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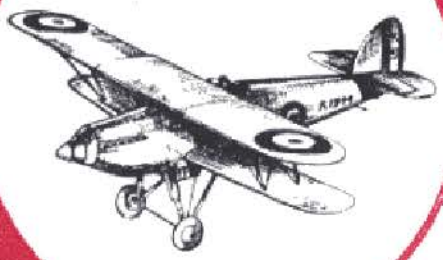

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24" CESSNA BIRD DOG

20" TIGER MOTH

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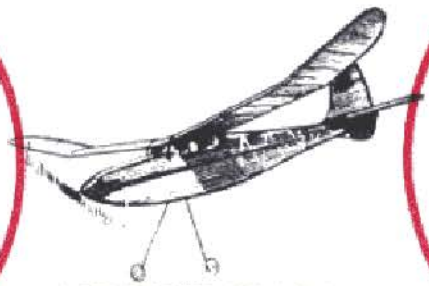

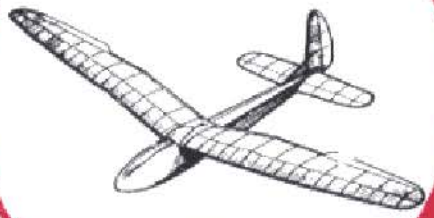

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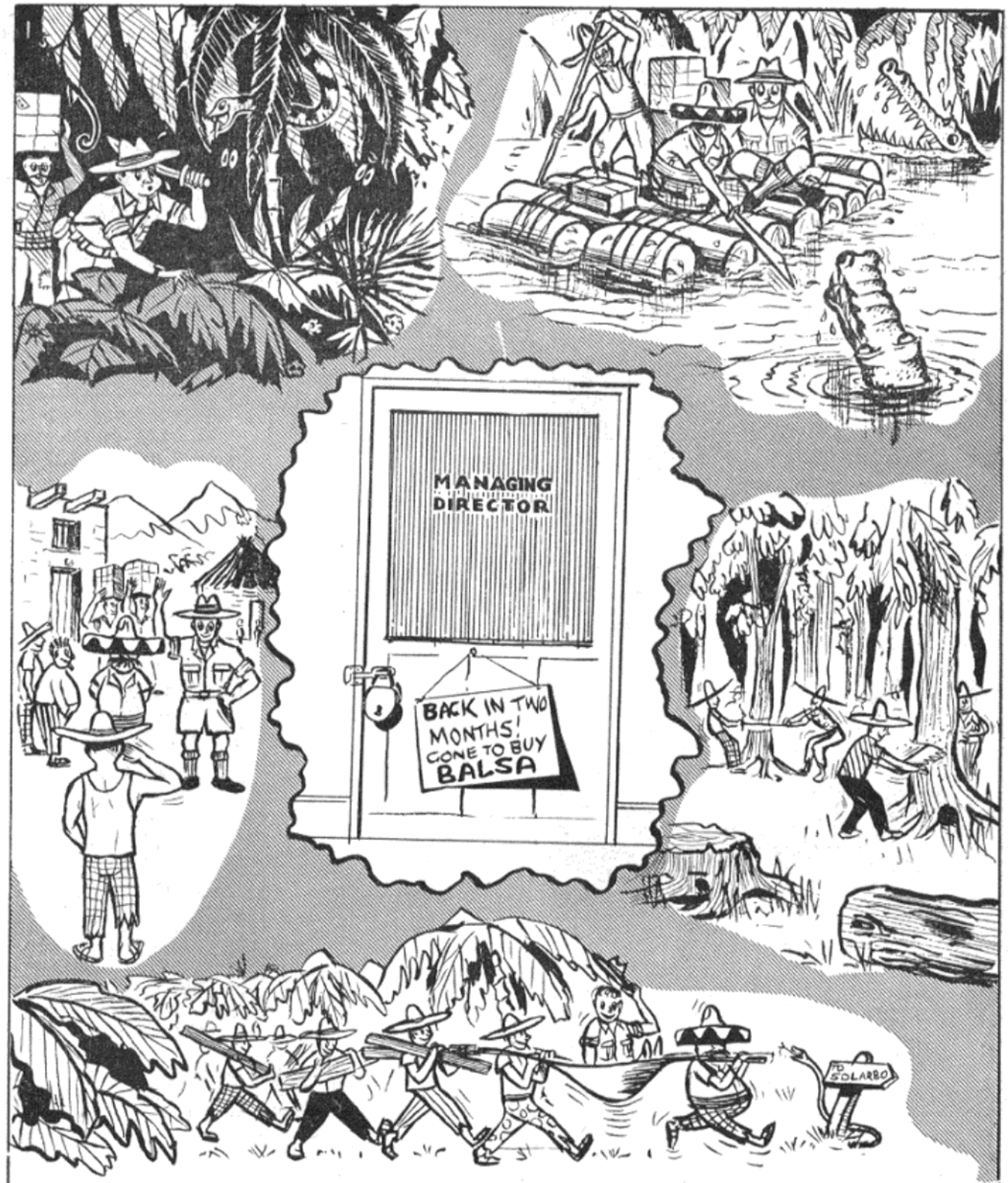

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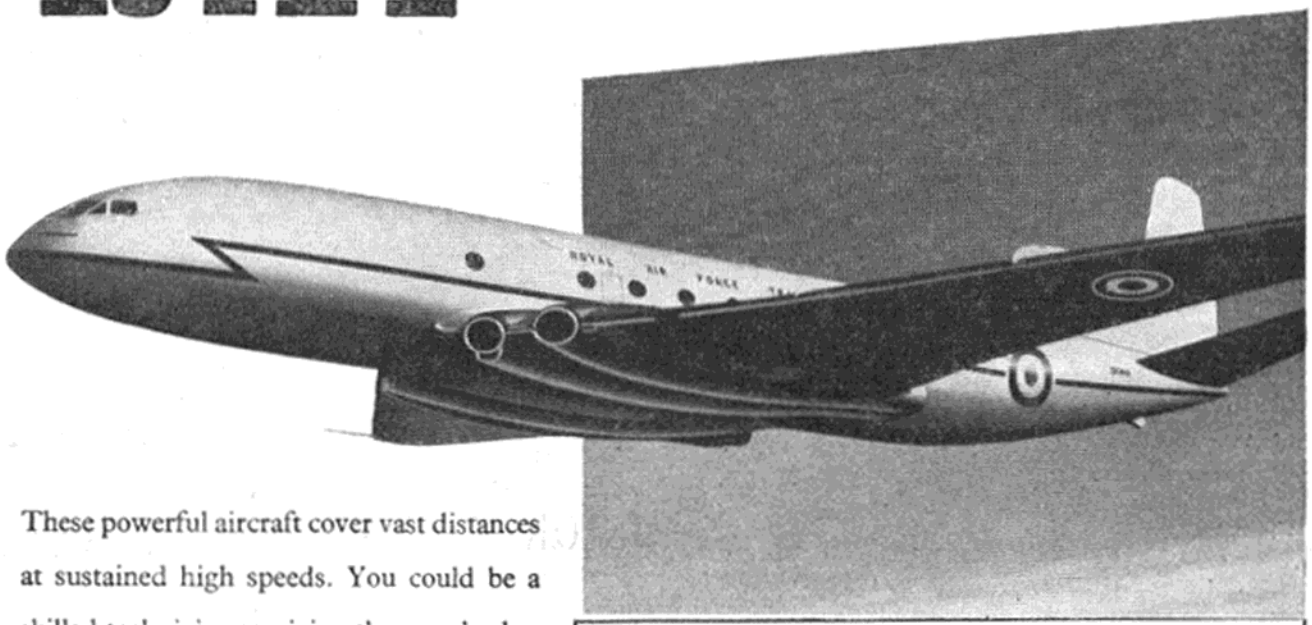

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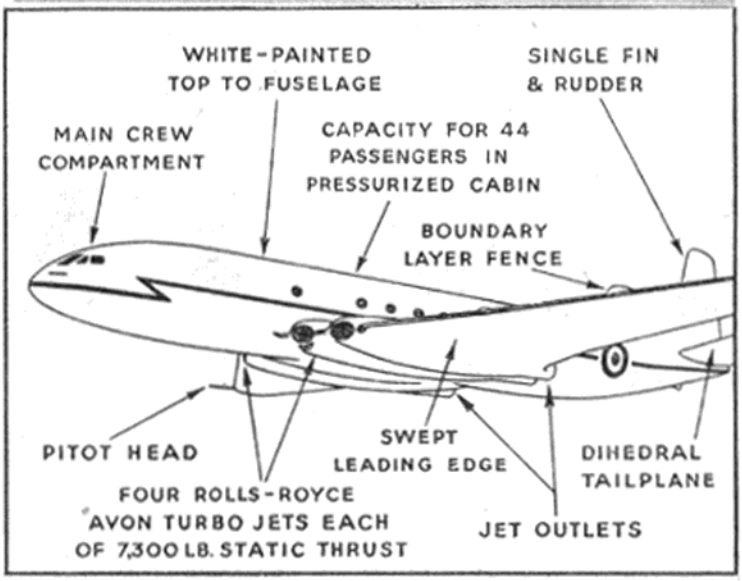

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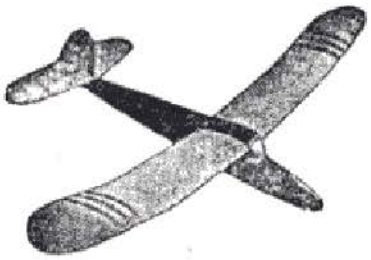

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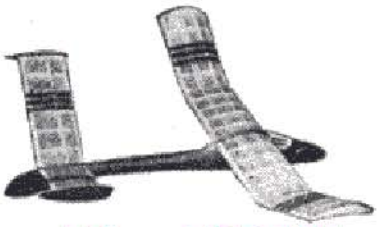

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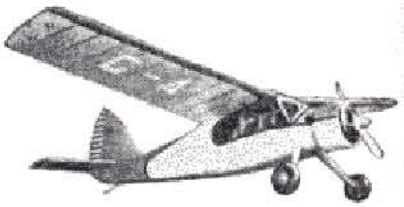

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NOVEMBER 1956 No. 185. VOL. 15

Contents

Cover Story

The Colonial Skimmer is the type of aeroplane at which the Americans excel, and we think you'll agree that Eric Fearnley has done the full-size counterpart proud in his model plans on page 383. We were fortunate enough to be on the spot when the model made its first-ever flight at the Nats., and can vouch for its impressive flying characteristics and in particular, the realistic take-off run. The designer tells us that he intends to try out the model's amphibious qualities, and if any other builder does likewise, we would be pleased to hear of the results.

Howard Levy photo.

THE JOURNAL OF THE SOCIETY OF MODEL AERONAUTICAL ENGINEERS

Published on the 20th of each month prior to the date of issue by PERCIVAL MARSHALL & CO. LTD., 19-20 NOEL ST., LONDON, W.1. Telephone: GERrard 8811. Annual Subscription 20s. 0d. post paid.

Letters TO THE EDITOR

Radlett Rumblings

DEAR SIR,—In the past I have always managed to refrain from writing complaining letters to magazines, but after visiting the All Britain Rally at Radlett on Sunday, September 16th, I feel that I must state my views—and I feel sure the views of many other R/C enthusiasts—on the utter chaos purported to be the R/C contest, which showed complete lack of organisation, and should be brought to the attention of the S.M.A.E. If radio contests are allowed to continue in this manner a serious accident is inevitable.

A fence had been provided for the area but apparently nobody had the time or the inclination to erect it. It was stated in the programme that Major Taylor and Mr. G. Honnest-Redlich were to be the judges and that all events would commence at 10 a.m., but on arrival at the aerodrome I was informed, somewhat ambiguously, that the radio event would take place after lunch. At approx. 2.30 p.m. no one on the contest area had the faintest idea as to the whereabouts of Major Taylor and G.H.-R. At 3.0 p.m. G.H.-R. was seen hurrying towards the contest area. Perhaps these two gentlemen will have some explanation to offer.

I have entered several R/C contests in the past, but on more than one occasion have been forced to withdraw from the contest on seeing the hopeless organisation, and crowds of spectators wandering about all over the area, as I see no point in risking what to me is a valuable model, under conditions such as these.

In fairness to contestants who have spent a lot of time and money on their models—and after all the radio models are some of the most valuable of all—if we must have spectators at these contests, is it too much to ask that some attempt is made to control the crowd and keep them *off* the contest area?

Finally, by the look on the faces of the B.B.C. Television Engineers, they, too, took a dim view of the proceedings.

Yours faithfully,

North Wembley, Middx. J. CURRY.

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

DISQUALIFICATION FOLLOWS WORLD POWER CHAMPIONSHIPS

FOR the first time in its history the S.M.A.E. has taken the drastic step of disqualifying a model flier from participating in any international contests for one year. The flier concerned was a member of the British Power Team which competed in the recent World Championships at Cranfield, and the action was taken because he failed to provide himself with a reserve model, despite the fact that he had signed an undertaking to do so.

It may be considered by some that the decision was rather a harsh one, but we are certain that if the following facts are taken into account, all serious competition fliers will agree that the S.M.A.E. Council's action was both timely and fully justified.

As is well known, in World Championship F/F events each entrant is permitted to use two models in order to make his five flights, and any team member who fails to equip himself with a reserve model is not only at a serious disadvantage, but he is also letting down the rest of the team very badly.

It must also be borne in mind that sending a British team abroad is a very expensive business and the necessary funds have, in the main, to be provided by voluntary contributions to the S.M.A.E. International Contest Fund. The S.M.A.E. would be failing in its duty to the donors to this fund, and to the Royal Aero Club, if it failed to take the precaution of ensuring that every member of a British team was fully equipped before leaving the country.

Quite Contrary

HOW contrary can some model fliers be? We are prompted to ask this question because of a decision taken at a recent meeting of the London Area Committee.

For some considerable time this committee have urged the S.M.A.E. Council to abolish the r.o.g. rule and to propose to the F.A.I. Model Commission that they should do likewise. At long last the Council agreed to submit the London Area proposal to the F.A.I. where it was carried.

However, at the Model Commission meeting at which this decision was made, it was also agreed to make the alterations to the contest rules which caused such a furore that the F.A.I. General Council decided that *the whole* of the proposals carried at that meeting were to be referred back to the National Aero Clubs for further consideration. So the London Area Committee had an opportunity of reviewing the r.o.g. rule, and what did they do? Believe it or not they decided that they did not want the r.o.g. rule dropped after all! They suggested instead that it be altered to one-point take-off.

Fortunately, the other area committees and the S.M.A.E. Council were more consistent; the proposal to introduce H/L in international events is to be resubmitted for consideration at the F.A.I. meeting in December.

* * *

When the F.A.I. rule changes are again discussed by the Model Commission in December, there can be no complaints that everyone has not had chance for a full discussion at both club and area level.

At its last meeting the S.M.A.E. collated all the area resolutions and will propose to the F.A.I. the following:—

(a) That the r.o.g. rule be abolished.
(b) That no change should be made to the A/2 specification and rules.
(c) That no change should be made to the Wakefield specification and rules.
(d) That no change should be made to the power specification, but that the motor run should be reduced to 12 sec.
(e) That the suggestion to hold one centralised meeting to cover all events is not supported.
(f) That model specifications should remain unchanged for a minimum period of four years.

It is now to be hoped that the trouble which arose from the original propositions will lead the Commission to follow the wishes of contest fliers, and arrive at decisions which will be acceptable to the majority.

NO NORTHERN GALA

DUE to the Cranfield meeting this year it was, of course, impossible to hold the Northern Gala on August Bank Holiday as has been the practice in the past. The coincidence of these dates was known some six months in advance, but it was apparently possible to fix only one alternative date which, as it clashed with the already advertised Northern Area Gala, the S.M.A.E. Council wisely decided to veto.

For years the North have been vociferous with their cries that all the centralised events are held down south, yet when they are given the opportunity to have a meeting that could well have become established as a second Nationals, what happens? With the exception of the usual keen few, the whole thing is treated with apathy, and not only from the organising point of view. If it had

not been for the support of keen southern competitors, the previous meetings would have received little more attention than second-rate provincial rallies.

We would suggest that if there is to be a repeat of this year's apathy then the Council might invite applications from any other area which is willing to run this event.

RULE NEWS

ELSEWHERE in this issue will be found the rules for combat and ½A team racing which the S.M.A.E. have accepted as preliminary rules for next year when, if they prove successful, they will be incorporated in the rule book. We will be most interested to receive comments from readers on the rules *after* they have *tried* them. Keep your letters brief, please.

The enforcement of the safety rules governing C/L flying has been very lax, and it is indeed fortunate that the number of accidents to spectators has been so few. One of the main sources of danger arose in team race and combat when, in an effort to prevent damage to the model, and other machines in the event, the pilot would release the handle if a difficult situation arose. To prevent this the Council have added the following rule to Part V of the Contest Rules. *Any competitor releasing the controls during flight, or before the model has come to a complete stop, will be disqualified.*

Good news for the stunt fliers who like big models. The rule limiting the maximum line length to 65.6 ft. for aerobatic contests has been deleted.

And for the radio boys, the technical secretary is to discuss with active R/C competitors the question of revising the scoring for future contests.

Christmas Issue

NEXT month's MODEL AIRCRAFT —on sale November 20th— will be a special Christmas issue, and readers are advised to place a firm order with their usual supplier as the demand is sure to exceed the supply. In accordance with our usual policy, the price will remain at 1s. 6d., which we are sure both the trade and our readers will appreciate. Many special features will be included, together with all the established favourites.

The Flying Eye

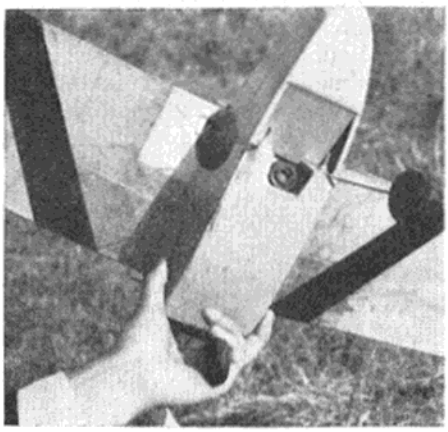
TO offset the more mundane correspondence that is often our lot, we sometimes receive a strange request or a really odd query that gives us something more than next month's issue to think about.

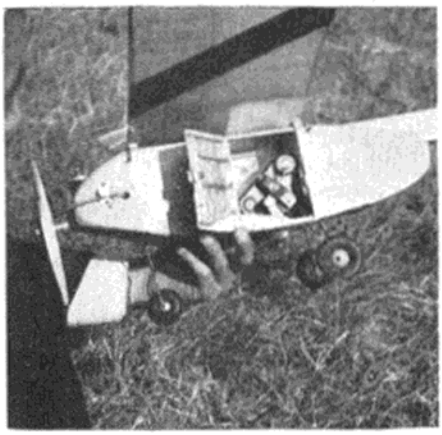
Just recently, a mining engineer working in Tanganyika wrote asking if it was possible to operate a camera from a radio controlled model. He wished to photograph the rather inaccessible terrain where he was operating, and normal aerial photography being right out of the question, he came up with the R/C model idea. Quality of the photographs was unimportant, which was just as well considering all the other problems to be solved! However, we helped him as well as we could, and thought it would be a long time before the same subject came our way again.

But within the next few days we received a news agency picture showing a large German model with a camera slung between the undercarriage legs, and a batch of photographs from a Japanese reader showing a power job with a Baby Brownie (or the Japanese equivalent) mounted in the fuselage.

A Tokyo modeller, J. Matsuno, designed the *Flying Camera*, as it is named, and both received considerable publicity in the National Press. The photos below show how the camera is installed through a hinged door in the side of the fuselage, the lens then pointing rearwards and down at a 45 degree angle through an aperture in the bottom of the fuselage.

The shutter operates after the engine cuts out, which reduces vibration, although with its slow speed of 1/25 second, movement—making the prints blurred—would appear to be common unless, of course, the shutter happened to fire while the model was flying straight and level. Our correspondent did not include any aerial pictures among those he sent us.





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World Championship Speed and A/2 Results

SPEED				A/2 GLIDER			
Individual				*Individual*			
1. Gibbs	Gt. Britain	211	kph.	1. Brems	Belgium	853	secs.
2. Vitkovicf	Hungary	205	,,	2. Amor	Gt. Britain	835	,,
3. Cellini	Italy	200	,,	3. Thoman	Switzerland	821	,,
Team				*Team*			
1. Czechoslovakia				1. Czechoslovakia			

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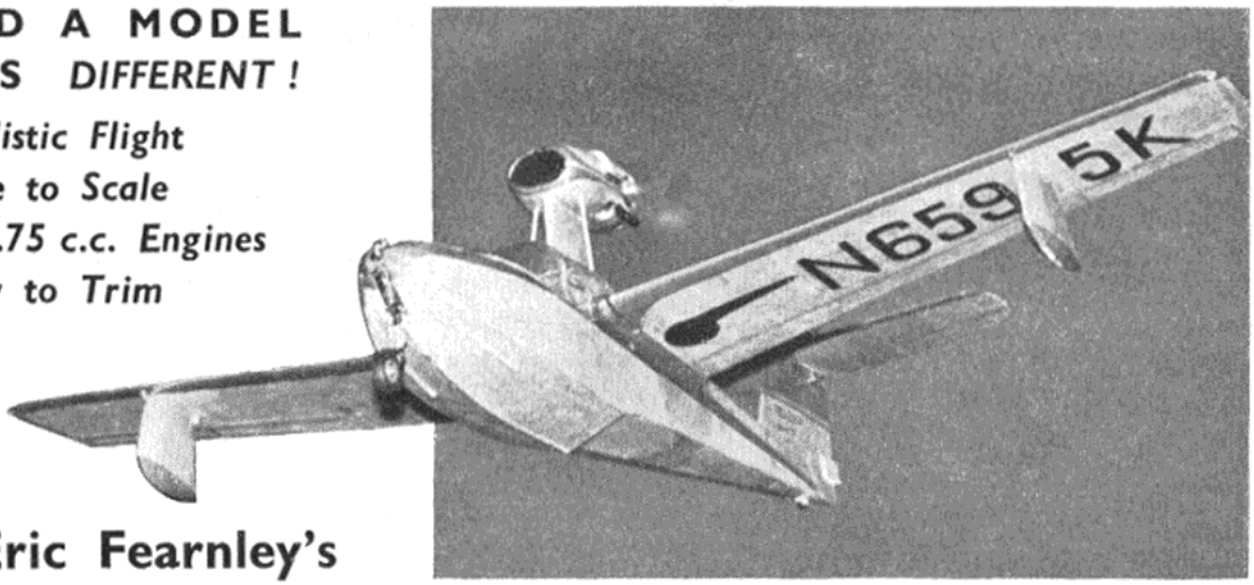
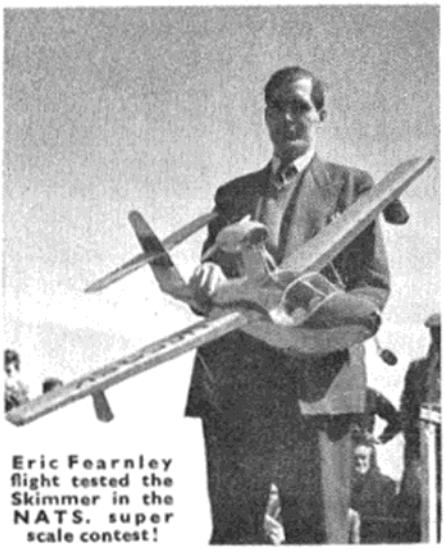


it's Eric Fearnley's

COLONIAL SKIMMER

IF you have had your fill of A.O.P.'s and high wing cabin scale models, here is something really out of the rut. As soon as I saw the *Skimmer*, I had to have a go at it. To me, it had much of the appeal of the *Seamew* about it, and that model is still going strong after three years of sport flying. Building was commenced on the *Skimmer* and as it neared the covering stage, the 1956 Nats. were switched to my own doorstep, as it were. Although I don't think much of competitions, I thought I would enter this model for the Super Scale Section.

The British Nationals is not the best place to flight test a pusher flying boat, with a few hundred spectators and the judges tapping their feet; however, the crowd gave it a rousing send off as it took off and bored its way into a stiffish breeze, as steady as a rock. Few of the people watching knew that it had, in fact, never taken off before, and had not flown with the main wheels in place. As these weigh 3 oz. it had put out my calculations, and I had two dummy runs before the Mills was giving its full power to r.o.g. the *Skimmer*. The trouble was due to the carb. intake facing forward into the airstream, which is aggravated by the venturi effect of the engine cowl. As soon as air speed was gained, the air pressure weakened the mixture. I cured it by fitting a scrap of celluloid to break the air stream.



Eric Fearnley flight tested the Skimmer in the NATS. super scale contest!

The *Skimmer* also had the honour of being the last plane to fly at the Nats. After the 6 p.m. flying ban was imposed I was approached by a group of R.A.F. types, including an officer from Binbrook, who asked for a demonstration flight. My club mate, Bud Hibbitt, who retrieved the model, very nearly ended up in the glasshouse for flying after curfew. He was saved at the eleventh hour by the intervention of the C.O. !

