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FEBRUARY 1968

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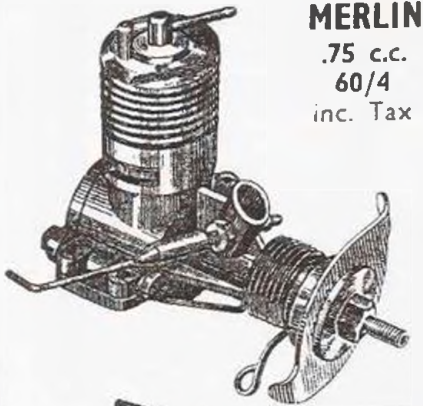


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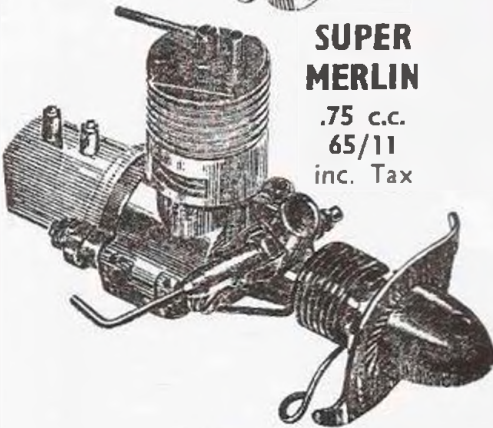
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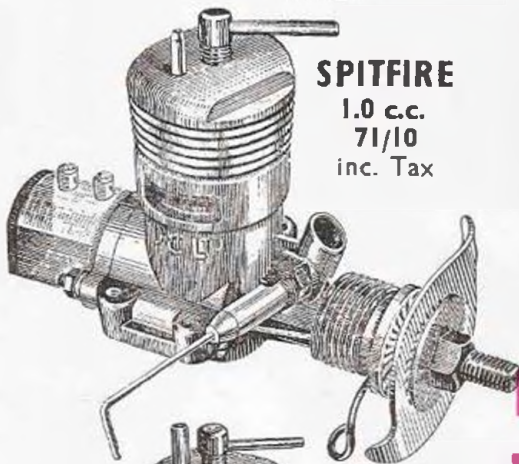
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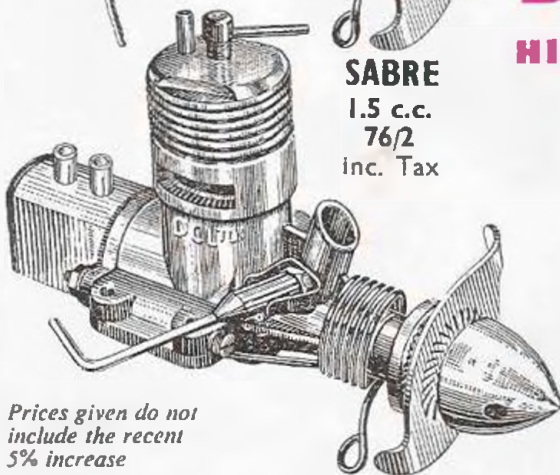
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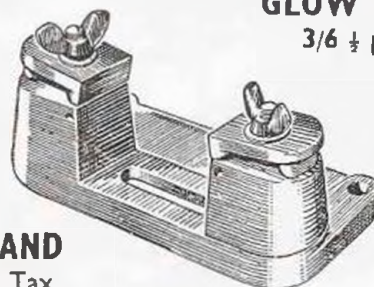
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February 1968

VOLUME XXXIII No. 385

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EDITOR **R. G. MOULTON**

Advertisement Manager **ROLAND SUTTON**

COMMENT

Life is one long series of comparisons and criticisms. It is said that critical comment is a sign of lively interest, but unless the views expressed are in some way constructive, such words are quickly brought to nought by deaf ears. Editors are frequent targets and they have to cultivate a sort of reverse thrust ear-lid if only to sift the positive from the negative. There is no useful purpose served in writing to say that a magazine does not satisfy one's interest if those interests are not defined. On that score, the content of Aeromodeller is constantly matched to trends best expressed in surveys of opinion and through contact with active modellers.

Thus we feel we understand, and live by, the vibrant demands, criticism and small grains of approval that punctuate our monthly tasks.

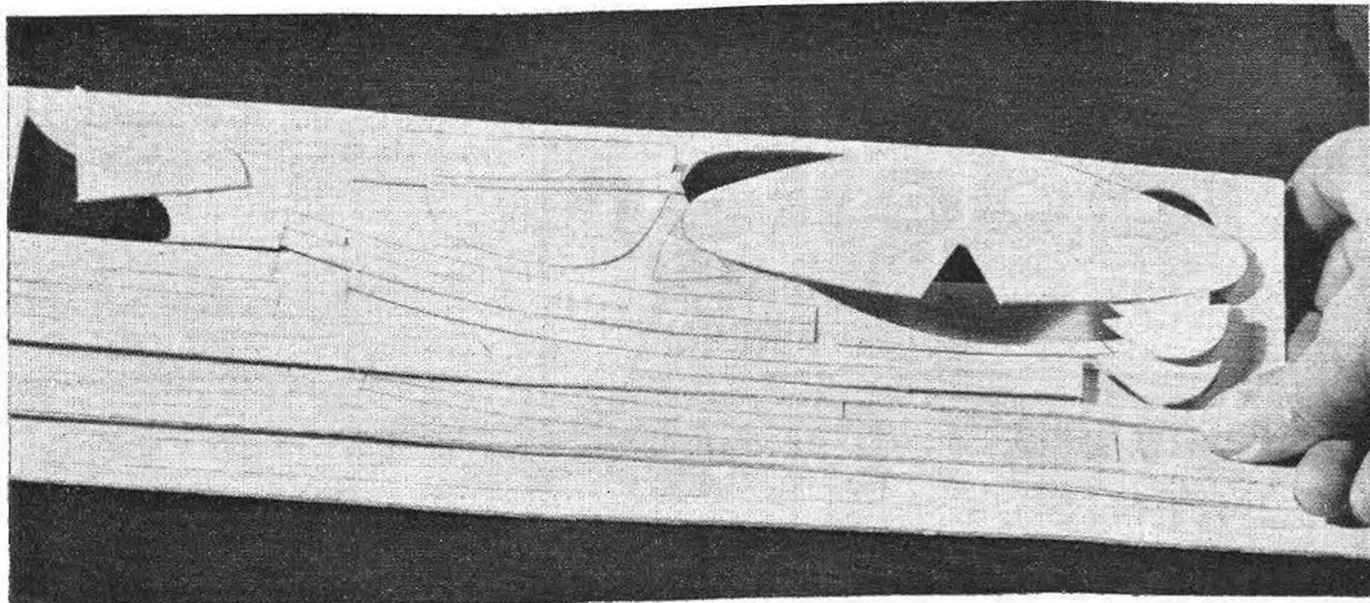
But another form of criticism has now become prevalent and in a way it defeats our comprehension. One might call it self destructive. Certainly it is International and is having its effect on the spirit of the hobby. It is the quest for rule quibbling and organisation baiting among the contest fraternity. One wonders if they have lost sight of the primary object of aeromodelling—to enjoy model flying. Certainly these heated arguments at club or Society level are serving one purpose and that is to alienate the "do it for fun" Sports flyer who rightly has no taste for such politics.

on the cover

Russia's Sukhoi Su 7M swept wing attack fighter roars off with JATO bottles blasting extra thrust. Artist Laurie Bagley captures the scene for our centre page feature this month.

next month

Not yet a contest class in Britain, and still enjoying its formative stage here is the art of magnet-steered slope soarers. First part of a series on this subject will introduce the techniques involved. Overseas aeromodelling will have prominence, following the editor's observations. The Taifun Sprint will be subject of the Engine Test. These and many other fine supporting features in March issue, on sale February 16.



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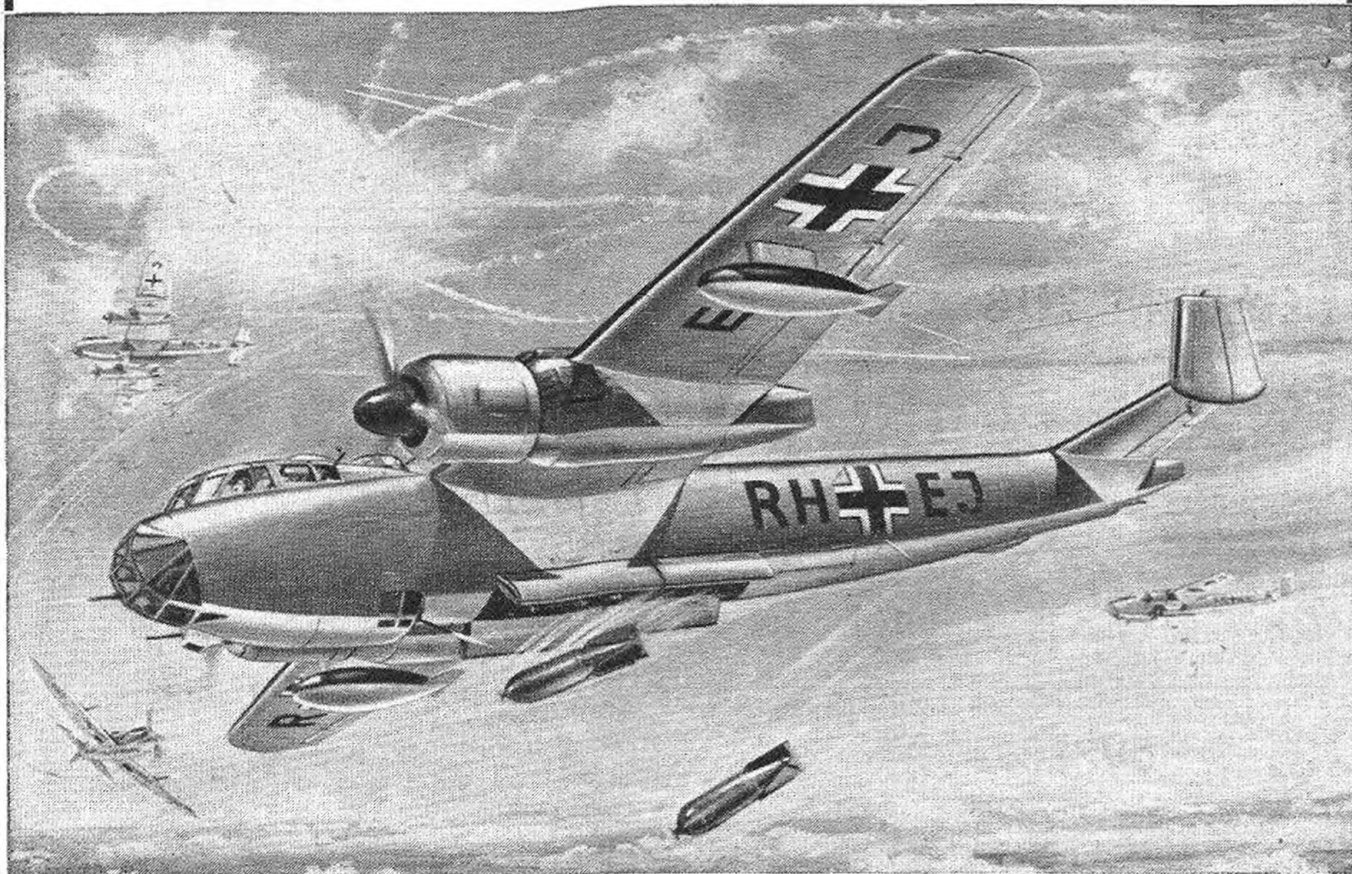
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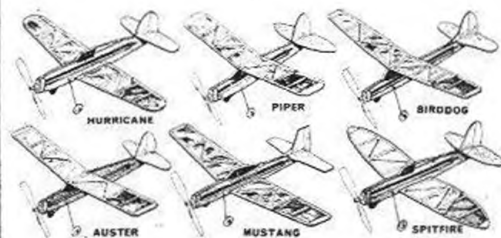
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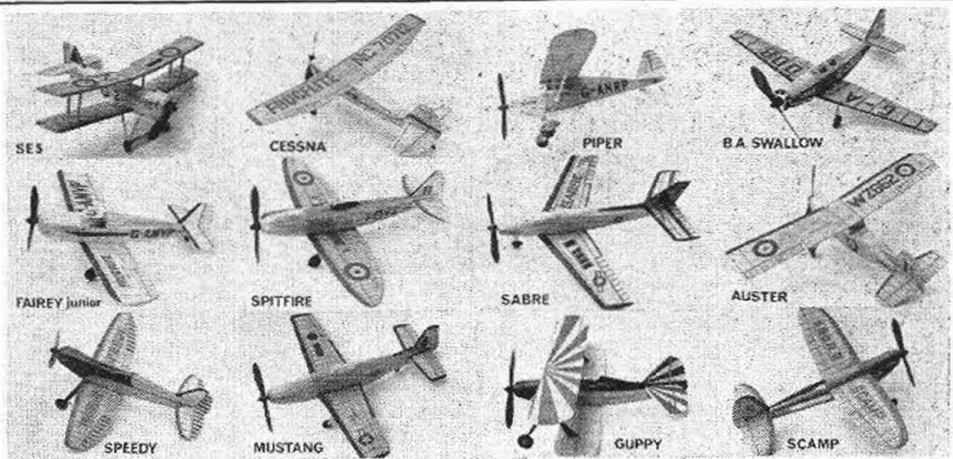
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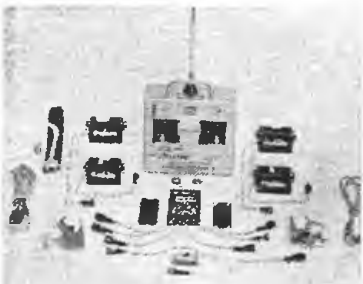


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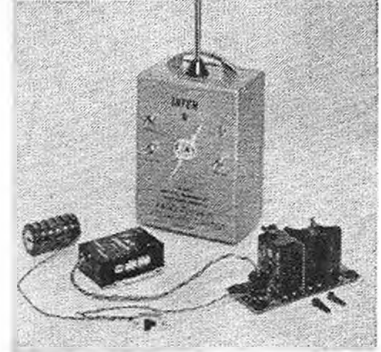


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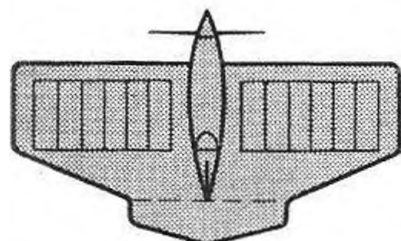
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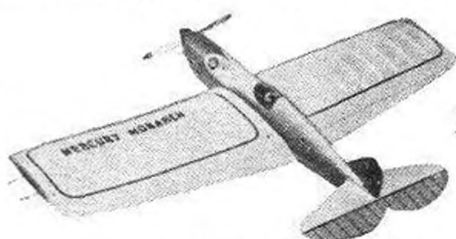
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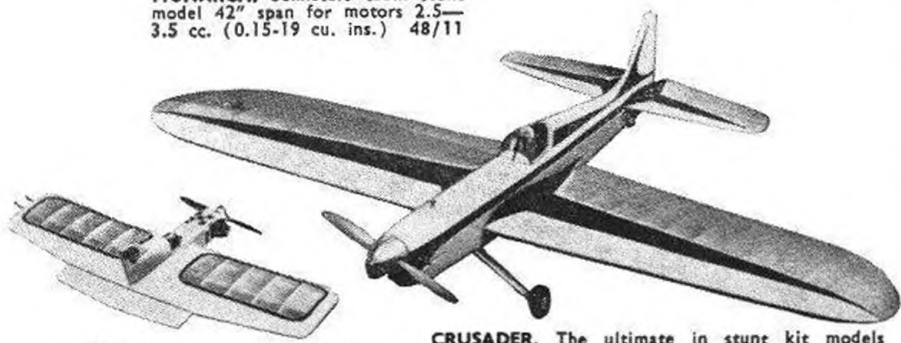
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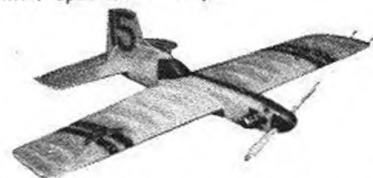


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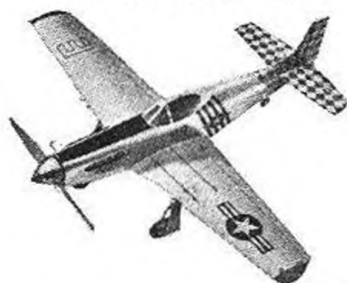
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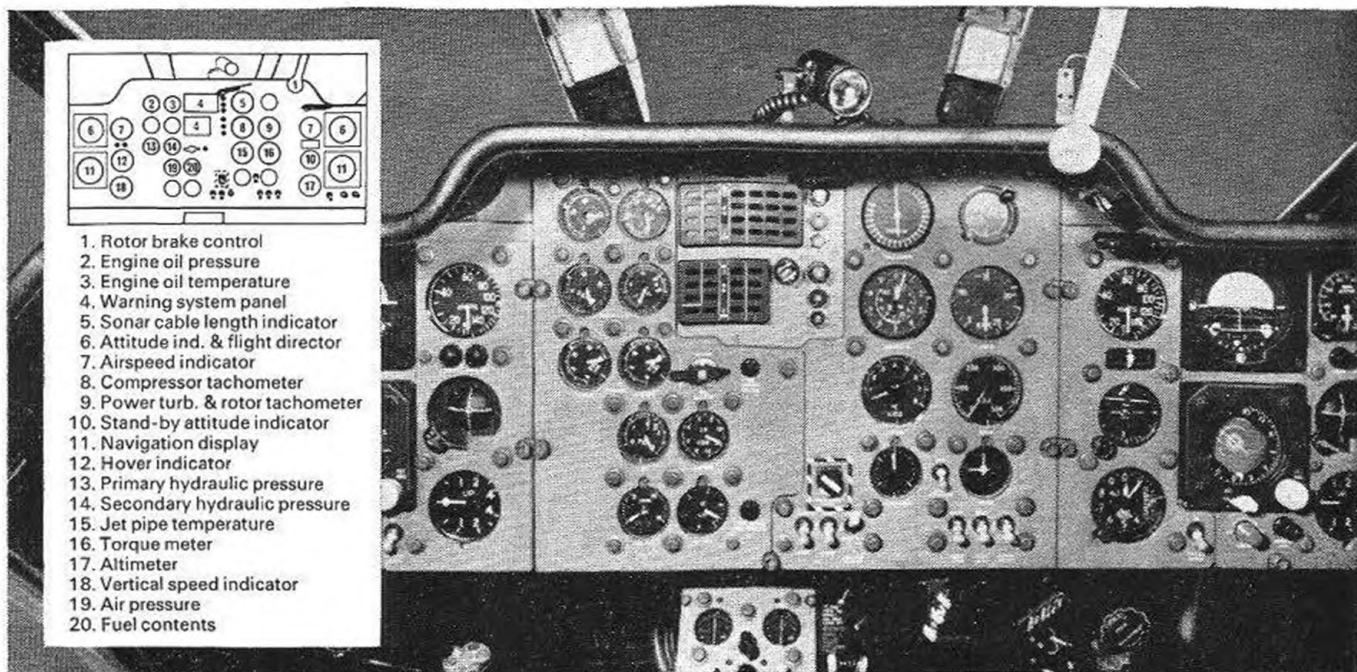
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This is the instrument panel in the cockpit of the Wessex.

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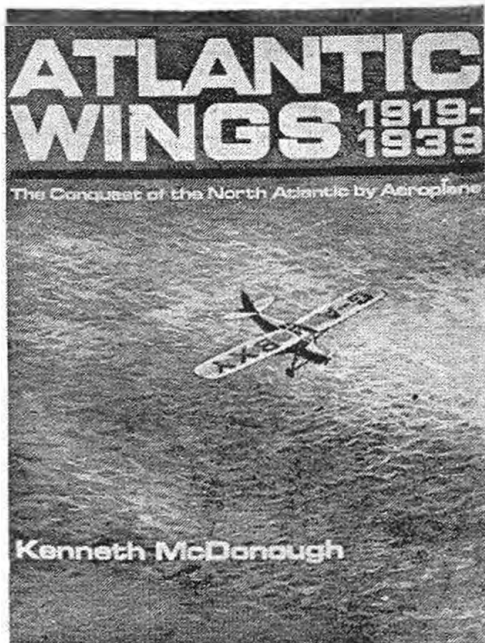
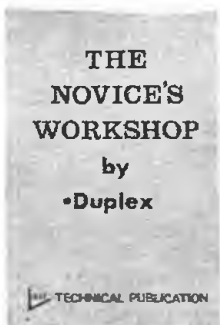
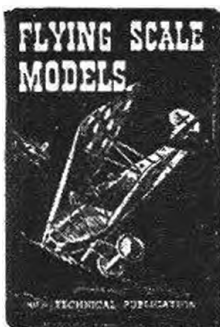


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The Royal Air Force



AEROMODELLER ANNUAL 1
1967/68

Articles include world record holder Wisniewski on Tuned Exhaust Pipes; other speedflying articles; Fuel Tanks for Control liners; Dr. Hawkins on Jap WW11 Colour Schemes; Prop Carving; Woodwork for Modellers; Flexwing flying models; plus drawings of the world's models of the year, including r/c, contest and sports power, Winter Cup, slope soarers, chuck gliders, helicopters, indoor. . . .
128 pages, size $8\frac{1}{2} \times 5\frac{1}{2}$ in. **10/6**

FLYING SCALE MODELS 2

All types of scale flying models are described in turn—glider, free-flight and control line: Jetex, Diesel, rubber or ducted-fan types. Much useful information is given on achieving highly realistic finishes and detailed parts, and there is a useful set of tables listing camouflage and insignia from 1914 up to date. Perhaps the most attractive feature is the very large number of illustrations including photographs, diagrams and scale plans. This is certainly a book to inspire the scale aeromodeller, whatever type he may choose; free-flight, control line, or radio.
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MODEL AERO ENGINE ENCYCLOPAEDIA 3

All the known World's Engines are detailed in tabular summary with principal dimensions and advised propellers. Three extensive chapters deal with initial operation of a first engine whether it be coil ignition, diesel or glowplug. Advanced data on fuels, horsepower, speed controls, silencers and tuning of racing engines. Fully updated and revised in new 1966 edition.
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METAL TURNING LATHES 4

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In *Metal Turning Lathes* the author has widened his scope, a comprehensive range of sizes of lathes is covered, and embraces all those used in general engineering from the smallest to about 6 in. centre height. This latest work embraces the latest practice and covers the evolution of the lathe, details a number of the latest models on

the market, and goes on to discuss elements of lathe design. Installation and driving equipment, accessory equipment and tools and tool holders are each given a chapter.
 $8\frac{1}{2} \times 5\frac{1}{2}$ in., 154 pages, 160 line drawings and photo-illustrations, 9 appendices. Bound in hard covers with linson cloth, gold blocked title on spine. Two-colour dust jacket. **25/-**

THE NOVICE'S WORKSHOP 5

This work, which originally appeared as a series of articles in *Model Engineer*, is designed to assist and instruct the newcomer to the craft in the all-important matters of planning and layout of the home workshop, the selection of handtools, their correct use, and, finally, shows the reader how to apply his newly-developed skill to the making of additional items for his workshop. The book then goes on to deal with the selection installation, maintenance, and practical uses of machine tools.
 $7\frac{1}{2} \times 4\frac{1}{2}$ in., 236 pages cartridge paper, 218 drawings, diagrams and illustrations. Bound in linson cloth, hard boards, two-colour dust jacket. **21/-**

