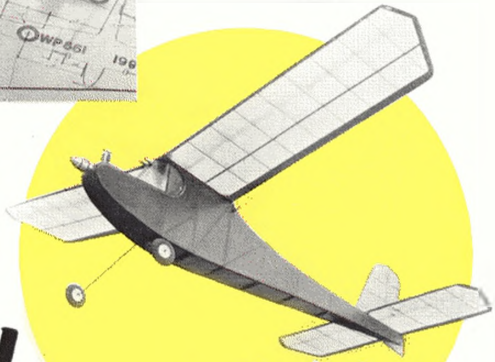
JUNE 1956

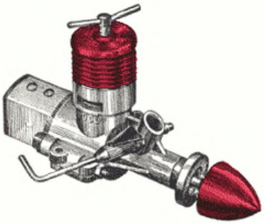
AERO MODELLER

1/6

2 SUPER KITS

Both for the SUPER MERLIN





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12/9

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★★★★★★★★★★★★★★★★★★

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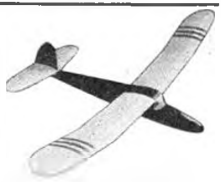

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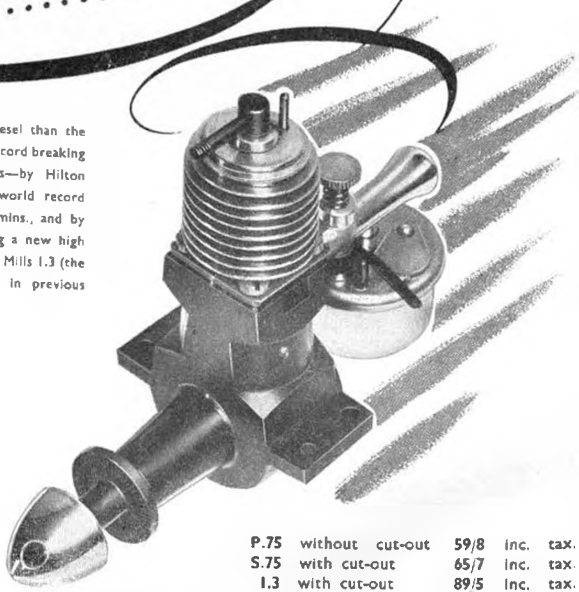

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Variety, achievement, reward. Through the Direct Commission Scheme, the R.A.F. offers young men a unique chance of blending the adventure of flight with the satisfaction of a great career. And more can now fly, with the new appointment of air electronics officers, highly skilled men trained to be responsible for all the electronic devices in the new V-bombers. **Pay? The new rates give you an income comparing favourably with most other professions: a Squadron Leader of thirty, with the increased flying pay and full allowances now earns nearly £2,000 a year. And you join with the assurance if you wish, of a permanent career right up to pension age. Alternatively, you can choose a 12 year engagement, with the option of leaving after eight years. In the first case you take back to civilian life a tax-free gratuity of £4,000!**

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Here's a harder way to reach 10,000 feet, but it's a part of training, part of a big plan to make aircrew even more self-reliant.

Going where the weather's made is part of R.A.F. routine—and it can take you to the Poles or down to meet the sun.

There's every sport you could wish for, with leisure to enjoy them. And R.A.F. teams regularly compete in international competitions of all kinds.

AERO MODELLER

"Covers the world of Aeromodelling"

VOLUME XXI
NUMBER 245
JUNE 1956

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

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Special features

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Regular features

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Odd Man Out

THE PRINCIPLE of holding World Championships in the leading classes of competition modelling is an excellent one, and the F.A.I. are to be congratulated on the splendid results achieved so far. The close finish in the keenly-contested free flight events at Finthen last year was a clear indication of the high standard that both competitors and their models have now reached. More's the pity that this happy state of affairs promoted the ill-conceived rule changes that have recently provoked such an outcry in the world of international contest modelling. This is, however, another story, and one which we feel will be remedied before the 1957 contest season is upon us.

No, our aim this month is to question whether speed models continue to merit classification in the world championship class. It is our opinion and that of many others that they have never merited top honours even in the sphere of control line flying!

Interest in speed flying is relatively small, probably the smallest of any class of modelling, with attendance both at home and in recent international contests showing a continued fall. Already the aspect of "works teams" has marred the essentially amateur outlook of international contest modelling, this being an inevitable sequel to a brand of flying which encourages the development of high speed racing engines that are out of reach and pocket to the average aeromodeller.

If the F.A.I. want suggestions for the World Championship Control Line Class they would do well to consider Team Racing, which encourages first class team work between pilot and mechanic; has a greater interest and following than speed flying; and which fosters the development of engines giving durability and economy in fuel consumption rather than sheer speed.

We are not decrying the magnificent efforts of Carter and Gibbs, of Battle and Sladky, etc., but do emphasise that they represent a very minute section of the world of contest modelling, that would be better catered for at the annual Criterium d'Europe than at the World Championships.

On the Cover . . .

Past the vertical in a dramatic peel-off from a flank attack is a Canadian CF-100 Mk. 4 all-weather fighter of the R.C.A.F. Aerobatic abilities of this large and heavy aircraft were ably demonstrated at the 1955 S.B.A.C. Flying Display by Sqdn./Ldr. Zurakowski, who we believe is the pilot in this camera study by an Air Ministry photographer.

Heard at the HANGAR DOORS

A.T.C. Prizewinner

Sgt. E. A. Harris, winner of the A.T.C. Aeromodelling contest mentioned last month, was entertained by Messrs. Kelvin Hughes the instrument makers, as part of his prize. The visit he made to their works also included a flight over his own home, and he is shown piloting the Auster aircraft in the picture above. Sgt. Harris also handled some of the latest marine electronic equipment used for locating whales, and other modern instruments such as a periscopic sextant, specially designed to enable star sights to be taken from high speed aircraft at great altitudes. His prize day was rounded off by a visit to Cinerama. All of which only goes to show where a little aeromodelling can get you!

Czechoslovakian Aeromodellers Camp

The British Youth Festival Committee have sent us details of what is described as "a holiday camp for young aeromodellers", to be held at Vrchlabi in North Bohemia by arrangement with the Czechoslovak Union of Youth. Hostel accommodation is provided, and there is a full programme of social, recreational and modelling activity. One day of the holiday, which lasts for approximately 14 days, will be spent in Prague and the cost is approximately £35. On enquiry we established that the definition of a "young aeromodeller" in this case means anyone between the ages of 14 and 30. Immediate application is necessary on the part of any interested British modellers.

Lost . . . and Found

The short paragraph that appeared in last month's "Hangar Doors" referring to a radio control model that had been picked up in the Humber Estuary had a happy ending. Just before the issue was published we had a letter from a reader at Grimsby asking whether we could help as he had lost a Junior 60 on a flight from Killingholme Aerodrome. Apparently he had made extensive enquiries, including advertisements in the local papers, all to no avail. His description checked accurately with that given by Mr. Chilton whose father retrieved the model from the Humber Estuary. We were pleased to put the gentlemen concerned in touch with one another, thus restoring another aeromodelling stray to the fold. The radio modeller concerned was very fortunate indeed. It was a new model, on its maiden flight, and if we may point a moral for the benefit of others, had no name and address and too much fuel in the tank for its first test flight.

Death of Leading Aerodynamicist

Professor F. W. Schmitz, who was responsible for much of the low speed airfoil theory that we enjoy today, passed away on April 16th in hospital at Bonn. His first book on the subject, "Aerodynamik des Flugmodells", gained him the Ludwig Prandtl Prize in 1941, and has been a reference work for model airfoil theory ever since. The Low Speed Aerodynamics Association co-operated with Professor Schmitz quite extensively, and much of the efforts of their combined research is contained in various L.S.A.R.A. Reports.

The value of low speed aerodynamic research cannot be overestimated, but unfortunately has been neglected in recent years due to the tremendous emphasis placed on high speed experiments. All the more credit to brilliant men such as Schmitz whose researches at the lower end of the speed scale will continue to be of value to the aviation world for years to come.

S.M.A.E. News

At a Council Meeting on Sunday, May 6th, the Society confirmed that, subject to funds being available, it would be sending teams to the Wakefield Contest in Sweden and the A/2 Glider Championships in Italy. With the Italians combining this latter meeting in Florence with the World Speed Championships, the question of a British Speed Team was also considered. It was decided that if the speeds achieved in the 2·5 c.c. class at the Nationals justify it, then consideration will be given to sending a speed team to Florence.

Sid Taylor, S.M.A.E. Competition Secretary, also announced the British team for the King of the Belgians International Radio Control Contest in Antwerp on June 15th-18th. They are as follows: *Team Manager*, G. Honnest-Redlich; *R/C Glider*, H. Boys and W. Airey; *Single Channel*, G. Parkinson and D. Fisher; *Multi-Channel*, R. Higham and E. Hemsley. In addition V. G. Breeze and R. Clarke are going as helpers. All these boys are going at their own expense.

The Top Dozen

Latest all-rounder to join the select band of British holders of the International Merit Certificate is John O'Donnell of Whitefield, who made his final qualifying flights on April 22nd during the Astral Trophy contest.

There is a sad lack of information regarding the gaining of Merit Certificates, and readers may be interested to know that anyone can qualify for these records of achievement, for which the following rather simple requirements obtain:

Class A.—Three flights of over 2 minutes with either Rubber, Glider, or Power model.

Class B.—Three flights of over 3 minutes, ditto.

Class C and International.—Three flights of over 3 minutes with *each* type of model. To qualify for the International class, applicant must be the holder of an F.A.I. Competitor's Licence.

Flights in each category must be made with the same model on the same day. For Class C, flights in the different categories may be made on different days, but within the period of one year. Special application forms are available from the offices of the S.M.A.E., Londonderry House, Park Lane, W.1.

Sidelines

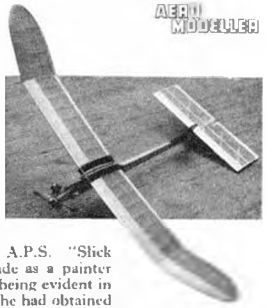
George Cox's revealing detailed drawing of the Hawker Hunter in Service colours on pages 324/5 was the result of much appreciated co-operation on the part of Air Ministry and Officer Commanding 41 Squadron R.A.F. whose aircraft is the one illustrated. Many scale enthusiasts have written to us in the past for detail of this nature, and we fail to see how they could possibly be disappointed by the Hunter V. Comments on this style of drawing would be appreciated.

The rather sweeping statement in last month's issue announcing that Peter Buskell's modified E.D. Racer is the most powerful 2.5 for free-flight was not (as some would imagine) made without vindication. On static tests the horse power and quoted prop-r.p.m. figures speak for themselves. Further corroboration comes from a Sunday session at a Common not too distant from London where a group of internationally-famous aero-modellers conducted a spot check on several potent engines, including Pete Buskell's. The modified E.D. was found to be 250 r.p.m up on the next best, and 750 r.p.m. faster than the rest. Pete estimates a further gain of 2,250 r.p.m. over the static figure when the model is climbing.

Two "Reet Good Do's"

For a number of years now two fine exhibitions of models has been a feature of the Northern calendar, and this year's shows in Manchester and Sheffield were well up to standard.

The Eighth Northern Models Exhibition at the Manchester Corn Exchange did not number perhaps quite as many aircraft as previously, but the general standard of workmanship was high with a number of outstanding models that were a delight to judge. G. J. Hankinson, of the Timperly and D.M.A.C. won the "AERO-MODELLER" Challenge Cup



G. J. Hankinson's "Slick Stick" won the Aeromodeller Trophy at the Northern Models Exhibition

with a fine A.P.S. "Slick Stick", his trade as a painter and decorator being evident in the fine finish he had obtained with an economy of material.

Once again A. Naylor had the best showing at the Sheffield Model Societies' combined exhibition, this fellow getting a better finish on pure flying models than most can achieve with specially prepared exhibition jobs.

We deprecate the attitude that kept entries from the North Sheffield club from public view, for surely it is unequitable for any one group to demand separate space in a show of this kind, and one can only say that the dissentients were the losers. In fact, it was not worth getting Shirty over!

Stosser Markings

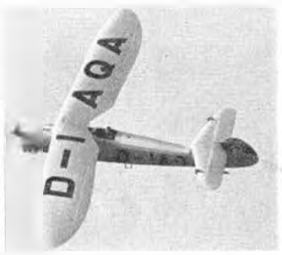
Details of German Civilian/Military insignia for B. Barton's popular Focke Wulf Stosser flying scale model published in our January issue, aroused considerable comment among our readers in Germany.

One authority wrote to us to say that such could not be, and so we sent him the photograph of the actual aircraft which we had used as our source of information.

After much research it appears that the Civilian Stossers were used for propaganda and for the purpose of the photograph Military markings were taped or pinned in place simply to boost up the strength of the growing Luftwaffe. This in practice appears to have been used quite extensively to confuse allied spies and it certainly confused us!

The two photos below show Stossers in pure Civilian markings, for those who require a change from the insignia given on the plan.

Civilian Stosser's as detailed above



VIIth Criterium of Europe

ETTERBEEK, BRUSSELS, APRIL 30th / MAY 1st

PERHAPS THE MOST important item of equipment one should carry to this important European Control-line Championships should be a pair of very broad shoulders. Not that one could complain in the slightest degree of the organisation, which was superbly controlled by omniprevent Albert Roussell—or the magnificent pair of circles which were the result of much hard labour by our old friend of free-flight fame, Georges Lippens. It was just that certain approaches to conduct in the speed and team race events were not exactly to the standard we apply in Great Britain. For one thing, open whipping was officially allowed in t.r ! — Let's leave it at that and analyse the speed results.

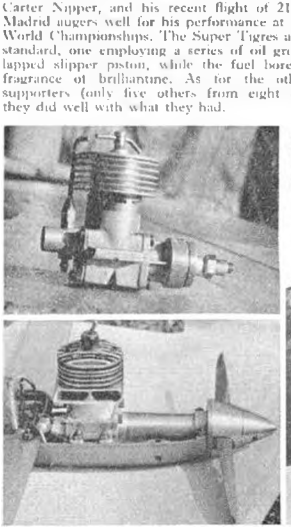
Gibbs beaten ! What a blow to our prestige and what a fine performance by that gentleman of the circuit, Fernand Battlo of Barcelona. At the close of the first day Ray Gibbs was comfortably situated in the lead with 124.5 m.p.h., the fastest he had ever flown on .25 mm. lines. Battlo had been fast at 121.2 on his first flight, and lost the model in a searing line break when whipping up to speed for his second. In the pylon he had appeared to be leading the model with the handle 90 degrees to the lines. Next day, with temperature up to 70 degrees F., Battlo made a beautifully smooth 127 m.p.h. at low altitude and Gibbs went to the circle to fly a l'Espagnole. Unfortunately he was not used to the technique and the whipping protest was upheld though the flight was equal to Battlo's. A counter-protest that Battlo had flown too low was also upheld following a spate of rule-book scratching, and the two had to fly again. Battlo made 125.5 and Gibbs 122. All credit to the Spaniard. He had two engines, either of which could match the famous Carter Nipper, and his recent flight of 213 k.p.h. at Madrid augers well for his performance at the coming World Championships. The Super Tigres are far from standard, one employing a series of oil grooves in its lapped slipper piston, while the fuel bore a distinct fragrance of brilliantine. As for the other valiant supporters (only five others from eight countries!), they did well with what they had.

The contest in which we did not compete, and therefore lost all opportunity to gain a place in the Criterium, was that for aerobatics; but we would be hard pressed to find a flier the equal of any of the first three. Henry Stouff's Blue Pants design and the E.D.246 were predominant, and in the hands of young Lecomte it was difficult to fault such a smooth display. For sheer stunt ability, highest credit should go to last year's winner, Rieger, who removed the tyre from a wheel at the foot of a vertical "8" on two of his flights, and for "square" pull-out from a dive or wingover the slotted elevators by Mathey will probably set a new fashion in design. Most points were lost by the also-rans through not flying F.A.I. "8"s with vertical and horizontal intersections.

Combat was not all we had hoped, with few cuts (it was protested that the "serpentines" were too tough), but the better two came to the final and it was multi-linguist Garcia from Barcelona who chip-chopped Rieger's streamer to win.

For excitement and international fervour Team Racing cannot be rivalled. Add to that the allowance of whipping, and you get a boiling pot that came dangerously close to overflow in violent temper. One cannot race sportingly under such conditions. The climax came in the one and only melee in which three racers went down, when Forester's Howard (with years of experience in the hurly-burly of British "A" racing) came out unseathed. After that, Albert Roussel produced the big stick and whipping stopped forthwith. Heat times went up by a whole minute, airspeeds down by as much as 10 m.p.h. ! Though all 18 entries each had two races, it was clear that the final was to be Anglo-Dutch and our old opponent Smelt was going to make the Oliver Tigers run for their money with his ancient coke-filled clack valve E.D. It was a magnificent final—so close that Smelt congratulated both Edmonds and Howard for beating him, when in fact he was the victor. Only five seconds covered the first three, which were seconds lost to us by a prop change for Edmonds, and one "other side of the circle" landing for Howard. The one-mechanic rule and segmented circle met with full approval and many would agree with the suggestion that Team Racing, rather than sheer speed flying, merits the World Championship status.

FULL RESULTS WILL BE FOUND ON PAGE 321



New variations on old motors seen at Brussels included (top left) a Webra Mach I, series II, with enlarged fin area for improved cooling, smaller intake throat and a plastic timing disc. Bottom left is the French home-built Jarry Special with Dooling 61 styling plus the usual Jarry-Desloges long shaft. Model has metal pan, see 4 opposite. Centre are the Webra-Glo's in three forms. With lightened pistons, and in one case a razor blade reed valve (detached in foreground), these engines are diesel conversions. Below is the Carter Nipper, based on a McCoy 19 crankcase

1. Smelt's winning team racer (Clark-valve converted E.D. Racer) is credited by his pal mon. Same model won last year, was second at The Hague in 1951. Flies about 82 m.p.h. for 25-40 laps. 2. German interest in Battle's winning speed model as close examination is made of the tiny airframe—and its fragrant smell! Uses forward end of a Super Tigre gen, otherwise all wood. 3. Model had metal wings. 3. Van De Dyk with 27-ounce Fibreglass racer (Ulicer) which was fourth in final, fastest in heats—whipped to 96 m.p.h.

