MODEL AIRCRAFT

English Electric P.1B scale plans & photos inside

1'6

MAY 1958

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18" Focke-Wulf 190


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15½" Nieuport


16" span S.E.5


16" Sopwith Camel


21" Piper Family Cruiser


20" Hurricane


18" Spitfire


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20" Ercoupe


20" Chipmunk


21" Auster Arrow


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20" Globe Swift


19" Percival Provost


19" Stinson


19" Cessna 140

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An Exciting New National Show!

THE MODEL AIRCRAFT EXHIBITION

AUG 20-30

New Horticultural Hall, Westminster, S.W.1

THE ANNOUNCEMENT in last month's *Model Aircraft* of a separate exhibition for aircraft models will come as no surprise to readers. There has long been the need for an independent exhibition in which all aeronautical activities could be concentrated, and the new arrangement opens up all kinds of exciting possibilities.

MODEL CRAFTSMANSHIP

The MODEL AIRCRAFT EXHIBITION will be primarily an exhibition of model craftsmanship, so whatever your model, whether it be flying or solid, you should enter it to win one of the numerous awards being offered. Cups, silver and bronze medals, cash vouchers and diplomas, are all there to be won; and even if you do not win a prize, a certificate of entry to the Model Aircraft Exhibition is given in every case. Make use of the entry form overleaf.

Models which have won awards at other exhibitions, or are of novel or particular interest are particularly welcome in the Loan Section. Entries in the Loan Section are free, but the entry form overleaf must be completed. Of course, you can enter your model in the Competitions Section providing it has not won an award in the MODEL ENGINEER EXHIBITION during the past three years and/or it is your original work.

AN IMPRESSIVE LINE-UP!

All things aeronautical will be the order of the day in the line-up of attractions. A large display will be put on by the S.M.A.E. and will include models collected from all over Europe and winning models from other exhibitions. The model clubs will be there in force and also the model trade. There will also be a Trade Federation stand in which all the latest accessories will be on display and retail stands will be there to sell them to you. Demonstrations of modelling by both commercial firms and by enthusiastic amateurs will be taking place continuously. A number of attractions are being lined up to show the various activities or aspects of aeronautical engineering and full-size flying. For example, there will be the complete cockpit of a *Vampire*. With four months to go, this side of the Exhibition is still in the blueprint stage but you can see there is quite an impressive programme.

Model Classes

SENIOR

AA Rubber-driven
AB Free-flight power-driven
AC Control-line
AD Sailplanes
AE Non-flying models
AF Scale free-flight or control-line
AG Radio-controlled models

JUNIOR

AH Any model by a junior under 16 on August 20th, 1958.

CLUBS

There are competitions for clubs, a club entry comprising a team of three models.

The Exhibition will be open from 11 *a.m. to* 9 *p.m. daily (Sunday excepted). Admission will be* 3*s., under* 15*'s* 1*s.* 6*d. There are reduced rates for parties of* 12 *or over and club secretaries are invited to apply for details from the Exhibition Manager, address given overleaf.*

Enter YOUR MODEL Now! ENTRY FORM OVERLEAF

(*Continued from previous page*)

Your Chance to Win

PLEASE WRITE IN BLOCK CAPITALS

MODEL AIRCRAFT EXHIBITION

Cups, silver and bronze medals, cash vouchers and diplomas of merit are all waiting to be won. A Certificate of Entry in the Model Aircraft Exhibition is awarded to every model in the Show. Clubs may enter a team of three models.

NAME OF COMPETITOR	AGE (Optional)
ADDRESS	
TRADE OR PROFESSION	
CLUB	
IS YOUR MODEL YOUR OWN BONA FIDE WORK AND PROPERTY ?	ESTIMATED VALUE OF MODEL For Insurance £ : :
TYPE (e.g., Free-flight Scale, Control-line, Stunt, etc.)	
NAME OR TITLE OF MODEL	
WING SPAN inches	WEIGHT ozs.
SCALE (if applicable)	POWER UNIT (if any)
STATE WHETHER MADE FROM COMMERCIAL KIT	WORKSHOP FACILITIES
PARTICULARS OF ANY PARTS OF THE MODEL WHICH ARE NOT THE COMPETITOR'S OWN WORK	
DETAILS OF GENERAL INTEREST FOR PUBLICITY. GIVE NAMES OF LOCAL NEWSPAPERS, &C.	

If you have a photograph of your model, please send it to us. It will give us some idea of what the model looks like and we may use it in publicity literature or in MODEL AIRCRAFT. *Write your name and address very lightly on the back. Do not use a paper clip as this may damage the print. Your photograph will be returned afterwards.*

TEAR OFF ALONG THE DOTTED LINE

I declare that the above particulars are correct.

Date..... **Signature**.....

Transport Arrangements.....

(FOR OFFICE USE ONLY)	
EXHIBIT No.	**CLASS No.**

FREE ENTRY OF LOAN MODELS. If your model has won an award at any other exhibition (including the Model Engineer Exhibition), or is of novel or particular interest, then you can enter it free in the Loan Section.

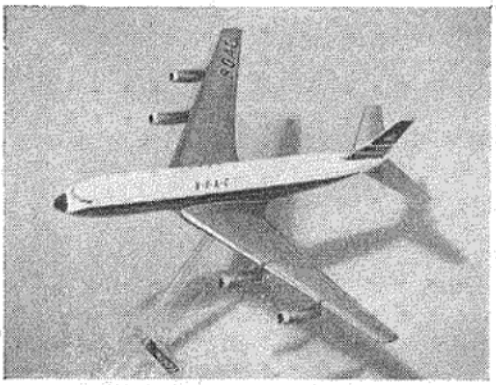
There is an entry fee of 3s. 6d. for competitors (1s. 6d. for under 16's). This includes a permanent pass to the Exhibition.

Send us a Photograph

Closing Date: **JULY 14**

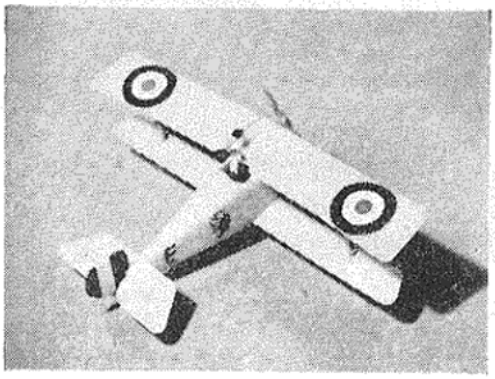
Please return this form to:

EXHIBITION MANAGER, 19-20 Noel Street, London, W.1



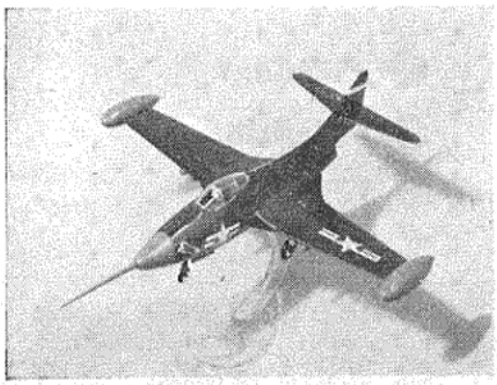
Code No. 216 Boeing 707. 4/11d.

Lincoln model moulded in silver plastic, consisting of 23 unassembled parts, mounting stand in clear plastic, set of authentic markings in easy to apply transfers. Wingspan 8 in., overall length 8¾ in.



Code No. 220. Nieuport 17cl. 5/6d.

Lincoln model moulded in yellow plastic, consisting of 22 unassembled parts, set of authentic markings in easy to apply transfers. Wingspan 6½ in., overall length 5¼ in.



Code No. 221. Grumman Panther F9F. 6/11d.

Lincoln model moulded in dark blue plastic, consisting of 26 unassembled parts, canopy, mounting stand, instrument tube in clear plastic, complete kit includes landing gear and four bombs, set of authentic markings in easy to apply transfers. Size 9⅜ in. wingspan, overall length 11½ in., including spear.

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Handley Page H.P. 80 Victor B.1	... 4/11
Vickers VC.2 Viscount 700 ...	... 4/11
Bristol 175 Britannia 100 ...	... 4 11
Douglas DC-7	... 4/11
Lockheed 749A Constellation	... 4 11
English Electric Canberra B.6	... 4/11
Republic F-84F Thunderstreak	... 4/11
Convair XF-92A Dart ...	... 4/11

COMING SHORTLY

North American F-51D Mustang	... 6/11
Gloster G.A.5 Javelin F.A.W.1	... 7 11
Bristol Type 171 Helicopter Mark III	4/11

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Auster Autocar	... 4 11
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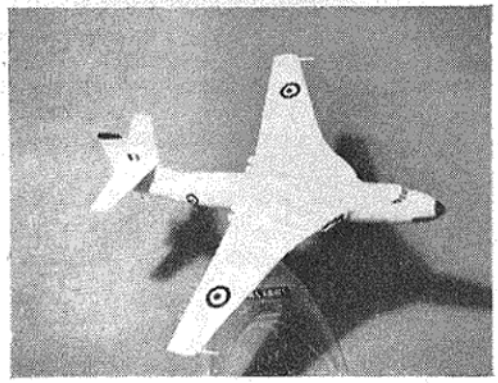
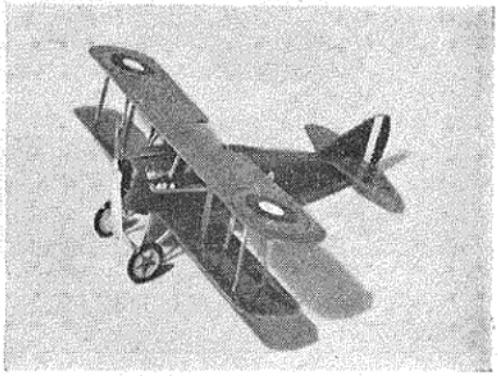
Folland FO.141 Gnat ...	... 4/11



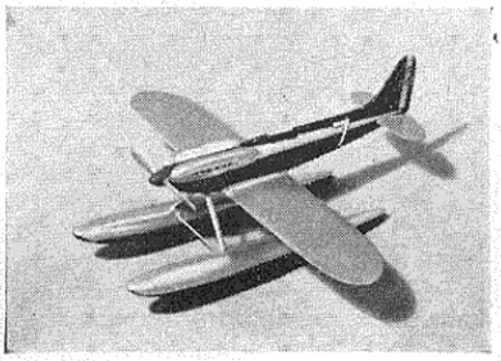
Code No. 215. Vickers 674 Valiant B.1. 4/11d.

Lincoln model moulded in silver plastic, consisting of 20 unassembled parts, mounting stand in clear plastic, set of authentic markings in easy to apply transfers. Wingspan 8½ in., overall length 8½ in.



Code No. 219. Spad 13cl. 5/6d.

Lincoln model moulded in green plastic, consisting of 29 unassembled parts, set of authentic markings in easy to apply transfers. Wingspan 6¾ in., overall length 5¾ in.



Code No. 222. Supermarine S.6B. 6/11d.

Lincoln model moulded in blue plastic, consisting of 14 unassembled parts, set of authentic markings in easy to apply transfers. Wingspan 7½ in., overall length 7½ in.

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are obtainable from all Model Shops

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MODEL AIRCRAFT

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★

MAY 1958

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The official Journal of the
SOCIETY OF MODEL AERONAUTICAL ENGINEERS

★

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Trade Attraction at the M.A. Show

IMAGINE being able to examine all the latest model aircraft products—kits, engines and accessories—all on one stand. The opportunity will present itself at the Model Aircraft Exhibition to be held in the New Horticultural Hall, Westminster, S.W.1, over the period August 20th-30th. The stand we refer to is that of the Federation of Model Aeronautical Manufacturers and Wholesalers, who will show everything that is new for the model aircraft enthusiast. Although for display only, any item shown will be available from the numerous retail stands that will be there to supply the needs of visiting modellers for whom an annual visit to London is the only opportunity to examine all that's new from the trade. However, this is but one of the many attractive features of this new show—the only one of its kind for model aircraft enthusiasts, and as new attractions are included readers will be kept informed through these columns.

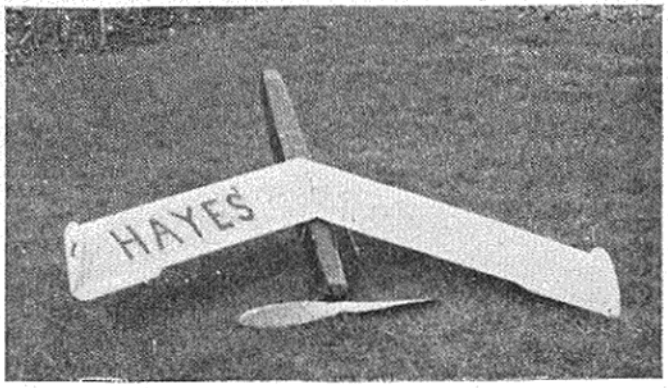
Incidentally, if you are entering a model in any of the competition sections, for which there are many attractive awards, further details and an entry form will be found on pages v and vi in the advertisement section of this issue.

Northern Models Exhibition

At the above Exhibition, held in the Corn Exchange, Manchester, on March 28th-30th. the judges, Mr. C. S. Rushbrooke (*Aeromodeller*) and Mr. E. F. H. Cosh (MODEL AIRCRAFT) awarded the Championship Cup to W. S. Nield (Cheadle) for his fine 66 in.. span radio-controlled model. Other class winners were:— *Juniors*, N. Davis (Heywood); *Rubber*, J. O'Donnell (Pendleton); *Flying Scale*, N. H. Lees (Wythenshawe); *Sailplanes*, W. C. Nield (Cheadle); *Control-line*, D. K. Brunt (Cheadle); *Static Scale*, H. Parrish (Denton).

TAILLESS TAILPIECE

J. Marshall's tailless rubber design, "Joss-stick," which is featured on page 153, is shown in the photo right. As this illustration arrived too late for inclusion with the article we reproduce it here, but there is no guarantee that all plans will receive the same V.I.P. treatment!

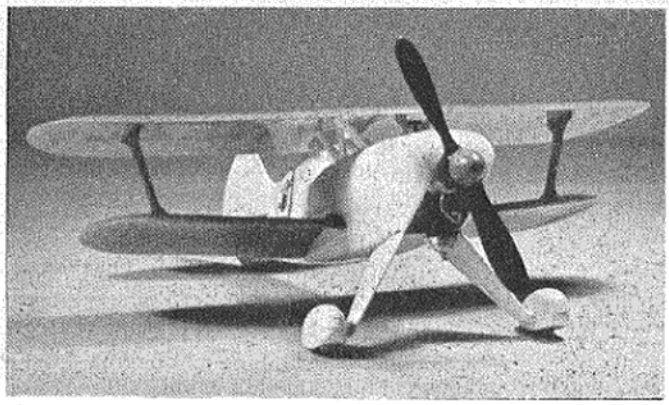


More Changes Rung

WELL, we asked for it! Last month, under the title "Ringing the Changes," we commented on the current scarcity of unusual models, and ended with an invitation to let us know if we were all wrong with our allegations. Readers were only too quick to respond, and we received a very mixed bag indeed of photos showing the unusual. Quite the most shattering of all was that reproduced above showing what, for the want of a better name, we will just call an unorthodox model! Built by Jimmy Green, of Hambrook, nr. Bristol, while in the R.A.F., it had a span of 40 in., with a 7 in. chord; power unit was an E.D. Bee, which made it an all-weather flier, smaller engines being a disadvantage in rough weather. Evidently the wire loop undercarriage was most effective in saving tailplane boom breakages by flipping the model into a roll on landing!

This would seem to be the appropriate place to introduce another type of unusual model—a plastic one, but of the flying variety. The attractive lines of a diminutive little aerobatic biplane are well brought out in the photo below, and it is the latest product of the famous Cox engine company. It is, of course, a C/L model and further details can be found in M.A.'s American Column on page 169 of this issue.

Perhaps it is now but a short step to the all-plastic F/F model and with moulding techniques now at their present high level, we can see no really insurmountable difficulties in manufacturing such a model on a commercial basis, always providing that the initial cost of the expensive dies can eventually be recovered in over-the-counter sales. The balsa and tissue model will be with us for many years to come (old habits die hard) but it looks as though model construction will, in the years ahead, undergo a radical change equal to the transition from the bamboo and silk model to the balsa and tissue type. Much as this may be regretted, there is always the hope that even then, a high premium will be placed on something that a plastic flying model can never really provide — craftsmanship.



Obituary

IT is with great regret that we report the death on March 16th of Donald Salloway, who was North Western Area Delegate to the S.M.A.E.

Don, as he was known to his many friends, was a jovial person—always well to the fore when there was any work to be done. He was very active in the affairs of the original Northern Area and the Manchester and District Council of Model Aero Clubs, both of which ceased to exist when the present area scheme came into being.

After the North Western Area was formed Don served at various times as Press Sec., Comp. Sec., Area Delegate and Auditor, the two latter posts being held by him for the last eight and nine years respectively.

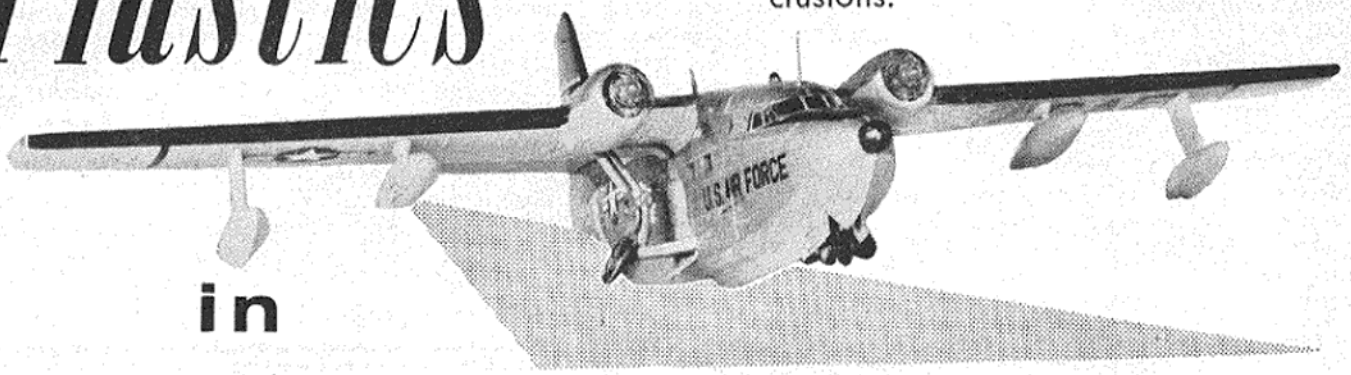
Don was not solely a chairborne modeller, as in the immediate post-war years he achieved considerable success with rubber and power models. It is, however, on account of his unselfish work on behalf of his Area and the S.M.A.E. that he will be best remembered, and we know we speak for all who knew him when we offer our sincere condolences to his family in their bereavement.

90,000 see C/L

A UNIQUE opportunity for publicising aeromodelling presents itself on April 26th, when London Area C/L fliers will give a half-hour demonstration immediately before the kick-off of the Schoolboys' International Match at Wembley. An estimated attendance of 90,000 schoolboys will watch the match—England v. Scotland—and, of course, the demonstration.

Plastics in Perspective

Do plastics fit into the "traditional" modelling scene? Here are the facts for readers to draw their own conclusions.



THERE may be some readers who, when they get to this page, will take one disgusted look and snort, "Plastics!" You know the story . . . it goes like this: the active model flier has little time for mere "solids" (under which heading he tosses all plastics) and the avid "solid" enthusiast, outraged by this attitude, is, nonetheless, equally against plastics—"Not to be mentioned in the same breath as real solid modelling, you know!"

But this is really rather an outmoded idea of how plastic scale kits are regarded. Before we thought of doing this article, we had watched the progress of plastic kits with some interest and, by and by, began to quiz people for their reactions. The replies were interesting and were far from suggesting that the better quality plastics go unappreciated by the average modeller.

Our first inkling of the potential popularity in Britain of moulded plastics came long before, however. At that time, the first small quotas of American plastic model aircraft kits (Lindberg) were being distributed, unheralded by the model Press, and we casually asked a provincial model shop proprietor whether he had seen any. His immediate reply was another question: "Do you know where I can get any more? I just can't get enough of them. . . . Sell like hot cakes. . . ."

Now, with plenty of British kits on the market and with ample supplies of American designs being manufactured in the U.K. under licence, in addition to imported kits, there is no sign of any slackening of interest in plastics. In America, sales of plastic kits during 1956 are reputed to have totalled nearly £20 million. Immense sums of money have been invested in moulds for those models.

It is in America that the plastics invasion has been the subject of considerable controversy in the model Press. Many experienced modellers have deplored the advent of the moulded plastic kit on the grounds that it takes all the skill out of model-building. They are supported by a section of the model industry which looks upon plastics as a threat to flying-model kit production.

What is the true picture? What is the picture in Britain?

The answers can be summarised, we would suggest, something like this:

1. Plastic kits, obviously, are supplementary to normal wood kits. They do not replace them.

2. Of all plastic kits sold, probably only 1 or 2 per cent. go to modellers who give up normal models in favour of plastics. Perhaps 10 per cent. are sold to modellers to whom they are supplementary to normal modelling activities.

3. The remainder are bought by youngsters and others who have never built a model aeroplane. Some never would have done so and never will. Others, having been introduced to modelling via the plastic kit, will progress to wood kits and flying models.

4. On balance, it seems improbable that the model movement or the industry can be any worse off for the advent of plastics.

5. On the contrary, the fact that the model field is extended to bring in more people should have beneficial results.

6. Manufacturers hitherto engaged only on wood kits, engines, etc., who have branched out into plastics should be able to pass on certain benefits of their increased production facilities to modellers—such as in the manufacture of plastic accessories.

Most model shops have welcomed plastics. To the proprietor they provide a useful source of extra turnover—and one that brings in new customers. Against this it has been suggested that retailers who stock up on plastics may have less space or less capital to spend on regular modelling lines. In truth, few, except the nationally known "big" model shops, can, in any case, afford to specialise solely in model building supplies. Such shops are usually combined with some other type of business. Any additional line tending to shift the emphasis further towards models, therefore, should help rather than hinder model makers in general.

The average modeller recognises the very considerable skill that goes into the making of the original patterns from which the parts of the

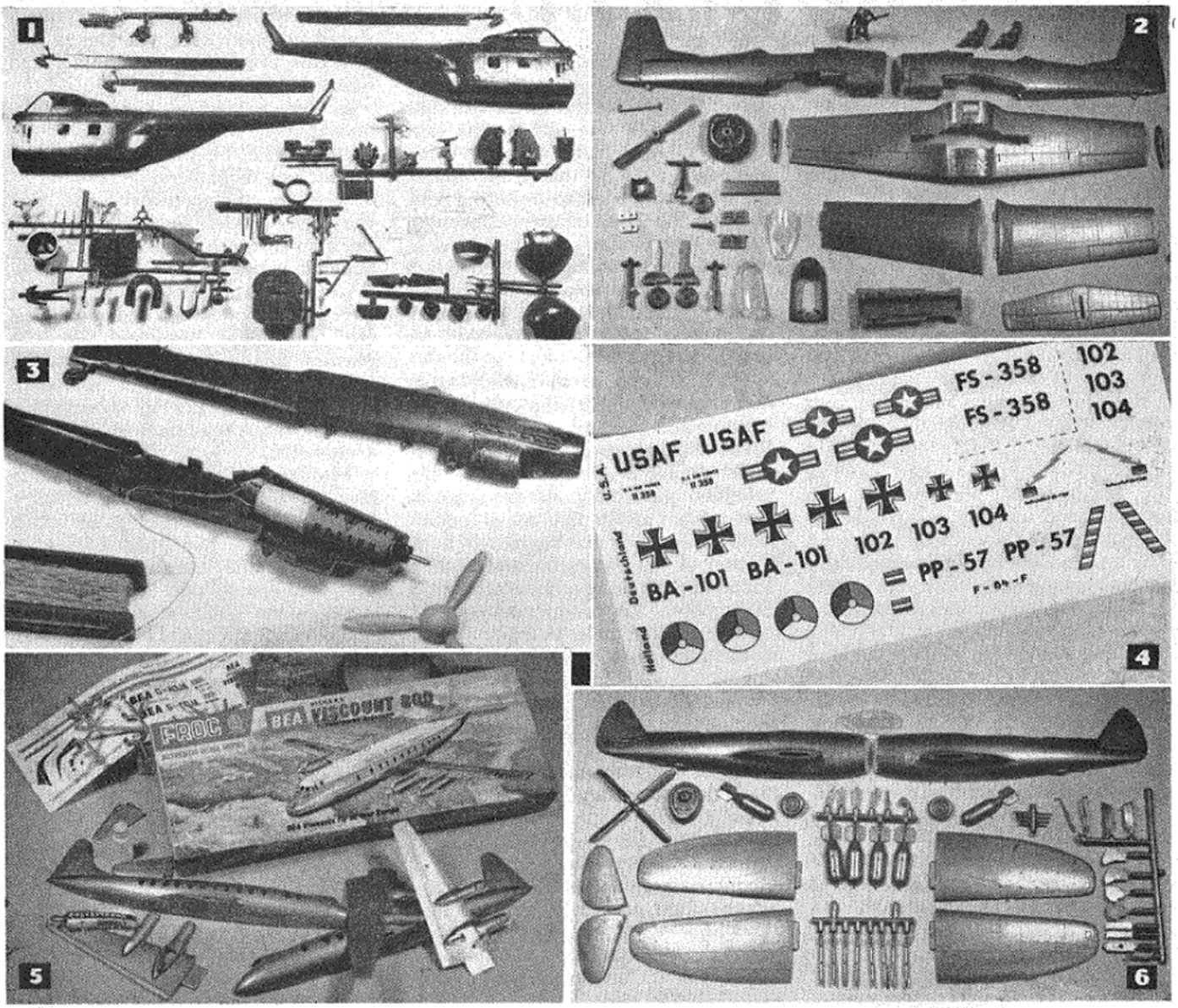
moulded plastic model are made. The standard of authenticity with the full-size prototype is usually very high (much more so than with the average wooden solid model) and the accuracy with which these parts fit together, in a good quality kit, is something to marvel at on first acquaintance. Few modellers, no matter how much they are devoted to the "functional" model: F/F, C/L or R/C, are entirely disinterested in scale models. Many such modellers, it seems, have been attracted towards plastics because, unable to spare the time to make ordinary wood solids, they find that a very satisfying model can be quickly assembled without interfering with the building of the new season's A/2 or F.A.I. power jobs.

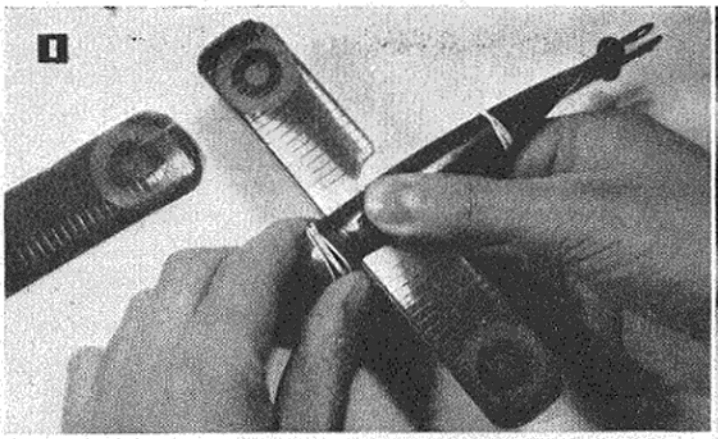
Some of the critics of plastic models say that these require no skill and that the true model builder will, therefore, derive no pleasure from his finished model. For an answer to this, it is only necessary to compare a plastic model assembled and finished by an experienced aeromodeller, with one completed by the average raw newcomer. As with the wooden solid, most of the skill is in the final finishing and there can be no question that the moulded plastic model repays skill and patience here just as much as a carved-from-the-raw solid.