The model is not, generally speaking, a difficult one to build, but there is a good deal of work in it, so don't expect to be flying it in a hurry.

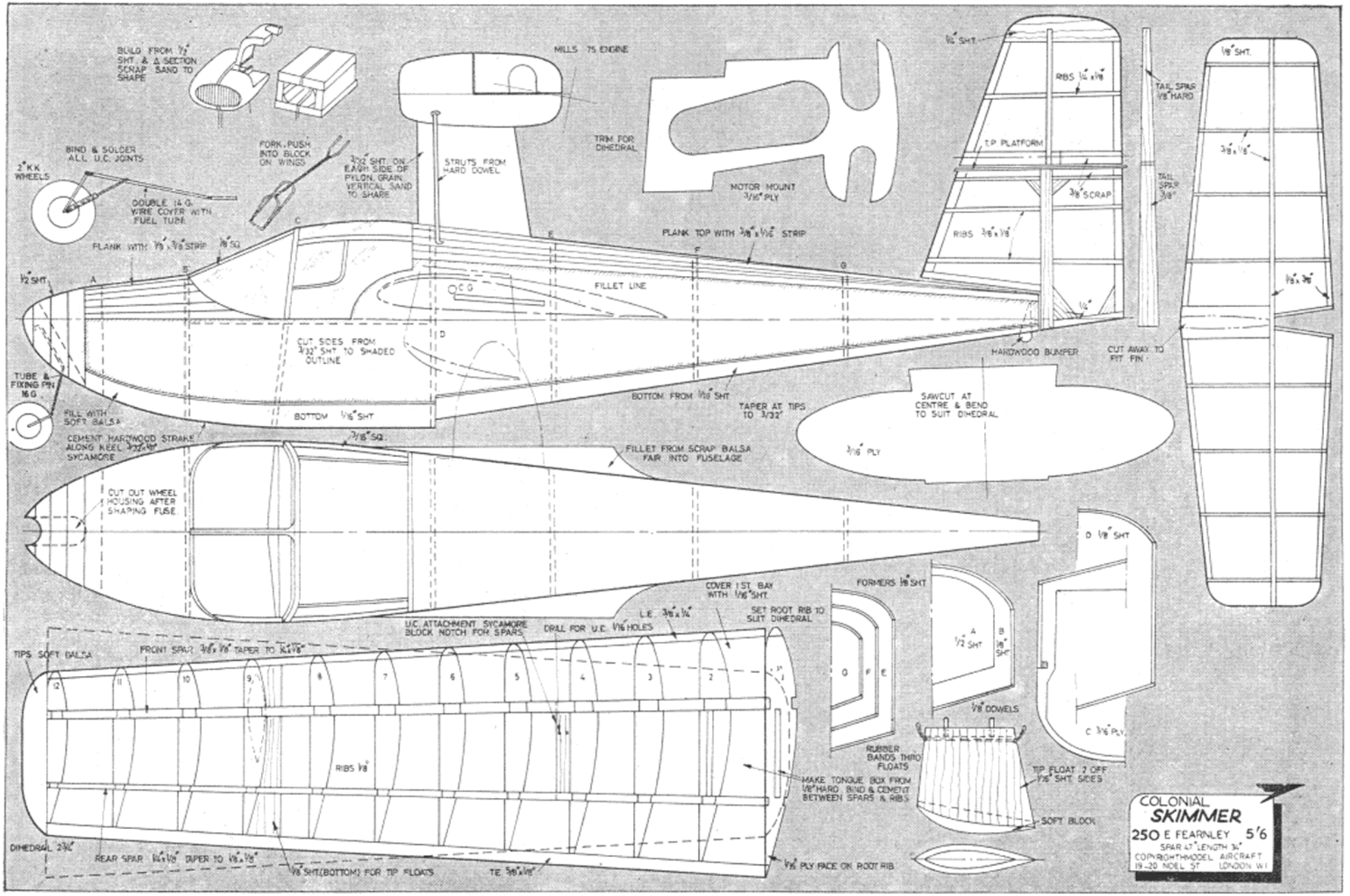
Cut out two fuselage sides from 3/32 in. firm wood. Take care with the slots for the tongue. The formers are all $\frac{1}{8}$ in. except the ply one where the cabin goes, and the front one is of $\frac{1}{2}$ in. wood. Cut these out, also the ply tongue and the motor mount, and assemble by fitting the two sides to the tongue, after the latter has been saw cut and cemented at the correct dihedral. Cement motor mount in place on top of tongue, add the formers either side, and when all is solid, pull in the nose and tail and add the rest of the formers. Finish by planking the top, and sheeting the bottom. If the fuselage gets out of true, steam during this process. If the model is to perform on water, care will have to be taken to seal up the cracks as building progresses.

Finish off the fuselage by adding the front of $\frac{1}{2}$ in. sheet, and add any cabin detail before fitting the celluloid.

The engine cowl is built up with $\frac{1}{2}$ in. sheet as shown. Carve to shape and cut away the hatch for engine access. The Mills 0.75 is recommended as it goes both ways, and obviates a left hand prop. The writer's model weighs 20 oz. without the main wheels and has reserve power. With the wheels added it still has ample power to perform in a scale manner.

(*Continued on page* 384)

FULL SIZE WORKING DRAWINGS ARE OBTAINABLE FROM YOUR LOCAL DEALER, OR BY POST FROM THE "MODEL AIRCRAFT" PLANS DEPARTMENT, 19-20, NOEL STREET, LONDON, W.1, 5s. 6d., POST FREE


BUILD FROM ½" SHT & Δ SECTION SCRAP SAND TO SHAPE
MILLS .75 ENGINE
TRIM FOR DIHEDRAL
BIND & SOLDER ALL U.C. JOINTS
2" KK WHEELS
DOUBLE 14 G. WIRE COVER WITH FUEL TUBE
FORK, PUSH INTO BLOCK ON WING
3/32" SHT. ON EACH SIDE OF PYLON, GRAIN VERTICAL, SAND TO SHAPE
STRUTS FROM HARD DOWEL
MOTOR MOUNT 3/16" PLY
PLANK TOP WITH 3/8" x 1/16" STRIP
FLANK WITH 1/8" x 3/8" STRIP
1/8" SQ.
½" SHT.
FILLET LINE
C.G.
CUT SIDES FROM 3/32" SHT TO SHADED OUTLINE
BOTTOM 1/16" SHT
TUBE & FIXING PIN 16 G.
FILL WITH SOFT BALSA
CEMENT HARDWOOD STRAKE ALONG KEEL 3/32" x 1/8" SYCAMORE
3/16" SQ.
BOTTOM FROM 1/16" SHT
TAPER AT TIPS TO 3/32"
FILLET FROM SCRAP BALSA FAIR INTO FUSELAGE
SAWCUT AT CENTRE & BEND TO SUIT DIHEDRAL
3/16" PLY
HARDWOOD BUMPER
CUT AWAY TO FIT FIN
1/16" SHT.
RIBS 1/2" x 1/16"
T.P. PLATFORM
3/8" SCRAP
RIBS 3/16" x 1/16"
½"
TAIL SPAR 1/16" HARD
TAIL SPUR 3/8"
1/16" SHT.
3/8" x 1/16"
1/8" x 3/8"
CUT OUT WHEEL HOUSING AFTER SHAPING FUSE
TIPS SOFT BALSA
FRONT SPAR 3/8" x 1/8" TAPER TO ½" x 1/8"
U.C. ATTACHMENT SYCAMORE BLOCK NOTCH FOR SPARS
DRILL FOR U.C. 1/16" HOLES
L.E. 3/8" x ¼"
COVER 1ST BAY WITH 1/16" SHT.
SET ROOT RIB TO SUIT DIHEDRAL
FORMERS 1/8" SHT
D 1/8" SHT
A ½" SHT
B 1/8" SHT
C 3/16" PLY
1/8" DOWELS
RUBBER BANDS THRO FLOATS
TIP FLOAT 2 OFF 1/16" SHT. SIDES
SOFT BLOCK
MAKE TONGUE BOX FROM 1/16" HARD, BIND & CEMENT BETWEEN SPARS & RIBS
RIBS 1/8"
DIHEDRAL 2¾"
REAR SPAR ½" x 1/8" TAPER TO 1/16" x 1/8"
1/16" SHT (BOTTOM) FOR TIP FLOATS
TE 5/16" x 1/16"
1/16" PLY FACE ON ROOT RIB
COLONIAL SKIMMER
250 E FEARNLEY 5'6
SPAN 47" LENGTH 34"
COPYRIGHT MODEL AIRCRAFT
19-20 NOEL ST LONDON W1

The Colonial Skimmer *continued from page 382*

With the high thrust it will tend to pull in on power unless upthrust is built in as shown. It is almost impossible to power stall this model, although the tail angle will require careful setting to obtain a flat glide. No side thrust will be required. The prototype will fly into the wind to the last drop of fuel with a straight rudder. It is best to allow for a fairly fast flight, as this increases the efficiency of the tail. This is common to all scale types.

The wings and tail are straightforward. Boxes of hard $\frac{1}{8}$ in. sheet are bound with strong thread and fitted to the wings with plenty of cement, taking care that the wings line up when viewed from the trailing edge during the fitting. If they do not, don't worry, as the boxes can be filed away until they do, and ply inserts fitted to correct. Nothing matters as long as the wings are dead true ! Taper the tongues away at the tips so that as soon as the wings start to come off they are relieved in an up and down direction. This will save the tongue or box from breaking in a crash, as the wings can " give " upwards as they come off. The landing gear is fitted to the wings by a block of sycamore (or similar wood), which is drilled to take the wire fork. Wheels are optional on the model, but the r.o.g. is worth it if you have a hard surface available.

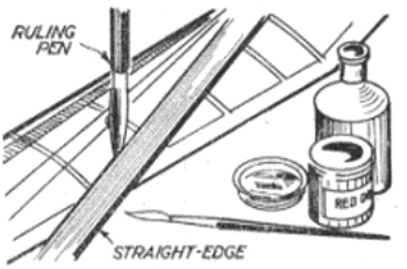
The prototype requires no ballast, in spite of the rear position of the engine. This is partly because there is a good deal of interior cabin detail fitted. The very wide glazed cabin makes interior furnishing almost a necessity.

Hard wood strakes were fitted to the hull bottom to save the inevitable wear when landing on a runway. A small blister of hardwood is fitted for a tail bumper.

The model has an excellent glide from a hand launch. Adjust the tail until it glides without stalling when it is launched vigorously from head high, and we are ready for power. If insufficient upthrust is fitted, it will nose in on full power, but most likely fly if power is reduced ! This makes a change from the usual power stall.

All in all, it is not a difficult model to trim, in fact nothing like as tricky a job as it first appears. The large amount of forward area tends to give stability. The burning question " Will it R.O.W.? " I can't answer yet. It floats tail down in the water, which gives it a high angle of attack early on in the taxi, and Col. Bowden, in his power model " bible " which I have had since 1938, states that it it essential to have the step well forward of the c.g. for good take offs. This being true (and I am quoting an expert) it looks as though the *Skimmer* could manage it. I am certainly going to try it soon !

The spacious cockpit of the Skimmer provides scope for plenty of interior detail and cancels out the need for ballast.



DOPING-ON TRIM

Quite elaborate " trim " to wings, etc., can be applied with the aid of a ruling pen and a brush. The only other materials required are coloured dope, thinners and a straight-edge (which can be a length of balsa strip, preferably at least $\frac{1}{2}$ in. wide).

The pattern required can be marked out on the surfaces to be treated with a soft pencil (e.g. B or 2B). If the pattern is fairly straightforward it is usually sufficient to do this freehand, relying on the use of ruling pen and straight-edge to produce clean edges and straight lines

The technique is to use coloured dope in the ruling pen to draw on the outline, then block this in with colour to complete the trim. The ruling pen should not be used freehand, but always guided by the straight-edge laid over the work. For curved outlines, of course, use a French curve

Ordinary coloured dope will flow easily in a ruling pen—if you follow this technique: lift some dope out on the brush into the lid of the dope jar. Add thinners to make up a fairly running mixture, then thicken with a little more dope. This should be dabbed into the lid in a blob and *not* deliberately mixed with the thinned dope already there.

You will now find it possible to adjust the consistency of the colour picked up on the brush and applied to the ruling pen, depending on whether the brush is placed in the " thin " or " thick " mixture. Balance until the dope will just run freely from the ruling pen. Too thin a mixture will run all over the surface and not give a clean line. Too thick a mixture will not run—so touch the ruling pen with the point of the brush dipped in " thin " mixture. A little practice and you will find that this technique is very effective, and very simple.

One final tip to remember—always clean the pen by rubbing on a cloth after every line ruled, and whenever the dope in it thickens up to the point where it will not run any more. And don't use your handkerchief !

The 1956 All-Britain Rally

IF one accepts that a good way to interest the general public in model flying is to get them along to a rally, then the All Britain is, without doubt, the most successful meeting of the year, although at 14,000 the gate this year was rather less than on previous occasions.

In all, twenty different events were run—no mean feat for any single club to handle—but we do feel, in view of the poor support accorded to some of the contests, that these might be dropped in favour of allowing a greater number to fly in team racing and combat—where many would-be entrants had to be refused.

Robby the Robot, "star" of a recent space opera, was there to instruct visitors on how to fly in the spectator event, while the many booths dispensing everything from kits to ice creams definitely gave a social air to the proceedings.

Although the day was dull, with the wind in totally the opposite direction to usual, everyone appeared to enjoy themselves, while R/C ousted C/L for the privilege of being the last event to finish.

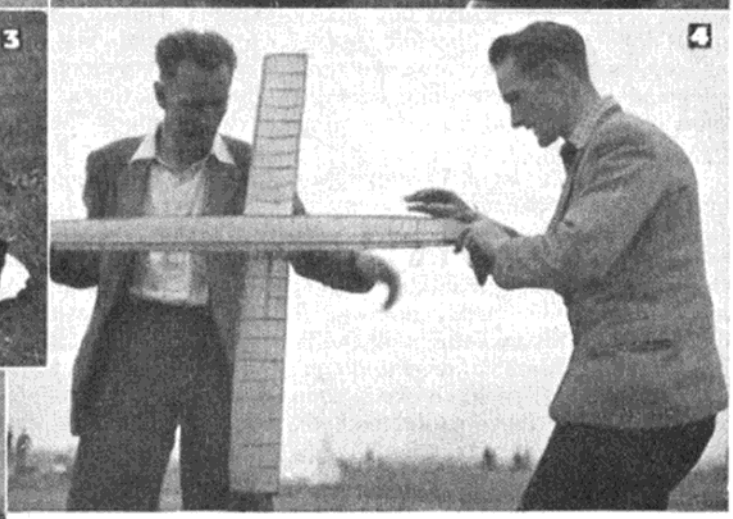
WINNERS

Rubber	J. O'Donnell	English Electric	9 : 00 + 5 : 08
Glider	P. Manville	Bournemouth	8 : 00
Power	D. Posner	N.W. Middx.	8 : 21
Jetex	J. O'Donnell	English Electric	2 : 15
Seaplane Rubber	R. Lennox	Birmingham	6 : 51
Seaplane Power	V. Jays	C.M.	6 : 00
Tailless Rubber	J. Marshall	Hayes	7 : 32
Tailless Glider	R. Way	Southern Cross	4 : 40
Tailless Power	O. F. W. Fisher	R.A.F. Yatesbury	1 : 46
Team Race A	A. Rhodes	Forresters	8 : 27
Team Race B	D. Walker	Enfield	7 : 52
Combat	W. Wood	Derby	
Concours Scale	F/O. E. H. Norman	R.A.F. Abingdon	
Concours Non-scale	E. W. Evans	Northampton	
Clipper Cargo	J. Marshall	Hayes	
R/C Stunt (Rudder only)	Cpt. E. Carroll	U.S.A.F.	
R/C Stunt (Multi Channel)	E. Hemsley	Bushey Park	
Aeromodeller Trophy	R. Lennox	Birmingham	
Model Aircraft Trophy	J. Marshall	Hayes	


1


2


3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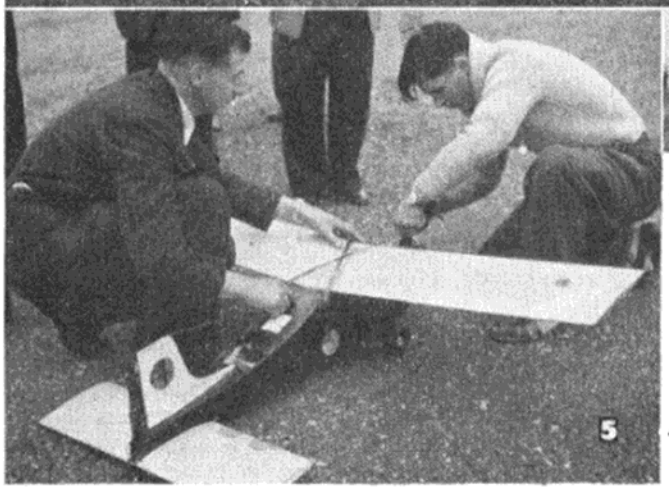
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1. F/O. Norman, of R.A.F. Abingdon, won first place in the concours with this beautifully made "Avro Tutor," with which he had already gained a silver medal at the recent M.E. Exhibition. Judges Peter Bugge (D.H. Test Pilot), Sqdn. Ldr. H. G. Hazledon, (Handley Page Chief Test Pilot) and Grp. Capt. John Cunningham (who needs no introduction) give the "Tutor" a good going over.

2. The Templeman brothers of Sidcup, were flying their Oliver-powered flying wings in the Combat.

3. Another fine scale entry was Cpt. Milani's "Auseldo SVA5."

4. Fred and Reg Boxall, of Brighton, are to be found with their glider and rubber models at any major contest.

5. B. Hartridge, of North Kent Nomads, prepares for his flight in the Rudder-Only R/C Comp, where he placed 4th.

IS EVERYTHING UNDER CONTROL?

— OR —

"WILL YE NO' COME BACK AGAIN?"

Being a light-hearted account of four years' practical experience of an R/C enthusiast, and some of the lessons learned thereby.

by Harry Stillings (who also did the drawings)

WHILST it is right that modellers, like all enterprising folk, should ever be looking forward in their efforts to improve their standard of flying, it is a good plan to pause occasionally and look back over the past. The lessons learned in the hard school of experience are worth a ton of theory, but many of us fail to obtain the full benefit of such experience because we tend to be impatiently straining forward most of the time and forgetting what has gone before.

I first turned to R/C some four years ago, after a lengthy apprenticeship in all forms of model flying (except C/L). Being a F/F adherent the idea of *tethering* a model seemed all wrong to me, and, anyway, I easily get giddy. I have had my moments in power and glider contests, and strove patiently for a time with the intricacies of rubber motors, but my true love was sport flying. One of my earlier favourites was a semi-scale biplane powered with an E.D. Bee, which logged many hours of enjoyable flying and is still airworthy after nearly eight years' valiant service.

My ultimate aim, however, was always controlled flight, and although I knew nothing about radio as such, I finally took the plunge and started building my first R/C model. This was the well-known Mercury kit, the Aeronca *Sedan*, and although it is an excellent model, I had at once betrayed my lack of knowledge by choosing a fairly intricate scale design when I should have picked on the simplest, plainest form of model I could find, so leaving me free to concentrate on the aspect I knew little about—the radio.

However, I persevered, and eventually had successfully finished the model and manoeuvred the various bits and pieces of radio gear inside, and made my way to the flying field. Conditions were all wrong for a first-ever attempt, with a blustery wind which was quite strong at times. But fools rush in where angels and experts fear to tread, so I carefully set about doing all the accepted pre-flight checks. First I tuned the receiver at 100 yd., then walked on with the model while my assistant keyed the transmitter, until I was a good half-mile away. The receiver was still faithfully following the signals at that distance, and I turned and retraced my steps.

So far, so good. In fact, very good! In spite of my rawness, I had, at least, made certain that I would have ample range, and had curbed my impatience to get into the air sufficiently to ensure that I could count on at least half a mile without losing radio contact. And, with a beginner in R/C, that's often the distance he finds the model only a minute or two after launching! Next I tested the equipment with the motor going full out, and again the model passed the test without fault.

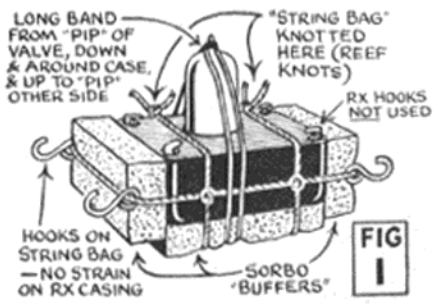


FIG 1

The next step was to test-glide the Aeronca. After some searching about, we managed to find a hollow where the wind was less troublesome, and with some trepidation I ran a few steps and launched! Joy of joys!: it didn't nose-dive or stall, and as far as we could see in the short distance of the glide, kept a reasonably straight path. Now, I felt, I had done all that could be expected of me in the way of preparation, and back we trekked to the launching-point. The wind tore at us as we came up on to the higher ground, and if I had been wise I would have decided there and then that now was the time not to try my first R/C flight but to pack up and go home.

However, by continually telling each other, in a casual sort of way, that the wind wasn't half as bad as it had been earlier, we finally succeeded in kidding ourselves that conditions were practically ideal. Up to this time I had acted strictly according to the book, and made painstaking tests to ensure that everything was working as it should. But now I made my first big mistake. In the confident expectation of long flights of the 15-20 min. variety, I had installed a massive fuel tank

of about 100 c.c. capacity; this would not have mattered had I remembered that my first few flights should be of only two minutes or so's duration, and limited the fuel accordingly. But it is always the obvious that is overlooked! Chatting merrily to my companions, I went on pouring in the fuel until the tank was nearly full, and started the motor. Pre-flight radio check was run through, and (with my heart in my mouth) I launched the model on its first-ever flight, and scampered over to take the button from my assistant.

The Aeronca got away to a good start, and I felt all would be well. After a few seconds, however, she started to turn to the left on neutral rudder (I had not off-set the motor to counteract torque) and I realised with horror that my first turn would be left. It sounds incredible now, with four years' button-bashing behind me, but I was literally frozen with panic and just couldn't think what I should do. Sensing impending disaster my companions were equally loath to offer advice, and in any case, they knew even less about R/C than I did, which is saying something! So we all stood and watched for about half a minute, when some semblance of reason returned to my bemused brain, and I realised that I should have to do something pretty soon, as the model was being rapidly carried downwind, climbing steadily in left circles.

I gingerly pressed the button, thus giving left rudder, and immediately the model dropped its port wing and started to dive earthwards. Panic again seized me, and I let go as if the button had become red-hot; which was just as well, as this neutralised the rudder, and the model's dive soon stopped, and I pressed again. Gradually the model started to turn right, but I let go too soon, and back she went to her left turn on neutral. This sequence continued, but I was rapidly losing my battle against the wind, and every time I tried to get her back she would finish still further away from the transmitter. By this time the model was 400-500 yd. away, and it was getting difficult to see whether the nose or tail was facing me, and I didn't know whether I was coming or going.

To cut a long (and painful) story short, I lost the battle. The Aeronca went on and on, and eventually disappeared o.o.s. at a height of some 500 ft., with the motor still belting away on its 15-min. fuel supply. It was found the next day, six miles away, with engine and radio stolen and the airframe smashed to pieces—the thief or thieves were never traced.

If I could repeat that flight today, after many hours of successful control, it would present no difficulties, but therein lies the moral of this story. Pressing a button to control a model sounds the simplest thing in the world—but, then, driving a car is easy to an experienced motorist! Compare him with the learner, nervous, apprehensive, and ready to panic at any moment as soon as he gets behind the wheel! Had I used a modicum of foresight I would have limited my engine-run to 1-2 min., when the model would have landed within easy visible and retrievable distance even with no control at all. Also, I should have started off with reduced revs., gradually increasing the engine speed as the flight trim was worked out, step by step.

I never found out, of course, what sort of a glide the Aeronca had, as it was still under power when it disappeared from our sight, but it is the glide which is the criterion in trimming for R/C. Get this right first—fast but flat, and dead straight on neutral, then correct any power-on deviations by adjustment of engine thrust alone. In this way both powered and glide flight are correct. If the trim-tab is used to counteract a turn under power, which should be corrected by thrust-line adjustment, the glide path will be upset. Some R/C exponents purposely trim their models to have a wide turn on neutral both under power and on the glide, on the basis that, if the model fails to respond to signals and is a flyaway, there is more chance of keeping it in sight with a wide turn. There is something to be said for this idea, but it strikes me as a defeatist sort of approach, virtually pre-supposing that our control is going to be pretty unreliable. It is also a great handicap to accurate direction control in flight, especially for approach-work when coming in for a spot landing. A model which can be relied upon to fly dead straight on neutral at all times (in reasonable wind conditions, of course) is far easier to control accurately than one with a natural turn. I have tried the wide-turn theory, but soon decided against it for the reasons stated.