4. Our ruler indicates the too small area of Jarry-Desloge's model. 5. Jose Garcia, a most able combat flier, with his Byra powered wings. These are silk covered and fly at about 55 m.p.h. 6. Smiling Swiss is A. Mathey, of Vallorbe, who came third in stunt with very snappy righ angle pull-outs, thanks to slotted elevators. E.D. 2.46)

7. Andre Chavaillaz, also from Vallorbe, Switzerland, struggled against the super-tuned special engines with his standard Super Tigres in neat traditionally white models. 8. Stunt Victor, young Lecomte of Belgium, with E.D. 246 Blue Pants. 9. Nicest of the stunt models was Battle's semi-HA 1109 (Fox 35) in Spanish military colours has detachable wing. 10. Rieger of Germany, winner last year and almost winner this time. Uses modified E.D. 246 diesels. 11. Novel venturi cooling extractor on Huperts (Germany) Mach 1 speed model. 12. Pas de whipping, eh? Albert Roussel waves a warning finger at two Dutchmen, a Spaniard and Howard at right who doesn't understand a bit of it! 13. Fernandez who flew a Dynajet to please the crowd at 131 m.p.h.

A 22" SPAN JETEX POWERED FREE FLIGHT SCALE MODEL

MILES STUDENT

DESIGNED BY

J.A. Fleming.

3/-

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MATERIALS REQUIRED

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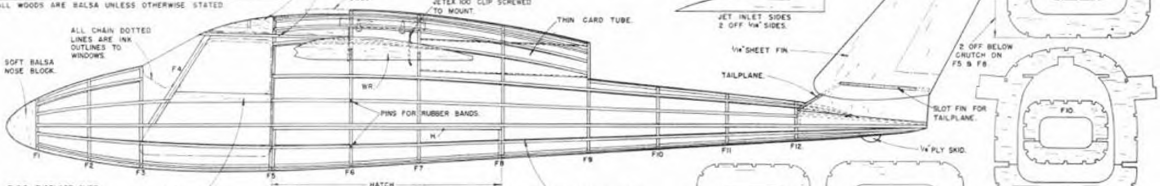
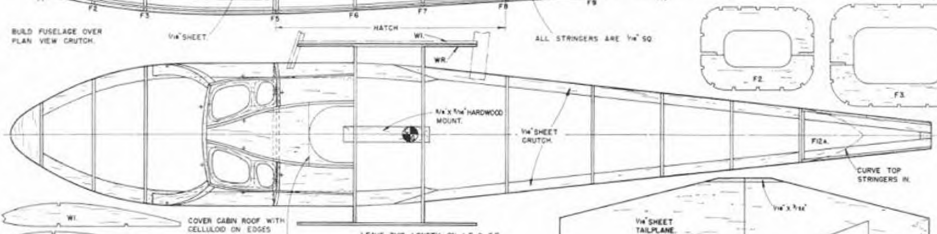
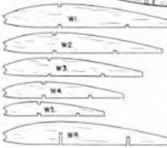
1	"	"	1/16" X 1/16" X 36" "
2	SHEETS	"	1/16" X 3" X 36" "
1	PIECE	"	3/16" X 3/16" X 2" HARDWOOD

ODD PIECES OF 1/16" SHEET
9" X 9" OF THIN CELLULOID
SMALL PIECE OF 1/16" PLY.
1 SHEET OF THIN CARD.



BUILD FUSELAGE OVER PLAN VIEW CRUTCH.



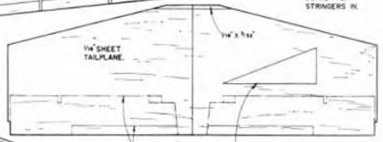


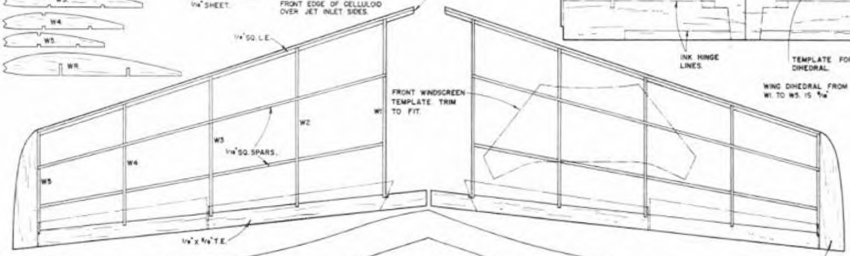
COVER CABIN ROOF WITH CELLULOID ON EDGES MARKED THUS +

ALL RIBS FROM 1/16" SHEET.

LEAVE THIS LENGTH ON L.E. & T.E. & CUT TO FIT FLUSH AGAINST FUSELAGE ON ASSEMBLY.

FRONT EDGE OF CELLULOID OVER JET INLET SIDES.

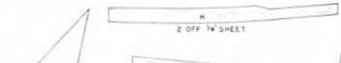


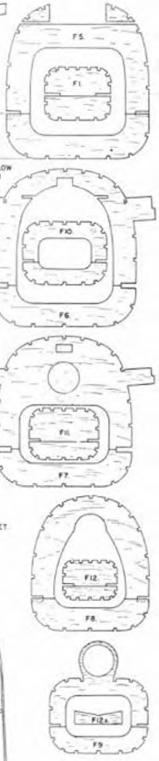


COVER MODEL WITH LIGHTWEIGHT TISSUE & GIVE 2 COATS OF CLEAR DOPE AFTER SHRINKING. COLOUR SILVER IF DESIRED.

WING ROOT TEMPLATE. CUT 2 FROM THIN CARD & TRIM TO FIT.

SOFT BLOCK TIPS.





ALL FORMERS FROM 1/16" SHEET.

PUBLISHED AEROMODELLER JUNE 1956.

Build this accurate scale model of a prototype that will soon be making headlines. Suitable for Jetex 100 or Jetmaster.

Designed by JOHN A. FLEMING

MILES STUDENT

THE MILES STUDENT is the newest jet-trainer under construction today. Descended from the first monoplane trainer to see service with the RoyalAir Force it is powered with either one Blackburn Turbomeca Marbore 2 or two Palas 600's. Though primarily a side-by-side trainer it can be adapted as a fast four-seater communications aircraft or used, in a modified form, as a ground attack aircraft. The large doors enable easy access to the cabin (floor of the Student is only 18 in. from the ground) and in the air a bale-out can be made without fouling any part of the structure. Thus weight and complications of ejector seats has been eliminated. Span with tip tanks (not fitted on the model) is 28 feet, length 27 feet, and maximum speed with the Marbore engine is estimated at 300 m.p.h.

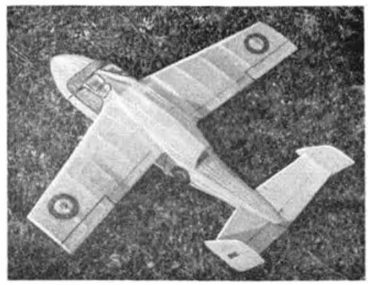
Undercarriage as well as tip tanks have been omitted on the model to give a light structure and a large hatch beneath the fuselage allows the Jetex motor to be easily removed.

Before beginning construction carefully study the plan. When all the parts have been cut out build up the crutch from $\frac{1}{4}$ in. x $\frac{1}{8}$ in. strip and sheet and then cement the upper fuselage formers and tailplane incidence pieces in position. The roof and sub-formers on F5 are added as well as the jet inlet sides. A sheet of thin celluloid between formers F5 and F6 completes the jet inlet. The hard $\frac{1}{16}$ in. sheet tailplane is cracked on the centre line and the template determines the dihedral. The tailplane is now cemented on to the incidence pieces on the crutch. Upper fuselage $\frac{1}{16}$ in. strips are fitted and when complete the half fuselage is removed from the plan. The $\frac{1}{4}$ in. square engine mount is added and from formers 7 to 9 light note paper is cemented inside the fuselage to screen the skin from Jetex exhaust.

Lower half fuselage formers are added with the hatch sides pinned in position. "Stringing" is completed and when dry the stringers between the pairs of formers 5 and 8 are cut thus detaching the hatch. Check that this is a push fit and add gussets for strength. Add the nose block allowing a hollow for weights to be added to adjust the C.G. Hard $\frac{1}{16}$ in. sheet fins are notched and cemented in place using template to obtain the correct angle. Fuselage and root ribs are positioned together with short leading and trailing edges and root fairings of thin notepaper are added. Cabin windows of thin celluloid cut from the approximate patterns on the plan are cemented in position before covering.

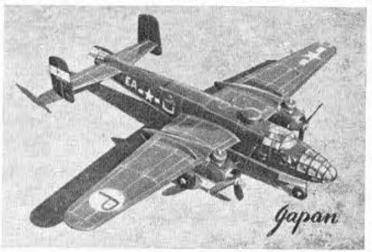
Wings are straightforward. The trailing edges are notched for the ribs and when ribs, spars and leading edges have been added the $\frac{1}{16}$ in. sheet nose cap is added. Smooth the model's surfaces with sandpaper and cover with lightweight tissue applying two coats of thin dope. Control surface hinges and cabin and door outlines are inked in with Indian ink, and yellow training panels and R.A.F. roundels (in positions seen on photo's) are added with coloured tissue.

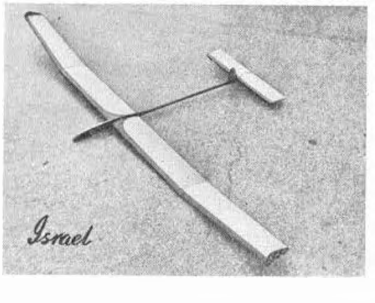
After fitting the Jetex motor balance the completed model at the point shown and trim for the glide by slightly bending the elevator hinges either up or down. A razor cut along the sides of the elevator will simplify this. Initial power flights should be made on a half charge after igniting the wick either with a cigarette spiked on a 5 in. length of wire or a piece of dethermaliser fuse on the same piece of wire. You will be rewarded by true jet-like flights and watch out for the initial flight of the prototype STUDENT on the newsreels in the near future.



Plain tissue was used to save weight on the original but a thin coat of silver would be painted overall for realism without spoiling performance. Full size copies of the 1/32nd scale plan opposite are available price 2/- post free from AERO MODELLER Plans Service

WORLD NEWS





Israel is a land of contrasts, and that applies to aeromodelling as well as the topography of the country. Remember how they once *wanted* windy, non-thermal weather to check their models for performance in "European" conditions? Latest experiment out there was to try the British system of de-centralised contests with an A/1 event. The entry was disappointingly low—apparently the lads prefer to travel and get together at a centralised venue! The team to go to Italy for the World Glider Championships (A/2) will be Ze'ev ben-Shahar, Yizhak Kobo, Rami Levi, Zvi Hermelin and Team Manager Naftali Kadmon.

Date for the 1956 M.M.S. Soviet Internationals is set for May 25th to June 5th at the Alag Sport Aerodrome near Budapest in **Hungary**. A change this year is that the Jet class will be omitted in favour of control line aerobatics, which should give countries like Poland and Yugoslavia a greater chance of success. Among the names to represent Hungary in this International we are pleased to note that of Georges Benedek, who was only 4 seconds short of gaining 15 perfect maximums in the three Wakefield eliminators. Could it be his airfoil?

The team to go to the M.M.S. meeting for **Yugoslavia** was chosen at an eliminator at Vrsac, and includes Emil Fresl once more, this time in 2.5 c.c. speed, and, surprise to us, one-time World Glider Champ Bora Gunic is flying in Power.

From **Germany** we learn that the model trade is very much radio control conscious, and the new Muschner crystal controlled transmitter plus small soft valve/transistorised receiver with latest Siemens 151 relay sells for about £12 complete. Transistors are at last on the way as far as models are concerned, and in Britain experiments are being continued by Radio and Electronic Products' George Redlich, so the old country is far from slacking in development. In Germany, the cement most widely used is UHU, a trade name that has been used to sponsor many a full-size model plan. Now the UHU company is to organise a huge contest for German youth, with kitted models that will assuredly boost activities in that country. Latest in the engine world is a purposeful-looking 1.5 ball bearing reed valve, the Taifun Hurricane, and a series of gold anodised headed diesels by Eggenweiler in Southern Germany.

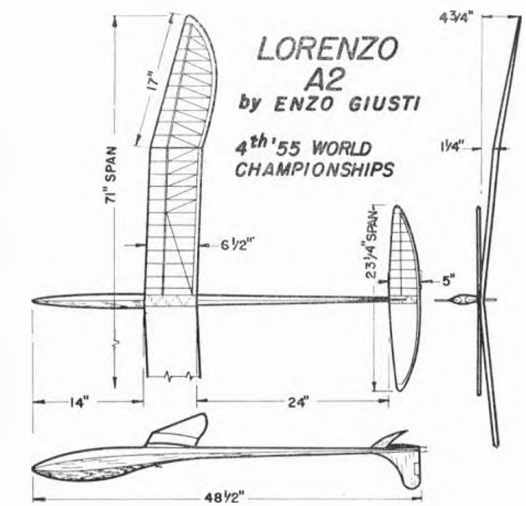
1956 International activities by representatives from **Spain** began with their success in Brussels. They will also go to the Saar Cup in July, and the World C/L Champs at Florence. Spanish Nats are to be in hot August this year at Pontevreda, near to Portugal in the North East. All of which indicates an increase in enthusiasm for the hobby in Iberia. Talking to the Spanish team at Brussels we learned that supplies are not very easy to obtain, and prompt hospitality is offered to American modellers in visiting Aircraft Carriers at Barcelona—a good turn that always brings a return in tips on model flying as well as a few hard-to-get glowplug engines.

Sad news from **Denmark** is that financial resources, or rather the lack of them, may prevent a full team going to Italy for the A/2. Borge Hansen was Danish A/2 Champion for the third year running at the May 6th Nationals totalling 681 secs. in turbulent conditions with a new "all-weather" thick section design.

Top: Tony Farnan of Melbourne and his American "Squirt" jet model with Japanese O.S. 5A II power unit. Weight is 3 lb., and Tony hopes for 140 m.p.h. Centre: Magnificent Japanese twin-engined North American B-25 Mitchell Bomber made by Kokei Ueda of the Nagoya M.A.C. Is fully detailed and must be about 72 in. span. Bottom: High aspect ratio all-balsa 4/2 by Naftali Kadmon has a manoeuvre wing of only 4.5 per cent. thickness ratio and curved plate tailplane. The whole fin is used as a trimmer and rear fuselage boom is tubular

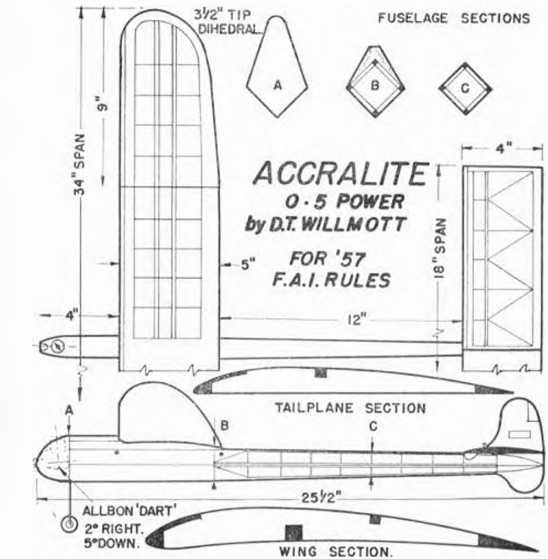
TWO MODELS OF NOTE

ALTHOUGH placed at fourth position in the 1955 World Championships for A/2 gliders, Enzo Giusti of Italy was a mere ten seconds behind winner Lindner. In fact, had Enzo not had the misfortune to fly very early in unfavourable conditions during the first of the five rounds his all-black model might well have carried off the honours. But then, perhaps the same hard luck story could be told of many another Championship class model at the Finthen meeting. Giusti's model is hardly orthodox except to Italian eyes. The sharply-pointed swept tips to the wing, and elegant tail profile make it a model that is extremely attractive in the air, and capable of very high performance. Regrettably, we have no information on airfoils or balance, but suggest Isacson SI 53507 for the wing and undercambered tailplane with 60 per cent. root chord C.G. position.



WHEN THE 1957 F.A.I. power rules were first announced, Airline Pilot Dave Willmott of the Thameside club was asked to go to the Gold Coast, and in spare moments there he created a point-five approach to the rules with the Accralite. Dispensing with a pylon, the basic idea was that of a streamlined sailplane, and in the tropical heat of Accra Airport it maintained an average duration of 2 minutes from 15 seconds engine run. Height gain in 15 sec. is approximately 200 feet, and because of a steady 15 m.p.h breeze plus prevalence of poisonous snakes and lizards around the Airport periphery, the dethermaliser is employed every flight! Model is conveniently small and can be built from these details with a minimum of ingenuity.

Though no structure sizes are quoted, the fuselage can be an ⅛ in. sq. frame with additional 1/16 in. sheeting about the nose portion. Wing seating formers are superimposed on a basic diamond cross-section and the wheel is merely there as a prop saver, not being required by the new regulations.



South African Nationals

DURING THE Easter week-end Palmietfontein aerodrome, erstwhile Johannesburg home of the giant airliners, was rudely awakened from slumbering retirement by cries of "Mind the lines!" as 500 enthusiasts from all parts of the country competed for top honours in the South African Model Aeronautical Championships.

Gaily clad spectators and competitors in club regalia added to a colourful scene. The Pretorians boldly declared their presence in large black capitals (PAC) sewn on the backs of their navy blue sweaters. Clad in neat yellow jumpers with peaked-caps to match, the Bloemfontein team also looked very smart. Led by a diminutive bundle of dynamite, Mrs. M. Lee, the only woman competitor in the championships, and her husband who is their chairman, the latter team exuded enthusiasm and showed what good teamwork could do by gaining second place to Gerry Matchet in the strongly contested team race championship.

Eight competitors took part in the radio-control competition. They provided interested spectators with some good flying. Flying an R6B, Mr. F. Raubenheimer (recently introduced to the type by Britain's Hilton O'Heffernan) gave a remarkable demonstration of control over his model, gaining 659½ points and the championship. This competitor and others who had come from different parts of the Cape must have travelled more than two thousand miles to take part in the championships, which gives some idea of South African enthusiasm for modelling. Perhaps some measure of this enthusiasm can be taken when one records the fact that the Monte Malherbe of Pretoria had no less than 26 models entered, and Brian Partridge of Johannesburg gained the overall championship with no less than four 1st places and two 2nds and a 5th.

—Bobb Coney

1. Monte Malherbe (Pretoria) pilots on the turns as he winds his Wakefield motor. 2. 15-year-old Jon Freedman T.O.'s a Ramrod 632 as popular in South Africa as it is in California. 3. Jim Connacher's 153 m.p.h. jet, up from Port Elizabeth. 4. Fred Raubenheimer (Cape) and winning R/C B—turn radio equipment. 5. Jim "Hat-rack" Hodges, with 10 c.c. speedster, and 6. Jet-powered Vampire by W. A. Du'Plooy of Pietersburg

RUSSIAN RADIO RECORD

by M. Lebedunski

EDITOR'S NOTE.—Many times in the past we have endeavoured to make contact with the Russian Aeromodelling Movement without success. Now at long last, following an approach through the Russian Aero Club, we have received this article from B. Simakov, Editor of "Krelya Rodine", which can be translated as "Christening of the Wings". The article which described the recent Soviet World Record has been translated literally from the Russian and is reproduced without alteration rather than risk destroying any of the original meaning.

