

AERO MODELLER

OCTOBER 1955

135¢



Special **WATERPLANE** *Issue*

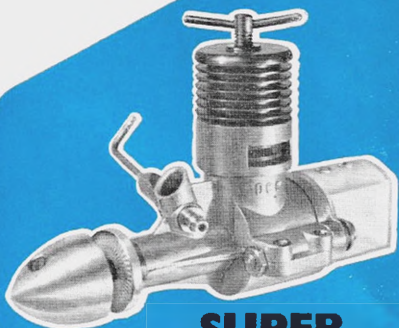
1'6

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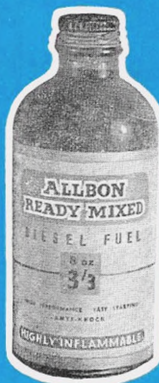
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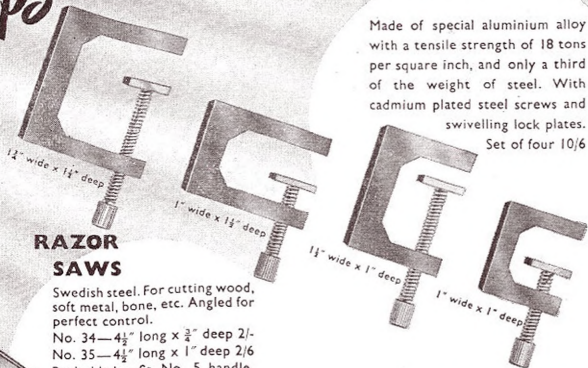
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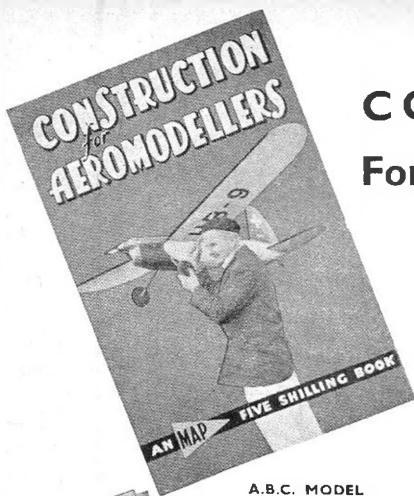
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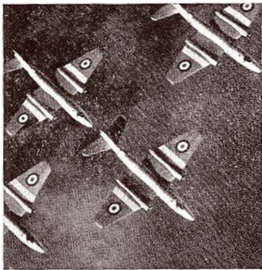
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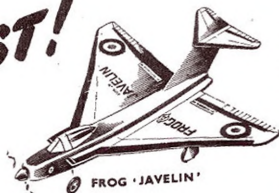


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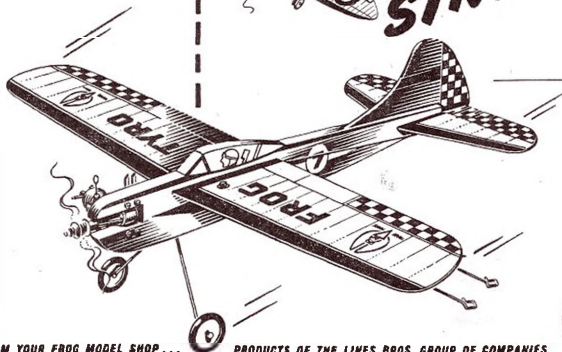


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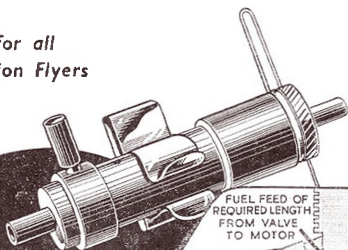
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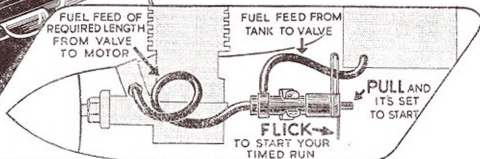
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NUMBER 237
OCTOBER 1955

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AEROMODELLER incorporates the MODEL AEROPLANE CONSTRUCTOR and is published monthly on the 15th of the previous month by the Proprietors:

MODEL AERONAUTICAL PRESS LIMITED
SUBSCRIPTION RATE: 21/- per annum prepaid (including the special Christmas Number).

Editorial and Advertisement Offices:
38 CLARENDON ROAD, WATFORD, HERTS
TELEPHONE: WATFORD 5445 (Monday-Friday)

Damp Enthusiasm?

HAVING, in our early and enthusiastic modelling career, been severely bitten by the water (flying) bug, it has always passed our understanding that so little attention has been devoted to this fascinating branch of aeromodelling, either at National or individual level. We omit from this criticism the stalwart members of North Kent, who have continued to stage their annual "weibobs" meeting at Danson Park in spite of mediocre support, and the one or two enthusiasts who have persevered with their hulls and floats as very much lone hands.

Last year saw the first really serious attempt to put waterplane flying back on the aeromodelling map, when a class for these models was included in the All Britain Rally at Radlett. We cannot honestly enthuse over this action, for it appears more as a publicity stunt to boost an already attractive programme, and less still can we engender any interest in ready-to-hand duration models fitted with floats merely to allow entry to yet another contest. That these craft will just leap off the water in similar manner to which they leave the tarmac demonstrates nothing more than that the models will continue to produce their very fine flying characteristics when airborne, and turn over on their backs when striking *terra firma*!

In our admittedly biased opinion, models that do not plane off and land on water cannot be truly classed as "waterplanes", though we are fully aware that the necessary facilities for such performances are not available to all. Nevertheless, we do urge the S.M.A.E. to reintroduce National contests for this class of model flying, albeit they would have to operate on a centralised basis. The old chestnut that "the support received does not warrant a National contest" no longer holds water (no pun intended) for we could instance many present day contests receiving National status that are worse supported than an average club event.

Probably the best future for such waterborne contests would be radio-controlled, and we foresee plenty of scope for a precision event on the same lines as the much-maligned Bowden. A requirement would be that models should land back on water *without* turning over, and a little less emphasis put on the pure duration aspect of flying.

We deprecate the policy of the aviation industry that has consigned such beautiful aircraft as the Princess flying boats to tight cocooning in a shed on Calshot Spit, and the abandonment of the miles of level and ready-made "runways" that abound around our shores. Fortunately, aeromodelling has never yet been bound to follow full-size practice, and we have sufficient faith in the adventurous nature of modelling enthusiasts to be sure that this neglected phase of the aeromodelling art will not continue to suffer oblivion.

On the Cover . . .

The day-to-day duties of the hardy D.H.C. Otter could scarcely be better illustrated than by this striking photo taken recently at White River, Northern Ontario. The Otter in the foreground has delivered men and equipment of the Lands and Forests Department to fight one of the many fires raging in this district, and its capacious fuselage has carried more in one flight than could have been transported by several overland vehicles. See pages 531-33 for further details of this remarkable workhorse of the air.





HEARD AT THE HANGAR DOORS

Sea Dart

In an essentially waterplanes issue, it is only fitting that a somewhat unusual waterplane should head our Hangar Doors columns this month. The Convair XF2Y-1 "Sea Dart" Navy jet fighter is seen making a high speed run on San Diego Bay in California. Now fitted with a single ski as part of the Convair-Navy hydrodynamic research programme, it is powered by twin Westinghouse J-46 engines which permit subsonic speeds in level flight. The aircraft, which has exceeded the speed of sound, should make an interesting subject for a Jetex powered scale model, with the encouraging thought that Jetex units operate equally well under water as they do above the surface!

--M.A.P.-- Books

Model Aeronautical Press Ltd., besides publishing "AEROMODELLER" and its associate magazine *Model Maker*, has embarked on a gradually expanding book programme. The regular appearance of *Aeromodeller Annual* we know is appreciated for its cosmopolitan appeal, and quality of content, by modellers throughout the world. This year's edition, to be published November 1st, is no exception, containing as it does such excellent features as P. E. Norman on "Ducted Fans", "A/1 Gliders" by Van Hattum, "Radio Control in New Zealand" by Les Wright, "Ultra Light Aircraft" by George Cull, "Combat Flying" by Ron Moulton, and many other first-class articles too numerous to mention here. The cover is C. Rupert Moore's best painting yet, depicting a helicopter over the Thames in front of the Houses of Parliament. Mr. Moore has also prepared a special colour plate within the book which gives accurate helicopter colour schemes for the discerning enthusiast.

Latest book from the M.A.P. press announced on page 509 is "Construction for Aeromodellers". Another "five-bobber", it can briefly be described as a companion title to "Design for Aeromodellers", giving a complete treatise on the constructional side of model aeroplanes. There are eighteen chapters ranging from Tools of the Trade—Simple Fuselages—Advanced Fuselages etc., through to Covering—Rubber Motors and Engine know-how.

For the beginner it is invaluable, and for the expert a most excellent reference book with a useful

wrinkle on every page. Publication date was September 1st, 1955, when the second edition of "Simple Radio Control" by Harry Hundley also appeared. Those modellers contemplating "button-pushing" for a change, who failed to obtain a copy of the first edition, should have no difficulty in finding this useful little book at their local model shop or bookstall.

Look out for . . .

As you read this our Staff Reporters will have just returned from the American Zone in Germany after covering the triple World Championships held during the first week of September. It is our earnest wish that the wonderful weather enjoyed in this remarkable summer of 1955 will have continued over the period of the events, for it is always disheartening—and most inconclusive—for contests of this importance to be influenced one way or the other by abnormal meteorological conditions. If the results are to be affected by weather, we infinitely prefer thermals and hot sun to chilling rain and high winds!

A fully illustrated report will appear in our next issue, published on October 15th, so make sure of your copy now by placing a firm order with your local agent.

Modelling in the R.A.F.

Our illustrated report in this issue on the recent R.A.F. Model Championships clearly demonstrates how firmly the Royal Air Force Model Aircraft Association is established in the eyes of the Service. Now in its sixth year of existence, the association has the full support of high authority in the R.A.F., which appreciates the important part aeromodelling can play in promoting skill, airmindedness, and the sporting instinct in the Flying Service.

Air Marshal Sir Dermot Boyle, K.C.V.O., K.B.E., C.B., A.F.C., the President of the association, paid full tribute to the benefits of the hobby in his welcoming address to the assembled modellers, culled from the various Commands throughout the country. May we humbly suggest that the R.A.F. could well study the American system under which model enthusiasts are selected from overseas as well as Home Stations, and qualifiers flown home to take their place in the ultimate Championships meeting. Here is an incentive to those airmen stationed far away from the hub of activities, yet who retain their great enthusiasm for all things airborne, whether they be full size or models thereof.

Readers will note the striking advertisement in this issue on behalf of R.A.F. aircrew recruitment, which stresses the advantages of Service life for young men from 17½ to 26 years of age. There can be no doubt that the R.A.F. offers a most interesting and lucrative career for aviation enthusiasts in its flying branches, and equally so among its ground trades. Keen aeromodellers with enthusiasm and aptitude for this type of life can continue their civilian hobbies and interests in the comforting knowledge that these are not merely encouraged, but actively promoted within the Service.

1955 Model Engineer Exhibition

We were once again disappointed with the rather meagre support of the Model Aircraft Section at this popular annual exhibition, and even more with the poorly-dressed display of such models as had been collected. Surely a better background than bare brick walls could have been provided, for the standard of aircraft shown was quite high, but much of the potential value of the exhibit was wasted by poor lighting, totally unsuitable background, and the eternal "flat" layout which requires the public to strain over the front row of models to see those hidden away at the back.

The absence of certain well-known top line exhibits was noticeable, for we are continually witnessing outstanding examples of the aeromodeller's art in static displays at various Rallies and Galas, any of which could be among the prize-winners at the "M.E." Surely owners are not content to display their masterpieces to the converted only—a little more window dressing in front of the general public would not come amiss.

Perhaps the greatest disappointment is the continued absence of aeromodelling contenders for the Duke of Edinburgh Trophy. We see no reason why some of the better examples of the aeromodeller's art do not take their place with the loco's, ships, and general engineering exhibits that are so plentiful at the "M.E.". Granted, the bulk of model aircraft are built for functional performance with no thought of exhibitions in mind, but every Rally produces a galaxy of models never intended to take the air, any one of which could rank with those modelling marvels produced on a lathe.

This year's winner of the Duke's Trophy is outstanding inasmuch as it displays a thorough knowledge and skill in more than one branch of the modeller's art. Mr. C. A. Chapman, of Peacehaven, exhibited a small scale Admiral's Barge in a setting rarely witnessed in a show of this nature, for his general display created a picture in three dimensions that was excellent in all details. In our (probably biased) opinion, only a model aircraft from the Evan's stable could have competed on equal terms with Mr. Chapman, but we are unshaken in our view that it is high time aeromodelling exhibits took their rightful place with the other examples of modelling in this widely publicised annual show.

Mrs. Rip

Modellers everywhere will join us in tendering sincere sympathies to Mr. C. A. (Rip) Rippon on the loss of his wife, who passed away on the 22nd. August, 1955. To most of us, the "Rips" seemed to have been going as long as aeromodelling itself, and Mrs. Rippon will be sadly missed at those functions where her kindly and motherly presence made itself felt.

Our last recollection of her was the 1954 Northern Heights dinner, when these founder members were presented with a handsome volume of photographs, recalling many of their earlier activities in the Club, and particularly those connected with the famous N.H. Gala, which the Rippons' did so much to popularise.

There are probably few ladies connected with the aeromodelling movement so widely known as Mrs. "Rip", for apart from her activities in a hard working capacity at the various Galas, she met a wide circle of hobbyists at the well-known pre-war establishment of Premier Aeromodel Supplies, where the Rippons presided as a committee of two welcoming modellers for visitors from all over the country. There are far too few of her calibre today, and her cheerful presence will be sorely missed.

Golden Wings Finalists

The response to our special Junior contest, as announced in the July, 1955, issue, exceeded all expectations, and the flight entry forms came in at such a rate that we were hard put to it to cope! The enthusiastic reception of our junior stimulus has been most encouraging, and clearly demonstrates that there is a huge potential to the aeromodelling movement, if only those in charge of clubs will open their eyes to the fact.

The constant cry of "lack of members" surely indicates a want of drive and/or publicity on the part of established clubs. We have been particularly aware of the number of requests for information regarding local flying groups, and it is obvious that in a number of cases even the local model shop proprietor is not aware of clubs operating in his area. It is up to clubs to bring their existence to the notice of the public by means of articles or notices in local newspapers, and in particular the provision of suitable literature and notices in the local shop where new members can expect to be recruited. To those clubs who have informed would-be members that "they don't cater for juniors" we would only say, get genned up and form a junior section right away, for a youngster set on the right road now is tomorrow's first-rate senior. Lack of foresight seems to be an occupational hazard in some model clubs!

The lucky finalists who competed for the valuable list of prizes at R.A.F. Halton on September 10th-11th are as follows, and a full report will appear in our November issue, on sale October 15th, 1955.

District	Name	Age	Town	Total'
A.T.C.	G. A. Rossion	15y.10m.	Sandbach, Ches.	12m. 21s.
1	A. Black	15y. 7m.	Lanark, Scotland	7m. 10s.
2	J. Cooke	15y. 9m.	Spennymoor, Durham	7m. 30s.
3	I. A. Ramsay	14y. 2m.	Sheffeld, Yorks.	5m. 53s.
4	D. R. Reed	14y. 4m.	Cheadle, Ches.	7m. 15s.
5	M. D. Sinington	15y. 2m.	Newport, Salop	15m. 10s.
6	J. Fellows	15y. 6m.	West Bromwich, Staffs	9m. 23s.
7	P. Ball	12y.10m.	Croft, Leics	9m. 40s.
8	T. K. Donovan	15y.10m.	Lambeth, London	14m. 02s.
9	M. Newman	10y. 6m.	Kingston, Surrey	7m. 45s.
10	R. A. Gatehouse	15y.11m.	Mere, Wilts	9m. 57s.

In addition we have selected the youngest competitor, John Shember of Oxford, who is only 8 years 11 months old, and whose total time was 4m. 19s.

We congratulate this round dozen of enthusiastic youngsters for their stout efforts in the contest. Some idea of the performance attained with the standard "Golden Wings" A/I glider design is reflected in the durations quoted above. Those who failed to qualify can be justly proud of their own efforts achieved against keen competition from the length and breadth of the British Isles.



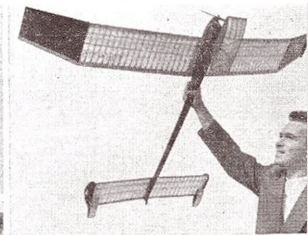
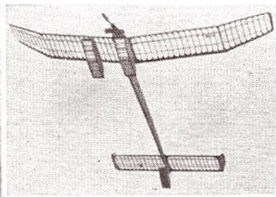
WE OF "AEROMODELLER" STAFF take a full viewing of most events during the course of a year, and we see all aspects of the hobby from indoor exhibitions to the major rallies, small club events to national team finals. We enjoy all of them; but there are some which stand out for the entertainment they provide and the enlightenment they offer. The indoor meetings at Cardington, slope soaring at Clwyd, and now, the Italian Hydromodel Nationals are highlights most recent in our memory and of the three, the Italian meeting provided the most in colour and excitement.

One has only to imagine the possibilities offered by a combination of Latin temperament, deep water, a rocky boat and a launching platform of dubious stability to understand why we should have particularly enjoyed watching the 7th Annual "Coppa Ostali" at the Idroscalo, Milan, on June 10th. The site was a large expanse of waterdrome, man-made for a flying boat port in the days of Mussolini, and no more than 30 minutes from the centre of hot, bustling Milan. The contest was organised as always by the local Aero Club modelling section, and the efforts of Ing. Nino Frachetti saw to it that everything, from transport through to food were laid on the Militia. In fact, this is one meet-

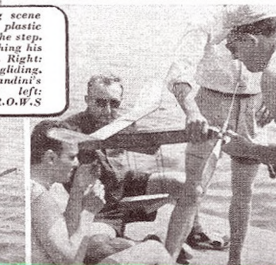
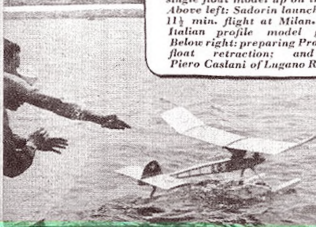
Flying over water is a neglected side of British Aeromodelling—why not take a hint from this feature illustrating recent Italian, Swiss and U.S.A. National contests, which also introduces three first-class Hydro-model designs.

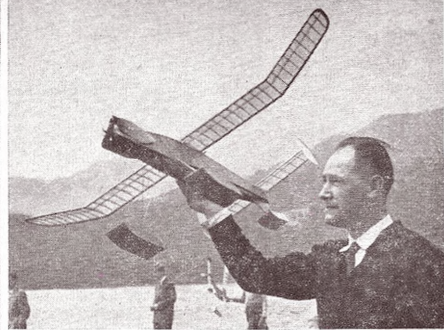
ing that simply calls for appraisal and inclusion on the International Calendar, for it has all the features worthy of support by teams from other countries. This year the event was brightened even further by the appearance of a group up from Monaco, while the comparatively nearby Swiss from Lugano also attended by invitation of the organisers. So the "Coppa Ostali" does already possess an International flavour, and we gather that Ing. Frachetti would welcome other teams in future. As matters stand, the locals have it all their own way with a high standard of flying, particularly in rubber (the Cup is a challenge trophy awarded to top team in both rubber and power).