Incidentally, once you have trimmed your model for straight flight, make sure that it stays that way. Key the tailplane assembly so that it cannot shift out of position, and, if a trim-tab is used, either fix it in some way or carefully note the exact adjustment. The engine thrust line will, of course, maintain itself, but if a heavy nose-dive or crash-landing should shift the motor, make sure you return it to its proper position. While on the subject of the motor, do make sure that it is securely bolted to strong bearers, and fit lock-nuts to prevent vibration loosening it. Vibration, when unduly present, is a real bugbear and can cause innumerable radio difficulties.

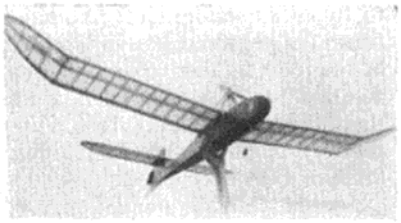
Just a gentle breeze, really

Which leads me to another point, namely, the installation of the receiver. Apparently some R/C fliers manage very well by packing their receiver in a " nest " of foam rubber, but I have never been able to achieve satisfactory results this way. The engine vibration (and although I have used a number over the past few years even the smoothest of them

(*Continued overleaf*)

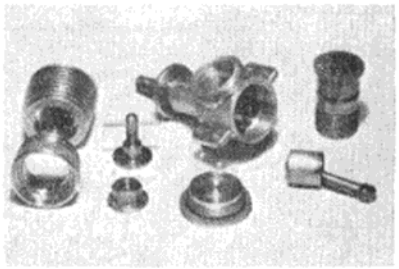
MA Model Quiz

Test your knowledge of model aircraft matters with this interesting quiz. Score 12 points for each complete answer. (Maximum possible score — 96.) A total of 50-60 is fair; 60-70 is good; 70-80 very good; over 80, excellent. Answers are on page 413



1. (a) Who built this record-breaking model ?
(b) What was the record it held ?
(6 points each question)

2. (a) Who was the first Wakefield winner to use a monocoque fuselage ?
(b) What year was this ?
(6 points each question)

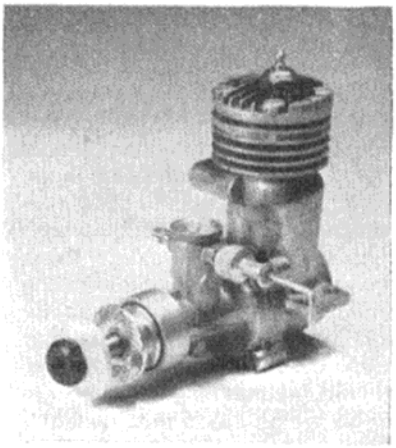


3. (a) Can you name this diesel ?
(b) What was its capacity: 14.9 c.c., 1.96 c.c., 2.02 c.c., or 2.43 c.c. ?
(6 points each question)

4. What are the nationalities of the following noted international contest flyers ?
(a) Pierre Gobeaux (c) Rudolf Cerny
(b) Silvio Lanfranchi (d) Oskar Czepa
(3 points each question)

5. The full-size aircraft of which this is a model has flown faster than any other manned machine. In place of aluminium alloys, its structure includes the use of steel and monel to withstand certain effects encountered at ultra-high speeds.
(a) What is the particular effect against which the designers have had to guard ?
(b) What is the name of the aircraft ?
(6 points each question)

6. What do the following engine manufacturers have in common ?
(a) Davies-Charlton
(b) International Model Aircraft
(c) Henry Engineering
(d) Johnannes Graupner
(3 points each question)



7. Most people can recognise the famous Super-Tigre G.20 2.47 c.c. glowplug engine. Can you give the capacity (in c.c.) and type (diesel or glow) of the following Super-Tigre models ?
(a) G.14 (c) G.24
(b) G.21 (d) G.27
(3 points each question)

8. Who designed the following well-known models ?
(a) Spacer (c) Live-Wire
(b) Dream Weaver (d) Spinne
(3 points each question)

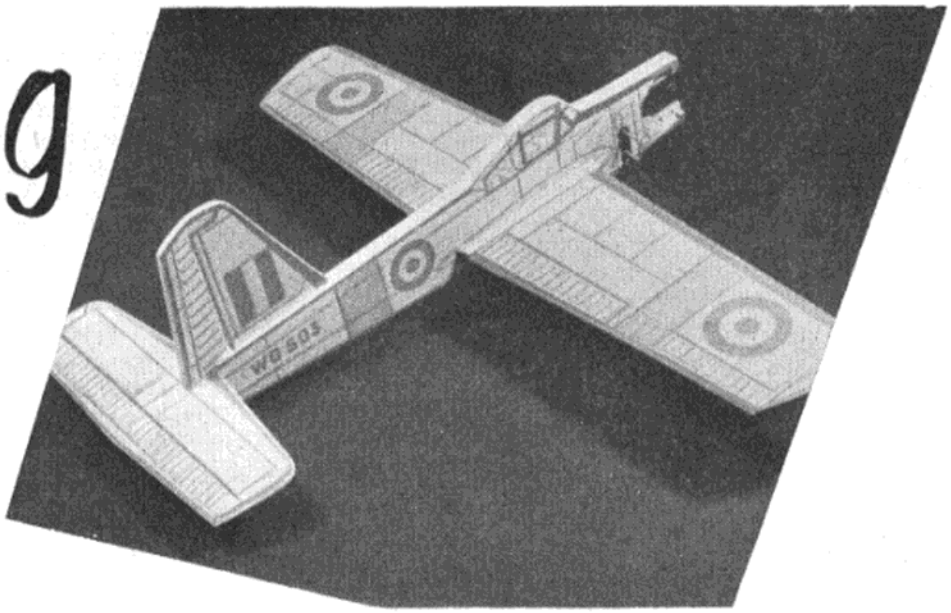
Is Everything Under Control ?—continued

set up considerable vibration through the fuselage) invariably caused relay chatter which ceased immediately when the receiver was slung on rubber bands. So if YOU are suffering from similar trouble, and are using the foam nest idea, just try substituting the rubber-band hammock system, and I am sure you will find this cures the fault. It is virtually impossible for any of the vibration from the high-revving motor to reach the receiver through the suspending bands. As the unit will naturally fly forward on heavy impact, I now use elastic (as against rubber bands) for the rear suspension, as this will stretch only so far and then becomes taut, so limiting the amount of forward travel. In addition, I always mount a foam-rubber " buffer " fore and aft, either on the receiver case itself or on suitable bulkheads, against which the *RX* can strike without harm in a really heavy impact. Still more protection can be provided by suspending the entire receiver in a " string bag," so that there is no direct pull on the casing (which could easily cause cracks or fractures). See Fig. 1.

Although my first-ever attempt at R/C had come to a decidedly sticky end, I had caught the bug, and it wasn't long before I started on my second model. I should perhaps have said earlier that, being a complete novice as far as radio was concerned, I had purchased a commercial outfit (transmitter, receiver and actuator) which by that time had proved itself to be very reliable, even in the hands of beginners like me. The theft of receiver No. 1, therefore, meant that I had to dig into my pocket once more, but as it had been my own stupidity that had made it necessary, I just had to grin and bear it. We can all learn from the mistakes of others (and ourselves!) and these articles are written with that idea in mind. Shortly I shall be recalling some of my experiences with my second model, which enjoyed a much longer life than the first !

Next month Harry Stillings will recount his experiences with the M.A. design of the A.B.C. " Robin," and has some special advice on how to combat the Gremlin menace !

Building a C/Line Trainer



The NEW M.A. BEGINNERS' COURSE PART IX

CONTROL-LINE flight is a development of the tethered flying of model aeroplanes which dates back to the late 1930s. In Britain, for example, r.t.p., or "round the pole," became quite popular as a means of flying small rubber models indoors, in halls or large clubrooms. The models were tethered with thread from a wing tip to a pole fixed in the centre of the room. Meanwhile, in America, Victor Stanzel introduced a system, which he called "G-Line," for flying power-driven models. In this, the line was attached to a pole held by the modeller. Then in 1940, Jim Walker, of the American-Junior Aircraft Co., announced "U-Control," which, instead of being merely a means of flying a model in a restricted space, gave, for the first time, actual *control* of the model via a linkage to the tail elevators.

In place of a single line, U-Control uses a pair of lines connected to a pivoted *control-plate* or *bellcrank*. Pulling on either one of these lines causes the bellcrank to swivel, moving, in turn, a push-pull rod coupled to it. The other end of this rod is linked to the elevator. The two lines, which can be of thread or nylon (small models) or thin steel wire (more powerful models), are secured to the top and bottom of a simple handle. Thus, by tilting the handle forwards or backwards (i.e. in much the same manner as the control-stick of a full-size aircraft) the model is made to climb or dive, to perform loops and to fly inverted. The normal radius for C/L flying is between 25 and 70 ft.—the longer line length being used only for fairly powerful models.

Virtually all C/L models use this, the Jim Walker patented "U-Control" system. The only noteworthy exception is the Stanzel "Mono-line" system favoured by some modellers—notably for speed models. In this, a single wire is used and control is effected through rotational movement of the wire. It is of especial value in speed flying, due to the lower drag of a single wire as opposed to two wires for

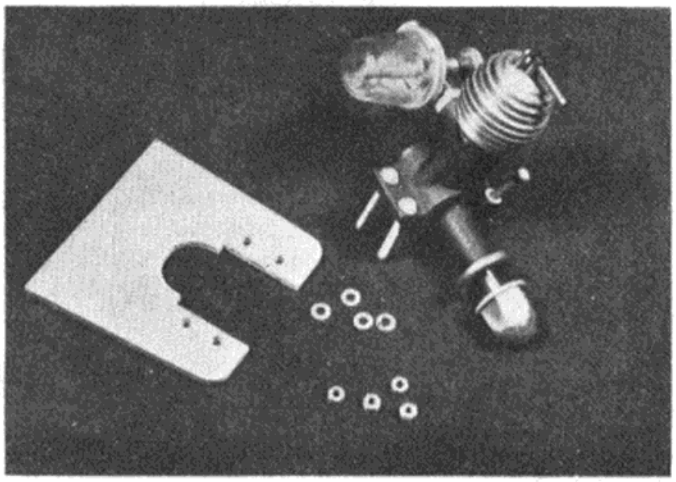


Fig. 1. Trim the engine mounting plate to fit the engine to be used and drill mounting holes accurately.

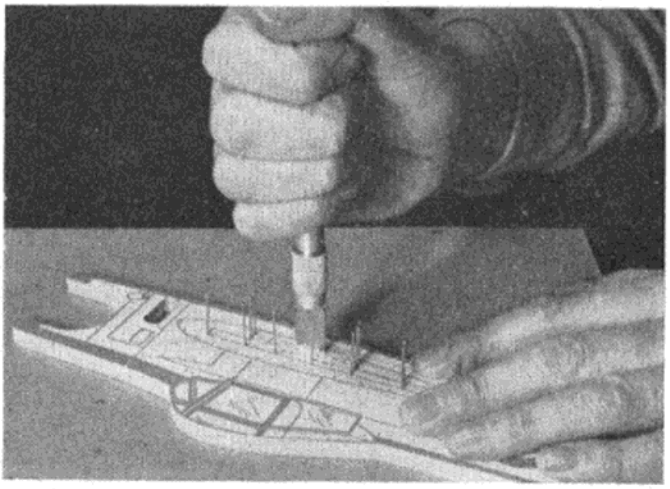


Fig. 2. Cut wing slot carefully, making sure that the tool is held perfectly upright.

the " U-Control " layout.

All C/L models are, of course, quite different from F/F models. For a given engine size, they are always much smaller and very much faster. Except in very specialised types, such as speeds models, it is also usual to find them resembling full-size aircraft more closely than most F/F models. They are always a good deal more solidly made than F/F models.

C/L flying is something that has to be learned. It takes a little practice to get used to controlling the model and the first time you try it, you will almost certainly lose control and crash the model once or twice. For this reason, it is very necessary that you first build a suitable *trainer* model, NOT an elaborate and highly vulnerable scale model, or a hot stunt job or speed model.

Fortunately, there are many suitable small trainer models for which kits are available. These are usually of the " profile " type with solid balsa wings and tail-units and are extremely easy and quick to build. Even if you have never constructed a model aeroplane before, you should have no difficulty in building up any of the kit models of this type.

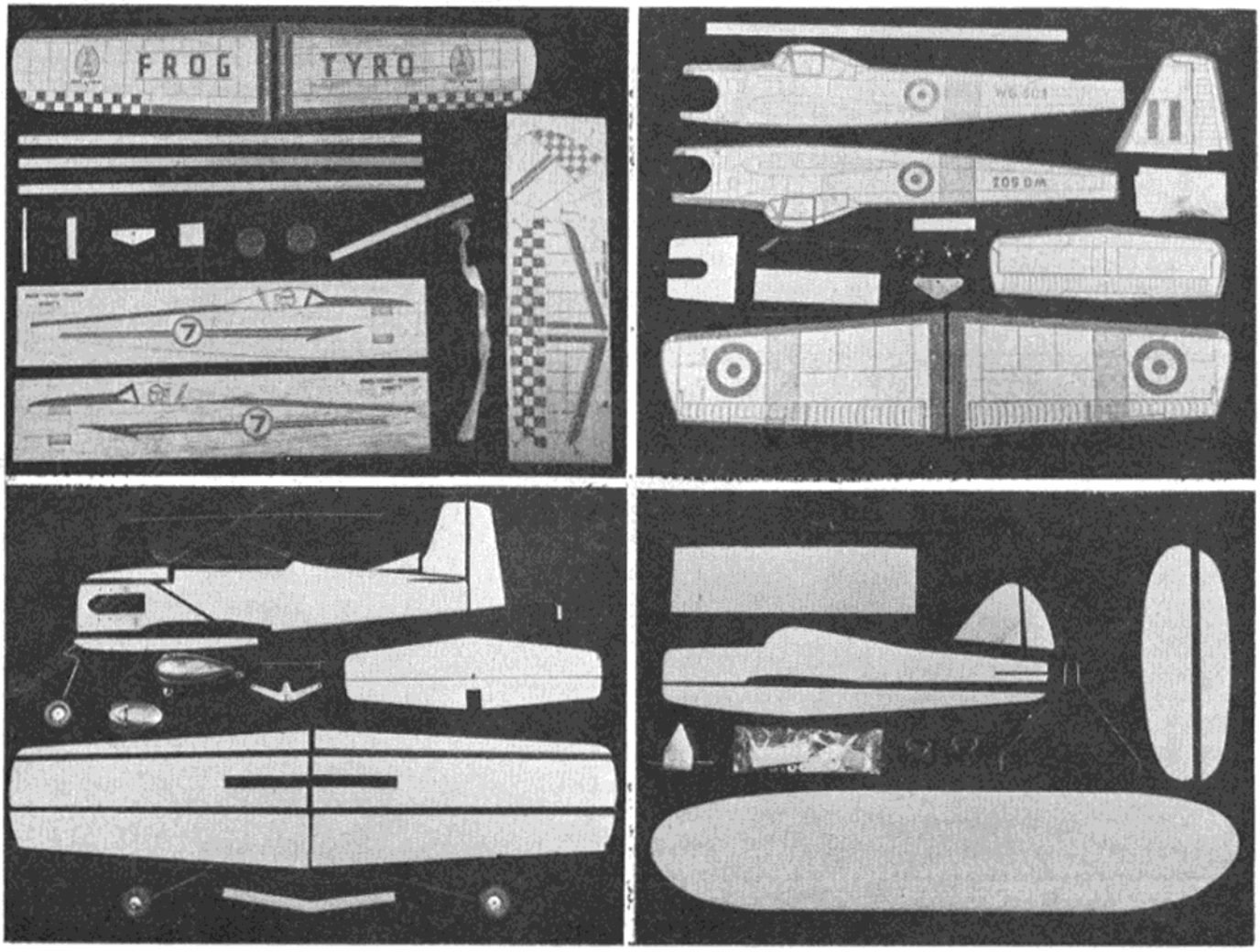
This type of model is offered by a number of manufacturers. Fig. 3 shows the contents of four such kits. The British made Frog *Tyro* and Veron Percival *Provost* are obtainable from any model shop in Britain and in many other countries also. In addition are shown the Jim Walker *Firebee*, popular in America, and a new German model, the *Mira*, which is now available to Continental modellers. Other popular profile models are the Keilkraft *Champ* and the Jasco *Trojan*.

The model we have chosen for our photographic sequence is the Veron *Provost*. This, of course, is a semi-scale model based on the Percival *Provost* R.A.F. trainer aircraft. It has a span of 18 in. and is suitable for the up to 1/10 h.p. motors we recommended in our previous article. The kit is of the prefabricated type, all parts being ready cut out and such items as the steel wire undercarriage struts are ready shaped. It is also " predecorated "—i.e. the balsa panels are printed with R.A.F. markings, etc., so that merely clear doping the finished model will suffice. If desired, of course, the model can, instead, be colour doped in the usual way.

This model differs from some other profile fuselage models in that the " fuselage," instead of being made from one piece of thick sheet balsa, consists of two $\frac{1}{8}$ in. sheets with a simple outline frame between them. In most respects, however, the model is similar to others of this type and the following notes, while not applicable in any detail to other designs, can be regarded as covering models of this type in general.

The first thing to do is to check the plywood engine

Fig. 3. Four typical profile trainers. Left to right, top to bottom: Frog " Tyro," Veron " Provost," Jim Walker " Firebee " and Star-Models " Mira." Note the extensive prefabrication of these kits.



mounting plate against the engine to be used. The motor is, of course, side mounted and, if necessary, the slot in the mounting plate must be trimmed so as to fit the crankcase properly. We chose the Mills 75 motor to power the model and this entailed widening the slot slightly as shown in Fig. 1. At the same time, four bolt holes were bored, using a 3/32 in. drill. Make sure that you get the holes correctly aligned. The best way to do this is to first position the engine and mark one hole. Drill this, then fit the engine in position with a single bolt and nut and mark the other three.

Next, pin the two sides together temporarily and cut out the slots for the wing and undercarriage mounting. The best way to do this is to use a chisel point modelling tool and to first drive pins vertically through the two sides along the lines marking the wing slot. Make sure that the pins are vertical and in line. Using the pins as a guide, it is now a simple matter to cut straight through the two, using a tool such as the X-acto No. 5 handle with No. 18 chisel point blade. (Fig. 2.) Alternatively, a steel-backed " Ever-Ready " razor blade can be used if care is taken to ensure that it is held quite vertically.

The two side panels, still pinned together, may now be smoothed along their edges, top and bottom, with a sandpaper block, to ensure that they are identical.

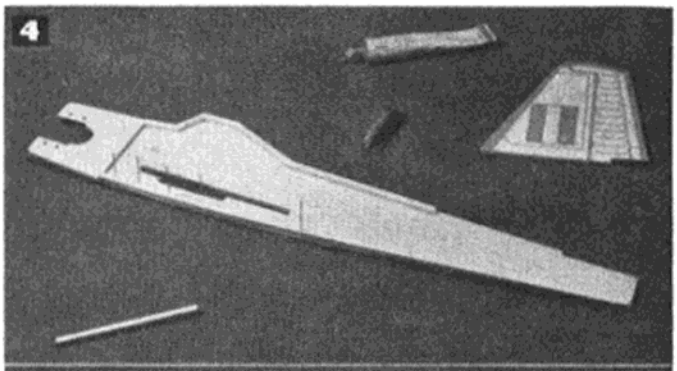
Unpin the two sides and lay the right (starboard) panel on the building board, printed side downwards. Position the plywood engine mounting on the side panel and then pre-cement both surfaces. While these are drying, pre-cement a length of $\frac{1}{8}$ square balsa on one edge and also pre-cement a border $\frac{1}{8}$ in. wide around the edge of the side panel. Always rub the cement well into the grain when pre-cementing.

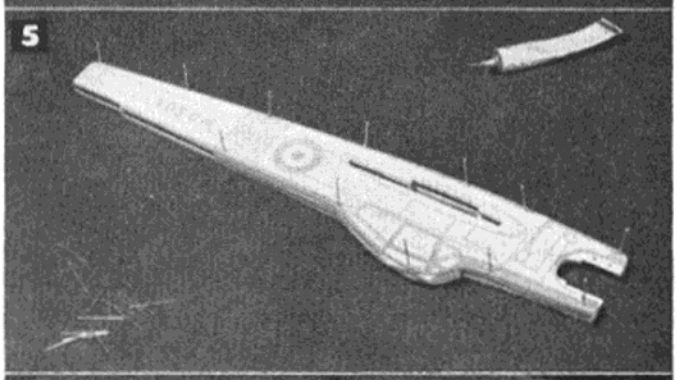
Coat the engine plate again with cement and press firmly into place on the side panel. Now add the $\frac{1}{8}$ square outline strips as shown, pinning the curved bottom strip in position. (Fig. 4.) Finally, add the second side (remembering, of course, to pre-cement bare wood surfaces) using pins to hold the panel securely in position while the cement hardens. (Fig. 5.)

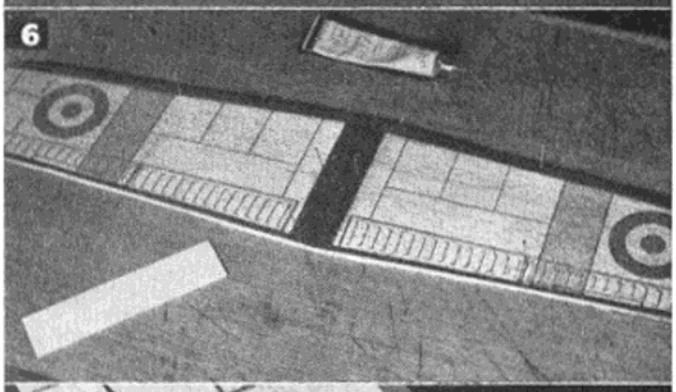
The wing is supplied in two panels which must be joined at the centre with the 4 in. × 1 in. plywood plate supplied. Liberally pre-cement the two adjoining edges and pin one wing panel flat on the building board. When the cement coating is dry, apply the second coat and firmly butt the second panel against the first, pinning this, too, to the building board as shown in Fig. 6.

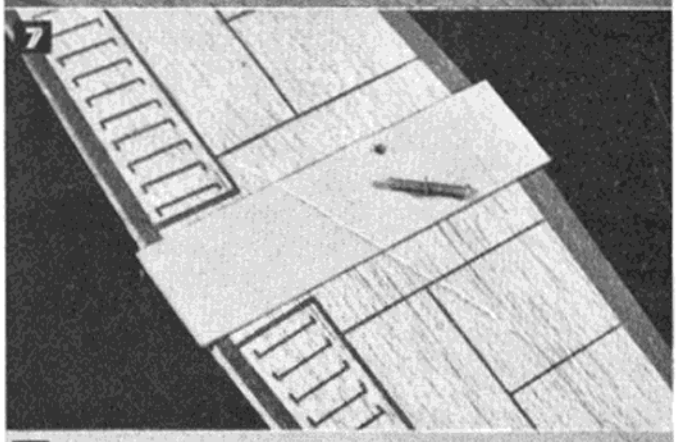
Before the ply plate or gusset is fitted, it should be drilled for the bellcrank pivot bolt and while the wing is drying, therefore, the other plywood fittings can be cut and drilled. These consist of two line-guides, an elevator horn and a small reinforcing plate for the bellcrank pivot bolt which is cemented to the lower surface of the wing. The two holes for the undercarriage fixing bolts can also be drilled at the same time. These are all seen in Fig. 8. Also, drill the pivot hole through the wing in the indicated position.

Liberally pre-cementing the two surfaces, fit the ply plate to the centre section of the wing and allow ample









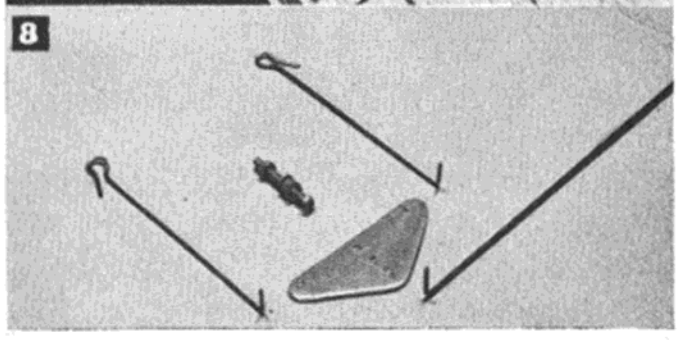


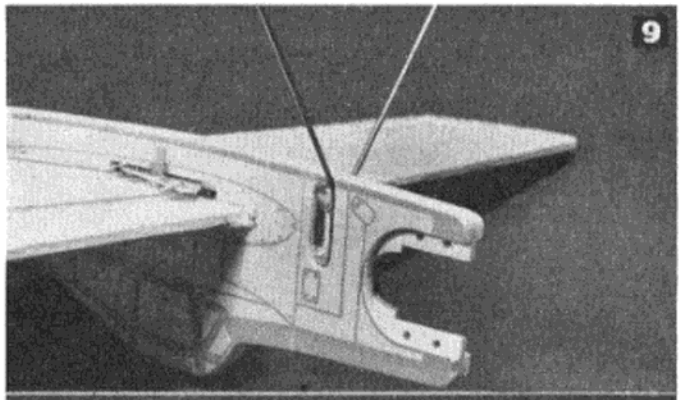
Fig. 4. Fit the motor plate and fuselage panel.

