

NOVEMBER 1958

# AERO MODELLER



*Coppens* The Balloon Buster

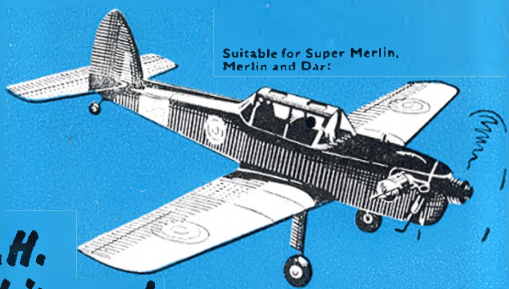
1'6

## D.H. CHIPMUNK

This 20-inch span control line scale model is an accurate replica of the actual training aircraft used by H.R.H. The Duke of Edinburgh. Authentic registration letters, roundels, etc., are included in a sheet of quality transfers and this superb kit is absolutely complete with wheels, tank, and pre-shaped wing, etc. All parts are accurately printed on top grade balsa and construction is child's-play with the specially prepared schematic stage-by-stage instruction sheet with its easy to follow perspective drawings. Designed by leading aeromodeller, Ron Moulton, it is a first-rate flyer and a scale model truly worthy of the name.

**Price including tax 15/-**

**D.H.  
Chipmunk**



Suitable for Super Merlin,  
Merlin and Dart

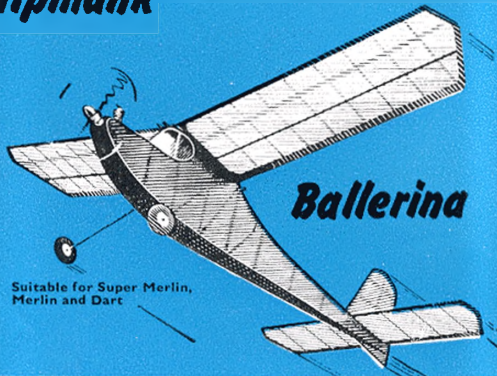
## BALLERINA

Fit this 38-inch span model with a Super Merlin and you have the perfect combination for a first power model. Construction is simplicity itself. The Kit includes accurate printed parts, shaped trailing edges, etc., all on satin smooth top grade balsa. Big feature of the design by Vic Smeed, is its foolproof performance. Even the beginner will find it difficult to prang, yet snappy performance up to contest standard can be achieved if required.

**Price Including tax 16/6**

**Ballerina**

Suitable for Super Merlin,  
Merlin and Dart



## D.C. KITS for D.C. ENGINES

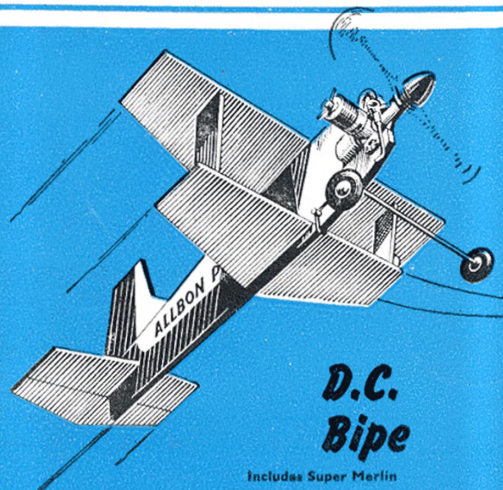
## D.C. BIPE

A complete 15-inch span Control Line Biplane Kit which includes Super Merlin Engine with propeller, special sidewinder tank, etc. Printed balsa parts, precut fuselage and flying surfaces, cement, dope, control line handle and lines, in fact all you have to do is assemble the parts, which can be done in one hour, and the model is ready to fly. It is the ideal model for your first attempt at control line flying and is virtually crashproof owing to the exceptionally sturdy construction. Full flying instructions are printed on the box label. Kit also available without engine and accessories.

**Kit only 12/- . Complete outfit £4**

**D.C.  
Bipe**

Includes Super Merlin

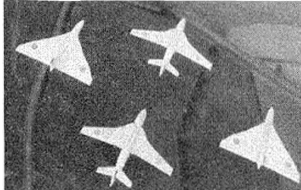


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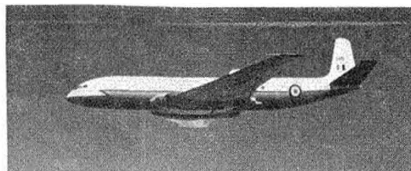


**Will you fly fighters?** Never have the fighter pilot's responsibilities been so great as they are today. Defence is a high priority and calls for special flying skill in developing air-to-air guided missile tactics.

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**Trans-global flying.** Transport Command pilots must have the temperament and skill to take the world in their stride.



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**Flying on special operations.** Men on the jungle patrols in Malaya depend on the helicopters of the Far East Air Force for ammunition, water, food, and often their very lives.

## in the missile age . . . if you're good enough



**How adventurous are you?** This Otter aircraft, taking part in the Trans-Antarctic Expedition, was flown 1,460 miles non-stop over the South Pole by the R.A.F.



**Research into flying.** At the R.A.F. Institute of Aviation Medicine this medical officer, a qualified pilot, wears the latest flying clothing and prepares to enter the man-carrying centrifuge used for studying the reactions of men subjected to "g" forces.



**Can you shoulder responsibility?** The greater your experience as an aircrew officer, the greater your responsibilities: to the men under you: in administrative liaison or training. Air traffic control typifies some of the duties that may come your way.

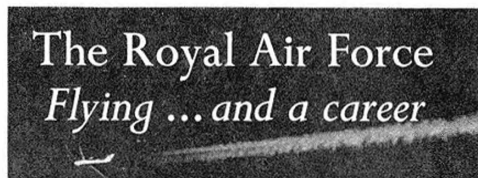
## to fly with the Royal Air Force



**You continue to fly.** In spite of heavy responsibilities a high-ranking officer continues flying throughout his career.



**Time for recreation.** Teamwork in work and play, is encouraged. Rowing is just one of the many sports and recreations organised by the R.A.F.



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Flying ... and a career**

**How to fly with the R.A.F.** You must be between 17½ and 26 and absolutely fit. You must have the General Certificate of Education, the Scottish Leaving Certificate or their equivalent. Write, stating age and education, to the Air Ministry, Dept. AM24, Adastral House, London, WC1.

# 3 Sensational 'CONTROL LINE' Kits

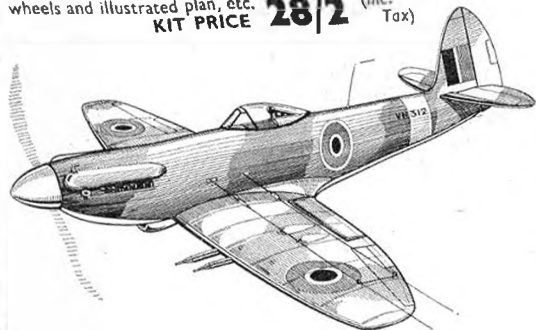
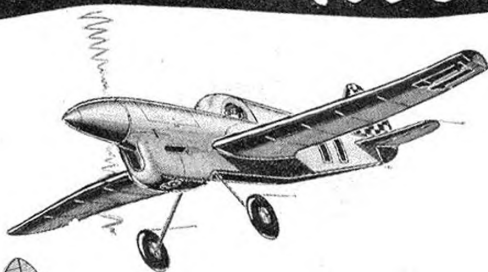
## ★ PHILIBUSTER

(28-in. span)

This model has everything!

A super racer designed for top performances.  
A Winner every time!  
Will take all Glow Plug and Diesel Motors up to  
5 c.c. (Inverted) such as E.D. Mk. IV, Frog 500,  
Amco 3.5, etc.  
Kit complete with plastic cockpit cover, Sorbo rubber  
wheels and illustrated plan, etc.

KIT PRICE **28/2** (Inc. Tax)



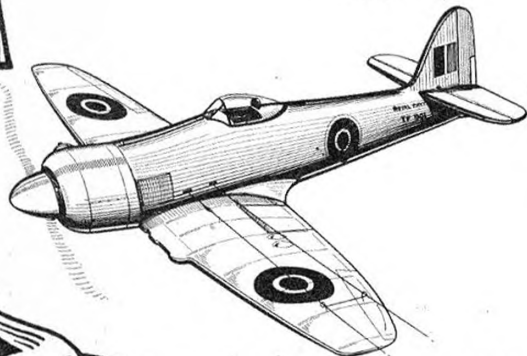
## ★ SPITFIRE (27½-in. span)

Britain's Immortal Fighter

A perfectly streamlined scale replica, capable  
of advanced manoeuvres and flies at speeds  
over 60 m.p.h.

Super kit contains many ready-cut hardwood  
and balsa parts, cockpit cover, Sorbo rubber  
wheels and detailed plan, etc. Best suited for  
radially-mounted motors of 1.3 to 3.0 c.c. Diesel  
and 1.5 to 5 c.c. Glow Plug.

KIT PRICE **33/-** (Inc. Tax)



## ★ SEA-FURY

(25½-in. span)

Of simple construction, giving high speeds with  
extreme manoeuvrability. The kit contains  
graded balsa ready-cut parts, cockpit cover,  
metal tank parts and step-by-step plan, etc.  
Powered by Diesel motors of 1.3 to 3.0 c.c.  
or Glow Plug motors of 1.5 to 5.0 c.c.

KIT PRICE **28/2** (Inc. Tax)

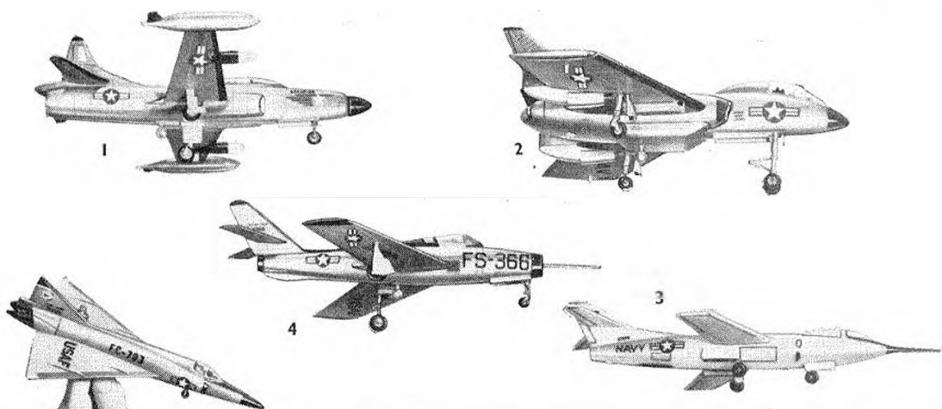
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# BALSA STORY

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## MORE ABOUT LIQUID NATURAL GAS STORAGE

THIS PROBLEM of the storage of liquefied natural gas has been worked on for many years.

In America, during the war, storage tanks for liquid gas were built at Cleveland, Ohio, the object being to take gas through the pipe-lines from the oil fields during the night, to liquify it and store it, and to use it to boost the peak consumption during the day. Unfortunately one of these tanks failed with consequent heavy damage and loss of life.

Storage tanks have also been built in Russia but it wasn't until the early 1950's that a scheme for the transport of liquid gas in tankers was evolved. This scheme was the first to be based on the use of balsa wood. It initiated from one of the big meat packing firms in Chicago and in its economic conception it was very sound indeed.

It was proposed to build storage tanks on barges which would be filled with liquefied gas in the Gulf of New Orleans. They would then steam up the Mississippi to Chicago and discharge their gas there.

Now in the process of liquefying a gas "energy" must be used in some form to do the work. The method of liquefying substantially rests on the compression of the gas which needs steam or oil or electricity to drive the compressor to do it. In reverse, if you want to turn the liquid gas into its vaporised form you have to put heat into the liquid gas and raise its temperature. Heat is another form of energy and to get heat you must use fuel in the form of coal or oil or electricity.

Where this scheme was so clever was that it was proposed to obtain this heat for vaporising the liquid gas by circulating the brine from the meat factories and taking heat out of this brine which, in turn, had taken the heat out of the meat. You will see that, at the same time, the brine would be cooled and so could then be used to pump round the refrigeration system

in the meat factory, again taking heat out of the meat which, in turn, it would give up to the liquid gas.

In this way, instead of having to spend money on providing the heat, they would, in actual fact, get back some of the value of the energy initially used in the liquefaction process in the Gulf of New Orleans because they would be saving the energy normally used in cooling the brine from the meat works. In other words they would be doing two jobs at once.

This may be a little difficult to understand as it is rather technical, but you have to realise that heat is only relative. Minus 100 degrees F. is hotter than minus 200 degrees F., and there is an amount of heat which can be calculated as required to raise a liquid at minus 200 degrees F. to minus 100 degrees F., or which must be taken out of the liquid in the reverse process.

This principle is used in heat pumps where it is possible to take a few degrees of heat out of a liquid and then concentrate this heat and use it for, say, heating buildings.

A large block of flats opposite Battersea Power Station is heated in this way. When you generate electricity considerable quantities of water must be available in order to cool the generators. This water is pumped across the river, through a tunnel, and it is cooled by removing some of the heat from it. The heat is concentrated and used to heat the flats.

You can, I think, see that if you have 100 gallons of water at a temperature of 40 degrees F., it would have the same amount of heat as 50 gallons of water to 80 degrees F. That is precisely what a heat pump does, it concentrates the heat.

In another such scheme the whole of the Municipal Buildings in Norwich are heated by taking a few degrees of heat out of the river water and concentrating it through a heat pump.

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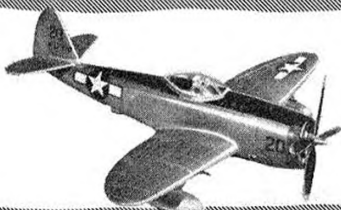
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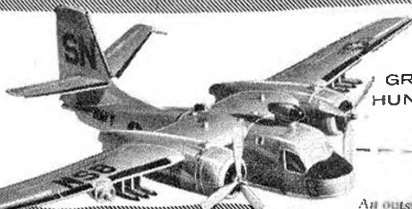
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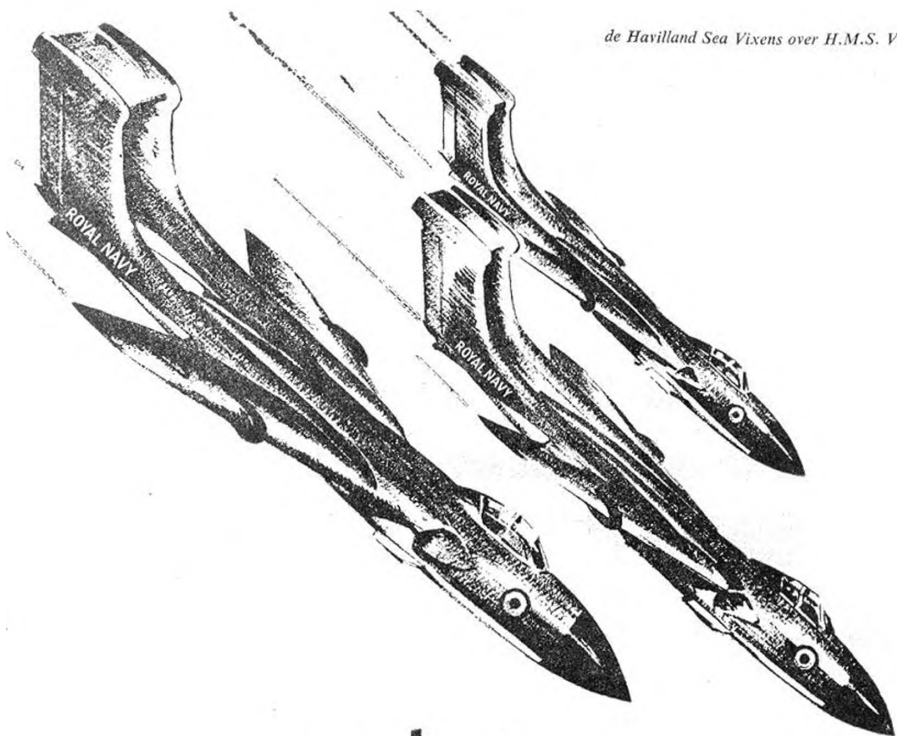


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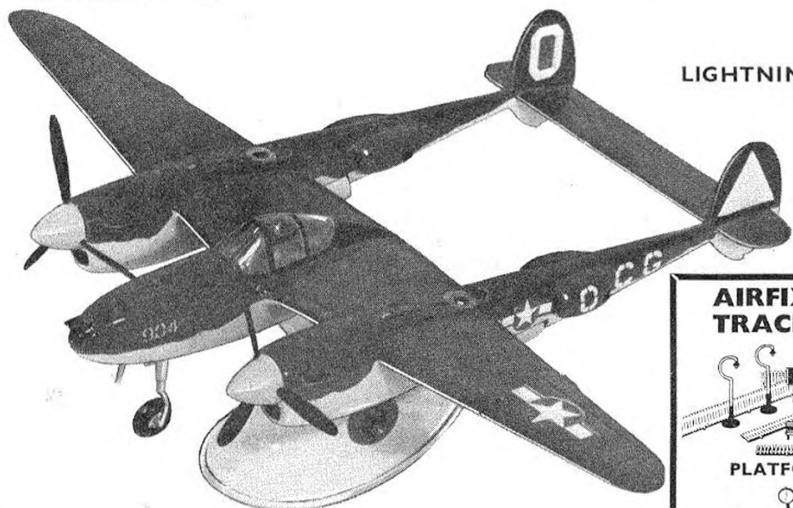
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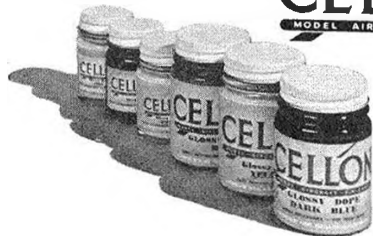
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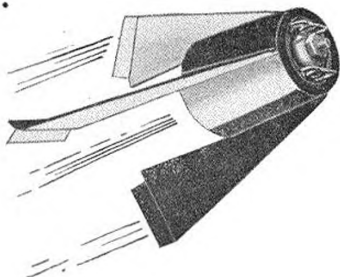
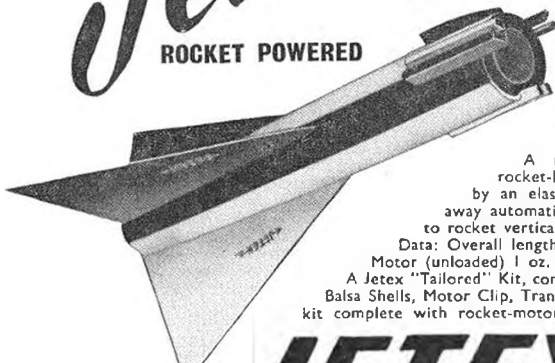
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Skydon	10/8 - 2/1
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Southerner Mite	10/8 - 2/1
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Panther	16/- - 3/6
Philbuster	23/6 - 4/8
Sabre F.8EE	4/11 - 1/5
Sea Fury	57/9 - 11/5
Sentinel	26/8 - 5/8
Skykooter	30 - 1/6
Vortex	16/- - 3/6
Wypern	31/3 - 6/3
Tru-Flites	4/- - 9d.

Stinson L.105	28/6 - 5/8
Texan	12/9 - 3/2
Thr. Monitor	19/3 - 3/10
Thunderbird	25/- - 4/8
Tiger Moth	28/6 - 5/8
Toreador	22/4 - 4/8
Wasp	10/6 - 2/1

### ★ YERON including

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Fairy D	41/3 - 8/3
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Lavochkin	28 - 5/2
Midge Mustang	23/6 - 4/8
Minibusster	11/9 - 3/1
Nipper	14/6 - 2/10
Phantom	7/9 - 1/7
Panther	16/- - 3/6
Philbuster	23/6 - 4/8
Sabre F.8EE	4/11 - 1/5
Sea Fury	57/9 - 11/5
Sentinel	26/8 - 5/8
Skykooter	30 - 1/6
Vortex	16/- - 3/6
Wypern	31/3 - 6/3
Tru-Flites	4/- - 9d.

