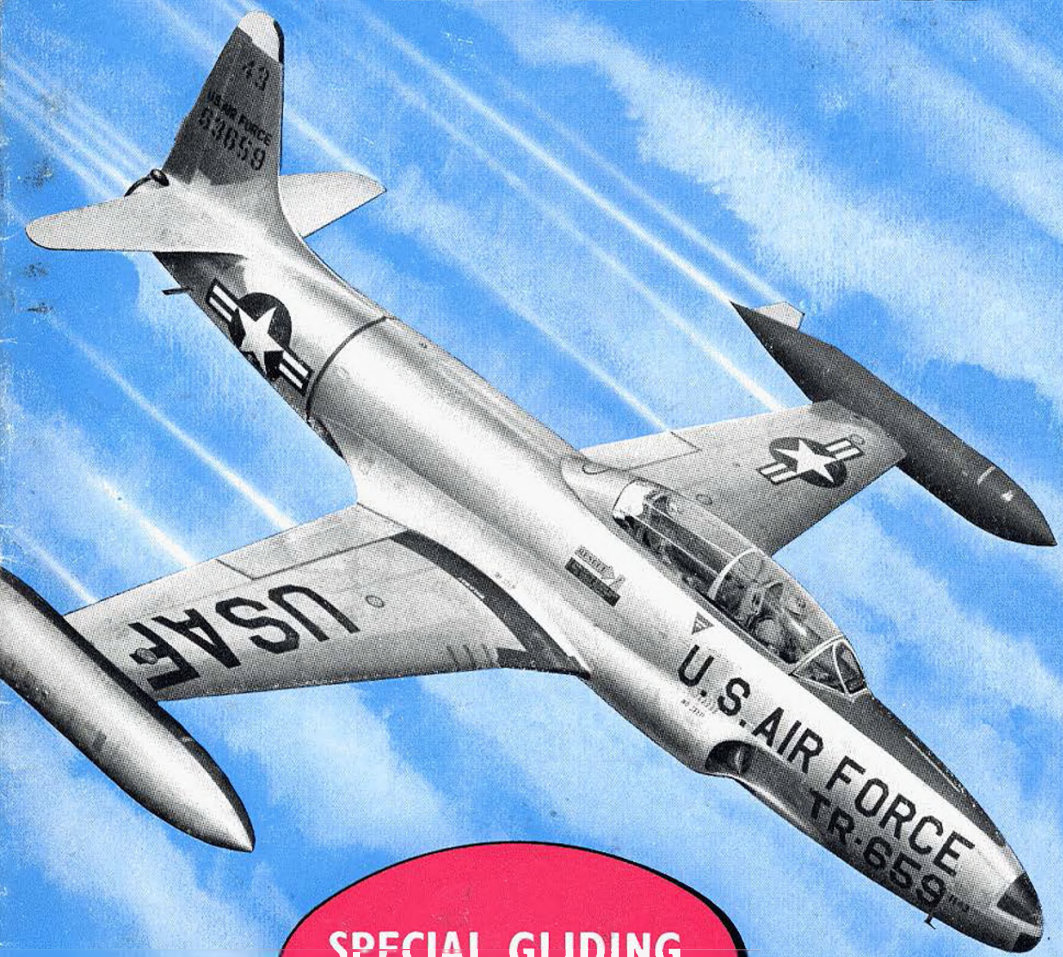
APRIL 1958

AERO MODELLER



SPECIAL GLIDING HOLIDAYS FEATURE

1/6

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SUPER MERLIN

·76 c.c. — ·046 cu. ins.

Only 52/7
Complete with tank, spinner, tommy bar, and propeller.

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The standard
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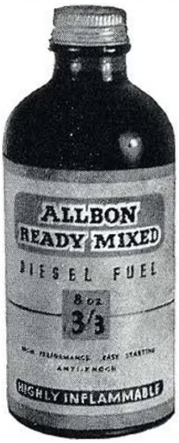
ONLY 43/10d.



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Allbon Ready Mix puts new life into old motors and more revs and longer life into new motors. Special additatives in this five part mixture ensure easy starting, extra power, and a minimum of engine wear.

SABRE

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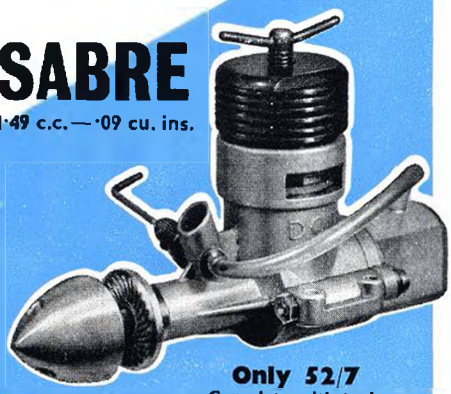

Only 52/7
Complete with tank, spinner, tommy bar, and propeller.

DAVIES CHARLTON LIMITED
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THE SOLARBO BALSA STORY

This is one of a series of articles on Balsa Wood written by John Paterson, Managing Director of Solarbo Ltd.

PART II

. . . MORE TROUBLES!

ALL WOODS tend to split as they dry. You will probably have noticed logs in this country which have been sawn through and through, as the trade calls it, with pieces of wood nailed across the ends of the planks. This is intended to try and stop the planks from splitting as they dry.

If you imagine a wet log lying in a tropical forest with a blazing sun beating down on it you can easily see that the outside of the log will tend to dry quite quickly. When wood dries it shrinks and if the outside of the circular log shrinks faster than the inside it must split. That is why it is impossible to ship logs of Balsa wood from Ecuador.

When wood is kiln dried you first of all heat the wood with wet steam and then you regulate the drying speed by controlling the humidity of the air in the kiln so that you allow time for the moisture to come out of the inside of the piece of timber, not just the outside.

With Balsa wood you will always get small splits at the ends of the planks. Before you can cut off a length ready for it to be sawn into sheets you have to cut away, generally, about 1 to 1½ inches from the end of the plank to get rid of those end splits. Sometimes these splits can be easily as much as 4 or 5 inches, and you can see what that means if you have a six-foot plank and want to cut two three-foot lengths of sheet from it.

To overcome this we now specify that all our wood shall have a three-inch over-measure on the lengths we buy. We have to pay extra for this but we get less short lengths which have to be cut back again with further waste.

I think it appropriate to say here that if only Aeromodellers would buy shorter lengths of sheet—say 24 in. or 18 in. long—as well as 36-in. sheet, it would make for a great overall economy in production.

When I buy Balsa wood I cannot specify sizes like one does with ordinary softwoods. When the saw-miller cuts his wood he cuts 2-in., 2½-in., 3-in. or sometimes 4-in. thicknesses of plank, according to what he can get out of his wood. These planks have waney edges and various defects. When he converts the planks into square edge material he cuts the maximum width he can get without a rough edge, and maximum length he can get to give a combination of maximum width and the getting rid of defects.

By far the majority of lengths we receive are between 3 ft. and 6 ft. so that every time we cut off a 3-ft. length we get 12-in., 18-in., 24-in. or 30-in. lengths left over. Similarly, only a proportion of the wood is 3 in. or 4 in. thick, so that every time we cut a 3-in. or 4-in. width from a wider plank we have a piece off the edge of the plank left, for which we have to find a use.

Another nasty defect is Storm-shake. This appears in a piece of wood as a series of minute cracks across the timber and can make it quite useless for cutting thin sheet. It is not a major defect but sometimes you get a whole batch of wood, presumably cut from logs from some "storm-shaken" area, More waste!

All timber has knots—the tree would not have any branches if it hadn't—and most timber is acceptable with knots in it. But NOT in Balsa wood for Aeromodellers. Indeed, you do not like the curly grain that you get near the area of a knot. So again we have to cut and trim to eliminate these areas to meet what you require in Balsa wood for models.

Next month I have some extremely interesting photographs of Balsa logs to show you — demonstrating clearly some of the reasons why Balsawood is not exported in log form — and how variable is the growth of the Balsa tree.

VOLUME XXIII
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APRIL 1958

Managing Editor - - - C. S. RUSHBROOKE
Editor - - - - - - H. G. HUNDLEBY
Assistant Editor - - - - R. G. MOULTON

★

Special features

★

Regular features

★

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On matters International

ON JANUARY 6TH, 1958, the General Secretaries of various National Aero Clubs held a meeting under the auspices of the F.A.I. to discuss matters of overall policy. Although the majority of their decisions were of little interest to modellers, others are worthy of mention.

They confirmed that the Gliding, Parachuting, Aeromodelling, and Ballooning Committees are very active and should continue to meet at regular intervals.

From time to time, when we have disagreed with their decisions, we have said hard things about the Aeromodelling Committee, for which reason we are more than pleased to see this well deserved acknowledgment of a live and *active* body.

Another decision of great interest to competition modellers, and which has arisen, not only from the rumpus created in the modelling world by hasty and ill-conceived rule changes, but also from similar happenings in full-scale sporting flying, reads as follows:

"*That no rule or regulation affecting records or competitions be altered, amended, added to or withdrawn by any Commission of the F.A.I. unless the item has been placed upon the Agenda and details circulated to National Aero Clubs at least 30 days before the meeting. In the event of such an item being raised at a meeting without prior notification, full details shall be sent to all National Aero Clubs and if requested by any member nation, a further meeting of the Commission shall be held in Paris to discuss the matter and briefs on the subject from National Aero Clubs whose delegates are unable to attend shall be submitted to the meeting when considering the subject.*"

Nearer to home the S.M.A.E. Council at its last meeting discussed the important issue of the Wakefield Trophy. Voting reflected the somewhat mixed feelings that have prevailed, and a motion that the trophy should be retained by the F.A.I., in spite of their decision that it would only be competed for bi-annually, was carried by 11 votes for and 7 abstentions. We think the right decision has been made, for whatever our disagreements with F.A.I. rules, the Wakefield should remain the premier rubber trophy for World Championship competition.

Mention of World Championships reminds us that the S.M.A.E. has the job of running both the Rubber and Power Championships at Cranfield this year. To do this not only involves many hours of preparatory work by voluntary officers, but also involves the Society in heavy expense.

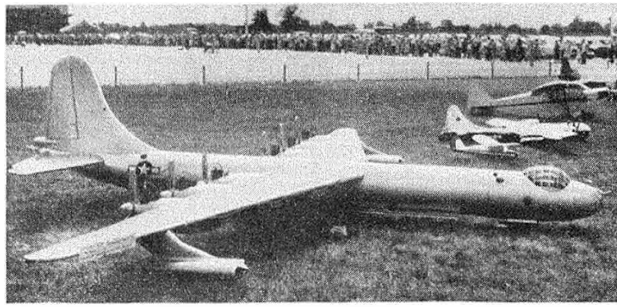
At the last Championships at Cranfield, costs exceeded £1,000, which amount has to be raised additional to normal funds. This year there will be some twenty nations competing, many of them from countries whose modelling societies are State supported. The S.M.A.E. receives no financial support from the State and on occasions such as this must therefore rely on voluntary contributions.

We ask *all* our readers, both private individuals and those in the trade, to support the 1958 International Contest Fund. It is essential for the prestige of British aeromodelling that these important contests are well administered, and this is only possible if the necessary finance is forthcoming.

As an appealing tailpiece, can we offer the thought that if each of our 50,000 readers gave a modest sixpence then the required amount would be exceeded!

On the cover . . .

MOST USED JET TRAINER—Student-pilots are given the feel of 600-mile-an-hour flight in the U.S. Air Force's T-33 trainer (PV-2 for the U.S. Navy), a two-place jet manufactured by Lockheed Aircraft Corporation, Burbank, California. Standard jet fighter-trainer for the U.S. Air Force, Navy, Marines and eighteen other powers through the Mutual Defence Assistance Pact, the T-33 is a tandem-cockpit version of the F-80 Shooting Star. In service since 1948, the versatile, dual-control flying classrooms are also being produced by Canadair Ltd., Montreal, for the Royal Canadian Air Force. Nine out of ten of all the world's jet pilots are trained in the Lockheed T-33.



Heard at the Hangar Doors

Gi-normous!

We've seen 30-ft. span towline gliders, and many a model exceeding the F.A.I. maximum weight regulation of 11 lb., but never before have we heard of such elephantine enthusiasm as apparently pursued by James Pappas of Indianapolis, Indiana, U.S.A. The photo shows part of his collection of giants. This is a 25 ft. 8½ in. span Convair B36 fitted with six Jacobsen two-stroke engines of about 2½ horse power and weighing 8 lb. each, plus a pair of Dynajets in each of the wing tip pods. Mr. Pappas is currently thinking of flying this 300 lb. model under radio control.

In the background can be seen a Boeing B.50, which he has flown on controline despite its weight of 60 lb. and the half-size Piper Cub, the cabin of which is quite capable of accommodating two children. There is also a Lockheed Shooting Star and Piper Tri-Pacer in the same collection. This photo was taken from a colour transparency supplied to us by Tom Pearson of Purdue University who saw the models at a contest in Kokomo, Indiana. Per . . . lease don't ask us for plans!!

S.M.A.E. Gen

A number of interesting decisions were taken at the S.M.A.E. Council Meeting held on February 16th, among them being the following:

1. April 26th, the date of the Schoolboys' Soccer Final at Wembley, will be the occasion for a half-hour demonstration of control-line flying. This should prove a fine opportunity for the publicising of aeromodelling to the many thousands of schoolboys (and adults!) who will be watching this exciting football match.

2. Team Trials meetings will almost definitely take place at Hemswell, near Lincoln; and Cranfield is confirmed for the Area Championships-cum-Radio Trials.

3. British Records will come in for possible revision at the end of 1958. It seems logical to base the domestic schedule on the International listing, but opinions will be welcomed and be taken into consideration when preparing the memorandum for consideration by the Council.

4. In order to provide easy checking of models, insurance, and ownership, in future models must carry the owner's S.M.A.E. membership number on the upper surface of the wing, with the exception of Scale models, and microfilm and tissue-covered indoor models. Indoor chuck gliders must conform to this new requirement, and letters/numbers must be a minimum of ¾ inch in height. (An earlier notice giving the height as ½ inch has been superseded, as the ¾-inch letter is available commercially.)

5. The Federation of Model Aeronautical Manufacturers and Wholesalers has given a donation of £50 towards the costs of running the Championship meeting at Cranfield next August.

6. The annual Dinner and Prizegiving of the Society will be held on November 22nd.

7. The film made at the 1957 Nationals has been enthusiastically received, and has already almost cleared the cost of production in hiring fees.

Learn to fly—Free!

Since a free £150 flying scholarship scheme for air cadets began in 1950, some 2,000 cadets of the Air Training Corps and the air sections of the Combined Cadet Force have been selected for training to fly a light aircraft. They attend local civilian flying clubs and complete the private pilot's licence course of 30 hours' flying within three months if possible. Chipmunk and Auster aircraft are mostly used.

By the end of December, 1957, 1,982 air cadets had qualified and another 258 are under instruction or are waiting to start flying. Boys still at school learn during school holidays, or if day boys, at weekends. Any proficient cadet who is over 16½ may apply for a flying scholarship and attend the R.A.F. Aircrew Selection Centre, Hornchurch, for aptitude tests, interview and medical examination. The Selection Board meets continuously throughout the year.

New lines for Class A

Following recommendations by the S.M.A.E. Controline Sub-Committee, it has been decided to alter the S.M.A.E. line length for Class A from 46 ft. 8 ins. to the international length of 52 ft. 2¾ ins. This will provide modellers with greater experience of flying on the longer lines and will standardise the circle radii for both the new 1958 F.A.I. Team Race specifications and S.M.A.E.

events. The number of laps required for a heat will now be 80, representing 4·97 miles or 8 kilometres. Speeds can easily be calculated in k.p.h. converted back into miles. Finals will be twice the distance, i.e. over 160 laps for 9·94 miles or 16 kilometres.

Incidentally, first-hand report from Henry Stoutls, 1957 European F.A.I. Team Race champion, show that there is little airspeed difference between the old and new F.A.I. rule models despite the considerable increase in size. This new line length for S.M.A.E. Contests also brings us nearly in line with the Australian Class A which has always been flown on 52 ft 6 in. lines.

S.M.A.E. Rule Book

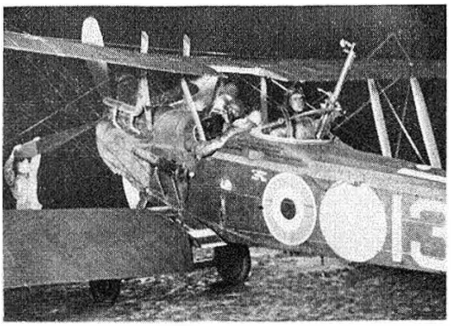
The new S.M.A.E. Rule Book is due for publication on April 1st, 1958, and in future will be supplied free of charge to all Full Senior and Junior Members. It has also been decided that a new rule book will be issued annually.

To date there is no sign of the revised F.A.I. Rule Book, but pending receipt of same, copies of the latest F.A.I. Radio Control Rules are available in duplicated form from the S.M.A.E. offices, price 1/-.

Three Biplanes this month!

We know that we shall be satisfying the majority of our readers (from first impressions of our Readers' Survey) when they find no less than three of their favourite subjects within our covers this month. George Cox's feature on the R.E.8 provides yet another fine subject for any type scale model, be it solid, free-flight or control-line, and in Flt.-Lt. Norman's *Active* we have a flying scale model *supreme*, which is already a contest winner, and certain to be popular with the perfectionists. The full-size *Arrow Active* is being rebuilt at Rollason's, Croydon Airport, for Norman Jones. It is hoped that spares supply permitting (*e.g.* streamline wires are on 18 months delivery quota!) the *Active* will be airborne in 1958 and will be having a Major in more ways than one, for the *Gipsy III* of 120 h.p. is to be replaced by a 145 h.p. Gipsy Major.

A very interesting comparison can be drawn with the *Active* and George Meyer's *Little Toot*. Both were made for the same purpose of personal enjoyment and despite the gap of twenty years which separates their design dates, they have many attributes in common. Incidentally, we would like to hear from any other aeromodellers who have followed their whims to the extent of building their own personal plane as has George Meyer.



Pilot's hand on the magneto switch, Gunner checking the Scarff ring motion, and Fitter about to throw his weight on the tip of the massive four-blade prop, this night action shot of an R.E.8 was taken at Savey on October 22nd, 1917, and shows an aircraft of the 69th Sqdn. Australian Flying Corps. (Imperial War Museum Photo E.1178)

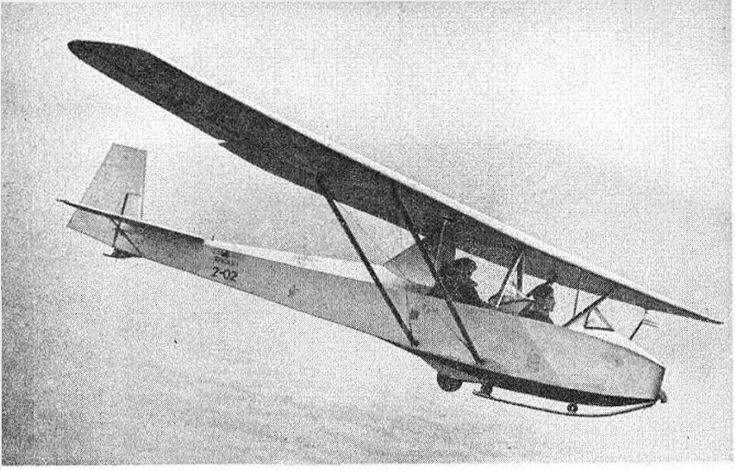
If that's your plane, where's mine?

Absolute gem from the *Larks Newsheet* concerns two R/C characters flying two beautifully finished "Astro-Hogs" (latest low wing multi design from America's West Coast). Both models were in the air, presumably on different frequencies or using crystal control spot frequencies, and could be hardly told apart. During subsequent manoeuvering an Astro-Hog was seen spinning into a field south-west of the flying area. Both fliers were concentrating on an orange Astro-Hog overhead, one presumably baffled by the lack of response to his control signals. Eventually a hesitant onlooker pointed out the tail of the other Astro-Hog sticking up out of the field, and return of the model still in the air to terra firma confirmed who was the lucky man!

Readers' Survey

May we remind all those readers who, as yet, have not sent in their survey forms that there is still time to do so. Closing date for the "Popularity Pick" contest with £25 cash prize, is April 30th and we shall be pleased to receive survey forms until that date.

FLIGHT photographs below show the purposeful lines of the Arrow Active carrying its King's Cup racing number 5



Build a 54 inch wingspan scale glider for sport flying

—By J. WILSON

Slingsby Tandem Tutor (T.31)

RETURNING BACK TO his farm in Falkirk from a holiday gliding course at Cairnbulg Aerodrome, near Fraserburgh, last year, John Wilson decided that the Tandem Tutor in which he enjoyed so many hours of flying, was the ideal subject for a flying scale model. Living on a farm, with no space or transportation problems he made it with a one-piece 54-in. wing, and the result is seen in the two photos at the foot of this page. Construction is as near as possible made to duplicate that of the full size which, incidentally, is known in the R.A.F. as Cadet 3.

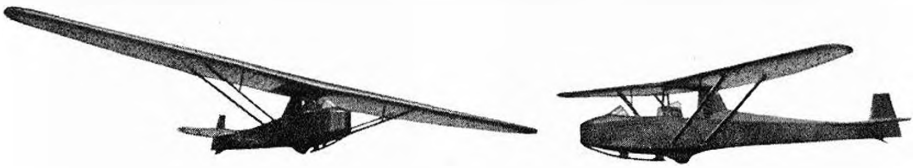
Those who have closer association with the single-seat Tutor will be able to convert the fuselage by eliminating the rear cockpit. A high proportion of the gliding clubs offering holiday courses are equipped with the Tandem Tutor and we are sure that Mr. Wilson's design will be popular with those who learn to glide during the coming year.

The basic $\frac{1}{8}$ square fuselage sides are built over the plan as shown in chain dotted line and the wing mounting pylon frames fitted to F2, F3. These formers are then used to key the two sides together, other spacers and formers added, then the $\frac{1}{16}$-in. sheet overlaid and $\frac{1}{16}$-in. square dummy Warren braces fitted to reproduce the full-size construction. The nose block should only be rough shaped before fitting to the front face of F1. No separate wire towhook is necessary as the end of the dummy nose skid comes conveniently at the correct position and is a most effective hook. Provision is not made for an auto rudder, but as this is not intended to be a high performance model, one should be content with the occasional premature release.

The tailplane is slightly enlarged over scale in order to improve performance and is a very simple construction, being flat plate $\frac{3}{8}$ in. x $\frac{1}{4}$ in. frame with $\frac{1}{8}$ in. x $\frac{1}{16}$ in. spars positioned above and below. These spars not only serve to prevent warping along the tail span, but also assist in providing a more effective symmetrical section as now is current vogue of many American radio control model designs.

Those who want to make the wings in two pieces should replace the 2-mm. ply bracing with celluloid boxes around the ply or aluminium dihedral keepers. Alternatively, the wing root can be changed to have stub dowels and pulled together with elastic bands at the leading and trailing edges, but in this case, the wing struts must be securely attached to prevent any excess dihedral. It should be mentioned, of course, that the full-size Tandem Tutor does not have much dihedral and 1$\frac{1}{2}$ in. under each tip was found to be the minimum permissible on this 4 ft. 6 in. model. Construction throughout is intended to be robust and with no less than four wing spars in the central panel, the T31 will withstand many a hard knock. The original model was silk covered for additional strength and doped red, although the majority of the Tandem Tutors in service are aluminium doped with a minimum of decoration.

Pictured in our heading is a typical T31 as operated by Royal Navy Cadets. A young Pakastani cadet is seen in the front cockpit, studiously taking over the controls from his instructor when flying from *R.N.A.S. Bramcote*. The device on the extreme nose is the towing release point.