POWER MODEL BOATS 6

V. E. Smeed
A welcome source of guidance and inspiration to the beginner, the dabbler and the not-so-expert. *Power Model Boats* guides the enthusiast happily through the pitfalls of his progress. Within its covers will be found a wealth of information on all forms of hull construction, materials in common

use, suitable tools; the different types of motor and their best employment; simple approach to radio control, boat fittings, couplings, shafts and propellers, superstructure, painting and finishing; unorthodox models, including submarines; and a valuable selection of "Do's and Don'ts".
 $8\frac{1}{2} \times 5\frac{1}{2}$ in., 128 pages. 250 photo-illustrations and line drawings. Bound in hard boards linson covered with gold foil title on spine **12/6**

ATLANTIC WINGS 1919-39 7

Kenneth McDonough
Man's greatest exploratory efforts have always centred upon the conquest of the Atlantic ocean. Author Ken McDonough traces the authentic history of North Atlantic aerial crossings. 1919-1939 with positively complete factual data and vivid description of each pioneer effort. The twenty full colour paintings have been produced with closest possible adherence to true colour tones of the real machines and are in themselves a treasure for collectors of all things historical in aviation. Appendices give tabular data on engines employed, in Atlantic bibliography and a fascinating tabular summary of all attempts and successful aerial crossings.
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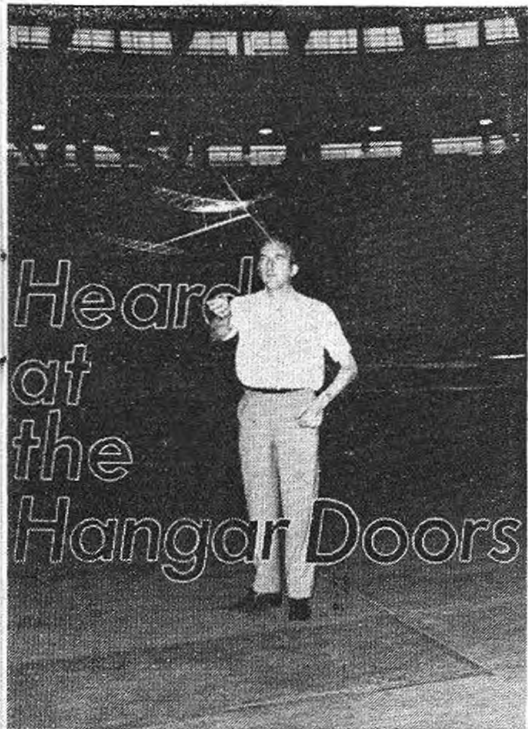
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FAR EAST aeromodelling activity now has a new meaning for your editor after a whirlwind tour of R.A.F. Stations in Singapore. Travel by V.C.10 is a time shrinking process and to be transported through 55 degrees of temperature, from winter to summer virtually overnight is an experience not easily forgotten. Nor too is that wonderful hospitality and fellow-feeling one was to discover among the Service and Civilian aeromodellers in Singapore. A complete account of the adventure, and several other side stories of R.A.F. Squadrons will appear in subsequent issues of this and other M.A.P. magazines. Enthusiasm, aided by remarkable climatic conditions, reaps huge rewards in terms of pleasant sport flying in those parts. Equipment is cheap by comparison and constant turnover produces the latest developments from the world's manufacturers practically as soon as announced. As a group one must envy the lads who fly each weekend at Changi and Tengah for they seem to have preserved a spirit of camaraderie that the tough field of competitions has overshadowed elsewhere. To find in one's film show audience modellers from three R.A.F. Stations, the Royal Navy and the Singaporeans all anxious and eager to learn of matters which are relatively commonplace to the European and to be taken aside on two occasions by Wing Commanders

who sought the latest news is indicative of a very healthy support for our hobby out there. More, much more, on this subject next month. . .

WELCOME this month to a new contributor, John W. R. Taylor, Editor of "Janes All the World's Aircraft" among many titles, is highly qualified to write upon the Russian Su-7MB attack fighter. This is John's first exclusive report for *Aeromodeller* and we're sure it's not to be the last. John is a regular contributor to our new companion magazine "MECCANO" with his "Air News" feature. Among recent revelations are his descriptions of the two seat Mustang development for COIN operation, and the Quant Russian home built scale fighter.

ANOTHER FILM with aeronautical fervour if not flavour now in the making is "Villa Rides", the story of Pancho Villa the Mexican Hero. Charles Boddington has been flying for the stunt scenes with Tiger Moths G-AHVV and 'HRC altered to simulate JN2D "Jennies". Watch for spectacular river-bed sequences leading up to a crash and landings on a runway of planks laid over a railway track!

PROGRESS with the Battle of Britain film models includes testing of a Messerschmitt Bf 109 (actually a model of the Spanish Ha 1109) and a Heinkel He III. Mass production is in full swing and new manufacturing methods utilising plastic techniques are likely to have an eventual effect on the whole prospect of model making for the film industry. There are fine opportunities for young modellers—see classifieds. Meanwhile the Plaster department of the Film Studios at Pinewood have produced the largest models of our acquaintance. How about 1:1 scale glass fibre 109s and 111s? Real aircraft were encased in plaster to produce the moulds for these static background "dummies" and the result is that even the finest scratches in the original doped surfaces show in the reproductions!

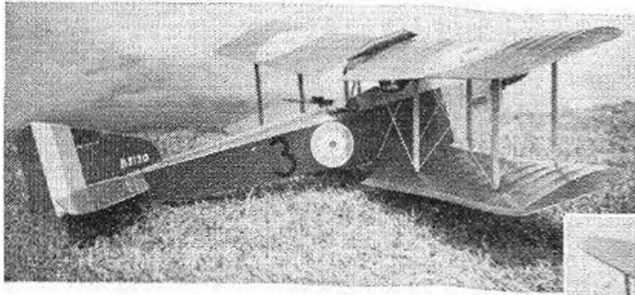
Heading: Egizio Corazza, leading Italian indoor flier, launches in the Palace of Sport at Rome, to be the venue for 1968 World Championships. Egizio placed 6th in the International event held last October. Right: Stars Robert Mitchum and Charles Bronson with Charles Boddington's "Jenny - Tiger" in Spain for filming of "Villa Rides"



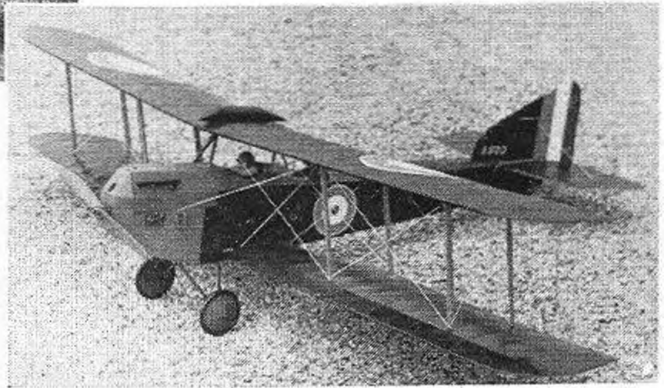
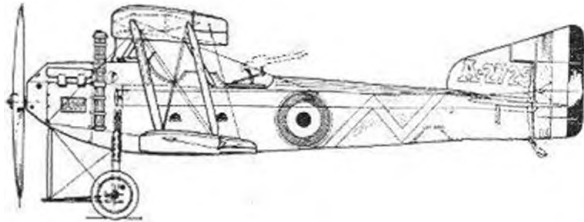
A MOVE to drop Monoline from the AMA contest rules programme in the U.S.A. was narrowly defeated on the basis that the membership had insufficient opportunity to get acquainted with the pros and cons of the proposition. Many leaders feel that a return to two line only would boost interest in speed flying, and there is a strong leaning to this view among International committee men.

FROM THE PRESS (1) The London edition of the Nationally circulated *Sunday Express* contained a pointed Reader's Letter on November 5th dealing with the recent sightings of U.F.O.'s. Mr. Chamberlain of Ashford in Middlesex suggested that in his youth he used to frighten the neighbourhood by sending up lanterns at night on a high flying kite and now with the current "Highly efficient art of Radio Control model aircraft, many things are possible", he went on to suggest that the present generation may well be trying to pull a few ancient legs.

FROM THE PRESS (2) The widely circulated American Hobby Supply Trade magazine *Craft, Model & Hobby Industry* for October 1967 carried an invited editorial from Bernie Cohen of Allied Hobbies. Under the headline "Somebody ought to be Ashamed of themselves" . . . Mr. Cohen made his case for the apparent decline of interest amongst American model engine manufacturers to sustain their market. He ran through the manufacturers one by one, described the volume of Italian and Japanese imports now virtually commanding the engine field in the U.S.A., and in conclusion he addressed the manufacturers "I say shame on you. You've lost a fine market to imports without putting up a fight." Hard words these; but we fear there is a little more to it than Mr. Cohen allows for.



ARMSTRONG WHITWORTH FK8 "BIG ACK"



A one twelfth scale model for the already popular R.E.8 and B.E.2e World War One recce types in the Aeromodeller Plans range

designed by G. Elsegood
to suit .75cc (.049 cu. in.) engines

IT WAS WITH surprise and delight that I opened the September 1966 *Aeromodeller* to find that the Aircraft Described was a model I was in the process of drawing out to a scale of 1 in. to 1 ft.—the F.K.8. It stated that the model should make a good subject for free flight and I can confirm that this is so. My model flies steadily and stably with a .75 diesel and has proved a worthwhile successor to my F.K.3 full size plan in *Model Aircraft* of December 1963. Incidentally, a number of people have seen the F.K.3 and the F.K.8 but no one has yet, correctly, identified them, but I am sure the September *Aeromodeller* will go a long way to rectifying this in the future.

Make up the two sides of the *fuselage* over the plan,

making sure the grain of the $\frac{1}{8}$ in. sheet is vertical. Remove from the plan and fit the formers starting with numbers six and eight. Fit the bearers and spacers, stringers and bind the 18 s.w.g. C/S struts to formers four and seven. Complete the C/S by cutting grooves in the $\frac{1}{8}$ in. ply rib to take the struts and bind them firmly with thread. Coat generously with Araldite and place the $\frac{1}{16}$ in. ply ribs in position on each side of the $\frac{1}{8}$ in. rib. Plank the decking with soft $\frac{3}{8}$ in. balsa. Shape the undercarriage from 16 s.w.g. wire and sew to formers six and eight, bind and solder the 14 s.w.g. wire in position. Make holes for the rubber bands retaining the lower wings, and the holes for the 16 s.w.g. wing dowels which are reinforced with $\frac{1}{8}$ in. ply. Fit the tail skid, ply gun



"One of these days you'll go too far Fanshawe."

ring and the $\frac{1}{8}$ in. sheet surrounding it, and below it, and finally fill in the bottom of the fuselage with $\frac{1}{8}$ in. sheet, the grain running across the fuselage. Cut out the cockpit and fit the gun mountings with Araldite to the gun ring. Do not fit the radiators, footholds, name plates and exhaust until all painting is complete. Fair all struts with $\frac{1}{8}$ in. sheet and sand to a streamline section and cover with two layers of heavyweight tissue cemented on.

Thread the buried spar carefully through the wing ribs making sure that the ply ribs are in the correct position. Then fit the remaining spars and the leading and trailing edges. Bind 16 s.w.g. tubes in position and the wing retaining hooks. One below each of the upper wings and projecting through the ply root ribs of the lower wings. Cut away the ribs to fit the No. 1 press studs which are sewn to 1 mm. ply and braced with $\frac{1}{8}$ in. sheet. Fit them so that they are flush with the lower surface of the upper wings and the top surface of the lower wings.

Make up tailplane and rudder from $\frac{1}{8}$ in. sheet and hinge with aluminium. The elevators were hinged on the original model but this is not necessary and may be omitted.

Finishing

Give the entire model two coats of grain filler and sand carefully and cover with heavyweight model span. Add yellow ochre water paints to the water used for shrinking the tissue, this will give the

correct creamy yellow colour, without adding the weight of colour dope. Give two or three coats of clear dope, then paint the upper surfaces of the wings and tail and the fuselage with matt green on khaki paint (Humbrol matt enamel is excellent). Paint the nose, the cowling and C/S struts with matt grey paint.

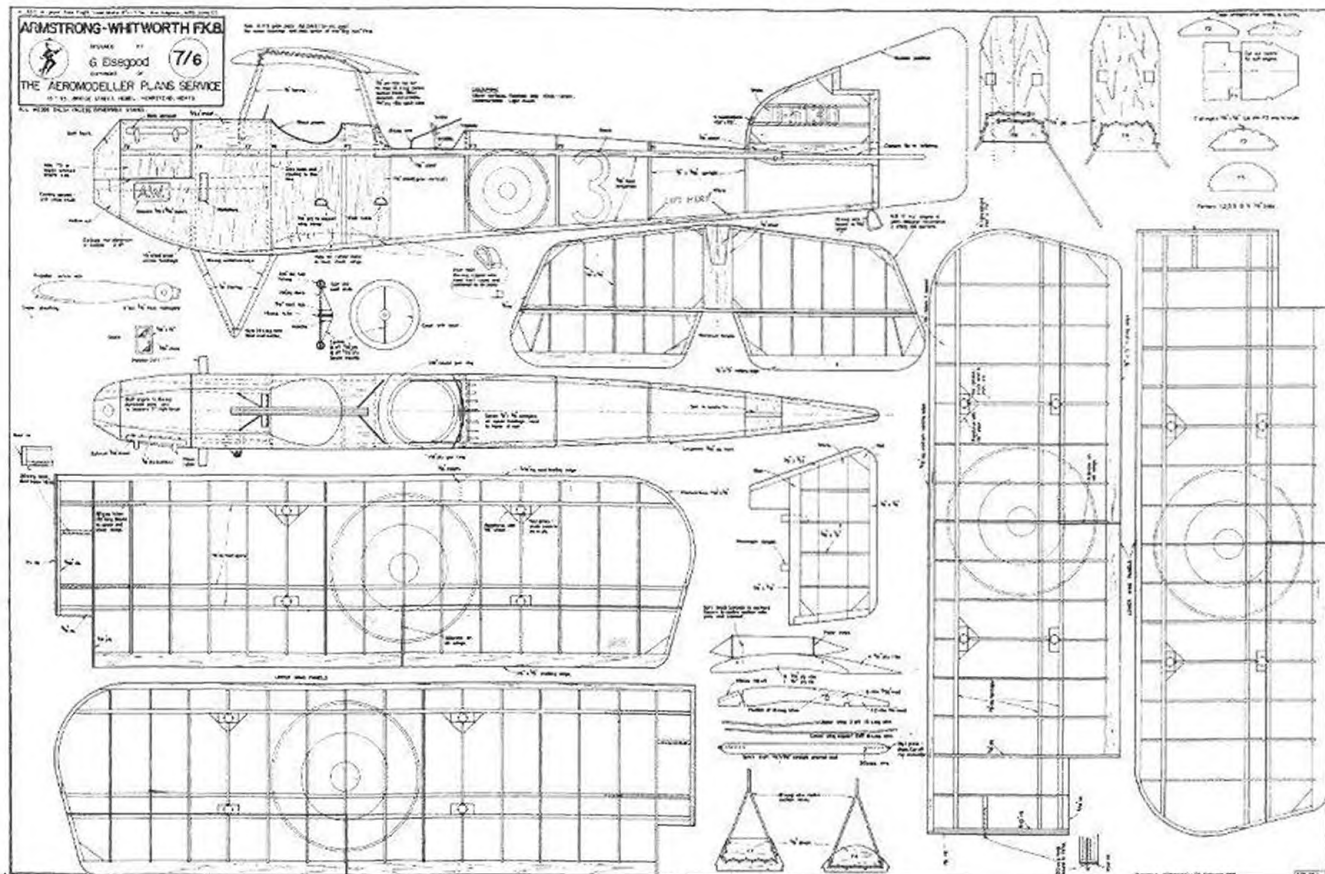
Secure the cowling with two No. 1 press studs. Bolt the engine to 16 s.w.g. aluminium plate and hold down with 4 small wood screws. Make up the struts as shown on the plan and give them three or four coats of clear dope. Refer to the September *Aeromodeller* if more detail is required.

Cement the fin to the tailplane after the tail has been aged against warping. Fit the wire dowels through the C/S and the fuselage, and hold the top wings securely with a rubber band round the hooks below the wing. The lower wing is held with a band through the fuselage. Fit the struts and brace them with shirring elastic tied to each strut. (I didn't do this and lost four struts when the model made a heavy landing in long grass).

Flying

Test glide over long grass and adjust the trim by adding weight to the nose or tail until a flat glide is obtained with no trace of a stall. Trim to fly to the left, gradually increase the power and the length of the motor run; although the climb is fairly slow with a .75 diesel, the glide is very good if the weight is kept down to about 15 oz.

FULL SIZE COPIES OF THIS 1/7th SCALE REPRODUCTION ARE AVAILABLE FROM AEROMODELLER PLANS SERVICE PRICE 8/- incl. POST. QUOTE PLAN FSP 960 WHEN ORDERING



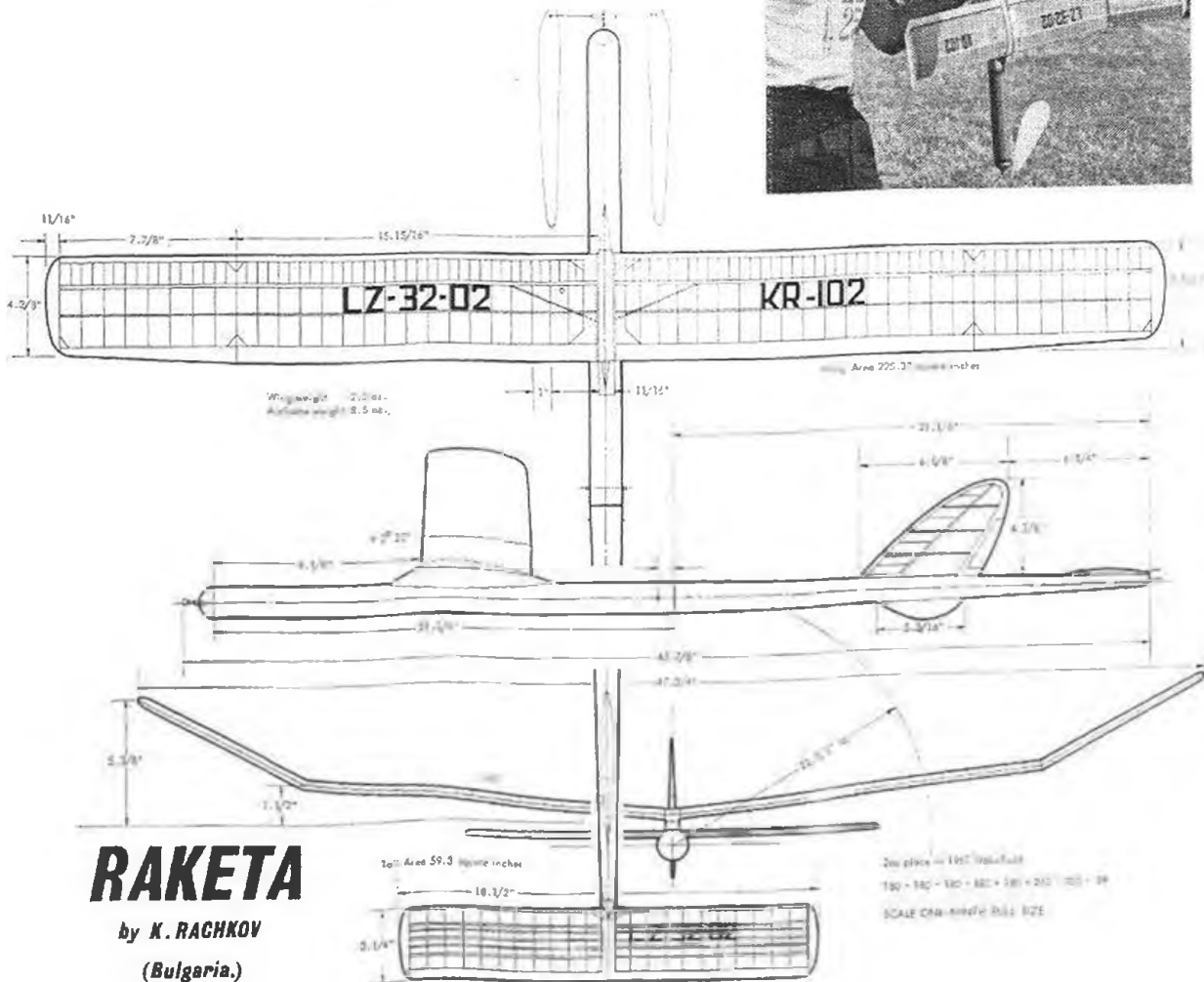


Championship Technicalities

WHEN KRESTU RACHKOV, the veteran Bulgarian aeromodeller almost carried off the Wakefield Trophy in 1967 at Sazena, Czechoslovakia, he surprised many of the expert onlookers for two reasons. Firstly, Bulgaria has never been highly rated in this category of competition. Secondly, he persisted in winding his rubber motors *by hand* throughout the event. The reason why he insisted on hand winding is his belief that he loads the motor in a steadier manner over a longer period of time.

Krestu had two different types of model in the contest but flew the rolled tube fuselage "Rocket" right through to the decisive eighth round. This model owes something to the U.S.S.R. expert Vlad Matveev, who was actually third in the contest. In the photograph at right, he is seen "winding up" the rubber band which holds the front and rear fuselage halves in position, in just the same manner as the Russian master. That in turn owes something to the American Bob Hatchek, who once exchanged models with Matveev at a Wakefield Contest in France.

Actual size airfoils are illustrated above. The spars in the wing are spruce, otherwise all the structure is in balsa. Notice the surface turbulator on the wing leading edge and the use of close spaced ribs, as also seen on the successful East German A/2 Gliders.

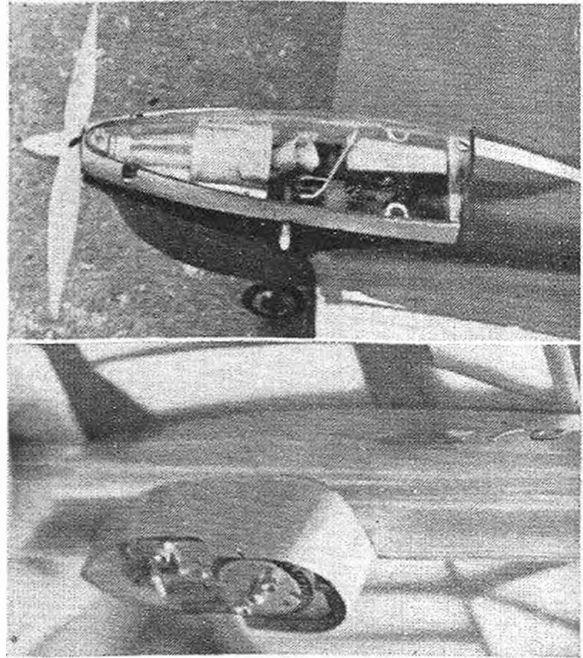


Right, Austrian team racer by Guntler/Baumgartner had transparent cover replacing cockpit, revealing H.P.15D and tank. The Pilot was clamped under the cover. Bartels 7 x 8 glass fibre prop, autoprimeing system on engine carb.