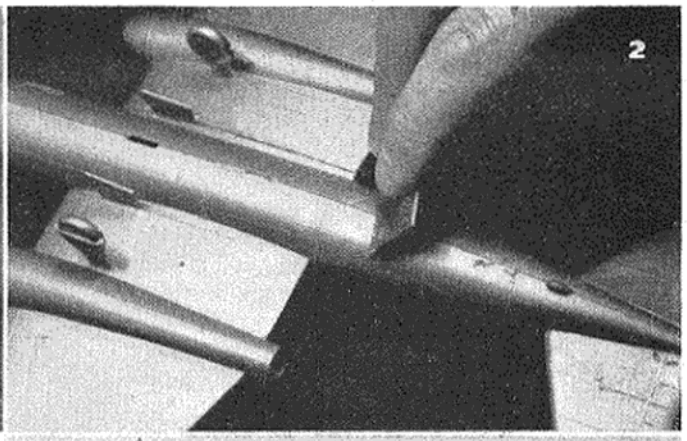
One point which is apt to be overlooked is that moulded plastic models still give scope to the skilful modeller to exercise his individual ideas. There are, in fact, three distinctly different treatments that can be applied to the plastics.

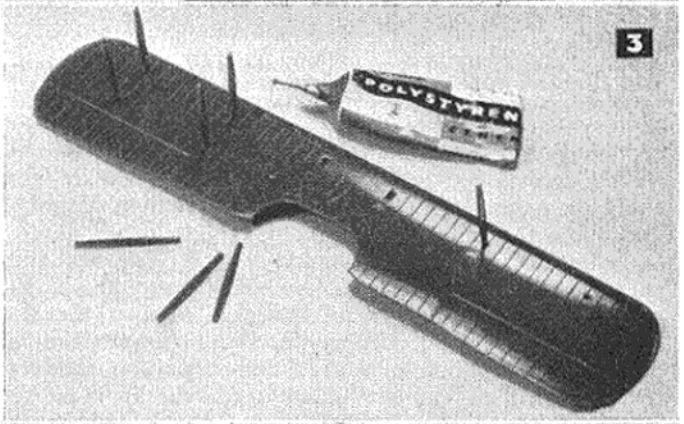
Firstly, you can finish the model exactly as suggested in the instructions. This usually gives an acceptable compromise between simplicity and accurate detail. Too much detail can look fussy and unrealistic unless it is very skilfully carried

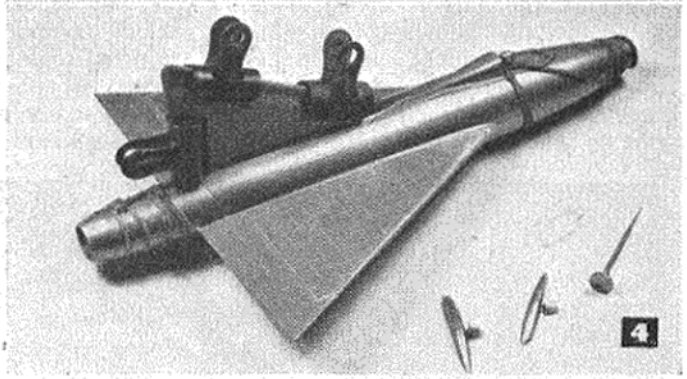
1. Popular American kit made in England under licence: Revell's Sikorsky S-55 helicopter. It includes a detailed engine compartment.
2. Monogram's T.38A, a typical high-grade American kit soon to be available in the U.K. It features a working retractable undercarriage and sliding canopy.
3. Unique feature of German Faller kits is provision for electric rotation of the propeller. The tiny a.c. motor, available as an extra, runs on 3-6 volts and is here fitted to a 1/100 scale Ju.87 Stuka.
4. Excellent transfer sheet from Faller's NATO Thunderstreak gives choice of U.S.A.F., German or Dutch markings.
5. High quality British kit is Frog Viscount 800. Unusual in that it includes both cement and white enamel. Transfer sheet is very complete.
6. Lindberg's 10½-in. span Thunderbolt, one of the many U.S. kits now made under licence in the U.K. Paul Lindberg, a former F/F scale enthusiast, was model editor of "Popular Aviation" in the nineteen-thirties.











1. Always check the fit of each part before final assembly. Hawk Spad XIII shown.

2. A slight ridge is usually left where shells are joined. It should be removed by careful scraping, followed by rubbing down and re-polishing (Frog Canberra).

3. Assembling interplane struts on Hawk's Spad. Sharpen cement tube nozzle to assist neat application of cement.

4. An easily constructed kit, the Lincoln-Hawk Convair Dart. Note use of rubber bands and office clips to hold parts in close contact while joints dry out.

out, especially where it involves the application of various coloured enamels to very small parts. The modeller is often given the choice (where applicable in the prototype) of mounting the model on a stand with undercarriage omitted (i.e., "retracted") or of fitting the undercarriage in the "down" position.

Secondly, the more experienced can indulge in a somewhat more elborate treatment. Polystyrene plastics are quite pleasant to work with using razor-saws, files and other small tools and it is quite feasible to make movable control surfaces, working undercarriages, etc. (Some of the more complicated kits already have this.) It is possible, in some cases, to modify a basic model to eliminate slight inaccuracies which are sometimes inevitable due to the necessity of moulding very small parts slightly thicker than the scale size (undercarriage parts are a case in point). Here the skilful enthusiast will substitute metal sheet, wire and tubes to accurately simulate the real thing. Similarly, models of vintage and veteran types obviously require the addition of wire rigging—one thing the plastics manufacturers have not, apparently, succeeded in moulding!

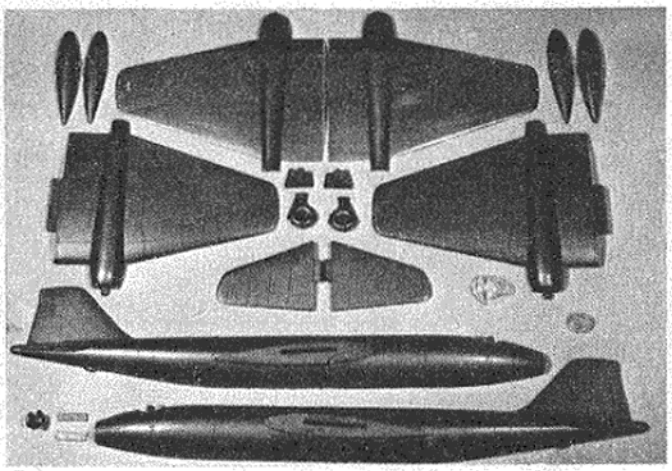
Thirdly, there is the strictly ornamental approach. This is best applied to jet aircraft and other clean modern types. The utmost care is taken in assembling the model and in cleaning up and polishing out any slight imperfections. No colour is applied. The idea is to produce a highly finished and accurate scale model that would not disgrace the desk of the managing director of the company who made the prototype. The silver-grey plastic in which most modern types are moulded looks very well with this treatment, as does ivory.

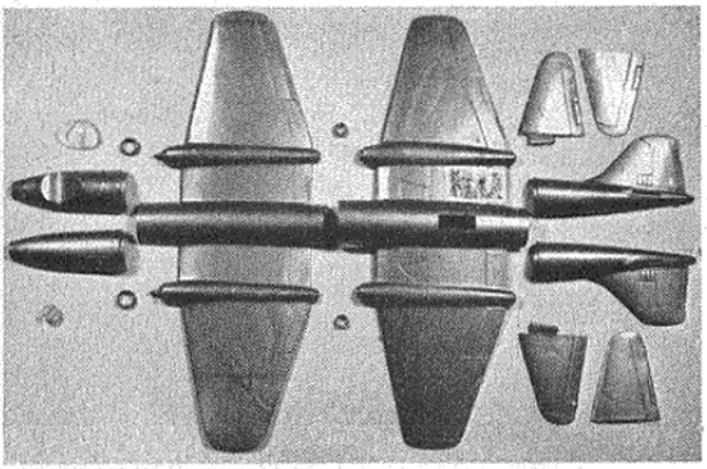
The currently available range of plastic model kits embraces a very wide selection of types, price groups and scales. The cheapest models, costing two to five shillings, contain anything from half-a-dozen to 30 parts. The more expensive kits, up to 30s. or so, may contain close on 100 parts. Some English kits (Frog and Airfix for example) are to the popular 1/72 scale and a number of American kits are 1/48 scale (Lindberg and Aurora). Other scales include 1/96 (Vulcan and Frog *Viscount* and *Britannia*) and 1/100 (German Faller range) but there are (discounting slight variations from nominal scale) numerous odd scales, especially among American manufacturers, for the larger types of aircraft, such as the Convair B.36 and Boeing B.52.

As with other types of model aircraft, it is not a bad idea to start off with a simple model first. Assembling a plastic model looks like child's-play, but even the expert modeller who has not previously tackled them will discover that there are a few tricks to learn.

The first rule is never to assume that every part is a perfect fit. Plastic kit parts are moulded with great accuracy and some of the top grade models can be assembled virtually straight out of the box. But, usually, some slight trimming here and there is necessary if parts are to be really accurately mated and without the appearance of ugly gaps between, for example, wing roots and fuselage sides.

Secondly, the use of polystyrene cement on plastics needs a good deal more care than cellulose cement





Different constructional approaches to the same aircraft are seen in this comparison of the Frog Canberra (left) and the smaller Lincoln version from Hong Kong. Latter has coloured markings printed on cellophane instead of the usual transfers.

on balsa. The cement does not merely form a bonding film between the two parts, it acts as a solvent and fuses the two surfaces together by softening the actual plastic. If, therefore, the cement is allowed to get on the outside of the model, it will spoil the finish. Unfortunately, accurate application of a thin continuous film of cement along the edges of the larger shells, is not aided by the knowledge that the cement dries quickly. A help here is to cut a vee-shaped notch in the nozzle of the cement tube so that it can be guided along the inside edge of the shell. A second tube, with the nozzle sharpened to a point, is then desirable for applying cement to other parts.

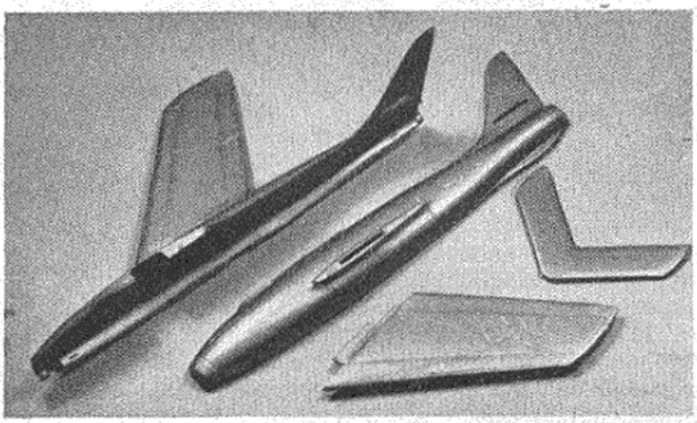
The first thing to do on opening your kit is to check the contents against the list or sketch supplied. It sometimes happens that a small part is inadvertently omitted when the kit is packed. At the same time you will become familiar with the various components and how they are fitted together.

This is particularly important because many of the more complicated models must be assembled in a certain sequence. If you ignore this, you may find that in cementing together the obviously matching components, you have omitted the small and vital link with another sub-assembly. It is not easy to correct such mistakes afterwards because, once cemented together, polystyrene plastic cannot be cleanly separated again.

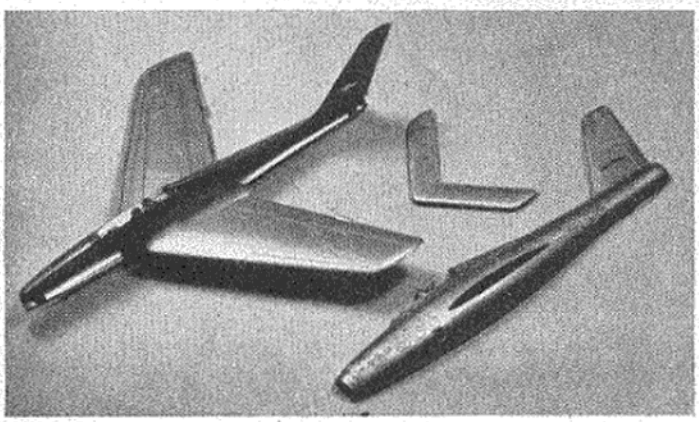
Many kits are supplied with the smaller parts still attached, tree fashion, to moulding stems. Don't be in too much of a hurry to separate them. If certain of these parts require colouring, it is generally much easier to paint them while they are still attached. To remove the parts from the stems, it is only necessary to carefully break them off, holding the part close to the joint. The tiny, irregular piece of stalk that then remains, can be easily trimmed off with a razor blade.

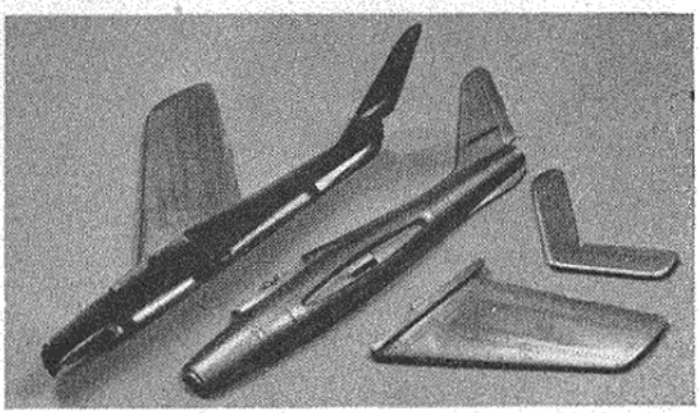
The " cleanness " with which parts are moulded varies somewhat among different makes. Some of the top grade kits require little cleaning up. Others have an appreciable amount of " flash " remaining around the edges of parts, which, of course, must be carefully pared off. Wing and tail surface tongues or pegs, also sometimes require trimming up

Continued on page 176



Inexpensive versions of the Republic Thunderstreak as interpreted, on left, by Lincoln-Hawk (Empire made), lower left, Comet (American) and lower right, Faller (German). Note different methods of wing attachment. Slight deviations from scale are also evident.





Topical Twists

by PYLONIUS

Flight Briefs

Big hit of the American Nats. is the Joke and Novelty Contest. A laff a minute is guaranteed from some of the craziest crates you ever saw. And the craziest crate of all is the pair of gent's long combinations—fully fashioned, ready-to-fly reach-me-downs in full flying trim.

Now I'm not going to quarrel with anyone's sense of humour. I admit that the sight of a pair of O.S. long coms going o.o.s. must be quite as ribtickling to the onlooker as the flannel underwear was to the wearer. But, if there is any truth in the saying that brevity is called for, a frill a minute might be the way the model funster would describe the aerial antics of dainty unmentionables in full flight.

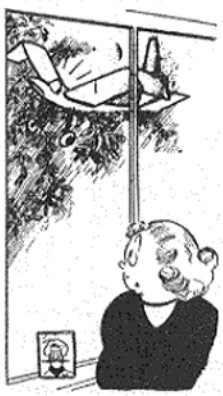
To add to the humour of this strictly modern joke we could resuscitate the oldest of all model jokes by using the elastic for power.

But humour changes with the times. What to us might appear quite unfunny would have 'em in fits in the year 1980, as this following snatch of conversation may illustrate:

"Did you get a load of that crate over there? Man, it's the craziest. And, what y'know, it's powered by elastic. Elastic! Can you imagine that? But you ain't heard nothing yet. The crate just flies around and around on its ownsome. No control lines, no radio—just nuttin'. Guess what, though? The guy don't go much on his crate being taken for a joke craft. He reckons it's a F/F Wakefield or sumpin'."

Lost Articles

Fying a model without a d/t is a short-sighted policy, and one which can create alarm among short-sighted citizens. This much is evident from the recent story of a lady who reported the landing of an aircraft near her home. Upon investigation the aircraft in distress turned out to be a wayward pylon model, and we can only trust that the police, fire brigades and rescue parties got some slight consolation out of jumping on the thing. This sort of mistaken identity could not have happened a few years ago when models were flying over the rooftops so thick and fast that people began to blame them for the bad weather. Suburban gardens were absolutely strewn with the things, and while some people regarded them as a nuisance, others welcomed the fact that they frightened off the birds.



Perhaps Granny, being a bit out of things, might remark that a large and ferocious looking insect had landed in the apple tree, other members of the family would be under no such delusion. Little Johnny would casually remove his space helmet, the better to view the phenomenon, and say, "Aw, it's only an ole model plane. Kid's stuff." And there the matter, and the model, would rest.

It is said that the reason for this present dropping off of models dropping in is the lack of F/F gen being submitted to the model mags. As the lorry loads of W.W.1 manuscripts arrive at the editorial office the staff tear frantically into the pile of paper in the hope of finding just one sheet of info on the dying art of F/F.

Whether they, too, are shortsighted, I don't know, but somehow they seemed to have overlooked some of my superb contributions. For example, I consider "Build Your Own Plastic Wakefield" to be a masterpiece of its kind. What better introduction to F/F for the vintage novice than a way to construct a new rule Wakefield from five Sopwith *Camel* kits, two ashtrays and a plastic mac?

Paper Chase

I think it's a nice gesture for any modern club to pay an occasional tribute to its glorious past. It's not all that easy for the up-to-date club to remember its model flying origins. Some of the older members may spare the matter a thought from time to time, but, to the budding Geoff Dukes who clutter up the clubroom, model flying remains a complete and ancient mystery.

Hats off, then, to the club which endeavours to capture the spirit of the past with a paper aeroplane contest. I picture the occasion as a most solemn one. Crash helmets are reverently removed; discussion on the latest two-stroke hushed to a whisper; and members inspecting the secretary's new 650 c.c. job are brought quietly in to pay their respects. Dignitaries of the club then hand each member a sheet of standard notepaper, and the stage is set for an old style model comp.

Even the younger members join in with enthusiasm. Perhaps because it is not often that they get the opportunity of competing on equal terms with the senior members. A powered pedal cycle is no match for the latest Norton, either in power or in the amount of dramatic clothing you can wear, but youth, lighter by three leather jerkins, is a decided asset in chucking paper aeroplanes. Of course, the older members could remove some of their more cumbersome garments but only with serious loss of prestige. It would be unthinkable for any motor cycling veteran to reveal himself in such a state of undress even on a special occasion.

It is to be hoped that other clubs adopt this form of memorial flying comp. Displays of plastic kit models and literature on W.W.1 aircraft afford splendid light relief from the serious business of motor cycling, but there's nothing like a paper aeroplane scramble to divert the juniors from breaking up the clubroom furniture.

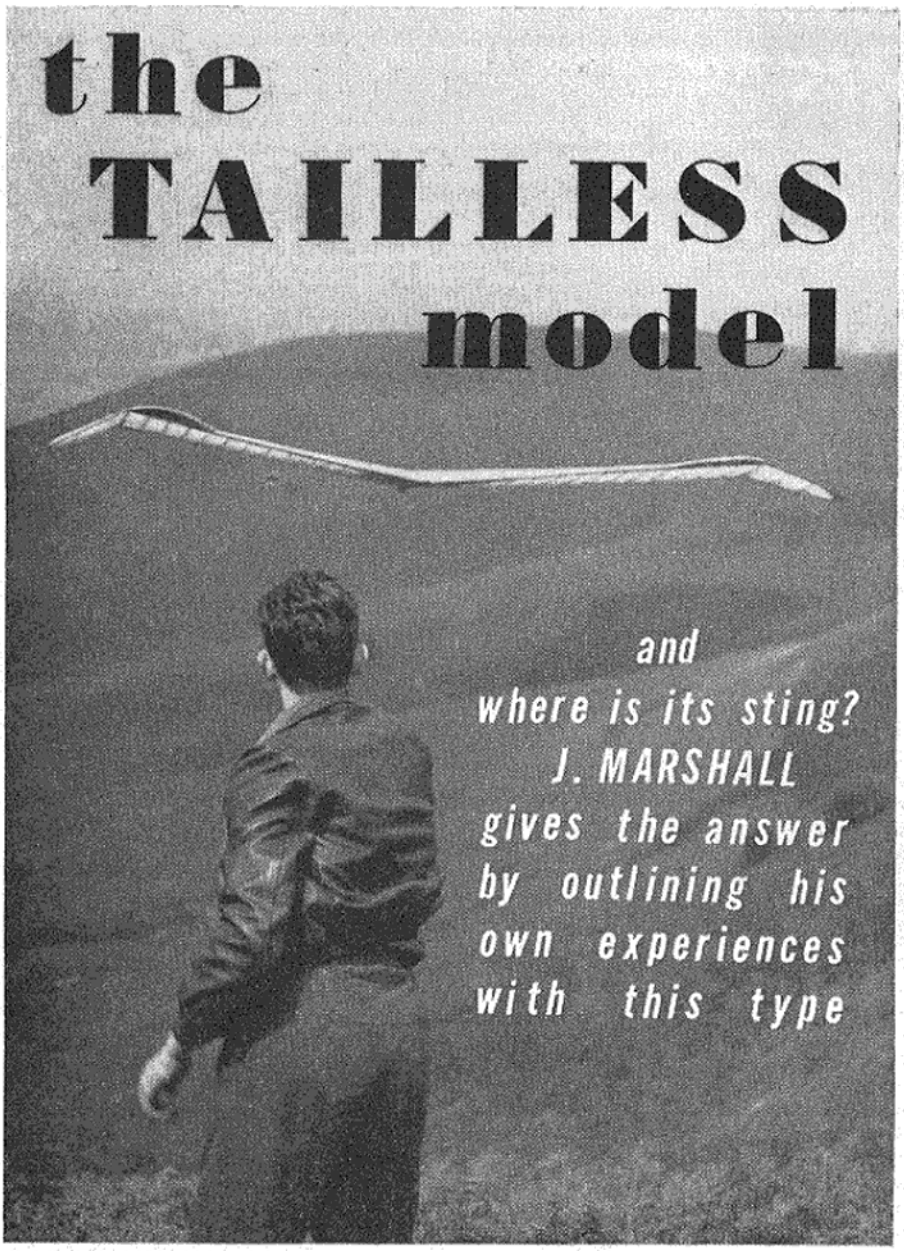
Pure Invention

We modellers have been accused of lack of inventiveness—and not without good reason. Year in and year out we fly the same old models with the same old wing and tail combination doing the same old job in the same old way. Now and again something out of the rut, like a helicopter, is to be seen on our flying fields, but, as this sort of thing seldom rises to the occasion, "on" remains the operative word.

The bugbear is that there is nothing left for us to invent. Those johnnies, who dashed about in gaiters and handlebar moustaches about a half a century ago, hogged the whole blooming lot. Having got the basic idea from the ancient schoolboy who invented the paper aeroplane they only had to work out the simple variations. Fit an extra wing and you were the proud inventor of the biplane; two extra wings and you had the triplane on the patent list; three extra wings and you had the quadruplane buttoned up; four extra wings and you were probably buttoned up.

After running out of wings you still had the tail to play with. Stick it up front and you had the Canard; 45 deg. offset gave you the Oozlam, and a hefty prang brought the Tailless into being. In fact, it was almost impossible not to have invented something, which was all jolly good fun but a sheer waste of time as the design layout of the paper aeroplane was the ideal one in the first place.

the TAILLESS model



AS a type, tailless models are, in my opinion, an interesting proposition, but their representation is usually confined to the various flying saucers or deltas, and they are sadly neglected by the keen contest flier. Just why this should be so is difficult to understand, for tailless models are stable and have given a good account of themselves in glider and rubber events against orthodox models—and surely it cannot be lack of events, with the Lady Shelley Cups and three separate classes at the All-Britain Rally to enter.

However, this article was not written to develop such arguments, nor to explain the basic principles of flying-wing aircraft, but rather to describe some of my own experiences with the type in the hope of assisting modellers who are already interested, and perhaps encourage others to try their hand.

At the start of my activities in this field I expected some magical properties from the wing planform and tried a variety, some elaborate, but the most recent are of simple, constant chord, and owe their improved performance to the choice of airfoils and construction.

My entry in the Handley Page Tailless event for a £100 prize in 1945, came home sixth. It was an attempt to fly without elevons, fins, or reflex, and with a minimum of sweepback. A novel feature then was tips mounted at an angle and turned down. It towed fair, completed the L.H. and R.H. turns required, but suffered with a poor duration (a) because it was somewhat heavy, and (b) because the light silk covering had to carry too much torsion. This model shattered every panel when it made a wingtip landing on the Radlett tarmac and hence lost washout and trim. I learned from this experience always to fit diagonal struts between ribs, or sheet cover leading edges when weight permits.

This project had shown enough promise to encourage fellow club member A. H. Wilson to make it up double size (over 12 ft. span), and powered with an Ohlsson 60. This turned out to be the start of his own extensive line of tailless models which include the magnificent *Manx Queen*. (M.A. Plan No. 39.)

My next model had a little 0.5 c.c. Ace mounted pusher fashion and the planform was dictated by the need to mount the engine near the C.G., so as to use the minimum of ballast. The airfoil had a considerable undercamber at the root and a symmetrical section at the tip, and had over 15 deg. of washout in the vain hope of flying without elevons. It flew very well with only small tabs cemented on, and made many long thermal flights from the 30 sec. motor run then allowed; it also started the ball rolling with two British R.O.G. Records.

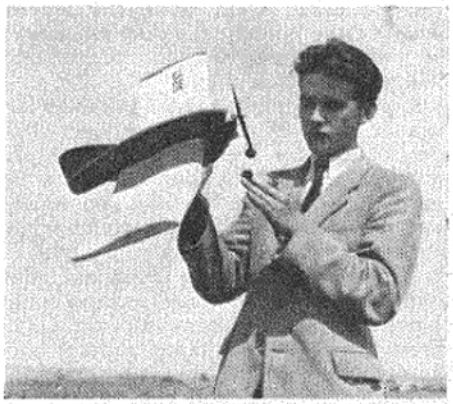
The next in line employed a similar planform but was larger and a Clark YH section was used, with some elevon area blended on to the tip ribs in a reflex trailing edge. It was pushed along by a Mills 1.3 and turned in times of around 2½ min. on a 30 sec. engine run. This design is in Model Aircraft Plans Service (M.A. Plan 64) and set up a World Record in 1949. The detachable outer wing panels of this model were fitted to a straight centre section with tow hooks, and in glider form it gained 3rd place in the 1950 Lady Shelley Cup. No D.T. was incorporated so the glider was lost making the 3rd flight (the wreck was located 10 miles away two years later).

Having read of the success of the Swiss "planks," I built a couple, one a power model, and the other a glider. The results were not very encouraging as they both possessed an undulating flight pattern with short pitches, a high sinking speed, and lacked directional stability. Together they proved excellent if unpredictable sport models, but offered no real solution towards getting more duration. It seemed possible to do plenty of research with this type alone to reach any conclusions. The glider towed erratically and the power job (a tractor) needed plenty of downthrust to correct looping, and also a pendulum rudder to stop it spinning in. A forward C.G. and an inefficient airfoil combined to make any D.T. superfluous.

Another power model left the board basically similar to the earlier pushers, but was lighter, and the engine was mounted higher to offset a looping tendency under the higher speed of powered flight. The big change of trim between power and glide makes this the most challenging of all tailless types. In 1954 the S.M.A.E. reduced the engine run from 20 to 15 sec. for power models and the glider tow-line length from 100 to 50 metres (in line with the F.A.I.) for the Lady Shelley event. In the course of this rule change the rubber class had emerged unchanged and it now appeared to have a more sporting chance of challenging glider supremacy.

Power models were put aside and a small rubber-driven pusher was built. The wing was untapered with 30 deg. sweepback and a section with a small centre of pressure movement selected, to cope with the expected inertia moments of a lengthy rubber motor and fuselage. A motor run of 50 sec. gave a brisk climb and 30 sec. of glide, coupled with an easy trim and no stability problems. This model was developed into an entry for the 1955 Nationals at Waterbeach, where it placed 2nd in the Lady Shelley. Its final flight exceeded 7 min. (no D.T.s yet!).