A 54" SPAN SCALE MODEL GLIDER

TANDEM TUTOR T31

DESIGNED BY

J. Wilson

5/-

THE AEROMODELLER PLANS SERVICE

38, CLARENDON RD., WATFORD, HERTS

ALL WOODS ARE BALSA UNLESS OTHERWISE STATED

MATERIALS REQUIRED

5 SHEETS OF	1/16" x 3" x 36"	72 SHEET OF	1/32" x 3" x 36"
2 " "	1/32" x 3" x 36"	2 PIECES	16 SWG WIRE
1 SHEET "	1/8" x 3" x 36"	1 PIECE	18 " "
12 STRIPS "	1/8" SQ. x 36"	3" OF	16 SWG BRASS TUBE
3 " "	1/16" SQ. x 36"	12" x 12" OF	2 MM. PLY
4 " "	1/4" x 1/16" x 36"	6" x 6" "	CELLULOID
2 " "	1/2" x 1/16" x 36"	1 "	1" DIA BALOON WHEEL

16 SWG. HOOKS BETWEEN CENTRE RIBS

HOOK EXTENDED FOR WING RETAINING BAND

STRUTS SECURED IN WING TUBES WITH RUBBER BAND

W1 W2 W3 W4 W5 W6 W7 W8 W9 W10 W11 W12 W13 W14 W15

16 SWG BRASS TUBES SEWN TO W3

C.G.

COVER WHOLE MODEL WITH HEAVY MODELSPAN & GIVE 2 COATS CLEAR & 1 SPRAYED COAT OF ALUM+ DOPE

PYLON TOP

1/16" SHEET SPINE

CELLULOID SCREENS

20 SWG WIRE PITOT HEAD

STRUT FAIRINGS FROM 3/32" SHEET EACH SIDE OF WIRE

16 SWG HOOK SEWN TO F3

1/16" SHEET

1/16" x 1/4"

SCRAP BLOCK PLUG

F5 F6 F7 F8 F9 F10 F11 F12 F13

FIX TAILPLANE AFTER TRIMMING AND ADD 1/8" x 1/16" STRUTS

SOFT BLOCK L.E.

PAINT LINE

3/16" SHEET

R4 R3 R2 R1

PAPER TUBES FOR STRUT RETAINING BANDS

1/16" SQ. BASIC FUSELAGE SIDES DOTTED

1/16" SHEET GUSSET

16 SWG. SKID BOUND TO 1/8" x 1/4"

1/16" SHEET SIDE COVERING AFT OF THIS LINE

1/16" SQ. DUMMY STRUCTURE CEMENTED OVER BASIC SIDES FOR FULL SCALE APPEARANCE

FRONT VIEW OF FIN LE

1/16" SHEET GUSSETS

2MM PLY KEEL

HARD BALSA NOSE BLOCK DRILL TO TAKE BALLAST

2 MM. PLY SKID 1/2" WIDE

USE END OF SKID AS TOWHOOK

1" DIA WHEEL

2MM PLY WHEEL BOX

RUBBER TUBE SHOCK PAD

TINPLATE BRACKET

1/16" SHEET TOP, BOTTOM & SIDE COVERING FORWARD OF THIS LINE

PIN

THICK WALL NEOPRENE ALTERNATIVE

WHEEL BOX

KEEL

PYLON

PAPER TUBE

FIN L.E.

1/16" SHEET INSERTS TOP AND BOTTOM AFT OF THIS LINE

1/16" x 1/4"

1/8" SQ. SPAR

F1 F2 F3 F4 F5 F6 F7 F8 F9 F10

BEND PYLON FROM ONE PIECE OF 14 S.W.G.

16 S.W.G. BRASS TUBES

PLAN OF TOP

TRUE LENGTH

SIDE VIEW

14 S.W.G.

FRONT VIEW

PYLON DETAIL

PYLON SEWN TO F2 & F3

F6 & F7

F4

F8

F9

F10

F11

F12

F13

FORMERS: F1, 2, 3 : 2 MM. PLY ALL OTHERS : 1/16" SHEET

COVERING

TYPICAL TAILPLANE SECTION

1/8" SHEET INSERT

1/8" X 1/16" OUTLINE & DIAGONALS

STRUT POSITION

1/8" x 1/16" TOP ONLY

PAINT LINE

1/8" x 1/16" TOP & BOTTOM

RIBS

W1 2 OFF 2MM PLY, 4 OFF 1/16" SHEET

W5 2 OFF 2MM PLY

ALL OTHERS, 1/16" SHEET

1/2" DIHEDRAL AT EACH TIP

1/32" SHEET BOTTOM COVERING

1/32" SHEET TOP COVERING

1/16" SHEET L.E.

TEMPLATE FOR CENTRE RIB ANGLE

1/8" SQ. BOTTOM ONLY

1/8" X 1/4" TOP ONLY

2 MM. PLY BRACES

PAINT LINE

LINE OF TOP COVERING

1/16" SHEET GUSSETS

1/8" SQ. TOP ONLY

SOFT BLOCK TIPS

W15 W14 W13 W12 W11 W10 W9 W8 W7 W6 W5 W4 W3 W2 W1

1/32" SHEET TOP & BOTTOM BETWEEN SPARS

FRONT STRUT

SECTION

REAR STRUT

STRUTS FROM 16 SWG WIRE FAIRED WITH 3/32" SHEET BOTH SIDES.

MAKE 2 OFF EACH LEFT & RIGHT HANDED

1/16" SHEET T.E. BOTTOM ONLY

FRONT

REAR

2MM PLY DIHEDRAL BRACES

ONE PIECE WING, PORT HALF SHOWN BUILD STARBOARD FROM BACK OF PLAN

PUBLISHED: AEROMODELLER APRIL, 1958

FSG.692

Gliding Holidays

Charles E. Brown shows to full advantage Slingsby's latest high performance single seater the "Skylark IIIB" winner of the 1957 Gliding Nationals

By The Editor

OF ALL AERONAUTICAL sports full scale gliding is the one most closely allied to aeromodelling, and certainly the one with greatest appeal to we balsa busters, apart from our own hobby.

Many gliding enthusiasts are keen aeromodellers, or should I say—many aeromodellers are also keen gliding enthusiasts! To quote a few well-known examples, we have Derek Piggott, former British Wakefield team member, now Chief Gliding Instructor at Lasham; Pete Russell, A.P.S. designer, model shop proprietor and control-line enthusiast, who instructs at London Gliding Club during the Summer months; Mike Garnett, C.F.I. at the Bristol Gliding Club, is another A.P.S. man, flew a useful Wakefield, and will be remembered for his delightful scale Austin Whippet; and J. C. Ridell is another old-time aeromodeller, now Secretary of the Yorkshire Gliding Club.

All of which indicates that a gliding holiday should have particular attraction to the aeromodeller at present considering how his annual 14 days holiday stint should be spent.

But before describing to you the many attractions of a gliding holiday, let me first present a few general facts about gliding in general which I am sure will be of interest to the majority of readers.

If I pass by with respect those early pioneers who made history by casting themselves from rooftop and hillside strapped amidst a variety of wingshapes I can safely say that gliding as a sport really began in the nineteen twenties. By the 'thirties it was firmly established with a healthy club movement that came to an abrupt halt when interrupted by World War II. The part played by gliders in this great aerial conflict is another story but it should be recounted that Phillip Wills, pioneer of British Gliding, assembled his "Minimoa" from its wartime wrappings in order to make radar tests for the Services. Towed out to sea he glided back inland to prove that our newly developed radar was capable of tracking enemy glider-borne forces approaching the coast.

Peace brought new impetus to the Gliding Movement, which started afresh with a wealth of newcomers swelling the nucleus of old hands. New machines played their part. Designs such as the "Olympia", manufactured by Elliotts of Newbury, providing performance that brought new records as it soared in silence through the skies. Slingsby Sailplanes Ltd. produced the "Sky" and also the T21B, the latter a side-by-side two-seater that had great effect on the training of new pilots, being ideal for dual instruction. Several of the clubs I shall mention later owe a great deal of their success to this versatile craft, known in the R.A.F., incidentally, as the "Sedbergh".

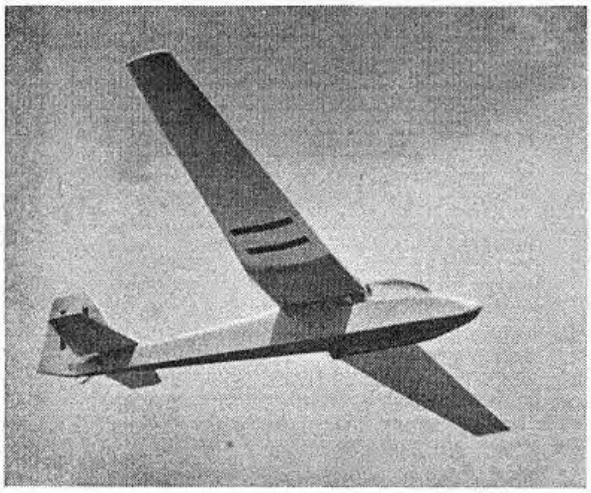
The Gliding Movement, under the auspices of the British Gliding Association, holds its Nationals alternate years, with Internationals taking place the years between. In 1952 Phillip Wills took a team to Spain and proved the strength of British gliding by winning the World Gliding Championships. Again in 1956 Commander Nick Goodhart and Frank Foster won the two-seater class in France with a Slingsby "Eagle". This machine, by the way, has a gliding angle of 1 in 31, which will no doubt make A/2 exponents pause for reflection!

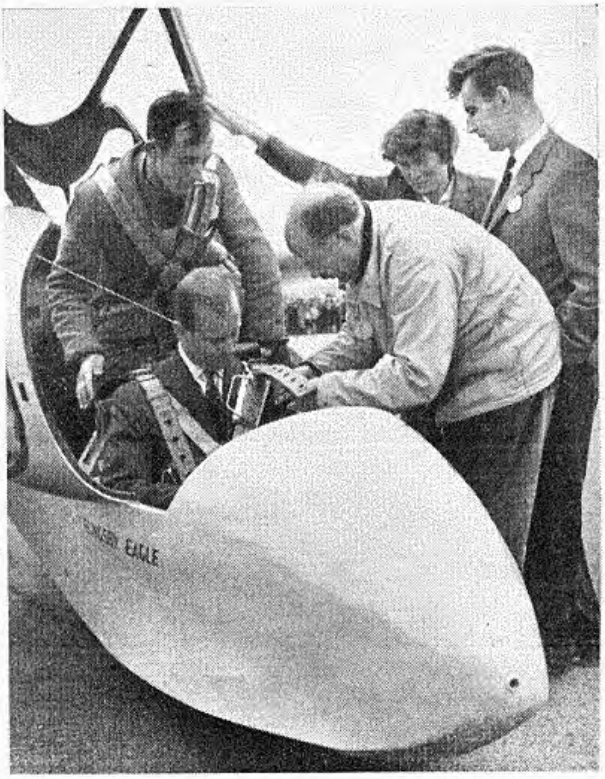
Last year's National Championships were held at Lasham and were the biggest ever with a total of seventy entries. They were won by Lt.-Col. Anthony Deane Drummond, who on one flight landed his "Skylark III" 163 miles from the launching site.

In a Slingsby "Eagle", too, flew the Duke of Edinburgh, Patron of the B.G.A., and an interested spectator at the championships. He was accompanied by Derek Piggott, who presumably kept a fatherly eye on the club's machine as well as on his distinguished pupil.

It is interesting to note that over 2,000 of we more

Above, left: Air Cadets prepare their R.A.F. "Sedbergh" which is one of the most popular trainers in service at the present time. Fitted with dual control it is ideal for ab initio instruction and will be found at most Gliding Clubs. Left, an "Olympia" of the Surrey Gliding Club being launched during the 1957 Nationals at Lasham





Right: H.R.H. The Duke of Edinburgh settling down in the cockpit of Lasham's Slingsby "Eagle", with Derek Piggott in the rear seat. Above, the same machine in the air displays almost "model" like lines in this "Aeroplane" photo

ordinary aviation enthusiasts learned to fly during 1957, the majority via gliding holiday courses. Most of the clubs running such courses are situated amidst the most attractive scenery, at least two of them being adjacent to the sea.

There are 13 clubs running holiday courses this season, some of which are already fully booked. I list below those Clubs who still have vacancies and would mention that where prices are quoted they include flying, instruction, accommodation and food. Accommodation is either provided bunkhouse style on the site, or at a convenient local hotel. Instruction is given in dual-control two-seater machines, and the idea is to give a good general introduction to glider flying coupled with an enjoyable holiday. An apt pupil can achieve a good degree of skill within a weeks' course, and subject to reasonable weather conditions should be able to go solo by the end of a two weeks' course. Courses, by the way, run from Monday morning to Friday evening, as normal club flying takes place at weekends. Many clubs advise pupils to arrive on the Sunday and leave on the Saturday, and people who book for two weeks, involving 10 flying days, can usually join in club flying at standard rates during the intervening weekend.

If you intend continuing with your gliding then it is an excellent plan to take a holiday course at the club most convenient for travel, added to which most clubs offer reduced rates for full members participating in the weekly courses. Interested modellers, and I know there are many, to judge from the response last season, should write to Secretary of the Club concerned immediately, for vacancies fill very rapidly now that this new form of aviation holidaymaking has become established. All of the courses advertised on page 221 of this issue are open to beginners.

BRISTOL GLIDING CLUB

The Bristol Club have been running courses for the past eight years and enjoy a beautiful site at Nympsfield on the Cotswold Hills near Stroud, overlooking the Severn Valley. Gliding takes place from a ridge facing the prevailing wind some 700 feet above the valley floor, and course members are accommodated at a nearby hotel, with transport provided.

CORNISH GLIDING (& FLYING) CLUB

Trevellas Aerodrome, home of the Cornish Gliding Club, on the outskirts of Perranporth, is right on the Cornish Coast where excellent beaches alternate with magnificent cliff scenery. Same cliffs provide first-class soaring in winds anywhere between West to North-East. Club gliders include a T21B, a T31 (both two-seat trainers), and in the single-seat class a Tutor and Olympia. A Tiger Moth is available for aero-tows. Accommodation is normally arranged at the Cornish Holiday Camp.

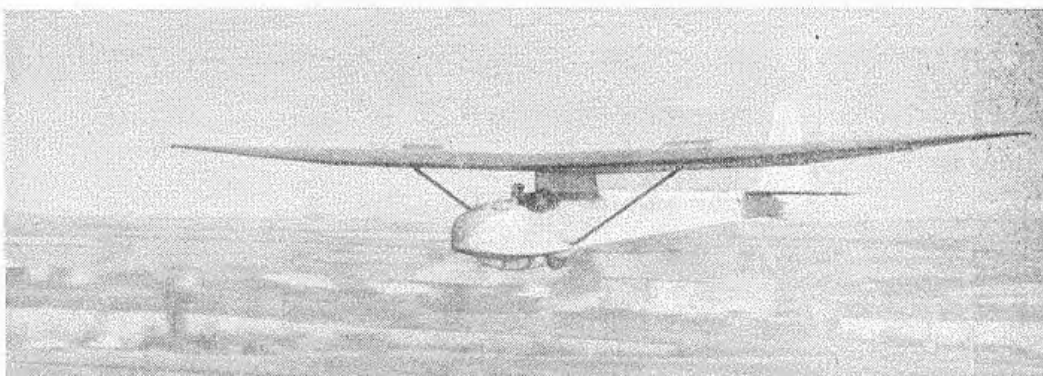
ISLE OF WIGHT GLIDING CLUB

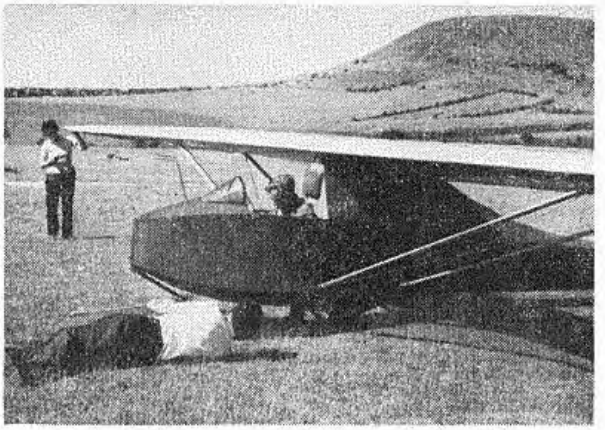
Sandown Airport is situated between Sandown and Shanklin, resorts that have many times held the sunshine record for Great Britain. It is, of course, possible to fly direct to the airport from most major cities, and the Island is well served by a fast train/boat service from Waterloo. Club fleet consists of a two-seater trainer and two single-seat machines.

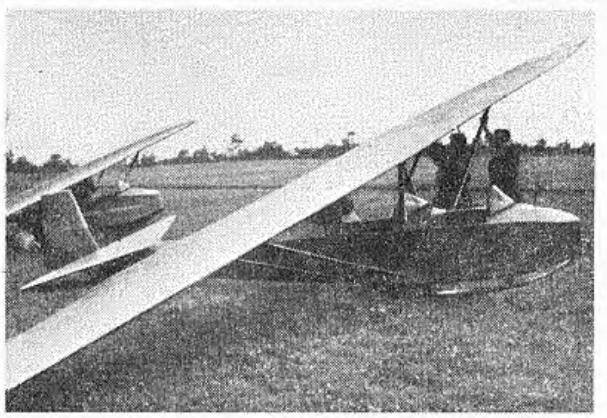
LASHAM GLIDING CENTRE

During the last seven years the gliding clubs which have been operating from Lasham, which lies between Alton and Basingstoke, have built up one of the biggest gliding centres in the world. There are no less than ten gliding clubs at the centre, although the Surrey Gliding Club actually manages the holiday courses. Accommodation is on the site, and as one would expect from the home of the Gliding Nationals, facilities in the way of machines and training are excellent.

Right: Ken Young sends this picture of the Cornish Gliding Club's T21 trainer at Trevellas Aerodrome near Perranporth on the Cornish Riviera during holiday gliding last season. Note the extended air brakes on upper surface of wing as the machine comes in for a landing. With beautiful beaches only five minutes away from the aerodrome, this is an ideal site for gliding holidaymakers







Photos above, from top to bottom: John Winch of Walsall Aeromodelling Club settles down in the cockpit of a "Tutor" at London Gliding Club. Two club members rig the wings of an "Olympia". Note airfoil section. A "Tandem Tutor" and "Tutor" of the Bristol Gliding Club at Nympsfield. Below, a T21 with instructor and pupil aboard pictured by Charles E. Brown at Lasham

LONDON GLIDING CLUB

As our Assistant Editor Ron Moulton paid a visit to Dunstable last year and had a quick day's course with Pete Russell, I can do no better than let him recount his impressions of gliding as seen through the eyes of an aeromodeller. Over then to Ron for a brief note on what goes on, other than radio control slope soaring, along the ridge of the Downs at Dunstable:

"The bare windswept ridge of the Chilterns which juts out into a natural elbow west of Dunstable is perhaps the most well-known soaring site in G. Britain. Home of the London Gliding Club, and the centre for many a famous name in high performance soaring, the natural ridge and bowl offer incomparable facilities for slope soaring in the prevailing winds. We went along to see a holiday course under instruction and leapt at the opportunity of a trial 'ride'.

"Our mount (Pete Russell was piloting) was the famous T.21, known as the 'Barge', a veteran two-seater and probably the primer for the now accepted system of dual instruction. No-one could ever claim a T.21 cockpit to be other than crude. To an aeromodeller, the sight of longerons and spacers is somewhat reassuring, and our appreciation for economy in finance and weight allows for the elementary stick which flops to one side under the weight of the surfaces.

"We cock our leg over the starboard side, slide down and in, and grope for the Sutton harness. Bridget Russell lifts the wingtip and Pete fills up the bench seat while around and about people are groping under the nose to hook us on to what looks like a very thin piece of multi-strand wire. Checked for release, the line is hooked on once more and to our right a course member is slowly indicating the distant winch man to take up the slack. Minutes seem to pass, we wait expectantly, and then quite suddenly there's a swish in the grass ahead, and over the nose we can see a long thin line which stretches taut across the hillocks and valleys of the field.

"Now our bat man is waving the yellow discs faster and we slide for'ds. A scrump from the skid, an imperceptible pull on the stick, and we are airborne in split seconds. Now the long climb up to the top of the line. Ahead there's nothing but wide vistas of sky. The horizon is tilted, yet there is no discomfort. A glance over the side shows the Club buildings, the dormitory, hangar and bar are like OO gauge railway models, and all is steady as a rock. We bank from side to side deliberately, and ask Pete his reason. 'Want a faster tow', he says. The fact that we can converse strikes one as being unusual, and having broken the ice, so to speak, our flood of questions seek to find the reason for each and every move.

"A pull at the red handle and we are free—as free to fly where we wish: but, of course, the ridge is our main attraction, and soon we are sweeping in a shallow dive along the hillside. Only now do we have any impression of speed. The rigging wires moan in the wind and the Chilterns slip by. Ahead there's a clear panorama of Bedfordshire, and as Pete lifts our stbd. tip to bank around in a sweeping turn at the 'bowl' it changes to Buckinghamshire and beyond. The sensation is nothing short of exciting. It is as though we are in a moving gondola, somehow suspended in mid air. What a layman's impression! But being in a glider as distinct from watching is so different, one tends to forget that our movement is the very reason why we are able to stay airborne.

"During 20 minutes we tried our own hand at controlling—and it is no exaggeration to say that aeromodelling experience gives one a great advantage in learning how to fly. From the time of the launch to the brief and gentle landing run, it was memorable experience and one which we can commend to all who build flying models".

MIDLAND GLIDING CLUB

Five miles south-west of Church Stretton at a height of approximately 1,500 feet, is Long Mynd, one of the best soaring sites in the country of which the Midland Gliding Club is justly proud. Flying is available for all wind directions with a fleet of eight gliders ranging from two-seater trainers to high performance machines such as their Slingsby T42 and Skylark II. Bunkhouse accommodation is on the premises, with a lounge, dining room and club bar. Visitors are warned that it is nearly always cold on the Long Mynd and that there is always work to be done. *Old* and *warm* clothing is therefore the correct dress. With most gliding clubs costs are kept to a minimum only by the voluntary efforts of the members and the Midland is no exception.

SOUTHDOWN GLIDING CLUB

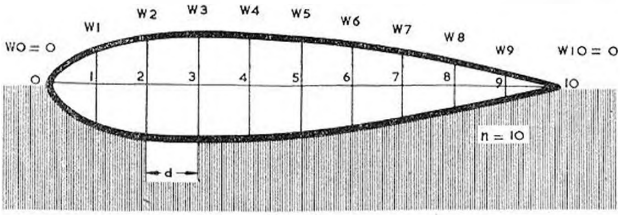
On the South Downs near Selmeston, on the main Lewes to Eastbourne road, lies the Southdown gliding site of Itford and Firle Beacon. The club has an excellent fleet including an Eon Olympia, a Slingsby T21B, two Tutors and a Cadet, and it is interesting to note that 75 per cent. of their flying days in 1957 were soarable. An old Sussex cottage at the foot of the hills has been converted into a comfortable clubhouse with dormitory accommodation. Good food is a club speciality, being provided at the Bo-Peep Farm, which is opposite the clubhouse.

YORKSHIRE GLIDING CLUB

At 1,000 feet on Sutton Bank, near Thirsk on the Yorkshire Moors lies the Yorkshire Gliding Club site. An impressive club fleet of over twenty gliders, many of them dual control two-seaters, are available for instruction, and beginners are welcomed. There are facilities for other sports, and visits to the Slingsby Sailplane works make an interesting addition to the normal itinerary. (Continued opposite)

Calculating Areas

By Naftali Kadmon



WHILE WORKING ON a float version of a free flight power model, Naftali Kadmon had to calculate float side areas; being aware that calculating more or less complex 'plane surfaces is one of the frequent tasks of the aeromodeller, it was decided to devote a few lines to this problem, which arises whenever the areas of irregular surfaces like cross-sections, fins, wing tips, floats, etc., have to be found.

Many readers may be aware of the connection which exists between areas and mathematical integration, though others will remember the sign $\int$ only as an unsympathetic serpent reminiscent of boring school or college days. And though an integral is no area, as some people believe, yet *all* area-calculating involves integration, even if one does the operation unwittingly.

There exist two methods of calculating an area: the first does it by exact integration, while the second is the method of approximate numerical integration. The first does not concern us here—it involves a knowledge of the function describing the line enclosing our area, and this we rarely know in practice, except in special cases, or when we draw the curves with the aid of formulae. Suffice it to say that the well-known area formulae $\frac{1}{2} \cdot a \cdot h$ (for the triangle) and $\pi \cdot a \cdot b$ (for the ellipse) are but two of the results of the first method.

The second method for finding the area, though being slightly less exact, is generally much more convenient for the average modeller. This is Simpson's Rule, and we shall illustrate it with the aid of a practical example.

