design wing and PAW .19D engine. 9. Aeromodeller staff man John Franklin won T/R at same rally with racing green Eta 15 model. 10. at the RAFMAA Championships Fit. Lt. Lambert, from RAF Farnborough, produced magnificent model of first plane he flew in, an Irish "Tiger Moth". Control line, with Merco 35 it flew well. Detail extends to corrugated centre section tank (covered with car mat!) 11. Sgt. Tony Boonham, from RAF Lyneham, used a "Thermalnose" A/2, and in 12 Cpl. Terence Arthur, from RAF Boscombe Down, a "Nig Nog" in power (Eta 29) to show Aeromodeller design popularity with the Royal Air Force. Note landing skid under silencer. 13. At Ivinghoe, Dick Godden produced 46 in. (6 in. chord) 13 1/2 oz. single channel soarer which rode the breeze like the big 'uns. 14. Engel L-100 kit makes into a fine semi-scale soarer, George Fountain's (Luton) all orange model at Ivinghoe RCS gear, Climax servos on rudder, elevator and trim.



back from the past with a compressed air model that flew at steady pace on 150 bicycle pumpfulls of free air a chance here for an enterprising manufacturer in engineering and plastics!

1965 CRAWLEY RALLY

The weather was extremely pleasant for the 1965 Crawley Rally on September 19th at G. Buckswood Farm. All three minute flights landed well within the Rally area and there were no retrieving problems. Best time to fly was obviously before 3.0 p.m., after this the air seemed to go generally dead. This year with F.A.I. Power, Rubber and Glider events instead of Open the entries proved quite good, except Power, which attracted only four entries. This was won by Dave Welch (Brighton) with a three max. score followed by clubmate, John West, who dropped ten seconds on his last flight. Rubber, with eleven entries was keenly fought, but the winner Alan Armes (Hayes) with his model fresh from the World Champs. made a perfect score to beat second man Wells, (Hornchurch) by 18 seconds. The largest entry of the day was Glider with twenty six competitors. This event required a fly-off for first place. J. Cartwright (Bristol and West) towed up far too fast and snapped a wing to score just thirty seconds. H. Torode a Country member then towed oil. Six minutes later his model went O . . . O.S. over the housing estate. Why he needed this much to beat thirty secs. appears a mystery! 4A Power entries were a little low at seven as was Ken Smith's (Croydon) winning time of seven min: seventeen secs. Chuck Glider had a large entry of fourteen, with all attacking in earnest. None of it was the 'chuck it and hope' type, tactical flying being the order of the day. H. Torode made this his second win with a three flight total of 108 secs., closely followed by Jack Darby (Crawley) who beat two others in a second place fly-off. Over at the Combat circle, this event was taken at a leisurely pace, with the deciding final bout of twenty six entrants continuing after the rest of the Rally had finished. The most popular models were *Early Bird* and *Dominator* both from (Outlaws). During the day there was one mishap when Pete 'Smiff' the European Champ. had a model hit him. Result was two stitches in the leg, but he flew later. The only member from Northwood was Stoo Holland. He brought back the trophy as he always has, but this year did not take it home again. Neil Tidey (Worthing Bald Eagles) actually made his first-ever Rally win over old rival, Sibbald (Sidcup) who reached the final by beating the European Champ. The Radio Spot landing event was very popular with the competitors and spectators alike. Large crowds were in attendance to see P. Williams (Richmond) win with a distance of just two ft nine ins.



WANSTEAD RALLY

Held as before, at the Hayes Control Line Circuit, the second Wanstead rally was rather poorly supported in combat due to a clash of dates with Crawley, who also had a similar event on September 19th. F.A.I. Team Racing attracted 16 entries, and all but one returned a heat time. Balch/King (Feltham/Hayes) were fastest at 4.43 with their Oliver Tiger powered *Trident II* having a very low aspect ratio wing with built-in leadout connection in a wing hatch. Langworth/Carvosso (West Essex) were second fastest at 4.56.4 also with an Oliver Tiger. They used standard Keil Kraft Fuel and home made twin outlet silencers and a large expansion manifold to give 45 laps at 92 m.p.h. when on tune. The final was extremely close with Franklin/Ives (Wanstead) the winners by a mere 2.4 seconds over Dave Balch. Franklin Ives were only making 35 laps but at 92 m.p.h., Dave Balch was nearly as fast but King missed a catch and with it, the race. Langworth/Carvosso lost settings and retired. Combat had 23 entries with 3 combaters fighting for top place after 20 bouts of a good standard due mainly to *Early Bird* popularity. In the semi-final of Mick Smith (Feltham/Hayes) versus Mick Reeves (West Essex) a mid-air collision started the excitement. Smith had to resort to his first model, already damaged in a previous heat, whilst Reeves flew his 2nd model for the reflight, and qualified through to the final, to fly against Andrew Longhurst (Feltham/Hayes). Longhurst flew a P.A.W.-19D powered lightweight to notch up his second win in a row at Hayes. Reeves' *Early Bird* out-turned Longhurst's lightweight but was too fast, each time he went to cut, he overshot the streamer. Longhurst gained the only cut and won + 2 to -2.