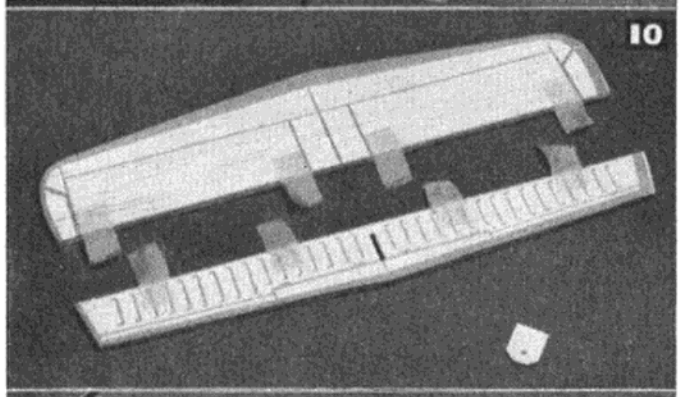
Fig. 5. Fit second side, pinning while cement dries.

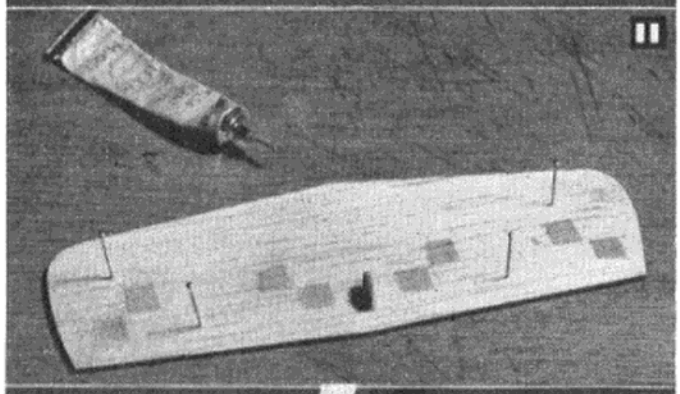
Fig. 6 Butt joint wing panels at centre after pre-cementing edges liberally.

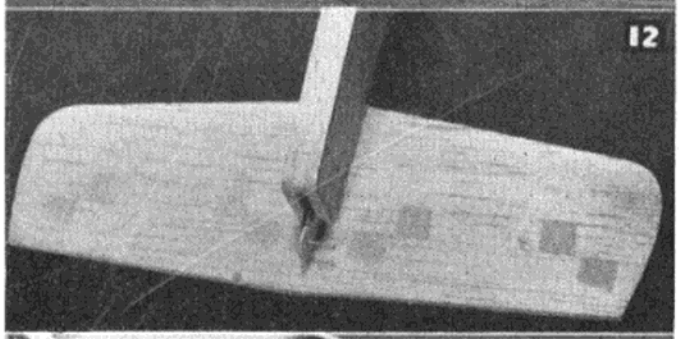
Fig 7. Firmly cement plywood centre section plate over wing joint. Align holes with bolt.

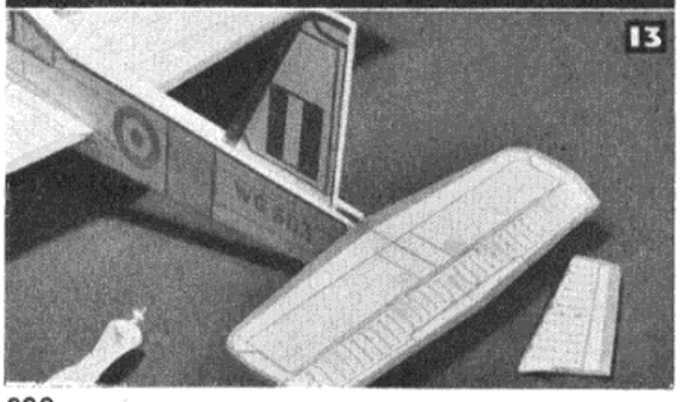
Fig. 8. Parts of the bellcrank assembly showing the two lead-out wires, pivot bolt, pushrod and control-plate.











time to dry before removing from the building board. Make sure that the pivot holes are correctly lined up by temporarily inserting the bellcrank bolt. (Fig. 7.) Then fit the small bottom ply plate and the two ply line guides to the wing tip.

The bellcrank components are seen in Fig. 8. Cement the wing in the fuselage slot, making sure that it is at right angles to the fuselage. Insert the push rod through the fuselage and engage the bent up end with the bellcrank, having previously fitted the two lead out wires to the latter. Now insert the pivot bolt through the wing from the top and secure it to the wing with a nut between the bellcrank and the bottom surface of the wing. Add a washer and nut so that the bellcrank is free to swivel but without wobbling about. Set this adjustment with a second nut locked against the first. The complete assembly can be seen in Fig. 9. It should be stressed here that the bellcrank must move absolutely freely. If the lead-out wires should tend to bind in the fuselage slot, trim away the wood at this point to allow unrestricted movement.

The next thing to do is to fit the undercarriage struts. This is a simple matter and is shown in Fig. 9. The wheels are retained with washers soldered on the ends of the axles, or special wheel retaining clips, obtainable at some model shops, can be used.

The tailplane should be cut cleanly along the hinge line with the aid of a straight-edge. Cut out the slot for the elevator horn also. The tailplane and elevator are connected with cloth hinges as shown in Fig. 10. Tape is supplied in most kits for this purpose. Our personal preference, however, is for silk or nylon hinges, as shown, so as to keep the control system as free as possible. The method of fitting the hinges will be evident from study of Figs. 10 and 11. After cementing them to the top surfaces as shown in Fig. 10, the tailplane and elevator are turned over and brought together with the hinges folded upwards. With the tailplane and elevator pinned down to the building board, the protruding ends of those hinges cemented to the upper surface of the tailplane are now cemented to the lower surface of the elevator, and vice-versa. The ply elevator horn is also cemented in position, using plenty of cement.

The tailplane is now fitted in position on the fuselage. (Fig. 12.) Before cementing it, however, check that, with the pushrod end inserted through the elevator horn, the elevator is level when the controls are neutral. You may find that the elevator is slightly "up" or "down." If so, the tailplane may be repositioned slightly, forward or backward, so as to correct this tendency.

Finally, divide the fin and rudder, again using a straight-edge, and securely cement the fin in the fuselage slot. (Fig. 13.) The rudder is cemented in position with an offset to the right—see heading photograph.

After lightly sandpapering any rough surfaces, such as the underside of the wing, the *Provost* only requires doping to finish it. We suggest two or three coats of banana-oil as very suitable. It must be understood that doping of some kind is essential, otherwise the model will be quickly ruined by oil, blown out of the exhaust.

Fig. 9. The undercarriage legs are fixed with two bolts and nuts to the ply engine mounting plate.

Fig. 10. Tailplane and elevator, showing hinges and elevator horn.

Fig. 11. The underside of the tailplane assembly showing how the hinges connect the elevator and tailplane.

Fig. 12. Cement tailplane to fuselage, ensuring that elevator is level when bell-crank is centralised.

Fig. 13. Cement the fin in position, then fix rudder with offset

Topical Twists

by PYLONIUS

Queer Turns

This column seems to be getting a deuced lot of unfair competition from a new line in comedy acts. One after another they come prancing on to the correspondence pages to the theme of "Those Were the Days." And, before my page is even glanced at, everyone is rolling helplessly in the aisles, including those few stalwart supporters, who at one time could be relied upon to summon up a loyal snicker at my debased attempts at humour.

The newest "Old Time Act" is even funnier than the previous one about the comedian who hoped to fly a pre-war rubber model to a mass audience on Epsom Downs. By the time he got the thing trimmed out he was gratified by the presence of huge hordes of spectators—only to be warned off by the Derby Stewards. The new act has a promising and most witty introduction in which this journal is loudly praised for its full-size features, while at the same time lamenting that such a fine model book should have any silly model stuff in it at all.

This gem is followed by a sentimental little ditty about bashing Old Pylonius on the head with a building board. An idea, which, while calculated to receive wide and popular support, is not, alas, so very original. In fact, its very unoriginality might well give our curious, old time comedian a clue to my identity. I am the bloke who appears at all the model meetings wearing a crash helmet.

Then ensues a captivating monologue on "Progress," full of heart-breaking nostalgia for the good old days when modelling, like the mentality of the old time brigade, was still in its infancy. During the rendering of this piece our Old Timer discards his grey wig and side whiskers to reveal himself in the true character of a Ranting Realist. Everything that hasn't a tall, glassy cabin and long, spindly undercart attached to it is an affront to his puritan eye. So touching was his pathos that I was almost tempted to write a stiff letter to the Air Ministry on his behalf, fulminating at the too functional appearance of the *Hunter*. Surely they realise how much prettier it would look with a nice hand made propeller, tall, elegant cabin and dignified, rigid undercarriage—and how much more like a real plane, whatever that might be.

* * *

While the Realists are thus preparing to bash the innocent head of one model flier with their building boards (a hollow sounding triumph, anyway) it is pleasing to see a handsome tribute being paid to another, more celebrated, functionalist.

Mr. Copland, of Wakefield fame, has been flying models for more years than he cares to remember, unlike myself, who has been flying models for more years than anyone else cares to remember.

I well recall the time I first saw the immortal Bob. This was back in the days when his retrieving was done not in a sports car but sports shoes. At the time I was experimenting with my latest geared job, called, I believe, a Frog Interceptor. I forget the particular rally it was, but, as far as I remember, Mr. Copland won all the events. These, for the benefit of those who yearn for the colour and variety of the old time meetings, were as follows: Lightweight Rubber H.L., Lightweight Rubber R.O.G., Heavyweight Rubber H.L., Heavyweight Rubber R.O.G. In addition there was the stirring grand finale—a downwind steering contest for rubber models of all classes.

Enough to make the All Britain Rally boys green with envy.

* * *

Look—No Plane!

It was, I think, a bloke called Icarus who first got the idea of pinning on a pair of home made wings and taking a header off a high cliff. The project came unstuck in more ways than one, but he did, at least, finish up with a more efficient pair of wings—plus a harp.

Not quite so daring, but equally optimistic, were the Edwardian johnnies who tried to r.o.g. on two feathers and a bicycle. One or two managed to achieve soaring flight—over the handlebars, and though, perhaps, they were not successful in imitating the bird, the same couldn't be said of their sardonic audiences.

I see, though, that the dream of man-powered flight has not been altogether abandoned, and we can look forward to the day when the newly arrived Hollywood star can truthfully say that she has "Just flown in." Details are being taken care of by the Man Powered Flying Club of Suffolk. Their immediate object, we are told, is to find a suitable form of transmission. Arms and legs, of course, have been tried without notable success; so, therefore, anyone possessing extra large, fully ornithopting ears is advised to contact the secretary.

* * *

What a Stoo!

They call it "Combat," I think. As in all public spectacles, the public, like the organisers, haven't the faintest clue about the rules. Anyway, there's four beat up stunters buzzing around, each trailing a festive line in streamers. In the centre there's four blokes engaged in a sort of all-in wrestling match. Which part of the mêlée was the combat side of affairs we were never told, but there's a fattish chap doing a Terrible Turk act in the ring, while at the same time his model is gobbling up streamer faster than a hungry sparrow with a worm.

We unscientific spectators naturally got the idea that the fattish chap was winning hands down, and cheered him on no end. We didn't know this simple game had a complicated set of rules tacked on to it, but after a mass demonstration they did at least give the fattish chap third place.

* * *

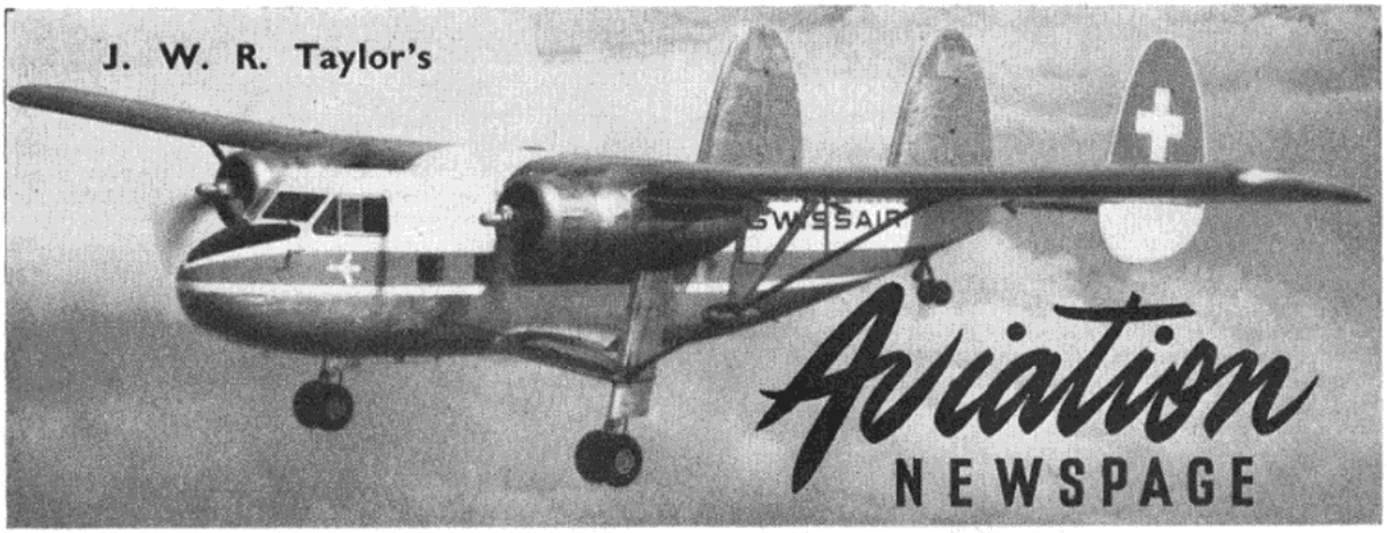
Knight Flying

Model retrieving is an irksome business, and only the dimmer sort of model flier does his own dirty work in this direction. A few years back the eminent flier would be surrounded by a corps of hero-worhipping, air-minded youth. With studied generalship he would deploy his scouts on the down wind fringes of the airfield, launch his model into a strategically placed thermal, and await the outcome of the retrieving foray with detached aplomb. When airminded youth retired from the ranks to go on permanent television watch, the eminent model flier had, perforce, to resort to cheap female labour. In the fashion of those Eastern Gentlemen who exercised the "Ladies First" prerogative when negotiating minefields, so did the eminent fliers push forward their wives and chattels into the barbed and hostile farmer country.

However, these dragooned and ill-used females may draw a crumb of comfort from the excellent precedent which, Mr. Chinn informs us, was set by a Lady of distinction. Whilst her well-born and gently nurtured friends were enjoying an elegant Sunday tea on the spacious lawns of the Manor, her Ladyship would be pursuing His Lorship's rubber models through thicket and briar. On occasion she was obliged to throw all dignity to the winds to shin up trees after the wretched models.

Society eventually revolted against this misuse of a much thought of gentlewoman, and His Lordship was compelled to give up model planes in favour of large, sea-going model boats.

We can only trust that Her Ladyship is a strong swimmer.



GOOD NEWS FOR TOURISTS whose tummies do a Swiss roll when driving round precipitous hairpin bends is that Swissair are likely to buy Scottish Aviation *Twin Pioneers*, to link major airports quickly and painlessly with resorts high in the mountains.

Ideal for the job, the 16-seat *Twin Pioneer*, powered by two 540 h.p. Leonides engines, will unstick in 110 yd. from grass and land in 160 yd. Both distances reduce considerably in a light wind, as I discovered recently on a flight from Prestwick to Turnhouse, Edinburgh. Surprisingly roomy and comfortable, the sturdy *Twin Pioneer* did the trip in 36 min. The return journey by train, with two changes, took over three hours.

Current price for a *Twin Pioneer* is £48,750 to civilian customers. With an R.A.F. order already in the bag, sales prospects look so good that Scottish Aviation have laid down an initial production line of 200 aircraft, with deliveries beginning at once.

* * *

NOSEY LINCOLN shown in the photograph below has been modified to flight test Rolls-Royce's new Tyne turboprop, which is scheduled to power the Vickers *Vanguard* transport. Although first flown only at the end of June, test pilot Rogers had no hesitation in bringing the aircraft low over the airfield at Farnborough with the props of the four Merlins feathered, and then shooting up in a most un-*Lincoln*-like climb on the Tyne's 4,695 horses alone.

By 1963 the developed Tyne is expected to be giving up to 5,500 e.h.p. for a weight of little over 2,000 lb.

* * *

FAIREY TAIL with a difference at this year's S.B.A.C. Display was sported by the little *Ultra-Light* helicopter. Flown originally with just a small rudder, working in the exhaust of its Palouste air compressor, it now has also a horizontal tailplane.

Although official support was withdrawn under economy cuts earlier this year, the *Ultra-Light* is now showing such exceptional performance that the Services would be foolish to let it die. The precision of its handling qualities, now boosted by a remarkable hydraulic cyclic-pitch control system weighing only 32 lb., was shown in a 1,350 ft./min. vertical climb from the back of a lorry and a plummeting 4,000 ft./min. autorotative descent with a last-minute flare-out that left the crowd gasping.

Four prototypes have been built.

Production versions would have a more egg-shaped cabin, doors and longer tail-boom for even better controllability.

* * *

Another **FAST VERTICAL CLIMBER** is Saunders-Roe's *Skeeter* helicopter G-ANMI, with Napier N.R.E.19 rocket units built into its rotor tips, fed from a tank of high test peroxide fuel mounted above the rotor head. Weighing just over 1 lb.

Left: Keeping this Lincoln's four Merlins company is a Rolls-Royce Tyne turboprop mounted in the nose. Machine was demonstrated at Farnborough this year (Shell photo). Below : The two-seat F-100F Super Sabre.

Left: The first Boeing KC-135 Stratotanker.

and small enough to hold in the palm of one's hand, each N.R.E.19 gives up to 25 lb. thrust, raising the *Skeeter's* vertical rate of climb from a normal 230 ft./min. to 1,400 ft./min.

* * *

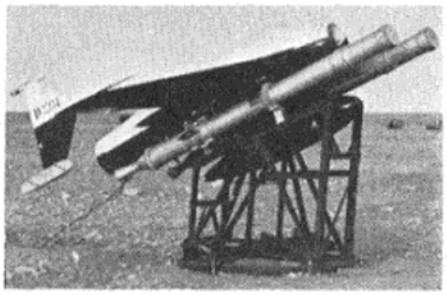
NO MERE TRAINER, the two seat *F*-100*F* version of North American's *Super Sabre*, shown taking off on its first flight, August 12th, can double as an interceptor or fighter-bomber. Fastest two-seater in the world, it has a level speed of around 800 m.p.h. at height and will be used primarily to convert fighter pilots on to supersonic types. Only apparent recognition feature is the longer cockpit hood over tandem seats.

* * *

The **FIRST BOEING KC-135 STRATOTANKER,** which flew on August 31st, looks little different from the *Model* 707 prototype. Its nose is slightly longer and more pointed, probably to house a radar scanner and it has the new-type streamlined refuelling boom and fin-tip probe aerial tested on the 707.

* * *

ANOTHER SCOOP for MODEL AIRCRAFT is the first clear photograph (*below*) of the advanced French *Sud-Est* 4200 surface-to-surface guided missile. Fired from a very short ramp with the help of two jettisonable solid-fuel booster rockets, it can be used to attack targets over ranges up to about 60 miles. Its ramjet engine gives it a cruising speed just below Mach 1, which, combined with its length of only some 6 ft., makes it an elusive target for the enemy defences. It is radio-controlled, with internal telemetering equipment to report its position en route to the target.



OLD MOORE TAYLOR'S prediction in last month's issue that "If any American aircraft is to top the 1,132 m.p.h. record of the Fairey *Delta* 2, the Chance Vought *Crusader* is the machine most likely to succeed," was justified on August 21st when Cdr. R. W. "Duke" Windsor of the U.S. Navy set up a new U.S. national speed record of 1,015.428 m.p.h. in a standard production F8U-1 with full armament of 20 mm. cannon. Speeds in each direction over a 15.1 km. course at 40,000 ft. were 1,018.553 and 1,012.303 m.p.h.

Powered at present with a Pratt & Whitney J57-P-4 turbojet and afterburner, the *Crusader* may need more power to beat the British record. Unlike the faster Lockheed *F*-104, whose chances are probably spoiled by the fact that it would have to decelerate below Mach 1 and back again between runs to save fuel, it remained supersonic throughout the flight and landed with 1,500 lb. of wide-cut gasoline still in its tanks.

* * *

Delegates to the Annual General Meeting of the International Air Transport Association (IATA) in Edinburgh in September were somewhat shaken to see the legend "*Sic* Iatur *ad Astra*" carved over the castle gate. Meaning "The way to the stars," it seems to imply that IATA had a mediaeval counterpart. Or did some ancient Scottish laird plan to build a space-rocket in the courtyard beyond?

FROM THE PAST . . . . . No. 6

The Martin Scout K.III

The Martin Scout K.III, despite its appearance, was one of the most advanced lightweight single-seaters of its time. Built at Elyria, Ohio, in 1918, by J. V. Martin, who was one of the most dashing pilots in Britain before the 1914-18 war, it not only had a semi-retractable undercarriage but was equipped with oxygen and fittings for electrically-heated clothing.

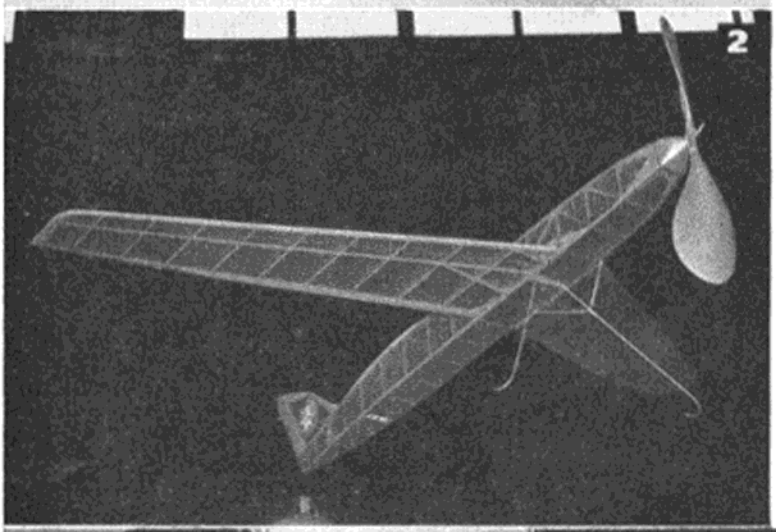
Its rotating wing-tip ailerons were not entirely new, having been pioneered by Bleriot 10 years earlier. But they were much improved, with symmetrical double-convex surfaces and so carefully balanced that very little effort was needed to move them.

The Ackerman wheels, which look as if they were made from old garden seats, were mounted on a cross-axle and V-struts, hinged so that they could be yanked up until their tops were enclosed in fairings on the sides of the fuselage. Other fairings were fixed behind their lower halves.

The K.III fighter was designed for a max. speed of 135 m.p.h. low down and 97 m.p.h. at 25,000 ft. But, when the war ended, the prototype was completed as a small, cheap, sporting aircraft that "could start comfortably from any country road" and was powered by an A.B.C. Gnat two-cylinder horizontally-opposed engine giving only 45 h.p. With 9 gal. of fuel in the centre-section of its upper wing, its endurance was two hours. Span: 17 ft. 11¼ in. Length: 13 ft. 3½ in. Height: 7 ft. 4¾ in. Empty weight: 350 lb. Wing area: 100.3 sq. ft.

