

NOVEMBER 1980 50p
(USA & Canada \$2.25)

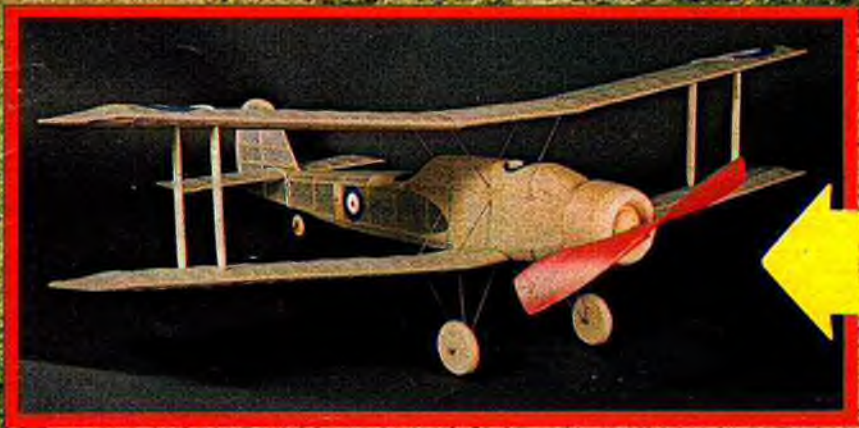
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Aeromodeller

NOVEMBER 1980

Editorial director TONY DOWDESWELL

MAP MODEL DIVISION MAGAZINE

Advertisement director M. GRAY

Managing Director RON MOULTON

Comment

AEROMODELLER PLANS SERVICE is as much a part of the aeromodelling scene as Aeromodeller magazine and over the years we have used our Plans Service to bring to modellers the very best in model designs. Favourite subjects, scale, sports models, free flight and control line models

of all kinds are part of the widest possible choice which the world renowned Aeromodeller Plans Service maintains. There is another benefit for aeromodellers as Plans Service brings to modellers the kind of designs which no kit manufacturer could hope to turn into a viable commercial product. It is here that Aeromodeller Plans Service plays a special role in service to the modeller, and one which is complimentary to the model kit market.

When recession bites, plans sales soar as modelling habits change to suit circumstances. Model flyers will always find a way to enjoy their chosen hobby and plans sales lead to demand for all the materials, hardware, paint – you name it – which helps our hobby industry through the lean period to better times. Choices, preferences, habits, change – but the Aeromodelling hobby continues, of that we are certain.

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On the Cover

Members of the Peterborough Model Flying Club, Neil Gill, Mark Jarrett and Rob Roy, were certainly a force to be reckoned with in the Control Line Combat event at this year's Nationals. Full report on page 600 of this issue. Inset: Charles Newman's Vickers Vildebeest – our Plans Service Introduction on page 622.

Next Month

Pat Lloyd draws the Zlin 50 Aerobatic aircraft in the finest of detail for Aircraft Described. The European Free Flight Championships will be fully reported and we will have free full size pull-out plans for a neat rubber powered sportster and Control Line model of the French Dewoitine D501 fighter. On Sale November 21st 1980.



Page 600



Page 622

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Aeromodeller Magazine (ISSN 0001-9232) is published monthly by Model & Allied Publications Limited, P.O. Box 35, Bridge Street, Hemel Hempstead, Herts HP1 1EE, England. Tel: Hemel Hempstead (0442) 41221. Application to mail at second class postage rates in the U.S. is pending at Milwaukee, Wisconsin and at additional offices. Distribution to North American hobby and craft shops by Kalmbach Publishing Company, Milwaukee, Wisconsin. Tel: 414-272-2060. Distribution to news stand sales by Eastern News Distributors Inc., 111 Eighth Avenue, New York, N.Y. 1011, U.S.A. Tel: 212-255-5626. Distribution to museums and bookshops by Bill Dean Books Ltd., 166-41 Powells Cove Boulevard, Whitestone, New York 11357, U.S.A. Tel: 212-767-6632.

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AEROMODELLER incorporates the MODEL AEROPLANE CONSTRUCTOR and MODEL AIRCRAFT and is published on the third Friday of each month prior to date of publication.

Aeromodeller is printed in Great Britain by Leicester Printers Ltd, The Church Gate Press, PO Box 20, 99 Church Gate, Leicester LE1 9FR for the Proprietors and Publishers, Model & Allied Publications Ltd, (a member of the Argus Press Group)

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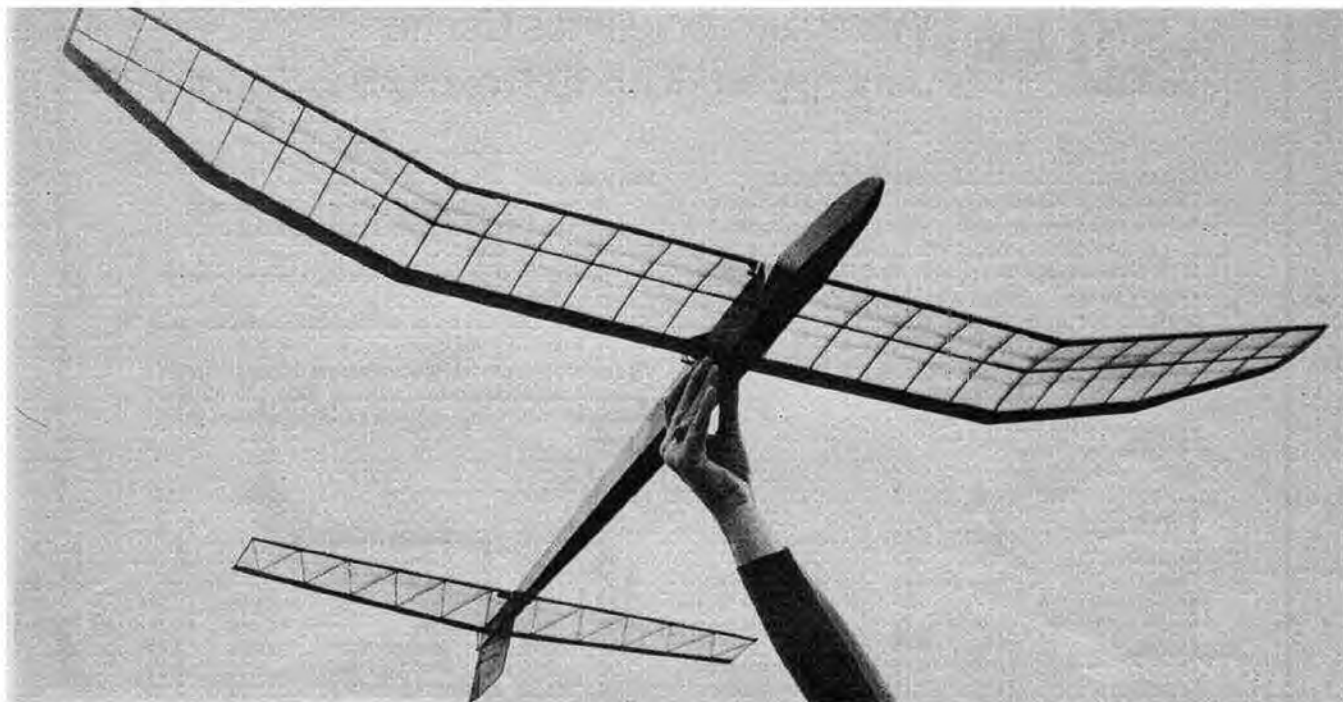
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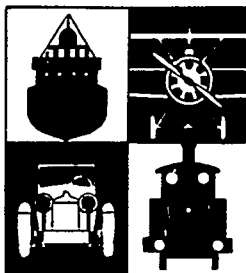


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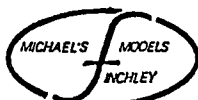
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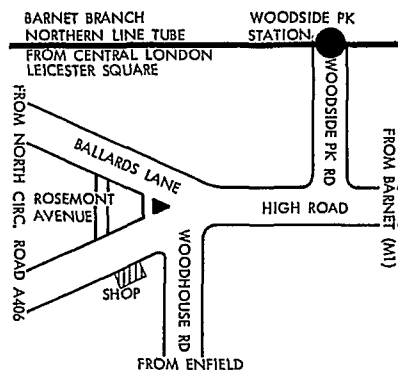
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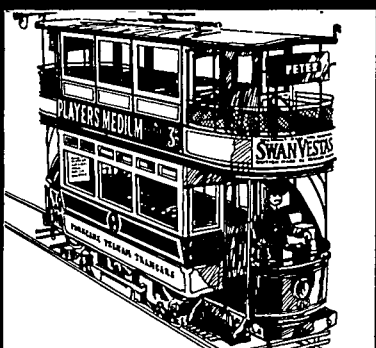
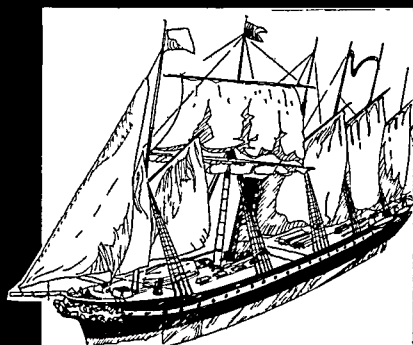
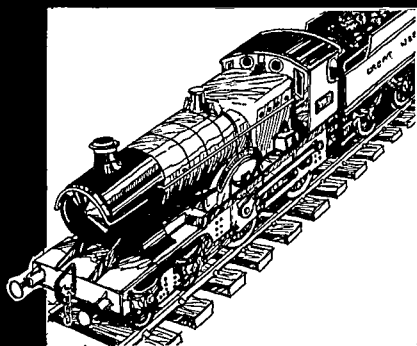
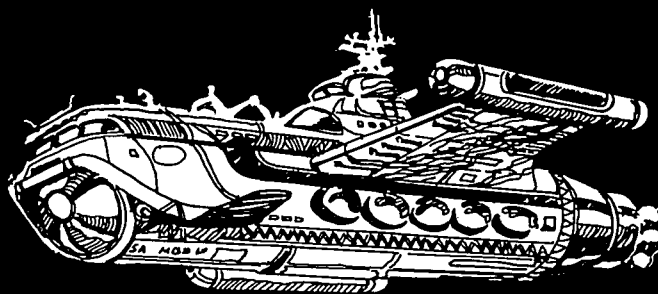
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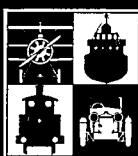
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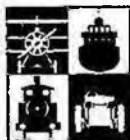
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50th Model Engineer Exhibition

Wembley Conference Centre
1st — 10th January, 1981
(Except Sunday 4th)

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ADVANCE TICKETS

Advance tickets at the normal rate and advance party tickets at more favourable prices are available on all days direct from the Exhibition Manager, Model Engineer Exhibition, at the following rates:

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Teachers/leaders must remain with their parties while they are at the Exhibition		

These tickets are designed to help regular visitors from waiting in long queues that often form on both the Saturdays and other well attended days. While it is not possible to guarantee that even those with advance tickets may not have to wait at the special 'Advance Ticket' position at the main entrance for a short while, these tickets will take precedence over non-ticket holders. Please use the coupon below.

Please also note the special cheaper British Rail fare rates being advertised in this magazine for those booking to come by rail in advance and that trains to and from Marylebone on the Princes Risborough line stop regularly at Wembley Complex Station, three minutes walk from the Conference Centre. Car Parking at 80p for the day is available for thousands of cars between the Wembley Stadium and the Conference Centre.

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Hangar Doors

FARNBOROUGH 80 was, as ever, full of technical interest. We wonder how many modellers stopped to study the R.P.V.s in the Marconi and Dornier stands. It's obvious that a lot of model flying experience has been built into each of these sky spies. The Marconi effort is British and proud of it—developed at Cranfield where there is a field of deep thinking aeromodelling talent. Even so, we can't help thinking that the use of landing skids is unyielding, even outmoded, in this modern age.

Dornier's flying wing Tucan has been seen before, at the Paris Show, but now it has what appears to be a new Webra (?) big twin driving a carbon fibre reinforced folding blade pusher prop. VTOL experiments with R.P.V.s are equally fascinating. We don't understand how they carry their own fuel, let alone the equipment required for telemetry and television. Among the many aerodynamic innovations, we were particularly taken by the Caproni C22J light twin-jet. This is a beauty by any standards and it introduces a 'new look' in aerofoils with a sharp leading edge and laminar profile. It works well, as displayed in an aerobatic flight programme despite the fact that the aeroplane had barely flown 10 hours. If beauty of line is to be the standard by which Farnborough exhibits are judged, the French family of Mirage jets must surely take first prize. In the trade booth, Dassault showed a further development of the 2000,4000 series with twin fins on outriggers. Futuristic shapes like this are inspiring for model designers especially when displayed with well made scale models.

I'M SUNNY — FLY ME!

Martyn Cowley sends first words (since leaving the editorial chair last month)

from distant California where he is now immersed in the Solar Challenger, which is expected to make test flights during November, before the Californian sun disappears for a short winter. Martyn is with Paul MacCready's team, engaged in the development of this self-set challenge to make a 100 mile flight on power derived from sunlight. Exciting as that may sound, we can appreciate how much the real highlight for Martyn on his arrival in the United States was his invitation to fly the famous *Gossamer Albatross*. To quote, "A truly fantastic sensation — silent, slow motion flight". We gather the grin has yet to be wiped from his face, lucky fellow!

FAMOUS SPACE SHIPS OF FACT AND FANTASY

Doubtless many younger readers of this journal will know that this year saw the release of *THE EMPIRE STRIKES BACK*, long-awaited sequel to the hugely successful "Star Wars" film and already notching up phenomenal box office returns. Latest publishing venture by our sister publication *Scale Models* is a lavishly-illustrated 'special' on modelling famous spaceships — including the X-Wing and TIE Fighter of the 'Star Wars'

films. This super publication contains 94 pages with exciting colour on almost every one of them. The contents include stacks of modelling techniques, painting and decalling guides, reference photos, scale drawings and describes many actual film and TV model subjects. Whether your interest lies in the Apollo-Saturn V and Lunar Module or the Starship Enterprise, this special has all the answers.

It promises to be the biggest selling model book of the year and at a retail price of £1.50, undoubtedly one of the year's best bargains. A knowledgeable team of authors and modellers have combined their considerable talents to produce this unique contribution to modelling literature. Sci-Fi fans, modellers and space enthusiasts will find their needs more than fulfilled by *Famous Spaceships of Fact and Fantasy* which goes on sale October 24th, 1980.



Above: Dassault jet trio at Farnborough included futuristic twin-finned delta (at rear). The fins are on outriggers at semi-span. Left: tip of the Caproni twin-jet has a drooped skid but this does little to disguise the unusually sharp leading edge on the laminar aerofoil. Right: For those interested in the fact and fiction of space travel — *Famous Space Ships of Fact and Fantasy*, a new *Scale Models* Special, on sale October 24th, 1980.



Letters

VIRTUOUS VINTAGE VARIATIONS?

Dear Sir,

It was with some dismay that I read your Nats report and Tony Brookes' letter, August issue referring to the Vintage fiasco.

I for one quarrel with Dave Goodwin's decision. How can R.O.G. be enforced on models not designed for same? The rules are supposed to allow for both types of launch "commonsense interpretation".

Regarding dispensation for Bazookas and others, by way of allowing a push - "No Way"! When these models were first designed and flown, the penalty for a push was instant disqualification for that flight, this being the timekeeper's decision. This rule should still be applied now, to avoid "cheating" - the only word for such launches. As for the Bazooka itself, if powered as per design it will R.O.G., ask the designer, Norman Marcus.

Mr Brookes is quite right, to scrap the R.O.G. rule would be regrettable. However I cannot see the administrative problems he feels might prompt such a move. Sensible rules should cater for all types of models, the "old rules" already mentioned would eliminate pushing, modified undercarriages etc, scrutiny of top placing models and elimination of butchered ones would solve this problem. Really the only extra work involved concerns take-off boards. Transportable ones were used 30 years ago, I have even used 'coffin' lids when trimming on my own.

To conclude, opinions apart, the situation should never have arisen and for the sake of Mark Hinton, Gerry Ferer and others, let us hope it does not do so again.

May I close on a personal note - I require the loan or sale of any of the following Wakefield plans, or copies: Ellila's 49 and /or 50 winner/s, Ron Warring's Voodoo, John Gorham's Ghost, any version, and Banshee, open power model.
Bolton, Lancs.

Kenneth Robinson

AEROMODELLING - THE SPICE OF LIFE

Dear Sir,

I have been a modeller for just over 55 years, and although far from "expert" I have derived great pleasure from the hobby over the years. Free flight, rubber and power over land and water, control line, model boats both working and static for glass cases. Last week I became an "old age pensioner" and also successfully flew my first radio control model! The model is an Aeromodeller Orange Box to which I have added a power pod with a Cox .049 motor - what an excellent model that is, it literally flew "off the board". I found the experience of being in "complete control" and the ability to touch down within a few yards of where I stood, as exhilarating (almost!) as when I first went solo on 23rd February 1936 in Tiger Moth G-ADIC at White Waltham (RAF ab initio training).

I look forward, all being well, to many more years of R/C flying!

Fishguard, Pembrokeshire

Ray Lewis

DEAR SIR, IS THIS A RECORD?

Dear Sir,

On the splendidly calm evening of Bank Holiday Monday, Mr John Cooper in the space of two hours, launched his half cc D.C. Dart powered APS Little Little Vagabond FIFTY ONE TIMES each flight being completely successful and none less than one minute duration, no repairs being needed and only failing light bringing the proceedings to a halt.

After what must be a record number of consecutive flights, the only damage was six small holes caused by stubble.

The machine was built from the Aeromodeller Plan and the engine never failed to start at the first or second attempt. I trust this will encourage all newcomers to the noble art of aeromodelling.

Kings Cople, Hereford

G. F. T. Taylor

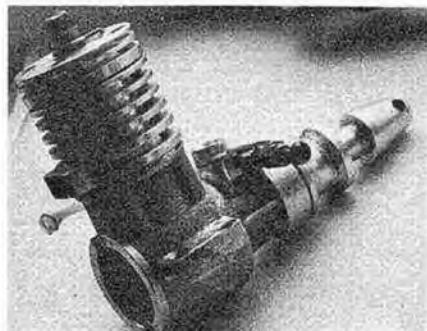
DEAR SIR, THIS IS A RECORD!

Dear Sir,

I read August 'Club News' suggesting a possible world record in 1/2A Team Race by Langworth/Broadhead 3:54. Just over two years ago the New Zealand team of Barnes/Allen recorded a time of 3:56.6 for a 9.09km heat (100 laps x 14.47m lines, 11 laps per km). Converting down to 8.8km for comparison puts their time approx 3:49.5.

Enclosed is a photo of the motor used. Essentially it is an Oliver Cub with a home-made Schnuerle conversion inspired from the Nelson 15D. Shaft timing 185°, transfers 115° and exhaust 130°. Racing speed is 23 secs per km using cut down McCann/Fontana props at 53d x 7 1/2 pitch. With a 3.2mm venturi range is around 45 plus laps. New Plymouth, New Zealand

Rod Brown



New Zealander Rod Brown's Oliver Cub diesel motor which he home converted to Schnuerle porting. Returned a 1/2A Team Race time of 3:56.6 for 9.09km heats.

What's Happening?

EVENTS

October 28th

BRITISH BOOMERANG SOCIETY flying meeting, 2pm. Venue: Dulwich Park, London.

CONTESTS

October 18th

WIGAN 70. 11am start. Venue A: 3 Sisters site. Contact: Pete Farrimond Tel: 0942 34068.

October 19th

THE OPEN RUBBER TROPHY. Venue B: Bassingbourn. Contact: Dave Hipperson, 35 Anthony Road, Boreham Wood, Herts. Enclose SAE.

October 19th

ELLIOTT AUTUMN RALLY. F2B, F2C, GOODYEAR, SPEED, 1/2A TR, 1/2A COMBAT. 1st-3rd Trophies all events. Venue C: Marconi Avionics, Rochester. Contact: Pete O'Neill Tel: 0732 57899.

October 19th

AUTUMN SCALE. C/L SUPER SCALE. Venue D: Upwood. Contact: Vic Wilson Tel: 073-522 3743.

October 26th

NORTHERN AREA GALA. FIF OIR, & COUPE, OIP, 1/2A POWER, OIG, VINTAGE, C/L RACING 1/2A/FIIB-IGOODYEAR, MINI GOODYEAR, COMBAT & STUNT, R/C AEROBATICS LENWING TROPHY STAND-OFF SCALE, THERMAL 100s. Venue G: RAF Church Fenton (SMAE Only). Contact: M. Proctor, 8 Church Rise, Holtby, York.

October 26th

INDOOR SPECTACULAR - MILTON KEYNES. HLG, MANHATTAN, PEANUT SCALE, OPEN & CO, SCALE, EZB, SLEEK STREEK COMP. 10am-8.30pm. Venue E: Middleton Hall, Milton Keynes Town Centre. Contact: Bob Bailey Tel: Stevenage 723842.

Contest Directors

Note - it's not too early to begin your 1981 Contest programme planning

October 26th

PETERBOROUGH MODEL FLYING CLUB. 1/2A COMBAT. Venue E: The Embankment, Peterborough. Contact: Neil Gill Tel: Peterborough 252645.

October 26th - Now cancelled

INDOOR SCALE FLY-IN. PEANUT, GO, OPEN RUBBER. Contact: John Blagg Tel: 0707 52779.

November 2nd

FF MINI CENTRALISED. A/1, C, D/H, 1/2A, HLG, CO, DURATION. Contact: Mike Fantham Tel: 01-736 7163.

November 9th

PETERBOROUGH MODEL FLYING CLUB. FINAL CLASS A DIESEL COMBAT. Venue I: The Embankment, Peterborough. Contact: Neil Gill Tel: Peterborough 252645.

November 30th

HOVERING ABOUT CHRISTMAS HELICOPTER FLY-IN. Upton Court Park, Slough, Berks. 11am. Near the M4. Details from John Griffiths at Slough R/C Models, Slough 39419. Venue J.

STOP PRESS - NEW VENUE

December 7th

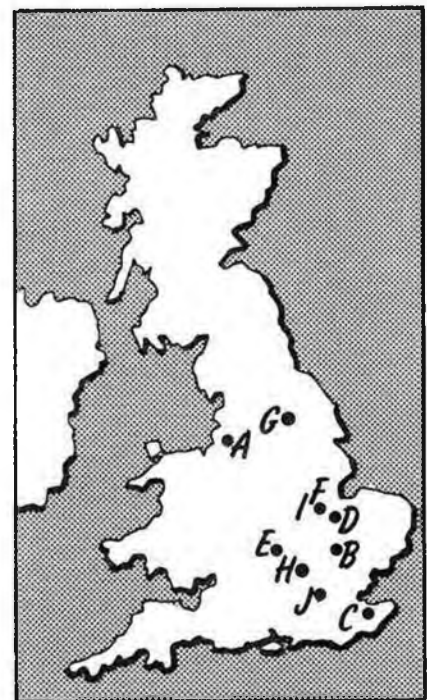
AEROMODELLER COUPE d'HIVER INTERNATIONAL 80gm Aeromodeller Cup - 100gm Bernard Bouillier Trophy. Plus substantial prizes donated by Model Hobby Trade. Venue: Shuttleworth Airfield, Old Warden, Beds. Contact: Aeromodeller Office Tel: 0442 41221 ext 283.

NEW ANNOUNCEMENTS

May 17th, 1981

RAFMADUCTED FAN FLY-IN. R/C, C/L and FIF, SCALE AND NON-SCALE. No entry fee, spectators welcome.

Venue D: Contact: G. E. Whitehead, Officers' Mess, RAF, Upwood, Huntingdon, Cambs. Tel: Ramsey 812092 Ext 242.