Lt. Col. "Mike" McGuinn is the A.M.A. representative in G.B., stationed at Longmoor, Hants. While at the Newcastle Nationals he persuaded Charles Lutman to part with two vintage Supermarine S.6.B rubber model kits. Mike converted these to .049 control line Schneider racers and made a fine job of them as can be seen.



A typical scene at the renowned S. W. London flying site of Chobham Common shows the South Coast Gala rubber winner, John Oulds, giving a statuesque launch. Note the calm and relaxed atmosphere.

ROYAL FLYING CORPS SITE

Most important news of 1965 for North Kent Nomads is the use of a newly located flying site at Joyce Green, Nr Dartford. Rented from a farmer, the field is of special interest, as during World War I it was a Royal Flying Corps airfield. Thanks to hard work by their P.R.O. they have a mown area 50 yards square for radio flying, and unrestricted use of over 350 acres for free flight. The river Thames is adjacent to one side of the field, so the free flight boys have to watch the drift or they may as well have joined a *Sub Aqua* club! Inter-club contests this year resulted in the following wins: *Dance Trophy* multi radio F.A.I. pattern, Tony Martin (Merco 61 Taurus). Both second and third places flew Merco's and Taurus's as well. *Wickens* (Rubber), Ray Parker. *Rotarian* (Glider), John Giffen. *Ball* (Tailless), Bill Hubbard.

DANGER FLIERS

Bletchley Buckaneers recently suffered a fateful day at their flying site with two accidents that could have been very nasty, but luckily the damages were slight. C. Browning launched Derek Giles' 14 cc control liner, then walked right into it on its next lap taking the wings clean off and making his arm a bit sore. It was lucky the model was not a foot higher or it would have struck him in the face. Second accident occurred when a radio model went out of control and struck the unfortunate C. Browning's car, which suffered a nasty dent and a broken mirror. Pilot at the time was none other than the same Derek Giles, flying someone else's equipment. Cost of this expensive venture had to be shared equally by all three parties. Fly with care at all times is the obvious moral.

DONT COUNT MAXES

A competition with no maxes, that even the beginner has a chance of winning, this was the latest enterprise by Sheffield S.A. members in their inter-club contest series. For the benefit of other clubs the basic rules are listed and this could become a very popular event. 1) Four flights to be made. 2) The nearest total to 6 minutes wins. 3) No maximums, all flights to be timed to the ground. 4) Model must be of the same class for each flight and must be

flown under power or towed. These rules give a fair chance to all fliers and the juniors as long as they can read a watch and set a dethermaliser, should be on equal terms with all. The winner, Graham Freestone, grasped first place using a clockwork timer to make exactly six minutes. Ken Emmett, who used a fuse dethermaliser, exercised good judgement to take second place just one second over a perfect score.

George Michalski with much modified Taurus at North Kent Nomads' Radio Contest.

CLUB AND CONTEST NEWS

Recent flying displays

Glasgow Hornets have found an ideal flying site where noise is no problem at all! This is namely Glasgow's White City Stadium where they provide a demonstration immediately prior to evening speedway racing. During the first demonstration it was raining so hard that the speedway had to be cancelled, but the Hornets flew on regardless whilst everyone went home! The second demonstration was slightly drier, and flying of rat racers and combat models was carried out under the glare of floodlights to the background of the Top Ten tunes blaring over the loud speakers.

Cosmo A.C. went all floral on September 26th for the Hurst Horticultural Society's Flower Show at Hurst Place, Bexley, Kent. Restricted to a 30 foot line length, they still managed to fly their 2.5 and 5 cc models and thrilled the crowds with balloon bursting and combat.

East Lancashire M.A.C. have passed over their period of inactivity and now have 45 members who helped in the Colne Carnival with a static show of two *Lockheed Lightnings*, *Cessna 172*, *Concord*, *Cosmo Bird Box*, *Rolling Stones*, also *Combat* and *Wakefield* models. During the afternoon demonstrations of combat were given and the two *Lightnings* were flown, this creating plenty of spectator interest. Famous actor Richard Todd opened the show, and the Mayor and Mayoress of Colne were in attendance. The local press gave them a good illustrated report.