Peter Velichkovski operates the control box on his twin transmitter rig assisted by Paul Gurunin. Unfortunately we have no technical details of the radio equipment or the model

IN THE TOWN OF ALMA-ATE about 4,000 kilometres from Moscow there lives and works Peter Velichkovski—a well-known Soviet sportsman. He labours with enthusiasm in the radio factory belonging to the town combine, living in the working-class area and when free from work he mostly devotes himself—with no less enthusiasm—to his hobby of making model aeroplanes. He built a radio-controlled flying model; constructed the radio apparatus and also the control mechanism for the miniature flying machine. All this required from the sportsman great craftmanship, technical inventiveness and resourcefulness.

The characteristic trait of the sportsman is not to be satisfied with a given achievement, but to work continually for the perfecting of his model.

Persistently, pertinaciously Velichkovski prepared himself for the establishment of a record for duration of flight with his model. At last arrived the day when the sportsman was expected to demonstrate the capabilities of his model, together with a practical verification of his calculations.

This took place last year in competitions of model aeroplanes for the championship, in Kazakstan. On the Alma-Ate aerodrome aircraft clubs assembled, hundreds of constructors of model aeroplanes, together with numerous spectators. The attention of the participants in the contest and also that of the spectators was attracted by the large-scale construction of the magic-carpet model.

"Tell us, how is the control transmitted?" asked the other constructors with unconcealed enthusiasm, hair standing on end. Velichkovski's eyes expressed delight. "Of course," he answered. He had simply built a model, but today having participated in the great competition, he could become acquainted with the work of the best sportsmen.

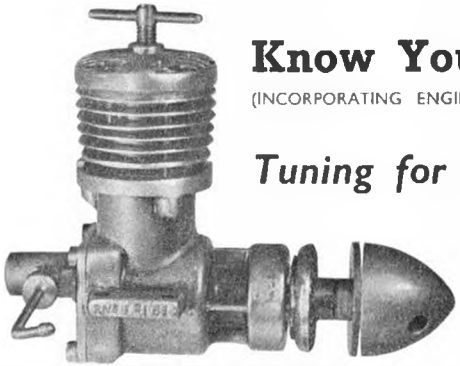
"In the model," said Peter Velichkovski, "the application of the double-channel radio link has permitted the quantity of commands to be increased and has also enhanced the reliability of the control. To this end there are two ultra short-wave receivers. One of them is tuned to the wavelength of the transmitter, to serve preliminary commands, while the second is tuned to the wavelength of the transmitter sending executive signals. By means of the dual transmitter the model is controlled from ground level."

But here the umpire announced "Sportsman Peter Velichkovski is requested to start." Very quickly the model is airborne, under radio control, it is in the sky. The judge of the sports watches the flight with close attention, the flight being accomplished with an incomplete stock of fuel.

ONCE, TWICE, THRICE ! . . . .

Three hours, six minutes, thirty-eight seconds ! Breathlessness of the sporting judge. The International Aviation Federation in December, 1955, confirmed this achievement in the quality of a peace-making record for duration flight of a radio-controlled model magic carpet.

The Soviet aeromodeller had broken the record of the New Zealand sportsman, Frank Bethwaite.



Know Your Engine

(INCORPORATING ENGINE ANALYSIS NO. 22)

Tuning for free flight

The technique of how to improve performance of a standard E.D. 2·46 Racer diesel is revealed by

PETER BUSKELL

COMPETITION IN FREE flight power international class has become so keen of late, that it is now almost essential to have an engine which produces above average power output, to stand any chance of winning.

The following notes describe a number of improvements which can be made to a standard engine to improve performance using a minimum of tools. The description applies in particular to the E.D. 2.46 c.c. in which a particularly high standard of workmanship is maintained, and which Peter Buskell has used to such good purpose in all of the British Power Teams to date.

Notes on other types are included where relevent.

The points at which improvement can be expected are as follows:—

(1) To increase the charge induced into the crankcase by removing obstructions in the induction system

(2) To improve burning by mixing fuel and air more fully.

(3) Reduce obstructions in transfer system.

(4) Reduce wear and friction by attention to bearing alignment and lubrication.

(5) To decrease vibration by improving the balance of reciprocating parts.

For optimum results, "tuning" should be carried out before the motor is run at all. Should running-in be completed, the bearings will have become polished and mated to each other and any dismantling and reassembly will result in parts having to bed down again. This is a more lengthy process as they are already polished.

Start by dismantling the unit and washing all parts in petrol.

The Crankcase

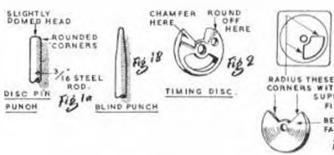
When used for free flight the exhaust stack cast into a 246 is not normally required, as the cylinder if not the whole engine is usually exposed. It does in fact partially block off the exhaust ports, adds a fraction of drag to the model and a fraction of unwanted weight, and is therefore best removed.

Before starting operation, "stack removal", seal the front ballrace housing with adhesive tape and block up the crankcase mouth with clean rag rammed in tight to obviate the entry of metal dust and filings.

Clamp the crankcase in a vice under the bearers, using soft vice clamps and not too much pressure, the stack can then be sawn off carefully, using the thick raised portion into which the cylinder holding-down bolts screw, as a guide line. File off to this line and finally emery-cloth to a smooth finish. Clean off all metal dust and remove protective cloth and tape.

The Back Plate

Begin by checking the end play on the timing disc. On a new component the ideal figure is about 1 to 1½ thou. inch, i.e. so that the disc appears to rub on the back plate slightly, this will wear off with running-in to a free close fit. A maximum of about 2 thou. is permissible in a new component after which serious loss of crankcase compression and poor starting will result. To remedy, open the vice jaws just sufficient to pass the disc pin, carefully position the backplate and tap the pin through gently, checking frequently until the desired fit is obtained. A suitable punch for the job can be made from a length of $\frac{3}{16}$ in. rod, the face being filled to a slight dome, *Fig.* 1*a*.



Afterwards mount the punch upright in the vice and get a friend to support the backplate with the disc pin head resting on the punch; then, using a blind punch, *Fig.* 1*b*, spread the end of the pin so that it cannot shift in future.

Next fit the backplate to the crankcase and check that the disc does not bind. There are two possible faults:—

(1) the register hole in the disc does not line up with the crankshaft so causing the disc to be pulled against the pin. The remedy is to scrape out the hole slightly, a suitable tool being a small screwdriver filed and stoned on one edge.

(2) the crankshaft is too long or the hole in the disc not deep enough, so pushing the disc against the backplate. The simplest remedy here is to pack out the backplate with a paper gasket of suitable thickness.

The tap and check system of fitting the timing disc for maximum crankcase seal and minimum friction is described in the text. Here, a punch of suitable size replaces the 3/16-in. rod advised. It is surprising how this small item of attention will improve engine performance

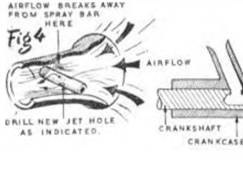
The next step is to open the choke diameter out. The effect of this is to reduce obstruction to the incoming charge so increasing power, but as the diameter is increased so the velocity of the air passing the jet decreases resulting in the motor being more difficult to start.

For free flight work, starting is not critical and the standard $\frac{5}{16}$ in. choke can be opened to $\frac{1}{2}$ in. in safety. Mount the backplate in the vice using soft clamps and drill through from the disc side using light pressure and high revs.

The choke can now be faired into the timing cutaway on the backplate face. A power drill and rotary files or burrs ease this work considerably but it can be done just as well with a 4-in. coarse cut rat tail or needle file. The intake should also be filed out to trumpet shape and the whole finally smoothed with emery. Chamfer off the square edges of disc timing cutaway on the outside, *Fig.* 2, and radius the corners of the cutaway on both disc and backplate on the working face with a superfine file, *Fig.* 3. Finally clean thoroughly with petrol until all traces of metal dust are removed.

The next item for attention is the spray bar, the sides of which are waisted by filing so as to reduce obstruction in the choke to a minimum. Do not carry this too far otherwise there is a danger of it breaking in two when the fixing nut is tightened.

Another worthwhile modification is to the jet. The standard E.D. arrangement is a $\frac{1}{8}$ in. hole facing toward the crankcase, this does not give a good mixture and gives rise to a hard exhaust note indicating large globules of fuel reaching the combustion chamber. Solder up the existing hole by scraping the sides and surround, then insert the needle with a blob of grease on it, and apply a dab of acid flux and solder with a *hot* iron in one quick dab.



The new jet arrangement consists of two rows of holes at the "guestimated" point at which airflow breaks away from the spray bar, *Fig.* 4, about 60° apart around the section.

These are best drilled on the opposite side to the original hole. Clamp the bar lightly in the vice and scribe two lines $\frac{1}{8}$ in. apart along it. You can now drill either four holes with a 68 drill or 5 with a 75, depending on your patience(!) along each line. A pin vice is a necessity and the drill should be chucked so that only about $\frac{1}{8}$ in. is exposed. It may be necessary to waist the needle to allow fuel to reach all holes. Check this before assembly.

On shaft valve type motors any work on the induction system is severely limited by consideration of crankshaft strength. Generally it is safe to open the port in the shaft and choke up to square section and round off any shaft bends or corners, *Fig.* 5. Also check that the choke tube cross-section minus the spray bar cross-section is not less than that of the shaft. If it is, open out the choke tube if sufficient wall thickness is available. Check the timing by mounting a degree marked disc to the crankshaft, (the piston can be refitted to find T.D.C.). A suitable timing for free flight is —

Inlet opens 50 deg. after B.D.C.
Inlet closes 50 deg. after T.D.C.

If the open period is less than this it is usually possible to file out the crankcase port by the required amount. Finally radius all port edges with an oil stone slip.

Cylinder

The transfer system of the E.D. 246 consists of a gap left between the outside wall of the cylinder and the inside crankcase wall. Work on the cylinder is directed towards enlarging this passage and smoothing the entry and exit.

First a means of holding the cylinder firmly in the vice is required. Two lengths of 2 in. by 1 in. batten are required. Place these together in the vice with the edges flush and bore a hole of cylinder diameter into the ends centred on the joint, *Fig. 6a* and *Fig. 6b* show the work to be done on the cylinder. This is best done with a 4 in. bastard file, grinding can be used if done very carefully but has a tendency to distort the liner. Take your time to avoid any chance of distortion. The bottom end of the liner may be found to be hardened, this is of small depth and can be removed with coarse emery cloth. When dealing with the transfer port, cut a semi-circle of liner diameter out of a piece of tin plate and use this to protect the cylinder seating face.

Work on the Piston

This requires the use of a lathe and $\frac{1}{4}$ in. power drill or a flexible shaft set. If you cannot get the use of these items do not attempt the work. The idea is to remove as much metal from the inside of the piston as possible, so decreasing mechanical losses at high r.p.m. and improving the balance of the engine.

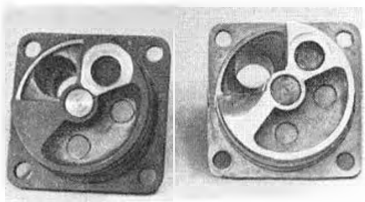
In the motor cycle engine world an approximate balance factor of 60% of the reciprocating weight is used and it is worth noting that using a cast iron piston

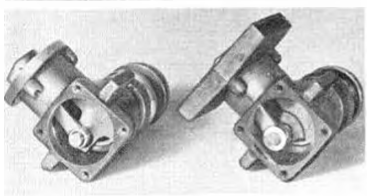
and normal manufacturers techniques it is not possible to achieve this factor in a model diesel engine. If the flexible shaft set only is available the work of lightening is best done by grinding.

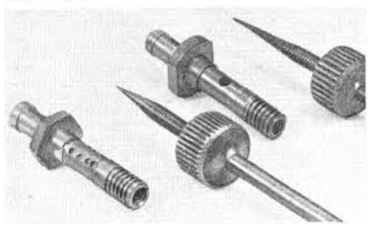
Make up the jig as shown in *Fig.* 7 for holding the piston and work slowly and carefully. The piston walls can be tapered off to about $\frac{1}{32}$ in. thick at their lower edge and an appreciable amount of metal can be removed from the crown and around the gudgeon pin bosses. If a lathe is available for re-lapping the piston advantage can be taken of lightening operations to improve the piston fit. The materials used in the 246 liner piston set are such that the liner expends more than the piston when hot so causing a loss of power. If the lightening is done with rotary files and a fair amount of pressure the piston walls are expanded, particularly on the working faces. The piston is then lapped to be a tight push fit in the top portion of the barrel. The writer has found it preferable to use a coarse paste for initial lapping rather than a fine one all through, this leaves scratches of slight depth on the piston surface which retain oil and hence decrease wear and friction. Radius the top and bottom edges of the piston with an oil stone slip.

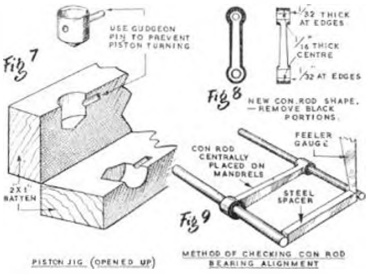
Con-rod

Considerable lightening can be carried out on this component, *Fig.* 8 gives details. When finished, drill



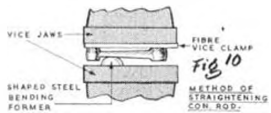






oil holes through big and little ends (No. 68 drill) and file a narrow groove across the bearing surface where the hole meets it. A fine half round file does the job nicely.

The alignment of big and little ends should also be checked. Purchase two lengths of ground silver steel rod (obtainable from most tool shops) to the big and little end diameters, these should be a close fit. *Fig.* 9 shows how to check using a length of steel bar and feeler gauges. If slight errors are present they may be corrected by bending, *Fig.* 10, but if they are more than about 2 degrees out of line or if the bearings are slack a new rod should be purchased or if a lathe is available, made.



Mark off the centres on dural plate of the required thickness and mount on the face plate, drill slightly under size and finish with a reamer or "D" bit.

The rod can then be sawn out and filed to shape by hand. A square or oblong cross section rod is of course preferable to a round one.

Assembly and Running

Clean off components in petrol and assemble the disc and big and little end bearings with graphite. Smear cylinder and piston with light machine oil.

For initial runs keep the speed down and the mixture rich. A good running in fuel is: 35% Castrol M 35% Ether, 30% Derv. (Road Vehicle Diesel Oil).

When the initial stiffness has worn off, change to smaller props and run for short high speed bursts starting with about one minute duration and slowly increasing as the motor becomes free.

Initially the compression will have to be slackened off from the starting position as the motor warms up but this will become less and less necessary as the motor runs in. A fully run-in motor with the correct piston fit should start and run on the same setting.

"Before and After" photos at left show the Haskell modifications to the Timing Disc, Crankcase and reciprocating parts including crankweb, and the needle valve and body at bottom. Note the saving in weight afforded by the reduction in con-rod dimensions

Advised fuel for performance

When running-in is completed a fuel with less oil can be used. A good mixture is:

20% Castrol M.
34% Ether.
44% Derv.
2% Amyl Nitrate.

Weight of the finished product should be about 5 ozs.

R. H. Warring Tests

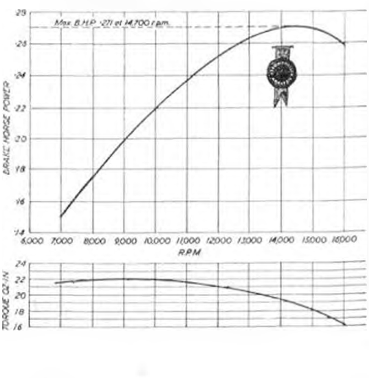
Running characteristics appear substantially unaltered by the mods. The engine started readily on all propeller sizes and was certainly no more difficult in this respect than the standard E.D. 2.46 (which generally has excellent starting). At the very high speeds, however, adjustment of both needle and valve and compression was fairly critical for optimum running. This possibly could have been improved by the use of a more heavily nitrated fuel, but Mercury No. 8 used throughout the test was quite satisfactory and gave smooth running right up to 16,000 r.p.m. plus, provided the fine adjustments were carefully made after the engine had warmed up.

In common with the standard model, the Buskell-E.D. is still susceptible to cylinder distortion if the head screws are tightened up excessively which can make the engine definitely "tight". Blowback through the intake is most pronounced at low running speeds and the fuel consumption seems higher than that of the standard model. The test engine appeared to develop harmonic vibration, and thus loss of power, at 12,000 r.p.m. Removal of the exhaust stacks, whilst undoubtedly improving scavenging makes the Buskell-E.D. even dirtier running than the engine from which it is derived!

PROPELLER R.P.M. FIGURES

Propeller dia. pitch	r.p.m.
9 x 5 (Stant)	9,900
9 x 4 (Stant)	10,700
8 x 8 (Stant)	9,500
8 x 6 (Stant)	11,100
8 x 5 (Stant)	12,400
8 x 4 (Stant)	13,200
7 x 6 (Stant)	14,150
7 x 5 (Stant)	15,500
6 x 6 (Stant)	16,300
9 x 9 (Stant TR)	7,400
8 x 9 (Stant TR)	9,100
8 x 8 (Stant TR)	11,000
7 x 9 (Stant TR)	10,600

Fuel used: Mercury No. 8.



What's the answer!

Geoff's control-liners always impressed by their performance, and they always looked good as well—at least, until you got right close to them. Then that apparently perfect paint job (we know he used a spray gun) showed up lots of little pinholes and excess cement always spoilt the appearance of the stuck-on canopy or cabin "glazing". We and Geoff, too, continue to wonder how those *Concours* winners get away with it. What's the answer?

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.

As for cementing moulded canopies and the like in place—generally a much neater job can be done if "glazing" is completed before the final colour doping. And don't use cement. Paint the edges of the canopy with thin dope (or acetone) and press carefully in place until set. Any finger marks you can wipe off with a little thinners on a rag.

"Two dips and it's a Concours finish!"

The Answer:

Spray finishing is generally superior to brush work, but it will still show up rough if the *surface* is not properly prepared. On sheet wings and sheet-covered fuselages at least half a dozen coats of Sanding Sealer is not extravagance, flattened down carefully between each coat with "wet and dry" paper (from local garages). When you have got the surface glass-smooth all over, and only then, is the time to think about putting on the finishing coats.