On MoD property, model aircraft may ONLY be flown by FULL SMAE members or contest entrants. All SMAE members (Associates and Juniors) and their families are welcomed as spectators, and non members may be admitted by prior arrangement with contest director. For SMAE membership details Tel: 0533-58500.

British National Championships

R.A.F. BARKSTON HEATH
AUGUST 23-25



Above: the RIC scale compound drew large and constant crowd as usual. Static judging took place here. Right: trade stand area was well supported by traders but few reported any big spenders. Below: calm evening air which aided the free flight scale classes was also ideal for this "model" hot air balloon. Opposite page top left: without official Vintage event, many fliers made their own fun including Mrs Ann Humphries with Valkyrie. Bottom left: trophies await presentation by SMAE Chairman John Jones, seen far right presenting new trophy for Rubber Scale to Barry Hotham.



LINCOLNSHIRE - 1980 put on its very best performance for each of the divided National Championships reminding us of former meetings which have always carried many pleasant memories. The Free Flight Nationals held over the Spring Bank holiday were remarkable for the calm evenings and consequently high durations. This time for the "Summer Holiday" at the end of August conditions were very similar and model performances no less remarkable. The really outstanding achievement was Mike Billinton's first ever 200mph flight and even then with a converted marine engine with its piston fitted back to front!

In every aspect this was a great Nationals. The visitors who came with cash in pocket to make a purchase never had it so good. Radio control was going at rock bottom prices and bargain offers among kits and accessories were tempting, especially for the many continental visitors out of France, Germany, Spain, Holland and Scandinavia plus those from Canada, USA and Japan.

Considerable thanks are due to the SMAE and its technical committee in setting up the organisation of the individual competitions and also to the RAF MAA who maintained their tradition and looked after 1/2A team race. Without these volunteers there simply could be no competition and consequently enjoyment of a wonderful hobby by the many thousands who attended.

Of course free flight was missed. There seemed to be vast spaces of unused airfield which in earlier years were always dotted with free fliers but in an age of specialisation we should be thankful that we have been able to enjoy 6, not 2 or 3 days of excellent weather on a fine site. Here's to the next time.

RACING EVENTS

by Bob Horwood

It was very heartening this year to see a large increase in the overall entries for the racing events, due mainly to an increase from 32 to 49 entries in the Goodyear event. This is surely because of the change from 3.5cc open last year to 2.5cc diesel only this year, encouraging many more people to compete including some of the top teams from the early days of Goodyear Racing. It is also true that with the changed rules, people have a much better chance of finishing the race. There was also a big upturn in the number of people entering the 1/2A event probably due to the introduction of the Schnuerle ported Cub and the appearance of several home made motors.

Class B Team Race

This event was also subjected to a rule change this year with the introduction of noise restrictions and certainly to my mind anyway, this made the event far more enjoyable to watch since one is no longer deafened by the motors. Entries however were down from last year, 9 instead of 12, and of these 9, only Wilson/Gardner really showed confidence in handling the now universal tuned pipe set up. They were in fact the only team to return, once common, One-Stop times and led by a convincing margin after the heats with a time of 3:39.1 compared with 4:12 from Laurie/Sladdin and 4:28.8 from Nixon/Campbell. The only other team to return a time in the heats, Taylor/Jones, were let down by very slow pit stops caused by a motor which was very reluctant to start. The final always looked like being a one-sided affair and so it proved with Wilson/Gardner racing very competently to record 7:18.5. The winning margin was exaggerated by the fact that Laurie/Sladdin chipped a prop at the second stop and of course, this caused them to lose all their power since the pipe no longer 'came on'. Nixon/Campbell failed to finish the race after an inex-

plicable crash. It would seem that Class B has now become too expensive to attract new 'Blood' and as the years take their toll of teams, so the numbers gradually reduce.

Goodyear

As I previously noted, the numbers in this event were well up on last year and in fact more people finished the event this year than actually entered last year! As was to be expected the Rossi and Nelson motors dominated the event but the models claimed to be doing 22secs for 10 laps or better, of which we had all heard but not seen, still fail to appear, with the fastest models showing at just under 24secs for 10 laps. In the first round the most spectacular performance came from Jarvis/Needham with an unofficial record time of 4:07, only two teams having started the race using their steel Nelson with 5.5mm choke. The fastest air speed of the round was that of Rudd/King with their *Miss San Bernardino* equipped with an R.V. Rossi complete with pan fitted from the inboard side of the fuselage which gave a degree of airflow to the motor. The Jury was not totally happy about the model but allowed them to race saying that they would mention their reservations to the C/L Tech-

second place on the ground, their pit stops being very pedestrian affairs, to leave Goddard/Temporal in a well deserved second place.

The final provided one of the best races of the meeting and after both Alcock/Chambers and Jarvis/Needham had missed catches, certainly one of the closest ever with only 1.5 seconds separating the teams. The eventual winners were Green/Cunningham who benefitted from making no mistakes, and incidentally gained revenge for coming third last year following a blown plug, with Alcock/Chambers second and Jarvis/Needham third.

The lack of carnage, which has become a familiar sight in recent years, plus the huge upturn in entries has surely shown that the recent rule change was a step in the right direction though perhaps there was too much evidence of expensive motors being used even in one case a Magnesium Nelson at £120 direct from Henry!

1/2A Team Race

The 1/2A event saw some very good racing with 21 out of the 28 teams entered recording times with the three fastest heat times being recorded by home built engines.

backwards on one occasion. Steve Smith's Nelson was fitted with an experimental liner from Henry with a low expansion liner. Collin's comment was that when it's going, it's fine, but the temperature is very critical; too cold and it just won't start! For the first time ever at the Nationals, all the semi finalists recorded under 4 minutes, surely proving the British dominance in the event at the moment.

Unluckiest competitors of the meeting must be Dave Fry and Ron Tribe who cracked the fuselage of their model at the first stop, causing it to crash later, whilst on the way to what would have been a very fast time.

The semi finals were for once notable for their clean flying with Smith/Brown recording yet another sub 3:40 time and only 0.5 seconds separating the next three with Clarkson/Woodside losing out by 0.5secs and Gray/Haycock only 0.7sec behind them.

The final of the FAI/TR event has over the years produced many disappointing races but not this time. All three finalists had similar airspeed with Smith/Brown having a slight advantage. Wilson/Gardiner were fresh, if that is the word, from their success in Class B T/R and flew faultlessly. Langworth/Broadhead were not quite



nical Committee after the meeting. Several other good performances came in notably from Stubbs/Schofield, R.V. Rossi with 5.5mm choke at 4:21.3, also Clarkson/Woodside and Catlow/Jephcott both using Nelsons to record around 4:25. The fastest of the F.R. Rossis was that of Coots/Horwood at 4:48 using only a 3.8mm choke! At the start of the second round, Messrs Jarvis and Jephcott lodged a protest about Rudd/King's model and after the Protest Jury had seen the model, they agreed that it contravened the rules in that the motor was cowed so Rudd/King were duly disqualified. In the second round only Alcock/Chambers and Fitzsimmonds/Millar were able to improve their times enough to enter the top 9. Then came the TROUBLE! Dave Rudd not unreasonably, requested that all the models for the semi-finals should be processed and this produced a very interesting result; namely only one model, that of Catlow/Jephcott, complied with all the rules and even they had a Balsa finish on the wings. Eventually the processing team disqualified Coots/Horwood's model which had six strands, not seven, in the strap from the bellcrank to the motor and allowed the rest! (My view is that either you process strictly which would have meant disqualifying nearly everyone or you don't process but then I am an interested party)

So the semi-finals started on time without two of the qualifiers and for the first time in years, all the semi-finalists recorded times, which compared very favourably with last year when only four teams finished in the semis and at least one team ended the semis with no model at all. The semis saw some good racing with the best semi undoubtedly being the second when only 6 seconds separated the three competitors, all three reaching the final and Jarvis/Needham at last being rewarded with an official record of 4:15.8.

The novice final was a very one sided affair with the Magnesium Nelson of Catlow/Jephcott always outpacing the other two F.R. Rossis. Lodge/Norman lost

In the first race Clarkson/Woodside produced a clean 4:16.8 with their now familiar *Broadside* model powered by a Don Howarth Cub. The most notable performance in the heats came from Morton/Howarth with their high aspect ratio model powered by a Don Howarth Schnuerle ported Cub and with the fastest heat time from O'Neill/Bollen with a 'Mini Wing' model powered by a F.1.5. Of those who qualified for the semis, only one team, Hill/Metcalf, recorded a time slower than 4:20, a big improvement on previous years. For instance, 2 years ago 5 minutes was good enough for the semis.

The Semis promised to be very good but were marred by three teams failing to finish due to 'run ins' and hard engine runs, and a general lowering in performance.

Fastest in the Semis were Langworth/Broadhead with 4:08.7 from their Schnuerle ported Cub, followed closely by Horton/Howarth and Hill/Metcalf, the latter also using a standard Schnuerle Cub. Again the final was of a somewhat lower standard than one might have expected with all three motors 'off song'. Horton/Howarth suffered least and this, combined with their greater 'on song' airspeed, allowed them to cruise to a very comfortable 3 stop final win in 8:07. Langworth/Broadhead gaining a comfortable second place with 8:52 and Hill/Metcalf third in 9:36.4.

Certainly this was the best 1/2A event for years and makes a welcome turn up in the fortunes of 1/2A.

FAI/T Race

The FAI event showed a slight drop in entries from recent years, mainly due to the lack of foreign entries. The standard however was far from down with a new British record coming in the heats for Smith/Brown with 3:38.6. All the eventual semi-finalists were using the now almost universal *AAC Nelson* but Don Howarth's motor had been modified - aren't they all - by the replacement of the drum valve assembly with a reed valve, displaying all the "Cox symptoms" by starting

so clean but still good, whilst Smith/Brown seemed doomed when Collin Brown missed a catch at the third stop. Their other stops, however, were so good with Steve Smith cutting the motor only some 5/8th of a lap out, that this, combined with their marginal extra airspeed, was enough to produce a winning margin of 12.7secs from Wilson/Gardiner with Langworth/Broadhead a further 3.1secs behind.

Certainly this was the best FAI T/R event ever at the Nationals with the crowning glory of a final which was truly worthy of the event. Smith/Brown were robbed of a final record to add to their heat record, by the missed catch but were consoled by their well deserved second Davis A trophy win in succession.

MINI GOODYEAR

by Bob Walker

Competitors, spectators and organizers all enjoyed this year's Mini Goodyear. 25 entries were received, about half of which were new faces. In the first round the less experienced teams were given 'two up' races since the organizers felt this would help settle butterflies as well as protect other people's models. The youngest pilots were 8 years old, being Masters Smith from Feltham and Moorhouse of Wharfedale. They were paired being of similar height and neither having flown two-up before and their race held everyone's attention. The Feltham pilot concentrated hard and flew evenly, unfortunately pivoting and with the lines at 45° all the time. The Wharfedale lad needed advice to walk round but did so in large circles and had to run. The inevitable crashes demonstrated the strength of the Moorhouse *Daerfly*. It was very nice to see Tony Eiflander with his *APS L'Il Quikie*, powered by one of the new Schnuerle PAWs which showed that it is going to be a force to be reckoned with. He had come along 'for the fun' and recruited his pilot on the day.

CONTROL LINE & SCALE RESULTS

RAF BARKSTON HEATH

23rd - 25th AUGUST 1980

1/2A TEAM RACE (21 flew)

1. Horton/Howarth	4:02.1	4:17.1	8:07.0
2. Langworth/Broadhead	4:19.9	4:08.7	8:52.0
3. Hill/Metcalf	4:35.1	4:17.1	9:36.4
4. O'Neill/Bollen	4:00.0	Disq	
5. Palmer/Ridley	4:13.7	Retd	
6. Nixon/Campbell	4:15.7	4:28.2	
7. Toogood/Ward	4:16.4	Disq	
8. Green/Cunningham	4:16.8	5:35.0	
9. Clarkson/Woodside	4:16.9	4:21.0	
10. Wilson/Gardiner	4:36.8		

FAI TEAM RACE (22 flew)

1. Smith/Brown	3:38.6	3:39.3	7:39.3
2. Wilson/Gardiner	3:50.7	3:46.0	7:52.0
3. Langworth/Broadhead	3:47.0	3:46.0	7:57.1
4. Gray/Haycock	3:47.5	3:47.2	
5. Clarkson/Woodside	3:54.7	3:46.5	
6. Nixon/Campbell	3:57.1	3:50.8	
7. Rudd/King	3:58.6	4:08.1	
8. Hutchinson/Daly	3:59.8	Disq	
9. Horton/Howarth	5:39.9	3:58.6	
10. Hill/Metcalf	4:05.4		

CLASS B TEAM RACE

1. Wilson/Gardiner	3:39.9	7:18.5
2. Laurie/Wallace	4:12.0	10:16.6
3. Nixon/Campbell	4:28.8	Disq
4. Taylor/Jones	4:48.2	

MINI GOODYEAR (25 flew)

	Club	Heat	Semi	Final
1. Langworth/Langworth	Wharfedale	4:07	4:02	8:25
2. Calder/McCarthy	A.G.S.	4:36	4:16	9:10
3. Rudge/Alcock	Bilston	4:31	4:33	9:34
4. Miller/Miller	Norwest	4:32	Rtd	
5. Cross/Cross	Wharfedale	4:36	55 laps	
6. Robinson/Robinson	Keighley	4:47	4:31	
7. Webb/Baker	Cambridge	4:51	4:57	
8. Atkinson/Eiflaender	A.G.S.	4:53	5:10	
9. Gough/Gough	Wolves	5:02	5:39	
10. Robinson/Robinson	Keighley	5:10	5:23	

C/L AEROBATICS GOLD TROPHY (48 flew)

	(Best 2 rounds)	Total
1. B. Robinson	3025	6085
2. P. Tindal	3015	6034
3. C. Draper	2965	5990
4. M. Lavalette	2968	5929
5. J. Mannal	2893	5926
6. J. Newham	2869	5886
7. J. Lynch	2900	5874
8. P. Gauthier	2836	5830
9. N. Dickenson	2904	5779
10. P. Coates	2813	5760

NOVICE C/L AEROBATICS

1. J. Galt	1037
2. C. Wallace (jnr)	1019
3. C. G. Shelley	977
4. R. Price (jnr)	971
5. G. Worfolk	923
6. G. Pearce	859
7. A. Gibson	836
8. V. Charles	829
9. D. Pardoe	817
10. D. Kenny	796

FOR A FULL REPORT OF RADIO CONTROL EVENTS, SEE OCTOBER RADIO CONTROL MODELS & ELECTRONICS

GOODYEAR TEAM RACE (34 flew)

1. Green/Cunningham	4:28.3	4:23.8	8:58.9
2. Allcock/Chambers	4:34.0	4:17.6	8:59.7
3. Jarvis/Needham	4:07.4	4:15.8	9:00.4
4. Schofield/Stubbs	4:21.3	4:28.5	
5. Clarkson/Woodside	4:24.4	4:31.8	
6. Catlow/Jephcott	4:25.0	4:27.4	9:19.2
7. Fitzsimmons/Millar	4:35.9	5:05.6	
8. Cooper/Daly	4:54.9	5:01.3	
9. Goddard/Temporal	4:55.4	5:10.6	
10. Smith/Yeldham	4:56.9		

RUBBER SCALE (9 flew)

	Flight	Static	Total
1. M. Hetherington	FW Stosser	1176	2151
2. D. Hunt	Piper Cub	797	1150
3. B. Holtham	Heath Parasol	545	1140
4. G. Spencer	Curtiss Hawk	824	610
5. J. Anderson	Kania	983	440

F/F SCALE POWER (8 flew)

	Bonus %	Flight + Bonus	Static	Total
1. E. Coates	DH 9a	5	1197	854
2. A. Creed	BE 2c	5	1320	722
3. T. Marley	DK 4	5	1122	804
4. R. Oldridge	Albatross DVa	5	1118	722
5. D. Banks	SE 5a	5	654	776

C/L SCALE

	Best Flight	Static	Total
1. D. Bird	S.A. Bulldog	931	934
2. M. Staples	Bristol Bulldog	787	1055
3. W. Cordwell	Bristol Blenheim IV	908	581
4. D. Ashfield	Albatross DV	564	783
5. D. Kenny	NA P-82	631	416
6. G. Gibbons	F2b	282	382

R/C SUPER SCALE

	Best Flight	Bonus %	Flight Total	Static	Score
1. D. Vaughan	NA P-51	435	10	479	539
2. M. Reeves	VS Spitfire IX	481	10	529	487
3. J. Warden	SE 5A	468	15	538	382
4. D. Brunt	H/Fury	466	10	513	314
5. D. Hutson	Fournier RF5	240	—	—	240

R/C STAND OFF SCALE (38 flew)

	Bonus %	Best flight + bonus	Static	Total
1. F. Coulson	Grumman Skyrocket	20	624	623
2. B. Taylor	DH Mosquito	20	640	560
3. D. Hutson	Morava	20	596	568
4. D. McDermott	DH 9a	20	524	610
5. M. Reeves	V.S. Spitfire V	10	564	558
6. D. Vaughan	Comper Streak	10	466	595
7. E. Coates	Sopwith Triplane	25	506	553
8. C. Weaver	Sopwith Baby	15	538	518
9. D. Brunt	Miles Sparrowhawk	5	610	545
10. T. Ruck	TA 152H	10	552	478

.049 SPEED (3 entries)

	MPH
Lee/Morrissey	99.21
N. Meager	87.73
T. Bettelley	75.20

.09 SPEED (1 entry)

J. Myszka	(New record) 126.67
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.15 SPEED (2 entries)

P. Eisner	164.49
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FAI SPEED (4 entries)

P. Halman	150.64
J. Halman	99.87

.21N SPEED (2 entries)

Tribe/Page	141.89
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.29 SPEED (7 entries)

I. Skinner	182.02
P. Gibbs	163.13
P. Rose	159.56

.40N SPEED (1 entry)

Taylor/Jones	146.21
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.40 SPEED (4 entries)

R. Miles	168.58
P. Halman	167.57
P. Grange	160.59

.60 SPEED (5 entries)

M. Billington	(New record) 200.26
Lee/Morrissey	185.34

FAI COMBAT

1. Neil Gill	Peterborough
2. John Highton	Urmston
3. Pete Wyke	Urmston
4. Mick Tiernan	Urmston

1/2A COMBAT

Results	
Seniors	
1. Dave Harrison	COSMO
2. Ian Kennedy	Urmston
3. Colin Straus	Chelmsford MFA
Junior	
Tim Howell (13 years Junior)	Rainham, Essex

R/C AEROBATICS (Aeromodeller Trophy 20 entries)

1. Red Cell	1234.6
2. K. Binks	1225.7
3. B. Brotherton	1115.6
4. P. Stevens	1099.5
5. T. Cooper	1070.4

HANDICAP SPEED (32 entries)

	MPH	%
1. .049 J. Myszka	126.67	108.72
2. .60 M. Billington	200.26	105.83
3. .60 Lee/Morrissey	185.34	97.76
4. .29 I. Skinner	182.02	96.01
5. FAI P. Halman	150.64	95.56



NOVICE
GOODYEAR



GOODYEAR



FAI
TEAM
RACE



CLASS B
TEAM RACE



1/2A
COMBAT



1/2A
TEAM
RACE

Top left: winners in Novice Goodyear with ol' Blue model, Catlow/Jephcott team. Top centre: main event Goodyear champions, Green & Cunningham with Miss San Bernadino design. Top right: nothing more satisfying than winning really strongly contested final - like this year's FAI TIR final, won by Smith/Brown, 2nd left: Wilson/Gardiner team took top Class B TIR honours. 2nd centre: top in 1/2A Combat, Dave Harrison of COSMO. 2nd right: first time FAI Combat finalist Niel Gill beat John Highton, also in his first ever final. Left: 1/2A Team Race winners Horton/Horwarth with Howarth Schnuerle part Oliver Cub powered model. Right: Gold Trophy control line aerobatics winner Barry Robinson with Merco 49 powered Northwind design. Below right: top in Novice Aerobatics, J. Gait with profile design. Below centre: D. Bird converted this S.A. Bulldog from RCM & E RIC scale plans to win Control Line Scale. Nice, big, steady flier. Below right: Mike Hatherington's beautifully made Focke Wulf Stosser flew realistically with geared drive to win Rubber Scale.



GOLD TROPHY
AEROBATICS



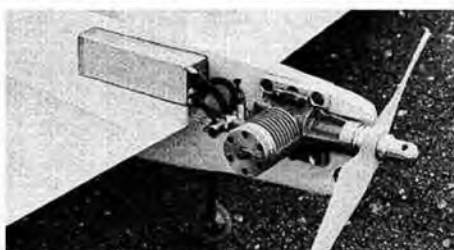
NOVICE AEROBATICS



CONTROL LINE
SCALE



RUBBER
SCALE



Far left: best finished model in C/I. Goodyear was this stars 'n stripes Midget Mustang, complete with dihedral on wing, by Tom Miller. Left: the willing and able RAFMAA who ran 1/2A Team Race. L to R - Cpl Simms, Cpl Hinsliff, Flt/Lt Price, Master Collins, Flt/Lt Collins. Below left: close-up of the Green/Cunningham Miss San Bernadino showing tank/motor. Below: Mini Goodyear finalists L to R - Calder, McCarthy, Langworth/Langworth, Rudge/Alcock.



There was much variety in models. APS designs being all represented with *Owl*, *L'il Quickie* and *Deerfly* the most popular; motors were mainly PAWS with several Frogs and a sprinkling of MVVS.

The times were closely spaced and the semi final cut off came at 5:02. The three finalists were Langworth/Langworth with 4:02 (ftd) Calder/McCarthy 4:16 and Rudge/Alcock 4:33. The Langworths were using their traditional *Deerfly* now with rebored Frog 150. Calder/McCarthy had wrecked their best models in practice incidents and were using a battered *L'il Quickie* with PAW whilst Rudge/Alcock had a pristine *L'il Quickie*, PAW combination. The final was an excellent race. All were airborne on the same lap, Rudge/Alcock away first and then Calder/McCarthy who had the fastest model until the Frog warmed up and accelerated past them all. Each model had over 50 laps range. All pilots were warned for whipping. Ian Calder's second being when his engine started to 'cook' on its third tankful but he had cooled it down, and reset compression at the last stop to solve the problem. The Langworths finished in fine style in 8:35, Calder/McCarthy in 9:10 and Rudge/Alcock who had a stop with two laps to go, in 9:34.

GOLD TROPHY by Glen Alison

Royal Air Force requirements to preserve the anti skid runways from fuel effect precluded their use for Control Line events which had to be positioned elsewhere. For Aerobatics this meant the distant corner of the airfield perimeter track, a subject of considerable resentment amongst the fliers in this the most prestigious of the year's events. Not only was the Gold Trophy in the most remote part of the airfield but despite all the space possible, only one practice circle was available and that was occupied by the Novice stunt event for part of the time. This unsatisfactory state of affairs created a strange lack of atmosphere, foreign to the usual Gold Trophy popularity.

However the competition itself was first rate with a total entry of forty seven, including four from France and three from Ireland. Flying conditions were excellent with no more than a light breeze for the two qualifying days and almost flat calm for the fly off.

For the uninitiated, the Gold Trophy is run to International FAI rules whereby entrants have one flight on each of the two qualifying days and from the best of these scores, the top 15 are selected for the fly off. The final result is the sum of a flier's best qualifying score plus their best fly off score.

Such is the standard of flying these days that one has to be of a very high standard to reach the fly-off fifteen and many fliers were very close to this but just failed.

With the British team of Barry Robinson, Bill Draper and Peter Coates, fresh back from the World Championships in Poland and in good form, it was obvious that this year the competition would be more open and less 'predictable' than usual. So it proved to be, although Pete Tindal led the first round with an impressive 3010 followed by Bill Draper with 2952 and Barry Robinson with 2911 and it seemed even at this stage that the title would be a battle between these three.