Draw your area—let's take a float side for example—full size, and insert a chord line. Subdivide this chord into an even number n of equal intervals, say 10. The length of each interval or subdivision will be d, say, for example, $\frac{1}{2}$ in.

W1	=	W2	=	W0	=
W3	=	W4	=	W10	=
W5	=	W6	=		
W7	=	W8	=		
W9	=				
Total	=	Total	=		

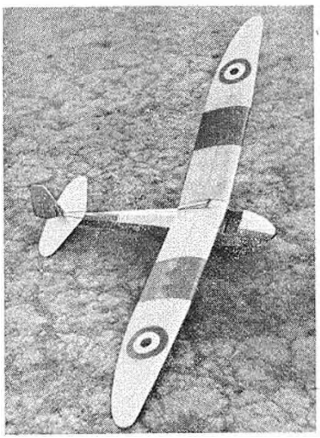
Add the various columns; multiply the first sum (i.e. that of the uneven stations' widths) by 4, and the second (the even stations) by 2. Add these figures and add to them the first and last station widths (W0 and W10). Now multiply all this by the interval length d and divide by 3, and presto —here is your area in square inches.

The more mathematically-minded among the readers will certainly shout for a formula. Well, here it is:

$$A = \frac{d}{3}[4(w1 + W3 + \ldots + Wn\text{-}_1) + 2(W2 + W4 + \ldots + Wn\text{-}_2) + W0 + Wn]$$

By the way, Simpson's method is based on the integration of the parabolas passing through any three consecutive points on the curve.

Now go thou and do likewise.



S.A.C. Bulley-Woods of the R.A.F. Mafraq in Jordan built this flying model of the T21B "Sedbergh". Photo was taken by F/Lt. F. Burton. We imagine a number of modellers taking gliding holidays will be inspired to build replicas of some of the machines they have flown

GLIDING HOLIDAYS — *Continued*

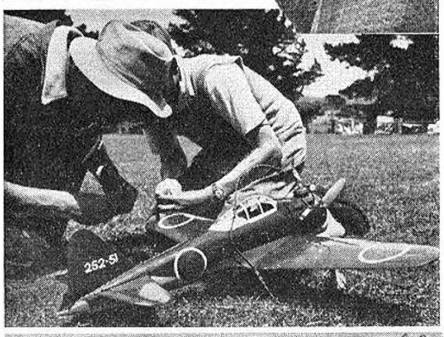
A few final words for those considering gliding for the first time would not go amiss. I mention in particular physical fitness, which is pretty essential if one is to enjoy this sport. It is not terribly strenuous but it cannot be fully enjoyed without reasonably good health. Poor eyesight is no handicap provided that it is corrected with glasses to the normal standard.

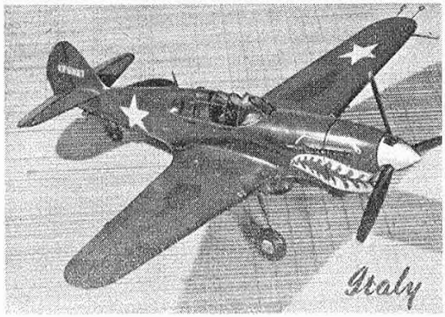
I would also mention for the benefit of beginners two useful books on the subject. The more one understands of gliding before going on the course the quicker one is likely to progress. "On Being a Bird", by Phillip Wills, serves as a useful introduction to the sport and needs no recommendation other than the author's name. For theory, I recommend "Elementary Gliding", by P. Blanchard. Both these books are only 5s. and available from the British Gliding Association at Londonderry House, Park Lane, London, W.1, who will be pleased to provide any general information relating to Gliding, although I do reiterate that information on particular courses should be addressed to the clubs concerned, whose advertisements will be found on page 221.

World News

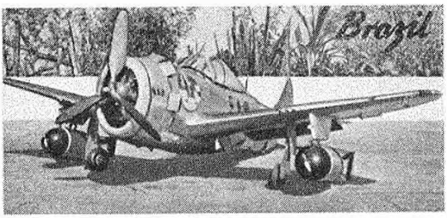
FIRST OF THE 1958 International events was the 12th Winter Contest in Helsinki, **Finland,** on February 16th. It was the second occasion for the inter-city challenge between Leningrad, **Russia,** and Helsinki, and this time the Soviet fliers took home the prizes for best team performance as seen top of next column.

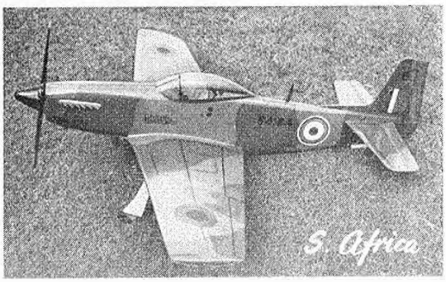
Now these results for Power are extremely interesting in that being the first to show us how the new-rulers perform under contest conditions, they also illustrate that the increased weight will not be any handicap at





Top: Rfc in Canada shows Bob Chesher of Bay of Quinte aeromodellers with 56-in. Breezy Sr. kit model (2 Channel Babcock and O.S. Max 15) is Bob's 248th model. From Japan, an interesting Oliver Tiger powered rfc design with kick elevator. At left: Australian Basil Healey's Jetex He 162 at the Nats in Tasmania, and a scale Zero by B. Chandler of Tasmania made from an Australian kit and powered by Jap O.S. 29. Other fighters from round the world are Franco Perazoli's P.40 for Webra 1.5 from Italy. A. J. McClean's 38-in. Mustang with throttled Fox 35 from Rossburgh, S. Africa, and a 6 Ab. 49-in. Thunderbolt with four lines to work every conceivable control and a 5-cylinder Morton radial engine, made by O. daCunha Filho of Rio de Janeiro. Even instruments light up and the compass works





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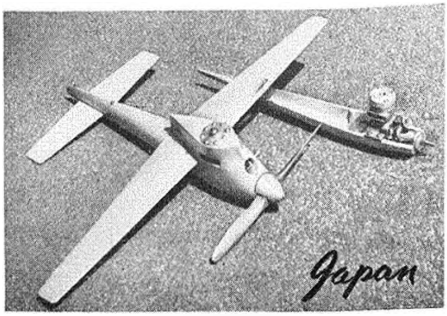


A/2 GLIDER

1.	E. Hamalainen ...	... 856.5 secs. ...	(Helsinki)
2.	N. Kolegov ...	... 853.6 ,, ...	(Leningrad)
3.	M. Tahkapaa ...	... 852 ,,	(Individual entry)

F.A.I. POWER

1.	H. Raulio	... 892 secs.	(Individual entry)
2.	V. Abramov	... 856 ,, ...	(Leningrad)
3.	S. Pimenoff	... 849·7 ,, ...	(Helsinki)
4.	V. Simonov	... 849·4 ,, ...	(Leningrad)

Cranfield in August, especially for our U.S.S.R. friends. Conditions at Helsinki were below freezing, fog interfering with visibility and moderate wind. Incidentally in the A/1 event top three places were taken by Wakefielders using their rubber model wings on glider fuselages.

Radio Control on the west coast of **U.S.A.** has now reached a new high in standards. Genuine reports reach us of inverted flight with a *Smog Hog* (Orbit 8-channel) by Jerry Nelson of the East Bay R.C. down to 30 ft. with a roll out and elevator climb away. There are many R/C models flying with only ·020 Cox Pee Wee power and Don Blessing has an 8-channel version of the *Ascender* spanning a mere 48 in. Major trend is toward low-wings, said to roll better and look nicer.

Montreal M.F.C. Bulletin, edited by Barry Haisman, always includes spicy (sometimes icy) comment on affairs national and international. January edition includes a chapter headed "*Quo Vadis*" which might well refer to many outside **Canada,** and we quote in full:

"Research into the fate of once-keen modellers can now be summarised as follows:

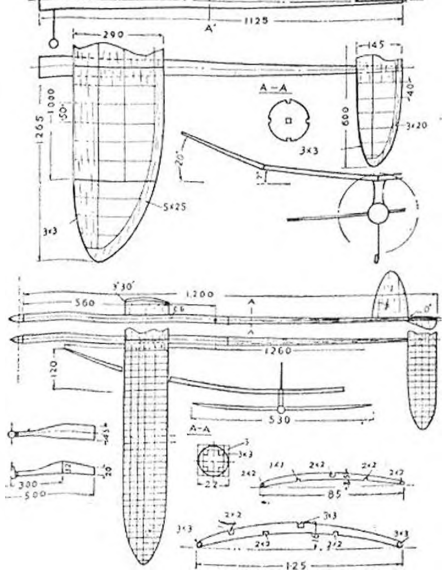
(*a*) Moving away to a town ro region where it is impossible to fly because of forests, icebergs, jungle, or prevailing 35 m.p.h. Westerlies. (This is legitimate).
(*b*) Being unable to win easily any more due to stronger opposition. (Now, who do we know?)
(*c*) Loss of status as a big wheel. (No comment.)
(*d*) Retirement to outer suburbia, bridge, watching the gogglebox, having the Blatzworthy's over to dinner (with candles) and talking about books they haven't read with other people who haven't read them either. (How can we compete?)
(*e*) Claiming the wife won't allow it any more. (Rationalisation of (*b*), (*c*) or (*d*).)
(*f*) Failing to agree with the new rules. (This means 'I'm bushed' or 'I can't think of a way to get around them'.)

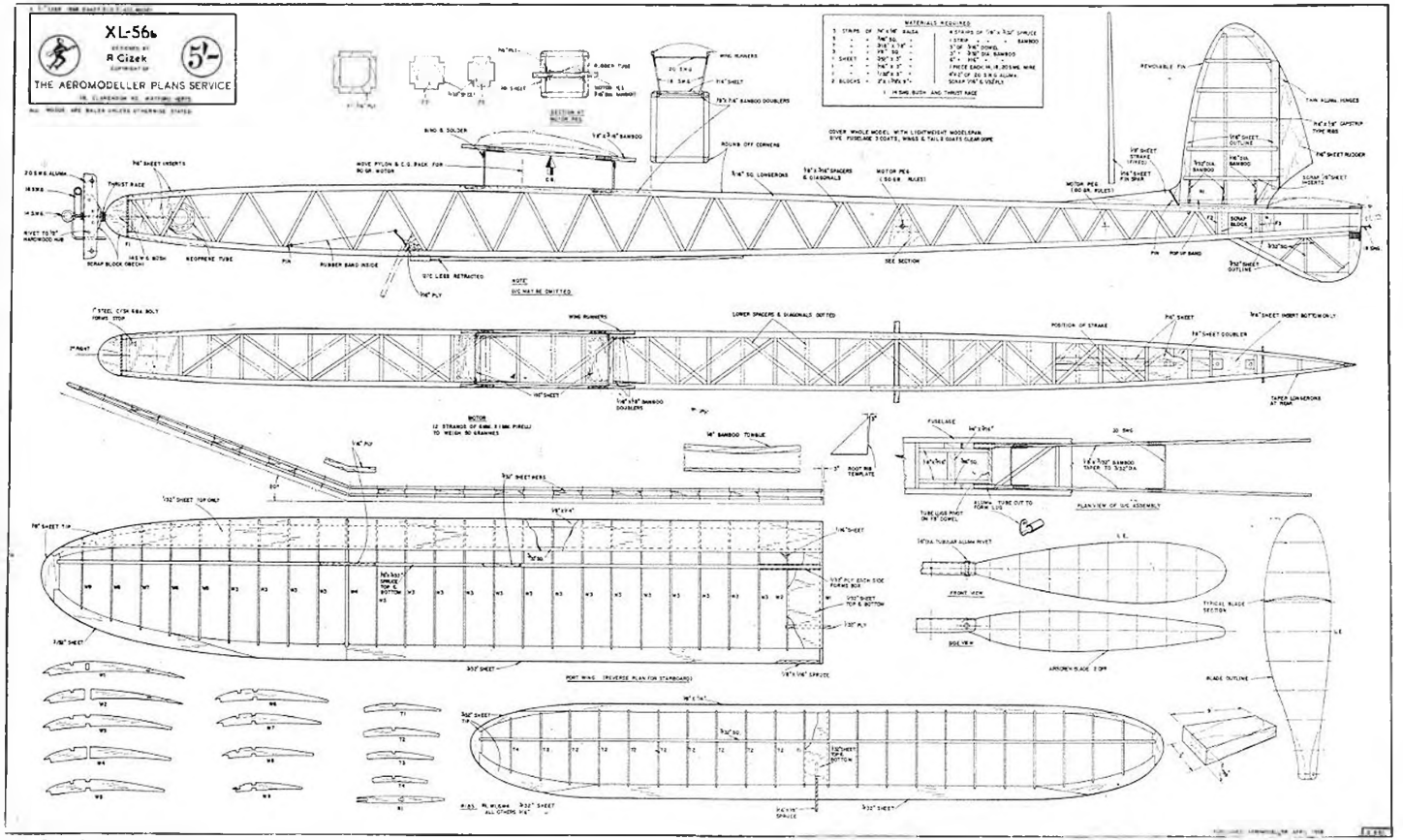
Appendum to (*a*): Being posted to a Weather ship in mid-Atlantic or going to jail."

To which we might add (*g*) Loss of friendship with timekeepers, hot engine tuners or penpal in the U.S.A. through one-sided swap deal.

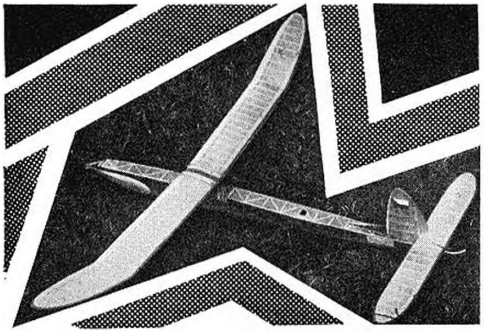
Enya engines are fast becoming respected for quality and power. At left is A. Fujimaro's 5 c.c. model with the 29-III Super Typhoon and pan at rear holds his 2.5c.c. 15-IB speed engine. As seen at right, he uses Monoline or his models

New rule Power and Wakefield designs from Japan. Power job is called "Boxer", has Enya 15 glow, 8 x 4 in. prop, NACA 6109 wing and 8 per cent. Clark Y tail sections. Weight is 750 grammes —is an M. Saito design. Wakefield by S. Nonaka has long tail moment, short motor, with rearward c.g., 19 x 25½-in. prop and high cambered sections with Soviet type radiused trailing edges





FULL SIZE COPIES OF THIS 1/5th SCALE REPRODUCTION ARE AVAILABLE PRICE 5/- PLUS 6d. POST AS PLAN D 690 FROM AEROMODELLER PLANS SERVICE. SINCE THE ABOVE BLOCK WAS MADE ADDITIONAL DETAILS OF THE XL 58 MODIFICATIONS HAVE BEEN ADDED TO SHOW A REVISED BUILT UP SHEET PYLON WING MOUNT



By R. ČÍŽEK

XL-56b.

A new rule Wakefield with an outstanding pedigree and remarkably simple construction

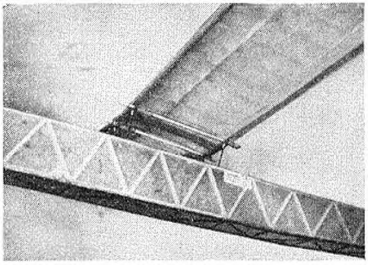
THE WELL-WORN SAYING that "when an aeroplane looks right, it will perform right" is very true, and when we referred to Radoslav Cizek's Wakefield in our report of the 1956 Contest at Hoganas, Sweden, saying that his XL56b was one of the best proportioned machines at the contest, we were by no means mistaken. The design dates back to early 1954 when Cizek was selected to be the sole Wakefield representative in that most exacting of all model contests, the "People's Democracies International", then held in Moscow.

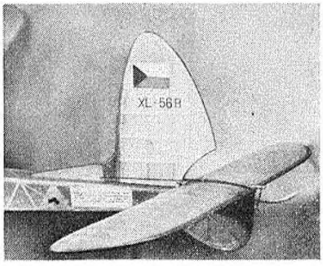
At that time the wing was mounted directly on to the fuselage and a slightly modified version was flown by Radoslav in the 1955 World Championships at Finthen in Germany. A sheeted fuselage variation was taken to represent Czechoslovakia in the 1956 "People's Democracies" contest in Budapest, placing first with a perfect 900 seconds score. Modifications were applied to strengthen the wing, experiments were made with turbulators and at the 1956 World Championships, using the 80 gramme motor to the rear peg, it placed 16th with a total of 760 secs. This was the last of the 80-gramme Wakefield events, and immediately after its conclusion, speculating on a change of rules, Cizek began flying with 50 grammes of rubber finding very little change in trim apart from the necessity to move the wing forward. At the moment, his 1958 version with the fuselage covered in $\frac{1}{16}$ sheet and wing mounted on to a built-up sheet pylon (details of which are incorporated in the A.P.S. drawing) stands a good chance of being in the 1958 Championships representing Czechoslovakia at Cranfield in August.

50-Gramme Experience

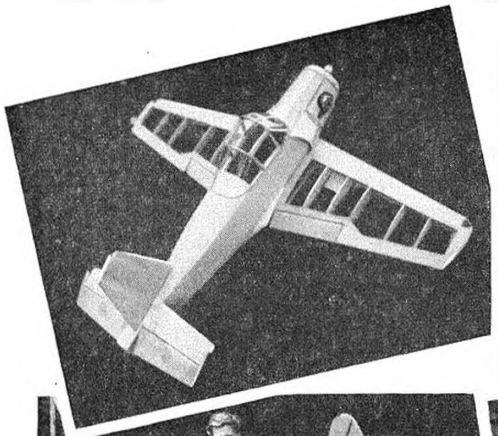
Although the drawing gives earlier undercarriage details, it will be realised that this is not necessary for either International or home contests. With more than eighteen months of experience of flying with the 50-gramme motor, Radoslav's design provides the opportunity for those without any Wakefield experience to get started straight away on the right lines with a model capable of breaking the 3-minute maximum figure.

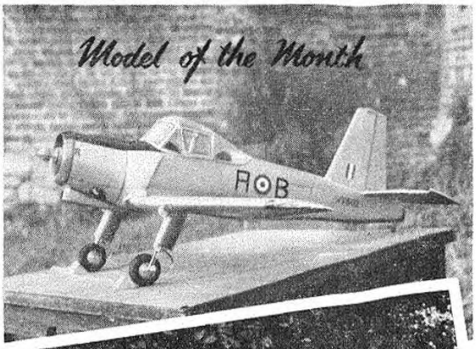
Construction is easy and does not employ thin fiddly material as have so many other high performance designs in the past. Use of close rib spacing provides a warp-free structure within anyone's capabilities and with dual purpose arrangements of wing and motor peg positions it can still be used for both open and the 50-gramme Wakefield events, a rare combination which goes to prove the point in our opening sentence.

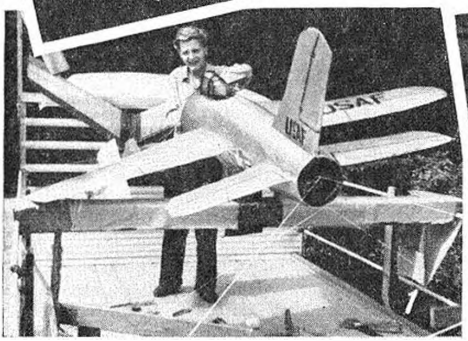


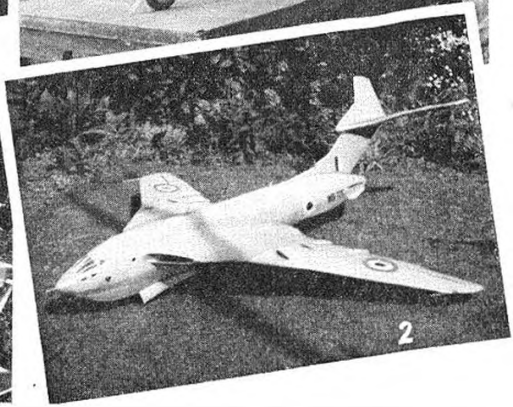


Wing mounting and rear fuselage detail shown at left is for the original XL-56b flown with 80 grammes of rubber in the Moscow, Budapest, Finthen and Hoganas Internationals. Plans show the 50 gramme rule development where both the wing mount and rear motor peg are moved forward. Details of 1958 modifications are incorporated on full-size APS plan









Model News

THE AMERICAN "Flight Control" third line system described in our December, 1957, and January, 1958, issues has created new interest and a number of new models including the 1/12th scale 38-in. span Hunting Provost chosen as our "Model of the Month". Designed by A. N. E. Bates of Keevil near Trowbridge, the Provost has an E.D. 3·46 fitted with simple butterfly valve which is operated by the third line, also connected to flaps. Thus Mr. Bates gets flaps down with slow speed engine for landing, plus the full range of elevator control. Constructional shot at left shows the flaps in the depressed position at 30°. The model also has undercarriage mounted landing lights and there is 1 in. travel for each of the wheels by virtue of spring steel "elbows" just visible in the right hand view of the model. Fetes and pageants are frequently enlivened in summer months by the co-operation of local model clubs. In Picture **1** we see the 8-ft. semi-scale Sharston D.M.S. Jet with club member Alan Cook aboard. The model was made for the local civic week parade and was constructed on a hardwood frame with papier mache covering.

The thunderous roar of Victors taking-off from the nearby Radlett airfield is frequently heard at the AEROMODELLER offices, and D. W. Ansell who lives almost on the edge of the aerodrome at London Colney has made the scale Victor seen in Picture **2**. This is the second prototype WB775 finished in

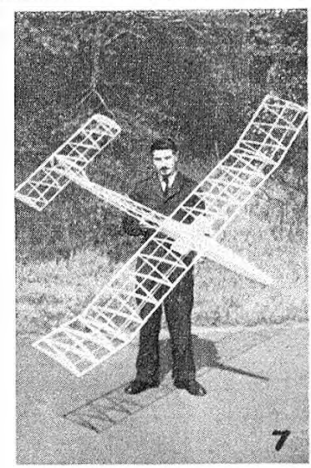

5

6

the authentic blue colour. The model took 400 hours to construct, span is no less than 60 in. and Mr. Ansell assures us that it is a flying model intended to take the air very soon. Tom Smith of English Electric has always been famed for his fast climbing swept-wing contest power jobs, and Picture **3** has caught him about to crank up his Oliver Tiger in his very latest "Nig Nog". This is quite a change for Tom flying what appears to be a very conventional model with a straightforward fuselage and elliptical surfaces. Wing area is 485 sq. ins., and total wing a mere 15¼ ounces, so there is no doubt it is destined for the Open events. Plastics in photos have flooded the office in recent months and we could have well filled this feature with the inevitable rather monotonous series of posed pics. No. **4** is, however, quite a different approach, showing the Aurora kit Martin Marauder put together by C/T Bloom of "H.H. Queen's Flight" at R.A.F. Benson. Model was posed for take-off on the runway and props allowed to spin in the strong wind, which gives this most realistic action shot.

That popular modeller George Fuller is seen in Picture **5** with his Open event design, namely, a 54-in. long, 54-in. span rubber job with twin blade folding props. A lightweight, with 40-in. 14-strand motor, its performance is well up to George's usual high standard. The next model in Picture **6** is a particularly fine example of a Mercury Mustang built from a standard kit for an AM.25 diesel by Norman Lees of Manchester, who added quite a bit of detail by reference to scale drawings and photos. Note those overload tanks which give an air of realism.