" That should dazzle 'em"

FAMOUS BIPLANE

Number 3

The famous U.S. Navy fighter of the '30's

Boeing F4B-4

to 1/48th Scale

by **G. A. G. COX**

IN 1928 THE Boeing Aircraft Company of Seattle, Washington, produced a new fighter type with a performance almost identical with that of its British contemporary the Bristol "Bulldog". This aircraft, the Boeing Model 89, appeared to be a very attractive proposition to both the U.S. Navy and the U.S. Army Air Corps who received prototypes designated XF4B-1 and XP12A respectively. From that date, variations on the original theme formed the backbone of America's fighter strength until 1934 when the P26A monoplane replaced the P12E and 1936 when the Grummans took over from the F4B-4's aboard the aircraft carriers. A total of 554 machines of the P12 and F4B series were built, including an export order for Brazil of 14 naval fighters.

A Pratt and Whitney R1340O "Wasp" engine of 500 h.p. gave the F4B-4 a maximum speed of 187 m.p.h. The range was 585 miles and the service ceiling 27,500 feet. In addition to one .30 and .50 machine gun mounted in the fuselage, the F4B-4 could carry two 116 lb. bombs for duty as a dive bomber. A long-range petrol tank could be mounted under the lower wing.

The model illustrated is the squadron-leader's machine of No. 6 Fighter Squadron which was based aboard U.S.S. "Saratoga" in 1933.

Illustrated stages are marked with an asterisk*.

The model

1. Carve the fuselage from two ¾ in. thicknesses of balsa. Make the headrest an integral part of the fuselage, but exclude the oil sump "A".

2. Separate the fuselage halves to hollow the cockpit. Smooth the inside, and dope light grey.

3. Recement the fuselage halves and make gun troughs.

4. Make the wings from ⅜ in. and ¼ in. sheet. Score along the centre-line of the lower wing, crack and cement to give dihedral.

5. Fill the grain of all parts with 3 or 4 coats of sanding-sealer, rubbing down between coats.

6.* Pencil the wingrib spacing onto a strip of paper, then transfer to wings. Draw rib lines with a 4B pencil. Score the ailerons.

7.* Cement lower wing to fuselage, checking alignment with the centre-line of the fuselage. Make soft balsa fillets. A series of thumbnail dents along the inside edge of the fillet will render it flexible enough to follow curve required. Pin in position until dry, then sand.

8.* Saw the tail surfaces from mm. ply, remembering to add to the rudder, the tenons and tailwheel. Use a file and glasspaper to obtain the correct cross-section. Mark hinge lines by making small vee-cuts with a knife.

9.* Trace the rudder and fin shape onto smooth paper, (the back of an old greetings card is ideal) including corrugation lines. Cut along these lines with an extra sharp blade, then carefully remove alternate strips.

10.* Coat one side of the fin and rudder with clear dope or glue, then apply the paper "comb", and allow to dry. Trim-off surplus paper, and give 3 coats of sanding sealer *without* rubbing down.

11. Repeat stages 9 and 10 until the whole tail is covered with strips.

12. Glue the tail components to the fuselage and fillet well with glue.

13. Coat No. 30 thread with cement, then wind round the wings to form "ribs". Give one coat of sanding sealer to secure the threads, then remove unwanted portions. *Note.*—The threads should not be stuck to the ailerons.

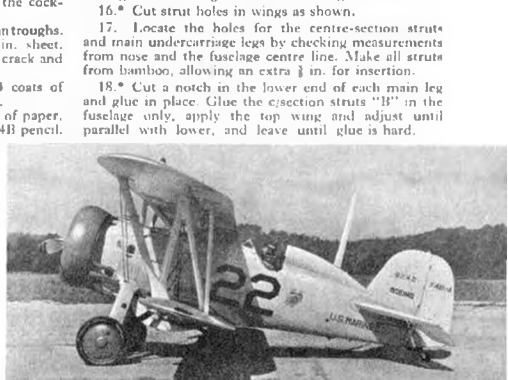
14.* Make "combs" as shown for the ailerons. Weave a needle in and out of the teeth, then coat both sides of the ailerons with gum and apply the comb. Trim-off surplus. Clear dope should not be used to fix the aileron corrugations because it would soften the sanding sealer underneath and mar the finish.

15.* Make the oil sump from two separate pieces of balsa and fill the grain before joining together and adding to the fuselage. Fillet well with glue.

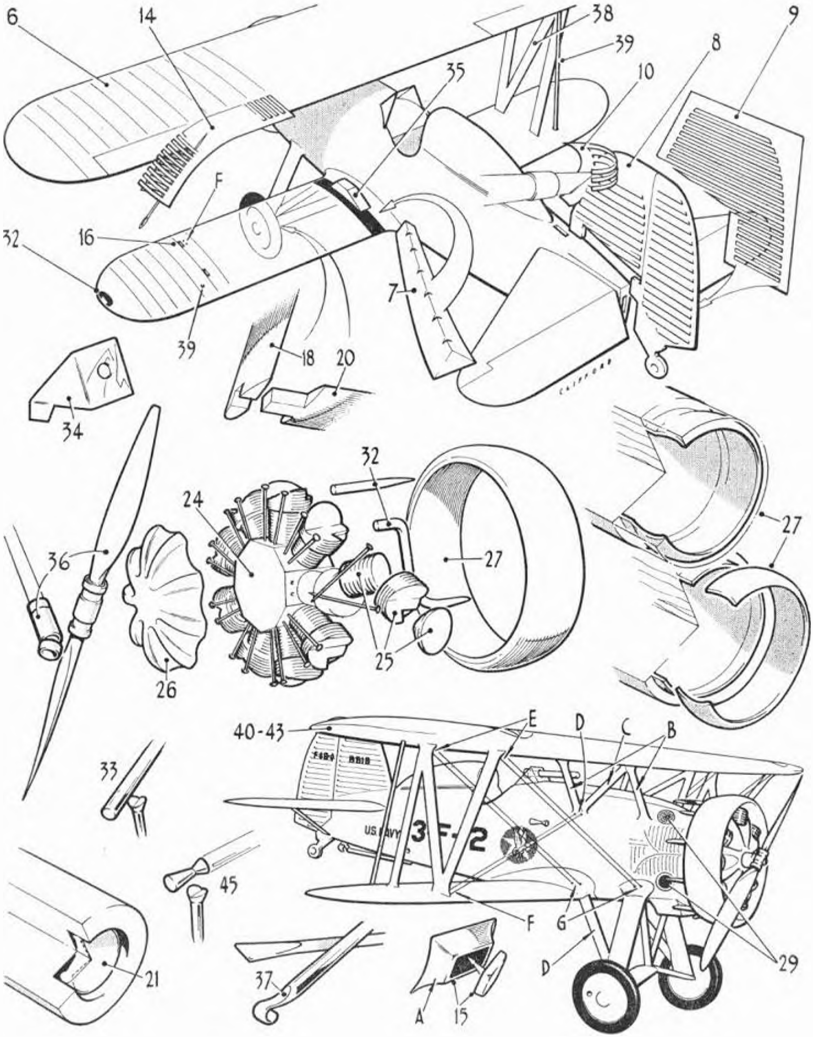
16.* Cut strut holes in wings as shown.

17. Locate the holes for the centre-section struts and main undercarriage legs by checking measurements from nose and the fuselage centre line. Make all struts from bamboo, allowing an extra ¾ in. for insertion.

18.* Cut a notch in the lower end of each main leg and glue in place. Glue the c/section struts "B" in the fuselage only, apply the top wing and adjust until parallel with lower, and leave until glue is hard.



Top shows a green tailed F4B-4 from USS Ranger which should have a further decoration on the cowl, unseen in the Marine Corps version at right. Boeing trade name appears across fin on many F4B-4s without tail colours.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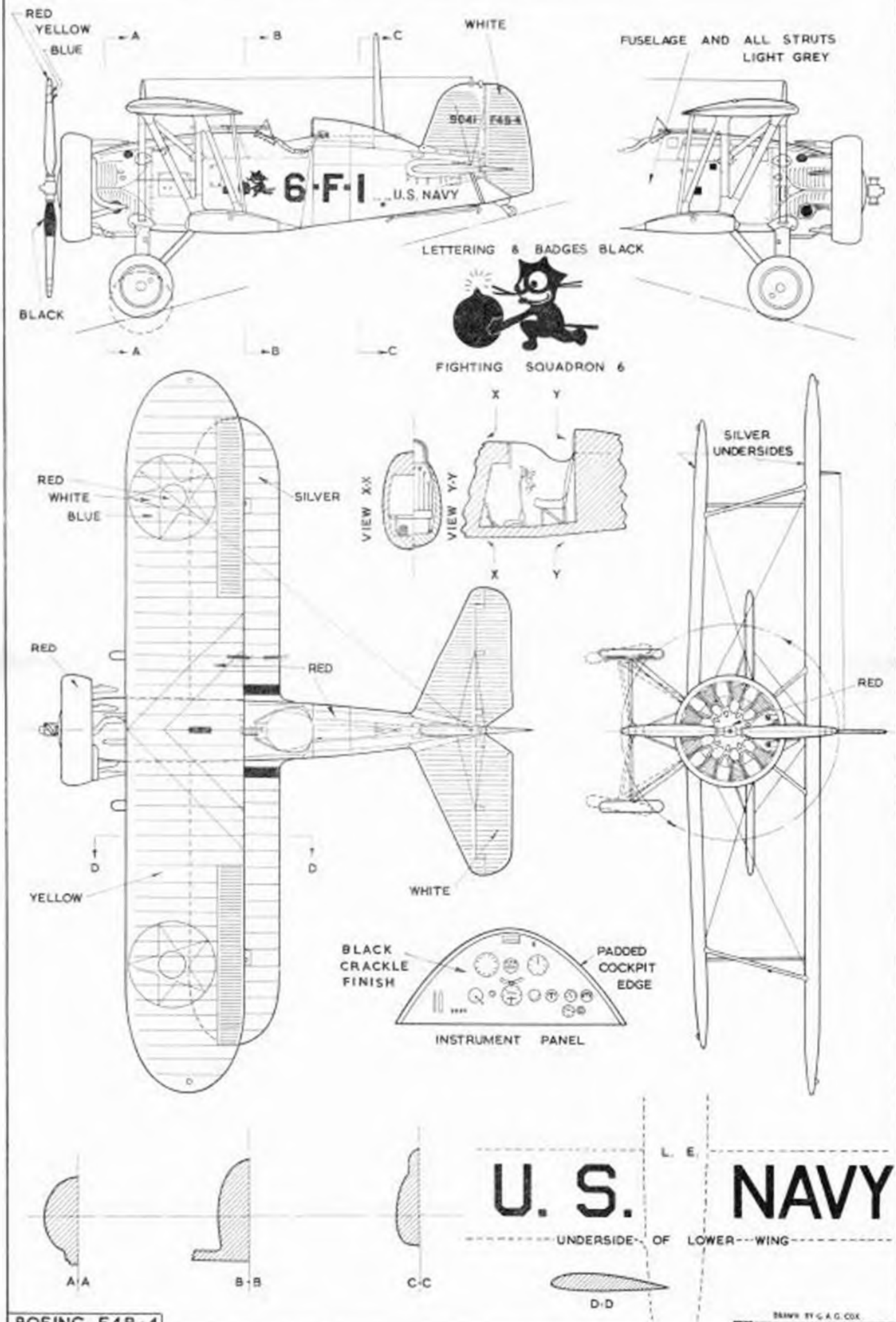

RED
YELLOW
BLUE
A
B
C
WHITE
FUSELAGE AND ALL STRUTS
LIGHT GREY
9041 F4B-4
6-F-1
U.S. NAVY
LETTERING & BADGES BLACK
BLACK
FIGHTING SQUADRON 6
X
Y
VIEW X-X
VIEW Y-Y
SILVER
UNDERSIDES
RED
WHITE
BLUE
SILVER
RED
RED
D
D
YELLOW
WHITE
BLACK
CRACKLE
FINISH
PADDED
COCKPIT
EDGE
INSTRUMENT PANEL
A-A
B-B
C-C
D-D
L. E.
U. S. NAVY
UNDERSIDE OF LOWER WING
BOEING F4B-4
DRAWN BY G. A. G. COX
FT

Author's model, made to sequence described here, shows what can be done in the way o detail in a 1/48th scale model

19.* Remove the upper wing and add the struts "C". Fillet well with glue.

20.* For the axle, file a length of wire to an aerofoil section, and file a tongue on each end as shown. Fit the central vee of the undercart, and solder to the axle. Make struts "D" from bamboo and glue in place.

21.* Turn the wheels from hardwood. To correct the flat inside surface derived from parting-off, mount a block of wood in the chuck and bore a recess in which the wheel is a tight fit. Push the wheel into this so that the inside face may be turned.

22. Dope the lower wing and the underside of the upper wing silver. (No thinning should be necessary with this colour). Apply masking tape under the top wing $\frac{5}{8}$ in. behind the L.E. and dope the top surface yellow. Three or four coats mixed with 20% thinners will be needed. In the same way dope the tail surfaces white (including the fillets).

23. The difficulty in successful doping is to work quickly enough to prevent the edges of the doped surface from drying. Because precise brushwork is necessary around the tail fillets and the red band, a lacquer is better for the fuselage. "Humbrol" has been found to be excellent for this job. It gives a surface hard and glossy like dope, but is slower drying.

24*. Divide a large circle into nine 40 degree sectors and in the centre draw a $1\frac{1}{8}$ in dia. and a $\frac{1}{2}$ in. dia. circle. Use the larger one as a building jig for the engine, and the smaller one to pinprick the engine crankcase onto $\frac{1}{16}$ in. and balsa. Make $\frac{3}{16}$ in. and $\frac{1}{4}$ in. dia. balsa dowels and wind thick thread round each piece. Coat with cement, then cut from the larger dowel nine $\frac{1}{4}$ in. lengths, and from the smaller, nine $\frac{1}{8}$ in. lengths.

25.* Assemble the engine as shown, and cut vee shaped notches in the tops of all cylinders. Use shortened $\frac{1}{4}$ in. pins for the pushrods, glueing their heads to the cylinders. Looking at the back of the engine, the exhaust port is at the anti-clockwise side of each cylinder. Cut away part of the cylinder to receive the exhaust. Dope the engine black.

26.* Make the cowl front from $\frac{1}{4}$ in. balsa, using folded glasspaper to make the flutes.

27.* Turn the cowling from hardwood. (A close-grained timber such as lime or sycamore is essential). Use a $\frac{1}{4}$ in. wide round-ended tool to turn the inside surface. Sand smooth before parting-off. If no lathe is available the cowling may be made by glueing a long strip of paper round a waxed 1 in. dowel until the requisite thickness is built-up, then glasspapering to the correct section.

28. Seal the grain of the cowling and cowl front, then paint these and the fuselage band and wing chevron red.

29.* Score all cowling lines and louvres with a sharp blade. Pinprick fasteners and screws. The two circular holes on each side of the nose may be made by boring a recess with the sharpened end of a brass tube. The upper hole was covered by wire mesh, making it appear from a distance lighter in colour than the lower one. To achieve this, paint the upper hole medium grey and the lower one black.

30. Paint the squadron marking,6-F-1 and badge on each side of the fuselage. (Younger readers may not know that the cat depicted is "Felix", a popular cartoon character of some 25 years ago.) The badge is reversed on the starboard side so that "Felix" faces forward. Indian ink may be used, but the markings on the model illustrated were done with a No. 0 sable brush and lacquer. A brush is less likely to blot or skid than a pen. Paint "U.S. NAVY" on the underside of the lower wing and print it on the rear fuselage, also the serial number and type on the fin and rudder.

31. Make transfers for the national insignia, following Mr. O'Keefe's instructions in the February issue. If prolonged soaking removes too much gum, a thin coat of gum arabic will hold the design down.

32.* Make exhausts from soft wire. (The straight ones on the starboard side may be made from bamboo). Paint black, also the front surface of the headrest, the wing walks, and the handholds at the lower wing-tips.

33.* Two gunsights are needed. They may be made by soldering $\frac{1}{4}$ in pins to wire. This is a tricky job, but a notch filed in the head of each pin will make it easier to keep the wire still while soldering.

34.* Make the windshield, leaving two tabs for cementing to the cockpit edge.

35.* Make the battery container and fill the grain. Paint grey and add to the model. (Port side).

36.* Wind gummed paper round brass or celluloid tubing, then glue three rings to a $\frac{3}{16}$ in. length of tubing to make the propeller hub. Fit balsa blades, seal the grain and dope silver. When dry, add the coloured bands to the blade tips and the black anti-dazzle paint to the rear faces.

37.* Soften one end of a length of wire by making red-hot and allowing to cool. Hammer one end flat, then bend to form the arrester hook.

38.* Make the interplane struts ($\frac{1}{4}$ in. too long) from bamboo. (Notice that the rearmost strut is narrower than the other two.)

39.* Bore holes for the aileron actuating rods and cut the rods from wire to fit.

40.* Make light grey sewing cotton smooth by coating with cement. Pierce holes in the fuselage at "D" and in the upper wing at "E", and in these holes glue 6 in. threads.

41. Pierce holes in the lower wing at "F", apply a spot of glue to each in turn and insert the appropriate "D" thread. Trim off the surplus when the glue is dry.

42. Glue the tops of the centre section struts and hold the upper wing on with a rubber band. Glue the interplane struts in position.

43.* Bore holes at "G" and in them glue the threads "E".

44. Fillet the interplane struts well by applying two or three coats of glue with a pin. Paint the struts and all struts fillets grey.

45.* Add a pitot head, venturi tube, navigation lights, and any remaining details.

Aeromodelling

FOCUS ON SHEET COVERING A WING LEADING EDGE

A SURPRISING number of aeromodellers make a botch job of sheet covering a wing leading edge. A lot of them start off by making things hard by using just any kind of sheet, rather than selecting it carefully. The right type of sheet for wings is light or medium-light stock which bends into a curve readily (1). Rigid sheet which cracks when bent is quite useless for the job. Sheet which is excessively heavy makes the whole wing too heavy. Use nothing thicker than $\frac{1}{16}$ in. ($\frac{1}{32}$ in. is best for wings of 30 in. span or less, or where weight must be saved) and select stock which weighs no more than $\frac{1}{2}$ to $\frac{3}{4}$ ounce ($\frac{1}{16}$ in. sheet). Do not use sheet thinner than $\frac{1}{32}$ in. whatever the size of the model, as it will only buckle and sag between the ribs when covered and doped.

The sheet should be finished to a smooth surface *before* it is stuck in place. Cut the sheeting to rough size and sand down lightly on both sides (2). Some people prefer to dope the sheeting (both sides) and then sand smooth when dry. This produces an even better finish.