On the second day, most at the top improved their scores slightly and Barry Robinson took the lead with 3025. John Lynch jumped up into contention with a 2900, and Frenchman Marc Lavalette with his new Merco 49 Olympus had a very good 2968.

Jim Mannall and John Newnham both out of form (for



2nd left: Pete Tindal flew nicely produced Genesis in Gold Trophy Aerobatics. Looks smart with ribs visible. Left: John Lynch of Bretons club placed 7th in the Gold with S.T.46 powered Eagle.



2nd left: up and coming youngster to watch in control line stunt, 16 year old Clive Wallace of Leicester, placed 2nd in Novice aerobatic event, with O.S.35S powered Omega. Left: even younger, 13 year old Roger Price of Wharfedale placed 4th with Merco 35 powered Smoothie, built off plans from the original Veco kit.

them) had 2893 and 2869 respectively although well in the top ten.

So to the fly off; the top fifteen included the three Frenchmen - Lavalette, Gauthier and Berringer, and one or two surprises. Arthur Tipper has made rapid advancement in the last year flying his ST46 powered APS *Chipmunk*, and Roger Quilter with his O/D model also ST powered. They both showed the value of smooth consistency.

Lavalette had his motor cut in the cloverleaf but recovered safely but of course lost about three hundred valuable points. So to the second fly-off round and the contest still very much open with about four contenders for first place. With only two exceptions every one made considerable improvements in their scores showing the effort being made.

Bill Draper made a superb 3025 with his *Super Hawk* to make his total 5990 early in the round and he lead until Pete Tindal (ageing ST46 *Chipmunk*) made 3019 together with a better second round score to give a total of 6034, the new leader. All eyes were now on Barry Robinson, Merco 49 *North Wind*. This flight made the highest score of the meeting with 3060 making a total of 6085 to make him the undisputed winner, his first time for the Gold!

A fitting climax therefore at the end of a perfect day. Lavalette could not hope to pull up the difference necessary and he finished in fourth with 5929 and Jim Mannall, many times winner of the Gold Trophy, had this year to be content with fifth place at 5926, only three points behind.

Final thanks to the long suffering judges Gordon Bryant, Reg Lowe, and John Harley for a gallant job well done.

NOVICE STUNT by Glen Alison

The 19 entrants in Novice proved that the standard of new fliers is getting higher every year. There were some very sophisticated models, including Gieseko, Noblars, Stiletto, Smoothie etc., all built and finished with good workmanship.

Competitor performance appeared to fall into three groups, the top end all flew very neat and well controlled patterns, obviously the result of endless practice and in fact worthy of an entry in the 'Gold Trophy'.

The middle group, demonstrated a considerable amount of promise, the only flaw being 'a touch of nerves' which took its toll on the higher K factor manoeuvres.

The third group, and none the worse for this clas-



sification, were the newer and younger fliers suffering poor engine runs, mishaps of varying degrees and models which required maybe a little more 'trimming time'. Each flight was flown with a great deal of determination to overcome the difficulties of staying airborne, with the odd flash of sheer brilliance showing through at the really trying moments.

Taken all round, having watched some 38 flights the future of Stunt is reassured and rests in some very capable hands. I must compliment the Widnes Club, on their superb running and co-ordination of this event.

FAI COMBAT

by Ian Kennedy

International Combat attracted 40 entries including four French, four Germans and two Spanish (plus the usual Irish connections) so it was a mixed bag.

A major change was the introduction of the two life system, which is going to be proposed to the FAI. This means that the losers round is eliminated and each contestant has to lose *twice* before being eliminated from the competition. This system is used up until the eliminators for the quarter finals. After this, the competition reverts back to a 'knockout'.

This innovation combined with the weather, made for an excellent competition with a notably higher standard of flying than in the previous years.

Round one saw M. Tiernan and T. Queen (France) in a good bout with the Frenchman having a motor/model advantage. He narrowly managed to defeat Mick by 15 seconds ground time, both being equal on cuts with a couple each.

The last bout of *Round two* saw superb flying from Pete Tribe when he beat his German opponent K. Jiriby 7 cuts to one.

But Pete Tribe was eliminated in *round three* having lost already in the 1st round to M. Jacobs, then took all of the streamer while in a line tangle against T. Ougen, the Frenchman easily getting the required 2 cuts to win.

Ougen went on to lose to D. Wood 2-2 with ground time in Dave's favour. This was Ougen's second loss as he was beaten in the 2nd Round by J. Highton.

On the 3rd day (Monday), the start of the eliminators for the Quarter Finals saw the best bout of the competition between M. Tiernan and R. Forstner, a young newcomer from Germany. After 4 minutes of excellent flying, the score stood at 4 cuts each with Forstner taking Mick's knot in the last 15secs to clinch a refly, both being equal on ground time. Mick won the refly 2-1 plus ground time.

Other notable bouts in this round were D. Wood losing to J. Highton by only 6 seconds ground time difference, and British team member Ray Sibbald losing to Ernie Burles.

No notable bouts took place in the quarter finals but they left John Highton v Mick Tiernan, and Peter Wyke v N. Gill in the semi finals. The first bout saw M. Tiernan v J. Highton with Mick dropping his first clanger of the weekend by taking all of John's streamer and John obtaining the necessary 2 cuts to get to the final.

Pete Wyke lost to Neil Gill by 2 cuts to 1 in a good bout with Pete making Neil work hard for the knot.

Tiernan and Wyke battled it out for 3rd and 4th honours with Pete Wyke 2-1 up on cuts. But he had 50 seconds ground time, therefore requiring a refly which Pete won after a single cut, and Pete having better ground time.

Above left: 13 year old Tim Harrell flew in 112A Combat. Above centre: lady competitor from France, Ms Beringer of Aero-Club Saint Etienne also flew in 112A Combat event. Above right: Steve Malone launches for Mick Tiernan, another of the French contingent - flying in FAI Combat. Right: John Highton and Peter Wyke, 2nd and 3rd respectively in FAI Combat.

The Final saw Neil Gill and John Highton each in their first final. Some good flying produced 2 cuts each and equal ground time after 3mins flying and most people thought it would be a refly, but in the last 15 seconds, John's motor cut (Rossi) and he landed only 10 seconds left but this was enough to cost him the bout.

JA COMBAT by Ian Kennedy

The National 1980 JA Combat Championship started a little late owing to several unforeseeable delays. A vote was taken on the one or two model per bout rule (apparently for JA Combat the new SMAE ruling permits two models per bout to be used). However, a unanimous decision was made in favour of one model per bout for the competition. Moreover unfortunately, there was no distinction between junior and senior in the pre-entry list; thus in the interests of a smooth running competition it was decided to fly Junior and Senior together, therefore awarding the highest placed junior with first prize.

The first round began with 43 entries including three lady competitors (variety is the spice of life!) The slight breeze which prevailed on Saturday suited the larger area models particularly the foamies as this helped M. Jarrett (PMFC) using *Shadow 80* foamy to beat I. Kennedy (URMSTON) using a *Tamerlane*.

The second and third rounds were flown on Sunday under similar weather conditions. Dave Wood using a *Tamerlane*, but Ms V. Charles using a PAW powered own-design *Hirfly* (that's French you know!) tissue covered model.

Two noteworthy bouts in the quarter finals were John Black (BELFAST MFC) using a standard PAW powered *Challenger* design, flying Dave Harrison (COSMO) using a fast home tuned PAW Powered *Mini-Boomerang* foamy. The bout began with an unfortunate collision resulting in both models crashed, which removed all John's streamer and broke a line. Dave was quickly back into the air but John took two minutes to get airborne. Realising he had virtually clinched the bout Dave flew low and inverted, but John's accurate piloting skill managed to get him a cut but he lost the bout owing to ground time. Another excellent bout involved the father-and-son team of Tim Howell (junior) using a standard PAW powered Solarfilm covered *Tamerlane* and Tim Bartram (COSMO) using PAW Powered *Mini-Boomerang* foamy. Tim Bartram quickly displayed his piloting skills by taking four cuts, but Tim Howell fought back to take a cut off Tim Bartram, much to the admiration of the spectators. However Tim Howell was unable to match Tim Bartram's score thus losing the bout. Rob Roy (PMFC) lost to Colin Straus (CHELMSFORD MFA) and Ray Sibbald (COSMO) lost to Ian Kennedy (URMSTON) who re-entered the competition by winning the losers round.

In the semi-finals Ian Kennedy beat Colin Straus and



Dave Harrison beat Tim Bartram in a closely fought bout. Thus leaving Colin Straus using a Schnuerle PAW powered own-design, Solarfilm covered *Reaper*, in third place. Therefore the final was between Dave Harrison and Ian Kennedy using a standard PAW powered Solarfilm covered *Tamerlane*. Unfortunately the final proved to be an anti-climax for within the first minute of the bout, Ian's model crashed, breaking the inboard wing, rendering it unflyable, and leaving Dave Harrison to win the Nats JA Combat Champs - a well deserved winner.

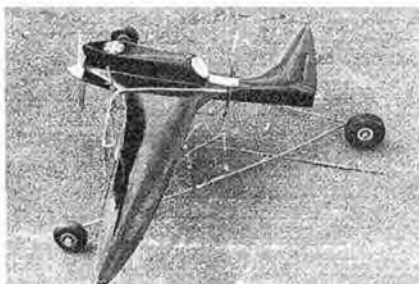
SPEED EVENTS by Jo Halman

Speed flying at the Nationals did not get off the ground until 2pm Saturday when the safety cages etc. had been erected and more fliers were beginning to arrive. Most spent the afternoon testing in the pits and getting ready for the following two days. Dick McGladdery had an FAI .15 he wanted to try out as well as his usual .29 and Mike Billinton was there with a new OS 61. Ivor Roffey had a monster asymmetric inboard wing and tail model. (These models are reputed not to fly too well.) Pete Grange, who for the last two years has flown in the *Newcomer .40 Class* was ready to fly in the Open .40 Class. The Lee/Morrissey team had their usual three class models: .049, .29 and .60, the .29 model a beautifully built asymmetric with an aluminium wing. Peter Tribe was the flying half of the Tribe/Black and Tribe/Pete teams. Lew Black, a newcomer to speed, had built a striking all black balsa upright asymmetric model with nary a straight line in the whole design - very attractive. Paul Eisner, one of our FAI fliers, was concentrating as he has done for the past two seasons, on the Open .15 Class. Tracy Bettelley, one of our two lady speed fliers, was there determined to record an official flight in her first competitive season. She flies an .049. The three FAI fliers were Brian Jackson and Peter and Jo Halman.

Of those who flew on Saturday afternoon, most put in only practice flights. Dick McGladdery worked hard with his FAI model but to no avail and decided, at the end of the day, to put it away and fly his .29. However he had problems with the new fuel tank on this model and did not record an official flight. Peter Halman spent the day practising with his .40 model using the *Irvine .40* with which he won his class at last year's Nationals, but the



Far left: 200mph right out of the box can't be bad. Mike Billinton set new record with O.S. 60 Marine motor – just machined down watercooled head and flywheel. Seen here with Ron Irvine and Mr Mihara of O.S. Japan. Left: FAI Speed winner Peter Halman and metal winged asymmetric. Below far left: for those who appreciate curves – Lew Black's .21 model. Below centre: lady competitor Tracy Bettelley with .049 model. Below: Handicap Speed winner Joe Myszka with .049 speedster.



engine continually failed as it left the dolly. At the end of the day, Peter decided to put in a new CFS assembly and this did the trick – the next flights were more successful.

The gusting wind that had been around all day on Saturday died away for Sunday and the weather was fine for flying speed. Most of the fliers put in at least one official flight and Mike Billinton recorded just over 191 mph with his 'out of the box' OS 61. Ivor Roffey flew his model but it hit the deck most spectacularly and he did not fly again. Best of the day was Joe Myszka who broke the .09 record with a controlled flight of 126.67 mph. He had 108% of the old record to put him in front at this stage. He flew a Webra 1.8cc sleeved down to 1.5cc (.09cu) with an iron/steel piston/liner assembly. He used a home made 10 thou. tin plate pipe and a 5 1/2 in x 6 1/2 in prop. The fuel was 60% nitro, 20% ML70 oil, 17% methanol and 3% polypropylene oxide.

With the weather still fine on Monday, the hero of the day was Mike Billinton who broke the 200 mph barrier in admirable style with one of the recently manufactured OS 61s, recording a speed of 200.26 mph. The flight was watched by Messrs. Mihara and Kajimoto of OS who were over here from Japan to observe our Nationals. This standard engine was 'off the shelf' with only the usual marine-to-aircraft modifications: the flywheel had been machined down to make a backplate for the spinner assembly and the water nipples had been removed from the cylinder head. The piston/liner assembly was ABC with the cylinder chromed with a solution containing a minute quantity of silicon granules. Mike had run the engine on his dynamometer which indicated 2.95 bhp at 21,500 rpm with a 4 1/2 in minipipe on 5% nitro, 18% ML70 oil and 77% methanol but the engine had never been flown prior to its 191 mph flight on Sunday. The model was one of Mike's usual small symmetrical designs weighing 36oz and requiring a pull test of 112lb and with a pull in flight of about 95lb. Mike uses a monoline system and the line diameter was .024in. The prop was a 9in x 12in two blade wooden Rev-up worked down to 8 1/2 in x 12in and the fuel was 72% nitro, 10% polypropylene oxide and 18% ML70 oil. The plug was a Fox Idlebar R/C plug as used by the pylon racers. Michael says he uses this type of plug because when the element in a normal plug disintegrates, the engine runs too lean on the ground as the remains of the element cool off. When the element vanishes in an Idlebar plug

there remains a 'hot spot' which keeps everything going at the correct setting. For control liners, Mike says, there is only one snag: on an overlean run this hot spot keeps growing resulting in a destroyed motor! However, magnificent as this flight was, it was only enough to give Mike second place overall in the Handicap Speed system. Joe Myszka won with his record .09 flight. Third place went to Lee/Morrissey with their Cox .049 – the whole thing only weighs 4oz. The single flight they put in was timed at 99.21 mph. The team had bad luck earlier in the day when their .29 model hit the deck and suffered considerable damage. Tracy Bettelley, the seventeen-year-old girl from the Bilston Club was delighted with her first official flight. She had been having trouble getting round the pylon at previous contests and this had been destroying her chances of official flights, but after some coaching from FAI flier Peter Halman she managed beautifully and all she wants now is a better motor to give her the speeds she deserves. Already the confidence gained by a successful flight in the pylon has her setting her sights on the bigger engine classes.

All in all, this Nationals was a pleasant affair but the mad rush to fly on the last day with the resultant hanging about in the pits waiting for a flight took a little of the pleasure away. At least one flier had to wait four hours for a flight that was cancelled because the event literally ran out of time. The fliers can only hope that the Speed Committee can come up with a better system in time for next year's Nationals.

F/F SCALE

by Bill Dennis

This year's entry of 24 was the highest for many years, and together with perfect weather made for a high successful meeting. Several new models were present – mainly in the rubber class.

Superscale

After a break of three years, Eric Coates once again won this event but the result was very close. Tony Creedy's

Carrier enjoyed its usual restricted but nevertheless firmly committed band of supporters. This Chance Vought F4U Corsair did itself a nasty mischief on the flight deck during an attempt at the wires.

BE2c made some superb flights but lacked fine detail in the static section.

Terry Manley had reverted to his DH4 which was surprisingly off-trim for such a stable design. Newcomer E. Hartley overcame engine problems in his APS AVRO 504K to put in a very long flight. His low static mark was largely due to lack of documentation, which should be easily remedied.

A notable performance was by Dave Banks' tiny CO₂ powered SE5a – a winner at the Model Engineer Exhibition. Dave managed a qualifying flight on the second evening, where the warmer weather was more conducive to gas expansion!

Rubber Scale

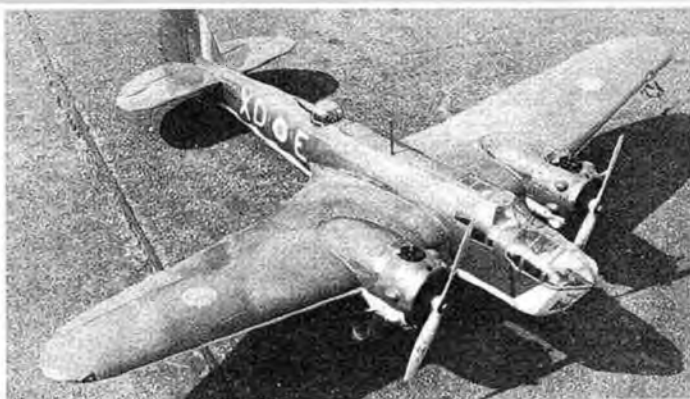
Doug Hunts' diminutive Piper Cub seemed to be heading for a surprise victory until the last flying round. Mike Hotherington then put in a ROG flight with his geared Focke-Wulf STOSSER that neared perfection in its slower acceleration and wide flight pattern at an almost scale speed.

There were many interesting subjects, and the quality of construction was generally very high. Rex Oldridge's triplane Curtiss Wasp was very stately in the air, but was let down by sketchy documentation (and hence detailing) on this obscure subject.

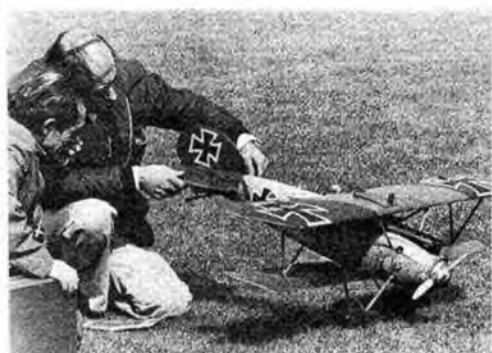
Again too many marks were lost by hand launches and poor landing approaches. The most common faults were tightly banked turns and flying too fast in the early part of the flight.

The large appreciative audience saw some very good flying and would have been even larger if F/F Scale had not been left out of the official SMAE Nationals programme once again.





Above: very nicely produced Bristol Blenheim IV by W. Cordwell, 3rd in CIL Scale. Top right: A/M scale columnist Allan Callaghan with new Miles Satyr for control line scale. Right: two fine examples of the Albatros D.V. Nearer is by Rex Aldridge of Virginia Water flown in FIF Scale, and far right by D. Ashfield in CIL Scale. Below: sheer reliability of Eric Coates D.H.9a gives him a definite edge - placed top in FIF Scale Power this year. Below right: North American P-51D Mustang entered in Rubber Scale by Chris Chapman. Excellent flyer.



Right: early leader in Rubber Scale was Doug Hunt's Piper Cub - finally placed 2nd. Far right: in process of successful ROG - J. Anderson's Kania 3, placed 5th in Rubber Scale class.



RIC Sport Scale was dominated by twins this year - took 1st, 2nd and 3rd places. Fred Coulson won with this Grumman Skyrocket powered by two O.S. 30 motors - excellent flight performance. Quite the sensation of RIC scale this year was appearance of Brian Taylor's D.H. Mosquito which had really fine flight performance on two O.S. 25 motors. Placed 2nd.



THIS MONTH:

Adjusting and trimming for safe free flight



BEFORE SETTING OFF to the flying field, are all the flying surfaces warp-free? A power model has a higher flying speed than gliders or rubber driven models, and is therefore more sensitive to small twists in the wing or tail. Get all surfaces as true as possible by twisting straight whilst heating or steaming. Some wash-in, approx 3mm, is required on the right hand wing for a right turning model to keep the wing up and prevent a spin. Check that the wheels rotate freely; sometimes residues from the soldering process, or dope drips, can foul the bearing surfaces. If they are

the rudder until there is just a hint of a right-hand turn developing. This is the accepted glide trim for most power models, although some low wing designs, because of their aerodynamic geometry and the spiral slipstream from the propeller, can be safely flown with a left hand glide trim.

The aim is to achieve a right-right flight pattern, that is, a right turn under power, continuing with a right turn on the glide. It is the torque from the engine that tries to roll the model over to the left, so helping to prevent the right hand turn from

engine, and launch the model into wind. There should be sufficient power available for at least horizontal flight, and a note should be made of direction of turn under power or any tendency to stall and any further trim adjustments required. If everything is satisfactory, try further flights with the engine at increased power, restricting the power run so that, should some instability show itself, there is a chance the motor will cut out before the model hits the ground, allowing adjustments to be made before attempting



Check assembled model for unwanted wing or tail tilt, or for excessive warps and correct, using shims of packing or dewarping with steam before attempting to fly the model.



Support the assembled model under the wings to ensure the model balances exactly at the position indicated on the plan. Add weight at nose or tail to correct.

tight, invert a bicycle and spin up the back wheel. Add a drop of oil to the model wheel bearing, and put its tyre in contact with the bike tyre. This is an easy method for obtaining free-running wheels.

We found that test gliding the power models was much easier than with the lighter gliders and rubber models. The models were less susceptible to small gusts, and it was thus much easier to see if the correct glide was being achieved. All our models required virtually no adjustments, but if your particular model is slightly off trim, follow the trimming instructions given recently for rubber models. Briefly, a stalling glide requires the leading edge of the tailplane to be lifted slightly, and a dive needs the trailing edge of the tailplane, or, better still, the leading edge of the wing, raising. Adjust

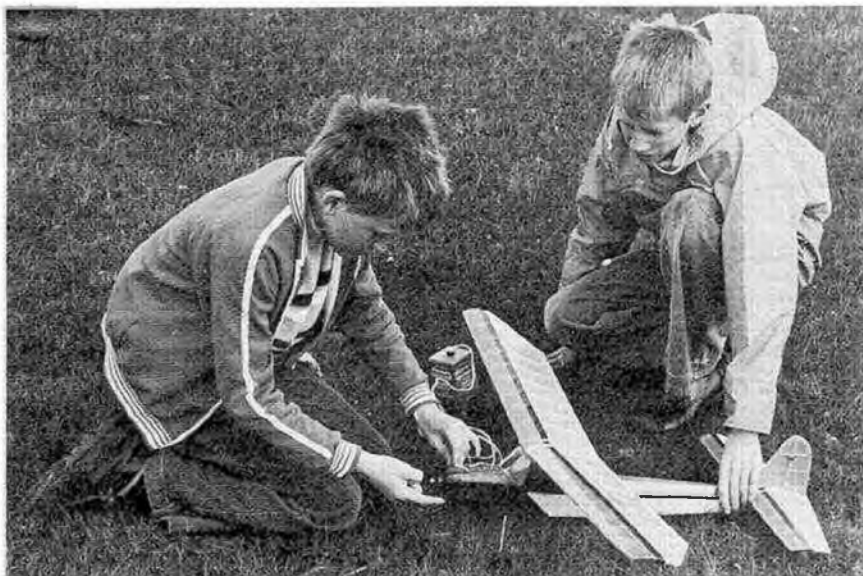
developing into a spiral.

For the first attempts at flight under power, the engine should be throttled back, the opposite philosophy to that for control-line models, where it is usually safer to fly with full power. To reduce the speed of a diesel engine, reduce the compression and open up the needle valve to richen the fuel mixture. Glow-engines only require the needle to be opened to produce "four-stroking". Another way to reduce the thrust from the engine is to fit the propeller back to front to begin with, which reduces its efficiency (the engine still rotates in the same direction, of course!)

Try to gauge the amount of fuel in the tank to give a run of genuinely no more than 10 seconds, remembering that the engine will be throttled back. Start the

further flights. Some engines will run in either direction, so always make sure the draught from the propeller is in the right direction before launching.