Lads in 2nd T.A.F. Germany by no means let their modelling slide when posted overseas as will be seen in No. **7**, where S.A.C. Robinson of Gutersloh is holding the framework of a 1,294 sq. in. glider, spanning 96 in. Unfortunately, after several good flights the wings proved to be rather weak and folded during a tow launch.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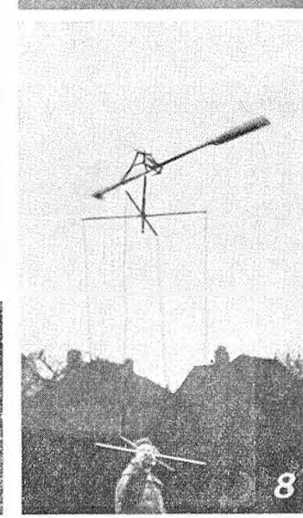
AEROMODELLER frequently has cause to pat itself on the back for introducing new thoughts and sometimes radical approaches to the hobby. One of the most successful innovations was that by the enterprising American at Cambridge University, Charles W. McCutchen, with his fabulous Helicopter which has been copied in practically every other magazine throughout the world, and for which many records have been claimed. Charles is still developing Charybdis using a fuselage and in Picture **8** we see him making further experiments marionette fashion. Last but by no means least, a scale jet of the Miles Sparrowjet scaled up from A.P.S. giving a span of 38 in. for two Jetex 200 units with the 50 size augmenter tubes by P. C. Turley of Bournemouth. Initial tests resulted in slight damage, but by now Mr. Turley will have been able to repair the damage and we trust he is enjoying good flight performances. Twin unit jet scale models are all too rare these days.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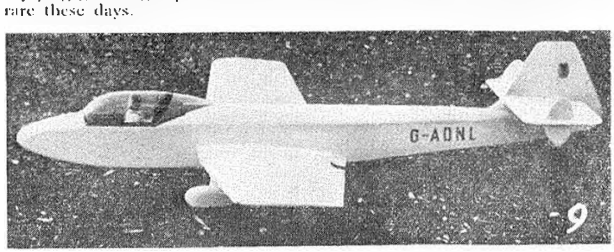

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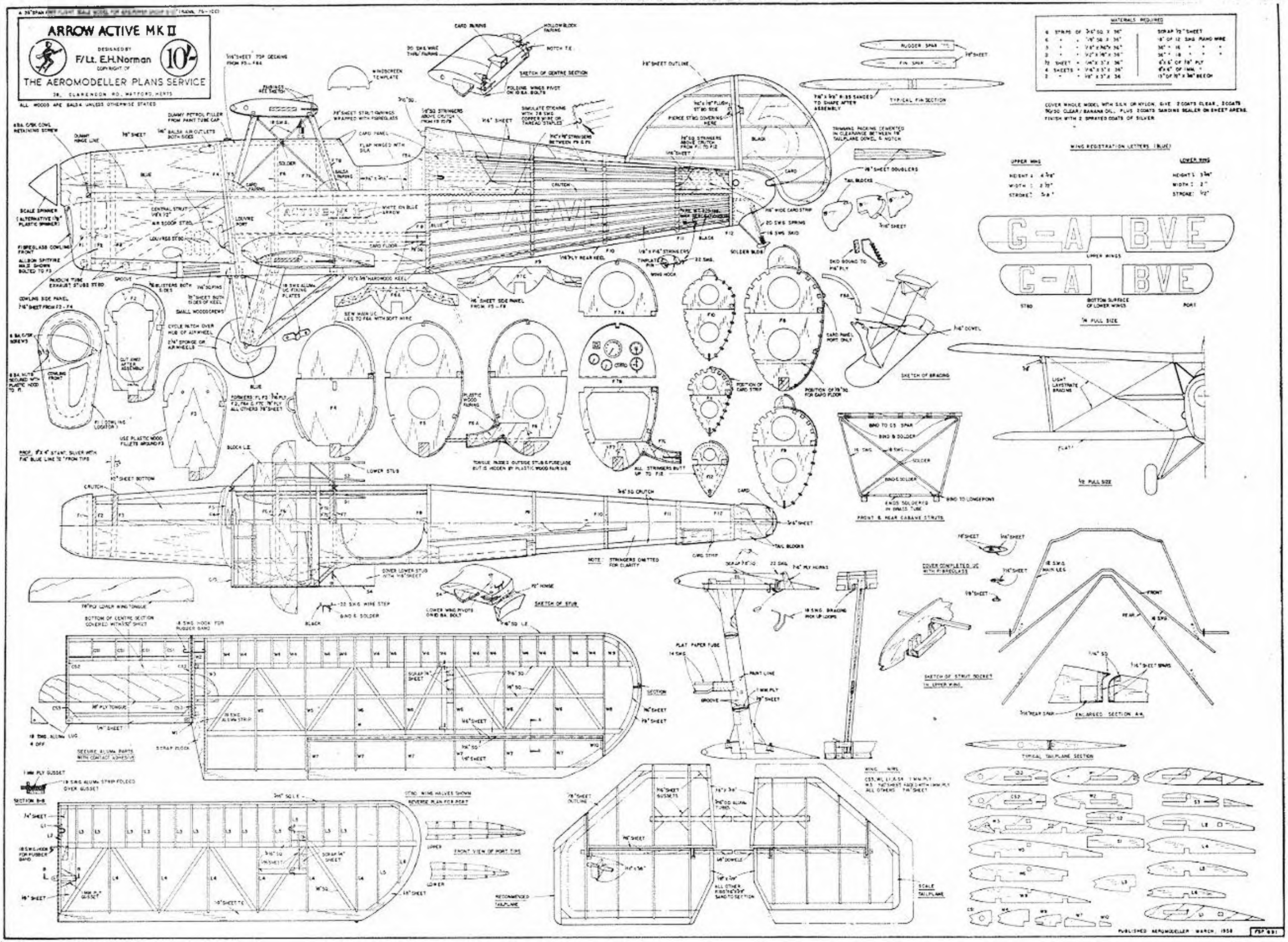
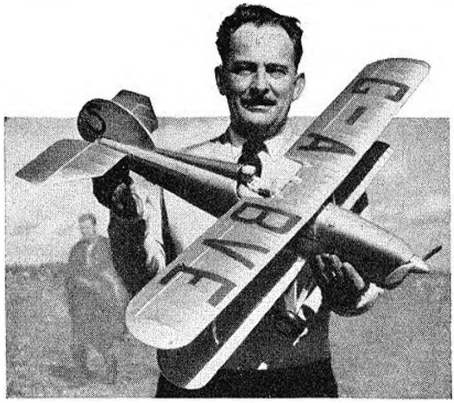


FULL SIZE COPIES OF THIS 1/5th SCALE REPRODUCTION ARE AVAILABLE PRICE 10/- PLUS 6d. POST AS PLAN FSP 691 FROM AEROMODELLER PLANS SERVICE

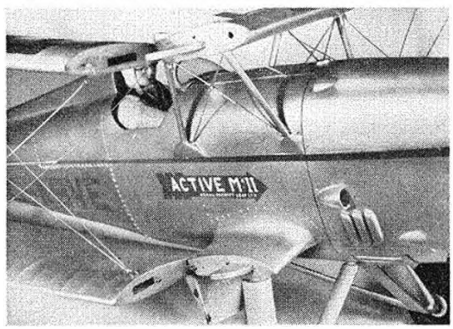
A 36-inch wingspan 1½" to 1' Super-Scale free flight model of a pre-war aerobatic racer for 1 c.c.

By Flt.Lt. E. H. NORMAN



ACTIVE-MK II
ARROW AIRCRAFT CORP'N LTD.

THIS DELIGHTFUL SILVER biplane which collected prizes for Flt.-Lt. Norman at the R.A.F. Championships and All Britain Rallies last season is one of the prettiest models we have ever seen. The full-size Arrow Active Mk. II was developed from an earlier version which has a solid centre pylon carrying the upper wing. Designed by A. C. Thornton who also designed the famous Blackburn Bluebird, it was flown in the Kings Cup for 1932 (unplaced) and in 1933 (5th) by Flying Officer H. H. Leach. The diminutive span (by British standards) of 24 ft. and generous power developed by a D.H. Gypsy III gave it a top speed of 145 m.p.h. and it is very pleasing to note that in spite of its age, it is currently being renovated at Croydon. Hopes are high that it will be seen at the 1958 Aerobatic Contests and Air Races.



The model has a fairly high wing loading and does therefore need a minimum of 1 c.c. power. Displaying inherent stability with offsets and surface angles as detailed on the plan, it is the perfect scale subject for the perfectionist. As will be seen in the photos here, the original model duplicates the full-size ability to fold its wings for storage and construction is virtually rib for rib, and lace for lace on the fabric-covered area of the fuselage.

Only deviation from scale is in the tail area which has been increased; again for the perfectionist we have provided precise scale tailplane details, so that those with the ability to trim out the difficulties incurred by the smaller tailplane can be satisfied with a perfect scale model. Fuselage construction is based on a horizontal crutch and the multiple scale-like stringers provide a high degree of strength.

First build the basic $\frac{3}{16}$ sq. crutch over the plan view. Ply wing supports F6a, F7c are fitted to F6 and F7 and the main u/c leg bound to the front of F6a. Now erect bottom portions of all formers over the basic crutch, fit the keel and stringers to retain formers in correct vertical position and maintain fuselage contours. Make the centre section wire frame and bind to the crutch after removing the latter from the building board, then fit the upper halves of all formers and complete with stringers and sheeting. Fit the front bulkhead and engine mounts, then complete the cowl, adding fore and aft u/c struts with formers on all legs. Now build up centre section for the upper wing and bind in place. All that remains are the lower stub wings, fairing blocks and incidental sheeting. Wing and tail assembly are more straightforward embodying scale structure with inter-spar $\frac{1}{8}$-in. square bracing and nose ribs.

The original model has a nose cowl made from glass fibre and despite the prangs during the initial trimming stages, finding out details for the plan opposite, it survived everything with hardly a scratch. Colour scheme is all silver with dark blue trimming and registration and the arrow trade mark printed above should be duplicated on either side of the fuselage.

AERO MODELLER

famous Biplane No. 14

the RE 8

"One of the most successful flops in the history of aviation..."

Described and Drawn by G. A. G. COX

More than four thousand R.E.8 artillery reconnaissance aircraft were built and the only conclusion one can draw from this figure is that this aeroplane was one of the most successful flops in the history of aviation. It was successful in the award of large contracts to several builders and in the results of hazardous sorties by its courageous flying crews but a flop in that it was designed to an ill-conceived specification and was from the outset inadequate for the duties it was to perform.

Without the guiding hand of precedent the military strategists of 1914 envisaged aerial warfare chiefly as a duel between artillery-observation and bombing aeroplanes in one corner and anti-aircraft batteries in the other, and this pattern of thought determined the layout of the B.E. series of aircraft. The B.E.2c was a very stable observation post for an observer who sat in the front cockpit and who was given a variety of small arms with which to defend his machine. Increasing attacks from enemy scouts soon made obvious the need for a rear gunner, and a three-seat version was built; but by this time the B.E. aircraft were well and truly obsolete and a replacement was requested by the Flying Corps. It was insisted that the new machine should be able to defend itself but surprisingly, no mention was made of the handicap imposed by stability in such an aeroplane and that to stand a chance against attacking scouts a reconnaissance machine must be manoeuvrable rather than inherently stable.

Work began on the R.E.8 early in 1916 and in July of the same year the prototype was sent to France for evaluation. This machine had a pillar type Lewis gun mounting and no forward-firing Vickers. The tailskid was attached directly to the rudder and the vertical fins were very small. First reports on the R.E.8 were so enthusiastic that the War Office immediately placed large orders with seven contractors and the die was cast. Misfortune accompanied the R.E.8 from the start. A shortage of raw materials caused a serious delay and then the unreliability of the R.A.F. 4A engine coupled with a tendency to spin began to take toll of aircraft and crews.

Rumours had circulated for some time that the long upper wing of the B.E. biplane was structurally unsound and likely to fracture under stress; when, therefore the R.E.8 was found to have a similar wing arrangement it was regarded with suspicion from the beginning. To enable the machine to take off from small fields and improvised landing grounds, the designers gave the R.E.8 a very high ground angle of attack. This produced a "bent-in-the-middle" appearance (a wit is quoted as saying that the R.E.8 was the only aeroplane with both lateral and longitudinal dihedral) and an attitude when landing to which pilots were unaccustomed, and which led to a succession of accidents.

The first unit to be equipped with the R.E.8 was No. 52 Sqadron, which arrived in France in November, 1916, and it was not long before the combination of prejudice and inexperience caused so many mishaps that morale was seriously endangered and the R.E.8s were replaced temporarily by B.E.2c's.

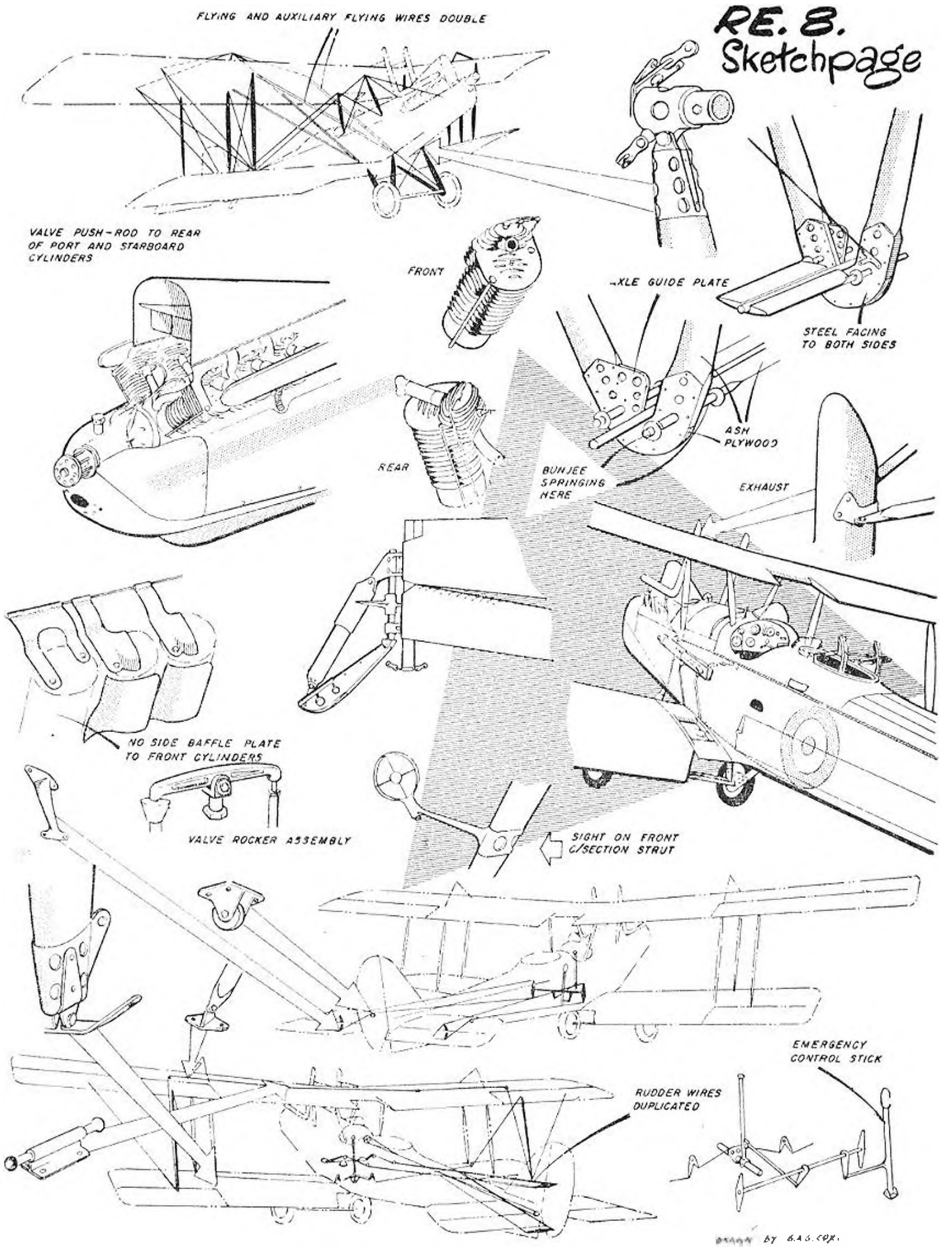
"Harry Tate"

It is a national characteristic of ours to regard the trusty steed and the lame duck with equal affection, and it was this feeling which prompted the army to nickname their new acquisition "Harry Tate". Because of early manufacturing delays it was obsolescent by the time it reached France in any number and yet once production was under way R.E.8s arrived in France in a steady stream to be flown on all sectors of the battlefront and, all too often, to fall prey to German fighters. The Harry Tate was a sight familiar to all troops as it chugged across the lines to drop bombs, take photographs or report to artillery batteries on the results of their bombardment.

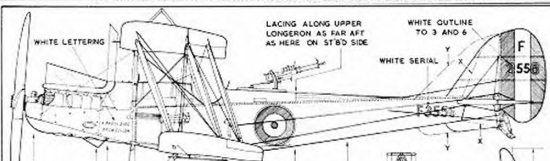
Several minor modifications were made to the original Farnborough design in the light of service experience. The fin area was almost doubled in two separate stages

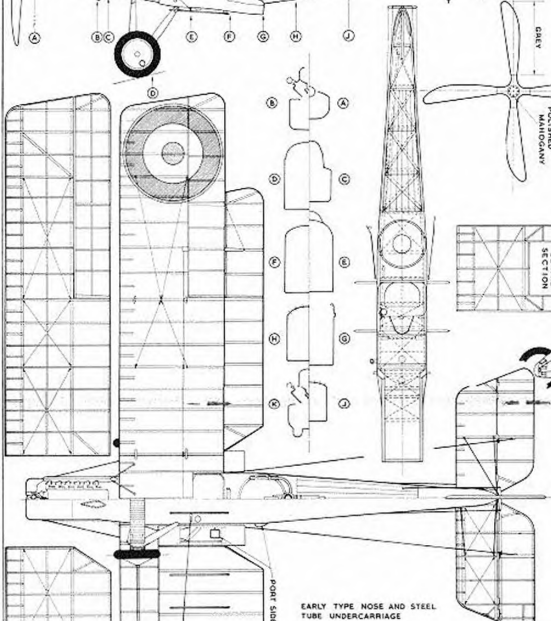
Continued on Page 198

Heading shows a late model with enlarged fin, deep nose cowl and Scarff ring at the observer's cockpit. Inscribed as a presentation aircraft, it has the original steel tube undercarriage. At right, is an early R.E.8. with small fin and pillar type gun mount. Both Imperial War Museum Photographs


RE. 8.
Sketchpage
FLYING AND AUXILIARY FLYING WIRES DOUBLE
VALVE PUSH-ROD TO REAR OF PORT AND STARBOARD CYLINDERS
FRONT
REAR
AXLE GUIDE PLATE
STEEL FACING TO BOTH SIDES
ASH PLYWOOD
BUNJEE SPRINGING HERE
EXHAUST
NO SIDE BAFFLE PLATE TO FRONT CYLINDERS
VALVE ROCKER ASSEMBLY
SIGHT ON FRONT C/SECTION STRUT
EMERGENCY CONTROL STICK
RUDDER WIRES DUPLICATED
BY G.A.S. COX.

A. 2703



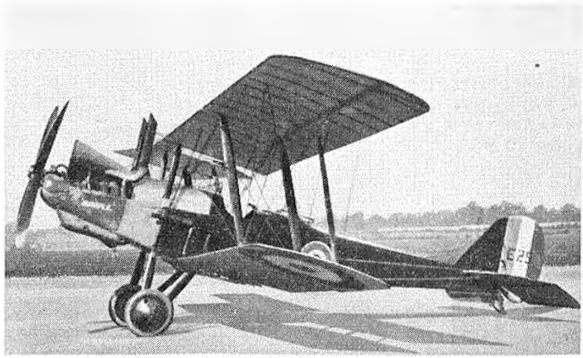


WITH TYPE "A" SCALE EXPLODED AND WITH TYPE "B" SCALE EXPLODED PRINTS OF THIS DRAWING ARE AVAILABLE PRICE 1/- AND 2/- RESPECTIVELY FROM AEROMODELLER PLANS SERVICE. PLEASE ADD 6d. POSTAGE AND QUOTE PLAN No. 2703.

ROYAL AIRCRAFT FACTORY R.E.8.

FT.

the R.E.8 continued



Inscribed "Marple" on the nose, this standard production R.E.8 has the solid ash undercarriage legs and enlarged underfin. Theory was that the original vertical tail surfaces were too small to counteract torque from the massive airscrew. By adding the larger ventral fin and lengthening the main fin root chord the "Harey Tate" became a more manageable aircraft
(Air Ministry Photograph)

and the tailskid assembly was attached to an extension of the front tube of the rudder. The nose of later models was deepened allowing the removal of the two lower fairings under the engine. One machine, A.4683 (one of a batch of 99 built by Coventry Ordnance Works) had an extra deep cowling beneath the nose—deeper than either of those shown in the drawing. A Scarff ring mounting for either one or two Lewis guns was fitted to the rear cockpit and the steel tube undercarriage of early models which was very like that of the Bristol Fighter was replaced by a stronger one of solid ash. The wire bracing to the upper wing was modified and may be seen in this form on F.3556 at the Imperial War Museum, although this appears to be a very late modification.

In 1916 twenty-two R.E.8s were supplied to the Belgian Government, and these were fitted with 180 h.p. Hispano engines cowled in a similar manner to the SPAD fighters. Also in 1917 an improvement on the R.E.8 was designed and two prototypes built. This, the R.E.9, differed from its predecessor in the shape of its rudder and in its wings which were two bay equal span. The R.E.9 was much more pleasant in appearance but its performance did not justify production.

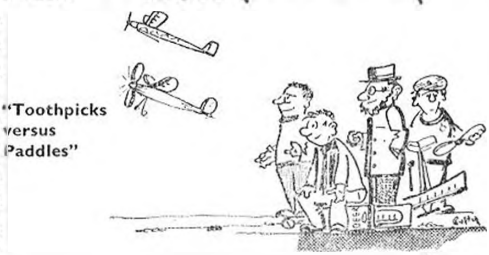
The R.E.8 was, of course, of all-wood construction, with ply covering around the cockpits and metal panels in the nose. The engine, an R.A.F. A4 of 150 h.p. was air-cooled and to achieve satisfactory cooling of the rear cylinders a large air scoop with internal baffles was fitted between the banks. A main petrol tank holding 37½ gallons and a 10½-gallon service tank were mounted on the upper longerons directly behind the engine with the 3½-gallon oil tank below these, an arrangement which greatly increased the fire hazard on crash landings. An offensive armament of two 112 lb. or four 65 lb. bombs, or their equivalent was carried under the lower wings, bringing the loaded weight up to 2,869 lb. compared with an empty weight of 1,803 lb. At 6,500 ft. the maximum speed was approximately 100 m.p.h., depending on the load, and with full tanks the endurance was four and one-quarter hours. The service ceiling was 13,500 ft.

On October 31st, 1918, there were 1,913 R.E.8s on charge out of a total of 4,077 built by the Royal Aircraft Factory, Austin, Daimler, Siddeley, Napier, Standard, and the Coventry Ordnance Works.

Details of weights and performance are quoted from "British Aeroplanes, 1914–1918", by J. M. Bruce, which contains a detailed description and history of this machine.

The writer is grateful to the Director and staff of the Imperial War Museum, London, and to Mr. J. M. Bruce for their kind co-operation.

what's the answer?

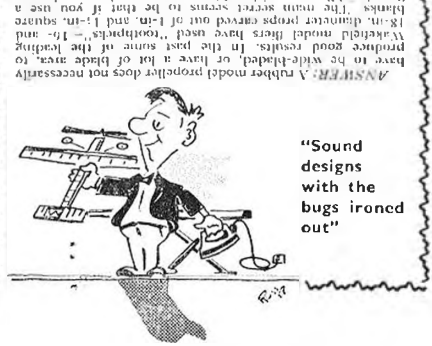


The Westhampton Club have always been particularly keen on rubber contest flying and three of their members have won places in the Wakefield team, as well as regularly figuring high in national contests. Knowledge was pooled and more or less standard designs evolved which all the fellows flew. Nothing very unusual about them—just good, sound designs with the bugs ironed out.

Then along came a couple of newcomers with some very simple models and "toothpick" props—more like power props. than the wide-bladed rubber variety. To the astonishment of the rest of the members they proceeded to beat the club designs time and time again. Most of the Westhampton boys feel that these props. are all wrong, but results speak for themselves! What's the answer?

What would YOU do in a case like this? Turn the page for the solution to the problem, printed below.

ANSWER: A rubber model propeller does not necessarily have to be wide-bladed, or have a lot of blade area, to produce good results. In the past some of the leading Wakefield model fliers have used "toothpicks"—18- and 20-in. diameter props carved out of 1-in. and 1½-in. square blanks. The main secret seems to be that if you use a "toothpick" prop with rubber power you have to have a high pitch—and you find you can fly on less power. Might be worthwhile trying out in your club in these days of rubber weight restrictions.