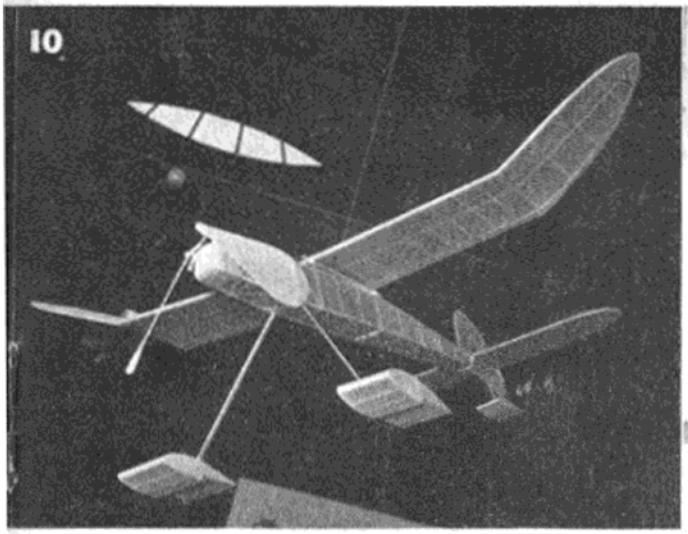
THE MODEL ENGINEER 1956 EXHIBITION

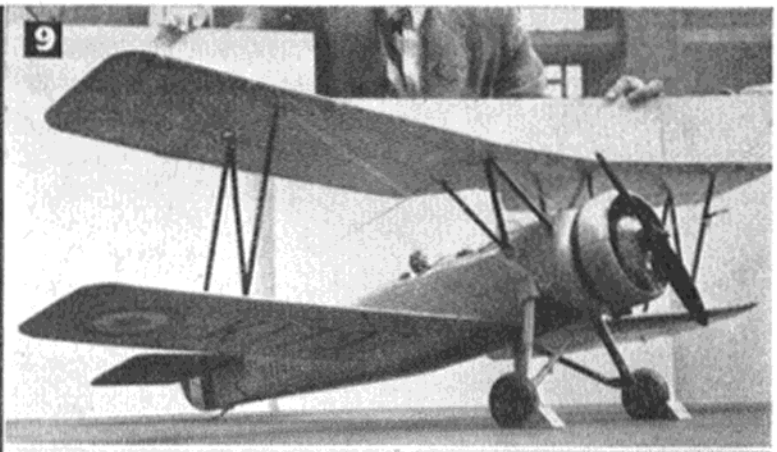
Scale Models in the majority

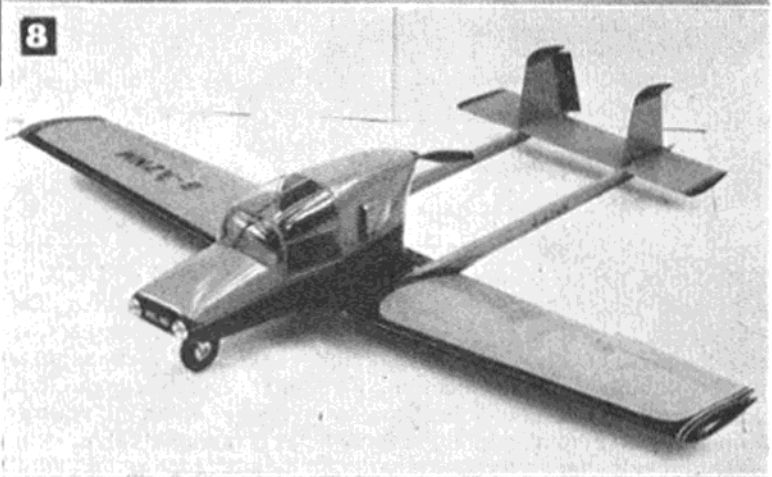


OF the many fine entries at this year's exhibition which we have been unable to illustrate, Dr. F. J. Morley's silver medal-winning collection of ten 1/72 solids, and P. G. Cooksley's authentically "used finish" Bristol *Scout* "C" (Bronze Medal and Bristol Challenge Cup) must be mentioned, as must also Pete Russell's well known *Liberator* and dyna jet-powered V.1, both of which were very highly commended. The MODEL AIRCRAFT prize went to W. R. Stobart's *Merry Miller* autogyro, but although the F/F section was well supported, main interest would still appear to be in scale models of all types.

1. *A worthy Championship Cup Winner—Ronald Chivrall's ¾ in. = 1 ft. scale model of the Sopwith Camel, which featured complete cockpit detail, hand beaten cowling, imitation stitching on the fabric, etc., etc.*
2. *Although entries in the F/F rubber section were few, quality was high and a Bronze Medal wen to W. R. Stobart for his extremely neat flying wing design.*
3. *A feature of the R.A.F. Stand was a modelling section where members, including a W.R.A.F., were at work building models during the exhibition.*
4. *Most outstanding R/C exhibit was without doubt Major H. G. Bell's Auster A.O.P.9, which features all home built radio equipment.*
5. *The same model as it was seen at the exhibition completed in authentic colours. A well deserved Bronze Medal winner.*
6. *As always, one of the main focal points was the water tank, where members of the Epsom M.F.C. put on regular r.t.p. flights with their seaplanes and flying boats.*







7 and 8. Neil Martin's aircraft-cum-car design was without doubt the most original entry, and incorporated a wealth of detail. Of particular note was the fully sprung u/c and neat interior layout.

9. Another Silver Medal winner was F/O E. H. Norman's Type 621, Avro Tutor; this F/F scale model has an outstanding finish and is powered with a 1.9 c.c. "K" engine.

10. W. R. Stobart also entered this lightweight rubber powered floatplane and gained a Highly Commended award.

COMPETITION RESULTS

CHAMPIONSHIP CUP
R. A. Chivrall (Sopwith Camel)

"MODEL AIRCRAFT" PRIZE
(For models built from "M.A." plans)
W. R. Stobart (*Merry Miller* autogiro)

BRISTOL CUP AND BRONZE MEDAL
P. G. Cooksley (Bristol Scout "C")

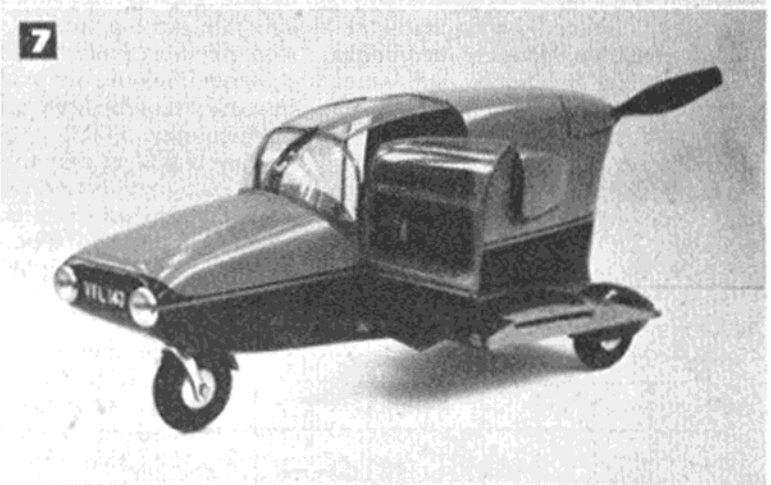
FREE/FLIGHT RUBBER-DRIVEN AIRCRAFT
Bronze Medal ... ... W. R. Stobart (*Arrowhead*)

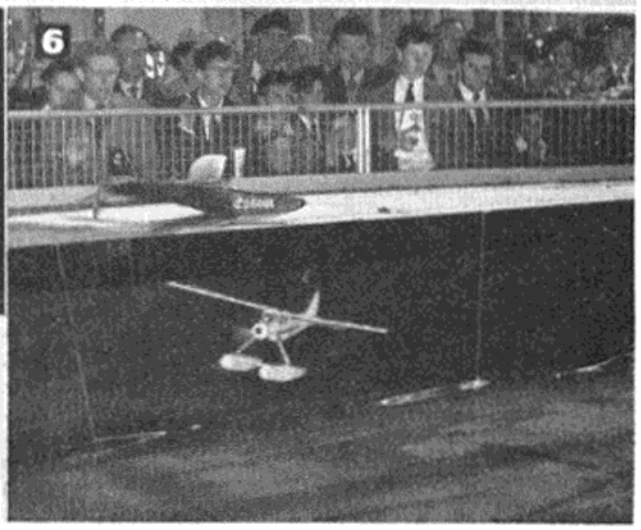
FREE-FLIGHT POWER DRIVEN AIRCRAFT
Silver Medal ... ... Neil Martin (Aircraft/car design)

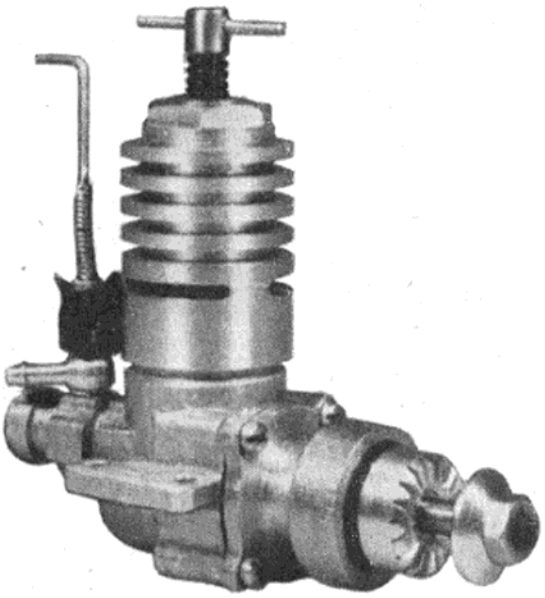
NON-FLYING AIRCRAFT
Silver Medal ... ... Dr. F. J. Morley (ten 1/72 scale models)

SCALE FREE-FLIGHT OR CONTROL-LINE AIRCRAFT
Silver Medal ... ... E. H. Norman (Avro Tutor)

RADIO-CONTROL AIRCRAFT
Bronze Medal ... ... Maj. H. G. Bell (Auster A.O.P.9.)







ENGINE TESTS

THE MK-12c 2.47 c.c. DIESEL

"First authentic test report on a Russian made motor"

SO far as we are aware, this is the first time that an authentic test report on a Russian made model engine has appeared in a Western publication. In this connection, we would express our appreciation to Ron Draper, 1956 World F/F Champion and collector of foreign engines, who kindly loaned his recently acquired MK-12c engine—probably the only one in the country—and gave us permission to put the engine through the usual rigorous M.A. test procedure.

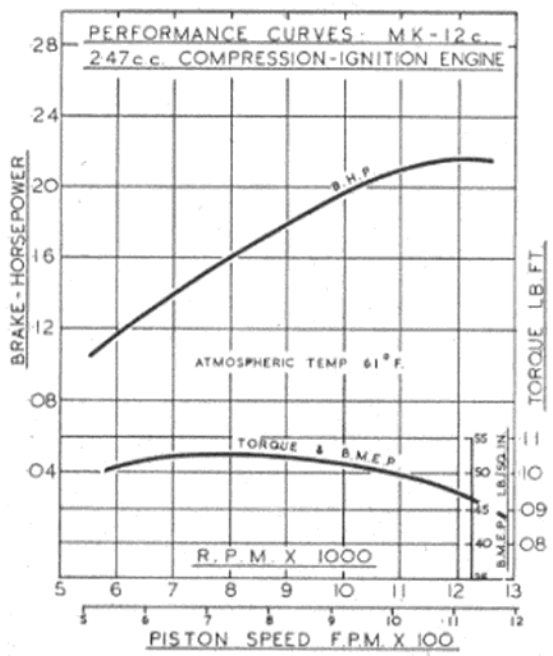
The MK-12 series of engine are the work of the noted Russian modeller, O. K. Gajevski and the MK-12c is widely used for various types of F/F and C/L models in the U.S.S.R., including the F.A.I. F/F class. In this respect, it occupies, in Russia, much the same position as the E.D. 2.46 Racer in Great Britain, an engine which it resembles in so far as it is a disc valve, twin ball bearing diesel, having a similar type of cylinder porting and a similar bore and stroke. It does not, however, compare favourably with the E.D. in standards of either workmanship or performance.

The structural design of the engine is in many respects similar to European model diesel practice, but with some innovations. The crankcase is a pressure diecasting in aluminium alloy and, integral with it, is the rear-mounted intake. The die-casting is a little rough by comparison with that now seen on most modern Western engines. The valve rotor is mounted by means of a pin which screws into the back of the crankcase. No locknut is fitted to this: instead the end of the pin is bifurcated and is then spread out after insertion. This system is decidedly crude and eventually gave trouble during our tests. The valve rotor is machined from aluminium alloy and some attempt has been made to reduce unbalance by cutting away part of the front face of the disc opposite the timing segment.

The front of the crankcase, forming the main bearing housing, is, of course, detachable. It is secured with four machine screws into lugs around the crankcase barrel. The main bearing consists of two ball journal bearings of equal size. On our test engine, one of these bearings was extremely rough. The crankshaft has a full disc web and a rather slim hollow crankpin of 4 mm. dia. There is a thin section crescent "balance" machined on the crankweb, although this is not sufficient to completely balance the shaft. A good, solid prop driver, albeit of rather small diameter, is fitted to the shaft by means of a tapered split collet.

A soft piston and contra-piston in a hard cylinder is featured. The piston has a shallow coned crown and heavy gudgeon-pin bosses. A somewhat unusual method of dealing with the gudgeon pin is used. The pin appears to be pressed into the bosses, the outer ends of which are then sealed with aluminium pads; the outside of the piston skirt at this point then being filed across to produce a slightly concave area around the end pads. The alloy connecting rod is a trifle rough and, on this particular example, bore evidence of hand file finishing. The small-end was a fairly good fit but the big-end was rather slack.

The cylinder liner resembles that of the E.D. 2.46, being a plain sleeve, flanged about the exhaust belt. There are three exhaust and three transfer slots, the transfer being larger than the exhaust. The cylinder liner is ground all over, with a lapped bore. The liner seats on the top of the crankcase and a machined alloy cooling barrel drops over the liner and screws over the crankcase. The barrel is



topped by a T-head compression screw with a simple coil-spring friction device.

The needle-valve is a modification of the usual type and is similar to that seen on the French Micron engines. The fuel inlet is above the carburettor body and fuel is metered by the needle-valve, whence it enters the venturi through a brass jet. Needle adjustment is held by a spring ratchet device and the adjusting stem is flexibly mounted by means of a short length of " curtain-spring " type flexible rod.

Specification

Type : Single cylinder, air-cooled, reverse-flow scavenged two-stroke, cycle, compression-ignition. Rotary disc-valve type induction. No supplementary air induction. Radial exhaust and transfer porting with conical crown piston.

Swept Volume : 2.474 c.c. (0.151 cu. in.).

Bore : 15 mm. (0.5905 in.).

Stroke : 14 mm. (0.5512 in.).

Compression Ratio : variable.

Stroke/Bore Ratio : 0.933 : 1.

Weight : 5.25 oz.

General Structural Data

Pressure diecast crankcase. Hardened, ground and lapped cylinder liner with radial exhaust and transfer ports. Liner clamped at exhaust flange between crankcase and cylinder barrel, the latter screwing over the former. Diecast main bearing housing. Hardened alloy steel crankshaft running in twin ball journal bearings. Beam type mounting lugs. (For detailed constructional data, see preceding paragraphs.)

Test Engine Data

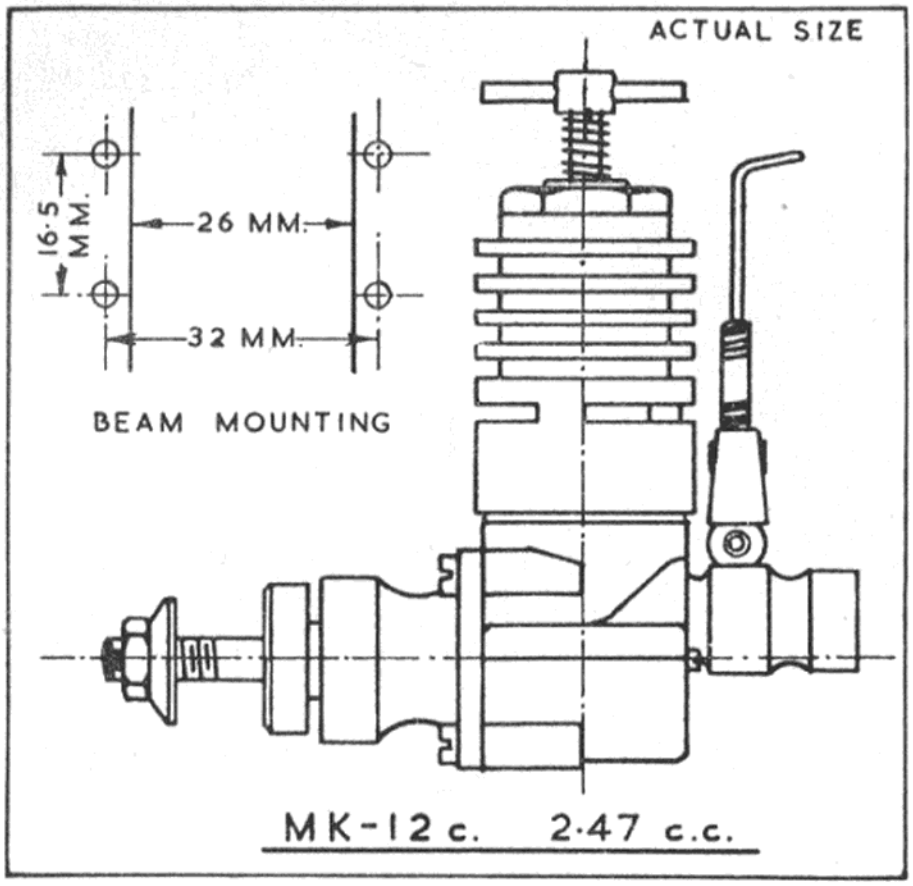
Running time prior to test : not known.

Date of manufacture: November, 1955.

Fuel used: 40 per cent. technical either BSS.579, 30 per cent. Shell Royal Standard kerosene, 27½ per cent. Castrol M, 2½ per cent. amyl-nitrate.

Performance

The leaflet supplied with the MK-12c specifies a fuel mixture of 1½ parts ether and 1 part each of kerosene and castor-oil, to which can be added 2-3 per cent. amyl-nitrate. This, of course, is much the same as preferred fuel mixtures used in this country and it will be seen that the fuel used for our tests did, in fact, closely resemble the recommended formula given by the manufacturers.



We found that the engine started easily and without need of priming through the ports, finger choking being sufficient. The needle-valve was positive in operation and held settings firmly at all speeds. The contra-piston moved smoothly and had no tendency to seize when the engine was hot.

A prop diameter of 230 mm. (approximately 9 in.) is specified for use with the MK-12c and this, using a pitch of 6 in., corresponds to a speed of around 9,000 r.p.m., which is comparable with the average European 2.5 diesel—usually of the shaft-valve, plain bearing type. It is, however, about 5 per cent. down on the revs of the better competition diesels, such as the Oliver and Mach-1, and this is confirmed by the power curve which shows the b.h.p. output as being about 15 per cent. less over this part of the r.p.m. range.

It seems fairly certain that the average Russian user is not in the habit of operating his MK-12c above about 9,000 r.p.m.—in fact, according to the instruction leaflet and various references to the engine in Soviet publications, 7,000 r.p.m. appears to be regarded as a normal speed. This being so, the unsatisfactory method of anchoring the valve disc pin may hitherto have passed unnoticed.

Various checks were made and readings taken at speeds of from 4,000 r.p.m. up to 9/10,000 r.p.m., without any untoward happenings. Our first run to determine the peak of the power curve, however, resulted, after a minute or two's running, in our suddenly detecting a slight but unmistakably " non-standard " noise and, on dismantling the engine, it was found that the valve pin had loosened half a turn, thus allowing the valve rotor to wobble about somewhat. Tests were therefore abandoned at this point, since it was obvious that a new pin with a more secure form of locking would have to be made and fitted before sustained high-speed runs could be safely attempted. However, on the basis of torque and r.p.m. readings secured up to this point, it was possible to establish the curves shown. From these it will be observed that the potential peak r.p.m. is approximately 12,000 r.p.m., where an output of 0.215 b.hp. is realised.

Power/Weight Ratio (as tested): 65.5 b.h.p./lb.

Specific Output (as tested): 87.8 b.h.p./litre.

L. BROCK tells how to build a super detailed model of this famous Japanese heavy fighter

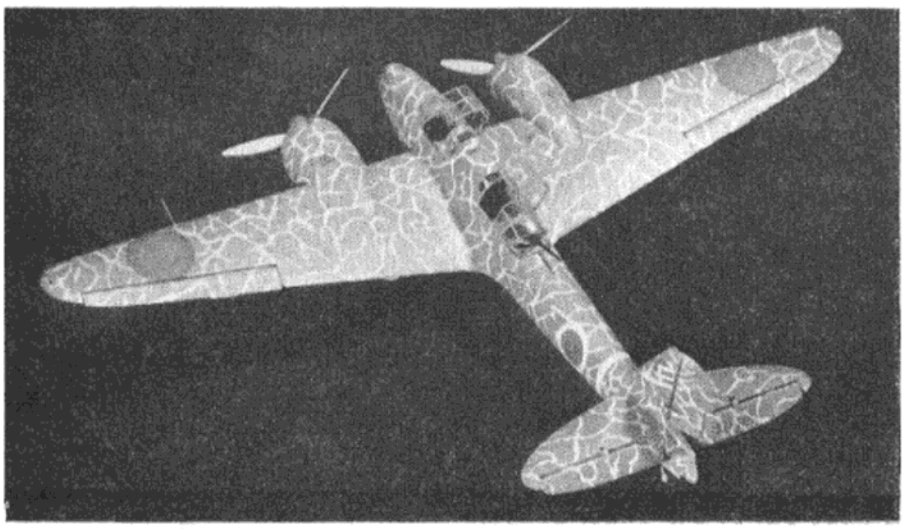
The KAWASAKI Ki 45

THE plans opposite are drawn up to the conventional 1/72 scale although the actual model shown in the photograph was built to 1/48 scale. Whilst the larger model does, of course, make for somewhat easier working with regard to fine detail, the same degree of authenticity can be preserved in either size.

The complete Japanese designation of this aircraft is Kawasaki (manufacturer's name) Ki 45 (chronological number, following a similar coding system to the U.S.A.F.) Type 2 Heavy Fighter (Japanese Army designation) *Model* 1 (mark number) *Toryu* (popular name, meaning dragon slayer). In the Western world it is more commonly known under its Allied code name, *Nick*. The length of the official designation shows why the Allies did introduce code names for Japanese aircraft!

A SOLID MODEL FEATURE

The two photos on this page show well the striking camouflage scheme that makes the Ki 45 such an unusual model

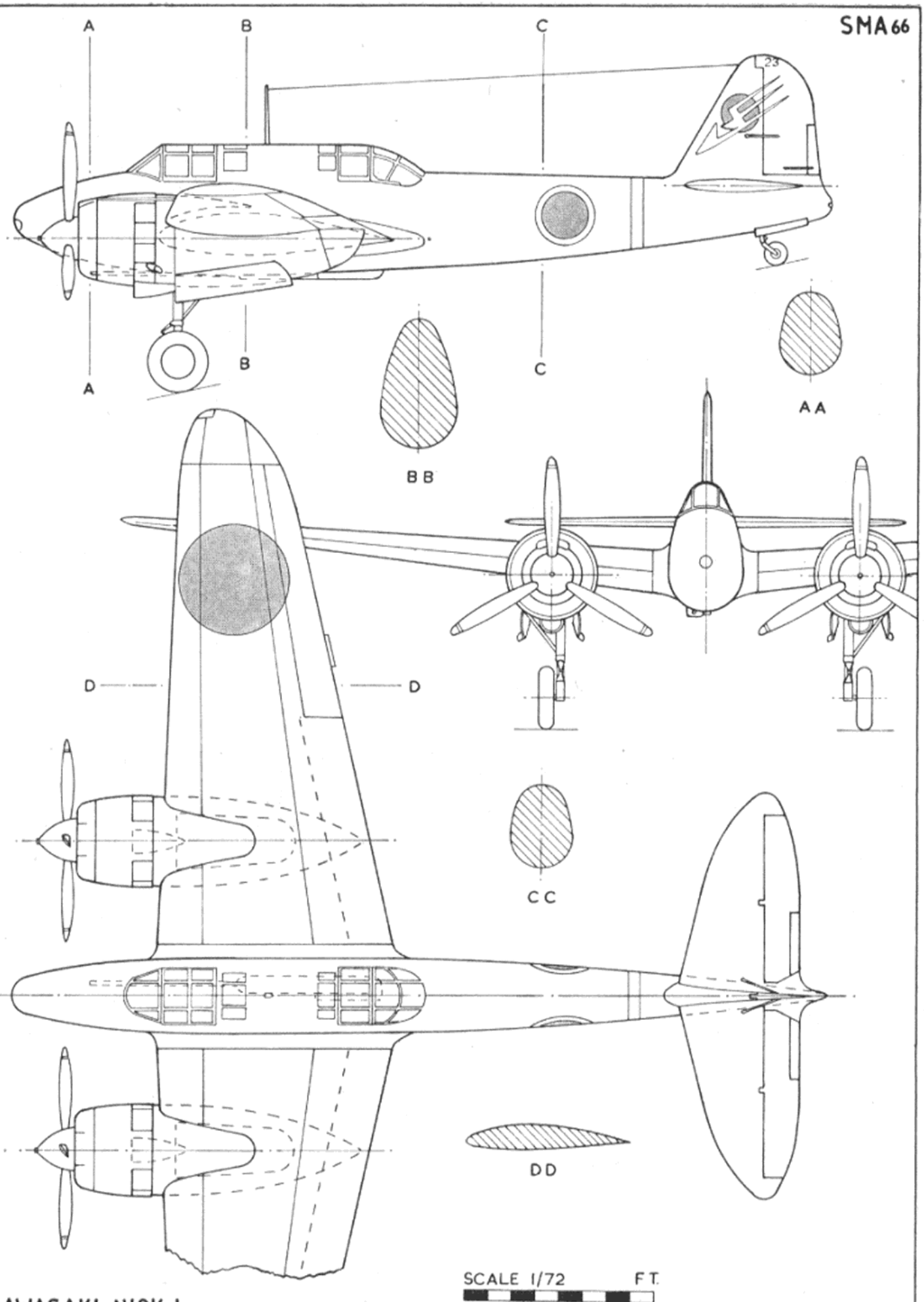


Nick was a Japanese Army day and night fighter used during the period 1943-4. The particular aircraft from which the 1/48 scale replica was modelled was operating in New Guinea in 1943 from Boram airfield, near Wewak. The camouflage it bears is rather bizarre but is quite authentic. This particular colouring scheme, incidentally, was only used on *Nick* fighters in New Guinea.