# ARTHUR MULLETT 110

15 MEETING HOUSE LANE  
BRIGHTON SUSSEX-ENG



# Heard at the HANGAR DOORS

1 Bombers at Farnborough captured in a passing moment by Staff photographer Doug McHard. The Vulcan B2 pours on the coals as it beats up the Victor II which has just landed with braking chute fully extended

## Our New Look

THIS REARRANGEMENT of our "shop window" will, we hope, please readers in that it saves space, serving the dual purpose of providing room for editorial comment as well as accommodating news items of modelling interest.

Firstly, the Editor must apologise for the obvious error in last month's Editorial where Erno Frigyes of Hungary was credited with winning the Wakefield. He did, of course, place top in F.A.I. Power. Amazing thing was that our normally astute readers missed this slip of the pen, failing to remind us with a shout of letters.

## Brussels Expo International

Although not a true World Championship the IX Criterium d'Europe for control line models held in Brussels during the fabulous World Fair period was indeed well attended. Fifteen European nations competed and once again the Hungarians proved that for 1959 at least they are the world's top modellers, taking first places in speed and aerobatics in the team positions, their man Toth winning individual speed at 134 m.p.h. It is interesting to compare this speed with the 1957 results bearing in mind the change in model formula. Comparison indicates that the larger model size has maintained *status quo* as far as performance goes.

Rumour has it that, due to the Hungarian successes this season, the three free flight championships scheduled to take place in Russia next year may now be held in Hungary. This is, however, only "grape vine" information and not to be taken as official.

Our own team racing champion "Big Dick" Edmonds proved his outstanding skill at the rotating race art by winning top individual honours against stiff opposition. Credit must go to his pilot "Gadget" Gibbs who fared better in this classification than he did in speed. A full report by our Assistant Editor Ron Moulton will be found on page 564.

## Army Model Pilots

The Editor meantime has also been journeying in Europe. To Kaiserslautern in Germany accompanied by Henry Nicholls to judge the U.S.A.E.U.R. Model Meet attended by U.S. Army personnel from all over Europe, and later to the International Radio Control competition for the King of the Belgians Cup. The Army meeting, the second of its kind, was a great success, the most memorable incident occurring during the Combat event when a truly fantastic mix-up took place. Firstly, the inevitable mid-air collision occurred during which a flying wing crashed, losing the complete starboard section of its supporting surfaces. It was re-started and re-entered the fray whereupon it performed the same operation on its rival, an orthodox profile machine which promptly flew across the circle crossing the two sets of lines. The pilot of the "half wing" lost control and crashed whilst his adversary lost the handle, his machine winding the lines around his opponent's legs. The flyer in question with great skill caught hold of the two lines with one hand and carried on flying his opponent's model, at the same time unwinding the lines from around his legs with his other hand before finally handing back the handle to his opponent with elaborate courtesy!



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No. 274, NOVEMBER, 1958

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## R/C at Darmstadt

Time nor space permit the inclusion of a full report on the R/C Internationals at Darmstadt, Germany, in this issue, but pending its publication in the December number we give a brief summary of what occurred. Of the four classes only the multi and single control power classes were well supported, R/C gliders being in the minority.

Multi control saw a closely-contested battle between German Stegmaier and Belgian Gobeaux, the former winning over a two-flight contest by a mere two points out of a total of over 3,200. Bernhardt of Germany was third and our own Chris Olsen fourth; a very creditable performance considering he was flying a model of his own design with home-built equipment against opposition such as the Stegmaier and Gobeaux "Equipes" with all their facilities.

Single channel saw a new name to the fore when Berglund of Sweden, flying one of the prettiest low-wing models we have seen, took first place by a mere six points from Schoorel of Holland. Berglund used a two-valve receiver of similar type to the Wright outfit operating a governor type actuator. Campolongo of Switzerland won the glider single control event, there being only four competitors all told. Even worse was the support for the multi control glider section which had not a single entry. If this is the support for what is at present virtually the European R/C Championships then the F.A.I. had best consider whether four categories are worth running, particularly as the meeting is to be given World Championship status for 1960.

## Canadian R/C Problem

Somewhat severe regulations by the Canadian Department of Transport place a deal of restriction on the operation of radio control equipment in that country. Richard Baylis, Chairman of the R/C Committee of the M.A.A.C. has sent us details of a questionnaire his committee is circulating in an effort to obtain an easing of the stringent conditions. He asks all Canadian modellers to assist by completing the questionnaire, copies of which can be obtained from Apartment 11, 4,000 Dupuis Avenue, Montreal, P.Q., Canada.

## It comes but once a year

We refer, of course, to the AEROMODELLER Christmas Number published November 15th, containing 84 pages of first class modelling material not forgetting TWO free plans, one of a sport/radio power job for .75 to 1 c.c. motors, the other a really hot combat model of unusual design. Further details will be found on page 578 and in view of the great demand for this

particular issue we do recommend that those readers without regular orders book this December number without delay at their local Model Shop or Newsagent.

## Frank-ly, it's a wow!

The appearance of a new ZAIC YEAR BOOK is always an event in the aeromodelling world, and the latest edition to make its way on to our desk is surely one of the best yet, if bulk is any criterion. Sure enough, a study of the contents shows that the 1957-58 edition is well up to the old Zaic standards, and its 224 pages contain no less than 160 plans and 57 contributions, covering all classes of model with one important omission. Wot? No control line? But then the old Zaic has ever been a dyed-in-the-wool free flyer.

The study of a collection of the Year Books is a fair indication of the wanderings of aeromodelling's "Bachelor Gay", for last year's dedication to "Nonno" gives way now to "Carmen", but it would be a bold man who predicted that this doyen of aeromodelling writers is due to settle down! Too often have we heard him discourse on the admixture of marriage and modelling to give much credence to his statement that "this is it", and frankly (no pun intended) a lot of fun would go out of the game if Zaic spent his time compiling a family budget instead of his incomparable books.

That the fun-loving Frank also has a serious outlook is no better presented than in the foreword to his current book, which we leave to speak for itself:

*"All of the pleasures and joys that we experienced while we build and fly model aeroplanes are being handed to us by those who were here before us.*

*"All the knowledge that we may find in this book we will take for our own, and feel that it is our right to do so. It truly is our right, if at the same time we assume the responsibility of eventually adding to the sum total of human knowledge. How could a fountain stay alive if we all dipped our cups in it, and no one took care that water will continue to flow?"*

*"Pity the man who will take and use the knowledge gathered by others and does not contribute his own."*

## Team trophy, tailless, for the use of

Since the annual International Tailless model contests were inaugurated some years ago by Germany, the only official award has been for the individual winner.

The Team aspect has now been taken care of by the donation of a fine trophy. Presented by the Editor of the Dutch aviation magazine at the closing banquet, Werner Theis, manager of the all-conquering German contingent, was the first recipient of this mark of recognition, which will encourage greater participation in this intensely interesting class of model.

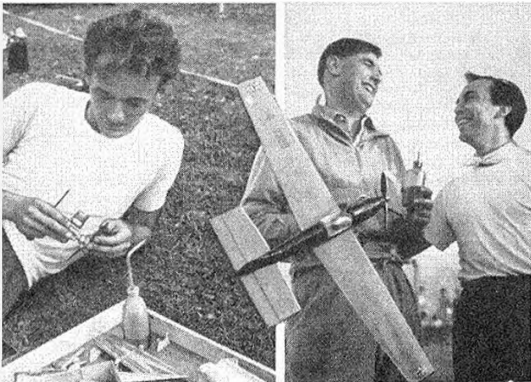


*M/Sgt. F. McKnight who placed second best individual in the U.S. Army meeting already mentioned flew in many classes. He is here tanking up his Cessna 180 in the C/JL Scale event*

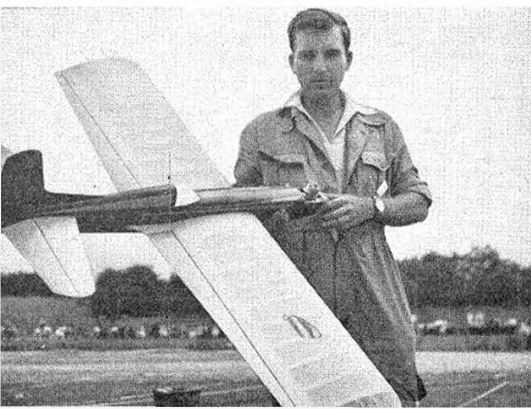
*Maestro McGillcuddy should have been with us this month but seems to have been delayed en route. He will, however, grace the pages of our Christmas issue by popular request. (Flattery will no reduce ma fee, says he!)*



# Brussels Expo International



Heading shows the Etterbeek pit scene and mammoth Atomium structure in the Brussels Expo, which symbolises 1958 in this bustling city. Above: Speed winner Toth contemplates his Hungarian Maki 2.5 glow engine, and at right: Dick Edmunds and pilot Ray Gibbs share a joke after their great TJR victory. Below: Josef Gabris of Bratislava the clear stunt winner



## 15 NATIONS COMPETE AT ETTERBEEK C/L CHAMPS

THE NINTH CRITERIUM of Europe for controling models was truly a companion festival to the equally bewildering World's Fair in Brussels. Fifteen European countries were represented in the stunt, speed, and team race events, and although at times the pace of the four-day meeting overran the resources of the heavily-burdened Belgian organisation, results and the lessons learned made it a memorable affair for the 112 competitors and innumerable officials who had been invited from each of the important governing bodies in Europe.

The meeting was scheduled to be a trial for the 1958 rule changes in speed and team race, and it was clearly demonstrated to the F.A.I. Models Commission members present that some strict administrative requirements must be introduced into the "Code Sportif" before the next meeting.

Rule changes have had no effect on performance, but have produced the desired results in handling, this being most evident in speed where every take-off was a success and no less than 14 models exceeded 120 m.p.h.

We would have liked to afford equal praise to the team racers, but a more-than-liberal interpretation of appearance and fuselage cross-section requirements by the Italian and Belgian entrants clouds any assessment of their merits. All praise to Dick Edmunds who so well and truly trounced the opposition (Ray Gibbs piloting) with a model that conformed in every respect, and did not have to be whipped to be fastest in the circle, creating an all-time record of 10 kilometres in 4.58, but of that, more anon.

First day was taken up by reception, processing and practice. Apart from a remarkable test flight by the amateur Ivanmikov at about 170 m.p.h., in which we witnessed the unusual characteristic of his low pulse-rate RAM-2 "coming-in" for the speed run, and the use of delta shapes by the Czechs, there was little to be learned from what was on show.

Unlike previous years, when a smaller entry had permitted events to be interspersed, the need for 108 flights in stunt, and 114 in speed meant that two of the three competition days had to be conducted to a strict time schedule. Great Britain was first out of the hat in the draw for precedence in the excellent circuits and by 9.30 when Gibbs went to the speed, and Efflaender to the stunt circles, it was already warm, though later the temperature was to soar to the nineties!

## Speed

The heat suited most of the speed entries and, although Gibbs came out of the pylon on his first attempt (the Carter Special running rich), it was not long before Zatecl, with the only orthodox Czech model, was showing a neat 122 m.p.h. and Rossi the Italian even faster with 126 m.p.h.

Victory in speed was anticipated to be the prerogative of either the Czech M.V.V.S. Institute or the strong Super Tigre group, ably governed by the maestro of high r.p.m. Jaures Garofali of Bologna. Then came the shock for both parties, for Michael Yassiltchenko (U.S.S.R.) beat the Czech with 123—and soon after came Toth of Hungary, using the new Moki engine produced in the Hungarian Institute. With his time of just under 130 m.p.h.

the picture now changed, for individual rather than team performance is more important for Criterion points, and as the day progressed a new technique in contest tactics was born. Each competitor was permitted three attempts per flight, and to nullify an attempt the pilot had only to remove his wrist from the pylon. Thus the situation arose when an Italian or Czech flier would start his run, be timed by his manager for the first four laps—and if the time was not fast enough at that stage, he was shouted out and left the pylon for two more chances! Such a practice has its faults, not the least being the fact that the time schedule only allowed for three flights per person—it also worked both ways, for Toth came out in the middle of a perfect 132 m.p.h. run when an onlooker gave the appropriate yell! Fortunately for him, it made no difference to the result.

In their efforts to surpass Toth's lead, several of the Italians and Czechs seemed obliged to adopt questionable pylon tactics. Past tolerance of the continental technique of having the handle at 90 degrees to the lines was now stretched beyond even Belgian patience, and on the second day one each of the Italian and Czech teams was disqualified on two counts. Not only was the handle of Koer (Czech) at an acute angle to the lines, bringing the line across the right shoulder, but Rossi of Italy actually used an outrigger on the handle, by such practice effectively shortening the official line length as a radius from pylon to model. The need for an indicator projecting from the handle, to visibly line-up the flier and his model was never more obvious.

However, it was a losing battle for both parties. Rudl Beck secured the lead with 130 m.p.h. just before the first round ended, and Hungary was in an unassailable position. The Mok engine owes little to any other particular type, having the downward intake of the Czech M.V.V.S. to its rear disc valve, Dooling-style bulbous transfer, and early McCoy piston contour. It operates very happily off the chicken-hopper feed tank and has that healthy crackle which distinguishes "faster" from fast motors.

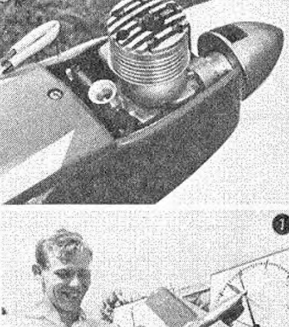
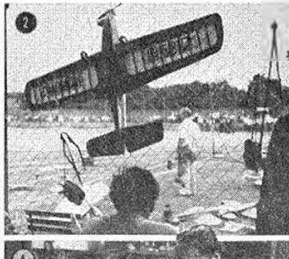
In the Super Tigre stable, motors were leaving airframes and being run-up beyond 20,000 on the quick run-up Garafati test bench. Pressurized, inverted tanks were connected to the main-bearing via the little stub in the casting which is now a standard Super Tigre feature, and it would appear that the pen-bladder tank is now a thing of the past. All the top 14 used either chicken-hopper or pressure feed from metal tanks.

Speed continued into the second day, after the warning had been issued to offending teams that deliberate "false attempts" were not going to be allowed, and in cooler weather a number of the leaders were able to improve on their speeds. Toth recording 134.2 m.p.h. and Beck 132.9 with their brown lakeite enamelled conventional models. On their heels came the Czech metal wings of Koci, Pastvik and Sladky (the latter with flat-plate solid deltal wings) and then a bevy of four Italians, split by Russia's Vassilchenko, clearly the acknowledged expert among a strong U.S.S.R. contingent using a Czech M.V.V.S. engine. In fifteenth place, vying with old adversaries Gorgocena and Battlo for leadership of the "private enterprise" section of the entry, Ray Gibbs had his share of problems and only made one good run at 117 m.p.h. Nevertheless his position placed G.H. in a fortunate fifth place behind Hungary, Czechoslovakia, Italy and Spain for Criterion points (Russia, not competing in Team Race, withdrew from the Criterion).

As a final and certainly most impressive flight of the day, little Ivannikov, who had waited patiently for such an opportunity for several hours, used the stunt circle to illuminate the gathering dusk with an awe-inspiring jet flight, the official time of 12 sec. making the speed no less than 300 k.p.h. or 186-41 m.p.h. At this time of day it was impossible to see the model, since the jet pipe-glow dulled as the speed increased, but visibility was more than enhanced by a pattern of bright exhaust flames (almost like the shock diamonds of an H/Peroxide rocket) and on this basis the time will go forward as a record claim.

## Stunt

Meanwhile, stunt had progressed steadily in 17 hours of continuous flying with an overnight break to relieve the monotony. The most outstanding feature of the aerobatic contest was the overall standard of the Russians who had only taken up the serious aerobatics to the F.A.I. pattern less



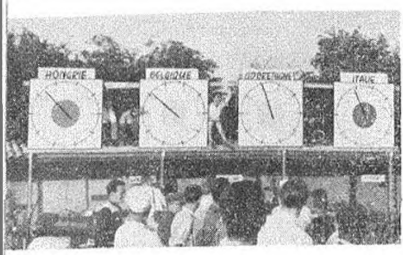
(1) Peter Bone, third in stunt for Hungary. (2) View from the U.S.S.R. pits. (3) Amato Prati, popular Italian flier. (4) Kondratenko's model based on Kenith Cougar. (5) Taddel of Italy and remarkable one-stop racer placed second. (6) Czech M.V.V.S. 5.6 engine used by winner Gabris in stunt. (7) Third in T.H., popular Henry Stauffs, also second in stunt. (8) German Schuco kit designer W. Sorgel placed fourth with latest model, the Hegl 70. (9) Pained expression on Ivannikov's face reflects a line break on a pull test. (10) Kozmator prepares speed model by Russian stunter. (11) Azor's racer was fourth in final



12



1



than 12 months previously. At the end of the first round all four of the U.S.S.R. men were in the top twelve! They used the Kometa 5 c.c. copy of the Super Tigre to good advantage, with 5-in. pitch props revving high and, though coming from places many thousands of miles apart in the U.S.S.R., all flew with the same walk-it-around technique so characteristic of Bob Palmer.

How they follow the Palmer design trend in the East! Czechs, Hungarians and Russians alike had models more than vaguely similar to that Thunderbird 3-view we published in January this year. The F.V.I. stunt schedule is simple enough, and the points given are most advantageous to the pilot who can execute three turns of figure-eight manoeuvres and fly the schedule correctly without omitting anything—for ten points are deducted for each omission. A number of favourites would have played higher had they been able to conform with these relatively simple requirements—our own team included.

First away was Gíg Eißlaender, but late was not kind and his motor cut after he had been performing at top class standard, so losing a valuable 360 points plus penalties for not doing the vertical and overhead eights. Breakink followed for Holland with his ALE35 miniature Thunderbolt, but was high in pull outs and inverted. Then Stoultz (the current Champ) with Fox 35 Nobler plus an oversize tank, lost his landing points.

Then came Kondratenko, first of the Soviet modellers. Obviously a knowledgeable

flyer, yet not spectacularly impressive, his points mounted steadily through rock steady flying. Nobody was going through the pattern with anywhere near a perfect standard, although some individual manoeuvres were exceptional, among them Ordegh's fine eights and smooth landing. Hellasi's perfect loops with an enormous model and Taoutiko's eights were first to earn full marks.

But the teamwork we had witnessed in free-flight and on the speed circuit was already bringing Hungary to the fore. Dr Egervary and the slim Bene were clear leaders with their high standard of precision, though Bene tended to pull out high. We awaited Bill Morley's flight to bring G.H. into the picture. Ridgway had had his motor cut, losing all the vertical and overhead eights, and Cornell had not been flying low enough to score many points. Mas, Morley was not on form. A wandering series of loops and overheads knocked his score down heavily, but hopes were high that in the remaining two rounds our men could find form to score higher.

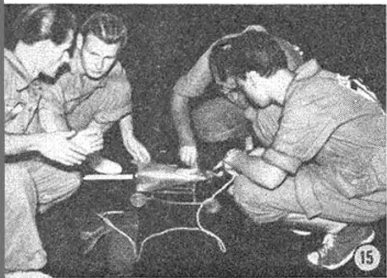
But we had not reckoned with the tall-enders. Surprise man Josef Gabris from Czechoslovakia certainly cannot loop well, but the rest of his schedule was markedly better than the rest of the entry. In this first round he led Egervary by 33 points, in the next he was 24 ahead of Stoultz (Egervary had been flying equally well but lost his overheads) and in the third round Stoultz was closest once more, a matter of 49 points behind.

On each occasion Gabris simply could not keep any degree of consistency in his inside loops. Had he done better in this simple manoeuvre, he might well have been the only man to break the 900 points barrier—a distinguishing score that almost deserves a gold medal!