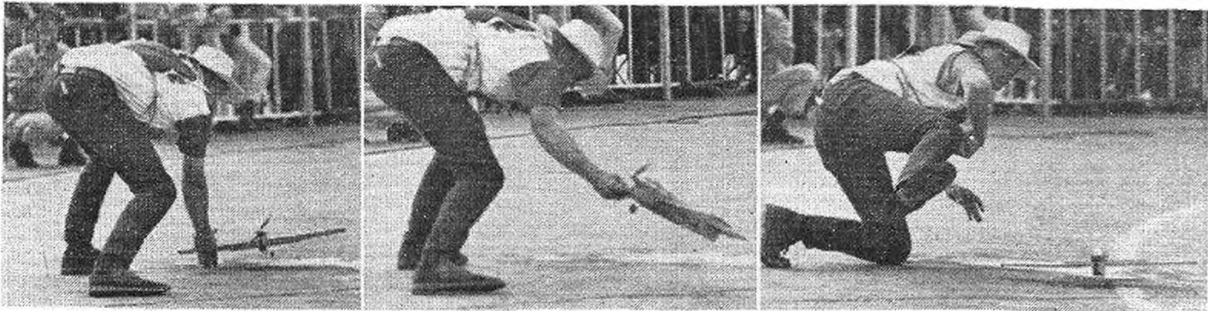
THERE is always something to be learned at any aeromodelling meeting where selected representatives from various Nations are gathered. Sometimes this is a matter of technique, more often it is a new technical development, and among the most interesting aspects are those of improved efficiency. In this series of articles we have endeavoured to bring new items to the eyes of our readers and to help fellow competitors to advance their standards.

There is no substitute for quality in construction and it is this degree of finesse which goes so closely with competition success. While some will argue that tactics are winning competitions, this is really only part of the story. There are many contributing factors and in our view the most important of all is that of producing a most efficient power unit whether it be rubber driven or internal combustion.

Publication of the torque control variable pitch propellers for Wakefield models seems to have sparked off particular interest and it is our hope that we shall be able to give more information on how they work in a future issue. Meanwhile, this month's selection appeals largely to Wakefield and Team Race modellers, next month . . . some leading Free Flight Power designs.



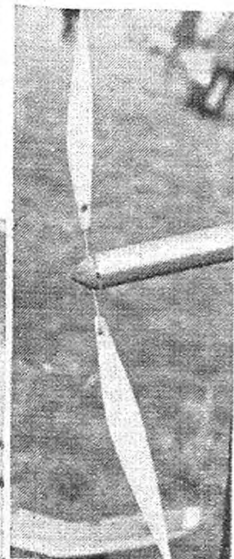
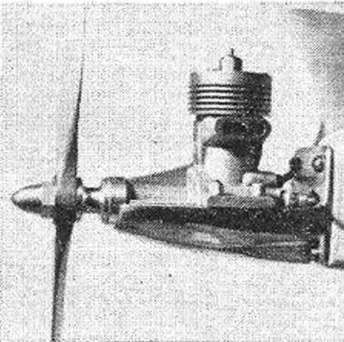
Above, Ingenious Italian method of shrouding d/t timer on a Wakefield with metal tube fuselage by Cassi. Note embossed F.A.I. numbers.

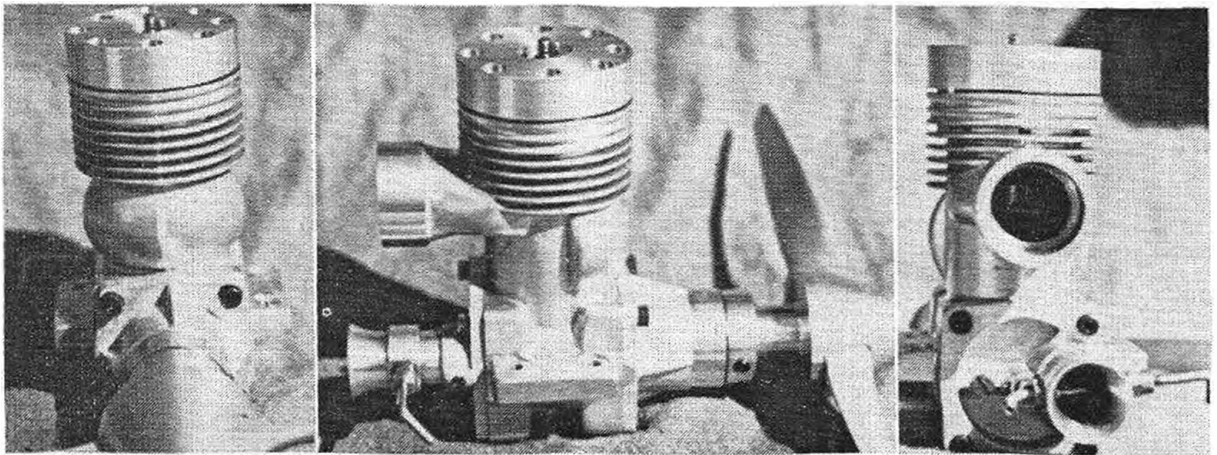


Above, just three of many photographs which must have been taken of Don Jehlik's pitting technique which has won major events over the past few years. Note how at left, Don waits for his "Jefe" to be flown into his hand by pilot Herb Stockton, the finger tips touch the ground, no attempt is made to snatch model in the air. Next the reaction of impact is to allow the arm to swing back and slightly upwards, prior to quickly bringing the model to the re-start line. At right the model has been refuelled, engine checked hard and the "Jefe" released as the right leg is raised for a clear take-off. Total time on average, seven seconds!



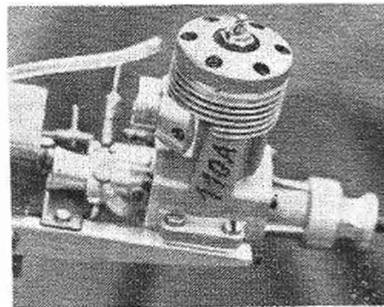
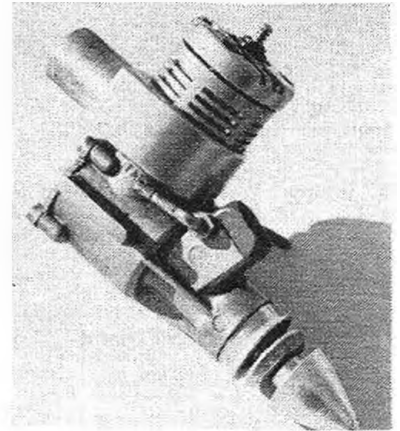
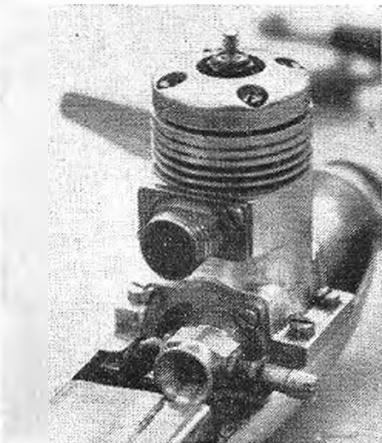
Left, Austrian pressurised refueling bottle, moulded to fit the arm in glass fibre and used for immediate tank replenishment for H.P.15D. Below is the H.P.15 used in World F/F Champs by Joe Savini on special pan which he makes. Right, the remarkably simple and well made Wakefield prop used by A. Boldin (U.S.S.R.) for fast climb, without any gadgetry.





ENGINE NEWS

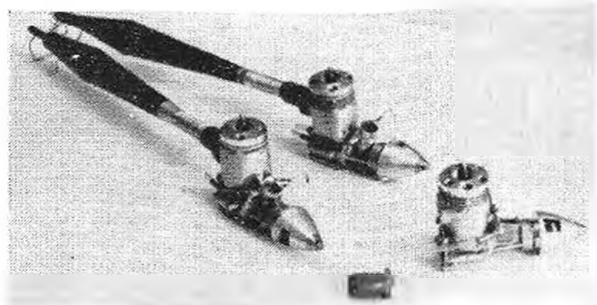
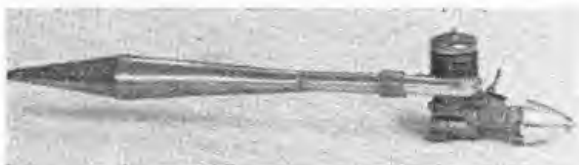
Three angles on Carl Dodge's home-made Custom .60 at top indicate why it was a talking point at the U.S. Nats. Seems to combine the features of many favourite racing designs. At left, is Swedish Lief Cernold's racing .15 based on Super Tigre parts. The manifold is similar to that made by Gordon Farnsworth of Sheffield for a stock G.15 at right. Below is the Moki S-6G with long carb for free flight, by Erno Frigyes.



PETER CHINN is taking a well-earned rest from the howl of engines and his regular column this month, so we'll try to fill-in by reproducing these photos of engines which have been specially produced for a tuned exhaust. We must congratulate **Electronic Developments** for being first in the commercial field with their Power Pipe exhaust and are pleased to note that Kevin Lindsey has designed it to be flexible on tune—hence the novel shape. Ours is 'on test' and a report on performance will appear

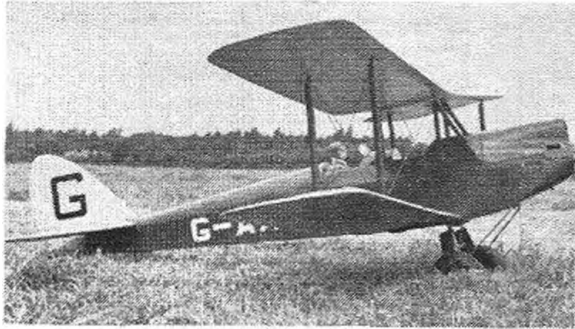
next month. Bill Wisniewski of K. & B. Engines must be proud of the way the engine world is adopting the ideas he used so well in the '66 World Champs; but strangely enough there is no word of any commercial rear-tuned-exhaust engine to come.

Right: Schiomo Barack of Israel has self-modded several 2.5 cc. Super Tigres to rear exhaust for pipes.



Above: Rolf Miebach's conversion adds only 1 oz. to the G.15. Right, the E.D. Power Pipe No. 1 weighs 1 1/2 oz. (38 Gr) and cost 49/6d. incl. Tax. Manifold is 12/9d. extra. Shape specially created to avoid "peaky" tuning. Suits many 2.5 to 3.5 cc. engines.





OF ALL THE recent trends in single channel R/C one of the most encouraging is the swing to scale and semi-scale models. For long enough R/C scale meetings and competitions have been dominated by models equipped with the latest and most complex equipment available. This was all the more difficult to understand as, until the comparatively recent addition of the international scale rules, the model was mainly assessed on scale fidelity and workmanship and the flying was mainly a matter of carrying out a qualifying flight.

The majority of scale modellers are *not* essentially "pot hunters" and are more likely to turn up to a scale meeting such as the Aeromodeller Scale Meeting held at Old Warden last August. The number of single channel entries and the standard of the models and flying at this meeting was absolutely first rate. I noticed quite a few "old time" modellers at this particular meeting and I am sure they went home convinced that the standard of building and flying in our hobby is every bit as good if not better than the so called "magic era" of some years ago. It must be admitted though, that it is infrequently that one has an opportunity of seeing a lot of these models and modellers, perhaps the non-competition type of rally appeals more to these individualists.

Scale modelling can be a most demanding and rewarding branch of our hobby but with such a wide choice in full size subjects to choose from, the degree of difficulty can be adjusted by selecting a suitable subject. No one should expect to build a version of a four engine Lancaster for the first R/C scale model but if they chose a high wing cabin model, with reasonable wing dihedral and large enough tail surfaces, there is as good a chance of success as with the average sports R/C model.

Some of my correspondence with readers has been on the subject of the suitability or otherwise of various full size aircraft and the problems and adjustments necessary to make them practical R/C subjects. Obviously in an article of this type it is not possible to discuss every full size subject but it might be use-

STRICTLY SIMPLE

David Boddington discusses the challenge of single-channel scale models from the APS range

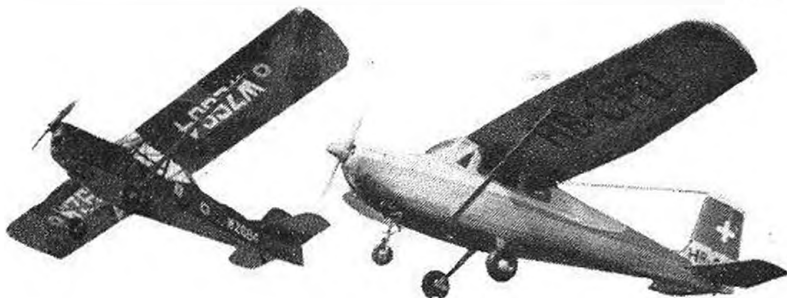
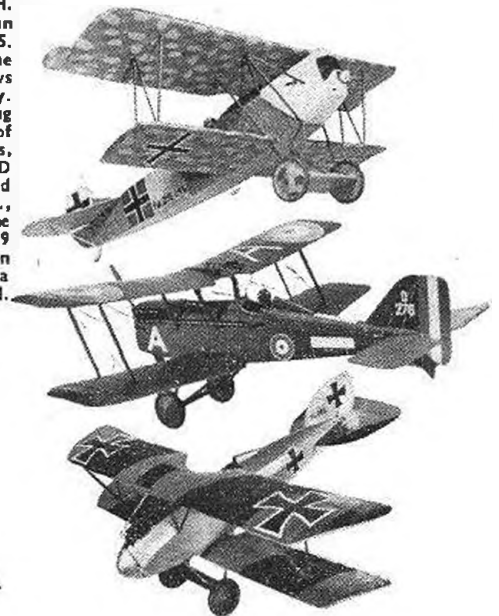
ful to consider some of the plans of free flight scale models in the APS Plans Handbook No. 1. Any scale model that can be made to fly on a free flight version, can also be made to fly with radio installed but this does not mean that *all* the scale models in the handbook will convert well to R/C. In some cases the structure may be too light to take the additional load of the radio equipment, in others it may be very difficult to arrange for access to the R/C equipment once it is installed. Also some of the models fitted with pendulum controlled surfaces may prove to be quite a handful to fly when radio control is substituted for the automatic pendulum control. Many of designs should, however, be *improved* by the addition of modern reliable R/C equipment allowing the operator to control the direction of the model and, in some cases, correct turning or diving and climbing tendencies during initial trimming flights. Here are some particular recommendations:

Scale Models suitable for R/C Conversion from the Aeromodeller Plans Handbook

MA 193 B.A.C. Super Drone

54 in. simple to build model of a pre-war powered glider by E. Fonteneau. The engine is mounted over the wing in a pusher fashion. By keeping the power down to about 1 cc. the Drone should be ideal on those calm summer days when it will float lazily around. Suitable for escapement operation and lightweight receiver. Price 5s.

Heading: The D.H. Gipsy Moth, an all-time A.P.S. favourite. This one by N. Mathews for rudder only. Right: A Doug McHard trio of W.W.1 fighters, the Fokker D VII, S.E.5 and Albatros D.V., Below left is the Auster A.O.P.9 by Ron Moulton and right, Cessna 172 by P. Holland.



MA 339 Sopwith Snipe

John Simmance's Snipe has proved itself as an excellent free flight and R/C model and should suit the modeller who really enjoys building as much as flying. With a wing span of 45½ in. this World War I fighter is suitable for engines from 1.5-2.5 cc. It is probably advisable to reduce the incidence of the lower wings for the R/C version. Price 10s. post free.

MA 194 Foster Wickner Wicko

A smart pre-war cabin aircraft with good flying surface areas for Eric Fearnley's scale model. The wing struts and wheel spats, although improving the appearance, make this model more suitable for flying areas with short grass or tarmac areas. With a wing span of 47½ in. the "Wicko" should be adequately powered with a good 1.5 cc. engine and the large cabin area will take most radio equipment. Price 6s.

FSP 759 Bristol Monoplane Scout

Designed by Brian Barton for easy but true scale construction. This attractive 46 in. World War I mid wing model is also suitable for 1.5 cc. engines. Some modification would be required to install the radio equipment but the effort should be rewarded by a realistic stable slow flying model. It may be possible to use Galloping Ghost radio with this 46 in. span model. Price 7s. 6d.

MA 210 Kirby Motor Tutor

The original aircraft was a slow flying low powered light plane and the model should exhibit similar characteristics. Although the wingspan is 63 in., an engine of 1.5 cc. capacity will cope with Eric Fearnley's design making it a "guided" free flight model suitable for good weather conditions. Keep the R/C equipment, construction and finishing as light as possible to retain the model's pleasant flying characteristics. Price 7s. 6d.

FSP 305 Sopwith Pup

The larger than usual version of the excellent "Pup" World War I Scout will require some "beefing up" of G. E. Fisher's original construction if this model is to be converted for R/C work and flown in anything but ideal conditions. Radio equipment must be installed as close to the nose as possible to maintain the correct C of G position. A 1-1.5 cc. engine is required for the 40½ in. span model. Price 5s. 6d.

FSP 568 Cessna Bird Dog

Another of Eric Fearnley's designs, this 36 in. span high wing cabin model for .5-1 cc. engines is fine for lightweight radio equipment. A first class subject for an initial near to scale R/C model and suitable for simple escapements. Price 5s.

FSP 567 Blackburn 1912 Monoplane

A. M. Fincane's real oldie that has proved itself to be a first rate R/C flyer. To see its lumbering take off and beautifully stable slow flying characteristics is a joy to behold. Definitely recommended for the "wind in the wires" enthusiasts, this 48 in. span replica will cope with 1.5 cc. engines and most radio equipment. Price 6s.

FSP 534 Luton Minor

Eric Fearnley's 1/12th scale model of the popular ultra light aircraft must be one of the easiest to build and fly in the whole A.P.S. scale range. With a wing span of 42½ in. a 1 cc. engine will give ideal R/C flying characteristics. Price 3s.

World War One subjects

Plan	Title	Span	Scale	Price
FSP 418	RE8	43 in.	1/12	5s. 0d.
FSP 551	Fokker EIV	36 in.	1/12	4s. 6d.
FSP 721	B.E. 2c	40½ in.	1/12	7s. 6d.
FSP 285	Nieuport 17C	41½ in.	1/8	5s. 6d.
FSP 682	S.E. 5a	27 in.	1/12	5s. 0d.
FSP 343	Avro 504K	36 in.	1/12	5s. 6d.
FSP 545	Sopwith Triplane	35 in.	1/9	6s. 0d.
FSP 775	Malz DH	46½ in.	1/8	10s. 0d.
FSP 441	Sopwith Camel	42 in.	1/8	6s. 0d.
FSP 837	Hanriot HD1	28 in.	1/12	6s. 0d.
FSP 907	Sopwith 1½ Strutter	33½ in.	1/12	7s. 6d.
FSP 810	Sopwith Tabloid	25½ in.	1/12	7s. 6d.
FSP 916	Fokker DVII	29 in.	1/12	4s. 0d.

The above World War I scale models have been grouped together as many of them present similar problems in construction and flying. Although they are all suitable subjects for R/C conversion I would suggest that they should only be tackled by modellers with a lot of experience in R/C flying or building and flying this type of model free flight or, and most desirable, with both these experiences. Many of the designs require careful modifications to the structure for installation and access to R/C equipment, and also to strengthen construction in certain areas. There is no doubt that the use of pulse proportional rudder control for this type of scale model is a distinct advantage over escapements or servos. It allows for a full range of rudder movement, so helpful particularly during trimming flights. The use of this form of control (via magnetic actuators or pulse servos, *i.e.* Rand HRI) is in fact strongly recommended for all scale models, the 1/12th scale models mentioned above should be fine with the Webra Picco or Adams Baby actuator. Now for a selection of more varied types ideally suited to R/C conversion.

FSP 625 Sopwith Swallow

John Darnell's design has been separated from the previous list of World War I models because its high wing (parasol) layout and general configuration make it particularly suitable for R/C work. It is the answer to the modeller who requires a World War I scale model with flying characteristics similar to a sports model and not too much hard work involved in the construction. A 1.5 cc. engine should give ample power to this 41½ in. span 1/8th scale model. Price 6s. 6d.

FSP 615 Druine Turbulent

A small model particularly suited to the popular .8 cc. glo' engines and 0.5 cc. diesels, with the 32 in. span this scale version by Ron Moulton of a popular home built French aircraft should be quite an aerobatic performer. To maintain a reasonable wing loading only lightweight R/C equipment should be used, and rudder movement restricted to small reflections. Price 5s.

FSP 554 Ryan PT 20

Popular model of an American service aircraft by G. Gannon with a 45 in. wing span for 1-1.5 cc. engines. Although a low winger the ample dihedral makes it a stable flyer and easy to handle. Price 6s.

FSP 388 DH C2 Beaver

Another high wing cabin model with slab sided fuselage and ample fuselage space to take any R/C gear. Designed by A. Moore, it is a sure stable flyer, ideal for the beginner to near scale R/C and, with a wing span of 60 in. and 2.5 cc. engine, can be flown in normal weather conditions. Price 5s. 6d.

FSP 503 Luscombe 8A "Sky Pal"

Fred Lees' "Sky Pal" is similar in size and layout to the D.H. Beaver but is rather more difficult to build, being true to scale. It should do well in contest and "concours" work. Price 6s.

FSP 688 Cessna 172

A really large 1/6th scale model of the extremely popular American light plane by W. Peter Holland. This 72 in. beauty just asks for R/C installation and, despite its size, is equally suited to single channel as well as multi R/C equipment. The tricycle undercarriage and detachable wing panels make it a practical model for transporting and flying. Try it on pulse proportional rudder and engine control (3.5-5 cc.). Price 10s. post free.

FSP 731 Tipsy Nipper

A shoulder wing home built ultra light aircraft with ideal proportions for C. C. Badger's 37 in. model. Tricycle undercarriage for easy take-offs and landing and, with a 1.5 cc. engine installed, it should live up to its name. Suited to either simple rudder only control or lightweight Galloping Ghost. Price 5s

FSP 580 Auster AOP 9

Another high wing cabin "natural" model ideal for sports flying on rudder only, designed by Ron Moulton. With a wing span of 36 in. a 0.8 cc. glo engine should suit fine but keep the weight of the R/C equipment to be installed down or the excellent flying characteristics may be lost. Price 4s. 6d.

FSP 135 DH Gipsy Moth

Surely one of the all time favourites of R/C biplanes. This model has excellent stability and response to rudder making it a majestic flyer although not difficult to fly. Relatively simple to build, a good project for biplane lovers who are looking for a practical model 60 in. span for 2.5-5 cc. engines, rather elderly equipment is shown on the plan; but who cares? Price 10s. post free.

Finally a design that *used* to be such a great favourite for free flight but which lost its lead and no longer appears in the A.P.S. handbook. It is surely due for a revival? The proportions and lines make it an absolute "Natural".