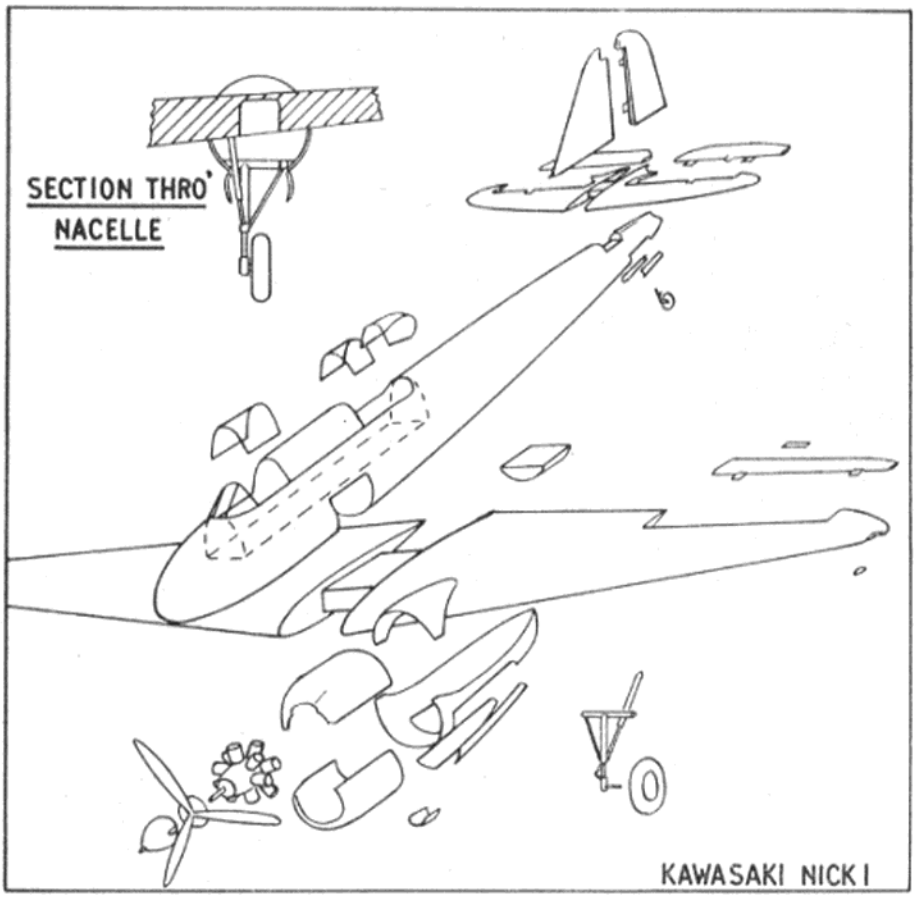
Nick was the first twin-engined fighter to go into service in either of the Japanese air services and could be described as the Jap. counterpart of the *Beaufighter*, Messerschmitt Me 110, and Lockheed *Lightning*. It was not very heavily armed, there being two 12.7 mm. guns and one 37 mm. cannon fixed and firing forward, and one movable 7.9 mm. machine gun firing aft. Later version had two fixed 37 mm. cannon mounted in the fuselage behind the pilot's cockpit firing upwards, but this was probably only a limited experiment.

Standard engines for *Nick* were two 14-cylinder Nakajima air-cooled radials of either 1,020 or 1,050 h.p.; each. Mitsubishi engines of the same power were also used. Top speed was quoted as 351 m.p.h. at 17,600 ft. and service ceiling 35,000 ft. A searchlight was carried in the nose as standard for night fighter duties and later variants also appeared with

SMA 66



KAWASAKI NICK I



more pointed noses. It was a graceful aircraft, but not particularly outstanding in service.

The original model was made from balsa and hardwood with moulded engine nacelles. The fuselage was carved from balsa and the wings and tail surfaces from hardwood sheet. Hardwood was also used for the propeller blades and undercarriage struts.

The nacelles were moulded from thin sheet celluloid, which appears to be an awkward job but is relatively easy once you get going. Blushing of the celluloid during moulding is not important since it is painted over to finish. The main advantages with moulded nacelles are that there is no hollowing out to fit undercarriage detail, etc., and the surface is smooth finished as made, ready for painting. Also, once having made the original pattern, as many nacelles as you like can be moulded around this one master. For 1/72 scale models, however, conventional carved nacelles would probably be a better proposition.

Main details of the (1/48 scale) model are summarised in the exploded drawing. All control surfaces were made movable, being hinged in place with thin copper strips. Perspex was used for the navigation lights and celluloid inset for the nose searchlight. The engines were built up with dummy cylinders to fit inside the cowling halves with sufficient " core " to cement against the wing leading edge in their correct position.

The colour scheme followed in finishing the model was medium green on all top surfaces with pale grey zig-zag stripes. These stripes were painted on by hand with a very fine brush. All undersurfaces are light grey. Spinners are medium green and propeller blades metallic grey with a narrow chordwise yellow band near each tip. Cockpit interior and undercarriage wells are pale grey-green.

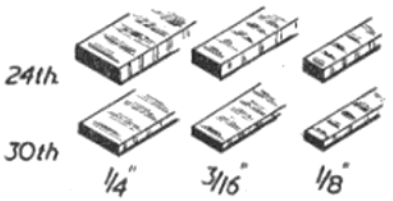
Markings consist of solid red discs on both upper and lower surfaces of the wings, the former overlapping the ailerons but the latter do not. Similar solid red discs are painted on each side of the fuselage, and these are outlined with a pale grey outer band. Tail markings consist of red disc with a superimposed grey "flash," the disc being accommodated entirely on the fin with the flash overlapping on to the rudder.

MATCHING RUBBER MOTORS

Rubber strip for motors is originally produced in sheet form, then stripped down to width. In this country, at least, there are two standards for sheet thickness—nominally 1/24 in. and 1/30 in. Standard widths for stripping are $\frac{1}{4}$ in., $\frac{3}{16}$ in. and $\frac{1}{8}$ in. Thus there are six possible sizes for rubber strip.

Contrary to popular belief, there is really very little difference in performance, if any, between made up motors of the same *cross section* but different number of strands. In other words, 16 strands of $\frac{1}{8}$ in. x 1/24 in. strip and 8 strands of $\frac{1}{4}$ in. x 1/24 in. are equivalent in cross section and will give exactly the same performance, for the same rubber. Where differences do occur in " equivalent " motors, this is nearly always due to variations in *actual* cross section to the nominal section; or better rubber in one case.

Certain " equivalents " are obvious. Thus two strands of $\frac{1}{8}$ in. strip equals one strand of $\frac{1}{4}$ in. strip



of the same thickness. Calculation of some of the other " equivalents," however, is not so easy. Some useful figures to remember are:—

$\frac{1}{4}$ in. x 30 in. and $\frac{3}{16}$ in. x 24 in. are virtually identical in cross section—hence these two sizes can be interchanged, strand for strand. $\frac{3}{16}$ in. x 24 in. is twice the cross section of $\frac{1}{8}$ in. x 30 in. Hence if the latter replaces $\frac{3}{16}$ in. x 24 in., twice the number of strands will be required.

Three strands of $\frac{1}{4}$ *in.* x 24 *in.* are equivalent to *four strands of* $\frac{1}{4}$ *in.* x 30 *in.* Hence three-quarters the number of strands is the $\frac{1}{4}$ in. x 24 in. equivalent of a $\frac{1}{4}$ in. x 30 in. motor. And 4/3 times the number of strands the $\frac{1}{4}$ in. x 30 in. equivalent of a $\frac{1}{4}$ in. x 24 in. motor.

Three strands of $\frac{1}{8}$ *in.* x 24 *in.* are approximately equivalent to four strands of $\frac{1}{8}$ in. x 30 in., so a similar rule applies.

A general rule embracing all the rubber sizes which you can use for other problems is:—

18 strands of $\frac{1}{8}$ in. x 24 in. = 24 strands $\frac{1}{8}$ in. x 30 in. = 16 strands $\frac{3}{16}$ in. x 30 = 12 strands $\frac{3}{16}$ in. x 24 = 12 strands $\frac{1}{4}$ in. x 30 in. = 9 strands $\frac{1}{4}$ in. x 24 in.

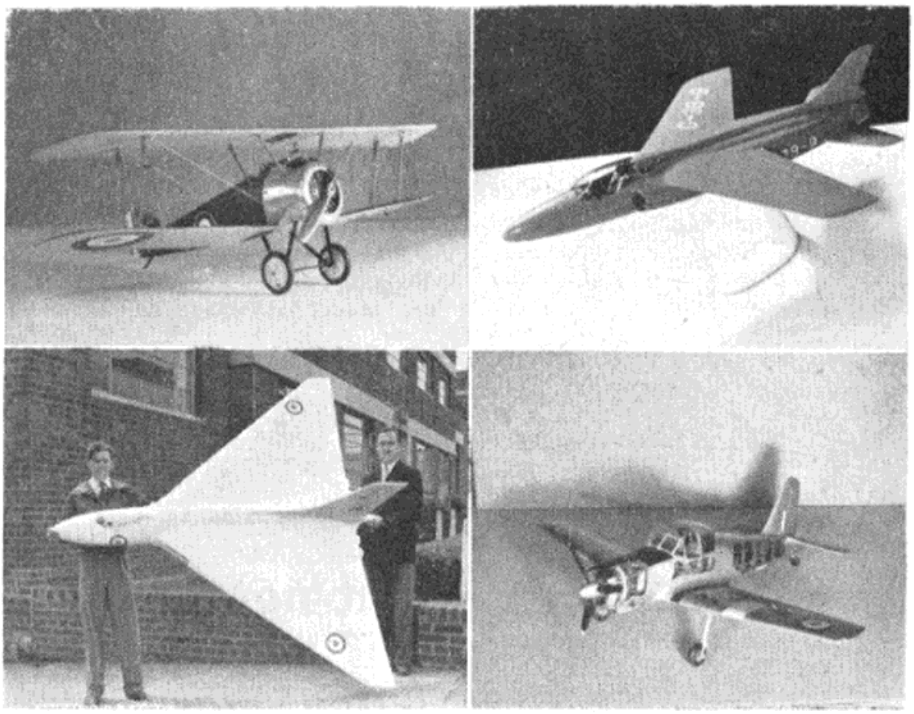
Models Magnificent

NO doubt many of our readers have paused to admire the beautiful models which decorate air line offices, but have you ever thought just how such detail and finish is achieved?

Rather intrigued with this question ourselves, particularly after examining the many magnificent models in the static exhibition at Farnborough, we 'phoned up Westway Models, of Brunel Road, East Acton, who are one of the largest model making firms in the world, and found ourselves talking to well-known contest flier, Laurie Barr.

No, Laurie assured us, there was nothing special about the materials used for these models, which have varied from the 8 ft. 6 in. *Vulcan* shown on this page, to a half scale wooden reproduction of a *Comet's* radio, " all we use are wood (mostly lime), metal, perspex, and ' bags of ingenuity.' "

The photos can give only an inkling of the amount of detail work and superb finish incorporated in all their models; they are indeed the work of model-making craftsmen, who, Laurie told us, in this mechanical age are very difficult to find.



The Camel *was built to 1/24 scale for the Melbourne Museum, Australia, from original works drawings bearing Sidney Camm's signature.*
The Vulcan *is proudly displayed by Works Manager Laurie Barr and Director Ian Walker. It is of 8 ft. 6 in. span and was built for Avros.*
The Gnat *was built for Follands to 1/48 scale and has a fully detailed cockpit.*
The Provost *took over 400 hours to make and is sectioned to show the construction; it has been shown at Farnborough for the past five years.*

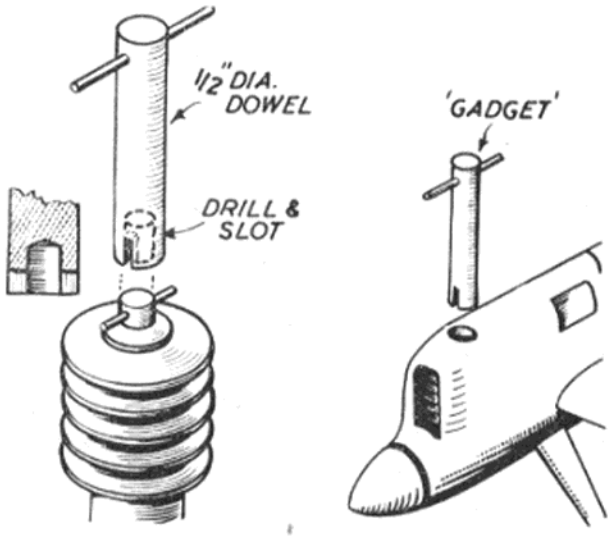
A COMPRESSION TOMMY BAR

"THE designer of this motor must have cast-iron fingers!" Such was a comment heard recently on the flying field. The originator was referring to the fact that compression adjustment on a baby diesel in his model was difficult and painful to operate. The adjustment lever was so near the cylinder head that he burnt his fingers, and the edges of the lever were sharp enough to cut if grasped firmly.

Having suffered, in a similar respect, it seemed charitable to suggest he used a special tool for the job, made up as shown in the sketch. This is simply a length of ½ in. diameter dowel, drilled with a blind hole to fit over the compression screw itself and slotted to fit the adjusting lever. The size of the hole and the shape and size of the slot can be proportioned to fit any individual engine.

A simple tommy bar of piano wire then completes this useful gadget, which provides remote control of compression adjustment in a simple, positive manner. Make the dowel long enough so that the hand, grasping the tommy bar, is well clear of the propeller disc. This gives a double safety feature to the tool.

Use of a tool of this type has a further advantage with cowled in motors. You can cowl in the top of the cylinder completely, not leave the compression lever sticking out, and make all the necessary adjustment through a ½ in. diameter hole in the top of the cowling, as shown in the second sketch.



Round the Bend!

Drawings by ALI

but not like this if you follow *Ron Warring's* advice on the correct way to bend piano wire

WIRE used for model aircraft work is variously specified as (steel) wire, piano wire, spring steel wire, music wire, etc. Each of these descriptions implies different properties, but in actual fact the wire as bought in a model shop (or supplied in a kit) is steel wire either "hard hard" or "hard drawn." Special spring steel wire is rather more expensive—and more difficult to work, although considerably tougher than average steel wire.

The main point is that the wire you buy, or find in a kit, for bending shafts and undercarriages, etc., may have varying degrees of hardness of temper. This will affect its behaviour when you come to bend it. Good wire bending is a knack which some people acquire apparently without effort. But the majority of modellers find it very difficult to make really clean, accurate bends in any gauge of wire.

The answer is to use the right technique—and practise it until you can master it. Also to identify what *type* of wire you are dealing with. The only point we are really concerned with is its reaction to bending, which can be found by a simple test.

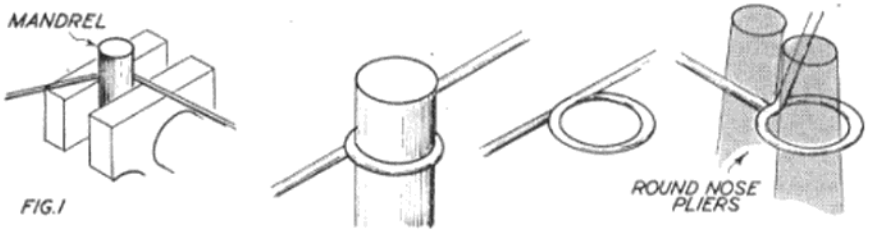


FIG.1

Suppose we have a length of wire and want to find its "quality." If we grip, say, 1 in. of its length in a vice we can pull down on the free length of wire and bend it in a right angle—probably not a true right angle but one with a radius or curve at the bend itself. If now this curve is hammered out to a true right angle one of two things will usually happen. Either the curve will hammer out to a sharp angled bend with the wire intact, or the wire will fracture at the bend before a sharp angle is reached. The first type of wire is relatively soft or "half hard" and is the easiest type of wire to bend in any gauge. The second is "hard" wire, stronger but also brittle. *It cannot be bent through sharp curves without cracking.* Thus if this is the wire you have to use, any sharp curves *must* be formed with a radius at the bend. Even the softer wire needs some bend radius.

The other point about these two types of wire is that the "half hard" variety can be straightened out and re-formed if one of the bends made in it is not accurate. Once the "hard" wire has been bent, however, straightening out will almost certainly fracture it. Certainly you will never get it quite straight and the next attempt to bend it will break it. As a general rule, however, *restraightening a bend and re-forming is bad practice.* Unless the bend is a comparatively shallow one the wire will inevitably be weakened. Better to start again with a new piece of wire.

Wire of up to 16 S.W.G. size can be bent with pliers alone to almost any shape. But to bend circles or loops, use the technique of wrapping

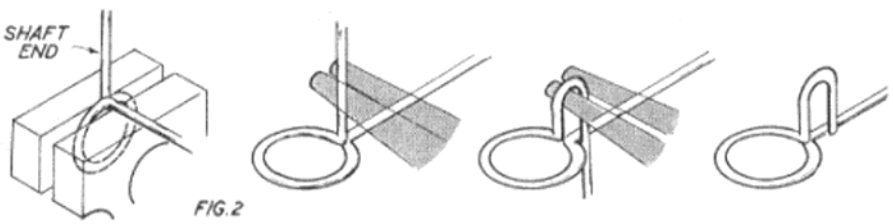


FIG.2

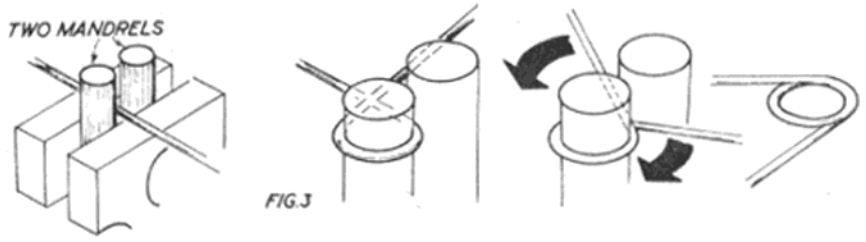


FIG.3

the wire around a suitable " mandrel " gripped in a vice—Fig. 1. This mandrel should be the same as the inside diameter of the loop required. It should be as tough as the wire so a piece of scrap wire of the right size is ideal, or a steel bolt or similar.

To bend the loop around the mandrel, use a fairly long length of wire and grasp both ends firmly. Then wrap *tightly* around the mandrel to complete a full loop. The knack is in pulling on the ends of the wire to keep it tight as you wind it round, which produces a snug fitting loop. The other important thing is to use enough length of wire to get this firm grip and leverage at each end. It is worth wasting a piece of wire to get a perfect loop.

The winding loop is then finished off by using pointed, round nose pliers to centralise the hook in respect to the shaft, when the surplus length can be cut off. It is better, however, to form the freewheel clutch from this length as this will

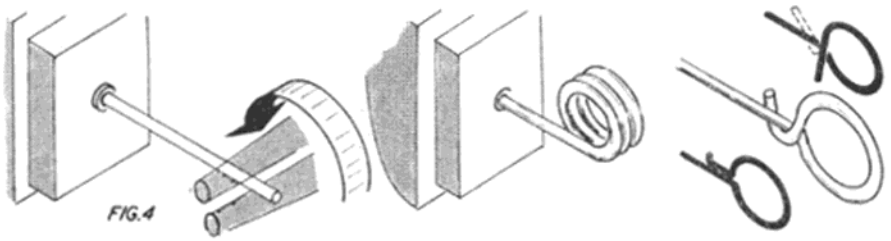


FIG.4

eliminate soldering on a separate clutch.

The first bend for the clutch loop should be made at right angles to the winding loop, gripping in the vice and pulling to shape, as shown in Fig. 2. The remaining bend is then made with round nose pliers. To do this, grip the wire at the appropriate point and then, keeping the grip very firm, rotate the pliers, as shown, to form the bend. Surplus wire is then cut off flush with the shaft, using cutters *which are capable of handling steel wire of the gauge used.* The average type of pliers with a cutter included in the centre on one side are useless for this purpose. Failing the proper cutters, use a small triangular file to make a notch around the wire and break off clean as soon as the notch is deep enough.

This bending technique can be used on wire up to 16 S.W.G., which is the largest size normally used on rubber model propeller shafts; 16 S.W.G. is also the maximum size on which pliers can be used successfully for accurate bending. If you prefer, all the bending could be done with pliers, but the vice and mandrel technique you will find much simpler.

If you still find it difficult to form a tight loop around the mandrel with this method, try the scheme shown in Fig. 3. Here two mandrels are used of the same size, gripped tightly in the vice and spaced apart just sufficient for the wire to slip between them. Only a short end of wire need be pushed between the two mandrels when you have the whole of the free length to grasp. Rotate this around one of the mandrels, pulling tight, to complete a bend as far as it will go. Slacken off the vice and reposition as shown in the second diagram. It should now be easy to complete bending the loop, when you can proceed from there as above.

On propeller shafts the winding loop and clutch should always be bent first. This, however, leaves the rather awkward job of bending the rubber hook on the end of the shaft after propeller and noseblock have been assembled. One good method is to cut off the shaft fairly short and grip the end down near the bottom of the jaws of a fairly stout pair of round nose pliers—Fig. 4. If the pliers are now rolled along the shaft they will wind the wire up into one or more coils. Stop when near enough to the back of the noseblock.

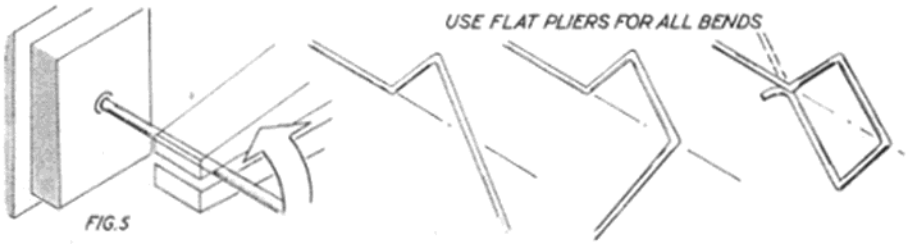


FIG.5

Centralise the loop formed and *straighten out* the excess wire (these need only be done roughly). Grip the loop in a vice and pull this straight length around the shaft to form a " lock " to clip over the shaft and so prevent the hook from opening up under the pull of the rubber motor.

Alternatively, form the end of the rubber hook as shown in the final sketch, which is locked closed by binding with a rubber band or fuse wire when the motor is fitted. Locking the propeller shaft hook is only really necessary on powerful motors.

An alternative form of bend which can be made with flat jawed pliers only is shown in Fig. 5. Each bend is made by gripping the wire tightly in the jaws of the pliers and twisting sharply. The first and last bends are 45 deg., all the others being 90 deg. Each leg of the " diamond " should be equal in length, which you can most accurately do by using the full width of the jaws of the pliers for each bend.

An " S " hook is the most difficult


FIG.6

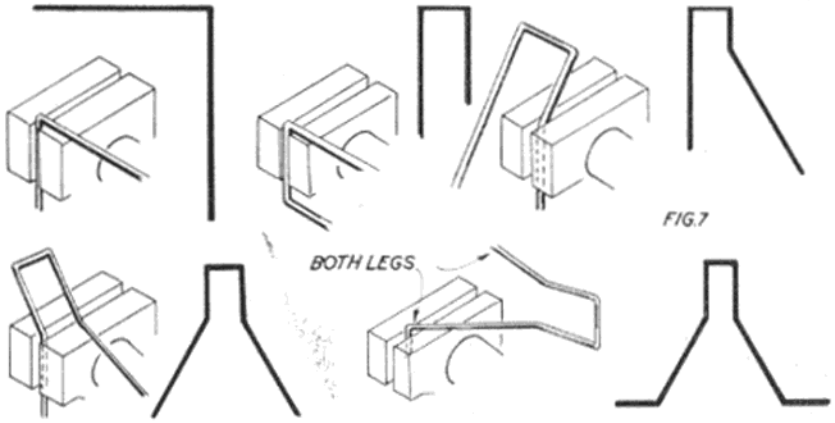


FIG.7

of all to form on the inner end of the propeller shaft. Yet, if bent the *right way round* (the "S" laterally inverted as viewed from the rear) it is the best form of all in that it will prevent the rubber motor from "climbing" out of line with the shaft.