It was unfortunate that the usual flat pontoon used for launching sank whilst under tow only a few days before the event, though we wish we had been there to witness so spectacular a happening. In its place modellers had to make the best of a 25 degree angled jumping ramp for water skiers, and in spite of vociferous warnings, the ramp was constantly overloaded and no place for spare photographers. There were a great many wet feet and waterlogged tailplanes at the end of the day, but none would complain of this, for in the intense heat of an Italian summer water-cooling was welcome.



Heading shows launching scene at '55 U.S. Nats with a plastic single float model up on the step. Above left: Sudorin launching his 1 1/2 min. flight at Milan. Right: Italian profile model gliding. Below right: preparing Prandini's float retraction; and left: Piero Casiani of Lugano R.O.W.S.





This was the first time we have ever seen thermals off water: an 11:30 flight O.O.S. by Edgardo Sadorin's Wakefield on floats (no d/t!) setting the pace early on and eight more flights picked up similar thermals as the meeting progressed. Those that drifted overland were swiftly recovered by the Squadre Motoceyclisti—except poor Sadorin's, which probably went for a height record!

Eventually, after a series of take-offs amid excitement that might well have rivalled a Clydeside launching, Roberto Bacchi and his veteran Tucano design emerged winner of power, and Dante Prandini gained a well deserved victory in rubber. Perhaps the photos convey something of the very high standard of finish and construction in these two models. Prandini's Wakefield size design had a most ingenious fuse-operated forward float which retracted into the fuselage contours immediately after leaving the water, and doubtless added much to his flight performance.

Of the models, most employed the single forward float with twin tip floats on the tail. Though less stable on water, and certainly a guarantee for water-logged surfaces on alighting, this layout is undoubtedly best for high powered designs, whilst the twin nose float scheme offers the satisfaction of

a more attractive longer take-off run and an upright floating position after alighting. In smooth water there would be little to choose between the two; that is the reason why twin floats are so popular with the Swiss who enjoy such calm conditions.

Filled with enthusiasm for waterplanes, or Hydromodels as they should be called, we returned to the office to find the timely arrival of three designs—all of which are presented here. Vic Smeed's *Merbaby* is a delightfully simple rubber design you can make overnight for minimum outlay.

Peter Holland's nicely proportioned *Miranda* is a perfect amphibious sport flier for '75 c.c. to 1 c.c. engines and the *Catalina*, possibly one of the finest drawings in the A.P.S. range, is a three-way design as Flying Boat, Landplane, or Amphibian in U.S. Navy or R.A.F. colours to please the hearts of all controliners with a pair of engines near to 2.5 c.c.

If you get only half as much fun as we had in making proving flights of these models, you'll soon find that flying over water is a little appreciated variation of our hobby that deserves more attention. There's no need to have a vast expanse of water either, for these designs will land happily on a grass field without damage so why not start now and take to H₂O for your next model?

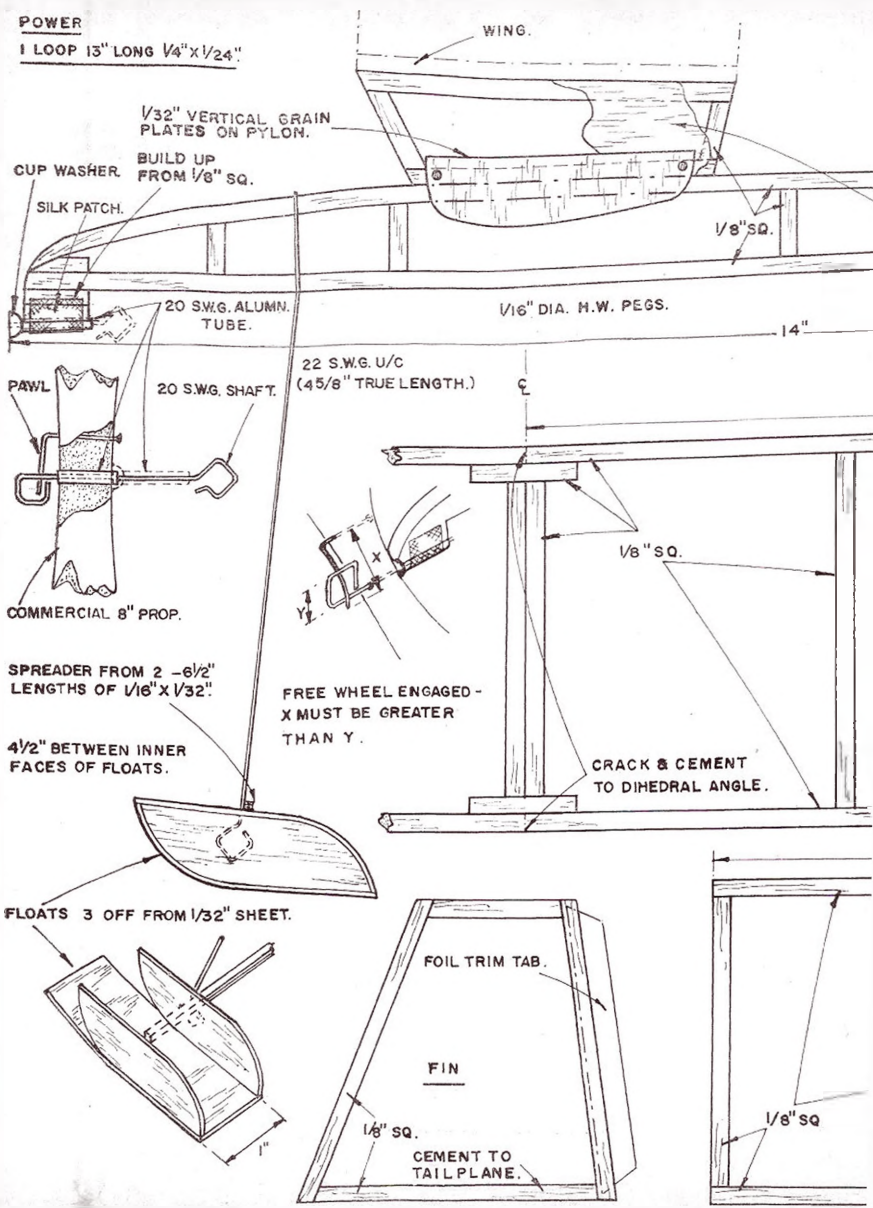


Top: Hans Buhr and Alfred Bickel display popular 2-float arrangement which won them 1st in power and 2nd in rubber at Swiss Nats. Single floats are evident in Bacchi's Italian winner (opp. page) and Zang's Swiss design below him, seen at the Milan contest. Here, two forms of recovery; at left, volunteer Stan Friedman run a wading service at U.S. Nats, and below: Gastiglioni swims back with Baracchi's damaged model. Unique cheat is Carl Lindley's plastic ballooned FTQ version of his Elfin 1.3 model at U.S. Nats: Could be called the flying Pambroker.

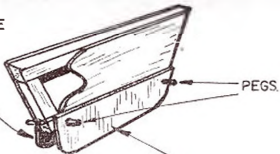


POWER

1 LOOP 13" LONG $\frac{1}{4}$ " x $\frac{1}{24}$ "



WING SADDLE



Merbaby

BY

VIC SMEED



PYLON SLIDES FOR TRIM.

CEMENT L.E. OF TAIL PLANE HERE.

1/32" SHEET COVERING EACH SIDE.

22 S.W.G. REAR HOOK.

CEMENT.

22 S.W.G. REAR LEG.

1 3/4" DIHEDRAL.

10"

STARBOARD WING.

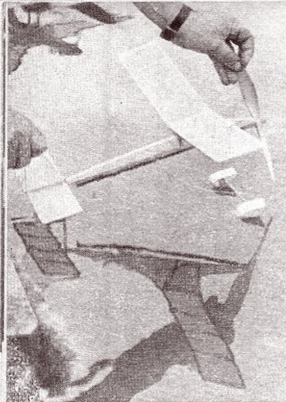
FLOAT AS FRONT.

REAR LEG CEMENTED TO TOP OF FLOAT.



8 1/2"

TAILPLANE



Nearly head-on view of Merbaby about to unstick will carry special memories for us, as it was taken whilst standing in 4 ft. 6 in. of water and missed the camera by scant inches!

Vic Smeed's MERBABY

A 20-inch puddle-jumper for beginner or expert

ONE EVENING'S WORK, four lengths of $\frac{1}{4}$ sq., half-a-sheet $1/32 \times 3$, 18 inches of wire, a scrap of tissue, an inch of tube and a propeller—that's the complete list for snappy little Merbaby which will return you fun far in excess of the outlay.

It's a good many years since a stick model was featured in the "AEROMODELLER"; older fans will remember that in the '30s such models were the basic trainers of the day and were regularly featured in the model press, especially in the old American *Flying Aces*. We have retained most of the simple features of these early models, but one or two improvements such as a built-up stick and rubber-held wing have been incorporated.

Pick medium hard "springy" $\frac{1}{4}$ sq., and lay out the fuselage frame. The rear rubber hook should go into the lower longeron before pinning this down. When the frame is dry remove the pins, cement the frame and lay the entire sheet of $1/32$ in place, weighting down to dry. When the cement is set remove the unit from the plan and trim to shape; repeat on the other side. The fuselage is finished by cementing two pieces of $\frac{1}{4}$ sq. beneath the nose and binding a stub of 20 gauge aluminium tube in place; note the correct downthrust, obtained by trimming the $\frac{1}{4}$ sq. Coat over the tube and patch with cement.

The tailplane is a simple flat plate, as is the fin. The trim tab can be of very thin aluminium foil or

celluloid, or even notepaper. The wing is built one half at a time flat on the plan, omitting the centre "ribs". When the second half is dry crack the spars to dihedral and pin the wing down on edge, cementing in the two short $\frac{1}{4}$ sq. braces. Now add the two centre ribs. The wing pylon is a $\frac{1}{4}$ sq. frame; the lower member can be pre-curved in the fingers before assembly. Cover the sides with $1/32$ sheet as with the fuselage, and when dry clean up and round fore and aft before adding the side plates and stub pegs, which can be pared from a matchstick. The flying surfaces are covered on one side only, with lightweight *hard* tissue, without even rounding the edges. A coat of very thin banana oil is all that is required, but make sure that there are no warps. Cement the wing to the wing-mount and the fin and tail-plane in place when the banana oil is thoroughly dry.

The airscrew on our original was a stock 8 in. KK propeller which we merely sanded lightly and checked for balance; the $7\frac{1}{2}$ in. KK plastic prop. should prove quite as suitable. Bend the rubber hook, slide the shaft through the nose bearing, fit on a cup washer and the propeller (which is best bushed with tubing) and bend the front loop. The freewheel pawl is fitted through an unbushed hole and should swivel freely; check that the operation is satisfactory.

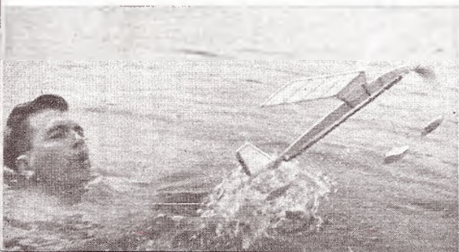
Nothing further need be done for landplane flying, although a tail skid and wheel undercarriage makes operation much more fun. Use $\frac{3}{8}$ in. light-weight wheels. The float gear is built by cutting six identical $1/32$ sheet sides and cementing these upright on 1 in. wide strips of $1/32$, cross grained. When the initial cement is dry the sheet can be bent round the float; the top is covered in the same way. Bear-claw floats of this size need no internal structure. The mounting wires are bent into a diamond at their extremities and cemented against the floats with two or three coats of cement. We used 24 g. wire and found it necessary to attach

(continued on page 524)

To Editor, Harry Hundley, makes a "Whooah" launch of Merbaby and in midstream. The little model carried on for a 30-second flight and alighted upright, safe and dry.

Full-size copies of the 1/16th scale plans of Merbaby opposite are available from AEROMODELLER PLANS SERVICE, price 4s. 6d. post free.

Full-size plans overleaf
for **MERBABY**



Merbaby (Continued from page 522)

cotton braces, but if 22 g. wire is used with a $\frac{1}{4}$ x $\frac{1}{4}$ cross brace between the floats no other bracing is necessary. One 13 in. loop of $\frac{1}{4}$ x 24 rubber brought our finished weight to just $\frac{3}{4}$ oz., including two thorough coats of banana oil on the floats. If you expect to fly over a large area of water where the model may alight back on water, it is advisable to banana oil the fuselage as well.

We found the best trim was slight right rudder with a little wash-in (leading edge $\frac{1}{8}$ in. high) on the port wing. Slide the wing forward or back until the model balances approximately at mid-chord, take up the slack in the rubber with a few turns, and check for glide. When the right position for the wing is found, mark it clearly. On maximum turns (450 or so) you should hit a consistent 30 secs. plus—the neater and lighter your construction the higher your flight average will be.

MIRANDA

Peter Holland's Flying Boat for '75 or 1 c.c.

THIS IS A MODEL that can be flown "wet or dry". Although designed as a Flying Boat, an undercarriage can be plugged into the solid sponson tips, and Miranda becomes a landplane ready for R.O.G. in grass or on tarmac until you locate your nearest stretch of suitable water. Simple structure, a flat hull planing bottom, the large cabin, and protected propeller position on the high engine mount are but few of the many points in favour of this attractive model which flew through flight tests with an Allbon Merlin.

We found that it liked a wide left climb after the beautiful long skating take-off run, and a touch of right rudder on the trim tab gave it a smooth right hand glide approach back to a skimming "landing"—and if that's not enough to tempt you, we can also say that Pete Holland made the prototype in a week of evenings, just to show how simple it is!

A glance at the sketch on the plan shows how the fuselage, or hull, is assembled around two vertical keels of $\frac{3}{8}$ -in. with the central parts of the first six formers mounted between them. The rear hull tapers to a joint of the keels, and outer bulkhead portions complete the hull section back to the rear step. Solid sponsons are mounted integral with the hull, $\frac{1}{4}$ -in. sheet forms the bow block and tail platform, and we are ready to cover with $\frac{1}{8}$ -in. sheet. Mounted over F4 and F5, the engine nacelle becomes an automatic assembly of tongue, bearers, and formers with $\frac{1}{2}$ -in. covering the top forward section and $\frac{1}{8}$ -in. at the rear. An M.S. tank in the engine compartment can be hidden by the detach-



Miranda and Merbaby make flotation tests in calm water

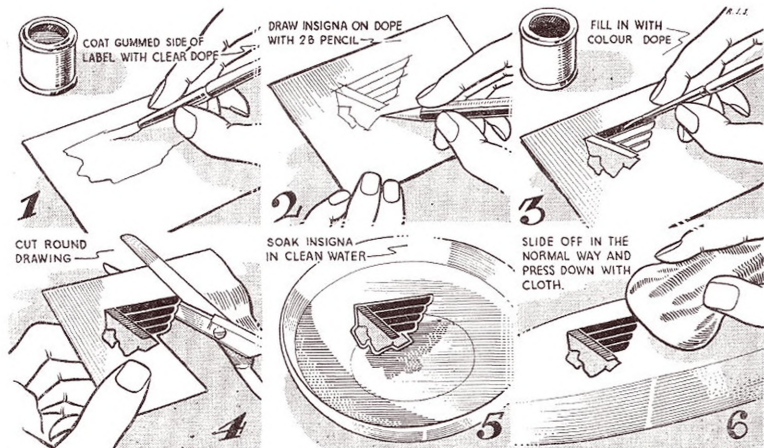
able access hatch, and a $\frac{1}{2}$ -in. sheet cowl ring, C.1, adds much to the appearance.

There remains the cabin "divider" of $\frac{1}{8}$ -in., over which the celluloid windows are applied, then a final layer of thin card or $\frac{1}{16}$ -in. sheet forms an outer protection against water seepage. $\frac{1}{8}$ -in. diameter reed will enhance the edge of the windows and also make sure of a watertight joint. We cannot place too much emphasis on this waterproofing business, as the model is a lightweight, and it is surprising how this soon becomes heavyweight after a day on the water, should the proofing not be good enough.

If you do find the cabin showing signs of water content, cut a hatch in the centre section top to let it dry out, or you might find yourself with a glass-house full of *balsa fungi*—even mushrooms might germinate on the damp interior!

Wings and tail of Miranda are simplicity itself. Each wing panel seats on to the centre section tongue and is held in place by a match stick shear pin through spars, box and tongue, while the "vee" form of the tail ensures accurate alignment on its platform.

Remember to put your name and address label inside the cabin before completing the fuselage, cover with lightweight Modelspan, dope liberally and then waterproof with Aerolac or similar clear varnish . . . and you are ready for taking the air with one of the smartest hydromodels it has been our pleasure to fly.



Make your own TRANSFERS

E. J. VINE describes how you can decorate your latest model with a favourite emblem

THIS METHOD of making one's own transfers for solid models or decoration of a flying design reveals a simple solution to the many queries we receive at "AEROMODELLER" offices.

The base is a gummed parcel label (purchased from a multiple store); this is pinned to a smooth board and then given a heavy coat of plasticised clear dope on the gummed surface and allowed to dry.

The next step is to set out the marking or design required; this is best done with a 2B pencil as it requires only slight pressure.

After this, the required colours can be applied in dope (ordinary paint is not suitable) and then allowed to dry.

Then comes the most interesting and sometimes difficult part—remove the paper from the board and carefully cut round the design.

The design is now ready for soaking; this is best carried out in a shallow container of water, the transfer being allowed to float on the surface with the design uppermost for a few minutes; it is then advisable to leave on a board for a further few

minutes to allow the water to soften the gum between the paper and the clear dope. It is now possible to slide the design off of the paper in the normal way on to the surface of the model and press gently with a clean soft cloth and leave to dry.

The reason for leaving the transfer to soak well is that otherwise the gum is liable to come away from the clear dope and remain on the paper. If this does happen, the design may peel away from the model. In this event a light rub from a moist gummed label on the model should reflex it without much trouble.