The gliders which won this contest (as in previous years) had returned scores of around 6-7 min., so for my next rubber job I set my sights on a motor run of 2 min. so that it could be capable of scoring 6 min. without taking any glide into account. A larger model was drawn up around a 5 ft. motor length. This was split into two skeins using return gears to keep down unduc



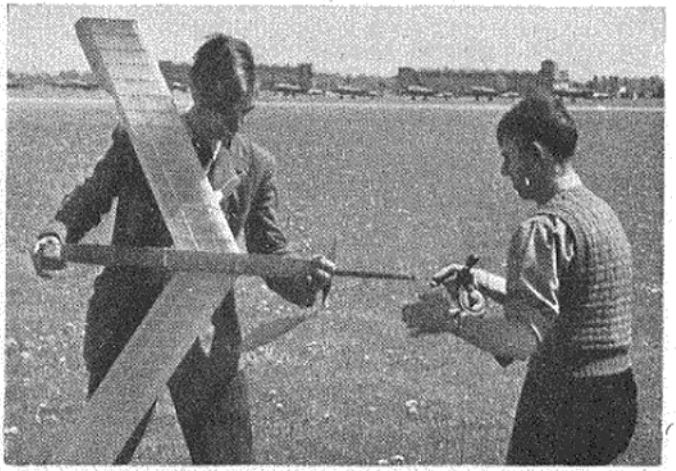
A Swiss plank design as mentioned in the text. This example by L. Porta has turned in 4 : 42 from a 30 sec. engine run.

fuselage length. A tractor screw was used so that it could be folded to improve any glide.

The previous model had a big reserve of stability so I took a chance with the larger one and used an undercambered section—N.A.C.A. 6412—at the root, changing into Clark Y for better control at the tips; sweepback was again 30 deg. Tip fins and small elevons completed the ensemble, which was to win the Lady Shelley Cup for 1956, scoring 6 min. 9 sec. and again in 1957 when it totalled 8 min. 39 sec.

During 1956 a more potent power job was built to compete in its class at the All-Britain Rally. Still flying, this model has an Eiffel 431 section for most of its span. It has a good glide, perhaps even the best yet, but an energetic 1 c.c. motor produces more power than it can use fully, with an area of 370 sq. in.

In 1957 the S.M.A.E. offered to hold the International Tailless event which was to be A/2 specification, and in common with other devotees another new glider was made up specially for this; it was my last and simplest! The



The writer assisted by Pete Hedgeman winds up his geared rubber design for one of its winning flights in the 1956 Lady Shelley Cup.

model had an untapered wing of 30 deg. sweep, 7 deg. twist, and Eiffel 431 section from root to tip, no fins and no fuselage. For various reasons this model had the C.G. too far forward and was never fully elevated, but nevertheless it made flights of up to 75 sec. It was lost after only 20 flights and here the series rests for the present.

To summarise: the best results are obtained with a sweepback of 15-30 deg.; less requires the use of specially developed airfoils, and gives an undulating flight pattern. More sweepback gives a stable, rigid and dart-like flight, but is not so given to (the desired) soaring flight.

Structurally, a wing with more than 40 deg. sweep tends to be heavier, weaker, and does not hold washout angles so well.

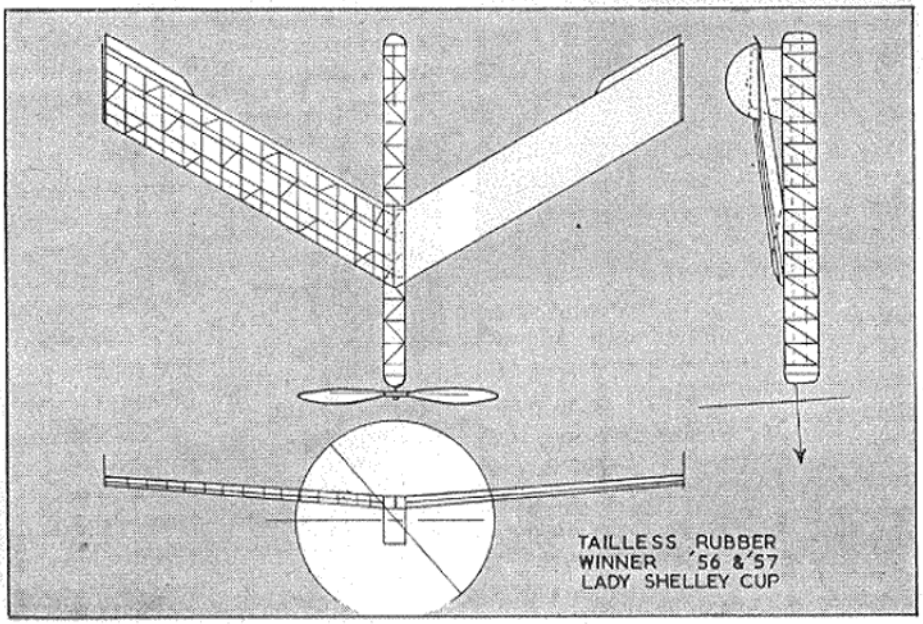
Constant chord wings work well, are quicker to build and offer more opportunity to experiment with sections, but if the section is to be changed from root to tip, it is nearly as easy to incorporate a slight taper as well.

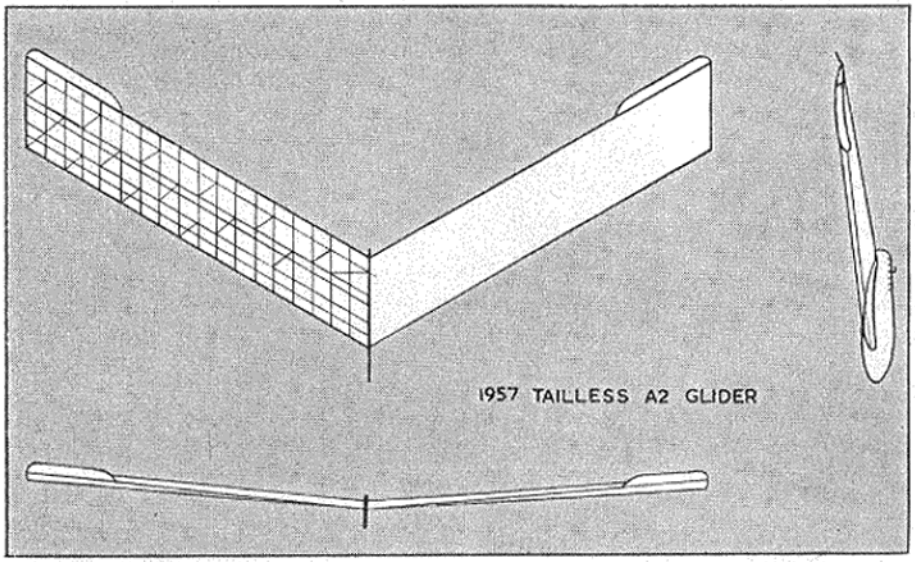
Choice of wing section does not appear critical, and almost any can be utilised, provided it does not have exceptional droop on the trailing edge, and that the designer is prepared to add upturned flaps onto the trailing edge towards the tip. If elevons of this type are fitted, they are best set up at identical angles using a template or protractor and fixed in position; do not use them for major trim adjustments.

The airfoil selected and the degree of washout required are inter-connected. The commonly used Clark Y and YH, and R.A.F. 33, will need only about 3 deg. twist, but if a cambered section is used along the whole span, 10 deg. or more will be needed. It should not be forgotten that a well cambered section still gives a lot of lift at negative angles of attack.

A good scheme is to use an undercambered profile of high lift at the root; hold this for about one-third of a semi-span then blend it from there into a reflex towards the tip, using 5 deg. or 6 deg. of washout.

As regards dihedral, none of my own designs ever gave any trouble that could be blamed directly on this. It seems better to err on the side of too little rather than too much. Some worked quite well without any. The extra complications that result from the use





of polyhedral are not called for.

The aspect ratio should be as high as possible, commensurate with strength and weight, in order to give the tips a longer moment arm.

And now fins. Many gliders are quite happy with or without fins; one big advantage of fitting them is to increase the models' visibility when side-on at a

The writer with the model that set up a world record in 1949. This design is obtainable on M.A. Plan No. 64.

distance—an advantage to be weighed against the extra difficulties of packing and transport. Only minor fin troubles came with the rubber jobs. Moderate sized fins were put on each tip from the start, slightly toed in to increase their effectiveness.

With power models the situation is completely different; side area disposition might even hold the key to success with this type when the motor is howling. It is a detail worth close study. Many fin locations have been tried, but to see a tailless going up really fast and straight is something I've yet to experience.

Let us now consider some of the details peculiar to the three possible types. Firstly, power driven—to push or to pull?

Personally, I have a leaning towards the tractor. Unfortunately, however, the C.G. is located around the trailing edge at the centre-line, and this puts our motor a root chord ahead; only light engines for their power can be considered, and their weight must be counterbalanced by lead, or a heavy clockwork timer projecting out on a boom at the rear.

With a pusher the engine will come close to the point of balance and with it come many obvious advantages, but if your wings are detachable take precautions against their knocking back through the propeller in the event of a power-on wing tip landing! Pusher or tractor, mount the engine well up above the wing to cause a nose down couple. A power wing flies straightest when it is a little under-elevated.

Next—rubber driven. A freewheeling or feathering airscrew can be used to push or pull, but if you wish to use a folder, then a tractor layout is a must. An unusual point to remember with tractor arrangements is to keep the nose as light as possible so as to increase the available length on to which the blade must fold back in front of the wing leading edge.

Don't worry too much if the C.G. goes back with the folding of the blades; this should improve the glide and reduce the demand for downthrust. A low wing would appear a good solution, giving a high thrust line, but also a higher C.G. unfortunately, so I still plump for the favourite high wing position, and use a little downthrust.

The fuselage length should be as short as possible not exceeding half the wing span; if it extends behind the wing tips, it can usefully carry a dorsal fin.

Two methods can be suggested which will enable us to use a shorter motor and fuselage.

(a) Split the motor into two skeins using relay or return gears or (b) a thick motor accommodating less turns, but with a step-up gear ratio to the propeller, like the Frog Interceptor. If you still like a simple single skein, this can be used up to twice the length between the hooks. A spring tensioner, as well as pre-tensioning the rubber, will prevent bunching.

Lastly the gliders. Those intended for use in the S.M.A.E. Lady Shelley or the All-Britain Rally are free of all restrictions, and the best policy is to make them large, and as light as possible, but still retaining a stiff structure to resist warping and flutter.

Arrange for the tow hook to have some alternative positions starting with a point about ½ in. forward of the C.G. From personal tests, auto rudders are hardly ever needed. Most models, when properly elevated, will stall mildly in straight flight when released, and one tip will drop, causing the glider to assume a circle of its own choosing, with no rudder applied. No towing troubles should arise if the wing halves are accurately aligned.

If you aspire to international honours why not try an all-wing A/2? Good examples of these will average over 2 min. and will seek out every thermal. Most of the preceeding paragraph

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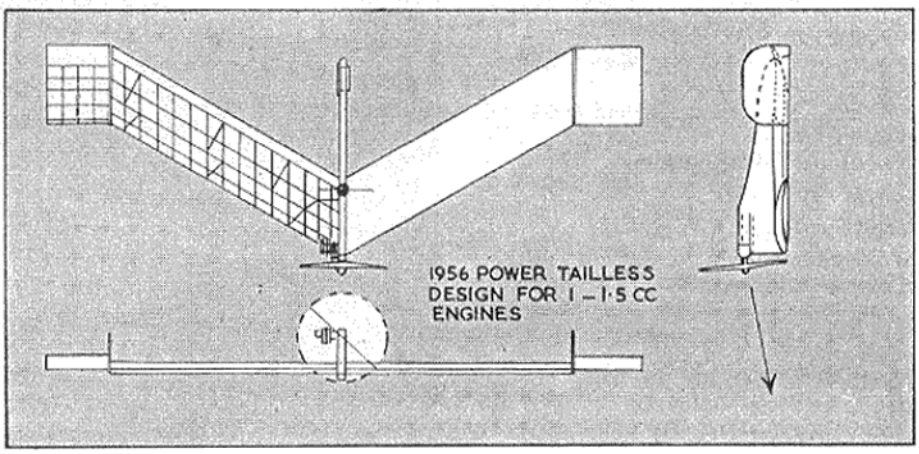
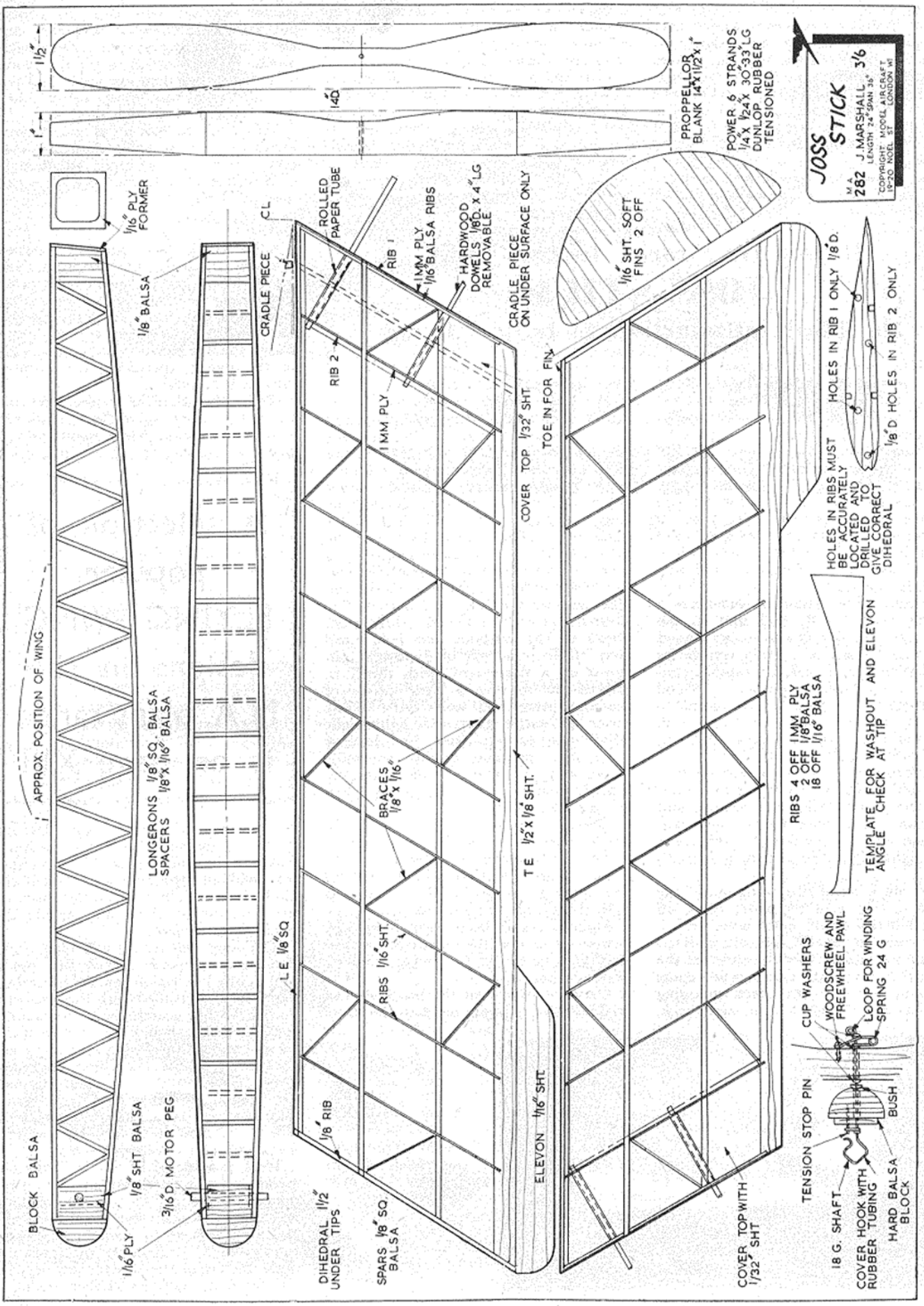




FULL SIZE WORKING DRAWINGS ARE OBTAINABLE FROM YOUR LOCAL DEALER, OR BY POST FROM THE "MODEL AIRCRAFT" PLANS DEPARTMENT, 19-20, NOEL STREET, LONDON, W.1, 3s. 6d., POST FREE

applies, except, of course, the area and weight limits. It is recommended that original models should be designed to the lower limit of area (495 sq. in.) so that any alterations, such as the addition of elevons or flaps, will not exclude the entry. A wing constructed to use the available 14½ oz. seems indestructible even when using quite high aspect ratios.

The parachute would seem a most satisfactory dethermaliser, either a silk one stowed in a box near the root, or a paper one folded and carried on the outside of a central pd; the ever inventive contest flier will no doubt soon find the best arrangement.

Can tailless ever be as efficient as normal aircraft with tails? Frankly, I don't know; both types are improving every year, and much more effort is concentrated on the orthodox layout. Try a tailless for yourself—there is much to be learnt about their behaviour and also there is scope for many improvements.

If you are "rarin' to go," build

JOSS-STICK

the ideal introduction to tailless flying

THIS model was designed mainly for use at the All-Britain Rally in the rubber driven tailless category, and if you have been disheartened at this meeting (Radlett) in the past by watching your latest super-contest F/F job disappear permanently over the perimeter fence on its second flight, well this model is just the job for you to take there this year. None of its competition flights in the past have taken it out of the field, with tailless there is no queue to wait in, and best of all, it can win!

Its competition record includes a win at the 1957 A.B.R. and 2nd in the 1955 Lady Shelley, it also makes a good sports model and is a ready vehicle for development as it can be rapidly converted from pusher to tractor. Good stability is a common feature of tailless designs, and the only breakages with the original in three seasons of flying were rubber motors, and tissue.

Start construction with the two fuselage sides laid down one on top of the other, over the plan. When dry remove and separate them and insert the cross spacers; add the ply nose former, cover with lightweight Modelspan, and that's that.

Cut out a set of ribs, using one of the ply root ribs as a template, mark off and drill the dowel holes accurately if you wish to avoid difficulties later, during assembly. Cut the slots for the spars, then divide the ribs into two equal sets and run through them enlarging the slots to an angle for the sweepback, not forgetting to make each set of opposite hand.

Notch the trailing edge to receive the ribs and assemble flat on the plan, sand the edges to section. Try in your joining dowels and file the holes in the ribs as necessary to bring them into line, grease the dowels and cement the paper tubes in place. Your wing should now have approx. 1½ in. dihedral under each tip. The centre bays can be covered with 1/32 in. sheet balsa if you want to make your model really strong.

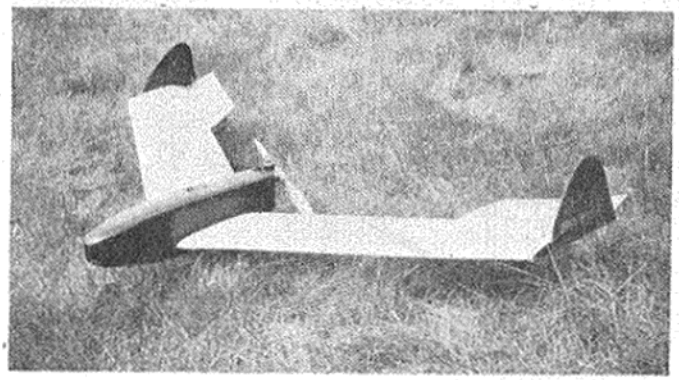
Cover the leading edge from the top spar, around the L.E. and back to the bottom spar with lightweight Modelspan, steam in the washout and hold until dry. Give it a coat of dope and pin down on a flat board, with the T.E. packed up to give a little excess of washout (some will warp out). Now cover the entire wing with lightweight Modelspan or jap tissue (the leading edge now becomes double covered), dope, and pin down, again using the washout template, for at least 24 hours to dry thoroughly.

Check the finished wings; no wash-in can be tolerated but an excess of washout is no disadvantage provided that both amounts are identical. Add the tip fins and elevons, setting these latter up with the aid of the template.

Make a cradle from scrap balsa and cement it under the centre-section so that the wing sits on the fuselage without rocking about.

Carve a prop from the blank shown, making it of opposite hand to the usual tractor screws; you can, of course, purchase a commercial propeller, and use it by winding up the rubber backwards. If you intend to try the model as a tractor this does not apply and you can also with this set-up use a folder made from sheet in the usual way.

Make up a motor of six strands ¼ × 1/24 × 30 in. long, lubricate well, attach the wing securely on fuselage with rubber bands and put on your running shoes.



A. H. Wilson's "Manx Queen," is another of the highly successful designs included in the M.A. plans range.

Flying

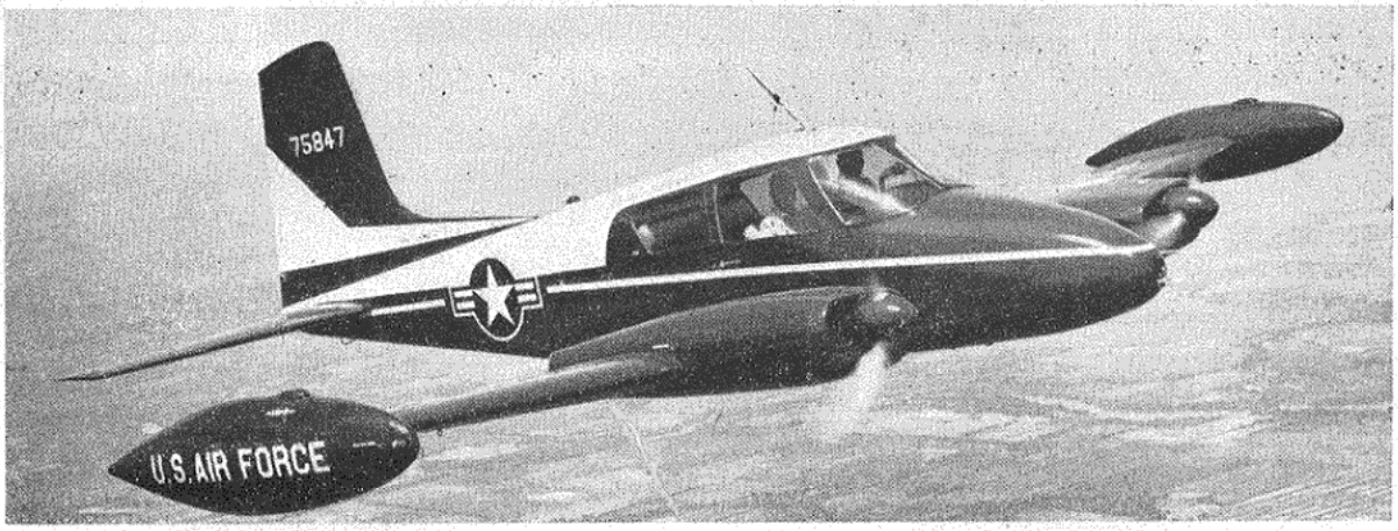
Adjust the glide by moving the wing fore and aft along the fuselage to find the best position; it should not prove very sensitive. If the model stalls when the wing is right back along the fuselage add a little plasticine to the nose. When you are satisfied put a few turns on the motor, increasing the number with each launch.

When the glide is perfect, do not move the wing again but mark its position for keeps. Make power adjustments by altering the thrust line, using downthrust to correct any looping tendency, and side thrust to get a spiral climb. The model should circle either way without loosing height, but if the circle is too tight for comfort increase the washout on the wing outside the circle (by steaming).

A selection of popular FLYING WING designs in the M.A. plans range is on page XIII

The suggested motor will take about 800 turns, you can if you like use a longer one but watch out for bunching. Don't be too satisfied with the first trim you strike but search for a better one, the duration should be better than 90 sec. in "still air" and about 120 sec. with good rubber on a warm summer day. If you want to fly when thermals are around rig up a d.t.; an external folded paper parachute, fuse operated, will prove most suitable. The original soars well and once topped 7 min.

It is possible that due to different weight distribution among the components, and slight warps, each machine will develop its own peculiarities and the builder will have to devise the answer, but trimming for a stable and satisfying flight should prove easy to anyone who has flown an ordinary rubber model.



AVIATION NEWSPAGE

by J. W. R. Taylor

Trim new **BLUE AND WHITE PAINT-SCHEME** sported by the U.S.A.F.'s L-27A light administrative liaison and cargo transport (above) was specially evolved by Cessna, after success in a 1957 competition had earned them an initial contract for 80 of these military variants of their five-seat Model 310 light twin. A further $4½ million order was placed at the beginning of this year, by which time the L-27A had replaced obsolete World War II types in eight major commands.

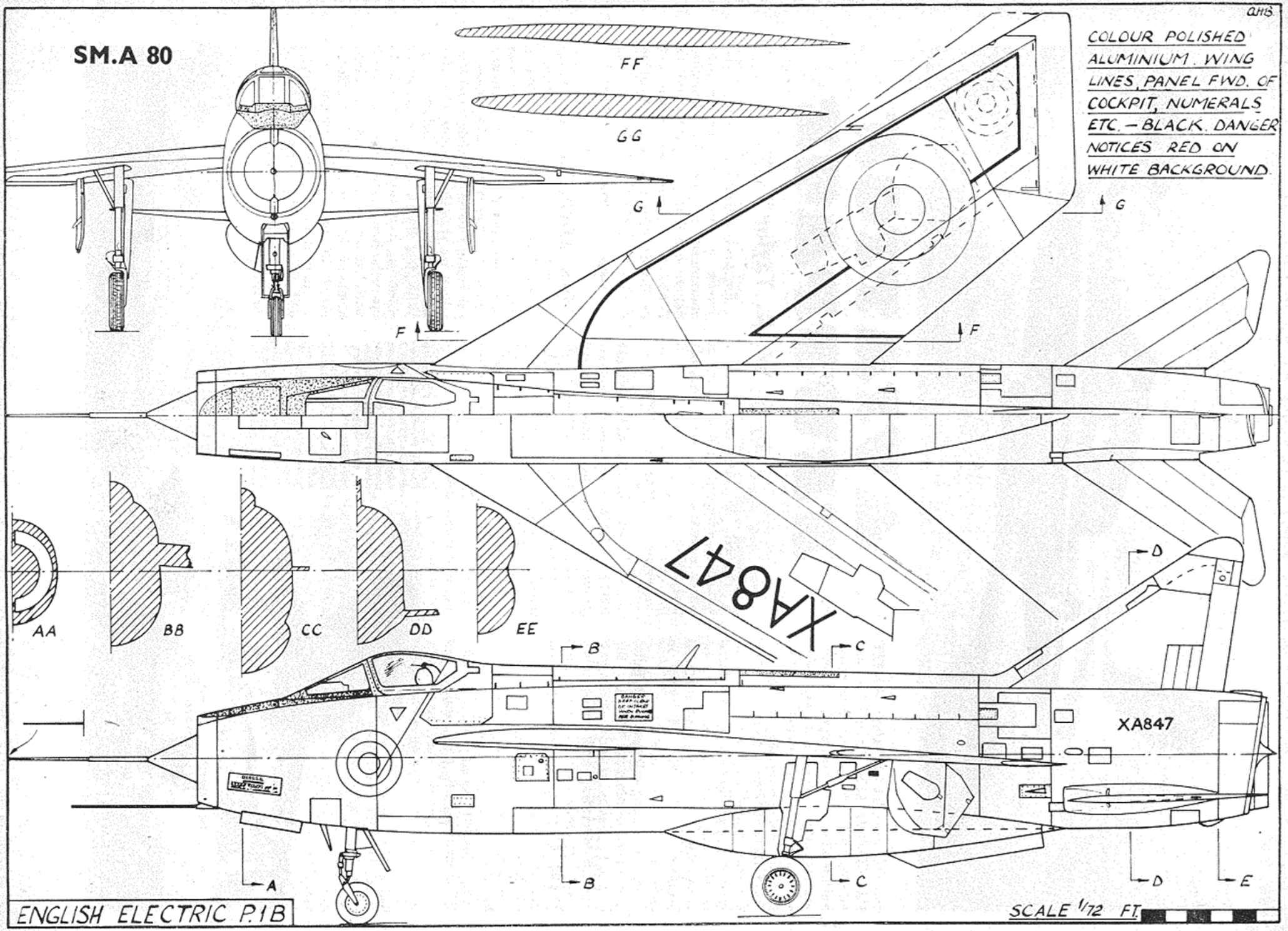
By purchasing off-the-shelf a fully-developed commercial aircraft, the U.S.A.F. claims to have saved vast sums in operating and maintenance costs. It chose well, for the civilian Model 310B is probably the best machine in its class. Two 240 h.p. Continental o-470-M engines give it a top speed of 232 m.p.h., and it can fly 850 miles at 213 m.p.h. at its max. loaded weight of 4,700 lb. Wing span is 36 ft. 1 in., and all fuel is carried in two permanently-attached wing-tip tanks, each of which contains a 41½-gal. flexible fuel cell.