The first round highlights we have mentioned were typical of the other rounds. Gíg Eißlaender had a recurrence of fuel trouble and manfully flew the schedule at ridiculously slow speed with hardly any power; each of our men forgot a manoeuvre during their subsequent flights; and two outstanding and surprise planks came when Kondratenko's "cup" base broke after he had flown a fine pattern, giving him a marvellous selection of tight outside loops, to be followed by Austrian Rautek who pulled out of the reverse winoover so sharply the engine left the airframe!

When flights were totalled (best two of

(12) Prelude to a 300 h.p.h. record by U.S.S.R. experts. (13) "Big Dick" is hoisted after his TJR final win. Above view shows the relative positions of Italian and Belgian models at moment of victory. Hungarian "clock" being many laps fast. (15) Czech confers around Sladky's metal-winged Delta. (16) Ivanovik receives his trophies for outstanding jet flights. (17) Taoutiko, much impressed by combat, takes details of Krack's winner. (18) Zatozil with Koci's fast delta, using ply wings. (19) Dieter Krack the unloatable in combat. (20) Rudi Heck fuels Krizma's engine in typical Hungarian speedster



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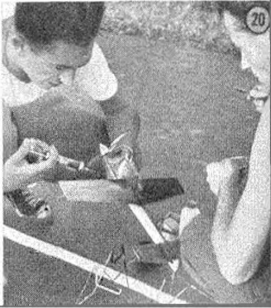
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three count), the team placing gave the familiar order of Hungary and Czechoslovakia, first and second; victories which were thoroughly deserved, particularly in the case of the winner with an own-design powered by the Czech M.V.V.S. 5-6 c.c. rear disc valve engine—and equipped with the Palmer tank.

**Team Race**

Just as we had fielded our best from Great Britain in Stunt and Speed, so were we able to put up a stronger than ever Team Race entry. Edmonds, Stephens and Yeldham had constituted the leading teams at our British Nationals, and with Vince they had few serious contenders among the 36 entries. Each team raced twice, and, as before, it was essential to complete the race on both occasions to qualify for the final. From the first heat the pace was fast, Stephens leading by about four laps over Rossi (Italy) and Batlo (Spain) with Leselak of Austria outclassed (Azor 250 against two Oliver Tigers and a Super Tigre G.30). Then at the 58th lap the Austrian's lines caught across those of the other three and the inevitable happened.

Dick Edmonds came into the second heat to show the flag with a fine 5:17 which might have been even faster had he not been delayed unnecessarily by an official at one pit stop. Then in the third heat victory went to one of the long-range Spanish models which were doing the 10 kilometres with only one stop, in the time of 5:36.

Stouff's and Azor, likely to provide our

strongest opposition, were drawn in the same heat, with the Belgian faster by 10 sec. at 5:23, and heat five was notable for Stodberg's (Sweden) line break which put him out when going well. Taddai won the next for Italy using the single stop technique, and the same long range tactics were exploited to even greater advantage by Spinardi de La Plaza in heat seven when he won in the best time of 5:04. An all-metal racer weighing 23 ounces brought Germany into the picture when Lenzen won heat eight in 5:36, and this was to be the last of the faster first round times, for in the last two heats a chapter of misfortunes eliminated or delayed the reputed Ordoth (Hungary), Gogorcena (Spain) and our own Yeldham, who started one second too early in the count-down.

Thus only Dick Edmonds could qualify for the final from the G.B. entry, and he made sure in his second round (with a 3:06 win) that he would be a finalist. Taddai of Italy had set up fastest time to date with 5:41; Stouff's improved his time to 5:08; and that left de La Plaza as fourth man, but alas—he was crashed out of it after a take-off melee in the second round.

Excitement was intense as the leaders lined up for the decisive final, Azor of Hungary coming into de La Plaza's place. All were using Oliver Tigers, and all had different techniques, Edmonds and Stouff's went for speed and two stops. Azor was a relatively unknown quantity, and Taddai for range and moderate speed.

They were delayed while a magnificent Combat final took place in which Krueck

of Germany, who seemed invincible and inspired considerable enthusiasm among the Soviet modellers, beat the Belgian Paepkens in a cut and thrust affair that had everyone on their toes. At last the climax of this hectic meeting was started and from the "zero" of the count-down start, it was Edmonds leading Stouff's and Taddai, with Azor much under-compressed and losing valuable speed. At half-way, Taddai led by two laps, having overtaken the others while on the ground, and at two-thirds distance, with both Stouff's and Edmonds at their second pit stops, it was still Taddai just holding the lead.

Those last 30 laps were memorable. Edmonds caught and passed the Italian with Stouff's about five laps behind, then, by sheer chance, Edmonds's and Stouff's models touched, stopping the Belgian's engine. However, we doubt if it would have made any difference as Taddai's second place time was 3:07—a great credit to his one-stop method—but still not so brilliant as the magnificent record time of 4:58 by "Big Dick". His victory brought our Critérium position from very lowly to a fine second place giving equal honours with Belgium, Italy and Czechoslovakia.

Many lessons had been learned by the British team, and the outright Hungarian victory in team speed, aerobatics and the Critérium seem to have made it certain that Budapest will be the scene of the next World Championships. Let us hope that Dame Fortune will smile more kindly on the British team for that occasion.

R. G. M.

**NINTH CRITERIUM OF EUROPE  
GRAND PRIX FOR VICTOR BOIN CHALLENGE TROPHY**

	Speed	Aerobatics	Team Racing	Total
1. Hungary	1	3	4	8
2. Belgium	2	2	3	12
3. Great Britain	3	6	12	21
4. Italy	5	7	2	12
5. Czechoslovakia	2	1	9	12
6. Spain	4	5	5	14
7. Germany	8	4	7	19
8. Sweden	9	5	6	20
9. Holland	9	9	6	24

**Aerobic Team Results**

1. Hungary	4:727
2. Czechoslovakia	4:676
3. Belgium	4:622
4. Germany	4:550
5. U.S.S.R.	4:530
6. Austria	4:421
7. Spain	3:988
8. Great Britain	3:915
9. Italy	2:672
10. Sweden	1:351
11. Holland	1:319
12. Monaco	1:187

**Speed Team Results**

1. Hungary	6:27
2. Czechoslovakia	6:20
3. Italy	6:19
4. Spain	5:74
5. U.S.S.R.	5:70
6. Great Britain	5:55
7. Sweden	5:25
8. Finland	5:03
9. Belgium	4:46
10. Germany	3:38
11. Switzerland	1:63
12. Holland	1:35

**TEAM RACING**

Final		mins.	secs.	
1. Edmonds	Great Britain	4	58	Oliver Tiger
1. Taddai	Italy	5	7	Oliver Tiger
3. Stouff's	Belgium	5	21	Oliver Tiger
4. Azor	Hungary	7	12	Oliver Tiger

**Best Heat Times**

1. Taddai	Italy	5	1
2. Edmonds	Great Britain	5	6
3. Stouff's	Belgium	5	2
4. De La Plaza	Spain	5	8
5. Azor	Hungary	5	33
6. Bernard	Belgium	5	34
7. Rossia	Italy	5	42
8. Contini	Italy	5	44
9. Carasco	Spain	5	51
10. Vogmlar	Holland	5	53
11. Lensen	Germany	5	56
12. Yeldham	Great Britain	5	57

**AEROBATICS**

	Total best two flights	M.V.V.S. 3-6
1. Galvris, J.	Czechoslovakia	1766-6
2. Stouff's, H.	Belgium	1681-3
3. Bene, P.	Hungary	1618-6
4. Sorgel, W.	Germany	1598-9
5. Macon, G.	Belgium	1585-3
6. Egervary, G.	Hungary	1577-9
7. Rieger, H.	Germany	1558-6
8. Rogel, G.	Austria	1553-3
9. Sirotkine	U.S.S.R.	1550-6
10. Kondratenko	U.S.S.R.	1533-3
11. Ordoth, I.	Hungary	1532-6
12. Bartle, F.	Spain	1521-2
13. Tcherbakov, V.	U.S.S.R.	1507-9
14. Morley, W.	Great Britain	1478-4

Jet		
Ivannikov	U.S.S.R.	276 Km. RAM-2

**SPEED**

	k.p.h.	
1. Toth	Hungary	216
2. Beck	Hungary	214
3. Koci	Czechoslovakia	209
4. Pastyrlik	Czechoslovakia	206
5. Sladky	Czechoslovakia	205
6. Rossi, C.	Italy	204
7. Pezzi	Italy	203
8. Vassilchenko	U.S.S.R.	203
9. Prati	Italy	202
10. Rossi, U.	Italy	198
11. Zaticil	Czechoslovakia	197
12. Krizma	Hungary	197
13. Gogorcena	Spain	194
14. Batlo	Spain	193
15. Gibbs	Great Britain	189
16. Fernandez	Spain	187
17. Natalenko	U.S.S.R.	187
18. Azor	Hungary	185
19. Rosenlund	Sweden	182
20. Grouchine	U.S.S.R.	182
21. Birk	Sweden	180
22. Decligne	Belgium	177
23. Gorziva	Spain	176
24. Kouznetov	U.S.S.R.	175
25. Page	Great Britain	173-9
26. Hall	Great Britain	173
27. Savolainen	Finland	170
28. Valo	Finland	169
29. Jankelainen	Finland	164
30. Bengt Martinielli	Sweden	163
31. Fawcett	Switzerland	163
32. Fritsch	Germany	162
33. Eiffhaender	Great Britain	146
34. Godsiabois	Belgium	139
35. Vogelauer	Holland	138
36. Deville	Belgium	128

Combat		
Kruck, D.	Germany	Webra Mch. 1



F3 and F4 securely to the structure. Install the engine bearers and use a lot of cement. Mount bellcrank with its push-pull rod and two control wires. Bend left and right cabane struts and landing gear, attach them to the structure with cotton, and cement well. Add  $\frac{1}{8}$  in. sheet filling between formers F3 and F4 on the bottom. Install formers F1 and F2, the top decking and small side sheet of  $\frac{1}{8}$  in. medium balsa can then be added. Top of the fuselage aft of the cockpit is hollow block, after shaping, cement in position. Now add the side and bottom stringers and sand the whole structure to the desired contour. The detachable bottom and top fuselage sections are made of solid blocks, hollowed as shown. The top part is cemented to former F2 and the engine bearers, after first cementing the engine mounting struts to the bearers. The fin and rudder are shaped and cemented at the specified angle before attaching to the fuselage. The tailplane and elevator are provided with hardwood edges along the hinge line. The tailplane is installed and cemented to the fuselage, then the elevator halves are positioned by means of metal hinges.

#### Wings.

Build a strong top wing as it takes all the load of the bottom wings. Cement all ribs in place. Add bottom strip of the trailing edge first, and after cutting away the arc in the centre, add the top strip. Cement leading edge and add wing-tips.

The same method is followed for the lower winghalves. Attach the upper wing to the cabane struts by means of beech dowels. Attach one side first, check wing position with centre line fuselage, put in the dowels on the other side (check the horizontal alignment) bind with cotton, and cement well.

Shape interplane struts and attach them to the upper wing. Attach the lower wing halves to the fuselage and then to the struts. Check alignment from the top. Add  $\frac{1}{8}$  in. sheet around the struts attachment points. All wires from struts and landing-gear are faired in with sheet. For wing-bracing wires, carpet thread is used and to keep these wires tight, small springs are employed as shown.

#### Covering and Finishing.

The entire model is covered with heavy weight Modelspan, after the normal amount of doping, sanding sealer, and sandpaper, are used to get a smooth surface before painting. The whole model is painted dark green,



Views above confirm smart appearance of this elegant biplane. Plans are available price \$1. plus 6d. postage from A.P.S. Quote Reference C/I. 712

after which the roundels and lettering are applied.

The radiator is installed after the entire model and the inside of the radiator have been painted, leaving small patches unpainted where the radiator is cemented to the fuselage. Then paint the outside of the radiator.

#### Flying.

The centre of gravity is located on the front line. The prop shown looks rather big, but a powerful 2.5 c.c. engine swings it easily and gives the model a realistic look on the ground.

Flying on 45-50 ft. lines, the model is very stable with a degree of sensitivity that permits mild aerobatics to be flown and due to the long u/c, landings are easy.

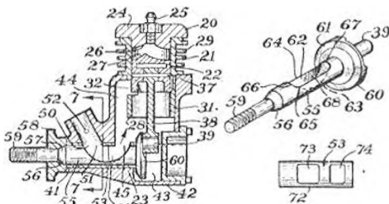
## IMPORTANT PATENTS No. 3

U.S.A. 28332556 - Ernest G. Maynard

Application date January 31, 1957

This invention provides one of the few alternatives to a conventional bored crankshaft in a forward rotary valve construction. A conventional intake port is employed, but the crankshaft passage takes the form of an arcuate slot or channel, similar in shape to that employed for a Woodruff key, extending from the intake port to the crankcase interior. The crankshaft bearing extends appreciably into the crankcase interior and includes an upward facing port through which the shaft passage communicates. Separate sketches show the shaft and double ported sleeve. To quote the Patent:

"The principal object of this invention is to increase



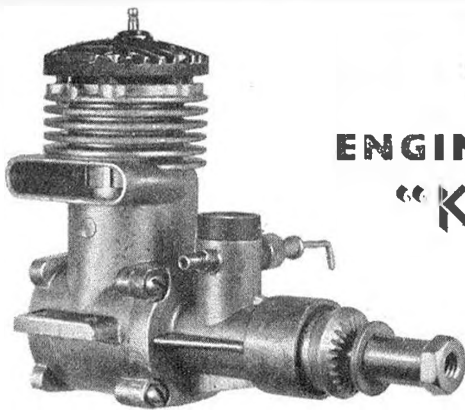
the efficiency of miniature, two cycle, engines by reducing displacement at the base of the crankcase compression chamber, increasing displacement in the fuel feed conduit to the cylinder and to achieve a direct, short flow of fuel from the fuel intake conduit through the fuel feed conduit and into the cylinder."

## ENGINE ANALYSIS No. 53

## "KOMETA" MD 5

Disappointing power figures on our test example of the engine used by U.S.S.R. for stunt in Brussels.

—by R. H. WARRING



THE OLD TENDENCY to discredit Russian engineering and technical progress has been exploded as something of a myth in the light of their achievements within the last decade—particularly in the field of aviation and rocketry. Russian aeromodellers, too, have met their counterparts from the free world on common ground and established that their performances are certainly of world standard, with their designs incorporating original thinking.

We know so little of Russia, and have had so little direct contact with their engineering productions, that we can only hazard guesses as to their true standards. Most industries certainly appeared to start out by copying Western standards and consequently to lag behind these countries in development. The Russian cars, for example, had the very familiar shapes of British and American cars of two or three years previously. Illustrations of model aero-engines showed a similar resemblance to "early" Western layouts and appeared comparatively crude by contemporary standards. But Russian technical achievements in certain fields are outstanding, and to "type" all productions on a generalised basis can be most misleading.

Model aero-engine production must rate as relatively unimportant in the national scheme and so could hardly be expected to receive the same degree of development and technical backing as, say, full scale rocketry. Thus the *Kometa* engine, as presumably typical of a contest type widely favoured for control line work, shows nothing remarkable either in design or performance. The design layout, in fact, appears very largely to have

been influenced by the Italian Super Tigre, having such features in common as general appearance and construction; the method of head fixing leaving a gap between cylinder head and cylinder jacket; and the rear ballrace as a location for the crankshaft; and the needle valve lock. On performance the *Kometa* was very disappointing, only coming up to the standard of a good 2.5 c.c. diesel of half the capacity, although there are reasons to suppose that this may not be typical of the design. It is also a very heavy engine for its power.

The engine supplied had definite high-speed timing and "speed" ports, but with a venturi insert in the choke tube more consistent with a "sports" engine. Both the liner and venturi are obviously interchangeable and whether we had a correctly "matched" combination or not we do not know. At one period, indeed, we thought that possibly in view of the low prop-r.p.m. figures achieved the *Kometa* was designed for opposite-hand running, but a check on the timing confirmed that it is intended to run in the conventional direction.

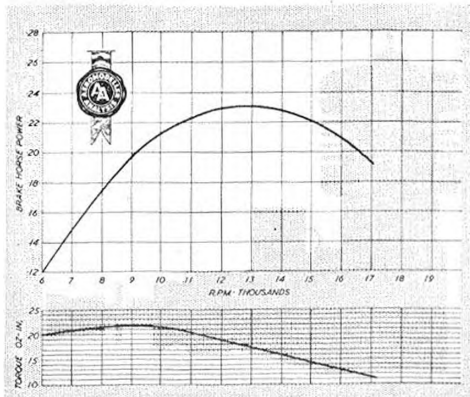
Another feature was an almost complete lack of compression, which made starting difficult, for the engine was both reluctant to suck fuel and to achieve sufficient compression in the head for firing. The Russian glow plug was quite ineffective on 2 volts and needed at least 3 volts to produce an adequate element temperature. And, having got the engine going, it was found that the needle valve could not be closed down enough to lean-out the mixture for optimum running, *i.e.*, when fully closed the mixture was still much too rich.

It proved impracticable to resolder the needle in a different position (a very hard solder had been used originally which would not soften under red heat) and so a new spray bar unit was fitted for the tests. The original needle had a very fine taper and the replacement was considerably coarser. Needle valve setting was found very sensitive which would verify that the very fine taper on the original was a highly desirable feature.

Because of the extremely advanced timing (the intake closing very late, or some 60 degrees after top dead centre) starting and slow speed running proved relatively difficult. Once having fired, however, the *Kometa* ran steadily and well on all propeller loads, and was most

## SPECIFICATION

Displacement: 4.77 c.c. (-299 cu. in.)	Cylinder: steel, heat treated and annealed
Bore: .747 in.	Stroke: .664 in.
Bore stroke ratio: 1.085:1	Piston: light alloy casting, machined to finish. Two cast iron rings
Weight: 8 ounces	Crankshaft: hardened steel
Max. B.H.P.: .234 at 13,000 r.p.m.	Cam rod: light alloy forging (casting?)
Max. torque: 21.8 ounce-inches at 9,000 r.p.m.	Bearings: two ball races (Russian origin)
Power output: .049 B.H.P. per c.c.	Bearing unit: light alloy die casting
Power/weight ratio: .029 B.H.P. per ounce	Cylinder head: light alloy die casting, anodised. Aluminium gasket seal
Material Specification:	Spraybar: brass, plated needle and thimble
Crankcase and cylinder jacket: light alloy pressure diecasting	Venturi: aluminium, anodised
	Prop. driver: light alloy, brass split collet



happy running at the higher speeds. Below 10,000 r.p.m. there was appreciable blow-back through the intake—literally spraying raw fuel out of the choke tube—and performance on large propellers was pretty poor. Running above 12,000 r.p.m., however, was most steady with the critical adjustment of the needle valve almost certainly a feature of the needle valve fitted. Fuel consumption appeared to be relatively high without being excessive.

All the test runs were conducted with a standard racing fuel (Mercury No. 7). Undoubtedly performance would have been improved considerably by increasing the nitromethane content, although not to any exceptional standards. There was no call to increase the dope content to match the design compression ratio, although this may have made for easier starting. The main trouble in starting, however, was the high leakage past the piston.

Constructionally the *Kometa* comprises a relatively massive crankcase-cylinder casting in light alloy, the transfer passage and diametrically opposed exhaust stack being formed integral with the casting. The casting is machined internally and the front faced off.

The cylinder liner is relatively thin, with a wall thickness of approximately  $\frac{1}{16}$  in. fabricated from steel and heat treated, although relatively soft in the finished state. The bore is finished by honing after reaming and the cylinder is ground externally where it fits into the casting (and quite a loose fit, incidentally, although this did not appear to leak). Square-shaped exhaust and transfer ports are cut in the cylinder walls, diametrically opposed and with a very large degree of overlap. A single transfer port is drilled in the cylinder wall matching a similar hole drilled in the piston. This characterises the "speed" liner and shortens the length of the effective transfer passage. An alternative liner can be used with this engine without the piston port, transfer being effected up the side through the cast-in passage. This alternative liner is also appreciably shorter. The bottom of the bore of the "speed" liner, incidentally, is relieved by boring. A certain amount of hand work is done on the liner after heat treating, notably the cleaning up of the edges of all ports with a file.