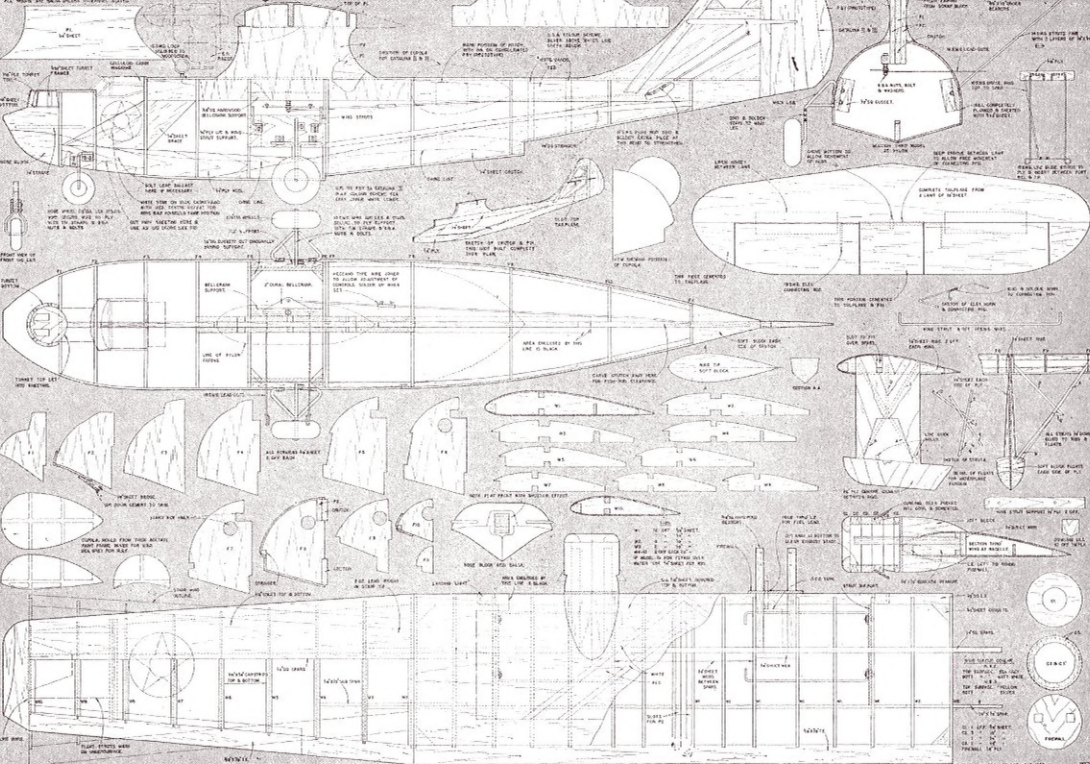
In conclusion, the old adage "If at first you don't succeed, etc." is good advice.

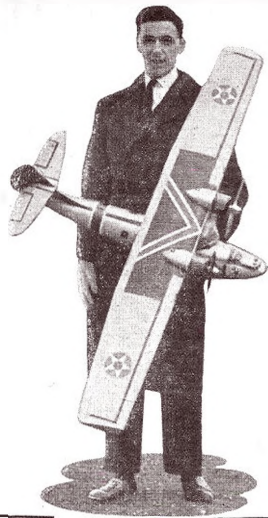
"This is the last time we take out the big stunt job!"



PBY CATALINA
 DESIGNED BY
F. W. Beckland
A. D. Kingswood
 THE AEROMODELLER PLANS SERVICE
 16 CLARENCE ST. BUFFALO, N. Y.

SIZES OF SHEETS OF PAPER		SIZES OF SHEETS OF MATERIALS REQUIRED	
NO. 1	11" x 17"	PLYWOOD	1/8" (1/4" FOR MAIN WING)
NO. 2	14" x 22"	BALSA	1/8" (1/4" FOR MAIN WING)
NO. 3	17" x 27"	BRASS	1/16" (1/32" FOR MAIN WING)
NO. 4	21" x 33"	STEEL	1/16" (1/32" FOR MAIN WING)
NO. 5	25" x 39"	ALUMINUM	1/16" (1/32" FOR MAIN WING)
NO. 6	30" x 48"	GLASS	1/16" (1/32" FOR MAIN WING)
NO. 7	36" x 54"	LEAD	1/16" (1/32" FOR MAIN WING)
NO. 8	42" x 60"	WAX	1/16" (1/32" FOR MAIN WING)
NO. 9	48" x 66"	GLUE	1/16" (1/32" FOR MAIN WING)
NO. 10	54" x 72"	ROPE	1/16" (1/32" FOR MAIN WING)
NO. 11	60" x 78"	WIRE	1/16" (1/32" FOR MAIN WING)
NO. 12	66" x 84"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 13	72" x 90"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 14	78" x 96"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 15	84" x 102"	SPRING	1/16" (1/32" FOR MAIN WING)
NO. 16	90" x 108"	SHIM	1/16" (1/32" FOR MAIN WING)
NO. 17	96" x 114"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 18	102" x 120"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 19	108" x 126"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 20	114" x 132"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 21	120" x 138"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 22	126" x 144"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 23	132" x 150"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 24	138" x 156"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 25	144" x 162"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 26	150" x 168"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 27	156" x 174"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 28	162" x 180"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 29	168" x 186"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 30	174" x 192"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 31	180" x 198"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 32	186" x 204"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 33	192" x 210"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 34	198" x 216"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 35	204" x 222"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 36	210" x 228"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 37	216" x 234"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 38	222" x 240"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 39	228" x 246"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 40	234" x 252"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 41	240" x 258"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 42	246" x 264"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 43	252" x 270"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 44	258" x 276"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 45	264" x 282"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 46	270" x 288"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 47	276" x 294"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 48	282" x 300"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 49	288" x 306"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 50	294" x 312"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 51	300" x 318"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 52	306" x 324"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 53	312" x 330"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 54	318" x 336"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 55	324" x 342"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 56	330" x 348"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 57	336" x 354"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 58	342" x 360"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 59	348" x 366"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 60	354" x 372"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 61	360" x 378"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 62	366" x 384"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 63	372" x 390"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 64	378" x 396"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 65	384" x 402"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 66	390" x 408"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 67	396" x 414"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 68	402" x 420"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 69	408" x 426"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 70	414" x 432"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 71	420" x 438"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 72	426" x 444"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 73	432" x 450"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 74	438" x 456"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 75	444" x 462"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 76	450" x 468"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 77	456" x 474"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 78	462" x 480"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 79	468" x 486"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 80	474" x 492"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 81	480" x 498"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 82	486" x 504"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 83	492" x 510"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 84	498" x 516"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 85	504" x 522"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 86	510" x 528"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 87	516" x 534"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 88	522" x 540"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 89	528" x 546"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 90	534" x 552"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 91	540" x 558"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 92	546" x 564"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 93	552" x 570"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 94	558" x 576"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 95	564" x 582"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 96	570" x 588"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 97	576" x 594"	NUT	1/16" (1/32" FOR MAIN WING)
NO. 98	582" x 600"	WASHER	1/16" (1/32" FOR MAIN WING)
NO. 99	588" x 606"	SCREW	1/16" (1/32" FOR MAIN WING)
NO. 100	594" x 612"	NUT	1/16" (1/32" FOR MAIN WING)





The P.B.Y.5, 1938 version, was strictly a flying boat only. It could be distinguished for its curved rudder trailing edge, hatches in the rear fuselage and vivid colouring, as will be seen in the two photos on this page. Making it into an amphibian is rather cheating on scale; but if you happen to be a stickler for accuracy the "Cansos" as it was known to the R.C.A.F. is detailed. This was also the Catalina III in the R.A.F., and calls for straight rudder trailing edge, undercarriage up or down and massive rear fuselage gun cupolas that have to be moulded from acetate sheet. One need not be drab in colouring such a Mk. III, or a straight flying boat Mk. II, for Coastal Command camouflage allows a bright matt white finish for all the undersurfaces, and sea grey for the topsides which is a contrast sure to catch the eye. Add to this a nose roundel and individual aircraft code letter of same depth in drab red in front of the struts (Squadron code letters were not used) and the R.A.F. version too calls for many dope colours.

If you really want to be ambitious you can make it a P.B.Y.-5 flying boat, for overwater control-

An accurate scale control-line

CONSOLIDATED CATALINA

by F. H. Buckland & A. D. Kingswood

HERE IS A MODEL to delight the scale fan seeking something different, and its gay colour scheme will attract and hold the attention of any "concours" judge—this we guarantee! This does not imply that the "Cat" is just for looking at; built as a combination effort by Alan Kingswood and Frank Buckland, the original is now three years old and still rarin' to go.

First power units were AMCO 3-5s, but these were later exchanged for E.D. 246s. Not much power for a 63-inch model you say? Look again at the wing area and let us add that this four-and-a-quarter pound beauty has *taken off* and flown quite happily on *ONE* of these engines driving an 8 x 8 prop! The tricycle undercarriage makes landings and take-offs a joy—no nose overs here.

lining with tip floats down as detailed and shadow-shaded in green and grey camouflage, with grey undersides and the Red Star of the U.S.S.R. on the rear fuselage behind the hatches. (No cupolas!)

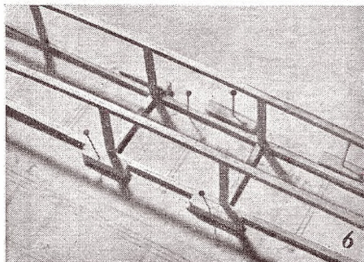
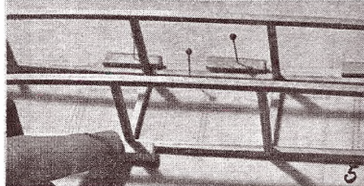
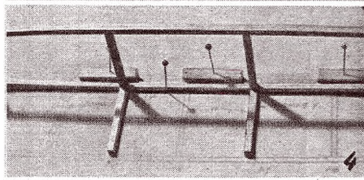
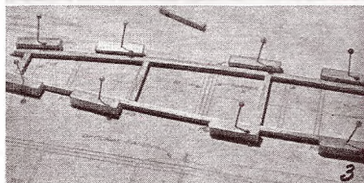
Airframe numbers for a silver P.B.Y. (curved rudder) in R.A.F. markings was P9630, the same number appearing in large black figures under each wing, and a number for a Mk. III would be FP-533, appearing only on the fin root.

Whatever your choice for colouring, the Catalina, Cansos or Dumbo as it was known to Coastal Services throughout World War II, will be a building project worthy of any pair of engines totalling 4 c.c. or more and is certain to be a favourite with all who have built the successful A.P.S. Invader

Equally at home on water or on land, the "Cat" prototype is seen here afloat with undercarriage detached. Painted wheel wells instead of actual recesses obviate any chance of a leak in the hull if such a dual purpose model is to be built. Tip floats, shown fixed here, should be put "down" for a water version. Who could fail to be attracted by such an ideal twin controller?

Full size copies of the 1/6th scale plans opposite are available, price 2s. 6d. post free from
AEROMODELLER PLANS
SERVICE





IF YOU are a member of an aeromodelling club you will have found out for yourself that modellers as a body are a helpful, unselfish crowd, and that the old hands are always ready to give the benefit of their experience to newcomers. Many of these experienced modellers have evolved their own pet techniques particularly as regards building methods, and while it is easy enough to show a beginner how to trim a model, using a finished glider out on the flying field, it is not so easy to explain how some particular building problem was overcome merely by pointing to the finished job on the model you happen to be flying. Moreover, there are hundreds of other beginners all over the country who aren't there to see.

Especially for the tips on building fuselage side

Most building problems, or rather the methods for overcoming them, can be understood readily enough if you can watch the modeller at work; and the next best thing to that is a series of photographs showing the various stages of the job accompanied by a written explanation, such as is being attempted in these beginners' articles. So if there are any modellers who have ideas which they think worth spreading, why not send them along?

Here, for instance, is a novel idea for better fuselage construction, which comes from that very well-known modeller, Mr. George Woolls of Bristol. The normal method for laying out the sides of a fuselage is to use pins pushed vertically into the workboard on alternate sides of the longerons to guide them along the lines marked on the plan, and the second side is then built directly over the first with the longerons passing between the original set of pins. Now Mr. Woolls point out that this is all very well as long as the pins are vertical, but if they tend to slant one way or the other (as they often do!), then the uppermost longeron is not going to lie directly on top of the lower one, but will be pushed over to one side, giving us a result something like that shown in Fig. 1A.

"This snag", says Mr. Woolls, "is easily overcome by using small pieces of $\frac{1}{4}$ in. square balsa, held in place with pins (pushed through them) to guide the longerons. It does not matter now whether the pins go in straight or not"—for the short lengths of balsa will sit squarely on the workboard whatever the angle of the pin—see Fig. 1B.

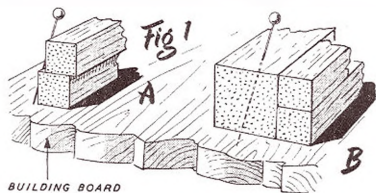


Fig. 2 shows the short lengths of $\frac{1}{4}$ in. square balsa pinned down against the contour of the fuselage plan (side elevation). In Fig. 3, longerons and spacers of the first side are set in place between the $\frac{1}{4}$ in. square blocks. (Not all the spacers marked on this particular plan were put in, but just enough for the experiment.) The second side is then built directly over the first—and it will be directly over it—and when dry, the two sides are removed, sanded uniform, and sliced apart.

The same idea can be used for joining the two sides together. The longerons of the two sides just made, will curve considerably between nose and tail, but there is always a point about half-way along the lower longeron where the curve almost

Beginner

cleaning brushes and use of thinners

By Rev. F. Callon

levels out. Push in two or three of the $\frac{1}{4}$ in. square blocks along one edge of the top view of the fuselage at this point, and push one of the finished sides vertically up against the blocks in its correct plan position. A single pin pushed into the workboard on the other side of the lower longeron will hold the side upright, pressing against the blocks—see Fig. 4—when the two central lower spacers can be cemented in place. Fig. 5 shows the second side being cemented against the ends of these spacers, with the $\frac{1}{4}$ in. square block being pushed firmly against the framework, thus holding it vertical. In Fig. 6 the other blocks have been added and pinned in place, when the framework is setting quite square even before the top spacers have been added. The rest of the procedure is as normal: tail ends cemented together, and the rest of the spacers, top and bottom, added in order from the nose.

If you happen to be one of those people who go in for rubber models with abnormally long fuselages of square cross-section and parallel sides, the above method can be adapted slightly by laying out a sheet of $\frac{1}{4}$ in. balsa on either side of the fuselage plan and building the two sides one over the other between them. The sides can then be stood up between the two $\frac{1}{4}$ in. sheets (without moving the latter) and the cross spacers added, top and bottom.

Dope Brushes. A good average brush which will do most doping jobs is a soft, squirrel-hair brush of medium size—about half-an-inch across the bristles. Such a brush is ideal for applying thin, clear dope; but if the dope is on the thick side, the soft bristles tend to flop about and drag when "loaded" with dope, and a stiffer bristle, such as horse-hair is preferable. For applying coloured decorations over small areas, or for getting nice clean edges to a coloured area, a small, soft brush is needed: an average size water-colour brush as supplied with a child's box of paints is just the thing.

It is a good idea to thin down the dope for the first coat with about 50 per cent. thinners.



It can then be applied with a fairly large soft brush with which you can move very fast with no danger of pushing a hole through the tissue, and the overall time is cut down considerably. It is also much easier to apply thin dope evenly than thick dope; in fact two coats of thin dope will always do the job better than one coat of thick. But we're supposed to be talking about brushes, not dope; and the thing I really wanted to tell you about brushes was how to clean them.

Now, these articles are written, as you know, for beginners; but I've found out one way and another that most of the old hands read them too, probably waiting to pounce! If any of these gentlemen think it a waste of time to tell people how to clean dope brushes, I'd be much obliged if they would take a look at Fig. 7. The three brushes on the right were salvaged (too late) from our junior workroom. They are brilliantly coloured—red, yellow and blue—and the colour extends well up the handles. (A point to remember when using brushes, is that you should never dip them further into the dope or paint than about two-thirds the length of the bristles.) The bristles on these three specimens are set hard in what is now a solid mass of coloured celluloid, and I very much doubt whether even the most prolonged soaking in thinners would make them usable again. The brush on the left has also been used a lot, but it has been regularly and carefully cleaned after use and as a result it is still as good as new.

How to clean a brush

I have found by expensive experience that 50 per cent. of beginners don't clean brushes at all, and of the rest the majority merely stick the brush straight into the thinners jar—which doesn't do the thinners any good, particularly if the brush has just been used for coloured dope. One of the best materials for cleaning brushes is newsprint, such as old copies of the *Radio Times*. This paper is sufficiently absorbent to soak up any surplus moisture very quickly. First of all, as soon as you have finished using the brush, squeeze out as much dope as possible from the bristles between folds of that type of paper, then pour a few drops of thinners into a small tin lid or similar receptacle, dip the bristles into the thinners, and then squeeze out in the paper again. The process is repeated two or three times, and finally give the bristles a last rinse in fresh thinners—either by emptying the tin lid and pouring in a very small quantity, or, if you've got a steady hand, by holding the bristles underneath the lip of the thinners jar and pouring out just enough thinners for them to soak up. A last squeeze between folds of newsprint, a flip with the fingers to open out the bristles, and your brush will dry out just like it came from the shop. Figs. 8, 9 and 10 show the three stages in the process, and should speak for themselves.

Odd Jobs with Thinners. Properly speaking, thinners are (or "is") the solvent for cellulose dope, so their primary job is to thin down thick

dope. We've just seen how useful they are for cleaning brushes, and there are a few other jobs they can do.

Thinners for finish

Everyone likes to get a smooth, super-gloss finish on his models. You can always achieve this with a final coat of banana oil (non-shrinking clear varnish) or fuel-proofer, but this costs money and adds considerably to the all-up weight of the model. On the smooth, Japanese type of tissue covering, it is easy to get a high gloss with nothing more than one or two coats of clear dope, but these days most people use "Modelspan", and unless very thick dope is used roughness shows through in patches even after two coats of clear dope. If you have got any models in this state, try giving them a quick brush over with thinners, using a large, soft brush. Move quickly, and don't go back over your work. Be particularly careful near the edges of any areas of coloured dope; you can go over them once only if smears are to be avoided. Exactly how this treatment works I have not been able to find out, but it appears to have the effect of drawing up the dope to the surface of the tissue, and when it dries out (which it does in a matter of minutes) the rough patches seem to have vanished leaving a mirror-like finish. The tissue goes limp temporarily, but there does not seem to be any need to pin down flying surfaces so treated; at least, I've never noticed any warps develop as a result.

It is more widely known that the same process—a quick brush over the thinners—will remove "blushing marks", that is whitish patches which appear when clear dope is applied in a damp atmosphere. If the fault is not to be repeated, the thinners must of course, be applied in a warm, dry room.

I've never yet heard of a modeller wearing rubber gloves when building, but that would seem to be the only sure way of preventing percentage of the contents of the cement tube from ending up on the fingers. Some prefer to bite it off, while others scrape and scratch with their nails. If you have nothing better to do while the framework is setting, that's fair enough; but a quick rub over the fingers with a rag soaked in thinners does the job much more efficiently. And it is the *only* way there is of getting cement off clothes without damaging the material—so perhaps you'll be able to interest your mothers in paying your thinners bills! (Messrs. Hammer Oil Co. now produce a special solvent.—ED.)