First photos of the **ADVANCED ARMAMENT** of the production-type *Javelin* F(AW).7 and *Swift* F.7 are reproduced below. Although intended only for training in air-to-air missile techniques, the *Swift's* beam-riding Fairey *Fireflashes* are fully-developed weapons of great efficiency; while the fighter itself, distinguished by its new black nose radome, is highly popular with its pilots.

Firestreaks will enter service with the *Javelin* 7 this year, and it was announced in the Air Estimates debate that both this aircraft and the F(AW).8, with different radar, will be fitted eventually with reheat to extend their effective lives.

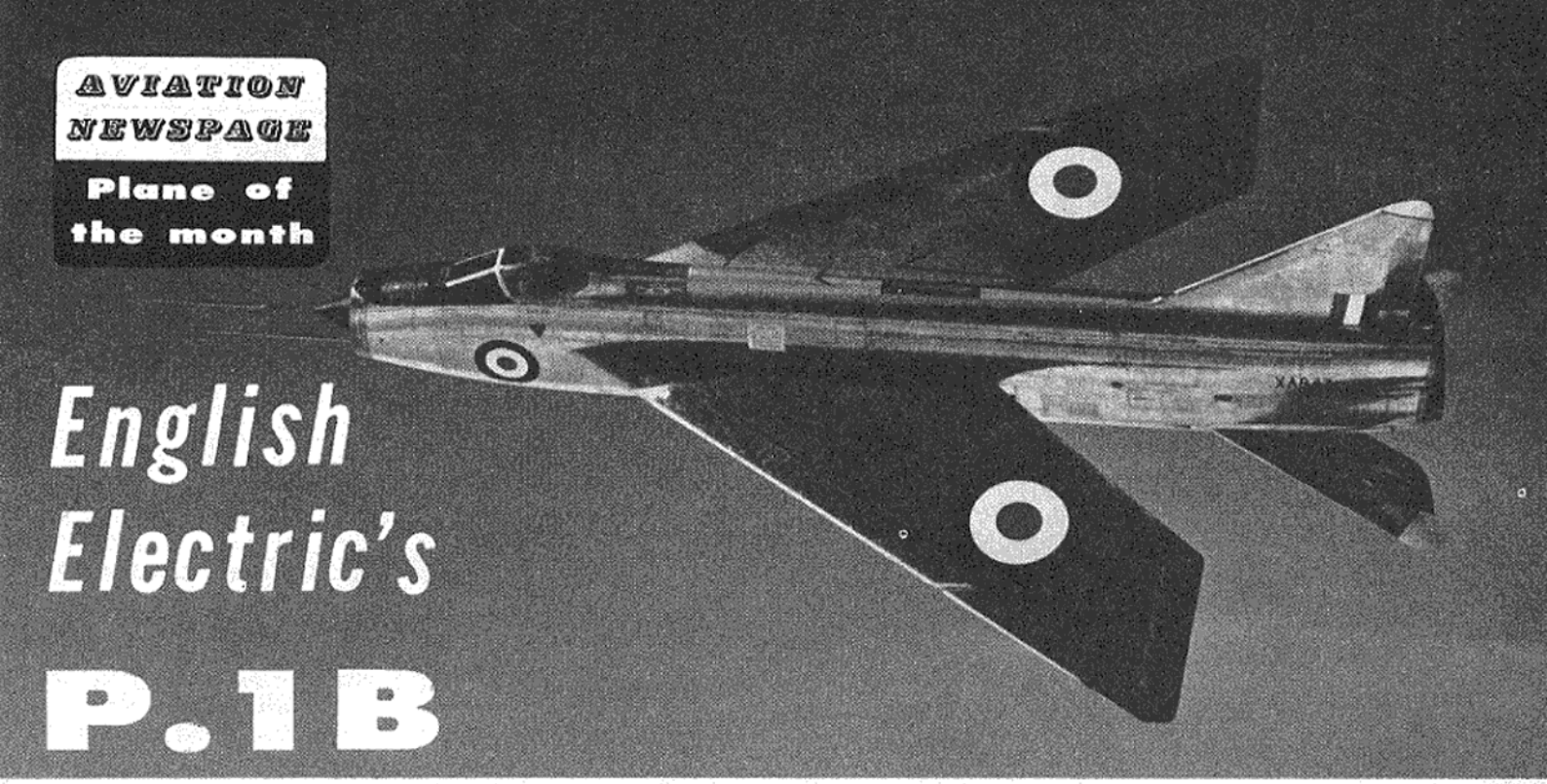
PAN AMERICAN have introduced new insignia on their airliners in the past few months. Already seen at London Airport on various piston-engined types, it is modelled below by N707PA *Clipper America*, the first of Pan Am's Boeing 707-120's, which we should be seeing over this side of the Atlantic before long. With test flights running ahead of schedule, it is hoped to be able to open the first transatlantic jet service with these aircraft in October, although the 120 is really the medium-range domestic version of the 707. It will be interesting to see if B.O.A.C. will take up the challenge with a one-stop London-New York *Comet* service.

Left: Swift F.7 with Fairey Fireflashes. Lower left: Javelin F(AW).7 with d.h. Firestreaks in position. To compensate for loss of efficiency of the weapon's infra-red homing system in certain atmospheric conditions, the Javelin will also mount two pods each containing 37 unguided rockets, plus its 30 mm. Aden guns. Lower right: P.A.A.'s new insignia.


SM.A 80
FF
GG
G
G
F
F
COLOUR POLISHED ALUMINIUM. WING LINES, PANEL FWD. OF COCKPIT, NUMERALS ETC. – BLACK. DANGER NOTICES RED ON WHITE BACKGROUND.
AA
BB
CC
DD
EE
XA847
XA847
A
B
B
C
C
D
D
E
ENGLISH ELECTRIC P.1B
SCALE 1/72 FT.

AVIATION NEWSPAGE

Plane of the month



English Electric's P.1B

NO aeroplane in history has carried a greater responsibility than the P.1B, which will be the last piloted interceptor to enter service with the R.A.F. It must not only be good enough to deal with every conceivable type of attack by piloted bombers of its own generation, but must have sufficient "stretch" to keep pace with future bomber development, until such time as the potential enemy attack and our own defence can be entrusted entirely to guided weapons.

How well does the P.1B meet this challenge?

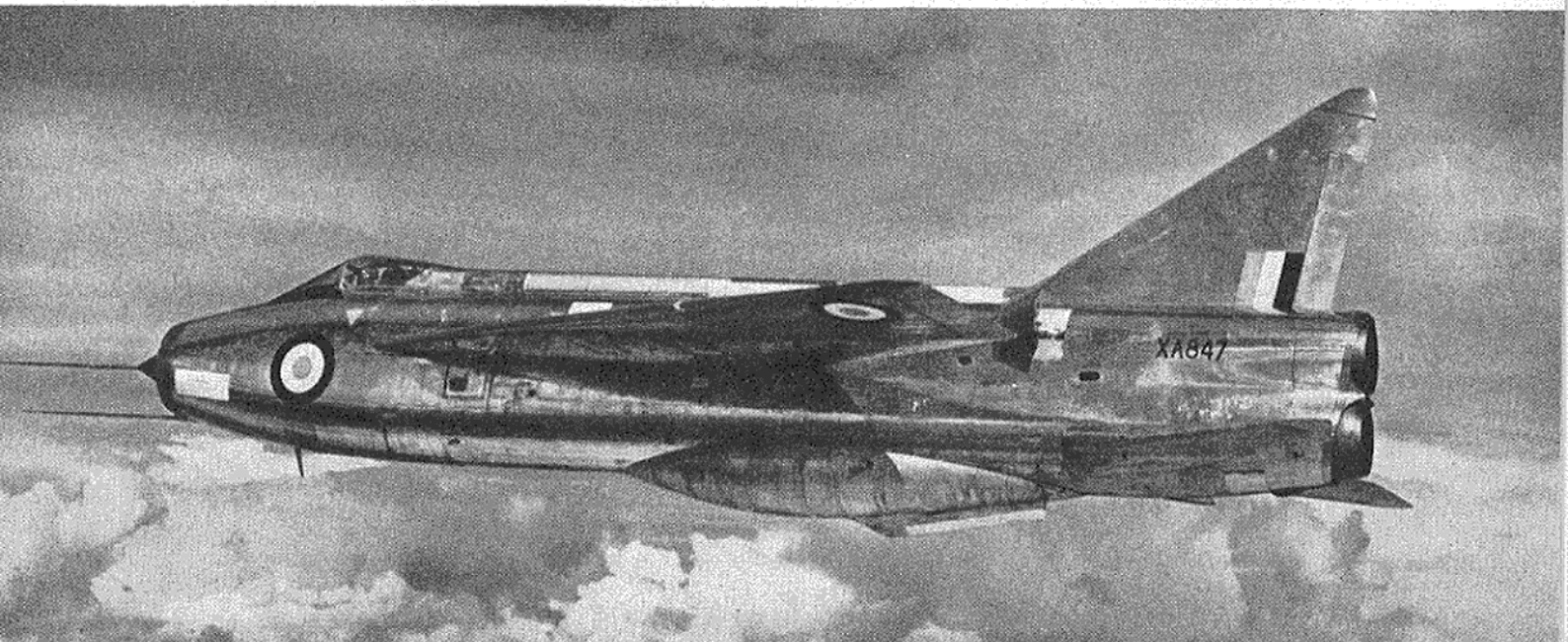
As a start its overall design is as advanced as that of any interceptor yet ordered into production anywhere, although it started life in 1947 not as a fighter but as a supersonic research aircraft to Specification E.R.103. English Electric decided it might pay to make the design easily adaptable into a fighter, and were rewarded in 1953 when Specification F.23 was issued to cover re-engineering of the project as a complete weapons system.

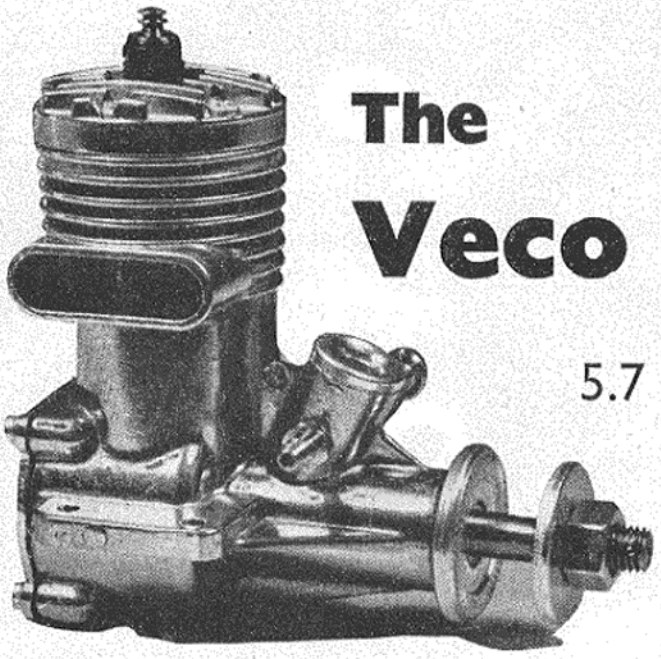
The fuselage gives the impression of being the simplest possible shape able to contain the pressurised and refrigerated cockpit and two turbojets, one mounted forward of and below the other. In fact, it has been designed so skilfully that, in conjunction with the 60° swept wings, it conforms to the area rule as much as its wasp-waisted U.S. counterparts. The wing itself is a five-spar structure with a thickness/chord ratio of about 5 per cent. and contains integral fuel tanks. By making the ailerons extend across the wing-tips at right-angles to the fuselage and cutting fore-and-aft notches in the leading-edges in lieu of fences, the result is clean and efficient, offering unrivalled handling characteristics throughout the speed range.

The two prototype P.1As (first flew August 4th, 1954) were each powered by two Sapphire turbojets and had a simple ram air intake. The P.1B has two 11,250 lb. s.t. Avon R.A. 24Rs with reheat and a circular intake with a conical centre-body, which creates a shock-wave to slow air entering the engines and also houses search radar. It can carry a large ventral fuel tank for long-range sorties, or a Napier Double-Scorpion rocket pack of similar shape. In the mixed power-unit form its range is short, as the pack contains H.T.P. oxidant but not kerosene fuel for the rocket, and this has to come from the main tanks. However, this version will have a speed of 1,500 m.p.h. and a fantastic rate-of-climb.

Armament of the P.1B comprises two 30 mm. Aden guns flanking the cockpit over the wings, and two Firestreak infra-red homing missiles on fuselage pylons under the wing leading-edges. Combat sorties will be semi-automatic, with an electronic computer to "tell the autopilot the place at which to intercept the bomber." Initial contracts for three prototypes (first flew April 4th, 1957) and a pre-production series of 20 P.1Bs have been followed by a full production order.

Span: 34 ft. 10 in. Length: 50 ft. Height: 17 ft. 6 in.





MA ENGINE TESTS

The Veco 35 Series 100

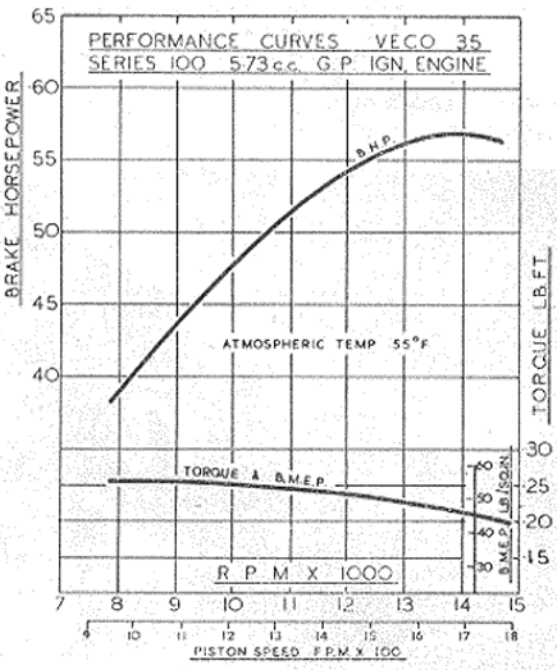
5.7 c.c. GLO-PLUG MOTOR

". . . the fact that Bob Palmer uses one is probably sufficient recommendation to most stunt experts."

A BRIEF external examination of the Series 100 Veco 35, is sufficient to show that this motor should offer above-average resistance to crash damage. The main casting, comprising crankcase, main bearing and cylinder barrel in a single unit weighing just over 2½ oz., is very strong and rigid, with good, substantial mounting lugs and a heavily webbed nose section. The crankshaft is fitted with a steel prop driver, and end float is held to a minimum, thus avoiding any possibility of damage to the backplate by the shaft being knocked back.

The Series 100 Veco 35 has been designed primarily for C/L stunt and combat work, where such robustness is especially welcome, and also with the requirements of the multi-channel radio-controlled model in mind.

The general layout and structural design of the engine follows that of the Veco 19 engine, which was the first Series 100 type Veco and which earned a very favourable report in the February, 1957, Engine Test article. Features of the design include a sintered iron cylinder sleeve, lightweight piston with relieved skirt and floating bush type big-end bearing. Two structural changes evident in the larger engines, are the use of a bronze (in place of sintered iron) main bearing material and a taper friction drive to the prop washer instead of the latter being keyed onto a flat on the shaft.



The engine is, of course, of the shaft induction type. Gas is admitted via a fairly large diameter (5/16-in.) gas passage from a rectangular valve port just under 13/32 in. long and occupying ⅜ in. of the shaft circumference. The intake aperture from the carburettor is 11/32 in. dia. and the carburettor is fitted with a detachable venturi insert reducing the choke diameter to 17/64 in. for increased fuel suction. Induction timing is on the generous side, the valve opening at 35 deg. after b.d.c. and closing 55 deg. after t.d.c. a period of some 200 deg. of crank angle.

The crankshaft has a 1 11/32-in. long journal of 7/16 in. nominal diameter. It is machined in one piece and, like the majority of American engines of this type, receives no hardening or after-treatment. It has the usual machined-in crescent counterweight which balances all rotating mass including approximately half the connecting-rod weight. The crankpin is of 7/32 in. diameter and coupling to the rod is via a 9/32-in. o.d. dural floating bush. This latter is made necessary by the one-piece design of the body of the engine: after removing the cylinder liner, extraction of the big-end bush allows sufficient angular movement of the connecting-rod to allow it to be lifted clear of the crankpin, and the entire piston and rod assembly is then withdrawn through the top of the cylinder barrel.

The piston is of lightweight design, with a straight baffle, filleted at its base. The skirt is relieved 0.001 in. for the lower third of its length to reduce piston drag. The gudgeon pin is of quite modest diameter (5/32 in.) and is fitted with brass end pads. Total weight of the piston and rod assembly is only 0.54 oz. The cylinder sleeve has a wall thickness of 0.058 in. and is a firm press fit in the casting. It is located vertically by a flange at the top. This fits into a channel in the cylinder

head, trapping the head gasket which is thus virtually blow-out-proof. The head carries a long reach glo-plug, offset to the exhaust side.

The finish, in general, is good throughout. Castings are tumbled to a pleasing polished finish and externally, the engine is of neat and purposeful appearance.

Specification

Type: Single-cylinder, air-cooled, loop-scavenged, two-stroke cycle, glo-plug ignition. Shaft type rotary-valve induction. No sub-piston supplementary air induction. Baffle piston with ignition plug offset to exhaust side.

Swept Volume: 0.3495 cu. in. (5.728 c.c.).

Bore: 0.784 in. Stroke: 0.724 in.

Compression Ratio: 8 : 1.

Stroke/Bore Ratio: 0.923 : 1.

Weight: 7.4 oz.

General Structural Data

Pressure diecast aluminium-alloy one-piece crankcase/cylinder/main bearing unit, with bronze main bearing bush. One-piece alloy steel counterbalanced crankshaft, unhardened, with steel drive disc and prop washer. Sintered iron cylinder sleeve closely fitted to cylinder barrel, flanged at top and retained by diecast alloy cylinder head, attached with six Phillips head screws. Meehanite lightweight lapped piston with fully floating gudgeon pin. Aluminium alloy connecting rod with floating big-end bush. Pressure diecast aluminium alloy backplate attached with four Phillips head screws. Reversible spraybar type needle valve assembly. Detachable venturi insert fitted as standard; beam mounting lugs.

Test Engine Data

Running time prior to test: 3 hours.

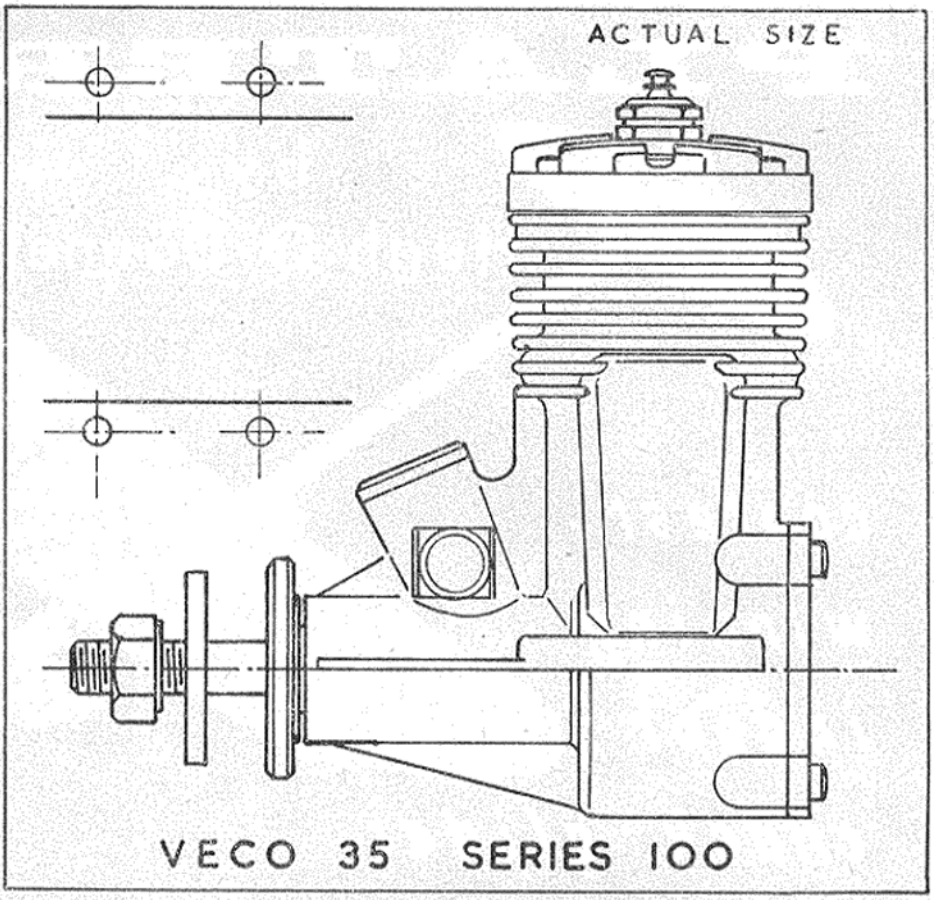
Fuel used for running-in: 70 per cent. I.C.I. Blending Methanol and 30 per cent. Castrol "M." For dynamometer test: 10 per cent. B.D.H. Nitromethane, 65 per cent. I.C.I. Blending Methanol, 25 per cent. Castrol "M."

Ignition plug used: Anderson-Veco 7/32-in. reach as fitted.

Venturi insert retained for all tests.

Performance

The Veco 35 is supplied with a helpful instruction leaflet. This, however, tends to give the impression that the engine is supplied ready



run-in, whereas, of three engines tried, two required quite a lengthy running-in process. This consisted of approximately two hours' rich mixture running, starting with short runs on a straight methanol-castor mixture. We would advise especial care here. Using a 10 × 6 prop, the needle valve should be set so that the engine is four-stroking evenly, in order to provide extra lubrication and cooler running. Any attempt to use a "hot" high nitro fuel and weaken the mixture setting for a fast two-cycle, at this stage, will almost certainly result in overheating and an abrupt stoppage or, possibly, pre-ignition followed by a shaft run.

Most engines of this type vary somewhat in the amount of rich-mixture running required and it is impossible to lay down hard and fast rules. We have had, for example, two new 0.29 engines of another make, one of which took 30 per cent. nitro-methane without protest within half an hour, while the other would not tolerate 5 per cent. even after two hours. The moral is clear. Play safe until you are completely satisfied that your engine is ready to take a lean mixture and/or nitrated fuel.

Compared with the Veco 19 (which admittedly is exceptional) the starting and handling characteristics of the 35 were less impressive. The main difference, however, is that the 19 will stand quite an appreciable amount of clueless handling, whereas the 35 responds best to the expert touch, so this is not likely to bother the experienced stunt enthusiast.

Two Veco 35s, were acquired for test and, after running-in, the best of the two was selected for dynamometer test.

As the curves indicate, the 35 produces plenty of power and a maximum output of a trifle under 0.57 b.h.p. at 14,000 r.p.m. was recorded on test. Maximum torque, developed in the 9,000 r.p.m. bracket, was 0.255 lb. ft. equal to a b.m.e.p. of 55 lb./sq. in.

On the popular 10 × 6 size stunt props, 11,500 to 12,000 r.p.m. can be expected.

To sum up, the Series 100 35 is not an engine for beginners, but the fact that Bob Palmer uses one is probably sufficient recommendation to most stunt experts.

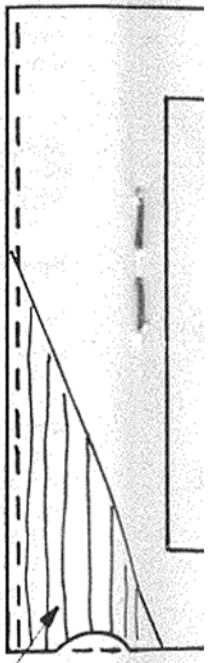
Power/Weight Ratio (as tested): 1.23 b.h.p./lb.

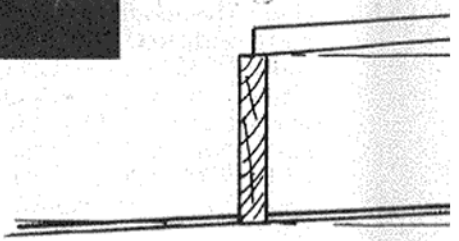
Specific Output (as tested): 100 b.h.p./litre.

PLATERO

by Hugh O'Donnell

contest-winning indoor chuck glider





AS we mentioned in our report of the Indoor Nationals in last month's issue, the performance of Hugh O'Donnell's winning chuck glider was so impressive that we have obtained the plans for MODEL AIRCRAFT. Well here they are, and all that readers must do to get similar results, once they have built the model, is to attain a standard of launching that is equal to Hughie's own inimitable style.

Construction is straightforward, but be careful to choose only good light wood. All joints should be pre-cemented with an additional layer of cement on the wing-to-fuselage joint and the dihedral joints.

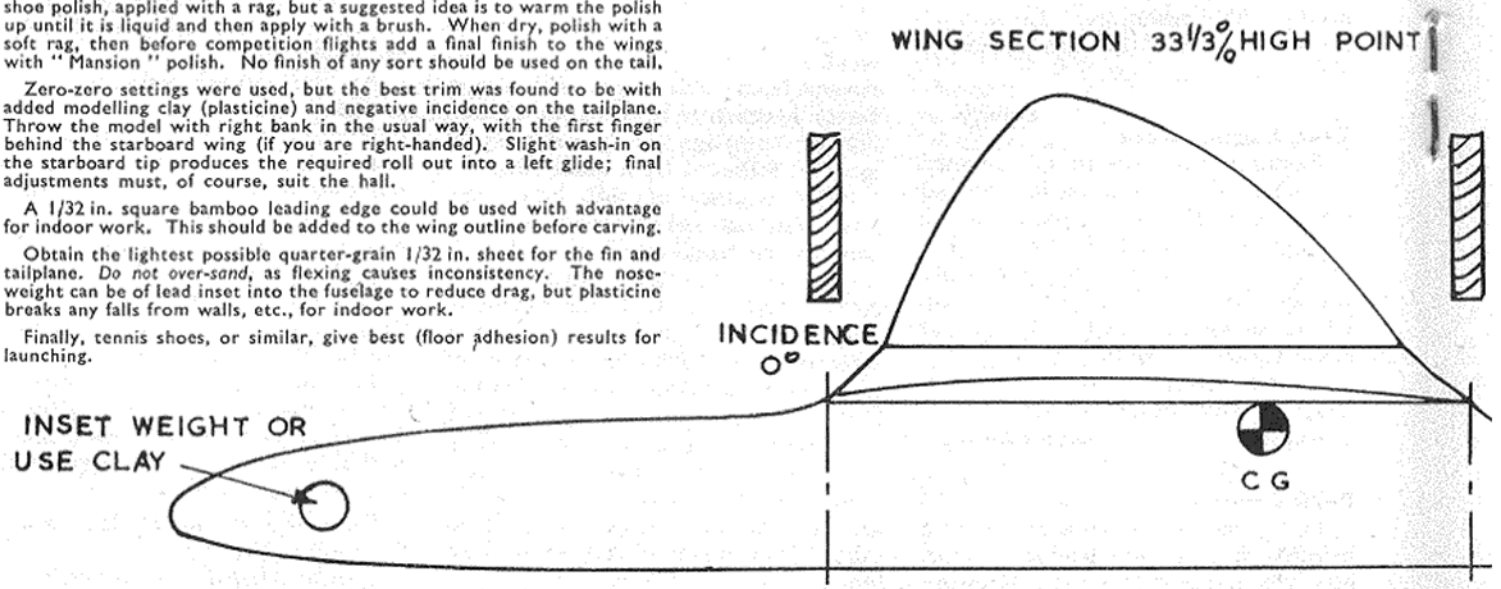
A good finish, especially on the wings, is essential. The finish on the original was achieved by rubbing talcum powder into the wings and fuselage, doping, and finely sanding. Next, the wing was polished with ordinary shoe polish, applied with a rag, but a suggested idea is to warm the polish up until it is liquid and then apply with a brush. When dry, polish with a soft rag, then before competition flights add a final finish to the wings with "Mansion" polish. No finish of any sort should be used on the tail.