The piston is a light alloy casting, machined externally and internally and left somewhat heavy. The asymmetric head is domed and incorporates a deflector plate. Two cast iron rings are fitted, each .039 in. deep, neither of which bedded down as well as they could have. The turned finish on the piston, too, was relatively rough, although this has no particular significance.

Both the gudgeon pin and crank pin are 60 mm. diameter, the former being hollow and press-fitted into the piston. It was difficult to tell if the connecting rod was a casting or forging in light alloy, but it appeared to have been shot blasted and then finished off by filing to remove any remaining flash. Both the big and little end bearings are slotted for lubricant distribution.

The crankshaft is a massive affair, .472 in. (12 mm.) diameter at the rear, stepping down to .275 in. (7 mm.) and then at the front to a 6 mm. (metric) threaded length (a  $\frac{1}{2}$  BSE nut will fit this thread, incidentally, although a little loose). The weakest point of the shaft is undoubtedly the end of the thread which is necked and could be a source of failure. The hole through the centre

of the shaft is 9 mm. diameter, terminating in a large rectangular port.

The ball races are a relatively loose sliding fit over the shaft. The rear race locates in the main bearing casting and the front race is an easy push fit into its housing. The bearing length in the casting appears to have been bored but shaft fits

throughout were generally good. The whole bearing unit attaches to the front of the crankcase unit with four screws. The propeller driver locks on to the shaft with a split brass collet with an extended propeller nut necessitating drilling out the hubs to  $\frac{3}{8}$  in. diameter clearance and also restricting the pitch size which can be accommodated without additional packing washers (a plain nut would have been a better proposition).

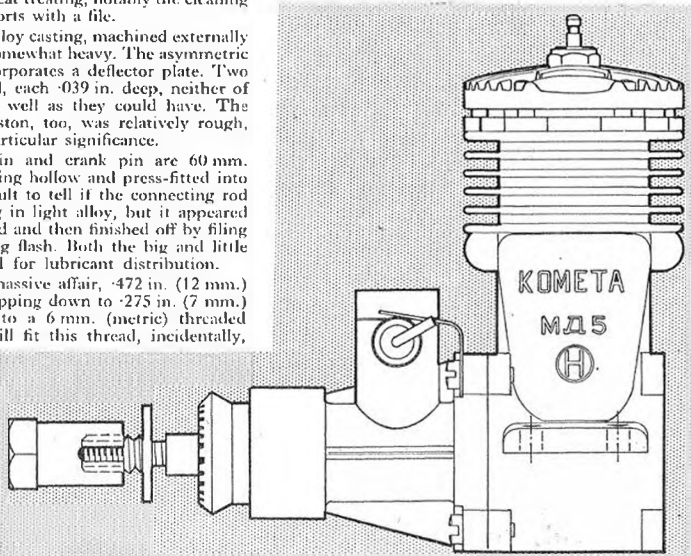
The cylinder head is a separate casting incorporating a shaped plug to match the piston contours. This seats directly on to a small flange on top of the liner and seals with an aluminium gasket. It is held down by six screws engaging in the jacket casting. The glow plug is offset to the transfer side.

Summarising, a well made engine on conventional lines which should certainly achieve better figures than the test performance we conducted. It was a brute to handle from the point of view of starting, but very consistent once it was running. For control line work a 9 x 6 Frog nylon propeller would probably be as good as any, although the *Kometa* we had was obviously ported for high speed running when one would expect peak power to be developed at around 15-16,000 r.p.m., instead of the 13,000 r.p.m. we found. The weight is a considerable disadvantage for use on free flight models.

PROPELLER—R.P.M. FIGURES

Propeller dia. x pitch	r.p.m.
12 x 4 (Trucut)	6,000
10 x 4 (Trucut)	7,400
9 x 4 (Trucut)	10,900
8 x 4 (Trucut)	12,800
8 x 3 (Trucut)	13,600
7 x 4 (Trucut)	15,000
9 x 4 (Stam)	10,600
8 x 4 (Stam)	13,000
7 x 4 (Stam)	14,300
9 x 6 (Frog nylon)	10,600
10 x 6 (Frog nylon)	8,500
8 x 4 (Tiger)	13,600

Fuel used: Mercury No. 7.



# NO TAILS AT TERLET

12-15th SEPTEMBER, 1958



TERLET, situated a little to the east of famed Arnhem in Holland, was once again the venue for the annual International Tailless contests staged by the Royal Netherlands Aero Club, who provided a well-organised, friendly meeting at the very well equipped gliding school found in this hilly section of Holland.

It is to be regretted that this year only three nations competed, Holland, Germany, and a half-size team from Great Britain. Unfortunately, experience with the tailless type of model is not extensive in this country, and only three enthusiasts could be found willing to pay their own expenses to this specialist meeting, though I have no doubt that Josh Marshall, Pete Hedgeman and Fred Smith feel that their efforts were well repaid in the experience gained, and the opportunity to match their skill against their overseas contemporaries. With the contest requiring glider teams of four, Smith proxy flew his clubmate Wilking's models, whilst Marshall took along a rubber-powered machine and Hedgeman entered his power model for the fun of it.

Our arrival at Terlet was welcomed by Dutch stalwarts Panje, van Hatum, Asselhergs, Jacobs and others well known to us from previous visits, and after settling our bags in the dormitory over the repair sheds, we fed, and then got down to the job of processing. It immediately became apparent that the British models had not been designed to close limits, for Marshall had to add nearly two ounces of lead to his rubber machine, and Smith had to strip a fair width of trailing edge from his all-sheet glider before coming within the specification.

Weather at previous Terlet affairs has been "difficult", but this year perfect flying conditions prevailed throughout the contests, bright sunshine being tempered with the merest breeze to produce a few healthy thermals, and occasional patches of dead air where the models clearly demonstrated their differing sinking speeds. With the Saturday morning given over to test flying, serious work commenced after lunch when the competitors were taken on a cross country ride to a spot where modelling activities would not interfere with the extensive glider launching that was taking

*Below: Josh Marshall winds up for his best flight of 90 secs. Centre: In flight Langfeldt's "Flying Goose" was most impressive. Right: Werner. This catches the winner to launch. Note fine geodetic construction.*

place to left and right of the take-off area. Patches of low heather and scrub were intersected by rutted, sandy roads, and the British contingent were soon floundering and fluffing their launches! With the breeze puffing from quickly varying directions, it was difficult to judge the correct line for a gallop into wind, though it was noticeable that the more expert fliers did not have to run far before their models were riding at the top of the 50 metre lines.

Though durations in the first round were in general hovering around the minute mark, Pils (Holland) scored a comfortable maximum, and Zwilling (Germany) laid the foundations for his eventual win with a flight of 2.38. Hedgeman made top time for the British contingent with 1:20, but disaster hit the three-man camp when Wilking's model came off the line twice in quick succession to give a big 0 for the initial round.

Round 2 saw an improvement as the competitors became more settled to conditions and terrain, and another Dutchman, John Osborne (the 1957 winner), recorded another maximum for the Netherlands' team, whilst ten Hagen returned a useful 1:49 to boost his team's score. However, the German contestants had by now got their teeth into things, and Waldhauser from the Saar got in a fine flight to miss a maximum by just two seconds. Zwilling added 2:19 to his total, and with Nick scoring 1:37 the German total of 705 at this stage put them usefully ahead of the Dutch 642. Marshall was the only British member to better the minute mark in this round, and we were already tracing a very poor third with a total of 334.

The third 11 hour round got under way with no change in conditions, but this time only two of the German team scored over two minutes, Haack making the best flight of the round with 2:43. Zwilling had his poorest score at this stage, and the day's flying finished with Waldhauser leading his team mate by a scant two seconds with the best individual score. Team placings were unchanged, but the German lead had increased to 168 seconds . . . and British hopes were still lagging.

Meantime, some excellent flying had been taking place with the rubber and power-driven entries, Schubert demonstrating his clear superiority in the rubber class with two easy maxs and a 1:24. Josh Marshall could not match the climb of the German machine, but just managed to keep ahead of the Dutch contender, Scheyle. Klinger got off with a bang to record a maximum on his first power flight, but followed up with only 0:24 and 0:21 to keep him just ahead of Wassenaar. Hedgeman had piled in on his first flight, and could not get a decent climb from his machine, which was a pity as the glide was exceptionally fine.

Sunday morning found the ground wet with dew, and a heat haze gave promise for good flying conditions, and so it proved to

be. Zwilling passed Waldhauser by scoring 1:57 in round 4, whilst Waldhauser recorded his worst score of 0:59. British hopes soared a little in this round, for Hedgeman got a fine launch to return 1:48, but Marshall from a similar launch stalled all the way down for a meager 49 seconds. Smith (winner in 1956) made his best flight of the contest during this period, but it was still one second short of a minute.

German dominance was manifest again in the final round, when Waldhauser caught an enormous thermal which carried the model away to an easy max (and a hectic cross-country chase). Zwilling's finely-trimmed model scored 2:40 to place him an easy winner, and the only other contestant to reach three figures was Osborne, who placed third in the final assessment.

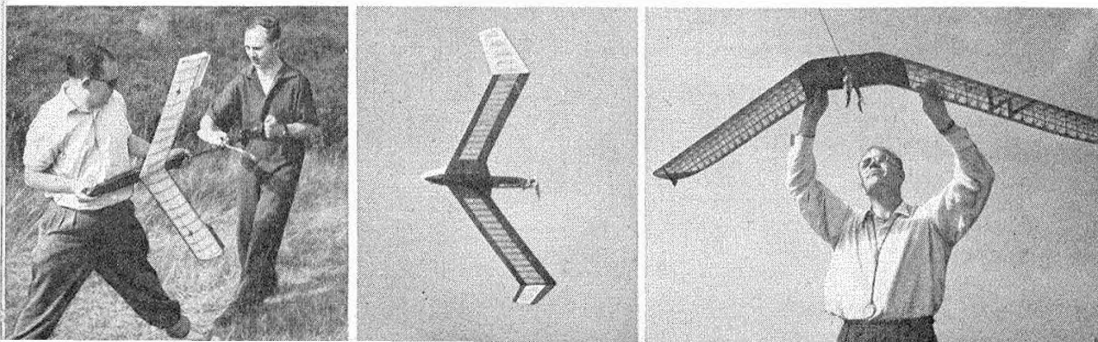


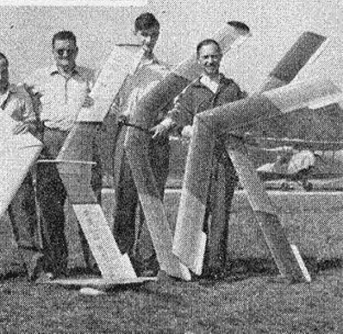
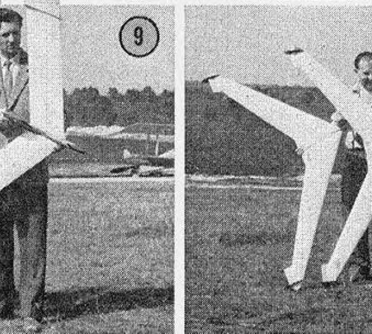
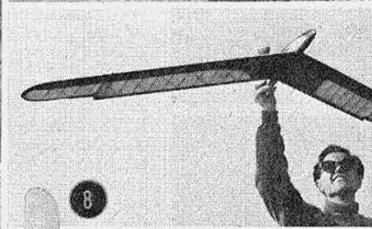
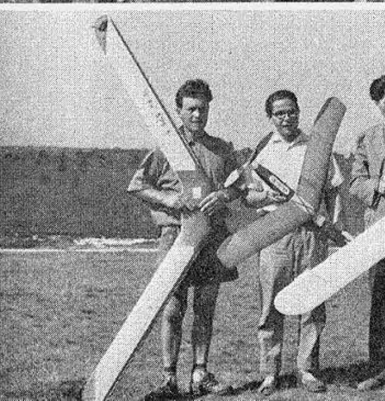
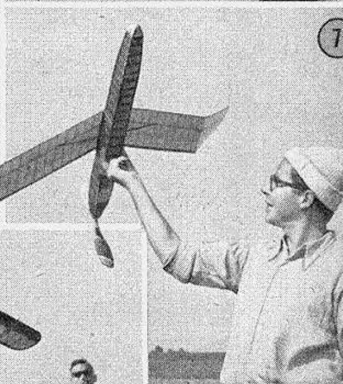
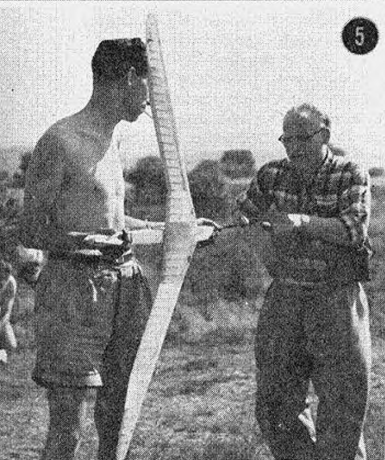
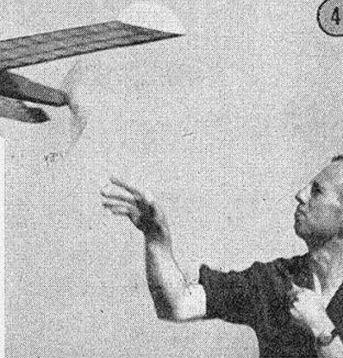
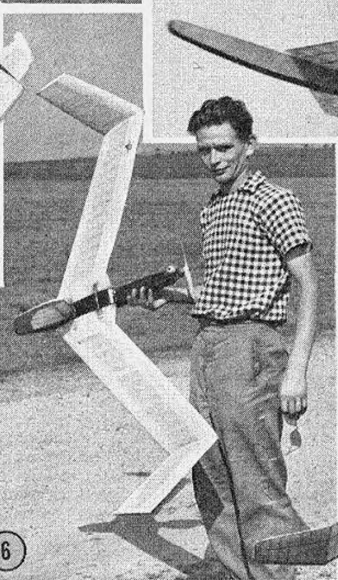
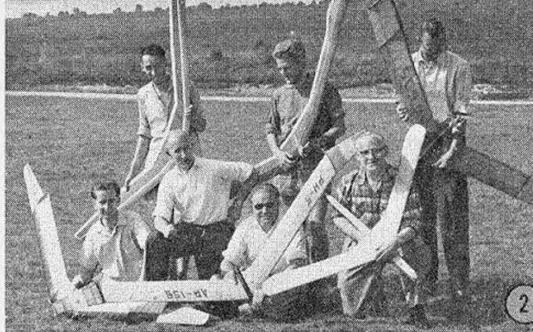
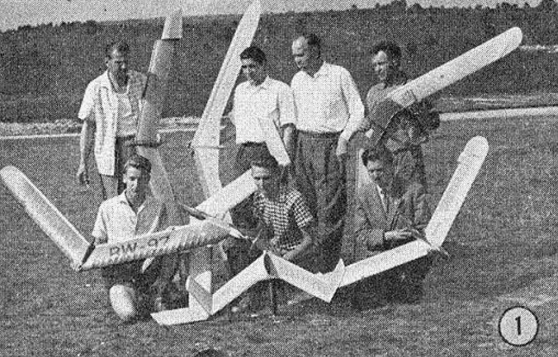
*The new Tram award, donated by the Editor of the Dutch aviation magazine.*

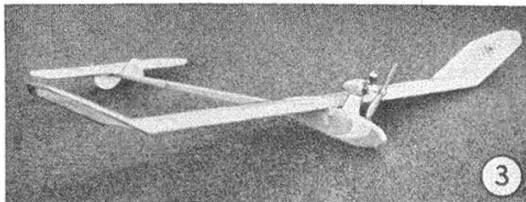
Schubert had a d model while coasted home to an easy win, then lost his model on a test flight after keeping it in sight for over 15 minutes! Marshall, who had kept just ahead of Scheyle all this time, lost out when the Dutchman returned his best score of 2:02, but Hedgeman managed a lucky second place in power when Wassenaar had his model break up in the air during the 4th round.

Thus ended a most interesting little battle, with the British team outclassed but not disgraced, and richer for the experience gained in flying under perfect conditions against strong opposition. It is to be hoped that 1959 will see a full British team contending in Germany, with more countries competing in what has proved to be an absorbing series of events with a type of model that can hold its own in any duration contest. (Results on p. 591) C.S.R.

- (1) The all-conquering German team, and (2) the Netherlands Equipe.
- (3) Waldhauser employed all-sheet covering to the top of his finely constructed wing.
- (4) Launching rubber-driven wings is not easy, as Marshall, Scheyle (5) and Schubert (7) demonstrated.
- (6) Werner Langfeldt had these of these interesting W-plan models, all of which flew well.
- (8) Klinger had the best finished power models as well as the top durians.
- (9) Class winners Zwilling, Schubert and Klinger.
- (10) The British team of Smith, team manager "Rushy", Hedgeman and Marshall.







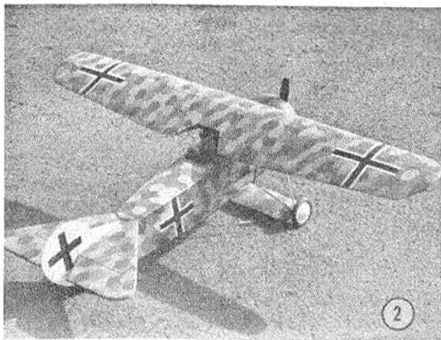
ACTION SHOT of R. Parsons of Prestwick launching his Frog 50-powered own-design pylon model was taken by Bill Meechan of the Glasgow Society of Aeromodellers on the occasion of the recent Caley-Shield Competition. Mr. Parsons was rather unlucky with his high powered model, as the engine chose to cut each time it was launched, except on its last flight when the motor ran on to the bitter end for a spectacular crash, one of the very few of that competition day.

We were beginning to lose faith in Britain's modern air-minded youth, who have not been showing as much enthusiasm for aviation recently as in former years, when into the office came photo 1 from A. W. Bishop, aged thirteen years, from Bedford. Surely this is the first flying model of the Blackburn NA-39 and, moreover, certainly the first twin Jetex 50 control-line model. Master Bishop lives quite near to the test aerodrome at Thurlleigh and was able to witness the first flights of the new Naval fighter which in some attitude bears a remarkable likeness to a King Penguin. The model is 134-in. span, with sheeted fuselage, but with area-rule fuselage, planking is not too easy on a job like this. Lozenge camouflage information recently published in our columns inspired S. Cole of Twickenham to magnificently decorate his 34-in. span Fokker VIII in photo 2. Weighing only 10 oz. for an E.D. Baby, driving a large diameter 8 x 4 pitch propeller, the Fokker is most realistically finished and we trust is a fine flier.

### Pee Wee Aiglet

The engine which has met with enormous demand on importation into this country (and other lands) is the fabulous Cox Pee Wee .020 (.32 c.c.) glowplug engine. G. Hindle of Burton-on-Trent couldn't wait to get his Pee Wee airborne and made a small pylon with engine nacelle to mount over the nose of his A.P.S. A/1 glider *Aiglet*, seen in photo 3. The resulting "power" model climbs on full revs at no less than 20 degrees angle and since the original weight is scarcely altered, this is almost the same as a towline launch, for the *Aiglet* continues to glide as well as ever. Incidentally, these Cox Pee Wee engines are now carrying as much as 6 oz. ballast weight in cargo models with over 400 sq. in. wing area in U.S. competitions!