Next trim the leading edge of the sheeting to the exact size, and take care to get this edge perfectly true. A true piece of hard sheet makes an excellent straightedge (3). The length of the sheet should be left slightly oversize.

Various methods of fitting the sheet covering are used; of those illustrated (4) method A is the best and easiest. The leading edge member is made much deeper than necessary (usually about $\frac{1}{8}$ in. oversize) and the sheet butts right up against it. For a perfect fit the leading edge of the sheet requires slight chamfering off, but this can be omitted. Method B is a little more difficult to get a perfect joint line. Neither methods C nor D are to be recommended.

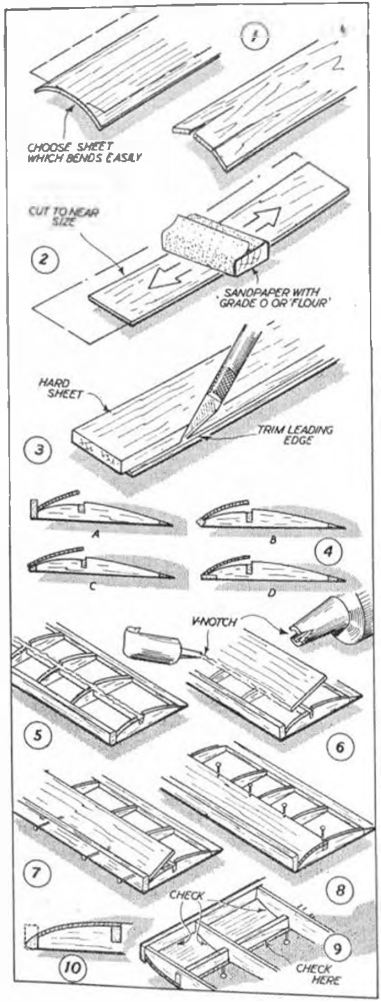
To apply the sheet, have a couple of dozen pins all ready for use and then apply cement quite generously along the spar and front of the ribs (5). Straight away coat the edge of the sheet (6). To do this quickly and uniformly cut a V-notch in the nozzle of the cement tube which acts as a guide when running the cement along the edge.

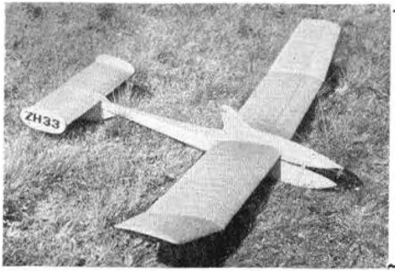
Now locate the sheeting firmly against the leading edge (7) and hold down with a number of pins, as shown. Make sure that the sheet is held down flush with the front of the ribs. Smooth the sheet around the curve of the ribs and pin down at close intervals along the spar (8). Go over all the joint lines and check that the sheet is not "springing" at any point. If it is, pin it down in place.

It pays to use a fairly slow drying cement for applying sheeting. Then you will have ample time to turn the wing over and inspect it from the underside (9). Check that the sheeting is resting flush against each and every rib, is not bowing away from the leading edge or springing away from the spar in places. Any trouble spots should be attacked at once, the sheet pushed in place and clamped down with pins.

Before leaving to set, check that you have not pulled the wing frame out of place in applying the sheeting. Then, if possible, lay the wing on a flat surface and weight down. Leave until the cement has quite set. Then you can trim off the excess leading edge material with a knife and finish down to the final nose shape of the aerofoil with sandpaper (10). If you have done the job properly the leading edge should blend into the sheeting with the joint line hardly visible, if at all.

STEP - by - STEP





"BICKI"

BY A. BICKEL

A 7ft. span Radio Controlled Glider-Winner of the 1955 International Radio Control Contest at Essen Germany.

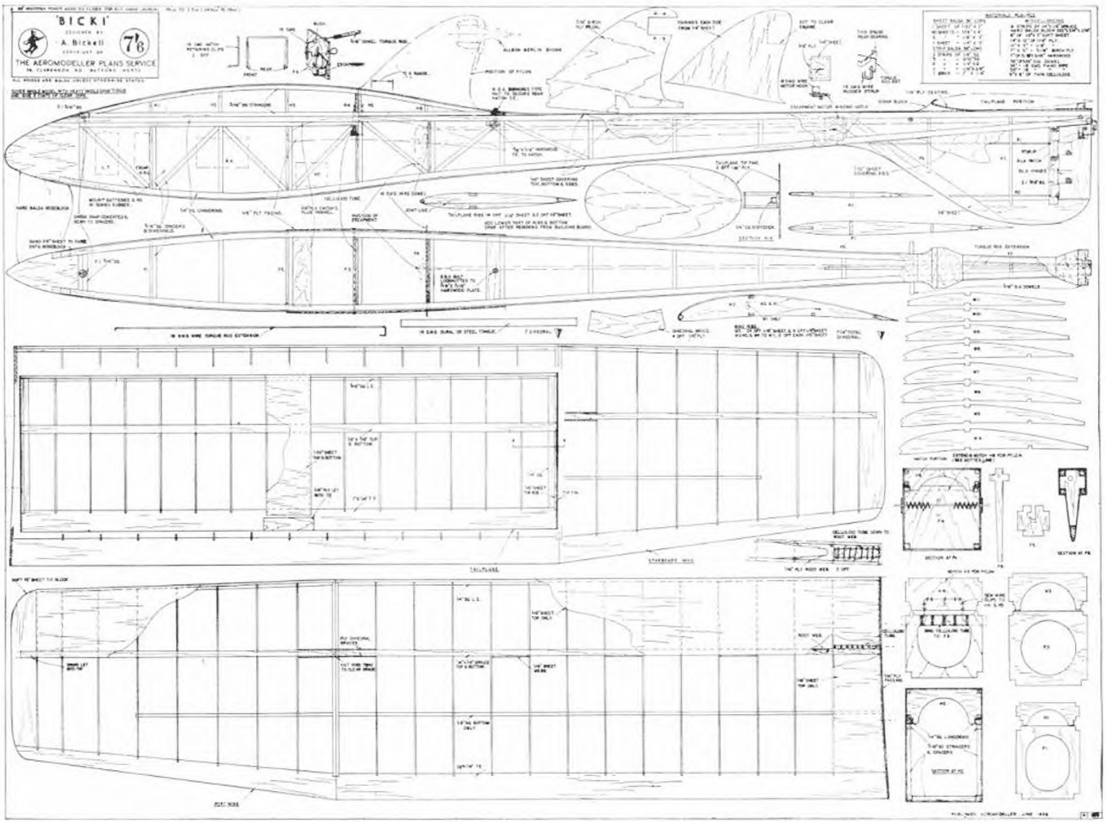
WE ARE PLEASED to welcome this excellent radio-controlled glider from the mountains of Switzerland, knowing how well it fills a long-standing gap in our range of "AEROMODELLER" plans.

A well-tried and proven design, it has been flying in several different versions in its home territory for over three years. As a radio glider, a slope soaring glider and as a power-assisted glider it has enjoyed remarkable success, placing second in the R/C Glider event at the 1954 Swiss Nationals, and taking top honours in the same class in 1955. As a glider its best performance was probably at the 1955 International radio control contest at Essen in Germany. Here against strong opposition from all over the Continent it carried off top honours, with designer Bickel demonstrating superb piloting skill ably assisted by Arnold Degen who did the launching from a 200 metre line. Particularly impressive was "Bicki's" fish tailing ability when it came to spot landing, the pilot bringing it in right on the button, sensitive control reaction obviously contributing much to the excellent performance. Bickel's original machine carried a home-made single channel receiver designed by his clubmate Nievergelt, using four hard valves, operated by a modulated transmitter. To operate the control surface a servo motor drives an extension shaft by means of a worm gear, this shaft connecting to the rudder horn which is spring-loaded in the opposite direction. We have shown on our A.P.S. drawing the normal reverse escapement system which permits a nice long rubber motor for those who want prolonged soaring. Readers will also note the straightforward yet practical structure. (Take a look at that dural or steel wing tongue!) The modification for power conversion is very ingenious. The normal rear hatch being removed and replaced by the hatch-pylon arrangement which keys with fuselage formers F3 and F4 and secured by the 8 BA Simmonds nut shown on the drawing. Another point for constructors is, that although "Modelspan" heavy-weight tissue is specified on our drawing, we do recommend silk or nylon for those who can afford it, as these materials certainly provide a really permanent covering.

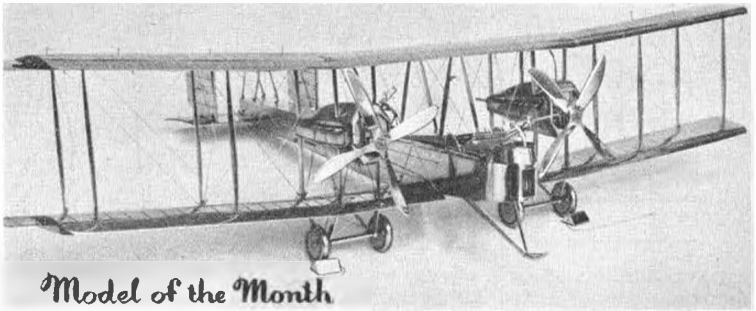
One final point. Remember that "Bickie" is a glider and a sucker for thermals. So make sure you can spin the model down by having sufficient rudder movement to promote a tight turn.

Heading photo shows "Bicki" with power-pod in position, this being the designer's original machine

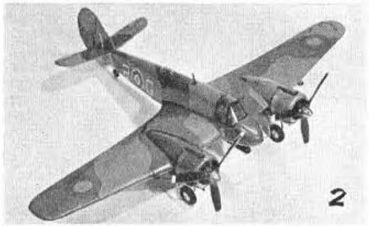
On the right is another version by Nievergelt who designed the radio equipment used in both models

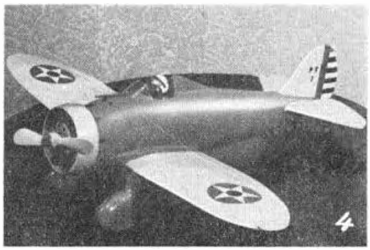


FULL SIZE COPIES OF THIS 1 6TH SCALE REPRODUCTION ARE AVAILABLE PRICE 7/6 POST FREE FROM AEROMODELLER PLANS SERVICE



Model of the Month





MODEL NEWS

THERE COULD BE no denying the fact that L. Morgan's accurate scale model of the famous transatlantic Vimy earns the title of "Model of the Month". Not only is the model made in metal (brass and copper), but it features complete internal detail: guns, scarfe rings, radiator shutters, rigging, control surfaces, in fact so much fine work that we rate it a "masterpiece" which should take a place of honour alongside Mr. Morgan's earlier Bleriot model. About 600 hours of model-making plus countless additional hours of research have culminated in this fine effort which we hope will some time be placed on exhibition for all to see and admire. See other view opposite.

When at the Air Training Corps model contest—reported last month—we examined a model Hunter Mk. IV to 1/18th scale, which had taken Cadet Sgt. Noel Dunmow, of Loughton, Essex, so long to construct that it was not ready in time to compete. It was indeed a super-solid, with internal detail and working undercarriage. In photo **1** he is showing it to admiring A.T.C. officers. Colouring is for 111 Squadron R.A.F. which Sgt. Dunmow frequently visits with his 414 A.T.C. Squadron.

Continuing on the twin-engined scale control-line theme after last month's long feature, we have

a nice Beaufighter for a pair of E.D. Racers by Brian Fry, of Abbey Wood, London. Scale is ¼ inch. equals 1 ft., giving a span of 40 in. Undercarriage retracts to boost the speed from 50 to 60 m.p.h., and the colouring is authentic for a Mk. X Torpedo Bomber. Seen in picture **2**, the "Beau" is a credit to the builder who spent four months assembling the 500 parts that go to make the airframe.

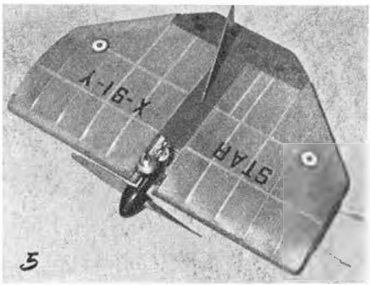
Lady modellers are strangely rare in our fraternity, but those who do enjoy our hobby are quite accomplished and put many of the men to shame with their standard of building, and particularly with their model covering. Eileen Whiston, who is Hon. Treasurer of the Urmston and District M.A.C., is seen at work on her control-line Boeing P.26 in photo **3**. The finished model is seen in **4** and it was much admired at the Northern Models Exhibition. Power is an Elfin 1·49 c.c. diesel.

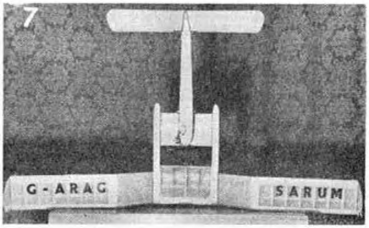
A flying plate of unique shape, not unlike that of the popular A.P.S. "Unlimited" stunt model design, in **5**, is the work of M. R. Pritchard, of London, E.8. It has been flown with the E.D. Bee and Mills ·75 as illustrated, and loops happily on 35 ft. lines. Span is a mere 16 in., length only 11 in. and the heavyweight tissue covered frame is virtually crashproof like the A.P.S. model.

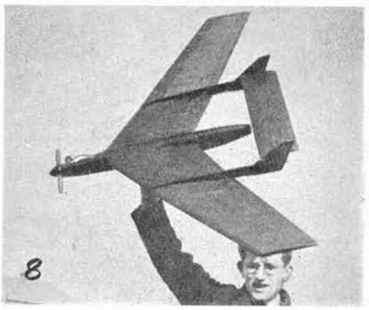
Winner of the control line section at the Northern Models Exhibition was E. Horwich's Bristol Britannia in photo **6**. Large and handsome, though not quite as detailed as one might expect, the Britannia will doubtless be doing the rounds of the rallies this season between bouts of cine photography, which is Mr. Horwich's second hobby.

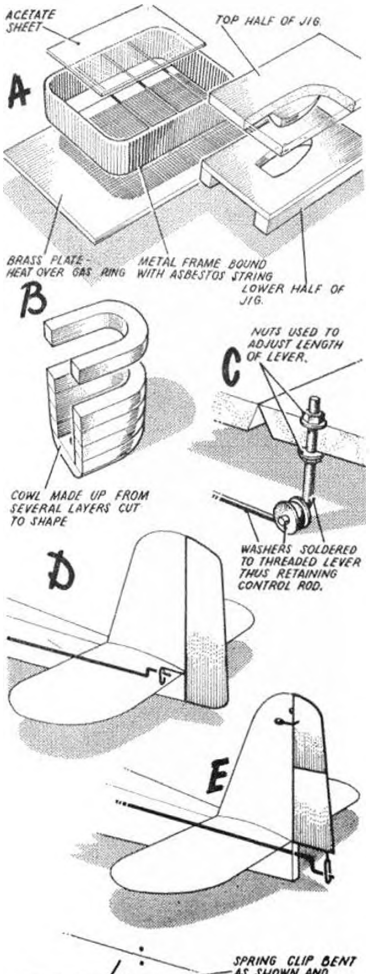
It's a "whatsit" in picture **7** and the direction of flight is tail first! This is another novelty by friend R. A. "Pteranodon" Guntrip, of Salisbury, which he has christened the "Pterosaur". Study the features. It has a five-wheeled undercarriage, E.D. Bee driving a pusher prop, clockwork timer right in the nose for balance, and everything detaches to make transport easy. Span is 50 in. and total weight is 22 ounces, while the designer tells us that it is durable enough for the rough and tumble of scramble flying. Not quite evident in this view is the fact that the main wings have gull dihedral.

A free-flight semi-De Havilland 110 of 50 in. span for an E.D. 1·46 in the nose, is the work of C. St. Claire-Smith, of Hillingdon, Middlesex, and seen in **8**, should have a delta-like flight pattern.









GADGET

So MANY readers apply to us for information on how to mould cockpit covers that we sometimes begin to wonder whether the many articles we have published on the subject failed in their purpose! Happily, we are assured that although we have told people how to mould a cockpit canopy for flying scale, the unfortunate solid model has been left out in the cold. In reality the procedure is the same, but because 1/72nd and 1/48th covers and turrets are relatively small, a different approach can be used, and thanks to A. J. Shipp, of Cambridge, sketch **A** explains the method which guarantees a fine result for the smaller mouldings.

The pattern can be carved from hard balsa and cemented on a piece of $\frac{3}{16}$ sheet which is at least $\frac{1}{2}$in. wider and longer than the actual pattern. Another piece of $\frac{1}{16}$ sheet forms the lower half of the jig and has a hole cut in the centre which will just take the pattern, plus the acetate sheet thickness. Make the metal frame as illustrated from $\frac{1}{16}$ in. $\times \frac{1}{2}$ in. brass and bind with asbestos string, leaving a few strands across the width to support the acetate. Procedure is as follows: (1) Light the gas ring and place a brass plate over it. (2) Position the asbestos wrapped metal frame on top. (3) Place acetate sheet or suitable transparent moulding material over frame when plate is obviously radiating heat. (4) Allow acetate to go limp, then remove quickly with pliers and place over lower half of jig. Push top half over immediately, so forming the cockpit.

A few practice runs soon find the correct gas setting, and with experience it is possible to knock out a number of canopies in a remarkably short time.

"Make cowl from block"—those few words, seen all too often on model plans, are often rather discouraging to the impecunious, for a piece of block can be quite expensive. Reader J. E. Fowler, of Sandhurst, suggested idea **B** which is a cowl made up of laminations from scrap sheet. We thought the end grain would make it weak, but Mr. Fowler sent along a sample that was perfectly strong, and of course, accurately hollowed to a parallel thickness—which can rarely be achieved by the average balsa butcher chopping at a piece of block.

All the way from Hango in Finland H. Sandin suggests **C** for an adjustable control horn on radio or controline models. A bolt is bent to take the push rod, and nuts either side of the elevator or rudder make the leverage adjustable. Note also the hinge line shown. Simple bevels like this can be hinged with one long length of tape the length of the movable surface . . . much more easy to apply than the "clothes horse" hinge normally employed.

D and **E** are radio rudder gimmicks spotted at last year's contests. The first is a neat internal crank used by H. Jones, of Crewe, on his converted Junior 60; and the second is Tommy Ives' safety tab. This is a second rudder, with pendulum balance weights which is independent of the actuated rudder below. A smart safety factor for any model liable to get into difficulties!

REVIEW

Simplest of all cowling clips is seen in **F**, sent by Master J. L. Park, of Farnham. Bend a spring wire clip as sketched, and arrange the tension so that the wire passes through two holes in the model, one in the movable cowl, the other on the fixed body. A streamlined blister from balsa provides something to grip and adds a neat appearance.