We haven't yet dealt with power modelling, but those who have done any, may have noticed how the threads of the engine mounting bolts sometimes get clogged up with dope, cement, or fuel proofer, making it difficult to get the nuts on, particularly in the confined space of a streamlined cowling. It often saves time and temper to brush over the bolts with thinners just before screwing on the nuts. Works like magic every time!



New style D.H.C. emblem carries Beaver silhouette, is seen on most Otter fins, and name at right is usually on pilot's door



Aircraft described

Number 76

by G. A. CULL

NOWHERE is the civil aeroplane put to better use than in the field of "hush flying", which term has acquired a certain romance stemming from the remote areas of northern Canada where the aeroplane is a workaday vehicle. These vast tracts of undeveloped country provide plenty of scope and this well-forested and rugged terrain has bred a class of machines that are about the most useful and sensible aeroplanes flying. Since the war the Canadian branch of De Havilland have produced two such machines, the first being the 450 h.p. six-passenger Beaver. From the great success of this it was apparent that there would also be work for an aeroplane carrying twice the Beaver's load, and so design work was started on a bigger machine to become the Otter. The maiden flight was made at Downsview in December, 1951, twelve months afterwards.

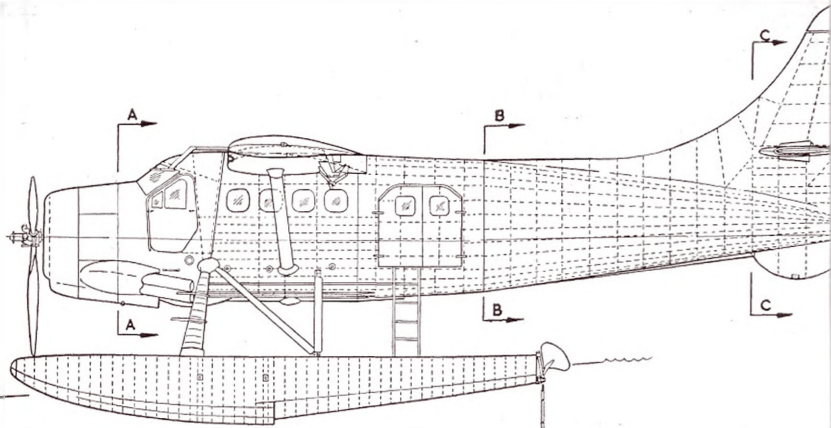
For economy and simplicity a single engine was used, but there was no engine available proportionately more powerful than the Beaver's to give the required performance. So the reliable supercharged and geared 600 h.p. P & W Wasp R.1340 9-cyl radial was adopted and a special effort made to refine the airframe and so still achieve the desired performance. The policy was to build light and then to strengthen as tests indicated. In actual fact, very little reinforcing proved necessary and the result is a much lighter airframe than would have otherwise been obtained, meaning increased efficiency to the designer and better value for money for the operator. Bush, or "utility" aeroplanes, to use a well-deserved name, must carry a variety of cargoes such as oil drums, mining gear, cases of supplies and passengers in ever varying proportions, and so for ease of loading and cabin outlook a high wing is inevitable. In Canada it has been said that the smallest lakes are surrounded by the highest trees and so take-off and climb with full load is of paramount importance; consequently much research went into the Otter's wing design. An undercambered wing section was developed and full span double slotted flaps employed.

The ailerons form the outboard trailing edge section of these and are drooped for flap effect. An unusual wing has resulted from the quest for lightness, the major part of the top surface has a double skin spaced apart by corrugations. This deals satisfactorily with the heavy torsion loads from the powerful flaps. Another lightening feature is the skinning of the T.E. flaps, ailerons, elevators and rudder which is Alclad sheet with formed stiffeners needing little internal structure. The exhaust pipes appear far too massive for the Wasp engine, but are more than they seem and represent yet more efficiency. They emerged from the problem of engine cooling at maximum power at low forward speed, i.e., on the climb. Both exhaust and all cooling air discharges through these pipes, the exhaust ejecting into the front of the tubes. This causes sufficient air to be sucked past the engine to adequately cool it at full power. For freight loading there are double doors on the port side and a passenger door is opposite. The pilot's cockpit has doors each side and all 178 gallons of fuel are carried in four tanks below the cabin floor. Normally the cabin seats nine with a further passenger beside the pilot, or six stretchers can be carried on ambulance work. For paratrooping 14 seats can be fitted. As well as the usual interchangeable wheel, float and ski undercarriages, the Otter may also have wheel-skis in which the wheels protrude through wide skis for runway operation, and for snow work the skis may be lowered hydraulically.

The Otter's great versatility has been proven in every requirement possible for a utility machine, and the Otter does it all cheaper than most. This economy has made her a good proposition to charter companies and other operators are the R.C.A.F., Royal Canadian Mounted Police, U.S. Army, U.S. Navy, Norwegian Air Force and the following air lines: Canadian Pacific, Philippine Air Lines, Taxi Aero de Santander (Colombia) and Wideroe Fleigerscapp (Norway).

Vivid red and white colour scheme for U.S. Army Otters is for arctic operation and is further enhanced by the black nose anti-dazzle patch. Note the wing fences, new standard Otter feature, and used here as a dividing line for the upper wing colours. At right: the European Otter demonstrator, G-ANCM uses dove-grey, white and blue. All letters and the fuselage stream were outlined, and no anti-dazzle patch painted on the nose. Modellers should note the undercambered wing section and slotted flaps





Specification:

(Seaplane figures in brackets)

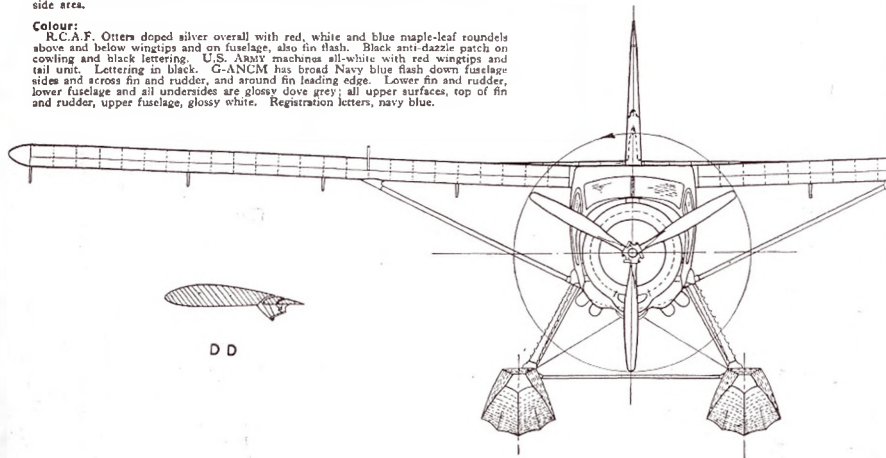
Span: 58 ft. 0 in. Length: 41 ft. 10 in. Height: 12 ft. 7 in. (16 ft. 0 in.). Empty weight: 4,358 lb. (4,756 lb.). Gross weight: 7,500 lb. Wing area: 375 sq. ft. Wing Loading: 20.3 lb./sq. ft. Max. speed: at 5,000 ft. 160 m.p.h. (153 m.p.h.). Cruising speed: at 5,000 ft. 139 m.p.h. (128 m.p.h.). Service ceiling: 19,000 ft. (18,000 ft.). Rate of climb: 1,100 ft. per min. (950 ft. per min.). Take-off (full load, no wind): 600 ft. (860 ft.). Max. range: 1,000 miles (978 miles). Stalling speed: 45 m.p.h. Payload 200 miles still air range: 2,550 lb.

Construction:

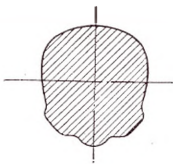
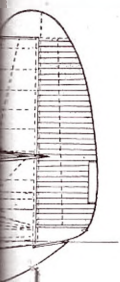
All metal. Fuselage normal stressed skin with bulkheads and stringers. Wings have two spars, lightened sheet ribs. Underside conventional skin and stringers, top side sandwiched corrugation. Wing struts fabricated from sheet. Fin and tailplane have two spars, stringers and lightened ribs. Control surfaces are semi-monocoques with fore and aft stiffeners formed from skin. Undercarriage employs rubber blocks in compression, for spring and rebound. Floats are Edo model 7170 floats with water rudders which retract back and upwards for flight. Underfin fitted to balance float side area.

Colour:

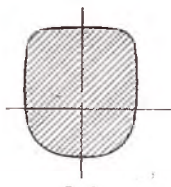
R.C.A.F. Otters doped silver overall with red, white and blue maple-leaf roundels above and below wingtips and on fuselage, also fin flash. Black anti-dazzle patch on cowling and black lettering. U.S. Army machines all-white with red wingtips and tail unit. Lettering in black. G-ANCM has broad Navy blue flash down fuselage sides and across fin and rudder, and around fin leading edge. Lower fin and rudder, lower fuselage and all undersides are glossy dove grey; all upper surfaces, top of fin and rudder, upper fuselage, glossy white. Registration letters, navy blue.



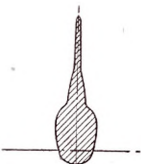
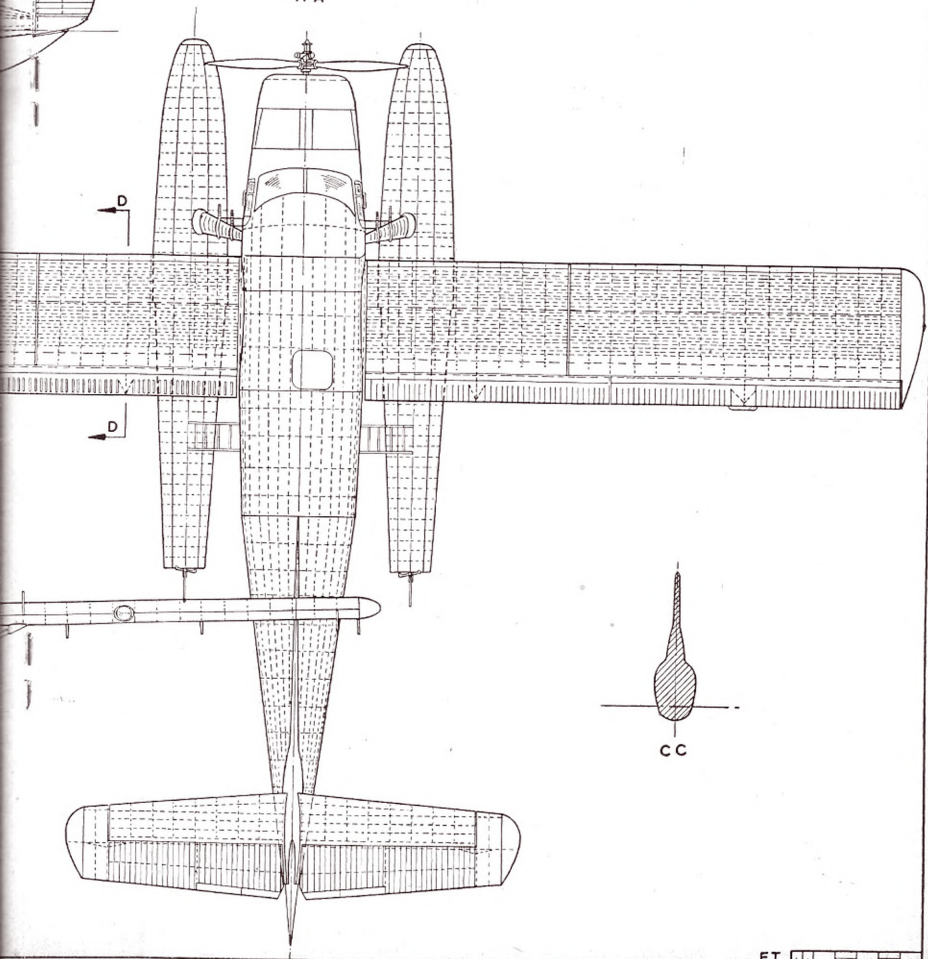
DE HAVILLAND (CANADA) D.H.C.-3 OTTER



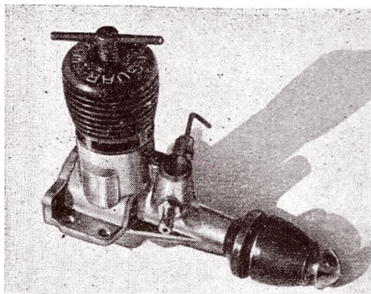
A A



B B



C C



OVERALL IMPRESSION of this German engine is of a beautifully made engineering job with a particularly fine finish. The die casting, for instance, is buffed and polished to a mirror surface whilst interior machining is generally excellent, all threaded parts fit really tight, etc. Further, parts are taken down to relatively thin walls throughout, more in keeping with American practice, so that the complete engine only weighs just over 3½ ozs.

Design is straightforward enough. The crankcase has cast-in beam or radial mounts, the latter being machined away so as not to interfere with beam mounting. Holes are drilled to the metric equivalent of 6 BA clearance size. Controls are sensibly proportioned. The needle valve is angled back and fitted with a ratchet-type lock with a very positive action. The tommy bar for compression adjustment is easy to grasp and contra-piston fit just

Engine Analysis—the JAGUAR 2-5

well finished German diesel reviewed by R. H. WARRI

DATA
 Displacement: 2.48 c.c. (151 cu. in.)
 Stroke: .59 (13 mm.). Bore: .55 (14 mm.)
 Bore/stroke ratio: 1.07. Weight (bare): 3½ ounces.
 Max. B.H.P.: 188 at 12,750 r.p.m. Power rating: .076 B.H.P. per c.c.
 Power/weight ratio: .052 B.H.P. per oz.

Material specification
 Crankcase: die-cast light alloy, buffed and polished.
 Cylinder: Steel. Cylinder jacket: light alloy (anodised black).
 Piston: Cast iron. Contra-piston: Cast iron.
 Connecting rod: Dural. Crankshaft: Steel.
 Bearings: Plain. Spraybar assembly: Brass.

Manufacturers:

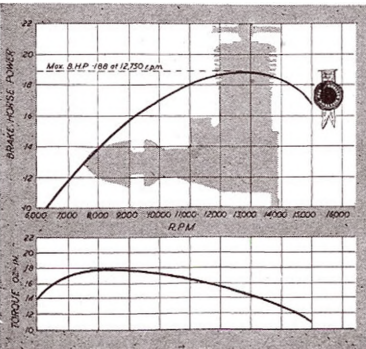
Josef Friedrich Schmidt, München 13, Blauenstrasse 21, Germany.

PROPELLER R.P.M. FIGURES

Propeller dia. x pitch	r.p.m.
9 x 8 (TruFlex)	7,500
9½ x 4½ (TruFlex)	8,350
9 x 6 (Stant)	9,300
8 x 6 (Stant)	11,200
7 x 4 (TruCut)	13,750
6 x 4	15,000

Fuel used:

Mercury No. 8 and
Allison Ready Mixed.



about perfect for ease of adjustment without showing any tendency to work off when running.

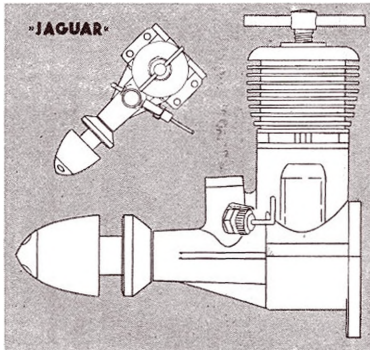
Running tests were started with large size propellers when performance and general handling characteristics were rather disappointing. Starting was easy enough with the engine cold, but difficult with the engine hot. And the engine does get quite hot after a minute or so's running. As soon as a change was made to smaller propellers, however, pushing the operating r.p.m. to beyond 10,000 r.p.m. a complete change in behaviour was noted. Running was sweet and free from the laboured heavy vibration experienced below 8,000 r.p.m. and starting, hot or cold, was easy. A single finger choke induced sufficient prime for an immediate start without altering the controls from running setting, when hot. Two choked turns produced a similar start from cold. Further, the engine seemed particularly happy running at high speeds.

With small propellers, this is one of those diesels which will hit back smartly, starting with small diameter propellers, if the propeller is not flicked over fast enough. But with a sharp flick, hand starting with 7 and 6 inch diameter sizes is easy—and safe. As an additional precaution the needle valve can be opened up a turn for rich and slower starting, although this is not strictly necessary. With rich starting, too, it will almost certainly be necessary to reduce the compression slightly from the best running position for high speed operation. Given the right initial settings and a determined flick over, it is readily possible to operate this engine without touching the controls further.

We were not too taken with the propeller shaft assembly. A ½ inch boss projects in front of the propeller driving disc, which fixes the propeller hub hole size required, but this is relatively short. A threaded shaft with a "spinner" head screws into the crankshaft proper, sandwiching between a

spinner-shaped fairing. With high pitch propellers (*i.e.* large hub thickness), alignment does not appear always as satisfactory as it might be. Presumably, if high pitch propellers are to be used, the answer would be to cut back the spinner fairing. Additionally, the "spinner" head on the shaft screw is quite small and the tommy bar hole large, by comparison. Hence this unit will not take a lot of excessively rough treatment. But particularly we comment on inclusion of a tommy bar of the right size with the motor. Only a small point, but one which many customers will appreciate.

Power output we found to be of the standard expected with a normal 2.5 c.c. production engine with plain bearings. We have already remarked on the excellent high speed running characteristics which are maintained well past the peak B.H.P. point. Our torque figures showed peak B.H.P. to



be developed at just below 13,000 r.p.m., but the Jaguar sounded just as happy running at 15,000 r.p.m., although at this speed torque was considerably reduced.

The marked falling off of torque at the lower end of the speed range may be a characteristic only of the test conditions since considerable vibration was present in this region. We would say from general operating characteristics, however, that this is not an engine which will be happy with large size propellers holding the r.p.m. down to 8,000 or less. Nor does it appear capable of any outstanding performance, although it is a really pleasant engine to handle and obviously well suited for sports flying.

Fuel consumption is moderate and it does not appear in the least critical on fuels. Alphon diesel fuel was used in establishing the test figures, but performance appeared similar on other standard proprietary fuels tried.

Whats the Answer?

On the club field the lauls have no table off facilities and most of the local contests and all test flying is made using hand launches. The S.M.A.E. decentralised events didn't bother them either, as they too could be hand launched; but when it came to the Eliminators for picking the International teams, the rules called for Rise Off Ground (R.O.G.).

No one was particularly worried when they arrived at the big semi-centralised venue for the Wakefield and P.A.I. power contests—they all had undercarriages, even if they had only been used as prop protector up till then.

When Charlie took his turn at the tarmac the whole club turned out to watch, for his rate of climb was easily as good as the big boys were getting, and they had great hopes for Charlie to get into the Finals. But no; each time he released his mono-wheel piston job it skated across the runway and wound up on a tip. After the first attempt, Charlie commented over the grazed tip and went back for another try. He didn't make it—so he lost that round altogether and went to seek comfort from one of the experts. He soon learned where he was going wrong, and for the next four flights he racked up more than 11 minutes just to show that although he had a "hot" model, it was spoiled in the first place by being reluctant to R.O.G. safely.