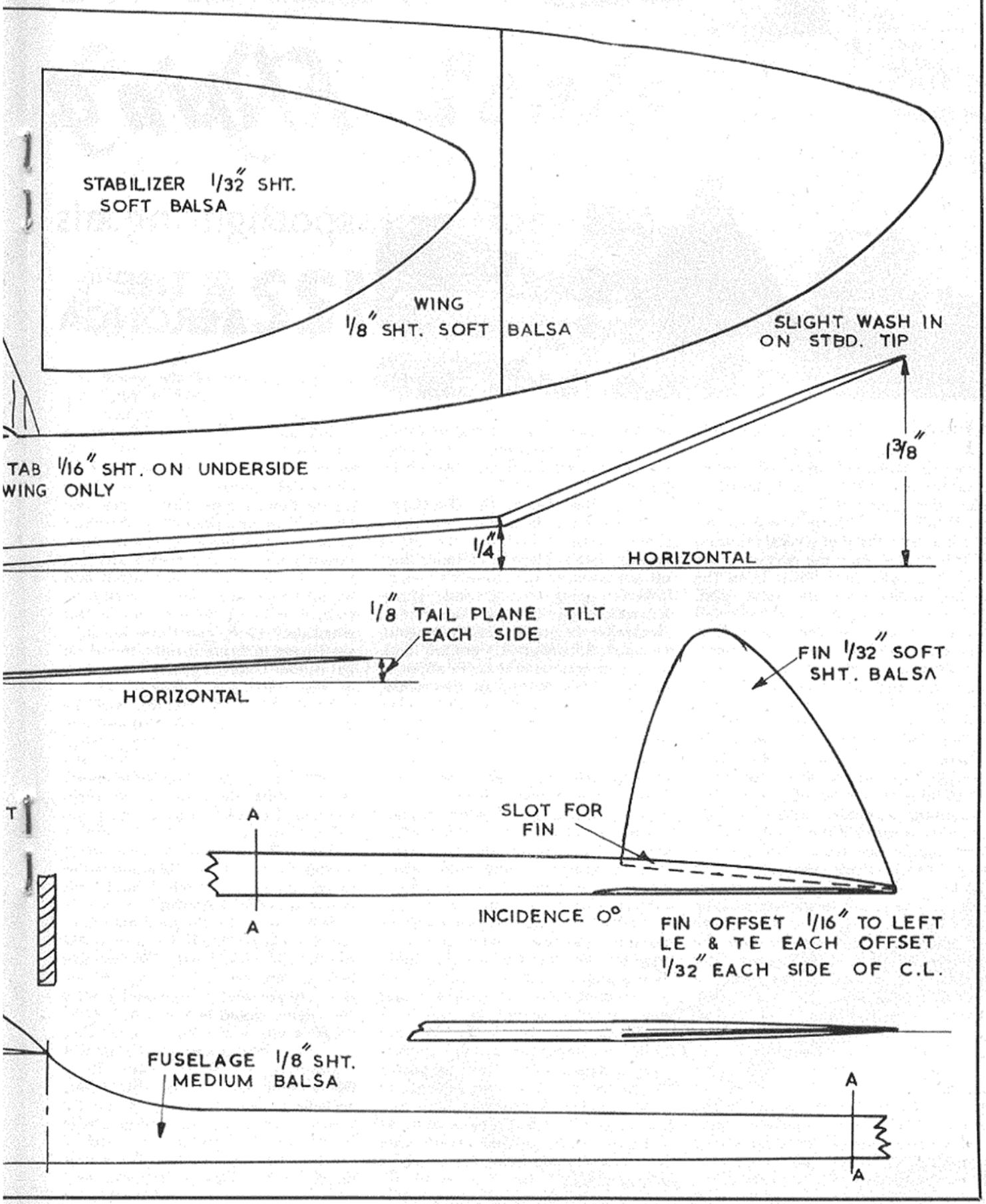
Zero-zero settings were used, but the best trim was found to be with added modelling clay (plasticine) and negative incidence on the tailplane. Throw the model with right bank in the usual way, with the first finger behind the starboard wing (if you are right-handed). Slight wash-in on the starboard tip produces the required roll out into a left glide; final adjustments must, of course, suit the hall.

A 1/32 in. square bamboo leading edge could be used with advantage for indoor work. This should be added to the wing outline before carving.

Obtain the lightest possible quarter-grain 1/32 in. sheet for the fin and tailplane. *Do not over-sand*, as flexing causes inconsistency. The nose-weight can be of lead inset into the fuselage to reduce drag, but plasticine breaks any falls from walls, etc., for indoor work.

Finally, tennis shoes, or similar, give best (floor adhesion) results for launching.




STABILIZER 1/32" SHT.
SOFT BALSA
WING
1/8" SHT. SOFT BALSA
SLIGHT WASH IN
ON STBD. TIP
1 3/8"
TAB 1/16" SHT. ON UNDERSIDE
WING ONLY
1/4"
HORIZONTAL
1/8" TAIL PLANE TILT
EACH SIDE
HORIZONTAL
FIN 1/32" SOFT
SHT. BALSA
SLOT FOR
FIN
A
A
INCIDENCE 0°
FIN OFFSET 1/16" TO LEFT
LE & TE EACH OFFSET
1/32" EACH SIDE OF C.L.
FUSELAGE 1/8" SHT.
MEDIUM BALSA
A
A

ERIC *Flying*

spotlighting his THE AERONCA

THE A.M. 35 bursts into life, turning the ten by six nylon prop in hunting surges of power. I do not adjust the controls, knowing that the engine will come through with full power when it warms up. With a radio flight of several minutes, it is useless to tune the revs until the engine is fully hot. Switch on the radio, underneath the nose, and, holding the *Grasshopper* by the tail wheel, switch on the transmitter. Left and right rudder answer promptly; there is no chatter on neutral. I have run out of excuses so there is nothing else for it—this is it, my first flight.

The *Grasshopper* is tough, very tough, and it is true and free from warps, for twenty years of scale modelling have taught me that trimming a model with marginal stability is easier if the flying surfaces are straight and true. The c.g. has been fixed where experience tells me it should be, taking into account the wing and tail incidence, and the thrustline in relation to the centre of resistance. Test glides into the traditional long grass have not confirmed or denied my trim—a 3½ lb. model with a 16 oz. wing loading does not offer much indication of its ability, especially with a scale tail. I have done all I can, but sooner or later it has got to be flown.

As I let go I look on the bright side. The model is covered with nylon, so none of those annoying tears and scratches runways love to make in models will appear. The radio has been transferred from a model where it was working O.K., so I should get some control over the flight, and I am an experienced "pilot."

Down the runway the *Grasshopper* rolls, fast—too fast, and my heart slips! Wish I had put the 25 in instead, but it blew its cylinder liner off last week, so it's Hobson's choice.

We're going out of wind; I trip left rudder on: the tail skids round. Neutralise before it gets into wind, or we shall have an A.1 ground loop. Tail is high now, and we're about to unstick. It's bumpy in that wind, nasty sort of January weather. We hit a temporary lull in the head-wind, and don't lift quite as soon as expected. Ahead looms a large tuft of grass which springs between the joins in the tarmac. Right rudder, and we swing out of wind to starboard. Hold hard left rudder before the wind gets under the port wing. The *Grasshopper* runs into wind, gives a last bump with the undercart, and we are airborne.

The wheels stop dragging on the ground, and the model points its nose for the clouds in a tight climb. Is it going to stall? So this is what a test pilot feels like with a brand new, million pound aircraft. I don't care for the thrill. We are quite safe, however; my trim appears to be reasonably right, and the power of the 35 is more than enough to keep it going skywards without any flattening off. I feel a little smug as I think of the advice about scale models and radio being too much at one go, about the "it won't fly with that small tail, old man." But we are not out of the wood yet. "You haven't landed it yet," my pessimistic inner mind tells me.

The aircraft is now building up a left turn. Not enough side thrust, or have I got a warp in after all? I apply right rudder. Thank goodness for the Bonner-type selective actuator which gives me a positive right rudder at once. The plane lessens its turn, but it's not coming round any too fast. It's got into a side wind, and we all know they take the devil of a rudder to bring them round in this situation. Only one thing for it, I shall have to bring it right round on left rudder before it gets too far away, as it is drifting pretty fast.

A touch of left rudder, and an immediate 45 deg. bank. No shortage of left turn! I pull out after a 270 deg. turn facing back to base, with the wind drift under the opposite (port) wing. With the natural left turn, the model crabs its way back to me. At the first sign of turn into wind I rudder right, keeping the nose about 20 deg. out of wind. This move has saved long "hold-ons" and run down actuator batteries.

Heading now in the right direction, the *Grasshopper* plods its way back, but in the high head-wind we are getting higher and higher rather than nearer and nearer, and I wish the engine would fade a little. After what seems hours the engine dies with the model about 400 ft. up and about 100 yards down wind. Ideal for a spot landing in this wind. Jockeying into position, it finally comes in over the transmitter about 30 ft. up. Left rudder to centre it up on the runway for the touch down, and, calamity, it sticks on! The model plunges in a tight turn

FEARNLEY on Radio Scale

latest scale design for M.A.

GRASSHOPPER

on to the runway, and I know my nylon and tough construction were sound design.

Examination of the model reveals no damage. Check the radio. Perfect. Did I get a stuck rudder (for it won't stick now) or was I out of wind with too much left, too near the ground? Everything is working, so we have another go. Take off again, confidently this time. The model responds wonderfully. I have adjusted the rudder to give more right rudder and less left. I take off after dodging a crowd in a 45 deg. bank, straighten out, and we are away. The model is really pleasant to handle. Leave it alone, and it behaves. Rudder it, and it responds at once without the jerky yaw one usually associates with a rudder-only kite. Which is not surprising, as it is an exact model of a very pleasant aircraft, specially designed to be thrown around in the air.

The engine stops with the plane well up, and I prepare for a long glide in again. A touch of left rudder, and down it comes in an almost vertical spin—400, 300, 200 feet, and I am waggling the control stick like mad to try and clear the stuck rudder. At 150 ft. it suddenly jumps out of its spiral into a flat steady glide. Thank goodness I had some space under me! I let the model glide its own way down, saving the rudder until the *Grasshopper* is about 20 ft. up. It answers perfectly. I decide this is my lucky day, and retire to discover the strange fault.

A thorough check on the radio tells me that all is O.K. and I transfer my attention to the actuator. A 100 runs on the rudder and it works every time. A new test—I blow hard on the rudder, signalling "on." It stops on after I neutralise. Stop blowing, and it flicks back to neutral. So it isn't powerful enough for the slipstream. While the engine was going the vibration kept it going, but on the glide it stuck, well twice anyway. Could have been once too many.

The rubber is a little weak. Owing to bad weather, the model has been wound up ready to fly for several weeks, and perished. Replace it with a new loop of lubricated eighth, and it stands the blowing test. A mistake like that might have cost me my model, so I learn another lesson in the business of check, and double check.

This isn't my first radio scale model. I think it's my best, but it certainly won't be the last. I am sold, absolutely, on this specialised branch of modelling.

Build a scale model, and it looks grand in the air, but it lacks inherent stability, and down wind landings are hard on them. They usually fly off down wind before they can be appreciated anyway. And one speck on the horizon is very much like another.

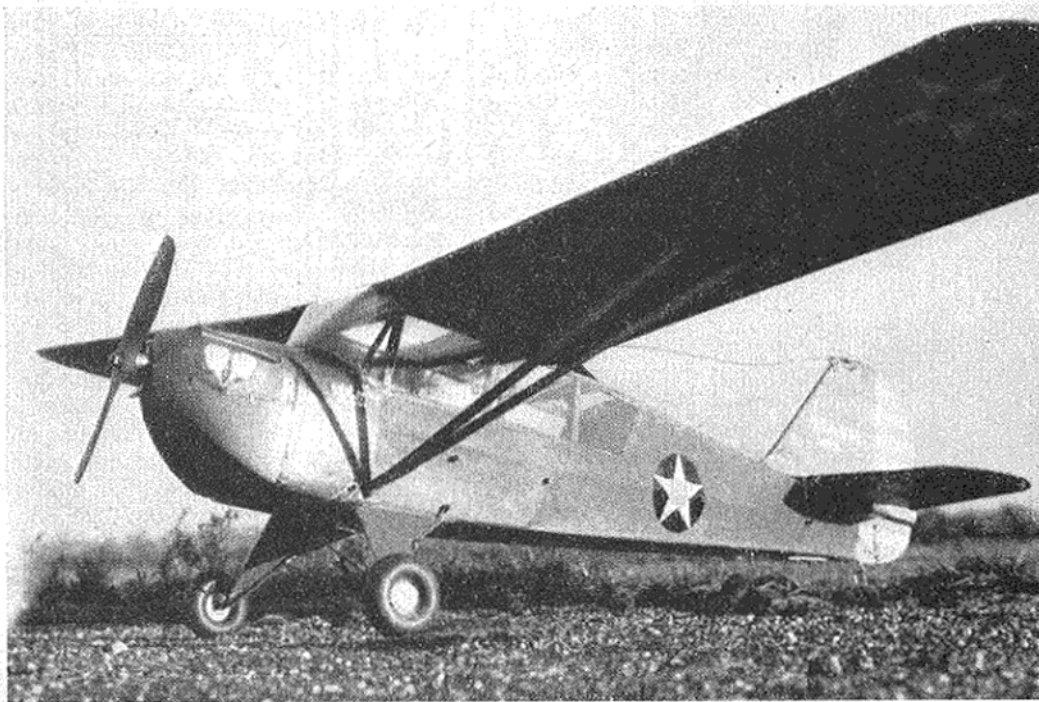
Build a radio job, and it looks like a freak, but gives "piloting" pleasure. But combine the two! It's a logical thing that a model of an aircraft which has controls will behave well in the air. Manufacturers spend years adjusting flying surfaces for maximum response, and maximum recovery, the very qualities we need in a radio job.

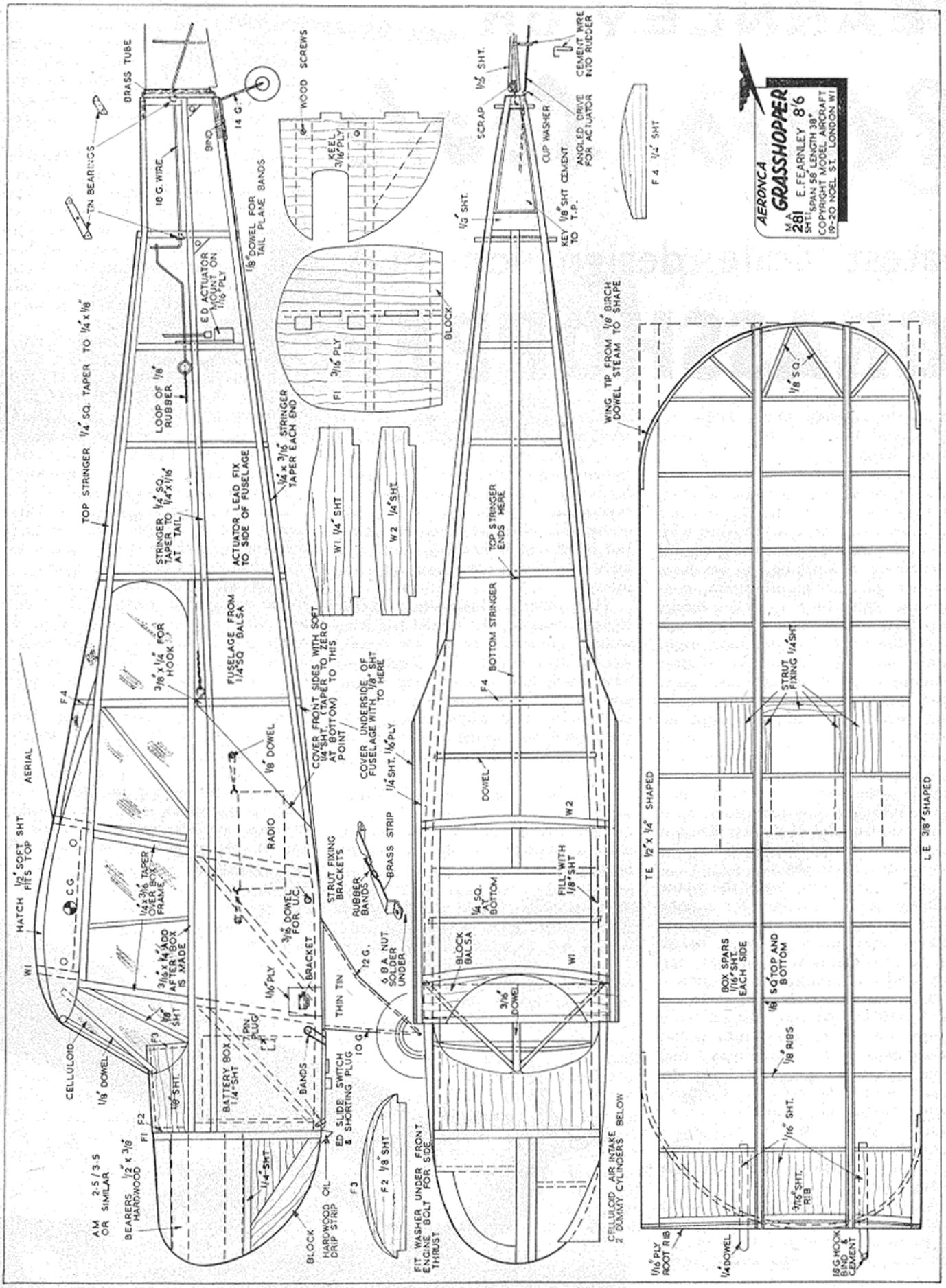
The reason why so many radio jobs in Britain look like oil-soaked soap boxes with wings on I put down to two reasons. Firstly, few fliers are interested in the aircraft side at all. Most of them are really radio hams at heart, and find the model a bit of a nuisance. Secondly, the amount of time required to maintain a radio ship in going order means not so much time left for building, and there is a tendency to make last year's model do again.

If, on the other hand, cup hunting is the thing that matters, then the best way to win a comp. with a radio job is to stick to the same model and fly, fly, fly it until you know every move the model will make under all conditions. It doesn't lead to smart models, but it wins cups. So we don't get smart models winning very often.

I would like to see a concours marks system added to radio contests, as per super scale. We would then see more aeromodellers entering, and a better general standard of

(*Continued from page* 165)





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

building all round. This is more important than inverted flying and such, as a national contest is the shop window of aeromodelling, and our "stock" is a little soiled at the moment!

The whole idea of radio flying is following the well trodden road of starting with the idea of producing a realistic flight that would please, and ending with a functional monster that bears little resemblance to an aircraft, designed to perform aerobatics impossible with a real craft.

This all too well-known pattern has appeared in the past in control liners, where stunt and combat models are utterly ridiculous in appearance, bowing to the god of the rule book and the tin trophy rather than to the rule of sound proportions and beauty of line. I had hopes of radio being a new outlook, where, as we fly the model, we can look to realism for winning marks; however, I know it will not be. In a few years we shall be flying models with little relationship to an aircraft. But will it be as satisfying in the long run as a really good take off, and a realistic spot landing?

Fortunately I am not under the spell of cup hunting (I grew up some time ago!) so I am able to devote my energies to simulating real flight—the cost of which is too great for me. In actual fact I get as much, if not more, pleasure in building the model, and a functional job can be knocked together far too easily to satisfy me. To answer the obvious question, why then *Beep-Jeep*? I had been having a good deal of trouble with my radio sets, mainly because the manufacturers were unable to furnish proper installation details with their products, and I was falling into pits which I shouldn't have, so I decided that it was too much to manage a prototype scale job and radio at the same time. I therefore built *Beep-Jeep* as an interim design to de-bug the radio, which I did.

The advent of the Transitrol set sparked off a desire to go back to the scale job, and as I was interested in a low wing model, I built a small, highly powered, low wing semi-scale job as a test bed. Having one of the first sets, I got three months of teething trouble, and many crashes. E.D.'s were very helpful, and modified the set extensively. When the set finally emerged I got myself a very potent model that would handle like a *Spitfire*, and I was ready for a new scale project with a lightweight set, capable of excellent range, and not tricky on the tuning. Caution decided me against the scale namesake of the above, though I will be starting this model next, I have now decided! However, I liked the cheeky look of the *Grasshopper*, and it seemed to have the qualifications necessary for pleasant flying and a simple shape.

If you want to build the *Grasshopper*, plans are available from MODEL AIRCRAFT, and a reduced scale drawing appears on the opposite page.

here are some points to note when building your "Grasshopper"

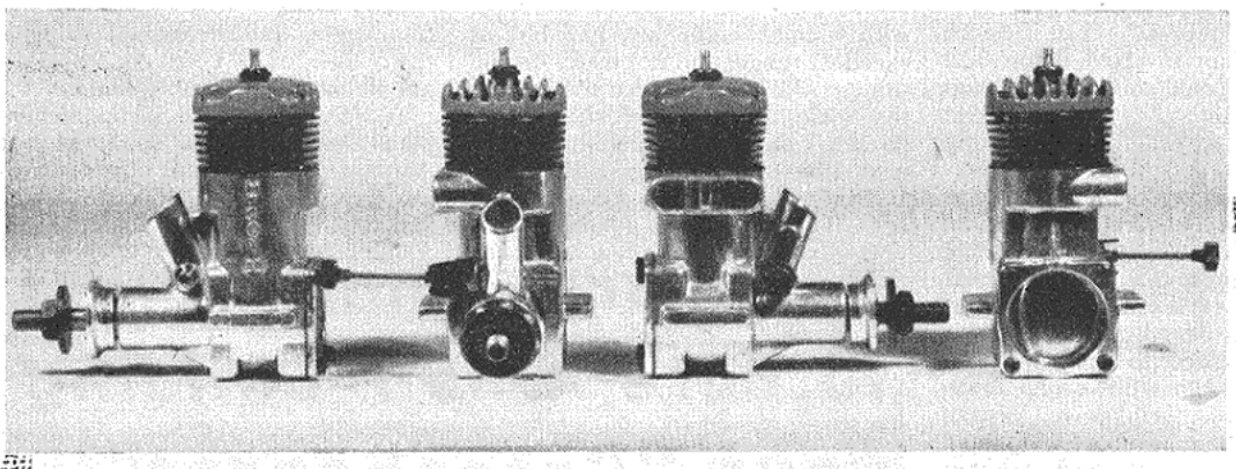
THIS model is an expert's job, if you are going to fly it by radio, and some previous experience is advisable, although as a normal F/F scale model with a 1.5 c.c.-2.5 c.c. engine, it should prove very pleasant. As a radio job it is suitable only for lightweight gear, the Transitrol set being ideal. To get stability with this set, I would advise a slight change in the h.t. set-up. One 22½ volt battery serves the transistor, out of which is drawn the full 4 mA to operate the relay. This is too much for the small B 122, and its life is so short that retuning of the set is necessary after almost every flight. I find it an advantage to double up this battery in parallel (that is: pos. lead goes to both pos. connections, neg. also to both neg.).

The second 22½ volt battery is there to provide the 45 volts in series with the other one to feed the valve. As the current from this is only about 0.3 mA it will last almost for ever, so there is no need to double up this one. In effect, then, we have three B 122s, two of which are grouped together to supply one 22½ volts and the other works on its own (detailed on plans). As far as the other batteries are concerned, the total weight with switches, wire, plugs, set and batteries is limited to 1 lb., so we must use pen cells for the actuator. I find it advisable to use 6 volts with the standard E.D. type to allow enough spring tension to overcome chatter. So four cells are required. The actuator is modified to Bonner type by bending one arm out of line, and extending the top pawl. A delaying gear is added consisting of a "push and go" gear train taken from a toy. The flywheel is removed, and a solder weight added.

The l.t. battery is a U2 cell which will last a good while, as the drain on the XFG valve is small. I do not advise overworking this on a soft valve set, however, so throw it away after a day's flying—it is a poor economy to risk a crash for a few coppers.

A really important point is to be sure to suppress the relay points. Last year I was using 6 volt ex-Government miniature accumulators, and after three months of fluttering rudder at range I found that owing to the terrific amps. these accs. can

(*Continued on page* 176)



Mainly GLO-PLUG

by PETER CHINN

IN the past dozen years, since Dick McCoy's original 10 c.c. racing Super-60, something over 20 different engines under the McCoy name have been produced. Several of these, from the most successful of all, the thundering Series 20 Sixty, downwards, have been featured in MODEL AIRCRAFT in the past. Hitherto, however, the "Red-Head" label has been reserved for the disc-valve, ball-bearing racing motors that have made the American McCoy famous. Now, with these models discontinued, the Testor Corporation, now responsible for the marketing of McCoy engines, has revived the "Red-Head" name for a new series of moderately priced shaft-valve engines. The first of these, the Red-Head Stunt-35, was announced just over a year ago and the second, the Red-Head Stunt-29, of identical construction, followed just before Christmas.

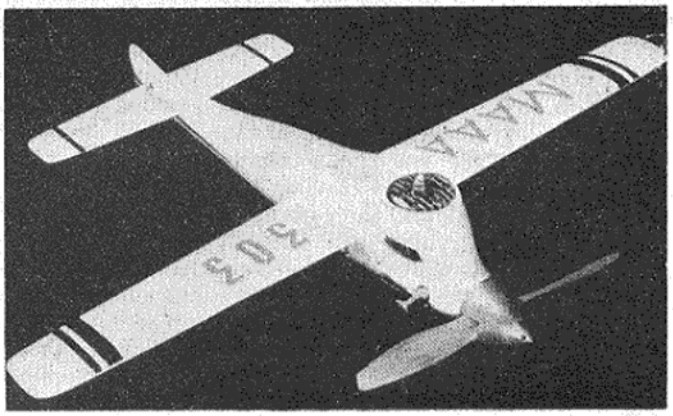
The McCoy enthusiasts will be asking a lot of questions, so we shall try to anticipate a few of them and provide brief answers at the same time.

Does this new design in any way resemble the old Red-Heads? Only very slightly. The Red-Head Stunt 29/35 model is an entirely new engine throughout and none of its components can be interchanged with those of the disc-valve Red-Heads. *Can the Stunt-29 be considered as a legitimate replacement for the racing Red-Head 29?* For speed work, no. For practically all other types of installation, yes. *Do these engines perform well?* Definitely yes. *Are they well designed?* Certainly. *Are they good value?* Outstandingly so.