No claim is made for the originality of **G**, which was featured back in 1940 by "AEROMODELLER" and was widely copied through the war years. D. Hunter, of Fleetwood, revives the "inner tube" wheel, and the many newcomers to the hobby will appreciate his suggestion. Take 3 in. of old bicycle inner tube, and slip it on a broom handle. You'll find that it can be rolled easily, and the final effect is that of a semisolid tyre. Hubs can be made with balsa, a brass bush and two-ply discs, and to keep the tyre on the hub we recommend the new impact type cement such as Evo-stick or Goodyear Pliobond.

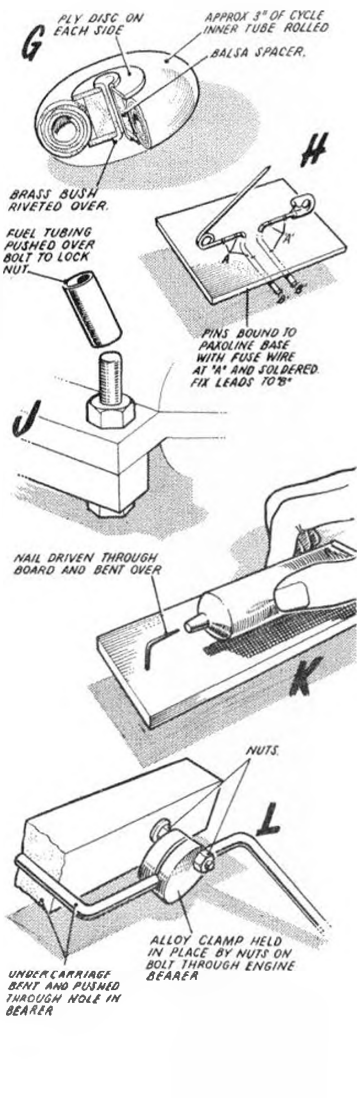
F. K. Spokes, of Morden, has unearthed a lightweight switch for radio control or similar use that can be made from two ordinary metal safety pins. Cut one on the "base" line near the head, the other near the coil, and bend as shown. When bound to a ply mounting plate and with leads soldered to the ends the safety pins make a perfect switch as in **H**.

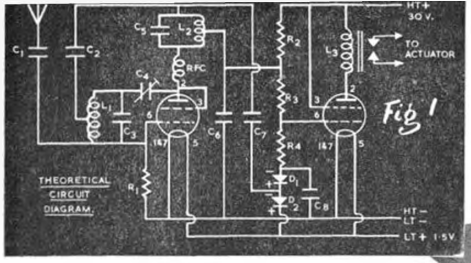
Translucent neoprene fuel tubing has a myriad uses, from making spray guns to dummy undercarriage oleo legs, and flexible conduits for thirdline control. Another use is to prevent engine bolts becoming loose and K. J. Phillips, of Birmingham, has used the idea in **J** on his E.D. Bee. Use tube that is a tight fit over the bolts, and screw home. From D. Burgess, of Northwood, we get the suggestion (not illustrated) that a length of neoprene can be used to make a flexible needle valve control extension. The tube can be forced over the bent wire needle, then the bent end forced through a hole in the wall of the tube.

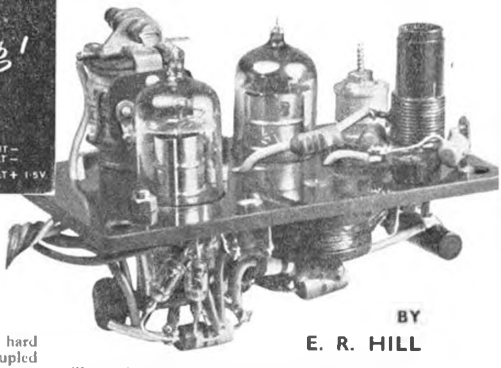
Glue or cement on your plan? There's no real need for it, particularly if you use the American idea in **K** which is about as simple and as useful as can be. Take a piece of scrap sheet, push a pin or nail through right up to its head, and bend over the point at right angles. You now have a cement saver, a quick depository for anti-drip purposes!

G. Bravey, of Leeds, uses quickly detachable undercarriages, which can be for floats of wheels and is shown in **L**. Two washers are cut from a length of aluminium bar, grooved to take the undercarriage wire and drilled through for the holding bolts. As these holding nuts are tightened on the bolt, the u/c is clamped tight. Combination of two or more such clamps makes it possible to have adjustable float angles on a hydromodel.

Lastly, a tip from George Woolls, of Bristol, who tells us that so many people ask how he gets such cleanly cut tissue lettering on his models, that he feels it is about time he revealed the secret. Simple! Just lay a sheet of waxed paper over the tissue, use a sharp new razor blade, and you can cut up to six layers of tissue letters at one time.







The HILL 2 Valve RECEIVER

BY

E. R. HILL

THE TRICKY ADJUSTMENTS of the single hard valve receiver for satisfactory operation, coupled with "rudder on" in the event of battery disconnection, uncertain operation should the battery voltages fall during use and high "no signal" or standing current, led the writer to explore the potentialities of the two valve types.

Circuits operating on the change in anode current of the detector were tried, as were those working on the 27 Mc/s oscillation present when a signal is received from the transmitter. However, for reasons of stability, complexity, weight or battery requirements all were eventually abandoned in favour of this receiver, the theoretical circuit of which is given in *Fig.* 1.

The receiver operates on the marked decrease in quench amplitude when a signal is received. For the technically minded, the quench output is applied to a half wave voltage doubler circuit using two germanium diodes, the D.C. produced is used to bias the second valve beyond cut-off. On receipt of a signal the quench amplitude falls, lifting this bias and allowing the valve to conduct.

The receiver uses two 3V4 valves and has a "no signal" standing current of less than 0.4 milliamp which rises to well over 4.0 milliamps on receipt of a signal, this being obtained with an H.T. of only 30 volts!

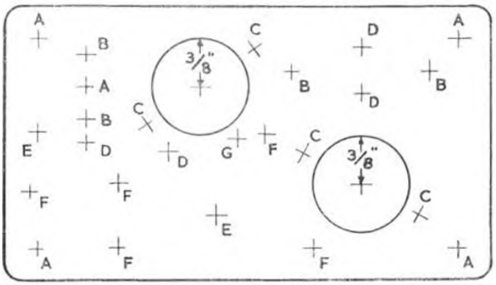
The receiver is remarkably docile, easy to adjust and positive in operation. Battery disconnection will not give "rudder on" and even a drop in battery voltages (within reasonable limits) will not prevent operation.

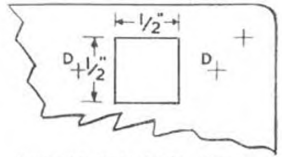
The actuator is operated by the "pull in" of the relay armature (instead of the "fall out" of single valve types) this considerably reduces the possibility of contact bounce.

Loose coupling is employed between the aerial and the 27 Mc/s tuned circuit which reduces the effect of hand capacities when tuning and prevents the changes in the aerial-earth capacity after launching from upsetting its performance. The writer has found that the high safety factor obtained, more than justified the additional valve and the two diodes used, all of which are readily available on the surplus market. It is quite impossible to give a really true indication of the maximum safe range at which any receiver will operate, as so much depends on the accuracy of tuning and relay adjustment as well as on the power, frequency stability and location of the transmitter. However, when this receiver was tested under identical conditions against a well-known commercial single valve type, it was found that the ranges were approximately equal only when the latter had its sensitivity or "quench" control adjusted to absolute maximum which would have been an unsafe setting for flying.

A "Manning Carr" miniature polarised relay

FULL SIZE MARKING OUT TEMPLATE





MODIFICATION FOR E.C.C. P 100 RELAY SOCKET.

Fig 2

type P53 wound to 3,500 ohms is recommended for use with this receiver and the full size marking out template is correct for this relay. However, should the E.C.C. P.100 relay be preferred, this can be accommodated, the modification required is shown inset in *Fig.* 2. The writer has a strong dislike for "brush and shovel" receiver construction with a result that the receiver as illustrated weighs in the region of 4½ ounces (including the supply leads and B7G plug) this is offset to a large degree by the reduced H.T. battery requirement.

If weight must be minimum, the use of ⅛ in. paxolin for the panel and thinner battery leads would have the desired effect.

RECEIVER CONSTRUCTION

The panel

From ¼th inch thick paxolin sheet mark out a piece 3¼ in. x 2½ in., cut with a hacksaw and file to size.

If the modeller has the necessary tools, all the centres and the two valve holes can be marked out from the full size template of *Fig.* 2. Alternatively, the template can be used direct, by pasting it on to the panel.

The modification in marking out if an E.C.C. P.100 relay is used should of course be made at this stage.

The panel should be held firmly down on a piece of hardwood during drilling, to prevent the paxolin chipping when the drill breaks through the other side.

The valve holes can be made in the usual way by drilling a number of smaller holes round the inside of the line, joining them with a small file to remove the bulk of the centre, and finishing off with a half round file. Holes marked "E" should now be tapped 6 B.A. (as well as the "F" holes if 6 B.A. solder tags are to be used). The four underside double tags and the single aerial tag are now secured in the positions shown in *Fig.* 6. The panel is now put to one side whilst the quench coil is constructed.

The quench coil

The essential dimensions for the quench coil bobbin are given in *Fig.* 3.

It can either be turned on a lathe from 1 in. diameter ebonite or perspex rod or built up by using 2 millimetre resin bonded ply for the two end cheeks, the centre holes of which should be made a push fit on to a piece of ¾ in. dowel. The cheeks are then positioned and glued in place. When set the dowelling should be trimmed flush with the cheeks.

A 6 B.A. clearance hole (No. 34 drill) is now made through the centre of the bobbin (a little care in ensuring that the hole is really central and true will be well rewarded when it comes to winding on the wire). Two very small holes (No. 60 drill) are now drilled in one cheek in the positions shown in *Fig.* 3 for bringing out the winding and finally the edges of the bobbin and any other roughness is lightly sanded off to prevent any mishap during winding.

Winding the quench coil

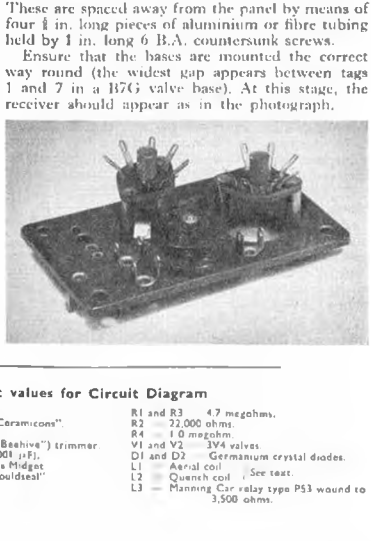
The coil can be wound by hand, but an improved "coil winder" consisting of a hand drill held in a vice will help both time and temper.

A 6 B.A. screw passed through the bobbin and locked with a nut will enable it to be held by the chuck. The coil should be wound as evenly as possible with 38 S.W.G. enamelled copper wire and is started by passing the end through the start hole, allowing about 1½ in. for subsequent termination. After winding on 400 turns bring out a 1½ in. loop through the centre tap hole and then continue for a further 400 turns.

The winding should then be locked with either shellac or polystyrene cement. After cutting the centre-tap loop, carefully remove the enamel from all four wires to within ¼ in. of the bobbin with very fine sandpaper and then lightly twist the two centre-tap wires together. The coil is now ready for fixing to the panel by means of a 6 B.A. *brass* screw and the wires soldering to the appropriate tags as indicated in *Fig.* 6.

The next step is to mount the two valve holders. These are spaced away from the panel by means of four ¾ in. long pieces of aluminium or fibre tubing held by 1 in. long 6 B.A. countersunk screws.

Ensure that the bases are mounted the correct way round (the widest gap appears between tags 1 and 7 in a B7G valve base). At this stage, the receiver should appear as in the photograph.



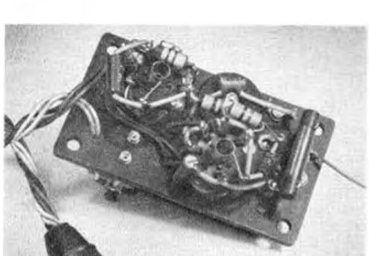
Drill Sizes for Template

A — No. 7 Drill.
B — No. 30 Drill.
C — No. 14 Drill (6 B.A. clearance).
D — No. 43 Drill (8 B.A. clearance).
E — No. 43 Drill (tapped 6 B.A).
F — No. 43 Drill (tapped 6 B.A. or drill size to suit eyeletted tags used)
G — No. 43 Drill (only drilled if eyeletted tags not used).

Component values for Circuit Diagram

C1 — 10pF
C2 — 50pF — Erie "Ceramicons".
C3 — 6pF
C4 — 3/30pF Phillips ("Beehive") trimmer.
C5 and C7 — 1,000pF (.001 μF).
C6 — .01 μF — Hunt's Pidgeon.
C8 — .005 μF — "Mouldseal"

R1 and R3 — 4.7 megohms.
R2 — 22,000 ohms.
R4 — 1.0 megohm.
V1 and V2 — 3V4 valves.
D1 and D2 — Germanium crystal diodes.
L1 — Aerial coil.
L2 — Quench coil — See text.
L3 — Manning Car relay type P53 wound to 3,500 ohms.



View showing underside of receiver. Note the BTG plug, neat and workmanlike wiring, and the use of systoflex sleeving for insulation

The underside of the panel can now be wired (the above panel components are intentionally not yet mounted to prevent damage and for ease of wiring).

24 S.W.G. tinned copper wire and systoflex sleeving is suggested for strapping, the sleeving also being used to insulate component leads. The battery supply leads and the relay contact leads should be wired with plastic covered multi-strand wire (using red for H.T.+, black for H.T.—, L.T. — and blue for L.T. +).

All connections should be made at the points shown in *Fig.* 6 (*b*), but the components and the wiring should take a reasonably direct route. A good indication of the practical layout is obtained from the photograph of the completed receiver. Allow about 3 in. above the panel on all the relay leads and on the lead from pin 6 of V1 which passes through hole "B".

Reasonable care must be taken when wiring in the two diodes. *On no account must they be allowed to become hot.* This is easily avoided if a pair of snipe nose pliers are used to grip the diode leads as they are soldered in, thus acting as a thermal shunt and preventing the heat from reaching the diode element.

The 3/30 pF Phillips trimmer is now mounted by pushing the two tabs on the trimmer through the holes already drilled in the panel and bending them back. A connection is made between the centre pin of the trimmer and pins 2 and 3 of V1. This completes the underside wiring with the exception of the R.F. choke which is now constructed.

The R.F. choke

Fig. 4 shows the general construction of the choke. It is wound on a piece of ¼ in. diameter paxolin tubing or ebonite rod 1¾ in. long. Two parallel holes spaced at ¼ in. and ¼ in. from both ends are made with the No. 60 drill and a short length of 20 S.W.G. tinned copper wire is bent and secured in each end as shown.

This makes the choke self-supporting and provides a trouble-free anchorage for the winding. The ⅝ in. winding space is now filled with 38 S.W.G. enamelled copper wire close wound (i.e. with each turn touching its neighbour) the enamel is removed from the ends which are then twisted a few times round the posts ("X" in *Fig.* 4) and soldered. Finally the choke is given a coat of polystyrene cement and wired in to the receiver.

Above panel wiring

The relay should now be mounted and the leads soldered to the appropriate relay tags as shown in *Fig.* 6(*a*). The 50 pF condenser is now connected and soldered to tag 3 with about ½ in. of this lead above the panel as indicated. The other condenser lead is left floating.

The tuning coil

This consists of 16½ turns of 22 S.W.G. enamelled copper wire close wound and centre-tapped, on a standard ⅝ in. diameter iron dust cored coil former, wound as shown in *Fig.* 5.

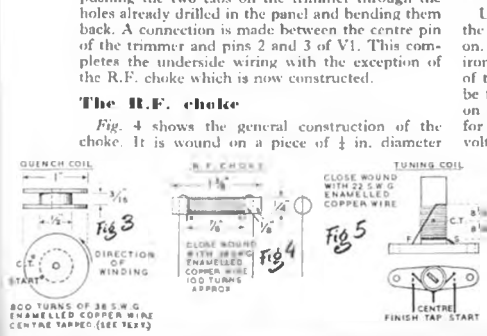
After winding, the coil should be coated with polystyrene cement to lock the turns. When set, the centre-tap wires are untwisted and the enamel removed, twisted together again and tinned. The start and finish leads are also cleaned and tinned back to the former.

The "finish" lead of the coil is now passed through hole "A" and the coil is mounted in position. This lead is then temporarily soldered to the tab of the trimmer. Temporary soldered connections are also made on the coil with the 6pF, 10pF and 50 pF condensers.

Finally connect about 24 in. of plastic covered multi-strand wire to aerial tag.

Final checking

Undoubtedly the modeller will wonder why all the tuning coil leads are only temporarily soldered on. The reason is that owing to the variation of iron dust cores found in coil formers, the tolerance of the 6 pF condenser and stray capacities, it may be found necessary to modify the number of turns on the coil. After thoroughly checking all wiring for accuracy, connect up the 1.5 volt L.T. and 30 volt H.T. batteries, inserting a 0-5 milliameter in the H.T. + lead. With the Phillips trimmer screwed right out and the dust core fully in the meter should read about 0·3 of a milliamp, which indicates that the quench coil is oscillating. (If this is not the case, re-check quench coil connections, wiring,



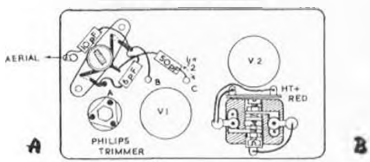
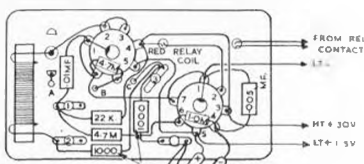


Fig 6



Note. TAG 1 TO CENTRE TAP OF QUENCH COIL
TAG 2 TO START OF QUENCH COIL
TAG 3 TO FINISH OF QUENCH COIL

diode polarity and valves). Now screw the trimmer fully in (incidentally, fingers can be used providing of course they are removed after each adjustment) the current should now rise to between 4 and 5 milliamps. This checks the tuning components. (If no rise is obtained, check the tuning coil and associated components.) Now unscrew the trimmer until the anode current drops to its lowest value and *just fails to rise* when the hand is removed. Next switch on your transmitter and transmit a signal. With the aid of a plastic or bone knitting needle filed to form a screwdriver, slowly unscrew the iron dust core until the current rises to a peak value. (Further unscrewing should cause the current to decrease again).

Tune for maximum current and note the position of the dust core.