"So I added a spot of positive—
"Oh—I would have packed up the leading edge!"



What would YOU do in a case like this? Think a moment, then twist the page for the solution to the problem which is printed below.

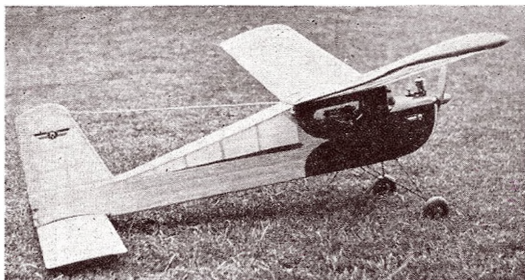
Contest Nerves . . . Who ??—Me ?

Oh—if it doesn't already collect some of the exhaust mess! (fray) then I prefer either—so that the handle will be a spot of faster, but also come unstrut when one wheel runs more left, for a left turn point to the right, I two wheels. In a real world, point it a little to the right in the corner of the tail-off it reverses if wind and set you ask for trouble. Good the model of wind that immediately after release. If you launch straight into run as soon as it builds up speed, and for a contest model. Second of Bert's recommendations was for Charlie to behind the prop. Charlie found he had a better take-off every that it came below the engine blades, or about 2 ft. in a few days margin. By shifting the wheel back, he had and usually results in too long a run, with loss of duration before the tip. This is too far forward for conventional flying position. Charlie had returned on having the wheel to save the prop on landing so he arranged it to come immediately running along on the one wheel, and position of the wheel is really where the model is two feet have ground. You must have ground, two feet from the and, Bert pre-ordered the problem in front from his owner, Bert model returned for the contest. The motor was won first by "Charlie".

THE ANSWER TO

It's that Way-
good-Otis Club
again!





RADIO CONTROL NOTES

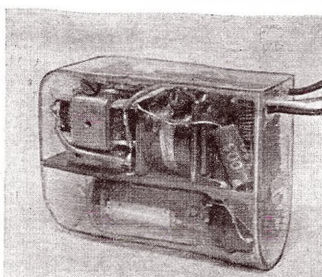
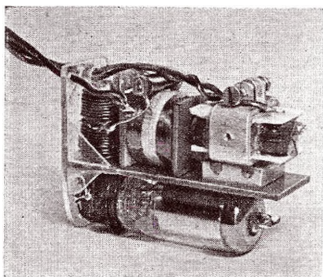
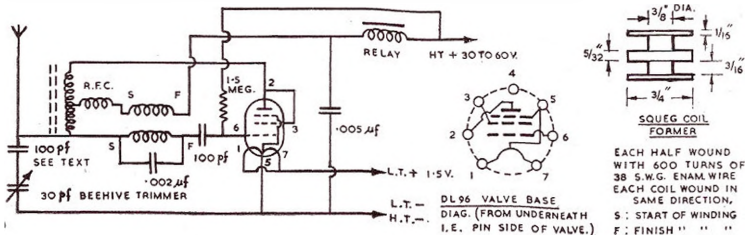
in which Doug Bolton describes his LOW CONSUMPTION RECEIVER

REGULAR READERS will no doubt be saying "Not again!" when they see the circuit, justifiably so perhaps, as it has appeared as on several occasions in the past. Although superficially unchanged, there is, however, one very important difference—the Ever Ready DL96 is used.

This valve is similar in appearance to the 3S4, but it takes only half the filament (L.T.) current 50Ma on 1.4 v. The performance of the receiver is much the same as with the 3S4, but the H.T. current on a given H.T. voltage is slightly lower.

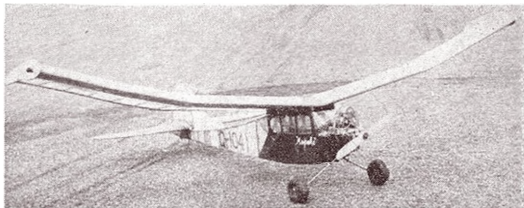
Any relay of 3,000-5,000 ohms can be used, the sensitivity of the relay determining the minimum

H.T. voltage which may reliably be used. On 30v. H.T. the standing current is almost 1.7 Ma, dropping to almost 0.6 Ma on signal (medium range). This is sufficient to operate an E.D. polarised relay if reasonably well adjusted. A curious feature of this relay is that the operating point varies in use. This was not just an isolated fault with one relay as several R/C flyers have been troubled by it. It is therefore essential to check the make and break current at frequent intervals, and re-adjust the contacts if necessary. Even so, the polarised relay seems to be far more sensitive than any other relay of comparable weight.



Emphasis is on neat layout in these two views of the receiver. Its size can be judged from the valve which, it will be noted, is well protected

Heading photo left shows neatly built A.P.S. "Electra" flown extensively by John Jorgensen, President of the Model Section of the Royal Danish Aero Club. Originally powered with a Comp. Special it has now progressed to an E.D. 3.16. John requests more information on the actual flying side of radio control, says it would be invaluable to people who are unable to watch the experts. We shall be remedying this omission within the next two or three issues.



If an ECC 5A relay is used, there will be a small saving in receiver weight, but about 60 v. H.T. will be necessary for reliable operation, giving a standing current of about 4 Ma dropping to about 1.2 Ma on signal.

The tuning coil consists of 17 turns of 22 swg. enamelled wire, centre tapped on a $\frac{3}{8}$ in. diam. Aladdin former (a turn may have to be removed if it does not tune properly to the r/c band). The RFC consists of 100 turns of 40 swg. enamelled wire on $\frac{1}{8}$ in. diam. fuel tubing.

The squegging coils are best wound separately so that their distance apart can be adjusted to give the best performance. The distance shown on the diagram gives quite satisfactory results however.

For convenience, the aerial condenser can be mounted externally. For this reason it is connected between the grid end of the tuning coil and common negative. Since the tuning coil is at H.T. potential, a 100 pf. condenser is connected in series with the aerial condenser, to avoid damage if the latter is accidentally shorted. If it is decided to mount the aerial condenser on the receiver, then it may be connected in the usual position, i.e., between the grid end of the tuning coil and the junctions of the relay coil and squegging coil.

The layout of the receiver is not of great importance and can be very compact. The photograph shows the writer's receiver built into a case and using a 4000 ohm E.D. relay.

As can be seen, the case, made of 50 thou. celluloid is a sliding fit over the receiver. The latter is built on a piece of $\frac{1}{8}$ in. paxolin $2\frac{1}{2}$ in. by $\frac{11}{16}$ in., with a $\frac{1}{16}$ in. perspex end. To achieve good jointing, it is necessary to roughen up the surfaces of the material and pre-cement. The coil former is cemented to the baseboard after removing the mounting lugs. The fixing ring is removed from the amphenol valve holder, which is then tapped 6 BA through the side (adjacent to the unused valve pin) and held in place with one countersunk bolt. The condensers are Hunt's 350 v. miniatures. The aerial is brought out separately from other wiring.

Adjustment of the receiver is as before. Screw up aerial condenser until the H.T. current jumps up and just stays up. Tune dust iron core for the best current drop, and re-adjust aerial condenser if necessary for maximum sensitivity.

Photograph above shows "Mopoke" a 6-foot span R/C model specially equipped for night flying, hence the batteries on the nose which provide power for landing lights. Built by Jim Mulcahy of Newtown, Australia, it has completed 341 flights to date. Power unit is a D.C. 350 and the radio an E.C.C. 521A with an E.D. polarised relay. Although rarely flown by day, it nevertheless won this year's Queensland Radio Championships.

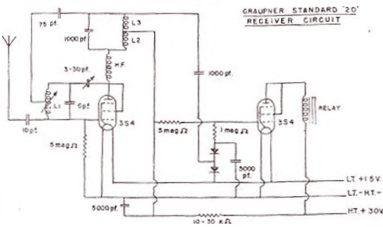
Finally, some notes on the DL 96 valve. It first appeared early in 1954, and like the 3S4, was designed as an output pentode for use in portable radios. Being new, it cannot therefore be obtained Government surplus, but at 15s. 3d. it is still cheaper than the NFG1.

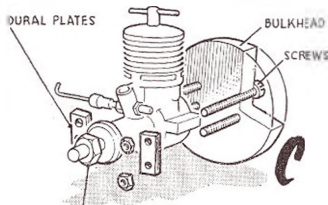
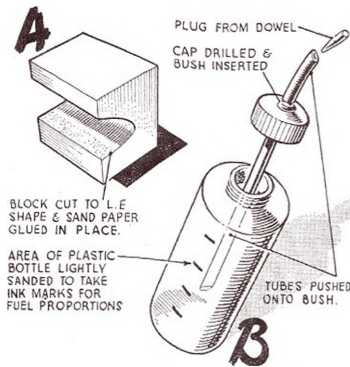
This valve should have a great future in R/C receiver circuits, as with some modifications to the circuit, it should be possible to use it to replace the less economical 3S4 and 3Q4 valves. This should be especially advantageous in multi-valve receivers.

One word of warning however; although still fitting a B7G base, this valve does not have the same pin connections as the 3S4 and 3Q4. Therefore before inserting the DL96 in any receiver, using either of these valves, the connections to the valve base MUST be changed or the valve may be damaged.

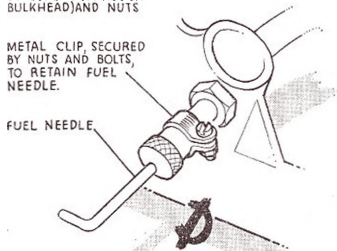
Erratum

We regret that our tame draughting expert decided to redesign the circuit of the German Graupner receiver published in our August issue. The corrected circuit diagram is given below and we would mention that the 10-30 K fixed resistor in the H.T. circuit has been reduced to 11 K in later versions of this outfit. Width of quench coils not given previously is $\frac{3}{16}$ ins.

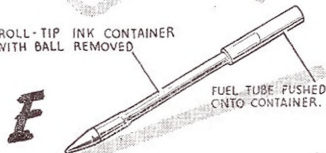




ENGINE CLAMPED BY MEANS OF DURAL PLATES ATTACHED BY SCREWS (THROUGH BULKHEAD) AND NUTS



ROLL-TIP INK CONTAINER WITH BALL REMOVED



THE TROUBLE with this feature is that we cannot publish it often enough!! There are so many inventive minds among followers of this aeromodelling hobby that our "Gadgets In" tray is constantly full of useful gimmicks—(quite a number of less useful thoughts as well)—and we can never keep pace with the flow of ideas. So if that contribution of yours is yet to appear, be patient, for we shall work it into this feature as soon as we can. Our object is to provide variety. Something for everyone, no matter what sort of model you build—that is our aim; although this month we have had to sway with the majority and give more for the power boys.

Gadgets

Gadget **A** is universal enough. Who hasn't found trouble in carving a leading edge to constant section, tip to tip? A slip with the knife, a heavier touch with the sandpaper here or there, and another length of L.E. is ruined. Peter Mawer of New Malden in Surrey makes a sanding block in reverse. He carves an oversize section out of a block of wood, it could be hard balsa, and adds the sandpaper as shown. Carve the leading edge roughly, then rub down with successive applications of rough, medium and smooth paper, and you really cannot go wrong.

The Polythene Plastic bottle is now an established favourite "Squeeze bottle" with most modellers, particularly the Team Race fraternity. Most of them are used just as they come, with a length of neoprene fuel tube jammed over the existing nozzle or into a hole in the screw cap. Inevitably, and always at a crucial moment, the pressure on the squeeze bottle proves too much for the push fit, and the fuel tube departs from the bottle amid a mild gusher of smelly mixture. Reader B. D. Jones also hails from New Malden, and tells how to modify a plastic bottle with screw top, and have no trouble. Drill the cap for a 14 or 12 gauge bush as in **B**, and put the neoprene on either end. One end will go into the bottle, the other is the outlet, and for cleanliness use a tapered dowel plug to keep the dirt out of the tube.

If a design calls for radial engines (I. E. Norman's scale wonders, for example) some people are apt to give up at the sight of the blank front bulkhead, for they have beam mount engines. P. J. Jubb of the Crosby Club at Liverpool is fond of saving the weight of wooden bearers in his contest models and idea **C** is what he employs for front rotary engines like the Oliver Tiger and Elin 1.49. Adjustments are easily made by packing under the backplate, and the engine is soon removed in case of need.

Also for engines is **D** by Jimi Waldron of Henley who was rather narked by a needle valve that refused to stay put. So he made a clamp on the field, as shown and has had no further reason to complain.

Yes, it's the ballpen again in **E**; this time a use for both the tube and the actual metal ballpoint.

Push out the ball with a pin, join to your squeeze bottle or can with neoprene, and it serves as an excellent fuel nozzle. D. Miller of Cambridge thought this one up and adds the suggestion that a length of Jetex fuse wrapped around or inserted in the usual lampwick d/t fuse *always* makes sure of a first time light. An inch is enough, and the 20 secs. of workroom preparation pays off in saving of matches and patience on the field.

Wings folded up?? Well it doesn't happen so very often nowadays, and it never happens to the Henley club who brace their wings as in **F**. Actually part of the wing assembly, based on the scheme introduced by Ray Monk's Quickie A/2

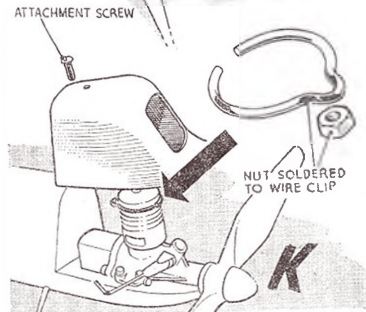
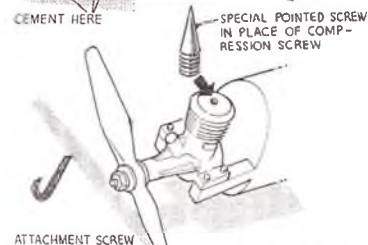
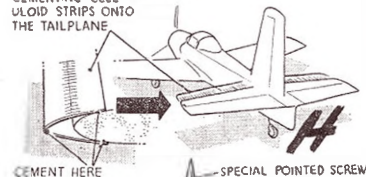
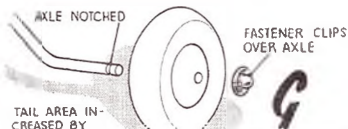
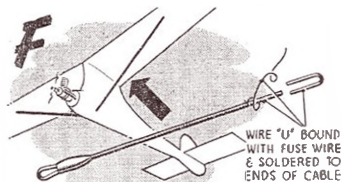
Review

glider, the Henley method shows a variation in using Bowden flexible cable for the brace. It holds all the flying strain, does not poke through the wing on a heavy d/t landing and will not shatter at a bend as piano wire tends to do. Important point is to have strong wing-to-wing bands across the top.

Apologies to those who have seen **G** before. It was an old dodge used by the pre-war fliers and we thought it would be a good idea to remind our younger readers that there is more than one use for a ladies' snap fastener. Master P. J. Brown of Stoke-on-Trent brought it to our notice this time and it simply entails filing a groove in the piano wire axle until the fastener will snap on. By this means we can use it to retain wheels, and for the various wire diameters one can purchase different snap sizes up to the big jobs used for carpets. It has also seen use as a prop retainer on rubber driven models.

Many a prospective scale modeller has been discouraged in making a selection of one of aviation's more attractive subjects because the tail area works out at something like 15 per cent. of the wing—and that is a bad start for any model with hope of flying. Increasing the tail area just does not look right in most cases and hence we have all too few free flight Me 109s, etc. From far-away Australia M. P. Richards of Sydney suggests **H** and we think he has "something" there. Celluloid from top and bottom of the tail L/E reinforces the structure, is invisible in flight and gives the required increase of area to make flight a safe possibility.

Now two ideas for the team racers. First, **J**, which is also handy for all who like to cowl their engines and then have to cut holes for the compression screw, etc. It is a quick way to find the exact hole position. Just file a screw to a point, fit it to the engine, press down on the cowl and the imprint tells you where to drill. G. Scott of Coleraine in Co. Derry sent this to us, and Pete Holland, the Miranda man, goes one better and shows how to hold the cowl down. A wire clip around the fins, a soldered nut, use the same pointed bolt technique to find the hole, and you have an ideal cowl retainer as in **K**.



RAF

Championships

R. A. F. Horsham St. Faith. August 6/7th

VARIETY IS ALWAYS the keynote of the United Kingdom Championships of the Royal Air Force Model Aircraft Association, and this year was no exception; though we must observe that entries were rather less and the standard a shade lower than of earlier years.

The scene was the large aerodrome at Horsham St. Faith, near



A ferocious wind did not deter CPT Edwards from flying his remarkable scale Lee-Richards 1913 Annular wing which displayed stability of higher order than many conventional types. The model was awarded both the Concours d'Elegance and Flying Scale trophies.

At right: an enlarged Jet-Gyro by SJA/C. Crateshane of Hendon, with 350 Unit



Corporal Rimmer of R.A.F. Valley receives the Victor Ludorum Trophy from Lady Boyle, a victory earned by his performance in speed and team racing events.

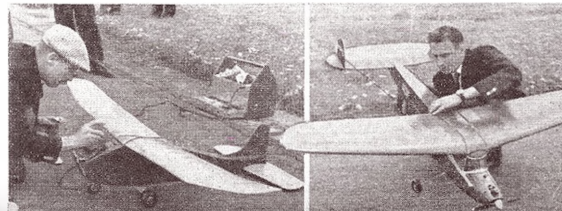


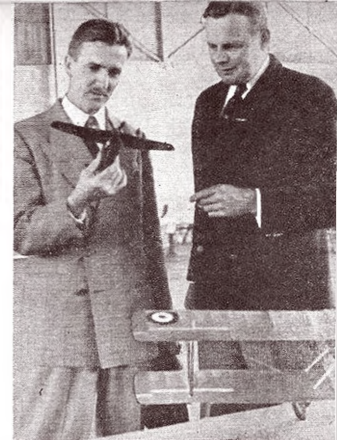
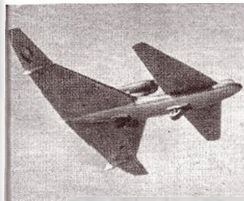
Norwich, and after a week of blissfully calm weather, we had hopes of magnificent conditions for the week-end. Old man Aeolus chose to disappoint us, and presented instead a blustery couple of days with wind force up to 30 knots and socks straining at their masts over the hangars. In such conditions we could not hope to see the scale and unorthodox at their best, not to mention the other events, and that some survived at all is to the credit of the hardy competitors.