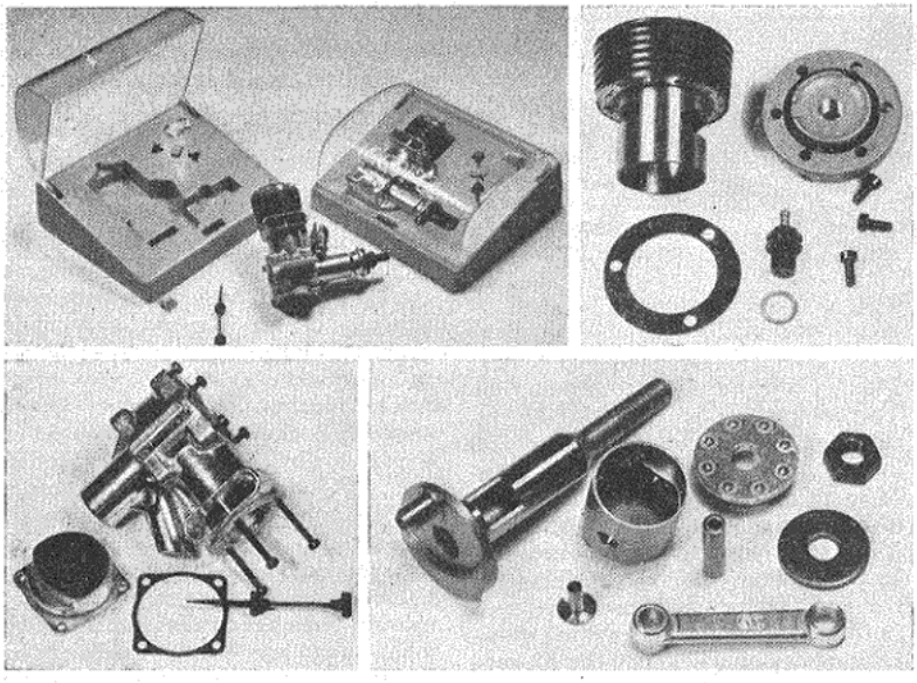
These new Red-Heads are, in fact, just what is wanted by the majority of today's modellers, for the more popular types of large models. We have to face the fact that the market has changed somewhat since the heyday of the racing Red-Heads. Few manufacturers can afford, nowadays, to go on making an expensive engine strictly for one type of model and in the knowledge that it will be equalled, in most respects, by other, cheaper, engines, for all other types of application.

In using the Red-Head name for their new shaft-valve McCoys, Testors may have run the risk of incurring the wrath of dyed-in-the-wool McCoy fans, but we are not at all certain that we can be in complete sympathy with such an attitude. The new Red-Heads may not look much like their distinguished predecessors, but they are still McCoys. In some indefinable manner, they still seem to retain a suggestion of McCoy in the way they run. They offer the high standards of performance that we have come to expect of every new McCoy and, for sheer "power-per-dollar," the 35 comes remarkably close to the Series 20 Red-Head 60 which, as finally produced, gave something like 1.5 b.h.p. for $22.50.

McCoy engines have never been expensive, but the new Red-Heads, selling for $10.00 in the U.S.—over 30 per cent. less than most other



Australian 2.5 c.c. record holder by Tony Farnan and Graham Rice. Built for the Nationals event, it subsequently returned a creditable 109.5 m.p.h. on a stock O.S. Max-15 and 5⅞ x 9 prop. Total weight 10 oz., of which 3½ oz. was accounted for by fibreglass pan, but this has been reduced to 1½ oz. in an improved version.



Layout of the Red-Head Stunt 29/35 conforms to current trends in this popular class. Note the attractive plastic box. Instruction sheet, etc., is carried in a tray underneath.

engines of the same class—are really astonishingly good value. Naturally, opportunities have been taken to economise here and there, but, unlike some attempts to produce a cheap engine, where construction is simplified to the point of crudity, nothing has been skimped. The crankshaft, for instance, is hardened and bearing fits and alignment were very good on four examples examined. The success of any production engine must inevitably be tied up with cost. Today's clever designer is not the chap who produces a fantastically advanced motor that will cost the earth to make. He is the man who evolves a design that eliminates, or reduces the cost of, as many production operations as possible, and then allocates the spare cash to maintaining or improving the essential features contributing to performance and durability.

In general, the layout of this new McCoy follows the present trend of 29/35 design. A pressure diecast crankcase unit embodying the main bearing (bushed), beam mounting lugs, transfer passage and exhaust duct, is used. The crankshaft, counterbalanced for all rotary mass, has a $\frac{7}{16}$in. dia. journal and a 7/32-in. dia. tubular crankpin. A $\frac{3}{8}$-in. square valve port opens into a $\frac{5}{16}$-in. dia. intake passage. The cylinder is machined in one piece with integral fins and has radiused ports. The cylinder head is enamelled red and is held down with six Phillips screws, three of which pass through into the main casting to secure the entire cylinder assembly.

The piston is distinctive in its use of a slightly domed crown in addition to the usual baffle. Its skirt is relieved below the gudgeon-pin centre. The $\frac{3}{16}$-in. dia. gudgeon-pin is tubular, fully floating and fitted with brass eyelet endpads. A drop-forged alloy connecting rod is used and the entire piston and rod assembly is one of the lightest yet encountered in this class, the 35 assembly weighing fractionally under $\frac{1}{2}$ oz.

Although the 29 is identical in appearance and external dimensions to the 35, few of the components are interchangeable, since both bore and stroke are altered (0.775 × 0.740 in. for the 35 and 0.732 × 0.712 in. for the 29) and the dimensions of the piston, cylinder, crankshaft and crankcase are changed accordingly. The connecting-rod, however, is common to both engines, and one result of this is that the exhaust and transfer periods are slightly reduced on the 29, while introducing a short (approx. 30 deg.) period of sub-piston supplementary air induction at the top of the stroke. Checked weight of the Red-Head 35 was 7.2 oz. and that of the 29 just a fraction more.

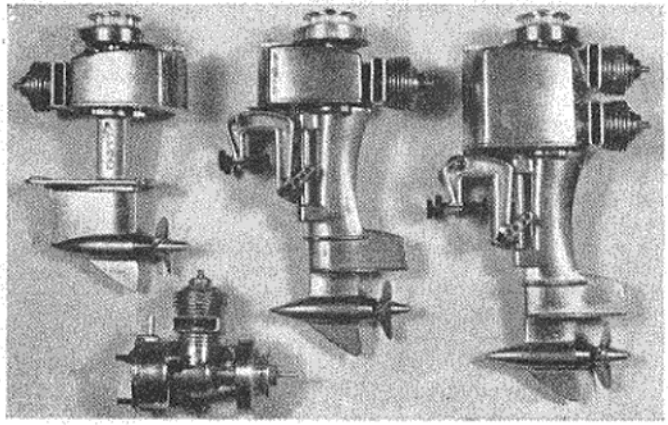
The test performance of this new Red-Head design will be the subject of a further report in the near future.

Allyn "Fury" Engines for U.K.

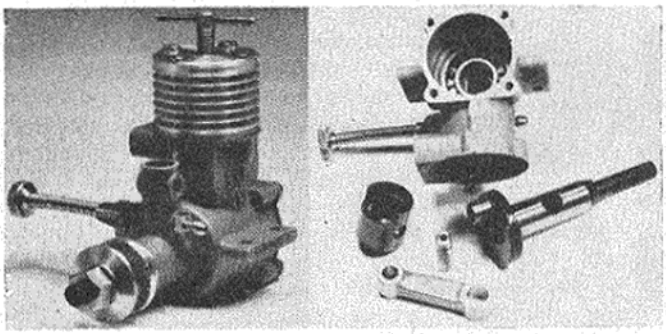
We understand that a limited number of American model engines will shortly be available in the United Kingdom. Among them will be the K & B Allyn "Fury" marine models, and recently we were able to inspect the range to be offered.

The full Allyn "Fury" marine range comprises an almost bewildering array of small air-cooled motors—undoubtedly the widest selection of small model i.c. boat engines currently offered. The full range consists of eight types as follows: "Mar-Fury" 049 Inboard (single-cylinder, 0.8 c.c.); "Mar-Fury" Twin 0.12 Inboard (twin cylinder 2 c.c.); "Sea-Fury" Outboard 049 (single cylinder outboard 0.8 c.c.); "Sea-Fury" Outboard 060 (ditto 1 c.c.). "Sea-Fury" Inboard 049 (similar to Outboard complete with vertical drive to prop, but with fixed lower housing and a floor-plate allowing inboard installation); "Sea-Fury" Twin 0.12 Outboard (2 c.c.), "Sea-Fury" Twin 0.15 Outboard (2.5 c.c.) and "Sea-Fury" 0.15 Twin Inboard (floor-plate version of the Twin Outboard).

The "Sea-Fury" Inboards are an Allyn innovation and offer by far



Part of the extensive range of Allyn Fury small marine engines to be imported from the U.S. Note the 2.5 c.c. twin-cylinder outboard and the unique vertical inboard based on the outboard design with self-contained bevel-drive shaft and prop assembly.



Latest Enya 15-D has new chrome-moly 10 mm. shaft with ¼ in. end, superior quality ball bearing and con-rod bronze-bushed both ends.

the simplest form of inboard installation yet devised, since they eliminate the need for separate prop shafts, I-brackets, couplings, etc. The Outboards are noted for their scalish appearance and have undergone one or two minor improvements since the original "Sea-Fury" Outboard was described in this column nearly four years ago. It may be recalled that, at that time, we had difficulty in preventing the whole unit from swivelling when starting the motor. These engines are now fitted with a spring steel serrated quadrant under the fuel tank, engaging a vertical washer on the swivel bracket. This effectively holds any pre-set turn adjustment against the pull of the starter cord.

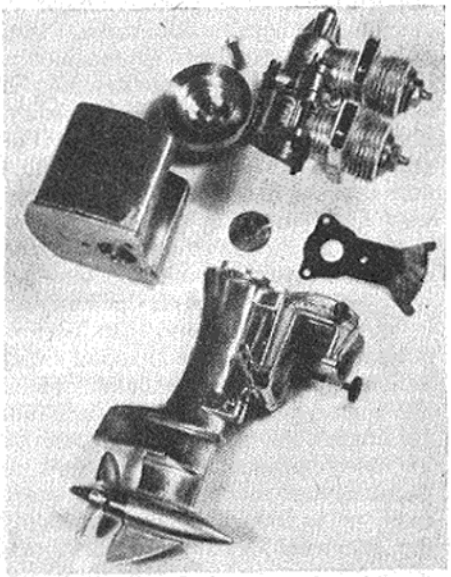
The Allyn "Fury" range, including the "Sky-Fury" aircraft models, follows a common design layout based on crankshaft valve induction and a reverse-flow scavenged cylinder. The two-cylinder versions are all in line, alternate firing twins with induction via a short coupling shaft between the two sealed crankcases. All are very compact, light in weight and well made.

* * *

From Japan we learn that an improved version of the World F/F Championship-winning 2.5 c.c. O.S. Max 15 is just going into production. To be known as the Max-II 15, this has a new main casting and follows the fashion of the latest Max 29 and 35 in having a revised induction system. The promised Max 15-D contest diesel is not yet in production, due to the fact that the O.S. factory is heavily engaged in filling orders for the existing glow-plug models, particularly the Max-35 and the new "Pet" 099. The special R/C version of the Max-35 with its coupled butterfly throttle and exhaust silencer/restrictor should, however, be ready in a month or two.

Also from Japan we have recently sampled the latest Enya 15-D diesel—whereby hangs a tale. When reporting on the original model Enya 15-D for an American contemporary, we had struggled to find something to complain about—on the theory that no engine is so good that it is beyond criticism. Eventually, but without much conviction, we decided that the 5 mm. threaded shaft end was a possible weak point on an otherwise robust engine. . . . When the Enya Company heard about this, they took it seriously. . . . Within a few weeks a new type of shaft, in 85-ton chromium molybdenum steel and with a 6 mm. end, had been put into production. This shaft has been fitted to all production models since the end of last year and the current model now incorporates one or two other minor changes. These include a superior type of ball-bearing, a con-rod bronze-bushed at both ends (instead of the big-end only) and slightly enlarged gudgeon-pin bosses in the piston.

The entire Enya range (seven engines) is now being distributed in the U.S. by International Models Inc., of New York, who, older readers may remember, manufactured the 9 c.c. Imp G.9 engine of pre-war days. So far, the demand has been mainly for the 29-3 and 35 models, each accounting for approximately 25 per cent., followed by the 60 (15 per cent.) the 19-3, and the 15-D (10 per cent. each) and the 15-1B and 09 (7½ per cent.).



Allyn's delightful little 2.5 c.c. outboard, showing the twin-cylinder power head, realistic lower assembly, large fuel tank and turn adjustment quadrant.

10—SECOND TIPS

- Using a razor blade to trim tissue covering, wet the blade by dipping in water when it starts to "drag." Shake off surplus water before using again, otherwise the tissue may be weakened.
- Alternative to trimming tissue with a razor blade, try sanding over tissue pulled down over wing tips, trailing edges. With care, this gives a wonderfully neat "cut."
- Tissue covering on fuselage should be laid with the grain running across the shortest direction (i.e., vertical). Then the length of any split will be minimised.
- Dope is better than cement for sticking on canopies, celluloid window panels, etc. Less risk of smearing the transparency this way.
- Before knotting rubber, lick or wet the ends. This will reduce the danger of tearing the rubber strip when pulling the knot tight.
- Dural tube is a better rear peg than hardwood. It is much stronger and never likely to fail. The next best material is really tough bamboo. Dowelling comes a poor third.
- Longerons and spars should be lightly sanded before assembling. This will smooth out and remove small irregularities and possible weak spots.
- Brittle sheet which has to be cut into intricate shapes can be strengthened by doping first, one coat each side. Alternatively dampening brittle sheet often makes it easier to cut. But let the parts dry thoroughly before cementing in place.

American Column

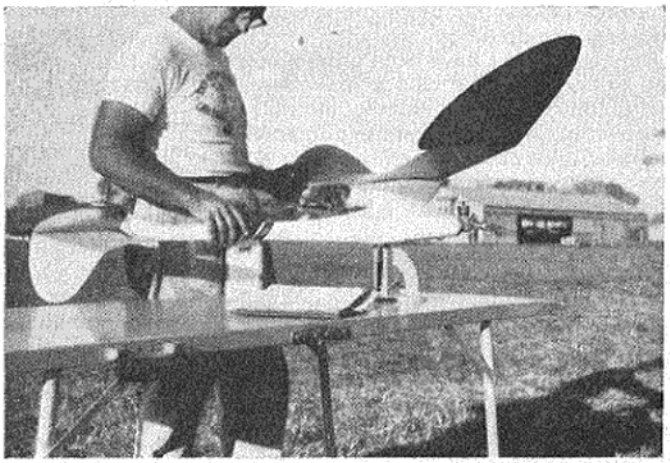
READY MADE, engine powered models are now "big business" in the American model industry. Call them toys if you like. The manufacturers won't argue with you, because these models are, in fact, intended specifically for the toy market. But if you think that it is *infra dig.* for the model industry to make toys, it is worth remembering that, indirectly, the model movement profits by the model manufacturer's infiltration into the toy market.

Today, good quality small model engines are being made to sell at prices as low as $4—about half the price of the cheapest engines made before the war, despite the fact that the cost of most other manufactured goods has risen 200 per cent. or more. This has been made possible only because the manufacturer has invested vast sums of money in elaborate automatic machine-tools which enable him to turn out a hundred engines in the time taken to build one engine by pre-war methods. Such an investment can never be justified solely on the sales of engines to model builders and has only been made possible by diverting a large part of the total production to powering various types of ready-built model aeroplanes, boats and cars, which find a ready demand in the toy market. In our opinion, this is, taken all round, a good thing. Not only does it keep engine prices down, it also helps to "catch 'em young" and arouse interest in pukka models.

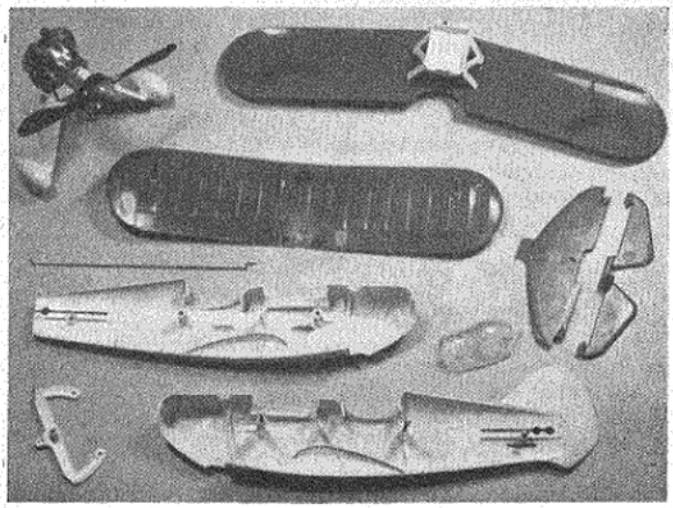
Several engine manufacturers are, themselves, now making "ready-mades"—usually of plastic construction. One of the most successful in this field is the L. M. Cox Manufacturing Company, whose famous Thermal-Hopper engine is a classic example of ingenious design and precision engineering in a volume-production engine. Recently we obtained, just before its release on the American market, an example of the latest Cox ready-built model, a tiny all-plastic C/L model based on the Pitts-Special aerobatic biplane *Little Stinker*. This model was designed around the new Cox Pee-Wee 0.3 c.c. motor which was described in MODEL AIRCRAFT a few months ago.

This type of model is unfamiliar in Britain and it is interesting to see how the various moulded components are keyed and slotted together. The model breaks down into ten separate plastic components, merely on removal of three screws in the fuselage. No doubt it would have been simpler to cement the parts together, but their system allows replacement of any component (a full spares service being available) in the event of damage. The engine is screwed to a plastic bulkhead or firewall and also clamps the undercarriage in position.

The model has a span of 10 in. and is 9¼ in. long. It weighs just over 3½ oz. complete with Pee-Wee engine and is attractively finished in red and white. A simple coil spring starting device is fitted which engages the 4 in. plastic prop. Recommended line length is 12 to 18 ft.



Second place winner in the F.A.I. finals, Don Wessel's beautifully built Oliver-Tiger powered model. Silk covered surfaces are wax polished.



Clever construction of the Cox Pitts-Spl. Ten interlocking plastic components are held together by only three screws.

* * *

There is evidence of a slowly but steadily increasing interest in model engine "museums." Latest bulletin from Bruce Underwood, doyen of American engine collectors, shows that there are now 17 collectors registered in the Underwood group—15 in the United States and two in Great Britain. Six members, Steven Ditta, Douglas Wendt, Leon Tefft, Donald Belote, Bruce Underwood and M.A.'s Peter Chinn all have collections running well into three figures.

Understandably, the emphasis is on the older types of engine and listed in Underwood's own collection are over a hundred engines more than ten years old, including some 40 pre-war types. Lesser known makes that exhibit interesting design features and foreign engines of all types are also in demand. Some collectors specialise and concentrate on, for example, spark-ignition engines only, or on collecting engines from as many different countries as possible. The names of many long-forgotten makes, as well as those of fond memory, appear in the collectors' lists.

* * *

Ken Willard, well known for his flying boats and who, last July, flew a Torpedo-15 powered R/C model (not a flying boat this time) across the 30 miles of water separating Catalina Island from the coast of California, has what must be the world's smallest R/C model to date. Called the *Astro-Piglet* (presumably after Bonner's *Astra-Hog*), it is a low-wing model, spans less than 24 in. and weighs only 9 oz. It is powered by a Cox Pee-Wee 0.3 c.c. motor, and a Deltron receiver is used, operating rudder with coupled "kick-up" elevator.

* * *

In 1955, the Federal Communications Commission issued 5,400 operators' permits to R/C modellers in the U.S. In

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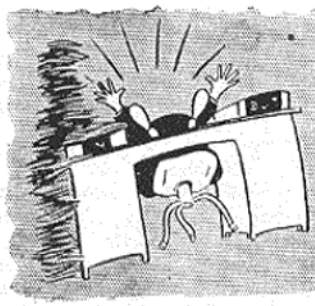


LETTERS

One man's poison . . .

DEAR SIR,—May I express the hope that the *Scimitar* (M.A., January) will be the first of numerous "American-style" stunt designs to be published, that will fly the new S.M.A.E. stunt schedule. We have recently tried the schedule with the "old style" stunters (250 sq. in., 3.5 c.c. or good 2.5, 18-20 oz.) and find that they simply can't take it, the airspeed being too high and the turning radius too large for the manoeuvres required.

Up to now we have been using motors of, at the most, 3.5 c.c., mainly diesels, with one or two elderly glow 19s thrown in, and are wondering about the suitability or otherwise of the Frog 500, having regard to Dave Platt's remarks on the need for a two speed effect in flight.

In closing, might I pen an appreciation of MODEL AIRCRAFT and also one criticism. I have been a regular reader of M.A. for eight years now and have found it excellent in every way, especially in its coverage of engines the world over. However, at the rate the precious pages are being gobbled up by articles and plans of full-size aircraft, there will soon be absolutely no point in my buying the magazine, for it will no longer deal with MODEL aircraft (or should I say miniature flying machines?) but will have gone the way of many of the American mags. and devote 90 per cent. of its space to full-size aircraft. I am aware that there are some people who build solids and plastics but must they appropriate just over 14 per cent. of the text (20 pages out of a total of 139 in four recent issues). It may not sound a lot, 14 per cent., but it is the equivalent of very nearly two complete issues a year, which have no interest for anyone except the above-mentioned types. A couple of pages (at the very most) a month would just about be tolerable but when no less than SIX pages are devoted to one full size aircraft it is beyond a joke.

I am pretty certain that the number of true aeromodellers (especially when you include the vast number of Sunday afternoon clubless "fly for fun" boys) greatly exceeds the number of people building solids and plastics (many of whom never buy an aeromodelling magazine or see a stick of that funny balsa wood) and should be catered for accordingly.

Please do not misunderstand the above rather bitter tirade. I am not knocking the flying scale boys (not even Eric Fearnley) but these folk who stick some pieces of precision moulded plastic together, place the result on top of the TV set and call themselves aeromodellers "get my goat."

Yours faithfully,

Hampton, Middlesex. M. ROLLS.

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.

. . . is another man's meat!

DEAR SIR,—I was overjoyed to see for two consecutive months multi-engined "big-uns," in the form of the *Mosquito* and the *Beaufighter* features in M.A. These are a change after seeing, month upon month, C/L team-racers and combat models.

At my age I am not at all enthralled by supersonic fighters, Sputniks, or any other kind of space travel. But what does interest me are aircraft roughly of the period from 1914 until 1945; furthermore, I like a few post-war models such as the *Cessna* 310.

In MODEL AIRCRAFT we have had a number of biplanes, dozens of in-between-the-wars' aircraft, and scores of unrealistic C/L team-racers and combat models. Maybe it is only now that your magazine "sees the light" in the form of super scale models; if so, then perhaps we can have more super scale bombers, such as the *Halifax*, the *Lancaster*, the *Junkers* and the *Dorniers*, etc., which have an elegance all their own.

In the April, 1957 edition, a solid model of the Short *Stirling* appeared but such large aircraft in solid form look more like children's toys than true scale models.

One last point, many thanks for the article on "How to achieve that life size look"—this, in my opinion, is one of the best features of its type yet published.

Yours faithfully,

London, N.W.6. PETER JAY.

More stunt events—please!

DEAR SIR,—Having read my March issue of MODEL AIRCRAFT through, I, together with my many keen aerobatic C/L friends all over southern England, am surprised and dismayed to find that despite the growing revival of stunt flying, and the long overdue adoption of the wonderful new S.M.A.E. aerobatic rules, there are still very few club and rally organisers who have included an aerobatic event in their programmes.

I note that many have included combat and I shall certainly be among those to "have a go," and I welcome this as a promising sign, but it is still a great pity for those who like to visit ALL the competitions to have to be content to just fly off a few cans of fuel in practice all day, whilst their more fortunate F/F clubmates have a good crack at one another [*sic*].

It would be a most welcome gesture

Continued on page 173

Each month we give away FREE an X-acto Knife Chest to the writer of the most interesting or controversial letter. This month's winner, D. Williamson, writes:—

DEAR SIR,—Never before has the public had so much opportunity as exists today to ridicule the aeromodeller as a builder of "toy aeroplanes"! The genuine enthusiast is being submerged beneath a sea of trashy, so-called beginner's kits (how many clubs would advise their juniors to build from a modern kit?), plastic models and "toy" engines.

I am aware that it is impossible to stop the get-rich-quick attitude of the manufacturers of such articles, but the model magazines could do a great deal by (a) refusing to publish advertisements pertaining to such products (many are definitely misleading); (b) setting an example by publishing only plans of model aircraft, and leaving the Sputniks to the Russians.

The space thus saved should be devoted to increasing the prestige of our hobby by allowing the serious aeromodeller to contribute articles and by allowing the clubs more scope for their reports.

Yours faithfully,

Beckenham, Kent. DAVID A. WILLIAMSON. (Springpark M.A.C.).

Although we do not agree with reader Williamson, we do respect his forthright views. However, to clear up one or two points:—

(a) In our hobby news of products, good or otherwise, spreads so quickly that no manufacturer would deliberately be misleading in his adverts, and (b) the "novelty" designs we occasionally publish prove popular with many readers. On the question of serious articles M.A. will always find space for worthwhile contributions but, alas, it would seem that modellers are loth to pass on their knowledge to benefit others. Finally, Club Reports that contain NEWS are, where possible, published in full.

Some further thoughts on

Designing for Duration

Since we published J. B. Poole's article of the above title in the March MODEL AIRCRAFT, we have received many interesting comments, both practical and theoretical. The latter aspect is covered—in an easily understandable manner—by **C. M. Christie,** who calls his article—

DEVELOPING RUBBER LIGHTWEIGHTS

THE Palmgren formulae mentioned in the 1953 Frank Zaic Year Book give a means of calculating the performance of rubber models. I am going to concentrate on the total duration formula, which can tell us a great deal about ways of improving the performance of rubber models.

Briefly, Arvid Palmgren states a very simple formula which gives the total duration of a rubber model:

$$\text{Duration} = \frac{k R \sqrt{A}}{W^{3/2}}$$

where R = wt. of rubber (oz.)
A = wing area (projected) (sq. in.)
W = weight of complete model (oz.)
k = constant

The constant, k, Palmgren has obtained for a series of models, but as they were calculated pre-war, they refer to free wheeling propeller jobs. However, it might be worth having a look at them, in the table below:

Prop. pitch	Free wheel	Free wheel (ret. 1d. gear)
Min. ..	66.7	85.7
Mean ..	72.5	88.0
Max. ..	78.5	90.5

Notice how the value of k increases with propeller pitch. This is partly because of the longer motor run of the high pitch propeller, but also partly because of the resistance offered by the propeller free-wheeling on the glide. With a folder, the effect of pitch on the "duration factor," k, will be much less, and most folders use a fairly fine pitch, anyway.

The factor k will vary a little from model to model, with aspect ratio and with aerofoil or propeller efficiency, for instance. About the only real way to produce an efficient rubber model is to develop it, and I am trying to show how we can use this formula plus a certain amount of common sense, to improve our designs.

Before going into this further, I want to take a look at the models described by Mr. Poole in his interesting article in the March MODEL AIRCRAFT "Designing for Duration."

By keeping the data on a comparative basis, the relative durations can be assessed. The information needed is extracted from the article and tabulated below:

Model	Wing area (A)	Rubber weight (R)	Total weight (W)	$\frac{R\sqrt{A}}{W^{3/2}}$
Mavis II ..	223	2.75	8.1	1.78
Mavis III ..	223	4.0	8.5	2.41
K. Attiwell's lightweight	240	2.75	6.0	2.89
Lytewake ..	220	3.10	6.0	3.13

We have an additional piece of information from Mr. Poole that *Mavis II* and *III* had performances on 80 per cent. turns of 2 min. 40 sec. and 3 min. 30 sec. respectively. We can use these figures to give us an idea of the duration factor in the original formula.