In view of the vibration in model aircraft and due to the thread in this type of former not extending to the top, it is essential that the core should be somewhere around $\frac{1}{16}$ in. to $\frac{1}{8}$ in. below the top of the former when the receiver is correctly tuned. If it is found that the core is too far out, remove a turn from both the top and bottom of the coil and recheck. It may in some cases be found necessary to remove yet another turn from both ends to acquire this condition.

In the very unlikely event of complete lack of tuning to 27 Mc/s even with the core right out, try another 6 pF condenser across the coil, if even this fails check transmitter frequency. Finally, properly terminate and re-solder the coil connections. The relay should be adjusted to operate at approximately 1.5 milliamps and fall out at 1.0 milliamp.

Normal tuning instructions

1. Adjust trimmer to the point where the current falls to minimum and *just fails to rise* when the hand is removed.
2. With a 27 Mc/s signal present (transmitter on) adjust iron dust core for *maximum* current reading by means of the trimming tool described.
3. With no signal, check for full current drop and if necessary re-adjust trimmer.
4. For maximum range and sensitivity repeat (1.) and (2.) at least 100 yards from the transmitter.

NOTE: (a) The core is best locked with high viscosity grease which is made specially for this purpose.

(b) *Slight* variations in the "No signal" or standing current does not indicate unsafe adjustment.

(c) *Recommended batteries for normal use:*
H.T. Ever-Ready B105
L.T. Ever-Ready D18
For lightweight and duration:—
H.T. Ever-Ready B123
L.T. "Venner" Silver-Zinc
Acc. Type H1075.

CRITERIUM D'EUROPE RESULTS

Speed — 2.5 c.c.

			m.p.h.
1. Battlo	Spain	Super Tigre	125.5
2. Gibbs	England	Carter Nipper	124.52
3. Jarry-Desloges	France	Jarry Special	107
4. Huppertz	Germany	Webra Mach 1	103
5. Gonzira	Germany	Webra Glo.	102
6. Hie	France	Webra Glo.	101.5
7. Chavallaz	Switzerland	Super Tigre	99.5

Aerobatics

			Points
1. Lecomte	Belgium	913	E.D. 2.46—Blue Pants
2. Rieger	Germany	874	E.D. 2.46—O.D.
3. Mathey, A.	Switzerland	865	E.D. 2.46—O.D
4. Patrianche	Belgium	833	
5. de la Plaza	Spain	791	
6. Garcia	Spain	781	
7. Humbertjean	France	781	
8. Battlo	Spain	742	
9. Rekk	Belgium	723	
10. Chavallaz	Switzerland	718	
11. Happetian	France	714	
12. Godsiabuis	Belgium	714	
13. Laniot	France	680	
14. Busch	Spain	646	
15. Greesink	Holland	646	
16. Rautek	Austria	635	
17. Mathey, J.	Switzerland	630	
18. Deville	Belgium	619	
19. Roggl	Austria	588	
20. Schweizer	Austria	432	

Combat

Garcia	Spain	Byra 2.5

Jet

			m.p.h.
Fernandez	Spain	Dynajet	131

Team Race — Final (10 Kilometres)

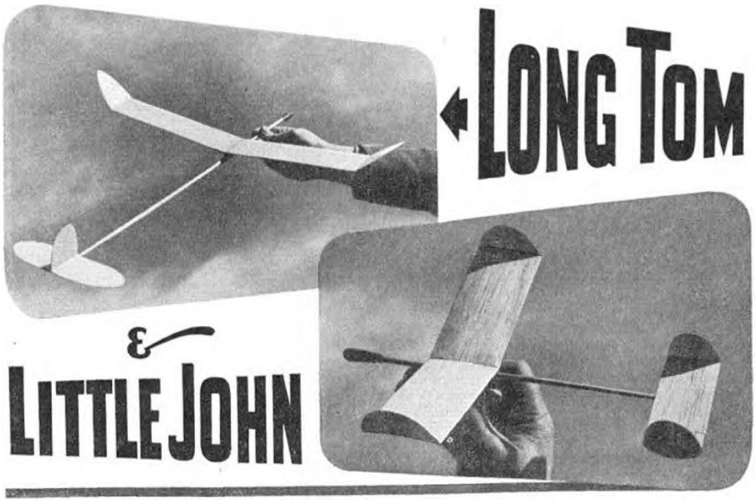
1. Smelt	Holland	E.D. 2.46 (Check Valve)	3.45
2. Howard	England	Oliver Tiger	3.47
3. Edmonds	England	Oliver Tiger	3.50
4. Van de Dyk	Holland	Oliver Tiger	4.4

GRAND PRIX DE CRITERIUM D'EUROPE

1. Spain	5 points
2. Germany	9 points
3. Belgium	9 points
4. France	11 points
5. Austria	11 points

Also ran—Great Britain, Switzerland, Holland

British Team — Manager: D. A. Gordon Edmonds (H. Wycombe) Gibbs (E. London), Templeman (Sidcup), Howard, Rhode-Thompson (Foresters).



LONG TOM & LITTLE JOHN

by **W. J. STOKER**

I HAVE SPENT a great deal of time during the past six years building and flying chuck-gliders, and have found that if enough time is spent on their design a very high performance can result. One of my earliest chuck-gliders was of 10 in. span, rather on the lines of the then popular "Sunnanvind" and now christened "Little John". Performance was so good that I lost three O.O.S. on favourite days.

The Tynemouth M.A.C., of which I am a member, then began to hold chuck-glider competitions, so I started experimenting with larger gliders. After about half a dozen I reckoned that I knew the answers to high performance chuck-gliders. One of the models disappeared O.O.S. for 5 min. 50 sec. and set up a record which still stands in the club. It was 18 in. span and 20 in. long. It featured polyhedral wings and the fin was set ahead of the tailplane.

My latest and best model, "Long Tom", as you will see by the plans, is 24 in. span and 26 in. long. This may seem large to be thrown easily, but in actual fact it is the ideal size. I am of only average physique, but chuck-gliders of around 18 in. span and ½ ounce weight had to be very under-elevated to stop them looping after a hard throw. Also, since a chuck-glider must be trimmed to circle fairly tightly to catch any lift that is about, they were very prone to spin in. I thought the obvious thing to do was to make them bigger, so that a happy combination of one's physical capabilities, and the stability of the model would be reached.

The tail area I reduced as much as I could as I found that it contributed greatly to drag on the throw. A large tailplane has also to be made of thicker, heavier material to be rigid at a place where lightness is important. The long fuselage compensates for the small tailplane, and stabilises the model directionally.

I do not know why every one designs chuck-gliders with low aspect ratio wings. I find that a high aspect ratio is much more efficient. It is suited to chuck-gliders because of their fairly high speed, and has a much lower drag.

With this model one should not throw too steeply otherwise the wing is not used greatly to aid the climb. It is thrown banked one way and trimmed to circle in the opposite direction. The fin should be used sparingly for trimming, as it has a powerful effect. It is far safer to warp the trailing edge of the tail-plane. If you are right-handed, you will warp the right side down, so giving a right circle.

For maximum throwing power the model should be grasped firmly with the forefinger against the trailing edge of the wing at the ply strengthener. A short run helps a powerful throw, but you must swing your body as well as your arm, really to get results. When the arm is swung back the body should twist from the hips to follow it. A smooth action is far better than a jerk and a final flick of the wrist imparts a little extra power. I can throw the model to about 80 feet in this way and get flights of from 45 sec. upwards in still air. This model has thrice won the chuck-glider cup in Tynemouth M.A.C. contests.

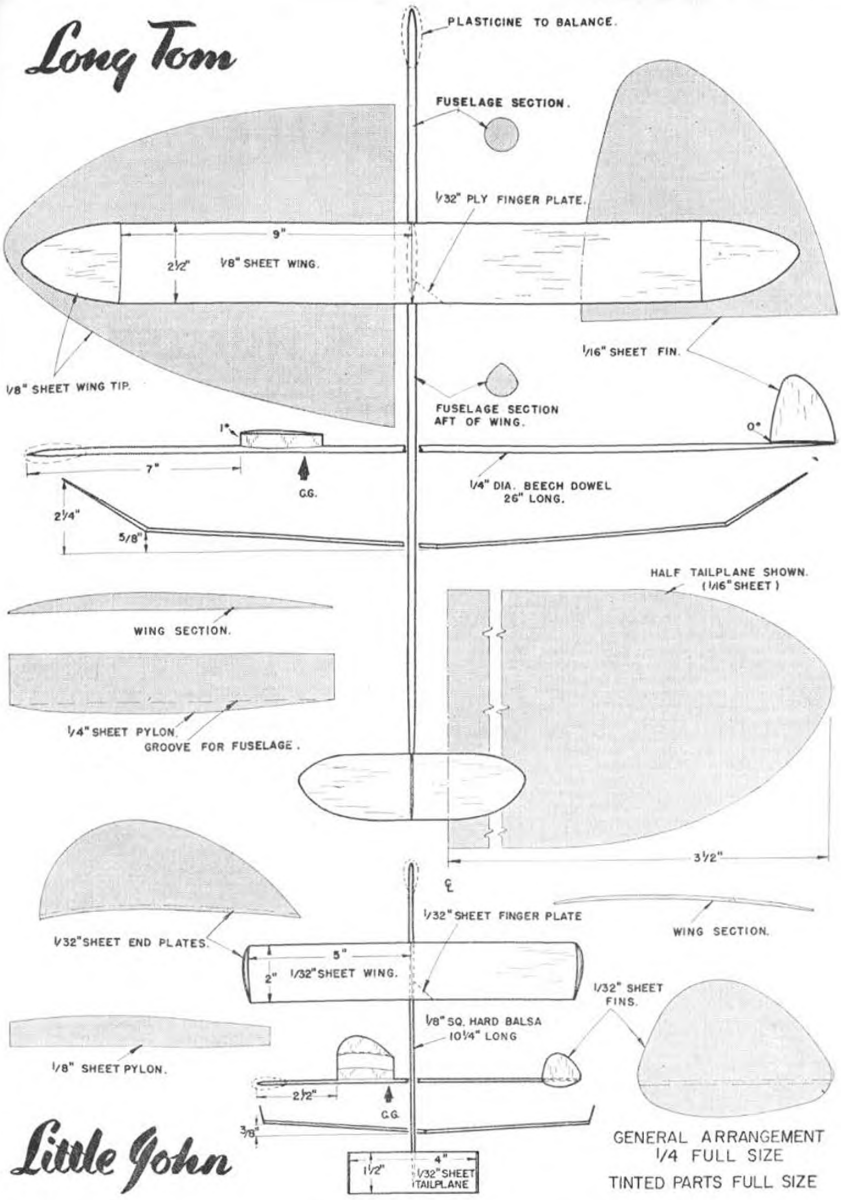
The plans are self-explanatory, but one or two notes might be helpful. Make sure that the grain is vertical on the wing mount. All joints should have at least three applications of cement smeared over them for extra strength. The hardwood of hardwood-to-balsa joints should be roughened before cementing.

The originals were given a coat of "Brummer" stopper made into a paste on the wing. It was applied with a rag made into a pad. When dry it was sanded with dampened wet and dry sandpaper and a coat of banana oil finally given on top to waterproof. The stopper is fairly heavy stuff, but gives a good finish with little effort.

The rest of the model was given a coat of cellulose grain-filler and sanded.

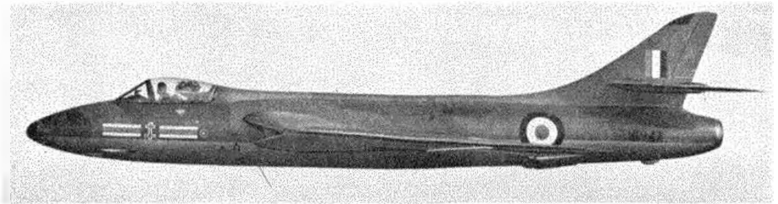
A very good idea is to cement thread along the leading edge of the wing. This gives surprising protection against denting caused by hitting bushes, etc.

Long Tom



Little John

GENERAL ARRANGEMENT
1/4 FULL SIZE
TINTED PARTS FULL SIZE



AEROPLANES IN OUTLINE
No. 45 by G. A. G. COX

HAWKER HUNTER V

IN THE IMPENDING age of push-button warfare when the manned fighter is a historical curiosity, we in Britain may look back on the Hunter with some affection and respect as was earned in its day by the Spitfire. It is hoped of course, that the Hunter will not have to prove itself in war, but battle victories alone are not the prerequisite of fame. In the Hunter we see the manifestation of all the virtues a fighter should possess—beauty, breeding, and functional efficiency to the limits of contemporary technical knowledge.

Designed by Sir Sidney Camm, who gave the country the Hurricane, Typhoon, and Tempest, the Hunter is the latest of a series of jet fighters which originated in the small Nene powered P1040. The first prototype Hunter (WB188) flew in July, 1951, and the first production machine in May, 1953; since then at least, seven variants have flown four of them with Fighter Command. (Marks 1, 2, 4 and 5). The projected Mark 3, with an afterburning Avon engine, was dropped because the improved climbing performance was not considered to be worth the sacrifice of range and endurance. In the F.R. version, which is basically a Mark 4, six cameras replace the radar gun ranging equipment in the nose, although the normal armament is retained.

Standard armament of the Hunter is four 30 mm. Aden cannon, which deliver 1,200 rounds per minute. Hunters have flown with a variety of underwing loads, but no such equipment is yet in use by the squadrons. Bristol 100 gallon plastic tanks have been mounted under the wings of a Mark 6, and a standard Mark 4 has carried a fuel tank and twelve air to ground rockets under the starboard wing, balanced by a 1,000 lb. bomb and a fuel tank on the other side. It is also reported that the Hunter is to be modified to carry the Fairey Fireflash guided missile. The large shell case collectors attached to the gun-pack are an unfortunate necessity, for without them the ejected cases are liable to inflict damage.

At least fourteen squadrons are known to be equipped with the Hunter. They are as follows:—

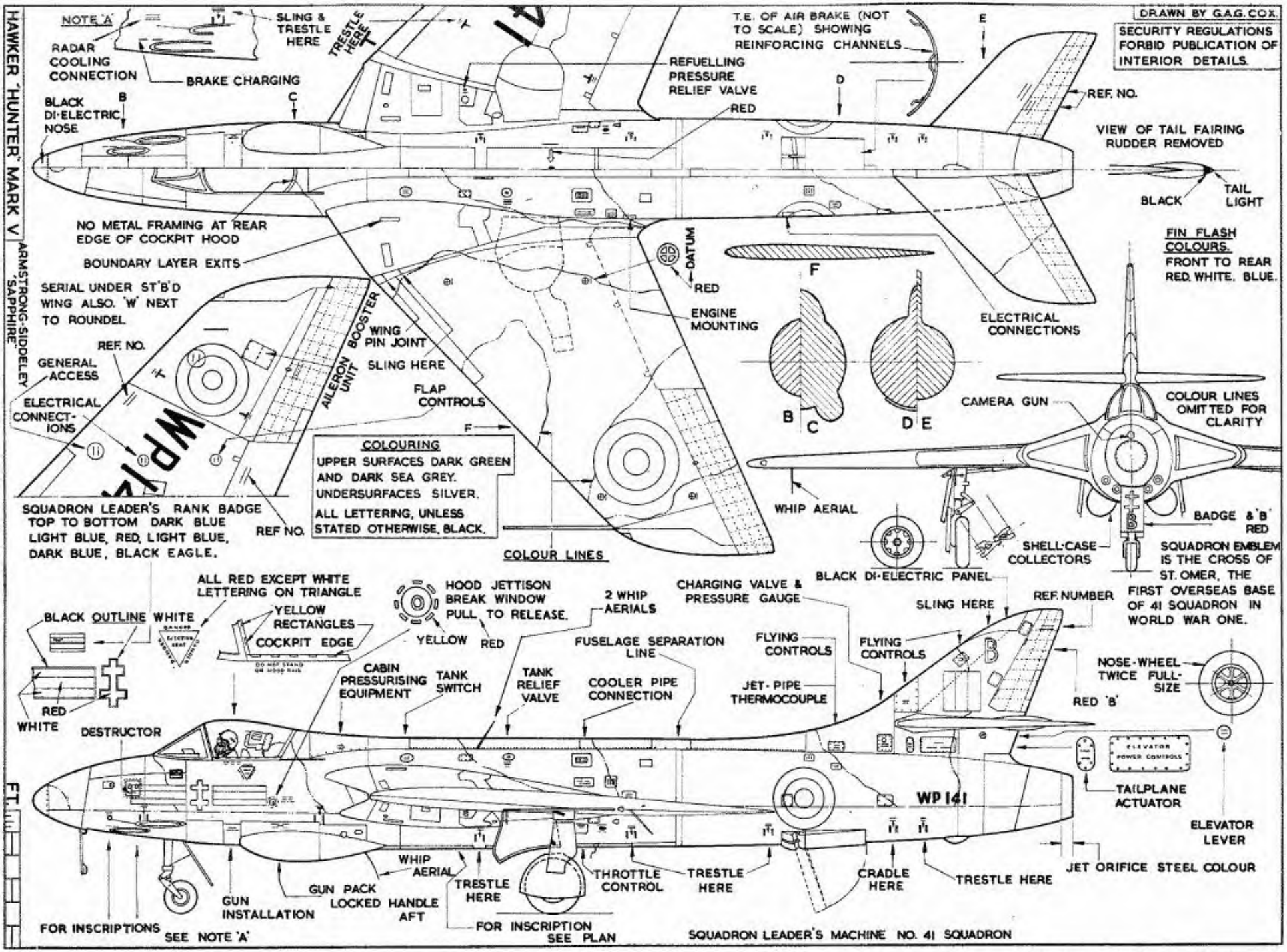
Mk. 1 (R. R. Avon)	43 & 222	Squadrons,	Leuchars
	54 & 247	,,	Odiham
Mk. 2. (Sapphire)	257 & 263	,,	Wattisham
Mk. 4. (R. R. Avon)	98 & 118	,,	Jever, Germany
	14, 20 & 26	,,	Oldenburg, Germany
Mk. 5. (Sapphire)	111	,,	North Weald
	56	,,	Waterbeach
	41	,,	Bigain Hill

The Mark 6 is reported abroad to have a R. R. Avon R.A. 28 of 10,000 lb. s.t. and the Mark 4 an R.A. 21 of 8,000 lb. s.t.

Weights and performance figures of the Hunter are still restricted, but it is generally known that it can achieve Mach. 1.0 in a shallow dive.

Heading, shows a Mk. 1 of 43 Squadron as drawn, but yet to be fitted with link collector bulges. The position of Squadron insignia is similar to the red and white dice of 56 Squadron (Above) who also have tip markings. No. 43 (Fighting Cocks) aerobatic flight is famous, using Mk. 1's and rear fuselage black and white dice. Demonstrating before Soviet leaders, 43 Squadron a/c had markings painted flush with turn of roundel. Note different individual letter positions in each case.