As full power is approached, the right hand turn might be showing signs of opening out to the left, and this might be cured by adding more right offset to the rudder. Unfortunately, this also has the effect of upsetting the glide, so remember to check any trim changes with further test glides altering the tail packing if necessary. Similarly, if the model has a stalling climb under power, and the glide is good, then increase the downthrust. At full power, the model should climb in a right hand spiral with not more than 45° of bank, and, when the engine stops, a transition into a gentle right hand glide. With a simple engine/tank set-up, it is a matter of



Above left: always get an assistant to restrain the model when starting the engine, leaving one hand free to adjust needle valve or compression, and prevent premature take offs! Above: test gliding is always the first stage before attempting powered flights. Look out for undesirable stalling or diving and watch for direction of glide turn.

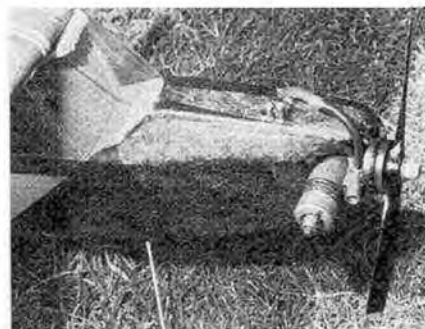
USE SIDE THRUST TO CONTROL POWER TURN

USE DOWNTHRUST TO PREVENT POWER STALLING

WASH - IN WING TIP ON INSIDE OF TURN TO KEEP WING UP DURING TURN (I.E. T.E. LOW)

TRIM HIGH WING POWER MODELS FOR RIGHT TURN UNDER POWER AND RIGHT OR LEFT TURN ON GLIDE

USE RUDDER FOR GLIDE TURN



Above: nose section of completed Kallkraft Snipe fitted with secondhand Wen Mac .8cc motor. Larger fine pitch propellers are normally used for Free Flight. Below: powered models often attract spectators, so always consider their safety and keep them well away from direction of launch.

luck whether the engine dies away gently on running out of fuel, or gives a short burst of extra speed. The former is desirable, as the latter tends to lift the nose, and then drops the model into a stall to start the glide. A correctly trimmed model should soon recover, but a continuing stall indicates more trimming is required - try a little more right turn, or if this persists, move the CG back a little and retrim.

If you are flying from a well-mown field with short grass, a take-off from the ground might be attempted. Undercarriages on power models are little more than decorative and only really work well on smooth surfaces like tarmac. Any unevenness can trip the model over on its nose. However, one of the early flights of our *Cardinal*, with a vintage diesel up

front, was in calm evening conditions from a newly mown sports field. The model took off after a short run, climbed under power for about half-a-minute, then glided down to a perfect wheeled landing without tipping over. Perfect!

One final word of caution. When flying any type of model, especially Free Flight power, the modeller should always be aware of public nuisance. Never launch unless the take-off area is free from spectators, always fly away from houses or where noise may cause problems, and be aware of downwind hazards towards which your model will be flying. To safeguard against possible claims all modellers should be covered by a third party insurance scheme, such as offered on P630 of this issue. Remember, safe flying is no accident.



More Rubber

During the past few months I have received a number of pieces of rubber to test — here are the two most interesting. *Sample A* was sent to me by someone thinking of purchasing in bulk and he did reveal that the source is America. He has been made aware of my results and they seem to match his findings which is reassuring. *Sample B* is interesting as its source is a British manufacturer who hasn't produced strip for over 20 years. It seems it has been manufactured for tying up sapling trees. As you will recall tying vines was the original reason behind the production of Pirelli strip.

In case time was distorting my recollections of Pirelli proper, the performance of HJN's Pirelli (actually three years old) and the legendary Dowsett Pirelli has been included here as a guide. These are in fact re-tests. The HJN piece comes from a well used Open motor that had disintegrated recently and the Dowsett came from a Wakefield motor used to the limit and blown.

The figures on these pieces differ rather from those achieved in the original tests of April '79, mainly in respect of numbers of turns. This reduction can be explained by the fact that these have rather more knots in than a typical new 10 gram test sample and are hence slightly shorter than normal. (You will be aware that one knot consumes quite a length of rubber when compared to the already limited length of a 10 gram sample.)

Sample A was certainly of FAI Supplies appearance — smooth surface and a little greyish in colour. To arrive at a 10.5in (167mm) motor the five strand arrangement had to be employed — a little untidy. If this is FAI Supplies, then it suggests that current production is better than when I tested it three years ago. The sample stretched to 11in (279mm) on run-in and having only one piece, I was rather cautious with max. winds. It was tough stuff and I wouldn't reckon to take it past 320 winds at this length. Top torque was encouragingly high and the drop-off to half turns was not too sudden — altogether on a par with



the HJN piece. It also proved very robust not showing any nicks or frays and took many high wind-ups until finally blowing at half turns after nearly a dozen uses. If this is FAI Supplies via another route, it would certainly explain why the rubber was so popular at last year's World Champs. My only criticisms are of its rather too beefy cross section and its great reluctance to stay knotted!

Sample B had a surface finish which I have never seen before — tiny dimples gave it the appearance of a miniature non-slip mat! Cross section was a little unconventional too, being well over 1mm thick and 7mm wide. Four strands were all that was required to come up with an 11.5in (292mm) motor and therefore, more turns were expected, although not this many more! I wound forever — 420 on the test and it eventually broke at 440. Power was very disappointing — behaving similarly to a piece of very tired and duff Filat. You can't say the torque dropped off quickly — it was just never there in the first place! I doubt whether this rubber would be suitable for contest work and would suspect from its jet black appearance that rather too much carbon filler is present. Dig out the issue of July '77 and compare this rubber with the dreaded Black Pirelli that was reckoned as the worse thing available then — it's worse than that.

It only remains to be seen if the person who let me have this sample and incidentally he was talking in terms of it being very cheap, can get back to the manufacturer and improve the 'mix' without letting on what we want it for as otherwise the price will without doubt go up. (Back issues July '77, April '79 and July '80 all useful references for comparing above figures and technique).

system when tube winding which uses an S or rather double loop hook much in the style of those available from Tim Gray but without the small diameter loop. This enables him to attach the prop before unhooking the winding rod and thus dispenses with the screw-driver routine. The long motor, 8 strands 54 grammes, makes up to around 44 inches and takes masses of turns (1800-2000) running off through the tiny prop for a very useful 1:45. Norman believes this to 'stagger a bit in wind' and therefore strands up to 10 in such conditions for a somewhat zippiest 80 second climb.

The spar-less wing has a built-up leading edge and top sheeting on which extends some 20mm (3in) back to help support the tissue which still managers to sag a little between the ribs. Long a devotee of the flat plate tail, his concession to section on this component and similarly on the fin, is to simply overlap the diagonal braces and hence produce a surface with 3mm (1/8in) camber and the most unusual tissue contours as a result.

After watching the model perform and having been beaten by it on every occasion on which it has been flown against one of my 20 dm² (310 sq in) fly-off models, I can only assume that somewhere in this formula Norman has hit upon the secret of making a small model both high performing and consistent. Six to seven minutes still air times and a fuselage configuration that minimizes cross section but still presents a fair side area for distance visibility — perfect! Anyone contemplating a start in Open Rubber could do much worse than a dead copy and even the weights should be fairly easy to achieve. Remember you can get one heck of a lot of 54 gramme motors from one hank of rubber. What is more, when you have it 'white at the edges' on full turns, you won't be frightened of it taking your leg off if it breaks!

RUBBER STRIP TEST FIGURES

	HJN Pirelli used	Dowsett Pirelli used	Sample A FAI Sup?	Sample B Black
Turns	11.25in	10.50in	11in	11.5in
420	—	—	—	8.00
410	—	—	—	7.00
400	—	—	—	6.50
390	—	—	—	5.50
380	—	—	—	4.50
370	—	—	—	4.25
360	—	—	—	4.00
350	17.50	—	—	3.50
340	12.00	—	—	3.50
330	9.75	26.00	—	3.00
320	8.50	21.00	—	3.00
310	7.00	15.50	22.00	3.00
300	6.50	12.50	18.00	3.00
290	6.00	11.00	12.00	2.75
280	5.50	10.00	9.00	2.50
270	5.00	8.50	7.50	2.50
260	4.50	8.00	6.00	2.50
250	4.50	7.50	5.50	2.25
240	4.25	7.00	5.00	2.25
230	4.00	6.50	4.50	2.00
220	4.00	6.00	4.00	2.00
210	4.00	6.00	4.00	2.00
200	3.75	6.50	3.50	2.00
180	3.50	5.00	3.00	2.00
160	3.50	4.50	3.00	2.00
140	3.25	4.50	3.00	2.00
120	3.00	4.00	2.50	1.75
100	3.00	3.50	2.50	1.75
80	2.50	3.25	2.00	1.50
60	2.00	3.00	2.00	1.50
40	1.50	2.25	1.75	1.00
20	1.00	1.25	1.25	0.5
10	0	0	0	0
	Max 370	Max 330	Max 320	Max 450

Open Rubber Model 1980

It is arguable that a large Open Rubber model has a higher performance than a small one. What is definite is that a large model is more consistent than its smaller counterpart. It is interesting therefore that when it is both logical and currently fashionable to build bigger airframes, a design appears with no concessions to the current trends. Things become even more intriguing when this design proves itself a match for most if not all, the 'state of the art' aeroplanes.

Things begin to fit however, when one realises that the model is from the Marcus stable. Norman Marcus a top contest flyer of the 50s has recently returned to aeromodelling after a 25 year layoff and, combining rapidly assimilated new ideas with his own existing influences, has created some startling airframes and gadgetry in the last 12 months. You may have read my comments about his Coupe d'Hiver model already and he has a glider with more moving parts than one would think physically possible and it was with this creation that he won the London Area Gala in appalling turbulence.

This rubber model is a good deal more simple than his A2 but unconventional nevertheless. Lightly powered but not particularly light in itself, it runs off its 54 gramme motor through a narrow bladed and quite fine 508mm (20in) pitch prop. To all intents and purposes, it is an above average Coupe d'Hiver wing 12.38 dm² (192 sq in) with a Coupe d'Hiver style prop and a bit more than a Wakefield motor. When I have tried this configuration I get performances nowhere near Norman's but I have long believed there must be a way to make a small model consistent enough at least to guarantee the maxes. Norman has done it.

He quotes the section as "estimated Benedeck with a slightly shortened nose". The original and truly diamond fuselage was built 'in the air' and is a little curved as a consequence, though fortunately in the direction of the turn! He utilises a novel prop attachment

Torbay Rally Woodbury Common, 24th August

At least one person said they had never seen Woodbury Common in the sunlight before! At this year's Trophy Rally everyone had a chance to sample the very best in Devon summer weather. A light on-shore breeze all day to keep the temperatures reasonable and as a consequence, it meant a long walk to a suitable flying spot as vehicles are no longer allowed on the Common in the interests of wild life conservation. Even so, models still found their way to the virtually impenetrable woods by way of long DT descents in the powerful lift that regularly appears over such heather and gorse covered terrain on sunny days.

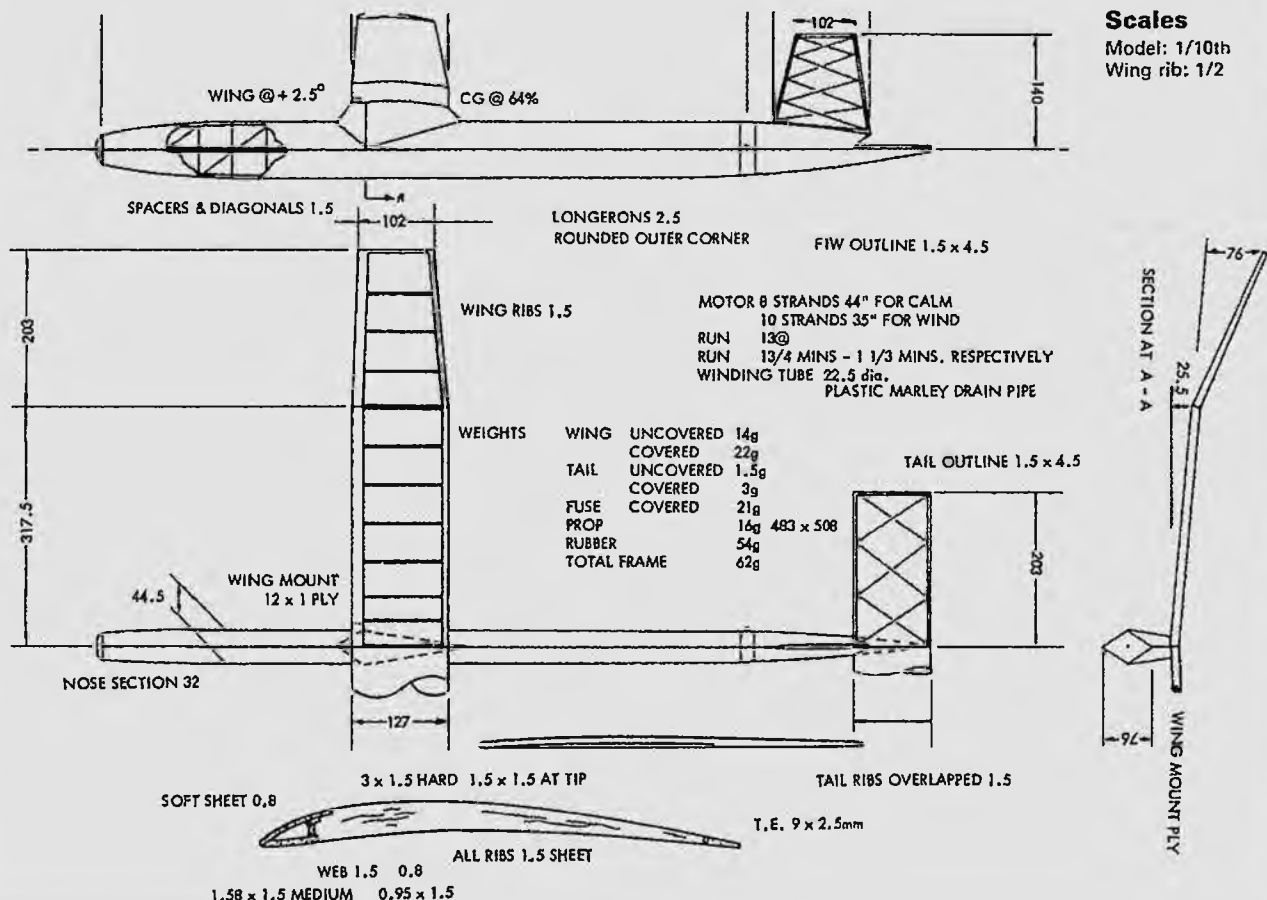
What was surprising was the casual attitude the local flyers took to landing in these woods. They just didn't seem to care. However, their attitude proved correct as many models reappeared, some having actually landed in the gardens of little houses themselves concealed in the undergrowth. One Tea Rooms in particular — where the proprietors were delighted with the arrival of all the unexpected customers retrieving. Few models were still missing by the end of the day, one exception being John O'Donnell's tiny *Scram*, unluckily lost on its second max. He made up for this forced retirement in Vintage by turning to Open Rubber and completing a treble but not without his 'bitsa' exhibiting some of the stalling trouble that put him out of a similar event a few weeks earlier. Ward took top honour in Vintage with a neat *Sande Hogan* proudly boasting an *Orion 29* for power of which he did complain of some erratic running.

The K factored Mini event certainly favoured the Coupes in the predominantly hot and thermally conditions but nevertheless, Derek Neil did well to complete a full house and not lose a model in the undergrowth. His flights were made around mid-afternoon when he said

OPEN RUBBER MODEL 1980 – by Norman Marcus

Scales

Model: 1/10th
Wing rib: 1/2



the thermal spotting was 'easy'. He earned the title of 'Man of the Day' as a result of this effort and a cash handout as a novel addition to the prizes. Organisers Chris Chapman and sponsor Paul Davis opted to give out these prizes before the flyoffs. This was not nearly as silly as it sounds as flyoffs were needed in Open Power and Rubber and only involved six people. Specially made trophies, plaques and equipment were given away courtesy of Free Flight Model Components and there was much hilarity when Elton Drew received a winch for his win in Open Glider. It was generally considered that he had enough already! The flyoffs were then sensibly delayed further until after 6.30pm by which time the sea breeze was slackening minute by minute and looked all set to go flat calm.

Andrew Chilton made a fine flight to take Power with what appeared to be an FAI model and against a flight from Cummins ruined by a very short run. The four Open Rubber qualifiers had been whittled down to three - Gerry Pink having temporarily lost his model and being without a suitably trimmed reserve. So it was that in calming conditions Chapman, O'Donnell and Hipperson flew in that order. As the first two glided away, Hipperson waited longer for the drift to drop further. Already smarting from a flukey retrieval from the woods earlier in the day, he did not want to push his luck and set a fuse. He was still in the air after the first two had landed but of course he had launched later. The moment of DT came perfectly to ensure the model stayed on the field but perilously close to JOD's 7.19. It turns out to be just enough and by waiting that bit to launch, Dave's model had found even less breeze to land no further than Chapman's who had flown a minute less.

A friendly and well organised comp and a good deal better way to spend the weekend than stuck in a French Channel port barricaded by twatler men.

Results: Open Glider 1. E. Drew (B&W) 9:00, 2. A. Tripper (Lee Bees) 8:59, 3. C. Rogers (Swindon) 6:28. **Vintage** 1. P. Ward (B&W) 7:52, 2. J. Mayes (S. Bristol) 7:41, 3. J. O'Donnell (Whitefield) 6:00. **Open Rubber** 1. D. Hipperson (Croydon) 9:00+7:25, 2. J. O'Donnell (Whitefield) 9:00+7:19, 3. C. Chapman (Torbay) 9:00+6:31. **Open Power** 1. A. Chilton (Crookham) 9:00+3:40, 2. D. Cummins (B&W) 9:00+1:51, 3. L. A. Rogers (B&W) 7:28. **Combined Mini** 1. D. Nell (Anglia) 10:00 CdH, 2. K. Smith (Croydon) 9:11, 3. L. Rogers (Swindon) 8:35. **LA Power HLG** 1. J. Tipper (Lee Bees) 3:35, 2. J. Mayes (S. Bristol) 4:29.

Below: Mark Hinton won Peanut Class at the Indoor Scale Nationals held at Derby back in April. Santos Dumont 14 bis achieved 2nd place in both static and flying to achieve best aggregate. Model seen here getting away for an official competition flight. (Photo by John O'Donnell)



TOPICAL TWISTS

by Pylonius

illustrated by Sherry

COMPLAINTS SECTION

There are two afflictions to be met with in the model world, if affliction is not too severe a term. They are Constructivitis and Constructophobia. In the first condition the patient, or model builder, as it would be kinder to call him, just cannot stop building. He becomes obsessed with the need to build model after model, sometimes three or four at a time. His wife goes frantic, for the home becomes one glorified workshop and storehouse. The garden is forsaken, with the large weeds peering into a home rapidly deteriorating through lack of any d.i.y. attention, not to mention the mess of balsa shavings and other modelling detritus. The children avoid him like the plague, for if there is anything he loves better than building it is instructing other people to do it.

Naturally, he is the mainstay of the local model club, doing, in addition to his vast model building programme, about three official jobs. And it is not uncommon for his kind to run the club single handedly, including the issuing of a newsletter which is only read by himself. Mostly he is the part of the club known as the hardcore, and, on occasion, can find himself to be the only member. Although not actually mad, he comes very near to achieving a split personality, particularly when he tries to make the most of the flying field which he has obtained from the local council after years of badgering, and which could be lost if noticeably underused, and, at the same time represent the club at the area and national meetings. He also finds time to write the articles we look forward to reading in our model magazines. It is the Constructivitis sufferer who is the mainstay of the model movement, which would collapse without him.

His counterpart is the sufferer from Constructophobia. He is the person obsessed with a fear of model building, being allergic to balsa, tissue and other model ingredients since having a frightening and traumatic experience with a model kit in his early teens which has left him in a state of severe nervous exhaustion. He is advised by his medical counsellors to try to forget the grisly experience by becoming an ordinary, non-building non-flying club member, and therapeutically restore himself to normality by constant complaining, particularly of the activities and policies of the Constructivitis sufferer. Another useful form of therapy is to make all sorts of promises and participate in various plans and projects, none of which he has the least idea of fulfilling. It may take years for him to get the particular form of model phobia out of his system, but with care he should have avoided paying club subscriptions during the recuperative period – for some reason they are not redeemable on National Health.

A more virulent form of Constructivitis, highly prevalent today, is the Gargantus Syndrome, in which the sufferer has an irrepresible urge to build bigger and bigger models. Fortunately, for all our sakes, and for our very undersized flying fields, the Gargantus Syndrome sufferer usually develops a fear of flying, but maintains a threatening posture with static displays and promises of a maiden flight.

There is also Itsy-bitsyitis. This is Scale fanaticism at its most extreme. The sufferer just cannot prevent himself from adding realistic bits and pieces to a model that is already more realistic



"YOU AND YOUR SCALE DETAIL, YOU'VE HAD HIM SITTING IN THERE FOUR HOURS ALREADY!"

than the original full size plane. Even that super finish which the Scale enthusiast once gloried in has given way to authentic battle scars, heat discolourations, smoke blazes and oil leaks. Get the pilot to nod his head or wave his arm and you are right there in the big league. Often the cure is for the sufferer to attempt to fly the model. This is known as the *Big Bang Theory*. Anyone who can wilfully put two thousand hours of painstaking work at risk in order to put the model at a distance where the super detail cannot be seen and relished is beyond mortal help.

SPORTS FLYING

Did you know that cricketers have their aerodynamic problems, just like we aeromodellers? Recent research reveals that the flighted cricket ball is not projected merely to knock out the hapless batsman but in the hope that a bit of off-lift will aerodynamically elude his proffered willow and artfully whip off his bails. It is all a question of laminar and turbulent flow over the ball. As might be expected you get the turbulence along the seamy side, and the smooth, laminar flow where the devious bowler polishes it on his flannels.

Not that a cricket ball and a model plane have all that much in common, except that they both require a fair bit of short-supply space in which to operate, but it does make you think of the complexity of things when anything that moves sets the air slugs crawling around in all manners of diverse and curious ways. Perhaps it is a good thing that the air is invisible, otherwise that beautiful, clean design, your pride and joy, might not look all that glamorous with all those eddies, whorls, vortices and what have you each doing their thing around your precious components. You'd be writing to the model press right away, "I am suffering from acute vortices at my dihedral breaks. Is there a cure?"

What we would almost certainly see if the air were visible is the confounding of our long cherished theoretical views about the behaviour of the air, which we already know to be bad, and could be a lot worse.

CARDBOARD MODELS

Paper models have always had an appeal to model builders, although to many people that is what they remain – models on paper. But most of us in our day have cause to remember such outstanding academic achievements as hitting the blackboard with a paper dart. And, although the kids nowadays are too sophisticated to do anything but gape at 'Star Wars', we older ones can remember many a good flight with what is perhaps the oldest of all flying machines – the paper aeroplane.

Cardboard models, too, have their appeal, we now find. The object seems to be more in the achievement of using an unlikely material than the quality of the resulting model. It is like the challenge of building a model of Westminster Abbey out of matchsticks when you could more easily produce it from a block of 4 x 2. Come to think of it, though, no one seems to have built a model plane out of matchsticks, at least not a flying one, but then, spent matchsticks are not too easy to come by these days, although there may be possibilities in expendable lighters.

Humming Bird

FROM PEOPLE'S
REPUBLIC OF
CHINA - THIS TWIN

ROTOR RUBBER POWER HELICOPTER IS
ONE FOR THOSE WHO LIKE
TO TINKER

BY
SON YIHOU

SOME YEARS AGO when I first tested this model in a small room, it was rather underpowered. The rotors turned slowly and the model flew straight towards the wall. The rotors struck first, then the ballast bar that protruded in front of the model and the whole model bounced backwards, only to repeat this flight cycle again. This scene made me very surprised; it was just like a hummingbird taking nectar from a flower and the model's name could be no other than "Fenniaoo" (Hummingbird).