It can be formed by pliers alone, as shown, but it needs some previous skill in wire bending to get even, neat bends with the centre of the "S" lining up with the shaft. This, in fact, is the one type of hook which reverses the general rule and is

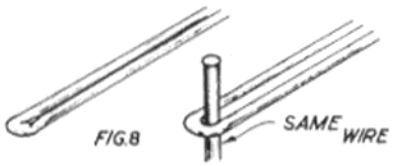


FIG.8

generally best bent *first*. Then you can have as many attempts as you like to get the "S" neat and accurate. This means that your final end is the winding loop on the front of the shaft, which you can tackle like Fig. 4.

Trying to bend wire thicker than 16 S.W.G. with pliers is usually a waste of time. The best method is to use a vice. Fig. 7 traces the steps in bending a typical undercarriage shape. It is usually best to make the top bends first, so make sure that in positioning the wire in the vice for the first bend, you have enough length on either side to complete both legs. The various stages can then be followed from the diagram.

It should be noticed that although the wire, in each case, is pulled through a seemingly sharp angle round the jaws of the vice it will actually form a radius at each bend. *No attempt should be made to flatten these bends by hammering.* If the radius is a little too generous, try to angle them more sharply by squeezing up in the vice jaws. Also *never heat the wire to soften it before bending.* This may make bending easy, but it will ruin the wire and make it extremely brittle.

Another type of bend sometimes called for in the case of wire fittings is a doubled back end—Fig. 8. As our original experiment showed, this cannot be done in "hard" wire without a considerable chance of the wire breaking at the bend. Half-hard wire is definitely best for this type of job. Even so, this should be bent round in a radius the same as that of the wire—e.g. by the method shown in Fig. 1. Half-hard wire can then be squashed together a little more with pliers (or clamping between the jaws of a vice) but hard wire, if used, must be left with this end radius of bend.

This basic technique for forming close loops can also be used for winding coils in thin wire. For convenience the mandrel can be held horizontally, laying the wire across the top—Fig. 9. Holding onto end of the wire very tight and pulling hard on the other, as many coils as required can be wound onto the mandrel. A certain amount of practice is necessary before you can get each coil tight and close to the one immediately before it. But even experts will frequently have to wind two or more coils before they get one which really satisfies them.

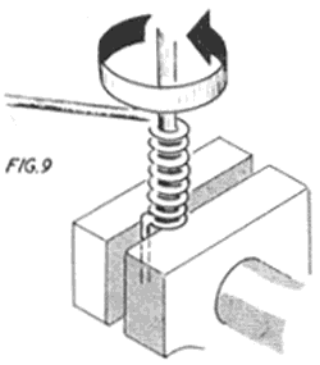


FIG.9

Essential tools for wire bending :
A vice.
Wire cutting pliers (for cutting wire up to 16 S.W.G.).
Triangular file (small) (for cutting larger diameter wire).
Small round nose pliers.
Large round nose pliers.
Medium flat jaw pliers.

An even better method of winding coils in thin wire (usually not larger than 20 S.W.G.) is to secure a drill in a vice and put the mandrel wire in the jaws of the drill. Make a right angle bend in the end of the wire to be formed and slip this between the jaws of the chuck—Fig. 10. Now, holding the wire tight near the chuck,

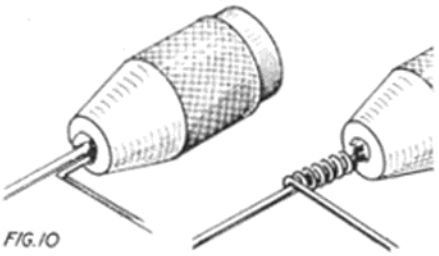


FIG.10

turn the drill to wind the wire onto the mandrel, letting it feed along uniformly. This method is very easy to master, and produces extremely neat coils.

One point to bear in mind in winding coils is to wind the coils in the best *direction*. This is particularly true where the coils have to be soldered to a shaft and take a side load. In the case of a clutch for a rubber model free-wheel, for example, this is loaded to one side when engaged. Thus if the coil is wound one way this load will tend to open out the coils, and in the other close them and make them grip even tighter on the shaft—

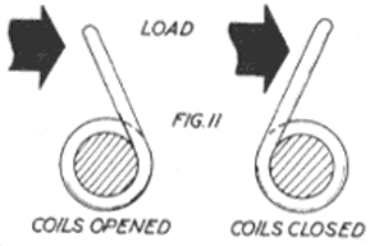


FIG.11

Fig. 11. Of course, the clutch would normally be soldered to the shaft but soldering can fail. A clutch coil which tends to grip tighter under load is thus always to be preferred to one which tends to open and throw more strain on the soldered joint.

This attractive R/C model by Sigeo Ogawa, manufacturer of the Japanese O.S. engines, has rudder and motor control and is powered by a two-speed version of the Max-15 engine.

PETER CHINN reviews some INTERNATIONAL 2·5's

Great Britain

LAST month we gave first details of the new Norman Long designed Nalon "Viper" 2.49 c.c. engine and our photographs now show some of the inside features of this interesting new British competition diesel, whose advent has already caused much speculation.

Following our tests on a prototype unit, some minor modifications have been made and it is expected that production will be well advanced by the time these words appear in print. As explained last month, the Nalon "Viper" is essentially a hand-built engine for those who demand top grade workmanship and performance. It is expected to sell at about £9 retail, inclusive of purchase tax.

Japan

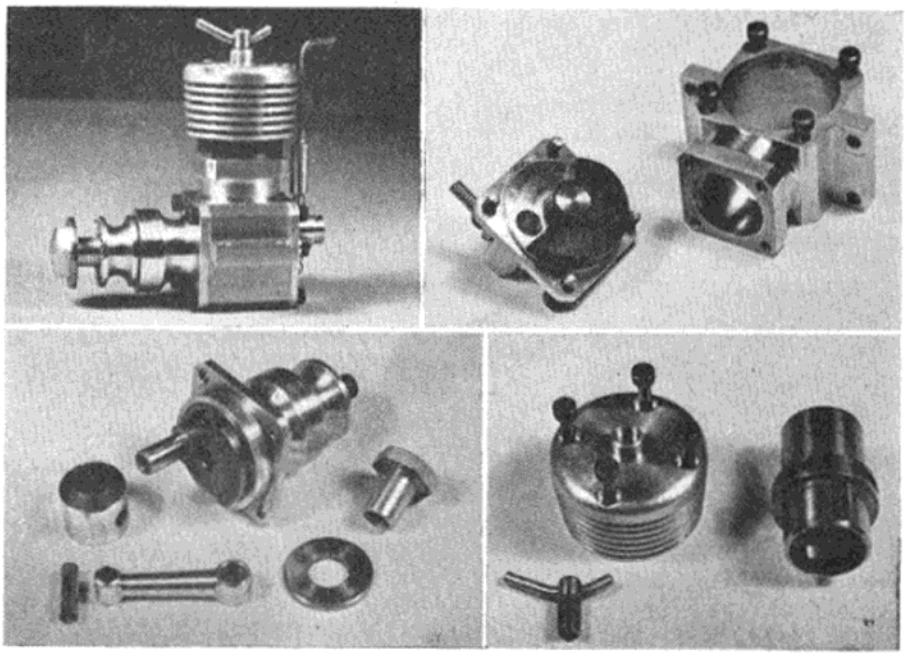
It came, no doubt, as a surprise to many people to find a Japanese engine powering the winning model in the World Free Flight Championships. Despite the fact that, for the past three years—and particularly since the latter part of 1954—we have frequently discussed the increasing excellence of some Japanese made model motors in these columns, we suspect that few people have really taken the Japanese challenge seriously.

Last December the then new O.S. Max 15 motor was tested in the "Engine Test" series, when it was shown that this motor was well up among the leaders as regards performance. Subsequently, some confirmation of our findings came with reports of the Max 15's performance overseas, particularly from Australia, where O.S. products are now firmly established and where the Max 15 succeeded in winning the F/F class event at the last Australian Nationals.

We asked Ron Draper about his winning engine. Knowing that he had used other leading 2.5s, we were particularly interested to know what had influenced him in his use of the Max 15 for his World Championship model. He put forward some very solid arguments in favour of his choice.

Firstly, Draper favours a model of near the maximum permitted size (650 sq. in. total area) using a flat under-surfaced wing, rather than a smaller area and an undercambered section. This, of course, means that every ounce of motor weight saved is important, if the all-up weight is to be kept down to the permitted minimum (say, 17½ oz.), without loss of strength in the airframe. Thus, a glowplug engine, the leading examples of which are mostly a couple of ounces lighter than the better types of diesel 2.5s, is very helpful here.

A quite natural choice, under these circumstances, would be an American Torpedo 15 or an Italian Super-Tigre G.20. Ron Draper has



The entirely new British Nalon "Viper" 2.49 c.c. competition engine, which was fully described in last month's issue. These photographs give an idea of the high quality of all components. Note the robust construction, Tufnol valve rotor and unusual transfer ports.

OVER THE COUNTER

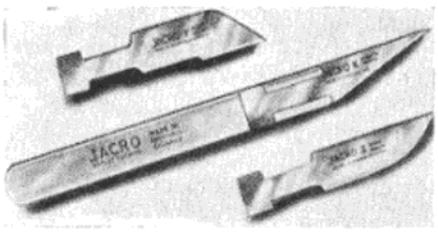
No excuse for flyaways with unreliable fuses now that Contest Kits have made D.T. fuse available via model shops. Purchased in 3 yard lengths, which sell at 9d. per packet, this fuse is of the lampwick type most popular with contest fliers, and is graduated in 90 sec. (burning time) divisions.

* * *

Keilkraft have on the stocks a *Tiger Moth* kit to follow the *Seamew* in their *Star* series range. Should be out in time for Christmas.

* * *

A neat " snap fitting " method of blade retention is a feature of the Jacro cutting tool, which is now on



the market. Made by James and Crookes Ltd., of 31 Stanwood Avenue, Sheffield 6, this cutter retails at 3s. 6d. with three blades.

* * *

If you have the same difficulty as us with heavier soldering jobs, then the " Do-It-Yourself Soldering Kit " is a " must " on the list of workshop equipment required. At a recent demonstration we were amazed at the ease with which dirty, greasy, pieces of metal could be soldered together with no prior cleaning whatever. The parts to be joined received an application of solder paste, they were then clamped together, the heat applied, and *voila*! Valtock Ltd. of 6, Sherwood Street, Piccadilly Circus, W.1, distribute this kit, which sells at 39s. 6d., but for those who already have a

blowlamp, the solder paste, putty, tinning salt, etc. are all available separately.

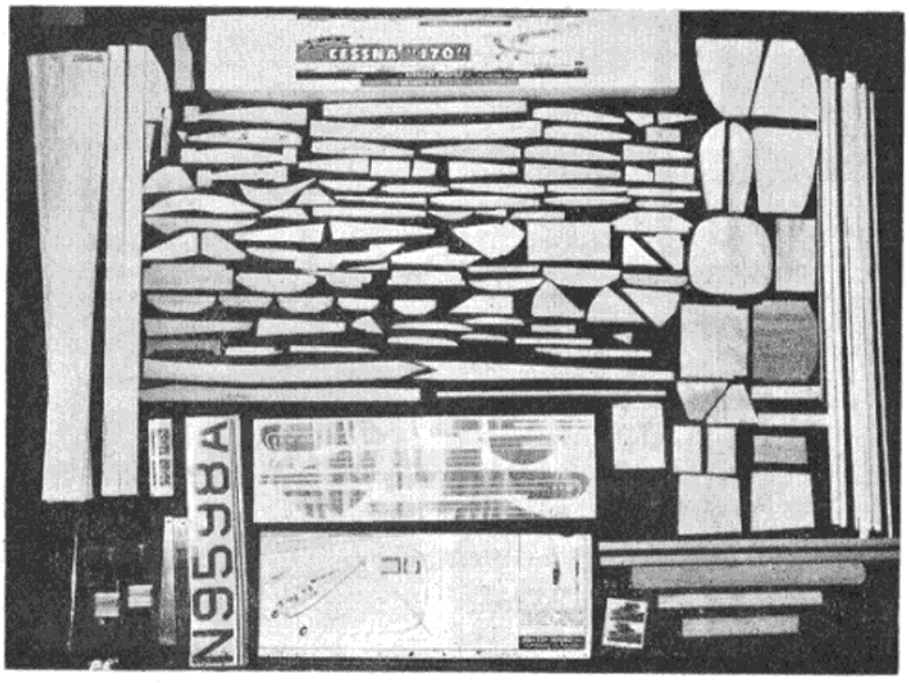
* * *

Kits to supply the demand which exists among modellers for the older type of aircraft are now becoming more plentiful, and one list we have recently received is of the Scalecraft 39/45 range, manufactured by C. P. Dixon of Adastra Works, Southport. This range of 21 popular prototypes of W.W.11, all of which are to 1/72 scale, includes such favourites as the Me 109, *Spitfire*, Ju.87B, *Blenheim*, *Stirling*, *Fortress*, *Lancaster*, etc., and prices range from 2s. 6d. for the smaller fighters up to 14s. for the biggest bombers. The same manufacturer also produces a 1/72 Super Jets range, which includes the F.D.2, Lockheed *Starfighter*, and Avro *Vulcan*. Prices are 3s., 3s. 6d. and 16s. respectively.

* * *

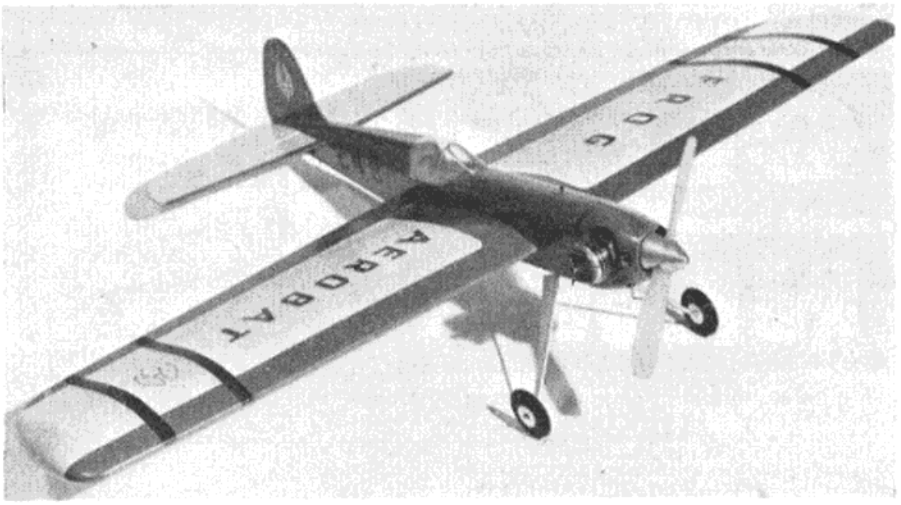
Of interest as comparisons with scale kits produced over here, are the Berkeley *Cessna* 170 and *Sea-Cat* kits, which are being made in New Zealand under licence from Berkeley Models Inc., of New York. Priced at £8 10s. and £5 19s. 6d., respectively, these kits are recent additions to the very extensive range of models produced by the Betta Model Aeroplane Supply Co., of Devon Street East, New Plymouth, N.Z. Each kit is complete in every detail and contains imported Berkeley plans and transfers. All bulkheads, formers, etc., are ready cut out and the kits include shaped L.E. and T.E. spars.

Accurately scaled down from the full size aircraft, the *Cessna* has a span of 6 ft. and was designed by the former American National Champion, Henry Struck. The *Sea-Cat* is a semi-scale amphibious flying-boat of 68 in. span, also designed by Struck.



OVER THE COUNTER
KIT REVIEW

The FROG AEROBAT



A NEW engine asks for a new model to go around it, even if the engine is a standard size. Frog kits are largely " tailored " around their individual engines and the *Aerobat* is no exception. It has been proportioned around the 2.49 diesel although, of course, it will equally well take any other beam-mounted 2.5 or 3.5.

The design follows more or less conventional modern standards for stunt control liners—low mid-wing of thick symmetrical appearance; slim fuselage with moulded cockpit canopy and all sheet tail surfaces. The wing has trailing edge taper to reduce the barn-door appearance of the average stunt wing and trailing edge flaps as an aid to manoeuvrability. With a short coupled tail, control response is rapid and positive.

Construction follows the built-up practice widely followed by International Model Aircraft. Fuselage sides are 3/32 in. sheet with $\frac{1}{8}$ in. square frames cemented on. All the balsa formers are die-cut to shape (including notches) and the sides are assembled on these formers. Fuselage top is also sheet. Longer to assemble than semi-hollow log construction, but it gives a lighter fuselage.

Engine bearers are of generous size. The stunt tank is attached to the bearers on the starboard side and the engine side mounted. The cowling is built up from block and carved to shape. Altering the engine bearer spacing modifies the depth of tank required to fit.

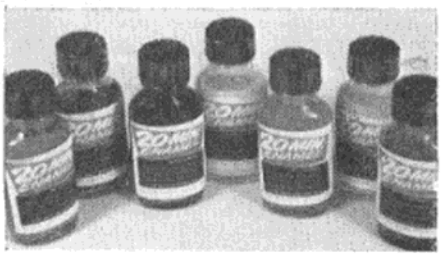
The symmetrical section wing is built up in one piece, in stages. Construction is perfectly orthodox, with block tips and the flaps attached to the trailing edge with tape hinges. A generous rake back is employed on the lead out wires.

It goes without saying that being a Frog kit it is very complete as regards pre-shaping and contents. It is excellent value and makes up into a model with " thoroughbred " performance. The only alteration we have made on our model is an increase in the balance weight in the right hand wing tip. The small lead discs supplied for this purpose do not seem heavy enough. But how many kit manufacturers who specify a balance weight here ever think of including the weight in the kit ?

Lindberg Products Ltd. are a firm well known in America for their large range of $\frac{1}{4}$ in. = 1 ft. scale plastic solids, and now, under an exchange agreement, the dies are being loaned to a British manufacturer for production over here. First off the line will be a *Spitfire II* and a *Mig* 19; both will retail at 7s. 11d. and should by now be in your model shop. These will be followed by a *Cutlass* and a *Thunderceptor* at 12s. each.

Peter Smith, of 40A, Parsons Mead, Croydon, who is one of the trade distributors of these kits, tells us that because of the demand in America the moulds can only be loaned for one month at a time; it is, however, anticipated that this will allow sufficient to be made to fulfil all demands.

The Lincoln Lockheed Constellation



To meet with the demand for a quick drying paint for plastics, Peter is marketing a new 20 min. enamel, which is, as the name implies, touch dry in 20 min. Initial range is of 12 colours which include matt olive drab and dark earth. For our tests we chose to colour some clear plastic with silver, which is a notably difficult colour to cover with, and we must record that we were very impressed both by the covering properties and the ease of application of this enamel.

* * *

Currently on the market is an addition to the Empire-made Lincoln Series of plastic solids, which were introduced early this year with the *Starfire*. Newest model is of the *Lockheed Constellation* which is nicely finished and not expensive at 4s. 11d.

* * *

Revell's beautiful plastic kits, with their precision mouldings and pinpoint details, should be readily available by the end of the year. All the mouldings will be made in this country but the dies—and the box designs—come direct from America. Ten models are scheduled to appear for October-November delivery to the model shops.

Revell's are the largest of the American plastic kit manufacturers. Last year, out of a total of some 25 million plastic kits sold on the United States market, Revell's contribution was some 15 million.

CLUB NEWS AND NEWS FROM THE S.M.A.E.

WIGAN M.A.C.

The club was represented up at the P.A.A., Abbotsinch, by five members, the only successful one being T. Rhead taking second place in Rubber with 2 maxes and 2.57 sec. I. Aspinall, fourth in Payload, B. Talbot fifth in Glider. May we take this opportunity of thanking Mr. Cochrane and a very co-operative farmer for arranging a very convenient camping site.

The club went to Ternhill where Frank Anderton, managed top junior in his first power comp. with a good 8 min. odd. B. Talbot was well on the way for top placing till some cattle had a foot in it (his model) and a very hasty repair job to two wing tips made his flight average 2 min. 1 sec. so placing him fourth with his Mach I power job *Ottazel*.

BRADFORD M.A.C. & LEEDS M.F.C.

Full of hope, our power quartet, Messrs. Lanfranchi, Collinson, Eckersley and Pannett, attended the Scottish Festival; and all had a "smashing" time (literally). The only one eventually left in the running was Stan Eckersley and the power event resolved into an endurance test between he and J. O'D. which the latter finally won when Stan's engine cut prematurely after five consecutive maximums. (Otherwise they might have been at it yet !)

We had normal Baildon weather for the N. Area Rally; however, Arthur Collinson managed 3rd in power, and in the H.L. glider comp. Les Hey repeated his Crips Cup success by winning 1st prize (later, too, he topped the Area placings in the K. & M.A.A. Cup with 11 : 27). Meanwhile, a strong contingent of Leeds lads visited the Emerald Isle for the U.K. Challenge Match—and left seven models there when they came home. However, Frank McNulty (one of the bereaved) was first in power.

In the Halfax, Silvio showed the way to 2nd place with 14 : 29; and after a poor season Brian Eggleston made a welcome come-back with 14 : 17 to place 6th. Another prominent member conspicuous by his absence this season—Ken Rutter—made a come-back too, and proved he had lost none of his old skill by topping the Area's open rubber contest on the same day with 11 : 51.

To crown all, in a three-cornered final against Halifax and Stockton, Leeds have at last won the Area Knock-Out after trying for years. Hooray !

FORESTERS (NOTTINGHAM) M.F.C.

Four of the boys attended the P.A.A. meet in Scotland, having an enjoyable, but wet, time. Arthur Rhodes won the class A team-race, and John Howard placed third in this event and second in class A combat.

The South Midland Area meeting was on the same day, so only one of the Foresters museum-pieces was in attendance; this unfortunately pranged, flown by a pilot recruited from the spectators, Tommy Thompson's pit crew being otherwise engaged. This valiant lone attempt by Tommy ended the sequence of 21 consecutive finals in which a Foresters model has been represented.

SOUTH BRISTOL M.A.C.

The Combat boys are feeling pleased with themselves, having won the combat events at the Trowbridge Gala, and a recent three cornered display at Bath. The number of models wrecked in the process doesn't bear thinking about.

In addition to mass-producing combat jobs, B. Hopkins has nearly finished a 7 ft. span Bristol *Wayfarer*, and hopes that two Fox "35s" versus 11 lb. of model will drag it round at about scale speed.

Plans are afoot to celebrate the 10th anniversary of the club next year. With typical single-mindedness, the main suggestions have all centred around a big "booze-up," the only dissension coming from the Juniors who will have to be content with lemonade !

WEST BROMWICH M.A.C.

Now that people are building combat jobs stronger, all we want are some strong lines to go with them, as usual in the Combat at South Midland Rally, the boys landed up with two sets of lines left out of the original eight sets. Dave Wilkes flew into first place on one of the remaining sets; he used the standard club combat model *The Ghost* powered by Mk. II Oliver.

Bad luck and high wind robbed us of first place in team race, Mac Grimmett's class A racer *Dimpled Dumpling* was lapping at 90 m.p.h., and in the finals, we were 15 laps in the lead when the wind blew a squeeze bottle into the prop. Even though there was a quick change of props, we just lost the race by 2 laps.

NORWICH M.A.C.

Club members gave both static and flying displays at Horsham St. Faith's aerodrome during the Battle of Britain annual display. A feature of the static display was D. Rushmer's 7 ft. radio model. This is coloured cream and blue, and all the dope stocks of the local model shop were used to give it a fine finish:—this meant black looks from other club members who ran out of clear dope.

The flying display consisted of 2½ hours of stunt, team-racing, combat and scale C/L flying. The only snag was that the All-Britain rally took place on the following day. This meant that there were some hasty repairs in evidence at the rally !

WEST OF SCOTLAND AREA

The last month has seen what are, from the Scottish point of view perhaps their two most important contests: the P.A.A. Festival and the U.K. Challenge Match.

The P.A.A. Festival passed off as the successful contest of the year being ably run by the Glasgow Barnstormer I. Cochrane. It was fortunate with the weather, the numerous heavy showers in no way dampened the enthusiasm. R. Parsons of Prestwick won International class P.A.A. load, club mate R. Sleight was 3rd in glider. E. McCabe of Barnstormers had a rough but successful weekend coming 1st in A combat, 2nd in B. Club mate W. McFarlane was 2nd in A team racing.

The following week saw the Scottish team in Ireland for the U.K. Flying from Glasgow, the travelling time was less than for many Scottish contests. The less said about Scottish flying the better perhaps; it could be summed up in that few, if any, of the Scots had two, or even one model trimmed for the conditions. The sooner we accept that contests don't take place in flat calms the better. In the Halfax and K.M.A.A. contests I. McPherson of Glasgow S.A. topped area power results. B. Harris of Prestwick, topped glider, W. Meechan, Glasgow S.A. was second and R. Sleight, Prestwick, came third flying an A/2 which sported a 36 sq. in. tailplane.