There were representatives from nine Commands, some of which

Bottoms: Sgt. McHard struggles against the wind with Super-Sonic, seen airborne at top left opposite. Eric Cable fuels up his 2-speed Turp 19 and right: S/Ldr. Trevor Ware adjusts his twin-finned Stentorian.

had the pleasure of arriving by air and in particular we were treated to the sight of a voluminous Shackleton which flew in just as events started, to disgorge two modellers from Coastal Command. Judging of the Concours d'Elegance was not altogether an easy task, for when these lads get down to detail, they really pile on the workmanship. Sgt. McHard of Wellesbourne Mountford produced his usual sample of skill in two very unorthodox types, the pusher canard fighter Watanabe J.7 Shindin solid, complete with working hood and undercarriage, and his amazing own design double-delta-canard-tractor. A rare sight these days was the curly-tipped Fillon glider by Cpl. Merry, and F/O Norman's Sea Bee displayed its working under-



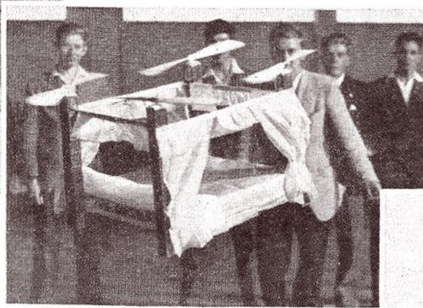


carriage and internal detail. But it was Chief Technician Edwards' effort which caught the eye—for who could ignore something not unlike a seat from the "little room", and a scale subject at that! It was a Lee-Richards 1913 Annular wing, E.D. Bec-powered, though one could hardly see the engine, and in the most furious of gusts on the second day it covered the length of the airfield in just over a minute.

There will probably be a swing to the R.6B radio control design in future after Cpl. Brooker's display with his Mills 1:3 version, the only model to penetrate upwind in the second round, though of smaller capacity than the other entrants. Performance of this design was a revelation which might earn it the title of "Giant killer".

Free-flight and control-line aerobatics were feats of man *tervus* und

Top: The McHard double delta Concourse and Unorthodox winner in action. Centre: J.T. Coutts-Smith's Luscombe; and right: C/Capt. Saw and C/Capt. Aitken examine the Shindig.



Winning R.6B launched for Cpl. Brooker looks like a glider in this view where high engine is hidden. The model was the only one to make headway in the strong winds

and after difficulties out in the breeze, all team racing was concluded in the safer(?) confines of a cleared hangar.

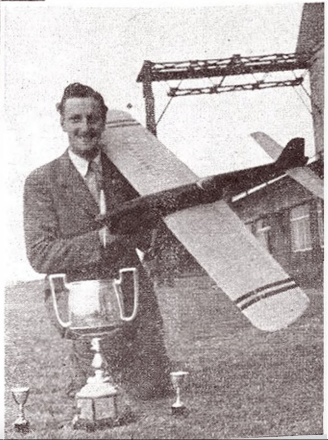
The C.-in-C. Fighter Command, Air Marshal Sir Dermot A. Boyle, who is president of the R.A.F. M.A.A., flew in by D.H. Devon on the second day, accompanied by Lady Boyle, who afterwards presented the many trophies. Also watching events with keen interest were Air Chief Marshal Sir Hugh Lloyd, Air Commodore Worrall, Group Captain Saw, the Association chairman, and Group Captain Aitken, Officer Commanding Horsham St. Faith.

At left: A genuine flying bedstead! Unfortunately excluded from the unorthodox event because it would not fly from in the wind outdoors, this remarkable piece of existing four-poster demonstrated its abilities after practising in the shelter of the hangar. Below: winner of both free-flight power with a Siva-Max and C/L aerobatics with his ET 129 model, J.T. Higgins of R.A.F. Kinloss

CONCOURS D'ELEGANCE		
<i>Soloist</i>	Sgt. McHard	Wellesbourne
<i>Solo</i>	C/T Edwards	Moorford
	C/Lee	Moorford
	F/Sgt. Richards	Heath
<i>Others</i>	F/O Trenchard	Wellesbourne
<i>Misc.</i>	Sgt. McHard	Wellesbourne
		Moorford
AEROMODELLER TROPHY: Sgt. McHard		
<i>A-2 Glider</i>	J.T. Suzanne	St. Mawgan 5 : 01
<i>Open Glider</i>	Cpl. Anderson	St. Athan 4 : 39
<i>Open Rubber</i>	Sgt. Elliot	Dialfirth 6 : 10
<i>Open Jetex</i>	SAC Peckham	West Raynham 7.73 ratio
<i>Planv. Scale</i>	C/T Edwards	St. Athan 88 points

<i>Open Power</i>	J.T. Higgins	Kinloss 5 : 20
	J.T. Higgins	266 points
<i>Speed Handicap</i>	Cpl. Rimmer	76%
	T.R.J.	Valley
	Cpl. Rimmer	Valley
	T.R.J.	Watisham
	LAC Walton	Valley
	Cpl. Rimmer	Valley
<i>Radio</i>	Cpl. Brooker	172 points
	Unorthodox	Wellesbourne
	Sgt. McHard	Moorford 93 points
<i>Wakefield</i>	J.T. Ling	West Raynham 5 : 00

VECTOR LEADER TROPHY:
Cpl. Rimmer, Valley
CHAMPION COMMAND: Fighter

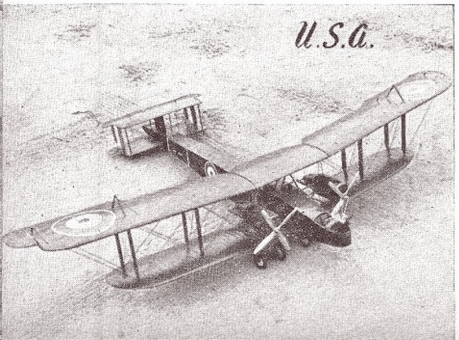
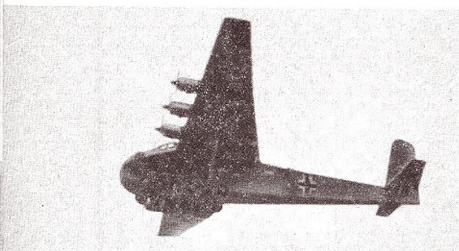




World News



Germany



U.S.A.

BY THE PUBLICATION time of this issue of the World Championships, 1955, will be history and we will know the individual and team winners to carry the honours for yet another year. For the time being, we must content ourselves, writing this one week before the big event, to offering sidelights on how some of the boys gained their places on the International teams. From the U.S.A. we learn that the plan to get everyone to a centralised finals fell through, and teams were picked from results of four events in New Jersey, Texas, California and Michigan. We like the tale of Bob Champine on the U.S. Wakefield team who tree'd in his area elim. at Fentress, Virginia and produced a bow and arrow to shoot a recovery line and shake the model out!

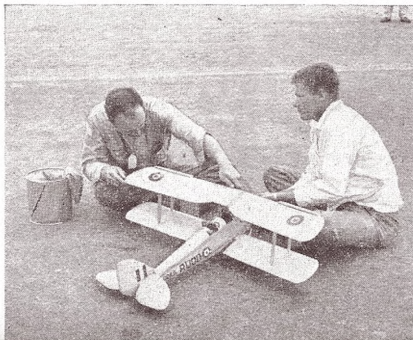
In Canada they had a spot of bother with their eliminators after complaints had been laid and the whole elim. were washed out on the basis that they were not run under proper M.A.A.C. sanction, etc. Teams as announced to us are presumably arrived at from a second trials, and stand at:

Wakefield	A/2	Power
B. Haisman	D. Mackenzie	J. Graves
G. McGlashan	B. Lester	J. McMillan
J. Bortnak	B. Jones	W. Etherington
L. Walter	W. Etherington	J. Bortnak

In the meantime, the U.S. Nationals have been held in California, and our correspondent out there tells us that there were many beautiful models to be seen, including the couple at the foot of this page. Scale attracted quite a lot of interest, there being 40 entries in the control-line section and another 30 in freeflight, while the total number of contestants approached 1,200 with many of them entering up to eight events. Many records were broken, including better than 100 m.p.h. with .099 cu. in. (1.6 c.c.) which is fast by any standards.

Outstanding news from Germany this month is of a scale Messerschmitt 323 "Gigant", complete with six engines for control-line flying! Built by Peter Kriz, it uses six Taifun Hobby 1 c.c. diesels and as the photos show—it flies.

Top: A. Bichel, winner of Swiss R/C Nats with "Bicki" glider and nose-ruddered Fulcan which beat conventional models. Peter Kriz's 66-inch Me. 323 with all six Hobbies going strong in the next view, and bottom left, magnificent A.P. Bomber at the U.S. Nats had 2 McCoy 049's, was glide tested only. Below: the popular A.P.S. Tiger Moth in advised colouring by Bob Evans, Inglewood Flightmasters, for 1.2 c.c. G.K. Cub diesel



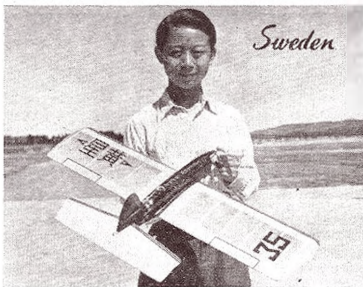
To interchange ideas on aeromodelling and bring up the standard of flying by virtue of inter-country competition, **Spain** and **Portugal** have started an annual event to be known as the "Campeonatos Ibericos", and this was started in July with a meeting in Lisbon—though a similar contest was held in Madrid last year. Each country submits a five-man team, with specialists to fly in Glider, Power, Wakefield, Speed and Aerobatics. This time the Spaniards won all the power events (control-line included) and so won the overall team honours, but the running was very close, and in speed only .8 of a kilometre separated the competitors, each of whom were using Super Tigres and flying at about 105 m.p.h. We understand that there is hope of the Spanish team attending the Criterium d'Europe for C/L at Brussels in October.

Over in **Uruguay** one would never think that there might be a shortage of balsa, yet that is the case as we receive airmail correspondence in August, and quite naturally this is dampening what would otherwise be a flourishing interest in aeromodelling. Biggest activity of the Montevideo modellers in recent months was a special display at one of those big football matches, with a crowd of 65,000 warmly applauding the stunts, one of which was a Mach. 1-powered *Blue Pants* to make it really International—a Uruguayan flying a Belgian design, supplied from England and using a German engine!

Useful tip from the very full bulletin of the M.A.A. of New South Wales, **Australia**, will interest all glowplug fiends who have been complaining about water in their fuel. Methonal takes in a lot of moisture from the atmosphere, and the tip is to tie a bag over the mouth of the fuel bottle in which there is a quantity of calcium chloride crystals. Two points to note are that the bag should be of the plastic variety and that there must be a clear passage from the neck of the bottle to the bag. Whatever moisture is present in the fuel will soon be taken out by this process—so a leading Australian chemist assures the Bulletin editor.

Hungary was the winning country in the 8-Nation MMS'55, Soviet Internationals held in Czechoslovakia. Full report will follow next month; but first details show Hungary winner of A/2, Russia in Wakefield, Czechoslovakia in Power and 2.5 speed and Russia again in Jet. Surprise entry as far as we are concerned was that of Yugoslavia.

For the World Championships, the **Czechs** selected their teams for all three events, and under the technical management of Emil Brauner, whose Jet we published in July issue, the teams went for a week of "final concentration" from August 22nd onwards at Brno. It remains to be seen whether such preparation gains any advantage in the results.



Top: Jose Gurgocena and Severo did 258 k.p.h. with Dynajet in a record attempt at Lisbon. They'll be hard put to beat the newly claimed 272 k.p.h. record by Russian Ivanikov (175 m.p.h. approx.)! Next, Mok Fung-Chiun and his 37-inch combat glider for the German Mach 1 contest has the model name in Chinese on its wing. From Japan, Hasegawa shows Lindner influence in his A2—or should we say Buckinger? Bottom: Young New Zealander searches for the glow in his N. A. Horkard engine



**ARMSTRONG WHITWORTH
METEOR NF. MK.14**

To balance the increased side area of the lengthened nose the fin leading edge was modified to have the "bullet" faired as shown. Final production version of the type is the N.F. Mk. 14, an improved Mk. 12 with the new clear view hood and revised windscreen. The first Mk. 14 was flown on October 23rd, 1953, being piloted by Plt.-Lieut. W. H. Elze.

The fuselage of the aircraft is of all-metal stressed skin structure, with a di-electric nose cap over the main search-radar equipment. Exceptionally good visibility for the crew (pilot and radar operator navigator) is

Aeroplanes in Outline No. 38

by J. R. ENOCH

In 1949, Sir W. G. Armstrong Whitworth Aircraft Ltd. was awarded a contract for the development of a two-seat night fighter version of the Gloster Meteor. This was at a time when the Gloster Aircraft Company were busily engaged with the design of the Javelin all-weather fighter and production capacity was absorbed with Meteors F Mk. 8, FR Mk. 9, and PR Mk. 10.

Basically developed from the standard Mk. 7 Trainer airframe, which in several respects it externally resembles, the design of the night fighter which was completely undertaken by Armstrong Whitworth resulted in the appearance of a completely new aeroplane. With T Mk. 7 cockpit and canopy, Mk. 8 tail unit and modified Mk. 3 long span wings, the length was increased by 3 ft. 9 in. to accommodate A.I. (Airborne Interception) radar in the re-designed nose. Two prototypes of this aircraft, designated N.F. Mk. 11 were built, the first of which (WA 546) was first flown by Sqdn.-Ldr. Franklin on May 31st, 1950. By the end of 1950 the type was in full production at the company's Baginbun factory and entered service with the R.A.F., becoming the standard night fighter.

Development of the night fighter was continued and there next emerged the N.F. Mk. 13 which, first flown on December 22nd, 1952, was similar to the Mk. 11, but intended for service in the Middle East. After this came the Mk. 12, first flown by Sqdn.-Ldr. Franklin on April 21st, 1953. This machine was a much modified and greatly improved aircraft, fitted with the latest and more efficient A.I. radar of American origin, which resulted in the nose being lengthened by a further 19 in., the overall length now being 49 ft. 11 in. compared with the F 8's length of 44 ft. 7 in. The Mk. 12 retained the side-hinging canopy of its predecessors.

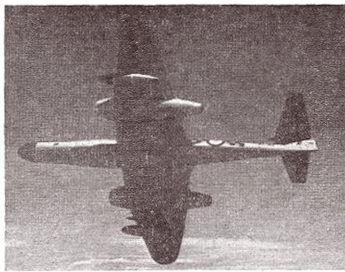
Heading shows an NF.14 of No. 85 Squadron with red and black chevrons on fuselage and hexagon badge on fin. Colouring is Dark Green and Dark Sea Grey upper surfaces with Medium Sea Grey undersides and Matt Black nosecap. Below is W S 726 and at right W S 723 displays the three overwing tanks

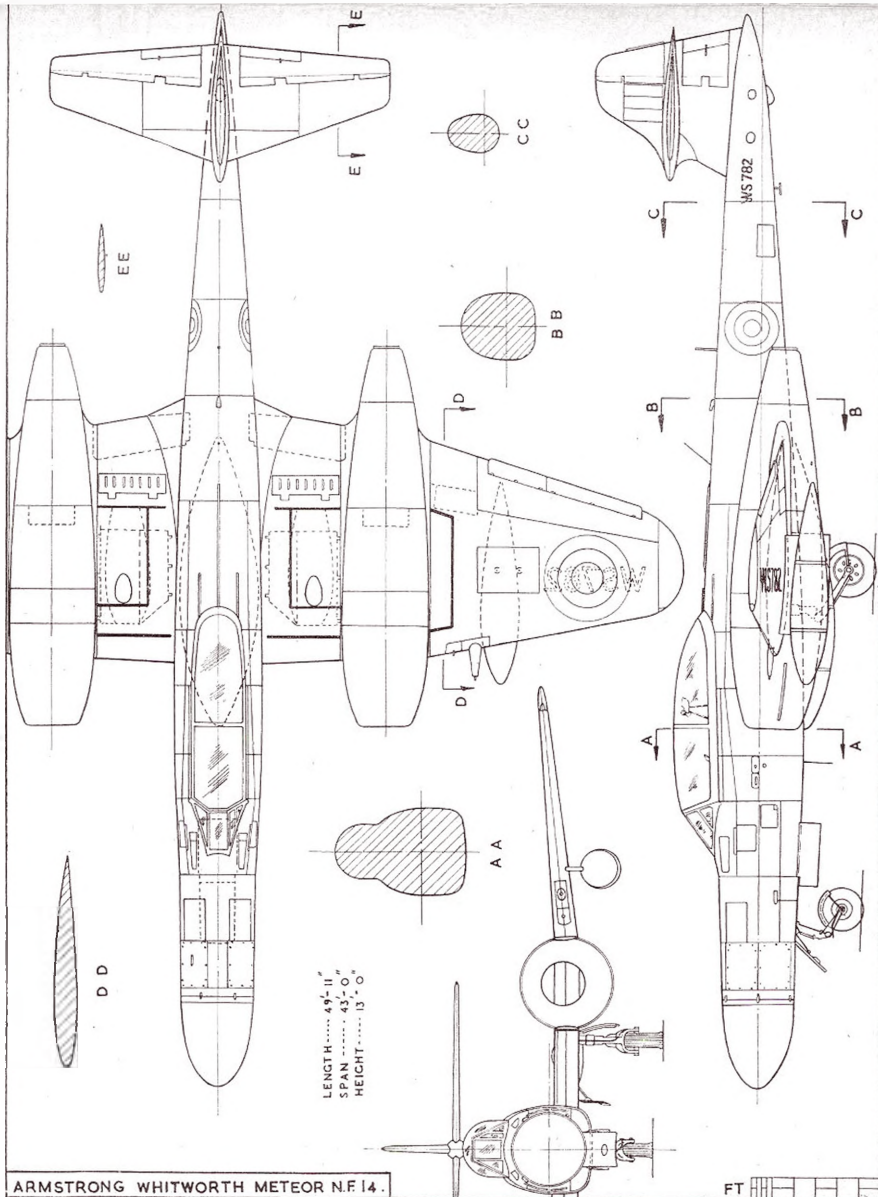


afforded by the two-piece clear view canopy which slides backwards, being electrically operated. The armament of the fighter is 4 x 20 mm. British Hispano cannon mounted in pairs outboard of the engine nacelles. The main undercarriage units retract inwards into the wing centre section with slightly "bulged" fairing doors.

Powered by two Rolls-Royce Derwent 9, centrifugal turbo-jets of 3,600 lb. thrust, the N.F. Mk. 14 is credited with being the fastest Meteor yet with a speed of over 580 m.p.h. at approximately 10,000 feet. Rate of climb is 5,797 ft. per minute to its service ceiling of 43,000 ft. and a range of 920 miles at 30,000 ft. is possible. Despite its bulk and all up weight of 19,474 lb., the aircraft is claimed to be pleasant to handle, and having good manoeuvrability characteristics, is popular with the aircrew who fly it.

Of squadrons at present equipped with the type are No. 25 Squadron, who also have Mk. 12 aircraft. The squadron insignia is a broad silver band within narrow parallel bars. WS 733—S, WW 798—V, and WS 680—T are three of the unit's Mk. 14 aircraft. No. 85 Squadron, with red and black check fuselage insignia, still retain the white hexagon badge used by its S.E. 5As in the 1914-18 war; it is now displayed within a small white circle on the tail fin. WS 782, 744, 740, 737 and 729 are amongst the aircraft of the squadron solely equipped with N.F. Mk. 14 aircraft. A third squadron, No. 46, has both Mk. 12 and Mk. 14 Meteors; the Wing Commander's aircraft coded H, Serial WS 830, has a distinctive black fin and red rudder.