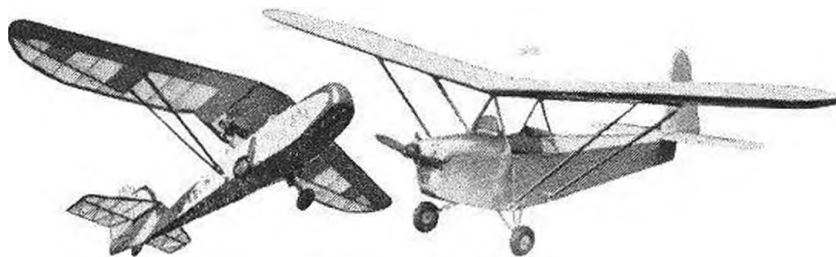
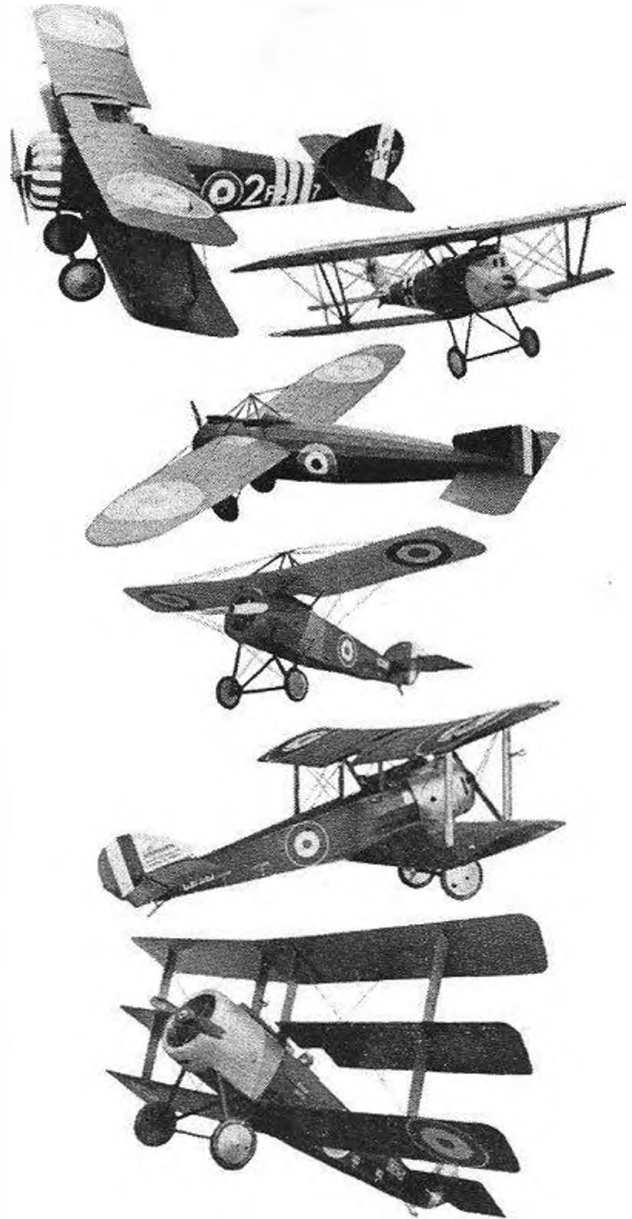
FSP 621 Dart Pup

D. I. Barton's 59 in. span model of a Parasol winged pusher for up to 1.5 cc. has ready made pendulum rudder for alteration to escapement operation. Boxy fuselage and attractive detachable panel swept wings plus an open cockpit add "Character" to a charming subject. Price 6s. 6d.

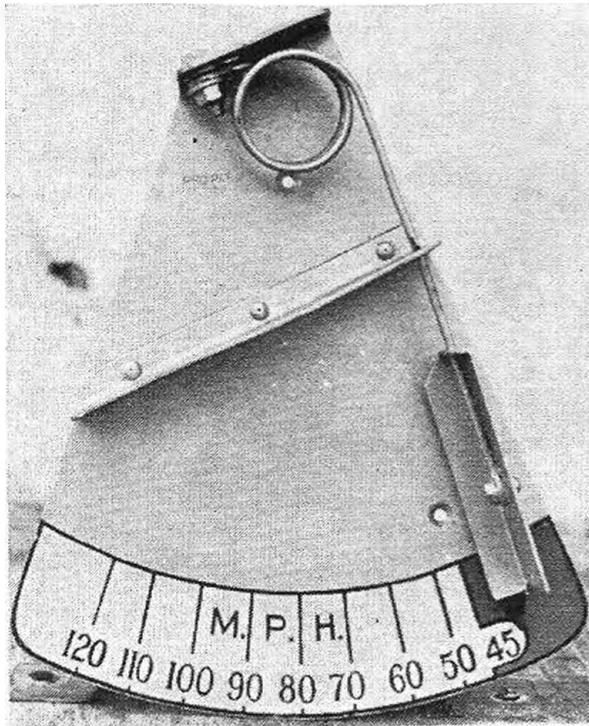
FSP 620 Dart Pup

W. Peter Holland's smaller (1/8th scale, 43 in. version) for .5-.8 cc. with all the attributes described above, in reduced size. Price 4s. 9d.

NOTE: ADD 6d. POSTAGE TO PLAN PRICES



Above, Top to Bottom, a range of W.W.I fighters. The Sopwith Snipe, Pfalz D.III, Bristol Monoplane, Sopwith Swallow, Sopwith Pup and Sopwith Triplane. The Camel is also included in the A.P.S. range; but is considered less suitable with its short nose. The Sopwith 1½ Strutter and the Tabloid are listed on page opposite but not illustrated. Left, Two of a kind! The Dart Pup and Luton Minor are, like the BAC Drone and Kirby Motor Tutor, models of very stable light planes with high mounted wings and ideal for R/C conversion.



for the technically inclined . . . or the practical modeller

A PRESSURE PLATE AIRSPEED INDICATOR

described by Ron Warring

ONE useful bit of data which escapes measurement on free flight models is the actual airspeed, and this could be extremely valuable for design check as well as being merely interesting. In fact it is impossible to design a flying model, in the proper sense of the term, without knowing its airspeed. That is the main reason why model design is largely empirical, or 'trial and error'.

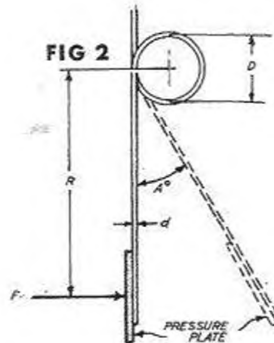
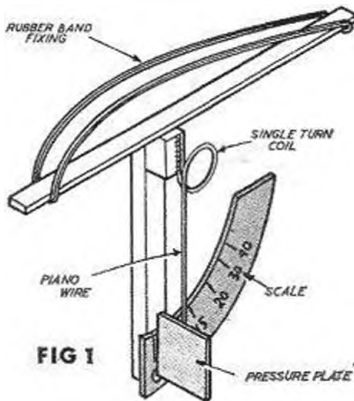
Over twenty-five years ago R. N. Bullock, one of the leading pre-war Wakefield exponents, published a design for a simple pressure plate airspeed indicator to be fitted to a model and, although the mathematics involved in arriving at a scale calibration were in error, it worked. In other words, the basic idea for construction was sound and although this particular type of airspeed indicator has a number of limitations it is still the only simple device which seems suitable for free flight model airspeed indication short of being able to control the model so that it can be timed over a measured course.

The basic form of the airspeed indicator is shown in Fig. 1. It need weigh no more than ¼ oz. and so can be

mounted on almost any size and type of free flight model—preferably strapped under a wing with a rubber band. It also has a relatively low drag, so that fitting an airspeed indicator of this type will not materially affect performance and trim of, say, a Wakefield size model or A/2 glider.

Its main limitations as a functional unit are that it is only as accurate as its scale calibrations (however they are arrived at); and also the model has to fly near enough to the observer so that the position of the pressure plate against the scale can be read. This limits measurement to when the model is close to the observer—e.g., on the glide approach to a landing or, if you are lucky, during the initial climb viewing the airspeed indicator through binoculars. The former, however, would be good enough to establish the glide speed on a duration model; and the latter if you can get it, the initial climb speed. Fitted to a radio control model it has more scope for you can bring the model (and indicator) within 'reading' range. There is also the possibility of recording *maximum* speed which does not require reading until the model has landed—e.g., with a soft pencil lead cemented to the pressure plate making a trace on the scale. This is largely a matter of ingenuity.

Calibration is a more difficult problem; also deciding on a suitable size for the spring arm and the pressure plate. The latter can be done by trial and error; and calibration can be attempted by hanging the unit out of the window of a car and marking the pressure plate position when the car is driven at, say, 10, 15, 20, etc., m.p.h. as indicated by the car speedometer. With care, calibration should then be as accurate as that of the car speedometer.



D.H. Moth strut mounted Pressure Plate A.S.I. in heading photo was used on thousands of early lightplanes. This one we discovered decorating Ruedi Frey's Chief Engineers' office at Royal Singapore Flying Club, kept as a memento of the wonderful days of pre-instrument flying.

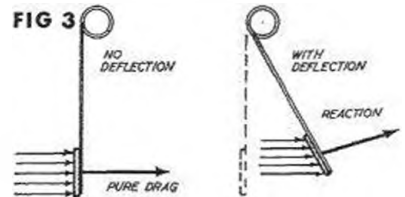


TABLE I WORKED OUT CALCULATIONS FOR FIG 5

D = .52, R = 4.8, S = 1.32, d = 22 s.w.g., d ⁴ = .00000615 (from Table II)							
From Geometry: C = $\frac{6150}{4.8 \times 1.32 \times .52} = 1860$							
V (m.p.h.)	5	10	15	20	25	30	35
V ²	25	100	225	400	625	900	1225
$\frac{C}{V^2}$	74.5	18.6	8.3	4.66	2.98	2.07	1.52
$1.26 + \frac{C}{V^2}$	75.76	19.86	9.56	5.92	4.24	3.33	2.78
$A^\circ = \frac{7.94}{1.26 + \frac{C}{V^2}}$	1.05	4.0	8.3	13.4	18.75	23.8	28.6

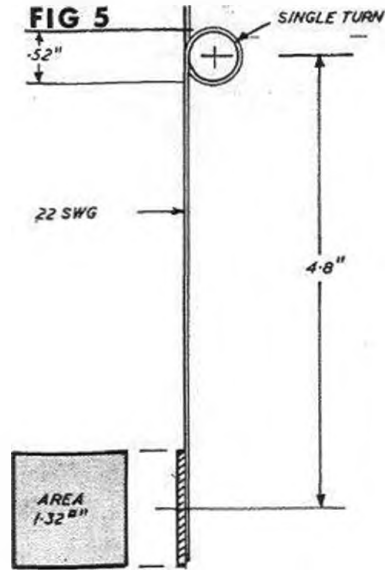
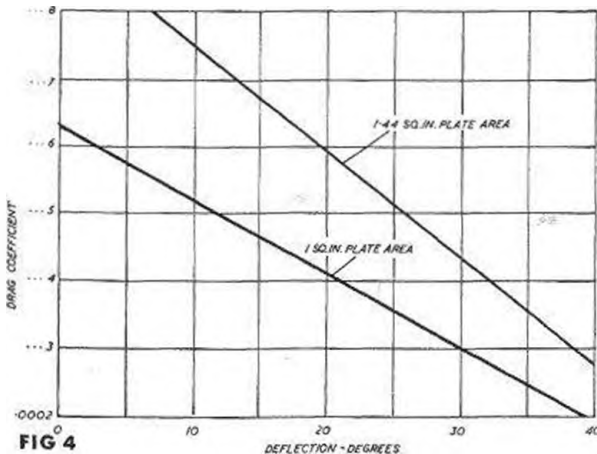
Alternatively, the whole lot can be worked out from first principles and reducing to a 'formula' solution. This has the advantage of being able to *design* the airspeed indicator for a particular range including a calibrated scale which can then be checked as above. The whole problem then boils down to the performance of a simple torsion spring; or specifically its deflection under a force applied by the pressure plate at right angles to the airstream—Fig. 2.

The formula involved is a little lengthy—

$$A^\circ = \frac{3665 F R D n}{E d^4}$$

- where A° = deflection in degrees
- F = force applied
- R = distance between point of application of force (centre of pressure plate) and the centre of the spring coil
- D = mean diameter of spring coil (i.e., overall diameter—wire thickness)
- n = number of turns in coil
- E = modulus of elasticity of spring wire material
- d = diameter of wire.

For a simple airspeed indicator of the type in mind a single turn coil spring is adequate (n = 1). The modulus of elasticity of piano wire can be taken as 29 × 10⁶.



Thus inserting these values and rearranging the formula as a solution for the force required to produce a deflection A°:

$$F = \frac{A^\circ d^4 \times 10^4}{1.26 R D}$$

As far as the pressure plate is concerned this is a simple drag plate and the force it generates is given by:

- Drag force = K S V²
- where K = a drag coefficient
- S = surface area of plate
- V = airspeed

Putting the two together:

$$K S V^2 = \frac{A^\circ d^4 \times 10^4}{1.26 R D}$$

Continued on page 95

TABLE II WIRE SIZE d⁴

Wire s.w.g.	Dia (d) Ins.	d ⁴
14	.080	.00004096
15	.072	.00002687
16	.064	.00001678
17	.056	.000009834
18	.048	.000005308
19	.040	.000002560
20	.036	.000001679
21	.032	.000001049
22	.028	.000000618
23	.024	.000000332
24	.022	.000000234
25	.020	.000000160
26	.018	.000000105
27	.016	.00000008554
28	.014	.00000003842
30	.012	.00000002074

TIGER TUNING

INNER SECRETS OF
MODIFICATIONS APPLIED
TO THE FAMOUS
"COPEMAN SPECIAL"
OLIVER TIGER DIESELS

BY
GEORGE
COPEMAN

WHILST THIS is most definitely not a do-it-yourself guide to Oliver 'Tiger' tuning, it should be of assistance to the competent engineer with adequate facilities, wishing to extract more power from his unit. Modellers are warned however, that unless they have some previous experience in this field they cannot be too strongly advised against attempting to carry out their own modifications; the dismantling of a precision instrument, such as a model engine, by any but careful and experienced hands *always* results in damage to the unit.

The author has for many years specialised in the tuning of Oliver Tigers. They are of sound basic design, excellent materials and their very competitive performance in standard form can be respectably improved by careful handwork and individual attention—which takes considerably more time than the makers can afford on the production line—up to 20 hours in fact.

'CS' Tigers have achieved many successes in recent years, particularly in Combat, and their owners and others may be interested to learn of some of the work that goes into them.

The motor is stripped, marking fins and piston (con-rod and cylinder are marked by Oliver), to ensure replacement in their original positions. All parts are cleaned in petrol and those not requiring further attention are kept clear of the work-bench in a polythene bag.

Design modifications are carried out similar to those effected by the 'works', but with a few minor differences. Induction timing is left standard at approximately 150 degrees; it is felt that the MK IV benefits from increased shaft counterbalancing, and two arcs are ground out of the crank-web (Fig. 1); the rear edge of the crank-web is not radiused in the MK IV since the gas-flow to the front transfers (when modified), is better than on the MK III; two angled flats are hand-filed on the backplate

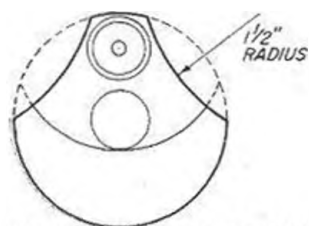


FIG.1 REAR VIEW OF CRANK SHAFT SHOWING CUTAWAYS FOR EXTRA COUNTERBALANCING

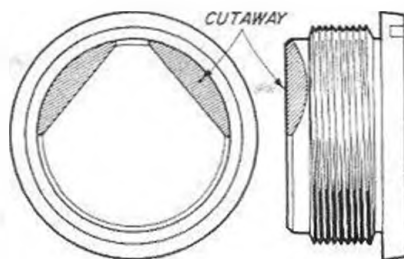
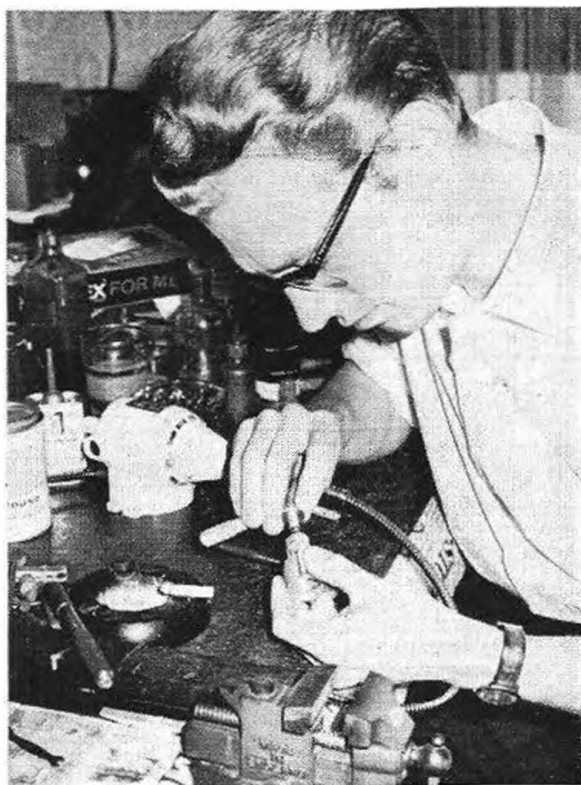


FIG.2 BACK PLATE MODIFICATIONS



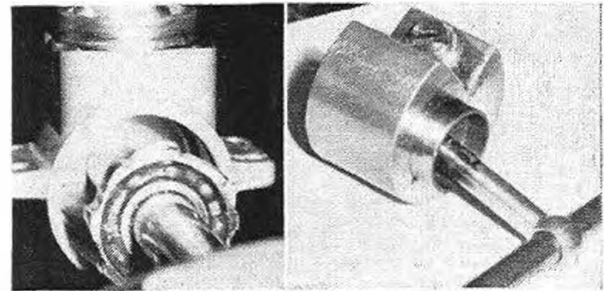
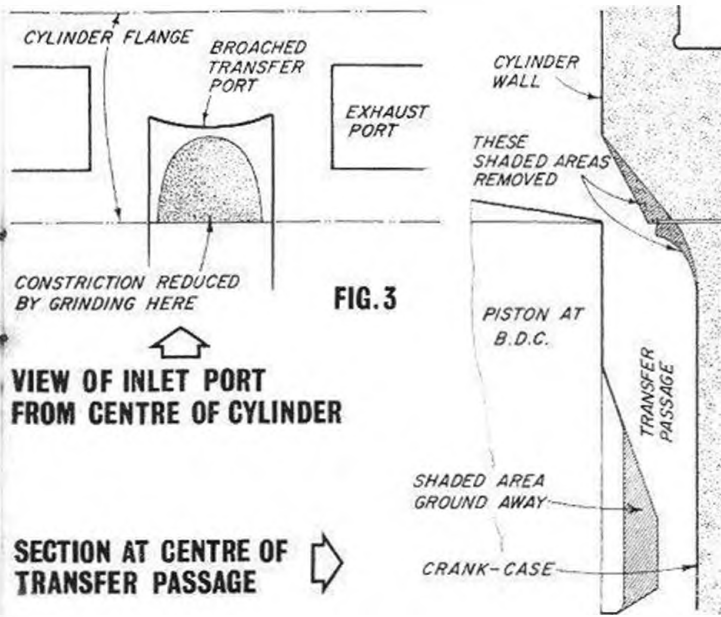
Author at work, skimming a front housing using a Flexispeed unit.

face to clear the rear transfers (Fig. 2); a 3/32 in. diameter mounted point is used (at 18,000 r.p.m.) to enlarge the cylinder transfers at the top (and the crank-case passages raised appropriately) to ease the constriction at this point between the upper edge of the piston and the broached part of the inlet port (Fig. 3); a flat, approximately 1/4 in. across is hand-filed in the piston crown to give a 'squish' combustion chamber shape.

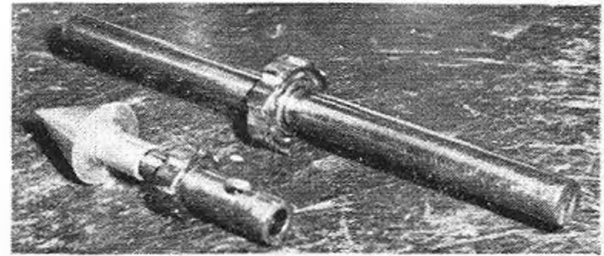
The following are modifications to the fits, and whilst they are far more time-consuming, can often produce greater increases in performance and reliability.

Bottom end: John Oliver finds that tight bearings/housings and shaft/bearings fits, make for a sturdier set-up (especially against the rigours of Combat), but, at the possible slight expense of this safety factor, they can be considerably looser for improved performance. It is possible to go as far as a .0002 in. interference fit for the bearings/housings and a loose sliding fit for shaft/bearings, but such a set-up is easily misaligned by small knocks and the bearings tend to work loose in their housings, especially when the crankcase expands during a lean run. It has been found that an interference fit of .0007 in.—.001 in. for bearings/housings is a safe compromise, and home-made piloted hand-reamers are used to skim out the housings; a selection of interchangeable pilots enables one to be used which is a tight fit in the 1/8 in. plain bearing, thus ensuring that the housings are cut exactly concentric. The shaft is spun in the chuck of an electric drill and the journal diameters reduced with the careful use of 400 wet-or-dry paper to be a light push-fit in the bearings.

Top end: The alignment of the con-rod bearings is checked with ground silver steel rods, and the rod 'tweaked' true as necessary. Floating gudgeon pins are



Left, ready to skim out a rear housing. Right, tommy bar and old con-rod used when lapping piston.



Piloted cutter made from old bearings, Araldited up; pilot of front cutter looks familiar.

discarded as they score the bore with obvious consequences, and replacements made up from 11/64 in. silver steel; the piston holes are usually a few tenths under the nominal size, ensuring that the replacement pin is held fast. If necessary, the little end bearing is reamed out to a .001 in.—.0015 in. clearance fit on the pin.

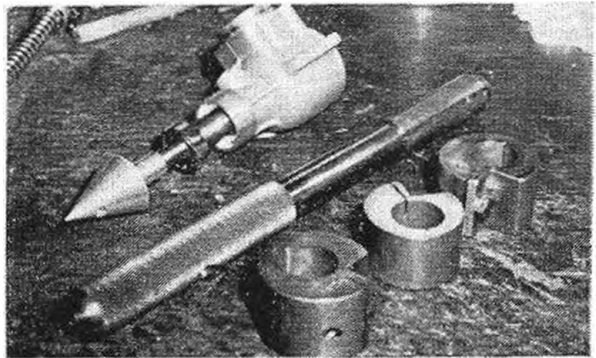
When a unit is to be re-bored, well oversize piston and contra are obtained. The usual bore taper (.002 in.—.003 in.) is reduced to .0007 in.—.001 in. by lapping, and piston and contra are lapped round and parallel to within .0001 in. and the appropriate size for the bore; this is such that the piston just begins to bind when $\frac{1}{4}$ in.— $\frac{1}{16}$ in. from the top of its stroke; the contra is approximately .0003 in. larger than the piston. Adjustable brass laps are used to achieve this with 3 micron diamond abrasive (£3 7s. 6d. per 2 grams) for the bore, and 6 micron diamond for piston and contra. The three components are thoroughly scrubbed in carbon tetrachloride, using at least two changes of solvent to ensure removal of the abrasive.

The motor is then carefully assembled, (heating the crankcase to approximately 100–120 degrees centigrade for insertion of the bearings) with everything scrupulously clean and well lubricated.

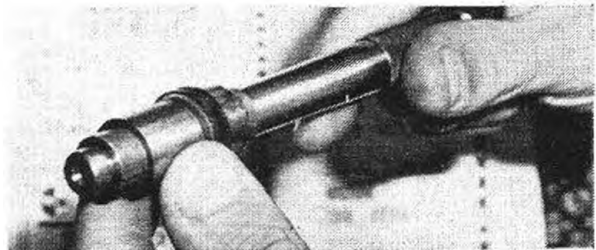
It will be noted that no mention is made of internal polishing. Apart from wasting a good deal of time which could be better spent on other points, it is very doubtful if it is at all beneficial. Indeed, it seems more likely that a rough finish in transfer passages, etc., could well aid gas mixing; the main thing is to ensure that passages are of adequate cross-sectional area.

Other small-sounding but important points also receive attention as necessary: de-burring conrod bearings, also gudgeon pin holes in piston; checking squareness of rear of tapered collet so as not to misalign front bearing; checking positioning of screw-holes in collector, also thickness of collector (should be .002 in.—.004 in. greater than gap between lower cylinder fin and crankcase seating).