The main structure of the fuselage is foam polystyrene plastic and the whole construction process is very simple. Power is obtained from two skeins of four strands x 0.8mm rubber. The length of the

rubber is rather short and is a sacrifice to the general appearance of the model which weighs about 15g, though the rubber weight is less than 0.7g. But even so, it can still fly very well. The rotors are of large diameter about 600mm and are each driven through a synchronising gear system as shown on the plan. The main function of this "drive mechanism" is to synchronise the rotors which rotate in opposite directions, each driven by its own strand of the rubber.

ROTOR SYNCHRONISING MECHANISM

The gears are brass, in the case of the designer's original, cut down from a single unit which was sliced into four 2mm

thick units. Nothing exactly matching the designer's original is available in the UK and for this reason a suggested alternative is the 7mm diameter gear (Part No. MAO5-12B) available from Davall Gear Co Ltd, Welham Green, Hatfield, Herts. Two are required, each to be split into two of 2mm thickness and drilled to take 2mm spindles (on the original made from duralumin knitting needles).

The rotor head unit into which the rotors and synchronising gears are assembled is made up on the 0.5mm dural. sheet carrier cage using the pattern provided. In order to achieve gear fits, the holes for the gear spindles are best drilled using a two hole spacer template and simply work along the four abreast spacer positions in three stages so that there can be no variations in centre spacings. Fashion the cage as shown using a template cut to the internal edge of the cage outline of section C - C.

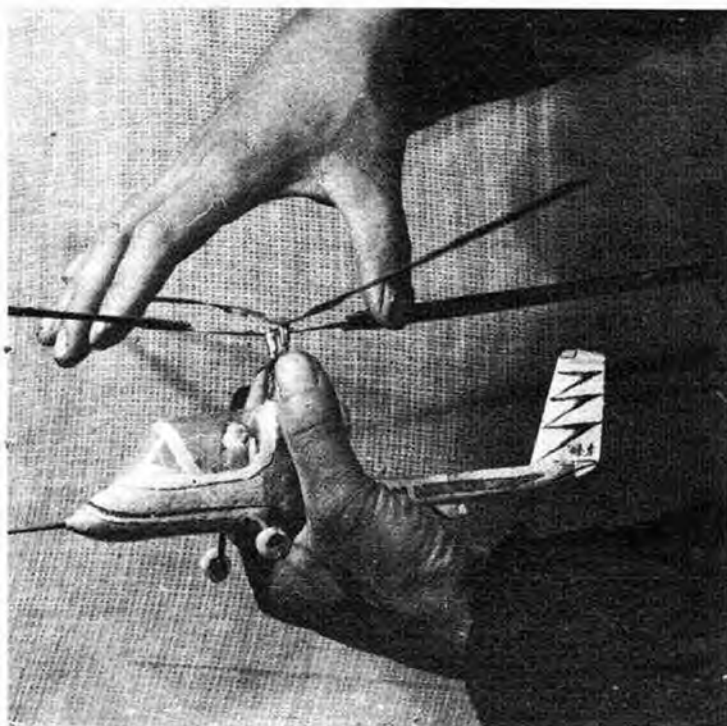
The two rotor shafts are shaped from 2mm duraluminium wire (the original used knitting needles) which is a material stiff enough for its task, but still soft enough to be drilled for the 0.8mm copper pins which secure the synchro gears and the rotors.

ROTORS

The aluminium hubs are made from duralumin block. Drill the pin hole of each hub separately. Cut blades from 3/32in balsa sheet and glue the blades and aluminium hubs together. When the glue is set, the rotor assembly must be balanced.

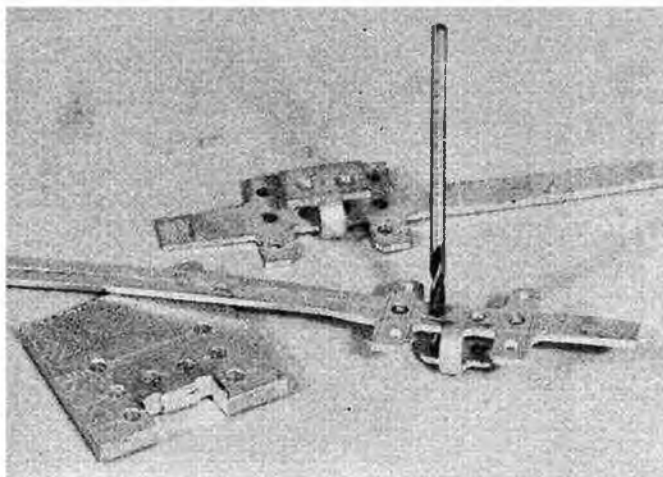
FUSELAGE, TAILFIN AND UNDERCARRIAGE

Fuselage, tailfin, wheels and the 'pilot' are all carved from polystyrene foam plastic that must be carefully selected. It must have adequate strength and carve satis-



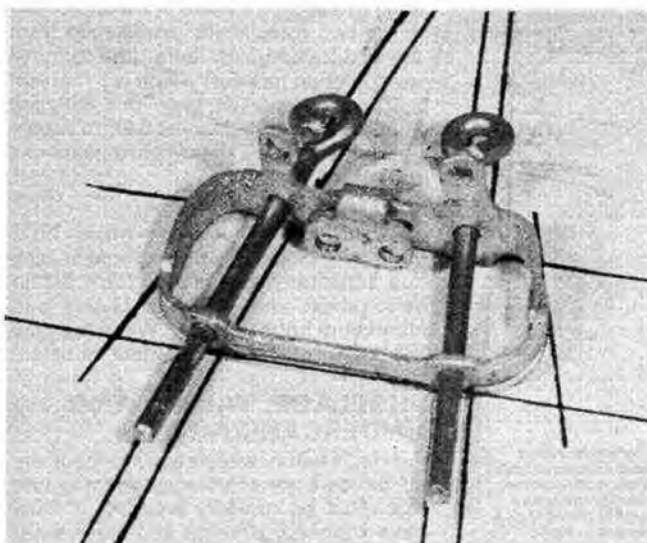
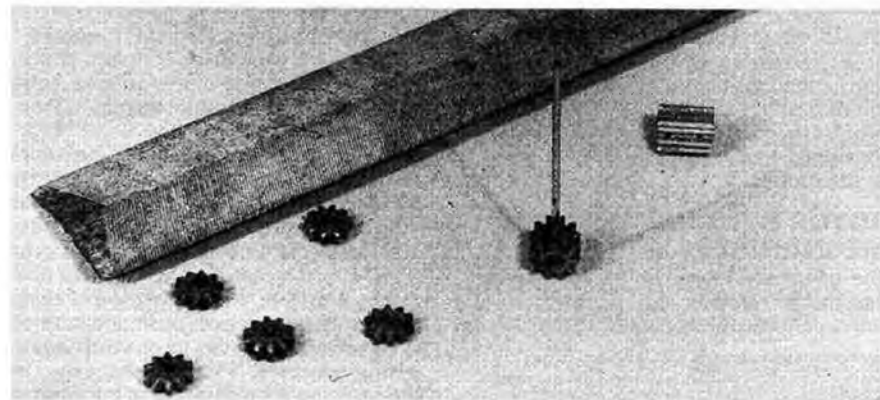
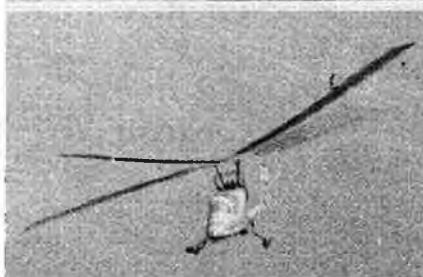
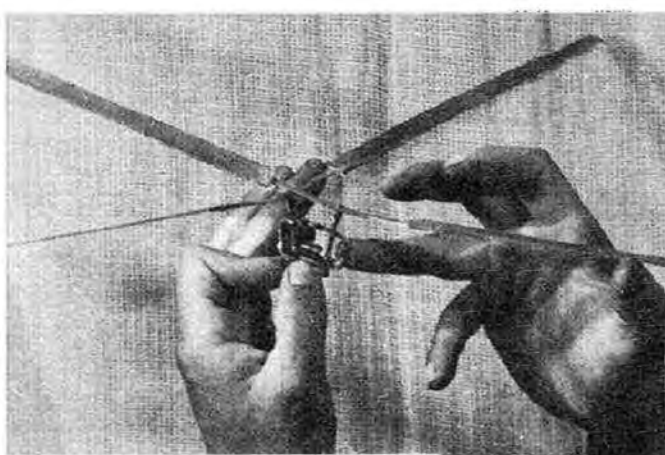
Heading: designer's seven year old daughter launches prototype for an outdoor flight, but the model also suits indoor flying. Try one for those winter club evenings.

Left: when operating without assistance, wind the twin rubber motors by rotating the rotors counter to the direction of rotation in flight.



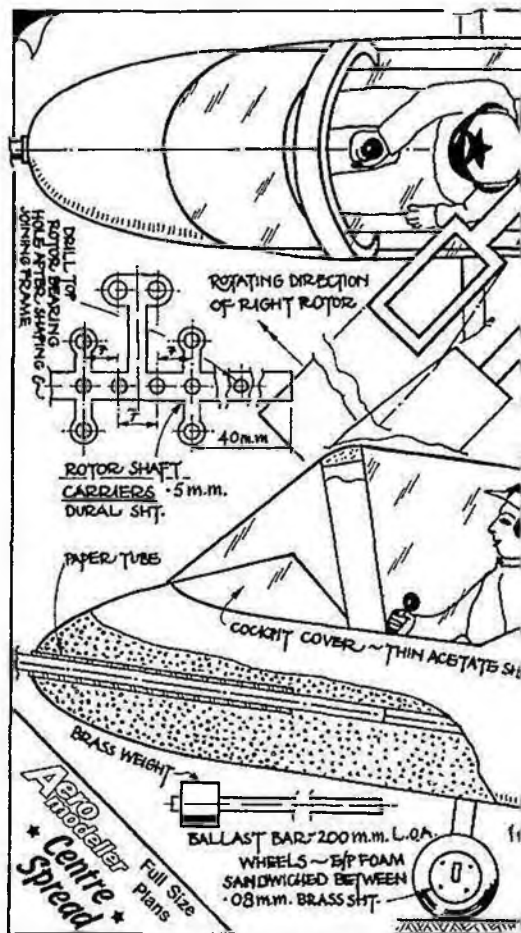
factorily. The main tools are a saw blade, a knife, a razor and some sandpaper. Cut and sand alternately. The undercarriage plate is cut from 0.5mm duralumin sheet and is glued into the bottom of the fuselage, using PVA glue. The vertical well or shaft that encloses the rubber motors is lined with balsa sheet which helps to strengthen the fuselage. Brush white glue on the whole surface of the shaft to proof against oil seepage.

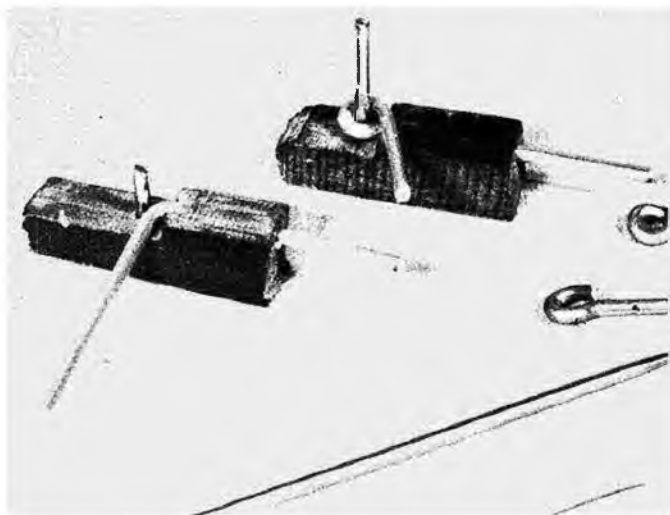
Above: the metal rotor case, in its flat strip state, prior to chaping. Note the metal drilling jig, used to accurately space the gear spindles. Top right: the complete rotor assembly—free movement is essential.



The gears of the rotor head synchronising system are obtained by slicing up a single deep pinion gear, after first drilling out the rotor pin holes. Finish off by filing the slices down to 2mm thickness.

Shape the rotor cage by tracing the shape off the plan and laying the assembly over the tracing to ensure correct angle of the rotor shafts.





Left: to shape the rotor shafts, the author produced this little bending jig. The shaft wire is slipped into the jig and bent through 90 degrees. The vertical pin is then inserted into the jig and the end hook is wound around it.

ADJUSTMENT AND TEST FLYING

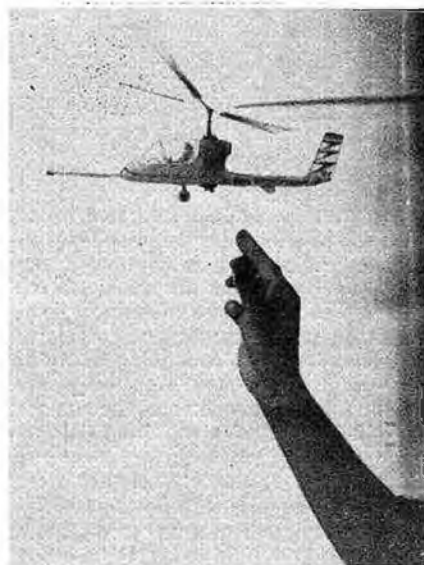
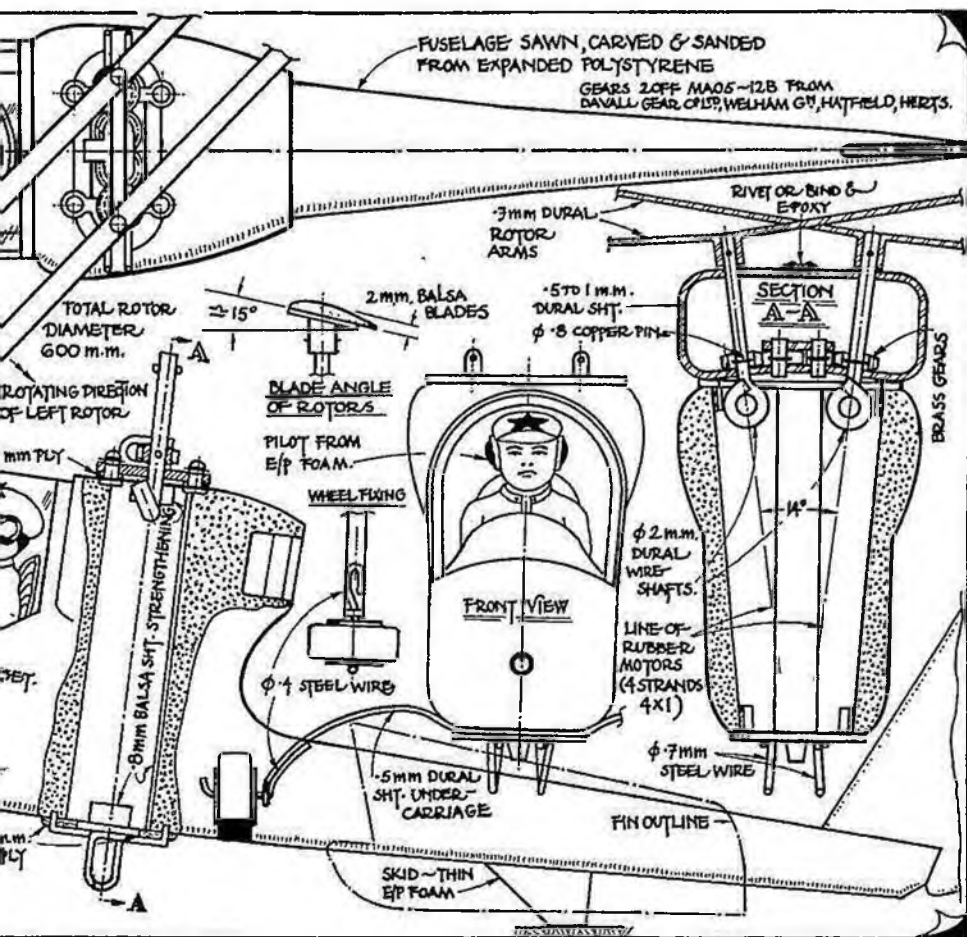
Since a model helicopter won't glide, trimming and adjusting for flight requires a very different technique. First adjust the inter-connection of the rotors so that when the right hand motor is parallel to the fuselage, the left hand rotor is at right angles.

Second, adjust the pitch of the rotors which for straight flight must be exactly uniform. If circular flight is required, this should always be to the left and is achieved by increasing the pitch of the blades of the right hand rotor. Because the two rotor assemblies are interconnected through the gears, the rotors turn at the same speed irrespective of pitch angle.



The right hand rotor thus generates greater lift than the left hand rotor and assists the turn. Effectively, it is just like a trim tab on a fixed wing model.

Third, adjustment of the ballast bar on the nose controls forward flight. The intermeshing rotor system produces a natural nose-up tendency so that without ballast in the nose, the model will fly backwards. Insert the aluminium ballast bar with a small brass weight on its tip as a ballast. Wind the rubber about 10-15 turns, hold a blade of the right hand rotor and launch the model which should fly forward with slight left turn. Increase the power and the ballast bar will need to be adjusted forward. If after launch there is still a tendency to nose-up even with the ballast bar stretched forward to the limit position, then increase differential of the rotor pitches and increase the turning component of the force set-up. Normally the rubber motors are stretch wound from the bottom of the fuselage, winding to about 100 turns.



Aeromodeller

Vintage Rally

Old Warden

August 17th

By Peter Russell

THERE ARE TWO BASIC WAYS of looking at aeromodelling. One is to regard it as a sport where the object, as in other sports, is to establish your superiority over the other fellow, the other team, or still amongst the more primitive intellects, regrettably, other species. With this approach, the medium, model aeroplanes in our case, is an important though not always primary factor. Judging by the attendance at the recent SMAE Nationals, this side of the game continues to flourish.

The alternative view comes from the people who just enjoy messing about with model aeroplanes, as you might put it. To these enthusiasts, model aeroplanes constitute a hobby, to be taken more or less seriously as the spirit moves you. It does not preclude competitive flying, but any that is indulged in is likely to be taken in a pretty casual, light hearted, all-that-matters-is-to-have-a-good-time sort of way. It is to this latter category of modeller that the now well-established *Aeromodeller* "All Scale" and "All Vintage" meetings



Above: The "radio-assisted" vintage area featured nearly as many models as on Scale Day and the standards were much improved too. This is the way to fly Vintage!
Right: Impressive bunch of vintage control-liners and pilots – only part of the total. Eagle eyes will spot Taurus, Stunter, Traveller, Profile, Yoiks, Monitor, Tyro Trainer, Stunt King, Mills Bomb, to name but a few. Great show of vintage control line this year.



of fly-for-fun and were duly rewarded when, around lunch time, the rain stopped and a little later the sun came out. It was still a bit breezy but only enough to deter the most timid.

The traditional layout was followed with the control line section adjacent to the spectator barriers nearest the entrance. This is more or less essential, as it is the only part of the field smooth enough for most control-liners. Further along comes the main spectator area in front of which the "radio assisted" section performs. Again there is little option as this is the section that attracts most spectator interest and is at the same time smooth enough for the take-offs and landings of even the smaller models. Those who still brave the hazards of free-flight, still the majority if only because many of the models are smaller, more quickly built and possibly not quite so precious to their owners. It must also be admitted that there are those who, for some reason or other, regard all forms of controlled flight

control-liners, however, and this area saw some pretty intensive activity from a bigger entry than ever before. It has always surprised the writer that the vintage fraternity has taken so long to recognise the fact that control line exists – after all, thirty years ago, there were probably as many control liners as all the other categories put together. All credit, therefore, to Mike Beech, an All-Round vintage enthusiast, for presenting the "Fireball Trophy" for annual vintage control line competition. Previous winner Chas Crawley turned up with a veritable private air force which included such classics as the *Millsbomb*, the *Stunt King*, the original Amco 3.5 powered *Monitor* and the *Biplane Stunter*. The *Monitor* had an engine with an unfamiliar red-anodised head, it turned out the engine was the original recommended plain bearing Amco, but fitted, for some reason, with the cylinder head from the later "BB" version. The writer still has lots of spares left from his own competition days, 1949–50–51, with



Left: "Flying Aces" would have called this one the "AM Mystery Ship". S & L took the picture but forgot to get the pilot's name. You all know what the model is, anyway. Right: A bunch of Hot Rods! Old Straight & Level Peter Russell holds Fireball Trophy in one hand and the "Profile" in the other. Model, which is original, won a lot of stunt (as it was called then) contests in 1948. Replacement Ohlsson 60 has a 4 digit serial and is a good deal older than the one originally used. Below right: Elaine Harrison shows off possibly unique Club "Scientific", a pre-war kit model originating, like Elaine, in the Birmingham area. Says "It's a bit tricky, can't imagine it ever flying as a free flight".



at Old Warden are dedicated, and whilst there will be a lot more aeromodellers at, say, the Nationals, it is doubtful if any single category event attracts the numbers approaching those in attendance at the *Aeromodeller* events.

This year, with its continuing record of bad weather, it looked, early on in the morning of the seventeenth, like being a day quite unsuited to the often delicate vintage models. There was a quite strong southerly wind and low clouds were depositing heavy rain in many parts of the country. Nevertheless, most of the intending participants duly set off for the shrine

as slightly obscure. Be that as it may, the layout of this fairly small grass aerodrome dictates the way the various categories are located and it is often the free-flyers who find themselves at a disadvantage when the wind drifts models into other areas, to the combined detriment of the models themselves and anything that happens to get in the way. This was the case on the seventeenth, when many fine free flights were damaged in the surrounding trees and in a few cases, the car park. It is difficult to suggest a remedy for this situation.

No such problems bothered the

the Amco powered *Monitor*, and Chas is very welcome to one of the original black heads, if he would care to write, via *Aeromodeller*.

R. J. Cooper was another multi-model enthusiast and his Nordec-powered *Yoiks* and Yulon-powered *Juggler* rated second and third in the "luvverly noise" scale to the writer's McCoy 60 powered *Arkansas Traveller* which, at 90mph and 14,000rpm, produced the sort of din at once exciting yet embarrassing. Many other models from designers like Coasby, Hundelby, Musciano (represented by a *Tyro Trainer* with an unlikely Eta 5 diesel power plant)

Bates, to name but a few, were on show.

The "Fireball Trophy" winning *Super Profile* stunt model is powered by an Ohlsson 60 running on spark ignition (what else?) and is the original which won a number of contests in 1948. It was refurbished in 1969, fitted with an Ohlsson even older than the original, and has been flying regularly ever since. It performed all the manoeuvres in the 1948 schedule except the vertical eight. It is actually capable of this manoeuvre, but the pilot doesn't like taking risks, after all these years!

The "R/C Assist" activities attracted most spectator interest and some fine models and flying were seen. Jim Shelley of Walsall had two new models, one, a completely authentic replica of Sal Taibi's 1938/9 *Powerhouse*. With its "as original" Forster 99 power plant, vintage switches and booster sockets, all the radio gear well out of sight, this was one of the perhaps no more than a dozen models where a serious attempt at authenticity was obvious. There seems to be an unfortunate tendency amongst the "R/C assist" enthusiasts to compromise authenticity to an unnecessary and, to some, unacceptable extent, by using current fittings and modifying things like dihedral, tailplanes, undercarriages and so on. The result might well be an interesting and enjoyable model but it isn't really vintage. Several modellers have demonstrated that, provided you pick the right model to start with, you can have it absolutely authentic and still produce a practical flying model. Another trend is to fit a modern Japanese four-stroke engine. This produces a very attractive model from many points of view, but again, it isn't really vintage. Mike Whittard had a splendid replica of David (steam power) Parker's 1941 *Firebrand* powered by the Saito 5cc four stroke, this latter perhaps the first to be seen flying in public, which went very nicely until Mike, as I heard it, pulled the wings off doing a

loop. This rather strengthens the contention that, since the elevators aren't necessary anyway, if you don't fit them you can't get this sort of thing happening!