Hence, for *Mavis II*, we have duration = 160 = $k \times 1.78$.

Therefore, $k = 89.9$.

As a check, the *Mavis III* duration should be 89.9×2.41 sec. = 216 sec. = 3 min. 36 sec. which therefore agrees quite well.

This done, we can work out the performance of the *Lytewake*; it comes to 281 sec., or 4 min. 41 sec.

Notice that the open rubber model of Ken Attiwell is superior to the *Mavis* model, as Mr. Poole comments.

There is another point of interest in the Palmgren duration formula. If you differentiate for constant area and frame weight with respect to the rubber weight you get that for maximum duration the rubber weight equals two-thirds of the total weight of model, a condition first pointed out, as far as I know, by Mr. Warren in a 1944 *Aeromodeller*.*

My own approach to lightweight rubber is the larger-than-Wakefield size model, shown overleaf. Last season's model, *Hulot II*, has a modest performance, round about 3¾ min., while the duration factor k is arrived at thus:

Rubber = 14 strands × 50 in. long = 4.28 oz. weight.
Area = 250 sq. in.
Weight = 8.34 oz.

This gives $\frac{R\sqrt{A}}{W^{3/2}} = \frac{4.28 \times \sqrt{250}}{8.34^{3/2}}$

$= 2.8$.

Hence $k = \frac{225}{2.81} = 80.0$.

* $D = \frac{kR\sqrt{A}}{W^{3/2}}$; $W = M + R$.

Then $\frac{dD}{dR} = \frac{k\sqrt{A}}{W^{3/2}} = 3/2 \cdot$

$\frac{kR\sqrt{A}}{W^{5/2}} = O$ for maximum.

Hence $W - 3/2R = O \quad \therefore R = 2/3W$.

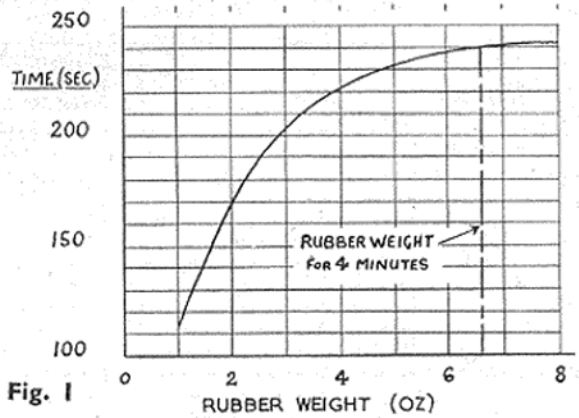
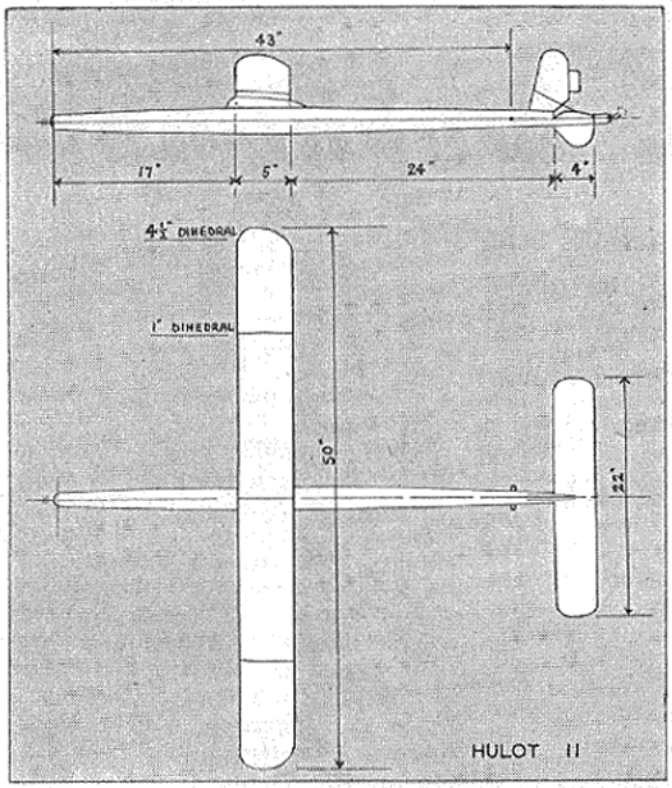


Fig. 1 EFFECT OF RUBBER WEIGHT ON PERFORMANCE



This is less than Mr. Poole gets for his *Mavis* design and may be due to a better propeller or superior trimming on his part. The models are both of fairly conventional proportions. I shall use 80 as the value of the duration factor anyway, and see what changes are necessary to get 4 min. from my model.

The first step is to use the Palmgren formula to find the maximum performance obtainable simply by boosting the rubber weight to twice the bare frame weight. The rubber weight is now increased to 8.12 oz. (only theoretically, thank goodness) giving a new total weight of 12.18 oz.

Max duration =

$$\frac{80 \times 8.12 \times \sqrt{250}}{12.18^{3}/_{2}} =$$

242 sec. = 4 min. 2 sec.

You can see how the increase in performance is falling off with increase in rubber weight. Fig. 1 shows how nearly 7 oz. of rubber would be necessary to get 4 min.

This is a "brute force" method which does not appeal to the writer.

Another approach is to change the wing area, either by increasing the span, keeping the chord constant, leaving the span at 50 in. and changing the chord, or a combination of the two. Easiest to calculate is the effect of increasing the span. The wing of *Hulot II* weighs 1.15 oz. and if I increase the wing area by increasing the span to 55 in., say, the weight will be increased to $\frac{55}{50} \times 1.15$ oz. = 1.27 oz. The wing weight will be further increased by having larger spars due to the greater loads, but this will be compensated by the greater value of the duration factor due to the higher aspect ratio.

The tail weight is increased in the same proportion from 0.28 oz. to 0.31 oz. The total weight now becomes 8.75 oz., and the duration is 230 sec., an increase of 5 sec. Fig. 2 gives the effect of changing the span. There does not appear to be a great deal to be gained here, for it needs an increase of span to around 69 in. before the magic number 4 min. appears.

It is a little more difficult to calculate the effect of changing the chord. A model I designed in 1952 had a 50 × 7 in. wing, which weighed 1.4 oz. This proved to be too weak, but strengthening up the wing spars would probably bring up the weight to about 1.6 oz., so that, comparing it with *Hulot's* wing, 2 in. extra on the chord costs about 0.45 oz. For want of any more information about the wing, we'll assume the weight goes up in proportion to the chord. The tail weight, which is small anyway, we can say increases with the area, which in turn increases with the wing chord²—because the moment arm is now smaller. The tail weight is, therefore, now $\frac{7}{5} \times \frac{7}{5} \times 0.28 =$ 0.55 oz., an increase of 0.27 oz. The total frame weight is now 1.78 oz., and the potential duration is 235 sec., giving an increase of 10 sec. Actually, this figure would not be achieved because of the lowering of the aspect ratio, and changing the area by changing the chord might well have virtually no effect on the performance.

Finally, I can improve the performance by lightening the frame of the original design, giving very close attention to structural matters, always bearing in mind that the model has to bear the rigours of a normal contest season.

Fig. 3 shows just how powerful this method is. By reducing the frame weight by only 0.35 oz., *Hulot's* performance can be increased to the required 4 min. Therefore, on the strength of these calculations, I am building a new, lightened *Hulot* for the 1958 season.

On the more strictly practical side we received many letters from readers, but as there is not space to publish them all we

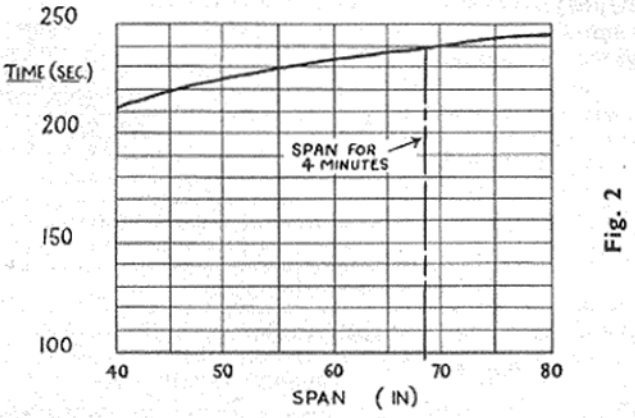


Fig. 2

EFFECT OF INCREASE OF SPAN ON PERFORANCE

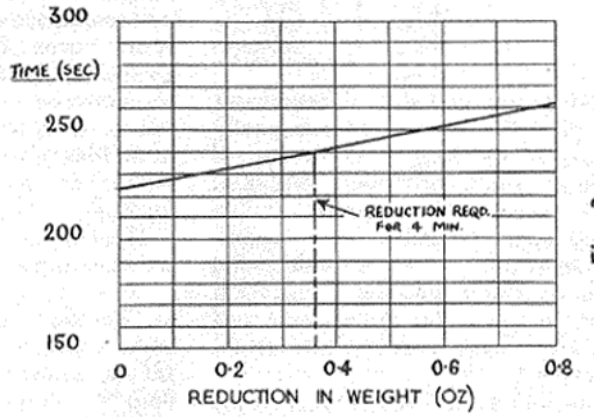


Fig. 3

EFFECT OF REDUCTION OF FRAME WEIGHT ON PERFORMANCE

have selected that from well-known rubber flier Urwin Wannop for inclusion, as his views coincide with the majority.

DEAR SIR,—"Designing for Duration" is, in my opinion, the most interesting writing to appear in MODEL AIRCRAFT for a very long time. I hope that his notes bring the comments he asks from the leading rubber clubs—I myself would particularly like to hear from Ray Monks, whose lightweight had surely the best performance of any model at the 1957 rubber contests. These comments of mine are sent to you because I hope they are only a few of many you receive, and that there is enough weight of response to encourage you to continue, in print, such an unusually valuable discussion.

At contests attracting the best of current open rubber models, it will be only in the worst weather that someone does not make a maximum score. To challenge consistently at leading events a model must, therefore, have a performance of well above 4 min., for the winning time on the fly-off may be above 6 or 7 min. Many of the models which put up these times have lift to help them, but O'Donnell and Monks win on a fly-off too regularly to credit that they are always lucky that way. The 6-min. model is, therefore, quite possible and, as Poole says, standard performance is rising above 4 min.

The way to be sure of 4-min. flights is to have a consistent 5-min. model, so I don't agree with Poole that it is not worth aiming at a 7-min. machine. As an aside, maximums of 4 min. in rubber and three in glider aren't similar standards, and I wonder whether we ought not to adjust one of them?

I agree with the low wing loading theory, for provided your wings are strong enough, a model of this type, and something like Wakefield area, seems the best for contest work. My present designing is strongly influenced by Monks, whose long steady climb under comfortable control is achieved with (I understand from talking to others from Birmingham and Leamington) a motor-run of over 2 min. on a 10-strand motor. Monks' victories last year at Cambridge (overcast and breezy) and at Halton (the biggest thermals in the history of model flying and meteorology) were enough to convince me of the low wing loading theory. However, because either a 10 or 14-strand motor is a fractious thing to make up late on the night before a contest, I fancy 12 strands × 48 in., in a model of rather less than Wakefield area.

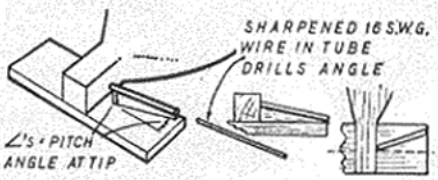
To get the best out of the glide, and to control the initial burst of power on the climb, I fancy wings of a higher aspect ratio than Poole suggests—a 48 × 4½ in. wing with a 12-strand motor in a 46 in. long fuselage. The propeller to match the motor will be 20 in. dia. × 24 in. pitch, from a Samaan type blank. The real strength of a model is in its wing, and if four ⅛ × 1/16 in. spars and one 1/16 in. sq. are used, the weight of the model less rubber can be kept down to 4½ oz. Close spacing (1¼ in.) of 1/32 in. ribs will keep the wing strong enough. I have never seen finer construction than Monks' in a contest model, and there can be few who can get as light weight, yet maintain strength as he can. So I know that it will take much hard work to make a model to rival Monks', but I think that the principles I have described are the best to follow.

Yours faithfully,
U. WANNOP.

Finally, a letter from the man himself—

DEAR SIR,—I was delighted to see my article on "Open Rubber Models" in the March issue of MODEL AIRCRAFT, but I should point out that one error has crept in, and one obscure item.

Fig. 6 on page 75 is the error. The idea is to drill the blade stub at a "compound" angle. To do this the small piece of balsa to which the tube is attached should be



DRILL JIG 3/32 BALSA WITH TUBE FIXED ON TOP

triangular and the angle of the triangle should also equal the pitch angle at the tip.

Thus the hole for the hinge is directed both downwards and forwards when viewed from the back of the blade. Without the double angle the port blade will point down—and the right up—and my name will be MUD.

The small performance table on page 74 is also misleading but I feel the average reader will see through it. (*However, to make sure, here it is again.*—Ed.)

	Rubber	P/W	Performance
Mavis II ..	2.75 oz.	0.5/1	2 : 40
Mavis III ..	4.0 oz.	1/1	3 : 30

Yours faithfully,
Halifax. JOHN B. POOL.

Letters

Continued from page 170

to provide an aerobatic outlet for us at all the major contests—so how about it, organisers? Let's see some fair play for everybody.

I must point out that despite my apparent prejudice in favour of stunt flying, I have been a keen modeller for many years and have taken an interest in everything from rubber and gliders to F/F power and C/L, and solely because one cannot specialise in *everything* successfully, I am specialising this year in C/L stunt and A2 gliders, with a little spare time combat!

Yours faithfully,
Swindon, Wilts. L. P. E. GLOVER.

Why no racing 3.5's?

DEAR SIR,—What has happened to the high power type of 3.5 c.c. diesel motor? Apart from a second-hand "Amco BB," this middle size of engine seems to be no longer available.

True, the 3.5 c.c. size is well catered for with several excellent plain bearing types but none of these are in the so-called "racing class." I feel that a well-designed engine, similar in output and price to the BB Amco, would fill a real long felt need in the C/L world, and find a ready sale, in this country anyway, for after all how many times have I seen published a design for "5 c.c. glow motors—or any of the high power 3.5 c.c. diesels"?

As a C/L enthusiast, who abhors the battery and wire required by the glow motors (not to mention the price of the nitro-methane so necessary for good performance), I say the high power 3.5 c.c. diesel is a definite must for the C/L fliers of this country.

Yours faithfully,
Sheffield. E. H. HIGGINS.

Hoh Jang-Chiun's Acrobator

a sports/stunt controlliner for 1½ c.c. engines

IT is not claimed that *Acrobator* will perform as well as the larger stunt models that have been discussed in connection with the new schedule recently, but it has certain advantages they do not possess. It is small, cheap both to build and fly and can be flown in small spaces, so these qualities allied to its good looks make it just the job for the "sporting" brigade.

Start construction with the mainplane. Select a hard, straight and warp-free $\frac{3}{8}$ in. sq. strip for the mainspar, and cut the ribs from $\frac{1}{16}$ in. and 3/32 in. medium sheet balsa as indicated on the plan, noting that the two root ribs are $\frac{1}{16}$ in. undersize on both edges. Before assembling the ribs on the main spar, securely cement the hardwood bellcrank mount at the centre of the spar. Don't forget to cut away approximately $\frac{1}{8}$ in. on the top of the spar at the bellcrank mount in order to ensure a free movement.

As the wing has a symmetrical airfoil, it has to be built "off the plan." Slide and cement the ribs onto the mainspar and check that they line up correctly, then cement the $\frac{3}{16}$ in. sheet trailing edge and $\frac{1}{4}$ in. sq. leading edge in place, finally, add the $\frac{3}{16}$ in. sheet tips. In order to facilitate the tip covering, and at the same time make it smoother, soft scrap balsa is cemented at the leading and trailing edges. Do not forget the $\frac{1}{2}$-oz. weight in the starboard wing tip.

Before sheet covering the centre part of the wing, bolt the bellcrank assembly and solder all the necessary wires, etc., in place. The wing can now be covered either with silk or tissue, but be sure that the grain of the covering material runs spanwise to minimize "sag."

Start the fuselage by cutting out all the formers and the two sides, using hard sheet for the latter. Solder up the fuel tank from thin brass making sure that the engine feed tube is long enough to suit your engine. Bend the U/C from good quality steel wire and bind it securely to the $\frac{1}{8}$ in. ply former FB with heavy thread and plenty of cement. Cut the engine bearers from hardwood stock and the parts are now ready for assembly.

First cement FA and FB to the bearers. Next, cement the tank just behind FA and insert scrap balsa under the tank to prevent it vibrating loose, then complete the nose assembly by cementing former FC in place. The nose assembly can now be joined to the fuselage sides and after it is completely dry, FD and FE are added in place. Next join the sides at the rear, but do NOT cement FF and FG in yet. Place FF and FG just behind FE with the push-rod holes in alignment, and hold these together with pins. Join the wing to the fuselage by inserting the push-rod through the holes in the formers and the slot on the starboard fuselage side, and then cement the wing firmly in place. Now FF and FG can be cemented in.

Cover the fuselage bottom and top rear with $\frac{1}{16}$ in. sheet, and the top front with soft $\frac{3}{16}$ in. balsa, when dry sanding the latter to the appropriate section. Complete the engine mount and nose in the usual manner.

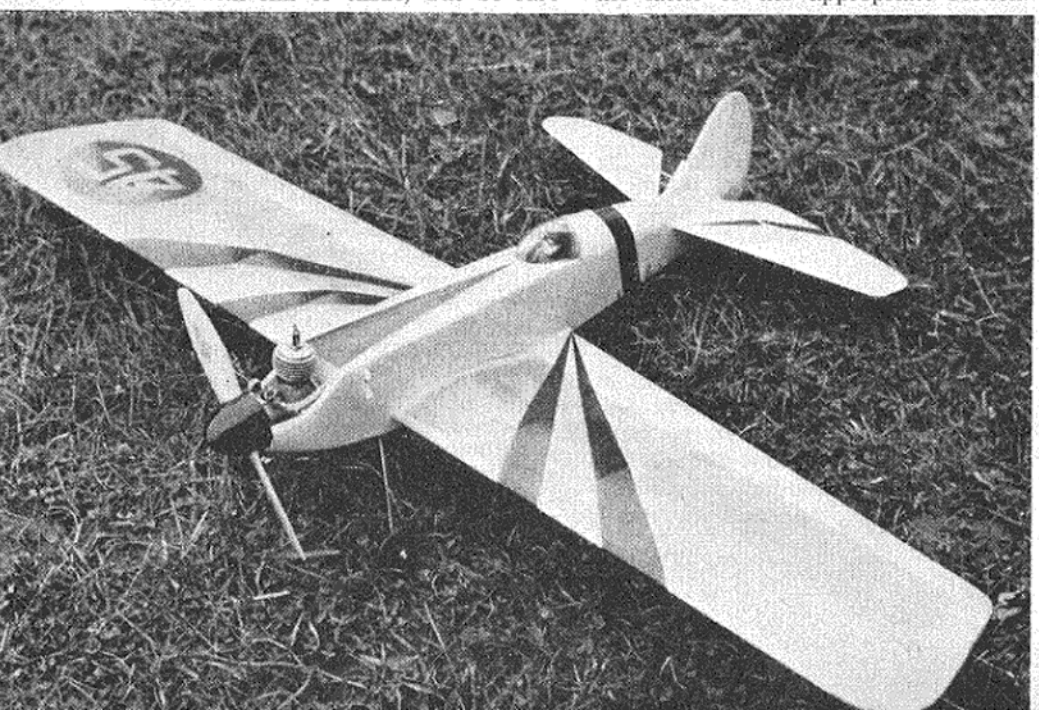
A soft balsa block forms the rear fuselage top, but be sure when cementing it in place to leave an $\frac{1}{8}$ in. gap for the tailplane. The tailplane and fin which are from $\frac{1}{8}$ in. medium sheet can now be cemented in place, but check that there is enough movement (about 40 deg. up and down is sufficient).

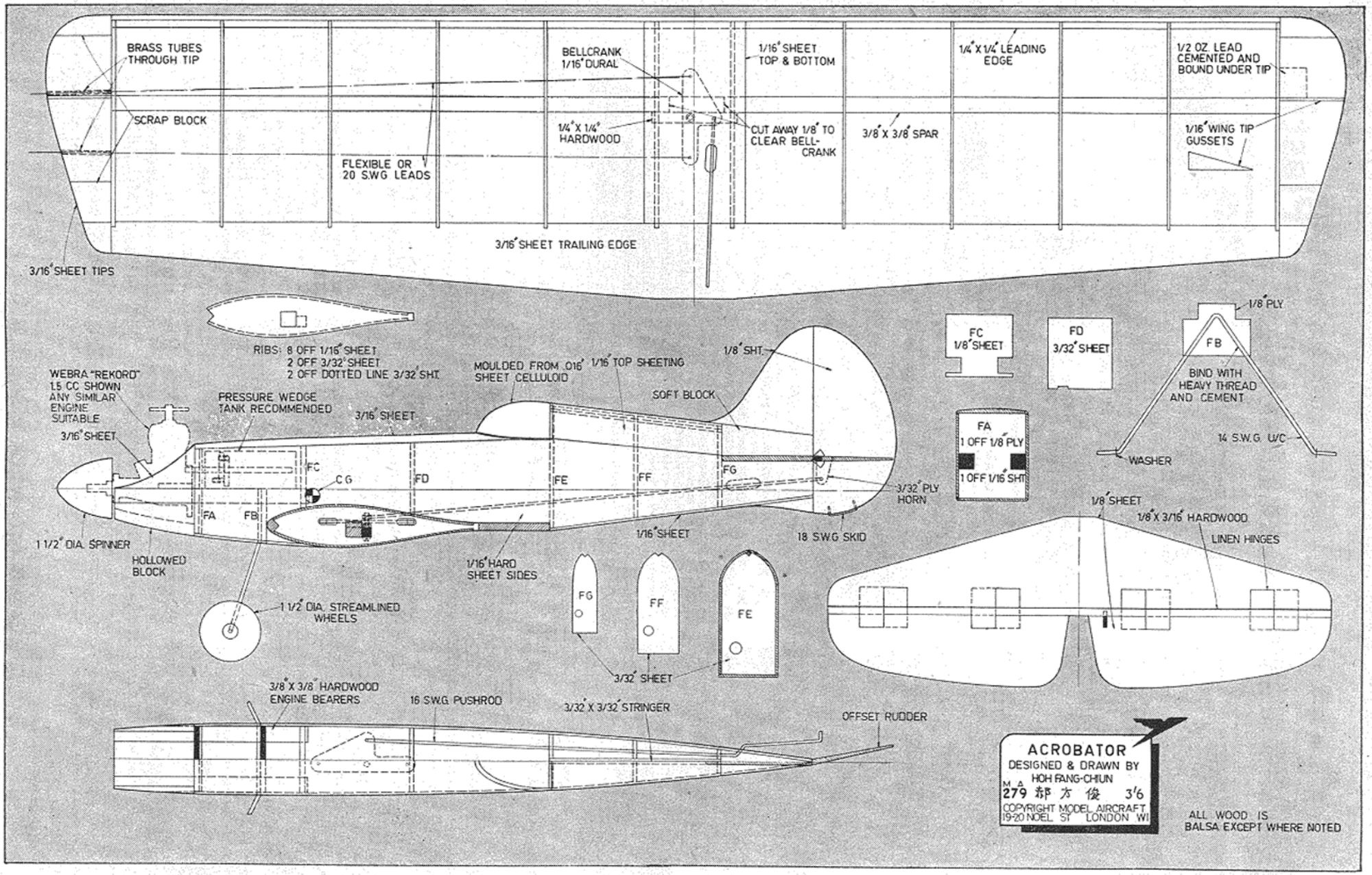
Complete the model by fitting the canopy; a commercial one (somewhat modified) can be used, but if that is not available, a home-made one can be moulded from 0.016 in. sheet celluloid. A good idea is to instal a class A team-race pilot for added realism. If you think it is troublesome to mould your own canopy, you can fit instead a hollowed soft balsa block and paint this silver when finished.

Every modeller has his own favourite finishing methods, but here is how the original model was finished: first I brushed on to the bare balsa surfaces one coat of thin clear dope, followed by two coats of wood filler, these being sanded with fine paper between each coat. All the wood surfaces were then covered with lightweight tissue and received two coats of thick clear dope before wet sanding with No. 300 wet-and-dry paper. A further thin coat of clear dope was then applied before colouring. The wing was covered with American Rayspan (similar to heavy Modelspan) and had four coats of thick clear dope with the addition of a small quantity of castor oil in order to make the covering flexible. In order to save weight no colour dope was used. The complete model without fuel should turn out to be around 12-oz.

Before attempting any flight, check that the model balances correctly; the prototype did not need any adjustment to bring the C.G. to the correct position. Use 0.010 in. dia. steel or light laystrate wire for best results, coupled with a 7 × 6 in. or 7 × 5 in. wooden airscrew for a 1.5 c.c. diesel. The length of the lines will depend on weather conditions and may vary from 30 ft. in windy weather to 45 ft. in a calm.

The model is very manoeuvrable and goes through most patterns with ease. The inside loop can be performed with almost any engine speed. However, never try any complicated figure unless the engine is running at peak revs.





FULL SIZE WORKING DRAWINGS ARE OBTAINABLE FROM YOUR LOCAL DEALER, OR BY POST FROM THE "MODEL AIRCRAFT" PLANS DEPARTMENT 19-20, NOEL STREET, LONDON, W.1, 3s. 6d., POST FREE

CONTEST CALENDAR

April 20th Surbiton Gala. U/R Rubber, Glider, Power. Chobham.
" 27th*KEIL TROPHY. Team Power. K.M.A.A. Cup. U/R Glider. Area.
" 27th High Wycombe C/L Rally R.A.F. Booker
May 11th Woodford Rally.
" 25th **BRITISH NATIONALS**
" 25/26th THURSTON CUP. U/R Glider.
SHORT CUP. 2.5 c.c. PAA-Load.
GOLD TROPHY. C/L Stunt.
S.M.A.E. TROPHY. R/C Multi-Control. (Full R/C schedule, course and aerobatic flying.)
DAVIES TROPHY. T/R Class "A."
SPEED. Classes 1, 2 and 3.
SIR JOHN SHELLEY CUP. U/R Power.
COMBAT. (1st Round)
MODEL AIRCRAFT TROPHY. U/R Rubber.
" 26th SUPER SCALE TROPHY. F/F Scale.
KNOCKE TROPHY. C/L Scale.
DAVIES TROPHY. T/R Class "B."
RIPMAX TROPHY. R/C. Rudder Control. (Course flying manoeuvres 1-6 inclusive and No. 20.)
SPEED. Classes 1, 2 and 3.
COMBAT. (2nd Round and Final.)
June 7/8th POWER & RUBBER WORLD CHAMPIONSHIP CLASSES. (First Trials.) Centralised.
" 15th Godalming M.A.C. Rally. Team Racing. "A" and "B." Combat.
" 21/22ndScottish P.A.A. Festival. R.N.A.S. Abbotsinch.
" 22nd INTERNATIONAL CLASS C/L TRIALS. T/R. Speed, and Aerobatic. Centralised.
" 22nd Clwyd Slope Soaring.
" 29th Northern Heights Gala. Halton.
July 5/6th POWER & RUBBER WORLD CHAMPIONSHIP CLASSES. (Second Trials.) Centralised.
July 20th AREA CHAMPIONSHIPS. Cranfield.
INTERNATIONAL CLASS R/C TRIALS. Cranfield.
Aug. 3/5th WORLD CHAMPIONSHIPS POWER & RUBBER.
" 17th Devon Rally.
" 23rd U.K. CHALLENGE MATCH.
" 24th **SCOTTISH GALA.**
CATON TROPHY. U/R RUBBER.
U/R GLIDER.
U/R POWER.
TAPLIN TROPHY. R/C Rudder Control, Stunt. (Simplified schedule.)
TEAM RACING. "A" and "B."
" 24th South Midland Area Rally. Cranfield.
Sept. 7th **NORTHERN GALA.**
U/R RUBBER.
U/R GLIDER.
U/R POWER.
AEROMODELLER R/C TROPHY. R/C Multi-Control. (Full R/C schedule, course and aerobatic flying.)
TEAM RACING. "A" and "B."
P.A.A. LOAD. (International Class.)
" 21st GUTTERIDGE TROPHY. Wakefield. Area.
*MODEL ENGINEER CUP. Team Glider. Area.
HALFAX TROPHY. U/R Power. Area.
" 28th TEAM RACING. "½A," "A," and "B" Area.
Oct. 5th Bill White Cup, Chobham.
" 12th*FARROW SHIELD.Team Rubber. S.M.A.E. CUP. A/2 Glider. Area.
" 19th South Coast Gala, Ashdown Forest.
" 26th HAMLEY TROPHY. U/R Power. De-centralised.
FROG JUNIOR CUP. U/R Rubber, Glider, De-centralised.