The time that can be spent trying to optimise the fits, finishes and general accuracy of motors is almost limitless, but this is what produces results—extreme T.L.C. in fact!



Useful tools: piston laps are in three sizes—.548 in. — .558 in. Bore lap is adjustable over this range.



Above, lapping the bore using the special tool. Below, Five Pounds worth of diamond abrasive (2 grams. in each syringe).



S.M.A.E.

ANNUAL DINNER & PRIZEGIVING

NOVEMBER 25th

GREAT NORTHERN HOTEL, LONDON



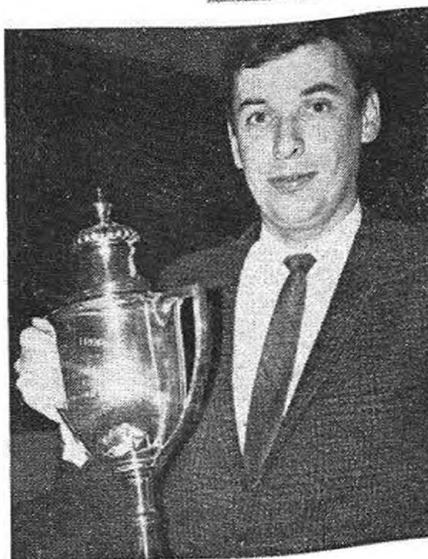
Modellers
enjoy fun
and games
at the social
event of
the year



John West, representing Brighton D.M.A.C., collected two important team event Trophies, the Keil, and the overall Club Championship, the Plugge Trophy, as well as the "Astral" for F.A.I. power.

At right, Tom Jolley, who has also done sterling work in contest organisation as chairman of the Control-Line Sub-committee, was presented with the famous "Gold" Trophy, supreme prize for control line aerobatics.

Trio of R/C Aces. Below: Dennis Hammant, Chris Olsen and Norman Butcher who between them picked up all the radio control cups. That decoration behind Chris's ear is no sign of flower power—it just reflects the happy atmosphere of the evening!



J. H. Bailey of Bristol is a perennial winner. Here he is receiving the handsome Gutteridge Trophy from Mrs. Sheila Greenhalgh who kindly awarded all the prizes. Commander Alwyn Greenhalgh R.N. was Guest of Honour, and in his speech, disclosed correspondence from which the Wakefield International Trophy originated.

Peter Jellis of Croydon collects the Davies Charlton "Quickstart" Trophy for 1/4A Power free flight from Mrs. Sheila Greenhalgh in the photograph below.

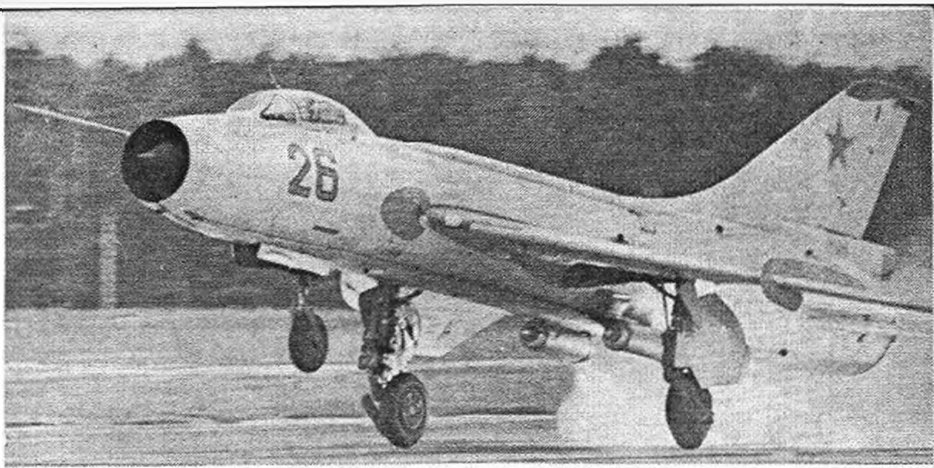


AIRCRAFT DESCRIBED Number 171

Sukhoi Su7_{MB}

drawn by Ian R. Stair

described by John W. R. Taylor



ONE of the aviation surprises of 1967 was the sudden appearance of a squadron of Sukhoi Su-7MB ground-attack fighters in Egypt in the Spring. It was an even greater surprise, particularly for the Egyptians, when these aircraft were destroyed, with more than 300 others, by the Israeli air attacks of 5th June!

There is nothing very new or secret about the Su-7MB. It was first shown, in prototype form, in the then-annual Aviation Day fly-past over Moscow more than a decade ago, in 1956, and was allocated the NATO nickname "Fitter". By 1961, it had become established in Soviet Air Force service, as a replacement for the veteran MiG-17, and formations of up to 21 aircraft were included in the fly-past over Tushino Airport that year.

Study of available photographs confirmed what had been suspected for some time—that the Su-7's fuselage and tail unit were virtually identical with those of the Su-9 delta-wing all-weather interceptor ("Fishpot"). Both types were clearly larger than the MiG-21 and a process of deduction suggested that the Su-9 was related to an aircraft referred to by the Russians as the T-431.

When the T-431 captured a height record in 1959, it was said to have a 19,840 lb. thrust turbojet. Three years later, when the same aircraft set up a sustained altitude record, its engine thrust was given as 22,050 lb. It seems probable that there is some connection between the larger engine and the fact that all but early models of the Su-7 and Su-9 have a pair of external "spines" along the fuselage.

The more powerful, modified version of the Su-7 is said to have the designation Su-7M (for *Modifikatsiya*), to which the suffix B is added on export models.

With a powerplant of this size, combined with a clean airframe, and a speed of around Mach 1.6 at height, the Su-7 has always looked a potent fighter. By Western standards, however, its armament is modest. A progressive increase in the area of the flash-panels on the fuselage in recent years reflects a parallel increase in muzzle velocity or rate-of-fire

of the two 30-mm. guns mounted in the wing-roots. The only other weapons observed as standard loads are a pair of 500-kg. bombs or nineteen-round packs of 55-mm. rockets on underwing pylons; but it would, presumably, be possible to carry bombs, rockets or missiles instead of the external fuel tanks mounted on twin pylons under the centre-fuselage.

Design-wise, the Su-7 is workmanlike and uncomplicated, with 60-degree swept wings and a sturdy, wide-track undercarriage well suited for operation from semi-prepared airstrips. Each wing has two fences, the outer one positioned uniquely at the tip. Other features include large area-increasing flaps, extending from the wing-root to the aileron each side, a flat bullet-proof windscreen, readward-sliding canopy and a comparatively small intake centre-body, identical to that on the original Su-9 but much smaller than that on the latest version of this all-weather interceptor.

For some years, the pitot head was mounted centrally above the air intake, but current Su-7M's have the pitot offset to starboard. A more recent modification has been the substitution of twin brake-parachutes, in a large housing at the base of the rudder, for the former single chute attached under the rear fuselage.

First export deliveries of the Su-7MB were made to Czechoslovakia in 1964. The Polish Air Force was next to re-equip with this fighter. Egypt had its first dozen machines for only a few weeks, but is reported to have received around 50 replacements since the June war; and we can expect to see Su-7's in service eventually with most of the air forces of the Soviet bloc.

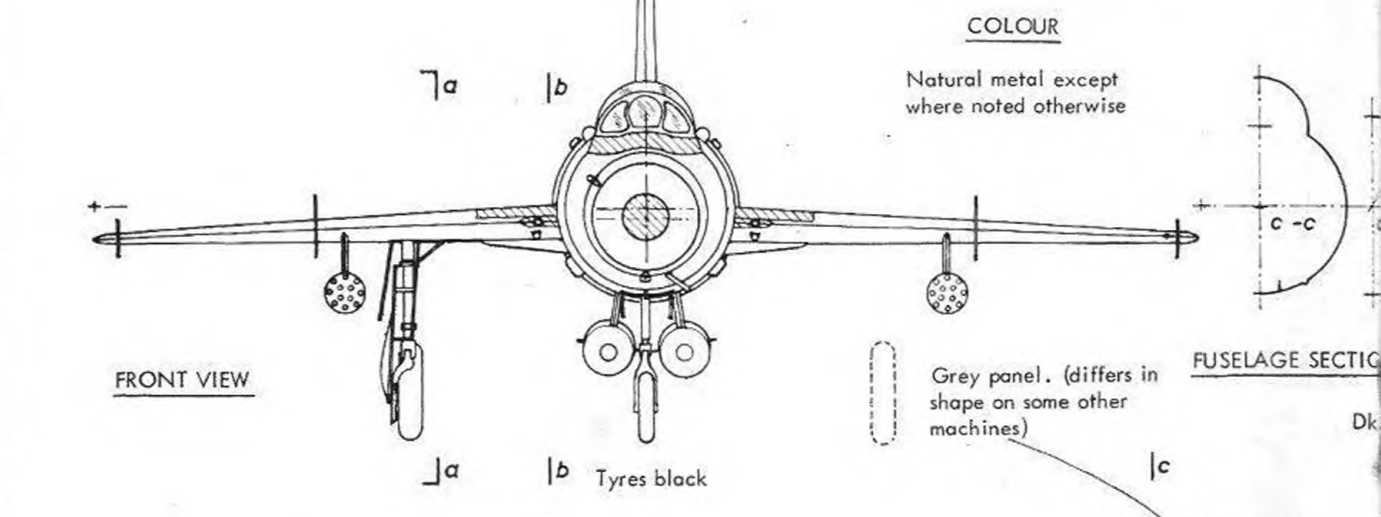
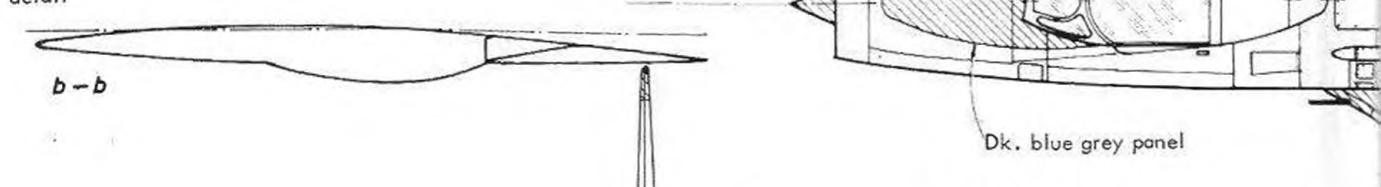
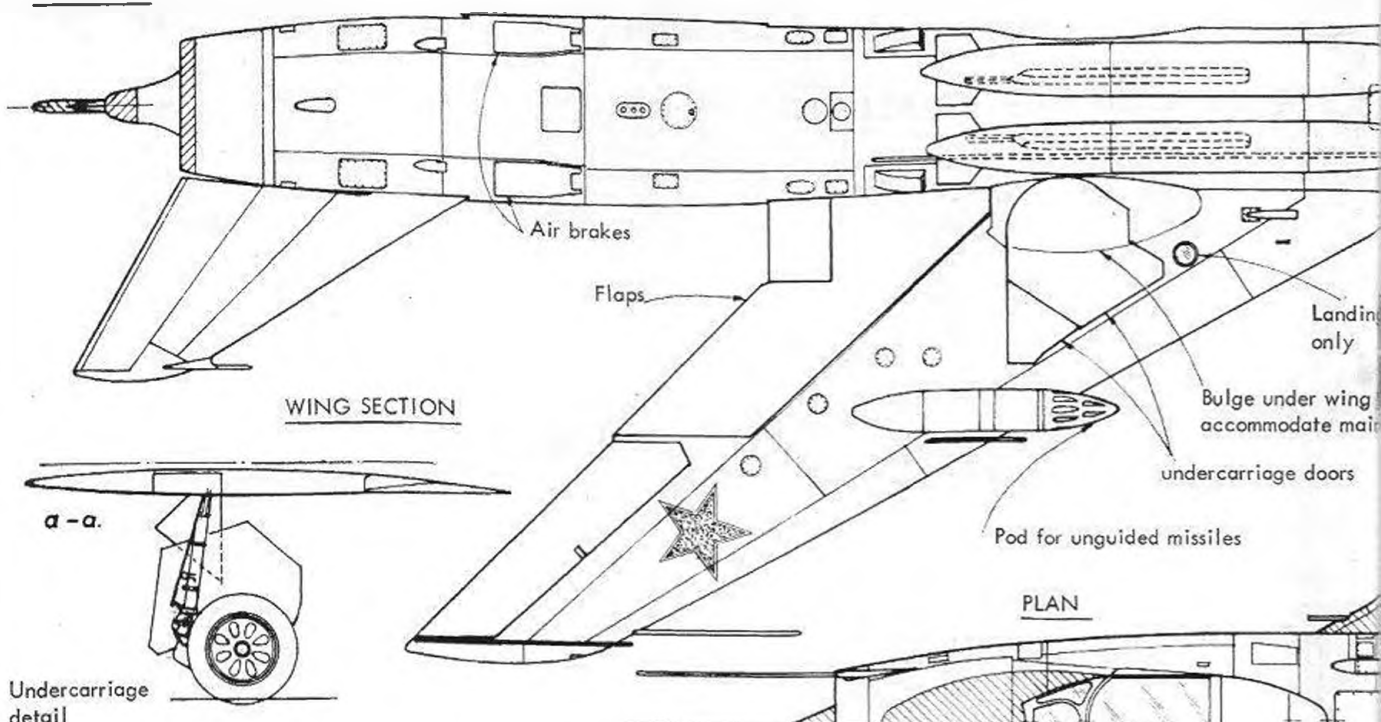
The basic single-seater has been joined by a two-seat version, with a second, slightly-raised canopy to the rear of the normal cockpit and with a prominent "spine" between the new canopy and the fin. A single example of this two-seater was included in a formation of standard fighters in the air display at Domodedovo Airport, Moscow, last July. The same display also included a variable-geometry Su-7. This differs from the standard fighter only in having the outer 13 ft. or so of each wing pivoted and fitted with leading-edge slats, with a large fence between the fixed and moving panels.

It was interesting to note that the fences embody attachments of the kind associated with "Anab" missiles. We can only wait and see if this has any significance in terms of production. This modest degree of variable geometry would be fairly simple to introduce and would offer valuable improvements in both take-off performance and range; but with new Sukhoi and MiG twin-jet fighters entering production, it would seem to be a waste of time to update so old an aircraft as the Su-7.

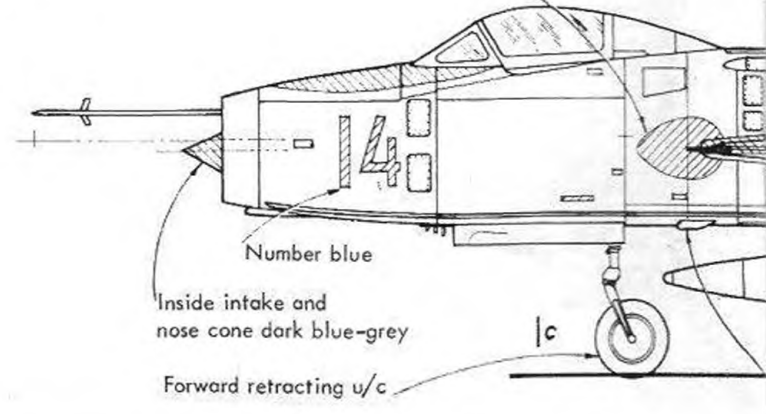
JATO Rockets assist take-off in heading, twin chutes slow landing of same demonstrator at left. (Photographs courtesy of "Soviet Weekly".)

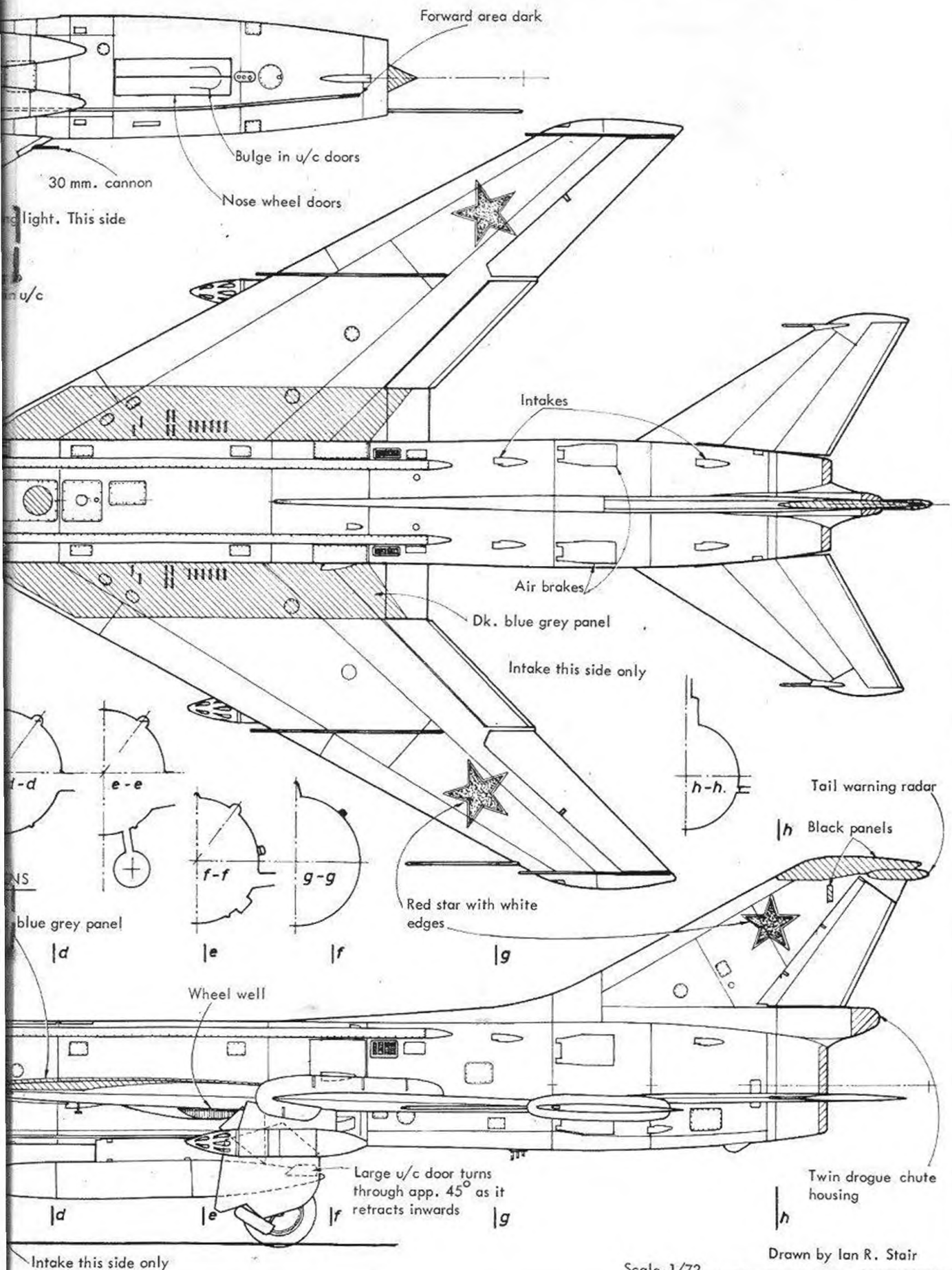


UNDERSIDE



Reprints of this feature plus 1/48th scale dye-line prints are available as plan pack BL 2877 price 2/6d. From AEROMODELLER PLANS SERVICE 13/35 Bridge Street, Hemel Hempsted, Herts.







Why not join this grand junior Aeromodelling Club?

Dear Sir,

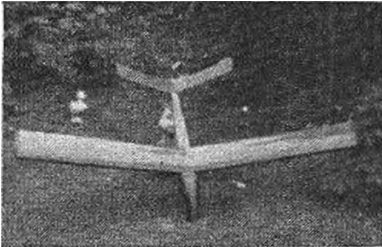
I am enclosing a photograph of my *Moonbeam II*, which I have recently built. It was described in the July issue of *R.C.M. & E.*

It is finished in red with Black trim and has a *McGregor Terrytone II* receiver and a *F.R.* lightweight escapement.

On its first flight my father and I took it to some hills near where we live. We launched it, it flew for about 12 yards, dropped a wing and crashed without damage and on its second flight it did the same but this time it pulled the front wing dowl out of the fuselage.

Please can you tell me what is the best method to cure the banking. Hope you can oblige, please find enclosed an S.A.E. for your reply.
Grays, Essex.

W. Cottis



W. Cottis's *Moonbeam II*, radio controlled glider.

Trimming a model for flight is rather a lengthy procedure to describe. If the model is dropping a wing, it sounds very much as though it is trying to stall. Check that the model balances on its centre line and weight either wing tip to correct this. Test glide again and add some more nose weight until any stalling tendency is cured. If it still drops a wing, check for warps and add a trim tab to counteract this.

Dear Sir,

I started buying *Aero Modeller* at the beginning of the year. I have found it to be full of useful information and interesting features. The first plane that I built was *Ferdinand* the second was *Turncoat*. I am entering the *Turncoat* in a Hobbies Fair and I hope to win a prize, then I will be able to buy another plane.

I am interested to know if you will be able to send me *Plans Handbook No. 1*. If so how much will it cost for postage.

I would also like to know if you can find a pen pal for me, I would like to swap information. Would it be possible for you to let me join the *Golden Wings Club*. What would be the best radio control plane for beginners suitable for the O.S. *Pixie* radio control equipment. Johannesburg, South Africa. T. Hicks

The Aeromodeller Plans Handbook No. 1 costs 2/- (two shillings) and is post free to any destination. Any Pen Pals who would like to write should contact Master Hicks at 40 Tenth Avenue, Orange Grove, Johannesburg, South Africa You can join the *Golden Wings Club* by filling in the membership coupon printed in each issue of *Aero Modeller*. The *Keil Kraft Mini Super* is an ideal model for the O.S. *Pixie* radio gear.

Dear Sir,

I am a newcomer to Aeromodelling and to your club. I would like some advice on the finishing of models, in respect of painting. After the model has been clear doped, is an enamel finish better than a coloured dope finish? Are the push button "spray tins" of enamel as good as a spray gun.

Since I started to buy the *Aero Modeller* (May 1967) I have picked up a lot of useful hints and like the magazine very much. Can back issues of *Aero Modeller* be obtained and if so how? Hoping you can give me some advice.
Dublin 9, Eire.

P. Mullon

Enamel and dope finishes are both good for aircraft use, but you do not need to fuel proof enamel, as you do with dope, when diesel fuel is used. If a glow plug engine is used they must both be fuel proofed. The push button spray tins of dope do on average give a better finish than a spray gun. It is a matter of personal choice to use the spray gun or spray tin, experience also plays a large part in this. Back issues of Aero Modeller are only available for a few months from the Editorial offices, Beaumont Aviation Books, 11, Bath Street, London, E.C.1. has quite a large stock of backnumbers in stock.

Dear Sir,

Please could you tell me if there are any model clubs in this area, which I could join.
Benson, Oxford.

R. Luke

Full details of all the model clubs in Great Britain were published in the March 1967 issue of Aero Modeller. This gave the location of all the clubs, their flying sites, meeting places and number of members, in fact all the information you need to select the club most suitable to yourself. The Oxford Club secretary is D. Vaughan 94 St. Clements, Oxford. A new club is also being formed at R.A.F. Benson.

Dear Sir,

I have been a keen aeromodeller now for some years, although it wasn't until about 1½ years ago that I got my first Aero engine. This engine was a *Cox Golden Bee* a .049 glowplug type. My first plane was a *Keil Kraft Champ* which taught me how to fly control and lasted some six months afterwards. My brother bought me a *Mercury Wasp* for Christmas which was a good steady flier. For my birthday I had a *Frog 150 Mk III* and I put this in a *Keil Kraft Gazelle*. With this I have executed a few loops and some inverted flights, but most of all a vertical figure eight. I always look forward to the *Aero Modeller* and to reading the *Golden Wings Club* pages.