The Mick Smith *Mercury* (nearly all of these designs are still available from MAP), an eight foot elliptical wing, elliptical fuselage cabin model, still seems to be about the most popular O.T. model around in this country. Several of those flying at Old Warden were powered by O.S. four strokes – and very nicely too – but Bob Brightwell went one better and designed and built his own flat twin four stroke which is a masterpiece. Based on full size aero engine practice, the engine uses parallel overhead valves operated by push rods and in squish heads. The lubrication system works on the dry sump principle with two oil pumps, one pressure and one scavenge. The result of all this complication is an engine that suits the *Mercury* very well, easy starting, good throttling, plenty of power, plus the big four stroke bonus features, low noise and fuel consumption.

Probably unique was the Club *Scientific* flown by Ray Harrison and his daughter Elaine. This was originally a pre-war kit made by the then well known Birmingham shop Model Aerodrome of Stratford Road. Maybe this smallish, sleek all-elliptical job – the *Baby Cyclone* was the originally specified power unit – could have flown free-flight but nobody ever seems to have actually seen one doing so! The Harrisons said it was fairly tricky even with rudder-ele-throt R/C and didn't give much for its chances without the radio. Ray had another "Club" design, the bigger high wing cabin *Conquest* which had the rarely seen Hallam Nipper. This particular one "goes well but doesn't develop enough power". The writer has one of which the same could be said, though they could be made to fly, remember Doctor (Petrol Topics) Forster used to fly one of his free-flight flying boats with one?

One snag with the "authentic minimum mods and control" approach was demonstrated when a Stentor powered *Junior 60*, absolutely no evidence of mods or R/C, but actually with radio controlled (original) rudder tab, suffered a timer failure and climbed nearly out of sight over Old Warden – it must have got higher than three thousand feet on a run of about five minutes, all this on a tiny tank of just over one ounce capacity. Very good on fuel economy, these sparklers! The Stentor is a very fine engine anyway, of course. In this case the model was recovered OK – a spot landing in fact – but if the wind had been a bit stronger it might have been a different story. Well, you can't have it all ways!

There were some equally fine models in the free flight section, but this department tends to be very spread out, and the models always disappear into the distance so it is quite difficult to report on. Models that did catch the eye, however, included the *Valkyrie* of Ann Humphries – yes, the ten foot Goldberg pylon model – the cost of the balsa alone is mind boggling – an MAP *ABC Robin* by Brian Downham and the *Smoothy* streamlined rubber powered model by Peter Michell, trophy winners all.

As far as trends are concerned, it seems inevitable that "R/C Assist" will continue as the fastest developing side of the Old Timer movement, and there are now a number of well-established meetings for these types. Not quite so obvious but a definite trend is the increase in vintage control line interest, demonstrated by this year's all round improvement in variety, quality and quantity. Unfortunately, the spin dizzies are not at all well catered for and it is suggested that interested parties communicate with the writer, via *Aeromodeller*, with a view to finding a venue for one or two meetings specifically for vintage control liners, particularly the "difficult" types like speed models and jets.

Results

"Best Power Model"		"Concours d'Elegance"	
Ann Humphries	<i>Valkyrie</i>	Bob Brightwell	<i>Mercury</i>
"Best Rubber Model"		"S.A.M. Award"	
Peter Michelle	<i>Smoothy</i>	Tony Penhall	<i>Black Magic</i>
"Best Scale"		"Fireball Control Line Trophy"	
Brian Downham	<i>ABC Robin</i>	Peter Russell	<i>Super Profile</i>



THIS MONTH:

SURVEY OF R/C TRAINER KIT MODELS FOR POWER & GLIDER FLYING

AT THE BEGINNING of this series, a number of manufacturers were asked if they would like to support the new feature articles. The response was quite exceptional with a large number of models, engines and radio control equipment being submitted. All of the models have been built, and flown, using engines and radio gear supplied. Most of them were built by experienced modellers who were asked to view the kit with the eye of a novice and comment upon its suitability as a first model. Others were built by complete novices, some with the help and advice of experienced "godfathers".

During the next two months we will be reviewing the kits submitted but in the meantime, our thanks are due to the following manufacturers:

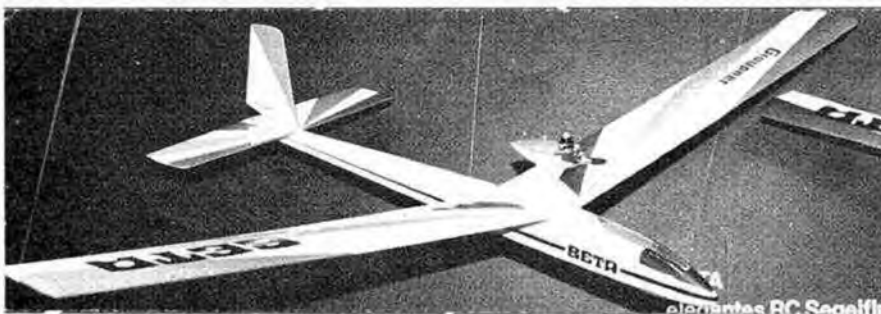
Cambria; Edmonds Model Products; Galaxy Models; Irvine Engines; Keil Kraft; Richard Kohnstam; MacGregor Industries; Micro Mold Ltd; Progress Aero Works; Ripmax; Trueline; Veron; Waterhouse & Ely;

and to the following 'builders':

Les Edwards; Graham Palmer; Stan Rose; and 'novices' Eric Denyer; Derek Hansen; Simon Rose.

GRAUPNER BETA

A comparatively recent introduction to the UK market, this model is primarily designed for thermal soaring but is also suitable for slope soaring in light to medium wind strengths. It can also be converted to a power-assist soarer using Graupner parts 164 or 62. The 1970mm span wings are in two parts for ease of transport. Tail surfaces are permanently attached.



This is a builder's model, and unless you enjoy this aspect of the hobby, look elsewhere for your glider kit. The quality of the wood is excellent with some of the best die cutting I have ever seen. There are a number of ABS moulded parts to fabricate the wing roots, a nicely moulded cockpit and canopy, all linkages and rod-in-tube control 'snakes'. Glues are supplied together with covering tissue. The plan is very clear and there is an overlay to show radio installation details. The German instruction book contains stage photographs and a very useful 'exploded' drawing of the finished model; this detail is cross referred to the English translation. Building instructions are concise and very detailed.

Fuselage assembly is based upon the fuselage bottom sheeting being pinned to the plan. Formers, corner support strips and sides are then built up on this base. The control snakes are fitted before top sheeting. Three gauges are supplied which ensure correct alignment of the forward fuselage sheeting, and also correct incidence for the wing seat. The sheet tailplane and fin are fitted, then the whole fuselage carved and sanded to shape.

Wing assembly starts by building up the root area using the ABS parts. The tubes for the wing join dowels are held in these plastic mouldings which ensure correct positioning of the dowel tubes. The rest of the wing is then built on the board in a conventional way. The top and bottom sheeting for the wing root area is die cut. Since these areas differ slightly, it is essential that the various parts are clearly identified before cementing in position.

The fuselage and tail group of the

review model were given two coats of thinned clear dope, sanding between coats. Lightweight tissue was then applied by brushing on a further coat of dope. Two coats of sanding sealer, rubbing down between and after applications, completed the preparation. Two coats of Humbrol white enamel thinned with white spirit were brushed on to give the final colour. After application of the transfers, a black cheat line was positioned. The wings were covered in white and transparent yellow *Solarfilm*, white from leading edge to main spar, transparent yellow from main spar to trailing edge. The join was hidden under an 1/4in wide black trim tape.

There is not a lot of room for the servos and although two sided tape could be used, I decided to wedge them in position using a combination of balsa wood and foam packing. With the receiver in its bay and the battery in the nose, 1 1/2oz of lead were required in the nose to achieve the correct centre of gravity position. Finished weight with *Sanwa* radio equipment is 2lb 7 1/2oz which gives a wing loading of approximately 9 1/2oz per sq ft.

The model flew well off a towline, gaining height with no need for elevator control. Directional stability was good with only one jab at the rudder needed to keep her straight. With little or no thermal activity on the test day, flight duration was not outstanding but the glide path gradient was not steep, and *Beta* seemed to glide on for ever during the latter stages of the landing approach. Subsequent flights proved that the stall is gentle with no tendency to drop a wing. Bungee launches were not attempted since I feel that the tow hook mounting would probably need 'beefing up'.

Off the slope with an 8mph wind, *Beta* floated around when other models were grounded. Its docile performance coupled to good control response were evident once again.

CONCLUSION

An excellent kit, well presented, which builds up into an attractive model with good inherent stability and control response. Ideal for the beginner who enjoys building.

VERON ROBOT

Probably one of the earliest designs still available as a kit, this radio control trainer was originally designed as a single function, rudder only model. Indeed, the plan still gives detailed instructions for installation of a rubber driven actuator to operate the rudder. Nostalgia is also created by the instructions to provide trim tabs on the wing trailing edges and the provision for adjusting the angle of incidence on the tailplane.

Since most present day beginners will be advised to purchase two or three functional proportional radio gear, with in-flight trimming facility, the above items are not really necessary. Provided of course that the model is built accurately with the centre of gravity in the correct position.

The kit includes the necessary wood of good quality, pre-formed undercarriage and wheels, a detailed plan and instruction book. A supply of various nuts and bolts are included together with tissue for covering. Engine mount and tank must be bought separately to suit the power plant to be used.

The most unusual feature of this model is the butt joint between F1 and the engine compartment. This would act as a 'knock off' sheer plate in the event of a crash, hopefully saving engine and the rest of the model from further damage. The rest of the model is entirely conventional in construction and no problems were encountered during building.

The fuselage of the review kit was covered in nylon and the wings and tailplane covered with heat shrink film. The model has been subjected to some quite 'heavy' landings and so far, has proved to be very strong.

Fitted with *Futaba Medallion 3* plus three *FD30M* servos and a *PAW 19 R/C* engine, the model weighed in at 2lb 15oz. Control movements were set at $\pm\frac{1}{2}$ in rudder and $\pm\frac{1}{4}$ in elevator.

Attempts were made to fly *Robot* off a grass strip but owing to the length of grass to wheel size ratio, she ended up with her nose buried quite firmly into terra firma. A hand launch was used and with the engine on full power she climbed away into



straight and level flight. The inherent stability, so important in a trainer, was tested and once trimmed, the model would fly 'hands off', i.e. no interference from the pilot's transmitter. *Robot* was put into typical "pause" attitudes to simulate the problems which might face a learner and regained her composure into straight and level flight upon release of the sticks. At one stage the engine cut at altitude and rather than descend, the model appeared to ascend. Thermal soaring is not usually associated with this type of model but the wing loading is such that power off gliding is long and flat, with full control response being maintained throughout.

CONCLUSION

Comparatively easy to build although the plan and instructions should be updated. The model is very stable and easy to fly and should give little trouble to a beginner. One of the less expensive kits to be reviewed.

VERON BIG IMPALA

This glider spans 74in and as the name implies, is a stretched version of its predecessor the 52in span *Impala*, which, over the years has proved an excellent first-model for newcomers to slope soaring. Big brother is now developing its own reputation as a trainer.

The kit is very complete with all the necessary wood, hardware and even tissue covering. The plan and building instructions are very clear, construction is

straight forward and would present no difficulty to the novice. The main feature of the kit is the ABS fuselage formers, wing and tail ribs. Contact type adhesive is recommended for bonding ABS to balsa wood and our reviewer found this to be entirely satisfactory.

The kit may be built as a three function rudder, elevator and aileron or simple rudder and elevator only model. In addition, the plan gives a further option as a powered thermal soarer using a 1.8cc engine. The review kit was built for rudder and elevator only, control being from a *Futaba Medallion* set with *Futaba FD30M* servos.

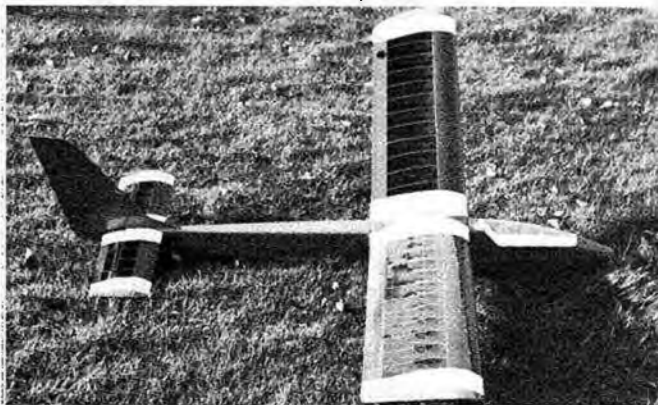
Sheet balsa is used for the fuselage which has a square cross section. Rod-in-tube 'snakes' are used for the control runs and these must be fitted before the fuselage 'box' is closed. It is necessary to secure the control tubes at about 6in centres, and since there are few suitable adhesives for bonding polyethylene to balsa wood fuselage sides, the following method can be used. Wrap masking tape around the tube then glue the tape to the fuselage side with either PVA white adhesive or balsa cement.

With the ABS moulded ribs provided, it is simplicity itself to build a true wing over the plan. Care should be taken to ensure that when fitting leading and trailing edges the ribs are not distorted.

This model was covered with heat-shrink film and if this is your choice, do not use too much heat to shrink the film or once again there is a danger of distorting the plastic ribs which will of course soften under heat.

With 2oz of ballast to achieve the required centre of gravity the model weighed in at 2lb 12oz giving a wing loading of approximately 93oz per sq ft.

First flights were conducted during a sunny autumn afternoon with a gentle breeze blowing straight onto the slope. An initial trimming flight showed that adjustment to the rudder was required. Once this had been completed, the following flights proved the *Big Impala* to be stable with no vices. A stall was characterised by the nose simply dropping, the



Far left: the Graupner Beta features entirely conventional balsa airframe construction. Assembly is easy, but there are no foam wing/glass fibre fuselage short cuts. Above: still entirely relevant, even after 15 years of proven operation, the Veron Robot - a toughie. Left: also from Veron, the Big Impala for an introduction to slope soaring.

wings remained level. Recovery was effected by putting in down and holding the dive until sufficient speed was built up to regain proper control.

CONCLUSION

The model is easy to build with a light but strong construction. The wing loading indicates that it would make an acceptable thermal soarer. With a lack of inherent vices the novice should find this a relatively easy and forgiving model for first flights.

GALAXY MODELS – CLOUD ESCORT

Galaxy Models own a number of model shops around the country which cater specifically for the RC enthusiast. The *Escort* is one of a range of kits produced by them and has a 54in span. It is designed with the beginner in mind for use with 2–3 function radio and an engine range of .19–.35.

The kit arrived in a plain box with no external indication as to what the box contained. Opening the box revealed a kit of high quality balsa throughout, with all parts accurately and neatly cut by hand saw. An excellent quality plan and instruction leaflet were provided and all parts numbered for ease of construction. Fuel tank, engine mount and pre-formed undercarriage were provided but not wheels or spinner. A hardware pack of screws, horns, hinges and clevises is also included.

The fully built-up construction was very straightforward. Accuracy of the pre-cut parts really helped, with everything slotting together very easily. The following standard tools were required: balsa knife, hand drill, screwdriver, soldering iron, pins, sandpaper, white wood glue and epoxy. Snake-in-tubes were used instead of the recommended wooden pushrods as the former produce smooth, friction free movement and hence less strain on the servos and current drain from the battery.

The model was covered in *Coverite* which is easy to use, produces a strong, fuelproof, attractive finish, but it is rather expensive. With *Enya 19* and *Sanwa FM* radio installed to control engine, rudder and elevator, the completed model



Left: Galaxy Models 54in span *Escort* for .19-.35 motor power, features nosewheel undercarriage. Test model used *Enya 19* motor, *Sanwa FM* radio and *Coverite* covering. Right: *Cambria* Instructor at 58in span is recommended for .15-.25 engine capacity motor range, Balsa rib spar and ready made foam wing options are available.

weighed 3lb 9oz ready to fly. The centre of gravity came out exactly as indicated on the plan and the control throws were set up as recommended.

The model flew straight "off the board" with no adjustments to trim required other than moving the CG forward about 1in after the first flight to produce a more docile performance to suit the needs of the beginner. The *ENYA 19* proved to have more than enough power on a 9in x 6in propeller, and once airborne, pulled the model round easily on half throttle.

Flight was very stable and when deliberately encouraged to stall, the model quickly regained stability after one of the most gentle stalls ever seen. One good feature is the ability to maintain stable flight at very low speeds, particularly useful for a beginner when practising the difficult art of landing.

It was necessary to bend the undercarriage main legs slightly to produce "toe-in" to assist the model to run straight and true when on the ground.

CONCLUSION

All in all, a well designed, good quality kit which is easy to build, resulting in a strong stable model and without doubt, very good value for money. With the larger engine sizes this model would probably be overpowered for a beginner.

CAMBRIA INSTRUCTOR

Two versions of this kit are available, one with a built up wing (B) and the other with a foam wing (F). The design parameters required that the model should be easy to

build and with a relatively slow flying speed, inbuilt stability to give the novice pilot confidence was also needed.

The two kits are well presented with clear plans and concise, easy to follow instruction booklets with good construction stage photographs. All wood is supplied, plus motor mount, clevises and control horns, glue, various nuts and bolts, and an ABS removable nose cowl which provides easy access to engine and fuel tank. Additional items required include 4oz fuel tank, wheels, and covering materials. It is presumed that the builder will have the necessary tools.

The fuselage is of all sheet construction, 1/8in sheet being used with 1/16in ply doublers. Formers are either 1/8in ply or "constructed" from 3/16in strip wood. When made up it is strong, and gives ample room for the radio installation. The engine is mounted on a paxolin plate screwed to hardwood engine bearers. The fuel tank floor should be left removable and if the battery pack is to be installed here, a hole for the wires must be cut in former F.2. It was found that a 'flat' fuel tank was required to facilitate fitting of the nose cowl, a *Kavan* tank is suitable. With the engine and the propeller temporarily fitted, the ABS moulding should be trimmed to fit. Finally, fit the silencer and make sure that it is not too close to the plastic cowl. Both *Irvine 20* and *Kosmic 23* engines were used in these models turning 9 x 4 nylon propellers. The ready-formed main undercarriage legs are secured with plastic clamps held by self tapping screws into an 1/8in ply plate.

Fin, rudder, tailplane, and elevator are from 3/16in pre-cut sheet, and only require sanding to shape and rounding off before fitting.

The 'B' kit has fully built-up open structure wings with 1/8in sheeted leading edges. Wing panels are joined with plywood dihedral braces, the second panel being built onto the first in the conventional way. Angled end plates are used on the tips rather than blocks.

The 'F' kit contains obechi veneered foam polystyrene wing panels which require the addition of balsa leading and trailing edges and tip plates. Either PVA or



"Excuse me – do you have a hobby?"



epoxy glues should be used for this; other glues will almost certainly attack and destroy the foam. When the wing has been sanded, LE and TE blended to section, the two panels may be joined. The roots are chamfered to give the correct dihedral angle and slotted to accept the $\frac{1}{16}$ in ply dihedral brace. The panels are joined with epoxy glue (provided) and strengthened with glass fibre tape which is supplied in this kit.

The models were covered with heat-shrink film and after the self adhesive black vinyl windscreen was fitted over the nose cowl, transfers were applied. Trim lines and letters from heat-shrink film were made up and applied.

The radio was installed and the centre of gravity checked. With the battery under the fuel tank and placed against F1, the model balanced perfectly. Control movements were set up as per instructions: Elevator $\pm\frac{1}{16}$ in, Rudder $\pm\frac{1}{16}$ in.

Kit B – finished weight, less fuel, was 31b 9oz.

Kit F – finished weight less fuel, was 31b 13oz.

The models were flown on a windy day with the occasional gust up to about 20mph. Not recommended for beginners but both models coped very well. There was no noticeable difference between the flying characteristics of the models, both being stable with excellent control response. They could be flown at half throttle with no loss of control and landings were almost possible 'hands off' once the model was lined up.

CONCLUSION

The newcomer has the choice of 'building' (B kit) or assembling (F kit) a model which is stable and very easy to fly. It would be simple at some future time to convert this model for aileron flying. The design parameters have been well and truly met.

WATERHOUSE & ELY SUPER FLY

Developed and produced for the beginner

but with an eye to styling, this model has been on the market for some years. It is almost correct to say that no model flying field is quite complete without one.

It is ARTF (Almost Ready to Fly) and the large box contains a nicely moulded glass reinforced plastic (GRP) fuselage which has the cockpit windscreen and side windows defined by a moulded line. The nose cowl is also moulded in GRP, obechi veneered foam wings, pre-cut balsa tailplane and control surfaces, pre-cut undercarriage with ply reinforcing plate and saddle clamps complete the kit. A clear plan and instruction booklet are also included. The fuselage is available in a range of colours, thereby obviating the need to paint and fuel proof. The review kit was red and windows were painted in with matt black. Prior to fitting any parts to the inside of the fuselage the immediate area should be roughened to ensure a good bond.

A $\frac{1}{16}$ in ply reinforcement is already bonded in at the F1 position. However once the engine mount had been bolted on, an extra layer of glass cloth and polyester resin was applied just as a "belt and braces" exercise. The only other work was to place the undercarriage support plate and 'glass' this in. The noseleg is held in position by the motor mount, and the main undercarriage by saddle clamps screwed into the ply plate.

Trailing edges and tip blocks were fitted

The Waterhouse and Ely Super Fly covers the Almost-Ready-to-Fly end of the RIC trainer market. It features glass fibre fuselage and veneered foam core wing panels. Our test model used an OS 35 motor and McGregor 3 function radio.

to the wings then carved and sanded to blend in. The two halves were then joined with epoxy resin and reinforced with glass fibre tape (supplied) and polyester resin.

The fin is integrally moulded with the fuselage. A rudder post is fitted to close off the trailing edge of the fin and to provide a suitable material to accept the rudder hinges. The tailplane is made up by joining the pre-cut pieces, rounded off, then fitted to the moulded seat on the underside of the fuselage. This was done by inlaying $\frac{1}{16}$ in ply to the balsa tailplane, then pre-drilling and using self tapping screws, finally a fillet of epoxy resin was applied.

Slots were cut at the indicated positions through the fuselage and balsa push rods with wire ends made up and fitted. The MacGregor III radio was positioned in the cavernous fuselage by epoxying hardwood supports to the fuselage sides, then screwing the servos onto a plywood tray which was in turn screwed to the supports. Having fitted the OS 35 engine, complete with 10 x 6 nylon propeller, the centre of gravity was finally achieved by placing the Ni-Cad battery under the tank.

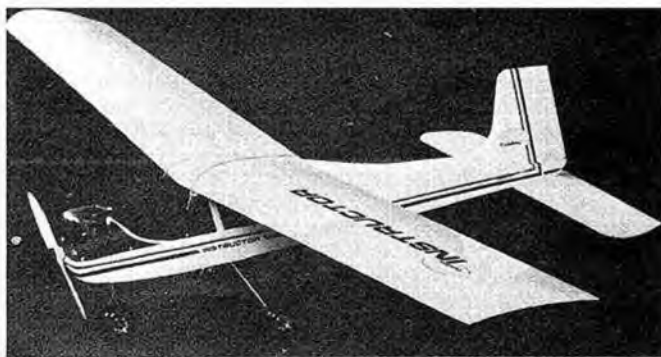
The wings, tailplane, and rudder were covered with white iron on film and as mentioned earlier, the windscreen and windows were painted matt black.