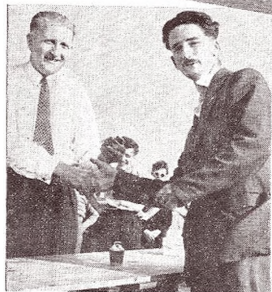
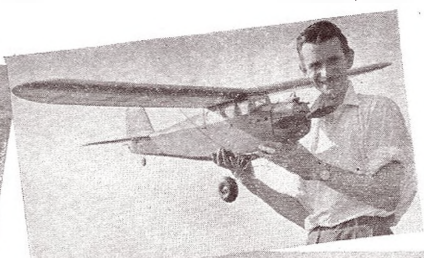
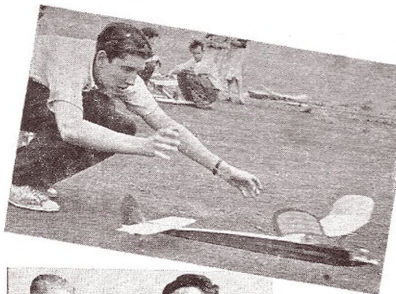




ARMSTRONG WHITWORTH METEOR N.F. 14.

FT

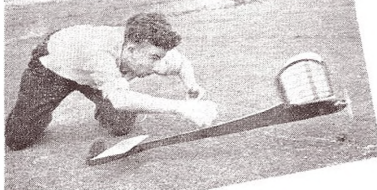
"J" TYPE 1/72ND SCALE REPRINTS AND "A" TYPE 1/48TH SCALE DYE-LINE PR.NTS OF THIS DRAWING ARE AVAILABLE FROM A.P.S. PRICE 6d. AND 1/- RESPECTIVELY



NORTHERN GALA and I.R.C.M.S. contest CROFT July 31

Left top: Blister canopy and parasol wing mount on Brian Faulkner's P.A. load winner are original features not often seen in this class. Below: Councillor John Newsham, J.P., whose kind co-operation went a long way in ensuring the success of the Northern Gala, presents a table lighter to Ron Firth (York) for 2nd in P.A. load. Next: Craydon's Ed. Bennett lets go snarply in the Flight Cup. Bottom: Chris Marsh, up from St. Albans was well in the P.A.A. running, but lost a flight when an elastic band fell off!

Right top: Ted Hensley flew his second-in-line "Buccaneer" with six-rod equipment to win the multi-channel section of the International R/C contest for the Lavton Challenge Trophy and an E.C.C. transmitter/receiver outfit. Next: Round and round they go—finalists in the F.A.I. class team race, with Foresters predominant. Next: Mike Rhodes of Harrow was second in R/C, collected a smart drill set and later on, a subscription to AEROMODELLER for the most spectacular crash of the day! Bottom: G. W. Parkinson of Kewford was single channel R/C winner with an A.P.S. R-6B for which he was presented an E.D. 3.16 Hunter diesel



Motor Mart

German manufacturer's
horse-power test rig is
described and reviewed

AN INTERESTING TEST RIG for **Taifun** engines was especially designed and built by the Esslingen State Engineering College, Germany. It works on the "balanced arm" method and there is a centre ball-bearing shaft, with a forked end for mounting the test engine. The torque value is obtained by measuring the counter-reaction on the main rig shaft.

With the engine running, this shaft is torsioned in the opposite direction to that of the engine, a spring balance limits the movement of the shaft, which, on the other end, has a measuring scale. Every torque moment registered corresponds to a certain B.H.P. value, which is given on a direct reading scale, at the top of the test rig. Readings are taken in cm./kg. (=ft./lb.). Initial testing showed some weak points in this layout, for instance, a hydraulic dampening appliance proved necessary. When testing engines possessing very low torque values, such as the 1 c.c. **Hobby**, there is an additional "zero-load", to bring the indicator to the most convenient and most accurate reading range.

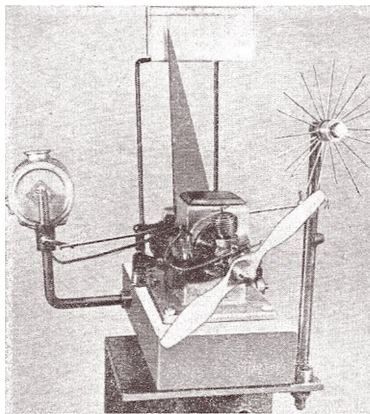
R.p.m. checks are made during each test run. The apparatus used is a reed tachometer, consisting of a score of different reeds, each being tuned to one only specific r.p.m. value for approximate reading. A Zeiss-Ikon stroboscope is used for the final r.p.m. check, possessing an accuracy of plus or minus 1 per cent.

Fuel feed is from a tank adjustable to any desired height, via a flexible tubing, the resistance to torque reaction resulting from this tubing has been incorporated in the test-rig calibration.

Ron Warring Comments

Being a reaction rig, the main objection is that it is susceptible to slipstream effect which can, and does, introduce an "unknown" error.

The method of weighing torque by displacement is also only valid



- (i) If the scale is calibrated by known weights with the engine mounted complete, ready for running (which implies a calibration check each time an engine is fitted for test); or
- (ii) The whole system is perfectly balanced so that there are no gravity moments introduced when the system is displaced rotationally. This again implies accurate balancing after mounting the engine ready for test.

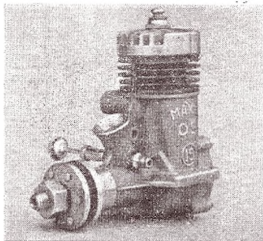
In this respect a "null" balance rig is to be preferred where all measurements are made with the arm balanced *horizontally*. This does not overcome "slipstream" effect, however.

Scale readings tend to be less accurate than weighing on the yardarm principle owing to the

The reed counter is an indispensable accessory with a stroboflash to get a quick check of the order of r.p.m. to be measured, and the addition of a built-in indicator of this type seems a very good feature, likewise, the fixed tank and flexible lead.

I do not follow, however, how B.H.P. is read direct off the scale. The moving system can only measure torque, by weighing the reaction. B.H.P. is torque multiplied by r.p.m. (with a constant factor, depending on the measuring units). Since r.p.m. is an independent reading via the stroboflash it cannot be integrated on to a mechanical scale.

New engine is announced by Davies Charlton from their Isle of Man works to replace the well established Javelin. Looking like an enlarged and rather chunky Merlin, it is a 1.49 c.c. and is christened *Sabre*. Engine will come with detachable plastic tank, be suitable for radial or beam mount and establishes a high standard in die-casting.



Latest of the Japanese 2.5 engines is the MAX OS "15" which shows obvious Torpedo influence. Added feature is second position for another needle valve in the carburetor throat surface like Czech State MVFS engine.

Readers Letters . . .

Timekeepers and other Comments

DEAR SIR,

Not having travelled outside Scotland as yet to comps. I am not in a position to recommend solutions to timekeeper problems which caused your editorial lamentations in the August "AEROMODELLER", albeit I like to help when "AEROMODELLER" throws open the hallowed columns of its pages in order to gain light on problems of importance to the furtherance of our hobby.

As Comp. Secretary in the turbulent Angus and District territory for some years now, it might be appropriate for me to comment on the general aspects of *fugit tempus aerocursus*.

Anyone knowing the human products of the hobby is aware they are usually extreme individualists, which is rather jolly in this age of uniformity. However, said trait can cause timekeeper shortage without warning, as an aeromodeller will go into a trance at any time, anywhere, being completely oblivious to rounds, timing of flights, food, drink, even sleep, his entire concentration being completely absorbed in a new trimming approach, engine, prang repair, or even an opponent's sister! When we are in this state, the plaintive cries of officials for volunteer timekeepers—or for timekeepers already under contract—fall on deaf ears.

In studying this problem the operative word is "volunteer". Timekeeping and organising is the nearest thing to actual work in the set-up so it is not surprising that those few who eventually take on the responsibility do so out of a sense of duty rather than pleasure, although it can be rather fun being super-efficient for once, proceeding resplendent with stop-watches, scales, slide-rule, time sheets, rule book and comp. cards, not forgetting a pocketful of sixpences for those who invariably produce £1 notes to pay their entry fees. First consideration is to get Comp. Sec. types of iron will and Job's patience, rather than the Sunday school teachers and town missionaries who usually hold the office. A suitable C/S is a rarity, but once you find him (or her), don't make those idle and often pointless criticisms that cause too many good Comp. organisers to give up in rightful disgust. Timekeepers will surely rally round a good organiser.

At the larger events where the T/K shortage appears as one of the natural hazards of the game, the fliers must be made to understand that for every flight they make that is timed by someone else, they are automatically obliged to time that other person's model when his turn comes round. That is only fair, but the people who think that a competition is a sort of temporary heaven with no irksomeness attached never seem to see that.

A large labour force that is seldom tapped is the groups of bright young ladies who loiter about on travelling rugs all day at various events. Perhaps they would appreciate the opportunity to do a spot of timekeeping, and take part in the proceedings, instead of just being camp followers. (They make good retrievers, too!)

The five-flight marathon gives the T/K a dreadful amount of work. I am still not satisfied that five flights of three mins. each are any better than three of four min. or of five min. I voted against the five flights at the time, but was unheeded. In any size of competition three rounds for all, and a fourth with a five min. max. for those with three max. flights—followed if need be by

an unlimited fifth round fly-off for those still surviving with max. times—is much fairer on the timekeepers, and just as fair to the competitors.

Regarding the "Nats"; what were "wing on a string" outfits doing at a civilised contest? If there is a lack of timekeepers or a lack of competitors, it is always possible to trace it back to C/L. Seriously though, it is time even the "Nats" were split into purely F/F and purely C/L sections to be held on different days. After all, it is rather a waste of good aerodrome to let control liners on it, when any old coal bin, refuse dump or disused railway siding would do, provided, of course, there were plenty of transformer stations and distributor pylons around to add a little danger to the game, not forgetting a hospital or an Old People's Home nearby to witness the pointless buzzing of hot engines on not-so-hot models. Pardon vicious attack on C/L, but I was told by a fellow Scot the other day that he was building a "McCoy Strunter". Well, that is the finish, the last straw has been set in place; I always thought we did our stunts with the real McCoy at Hogmanay.

On looking over August "AEROMODELLER" again, I see reference to the V.T.O. controversy. "Natural" position on the ground before take-off is surely roughly similar to natural landing position just before touching-down, so interpreting the ruling in this way, V.T.O. is out. With the exception of Paioad and Scale types of contest R.O.G. is superfluous, and should be abandoned.

COLIN G. CAMPBELL.

Montrose Angus.

Low power Wakefields

DEAR SIR,

Mr. Baxter (June issue) seems to think that in increasing velocity he spends something for nothing (except drag), which of course is incorrect. If he had converted the available energy of the rubber motor into higher power, his model would in fact have increased its flying speed, but this speed would have been converted not merely into drag, but into additional lift, meaning climb, and therefore height, which converts into flight duration at a rate governed only by the power factor C_l^3/C_d^2 (assuming, of course, a given loading). Now I don't wish to enter into the aerodynamics of the problem, but even in the special case in which duration of (climb+glide) is equal in the low-power and high planes, the latter has the better chance of contacting a thermal, whereas one small downdraught could "finish" the former. Anyhow, one ought to think twice before asserting that 40 seconds' worth of energy (out of 180) are wasted on speed—modellers, and especially Wakefielders, are not as dumb as that!

Israel

NAFTALI KAIMON.

Casting nose weight

DEAR SIR,

I should like to inform your readers of the possible dangers of pouring molten lead on to wet wood, which is recommended during the course of instruction of the 1955 A.2 Trials winning model. I have used this method several times to make weighted nose blocks; on the last occasion the whole virtually exploded, sending molten

lead into my face and I consider myself very fortunate in not sustaining serious eye injury. The danger lies in the resulting steam being unable to escape and so spurring the lead out of the box. I don't say that this always occurs, but the possibility obviously exists, henceforth I will always use DAK hollowed hardwood nose blades, where the possible burning will not be too serious.

S. HINDS,

Walsley, Cheshire.

Timekeeping

Dear Sir,

Your August issue Editorial solicits suggestions regarding the timekeeping problem, and I will endeavour to do my best.

In general, the people attending contests fall into two categories—the officials, who have either been pressed into service or have volunteered for the love of the thing, and, of course, the competitors who are there for obvious reasons.

Experience has shown that (particularly at Area events) there are usually few people who can be pressed into

service, so timekeepers have to be drawn from officials or competitors. Since the one official necessary for each contest should be string in his ready, necessary motor car in case the wind changes, judging the flight starts and recording, the timekeepers will have to be drawn from the competitors.

If the organisers make it known at the beginning of the year that an Area meetings a competitor will have to provide a timekeeper from his own club, and find another from a neutral club, competitors will be able to draw their cards from control and get on with the contest.

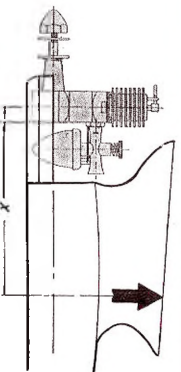
My (London) Area Committee decided to adopt this system, and have used it for two years now without trouble. This has resulted in the familiar string of people waiting to fly dwindling to naught. Whether it will work at a National Centred meeting such as the Nationals remains to be seen, but I think it could work at this level if given a trial without any limitations being added.

Croydon.

E. BENNETT

DESIGN CHART

FOR $\frac{1}{4}$ cc TO 1cc ENGINES



ENGINE USED	ATWOOD 048	BABY SPITFIRE	WASP 049	INFANT TORP	OK CUB 049	McCOY 049(D)	ATWOOD CADET	ALLBON SPIT ^{fm}	MILLS 75	ALLBON DART	E-D '46'	FROG 50	ELFIN 5	E-D BEE
ATWOOD 048	-	9	10	25	15	1/2	9	2 1/2	16	17	1 1/2	11	1 1/2	2 1/2
BABY SPITFIRE	11	-	11	2 1/2	1 1/2	10	10	3	2 1/2	1 1/2	1 1/2	1 1/2	2 1/2	2 1/2
WASP 049	10	9	-	2 1/2	1 1/2	1 1/2	2	2 1/2	16	16	1 1/2	1 1/2	1 1/2	2 1/2
INFANT TORP	1 1/2	1 1/2	1 1/2	-	2	2 1/2	1 1/2	2 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	2 1/2
OK CUB 049	3/4	2 1/2	3 1/2	1 1/2	-	11	2 1/2	1	1 1/2	11	11	3 1/4	9	10
McCOY 049(D)	2 1/2	6	2 1/2	1 1/2	9	-	6	18	11	11	3 1/4	9	3 1/4	9
ATWOOD CADET	11	10	11	1 1/2	16	-	3	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	1 1/2	2 1/2
ALLBON SPIT ^{fm}	4	1 1/2	4	1 1/2	6	1 1/2	-	6	6	4	4	4	4	1 1/2
ALLBON MERL ⁿ	6	3 1/2	6	3 1/2	4	9	17	-	10	7	9	9	9	1 1/2
MILLS 75	2 1/2	6	2 1/2	4	9	9	6	17	10	-	9	7	9	16
ALLBON DART	9	8	9	4	12	13	8	2 1/2	14	14	-	11	10	12
E-D FRONT'46'	6	7	8	12	11	12	7	2 1/2	1 1/2	1 1/2	9	-	9	11
FROG 50	9	8	9	6	12	15	8	2 1/2	14	14	10	11	-	12
ELFIN 5	3 1/4	2 1/2	3 1/4	1 1/2	10	11	2 1/2	1 1/2	1 1/2	1 1/2	9	8	-	18
E-D BEE	4	4	4	1 1/2	6	6	4	11	11	2 1/2	1 1/2	1 1/2	1 1/2	6

(One of the troubles in "converting" American model designs to British power units is frequently the difference in engine weight resulting. As a consequence, the balance of the finished model is different. The table gives design factors using different engines, as affecting the positioning of the engine relative to the design balance point. The dimension "X" can be considered as measured from the back of the engine crankcase, or centre line of the cylinder.

For example, if the design shows an Atwood 049 as the standard motor (i.e. design engine), and the motor actually to be used is an Allison Merlin, table shows the "conversion" factor to be 2.2. That is, the "X" dimension measured off the plan must be inflated to 2.2 X "X". If a Merlin is fitted on the power plant. Similarly, for a design specifying a Mills .75 as the power unit the nose would have to be rendered to 1.4 X "X" if a Frog .50" was used instead.

BRITANNIA TURBOPROP



Armchair Aeronautics

BRITANNIA TURBOPROP by WALLIS RIGBY (Brockhampton Press Ltd., 5s.).

Wallis Rigby needs no introduction to the pre-war modeller, for his card designs were a favourite with young and old—they flew too! In the Britannia we find a press-out example that tabs together without need for gluing, and can be whirled around on the end of a line if so desired. It's a book for the youngster, instructive in its well-written text, and creative in the product of its pages.

GREAT AIRMEN by Wing Commander NORMAN MACMILLAN (G. Bell and Sons Ltd., 12s. 6d.). 270 pages; illustrated.

Can you name the pilot who has flown at 1,650 miles per hour, or the British aircraft manufacturer who was known in his youth as "Springer"? Did you know that a Spaniard produced the first successful rotating-wing aircraft in 1922 and that experiments in flight refuelling were taking place in England as early as 1932? These and hundreds of other interesting facts about aviation history and the men who made it can be found in Norman Macmillan's latest book.

In these eminently-readable biographies of over twenty famous airmen, the author takes us from the first flight of the Wright brothers to the latest experiments with rocket-propelled aircraft. With so many famous characters clamouring for attention, the final choice of subjects cannot have been easy, but the author's selection provides a cross-section of pioneers, engineers and designers, record-breakers, test pilots, air force leaders and pilots of both World Wars with which few readers would quarrel. Six different nations are represented.

Names such as Kingsford-Smith and Cobham may not be so familiar to the younger reader, but they will find their stories just as exciting as the chapters on "Mike" Lithgow and Neville Duke.

The author has taken pains to ensure authenticity and much of the material was collected during personal interviews, but there are one or two unfortunate errors. It is not true to say (page 78) that the D.H. 10A bomber did not see service in squadrons. It equipped R.A.F. squadrons in Egypt and on the North-West Frontier, operated a mail service from Folkestone to Cologne and pioneered the Cairo-Baghdad mail route. Again, on page 251, test pilot Lithgow is reputed to have described the

Blackburn Roc as a good dive-bomber. Clearly, the Blackburn Skua is meant, as the Roc was a turret-fighter. One suspects, also, that on page 265 the reference to a Hawker Hawk jet fighter is a slip of the pen.

Despite these small criticisms, **Great Airmen** makes entertaining reading and it can be heartily recommended. O. G. T.

BRITISH CIVIL AVIATION by D. G. T. HARVEY (Adlard Coles Ltd., 15s.). 168 pages; 125 photographs and G.A. drawings.