*Spirit of St. Louis* has now passed its first anniversary in Plans Service as a model to com-







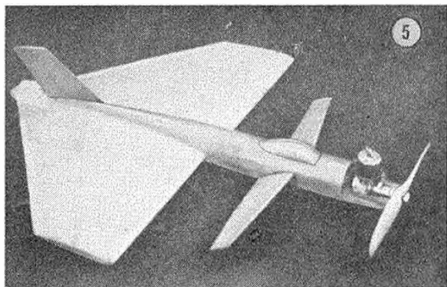
memorate the now twenty-one-year-old establishment of the first solo crossing of the Atlantic by Charles Lindbergh. In **4** is F. Turner's replica which was actually one of the development prototype models made prior to publication of our plan and which was seen by many visitors to the film premiere in London.

### Whichaway?

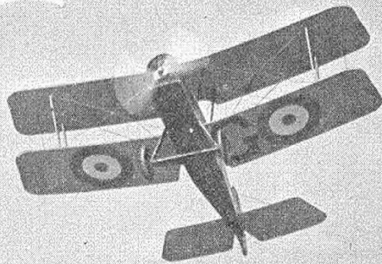
Now for a complete change in appearance and J. Seaston's Zataway in picture **5** which is a controlliner with a noseplane and a delta wing of reverse shape. Capable of flying at 60 m.p.h. with an A.M.35 for power, it will loop in about 25-ft. diameter circles, and although showing signs of a lack of wing area and excess weight effect due to 6 oz. of ballast in the tail, it is remarkably manoeuvrable. However, the centre of gravity is very critical and others are advised to proceed with such a design with caution. B. Weatherhogg (let he gets his leg pulled with that moniker!) of West Bromwich likes to build large controliners and the very semi scale Focke Wulf 190 in picture **6** is 45-in. span, with a 500 sq. in. wing. Fully flapped, it does sufficient stunt schedule to satisfy anyone's demand, although somewhat under-powered with only a 3.5 Amco for its weight of 2½ lb. The large diameter radial cowling does not appear to affect the propeller thrust and the glide and landing are said to be a joy to behold.

The description of Amy Johnson's famous *Jesson Gipsy Moth* in August makes it an opportune time for us to remind readers that a 60½-in. span Gipsy Moth with details for radio control conversion is available in A.P.S. as drawing FSP/135, price 10s. In picture **7** we see one made by G. C. Chandler of Didecot, Berkshire, complete with pilot in the rear cockpit and an AEROMODELLER receiver up front. This design is extremely stable and most impressive during flight and was a great favourite of the late radio control champion Sid Allen.

Modellers in the Bradford area will quickly recognise Mary in picture **8** who is the popular assistant at the Bradford Aero Model Company shop. She is holding the proprietor's (L. Davis) R.6B made from the A.P.S. plan for an Ellfin 149 with an enormous fuel tank, all of which shows his extreme confidence in the Hill Receiver! Colour scheme is metallic blue with white panels and black and gold lettering, total weight is 4 lb. in flying trim.



Perfect 1/8th scale replica McCudden's S.A.C. launched for "Aero-modeller" Trophy qualifying flight at R.A.F. Champs by S.A.C. Wyse



# Round the Rallies

## R.A.F. Championships

THE WEEKEND August 30th-31st provided two perfect flying days on the occasion of the 1958 United Kingdom Championships for members of the R.A.F.M.A.A. Approximately 190 competitors took part in the sixteen events at R.A.F. Debden, and some remarkable flying took place. We witnessed one "test" flight of a ten-year-old glider which exceeded 45 minutes duration . . . but it was not officially timed!

Records were broken in both speed and A/2 duration, F/O N. Parker clocking 11:31 with his "Inchworm", and the quality of flying in the finals of Class A Team Race, Combat, and Open Rubber were well up to national contest standards.

It was unfortunate that the international situation severely handicapped certain Commands, preventing full strength teams for this important Service event. We also reflect on the fact that many well-known contest fliers currently on National Service do not take part in R.A.F. aeromodelling activities. Probably an explanation of the Service system will help them to take advantage of the facilities offered and enable them to compete next year. An officer is delegated in each Command who is responsible for the organisation of model aircraft clubs within that Command, and most Commands hold their own eliminating events to select their best representative team at the Championships. Governing the overall situation there are Contest and General Secretaries at Air Ministry to help and advise members; so we recommend serving aeromodellers to get winners up on activities within their units.

Winners of the events at Debden were as follows:

A/2 Glider:	J/Tech. Woodward	Home Command	360
Open Glider:	L.A.A. Swinbourne	Hilton	357
Open Rubber:	J/Tech. Rowe	Maintenance	539
F.A.I. Power:	Cpl. Tibbo	Transport	360
Open Power:	Cpl. Tibbo	Transport	360
P/F Scale:	S.A.C. Wyse	Flying Tr.	65
Unorthodox:	S.A.C. Wyse	Flying Tr.	48
Thurston:	Cpl. Payne	Tech. Tr.	360
Jetex:	Cpl. Johnson	Flying Tr.	7-04
Radio:	F.Lt. Andrew	Flying Tr.	155
Stunt:	C/Tech. Irvine	90 Group	514
T/Race A:	J/Tech. Dillh	Maintenance	
T/Race LA:	A.A. Robertson	Locking	
T/Race B:	J/Tech. Thomas	Fighter	
Combat:	L.A.C. Robinson	Fighter	
Speed:	C.Tech. Irvine	90 Group	
Victor Ludorum:	C/Tech. Irvine	90 Group	

## I.R.C.M.S.

Another meeting to be blessed with fine conditions was the I.R.C.M.S. meeting at Wellesbourne Mountford, the last weekend in August seeming a fortunate date for any aeromodelling activities. First arrival was Ed Johnson, who got in some useful practice flying before a start was made on organised flying about 10 a.m. All transmitters were called in and checked with a simple absorption-type meter, and the contest started at noon with the single control section taking priority. Two flights were allotted to each competitor, with a five-minute break between each to allow for adjustments, etc. Total flying time per man was 15 minutes, during which various manoeuvres could be performed over a figure eight course.



Landings were judged on quality and distance from a line across wind. Quite the most interesting model was a 1/10th scale B.E.2E which flew beautifully. Built by D. E. Thrumpton of Mosley, the machine had a span of 49 inches and weighed 42 ounces, with an A.M.15 motor hidden away in the mock V8 engine. Howard Boys won the single-control section, followed by R. Pritchard and G. Franklin.

In the multi-control class most interest was created by a beautifully-finished but unflown "Astro-Hog" built by H. Joyce of Salford; but he had too many difficulties and overran his starting time, though he did manage a short hop after the contest was closed. With a field of ten, one man scratched, three had a deal of trouble, and the other six never got past the first turning point! However, J. E. Johnson, the winner, put up a very good flight, though short on engine power, to be followed home by J. Webster and R. S. Higham.

### Scottish Gala

Better supported than last year, the Scottish Gala was held in hot, calm conditions which produced some strong thermals making early flying desirable. Rubber winner John O'Donnell had completed his three 4-minute maxs by 11.15, only the third flight being influenced by lift. Model was the usual lightweight structure "Maxie". Next came 'Tom Chambers of Teeside whose folder open model caught a bad down-draught for an initial 1:57, but followed up with two



Smiling faces of the Scots victors in the 1958 U.K. Challenge Trophy. Abbotsoinch. As reported last month, the hosts dominated in Rubber and Glider, no wonder they seem pleased with their effort!

maxs. Third and fourth places went to Wigan members Tom Rhead and Brian Picken, both flying open class models roughly to Wakefield size, and equipped with the distinctive single blade featherers favoured by their club.

The glider event was the customary thermal/down-draught gamble, with only two fliers finding three consecutive thermals to reach the fly-off. These were Meechan and Sleight, who had both done well the previous day during the U.K. Challenge Match, followed a long way behind by Rhead, who missed the lift completely on one flight.

Power seemed to produce a much higher casualty rate, both in and out of the contest, than expected. Again only two trebles were scored, by Brian Talbot of Wigan with an o.d. model powered with a production P.A.W. turning an 8 x 4 Tornado nylon prop., and J. O'Donnell's "Eureka" using a very early P.A.W. and a Frog 9 x 6. Following places went to West Scots Smith of Stranraer and Bob Parsons of Prestwick.

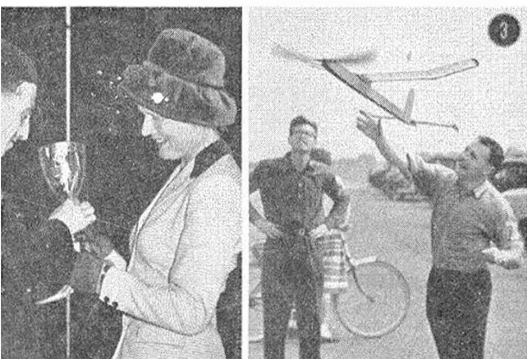
Glider and Power fly-offs were held at 6 p.m., by which time there was a fair breeze at ground level, and quite strong drift at altitude. The glider result was clear cut as Sleight hit the lift which Meechan missed, but Power had the closest result ever. J. O.D.'s model went o.o.s. still in lift at 5:55, whilst the Wigan model was timed to 5:54. Talbot was probably consoled by the recovery of his model, which landed short of the crops that presumably claimed the "Eureka".

Wally Nield of Cheddle repeated his Nationals win in the Radio event, making probably the best spot landing ever in an S.M.A.E. event, touching within three feet of the spot, and stopping with the wing over-shadowing it! His E.C.C.-lited "Electra" was powered by an Arden 199. George Parkinson of Kendal placed second, flying a Nordec-powered multi-control model with various items disconnected. Fraser of Kirkcaldy came third.

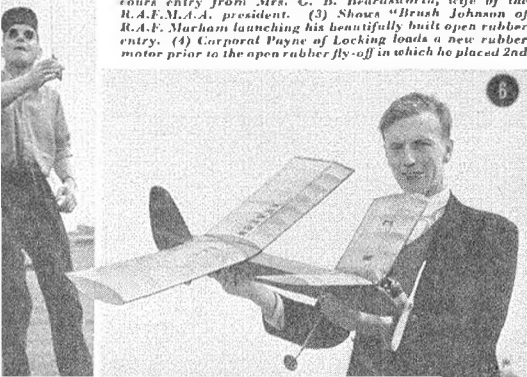
Team Race events were held consecutively. Thornaby Pathfinders having a field day by cleaning up both classes. Two of the Class B finalists failed to finish as the fastest model caught fire, and the other was wrecked apparently due to the stop on a U-reely handle failing.

### Croydon Gala

Fantastic thermals were the talk of Chobham Common on September 14th—one piece of newspaper was timed for a 4-minute maximum at 150 ft. and such was the power of the lift bubbles that some models went vertically into the blue in under that time, never to appear again! George Fuller, Gala Champ and winner in Power, clocked no less than nine 4-min. maxs during



At the R.A.F. Championships: In (1) Sgt.-Lent. Anourex of Cranwell checks his R.6B with which he came first in the Radio Control event. Rex Franklin, A.R.C.C. Secretary, Sqdn.-Ldr. "Bill" Verney, and Sqdn.-Ldr. Cable, R.A.F. M.A.A. Comp. Sec., look on. (2) S.A.C. Wyse of Shawbury receives the AEROMOBILE Trophy for the best concurrent entry from Mrs. C. B. Beardsworth, wife of the R.A.F.M.A.A. president. (3) Showa "Brush Johnson of R.A.F. Marham launching his beautifully built open rubber entry. (4) Corporal Payne of Locking loads a new rubber motor prior to the open rubber fly-off in which he placed 2nd



Nose look 'ere, mate! in picture (5). Anxious rainfall expressions are those of L.A.C. Robinson and Corporal Goolfrey, both of Fighting Command, in the combat semi final. L.A.C. Robinson was the eventual winner of the event. (6) This orthodox tractor canard made consistently stable flights at Dabden. Named Krakon and powered by a Mills 75, it was built by S.A.C. Wyse



At the R.A.F. Champs: Top, an international group of aircraft apprentices from R.A.F. Locking; left to right, A.I. Phinn, Australia; I.G. Robertson, Scotland; and J.I. McDonald, also a Scot for the winning team in the Class 3A team race, with a black-painted Oliver Cub powered model. Next, Sgt. Woods checks the controls of his Johnson 35 powered Astra. Here a very nicely finished model, it did not fly owing to actuator snags, but created a great deal of interest. Radio equipment consisted of E.D. Everest receiver and Pike centrifugal clutch Mighty Midget servos.

the day and was one of the few in the fly-offs to get his model back the same afternoon—this by chance as Sid Smeed (who had timed his winning flight) was searching for another model. Supported by a good entry from all parts of the country, this annual Croydon "do" was perhaps the best-ever.

Results	CROYDON GALA		September 14th
<b>Rubber (48 entries)</b>			
1. K. Horry ...	Bristol and West ...	...	12:00 + 4:50
2. D. Poole ...	Birmingham ...	...	12:00 + 4:39
3. E. Barnacle ...	Leamington ...	...	12:00 + 4:38
<b>Glider (76 entries)</b>			
1. D. Partridge ...	County Member ...	...	12:00 + 2:58
2. D. Howell ...	De Havilland (Hatfield) ...	...	12:00 + 2:11
3. M. Dickson ...	Leamington ...	...	12:00 + 1:29
<b>Power (57 entries)</b>			
1. G. Fuller ...	St. Albans ...	...	12:00 + 4:19
2. K. Glynn ...	Surbiton ...	...	12:00 + 4:10
3. D. Posner ...	Surbiton ...	...	12:00 + 3:54
<b>Chuck Glider (19 entries)</b>			
1. A. Young ...	Surbiton 4:29		
2. J. Lawson ...	St. Albans 2:06		
3. J. Barker ...	Surbiton 1:29		
<b>Stepie Soaring (34 entries)</b>			
1. J. Baguley ...	Hayes ...	...	3:46
2. J. Simons ...	St. Albans ...	...	3:45
3. B. Cox ...	St. Albans ...	...	3:03

#### SCOTTISH GALA, August 24th, 1958

<b>Caton Trophy (U/R Rubber)</b>			
1. J. O'Donnell ...	Whitefield ...	...	12 : 00
2. T. Chambers ...	Teesside ...	...	9 : 57
3. T. Rhead ...	Wigan ...	...	9 : 27
<b>Open Glider</b>			
1. R. Sleight ...	Prestwick ...	...	9 : 00 + 5 : 58
2. W. Meechan ...	Glasgow ...	...	9 : 00 + 1 : 13
3. T. Rhead ...	Wigan ...	...	7 : 26
<b>Astral Trophy (Power U/R)</b>			
1. J. O'Donnell ...	Whitefield ...	...	12 : 00 + 5 : 55
2. B. Talbot ...	Wigan ...	...	12 : 00 + 5 : 24
3. A. J. Smith ...	Stranraer ...	...	10 : 40
<b>Taplin Trophy (Radio)</b>			
1. W. S. Nield ...	Cheadle ...	...	44 pts.
2. G. W. Parkinson ...	Kendal ...	...	35
3. R. Fraser ...	Kirkcaldy ...	...	31
<b>Team Racing A</b>			
1. Pasco ...	Thornaby 4:51		
<b>Team Racing B</b>			
	G. Rhucroft	Thornaby	13:46
<b>NORTHERN GALA</b>			
<b>Flight Cup (U/R Rubber)</b>			
1. D. Poole ...	Birmingham ...	...	12 : 00
2. E. A. Barnacle ...	Leamington ...	...	10 : 31
3. R. Lennox ...	Birmingham ...	...	9 : 53
<b>Frog Senior Cup (U/R Power)</b>			
1. T. H. Wilkes ...	Shelfield ...	...	11 : 55
2. T. S. Eckersley ...	Baldon ...	...	11 : 06
3. K. Glynn ...	Surbiton ...	...	11 : 04
<b>Pan American Trophy (Payload)</b>			
1. A. R. Collinson ...	Baldon ...	...	6 : 01
2. P. Muller ...	Surbiton ...	...	5 : 18
3. R. C. Monks ...	Birmingham ...	...	5 : 02
<b>"AEROMODELLER" Radio Control Trophy</b>			
1. W. S. Nield ...	Cheadle ...	...	23 pts.
2. G. W. Parkinson ...	Kendal ...	...	16
3. H. B. Smith ...	Baldon ...	...	10
<b>Team Race "A"</b>			
1. L. Davy Whirledale			
<b>Team Race "B"</b>			
1. D. W. Mitchell	Prestwick		

Running up ready to start is H. Joyce's Astra Bug at the B.R.C.M.S. Meeting, Wellesbourne Mansford, unfortunately it did not get airborne in the contest. Bottom is D. E. Thompson's A.M.15 powered B.E.2c, quite the most interesting scale R/C model we have yet seen.

#### Next Month

Consider the contents—the Gloster Gladiator in full detail as a famous "Bipe" by George Cox and for flying Cox by Doug Mellard. Helicopter expert F. G. Boreham reveals his cherished data with two fine plans. More data on the world's finest Wankel and Pacer designs. Hints on plastics. Latest in contest news. The E.M.S. Thunderbolt for solid fans, and the return of McGillicuddy after long hibernation in the realms of the Highlands. All this—with TWO free plans will be in addition to many popular regular features. Order your copy now!!

# VECTOR

A 22 inch span  
rubber 'quikkie'

By N. D. PEACOCK

THIS LITTLE MODEL was built to try and find out something about the stability of a Delta layout. Flight pattern is fast and usually lasts around 20 secs. on 600 turns.

Constructionally, the model is simple and sturdy. Enlarge the details for the 1/4-scale plan below. Make the fuselage tube by soaking the 1/8-in. sheet in water and then form round a convenient broom handle larger than the internal diameter of the finished tube. Ensure that the edges of the balsa are running parallel with the axis of the broom handle, then bind in place with rubber or tape and leave to dry out.

Remove the balsa tube and cement up the joint holding the edges together with light rubber bands. Smear the excess cement along the joint. When dry, slice off two sheet lengths and cut these down to fit into each end of the main tube; cement in place to give local reinforcement. Sand the ends of the tube and add 3/8-in. ply discs with a square removed from the centre of each

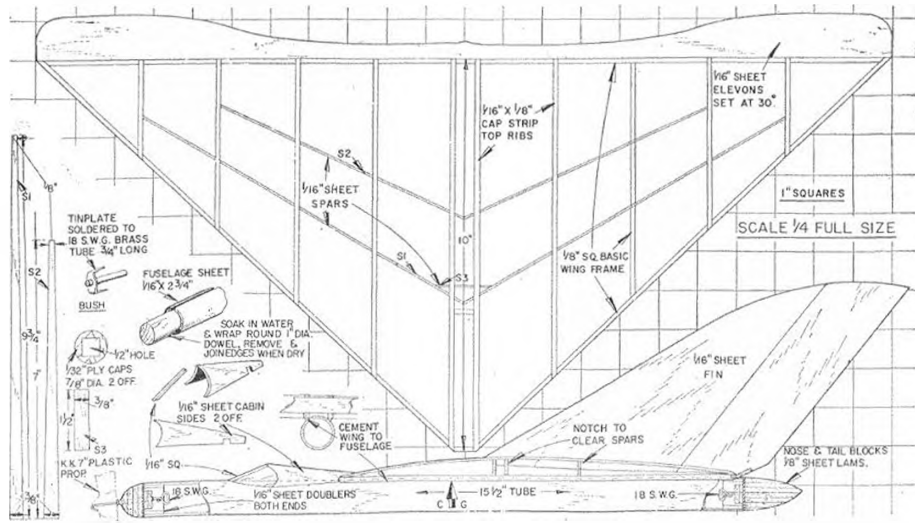
in place. The square hole then forms the nose and tail plug locating arrangements. The whole fuselage tube is covered with lightweight tissue and given three thin coats of dope, one clear, two colours.