The model was flown from a grass strip, and take off was straight and smooth. The model was trimmed out, minor adjustments were needed to the rudder setting. The following flights proved that the Super Fly is a safe and stable trainer with good response to controls. When put into a tight spiral dive, given sufficient altitude, this model will self correct back to level flight.

CONCLUSION

An ideal kit for the beginner who prefers flying to building. In the event of damage, spare parts are available from the manufacturers. The kit requires slightly different techniques to conventional building but the manufacturers have eased the path of the novice by producing clear and concise instructions.

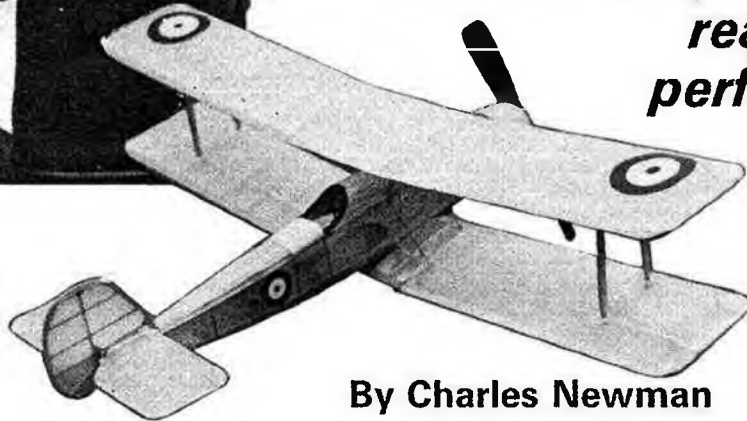
The model is strong and has a high degree of inherent stability.





VICKERS VILDEBEEST

*For rubber power scale
enthusiasts, here's an
unusual subject with a
really good
performance*



By Charles Newman

Aeromodeller, November 1943 – 1/72 drawing plus photos.
Vickers Aircraft since 1908 (Putnam) – drawings, photos plus text.
Aeroplane Monthly, May 1979 – article called 'Vincent Valedictory' which has some excellent photos of Vincents, the sister ship of the Vildebeest.

Finally, if this is your first scale model, build it as carefully as you can but when it comes to the big day, be even more patient. The first few flights should be made over long grass or similar and in calm winds. Whilst this is true of most models, it is most true of the free flight scale model. The designer has been known to keep models for ages before that first flight so that conditions are good.

As this design was aimed principally at people with little or no experience in this field, there are fairly full constructional notes. Before attempting any construction, study the plans carefully and become acquainted with it. If necessary, look at details of the full-size aircraft. Make sure that you know what tools will be required and arrange to either buy or borrow anything that you do not have. Use which adhesive you know best: balsa cement or PVA are equally suitable. Cover the plan with a thin, large plastic bag – the best are those used to cover clothes returned from dry cleaners.

Construction

1. Make templates for ribs R1/2, R3, and T2 from thin (1mm ply) ply or card. Omit the spar notches but include those for the leading edge (LE). Cut out all the rib blanks and notch the spars. In the case of the riblets (R3), include the notches in the template and cut them out with every riblet as you go.
2. Pin down wing TEs plus lower reach spars packed $\frac{1}{8}$ in for outer wing panels and upper centre section. Pin down the spars (both) for the lower centre section. Pin down the lower spar for the tailplane. Add all ribs except root ribs of the outer panels and the riblets. Add root ribs with the use of the dihedral template. Make four of these and leave them pinned to the board next to the ribs.
3. Cut the front fuselage sides and mark the former positions. Now build one fuselage side over the other to ensure symmetry. Use hard balsa for the longerons and medium hard for the verticals and cross members.
4. Return to the wing to add all LEs and upper spars (front and rear) and all gussets.
5. Insert all the riblets (R3) using a pair of tweezers. These may be omitted if required but will improve both appearance and performance if put in.
6. Prepare the wheels by cutting eight 3 in squares from $\frac{1}{8}$ in sheet balsa and divide them into two piles of four, with each layer with the grain at 90° to the one before (like plywood). Glue them together, using clamps.
7. Cut some strips of $\frac{1}{8}$ in sheet the same width as the interplane struts. Also some $\frac{1}{8}$ in x $\frac{1}{8}$ in and $\frac{1}{8}$ in x $\frac{1}{4}$ in strips. Glue a length of each strip to the wide one with a gap in

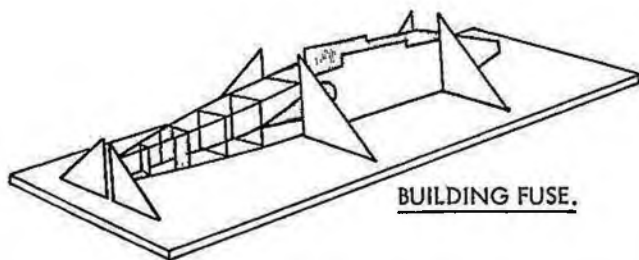
IN 1928 Rex Pierson thoughtfully designed the Vildebeest at Vickers in Weybridge. Thoughtfully because he did not like curves and streamlines as they were difficult and costly to manufacture. The result of his labours was a large, angular biplane which is a very suitable subject for a beginner's rubber scale model. The preponderance of straight lines, whilst not exactly the last word in beauty, makes for easy construction just like the Ajax, Competitor, Sentinel et alia. Anyone who has tackled one of these with reasonable success should have no trouble with the Vildebeest. There are relatively few 'tricky bits' and the model is sufficiently large to be easy to handle in the air, whilst utilising a standard 12 in Keil Kraft plastic propeller, so do not bother to carve a wooden one unless you wish to. Thanks to Pierson's angular design philosophy, there are none of these curly formers with masses of notches to cut either. All in all, a very straightforward model.

You will notice from the photographs that the model has been left in its natural tissue finish in order to keep it light. The original weighed in at 6oz all up, with rubber and $\frac{1}{2}$ oz nose ballast. There is no point whatever in building something this size if it is too heavy to perform properly – you are far more likely to get complimented about your models because they fly well rather than for a good but heavy finish. The same goes for detail so forget the Lewis gun and bombs! The Vildebeest flies very slowly with a majestic air and a gentle stall which is really what it is all about.

The prototype was constructed without much trouble by Adrian Flowers, a sixteen year old who has built other models but nothing like this before. His model flew straight off the board, so you see, it can be done.

Before launching into the construction of the model, there are a few points worth mentioning. Firstly, though intended as a beginner's rubber scale model, there have been only a couple of minor deviations from scale, thus it is quite accurate. So, please enter competitions with it if you wish. You may do better than you think and you certainly will come away with more confidence and know-how. Secondly, for those who really must go to town on colours and details, here are a few references.

Below: basic fuselage assembly. Sides are joined inverted over plan, using squares to ensure that the sides stand vertically.



between (see section on plane). Scrape any excess glue away with a piece of scrap wood. A second piece of the wide strip will be added later to form a tube, but for the moment set these aside to dry.

8. Now assemble the basic fuselage inverted over the plan. Use set squares cut from balsa or cord to keep the fuselage square to the drawings.

9. Study all the wire parts except the propeller assembly and fully understand their shape, position and function. Use long nosed pliers to shape these parts over the plan. Mark them where necessary with permanent white (Typex fluid) or matt white paint. It is very important that the wire bending is accurate and symmetrical. Cut the tubes for the undercarriage (U/C) at this stage.

10. The wings and tailplane may now be lifted from the board and the front lower spars be added to the outer panels and upper centre section. Tailplane will be complete and simply require all excess glue to be removed. Do the same when spars have dried in the wing panels and the wing tips have been added.

11. Lift fuselage from board and check fit snugly between the ribs and spars of the lower centre section. Trace from plan the inner outline of the laminated section of the fin onto a piece of 1/16" sheet, extending the lines a little each end. Cut some lengths of 1/16" x 1/2" from 1/16" sheet and soak them in a bowl of water for at least an hour. In the

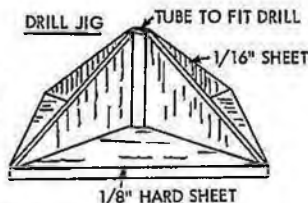
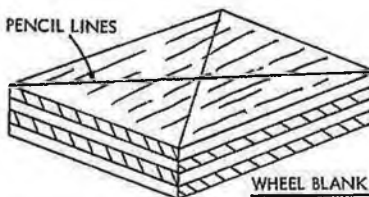
meantime, grease the edge of the fin template with Vaseline and pin down over the plan. Cut some scrap 1/16" sheet into small pieces and grease one side of each. When the strips have soaked, dry them gently with some tissue. Using PVA glue and not balsa cement, glue all four pieces together and whilst they are still wet, place one end at one end of the template. Anchor it with one of the pieces of scrap and pin, greased side against the strips. Continue in the same manner, and work your way round until the shape is formed and leave to set.

12. Take a length of 1/16" square and cut two pieces to fit between the U1s where the cabane struts meet the fuselage. Now attach the cabane struts using thread and cement. The front and rear bracing struts must now be added. Bind and cement the front struts to the forward ends of the strips and the rear struts to the rear. Glue each unit on the inside of the fuselage side, the top of the strip level with the top of the fuselage side, the struts emerging through their slots. The ends of the braces should fit against the spars - check that they do.

13. Remove laminated fin outline from plan, clean up and replace to set.

14. Add fuselage formers U1-3 and L1-2, checking to keep them vertical. Then add C1-2. Set aside to dry.

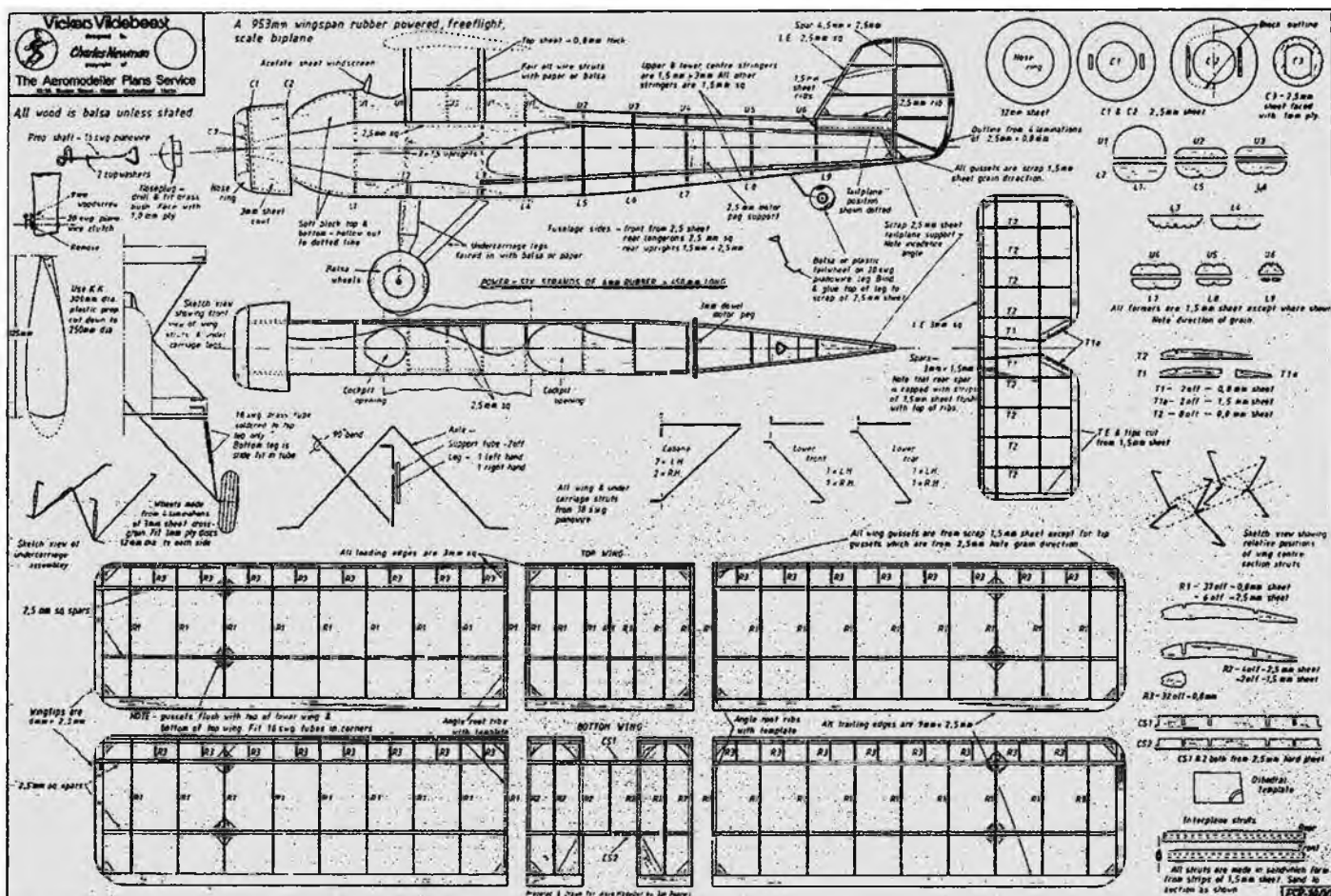
15. Take the wheel blanks and drill a 1/16" diameter hole in the centres. The jig shown in sketch shows how; draw the wheel outline on both sides of the wood, and scribe on the inner line of the tyres, again both sides. Shape the wheels, truing up by running wire through the centre of both together.

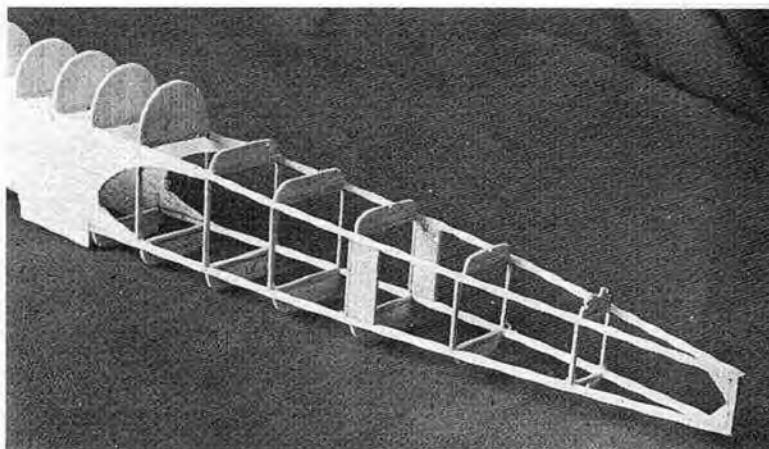
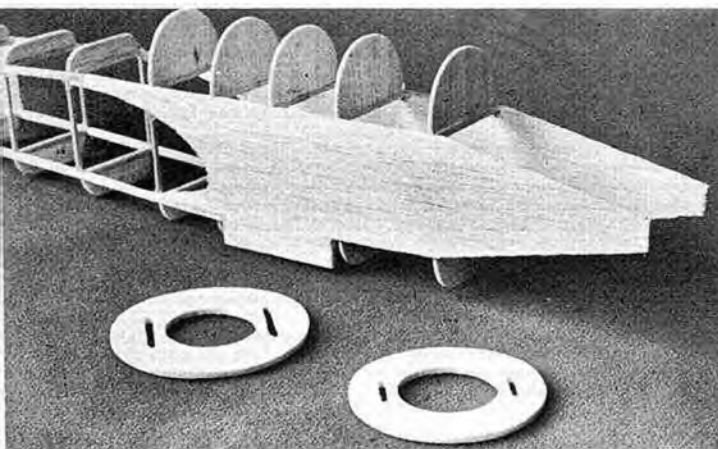


Lightweight wheels are made from cross grained laminations of balsa. In the absence of vertical drill, true axle holes can be achieved using this drilling jig.

16. Sheet upper front fuselage, also the bay between L1 and L2. When dry, cut out the two cockpits. Cut some spacing pieces (four) from 1/16" square and glue them between C1

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Above: two views of the basic fuselage assembly after joining the fuselage sides. Formers have been added top and bottom of basic frame. Note formers C1 and C2, ready to slot over the fuselage sides.

and C2. Add all the remaining formers, noting the angle of the lower ones. Add upper and lower fuselage stringers. Sheet the cowling with $\frac{1}{8}$ in. Leave to dry.

17. Finish the fin and shape the TE of the tailplane.

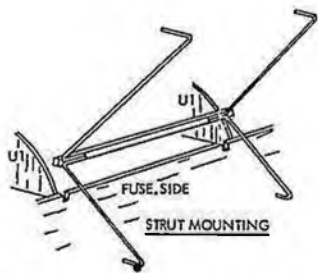
18. Shape the fuselage blocks to leave the rear end slightly proud so as to allow sanding down to achieve an even finish when stuck to U1/L1. Then hollow out.

19. Form cowling ring and stick to C1. Add C3 with 1mm ply facing and blending it into the sheeting. Open out the centre of the ply facing to accept nose plug.

20. Sew U/C axle wire to rear face of lower centre section front spar. Sew upper U/C legs to the outer ends of the same spar, again to the rear. Solder on the brass tubes, inserting the legs as shown. Sew the upper ends of the rear legs to rear face of rear spar. Insert the other ends into the tubes and solder the axle to the bend as shown in the sketch on the plan. This rear leg should be a sliding fit and is sprung by the axle. Attach lower centre section to fuselage and sew lower bracing struts to rear faces of spars. Run cement over all thread joints.

21. Pin upper centre section down to the board and stick on the outer panels, chocking up the tips to ensure similar dihedral.

22. Sew all cabane struts, to the rear faces of the upper centre section lower spars, checking that the incidence remains correct and that the wing is true viewed from the front.



23. Cut four pieces of aluminium or plastic tube (from a B10 inner) and stick them to the ribs of the positions shown with Evostick or a cyano adhesive. Now add the gussets.

24. After a final check to see that everything is ready and smooth, proceed to cover the model with the lightweight Modelspan or Jap tissue, taking care to stick it to the ribs on the underneath. Cover the lower outer wings as separate units but do not dope. With that exception, give the whole model a coat of 50/50 dope and thinners, followed by two more on the fuselage. Leave the model for several days to settle.

25. Cut two lengths of shirring elastic (available from a haberdashers) about 15in long. Cut a piece of 22g wire 2in longer than the interplane struts and bend a small hook in the end of it. Tie a match to one end of each piece of thread. Starting with the front tube in the upper wing, using the wire as a needle, pass the thread down through the wing, the front interplane strut and out through the lower wing. Now insert the thread in the rear tube in the lower wing and pass it up through the wing, the rear interplane strut and up through the upper wing, pulling tight as you go. Tie the two ends together. Repeat for other pair of wings. Now stick the lower wing panels to lower centre section, the struts setting the dihedral angle automatically. Allow to set thoroughly.

26. Snip through the thread and remove the struts. Now dope the lower wing panels with one coat of 50/50 dope and thinners.

27. Make up the noseplug. Insert the brass bush. Give it several coats of full strength dope mixed with talcum powder. Apply this also to the wheels but rub some balsa cement into the tyres first, sanding smooth when dry. Finish with one coat of clear dope.

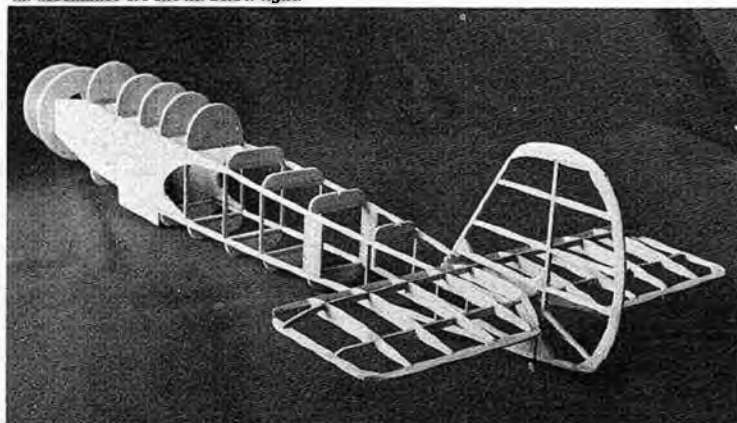
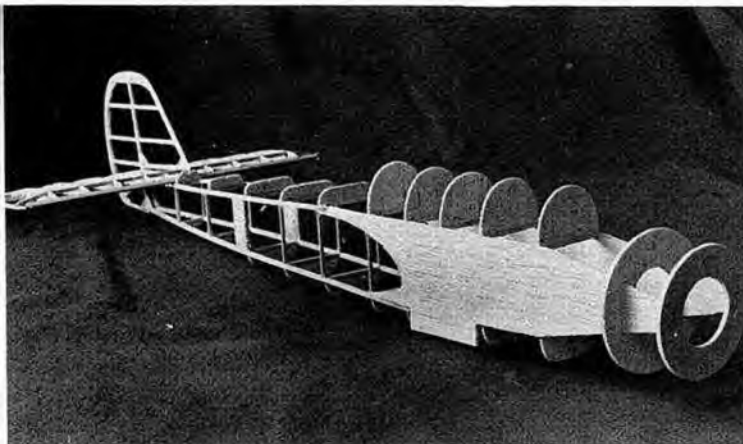
28. Take a Kell Kraft 12in plastic propeller and remove the spiral on the hub. Trim the blades to the line shown on the plan and balance the propeller, spinning it on a piece of wire to test it. Make up the little free wheel clutch, drill a fine hole and attach it with a $\frac{1}{16}$ in woodscrew. The clutch should move freely.

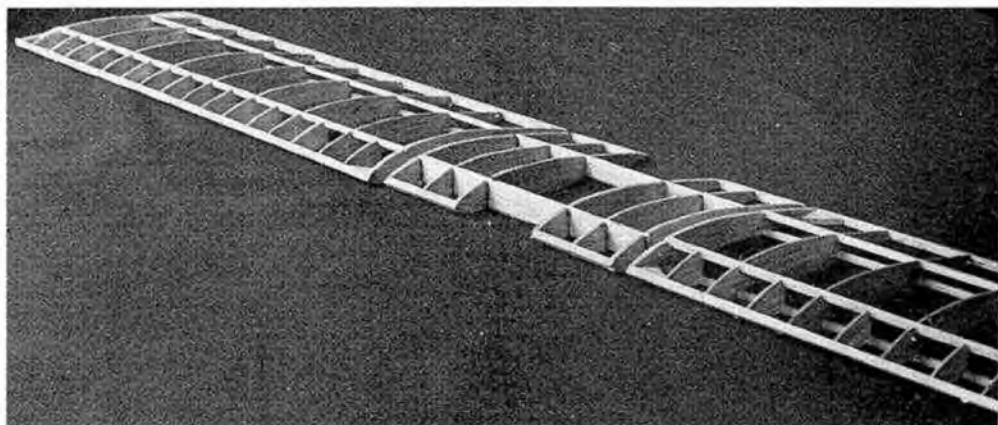
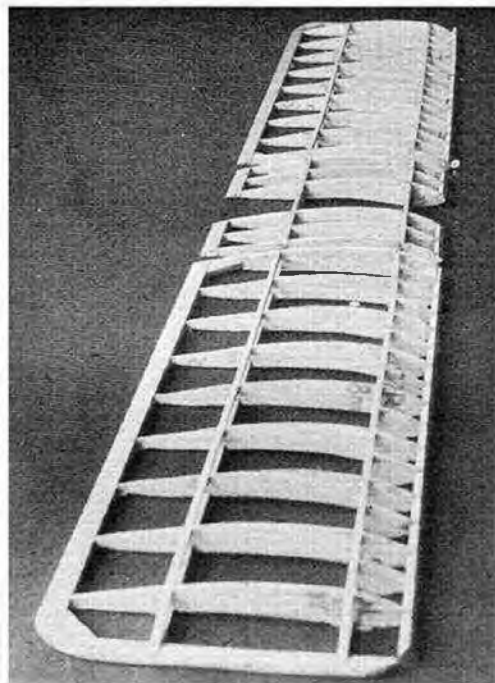
29. Bend up the propeller shaft from 16g wire. This is easier if you soften the wire first in a blow lamp or gas flame. Heat until the wire glows red and bend whilst still glowing. Do not forget the cup washers when assembling the unit. Check that it revolves freely in the bush and that the propeller revolves freely on the shaft. A drop of light oil is a good idea.