It is a sign of the times that a book with this title should exclude particulars of flying clubs, private owners, air racing or rallies? One would have thought that "British Commercial Aviation" might have been a better title as the book concentrates entirely on airlines and charter firms and the aircraft they operate.

Part I contains descriptions of all current commercial aircraft in British service and such future types as the Accountant and Herald, though not the Prestwick Twin Pioneer for some reason. The three-view drawings vary considerably in quality and in one of them (the Avro York) a rather curious effect is obtained by the omission of the cockpit from the plan view. It seems a pity, too, that in a book on civil aircraft a picture of a military Anson should have been chosen.

Part II offers particulars of British airlines and charter companies, with operating statistics, personnel, equipment and brief histories. Unfortunately, this section is not, as claimed on the dust-jacket, a complete record. Some firms, such as Don Everall who fly out of Elmdon, Birmingham, are not even mentioned.

There is indeed a place for a good reference handbook on British civil aviation, but the present work fails to provide the full answer. With some exception of its contents and more careful editing a future edition could find a wide audience.

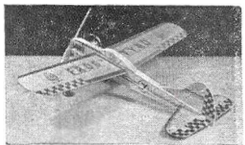
O. G. T.

"DOWN IN THE DRINK", by RALPH BARKER (Chatto and Windus Ltd., 12s. 6d.), 254 pages, illustrated.

Qualification for membership of the "Goldfish Club" is not given to many—certainly not voluntarily!—and the collection of experiences recounted in this absorbing book confirms the benefits of non-membership.

The exasperating, fearsome, and at times stark happenings to eight crews who ditched in many oceans during the last war give a vivid picture of the unwelcome things that can follow on running out of altitude over the wide stretches of water that make up such a large portion of this globe.

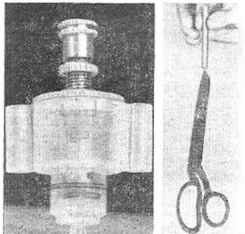
Ralph Barker has been at pains to select a varied and representative account from amongst the hundreds of stories that must be recounted by the 10,000 members of this exclusive club, formed as it is of airmen from all countries in the Commonwealth, proving that once again there is no limit to human courage. C. S.



All-sheet Frog Tyro has now passed full flight tests with Frog 50

THE INTEREST aroused by Hans Gremmer's article on Vane Steering in our April issue exceeded all our expectations. Readers were writing at fabulous rate for further details of the British source of supply for the high power bar magnet and we helped them to the best of our ability. Unfortunately it became apparent that nowhere could anyone obtain the exact 3-in. x 3-in. Alnico rod as a straight "over-the-counter" sale and after searching out the manufacturers of such metal, we were able to interest Woodside Model Aircraft Supplies of 71 Shirley Road, Croydon, in ordering a batch to be specially made. Further negotiation revealed an even more powerful medium in Alcomax, and it is with some pleasure that we recently tested one of the first of these magnets which are now on sale from Woodside at 2s. 11d. each. As the picture shows, one of these Alcomax bars will easily lift our editorial shears, weight seven ounces, and it will pull a steel pin from the desk at 2-inch distance. Now that

Below: Mercury's new tanks in latest shapes; the Elmic Limitank showing control knob and adjustable flight cell; at right: the Alcomax bar magnet for Vane Steering has tremendous power



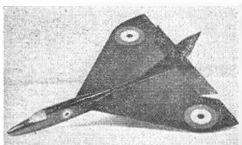
Trade Notes

the ideal item is available we suggest a quick back reference to April issue for all who have a yen for this attractively inexpensive form of model steering.

Balsa has been much in the news of late, and to add to the battle of brand names we now have Equado which signifies the excellent cutting and selection of wood from E. Law and Son at Sutton. For many years E. Law and Son have supplied the retail trade almost in anonymity, and now the new and well chosen name stamp will serve to advertise their balsa.

Henry J. Nicholls sent along a few sheets of some very nice, smooth white Jap Tissue, ideal for rubber jobs and lightweight. Price is 3d. per sheet measuring 21-in. x 25-in. and we can thoroughly recommend it. Colouring can be applied by Mercury's Aerolac after doping, and, incidentally, there's a new clear Aerolac now for high gloss finish or waterproofing. Other new items from Mercury are the new style tanks, some specially created for the latest of their kits. Pressure fed stunt tanks come in two sizes, one of them just right for an AM 25 or similar engine in the *Monarch*, and a teeny wedge tank for 3 c.c. control-line suits the new *Wasp* kit and sells at 3s. 3d. For team racers, notably the *Thunderbird* and *Mac*, there are two of the latest "vertical" pattern types, 30 c.c. and 15 c.c. at 3s. 6d. and 3s. 3d. which will drain to the last drop and if properly positioned in the model, give no change of fuel feed throughout an entire run. If you are having trouble with your racer you might do better with one of these tanks.

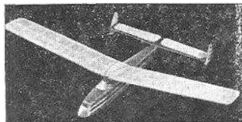
Announcement and a sketch of the remote valve Elmic timer appeared way back in our March issue, but production difficulties are unfortunately holding up supplies. In the meantime, Dennis Elmes has come up with a new approach for the man who likes to do without a separate timer and cut-out valve, and prefers to work on fuel limitation. Known as the *Limitank*, this is a translucent fuel-proof two-cell tank with a shut-off valve incorporated . . . phew! In other words, it fits across the engine bearers and is connected with fuel tube direct to the needle valve. When the tank is filled, both the large upper section and the adjustable capacity flight cell below it, plus the fuel tube are also filled, and the engine can be started. Before releasing the model,



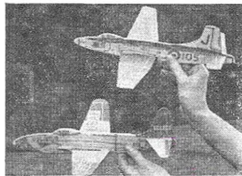
XCI by Contest Kits is now a veteran flier in our stable, best painted bright orange to help find it!

a quick anti-clockwise twist of the control knob seals off the upper reserve tank, and the engine runs on the flight cell only. Altogether a very clever piece of polythene moulding, and one which will appeal to all. The price is a moderate 7s. 6d.

Wolf Electric Tools Ltd. announce yet another addition to the Home Constructor equipment they can supply in the Flexible Shaft set. Expressly designed for use with the Wolf Cub drill, the Flex drive will have quite a number of applications for aeromodelling, and the accessory outfit includes several shapes of grinder, polisher, and cutters which would be especially handy when carving out from block. There is also a new Easy Payment plan for those who prefer not to pay cash for their purchases of Wolf Cub equipment. Under the scheme it is possible to obtain as much Cub equipment upwards of £8 10s. 0d. in value as may be required, for a modest first payment of 30s. down, the balance being paid by weekly instalments of a few shillings. All Wolf stockists and dealers throughout the country are in a position to offer the scheme.



New Keilcraft Kits to receive our blessing are the 20-inch Nomad (above) and the Shadow series of profiles for Jetex²⁰ or Chuck glider (below)



CLUB NEWS

Greenford Park, near London Airport, is the flying site of HAYES D.M.A.C. Radio enthusiasts are here checking out an "Electra" and two smaller odd models



JUDGING FROM the tremendous number of enquiries received from entrants in our "Golden Wings" contest, there should be quite a sizeable boost in the total club membership of all clubs in the British Isles. In all cases where an entrant has taken advantage of our offer to supply the name of the nearest club we have passed on this information, and in many instances have added one or two alternatives which may be more accessible due to local geography. We expect that a large proportion of these enquiries would have been followed up, if only for the acquisition of witnesses for "Golden Wings" flights, but we hope that club secretaries have taken the initiative once approached, and recruited a number of potential members into their ranks.

North Western

The first A1 Glider Competition held in SHARSTON D.M.S. attracted twelve entries, and with a three-flight two-minute maximum rule in force A. Harrison took first place with an aggregate of 3.14. The competition was very successful and another is being held later in the year. Club nights have been enlivened by chuck glider competitions, the first of which was won by M. Carlidge with a three flight total of 53.6. The second showed the benefit of increased practice, being won by A. Harrison with a 77 second total.

A record of 70 competitors took part in CHESTER M.F.C.'s contests on August Monday. Entrants came from a dozen or more clubs, and the results were intriguing, since J. G. Effhaender headed the stunt prize list with two other Macclisfield members second and third, J. Thompson won class A racing with two other Forsters' members second and third, and R. Gibby won class B with two other West Essex clubmen second and third. Combat was won by D. Bailey of Barton-on-Trent. The Club Paro Cup for rubber models was held on the previous weekend, and, with lots of flyways, was won by Mrs. C. R. Filkins. Joint runners-up were the winner's husband and H. F. Wilde, with top junior J. Moulton.

Anyone within reach is advised to go along and have a look at the SOUTHPORT M.F.C. Exhibition to be held in the Congregational Hall, Chapel Street, September 24th-October 1st (excluding Sunday). Anyone who cares to is invited to send an exhibit along—there are 16 classes with shields and cups in each. Would-be entrants contact P. Saphron, 6 St. Annes Road, Southport.

ASHTON M.A.C. have kept their competition end up this season with a narrow miss for a place in the A2 team by J. Chidwick, and by R. Pratt taking first in race at the D.D. Rally. A second at Clwyd was collected by R. Cole and 8-year-old B. Jackson was first in the junior event at this winter meeting.

After some doubt, HYDE M.A.C. Rally was finally held, with good weather and a selection of clubs, all of whom had travelled a good distance. Prizes were well scattered; power went to T. M. Unsworth (Stocker) 8.23, rubber to W. Nelson (Sheffield) 9.18, glider K. H. Webster (Pontefract) 10.28, R.C.W. Airey (Kendal) 575 points, T.R.A.I. Thompson (Foresters), T.R.B. J. S. Jackson (Foresters), R.H. Clipping D. Morgan (Wigan).

London

Gratifying membership of 57 has again been reached by NORTH KENT NOMADS M.C., and quite a string of contest successes have been achieved so far this season. These include Miss D. Knight winning the Ladies' Trophy, H. J. Kowdie topping the area Weston results and qualifying for the Wakefield team, and C. F. Dance second for the Taplin Trophy. The All-Kent Rally was not very well supported, probably due to the high wind prevailing. Results were: Wickins Wakefield Shield—Latter of Men of Kent; Parker Power Trophy—Bishop of Blackheath; and Rotarian Glider Cup—Blount of Croydon. A club RC event was held in excellent weather and mastered six entries, all of whom completed two flights without a crash. How many clubs can do that? Judged by E. H. Cosh, the top three were B. G. Taylor 165 points; C. F. Dance 160; and J. Ashcombe 158.

HAYES M.A.C. have reached the semi-final of the I.D.T.C. by beating Northern Heats by 4:04, total time being 40:58. J. Baguley has lost yet another brand new power model after a D/T failure, and J. Marshall is flying a tailless rubber model with a consistent performance showing up many orthodox jobs. The club still meets in Cranford Park on Wednesday evenings, and will be glad to see any potential members. A junior contest featuring A1 gliders is being run at the end of October by ST. ALBANS M.A.C., and later activities will include decorations in the clubhouse. The All-Britain Rally freeright events will this year lie on a 3-flight basis, by the way. Perfect weather blessed ENFIELD

East Anglian

The area gala was held in the very warm weather during July, though a stiff breeze persisted and a two-minute maximum was decided. A wide cross section of clubs attended with 287 model entries being flown in glider. This was won by R. Chavins of Southend Seniors with 5:55; power went to Scott of the same club with 12.12, rubber to R. Lloyd of Thruside with a treble max. and 55 seconds fly-off. The other treble max. was scored by M. Fressnel of the same club, who was unable to make his fly-off.

Now nine months old, DUNMOW M.F.C. has a strength of sixteen and is fortunate in that it has obtained aeroplanes for flying sites. Club funds are being conserved to provide a Tiley lamp for the otherwise well equipped. Interest in local late work is all.

Another lucky club is CAMBRIDGE M.A.C., who now have the use of Oakington aerodrome while Waterbeach is in use. This brings the club's choice of ideal flying grounds to three . . .

Most important news at NORWICH M.A.C. has been serving member P. Gidley's R.A.F. M.A.A. Class 2 speed record of 119.7. This, incidentally, was achieved with an O.I. team race using a stock ETA 291 Club members attended the R.A.F. Championships and rendered assistance as well as a spare service. The club's monthly cup has again been won by a junior, F. Carter with his "Riptabity" stunt model.

North Eastern

Interclub contests with Soham and R.A.F. Middleton St. George are giving THORNBY PATHFINDERS M.F.C. much pleasure, and the club recently gave their first public demonstration, in conjunction with Middlebrough Horticultural Show. Apart from carrying the title "Pansies", the display was most successful.

CONTEST CALENDAR

Sept. 17/18	U.K. Challenge Match	} Prestwick
	P.A.A. Festival	
Sept. 25	All-Britain Rally	} Radlett
Oct. 2	Model Engineer Cup	
	Gutteridge (team flight)	} Area. (1st Wkld. F. Area. Etlm.)
Oct. 16	K.M.A.A. Cup (1st & 2d Elim.)	} Area. (1st Power Etlm.)
	Hallfax Trophy (1st Power Etlm.)	
	Note: Revised dates of 1956 eliminator.	

it was unusual in that F/F rather than C/L models were used, notably power and A1.

Southern

Sharpening their models for the annual Hobart Trophy blood match with Portsmouth M.A.C. are SOUTHAMPTON M.A.C. members. Last year this was won by Pompey, which means that Southampton do the travelling this time.

Big news from BOURNEMOUTH M.A.C. is A. Yale's flight to the Isle of Wight with a Wakefield suffering from D.T. failure. This made the national evening papers in the usual way—you know—powered by an elastic band.

Odd view of C/L flying was experienced by members of LEE-ON-SOLENT and SOLENT HEIGHTS M.F.C.s, who watched it through a submarine periscope while club-mates were giving a display at H.M.S. Dolphin, the Gosport submarine base! In a return match between Solent Heights and Gosdolph M.F.C., the latter filled first and second, the former third and fourth.

Several Eliminators are now flying in FARNBOROUGH M.A.C., and something like half a dozen Y-Bars are on the way. Seven new members joined at the last meeting, which needless to say happened on the day the secretary was playing cricket!

Northern

A1 has certainly caught on, and LEEDS and BRADFORD M.F.C. report that their restricted flying areas are already beginning to look larger! Together with A1, a similar size rubber class (3 oz. rubber, 5 oz. all-up) is being developed, and promises to be a very good thing. A club power comp. was won by A. Collinson with 10:40, first five places being taken by breezy (plans coming up shortly in "Aeromodeller" by the way!) Club A2 event went to A. Pickles with 12:48 (5 flights, 164 ft. line). Oliver motors

Anson Yale's Wakefield photographed immediately before its successful hour-and-a-half Isle of Wight flight

are very popular, and the T.R. boys are using them in 12 oz. racers, in keeping with the built-up lightweight A and B jobs favoured in this club.

Consolation for the scrubbed Y.E.N. Rally will be a big exhibition to be held during the winter in Leeds. More news of this as and when.

South Wales

The old town airport of Penang has been secured by CARDIFF M.A.C. for T.R. flying, which has previously been restricted due to lack of suitable take-off sites. Now they have lots of nice tarmac, R/C interest is picking up, with five more members going in for a crowd.

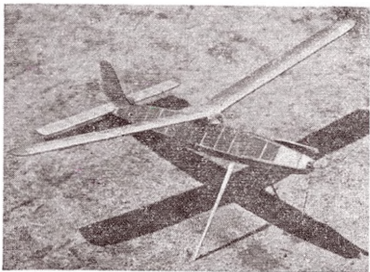
Western

A display before a large crowd was an outstanding feature of recent SOUTH BRISTOL M.A.C. activities. B. Hopkins was unable to fly his jet stunter due to lack of take-off facilities—hand launching was tried without success. Some brave man! Only model planned was an E.D. 2.46 H'ween, and the crowd was quite upset. Finally, Karl M. Webster of 25 Rock Hill,

Glass Houghton, Castleford, Yorks, would very much like to correspond with a Scandinavian A2 enthusiast aged around 17 and able to write in English. Any offers? THE CLUBMAN.

SECRETARIAL CHANGES

SWINDON M.A.C.
R. H. Smith, 11 Heywood Close, Penhill, Swindon, Wilts.
FALMOUTH M.A.C.
C. C. Badger, 24 Wodehouse Terrace, Falmouth, Cornwall.
SPRINGPARK M.A.C.
C. J. Percival, 39 Queensway, Coney Hill, West Wickham, Kent.
NORWICH M.A.C.
I. S. Bird, The Falcon, Pulham Market, Norfolk.



Marinecraft Kit

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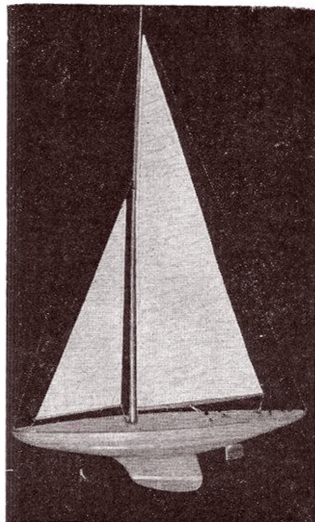
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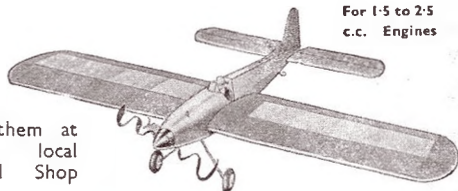
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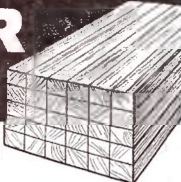
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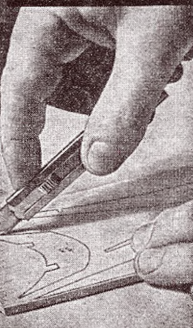
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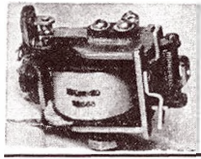
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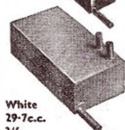
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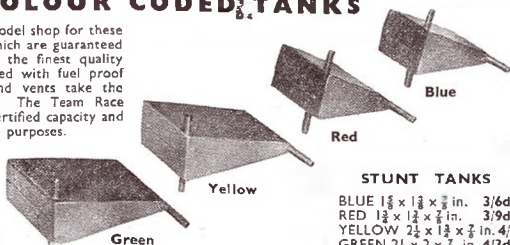


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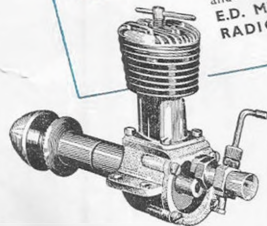
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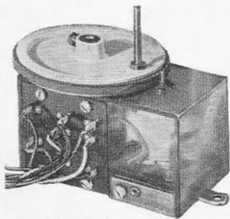
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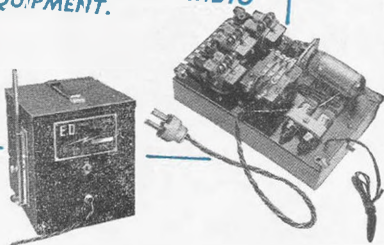
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