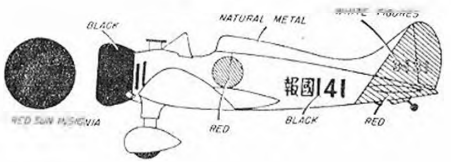
DECOR DETAIL

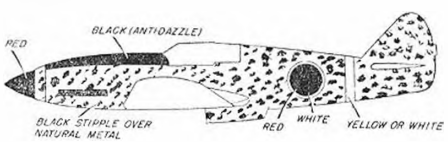
OUR PICTORIAL FEATURE FOR SCALE MODELLERS

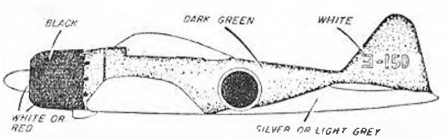
Returning B-17G's from the European Theatre were frequently emblazoned with names of crew members, ground staff and associates. This example appears to have been specially selected as an object of affection

Japanese colour detail from a 1938 publication in Tokyo is authentic and is for army fighters. Unit insignia was usually painted on the vertical tail surfaces, name of base is quoted in brackets

Unit Insignia.





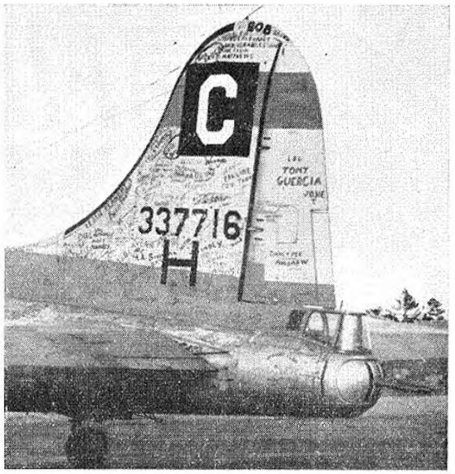


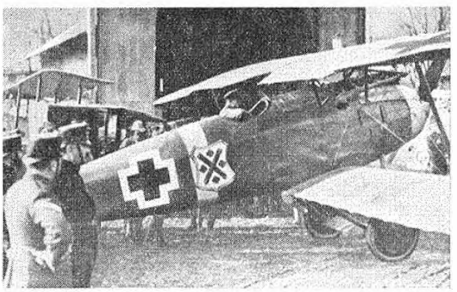
At right: W.W.I Fighters from the Chas. Donald collection

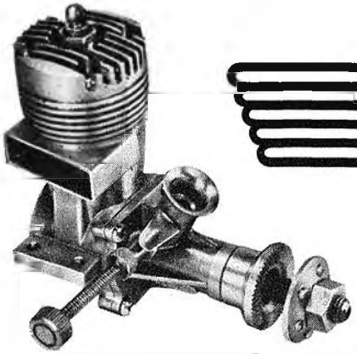
Top: Albatros D III on public display bears highly decorative shield device superimposed on a black and white ribbon. It is most unusual to see an Albatros D III with this style of cross (which dates it approximately May/June, 1918) as the aircraft was by then rapidly becoming—if not already—obsolete

Centre: Extremely rare shot of Manfred von Richthofen in cockpit of LFG Roland D III distinguished from more common D II (in background) by "open" centre-section. Blending of upper and lower fuselage camouflage colours may be noted on original

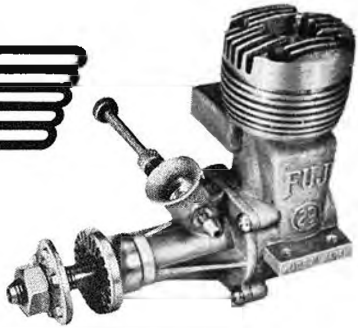
Bottom: Albatros D Va Leutnant Dilthey—of Jagdstaffel 27, July, 1918. Colour values of original would indicate fuselage and tail painted in bands of red and white, the crosses being superimposed on the white to obviate an outline. Wing crosses are painted on—non-regulation—white squares. Blue rib tapes show up well on the loasenge fabric-covered wings







FUJI 29



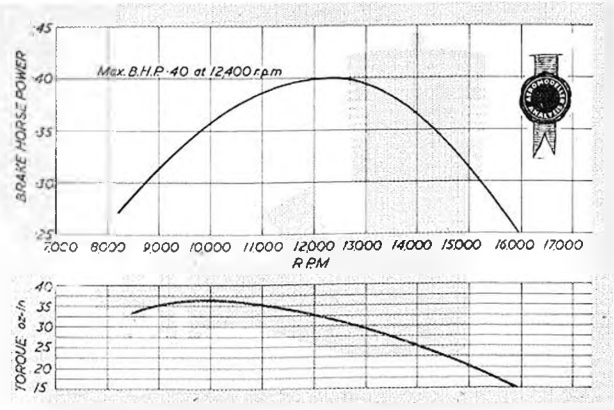
ENGINE ANALYSIS No. 46 by R. H. WARRING

THE "FUJI" RANGE OF Japanese engines are not so well known outside their country of origin as some of their contemporaries, but current production embraces seven different models (all glow plug motors) from ·049 cu. in up to ·35 cu. in. There are also outboard versions of the "Fuji" ·049 and ·061 for boat enthusiasts. The "29" appears to be widely used, and popular, with the Jap. control line fans, the model received for testing being a re-designed version of the original Fuji "29", put into production in early 1957.

In keeping with what we have come to expect of post-war Japanese light engineering production, the Fuji is a well thought out design, extremely well made with fits of the highest order. The layout follows conventional glow-motor practice, resulting in a light yet sturdy unit. Handling characteristics were found to be very good. Starting was easy on almost any size of propeller load, although a little touchy on the needle valve adjustment to achieve consistent two-stroking. But once properly adjusted the running was most consistent. A noticeable feature was that, even after a prolonged run at high speed the main bearing remained remarkably cool, indicating that the fit was just right. This tested engine (*at left, above*) had a highly polished external finish. An improved version with rough cast finish (*at right, above*) appears to be about 5 per cent. up on prop. figures.

Performance tests, however, showed a relatively moderate power output for a glow-motor of this size and type. Although definitely happiest running at higher speeds, torque fell off quite rapidly above 11,000 r.p.m. so that the peak B.H.P. figure was in the region of ·40 at 12,400 r.p.m. Consistent running was obtained with smaller propellers to beyond 16,000 r.p.m., but some of the figures obtained at the upper end could almost be matched by a good diesel of half the capacity.

Actually static r.p.m. tests are not usually a fair comparison between diesel and glow. The latter type of engine has the capacity to increase r.p.m. by a much greater extent in the air and so, for control line work especially, will often out-perform a diesel which, on test figures, appears to have a better power output and similar peak r.p.m. No doubt the Fuji would also show up better in this way than the test figures alone would appear to



SPECIFICATION

Displacement: 4·814 cc. (·2936 cu. in.
Bore: ·747 in.
Stroke: ·670 in.
Bore/Stroke ratio: 1.1:1
Weight: 6½ ounces
Max. B.H.P.: ·40 at 12,400
Max. torque: 36·8 oz-ins. at 9,800 r.p.m
Power rating: ·083 B.H.P. per c.c.
Power weight rating: ·064 B.H.P. per ounce.

Material Specification:

Cylinder and crankcase unit: light alloy pressure die casting.
Cylinder liner: hardened steel.
Piston: cast iron.
Gudgeon pin: silver steel.
Connecting rod: pressure die casting in light alloy.
Crankshaft: hardened steel.
Main bearing: plain (bronze bush).
Cylinder head: light alloy pressure die casting.

Manufacturers

Fuji Bussan Co. Ltd., Hokkaido, Japan.

indicate. Nevertheless, we would classify it more as a sports engine on these data than one which could be expected to give top results in speed.

The main casting of the Fuji incorporates the crankcase, cylinder and integral backplate. The steel liner is of substantial section and fitted tightly (probably shrunk fitted). The (top) transfer port and exhaust port are rectangular in shape, diametrically opposed and nearly on the same level. The transfer passage is formed in the cylinder casting with lower ports consisting of two large holes drilled in the liner matching two similar holes in the piston.

The piston itself has a simple deflector on a flat top (on the transfer side) and is mounted on a hollow gudgeon pin fitted with brass end pads. Piston material is cast iron, the top being relieved slightly. After some two to three hours running time the piston walls tested as "hard"—presumably work-hardened by running, as the piston top was still quite soft— and had a fine polished finish indicative of a perfect running fit.

The connecting rod is a pressure die-casting, with a bronze bush for the big end bearing. Gudgeon pin diameter is 4 millimetres, crankpin diameter 6 millimetres. Crankshaft diameter 11 mm. over a bearing length of 1⅝ in. The crankshaft, of hardened steel, is turned down to a 7 mm. threaded length. The web is machined away to form a counterweight and save weight; the crank pin also drilled through and the central hole in the shaft taken well forward past the intake port, the latter being rectangular in shape and of generous area.

Main bearing is a bronze bush inserted in the front casting. This casting also incorporates the venturi with characteristic Japanese shape of bell-mouth and attaches to the crankcase with four screws. Neither mating faces are machined and sealing is accomplished with a gasket.

PROPELLER—R.P.M. FIGURES

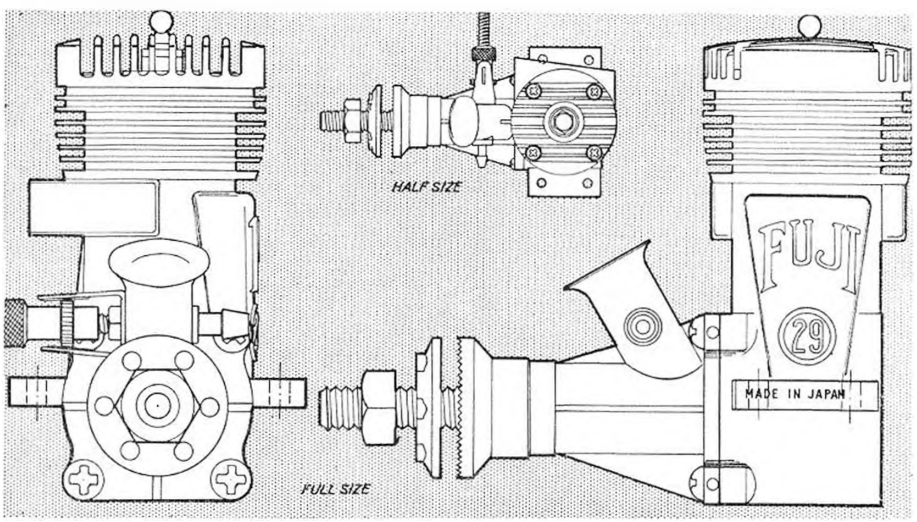
dia. x pitch	*r.p.m.*
9 x 4 (Stant)	12,300
8 x 4 (Stant)	14,500
10 x 4 (Trucut)	10,800
9 x 5 (Trucut)	13,000
8 x 4 (Trucut)	14,700
7 x 4 (Trucut)	15,900
8 x 3½ (Tiger)	15,500

Fuel used: Mercury No. 7

The only other casting (apart from the American-type prop. washer) is the cylinder head, the plug-in portion being relieved to clear the piston deflector. Hence, although the plug is centrally located, the head can only be assembled one way round. The propeller driver is machined from dural and fits unusually—on the taper end of the main section of the crankshaft (*i.e.*, on the full 11 mm. diameter), leaving a circumferential gap between the boss of the driver and the protruding threaded length of shaft. Presumably this could be of assistance in aligning the driver when the propeller is tightened up.

The makers specify a methanol-castor-nitrobenzol fuel mixture, in the proportions 55-60%—30-25%—15%. All tests were conducted with Mercury No. 7 fuel, which seemed perfectly satisfactory, although not necessarily giving maximum possible performance. Obviously the latter could be improved by the addition of more nitrate, particularly as the compression ratio is 6·5:1.

Summarising, we would rate the Fuji a long-lasting, very well made engine, which should be particularly suited to control line work. All running fits are of the highest order and in general running and handling characteristics, it appears to have no vices at all. Altogether, a docile engine embodying many first class design features.



AEROMODELLER

AIRCRAFT DESCRIBED

NUMBER 91

George Meyer's home-built aerobatic biplane

Airborne at an indicated 110 m.p.h. cruising speed over the vast Texas flatlands bordering the Gulf of Mexico, George Meyer holds close formation for a flight shot of his trim little biplane

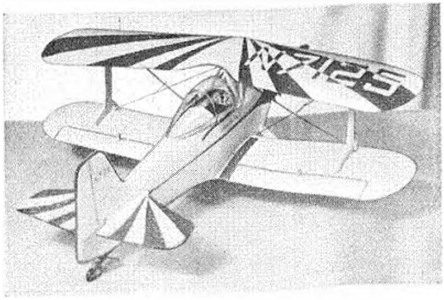
MANY AEROMODELLERS of our acquaintance aspire to constructing their own full-size aeroplanes in some distant date and we do in fact know of a number of modellers who have joined the light plane fraternity and still maintain their interest in our hobby. In the U.S.A. and in France aeromodellers have greater opportunity and certainly more freedom to follow their full-size whims, and it was a feature in that excellent specialist magazine, *Experimenter* (now issued as *Sports Aviation*) that first drew our attention to one modeller's particularly attractive home-constructed biplane built at Corpus Christi in Texas. George Meyer was particularly fortunate having a good aircraft design training through his work in the Experimental Department of Curtiss Wright Aircraft in St. Louis from 1935 to 1940 and following Army service in World War II was able to take advantage of the G.I. Bill of Rights for veterans taking flying lessons and earning his pilot's licence. All this time he maintained a keen interest in aeromodelling and in fact he has been an AEROMODELLER subscriber for many years. Working with prototypes and modification of Naval Service aircraft at Corpus Christi Naval Air Station, Texas, he decided to make his own biplane using the well-known Stearman biplane as a basis.

Home constructors in the U.S.A. are particularly favoured by the amount of information on aerodynamics available through the Department of Documents, Washington, D.C., for example the C.A.A. Manuals 18 and 04, plus papers on airfoils, tail surface design, surface areas and characteristics of wing and tail combinations. With such information, and with his flight engineering experience, George Meyer's Little Toot was started in 1950 as a "rule of thumb" job, and yet when checked over by officials for gravity load, design and balance, he was told that his centre of gravity was within $\frac{1}{16}$ in. of the calculated desired position.

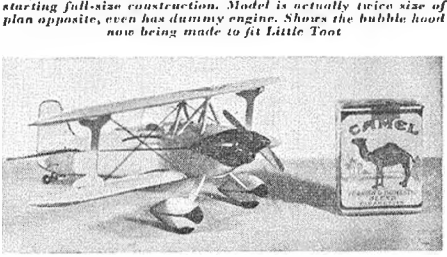
Being an aeromodeller, George first made a 1/24th scale (twice the size of our plan) model of all metal construction, duplicating the projected design in every detail even to the extent of a dummy engine. Not only does this system provide the designer with a good idea of the appearance of the full-size counterpart, but it also enables one to develop constructional details and eliminate unforeseen snags.

The landing gear is the clean cantilever Cessna type with standard Cessna wheel spats. Otherwise the rest of the airframe is strictly own design and the fuselage is a metal monocoque frame from the cockpit aft as will be seen in the photo above. Wings are spruce with $\frac{1}{8}$ in. ply ribs capped by $\frac{1}{2}$ in. x $\frac{3}{16}$ in. spruce and then fabric covered. Power is a 90 horse power Continental flat four and at a later date, George hopes to install a 135 or 150 horse-power Lycoming to give even more exciting performance.

A snappy take-off in about 200 feet, sustained spins, extremely rapid rate of roll and delightful aerobatic performance—said to be even superior to that of the famous Bucker Jungmeister are among its many attributes. Little Toot will stall at 55 m.p.h. and land at the same speed. Its most outstanding achievement came last year when George flew it



Camel cigarette pack offers a size comparison for the all-metal rib-for-rib true scale model built by George Meyer before starting full-size construction. Model is actually twice size of plan opposite, even has dummy engine. Shows the bubble hood now being made to fit Little Toot



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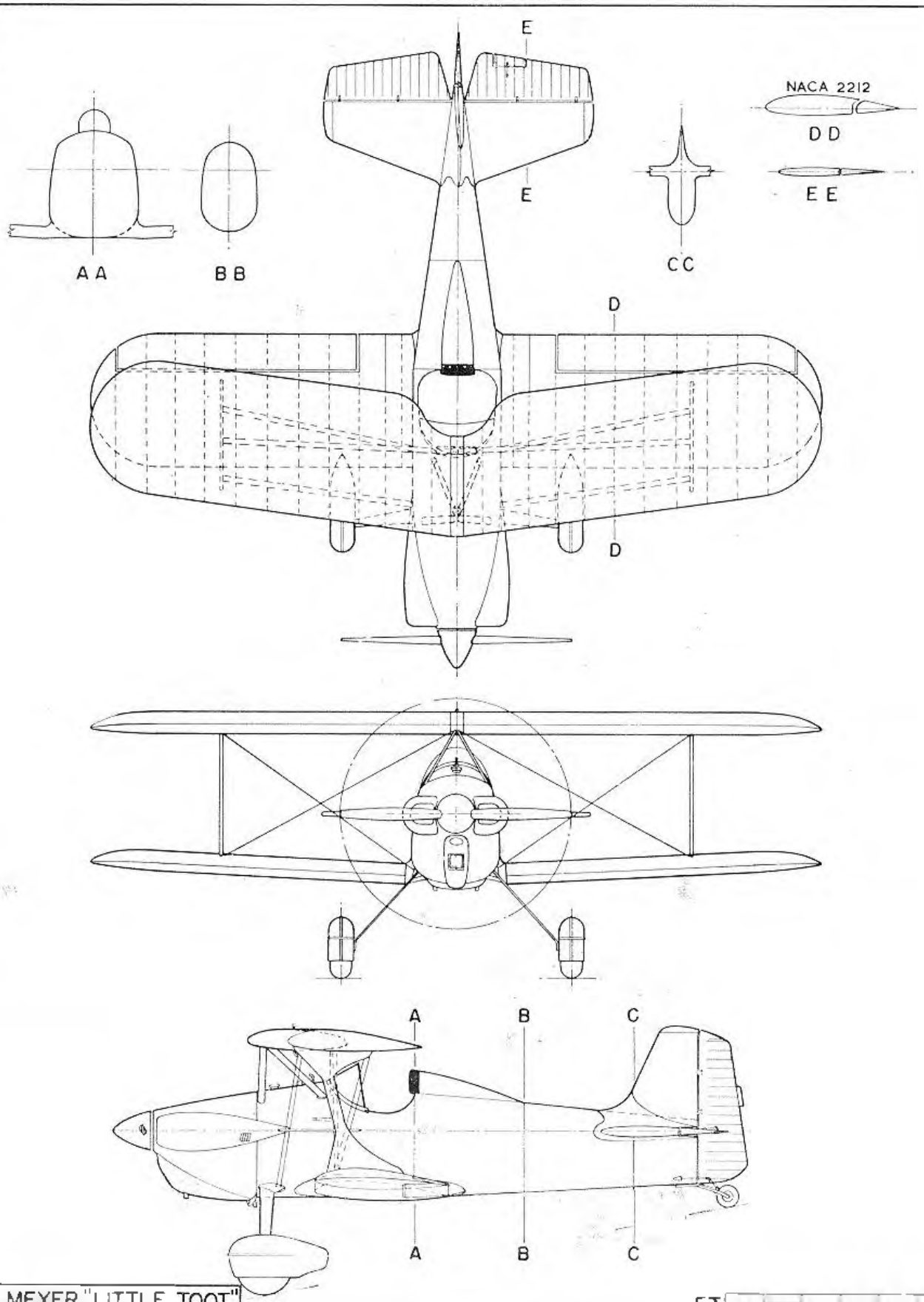
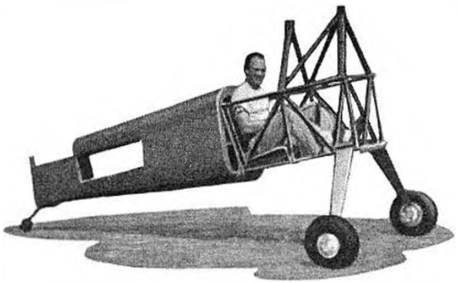


GEO. MEYER "LITTLE TOOT"

FT

1/48th SCALE REPRINTS OF THIS "A" TYPE DRAWING AND 1/36th SCALE "K" TYPE DYE-LINE PRINTS ARE AVAILABLE PRICE 1/- EITHER SIZE PLUS 6d. POSTAGE FROM AEROMODELLER PLANS SERVICE.



George Meyer in the partly built fuselage shows the snug cockpit fit, Cessna landing gear assembly and monocoque rear fuselage. At right, after completing his 2,600 mile round trip to Milwaukee the proud designer/constructor poses with his trophies

1,300 miles from Corpus Christi to Milwaukee for the annual Experimental Aircraft Association Fly-in meeting. Despite awful conditions of rain and fog during the latter part of the journey, the diminutive biplane made the trip in thirteen hours flying time and was so well received that it won three trophies amid stiff opposition. The *Mechanix Illustrated* trophy for the most outstanding achievement in home-built aircraft, second place in the event distance flown to the Fly-in and second place for the most outstanding design. Since returning from Milwaukee, George has been working on a sliding hood for the cockpit as was fitted to his prototype 1/24th scale model. The blueprints are also being modified to incorporate minor changes including an alternate fuselage structure for others who want to make duplicate "*Toots*"

Colour scheme is red and white and for controline stunt we fancy the Little Toot would make a magnificent subject, especially if the ailerons were altered to work as flaps in conjunction with the elevators. Such a model would turn the wheel full circle, returning Little Toot back to the model stage,—who'll be the first to make a full-stunt replica?

Data

Airfoil	N.A.C.A. 2212.
Wing area	123·9 sq. ft.
Power loading	10·6 lbs./h.p.
Empty weight	560 lbs.
Wing loading	7·24 lbs./sq. ft.
Useful load	340 lbs.
Gross weight	900 lbs.
Engine	Continental C-90 at 90 h.p.
Stabilizer area	10·5 sq. ft.
Elevator area	7·25 sq. ft.
Fin area	4·66 sq. ft.
Rudder area	3·47 sq. ft.
Span (both wings)	19 ft.
Length	17 ft.
Height	6 ft. 7 in.
Tread	6 ft.
Top speed	127 m.p.h. at 2,000 ft.
Cruising speed	110 m.p.h. at 2,200 r.p.m.
Climb to 3,000 ft.	320 secs.

Who could fail to be attracted by the lines of this 19-ft. span biplane with red anuray decor over its bright white finish. Plans for other home-builders are to be available to members of the American Experimental Aircraft Association who want to make the Toot for 90 horsepower engines. Top speed is 127 m.p.h., lands at 55 m.p.h. and is fully aerobatic, stressed to 10G loads

READERS WRITE...

Letters of interest selected from our daily post bag

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

Anthony Fokker

DEAR SIR,

In his letter, published in your January issue, Mr. Weyl raises some points which I would like to comment as follows:

1. Although Fokker was, in his view, "a poor fellow who simply did not know the answer", yet the German authorities asked him to design a better mechanism than Roland Garros' deflecting plate. The answer came within 48 hours. Neither the L.V.G. weapon expert Schneider, nor the other German designer were approached. Fokker got the job and solved it with his famous m.g. interrupter-gear. Further, the German Government directed the later famous Prof. Hugo Junkers to Fokker when the former, inexperienced in the practical side of the subject, wanted to build all-metal aeroplanes. Fokker became his mentor because he knew the answer.

2. Mr. Platz designed the Fokker F.2 (for which Fokker praised him in a letter, as Mr. Weyl doubtless knows). Mr. Grase was responsible for the F.7a, the cleaned-up F.7 and from the former there was developed the F.7-3m, the famous three-engined version. Fokker ordered to put the engines in the wing, Platz lowered them in nacelles, practice has shown that Fokker's answer was the right one. Fokker was in the States at that time and telegraphed all main data in extensive cables to Platz in Amsterdam, a fact which is vouched for by top technicians still active in the industry. Without doubt they could have set Mr. Weyl right on this point.

3. Mr. Weyl's statement that Fokker withheld technical information from his collaborators appears vague, but it could bear upon a curious fact which he, Mr. Weyl himself, recounted in a letter to *Flight* of April 29th, 1955. Surprisingly, these two statements are wholly contradictory.