Easenhall, Warwicks.

J. Lockwood

Dear Sir,

I have been a *Golden Wings Club* member for some time now and do not understand the Coming Events section of Club and Contest News each month. When you give the venue for the contest it is followed by some event symbols such as, Open R/G/P, or ¼A, F.A.I.T/R, ½A P, etc.

Brixton, London.

S. Black

The contest calendar gets longer each year and to get this all in the correct issue of the magazine we have to condense it as much as possible. This means the use of very small (5 point) type face and some notations instead of the event full names. Open R/G/P means Open (Unrestricted) Rubber, Glider and Power duration free flight classes. ¼A, FAI T/R means the ¼A and A (international class) team race for control line models. ½A P means, a free flight power duration class for the .049 size engines. This can be flown in the

Dear John Bridge,

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

NAME IN FULL

ADDRESS

YEAR OF BIRTH SCHOOL

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

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

2/6d
G.W. No.
2d. in the 1/- Rebate
plan purchase coupon
for Golden Wings Members

GOLDEN WINGS CLUB

unrestricted contests as well. Some other ones we use are **RJR**, i.e. *Rat Race*, **C.G.** i.e. *Chuck Glider*, and **A & B Combat** i.e. the 2.5c.c. and 2.5c.c.+ classes of combat flying for control line.

Dear Sir,

I have been flying kit models for some two years now and my latest is the *Veron Nimrod*, this goes very well. In your *Plans Handbook No 1* that I purchased from my model shop some months ago, there is not always a mention of the suitable engine size. Also what do the letters under the description of the plan mean, i.e. B, C or D. this has been puzzling me a few times.

Wanstead, London.

J. Wright

The engine size to suit the Aeromodeller plans are shown under the description of each plan in the *A.P.S. Handbook* with the power code letters, i.e. the B, C or D. This is converted to the engine size by looking up the engine and letters in the table of the world's model engines. If you have an *Oliver Tiger* which is in the power group G, this engine is suitable for any aircraft with the letter G under the description.

Dear Sir,

Having just constructed my first own design free flight rubber model which has a cabin fuselage, I am very disappointed with the results. The fuselage has come out all twisted but I used very straight strip wood to construct it with. Why has

this warped and twisted, is there a reason?

Amersham, Bucks.

P. Jones

There is a very good reason for the fuselage twisting on your model. If you used strip wood the chances are that they were of different densities and with odd bending rates. You can cut adjacent strips from sheet to get a uniform wood density for a true structure or inspect the strip more closely when selecting it at the model shop.

Pen Pal Wanted

Master S. Kulaindrum, c/o E. T. Simon Rasiyah Esq., 7 De Alwis Place, Dehiwela, Ceylon, would like a pen pal so that he can get information on British Aeromodelling from interested Golden Wings men.

GOLDEN WINGER'S FULL SIZE PLAN THIS MONTH

"HUMBUG" was intended as a tough, reliable sports

flyer, with a capability for scramble flying as a sideline. In these respects, it has been most successful, having survived the rough and tumble of sport flying; been lost in the "bush" for four months, after which it required no retrimming; and has never been beaten in a scramble.

The requirements for a good scramble design happen, we feel, to coincide with the requirements for a good beginners' model—simplicity of construction, ease of trimming, and the ability to maintain that trim, and durability. Thus "Humbug" presents an ideal opportunity for a youngster to break (sorry!) into power flying, while also providing great fun for more experienced modellers.

Design and construction of the prototype occupied one weekend, for a total cost of materials of about 5/-—excluding motor and wheels, of course. The Cox Pee Wee is the ideal power plant, with its ease of handling, although others may be substituted. If the model is kept light, by substituting a lighter grade of wood, or using $\frac{1}{8}$ in non-critical areas, an 0.10 will provide quite sufficient power.

Construction begins with the wing. Choose the harder edge of the sheet of balsa for the LE of the wing, give what is to be the underside two coats of dope, and sand. While the dope is drying, cut the ribs from the hardest piece of 3/32 available. Now for bath time! Drop the wing into the bath, whereupon it will curl, with the doped side inside the curve. Don't leave it too long, or you'll have a dandy tube fuselage for your next Wakefield! Now glue the ribs in place, noting that double ribs are used in the centre. You will have noticed that the wing, at this stage, has no dihedral. That comes next. Cut the flat wing in half, and give the dihedral joint with a piece of scrap T.E. section balsa sandwiched between the two halves, to provide the correct angle. When this is dry—preferably after having been left overnight—reinforce the joint with a well-glued strip of tape.

The tailplane and fin require little work, except for the anti-warp keys, which are let in across the grain. Be sure to pin these units down securely while the keys are being glued into place, as a bad joint made in "mid-air" can result in a warp which is difficult to remove.

Next, cut all fuselage parts, giving particular attention to the downthrust angle. Bend the undercarriage wire, sew and glue to the appropriate former with nylon thread, and assemble the fuselage. The sides are then pulled together at the tail, with a careful eye on the alignment of the fuselage. Small scraps of balsa should also be fitted behind the firewall, to reinforce the joint. The top and bottom sheeting is then fitted, with the grain running across the fuselage. Finally, reinforce the firewall joint with a strip of silk or light bandage.

When all this cutting and glueing is complete, sand the model thoroughly, fit dowels and the tailplane platform, and epoxy short lengths of 1/16 wire into the holes in the firewall to locate the engine mounting plate. The idea of attaching the motor with rubber bands may be a little horrifying to some modellers, but it works, and is a good deal less troublesome than attaching units to the back of the firewall, and so on.

Apply sufficient dope to seal all surfaces, sand thoroughly, and cover all but the underside of the wing with lightweight tissue. Then apply more dope, and finally fuelproof. Weight is not critical, although we would recommend using coloured tissue rather than colour dope—it's easier, anyway! The original weighed 4½ oz.

Right—attach the motor with stout rubber bands, looping the bands from the nose dowel behind the motor, but *under* the wire pins. Then collect fuel and batteries, and head for the nearest field.

If all angles are correct, and the model balances correctly, trimming should be no problem at all. The glide is slow and flat, in large left hand circles. Using the normal .020 propeller, the climb is fairly steep, in tight left hand circles—a little left thrust may be needed to maintain this—with perhaps a little left rudder tab. We fly scrambles with a 6 x 3 nylon propeller, an enormous load for a Pee Wee, but one which we would recommend, for nice, gentle, non-ulcer type flying. Again, trim is left-left, but the climb is naturally much slower, and in wider circles, no side thrust being required.

In conclusion, a word of warning—keep the engine run short! We didn't—once—and promptly lost our "Humbug"!

TOPICAL TWISTS

by 'Pylonius': illustrated by 'Sherry'

Devaluation

FLIGHT value in the contest field is rather like currency; it is subject to periodic devaluation. Take the Wakefield, for instance. Time was when anyone who could keep a model airborne for one glorious minute was assured of a victorious salute of raised deer-stalkers. But Modelman, with his timekeeping eye beamed on future horizons, could not leave well alone, and came the fateful day when his models began to outfly dear old Wimbledon Common, and he had, perforce, to leave for pastures not so green.

But even when given a R.A.F. 'drome to use, he had ideas above his station; so, in an endeavour to bring him down to earth the powers that be tampered with the power that was; eventually reducing his rubber motor to elastic band dimensions. Undeterred by this he still managed, in his perverse way, to spend more time outside the flying field than in it.

Obviously another dose of devaluation was indicated, and this he is now getting with what may become known as the Seven Year Hitch. This means that, to keep in the running, and I mean running, he will have to cram in seven flights per contest, not to mention the fly-offs. Worst of all, it is no use the contestants complaining—they just won't have a leg to stand on.

Another new piece of F.A.I. legislation puts an end to the era of the V.I.P. contest judge. Up to now the only qualification for that exalted office was sufficient maturity and status for a dark glasses and walking stick turn out, although if operating in the Radio area it was necessary to be sprightly enough to make the occasional evasive six foot leap. But now the new breed of judge is to be a fully qualified and trained official, very much on the same footing as the football referee. We trust, however, that this does not mean the laying on of a police escort, or the putting up of a wire net around the contest area to keep out the flying fuel bottles.

Snap Judgement

About the worst subject to get in cine camera focus, apart from the back of the Mother-in-law's head, is the model plane, flitting agitatedly and microscopically in the corner of the viewfinder.

It is incredible to think that the squiggly dot on the screen is that super realistic multi model you admired so much, or that there was so much empty sky in the world.

But, no need to be discouraged. We are now told that it is quite unnecessary to shoot the model plane in flight; in fact, it is a waste of time even attempting it. What you do is to aim the camera at some skyward looking toddler, and leave it to his reactions to denote what is going on up above. For instance, when the little chap stands on his head the viewer will rightly interpret this as a Radio job. Fingers in ears can mean a Power model, and swivelling eyes a Team Racer.

Growing Concern

I often wonder if all this cossetting of Junior members by do-gooder Seniors isn't just a waste of good building time. I know that it is a fashionable way of demonstrating one's dedication to the hobby to join the Juniors' Welfare League, but I often think it is more rewarding to build a model than to try to build a model flyer. The number of hours which have been lost trying to whip up some enthusiasm amongst non-starters would be enough to redress the balance of payments.

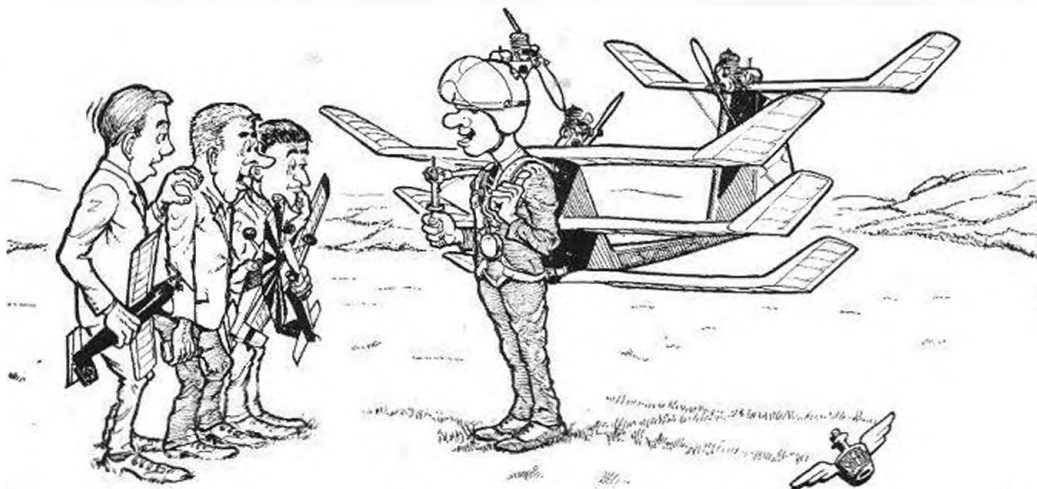
In my experience the junior aeromodeller is like a firework; he either goes off with a bang or just fizzles out. Now the one who goes off with a bang doesn't want to be fussed over by some old creep of a senior member. After listening patiently to a lecture on 'Chuck Gliders for Beginners' he whips out a crisp looking multi radio job of his own design—thus proving that the model builder is born, not made.

Taking the Rise

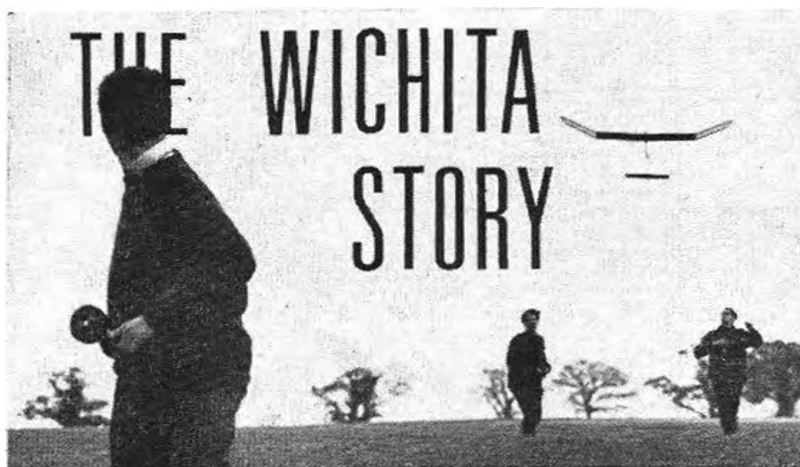
From what we read, model flying in America is largely of the old fashioned chuck-it-and-hope variety. Furthermore, they don't seem too concerned about what they chuck as long as it approximates to the popular view of what a model plane should look like. Reason for this apathy are those huge, hungry thermals which devour everything with the same voracity, be it an ultra finished Wakefield or a rough hewn chuck glider. And the equally monstrous down-draughts are just as unselective; even the most hardened tactical flyer has to launch a full scale campaign just to get airborne.

Some people, of course, have a natural feeling for thermals, instantly recognising such symptoms as being two feet off the ground, but others may seek artificial aids, and this gives scope for commercial exploitation.

'Old Gripe is more than a deodorant; it is a fabulous thermal detector, guaranteed to give you instant success on the flying field, even without a girl friend.'



"I've finally found a use for all those old free flight wings."



by Mike Woodhouse

The story of his development of an A/2 glider design

THE Wichita A/2 series was first conceived in August, 1961, after a long rethink regarding my design efforts up to that date and in particular my abysmal failure in the '61 team trials. Up to this time my models were based upon the *Altair* and *Lucifer* gliders and at times were reasonably successful but never met with the success of the original designs.

The first *Wichita* was based upon what I considered were the best models at the '61 trials, namely those of Ray Monks' and Graham Freestone together with my own ideas in an effort to establish a foundation from which I could develop. The result was an entirely different model to those I had been flying up until that time.

The first model exceeded my hopes and was extremely good for a prototype. The model was extremely good in dead evening air in late August, which does *not* mean much in relation to contest results. A few modifications were made to the original after testing:

1. A reduction of fin area (from 4 in. x 3 in. to 3 in. x 3 in.) after problems of turn overtightening in strong lift or wind.

2. The fuselage boom had to be replaced due to persistent breaking and warping (from $\frac{1}{4}$ in. top, $\frac{1}{8}$ in. sides to $\frac{1}{2}$ in. top, $\frac{3}{8}$ in. sides). A triangular section was used for quite a while but even after further strengthening was eventually abandoned although I've still one of these fuselages left and in regular use.

Once proved that the design was basically sound, further versions were built by both club mates and myself. Rapid production of several more models helped to eliminate small faults in detail design and structure. Through application of several different lines of thought, ideas were tried and either adopted or dropped. Some of those that fell by the wayside were: turbulators, geodetic bracing in the wing and shorter wing tips.

The result of all this was a drop in dead air time but an increase in reliability which began to show itself in contest results.

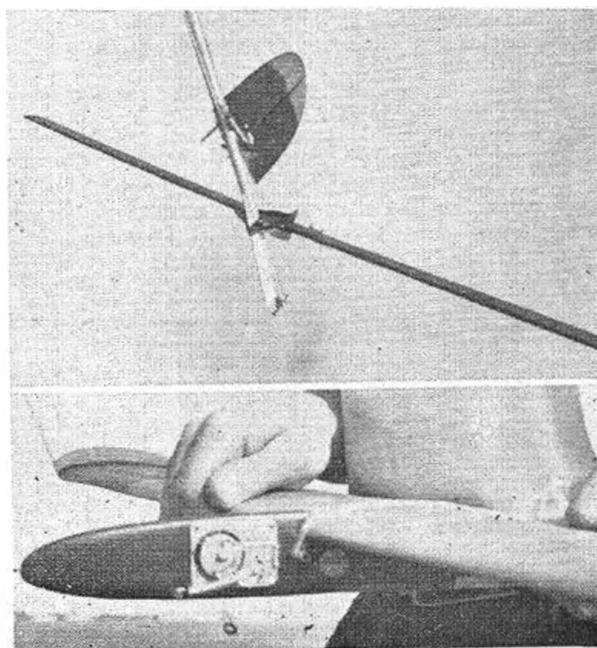
Heading shows the start of a tow, as it happens, one which qualified Mike for his place in the 1967 team for the World Glider Championships during the trials at RAF Odiham. At right are close-ups of the *Wichita* showing the tailplane at dethermalised position on the slender fishing rod fuselage and the clockwork timer mounted in the nose.

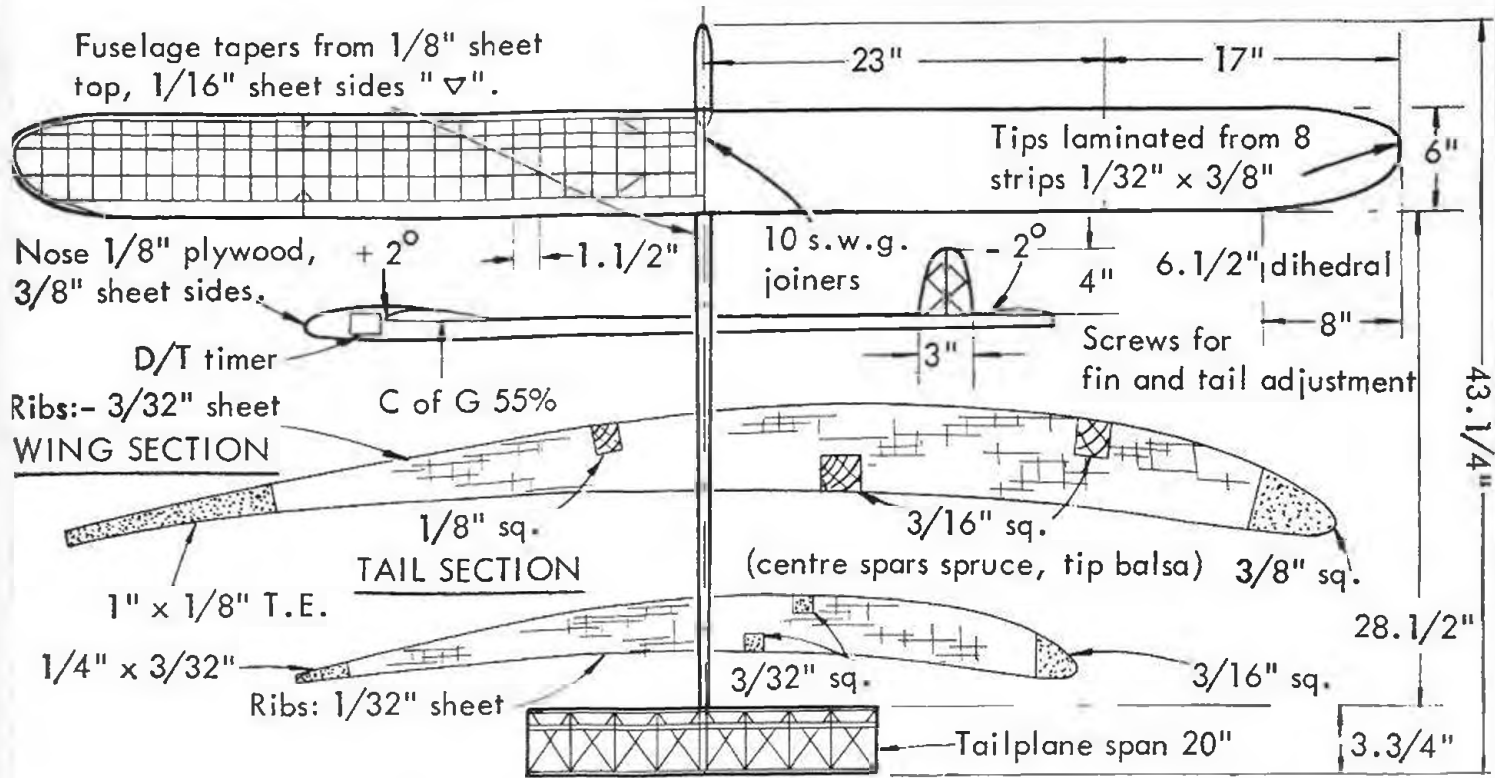
A few of the major steps in design between 1962 and 1966 in order of development were:

1. The introduction of a double D/T system—fuse and timer combined (see *Aero Modeller* article April, 1965).

2. *Faster construction*—in particular the use of shop trailing edge ($\frac{1}{2}$ in. x $\frac{1}{8}$ in.) pessimists forecast performance deterioration, but my most successful models employed this type of trailing edge. As a try-out I flew one of the *Wichitas* using the thickened wing against another using the older more normal section of a cold, dull winter day: the result over five flights was thin wing 11:45, thick 11:38.

3. *Addition of wing warps*—warps as for power model practice (wash-out wing tips, wash-in on inside wing). The tip warps are used to delay tip stall. The wash-in was added, about $\frac{1}{4}$ in., to aid both turning and prevent spinning in strong wind or lift. The idea being that when the nose lifts the model will begin to stall inside wing first the model will thus fall into the turn. As well as this when the





model does turn tight the warp will prevent spinning in. The resulting pattern is not pretty but very effective.

4. Fibreglass fuselage—(see *Aero Modeller* November 1966).

Now to the flying side of the business.

To start with, a few basic assumptions must be made, number one being that no A/2 glider can perform full maximum duration flights of 3 minutes in this country. Usually on contest days, flights without lift that appear in neutral air will more often than not return scores quite a lot below the dead air time. Thus thermal seeking has become an entire necessity as a result of this fact.

Thermal seeking is still a fairly new development in this country due to considerable range of conditions that can be encountered throughout one day let alone a whole season!

The various ways of finding life have been covered time and time again so I won't attempt to delve into this save to add what I consider are a few relevant points worthy of note.

I know anything will go up in lift, but to obtain this consistently a well trimmed reliable model is

needed. Wings strapped on tight, a timer system that works properly, balanced wings, etc. I usually use the same model regardless of conditions though certain quirks in a particular model or oddity of the flying field might cause a change though I never change trim for flat calm or windy weather flying. I find the ultimate trim by flying in the strongest wind I intended to fly in, the towhook position being adjusted for best tow in the same conditions and then left. I have varied these points in the past but have met with disastrous results, once bitten etc.

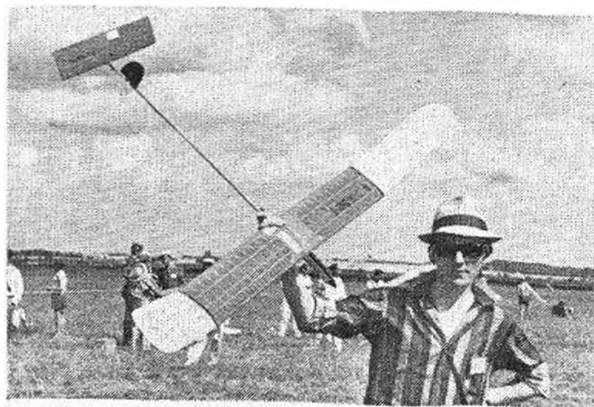
When towing, I try to let the model 'fly' as lightly as possible on the line, to ensure it doesn't drop off I use a long towhook 2 1/2 in. bent up at about 10 deg. with just enough room for the ring to slip off and tow on a 35 lb. well stretched mono-filament nylon line. By this means I can personally find more lift, opinions differ quite a lot, some people preferring a tight line with a constant pull from the model.

Tactics have come to play a part of any glider contest (the next section is written to give least possible help to anyone trying to pinch lift off me !!). My own tactics vary considerably and depend on many things, although the object is to devise a way by which I can most consistently score maxes. The following points that I usually work upon are the model I'm flying, the importance of the contest, the weather, the airfield, time of year and the quantity and quality of the rest of the field.