HAYES M.A.C.

A big event in our annual calendar is the Fairey Horticultural Society Exhibition at which our club is invited to display model aircraft. A prize is awarded for the most outstanding model on show. This was won for the second year in succession by J. Baguley with a "purely functional power model designed for 2,000 ft./min. rate of climb." The magnificent trophy for the best exhibit in the whole show by a Fairey apprentice was also won by a club member Frank Blows with an ETA 29 powered radio model..

The K. and M.A.A. trophy at Chobham on the 9th was much more encouraging. Four members totalled over 10 min., E. R. Welbourne placing third in the London Area and fourth in the country with 11 : 39.

WALLASEY M.A.C.

The club open day this year was held in cold blustery conditions with the result that a 1½ min. max. was decided upon. John O'Donnell came out as champ. flying his Nordic with Malcolm Watson also of Whitefield 2nd and John Dane of Wallasey 3rd.

Seven member travelled to Scotland for the

RECENT RESULTS

K.M.A.A. CUP

1.	J. Palmer	Croydon	11.58
2.	R. Thorogood	Mill Hill 1	11.45
3.	P. Giggle	Southampton	11.42
4.	E. Wellbourne	Hayes	11.39
5.	R. Burwood	Blackheath	11.34
6.	L. Hey	Leeds	11.27
7.	C. Hickmott	Hull Peg.	11.25
8.	J. West	Souther Cross	11.24
9.	J. Chadwick	Ashton	11.23
10.	R. Standing	Croydon	11.17
11.	F. Boxall	Brighton	11.10
12.	G. Martin	W. Middx.	11.06
	D. C. Readman	Loughboro Coll.	11.06

HALFAX TROPHY

1.	M. Gaster	C/M	15.00	+ 3.26
2.	S. Lanfranchi	Bradford	14.29	
3.	R. Draper	Coventry	14.37	
4.	A. Spurr	Middlesbro	14.36	
5.	D. Posner	N.W. Middx.	14.35	
6.	B. Eggleston	Whitefield	14.17	
7.	K. Pickles	Leeds	14.12	
8.	A. G. Young	C/M	14.08	
9.	J. West	Southern Cross	14.03	
10.	D. W. Jackson	Ashton	14.00	
11.	E. Smales	Hull Pegasus	13.59	
	W. Hadfield	Ashton	13.59	

SOUTH MIDLAND AREA RALLY RESULTS

Rubber

1.	R. Monks	Birmingham	9 : 00
2.	S. Wade	Loughborough	8 : 44
3.	R. Lennox	Birmingham	8 : 20

Power

1.	D. Posner	N.W. Middx.	9 : 00
2.	D. W. Stenning	C/M	8 : 55
3.	R. Draper	Coventry	8 : 35

Glider

1.	L. Barr	Pharos	9 : 00
2.	D. Illsley	Burton	7 : 24
3.	G. Cronin	Godalming	7 : 09

Team Race "A"

1.	P. Hartwell	Enfield	10 : 19
2.	M. Grimmett	W. Bromwich	10 : 44
3.	Knowles	Wolverhampton	
4.	B. J. Deller	Belfairs	

Team Race "B"

1.	D. Platt	Wanstead	11 : 00
2.	B. J. Deller	Belfairs	
3.	T. Sprosson	Belfairs	
4.	S. McGoun	West Essex	

Combat

1.	D. Wilks	W. Bromwich
2.	M. Pinnock	Enfield

Radio Control

			points
1.	J. P. Webster	Country Member	48
2.	H. Joyce	Kersal	27
3.	V. G. Breeze	Country Member	25

U.K. CHALLENGE MATCH

The U.K. Challenge Match, watched by well over 1,000 spectators at Toome Aerodrome, N. Ireland, started off with a swing with a glider flight of 2 min. 26 sec. by R. Sleight (Scotland) —a fine effort considering the cold, biting N.W. wind of surprising strength. G. Evans chalked up the first max. of the contest for England with his well-built rubber model, and indeed that type of model seemed to fare best under the conditions.

Credit must be given to J. K. Cartwright (England), who, having wrecked his first model and lost his second, flew his last two flights with his third model to achieve the highest individual total of the contest, 8 min. 16 sec.

England sailed through a storm of wrecked and lost models to win comfortably from N. Ireland, with Scotland again getting the wooden spoon, although it must be mentioned that they had to leave early in order to catch the afternoon plane back to Scotland and were unable to finish the contest. Those who contributed most to England's victory were J. K. Cartwright, G. Evans and F. McNulty while B. Wicklow (junior), N. Taylor, and I. Firth (junior) carried the weight of N. Ireland on their shoulders, and B. Harris and R. Parsons kept the flag (or should it be windsock ?) flying for Scotland.

The weather conditions had, however, taken their toll; only eight maxes were recorded in the whole competition and altogether 13 models (a significant number) were either lost or wrecked. No records were broken except perhaps, by B. Wicklow's glider which stayed afloat on Lough Neigh for two days before being recovered !

The " cold, biting N.W. wind " evidently didn't deter K. Armstrong from wearing shorts, as he holds for N. Taylor of N. Ireland.

P.A.A. load rally and we were successful in returning with two firsts and two thirds Stan Hinds taking 1st in glider, John Done 1st in P.A.A. load (America Class) and 3rd in power, John Hannay 3rd in rubber.

BRISTOL ACES M.A.C.

We are still going very strong, and have enjoyed putting on exhibitions of C/L flying. We also attended the rally at Keevil recently. George Ford won the cup for Rubber driven aircraft flying a Mercury *Mentor*, his best flight being 104.3 sec.

Gordon Bunney won the Bob Sergeant trophy for the member of Aces who put up the best performance. He was flying in the glider contest.

We are shortly going on a trrip to Westlands Aircraft Limited which, we hope, will prove very interesting to us all.

TYNEMOUTH M.A.C.

Gordon Oswell and Roy Nicholls flew in the Chester C/L rodeo, but were rather unsuccessful as the best placing was Gordon Oswell with 284 points in the stunt event with his 15-month-old D.H. 110. We have team-racing practice every Saturday afternoon at Linskill School so if you are not a club member come and give us a visit as new members are always welcome.

Doc. Nicholls is bewildered these days as his Mk. II Oliver racer is faster than the Mk. III job which is 3 oz. lighter.

CHEADLE & D.M.A.S.

At the Midlands Rally, Walter Nield and Brian Falkner scattered their Nordics over the countryside, the latter member only deciding to fly glider at 6.30 p.m., naturally a hectic time went into that mad half hour; the models made three flights and placed only 6th.

Woodford saw the unexpected happen. Wally Nield came up to win 1st after two loops on tow that made the C/L boys envious. His stockpile of gliders is getting low, now that his wing rib cutting machine has worn out. Garth Evans put in a nice couple of maxes followed by a 6 min. fly off (and girl friend) Garthy just sat and laughed. The model which rejoices in the name of *Chinaman* is a simple 6 square lightweight.

Membership is soaring to great heights, and is now approaching 50, mostly associate members who enjoy the club flying field on Sunday and Tuesday evenings.

Older senior members have been amazed at the high climbers that our junior section are producing. Wise head shaking was replaced by dropped jaws when Junior Paul Gibson screwed his Oliver Tiger 2.49 powered 46 in. job vertically upwards. Fibre props are all the rage amongst the hi-climb enthusiasts, giving top engine revs and the pleasant sound of tearing linen.

ENFIELD & D.M.A.C.

The C/L fliers are finding things a little hectic with three meetings in three weeks; the results being that the " Class B " boys are in disgrace, having failed completely at all three, and the Juniors are jubilant that Mike Pinnock should take 2nd in combat at both the London Area and at Cranfield, and that Pete Hartwell with George Allen " pitting " should win the " Class A " at Cranfield. These youngsters will soon be showing the Seniors how to do it if we're not careful !

MONTROSE M.A.C.

The Montrose M.A.C. shared their flying field with the rest of the N.E. for the Open Rubber, and also for the " Aberdeen Express Cup " power event which was making its first visit to Montrose. K. B. Whyte (M.M.A.C.) flying a *Swiss Miss* won this solid silver goblet with a fine three-flight agg. of 6 min. 30 sec. Bruce Lamb (B.A.T.) was second with 5 min. 5 sec. flying an *Eliminator*. Ken Whyte has also won the League's " Individual Championship Cup." which is tallied from efforts in the Strathmore events.

As a change from prang-burning and other post-comp. events the Bucksburn and Montrose clubs held a grand joint search of the undergrowth west of the 'drome which lasted most of the evening. Search was for D. L. Petrie's *Upstairs Maid* which mysteriously vanished on a " trimming " flight and is still missing.

BUCKSBURN A.T.

Local history was made this year when Bucksburn A.T. broke the Montrose/Dundee monopoly of the Angus & District Aero League's " Strathmore Trophy " which goes annually to club whose team scores most in the League's series of F/F events. Final tally was 2,114 points, with Montrose just behind with 1,916. This was the narrowest decision on record.

On September 2nd, at Montrose Aerodrome, Ronnie Robertson won the League Open Rubber with a three-round total of 420 sec. including one maximum: model was a *Borderline* Wakefield: Open rubber is having a revival among B.A.T. members.

RULES FOR ½A TEAM RACING

1. Model Specification:
   (i) Maximum motor capacity 1.5 c.c.
   (ii) Minimum wing area 50 sq. in. (excluding fuselage).
   (iii) Fuselage depth at cockpit and including cockpit minimum 2½ in.
   (iv) Fuselage width at point of maximum cross section to be not less than 1¾ in.
   (v) Fuel tank capacity 10 c.c.
   (vi) Wheels 1½ in. dia.
   (vii) Pilot's head minimum ½ in.
   (viii) Line length 38 ft. 2½ in. i.e. 110 laps equals 5 miles.
   (ix) Heats 5 miles.
   (x) Finals 10 miles.
   (xi) Maximum of four to fly in the circle at the same time.

RULES FOR COMBAT

1. A combat event shall consist of two models flown at the same time in the same circle for a predetermined time, the object being to cut a streamer attached to the tail of the opponent's model, points being scored for each cut. The winner shall be the competitor with the most points at the conclusion of the combat period.
2. The S.M.A.E. general competition rules shall apply as appropriate.
3. The contest shall be run by one Referee with a whistle and a stop-watch, together with one Scorer per contestant who shall also be equipped with a stop-watch and appropriate means of recording the number of cuts.
4. The model shall conform to the following specification:—
   a. Models shall be fully aerobatic.
   b. Maximum engine capacity shall be 3.5 c.c.
   c. Line length from the grip of the control handle to the centre of the model shall be 50 ft. plus or minus 6 in.
   d. The streamers shall be 10 ft. long and 1½ in. wide, securely attached to the rear of the fuselage or fin by 60 in. of strong thread.
   e. The model shall not be fitted with any artificial aid calculated to assist the cutting of the streamers.
5. The combat period shall be of 5 min. duration and shall commence from the giving of the starting signal by the referee.
6. Any pilot whose model is not airborne within 2 min. of the starting signal shall be eliminated.
7. Each contestant shall be permitted a maximum of two models in the event, but only one model shall be used in any one flight.
8. The following shall be the method of scoring:—
   a. Scoring shall commence immediately the starting signal is given.
   b. A penalty of 1 point shall be incurred for every full period of 15 sec. that a model is not airborne during the combat period.
   c. Five points shall be awarded for each single cut of the opponent's streamer, only cuts by the airscrew count.
9. Flights shall be declared unofficial if:—
   a. There is a mid-air collision and neither contestant is disqualified.
   b. If a streamer becomes accidentally detached from a model i.e. is not cut by an opponent.
   In the event of an unofficial flight, the heat shall be re-flown.
10. In the event of a tie, the heat shall be immediately re-flown.
11. A contestant shall be disqualified from the contest if:—
    a. He flies two or more consecutive laps at a height of less than 6 ft.
    b. If he deliberately attacks another model as distinct from its streamer.

QUIZ ANSWERS

1, (a) Geoffrey Pike, (b) World R/C endurance record for powered models. 2, (a) J. Cahill, (b) 1938. 3, (a) " K " Falcon, (b) 1.96 c.c. 4, (a) Belgian, (b) Swiss, (c) Czech, (d) Austrian. 5 (a) the heating effect of skin friction, (b) Bell X-2. 6, All are also kit makers. 7 (a) 5.65 c.c. diesel, (b) 4.82 c.c. glowplug, (c) 9.82 c.c. glowplug, (d) 3.2 c.c. diesel. 8, (a) Sal Taibi, (b) Dave Posner, (c) Harold deBolt, (d) Rudolf Lindner.

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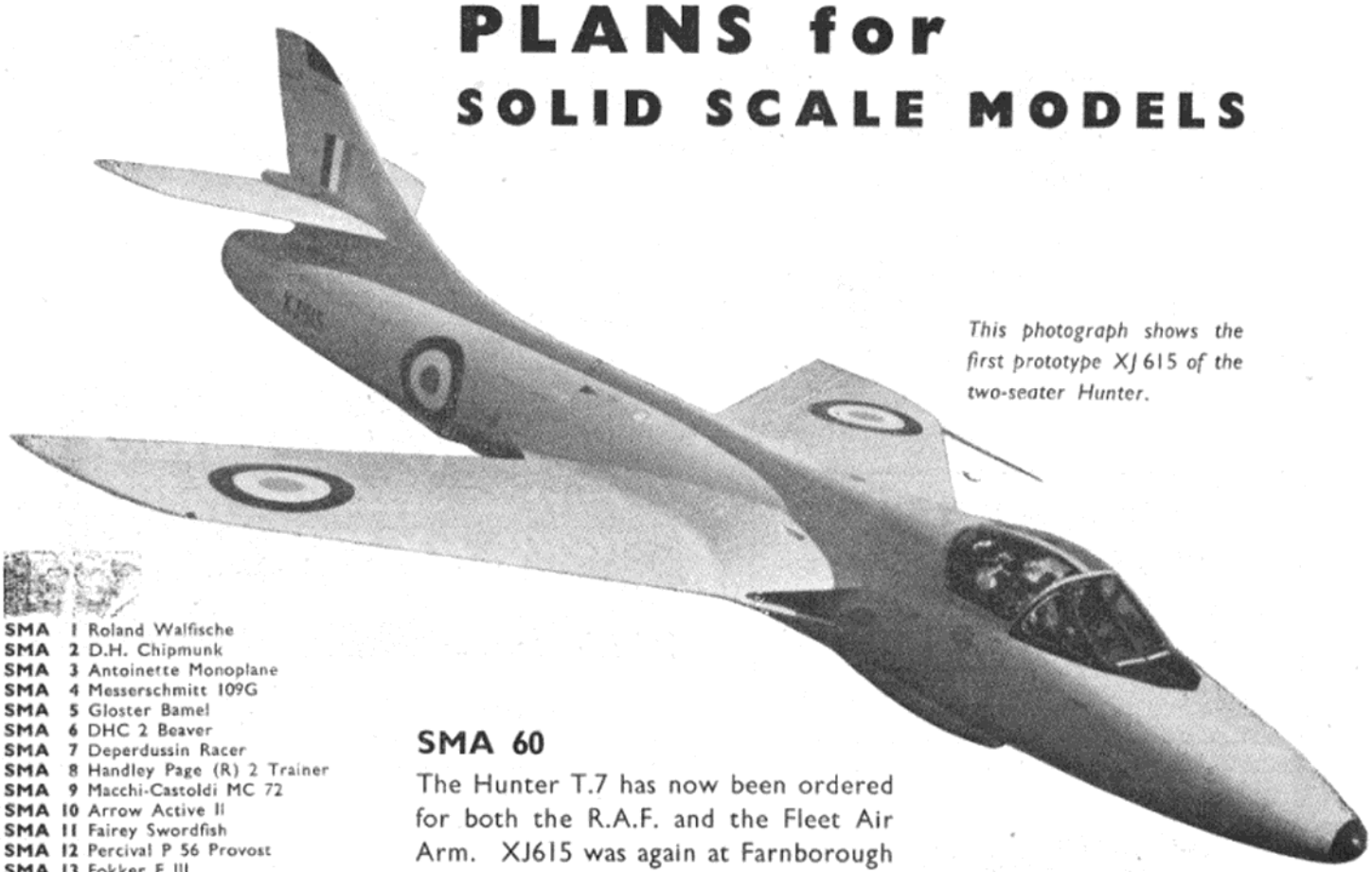

This photograph shows the first prototype XJ 615 of the two-seater Hunter.

SMA 1 Roland Walfische
SMA 2 D.H. Chipmunk
SMA 3 Antoinette Monoplane
SMA 4 Messerschmitt 109G
SMA 5 Gloster Bamel
SMA 6 DHC 2 Beaver
SMA 7 Deperdussin Racer
SMA 8 Handley Page (R) 2 Trainer
SMA 9 Macchi-Castoldi MC 72
SMA 10 Arrow Active II
SMA 11 Fairey Swordfish
SMA 12 Percival P 56 Provost
SMA 13 Fokker F III
SMA 14 Boulton Paul Balliol
SMA 15 Sopwith Camel
SMA 16 S.E. 5A
SMA 17 Boulton Paul P III
SMA 18 Prestwick Pioneer
SMA 19 Heston Phoenix
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SMA 21 Spirit Of St. Louis
SMA 22 MIG 15
SMA 23 Fairey Tipsy Junior
SMA 24 Supermarine Swift
SMA 25 Blackburn Lincock III
SMA 26 Supermarine Seagull
SMA 27 Spitfire Mk. I
SMA 28 D.H. 60 Moth
SMA 29 Henry Farman
SMA 30 Armstrongs-Whitworth FK 3
SMA 31 Fairey Fantome
SMA 32 Bristol 173 Helicopter
SMA 33 Fokker D VII
SMA 34 Fairey Fox
SMA 35 Saab J-29
SMA 36 Vickers FB 9 Gunbus
SMA 37 Wright Biplane
SMA 38 Slingsby Sky Sailplane
SMA 39 D.H. 9a
SMA 40 The Westland Wyvern
SMA 41 The Bleriot Monoplane
SMA 42 The Messerschmitt Me 109E
SMA 43 The Blackburn Shark
SMA 44 The Avro 504K
SMA 45 The Hawker Seahawk
SMA 46 The Brandenburgh Seaplane
SMA 47 The SPAD Berline
SMA 48 The Lockheed Starfire
SMA 49 The Heinkel Salamander
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SMA 54 D.H. Vampire T II
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SMA 57 Mystere IV N
SMA 58 Fairey Delta FD2
SMA 59 Hawker Nimrod
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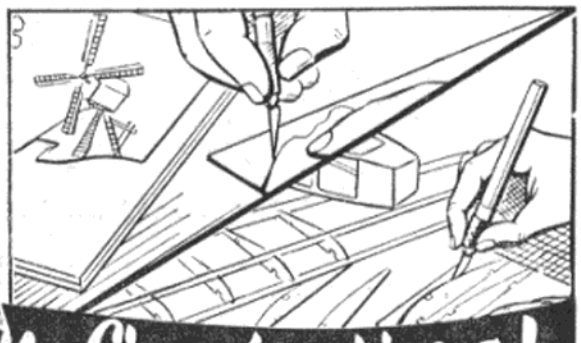

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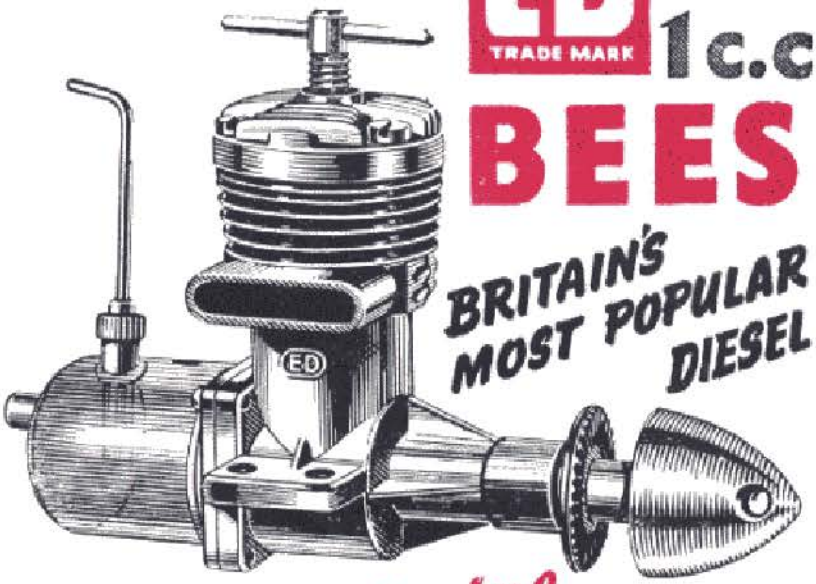

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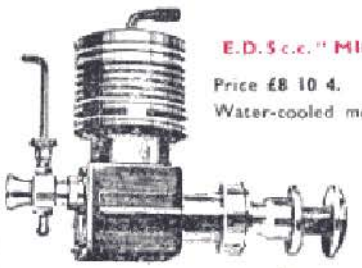

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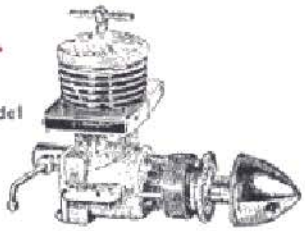

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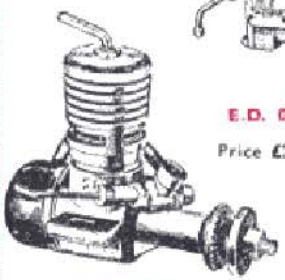

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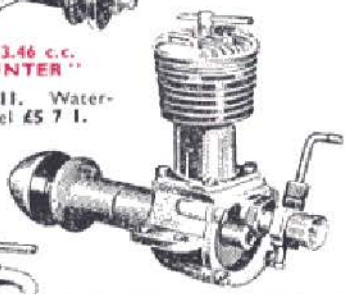

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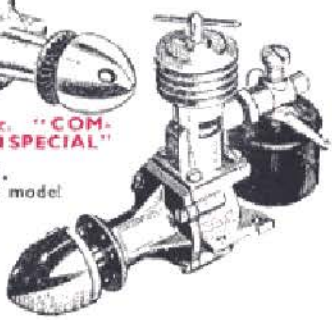

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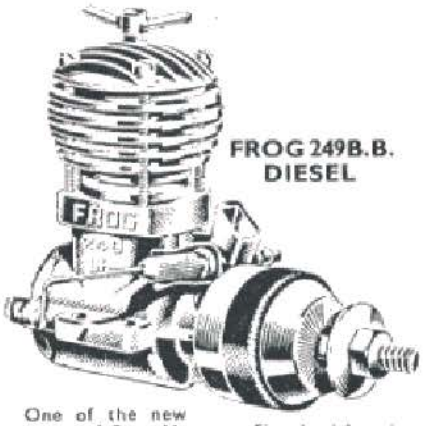

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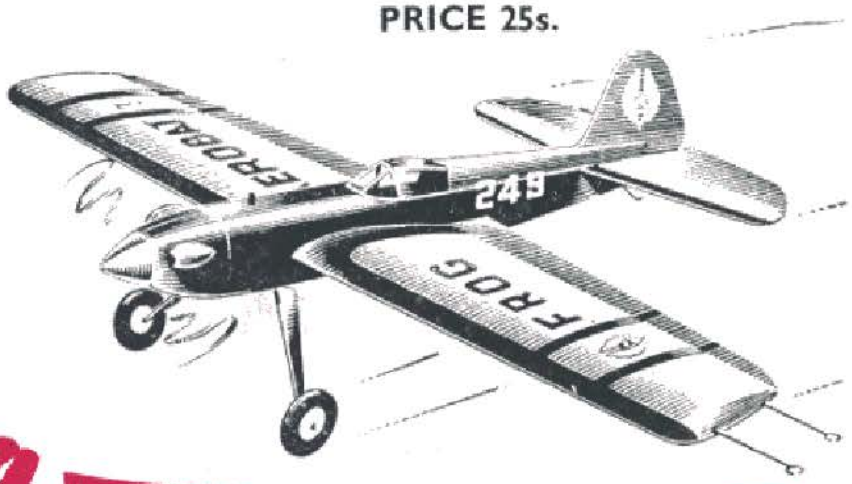

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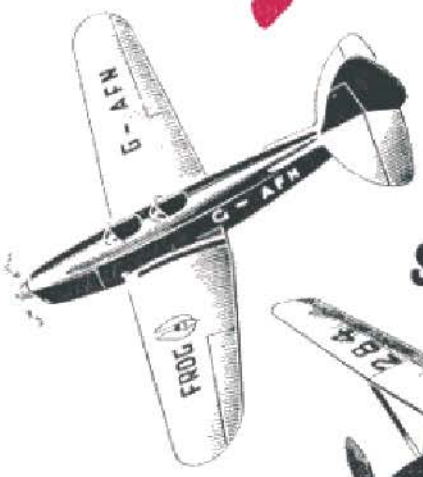

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