4. It is true that neither Fokker nor Platz had an official engineering diploma or degree, but Mr. Weyl should know that as late as 1914-1918 (and later!) many excellent aeroplanes have been built by designers who did not possess "official" qualifications. The learned scientists of the Flugzeumeisterei at Aldershof, who ordered the beefing-up of the rear-spar of the Fokker D.8, had acted for the best, but the tragic results were soon seen in a series of wing-failures. Yet they thought they knew better than the practical designers.

VAN HATTUM.

Aero Club, The Hague.

This correspondence is now closed (Ed).

That Fox Moth

DEAR SIR,

Concerning the articles on the D.H. Fox Moth which have appeared in the AERO-MODELLER (April and December, 1957), I am prompted to add a further contribution, possibly the last of an interesting spate of letters on this subject.

The reason primarily being that a big misunderstanding has continued to pass unnoticed by all and sundry, which I think should be cleared up. As a rider to Mr. Hodgkinson's letter in the December, 1957, issue of the AEROMODELLER, the editor mentions that G-ACEJ is apparently enjoying a new lease of life on Southport sands after its previously assumed demise. "Apparently" is the operative word, as the unfortunate Fox that did in fact crash was G-ACCB, not G-ACEJ.

Sister ships, both owned by Mr. Givoux, who, incidentally, when I once spoke to him on this question of flying hours, made a rough guess "about 25,000". Some log book!

A. W. JESSE.

Liverpool 8.

Armstrong's Camel

DEAR SIR,

I read with interest the article on the Sopwith Camel, by Mr. Gray. However, I should like to point out to Mr. Gray that his reference to Captain Armstrong having no decorations is incorrect, in fact Captain Armstrong was awarded the Distinguished Flying Cross, in a supplement to the *London Gazette*, dated December 3rd, 1918.

Captain Armstrong was killed in France on November 13th, 1918. It was reported that while he was on Home service he flew an all-red Sopwith Camel, but I have not been able to confirm this.

D. WHETTON.

Littlecover, Derbys.

Peter Gray wrote that Armstrong **received** *no decorations, in point of fact, this was true in that the award was made posthumously. Mr. Whetton has forwarded the actual citation and an interesting letter which amplifies the amazing abilities of this outstanding pilot.*—ED.

Award of the Distinguished Flying Cross.

"Lieutenant (Captain, Acting) D. V. Armstrong (France). A brilliant pilot of exceptional skill. His success in night operations has been phenomenal; and the services he renders in training other pilots is of the greatest value, personally supervising their flying and demonstrating the only successful method of attack by night. On the night of September 10th-11th, learning that an enemy aeroplane was over our front, he volunteered to go up. The weather conditions were such as to render flying almost impossible, the wind blowing about 50 miles an hour, accompanied by driving rainstorms; despite this, Captain Armstrong remained on patrol for over an hour, his machine at times being practically out of control. The foregoing is only one of many instances of this officer's skill and resolution in night operations".

Letter in respect of Armstrong.

"Early in 1918 I had to deliver a model Morane Parasol to the C.O. of Sutton's Farm, Hornchurch, through an old school friend of mine, Lieutenant Parks. He was orderly officer for the day, and after handing over the model, I asked him who the combatants of a sham scrap had been, which I had seen on my arrival.

"The machines in question were a Sopwith Triplane and a Camel. Parks said they were an R.N.A.S. officer and Armstrong, and after an easy win by the latter they celebrated in the Mess. Shortly afterwards the entire personnel went out on to the tarmac, and Parks said 'You are going to see something note; Armstrong is going up to commit hate'. Armstrong took off with a loop off the ground, and after doing every stunt both possible, and impossible, chased everybody off the tarmac. Then seeing Parks and myself standing alone, he rushed across the aerodrome and flicked over in a roll so low that his wing nearly struck the ground. The rush of air threw Parks and myself against the boundary fence, where Parks kept shouting 'Good God, he'll kill himself'. Armstrong after a few more stunts went off to Number 44.

"Parks was killed in May, 1918, while instructing at Huntingdon. I forgot to mention that at the time Armstrong's Camel was painted red. The only other pilot who could do a flick roll at Number 44 as Armstrong did it was Major Martin Green the C.O.

"Armstrong was one of those who passed on without being known to anyone except those who came into contact with him. My greatest sorrow was that I refused to make a model of the famous red Camel for him, as I was full up with orders for other planes at that time".

T. CLARKE.

This letter appeared in a 1937 issue of *Popular Flying*.

Combat Rules

DEAR SIR,

Where can I get British Combat and 4A team race rules? We want to take up these events in our club but can find no printed information on them.

W. BROWN.

London, N.7.

Provisional rules for Combat and 4A T/R and any other information on competition classes is available through the S.M.A.E., Londonderry House, 19 Park Lane, London, W.1. In brief, the provisional Combat rules are as follows:—ED.

Basic Requirements

(*a*) Max. engine capacity 3·5 c.c.
(*b*) Line length 50 ft. ± 6 in.
(*c*) Streamers: 120 x 1¼ ins., plus 60 ins. thread.
(*d*) No artificial aid calculated to assist streamer cutting permitted.
(*e*) Combat period to be 5 mins. duration from starting signal.

Score System

(*a*) Scoring shall commence immediately the starting signal is given.
(*b*) A penalty of 1 point shall be incurred for every full period of 15 seconds that a model is not airborne during the combat period.
(*c*) 5 points shall be awarded for each single cut of the opponent's streamer, only cuts by the airscrew count.

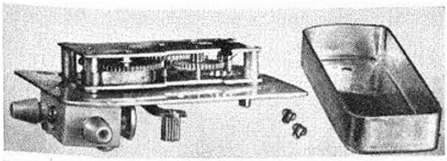
Unofficial Flights

(*a*) If there is a mid-air collision and neither contestant is disqualified.
(*b*) If a streamer becomes accidentally detached from a model (*i.e.*, is not cut by an opponent).

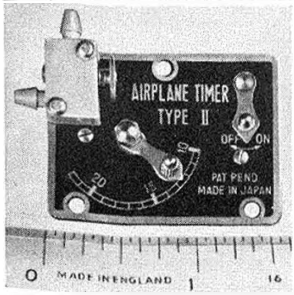
In the event of an unofficial flight, the heat shall be re-flown.

Disqualifications

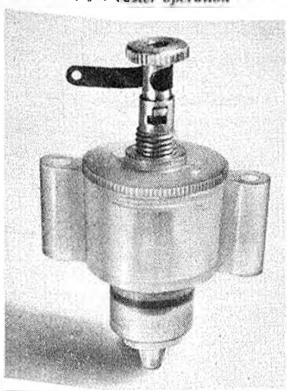
(*a*) If two or more consecutive laps are flown at a height of less than 6 feet.
(*b*) If a combat entrant deliberately attacks another model as distinct from its streamer.



Trade Notes



Actual size photo of Japanese timer shows high precision workmanship. Below: Elmic Limitank with new style release clip for easier operation



Pattex adhesive below is contact type, ideal for metallised paper covering, available in Europe only

OUR PHOTOGRAPH of the **Altmaster** height measuring instrument used to illustrate the F.A.I. report last month, has brought forth a flood of enquiries. Produced by Kenland Research, 4 Stratford Way, Boxmoor, Herts, it sells for 25s., weighs a mere 0·45 oz., and has a recording range from local ground level to 8,000 ft. In brief, one "Zero sets" the instrument for ground level temp. and pressure.

When the model has landed, a lamp indicating reader is connected to read maximum height obtained and the dial pointer turned until the lamp shows electrical contact in the diaphragm operated mechanism, which may also operate d/t, chute drop, etc. Our tests have shown it to be sensitive to within 10 ft., even telling us how high the AERO-MODELLER attic is above Clarendon Road.

Another lightweight instrument is the Japanese **KSB** Timer shown actual size above. Weight is 0·35 oz., reliability factor 100 per cent. and shut-off valve one of the most effective we have seen. We are sorry that we cannot say that it is available in Europe to add to our superlatives, for without doubt it sets a new standard in mechanical timers. This is not to belittle our well-known British **Elmic** products, for we rate the Universal timer equally highly.

Another item not available in Britain; but which we can recommend to Continental modellers is **Pattex** adhesive. This is produced by Henkel & Cie of Dusseldorf and is ideal for metallised wallpaper covering where the British **Evostick** and other contact adhesives cannot be obtained. We tested it for metal to metal (not so good) and metal to paper joints (excellent).

A new type Epoxy resin fuel proofer by **Mercury** promises to be the complete answer to the ever-present finish problem. Three bottles are provided, and we must emphasise that the instructions be followed very closely. It can be applied quite thin, obviating bubbles and brushmarks, and for extra safety, a second coat can be applied: but the model must be left one week before its surface is exposed to fuel. Price is 7s. 6d. and this gives one a stock for a whole squadron of team racers.

New from **KeilKraft** are the Ju.87 Stuka rubber scale kit at 4s. 1d., and their first Plastic kit at 4s. 9d. We have the Stuka built up and will be saying more about it next month; but our main praise goes to KK for the 1/72nd scale Hurricane. A lot of trouble has obviously been taken to get this model dead right, and with wheel wells cast in two-piece wings (top and bottom halves), stringer mouldings and scope for both a retractable u/c and sliding hood, the Hurricane will be very popular. The propeller moulding for this kit is particularly good, possibly the best representation of a full-size prop we have seen in the whole range of plastics. Purists will want to angle the undercarriage hinge line for correct "down" rake. Next to come in the KK. Plastics range are the Camel, Stuka and Chipmunk. Also out is the brightly covered '58 KeilKraft Catalogue and Handbook, well worth the 1s. 6d.

Contest Kits have many new items this month: 30 and 33 s.w.g. piano wire in Polythene bagged 120 ft. coils at 1s. 9d. and 2s. 3d., first class control line elevator or flap hinge tape at 3d. for 24 in., and two kits. These are the 34-in. Calypso Cub for ·5 to 1 c.c. at 13s. 6d. and the Voodoo to S.M.A.E. Class A team race specifications at 21s. 6d. The designer of Voodoo can claim many successes for his models leading up to this design, which won the "A" event at Radlett last year. Span is 24 in., taking full advantage of the S.M.A.E. 8 : 1 aspect ratio rule and both wing and fuselage decking are contoured, with other parts prefabricated.

At right: Airfix Walrus, like the Mig 15 just introduced, is from "Aeromodeller" drawings and fully detailed even to Lewis guns. Another new introduction is the Mustang

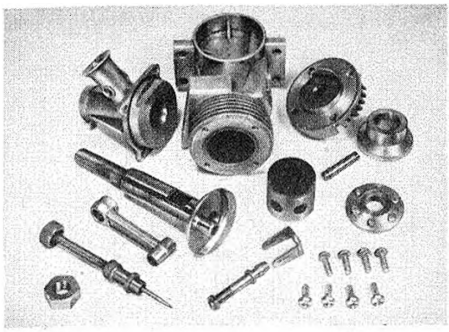
MOTOR MART

DOUBTLESS THE ADOPTION of the A.M.A. stunt schedule has had some influence on engine demand in recent weeks, for never before have we received so many appeals as to sources of supply for the American or Japanese "35" glow plug engines. Fortunately, Messrs. H. J. Nicholls have arranged importation of a batch of 19, 29 and 35 engines, Fox and Veco, so the flying fields will soon be blessed with the roar of these fine power units. Arising out of the HJN advt. for 2nd hand engines, we were given a breakdown on the types of motor sent in for purchase and the numbers of some makes are really surprising. Significantly, there were no Mills and few Olivers: but of others the amount of nearly new and little-used types give one a clear indication of what is not so popular in the motor mart these days.

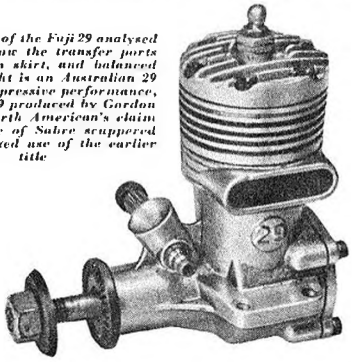
Duke **Fox** wrote us as we go to press, "Once in a while something comes out just a little bit better than we have any right to expect". He was referring to the newest of his motors, the **29X,** another Fox special for combat, stunt or team race. Parts, except the head, are interchangeable with both the racing 29R and the Combat 35, and the accent throughout is on strength plus power. There are several new features, but until our analysis we'll only reveal that the needle valve has a tee-shaped end for better fuel atomisation.

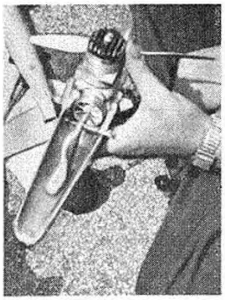
From Japan, S. Ogawa the **OS. Max** engine designer, has sent data on the new Max-11 15, said to rev up to 21,000 happily and showing signs of expansion in transfer porting and carburetter diameter. A new name is introduced to his range in the 1·6 c.c. **OS Pet,** destined to be a very popular glow unit with radial or beam mount, an unfinned head and otherwise much a miniature of the Max series. The proposed combined exhaust choke and throttle unit for the '58 Max 35 will not now be produced due to prior patent registration by a U.S. manufacturer. The accent is more than ever on motor speed control in the States, K & B, Veco and Fox all having engines capable of slow speed setting through a throttle, and in Europe, the makers of the **Ruppert** opposed twin diesel with vacuum pump for the Stegmaier r/c system cannot keep pace with orders, for there's no doubt that its wide range of speed control is highly desirable for multi-channel r/c. We know at least three radio control fliers who purchased complete Stegmaier outfits, which include the Ruppert twin before Christmas. Their engines were to have followed but due to production hold-ups are still not with them.

We are firm in our belief that the twin diesel with a proper throttle unit has a great future for multi-radio control and for this reason were greatly encouraged when Col. **Taplin** demonstrated his new 7 c.c. in-line twin to us recently. Here is an engine that starts at ridiculously low speed, if it enters production it could well rival all the glow engines for high power at low r.p.m.

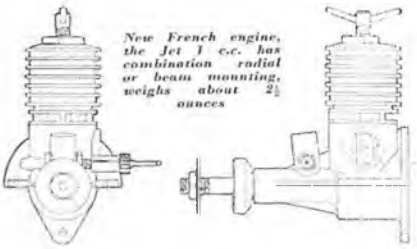


Above, parts of the Fuji 29 analysed on p. 200 show the transfer ports in the piston skirt, and balanced shaft. At right is an Australian 29 with very impressive performance, the Taipan 29 produced by Gordon Burford. North American's claim on the name of Sabre scuppered GB's continued use of the earlier title

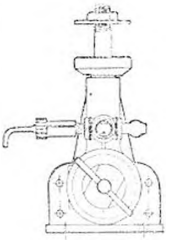




Seen at the U.S. Nats, a Fox 29R and McCoy 60 with pressure fed rear appendages, any clues anyone? Could be a new form of rotary intake



New French engine, the Jet 1 c.c. has combination radial or beam mounting, weighs about 2½ ounces



GADGET REVIEW

ONE OF THE more common queries received at AEROMODELLER offices is "How can I make or where can I obtain a three-bladed prop?" There are all sorts of ways one can construct a three-blader from a pair of standard two-blade screws, but the idea suggested in **A** from 14-year-old Peter Dunkley of Walton on Thames has great possibilities. His was intended for a small Keil Kraft 3s. 9d. Hurricane kit and was more effective (with all due respects) than the kit prop. Why not try the same thing with more laminations in hardwood for, say, the A.P.S. Lysander? Two sketches from R. Willes of Epsom appear in **B** and **C**. The first suggestion being a very simple form of D/T travel limit using standard hook and eye dress fittings available at the haberdashers, it saves an awful lot of both messing about bending piano wire. His second idea is also sensible, simply stick a length of $\frac{1}{8}$th square balsa or similar, extending rearwards from the tailplane to the exact length you need for your D/T fuse, then there will never be trouble obtaining correct D/T timing. Idea **D** is not new, we know, but many of us have only just taken up the hobby, and this gimmick deserves repetition, coming from Alan Dew of Ipswich. Just a small safety pin which happens to make an excellent line connector, particularly for smaller models.

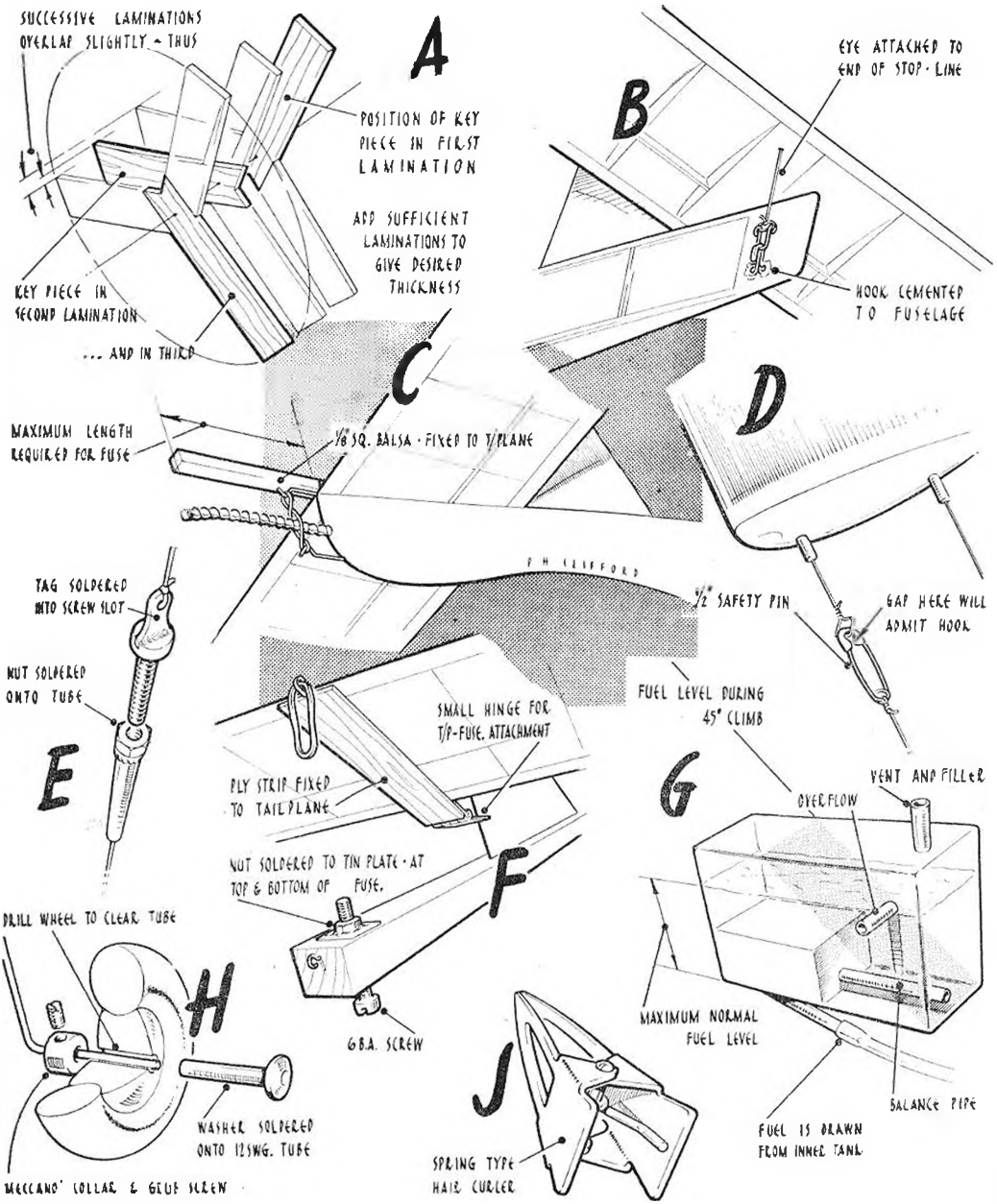
Turnbuckles are not easy to come by, and when needed for rigging a scale model for example the big A.P.S. Gypsy Moth, a home-made turnbuckle comprising of an ordinary bolt with a tag soldered in the slot and nut soldered on to a tube you can make an adjustment of the buckle to tension the rigging line. C. G. Chandler sent this in, in sketch **E**. Tail trimming is usually a matter of sticking on an odd piece of $\frac{1}{32}$nd scrap balsa or more, and this hardly ever reaches the precise state of adjustment in cigarette paper thickness stages. G. Mair of Ashton-under-Lyne has been using idea **F**, a self-explanatory system which provides a minute tail incident adjustment. Note the hinge for D/T movement. Now for yet another tank idea, this time from B. Faulkner of Cheadle, and it is a very fine tank to prevent excessive over-run, should the timer fail. As seen in **G**, it has a large capacity for starting when horizontal, the fuel feed only coming from the small corner tank when the model nose is up in a climb. Everything depends upon the position of the balance pipe, so be careful to follow the sketch. It is suggested that the volume of the smaller corner tank should be arranged for a 20-sec. engine run. Wheel retaining, particularly for scale models is not always neat in appearance. Idea **H** from J. W. Dutton of Newport employs a Meccano collar to clamp over 12 s.w.g. tube that is virtually a capped axle shoe over the main undercarriage leg. This provides only a soldered washer to view on the outer face of the wheel.

At Woolworths

Many good things can be found at the gold and plum-coloured High Street store, once famous for its 3d. and 6d. prices. J. Anderson of Stretford, Lancs., found the hair clip shown in **J** which has many uses for aeromodelling, either as tweezers for getting gussets and other small pieces into awkward corners and holding them while the cement sets, or they can also be used for holding the double sheeting on trailing edge, tail ends of fuselage, etc., etc. A larger size of similar shape and detail is available through Boots the Chemists. Meandering around our local branch of Woolworths, we found two other items of remarkable inexpensiveness. Number one is the recently introduced Nylon curtain runner, sold separately in some cases for 3d. a runner and elsewhere in packets of a dozen for 3s. These nylon runners supersede the old solid brass wheel variety, providing aeromodellers with a one centimetre diameter nylon disc in the centre of which is a beautiful caged thrust ballrace and of a No. 13 knitting needle size bore. Ideal for bell-crank mounting, control surfaces, flaps and other bearings, we have yet to see anything as good and so cheap. They work out at $1\frac{1}{2}$d. each per ballrace! On the Toy Counter a new look in dolls feeding bottles gives a ready-made plastic fuel tank for a mere 7d., perfect for 2·5 c.c. radio-control. Still in the High Street, newly introduced lightweight Terylene is available in 36-in. widths at 6s. 6d. per yard and 48-in. at 8s. 11d. per yard. In pastel shades or pure white, of perfect texture for large model covering—it should be just the job, and though we haven't tried it, we venture to suggest it will be even better than nylon covering.

A tip from Junior Technician Murrell in the R.A.F. tells us that he has made miniature cockpit covers for solid models by the simple process of making a Plasticine form shaped to the desired cockpit cover profile and painting the Plasticine with a coat of warm Vaseline which will go thin. Now apply a series of coats of thick dope, and when this is set with the desired thickness built up by successive coats of dope you can remove the top skin in the form of a cockpit cover from the Plasticine.

Finally, yet one more tip for disused ball point refills from G. T. Le Vay. He uses the end caps from the tube as a neat weight box plug and finds that the dimensions of the threaded portions just enough to allow a ·177 lead air gun pellet used for ballast to pass through the $\frac{1}{8}$-in. hole. The plug can be screwed into the balsa cutting its own threads.