There are several points that I usually try to follow, the weight put on each point dependent on the conditions outlined above.

1. Always watch other models and "pinch" lift if possible, although contrary to popular belief this is not always the best method.

2. Always be prepared to sacrifice both No. 1 and reserve models, if not, don't fly as this inhibition can easily undermine capabilities and then what was trying to be avoided, will probably happen.



Drawing above is Wichita MKI in original form. At left, Mike Woodhouse at Sazena in Czechoslovakia where he flew the later version as opposite, with Fibreglass fishing rod fuselage.

STATION		1.25	2.50	5.00	7.50	10.00	15.00	20.00	25.00	30.00	40.00	50.00	60.00	70.00	80.00	90.00	100.0	
TAIL SECTION	Upper	.80	2.45	3.25	4.25	4.95	5.55	6.50	7.10	7.55	7.80	8.00	7.55	6.85	5.90	4.80	3.70	2.00
	Lower	.80	0.00	0.20	0.35	0.60	0.80	1.05	1.35	1.60	1.75	1.90	2.00	1.90	1.75	1.35	0.80	0.00
WING SECTION	Upper	1.00	3.20	4.30	5.55	6.55	7.25	8.25	9.10	9.50	9.90	9.99	9.55	8.75	7.75	6.15	4.45	2.00
	Lower	1.00	0.00	0.20	0.55	0.90	1.20	1.65	2.10	2.60	2.85	3.30	3.50	3.30	2.85	2.10	1.20	0.00

3. Watch other people's score cards to see what's happening, if no one's maxing, hold back and fly later.

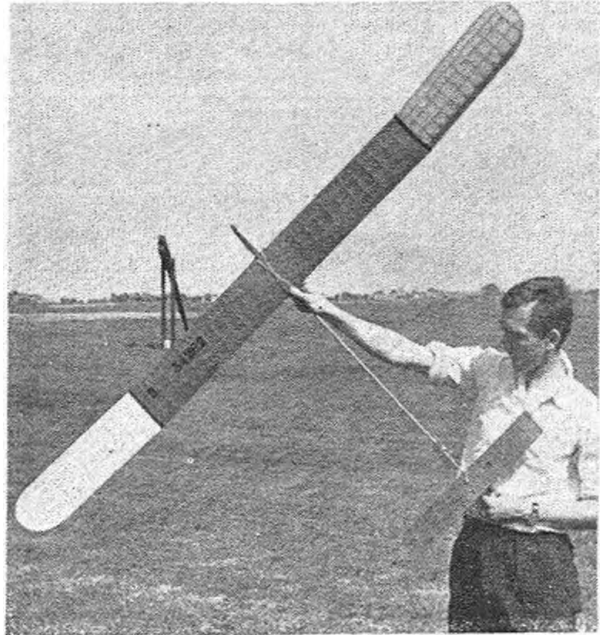
4. Watch the sky and look for birds, seagulls are very good at lift finding in the summer, birds will follow thermals that have carried low flying insects with them.

5. Never fly when the sun has been recently obscured by cloud.

6. Never panic, there's usually another thermal to follow.

7. If in doubt—don't !

Based on a Jedelsky section, the ordinates are for wing and tail airfoils as on latest Wichita.

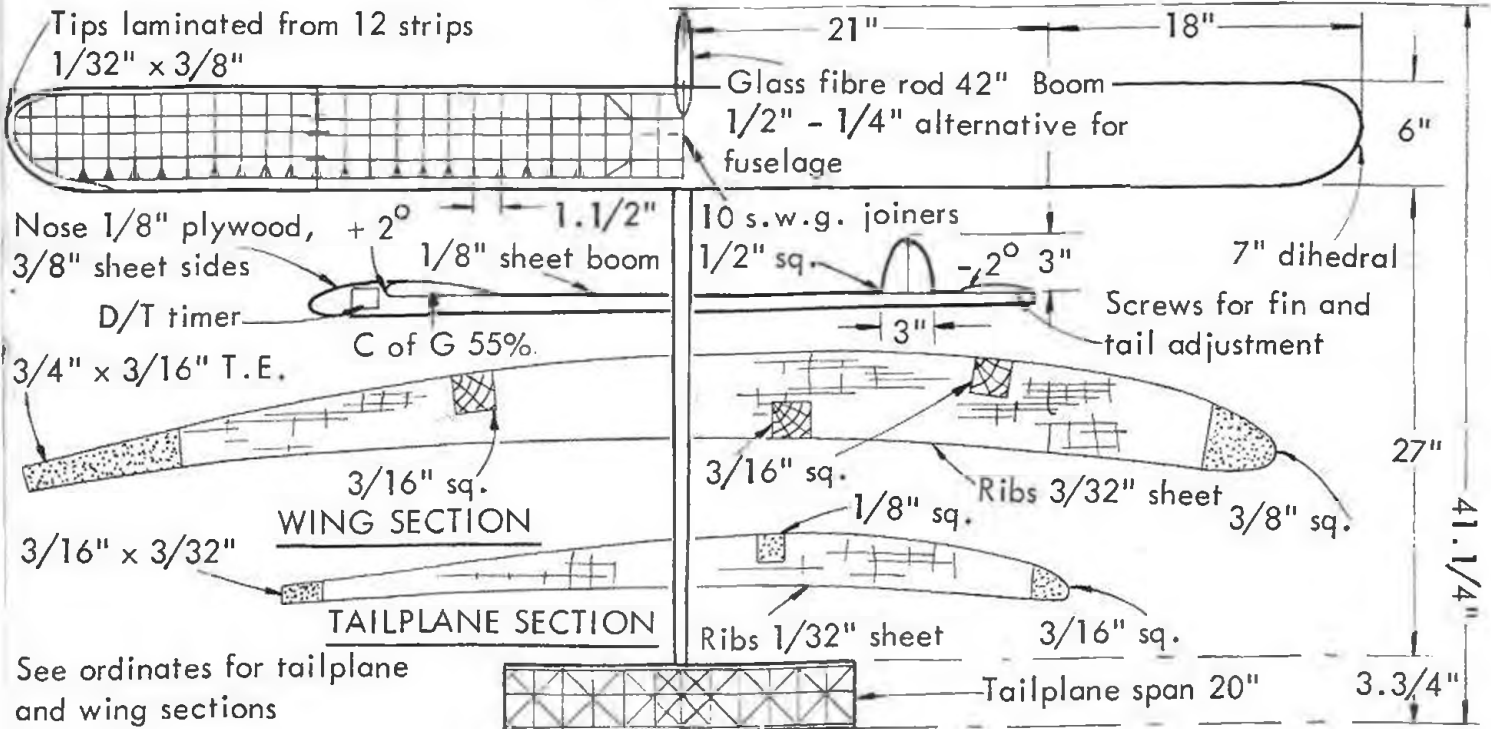


Mike Woodhouse and the 6 in. Chord version as drawn below, but with the fishing rod fuselage.

The Future?

The latest step has been the increase of wing aspect ratio chord reduced to 5 1/2 in. in an effort to get a better glide. The reason for this step has been found necessary as recently I've found that an A/2 of one of my club-mates has a noticeably better glide. As yet this 'improvement' has not yet been tried though I'm confident enough of it to build two models. One of these models also features a nose model from a two part epoxy plastic in an effort to improve the durability of the fibre glass fuselage.

As nothing ever stays still, further development will and must take place; as far as I can visualise this will be a gradual improvement in structures using more obscure materials other than balsa together with gradual increase in aspect ratios and shortening of the nose and further cleaning up of the airframe.



WORLD CHAMPIONSHIPS—WHERE? WHO WON?

A chronological survey of events giving the location, individual and team trophy winners since resumption of International contests after World War 2

EVENT	Wakefield	A/2 Glider	F.A.I. Power	Speed C/L	Stunt C/L	Team Race	Multi R/C	Indoor
1948 Where? Winner Nation	U.S.A. Chesterton (G. Britain) ?							
1949 Where? Winner Nation	G. Britain Ellila (Finland) ?							
1950 Where? Winner Nation	Finland Ellila (Finland) !	Sweden Bernfest (Yugoslavia) ?						
1951 Where? Winner Nation	Finland Stark (Sweden) Holland	Yugoslavia Czepa (Austria) ?	France Schmidt (Switzerland) ?	Belgium Hewitt (G. Britain) ?				
1952 Where? Winner Nation	Sweden Blomgren (Sweden) France	Austria Gunic (Yugoslavia) W. Germany	Switzerland Wheeler (G. Britain) Switzerland	Belgium Wright (G. Britain) G. Britain				
1953 Where? Winner Nation	G. Britain Foster (U.S.A.) U.S.A.	Yugoslavia Hansen (Denmark) Denmark	G. Britain Kneeland (U.S.A.) U.S.A.	Italy Battistella (Italy) Italy				
1954 Where? Winner Nation	U.S.A. King (Australia) U.S.A.	Denmark Lindner (W. Germany) Germany	U.S.A. Wheeley (U.S.A.) U.S.A.	Holland Wright (G.B.) G. Britain	Holland Stouffs (Belgium) Belgium	Holland Smith (G.B.) G. Britain		
1955 Where? Winner Nation	W. Germany Samann (W. Germany) Sweden	W. Germany Lindner (W. Germany) Italy	W. Germany Gaster (G. Britain) G. Britain	France Sladky (Czechoslova.)				
1956 Where? Winner Nation	Sweden Peterson (Sweden) Sweden	Italy Brems (Belgium) Czechoslovakia	G. Britain Draper (G. Britain) G. Britain	Italy Gibbs (G. Britain) Czechoslovakia				
1957 Where? Winner Nation		Czechoslova. Babic (Yugoslavia) U.S.S.R.		Czechoslova. Sladky (Czech) Czechoslova.				
1958 Where? Winner Nation	G. Britain Baker (Australia) Hungary		G. Britain Frigyes (Hungary) Hungary	Belgium Toth (Hungary) Hungary	Belgium Gabris (Czech) Hungary	Belgium Edmonds (G. Britain) Italy		
1959 Where? Winner Nation	France Dvorak (Czechoslov.) U.S.A.	Belgium Ritz (U.S.A.) Finland						
1960 Where? Winner(s) Nation			G. Britain Pimenoff (Finland) Guerra (Italy) Sheppard (New Zeal'd) Hagel (Sweden) Conover (U.S.A.) Hungary	Hungary Rossi (Italy) U.S.A.	Hungary Grondal (Belgium) U.S.A.	Hungary Bernard (Belgium) G. Britain	Switzerl'd Kasmirski (U.S.A.) U.S.A.	
1961 Where? Winner Nation	W. Germany Reich (U.S.A.) Poland	W. Germany Averjanov (U.S.S.R.) Holland	W. Germany Schneeberger (Switzerl'd) Hungary					G. Britain Bilgri (U.S.A.) U.S.A.
1962 Where? Winner Nation				U.S.S.R. Krizma (Hungary) Hungary	U.S.S.R. Grondal (Belgium) U.S.S.R.	U.S.S.R. Sirotkin Chkourski (U.S.S.R.) U.S.S.R.	G. Britain Brett (U.S.A.) U.S.A.	G. Britain Reike (W. Germ.) W. Germ.

AIRSPED INDICATOR (cont. from page 81)

The only realistic way of determining the drag coefficient *K* is by experiment, so this is the one empirical factor in the whole formula. At this point another snag arises. Once the pressure plate is deflected it is no longer developing a pure drag force for it is assuming an angle of attack other than 90 degrees—Fig. 3. This means that the drag coefficient *K* is not constant but will vary with deflection (*A*^o).

Figure 4 shows the results of some experimental measurements undertaken with a drag plate of 1.44 sq. in. area (1.2 in. square), indicating the change in drag coefficient (*K*) with angle of deflection on an airspeed indicator set-up. The lower curve shows the corresponding drag coefficient for a plate area of 1 sq. in. The fact that the relationship is substantially linear enables the drag coefficient *K* to be expressed in the form:

$$K = .000063 - (.000001 A^o)$$

This applies when the surface area of the plate is in sq. in. and the speed *V* is in miles per hour.

Substituting this value of *K* in the main formula above and solving in terms of deflection (*A*^o) is a bit tedious, but it comes to:

$$A^o = \frac{79.4}{1.26 + d^4 \times 10^{10}} \frac{RDSV^2}{RDSV^2}$$

This is a basic formula for the design of a pressure plate airspeed indicator giving the deflection (*A*^o) in terms of all the variables involved—wire diameter (*d* in inches), length of moment arm (*R* in inches), coil mean diameter (*D* in inches), pressure plate area (*S* in sq. in.) and speed (*V* in m.p.h.).

For a practical formula we can put it as:

$$A^o = \frac{79.4}{1.26 + \frac{C}{V^2}}$$

where:

$$C = \frac{d^4 \times 10^{10}}{RDS}$$

This means that the value of *C* has only to be calculated once for a given layout. Scale calibrations can then be calculated on the basis of calculating the deflection (*A*^o) for different values of speed (*V*). Table I gives a complete working for the geometry of Fig. 5, as an example of use of the formula.

From experiment it would appear that the maximum deflection should not be more than about 30 degrees. More than this and the scale gets very crowded and rather inaccurate. If we adopt 30 degrees as a nominal maximum deflection corresponding to maximum speed for which the airspeed indicator is designed we find that:

$$C = 1.39 V^2 \text{ or say } 1.4 V^2$$

This will give a basis for selecting wire diameter for any required speed range, viz:

$$d^4 = \frac{1.4 V^2 RDS}{10^{10}}$$

See Table II for finding the actual value of *d* for calculated values of *d*⁴.

The other factors *R*, *D* and *S* can have nominal values. For instance, *S* can be made 1 sq. in. and *D* = ½ in., when:

$$d^4 = \frac{0.7RV^2}{10^{10}}$$

A few trial calculations will then fix *d*⁴ (and thus wire diameter required) to make a suitable airspeed indicator for reading up to the value of speed (*V*) used, and slightly beyond. Calibration is then done, of course, for other speeds by the main formula.

In other words, the above gives the basis for the design of a pressure plate indicator for any speed range likely to be required for models, and a method of calibrating the scale. It would still be advisable to check the calibrations by a 'car test' although this will have distinct limitations both at very low speeds (under about 15 m.p.h.) and at higher speeds (above 60 m.p.h.). Also you will probably find that the pressure plate indicator will not give absolutely steady readings but tend to oscillate slightly, particularly with a single turn coil.

WORLD CHAMPIONSHIPS — WHERE? WHO WON? (continued)

EVENT	Wakefield	A/2 Gilder	F.A.I. Power	Speed C/L	Stunt C/L	Team Race	Multi R/C	Indoor
1963 Where? Winner Nation	Austria Loffler (E. Germ.) Italy	Austria Ericsen (W. Germ.) U.S.S.R.	Austria Frigyes (Hungary) Italy				Belgium Brooke (U.S.A.) W. Germ.	
1964 Where? Winner Nation				Hungary Wisniewski (U.S.A.) U.S.A.	Hungary Sirotkin (U.S.S.R.) U.S.A.	Hungary Place Haworth (G. Britain) U.S.S.R.		
1965 Where? Winner Nation	Finland Koster (Denmark) Sweden	Finland Bucher (Switzerl'd) G. Britain	Finland Dall'Oglio (Italy) Italy				Sweden Brooke (U.S.A.) U.S.A.	
1966 Where? Winner Nation				G. Britain Wisniewski (U.S.A.) U.S.A.	G. Britain Gabris (Czechoslov.) U.S.A.	G. Britain Stockton Jehlik (U.S.A.) Czechoslovak.		Hungary Beck (W. Germ.) W. Germ.
1967 Where? Winner Nation	Czechoslov.* Sulkala (Finland) U.S.S.R.	Czechoslov.* Hirschel (E. Germany) Czechoslovakia	Czechoslov.* Seelig (W. Germany) G. Britain				France (Corsica) Kraft (U.S.A.) U.S.A.	
TROPHIES Individual Team	Wakefield Penaud/FNA	Daumerie Ae.C. Sweden	Victor Tatin Franjo Kluz/ Kosmonautica Vase	Ae.C. Italy	None	Paul du Toit	'King of Belgians' Model Aero Press	Dragonfly (S.M.A.E.)

* Subsequently graded "International", and not World Championship. Blank spaces indicate no event held.



EVEN the British Contest Season comes to an end eventually—usually about late November—and 1967 was no exception. I had hoped to be able to “tidy up” all reports, but am still awaiting the outcome of the two International Postal Events held during October.

Results of the later but more localised **East Anglian Decentralised F.A.I. Postal Competition**, held on 12th November, appeared with little delay. Despite quite reasonable weather, especially in the South, there were only 28 participants including a dozen from the organising area. This would seem to imply either that modellers do not care for this type of event or that they lack local facilities suitable for contest flying (and are reluctant to travel).

I flew at Elvington, by courtesy of the York Club, in conditions where a max went perhaps half of the available airfield space. Just four people competed there whilst another couple reckoned it wasn't worth the 5/- “double” entry fee! As only three “Chobham fliers” appear in the results I presume London Area were preoccupied with the L.D.I.C.C.

Overall winner was George French with just 10 seconds short of five maxs—obviously flying power. A late afternoon start



Left: Ray Elliott of Lee Bees who placed 2nd in Wakefield at the Croydon F.A.I. Gala has also had some success with his Open Rubber model last season. Another very keen Open class competitor is Sgt. Hadland of R.A.F. Brize Norton who won Open Rubber at the R.A.F. M.A.A. Champs (right).

Vintage events become increasingly popular. One veteran that always rings the bell of reminiscence is the Dick Korda Wakefield Winner of 1939, here flown by J. Mayes of Bristol. (The kit was once 8s. 6d.) Right: elegant A/2 by Chief Tech Truluck of R.A.F. Lyneham at R.A.F. M.A.A. Champs.

resulted in his final flight going O.O.S. in the dusk. Dave Hipperston and John Blount placed second and third flying Wakefields. John's model is worthy of mention in that it features variable trim. A few seconds after launch an Auto-Knips timer moves a flap on the *port* wing from the washed-out position to one more in keeping with the airfoil shape. Initial results are obviously encouraging.

Nev Willis provided the top A/2 representation at fourth position whilst the next two places went to the only other power entrants—Steve Bowles and myself. Practically all the rest of the entries were gliders.

The following weekend saw the **Croydon F.A.I. Gala** at Chobham Common. I was deterred from attending by the uninviting road conditions experienced (and forecast) after the Saturday's extremely depressing S.M.A.E. A.G.M.

Dave Hipperston supplied me with a very detailed report of which I will have to attempt to make a *précis*. The contest was run in one hour rounds between 10 a.m. and 3 p.m. and this arrangement eliminated several late arrivals who had failed to read the advance details.

The weather was cold, with a slight breeze increasing to a fair wind by the end of the contest. As there was plenty of lift quite a few models were lost in the notorious Chobham undergrowth and woods.

Free Flight Comment

JOHN O'DONNELL discusses recent events and contest tactics

Wakefield had the most competition and top positions changed throughout the day. Fourth round leader Jack North (with 11:59) elected not to take his fifth flight in favour of searching the gorse for his model. (He found it by chance just before dark). Laurie Burrows had his sliding wing jam for a disastrous final flight. Eventual winner, Bob Bailey, was much luckier as he had a rear peg pull out on his third flight after three-quarters of the climb and still recorded a reasonable score. Runners-up were Ray Elliott with only one max, and Ray Pavely.

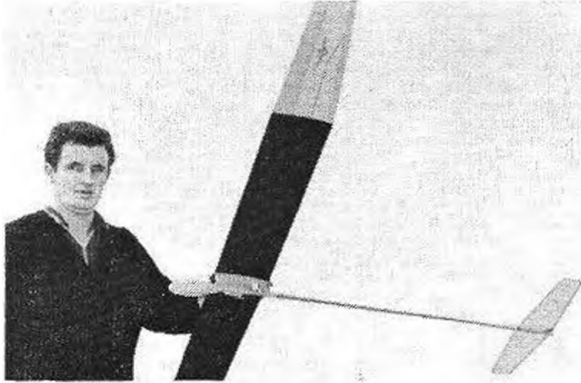
Glider was a continual reshuffle of Messrs. Dilly, Smith and Kaynes, all of the host club, who finally finished in that order. Ian had to finish with his reserve as his number one model had been taken home by its finder!

The Power event was almost a flyover for Tom Cheesley who managed four good flights out of five for top score of the meeting. C. S. Bryan missed three rounds due to retrieving difficulties and merely made a nominal last round flight to take second place.

★ ★ ★ ★

The 1968 S.M.A.E. Programme is still undecided at the time of writing, and will presumably have to be finalised at the Council Meeting of 13th Jan. There can be little doubt that the outcome





will be very much "the mixture as before" as, in fact, has been proposed by the F/F Sub-Committee. The biggest changes suggested are concerned with the Trials as there is mention in Ian Lucas' latest circular of "3 Trials being needed".

The recent decision by the F.A.I. to increase the number of flights at World Championships from five to seven must have repercussions at other levels. This number of flights in domestic events has obvious drawbacks, not the least of which are time-keeping and, at many meetings, the rival attraction of flying two open events for less effort than one F.A.I.

World Championship contests themselves are rather different although I consider it would have been far better to fly at times when lift is less likely than merely to fly more when it is present! Rounds are liable to become shorter, and with the current accent on thermal flying this might well become critical. The championships are the one event where helpers (even timekeepers) seem little problem. It would now seem that the time has come where a timekeeper could be allocated to each flier instead of a pair to a team. This would give everyone an equal chance which is hardly the present situation when team members have to fly successively. We should not forget that the Championships are *Individual* as well as National Team events, and it is the individual who expends his efforts (and often his money) to participate.

Present trends in thermal flying is a very popular topic in the various newsletters that I receive from home and overseas. Practically all comment is in the vein that tactical flying, "piggy-backing", or waiting with timekeepers is undesirable and *must* be stopped.

We are far from consistent in our attitude to this. When it is done at the World Championships it is regarded as part of continental expertise—and all very clever. When, however, we do it at home it is another matter. After Czechoslovakia there were the usual cries about how we must improve in Wakefield and A/2. Attempting this by model refinement is acclaimed, but to practice thermal exploitation is decried! This is hardly logical.

It has become apparent that the "restricted" events (i.e. Glider, Wakefield and Cd'H) need to be flown in favourable air to obtain a max. As far as can be foreseen no amount of conventional juggling with the aerodynamics or engineering of these classes is liable to produce a really significant improvement in performance. Of course present models can be refined, but the process is subject to the Law of Diminishing Returns. Should anything revolutionary appear, such as a hypothetical plastic capable of storing twice the energy of rubber, then I'm sure the rules will be rewritten swiftly to suit.

On the other hand, a *reliable* method of assessing the local air conditions on ascent/descent considerations would give all the increase in duration needed, and without requiring more than a very ordinary model. As this has been widely realised by now it is hardly surprising that "tactics" have developed. It is noticeable that the modellers who make a success of complex models also pay considerable attention as to *when* they fly. They, at least, have no illusions that variable rigging, ball-race propeller assemblies and involved structures are any more than a *help* towards winning.

At present A/2 is the most extreme of the "tactical" events. Gliders are becoming very standardised and of very comparable performance. Main differences between designs seem to be in flight characteristics—hence the need for lift. Certainly at any

well attended contest I would hardly consider flying "on my own", as to do so would merely mark a thermal (or the opposite) for the opposition.

Having described the situation as it exists, what can be done about it? Invariably suggestions are advanced that the waiting time (between obtaining the services of a timekeeper and launching) should be limited. There are obvious ways to wait *before* requesting one's flight card, and self-provided timekeepers then become even more useful than at present.