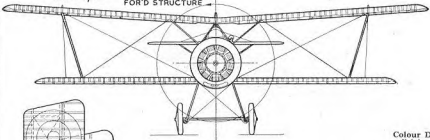
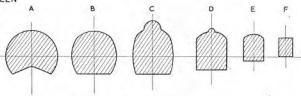
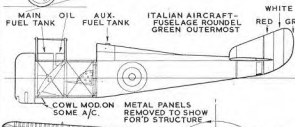
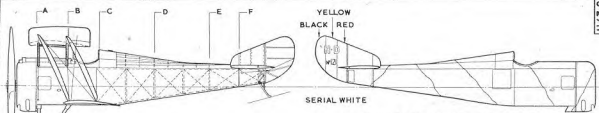
The wing is extremely simple, being a flat 1/4-in. square basic structure with spars added and strip ribs bent over. The ends of the strip ribs should be chamfered off where they meet the frame.

Elevons are added after sanding the edge to sit on the wing T.E. at a suitable angle (30°). Line the top of the elevon with the top of the T.E. When the frame is dry remove from the board and carefully sand off blending the underside of the T.E. with the elevon.

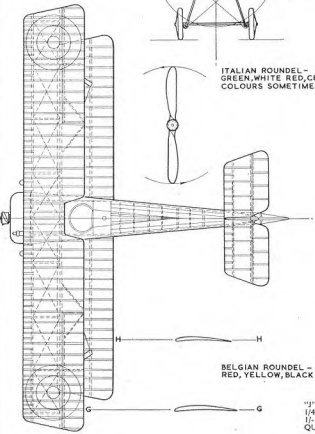
Now fold some fine sandpaper over the fuselage and with the sand side out, then bed the wing frame down on the tube by moving it over the paper. Cover and dope the wing and pin it down to dry out. Do not cover the centre section at this stage. Next cement the wing to the fuselage, add the sheet fin and complete the covering.

Hand launched glides do not prove much, so start off with a few turns and gradually increase them. Try and get a wide sweeping left-hand turn. The turn can be controlled by bending the elevons slightly (they are left uncovered) but chiefly control the tight left turn by adding right side thrust.





ITALIAN ROUNDEL - GREEN, WHITE RED, CENTRE SPOT. COLOURS SOMETIMES REVERSED.



BELGIAN ROUNDEL - RED, YELLOW, BLACK CENTRE SPOT.

**Colour Details and Data**

Belgian aircraft were camouflaged on the top and vertical surfaces (including cowl and metal panels) in large "shadow shading" patches of dark green and khaki, with cream or very pale blue, underneath. Near full-chord roundels of red, yellow and black were applied to the wing surfaces, none were carried on the fuselage; the rudder was equally divided into red, yellow and black portions with red next to the rudder post. Coppens flew Hanriot's No. 2, 6, 9, 17, 23, 24 and 45; No. 6 was painted turquoise blue all over on June 18th, 1918, and No. 23 was similarly painted at a later date.

Italian Hanriots were uncamouflaged, the finish being the creamy shade of clear-doped linen fabric; metal panels and cowlings were usually polished. Green, white and red roundels were carried on the wing tips and fuselage sides; the rudder was divided into red, white and green divisions with red foremost. American built aircraft had battleship-grey fuselage, aluminium wings and tail. Red, blue and white (centre)-colours in that order-roundels were carried on the wings only, positioned inboard of the ailerons. Equal width rudder stripes were red (foremost), white and blue. A large white serial was carried on the fuselage sides.

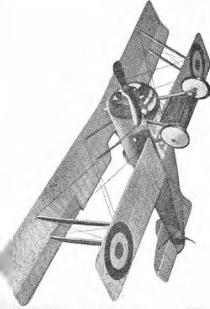
**Data**  
 Span Upper, 28 ft. 6½ in.; Span Lower 24 ft. 3½ in.;  
 Length 19 ft. 14 in.; Height 9 ft. 8 in.; Chord Upper, 4 ft. 11 in.; Chord Lower, 3 ft. 9½ in.; Dihedral, 4/4½ degrees upper wing only.  
 Speed, 108.5 m.p.h. (174 k.p.h.); Climb: 1,000 m. in 3 min.; 2,000 m. in 6 min.; 3,000 m. in 11 min.; 4,000 m. in 17 min.  
 Endurance, 2½ hours. Weight empty, 904 lb. Weight loaded, 1,322 lb.  
 Also built by Niupport-Macchi Co. for use on Italian Front, and U.S. Naval Aircraft Factory (10 aircraft only).  
*Performance figures from "Flugpost".*

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AIRCRAFT DESCRIBED No. 94

# The HANRIOT DUPONT

## H.D.1. By Peter Gray



DESIGNED IN 1916 by M. Dupont, the Hanriot H.D.1 saw considerable service on the Belgian and Italian Fronts in the hands of pilots of these air forces.

The first Belgian unit to receive the H.D.1 was, fittingly, No. 1 Squadron in August, 1917, and Willy Coppens, then a Warrant Officer, was immediately impressed by its excellent handling qualities and strength as compared with the Nieuport which it was replacing. In November, 1917, the Italian Hanoiport-Macchi Co. commenced production of the Hanriot and towards the end of the war some 130 machines were in service with the Italian squadrons. Silvio Scarioni, one of Italy's leading pilots, with 26 victories, extensively flew an H.D.1 fitted with twin machine guns—a non-standard arrangement. Probably the most famous airman to fly this aeroplane was Charles Nungesser, who was credited with 45 victories—and almost as many broken bones from his numerous crashes! His various aircraft were emblazoned with a "coffin and candles" identity device on the fuselage sides. Whether he flew the Hanriot H.D.1 operationally cannot be certain, but after the war he took one to the U.S.A. (No. 5934) in 1924 for a barn-storming exhibition tour; still bearing the notorious coffin and candles insignia. After several changes of ownership subsequent to Nungesser's death in an attempted Atlantic crossing and appearance in several films ("Hell's Angels," etc.) this machine passed into the possession of Ed. Maloney in 1951 who restored it for exhibition in the Claremont Museum, California. Hanriot No. 78, an old Belgian Flying Corps machine, is exhibited in the Brussels War Museum. A further H.D.1 was owned by the Shuttleworth Trust (G-AFDX), but this was written-off in 1939 through shedding a wheel after take-off. The Hanriot was also used by the Swiss air service.

Although quite a useful aeroplane the H.D.1 suffered insofar as it was only fitted with a single machine-gun off-set on the port side of the fuselage, whereas contemporary types were using the classic twin gun installation. The sight was fixed to the centre-section struts and was not, therefore, completely harmonious with the gun, which resulted in unreliable shooting. Eventually the Belgians had the gun re-positioned on the centre-line of the fuselage—immediately in front of the pilot—with rigidly attached sights, which arrangement certainly made for more accurate firing. André De Meulemeester, a companion of Coppens, who for a time sported an all-yellow Hanriot, had two machine-guns fitted to his aircraft, but had the extra gun removed due to the considerably reduced ceiling.

The wooden airframe design was a conventional fabric covered structure that turned out strong and reasonably light. The heavily-braced wings were built on two spars and internally braced with wire and steel tube compression members, the upper wing was, unusually, in two halves joined at the centre, with ailerons hinged to the rear spar. Centre-section struts were of steel tube "W" formation connected at the centre apex

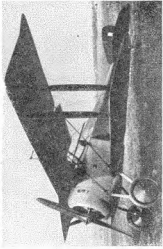
with a steel tube of small diameter; the spruce interplane struts were equipped with metal end fittings.

Basically a curved box-girder structure, the fuselage had a curved upper decking and headrest for which light plywood formers and stringers formed the basis. The main longerons were of ash. Curved metal side panels faired in the circular section of the cowling as far back as the cockpit, aft of which it was a slab-sided fuselage. Carburettor air intake tubes projected through these panels on either side also access panels were located in the forward bay. Immediately aft of the pilot, mounted on the upper longerons, was the gravity petrol tank which was neatly built to the contours of the headrest and decking of which it formed part. Heavy diagonal bracing members at the extreme forward end of the fuselage supported the rear engine mount. The cockpit was fitted with a metal bucket seat punched with lightning holes. The control column was a straight-forward steel tube with a hand grip and "flip" switch at the top, also the gun trigger which fired the gun through a Bowden cable. This trigger was almost identical to the brake levers on a sports cycle fitted with cable brakes. The steel tube rudder bar was fitted with adjustable leather strap stirrups. Controls and instruments consisted of: throttle, hand fuel-pressure pump, magnetco switches and fuel cocks, altimeter, rev. counter and air-speed indicator, fuel supply and pressure gauges, etc., the precise layout of these is, unfortunately, not known. A compass was fitted into the cockpit floor.

Fin and rudder were built of light gauge steel tube and it is thought the tailplane was of composite steel tube and wood (ribs) construction. The control horns for the elevators were fixed to the centre of the hinged spar and operated through a crank, all mounted inside the fuselage. The extreme end of the rear fuselage was left uncovered to facilitate servicing the tail controls and skid; this latter being hinged to the base of the sternpost. The undercarriage was a normal "V" structure with two spreader bars, the axle being sprung with elastic shock cord, as was the tailskid.

Standard engine fitted was the 110 h.p. Le Rhone which was housed in a circular cowling of similar design to that of the Sopwith Camel. It was extensively fretted with additional cooling slots not always symmetrical.

*Handing shows Belgian Hanriot as present in the Brussels Musée de l'Armée Beldine is Swiss Hanriot with a white Greek cross on a sunset spore insignia at wing tips and rudder*





By Peter Gray

DURING THE First World War considerable assistance was rendered to the Allied air forces by the small, but no less efficient, Belgian Flying Corps. It operated as a completely independent national corps being responsible for its own sector of the Front, yet in close integration with the British and French air forces.

As was usually the case, the fighter (or scout) squadrons seem to have been brought mostly into the limelight and several names became well-known: André de Meulemeester, Jan Olesiegers, Edmond Thiedry, etc., as their score of enemy aircraft began to mount. Probably the most colourful character of all though was to be Major The Chevalier Willy Coppens de Houthulst, D.S.O., M.C., who, although somewhat a late starter with regard to scoring, rapidly became one of the leaders when he did get going. With a particular penchant for kite-balloons his final score of 34 victories included no less than 24 of these gas bags.

Although balloons were allowed to count as victories in the other Allied air services, they were not recognised in the Royal Flying Corps. It is not easily understood why this should have been so for balloon straffing was an exceedingly dangerous business. One or two buccaneer types specialised on them, however, but seldom survived for any length of time. It has been likened to a disease—balloon fever—which quickly became chronic, particularly if early efforts were attended by success.

As has already been mentioned, Willy Coppens's start was somewhat slow, but he used the gradual accumulation of knowledge and experience as scientifically as he could, to such good purpose that he was eventually able to down no less than seven balloons in a single week.

The Hanriot H.D.I scout which he flew almost exclusively had one major shortcoming, and that was its only being fitted with a single machine gun and consequent restricted fire power. When Coppens decided to really do something about enemy kite balloons his first thought was to obtain some really efficient incendiary bullets. None being available officially he managed to obtain, at first, just 20 rounds from the French through the good offices of Lieut. Bataille. These he husbanded most carefully by making up a special belt using just four incendiary rounds, interspersed by three ordinary rounds, at the beginning of the ammunition belt. (Later, after several successes, suitable ammunition became available through the proper channels.) The gallant Belgian had calculated that 50 yards was the maximum range at which it was any good to open fire; and that after the approach dive at approximately 125 m.p.h. one had about 9/10th second to fire and pull up to avoid collision!

On May 8th, 1918, Coppens set out on a dawn patrol with Galliez and Dubois and shortly after take off

noticed the Zarren balloon ascending through the early ground mist. He quickly left the patrol—which he was authorised to do if need be—to return to his airfield at Les Moeres where he rapidly had four rounds of his precious incendiary ammo inserted, as already mentioned, at the beginning of the belt. Soon he was airborne again and observed the balloon had risen to about 4,000 ft. He crossed the lines himself at nearly 9,000 ft., from which height he commenced his approach dive and as the balloon drew nearer, at what seemed to be terrifying speed, he realised his speed was greatly in excess of the 125 m.p.h. he had calculated.

Meantime the German defences had not been idle and were busy plastering the area into which he now flew with thick, black, bursts of H.E., once again underlining the danger with which these balloon attacks were fraught. However, there was little that Coppens could do now but to press on regardless, trusting to luck his excessive speed would confuse the ranging of the Archie gunners. As he winged into range he noticed the Hun observer heaving a hurried retreat from the basket swinging under the drachen, and presently observed his parachute mushroom into shape to drift leisurely down to safety. Now he was able to discern the handling ropes of the great gas-bag, trailing obliquely in the early morning breeze and looking like the tentacles of some bizarre animal waiting to spring upon him. Uncapping his telescopic sight he realised the futility of this action, for the target now completely filled the field of view forward. It was just on 07.10 hours when he squeezed the trigger and his single machine gun spat the four incendiary bullets into the bloated envelope; it immediately flared up and was consumed almost in an instant. Coppens was exultant and made a highly acrobatic departure from the scene of action, rolling, spinning, even looping (!) crazily—a not altogether wise procedure, for had his Hanriot been unknowingly hit by an A.A. fragment the additional load on the structure may have had dire results; as did often happen.

Balloons did not always fire easily or immediately, however, and on May 15th Willy Coppens had a unique encounter with the Houthulst balloon. Again it was early in the morning, just after eight o'clock, with the target trailing at a height of 3,900 ft. when he attacked out of the sun; but after firing three times at point-blank range it did not catch fire. In an endeavour to make more certain he slowed right down and, flying perfectly straight and level, fired at the last split second, whereupon the drachen suddenly shot up as though relieved of a great weight and it was impossible for the Hanriot to avoid colliding with it. The wheels struck the balloon and tripped the plane on to its nose and port wing as the envelope began to sink under its weight. With great presence of mind the redoubtable Belgian had thumbed his blip-switch, switching off the



*Right is an Italian Hanriot H.D.I. which is not standard in certain details. Note the special machine gun branch and careful polishing of the metal panels. Unusual refinement is the ample padding of the pilot's headrest (I.W.M. photo)*

*Bottom left is Nangessa's restored H.D.I. at Claremont, California. Note non-standard windscreen and Coffin and Candler insignia (C. Donald photo)*

*Bottom right is a U.S. built Hanriot being run up on chocks. Widely-spaced twin machine guns are evident*



engine, at the moment of impact although at the same instant his mind registered the thought: "That's the end. It's bound to happen to those who risk too much."

However, all was not yet lost, no structural damage had occurred and immediately the Hanriot began to slither across the spongy, yielding mass until it plunged clear, rapidly gathering momentum as it fell nose first. The propeller began to windmill and, relaxing his thumb which had "frozen" to the switch, the engine once again fired whereupon he opened up the throttle and high-tailed it for home. Meantime the balloon, torn and leaking, continued to fall but did not actually catch fire until it reached the ground, when sufficient of the resulting conflagration could be seen from the Belgian lines for the victory to be confirmed. Naturally Coppens's story was accepted by his colleagues with some reserve, to say the least—but he was able to substantiate it by pointing to the traces of white "down" from the sides of the balloon, underneath his lower wings, and the imprint of cord on a propeller blade where it had struck one of the balloon's guys before it stopped revolving. This victory had cost another eight of his precious incendiary bullets.

It was on October 14th, 1918, that the last victory and last patrol of this gallant flyer coincided. Having taken off in his turquoise blue scout at 05.40 hours for the dawn patrol, some 20 minutes later he fired exactly four rounds into the Praet-Bosch balloon as it rode at 2,400 ft., and it slowly began to burn in the damp morning air, silhouetted against the dark cloud ceiling and dramatised by the first crimson streaks in the east heralding the day. Five minutes later Coppens lined up the next "sausage" in his sights, this target now having been winched down to a mere 900 feet. In addition to the A.A. shells and "flaming onions" (incendiary phosphorus shells) which bracketed the area, was added a fusillade of small calibre machine gun fire, and when only 150 yards away from the balloon he felt a shattering blow in his left leg.

So acute was the pain that his right leg shot out rigid, swinging the little blue scout into a spin. Simultaneously Coppens's hand convulsed on the trigger and bullets were random sprayed in every direction. The first of them hit the balloon which burst into flames, but this

was not known to the wounded pilot and this last victory was never credited to him. The wound in his leg was intensified by the fact that it was caused by an incendiary bullet which, being hollow, had a dum-dum effect. The shin bone was shattered, the muscles torn apart and the artery severed. The spirit of self-preservation was much alive, however, and after the initial shock Coppens managed to correct the spin after two or three turns by manipulating the rudder bar solely with his right leg, which he was able to do by virtue of its stirrup strap. His only thought now was to re-cross the lines some five miles away, even though his revs had dropped due to one of the induction pipes being holed by a stray bullet. This, he calculated, would take three minutes—the severed artery was pulsing madly; would he be able to sustain consciousness long enough to effect some sort of landing? The sweat stood out on his brow and he tore down his goggles so they should not become fogged; his lucky fur-lined cap (in which he had done all his flying at the front) he stuffed under his coat—it was a talisman.

Hungry he gulped down the cold morning air in an endeavour to stave off the faintness; he had lost much blood and things were becoming decidedly dicey. Suddenly he noticed the firing had stopped which could mean only one thing—at the end of his strength he had made it. In a small field—all too small—he quickly put the Hanriot down, the undercarriage collapsed and the machine slithered to a halt.

So came to an end Willy Coppens's wartime flying career—after many months in hospital he eventually lost his leg, but such a man could not be kept out of the sky and on his discharge from hospital he persevered and flew again, becoming a well-known figure in post-war aviation circles. With regard to his final operational sortie, it was later learned that the pivot holding the rudder bar had been partially cut by a bullet. Had it been completely broken he would not have been able to control his machine with just the one foot.

Major Coppens's exploits were legion and readers who have not read his autobiography "Days on the Wing" (on which these incidents are based) are recommended to try their local library.



# The OLSEN SERVO

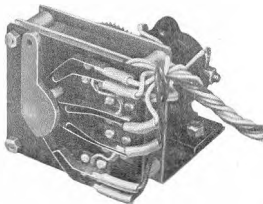
CHRIS OLSEN and his "Uproar", described in last month's issue, need no introduction to our readers. Winner of the Multi event at this year's "Nats" and top man in the R/C Eliminators, he builds all his own radio equipment including the servo units which utilise a Mighty Midget electric motor for the drive. These units are capable of a 3-lb. pull if built correctly, so study the photos and drawings on this page and read carefully the following words of wisdom.

First cut the two dural plates shown full-size in the drawing. Clamp them together and drill all of the mounting holes and hole "C", but not holes "A" and "B".

Now take the large plate only, bend at 90 degrees where shown, screw the motor in place and pass a length of  $\frac{1}{8}$ -in. silver steel, sharpened at one end, through the top bearing holes, using this as a scribe to mark the dural plate where  $\frac{1}{8}$ -in. hole "A" should be drilled.

If two small Mighty Midget gears are mounted on  $\frac{1}{8}$ -in. spindles and positioned in holes "A" and "C" and a large gear meshed up against them tightly, the centre hole of this large gear will locate the third bearing hole "B" which can be marked with the pointed length of silver steel and drilled. Now that these holes are drilled the two plates can be clamped together again and the holes drilled in the smaller plate, apart from hole "A" which is not required.

A small gear is soldered on a spindle and pushed through hole "A", with an 8 or 10 BA washer on either side, this spindle locates in the top bearing of the motor and the large gear engages with the gear on the motor shaft. A spindle about  $\frac{1}{2}$ -in. long is threaded with a large and small gear and the two are soldered together and fitted in hole "B" so that the large gear meshes with the

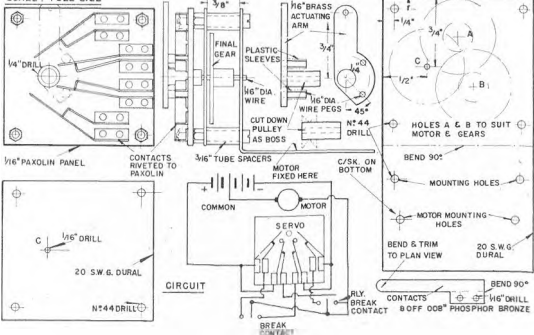


small gear in hole "A". The top plate is then fitted and the two clamped together using 8 BA bolts and spacers.