SUCCESSIVE LAMINATIONS OVERLAP SLIGHTLY - THUS
A
POSITION OF KEY PIECE IN FIRST LAMINATION
ADD SUFFICIENT LAMINATIONS TO GIVE DESIRED THICKNESS
KEY PIECE IN SECOND LAMINATION
... AND IN THIRD
B
EYE ATTACHED TO END OF STOP-LINE
HOOK CEMENTED TO FUSELAGE
C
MAXIMUM LENGTH REQUIRED FOR FUSE
1/8 SQ. BALSA - FIXED TO T/PLANE
D
P H CLIFFORD
1/2" SAFETY PIN
GAP HERE WILL ADMIT HOOK
TAG SOLDERED INTO SCREW SLOT
NUT SOLDERED ONTO TUBE
E
FUEL LEVEL DURING 45° CLIMB
SMALL HINGE FOR T/P-FUSE. ATTACHMENT
FLY STRIP FIXED TO TAILPLANE
G
VENT AND FILLER
OVERFLOW
NUT SOLDERED TO TIN PLATE - AT TOP & BOTTOM OF FUSE.
F
DRILL WHEEL TO CLEAR TUBE
H
6BA. SCREW
MAXIMUM NORMAL FUEL LEVEL
BALANCE PIPE
FUEL IS DRAWN FROM INNER TANK
WASHER SOLDERED ONTO 12SWG. TUBE
MECCANO COLLAR & GRUB SCREW
J
SPRING TYPE HAIR CURLER

Round or Flat? This feature will interest the Wakefield fans

First comparative tests of British and Hungarian model aero strip rubber

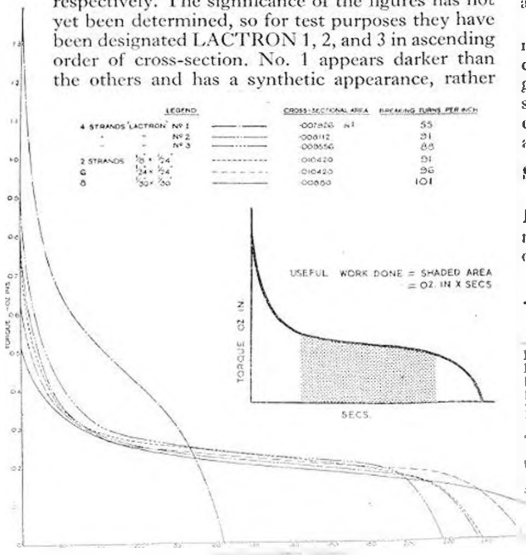
— by A. W. F. Alexander & T. Benson

USE OF MULTIPLE round section strands in Wakefield contests has been a subject for much discussion over the last two seasons, and it has long been our intent to compare the properties of this Hungarian Lactron rubber aero-strip with the flat rubber available to British aeromodellers.

Examples were obtained from Czechoslovakia, Hungary and in the case of Dunlop from the local model shop. Three sizes of the Hungarian rubber were used for testing, all of circular cross-section. These were labelled LACTRON 4·5 6 and 6·7 respectively. The significance of the figures has not yet been determined, so for test purposes they have been designated LACTRON 1, 2, and 3 in ascending order of cross-section. No. 1 appears darker than the others and has a synthetic appearance, rather "crinkly", like rubber left wound for a long period. Nos. 2 and 3 appear similar to Dunlop in colour. All three have a smooth surface finish, free from grain, etc., but a number of imperfections were found in No. 1, proving a considerable problem when sorting a suitable length for the purposes of torque testing.

Owing to the small cross-sectional area, it was decided to split the tests into two sections, *viz.* small numbers of strands as comparable with indoor practice, and Wakefield application, including an assessment of actual flying characteristics.

The tests for the first section comprise determination of the breaking turns per inch for likely combinations (nos. of strands) between the Hungarian types and the nearest equivalent cross-section of British rubber. These were followed by comparative torque curves for the closest equivalent at 75 per cent. max. turns.



Standard Test Conditions

All tests were performed at room temperature. Lubrication was applied by soft soap and glycerine mixture prior to tests and repeated during tests as often as necessary. All ends were knotted and bound

USEFUL POWER AVAILABLE FROM TORQUE CURVES

MOTOR		OZ. INCH SECS.
LACTRON No. 1	4 strands	28·27
LACTRON No. 2	4 strands	28·78
LACTRON No. 3	4 strands	27·65
1/30 x 1/30	8 strands	32·96
1/24 x 1/24	6 strands	34·24
1/8 x 1/24	2 strands	30·80

NOTE.—These figures should be approximately the same irrespective of the duration of motor run, i.e. air brake size.

The conclusion from these figures is that the British Rubber is able to store more energy.

COMPARISON OF DENSITIES OF LACTRON & DUNLOP

	Density	% Dunlop Weight	50 gramme. Wakefield Length
Dunlop	·603 oz./in.³	—	124 yds.
Lactron No. 1 ...	·584 oz./in.³	97·3%	67 yds.
Lactron No. 2 ...	·57 oz./in.³	94·99%	67 yds.
Lactron No. 3 ...	·532 oz.	88·6%	62 yds.

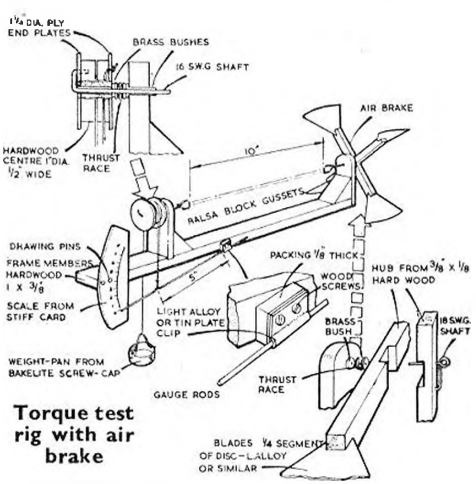
with wool. For torque testing, the unwound motor length was 10 in. (except Wakefield) with 75 per cent. max. turns applied as given by the breaking tests. An average of three runs was taken at five-minute intervals.

The accompanying sketch of the torque test rig is self-explanatory. Important points are the necessity of keeping friction to a minimum, especially at the scale end. In use, the machine was found to be easy to calibrate and to read. Calibration was in units of 0·1 oz./inches, *i.e.* by adding increments of 0·2 ozs. to the scale pan. Vibration was found to be well damped and the resulting curves are felt to be quite accurate even to the values stated.

Conclusions

The curves show a close comparison between four strands Lactron No. 2 and two strands Dunlop ⅛ in. x 1/24 in. with the latter having the larger cross-section. All three Hungarian types were less elastic giving higher torque values and taking less turns/inch, but No. 1 exhibited the most differences from British rubber. A measure of the power available was taken from the area under the curves, the units being oz./inch/secs. Only the flat portion of the curves was taken as this is thought to be the useful part of the motor run especially in indoor practice. The Hungarian rubber was found to be at the bottom of the scale in this case and the conclusion would seem to be that the less work can be extracted from the rubber, but the lower cross-section areas may have some bearing. A further point that will be considered later is the effect on the motor life of round-section rubber having no corners and grain causing stress-raisers, so reducing fatigue life. This will be studied by repeated windings to 75 per cent. max. turns on equivalent cross-sections of round and rectangular section rubber.

In connection with Wakefield application, some advantages and disadvantages in the use of small cross-section rubber are apparent. There is always safety in numbers and the effect of a single strand breaking would be hardly noticeable. A large number of strands also gives a wide choice of variations. Offsetting this is the difficulty of making up a motor of between 60 and 70 strands which would be the rough equivalent of 14 strands ⅛ x 1/24 in.



Torque test rig with air brake

Lactron is lighter

It is interesting to note that the Hungarian rubber is less dense than Dunlop in each case and since more torque is available for the same approx. cross-section, advantage may be gained by use of this Hungarian rubber for Wakefield motors. This may be done in several ways.

(*a*) Short powerful burst—motor of same length giving more torque.

(*b*) Motor of same cross-section—length increased—more torque for approx. same useful duration.

(*c*) Motor giving same average torque—longer motor still further increase in useful duration.

For this reason it is a pity that some round-section British rubber is not available to give a true comparison of motor life and average torque.

It could be estimated that by using Lactron No. 3 to the best advantage an increase in duration of 10-15 per cent. over Dunlop would be possible for the same average torque.

This will be confirmed by practical flying tests when it is also hoped to establish an opinion on the reputed variations in Lactron quality.

TABLE OF BREAKING TURNS/INCH

Rubber Type or Size	Lactron No. 1	Lactron No. 2	Lactron No. 3	1/30 x 1/30	1/24 x 1/24	1/8 x 1/24"
No. of strands ...	2	2	2	4	—	—
Area of Cross Section (In²)	·003963	·004056	·004778	·0044	—	—
Breaking Turns/Inch	83	120	120	137	—	—
No. of strands ...	4	4	4	8	6	2
Area of Cross Section	·007926	·008112	·009556	·0088	·01042	·01042
Breaking Turns/Inch	55	91	88	101	96	91
No. of strands ...	6	6	6	—	8	—
Area of Cross Section	·011889	·012168	·014334	—	·01388	—
Breaking Turns/Inch	48	83	70	—	85	—

RADIO CONTROL NOTES By Howard Boys

FOR SOME TIME radio control enthusiasts have been wanting a scheme for giving two proportional controls with a single valve receiver. A number of schemes have been put forward, but it was not till the "Galloping Ghost" that anyone appeared to get anything satisfactory in the air. Nearly three years ago Ted Sills had a system working beautifully on the bench in which he used the inductive kick from a magnetic actuator to bias a valve and operate a relay in its anode circuit. Lack of time prevented its going into the air.

About the same time Harry Cuckson worked out a scheme which gave much the same results as that used by Dr. Walt Good, but the Cuckson scheme had only one valve in the receiver, and three in the transmitter. Work in other directions again prevented airborne tests. Lately the writer has been experimenting on a modified version of this system with good results. It might also be called a modified version of the "Galloping Ghost", since it does the same things with the same transmitter arrangement. The same pulsing is used with mark space to give proportional rudder, and pulse rate variation to give elevator control. Fig. 1 shows the circuit with RL1

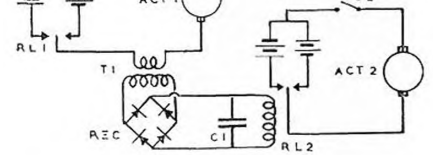


Fig 1

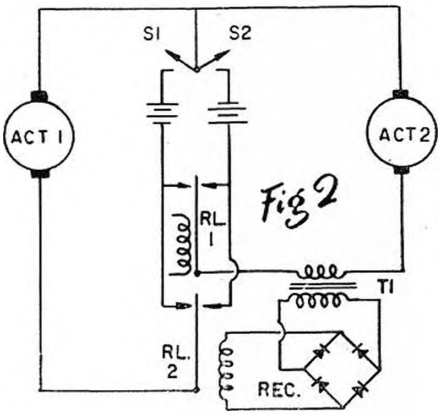
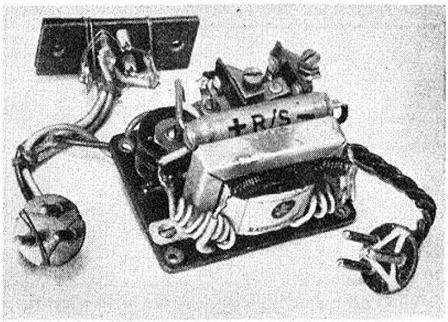


Fig 2

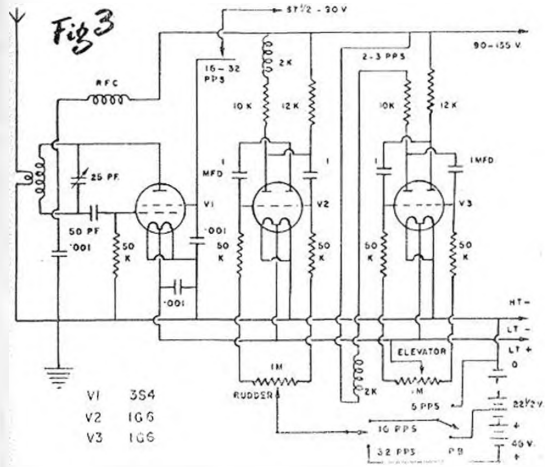


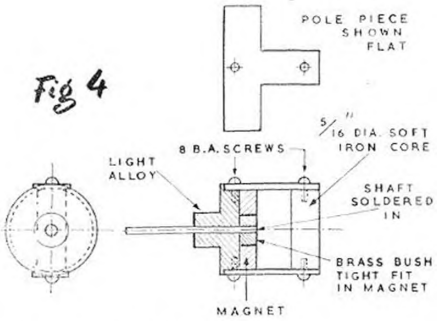
Above: Howard Boys used a Government surplus transformer of between 20 and 30 to 1 ratio for his two-control unit. Size may be gauged by the standard three-pin plugs used; weight of the unit is 3 ounces

being the normal receiver relay, and Act. 1 the rudder actuator. This can be a magnetic type or a small motor. Every pulse through the actuator sends current through the low resistance winding of the transformer T1, this being a midget radio output transformer. The secondary pulse is rectified by a 5 milliamp meter rectifier REC, and gives a kick to relay 2. The condenser C1 may or may not be desired, 2 mfd. having been used in one case when using Mighty Midget motors which gave best results. The transformer was a standard midget type for use with battery valves such as 3S4, etc. This transformer was not satisfactory with the magnetic actuators favoured by the writer, probably due to the lower current flow, but the writer's motors are old and battered and no longer reliable. Due to the high initial starting current motors are specially suitable for this system. For use with magnetic actuators a government surplus transformer was found with a ratio of about 20 or 30 to 1 which gave good results, though it needed an increase in the actuator battery voltage. Both actuators can be worked from one pair of batteries as shown in Fig. 2. The switches S1 and S2 can be embraced by one double pole type. A model has been flown using magnetic actuators and while the rudder was powerful enough, the elevator lacked power, but was still effective enough to be useful.

To switch the transmitter a Fenners Pike pulse box was modified. The variable resistance was mounted outside and a small lever added so that it could be varied easily by hand. This meant using one hand for rudder and the other for elevator, which was quite convenient with the switch on the transmitter box. One advantage of using a motor driven switch like this is that it can be heard, and a good impression of the output from the transmitter can therefore be gained.

The scheme evolved by Harry Cuckson was a little more complicated on the transmitter side but seems likely to give better results. The full transmitter diagram is given in Fig. 3. V1 is a 3S4 or similar valve with switching by means of a relay in the H.T. supply to the screen grid. V2 and V3 are multi-vibrators to give the switching. Rudder and elevator controls are 1 megahm rheostats which vary the switching rates. The relays 2K are 2,000 ohms each. The actual pulsing requires a little explanation. The rudder control is a plain mark/space, of the type that is now fairly well known. The pulse rate of the mark/space is, however, changeable between 16 pulses per second, and 32 p.p.s. This is done by the





relay in the elevator multi-vibrator, in a similar manner to the mark/space. It varies the proportion of time spet t on 16 and 32 p.p.s., changing over from one to the other at 2 or 3 times per second. Think this out slowly if you want to. If it is changing over twice per second with equal time of dwell each side, then for a quarter of a second it will be going at 16 p.p.s. (4 pulses) and for the next quarter second it will be going at 32 p.p.s. (8 pulses). Now on the receiving end the relay for the second actuator will need a condenser across it which may need to be as much as 50 mfd. (25 volt rating) and this relay will then stay closed with a pulse rate of 32 p.p.s. but remain open at 16 p.p.s. It will be seen then that the second relay in the actuator system will change over in the same way as the elevator relay in the transmitter. This seems to be much the same as the Good system except that 16, and 32 p.p.s. are used instead of 100 and 500. The lower pulse rates allow the use of a relay for switching the transmitter, whereas the tones of the Good system require "electronic" switching. It is possible to add a further control of the stepping (escapement) type by adding another relay in the second relay circuit and adjusting it to remain closed with a pulse rate of 16 p.p.s. but open at 5 p.p.s. A push button (PB) is added to the transmitter to change the bias, and consequently the pulse rate of the elevator multi-vibrator. This button must be of the single pole change-over type. This can be used to change the engine speed. Note that high speed relays should be used throughout since besides changing over at 32 times per second, they have to vary their time of dwell on each contact.

The Importance of Quench Coils

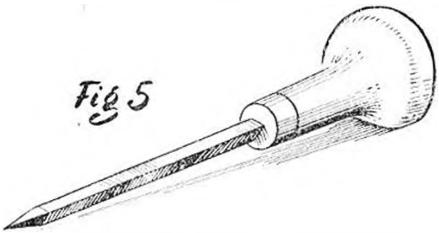
A beginner in radio control recently had difficulty with an AEROMODELLER receiver, the second he had built, the first having worked without trouble. Investigation showed that something was wrong with the quench coils. New bobbins were made from paxolin sheet and tube, and another pair of quench coils wound with new wire. This cured the trouble, as it has done with a number of other receivers the writer has known of. If the coils are made carefully to the instructions with the materials specified they will most likely be satisfactory, but it is very easy to damage the wire, short circuiting some of the turns and spoiling the coil. The bobbin material may also cause trouble, especially if it is turned from a fabric reinforced plastic. The fabric can absorb moisture. If the bobbin were coated with Shellac varnish or polystyrene cement immediately after turning, it would most likely avoid trouble from damp.

A Magnetic Actuator

During the last two years the writer has developed an efficient magnetic actuator for use with proportional control of the waggling rudder variety. The latest one has been used on a 5 ft. 6 in. span; 5 lb.; E.D. 3·46 powered model the current consumption being no more than 200 ma. at 1½ volts. This is about half a normal flashlamp bulb. Fig. 4 is a drawing of the actuator to illustrate the principle. Dimensions are not given because the magnet used by the writer was a Mullard TS 1057, which is not generally available because Messrs. Mullards have no organisation to sell such things to the general public. This magnet was ⅞-inch diameter by ⅜-inch thick, but a smaller one ¾-inch diameter by ⅜-inch thick is available from Messrs. Woodside Model Aircraft Supplies, 72 Shirley Road, Croydon, Surrey. This can be used in exactly the same way. The soft iron core could be reduced to ¼-inch diameter by ¾-inch long and this would produce a lighter actuator more in keeping with a model of 40-inch to 50-inch span.

The magnet was bushed with brass pushed in tightly, and lightly riveted over both sides. It was then drilled as concentrically as possible and the 14 guage steel shaft soldered in. The magnet was found to be running two or three thou. out of true so it was ground true. The method of doing this may be of interest. The lathe available was fitted with a collet for ¼-in. diameter. A ½-in. length of ¼-in. brass rod was put in the collet and drilled concentrically. The writer had been in engineering for 25 years before learning the best way to do this, and then learnt it in his hobby time. The hole must be started right and for this a graver is required. This is a hand tool with a triangular point (*Fig.* 5). A bar is clamped in the tool rest close up to the work with its top just below the centre. The graver is rested on this bar and the point pushed into the centre of the work. Any wandering from the centre can be felt on the handle and corrected by holding against it and pushing deeper. When a good true countersink has been formed, this part of the job is done, and the hole drilled with the drill in the tailstock in the normal way. A hole started gently in this way always seems to keep true. The graver by the way can be made from an old triangular file or a piece of ¼-inch diameter silver steel could be ground up and hardened, and tempered to dark straw colour.

The bush so made was sawn along most of its length from one end and then another sawcut made at right-angles, from the other end. When gripped in the collet it now gripped the shaft. The magnet was ground true with an electric drill grinder clamped in the tool rest. The light alloy bearing is turned with the spigot on the



magnet side true with the hole and about two thou. bigger than the finished size of the magnet. The Tee-shaped pole pieces are made from 16 gauge sheet iron with the top of the Tee bent round to the diameter of the magnet. A ring of steel, outside diameter 2 inches, inside diameter 1 inch and half an inch thick was sawn in two, and a pole piece hammered into one half ring with the aid of a piece of $\frac{1}{4}$-inch steel bar, the magnet being $\frac{1}{8}$-inch diameter. The pole pieces were then adjusted for length so that when held on the magnet there was a gap between each pair of ends of $\frac{3}{16}$ inch. The $\frac{1}{4}$-inch bar, pole pieces, and half rings were clamped together in a vice, taken out and hammered and generally knocked into good shape. On screwing in place with the core a few high spots were found, and filed to clear. Any magnetic dust can be removed with plasticine.

A bobbin was made from thin card, and wound with 800 turns of 29 gauge enamelled wire which happened to be handy. This suited the $1\frac{1}{2}$ volts. Thinner wire could be used, say 34 gauge with 3 volts and less current. Using the smaller magnet the wire could be 32 gauge or 36 gauge. With a single coil two batteries are required

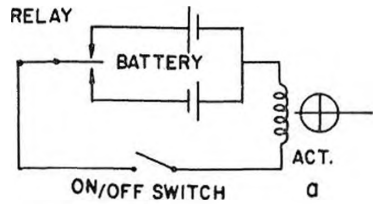
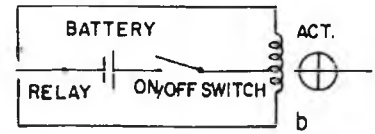


Fig 6



as in *Fig. 6a*, but the coil can be centre tapped to use only one battery as in *Fig. 6b*. Note that with one battery, twice the current is used which needs twice the capacity so there is no gain either way. With the pole pieces nearly touching there is no tendency for the magnet to take up any particular position of rest. A light spring was fitted to centralise the rudder, and at the same time prevent the magnet rotating too far. A crank arm is, of course, soldered to the shaft. The actuator is mounted by means of a clamp on the bearing boss which enables it to be rotated for best position of the crank.

ARC SUPPRESSION OF RELAY CONTACTS

A useful reference table covering commercial escapements and motor driven actuators

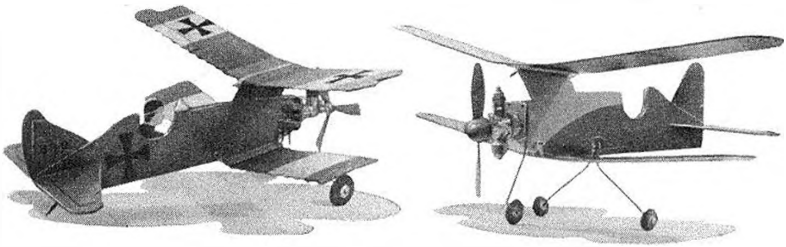
MANY PROPRIETARY RELAYS tend to stick when made to carry currents of the order of 500 milliamps (and in some cases less). Complete reliability under such circumstances is usually given by suppressing the arc developed between the contacts on "break", utilising a condenser and resistor in series across the relay. To elaborate, one connects the two components between the relay armature lead and the live contact lead. When both contacts of the relay are used as with a pulse system then it is necessary to suppress *both* contacts for satisfactory results. Quench values required depend on the inductance of the load concerned and vary with individual proprietary relays. The commonly quoted ·1 mfd. value for a "quench" condenser gives satisfactory results in only a few cases. The table summarises condenser and resistor values required for complete arc suppression on typical proprietary examples, obtained by practical tests. In the case of motors these were tested as rotary solenoids (i.e. appropriate to operating as motor-driven actuators).

TYPE OF ACTUATOR	OPERATING VOLTAGE	QUENCH VALUES CONDENSER	RESISTOR
E-D Compact	6	.5 mfd.	47 ohms.
E-D (current saving) Low current	6	.1 mfd.	47 ohms
E-D (current saving) High current	6	.2 mfd.	47 ohms
Typhoon	6	.25 mfd.	47 ohms
Mactuator	3-6	.25 mfd.	47 ohms
E-D Clockwork Actuator	6	.1 mfd.	47 ohms
ELECTRIC MOTORS:			
Frog Revmaster	4	.2 mfd.	47 ohms
Frog Tornado	4	.5 mfd.	47 ohms
Ever Ready	4	.1 mfd. (not complete)	25 ohms
Mighty Midget (Industrial)	4	.1 mfd.	100 ohms
Electrotor	4	.25 mfd.	47 ohms

EBENEZER

an all-sheet balsa quickie for free flight with small engines

by B. C. Striegler

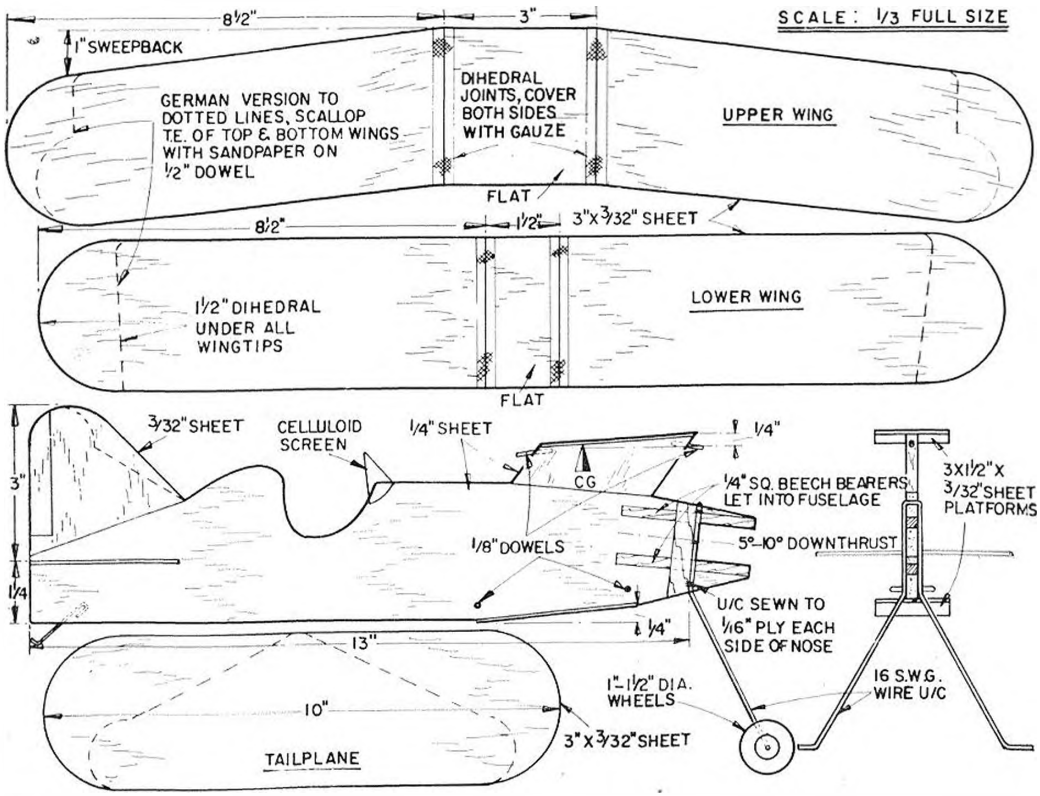


WITH THE WORST of the northern hemisphere winter behind us (we hope!) now is the time to start thinking of a new sport job to fill in time on the flying field. What better than this pee-wee solid sheet number that can be knocked out overnight from a few sheets of standard 3 in. wide balsa sheet?