As finding one's own lift is usually considered praiseworthy I suppose it *could* be stipulated that competitors can fly when they like *provided* any model launched earlier is sufficiently downwind. This would be rather inconvenient in calm weather, or during the usual last minute rush!

The old, old system of flying by number, or when called, is even worse as it would turn the event into a raffle with the winner being the person who "draws" the best weather. It also demands much more comprehensive organisation than can currently be provided.

A specified launching area has been proved very far from the answer, as it merely concentrates fliers and produces what it is intended to prevent.

Certainly nothing will now destroy the knowledge that lift is the great equaliser—so perhaps we had better learn to live with the situation. There might even be a place for an admitted weather-picking event—but I'm sure we don't need more than one!

There is one promising solution—but it involves a drastic rethink of our whole *lift* contest setup. This is to "pair off" competitors and have the pairs fly within a very short interval on a knockout basis. The winner then goes on to the next round. With present entries this would not lead to too many flights—but it would demand proper organisation.

The virtues of this idea are pretty clear. There is no weather selection as we now know it. The better model should win in anything short of a strong thermal. Space requirements would presumably imply the use of a max—but this makes the whole system much less clear-cut.

Should anyone consider trying this scheme in practice could I suggest that the details are well and truly thought out *in advance*. With this proviso, the scheme could provide a contest well worthwhile from both participation and spectator considerations.

East Anglian Area D/C F.A.I. Postal.

12th November, 1967

1. G. French (Essex) 890 Power; 2. D. Hipperson (Croydon) 892 Wakefield; 3. J. Blount (Croydon) 843 Wakefield; 4. N. Willis (Anglia) 814 A/2; 5. S. Bowles (Norwich) 811 Power; 6. J. O'Donnell (Whitefield) 789 Power.

Croydon F.A.I. Gala

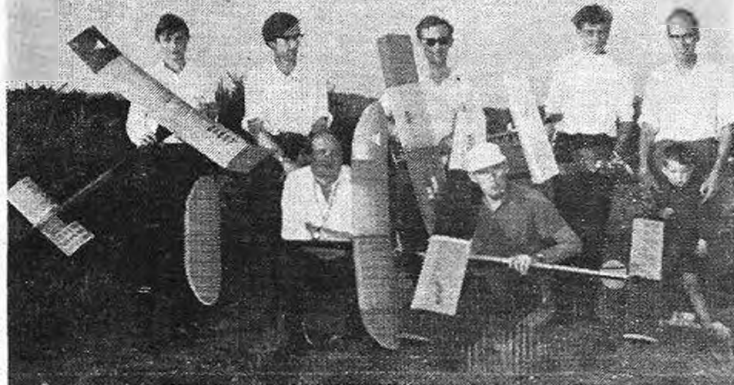
19th November, 1967

- Wakefield.** 1. R. Bailey (Croydon) 13:48; 2. R. Elliott (Lee Bees) 13:13; 3. R. Pavely (Hornchurch) 13:01. **Power.** 1. A. T. Cheesley (RAFMAA) 13:01. **Power 1.** A. T. Cheesley (RAFMAA) 13:58. 2. C. S. Bryan 4:09. **Glider.** 1. M. Dilly (Croydon) 13:34; 2. K. Smith (Croydon) 13:04; 3. I. Kaynes (Croydon) 12:50.



"Where have all the silencers gone?"

CLUB NEWS



WINTER is the time when all good aeromodellers and true are building those super projects with which they are going to surprise the summery flying flyers, but to the 'hardy annuals' it is very much a time of model flying.

We are reminded of this year round dedication by an enterprising effort by Alan Wells of Hornchurch M.A.C., to step up the intensity of Wakefield contesting in the South of England. He is promoting a six round Winter Competition for the breed which is to be held on Chobham Common. The six rounds are, in effect, six phases of the same contest covering the early part of 1968 (see *Contest Calendar for dates*). The aggregate flight times of the best four rounds by each competitor to count as his final score. This should certainly provide a good work out for our keener Wakefield flyers under more or less non-thermal conditions. A much needed stimulus after our none too good showing in the last World Champs.

Odd how one district becomes suddenly model aircraft conscious, with a livening influx of enthusiastic members lifting the local club out of the doldrums. Don't ask me to give rhyme or reason, better to ask the Richmond and District M.A.C., which is now riding high, with prestige much uplifted by its stronger showing in S.M.A.E., and London District Team events and the higher individual placings achieved in contests generally. In celebration of this renaissance and also the club's tenth birthday a bumper Gala is to be held this year, which, it is hoped, will prove to be a minor F/J Nationals. To beguile the wintry months the club is running a series of 'fun' comps in Richmond Park (Stag Parties?) Anyway, if you live down Richmond way you will be welcome to drop in at the 'Sun Inn', Parkshot, Richmond, any Friday evening.

Mr. P. B. Jenkins is the newly appointed P.R.O., of the Norwich M.A.C. He also has the honour of being the R/C Comp Sec., with a flighty group of 16 to 20 Radio types under his wing. To fill in his spare time he prints and distributes the club newsheet (we look forward to seeing it). And an upward swing of interest to report in this club, too! Things are looking up for the Sport of Wings! R.T.P., flying is being laid on to liven up the wintry months, so why not make a point of joining, you lone flyers.

Heading shows Richmond Club team of the '67 Kiel Trophy, below; the clothes may change for Moggs Morris & Richard Wilkens but "September Warrior" goes on forever! Seen at Cranfield.



"Pop" Warburton has made three magnificent Trophies, is seen with one of them here. He intends to give them for control line stunt events in '68—good show!



"Ginger" Toohey, one of the keenest of the RAFMAA's control line enthusiasts has also made his mark in Australian modelling circles. Hope we won't lose him to "down-under", it'll be their gain.



Stark warning from the Elliott Model Eng. Club: "Don't throw your silencers out". Elliott say that they are but one club of many which, in order to preserve precious flying sites, will have to insist on the continued use of the muffling gadget, whatever the official position may be. Contest flyers are thus advised that all Elliott comps carry the silencer rule as a condition of entry, including the C/L Gala. The only exception will be in F.A.I., Team Race, wherein a full cowled model will be acceptable. The club is sorry to insist so strongly on the silencer rule but, as it points out, no flying site, no flying. Club Newsletter is called 'The Emeculate', whatever that might mean. Quite a range of topics discussed, from a complaint about Quinton Hogg on his telly remarks to an article on engine tuning. This is obviously not by 'Furious Flicker' who loquaciously covers the C/L front.

The editorial in *Scottish Aeromodelling* also has a thing or two to say about silencers. It suggests that their use should be discretionary, necessary when flying near populated areas or in public places, but not so essential when flying in remote areas. The newsletter also has a dig at exhibitionist R/C flyers, particularly the clever, clever spectator buzzers.

Night flying is not one of the more popular of model pursuits, but is something often imposed upon reluctant Combat flyers. Thanks to fine weather, however, the Combat event in the C/L Rally held at Halington Sports Ground by the Imperial College M.A.C., came to a happy conclusion before the sun had completed the brighter part of its lap. The event was dominated by the FACCT Club, with Johnson of that club the winner. Although it is hoped that the Rat Race was not all that rather too competitive name implies, the speeds took some keeping up with—in the 120 m.p.h. region. The winner of this swivel marathon was Alan Woodrow of Delta with a time of 6.29. Entries were down on the previous year, but it is hoped that come the Spring Rally, a few less young men's thoughts will have turned lightly in other directions.

Nothing is more encouraging to the model flyer than a co-operative family. And surely the testing point of such loyalty is the use of the home as a club meeting place, particularly as the Secretary of the Worcester Sky Pals finds the meetings so well attended. And there is room for more, and Mr. J. Coleman, the Sec., will be happy for any new member to contact him at Claines Cottage, Claines, Nr. Worcester. The newcomer will find the club interests to cover the whole spectrum of the hobby, with always plenty going on such as contests, displays (a 'Blue Max' one in the local cinema) and outings.

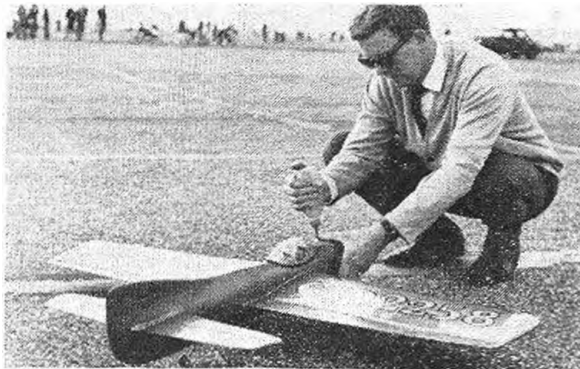
From the humble beginnings of four miscellaneous R/C flyers finding a common interest on the local common there sprang into being the West Birmingham Radio Control Society. Very much S/Channel and popular design in the early days, but learning the hard way over the years has given rise to more sophisticated equipment and many own design projects. On the membership side, too, much has been achieved, with a merry band of 20 flyers who enjoy the amenities of club headquarters and flying field. Many a speedo mile was clocked in search of this essential piece of equipment—the flying field, but the expeditions were worth the while. A few meetings and rallies have been receded by members, and an insight into the standards required in the contest field attained. In consequence it is fair to expect the name West Birmingham to become known in the result sheets of the future. New members welcome. Contact Mr. H. Copson, Hon. Sec., 92 Windsor Road, Halesowen, Worcs.

Calling all clubs within hailing distance of Oxford. Would you like to run a couple of events in a Combat Rally to be held in the Oxford area? Events in question are A and B. Request comes from John Dixon of Merton College, Oxford.

"Things are stirring in Sharston." This is not a tea set slogan, but the report of the Sharston M.A.C., commenting upon a recent influx of new members. Very much a C/L club this, with Scale, Stunt, Speed and Rat getting a due share of attention. And, best incentive to progress of all, a resident engine tuner to get things moving just that bit faster.

Concern in the competitors' companion, the Northern News, continues to be for a performance reducing formula for Open Rubber contests. Latest suggestion is to restrict the distance from nose-block to rear anchor peg as a rough and ready means of limiting rubber bulk. Many other ideas, such as ballasting, which are good in themselves, require more processing than the official famine will allow. What is needed is something simple, obvious and effective. Another contest headache, 'tactical' flying, gets its share of comment. Sportsmen are now concentrating on the 'piggy back' ploy; a device by which the thermal hogs get more than their snout up share of updraught. You wait for the 'charlies' to launch, when one gets lift you immediately opt to share his good fortune.

Everything's going up these days, even model planes, if you're lucky. Club subs are no exception, and the Leicester M.A.C. reports that it has reluctantly raised fees to 21/- for Seniors and 12/6d. for Juniors. Topical prohibition note: the club airfield is out of bounds owing to the foot and mouth epidemic. Topical word also on silencers. These are required for all classes of models, S.M.A.E., revisions notwithstanding.



C. Elliott of Wolves refuelling his "Chizler" 50 in. stunter at last years South Midland Area Gala.

At the Club A.G.M., the "Glasgow Model Aircraft Club and Renfrewshire" eschewed that unwieldy mouthful in favour of more succinct "Clyde Valley Flyers". The said flyers have cleaved unto themselves two new flying fields on the slopes of Gleniffer Braes (doing bonny banks on yon bonny braes?) Adding further to the flying field tally there is news of a large expanse of moorland for the use of. Lost are the Rootes Pressings Recreation Grounds due to all engulfing urbanity; motorways through and airfields adjacent.

Another Area, rather than district club is the Teesside M.F.C., which is a consolidation of a number of local clubs and which began life a year ago. The membership figure stands at 56, mainly seniors but with a strong minority of juniors. Interests range widely from R/C to F/F. Useful member is Bill Kitchen, holder of the Northern Models Exhibition Trophy—just the man to smooth out those finishing wrinkles. Meetings are held at Settlement House, Newport Road, Middlesbrough, on the third Tuesday of each month at approx. 7.15. Plenty of discussion, and light refreshments available. Airfield situation somewhat dicey since the loss of R.A.F. Thornaby, due to devious reasons. One is that it is Council rather than R.A.F., and more housing estate than airfield, and another the depredations

How's this for a notice? S. P. Cousins photographed it at Horsenden Hill in the London Borough of Ealing. Tells us that it is approx. ½ mile north of the Hoover factory at Perivale in Western Ave (A40) and the natives are reasonably friendly but beware the boundary canal!



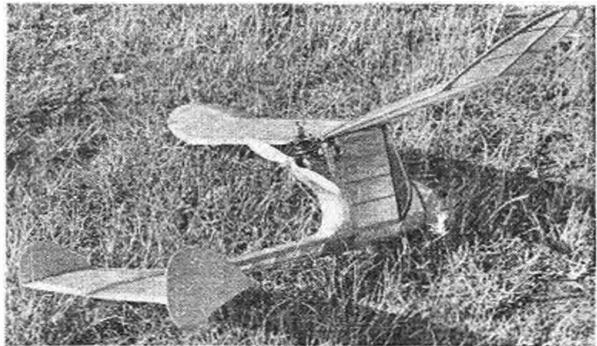
The Editor and Sqdn. Ldr. "Bill" Drinkell during their film/talk to 45 RAFMAA members from Changi, Seletar and Tengah, December 7th. Activity in Singapore is extremely keen, and mainly radio control. Each Station has a clubroom, that at Seletar is the wartime Japanese control tower.

of non-members. This seems to follow the general pattern of relinquished R.A.F. fields not surviving long as model aircraft amenities. However, a new field has been acquired, but lacks at present a level stretch for R/C and C/I operations. Also the slope soaring site continues in operative use, and there is even another useful slope adjacent to the new flying field. Prospective members are asked to contact the Hon. Sec., Alan Pearson, 19 Hurst Park, Redcar.

Crawley Club's 'Turbulator' contains a report of the South Eastern Area's A.G.M. The Treasurer reports the kitty to be a few pounds in the red, but it is expected that the takings from the South Coast Gala will help redress the adverse balance. Main cause of the sterling drain is the hefty Ashdown Forest flying levy. The issue includes the plan of a Coupe D'Hiver model called of all things 'Patience Strong'. This encourages me to sign off this month with a little homily of my own, "When flying tribulations throng, keep my nerve and patience strong."

Just as a postscript, K. Olszowka, Katowice, ul. Plebiscytowa 42b, Poland, is interested in obtaining English plastic kits. He writes in good English. Christian name is Kazimierz.

Clubman.



Vintage pusher with a Mills .75 is a "Yogi", entered by Mr. Beach at the '67 St. Albans vintage event. Could start a new trend, reviving old shapes like this.

COMING EVENTS

- | | |
|-----------------|---|
| January 21 | <i>Blackheath Gala.</i> Open R.G.P. Wakefield. Bill White Trophy for Open Rubber—Chobham Common. |
| Jan./Feb./March | <i>Winter Wakefield Events</i> organised by A. R. Wells, 28 Nimes Way, Hornchurch, Essex. Chobham Common, January 7th, 21st; February 4th, 18th; March 4th, 18th, fee 2/6 each round. |
| February 18th | <i>Airtech M.F.C.</i> R/C Spot Landing Contest at Haddenham, Bucks. Further details send to Richardson, 71, Walton Road, Aylesbury, Bucks. Refreshments available. |
| February 25 | <i>Winter Gala.</i> Rat Race with silencers. All-In-F.A.I. in rounds, vintage, R.A.F. Hullavington. |
| March | <i>Halifax Tailless International Challenge Trophy Contest.</i> All March 1968. Attractive rules free, Entry forms 1/- each from John Pool, 3, Rothwell Drive, Halifax. |

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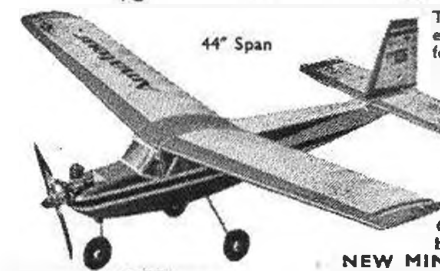
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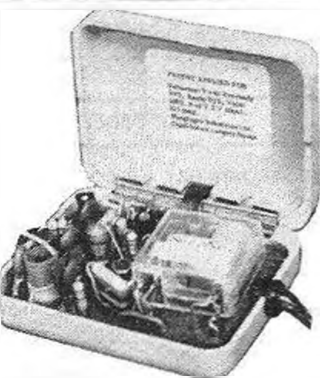
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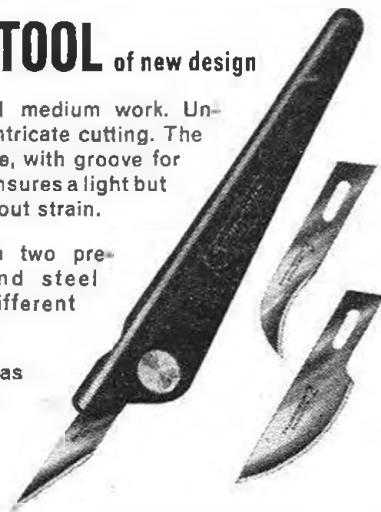
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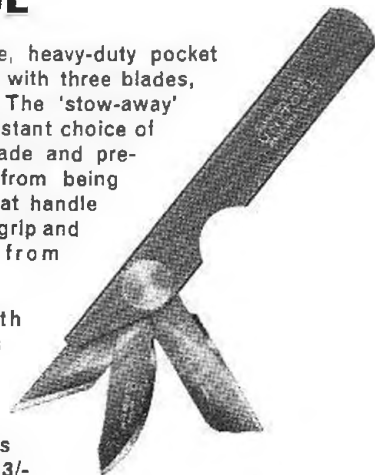


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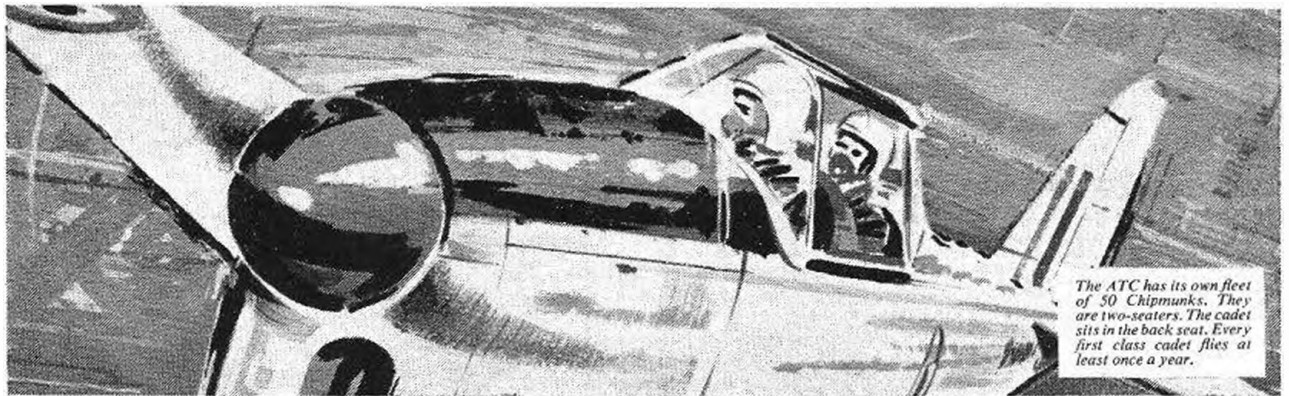
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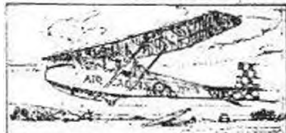
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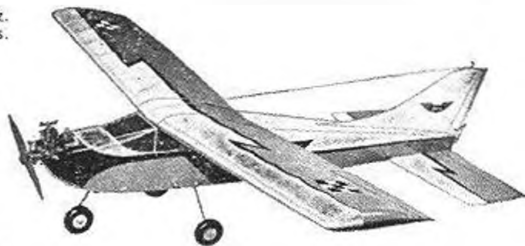


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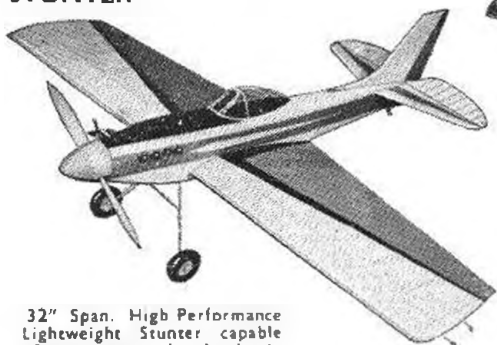
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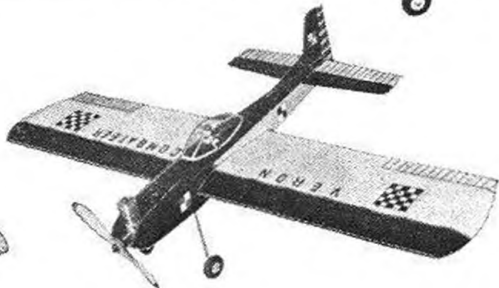
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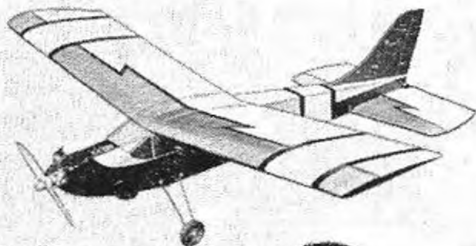
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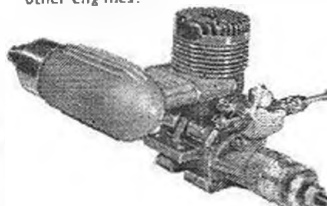
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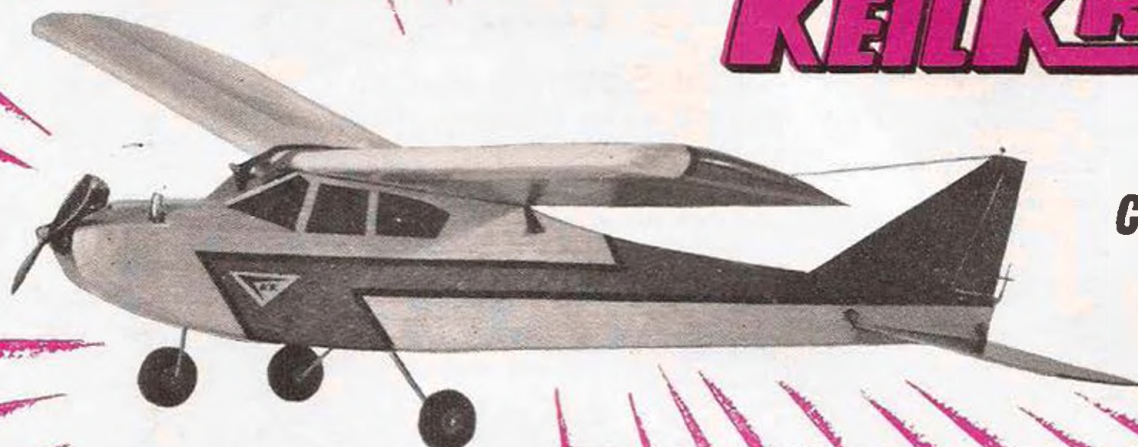
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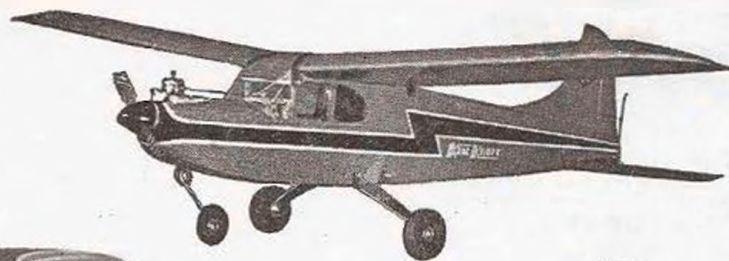
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