Next job is to make the switches from .008 phosphor bronze. The basic pattern is shown on the drawing and individual switches should be cut to the lengths shown in the plan view.

The paxolin panel, which can be drilled previously using the small dural plate as a template, is then fitted with the switches using  $\frac{1}{8}$ -in. alloy rivets to fix them to the panel. It is important that the end of the switches do not overlap the  $\frac{1}{2}$ -in. hole otherwise they will foul the actuating arm. The paxolin panel can now be fitted on top of the gear box using the retaining nuts as spacers. The actuating arm should be made as shown on drawing, and if silver solder facilities are available they should be used when sweating the arm to the cut

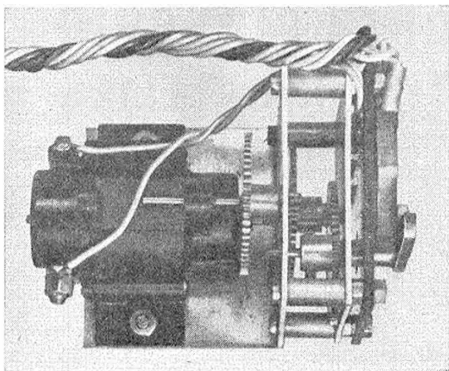
SCALE: FULL SIZE



down pulley and shaft. The arm, preceded by a washer, is then pushed through hole "C" when the last gear with a washer is threaded on the spindle and the grub screw tightened up. The gear should be quite free and should move easily when the large gear on the motor is turned. The switches can then be wired up as shown, the polarity of the connections being particularly important, and the actuator is ready for use.

Now for a few operating hints—if, when a relay pulls in, the arm moves over and will not cut off when the limit switch operates then the battery polarity is wrong. It should be noted that the limit switches make contact all the time and that the neutral switches are broken when in the neutral position only, making contact when the arm moves away from neutral.

The Mighty Midget motor should be suppressed by wiring a .1 condenser across the brushes, it is also recommended that plenty of cement is applied around the brush contacts after soldering to prevent displacement due to vibration. The brushes should be examined regularly, every 20 flights at least, as they do fracture and wear out as the author knows to his cost.



## Radio Control Notes

A NEW TYPE of nickel cadmium secondary cell has come to our notice named the DEAC and distributed in the U.K. by Messrs. G. A. Stanley Palmer Ltd., Maxwell House, Arundel Street, Strand, W.C.2. Capacities range from 50 M/a hour to 23 amp hour, the type most interesting to the R/C fan being 100 DK at 100 M/a hour (size 45 mm. x 3.9 mm.) to 450DK at 450 M/a hour (size 43 mm. x 7.5 mm.). Weight 0.32 oz. to 1.16 oz. The most useful for actuator systems is the 225 DK and the 450 DK. Details are as follows: 225 DK, 225 M/a hour. Discharge current at 10 hour rate 22 M/a. Maximum charging rate 22 M/a for 14 hours. .44 oz. 450 DK, 450 M/a hour. Discharge current at 10 hour rate 45 M/a. Maximum charging rate 45 M/a for 14 hours. 1.16 oz.

The normal discharge rate may be exceeded without damage to the cell. The length of discharge, however, is limited accordingly. Tests were made of the 450 DK and the results are as follows: Two cells (2.4 volts). Discharged continuously through a Mighty Midget motor without load. Approximate current 130 M/a.

Time taken to discharge completely, 3½ hours.

Re-charged for 14 hours at 45 M/a.

Discharge time with the same load approx. the same.

Re-charged at the same rate, etc.

Discharged through M.M. motor under load. Approx. current 200 M/a.

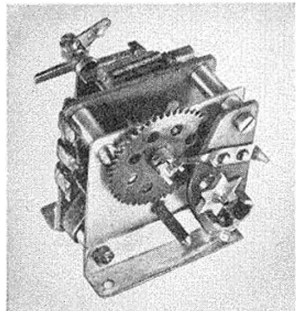
Time to discharge completely approx. 2½ hours.

This will be ample to deal with a day's flying with normal actuator service. The 225 DK would give proportionately lower outputs, but would still have ample capacity.

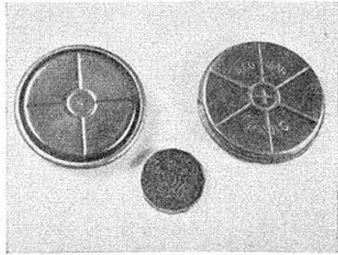
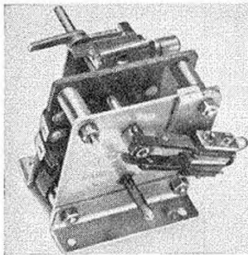
The cells may be made up into higher voltage units by strapping together. One side is negative and the other positive. Price of the 225 DK is approx. 4s. and the 450 DK 6s.

A range of charging units is available for these cells, all incorporating over-voltage protection. For the 225 DK the SCR1 unit charges at 10 m/a at half the nominal current and retails at 10s. The 450 DK cell is accommodated for by the SCR2 charging at 20 m/a and retails at 25s. Full particulars of other charging units can be obtained from Messrs. G. A. Stanley Palmer Ltd.

Fred Rising's well-known clockwork escapement, which we have previously reviewed in standard form, is now available in two further versions. The one shown bottom centre has additional double contact switches fitted, operated by a cam on the pawl shaft and is an additional 12s. 6d. above the normal price of 32s. 6d. The illustrated bottom left is a compound version providing quick blip engine control or elevator control in addition to rudder control using a further escapement and is available to order for 22s. 6d. extra.



Two new versions of the Rising escapement are shown left. Note on compound type, extreme left, the rudder actuating horn which is attached to pawl shaft by grub screw. DEAC miniature accumulators are shown, right, with 3d.-piece for size comparison





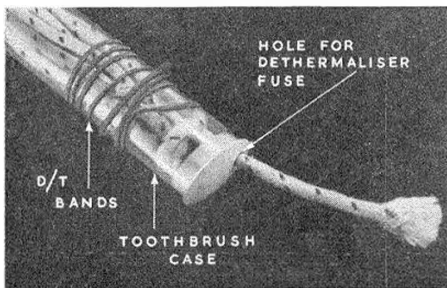
# GADGET REVIEW

MANY OF US HAVE difficulty with our solder work and will appreciate the excellent use of a tablet tin sketched in **A** as used by B. G. Kirkman of Derby for stunt work. All one needs to do, is to sandpaper the colour printing off the surface of the tin where joints are to be made, fit a baffle and ventilators to base and lid, then join the "tank" halves. If the paint happens to be of cellulose type on the tin, it can be removed with thinners. Mr. Kirkman also suggests an idea for making wings with built-up trailing edges, employing ordinary paper clips to keep the extreme T.E.'s together until dry. A strong lightweight boom for an A2 glider can be made from 3/32 sheet and an odd piece of silk or nylon. The sheet is covered on one side with the material, being applied with dope. It is then cut as shown in **B**, submitted by Karl Webster of Wakefield M.F.C. Chamfer one edge to make a good joint, then wrap round formers and run cement down cracks, sandpaper well and finish outside covering with tissue, so sealing the surfaces. Mr. Webster suggests taking a 3-in. wide sheet, tapering it down to 2 inches at the other end and making 14 equally spaced lengthwise cuts throughout the length. A needle valve extension for those engines with controls which are too close to the propeller is shown in **C**, sent by Pat Wheeler of Cape Town. Take a 3/4-in. dowel about 8-12 in. long, hacksaw a cut 3/4 in. deep in the end and chamfer slightly so that it is easily fitted over the bent end of the needle valve. Then bind over outside to give location and you have an ideal "twiddler".

From F. Bryant, R.A.F. in Germany, comes the use of a child's toy clockwork motor for progressive action timer in a model, using the expansion of the spring (**D**) to operate a tail surface, engine throttle or what-have-you. This can be used on a sport model so that it will loop at height and still descend safely in the glide, or trip a parachute mechanism.

One hands always welcome ideas to enable them to continue aeromodelling without waiting for assistance and in **E**, B. Napier of Carshalton, Surrey, shows us a new type of stooge which employs a conventional stake-in-the-ground to hold back a control line model until

*Photo shows how John Trinder of Croyley Green, Herts, makes good use of a toothbrush case for field work. It will just hold a pack of Contest Kits dethermaliser fuse, and with a hole drilled in one end to allow fuse to pass through, it can be carried in the pocket ready for use and with dtj bands at the ready too!*



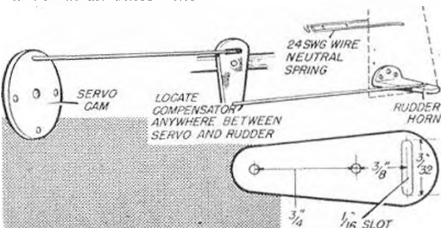
it is released. The vertically bent tail skid engages in a hole at the top of the stake and the pull of the engine is enough to hold the tail up, then when the operator takes up the control line handle, and pulls "up" elevator, the tail is forced down, the hook disengages and the model takes off.

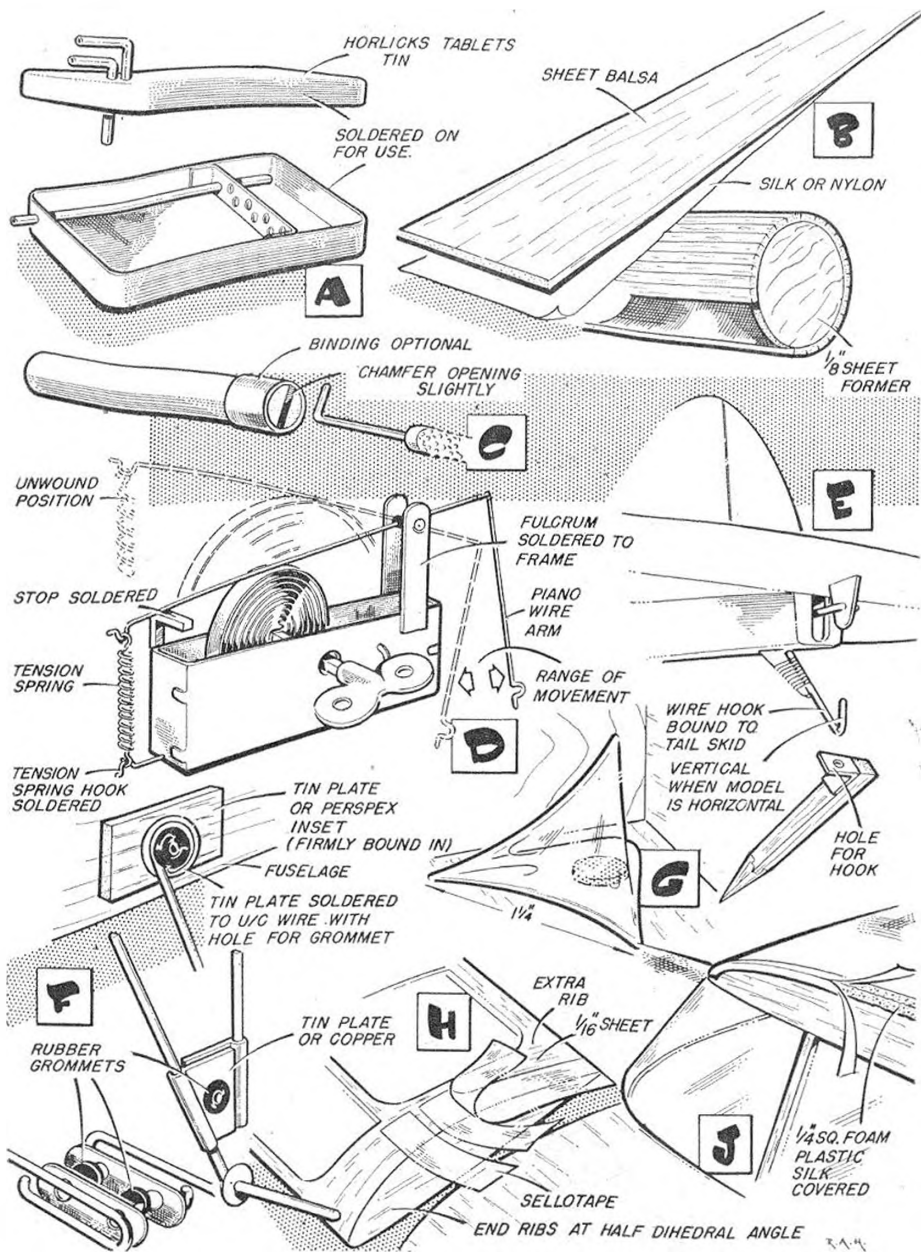
Rubber grommets have a multitude of uses, particularly where vibration is troublesome and R. E. Butler of East Ham, suggests in figure **F** two methods for shock absorption. The idea consists of two metal plates joined by these rubber grommets such as can be obtained from most motor accessory stores, and it will be found that the grommet has enough "give" in it to give quite a lengthy undercarriage shock movement. Moreover, if the upper end of the rear strut is attached to the fuselage in a similar way, it too provides extra "give". For the tie between undercarriage leg to stop leg spread, Mr. Butler suggests the second idea, sketched bottom left, employing double grommets.

Have you seen the new idea for keeping the stair corners clean? Triangular in section from all views, and cleverly moulded in transparent plastic with self-adhesive plates on one surface, the corner fillet shown in **G** is sold in most stores in small packets, very cheaply, and forms a perfect gusset between engine bulkheads, etc., and fuselage sides, top or bottom. They stick in place with balsaloc cement and provide immense strength. **H** is a practical idea from Mr. G. C. Riall of London, who employs it for his reduced size *Smog Hog*, which has flown so successfully demonstrating the Galloping Ghost equipment. He simply butt joints the halves of his wings and wraps Sellotape around them, the result is something which will knock off quite easily, yet has remarkable strength and also allows dihedral to increase or decrease according to requirement. There is no need for location dowels and to date, the system has never failed on a model which weighs almost 3 lbs. Lastly, in our illustrations in **I**, we have a system for filling up gaps when joining wings to a root rib fixed to a fuselage centre section, is to use the foam plastic which compresses very easily and to cover it with silk to improve appearance. Some people also use foam rubber to insulate wings from fuselages to avoid vibration burns, but should beware that the wing always seats on the same angle every time. This idea comes from R. Kenwood of Romsey, Hants.

From gadgeteer "Whiskas" Holland of Apsley comes a simple yet effective idea that needs no illustration for control line models. Remember how the tubes that carry control line wires through wing tips tend to come loose after a few flying hours? Well, instead of using plain tubing try short lengths of flexible curtain rod which provide a much better key for the cement.

For R/C enthusiasts we reproduce below the DeBolt Compensator with due acknowledgment to the maestro. It will be seen that the compensator reduces the rudder action, giving rudder movement only when the servo reaches maximum operating positions. It gives neutral rudder at all other times.







Heading shows a Fairey Flycatcher with Armstrong Siddeley Jaguar engine, of 404 Flight, H.M.S. Courageous. Colour details are: Fuselage band and decking blue with white outline, numerals are white outlined in black. Interplane wing struts are blue with ends white and black. Wheel discs blue with white edges and the rudder has a blue stripe foremost—photo, Pete Farrar

All fabric surfaces were aluminium doped; the metal panneling of the period was anodised to prevent corrosion and presented a dullish silver-grey finish.

During the 1930's a system was inaugurated whereby flights of single-seaters were led by a two-seater (i.e., Hawker "Nimrod" flights were led by an "Osprey") in the rear cockpit of which flew the navigator who did the necessary calculations for the whole

### — by Peter Gray

#### FLEET AIR ARM AIRCRAFT CARRIER IDENTITY COLOURS c.a. 1925-1938 approx.

THE ROYAL NAVY, ever the Silent Service, had never let much "gen" out of the bag even when it has considerable antiquity, but such information as it has been possible to gather on the "tween wars" period is as follows.

All Carrier-borne aircraft of the period wore an identity colour (appropriate to its parent ship) in the form of a band round the rear fuselage, sometimes straight, sometimes sloping, and an identity device of some kind often adorned the top wing.

The following details appertain to Hawker Nimrods and Ospreys of mid 1930's period:

A/C CARRIER	FUSELAGE BAND	TOP WING PATTERN
H.M.S. <i>Glorious</i> ...	Chrome yellow	Chrome yellow. Eleven diamonds between two stripes. The centre three diamonds were in flight colour, i.e., white, blue or yellow.
H.M.S. <i>Furious</i> ...	Scarlet	Various international code signal flags painted on centre section; no details.
H.M.S. <i>Courageous</i> ...	Blue	Blue. Seven diamonds between two stripes. One flight of Nimrods had black fins and wheel discs.
H.M.S. <i>Hermes</i> ...	Apple Green	No details.
H.M.S. <i>Eagle</i> ...	Black	Black chevrons in various forms; no details.
H.M.S. <i>Ark Royal</i> ...	Blue-Red-Blue / Red-Blue-Red	According to unit, for short period only.

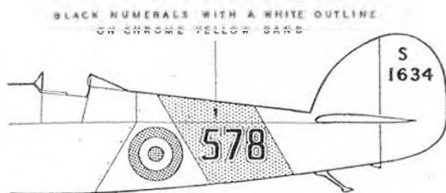
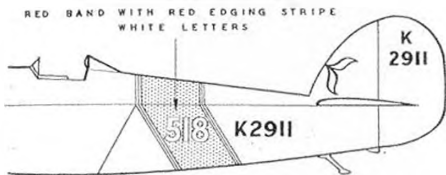
For general interest the above colours—with the exception of H.M.S. *Ark Royal*—were carried in the shape of fuselage bands on the following Fleet Air Arm types:

**Avro:** Bison.  
**Blackburn:** Dart, Blackburn, Ripon, Baffin, Shark.  
**Fairey:** IID, IIF, Flycatcher, Seal, Swordfish.

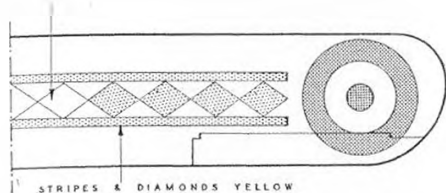
In addition to the normal serial number, aircraft carried a large number, usually of two or three digits, superimposed on the fuselage colour band. Except on the yellow background this number was usually painted in white and often outlined in black. Many F.A.A. aircraft did not carry a roundel on the fuselage sides in order to accommodate the colour band. Wing-tip roundels were of near full chord diameter up to 1934 when the diameter was reduced in order that they should not overlap the ailerons and slots. The idea was to save the weight of the paint on the control surfaces, but in typical Service fashion, aircraft with full chord roundels had them painted out! Serial numbers were carried in normal Service manner on rudder and/or rear fuselage, painted in black, but not always under wings.

flight, thereby relieving the fighter pilots of much mental effort. It should be remembered that there was no R/T then, the home base (parent A/C Carrier) was moving constantly, and navigation problems were not insignificant. Had this system ever become operational and the two-seaters been shot down, how the fighters got home to their Carrier was apparently nobody's business!

#### NIMROD OF H.M.S. FURIOUS 801 SQDN. NO UPPER WING DECOR



#### CENTRE THREE DIAMONDS WHITE ON THIS AIRCRAFT



#### NIMROD OF H.M.S. GLORIOUS 802 SQUADRON



## CLUB NEWS

IT BEATS ME how modellers can blithely throw their models into the air, hoping against hope for that big fluff which will give them their best flight to date, yet fail to carry out a very necessary requirement . . . put their name and address on the kotel! Each month we get pleas from foolhardy builders who want space to request the return of their property . . . but we just cannot devote the columns to such matters, or half the magazine would be taken up with such items.