Bert Striegler's prototypes seen above have a flight log which takes them back over three years of constant activity, amassing no less than 400 flights in the case of the "German" version with the Fokker type tail. With tricycle or standard undercarriage, radial or beam mounted engine, this little 20-in. span bipe will surprise you for its performance in spite of the flat plate aerofoil.

Plans below are one-third full-size, simply multiply the various measured dimensions three times and mark out directly on to balsa, using the actual measurements quoted as a guide. There's no need to be fussy over being exact in shape, just as long as you get those wing and tail angles right. The models shown above have flown on O.K. Cub ·039, ·049, Torpedo ·035, Spitzy ·045, Allbon Dart and Merlin, so it's safe to assume that anything in the way of diesels from a Kalper to a Frog 80 will zoom Ebenezer aloft like a homesick angel.

P.S.—It takes off, too—after a long fast run, so if there is a runway on your flying field you can try some racehorse starts with your clubmates.



I AM PLEASED TO see that aeromodellers in the new towns surrounding the London Area are beginning to form clubs. Moving from towns to newly built-up semi-country districts has the disadvantage of losing the old close-to-hand model shop facilities, but the flying fields advantages are many. If you happen to have moved recently to one of these new towns and cannot locate the local modellers, write me and I will put you in touch with the organisers.

Pan American Airways film, "From Little Wings"

Clubs wishing to book this film for local showings should apply to James O. Leet, Pan American Airways, Piccadilly, London, W.1.

British Nationals Film

Applications for bookings should be made to the Technical Secretary, S.M.A.E. Ltd., Londonderry House, 19 Park Lane, London, W.1. Bookings to date are filled until May 14th.

London

The New Town Club at **HARLOW** had its first open night on January 10th at Mark Hall Youth Centre with films and demonstrations of indoor flying, including chuck gliders and microfilms. More seniors are needed in the club and all new members would be welcome. A recent triangular combat contest was run-off with the **DEBDEN** and **BISHOPS STORTFORD** clubs at Grange Farm, Chigwell, where a smashing time was had by all. Club nights are held on Tuesdays at 7.30 p.m. in the "Depot" Ewell Road, Epsom, for the **EPSOM AND D.M.F.C.** and recent meetings have included a quiz and engine starting contest. In the latter, a *Le Mans* start was used, empty tanks and needle valves closed. Robin Willes was the winner with an ancient E.D. Baby. Club members are reported to be testing "hot" 3·5 c.c. prototype engines made by the well-known designers and probably destined for mass production. **ST: ALBANS** announce their second Slope Soaring meeting at Ivinghoe Beacon for two classes, controlled and uncontrolled, maximum being a 30-minute flight, best flight to count, three flights for 1s. 6d. and 6d. per extra flight. The date is April 13th. **KENTON M.A.C.** had a combat challenge against **NORTHWOOD M.A.C.**, giving a win for Kenton 5-3. The club is now re-equipping with Oliver Tigers and tuned E.D. Racers and would like to hear of other clubs in the Middlesex area which will take up their combat challenge. **LONDON AREA** organised a talk and film show by John Patterson, director of Plantation Wood, more popularly known as Solarbo, and although most of the support appeared to come from outside the area, everyone thoroughly enjoyed this opportunity of seeing the fine film of Equador and learning so many unknown facts about balsa. John Patterson delivers a first-class talk and if your club has not arranged its bookings for the next few months, I suggest you write straight away to Solarbo to ask him if he can come along and do the same for you. **BROMLEY M.A.C.** has become a thriving centre for radio control flying and some of the boys are finding out that they can fly simultaneously without mutual interference, which not only resulted in some interesting dog-fights, but also cuts down on queuing for the air. Meetings are every Thursday at The Plough on Bromley Common. **FARNBOROUGH M.A.C.** was surprised when junior Richard Brown, ratoed 15-1 with his 1 c.c. E.D. Bee, powered *"Hound Dog II"*. He is now building a scaled up version with the A.M.25, but he is having a tough battle beating D. Sibbick's *Helicanth* design. **NORTHERN HEIGHTS** have fixed their Annual Gala, which means of course, another fair weather date as June 29th at R.A.F. Halton and it is interesting to note, that the choice of class for the Queen Elizabeth Cup will be for International A/2 gliders, giving an incentive for the Nordic boys, who are otherwise "without" a comp.

CLUB NEWS

For Your Diary

April 13th
Slope Soaring Rally. St. Albans M.A.C., Ivinghoe Beacon.
April 20th
Surbiton Gala, Open Rubber, Glider and Power, Chobham Common.
April 27th
High Wycombe C/L Rally. Team Race A, B, Combat, R.A.F. Booker.
May 4th
Midland Area Rally, F/F All Classes, Class A Team Race. C/L Stunt, Chuck Gliders. Venue to be announced.
May 11th
Stockport Express Rally, All Classes F/F, Scale, Team Race, Combat. A. V. Roe Aerodrome, Woodford, Manchester.
June 15th
Godalming C/L Rally, Team Race. All Classes, Combat. Godalming, Surrey.
June 29th
Northern Heights Gala, All Classes F/F, Combat, Concours D'Elegance, Queens Cup. A/2. R.A.F. Station Halton, Bucks.
August 17th
Devon Rally, All Classes F/F, Combat, R/C. Woodbury Common.
August 24th
S. Midland Area Rally, All Classes F/F, Combat, R/C, T/R A & B. Cranfield.

South Midland

Another new town club has been formed at **STEVENAGE** and from the start there has been a great interest and enthusiasm by twenty-five active members, although they miss model shops, they are working hard on the local retailer to take in stock of their favourite supplies. Many of the Aircraft Companies, who have established new factories in the area have aeromodellers on their staff and Stevenage should be a name to look to in future. **LETCHWORTH M.A.S.** announce the fine record of 61 mins. 29 secs. o.o.s. by P. Ladbrooke in their rubber class and were very pleased with club members' performances during 1957. This club is particularly fortunate in having good flying field facilities and with the purchase of some "hot" engines should do well in 1958. **LUTON AND D.M.A.S.** are looking forward to Sid Miller's new radio control glider with rudder and down elevator control for slope soaring. J. Welham has a 6 ft. jet scale *Tupolev* Russian Bomber coming along, which he hopes to produce as a surprise item in the 1958 rallies. **HIGH WYCOMBE M.A.C.** announce their very popular annual Controline Rally as taking place earlier this season on April 27th. Main difference is, that this time it will be held at R.A.F. Station, Booker, just up the hill south of High Wycombe. Events are to be Class A and B team race and combat. **KETTERING AND D.M.C.** has been re-formed and regular meetings are held in the Labour Party buildings, Club Street, every other Thursday. **NORTHAMPTON M.A.C.** held their annual dinner on February 20th and followed up with a film show.

East Anglia

CAMBRIDGE M.A.C. held their Annual General Meeting on the same night that the district subjected to a snowy blizzard, but enough members struggled through conditions to fix up the programme for the coming season including an unrestricted handicap race to replace conventional team racing. This is of course, for a club event. Incidentally, travellers to the Nationals will be interested to note that the Secretary of the Cambridge M.A.C. is Mr. C. King of the *Red Roofs Service Station, Cambridge Road, Waterbeach*, and I hope you will support him when you pull up for petrol on the way to the Nats. **CLACTON AND D.M.A.C.** are highly radio active with no less than five Hill receivers and two AERO MODELLER transistor outfits currently flying the airwaves. A Scramble is programmed to be held on Jaywick Marshes and it is hoped that Clacton will be coming along to more of the rallies this season. The club's current controline speed record stands at 120 m.p.h. by H. Hart with a 5 c.c. Super Tigre. New members would be welcome at the Clacton County Youth Centre on Thursdays of every other week. In the Area A.G.M. Les Sayers of **ANGLIA** has been appointed Secretary, and I note in their contest programme that the area centralised meetings are to be held alternatively at Debden and Martlesham. **LOWESTOFT AND D.M.A.C.** say they have adequate flying grounds for free-flight and controline and would welcome new members through B. Baldwin, 12 Rotterdam Road, Lowestoft.

East Midland

CLEETHORPES D.M.A.C. turned up in force at Lincoln for the area dinner and to collect last seasons "spoils" which included the Butlin Trophy for the top club in the area, and the Individual Power Trophy, which was collected by Len Briggs. Extensive flooding in the area has handicapped the club and there has been an unexpected number of flying boats and seaplanes including a Plans Service 1 c.c. *Hawker Tempest* on floats.

Southern

The first meetings of the **LEATHERHEAD AND D.M.F.C.** have been very successful and membership is now in the region of thirty with indoor flying popular and meetings are held on the second and fourth Fridays in each month at the Oddfellows Hall, Bridge Street, Leatherhead. **READING AND D.M.A.C.** have a club event for rubber driven R.T.P. scale models with a maximum wingspan of 26 inches. Times are creeping up towards the minute mark which is no mean feat with a small scale R.T.P. model. At the Local Hobbies Exhibition, **EAST GRINSTEAD M.F.C.** collected all but one of the aeromodelling prizes and with Delta radio models on the way, they intend to be seen more at the 1958 events. Visits are planned already for the Nationals and All-Britain. **SOUTHERN CROSS** had a most successful 11th Annual Dinner on February 1st with many happy reflections of the past season of success and hope for continued activity this year. John West is club champion once more with a total of 57 : 28 secs. during 1957 comps. **PORTSMOUTH M.A.C.** activities are on the less serious side, except that they are appealing for some of the Southern Counties Rally trophies to be returned to W. Tinker, 5 Barnwood Road, Fareham, Hants. An F.A.I. power design is on the way, apparently a communal effort and John Evan's 56 in. A.M.35 stunt model has apparently set the combat boys back a peg or two.

South Western

EXMOUTH AND D.M.A.C. extend a welcome to new members having regular meetings, and flying events are planned throughout the year. August 17th is to be their big day for the 1948 Devon Rally, the venue to be the same as last year at Woodbury Common with all classes of free-flight and radio control and combat, for cash prizes. The **SOUTH-WEST R/C M.F.S.** held their first A.G.M. at Paignton in February and it was proposed that the

flying season should commence at Easter through to October, rallies being held on the first Sunday of each month at a centrally situated flying venue near Totnes and anyone interested in Devon, Cornwall, Somerset and Dorset are cordially invited to join through H. A. Stillings, 5 Woolsery Grove, Whipton, Exeter.

Midland

LEICESTER has instigated a few new rules which I trust will be rigidly enforced and may possibly provide a lead for other clubs to follow. Briefly, they specify that all competitions will be held regardless of the weather conditions, but if no competitors arrive for the competition by the time specified for the end of the 1st round, the competition shall be declared null and void for the season, subject to confirmation by the Committee. If competitors refuse to fly in competitions, but if one makes a single flight, he should be judged the winner and for contests where there are up to three competitors, only one prize will be awarded, for up to six, two prizes, seven or more, three prizes. **STRATFORD-UPON-AVON AND D.M.A.C.** are beginning a drive for keen members with a short article advertising the club in local newspapers and a set of rules drawn up to assist the committee and members. Weekly flying takes place at R.A.F. Wellesbourne and new members would be welcome on the first Monday of each month at Central Chambers, Stratford-upon-Avon. **OUTLAWS (CANNOCK) M.A.C.** of whom we have heard but little for several seasons, are still 90% controline enthusiasts and are hoping to do a few displays in the coming months. The *Mercury Gnome* was chosen as a one-model design contest, subject for juniors in the **WEST BROMWICH M.A.C.** and a combat challenge competition has been arranged with **WALSALL M.A.C.** for March 9th.

North Eastern

A burst pipe in the upper floor of the **TUDHOE M.A.C.** club room caused havoc not only with the decorations, but also with a number of models, involving considerable loss of time and effort. Transfers have been used to decorate the wall and you can guess what happened to them! A radio transmitter on the floor was filled to the brim! —all this may sound pretty bad, but a few days later another pipe burst and further damage resulted. Anyhow, let's hope that they get over it soon. **NOVOCASTRIA M.A.S.** have moved into new Headquarters at the Newcastle R.A.F. Association Club having full use of the bar and concert room. The club has a flourishing junior section meeting every Tuesday evening with a senior member to supervise. These juniors are very keen and build a model on a Tuesday, fly and prang the same model the following Sunday and the whole process starts again the following week. The team race men are intending to hold contests at R.A.F. Long Benton.

North Western

After talking of a club obtaining a suitable meeting place, I regret to mention that **BLACKBURN M.A.C.** have been forced to give up their club room due to lack of support. E. Arnald is currently breaking the 100 m.p.h. mark with his Eta 29 Class B racer and J. Howorth and T. Hindle have a combined class A model doing 85-90 m.p.h. Junior M. Cresswell of the **CHESTER M.F.C.** placed second in the Junior Glider event at the North Western Area Winter Rally on February 2nd with his *Inchcorm*, which he finished only the evening before. It was his first attempt at a towline glider. D. Spencer has set up another club record A/2 record of 23 mins. **WIGAN M.A.C.** have put a lot of hard work into their exhibition and have obtained a good club room with new members turning up each week and membership now totals fifty fully affiliated modellers calling for no less than two coaches for this year's contests. There is an extensive interest in radio control and a number of budding bleepers have been building their sets in the club room. Incidentally, those who want to enter the Northern Models Exhibition, should obtain their application form as soon as possible through the Exhibition Secretary, 5 Winstanley Road, Sale, Manchester. **CHEADLE AND D.M.A.C.** came back from the Area Rally with two places. W. Nield placed 5th in radio with his faithful A.P.S. *Electra* and Brian Faulkner second in rubber. The latter model was on its first outing and did two near maximums on only half turns, so the plan is popular among club members. Now multi-channel radio models are on the way and have been entered for the Northern Models Exhibition. **ENGLISH ELECTRIC M.A.C.** had a third in Open glider at the Area Rally with L. Ellison total 7 : 15, with his new 1,265 sq. in. lightweight design. Apart from a number of motor-cyclists using the runway as a racing track, English Electric members like the aerodrome at Stretton, which was used for the rally. **SHARSTON D.M.S.** have sudden interest in controline, mainly glowplug powered stunt models, including three Eta 29 designs. The only recent free-flight success was E. Helliwell who placed in Glider in the York Winter Rally. Twenty members of the **SOUTHPORT** club went along to Stretton, but only J. Peet achieved anything worth mentioning, placing 6th.

Open Glider

J. Done	...	Wallasey	7 : 36
K. Cain	...	Liverpool	7 : 22
T. Ellison	...	English Elec.	7 : 15
G. Hutton	...	Wallasey	7 : 06
S. Hinds	...	Wallasey	6 : 55
J. Peet	...	Southport	6 : 37

Open Rubber

J. O'Donnell	...	Whitefield	9 : 00
B. Faulkner	...	Cheadle	8 : 43
J. Hannay	...	Wallasey	7 : 40
R. McDonough		Wallasey	7 : 17
T. Rheag	...	Wigan	7 : 07
M. Hosker (Jnr.)		Wigan	6 : 26

Open Power

A. Farrar	...	Wakefield	9 : 00	3 : 18
A. Carter	...	Liverpool	9 : 00	2 : 50
J. O'Donnell	...	Whitefield	9 : 00	
B. Talbot	...	Wigan	8 : 45	
C. Day	...	Wallasey	8 : 34	
T. Neesworth		Stockton	8 : 27	

Radio Control

R. Donohue	...	Kersal	249 points
J. Butterworth		Associate	156½ "
G. Parkinson		Kendal	149 "

Ireland

THE MODEL AERONAUTICS COUNCIL OF IRELAND extends an invitation to aeromodellers in Great Britain, Ireland and elsewhere who are not members of their own National Aero Club to join M.A.C.I. as county members so that they are eligible to compete in any contest in Ireland under the auspices of M.A.C.I. by sending their names and addresses to Hon. Secretary, M. Greer, 34 South Hill Dartry, Dublin and 1s. 6d. For this you should receive:

1. Copy of Rules, Contest Calendar, Membership Card for one year.
2. Insurance up to £500 (in Great Britain and Ireland) for third party liability.
3. The right to enter the Irish Nationals on payment of the entry fee (entry forms will be circulated to all members).
4. The right to enter any other contest in Ireland on payment of the entry fee plus one shilling. (Entry forms available from Mr. Greer's address by enclosing a S.A.E. if possible Irish stamp).

First contests this year are:
March 30th: Class A team-race (E.D. Racers only), at Dublin.
April 6th: Controline Rally, at Drogheda.
April 13th: Irish Eliminators, 1st round (Irish only), at Baldonnel, Co. Dublin.
July 27th: C/Line Nationals, Baldonnel.
August 30th: Glider Nationals, at Baldonnel.
August 31st: Rubber and Power Nationals, at Baldonnel.

Scotland

THE SCOTTISH AEROMODELLERS ASSOCIATION A.G.M. had a disappointing attendance, perhaps due to a controline meeting scheduled for the same day. However the committee had plenty to do and many vital suggestions were thoroughly discussed, all of which have been circulated in the minutes and will I trust, be thoroughly digested through all S.A.A. club members. The Alison Trophy will now be awarded for the best junior aggregate time at the Nationals and it seems that the AERO-MODELLER Trophy is missing and any information about it will be gratefully received. The last winner was a D. H. Beaver at Lanark—who is hiding it behind his kilt! ! ! It is decided that the I.A.T.R. event at the Scottish Controline Nationals will be held for juniors only with special low entry fees of 1s. per team and that the free-flight Nationals will be limited to free-flight models only. The contest calendar for the S.A.A. is as follows:—

C/L Nats.	June 22nd	Kirealdy
Caley-Shield	May 4th	Lanark
F/F Nats.	June 8th	Abbotsinch
Montgomery Cup	Sept. 7th	D/Centralized

MONTROSE M.A.C. are relieved to know that Flt-Lt. Noel Falconer, a very popular member, escaped unhurt on January 23rd, when a Vickers Varsity crashed on landing at Manston with three fatalities. Only Flt.-Lt. Falconer and another pupil managed to get out of the wreck which was on fire. **ANGUS AND D.Ae.L.** welcomes a new club to the fold, which has been formed at Leuchars and has a score of adherents who intend to take part in the League's competitions this year. **PRESTWICK M.A.C.** announce that they finished the season with a bang by winning both A and B team races at the West of Scotland Controline Gala.

The CLUBMAN.

S.M.A.E. Contests

March 16th
Gamage Cup: U/R Rubber.
C.M.A. Cup: U/R Glider *D/C*.
April 6th
Pilcher Cup: U/R Glider.
Lady Shelley Cup: Open Tailless.
Women's Cup: U/R Rubber/Glider.
Jetex Trophy: Jetex. *Area*.
April 27th
Keil Trophy: Team Power. *Area*.
K.M.A.A. Cup: U/R Glider.

Secretarial Changes

BROMLEY M.A.C.
F. A. Van den Bergh,
82 Bromley Common, Bromley, Kent.
CAMBRIDGE M.A.C.
C. King, Red Roofs Service Station,
Cambridge Road, Waterbeach, Cambs.
CHESTER M.F.C.
C. R. Fitness, 26 Raymond Street,
Chester.
CLACTON & D.M.A.C.
D. Coe, 66 Severn Road,
Clacton-on-Sea, Essex.
EASTBOURNE M.F.C.
W. Coomber, 9 Bodiam Crescent,
Hampden Park, Eastbourne.
KETTERING & D.M.F.C.
R. Thrower, 229 Wood Street,
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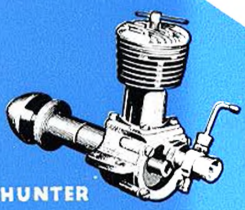

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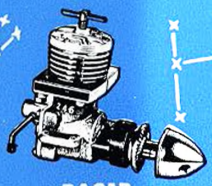

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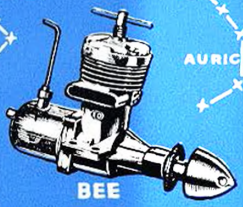

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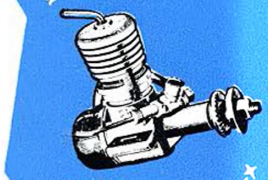

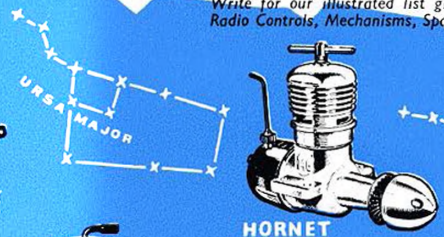

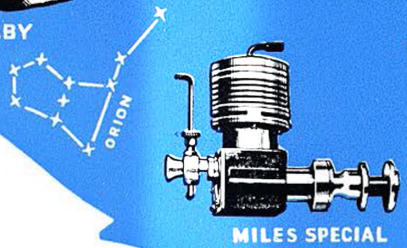

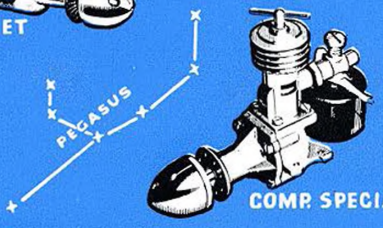

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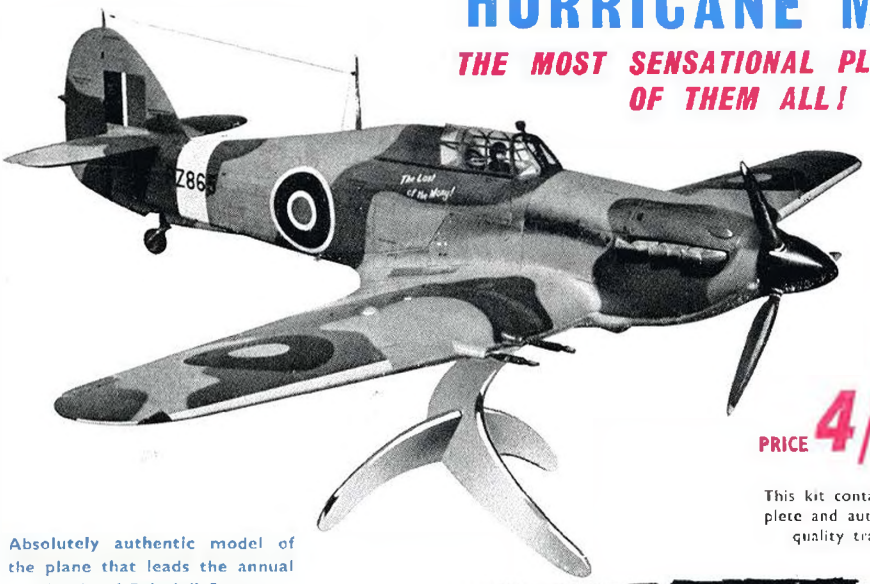

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