All Air Ministry Photo.



"J" TYPE 1/72ND SCALE REPRINTS OF THIS DRAWING AND "A" TYPE 1/48TH SCALE TYPE DIE-LINE PRINTS ARE AVAILABLE PRICE 6d. AND 1/- RESPECTIVELY FROM THE AEROMODELLER PLANS SERVICE

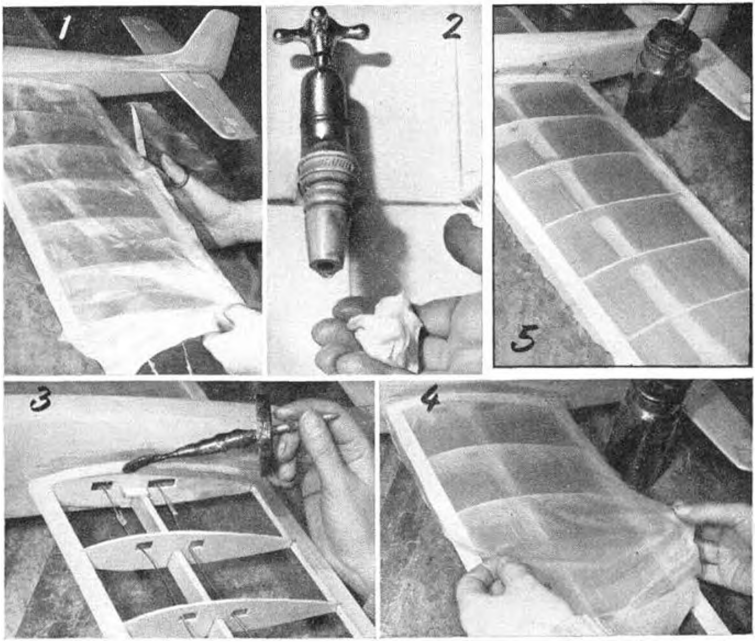
Covering —with silk

THERE IS NO other form of model covering that approaches the strength/weight ratio of silk or nylon, yet very few modellers appear to take advantage of this fact. Silk of the pre-war lightweight grade is now available through the model shops, and the thinner type of nylon can be bought at most haberdashers.

In this feature we concern ourselves with Silk—covered wet, and using a Veron "Combateer" kit as the guinea pig. First thoughts must certainly be for economy in use, and the raw silk is placed over the area to be covered, then trimmed to shape with a pair of sharp scissors, as in picture **1**. The overlap allowance need only be a matter of ½ in. all round, since when applied wet, the silk will be pulled larger than when dry.

Next, take the silk to a tap and get it thoroughly wet **2**. Then squeeze (do not wring out) the excess moisture by compressing in the palm of the hand, and then spread the dampened silk out flat and hang over a chair-back. In a warm room it will dry within 30 minutes, so be prepared to go straight into the next phase which is to dope the outlines of the wing to be covered. In **3** we are using our favourite pickle jar brush preserver, wherein the brush is permanently mounted in a Bakelite jar top, and the bristles always dope filled in the contents of the jar which are replenished from the less convenient tins sold in the model shop. A good tip this, we have used the same brush to dope dozens of models over the past five seasons and never lost a hair! Back to the silk. We have now made the framework thoroughly gooey—and flop—on goes the root end of the covering as in **4**. Support the rest of the damp silk off the frame, then apply, panel by panel, pulling more spanwise than chordwise. When a couple of rib bay panels are done, pin the silk at the root to stop it slipping, and when the last wrapping around the tip is to be made, pull hard spanwise to remove any sag. This will give spanwise wrinkles which are soon removed by working the silk over leading and trailing edges. Application of extra dope here and there, enables one to move the silk quite easily while it is still water-damp.

Final effect is soon observed as in **5**, and any white "blushing" soon disappears when the first heavy coat of shrinking dope is applied to fill the pores. Thereafter, use two or more extra coats of clear dope, as for a tissue covered model.



LOOKING AT THE figures that are always quoted in the S.M.A.E. news when a club renews its membership for the coming year, makes me wonder what is happening to some of the big name clubs. Only a dozen members in some of them, and ten of those are usually Associates. Yet on the other hand there are several really large groups, like those at Thornaby and as in this heading picture, at Bridport, which are largely composed of keen sport fliers. Which is the largest club I wonder—those with more than 60 *paying* fliers on the books please let me know.

London

Indoor Jetex speed has been the main avenue for exploitation in the **WALLINGTON M.A.C.**, and the record for a 50 is 68 m.p.h. Outdoors, the freeflight duration record has zoomed to 6 : 20 for the club 1 c.c. class. New members would be

For your Diary

Events inviting your entry

June 3rd
Dartford C/L Rally—Dartford Central Park—all classes.

June 17th
Chester Slope Soaring—Clwyd—5 glider classes incl. R/C.

June 24th
Midland Area Rally—R.A.F. Wellesbourne—f/f, T/R, Combat.
West Hants Rally—R.A.F. Andover—f/f, R/C, Glider, T/R.

July 8th
Stockport Express Rally—Woodford—f/f, T/R, Combat, Scale.
Northern Heights Gala—R.A.F. Halton—f/f, Combat.

July 15th
Enfield C/L Rally—Enfield playing fields—all classes.
Croydon Gala—Chobham Common—f/f.

July 29th
Epsom Slope Soaring Rally—Box Hill, Surrey.

August 5th
I.R.C.M.S. R/C—R.A.F. Wellesbourne—Nr. Stratford-on-Avon.

August 12th
Cambridge C/L Rally—Pye Sports Field—T/R, Combat.

August 26th
S. Midland Area Rally—Cranfield—f/f, T/R, R/C, Combat.

August 25 26th
PAA Scottish Festival—R.N.A.S. Abbotsinch—f/f, PAA, T/R.

September 2nd
Northern Area Rally—venue to be announced.

September 16th
All-Britain Rally—Radlett.

September 2nd
Northern Area Rally—venue to be announced.

Enthusiasm in the West, at Bridport in Dorset is shown by these clubsters. Since January, 1955, membership has risen from 9 to 57. In centre is an A.P.S. Halifax converted for two 4M-25s and with retracting u/c, by 16-year-old builder.

Club reports should be submitted to the Editor not later than the 15th of each month. They should be factual and informative, and will appear in the issue published exactly one month after the above press date, e.g. reports received in January appear in March issue, published February 15th

welcome at this South London—Surrey actually—club, and are urged to contact the secretary at the new address overleaf.

In the last two issues A.F.C. interest in aeromodelling has gained a fair share of publicity and a squadron in **WEST HAM** No. 338, has an active model section with regular weekly meetings and workbench facilities. Initial club record is 2¾ minutes with a Kellkraft Dolphin, so if anyone in the area wants to have a go I suggest they join up—and get some full-size flying hours in at the same time with the squadron week-end parades at R.A.F. Stations.

The **ENFIELD** boys are more than backed that they should win Class B Team Racing at High Wycombe. They deserved their victory, and D. Walker looks forward to having another go at the W. Essex and Sidcup boys at the Nats and future rallies. Two racers in the club are now circulating at over 100 for 2½ mile range. Interclub affairs are always stimulating, and I wish there were more of them. I know one club that would benefit geographically from a change of Area membership, but refuses to do so because of the annual club interchallenge event which helps to keep things together between eliminators. All of which leads up to a **REGENTS PARK M.F.C.** report on their clash with **MILL HILL**, which was fought out on Epsom Downs. The Regents were winners with first three places. Sad note is that they no longer have the use of nearby Parliament Hill Fields, scene of the earliest model flights in Britain, and now have to go to Epsom to fly. Open challenge is offered to all other clubs for a contest; contact Comp. Sec., A. Fox, 1 Damselle Place, Kentish Town.

That clash of dates for **NORTHERN HEIGHTS** and W. Hants rallies caused the coach hookers on north to scurry round, and I'm glad the Hants boys managed to get a quick change. From the Heights I learn that the Queen's Cup this year will be for Wakefield class, and since there is no tarmac at Halton, the team races will be again run in conjunction with the Enfield C/L rally. New members are always welcome at the Y.M.C.A., Crouch End, on Friday evenings.

South Eastern

Extra strong thermal activity down south at Ashdown caused **BRIGHTON** fliers Ian Lucas and Alan Mussell to lose models O.O.S. in spite of otherwise efficient dethermalisers! The Boyall brothers will be at the Trials in Wakefield, in fact all of the Area reps in Power and Wakefield, and a third of the A/2 finalists hail from Brighton. Using his *Kismet III*, Alan Mussell collected the Charles Power cup on May 6th, flown in conjunction with the Barnley.

Rodney Way leads the poll in the **SOUTHERN CROSS** Club Championship and remember my remarks on the coach business last month: Well they couldn't make to the Nats, and the only scheduled coach trips for the year are to be to the Farnborough display, and the All-Britain at Radlett.

Southern

J. Manville, of **BOURNEMOUTH**, topped the Area Eliminators for both A/2 and Power, which is some achievement, and he earned second place in the S.M.A.E. Cup. The club was beaten by **SOUTHAMPTON** in the Farrow Shield results to make matters even.

East Anglian

Enthusiasm is on the way up—and a Miss Glenda Cox placed second in the **THAMESIDE** club results for the Pilcher with her first model (maybe the two items go together). Shaker of the month is that Mick King placed top of the Area Wakefield Eliminator results with his first ever Wake., knocking up 14 : 15. Bet it appears as a Contest Kit!

South Midland

Remember when in the rarly days before the corners were rubbed off team race organisation, the finals always took place after dusk as the sands of time ran low? Team Racing is now much more cut and dried, but swiftly taking its place as a day-long event is Combat. At the **HIGH WYCOMBE** Team Race Rally, Combat attracted around 40 entries of which a good dozen were real "go and get 'em" types. To achieve any sort of decision as to who would be winner (they all deserved 1st place!) each of the semi-finals and the final were four-man affairs that provided a tremendous climax to a fine day of racing. Oliverts and AM 25's, 35's appear to be the combat favourite power plants, and silk or nylon covering essential. Congratulations on your weather, and the meeting High Wycombe! There's a new club at **WELLINGBOROUGH** called the **QUEENSWAY AND D.M.A.C.**, which meets every Monday at the clubroom, Kings Street, nr. Park Road. Members are openly welcomed.

Midland

BELPER & D.M.A. & E.C. write to assure me that my assumption was in error when I suggested that the Club *Thunde-bing* had been trodden on. I learn it was genuinely downdrafted into a need for repairs. Interest in full-size gliders is on the increase following Secy. Anthony Brookes getting his "A" and "B" Certs., and also making a 1 size Kirby Cadet III. Wonder if they'll have a gliding holiday as advertised, I thoroughly recommend these holiday flying courses to all aeromods.

Contest fever has hit **BURTON-ON-TRENT M.A.C.** following successes last season and D. "*Khamiseen*" Illesley is back out of the R.A.F., flying a 10 ft. R/C glider he designed. D. Bailey has another of these monsters that have to be towed up by car! The latter man also believes in flying fast in combat—uses an ETA IV in a flying wing—but where do we find the combat events for 5 c.c. Mr. Bailey?

Ten minute OOS by Alan Sisson's *Marauder* collected the **HEANOR & D.M.A.C.** glider trophy and you guessed it—no d/t and no address—will they never learn? Encouraging news is that mid-week free flight meetings are organised. I wonder how many other clubs do this.

Northern

Travelling 400 miles on the round trip **HEATH** Aeromodellers enjoyed their day at High Wycombe, reaching the finals in both t/r classes, and their airspeed was more than appreciated by the Southerners, take it from me. The number of over 100 m.p.h. class "B" racers to be found at the rallies this year must go well into the twenties.

STOCKTON & D.M.C. rejoice in their victory over **PUDSEY** in the Area knock-out contest, and with accent on rubber Messrs. Chambers & Robson did well to come 3rd and 12th in the Gamage Trophy. Second in the same contest, was I. K. Cartwright, the rubber ace of **HULL PEGASUS M.F.C.**, poor visibility unfortunately clipping the actual durations. There's a big interest in power, and a handicap contest where the sportsters get a chance of whacking the high-climb wizards is planned. Hull beat **BRADFORD** in the knock-out trophy, but I see the familiar Eckersley/Lanfranchi/Collinson trio at the head of the Area Power Elims., to keep the Bradford flag flying.

North Western

There are 22 in the **HYDE M.A.C.**, and after repeated offers to allow others the use of their field (not taken up), they have now put up the shutters and made it a Hyde exclusive. August rally date for this club will be sponsored by a manufacturer—I wonder who?

J. O'Donnell heads the Area A/2 Elims for **WHITEFIELD**, a 58-in Power and 4th in Wakefield, so he's due for a busy Trials. Second to him in A/2 was Garth Evans of **CHEADLE**, one of six from that club to qualify for the Trials including Ian Thomson, who is doing well in Wakefield. Unfortunately, Brian Faulkner misses the trials by just one place—which shows how tough the competition can be in this Area.

WIGAN M.A.C. are pleased that Bob Baldwyn should be top of the Area Wakefield Elims with a total only 24 secs. short of ten max's—remember he was in the '54 team at one stage. J. Wilkie tied with Stockton's T. Chambers at 3rd in the Gamage, and a full Wigan contingent had a real bash at the Nationals, more of which, next month.

Leaving the National events for domestic affairs, I learn that the four-cornered **BLACKBURN / SOUTHPORT / SKIPTON** and hosts, **COLNE M.A.C.** was a model losing event, with R. Wand (Skipton) leaving a Frog 150 *Stomper* and D. Barber (Southport) an E.D. Racer, *Semi Miss*, somewhere over the Yorkshire border. Blackburn's Junior C. Entwistle, won glider, but I'm told he's one of those who checks the timekeeper's time with his own watch. Tut tut, no trust in human nature?

SHARSTON M.S. found their comp. sec. top of the Club Championship with his A/1 (fiddle!) and same E. Hellewell is through to the trials in Power. At **PRESTON M.A.C.**, they are mass producing *Mercury Monarchs* and combat models for a big local sports day display on July 14th, and I'm pleased to hear that the few keen seniors are giving plenty of help to the juniors.

Western

A gala meeting in April closed the **SOUTH BRISTOL M.A.C. R.T.P.** season, most spectacular flight being when Jr. Watson added two Jetex units to an indoor team racer. After 10 secs. of continuing acceleration, the line gave up the unequal battle. Perhaps there's a moral there somewhere!

I've details of a green and yellow Mills .75 job found at Epsom on May 29th, and R. T. S. Frankford of 97 Harland Way, Cottingham, Yorks, wants an Italian or U.S.A. pen-pal he can write in foreign languages. J. Satherthaite of The Forge, Coniston, Lancs, also wants a U.S.A. P-p with an interest in control-line. Well that's your lot for this time.

THE CLUBMAN.

Odd tip

Ultra lightweight models, such as Jetex or rubber-powered scale models, frequently call for compound curve shapes which are not realistically reproduced by stringers and formers. For example, Ian Geddes of Eire is an enthusiastic supporter of the Coleopter and he wanted to make the central nacelle of this ring-winged aircraft in some form of "moulded" sheet. First he turned a former, not unlike a spinner: but any shape would have the same application. Then the former was waxed, and model tissue doped over it as in 1. Stage 2 is that odd strips of 3/32 in. sheet are cemented over the tissue, leaving no gaps, and then an outside "sandwich" of tissue or fabric applied. Finally, in 3 the shell is cut through and separated with a razor blade and the result is near enough "moulded balsa".

S.M.A.E. Contests

June 10th
International F/F Team Trials—no venue.

June 24th
Keil Trophy—Open Power.
Frog Junior Trophy—Open Rubber/Glider.

S.M.A.E. Contest Results

Women's Cup

7 *Entries*

1.	Mrs. B. C. Moulton	West Herts	7 : 42
2.	Mrs. M. Filtness	Chester	7 : 10
3.	Mrs. F. Arnold	Bournemouth	6 : 31

S.M.A.E. Cup (2nd A/2 Eliminators)

189 *Entries*

1.	R. Robson (Jnr.)	Hayes	13 : 26
2.	J. Manville	Bournemouth	13 : 21
3.	R. Goodhew	Men of Kent	12 : 49

Jetex

18 *Entries*

			Ratio
1.	I. Dowsett	West Middlesex	28.02
2.	J. Done	Wallasey	25.40
3.	K. Pratt	Ashton	23.00

Farrow Shield (Team Rubber)

17 *Entries*

1.	Croydon	...	35.14
2.	Leeds	...	29.13
3.	Birmingham	...	28.52

NEW CLUBS

QUEENSWAY DISTRICT M.A.C.
L. L. L. Corbyn, 160 Northampton Road, Wellingborough, Northants.

WEST HAM M.A.C.
L/Cadet E. Cook, A.T.C., "The Cedars", Portway, West Ham, E.15.

SECRETARIAL CHANGES

BARNSLEY AND D.M.A.C.
A. Folding, 2 Samuel Square, Gawber, Barnsley.

BLACKBURN WELFARE M.A.C.
T. M. Burrett, 7 Albermarle Close, Brough, E. Yorks.

BRADFORD M.A.C.
J. S. Eckersley, 65 Calverley Moor Avenue, Thornbury, Bradford.

BRIGHOUSE AND D.M.A.C.
D. F. Haviour, 11 Back Charles Street, Brighouse.

COLNE M.A.C.
A. Garnett, 8 Brown Street East, Colne, Lancs.

CRESWELL M.F.C.
S. Poole, 20 Bevin Estate, Creswell, Worksop, Notts.

HULL PEGASUS
E. M. Smales, 39 Bilsdale Grove, Southcoates Lane, Hull.

WALLINGTON M.A.C.
G. Wise, 22 Maldon Road, Wallington, Surrey.

YORK M.A.S.
C. G. Clay, 238 Burton Stone Lane, York.

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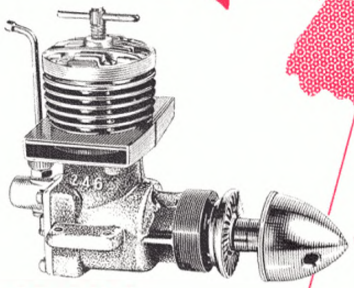

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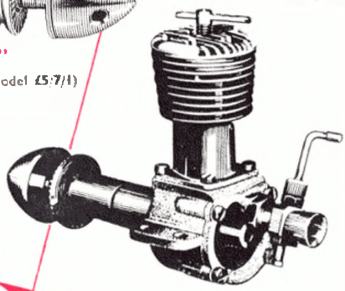

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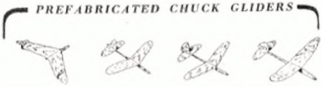

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