On the other hand, from time to time we are informed that a model has been found, and in fairness to the finder who has gone to the trouble (and expense) of informing us, we like to assist them in finding the rightful owner. One such item is notified this month by Mr. E. Hellswell of 16 Stanville Road, Sharston, Manchester, who has a 6-ft. span cabin model found during the Northern Gala at Linton-on-Ouse, the "address" label giving solely the name of "Count Fred". As the finder says, "with an address label like that he doesn't deserve to get it."

### East Midland

CLEETHORPES AND D.M.A.C. combined with chaps from the North Lines club recently to give a C/L demonstration at the Cleethorpes Gala, when an entertaining afternoon's flying was staged. The club notifies the death of Mr. W. Fletcher, a very good former friend of the group, who allowed the use of his fields for as long as the members remember.

### Western

THE WESTON CONTROLINERS M.A.C. has been re-formed, and it is hoped to regain their reputation in speed circles. Main interest at present is combat, and quite a rash of Peacemakers have appeared powered with an assortment of A.M.J.s and Envia 19s. Eyes are on an assortment of rallies where it is hoped to make the name felt. And what of the lad who, after cleaning and "adjusting" his U-streky handle, attempted to fly a McCox 35 job on it? As soon as the job picked up speed the model whizzed out to 120 feet and disappeared through the asbestos roof of a nearby factory. They don't fly there any more!

### Midland

THE MIDLANDERS A.E. are now very competition-minded: T. West's and B. Colley's Class "A" tri being clocked at

a genuine 90 m.p.h. over the half mile, with a fastest heat time of 4.03. J. Bashford's O.S. Max powered 1/6 job has been doing a consistent four minutes, whilst K. Newcomb's A.P.S. Seraph puts up consistent maxes from the 50 metre line.

The Littleover club has now disbanded, most members joining the DERBY M.A.C. A number of rallies have been attended, B. Sadler winning the combat event at the S. Mid. Area affair. At the Northern Gala E. Thorpe flew three maxes in glider, but was apparently disqualified. (We note that this contest is to be discussed by the S.M.A.E. Council, so there was something wrong with the works at Linton. We await the full gen before commenting.) This club now enjoys several lady club members who tea in the newly-decorated club room.

Several members of the NINEATON M.A.C. put on a display of stunt and combat at the local Bank Holiday show, and rather lived up to what would have been a dull afternoon. A number attended the S. Mid. Rally at Cranfield where Mick Bate's chances in combat were ruined when a young Hugh Wycombe member ran over the model whilst speeding in his new car! Hmm, I suppose the comment was equal to those usually heard in combat quarters?

After three or four years in the doldrums, OUTLAWS (Canmock) M.A.C. have had a complete springclean, and the lads have embarked on a hectic programme of display and contest flying. Four successful displays have been given this year, and with combat controlling 90 per cent of the interest, entries have been made in all the accessible rallies. Best placing to date is Roy Lockley's third at the S. Mid. Rally with a P.A.W.-powered Peacemaker, a very popular combination in those parts. With the end of combat activities for the season, feelers are being put out in T.R. and Stunt in the hope that a little more variety will be introduced next year.

Though the weather was better than previously, the LEICESTER M.A.C. could have done with a little less wind and rain for their Gala Day. Nevertheless, the entry was most satisfactory, results being as follows:

Revard Cup	C. Rodwell	2:11
(Open Power)	J. Andrews	1:18
	R. C. Stonehouse	1:11
Stafford Cup	P. H. Ball	3:59
(Open Glider)	G. Brown	3:11
	M. Colver	3:00
Hilary Cup (Juniors)	A. K. Froggart	1:30
AERO-MODELLER Cup	F. Barrett	2:36
(Open Rubber)	J. Andrews	1:41
	B. Tyrrell	0:54

*The sun's a-shining,  
the skyline's  
breathing, not a  
breath of wind,  
and deep, lush  
green English  
grass between  
with cowslips and  
daisies. What  
more could we  
want of a summer  
Sunday-afternoon?  
Sad fact is that  
such conditions  
are all too rare . . .  
but here's hoping  
for better weather  
in '59*

THE GEE DEF M.C. is a new group to be formed in Nottingham, with I.Q. at 19a Heathcote Street, and we wish them luck.

The recent chaotic attempts at combat competitions has showed the enthusiasm of many members of the WEST BROMWICH M.A.C., the accent now being on concours models. Recent successes at the M.E. Exhibition include Mike Kendrick's silver medal and Tony Day's Model Aircraft trophy, proving that number three can build at least as well as those types who build for concours only. Following a Sunday's flying when two flying saucer jobs went o.o.s., these types are now all the rage.

### North-Western

Five much-weathered members of the WIGAN M.A.C. collected four of the top places at the Scottish Gala, Brian Talbot being beaten in the power fly-off by one second! He had the consolation of getting his nose back through the efficient downwind recovery team, the argument now being which is best . . . first place no model, or second place and model intact! F. Rhead came third in both rubber and glider; Picken got a fourth in rubber, the other two just got sunburnt! A full coach plus other forms of transport made their way to Linton for the Northern Gala, the nearest to the prize list being junior E. Ashcroft, who collected a second place in Junior Power, this in his first contest.

Wally Neild of CHEADLE AND D.M.A.S. seems to be cleaning up in radio this year, and was the only lucky member at Linton. Wally has donated a cup to the N.W. Area to encourage radio flying, a gesture we commend. Whilst at Linton the club held its championships, resulting in M. Turner placing top in glider, Jimmy Wingate in rubber, and I. Blackburn in the power class.

Despite the distribution of hundreds of pamphlets during an exhibition at a local show, the HESWALL M.A.C. did not succeed in attracting new members, that part of the country seeming dead for aviation interest. In a discussion between Cuthbert and Pete Bodey's magnificent "Catalina", guess which came off worst?

### London

Fine weather graced the WANSTEAD A.C. rally held at the end of July, and all events finished well before dark, including combat in which B. Austin of the Dope Peddlers triumphed over Tribe of Northwood. Bell of Gudahning did well to complete the course and win the 1/4 event, and the Dew/Bassett team cleaned up the A final, with Oswald of Ashford top in the B with 8.37. Dave Platt ran the stunt event, to the new S.M.A.E. schedule, where Brown of Lee Bee placed top with 48.1 points.

BRIGHTON AND D.M.F.C. have recently undergone a complete reorganisation, and meetings now take place at Rosendale Road School, Herne Hill, on Tuesdays and

### For Your Diary

#### October 19th

South Coast Gala, R.N.A.S. Ford F/F and Chuck Glider.

#### November 2nd

St. Albans Slope Soaring (winghoo Beacon, Open and R/C).

### S.M.A.E. Events

#### October 12th

Farrow Shield, Team Rubber.

S.M.A.E. Cup, A 2 Glider.

#### October 26th

Hanley Trophy, Open Power; Frog Junior Trophy, Open Rubber Glider

#### November 22nd

S.M.A.E. Dinner and Dance, Horseshoe Hotel, London



Thursdays from 7.30 to 9.30 p.m. A C.L. ground is available on Saturday afternoons, but with the shorter evenings, indoor flying is engaging most of the attention. Dick Taylor got past the 50 m.p.h. mark recently with his latest r.t.p. speed model K.O.T.G. (Keep Off The Grass).

Two HAYES M.A.C. members made the long trek to the Devon Rally, and found it well worth while. In his first-ever rubber contest, Jim Bauley took fourth place, and not content with this managed third in power. Not to be outdone, Brian Chapman placed second in the glider event. With three contests to go in many weeks, the C.L. boys are almost flat on their backs, but they still have the strength to tell how certain victory was snatched from their grasp at Warstead, broken lines putting them out of the running just when it seemed they were in front.

September 7th saw the C/L Gala staged by the DAGENHAM M.A.C., where over 60 entries battled it out with the following result:

**Combat** (4 entries): P. Tribe (Northwood), **TR/A** (7 entries): A. Seaman (Warstead), **TR/B** (4 entries): N. Winch (West Essex), **Speed** (9 entries): J. Watson (Lomax) 124.3 m.p.h.

**NORTH KENT NOMADS M.C.** were very fortunate in having aeromodellers' dream weather for their Dance Trophy event for R/C planes, and a DeLing drone saw a good collection of competitors and spectators. Of the 13 entrants, only one flew out of range, but one model went into an ever-tightening spiral dive and crashed into a thicket. Model was eventually traced by listening for the ticking of the actuator! Winning model was entered by a trio of new members, but credit must be given to Trevor Waters who piloted the model through some very pretty manoeuvres. On the whole there was little to choose between single and multi channel jobs, except the worried looks on the pilots of the latter class! Possible points were 450, out of which the winning trio scored 271.5.

With the acquisition of a new flying ground, **WEST ESSEX M.A.C.** had a great revival in all forms of flying. Much activity is seen with R/C with up to 12 models ready to fly. Most are single channel on Hill RXs made by members, but two new members who are electronic engineers have produced a new RX with five transistors working from only 44 volts H.P. Worked well on first test. Andy Anderson was unlucky at the Northern Heights Gala when his R/C model landed only six feet from the spot, but five seconds outside the time limit!

The **EPSOM AND D.M.F.C.** slope soaring meeting was held at Chobham Common on August 31st in very warm weather, but with a little wind that real soaring was impossible. With entries up on last year, most used large, light models. George Fuller's having the advantage of an ultrasonic "hanging" trim which kept in the lift longer. When the Albatross Trophy was presented, filled, and emptied at 6 p.m., Mr. Fuller's "What, another cup to clean?" struck the only discordant note!

### East Anglia

Fine weather attended the impromptu meet staged by the **DEBENDAIRS M.F.C.** when Ian, the wind joined with members from Harlow, Dagenham, Northwood and Bishops Stortford. Doug Galpin (Debdenairs) won combat after a close tussle with Hobbs of Dagenham, whilst another local Mike Pointing cleaned up in glider with a total of 5.05.

On Friday, September 5th, a few brave members of the **WICKFORD D.M.A.C.** battled through the storm to hold the longest clubroom meeting ever... 24 hours! They were unable to get a flying place until 11 p.m. the following evening, owing to the floods. Built any good seaplanes lately?

### Northern

**REDCAR M.A.C.** has just celebrated its twentieth birthday, and a meeting held to commemorate the occasion was blessed with top-tier weather. Congrats to C. Skinner, who has been secretary ever since the club started.

Members of the **THORNABY PATH-FINDERS M.F.C.** have been certainly getting around the various rallies in the North, and met with a fair amount of success. Highlight of a demonstration to over 5,000 people at Billingham came when an A.P.S. Stuka was rammed in mid-air by a Hurricane, much to the delight of the watching crowd. No word of what the modellers thought!

Several members of the **BALDON M.F.C.** attended the Novocastria gala on Newcastle Town Moor, when Frank McNulty (now off on two years hard with the Army) won the chuck glider class, and J. Pannett finished fourth in the power fly-off, his model being rather battered from its dinging on the roof of a house. At the Northern Gala, Stan Eckersley, making one of his rare appearances on the contest field this season, showed the way and won the Frog Senior Cup with 11.06.

### North Eastern

In perfect weather the **NOVOCASTRIANS** held their James Rusch Gala with 78 competitors from as far afield as Lincoln and Glasgow. (John Black cycled all the way from Glasgow with four models slung in a box on his back!) John O'Donnell won the power class and was also Gala Champion, followed very closely by Black. Pollard of Tynewood won the rubber section, Saver (Tueside) the glider, with combat going to Farrar of Wakefield.

### South Midland

**HODDESDON M.F.C.** are victims of the noise problem, and are now searching for a new flying ground... not surprising when we hear that the clubhouse has been ringing to the song of Fox 35k, Eta 20s and Oliver Tigers. Two club records have recently been established, R. Davis recording 97 m.p.h. with a Frog 500 "H" racer, and a flight of 5:19 with a Cox Pee Wee-powered "Tom Thumb" belonging to J. Deacon.

The **DEHAVILLAND (Hatfield) M.A.C.** club glider contest, a five-round three-min. max event, was flown in non-thermal evening conditions, and from an entry of seven C. A. Ward placed top with his A/2 totalling 12.22, D. Howell coming second at 16.29 with a lightweight.

### South Eastern

We regret to report the death of **CANTERBURY PILGRIMS M.F.C.** secretary, Mr. E. A. Copping, who was killed on his way to work when his cycle skidded under a bus. Mr. R. Burville of 63 St. Peters Place, Canterbury, is carrying on the secretarial duties until further notice.

### Scotland

Mr. John S. Hay, of 166 Albia Road, Larbert, Stirlingshire, is interested in forming a club for enthusiasts in that area, the nearest group at Denny being too far away for useful co-operation. Will interested clubs get in touch right away.

### Ireland

Irish members did not do as well as had been expected at the World Championships. They blamed bad luck, but what kind of luck can be blamed when a fier uses the wrong motor in his Wakefield (as one member did!). And is it luck that causes it not to climb, or causes an overrun? It is whispered that perhaps the lads were nervous, and this might be because most of the team members had not practised very much with their models! Incidentally, an exhibition held to raise funds to finance the teams flopped completely, and efforts to find a sponsor failing, all members travelled at their own expense, £20 per head.

**BELFAST M.F.C.** members really cleaned up at the Irish Nationals, Wicklow, Armstrong and Graham taking top three places in the glider event, and Doyle and Armstrong collecting first and third in the rubber class. The hat trick was completed when G. Telford won the power event. The lads took advantage of the fine conditions to qualify for three "A" and two "B" S.M.A.E. Merit Certificates.

### Pen pals

E. Radburn of 42 Montimer Drive, Old Marston, Oxford wishes to correspond with a pen-pal in Boston, U.S.A., whilst from the other direction Eddie Ogurchak, Jr., of 636 Federal Street, Lebanon, Pa., U.S.A., and J. L. Leary, of 4019 Tyndale Drive, Jacksonville, Fla., U.S.A., wish to take up the pen with modellers on this side of the Herring Pond. Lewrey (who is an ex F/O in the R.A.F.V.R.) is mainly interested in World War I items, and is in addition a camera bug.

THE CLUBMAN

### Secretarial Changes

**FALMOUTH M.A.C.**  
C. Radner, "Capri", Mount Ambrose.  
B. Butler, Cornwall.

**BRENTWOOD M.A.C.**  
A. E. Jones, 11 Spital Lane.  
Brentwood, Essex.

**LEIGH (LANGS) M.A.C.**  
P. Eckersley, 6 Wimmerleigh Gardens,  
Leigh, Lancs.

**HODDESDON M.F.C.**  
J. F. Deacon, 25 Manor Road,  
Hoddesdon, Herts.

**EPSOM AND D.M.F.C.**  
R. Leppard, 20 Salfrey Ave.  
Chertsey, Surrey.

**WESTON CONTROLINERS M.A.C.**  
P. Heeley, 159 Moorland Road,  
Weston-super-Mare.

### INTERNATIONAL TAILLESS RESULTS, TERLET, HOLLAND, 12-15th SEP., 1958

Glider	Zwilling, W.	Germany...	158	139	88	117	160
1. Waldhauser, H.	Germany...	66	178	143	59	180	
2. Osborne, J.	Holland...	50	180	72	73	101	
3. Fiks, G.	Holland...	180	71	72	100	43	
4. Haek, W.	Germany...	51	39	163	84	76	
5. Nick, A.	Germany...	67	97	77	33	70	
6. Hedeman, P.	Great Britain	80	55	42	108	46	
8. ten Haggen, G.	Holland...	47	109	58	35	77	
9. Lust, P.	Holland...	74	87	61	61	42	
10. Marshall, J.	Great Britain	34	75	51	49	87	
11. Smith, F. C.	Great Britain	48	42	56	59	39	
12. Wilkms, P.	Great Britain	48	70	49	63		
<b>Rubber</b>							
1. Schubert, W.	Germany...	180	180	84	92	69	
2. Schejde, H.	Holland...	60	63	96	88	122	
3. Marshall, J.	Great Britain	82	90	67	76	70	
<b>Power</b>							
1. Singer, W.	Germany...	180	24	21	103	22	
2. Hedeman, P.	Great Britain	39	62	25	97		
3. Wassenaar, W.	Holland...	81	58	74			



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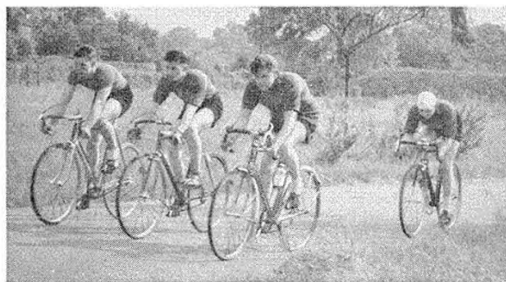
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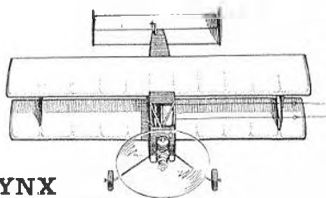
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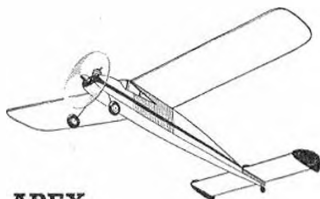
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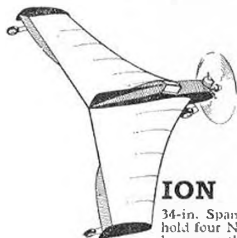
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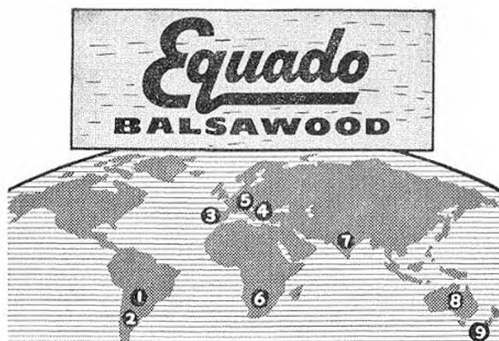


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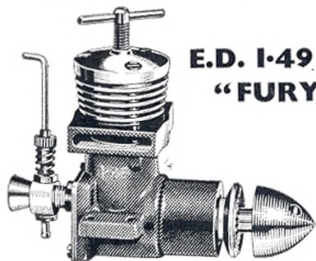
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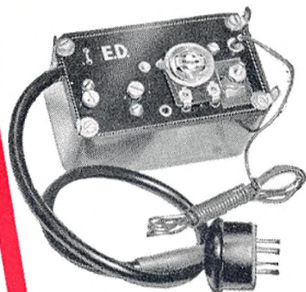
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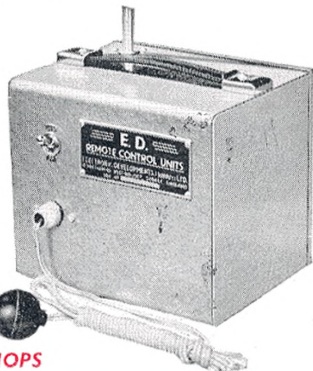
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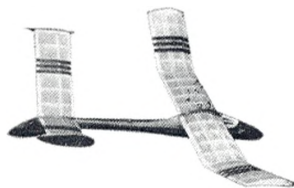
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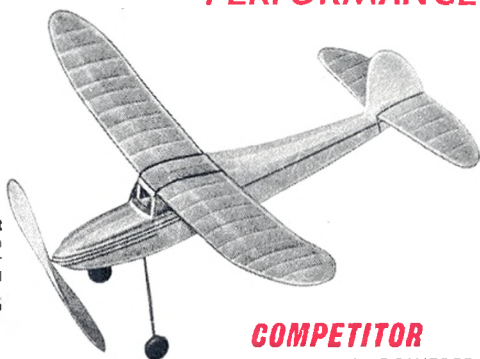
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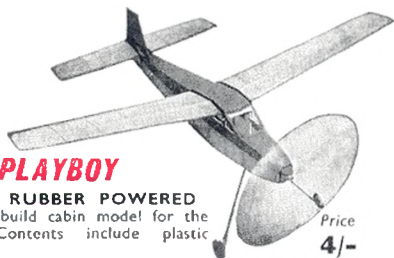
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