Chayton M.A.C., from Newcastle Under Lyme, Staffs, recently put on a *Magnificent Men and their Flying Machines* display in the foyer of the Odeon Cinema in conjunction with Five Towns M.A.C. Many models were constructed specifically for the show and these were of the film subjects. Also several other scale jobs, including a *Newport 17* and *Pfalz D III*, attracted many filmgoers after the show, so creating valuable publicity.

Contest Calendar

- | | |
|---------|--|
| Nov. 28 | Roxcombe Down F.A.I. Rally, Everleigh Dropping Zone, North Tidworth, F.A.I. Power A.R., Wakefield. Entry on day |
| Dec. 4 | Brentwood Indoor Contest, Brentwood Congregational Church Hall, South St., Brentwood. Open Microfilm, Open Tissue, R.T.P. Speed, Duration and Team Race (50 laps). Starts 2.15 p.m. Hall 60 ft. long x 30 ft wide x 24 ft high |
| Dec. 5 | Crawley Winter Rally, Chobham Common Coupe d'Hiver, A.I. Glider, and Chuck Glider |
| Dec. 26 | Woking D.M.A.C. Gala, Chobham Common. Open R/G/P Coupe d'Hiver and Chuck Glider. |



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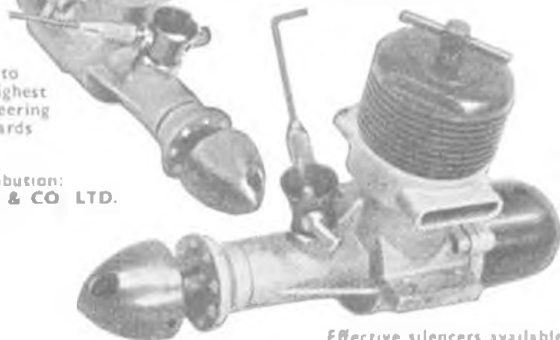
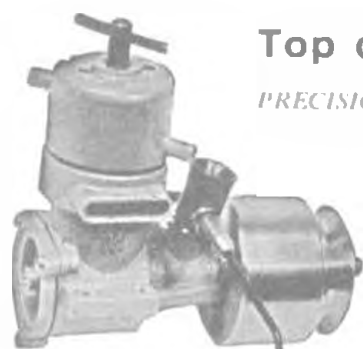
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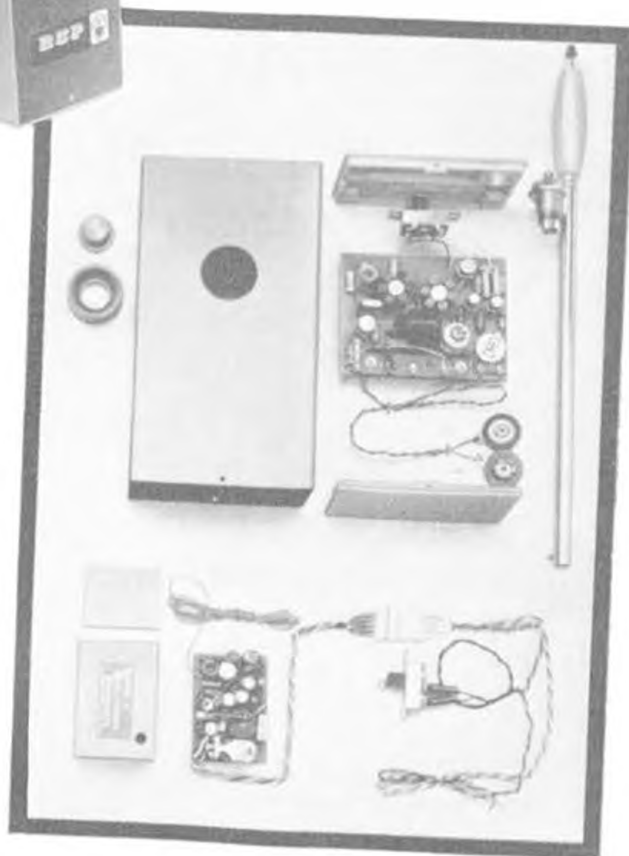
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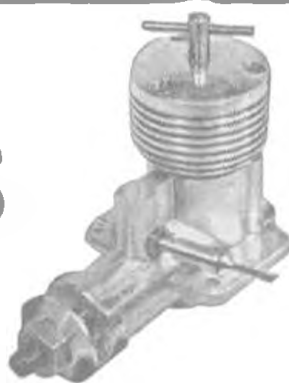
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