*Plugge Cup events.
All S.M.A.E. competitions in capitals.

Plastics

Continued from page 148

to permit a firm, but not unduly forced, fit in the fuselage. Another thing to watch, where applicable, is the fit of wing root against the fuselage side. The two surfaces should butt perfectly together. Do not expect cement to make good an ill-fitting joint. This is one of the rules of normal modelling, of course, but it is even more important with plastics. A slight gap—possibly interrupted at intervals where the cement has made contact between the two surfaces—is unsightly.

When the model has been assembled, careful cleaning up will do much to improve its appearance. Where ridges appear on parting lines or joints, these can be removed by drawing the edge of a piece of glass or razor blade along them. Small files or glasspaper sticks may be used for cleaning out intakes, jet orifices, etc. The scraping of outside surfaces will, of course, dull the polished surface. This can be easily restored using the normal coachbuilder's cutting-down process, well-known to scale and speed model builders, consisting of No. 400 silicone-carbide paper, used wet, followed by rubbing compound.

(To be concluded)

The Aeronca GRASSHOPPER

Continued from page 165

deliver, they were giving a spark enough to fire a piston in a gas job! The suppressors were fitted at the 7-way plug. They were moved to the actual set, and it cured the fault at once. In the meantime I had had the model lost in a cornfield for ten days. One more lesson.

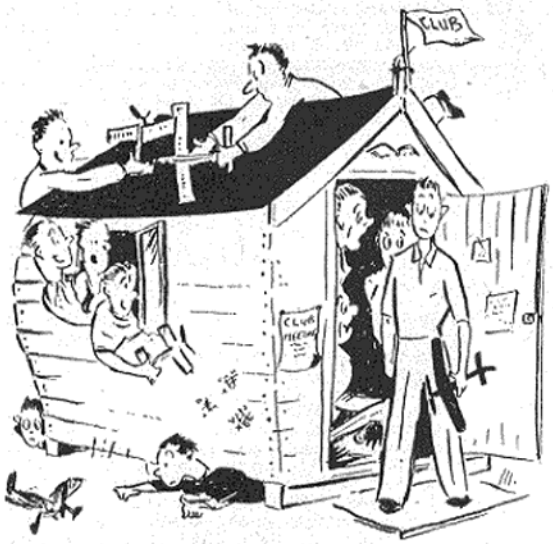
It will be noted that the batteries, furnished in a balsa box under the dashboard, are stored well away from the set. Avoid any set-up that calls for the batteries being near the set, or you may lose that valuable range. The Aeronca has a range to the limit of clear sight of it.

The set is fitted on rubber bands across two dowels. So neat is the fitting that the model has a pilot's seat, map table, aerial winding gear, headphones, throttle, trimmer, instruments, two-way radio set and maps. A pilot is now being made. The only visible sign of the R/C gear is the set in the place of the observer's seat. This fulfils a long standing ambition as even the aerial is in the scale position. It makes some of the ugly ducklings of radio jobs look a little hammish, and gives one a real kick to operate!

You will by now have noted an absence of the customary load of building instructions. Let's make it clear here and now: if you cannot handle the plans as they are, then leave this model alone. If you are able to read the plans, then go ahead. I am not going to waste valuable space explaining how to build a traditional box type fuselage, with side stringers added; but I might say that the wing spars are unusual in that they are hollow box type, full depth, and that the wing ribs are, in consequence, in three pieces. This makes a very strong wing without great weight.

The ribs are made in the normal way, and cut up into three after sanding to shape. This is one of the keys to the warp-free structure, as notches, unless properly made, make most of the warps in wings. Avoid warped wings at all costs, so don't use the strongest dope you can get. Choose the one that spreads smoothly. If the nylon is damped, and stuck on with strong glue such as Croid, it should be quite tight enough without the overtightening and warps the full strength dope produces. Banana oil will fill in the texture without tightening if necessary.

An R/C model requires care at every stage, but a scale radio job needs twice the care if you are to succeed. The reward, however, is that you are in a class of your own when you fly, and you will always be the centre of attraction at a flying meeting. My parting shot—don't build it to look at. It's got its C. of A. with full honours, so build it carefully, trim it properly, solder the radio carefully, and FLY it!



Club News

CHEADLE D.M.A.S.

The first club event of this year was for open and A/1 gliders, the results being: *Open*—1, L. Whalley, 7 : 35; 2, G. Jones, 7 : 01; 3, P. Gibson (J), 6 : 53. *A/1*—1, B. T. Faulkner, 5 : 01; 2, P. Gibson (J), 4 : 17; 3, J. Crellin, 4 : 14. Junior Paul Gibson did very well, especially as he used an A/1 in *both* events. The weather was very good, with plenty of lift, and N. Garner lost his model 23 min. o.o.s.

Future contests planned will be for rubber and up to 1 c.c. power. Now that last year's stragglers have been cleared from our books, our membership stands at 35.

All the lads are looking forward to Woodford on May 11th. There should be a large entry from us in the glider event, and Wally Neild and Arthur Bailey will be in the radio event. Arthur's radio delta was featured in our local newspaper recently, and will have its first outing at Woodford. According to club gossip, it will be well in the running for the trophy which he also won last year, at the Northern Models Exhibition.

The club had a good start this year when, at Stretton, Wally Nield managed 5th in radio, and our chairman, Brian Faulkner, claimed second place in the rubber event. The model Brian used was having its first outing and did one max. and two near-maxes, on half turns only. The design has been passed around the club and two models are on the way already.

Participation in the Northern Models Exhibition will take the form of two radio models from Messrs. Nield and Bailey; both are multi-channel (the models).

WEST OF SCOTLAND AREA

June 21st and 22nd are the dates for the Scottish P.A.A. events this year. The Royal Naval Air Station at Abbottsinch, Paisley, is once again the venue, and with the usual superb prizes by courtesy of P.A.A. the Festival will be well worth attending.

Saturday, June 21st, features P.A.A. load events, America class (up to 1 c.c. power carrying a fixed load), International class (up to 2.5 c.c. power carrying a fixed load), and the Challenging Clipper Cargo for models of up to 1 c.c. power to carry as much load as possible. Also on the Saturday there will be an unrestricted glider contest and up to 3.5 c.c. combat.

On Sunday, June 22nd, there will be R/C to the Taplin rules, 12 o'clock start, at which time transmitters will be impounded at the take-off area. Unrestricted rubber and power, with "A" and "B" team racing complete the bill of fare. For further details write to contest secretary: Bob Parsons, 8, Cunninghome Road, Prestwick, Scotland.

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

The first annual general meeting was held at Paignton, and much useful discussion took place The flying season commenced on Easter Sunday and continues until October, rallies being held on the first Sunday in each month (if weather unfavourable, postponed to second Sunday). The society now has a centrally-situated flying venue, near Totnes, and anyone interested in R/C in Devon, Cornwall, Somerset or Dorset is cordially invited to join. Contests during the season will include spot-landings, pylon races, S.M.A.E. schedule and a reduced schedule. The contest for the Wilson-Smith Trophy will be flown at the Devon Rally on August 17th, as in past years. Anyone requiring further details should write to the hon. secretary: H. A. Stillings, 5, Woolsery Grove, Whipton, Exeter. Phone 66183. Any R/C veteran contemplating a holiday in Devon would be very welcome to give a demonstration at one of our rallies—please contact the secretary.

HIGH WYCOMBE M.A.C.

We are holding our annual C/L rally on April 27th, the venue being Booker aerodrome and NOT Kingsmead as in the past. The 'drome is on the B482 road between Marlow and Lane End for those coming from the west. From all other directions A40 is the road and the 'drome is signposted R.A.F. Booker from a turning off A40 near West Wycombe. There is a bus service from High Wycombe station which runs to Booker Hospital which is 200 yards from the 'drome. The rally will be "A" and "B" team racing and combat.

The club is now running a one design glider comp. mainly for the benefit of the dozens of juniors who have suddenly appeared, although the seniors are nearly all joining in. We have just seen the "Nationals" film, opinion being that it was a good first effort, but a few more models and a few less dustbins and tents would have been appreciated. During the showing, boos and cheers and jeers echoed round the hall, especially when our own members appeared. Biggest laugh was for Dick Edmonds' pit stop ! Dick, by the way, is still trying to persuade his radio model that the set is there to control it, NOT as a P.A.A. load.

BLACKHEATH M.F.C.

The Bill White Cup for open rubber will be flown off at Chobham on Sunday, October 5th, in conjunction with the usual glider comp. Entries will be on the field, although pre-entries will be welcome. Entries are 1s. 6d. per event. The comp. will start at 11 a.m. or as soon as possible, and finish at dusk. The maximum flight time will be decided on the day. For further details contact: P. Crossley, 11, Broadfield Road, Catford, S.E.6.

SOUTHERN AREA

The Southern Area held a late winter rally at Beaulieu Aerodrome on February 23rd. Flyers came from as far afield as London, Birmingham and Bristol, and each contest was well supported. The weather cleared in the morning to give a fine sunny day and the very good flying ground made retrieving easy—not one model being reported as lost. A. Wisher of Surbiton won the glider event, flying a big model he returned a time of 8 : 01 for three flights.

The rubber event was won by M. Fuller of Bristol & West with three maxes of 3 min. The highlight was a fly-off between four flyers who returned maximum flights in the open power competition. Straker of Springpark was first away and returned 2 : 06. Scarbrow of Croydon got 2 : 22, B. Eggleston, Baildon, who had been troubled by engine overruns, was let down by this bugbear again when he had P. Manville of Bournemouth with 3 : 42 to beat.

The organisers wish to thank all the people who attended the rally and hope to see them later in the summer when it is our aim to hold another rally at the same venue. We would also like to thank all those who assisted with the timekeeping, etc.

Results

Open Glider

A. Wisher	Surbiton	8 : 01
J. Harding	Oxford	7 : 20
P. Giggle	Southampton	7 : 18

Open Rubber

M. Fuller	Bristol and West	9 : 00
Alexander	Cowley	8 : 55
K. Horry	Bristol	8 : 50

Open Power

P. Manville	Bournemouth	9 : 00 + 3 : 42
Scarbrow	Croydon	9 : 00 + 2 : 22
Straker	Springpark	9 : 00 + 2 : 06

Class "A" Team Race

J. Templeman	Sidcup
McGoun	W. Essex
M. Templeman	Sidcup

Class "B" Team Race

Tuthill	Enfield
Whitebread	W. Essex
McNess	W. Essex

SURBITON M.A.C.

Surbiton members started the comp. season by attending the "Southern Gala," A. Wisher gaining first place in the glider. The power boys flew new rulers, both Gaster and Posner failing by some 30 sec., to get three maxes, which just goes to show that the new rules are not as bad as they seemed to be. A few new Wakefields are now flying. Just topping the 2:30 mark. But boy, is that climb slow !

LEATHERHEAD & D.M.F.C.

The first meetings of the club have been very successful and membership is now in the region of 20. Indoor flying has proved popular, and a full programme of talks and discussions has been arranged. Meetings are held on the second and fourth Fridays of each month at the Oddfellows Hall, Bridge Street, Leatherhead, at 7.30 p.m. A welcome is extended to all over the age of 12 years. Further details may be obtained from M. Dias, 21, Orchard Close, Fetcham, Surrey.

LITTLEOVER M.A.C.

The club held its annual dinner and over 45 guests attended. At the feast, films were shown and beer drunk. We asked the local press

AEROBODS OF NOTE

"MAC" GRIMMETT

King of Combat ! "Mac" has placed first in almost every combat event in 1956-57. Keep tearing 'em off a strip, "Mac" !

reporter to come along, and as a result, a large picture appeared in the Press.

In order to gain more contest experience, we held a friendly rally with the Derby and Ashbourne clubs. The combat ended in a tie because it was so dark that the models could not be seen on the ends of the lines !

Results—Team race " ½A ": Jones, Ashbourne, 7 : 30; team race " A ": Robinson, Ashbourne, 9 : 50. Combat: M. Keeling and B. Kirkman, Littleover.

At the annual general meeting, M. Keeling was unanimously re-elected secretary. Owing to the large amount of work to be done, two competition secretaries were elected. After the meeting, a Jetex flying display was given and T. Pope set up a Jetex 50 record of 74.6 m.p.h. (did they see it ?).

K. De Ville is building a semi-scale twin for two E.D. 2.46. The model is being covered in " Polyfoil," using " Weldtite " as an adhesive. " Polyfoil " can be obtained from Woolworths, price 2s. 3d. for a 15 ft. × 1 ft. 6 in. roll.

Any unattached aeromodellers in the district should write or call: M. Keeling, 1, Bonsal Avenue, off Littleover Lane, Derby.

STRATFORD-UPON-AVON & D.M.A.C.

The club enjoyed immensely the " Nationals " film shown at Tyler St. Boys' Club on March 3rd. The " local " bods from Warwick, Leamington, and Evesham, also managed to get to Stratford despite the bad weather conditions. After a hectic day worrying about the non-appearance of the film, we were greatly relieved when it eventually arrived (by express train from London) just half an hour before the show was due to start. However, everyone thought the film well worth the trouble and the club thanks everyone who helped to make a success of the show, especially the S.M.A.E.

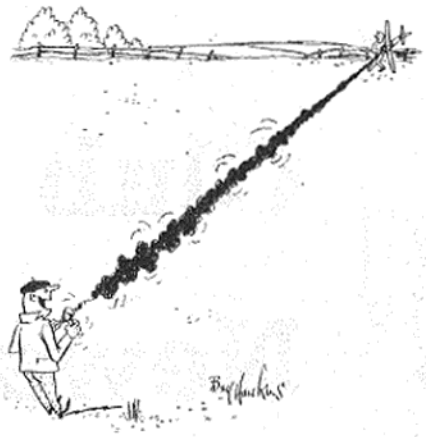
The club has decided to run a coach to this year's " Nationals " on the Sunday, May 25th. Seats will be 15s. 6d. each, starting from Stratford at 7.30 a.m. If you are interested, please book early.

We are also holding a sports-flying-type rally at Wellesbourne in the near future.

CHESTER M.F.C.

This year the Clwyd Slope Soaring Contest will be held on June 22nd.

Classes: Open, A/2, Tailless and Junior. The



25,993 . . . 25,994 . . . 25,995 . . .

Gosling Trophy, which is awarded annually, will go to the holder of the best individual time in any of the above classes.

Facilities will be given for R/C record attempts and a contest will be organised to suit the conditions.

Fees: Senior 2s., Junior 1s.

Venue: South-west slope of Moel-Ffammau, reached by turning off the Mold-Ruthin road, A494, about half-a-mile past the Loggerheads. This turning will be clearly marked.

Rules: The best time of four flights is the scoring time. Entrants will be required to produce proof of S.M.A.E. insurance (full or associate). Fuse type d/t's will not be permitted due to the fire hazard.

Should any further details be required, please contact C. R. Filtness, 26, Raymond Street, Chester.

SOUTH BRISTOL M.A.C.

The club is numerically very strong at the moment (with 80 plus members), and the rather confined club field is made to seem very small when a large percentage turn out.

At the recent club contest the same old names appeared at the top of the F/F and C/L lists, though there were quite a few signs of competition among the juniors; possibly by the end of the present season, the seniors will have to fight for those cups. Owing to field trouble the C/L backbone of the club is restricted (by poor surface) to combat and hand launched stunt at the moment; however, there is much behind the scenes activity, in preparation for various displays and concours during the coming season.

DE HAVILLAND (HATFIELD) M.A.C.

A film show held recently has been our only club winter activity. Most of the films were loaned by Shell-Mex and B.P. Ltd. and the main feature, " Powered Flight," was supplemented by four short films of aeronautical context including " Model Flight." Also shown were an 8 mm. aeromodelling film and a colour film featuring the *Viscount*.

The winner of last year's club championship was W. G. Winder. This was decided on a points system. Covering national and club contests, points were awarded according to position in the contest, the number of club members beaten and with bonus points for high flight times. The runner up was C. A. Ward.

A competition among members to design a club badge has been concluded, the winning entry being submitted by C. A. Ward.

BAILDON M.F.C.

Several of our members competed in the area's winter rally—held at Rufforth in somewhat bleak and wintry conditions—but your scribe was unable to attend owing to illness; if, however, the tales told by those who were there are anything to go by, he didn't miss a great deal ! We were also represented at the Indoor Nationals by three " lookers-on " in the persons of Henry Tubbs, Bill Lakeland and Gerry Tideswell.

The club's annual dinner and prizegiving was held at the Victoria Hotel, Leeds, on Thursday, February 27th, and was rounded off by a film show provided by Jack Winter. As usual, Mrs. Lanfranchi kindly distributed the trophies —all 16 of 'em !—and, in addition to his three awards for best performances in club open and F.A.I. power contests and the precision event, her irrepressible husband (as captain of the victorious team) was proudly presented with the N. Area Knock-Out Trophy. Other awards were: junior championship, P. Rennison; senior championship, G. Cameron; rubber, H. Tubbs; open glider, K. Grice; A/2 and chuck glider, F. McNulty; A/1, L. Hey; and H.L. glider, J. S. Eckersley—while Arthur Collinson collected the remaining power trophy for overall best performance in club and national events.

SOUTHAMPTON M.A.C.

At Beaulieu the club was well represented in the Southern Area Rally. The only success being P. Giggle's 7 min. 18 sec. which gave him 3rd place in the open glider event. Looking around the building boards, we find that P. Giggle is building a new rule Wakefield with a wrapped sheet fuselage; he is also building a power model to try and get his " C " class certificate. N. Worley is building a new rule power model after his old *Tree Creeper* style; and R. Caton and C. Black are still turning out stunt jobs; these two consistently fly models every Sunday, on the common and never fail to gather a large audience of Sunday afternoon strollers.

PEN PAL WANTED

Ludovic Nosek, Gottwaldovo nam, 3, dum Tatra, Marianske Lazne, Czechoslovakia, would like to exchange news and magazines with model clubs in this country. Anyone interested should get in touch direct.

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SOUTHAMPTON M.A.C. Miss M. Pepper, 18, Mayflower Road, Shirley, Southampton.

OUTLAWS (CANNOCK) M.A.C. L. R. Hockley, 24, Horse Fair, Rugeley, Staffs.

CHINGFORD M.F.C. B. G. Spence, 12, Liverpool Road, Leyton, E.10.

CHESTER M.F.C. C. R. Filtness, 26, Raymond Street, Chester.

STEVENAGE M.F.C. G. W. Dallimer, 10, Angle Ways, Leaves Spring, Stevenage, Herts.

AMERICAN COLUMN

Continued from page 169

1956, this number rose by something like 50 per cent. and, for 1957, it is fairly certain that the totals will show an even higher figure. Add on a percentage for the absent-minded or irresponsible few who fail to register with the F.C.C. and you will have an idea of just how big R/C modelling in the States has grown.

* * *

The standard high-wing cabin monoplane layout for R/C is beginning to look a bit out of fashion. The successful contest performances of racy-looking shoulder-wings with bubble canopies and tapered surfaces, like Dale Root's *Ascender* and Lou Andrews' *X-Ray*, show that the modern multi-channel R/C job need not resemble a 1937 vintage F/F gas model. We hear that Andrews' *X-Ray* is soon to be offered as a kit by Guillow.

* * *

Long demanded by R/C men : an " R/C " engine. Things now seem to be moving in that direction. K & B-Allyn have developed a new version of the Torpedo-35, having slightly less power, but improved low-speed running via coupled intake throttle and exhaust restrictor. Veco are reported to be working on a similar idea.

* * *

How long will it be before the C/L endurance record reaches 100 hours? Late last August, some lads in Oregon set up a new record of 35 hr. 8 min. with a Torpedo-35 powered model. But, almost before the prop had stopped turning, their record was shattered by a new mark of 2 days 16 hr. 33 min., by another group in the same state—also on a Torpedo-35, incidentally. There was a crew of no less than 17 engaged in this attempt. A C/L endurance record is not, of course, recognised by the F.A.I.

* * *

It is with deep regret that we have to report the death of Harold deBolt's father, following a fire which destroyed the deBolt Model Engineering Company's plant at Williamsville, New York. Mr. deBolt sustained serious leg burns and died in hospital following grafting operations. His friends knew him as a quiet, fine man and we join in offering our condolences to Harold and his family in their loss.

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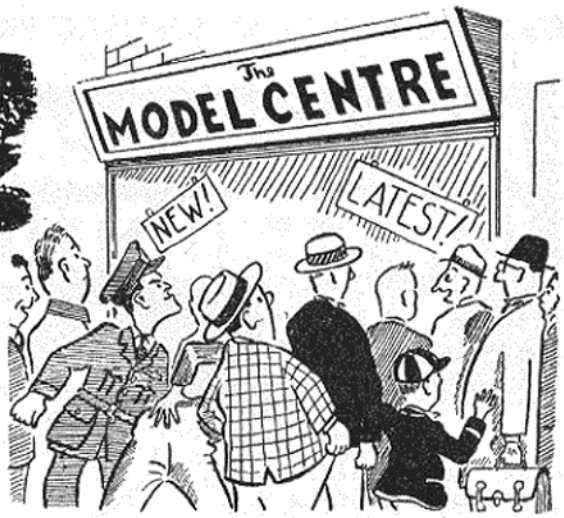

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PRECISION—AIRSCREWS

MAY 1958

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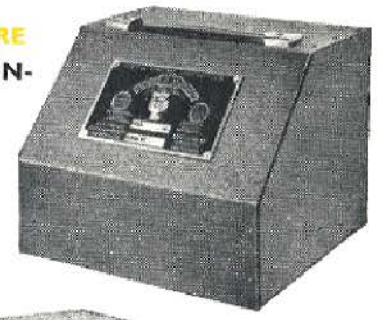
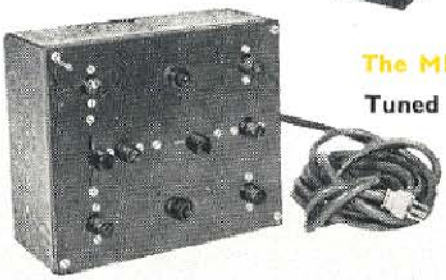
3 VALVE RADIO CONTROL UNIT

Comprising Transmitter, Receiver and Escapement. Receiver Batteries weigh only 10½ oz. Price complete **£20 9 7** (sold separately).





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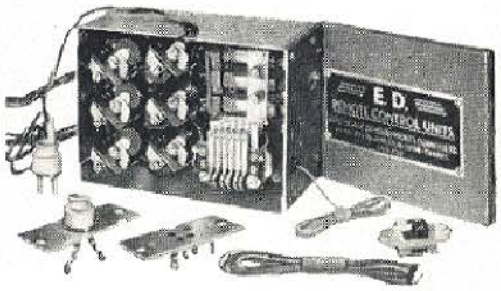

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The "TRANSITROL"

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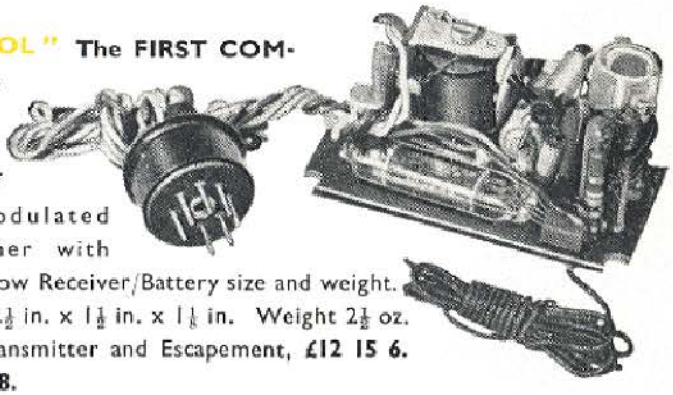

Full information and technical details of all E.D. Radio Controls, Units, Mechanisms, Spare Parts and Accessories, etc., are given in our illustrated list, free on request. Information concerning the full range of E.D. Engines and other E.D. Productions is also included.

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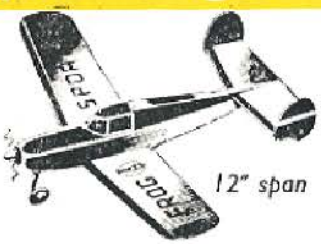

SPORTY 3/6

PIPER PACER 3/11

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7 different models at 3/6

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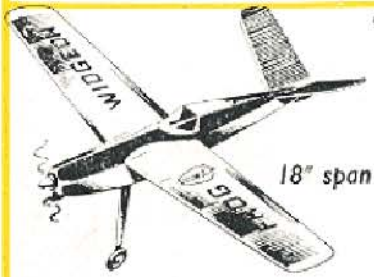
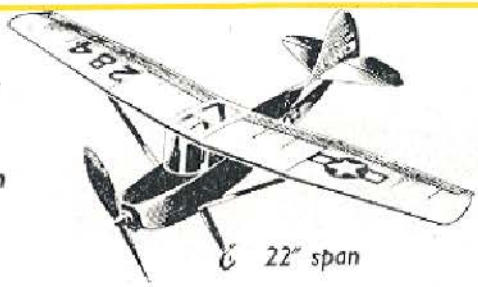


WIDGEON 4/9



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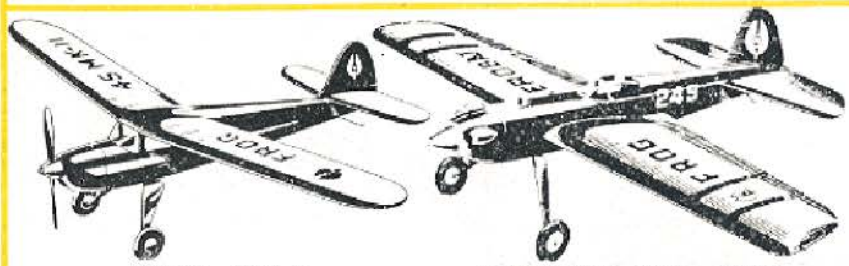

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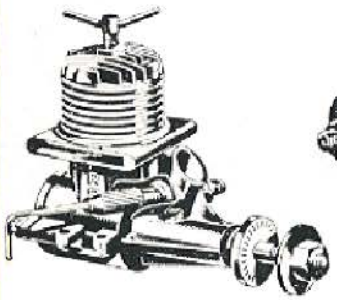

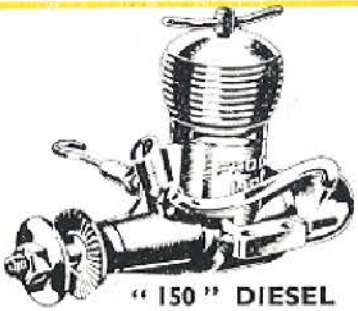

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