30. If it is intended to paint the model, it should be done so at this stage, but only using a spray gun to give a very thin finish. Paint tailplane and fin as separate units.

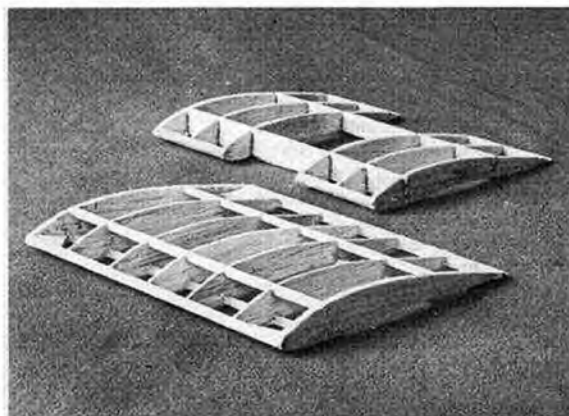
31. Assembly. Simply place and not stick the tailplane in position. Stick the fin over it. Tailplane is now trapped but loose and is temporarily held in place by rubber bands whilst trimming is carried out. When the correct position is found, stick down permanently and remove bands. Interplane struts are put back as described in step (32). Wheels are simply slipped over the axles and held by washers soldered to the axle. Trim the axle and cover hub with a shallow paper cone. Treat tailwheel the same way but without the cone. Drill out hole for rear motor peg and insert peg.

Below: further views of the fuselage frame, here with tailplane and fin units added. It is worth working over the airframe at this stage to clean up glue joints, corner pieces and the like, but do avoid disturbing any of the glue joints. The finished tailplane and fin assemblies are shown below right.





Structural details of the two complete wing assemblies, here ready for cleaning up and covering. The two wing centre section units are shown right.



Flying instructions and conclusion

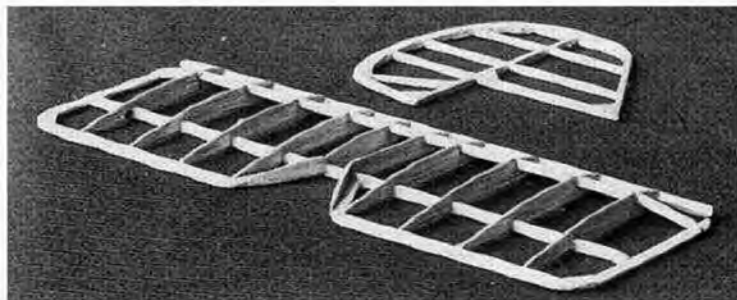
Power for your model will depend on how heavy it is, but either 8 strands of $\frac{3}{16}$ in rubber, or 6 strands of $\frac{1}{2}$ in rubber 18in long should be about right. Lubricate it well before use. The designer mixes a brew of 50/50 green washing up liquid and glycerine (no, not the nitro type! The type that comes in bottles in Boots for cake icing). Make up the motor with a bobbin for the rear dowel, using a small band to retain it. Force some fuel tubing over the prop hook to protect the rubber. Load the motor with the aid of the stick shown on the plan.

With the model now complete, balance it and add weight in order to get the CG about 1 $\frac{1}{2}$ in from the LE of the upper wing. You are now ready for that first glide—into *long* grass please. Assuming that you have not too many errors, she should float down some way in front of you. If not, check the incidences of all flying surfaces. Provided they look alright, pack the tail in order to achieve a flat glide. This model will glide so do not let anyone tell you that biplanes do not!

Now for the first powered flips. Again over long grass, wind on about 75-100 turns and launch gently into wind. Gently! She does not weigh very much, remember. The original model that Adrian built needed no change to the thrust line. You will note that downthrust is built in. We are indebted again to Mr Pierson of Vickers for so thoughtfully doing so with the full-size aeroplane! Continue to work up the turns and trim if necessary should a stall develop. Unless the turn is tight, do not correct it. This model is somewhat unusual for a biplane inasmuch as it will fly quite happily to the left or right. After each flying session, remove the motor, wash and dry it, dust it down with French chalk or talc and store it in a cool, dry, dark place.

The Vildebeest is an extremely forgiving model which again makes a good candidate for a beginners scale job. To illustrate this, the designer's wife Helen, who is not an aeromod, had not the slightest problem flying it despite the fact that it had only had its first flight some hour and a half before. Should you have a few spills during trimming and general flying (and Helen did not!), do not worry as the Vildebeest is a very 'floppy' model with a sprung U/C, so you are unlikely to do too much damage. Although a one-piece model, the wings are arranged with flexibly mounted interplane struts and butt joints between the panels so that in the event of a really nasty return to terra firma, the wings will merely fail at the joints. It is, of course, a simple matter to put the model back together again and this system avoids any complicated assembly methods which can be difficult to produce and will not necessarily reduce damage in a crash.

It is to be hoped that the above will encourage some of you to build this model. It is simple to build and fly and will give a great return of fun for the effort put in. Although the Vildebeest was chosen for this project, because the designer felt that it would make a good beginners model, he has frequently talked to other experienced modellers in other spheres of the game, who say that they often thought about rubber scale but shied away. Gentlemen (and ladies) now is the time to act. Have fun!



Engine Test Review

with Peter Chinn

No. 9 M.E. HERON

Country of Origin: Isle of Man, UK.

Type: Compression-ignition, shaft rotary-valve with plain bearing.

Optional fuel tank.

Bore: 0.424in (10.77mm).

Stroke: 0.420in (10.67mm).

Swept Volume: 0.0593 cu. in. (0.9718cc).

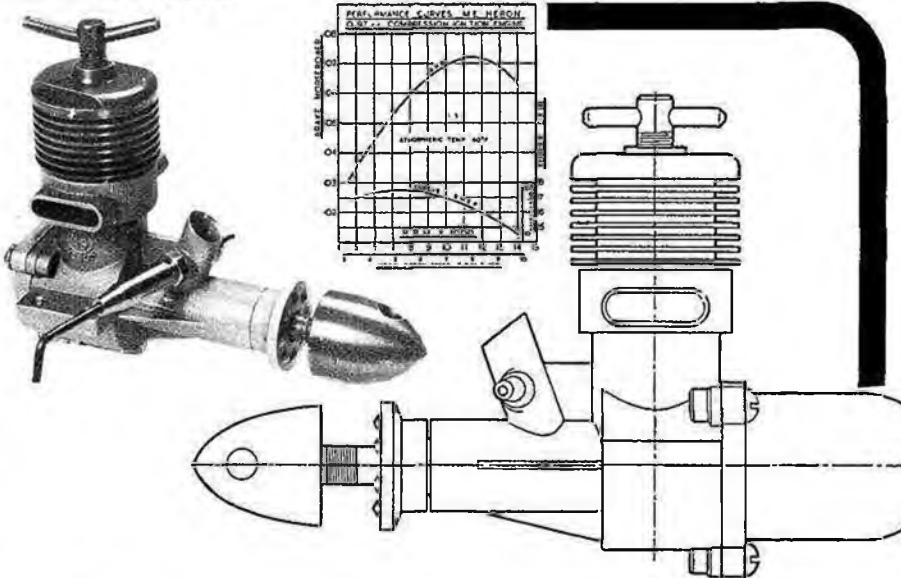
Weight: 72 grammes – 2.54 oz. 77 grammes – 2.72oz with fuel tank.

The ME Heron has just celebrated its 20th birthday. It was in the June 1960 issue of *Aeromodeller* that this engine was first announced. At that time it was manufactured by Marown Engineering Ltd., hence 'ME' name. Marown Engineering later introduced a 1.5cc motor, the ME Snipe, and both models were also available in water-cooled marine versions. After several years of production, Marown Engineering withdrew from the model engine business but, in 1972, the ME engines were revived. They were still made in the Isle of Man but by a new company, Moore Engineering Ltd.

When it was first introduced, the Heron was aimed squarely at the beginners' market for use with simple control-line and small free-flight models. This is a function for which it is still eminently suitable. It also has possibilities as a power-unit for motor-gliders and beginner type R/C models where throttle control is not called for.

The engine is of quite conventional design and construction. It has a lapped cast-iron flat-crowned piston running in a radially ported cylinder liner. The liner is flanged at exhaust port level, where it is located in the crankcase by an annular seating and is secured by a turned alloy finned jacket which screws into the top of the crankcase.

The crankshaft is of case-hardened steel with a 0.270in dia. main journal which now



runs directly in the crankcase material rather than the cast-iron bush that was a feature of the original Heron. The crankcase itself is of pressure diecast aluminium and has a detachable backplate secured with three screws and to which the optional fuel tank (anodised aluminium alloy in the original model but now of translucent plastic) is secured. The spraybar assembly is installed in the air intake at an angle so that the needle-valve is inclined rearward, safely away from the prop.

It is many years since our tests of the Heron were carried out but the engine is basically unchanged and we would therefore expect the performance of a current production model to be much the same as that of the earlier example. Prop rpm recorded included 9,000 on an 8 x 4 PAW wood, 9,500 on an 8 x 4 Keilcraft nylon,

10,500 on a 7 x 4 PAW wood and 10,800 on an 7 x 4 Keilcraft nylon. Since the engine reaches its peak output (0.072 bhp) at 11,500 rpm, there would be little point in propping it for more than 11,500 rpm static.

Starting was good and the engine was easy to adjust. The short, straight tommy-bar used on the original motor (see drawing) made the compression adjustment a little uncomfortable to manipulate, but this was modified in later production models and current engines have a bigger, V-shaped lever.

At only 2½oz bare, the Heron is quite light for a 1cc model diesel. Available for use with the engine is a pair of small silencers which clamp neatly onto the two exhaust stubs. They are very effective, cause only a moderate power loss and add 0.7oz to the engine's weight.

No. 11 Cox Tee-Dee .049

Country of Origin: U.S.A.

Type: Glowplug ignition, shaft rotary-valve with plain bearing. No fuel tank.

Bore: 0.406in. (10.31 mm)

Stroke: 0.386in. (9.80 mm)

Swept Volume: 0.04997cu.in. (0.8189cc)

Weight: 42g (1.48oz.)

For almost twenty years, the Cox "Tee-Dee" .049 has been the undisputed leader in the "half-A" or 0.8cc contest engine group. One of a range of entirely new Cox engines introduced in 1961 (others in the Tee-Dee line were the .010 and .020 models already dealt with in these articles,

the .051, .09 and the now discontinued .15) the TD .049 achieved a level of performance that has yet to be bettered in the Half-A displacement group.

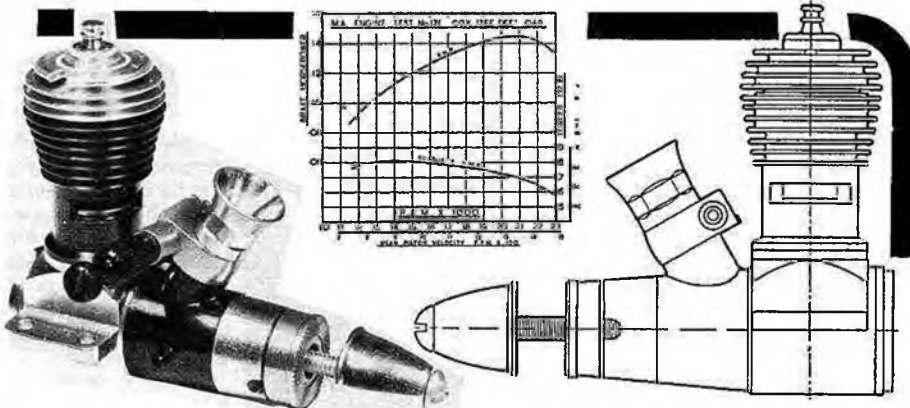
Actually, this was the second time that the Cox company had made its mark in .05cu.in. class engines. In the early Fifties, Cox's very first .049, the "Space-Bug" control-line engine, and the free-flight version that followed it, the "Thermal Hopper", set new standards of design, construction and performance in this then-new class. Other American manufacturers respond by offering improved high-performance .05cu.in. engines, culminating in the Holland Hornet of 1957. Following further development, selected "factory

specials" of the Hornet became available late in 1959 and these were far ahead of other engines at that time. On test, ours reached 0.145bhp at just on 22,000rpm using 30 per cent pure nitromethane fuel. At this point, however, the Hornet was just about at the peak of its development: in fact the stresses involved were reflected in not infrequent conrod breakages (ours included), whereas the Tee-Dee .049 that followed it, a year or two later, was able to deliver similar performance in stock off-the-shelf form and to go on doing so.

The Tee-Dee .049 (there is also an over-bored .051 version for the U.S. 'A' class) is similar in design to the TD .010 and TD .020 dealt with in the October 1979 issue,

except for having beam mounting lugs and no fuel tank, in place of the bulkhead type mounting, with or without tank, as used by the smaller engines. The crankcase is machined from extruded aluminium alloy bar, complete with an extended nose section that forms the unbushed main bearing. The latter is encased in a moulded black plastic housing that includes the intake boss, into which is screwed a machined aluminium alloy intake venturi. The latter has three peripheral jets fed from a collar containing the needle-valve assembly.

The hardened and ground steel crankshaft has a $\frac{3}{32}$ in. dia. main journal and a $\frac{1}{64}$ in. dia. crankpin on a disc web with crescent counterweight and features a very long rectangular valve port which registers with an equally large port in the bearing housing and is timed to remain open for 175 degrees of crank angle, closing at 45 deg. ATDC. The machined non-hardened steel cylinder has integral fins and screws into the crankcase. It has two diametrically opposed exhaust ports and, between them, two internal flute type transfer ports. The flat-crowned ringless steel piston is case-hardened on its outer skirt surface only and is coupled to a hardened steel connecting-rod by means of a ball and socket joint. The screw-in cylinder-head is of the glow-head type containing an integral glow filament. It has a trumpet shaped combustion chamber and seats on a copper gasket.



Intended primarily for contest free-flight use (it has also been unbeatable in the American Half-A control-line speed class) the TD .049 is intended for operation on contest and racing type fuels containing fairly high proportions of nitromethane. Our tests were carried out on a blend equivalent to Cox Racing Fuel and containing 30 per cent nitromethane. No silencer was used (at the time these were not considered necessary) and, as the performance curves show, the TD .049 recorded, under these conditions, a maximum torque of 8.1 oz.in. at 14,000 rpm and a peak power output of 0.145 bhp at 21,000 rpm. No standard .05 cu. in. class engine that we have tested in the nineteen years since these results were published in

MODEL AIRCRAFT in 1961, has ever equalled, let alone exceeded, these figures.

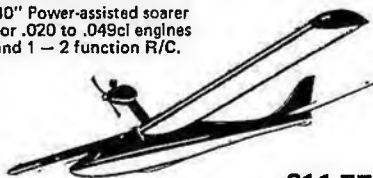
Prop rpm figures were equally impressive. The TD .049 will pull bigger props than most other .8cc glow engines but it prefers to be given its head and is best when propped for not less than 17,000 rpm. Typical speeds recorded with out test motor included 15,400 on a 6 x 4 Top Flite wood, 16,000 on a 6 x 4 Top Flite nylon, 17,500 on a 6 x 3 Tornado nylon, 18,100 on a 5 1/2 x 4 Tornado nylon, 18,300 on a 6 x 3 Top Flite nylon, 19,500 on a 5 1/4 x 4 Top Flite nylon and 19,800 on a 5 1/2 x 3 Tornado nylon.

These figures, like the torque and bhp figures, were recorded on 30 per cent nitro fuel. Power is considerably reduced on cheaper, low-nitro fuels.

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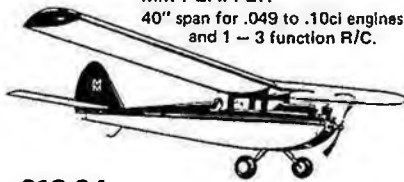
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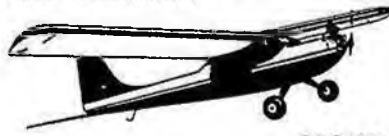
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CLUB NEWS

IN MANY WAYS the new technology is a great boon to us aeromodellers. To give an example, I was looking around the other day for a quick means of refurbishing a couple of somewhat faded and soiled tube type Wakefield fuselages and I found a suitable medium in a chance visit to a car spares shop: the rows of aerosol paint sprays in a wide variety of colours, and moderately priced. Two snags, though. On small or narrow components you get a lot of off spray wastage, and the contents of the aerosols are all too quickly depleted. Ideal for a quick, touch up job but not for extensive colouration.

Most newsletters are a bit on the lean side during the high holiday period, and the *Bourne Flyer*, the newsletter of the **Sittingbourne & DMAC** is no exception. At least we know that the Club Hut now looks resplendent in its newly painted condition, proof that members have other talents than model building. No doubt the decorating squad are the same dozen helpers who pitch in when there's work to be done. The Secretary may gripe about the lack of effort on the part of the other members, but he's lucky to have a whole dozen willing hands. I've known secretaries who have been veritable one-man-bands. But this raises the whole question of why people join clubs merely to make up the numbers, never to be seen on the flying field nor participating in club life in any way. One incentive to appear on the flying field though, is to romp about in one of the club's new Tee and Sweat shirts. Suitably emblazoned with the old flying gee gee (most people put their shirts on horses, not the other way round) and the legend 'Bourne Flyer'. An interesting letter from Brian Muir in Yugoslavia leaves you wondering how the East Europeans manage to produce such excellent model flyers in all spheres of the hobby when you cannot seem to obtain so much as a stick of balsa. Anyway, Brian's R/C Spitfire caused quite a stir, but finds himself starved of fuel.

A still briefer newsletter is *The Scimitar*, from the **Buckaneers Model Club**. It looks back, however, to a quite successful display season. These include demonstrations at Woburn Abbey, 3 hours continuous flying at a Cubs and Scouts Jamboree at Halton Camp, with Derek Giles doing the marathon commentary, and a static display at the RAF Stanbridge Carnival. The situation vis-a-vis flying at Woughton appears to remain sensitive, and the Milton Keynes District Council have been approached for a possible alternative site.

The **Leicester MAC**, like so many clubs with a strong R/C section, is all agog about the possibility of a new frequency allocation in the 35Mhz waveband, a subject discussed in the July bulletin. Not 'crystal' clear yet, but there does seem a strong possibility of putting a safe frequency gap between the precious models and the CB fun band. Members visiting Wymeswold in June for the R/C Power Scale Comp were impressed with both the vast number of entries and the quality of many of the participating craft. Winner was that fantastic four-engined Handley Page HP42 of Ted Heath-Robinson, now famous for fully functioning passengers' toilet. Flushed with success, you might say, but it is suggested that a cistern overflow was the cause of the crash which later wrote off the splendid model - water flooding the receiver! Another notable event in June was the **Leicester Modelling Association** Model Day at Anstey Martin School. But was it wet! It rained so hard that not even the boats would venture out. However, all was not lost, for there was a magnificent static display in the school hall, with non-stop rtp by way of animation. The heavens exhausted themselves in the early afternoon and the outdoor flying display finally got under way. It was the first aqua-gliding in Leicester history, whilst Roy Millward's WW1 Biplane looked really at home in the Somme-like conditions. Looking forward to the longer evenings, the club has one reserved for Modelling Techniques. New materials, new techniques and new systems seem to pile up on us these days, and we are often looking for expert advice on the new technology. To this end, the opportunity of putting your queries to



Gloucester Pine Holt Model Aeroplane Club keep children entertained during demonstrations they give on Saturday afternoons at local fetes and carnivals. Shows like this are excellent PR work for the aeromodelling movement, provided that demonstrations are carried out safely in adequate flying facilities.

experts in the various spheres does seem a good idea. Latest news on Wymeswold is that it may be okay up to the end of the year, but beyond that, the prospects are obscure.

Raffles are always a popular way of raising funds, and just now the **Hemel Hempstead MFC** is finding its monthly super raffles quite a draw, according to the club's August newsletter. Top prize is an R/C Power Kit, or something of a similar order. A big draw of another kind was the static and C/L display put on by the club at the Bovingdon School Craft and Hobby Fair. A big crowd came to view the models and watch the C/L section do its thing throughout the afternoon. An ironic note was struck when the organisers asked the flyers to 'make plenty of noise to attract the paying customers', particularly as this is in the middle of 'Bovingdon Action Group' country. Note on flying sites. Seems that Puttenham field may be okay for 'puttenham down' but not so good for 'puttenham up', for the take off surface is not all that it could be. Adding to the hazards are the roaming cattle which are no respecters of the line of flight.

A very short report from Jeff Smith, PRO of the **Wharfedale DAC**, merely reporting A Combat Comp at Dewsbury in July. Lack of advance publicity was responsible for a rather poor turn out—for some unknown reason it missed out on the usual publicity hand-outs. The event was for 2.5cc diesels to FAI rules. Winner was Peter Wyke of NACA.

Free flighting does not carry the same overheads, cost wise as well as machine wise, as Radio flying, which is why the yearly sub fee of the **Maidstone Free Flight Group** remains at the pre-inflation level of just one pound. This was agreed at the club AGM, reported in the July newsletter. The club flies at Mote Park, where power flying appears to be restricted to power assisted small gliders, and at the Area venue, the notorious, model-swallowing Ashdown Forest. However, it does disgorge some of its victims. The newsletter editor, M. B. Riggs, lost two Open Rubber models in dense trees, but a local smallholder found them very soon afterwards and phoned Mr Riggs' home. Two points here. If you lose a model, phone home first before leaving the site, and most local inhabitants are usually helpful when finding lost models—it is only that the 'black sheep' seem to get all the publicity. As the season

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progresses, the pace of RAFA Shield events hots up. The trophy is competed for concurrently in the Area F/F events, and just now Maidstone is battling it out for second place with Crawley. A big effort is called for at the fifth Area meeting.

In order to attract more people to the club flying site and to remind members that they are in this aeromodelling business to fly models, the **Three Kings Aeromodellers** are starting off their *Court Circular* newsletter with a list of appetite whetting forthcoming attractions. One such is a practical demonstration on remote operating of C/L devices such as flaps, undercars etc. Seems you need to go electronic if you want the luxuries that the radio boys enjoy, but just how signals are transmitted up and down the lines I'd like to know. Even hobby besotted aeromodellers are not quite oblivious to their surroundings, and it was a pleasant change from the rigours of the urban life for the members who went along to the beautiful grounds of the **Grantham Club's** local stately home, Belton House, to give a C/L demonstration. Mick Staples and Wal Cordwell supplied the Scale interest with an *Avro 504* and a *Heston Phoenix*. The other Scale entry (it was also a meeting as well as a display) was nicely finished *Stampe SV4*. They each got a prize, though, and the delight of operating off a cricket pitch (watch those out-swingers!). Back on the patch, conditions were somewhat improved with the motor bike and other invaders respecting the new council 'keep off' signs. This resulted in a lively session of C/L flying, with Wal Cordwell's new *Bristol Blenheim* given its maiden flight. Should be okay once the snags have been ironed out. Out and about again for a most enjoyable day at the Witham Gala to compete in the C/L Scale event. Not many entries but the standard was high. The 3 Ks did well here: 1st, 2nd and 4th. Models mentioned are Dave Kenny's *North American P-82 Twin Mustang* - twin Merco's throttle, flaps and a four wheeled u/cart, Mick Staples *Fokker D7* and Pete Miller's *B-17 Fortress*. The other event at Witham was Carrier for Profile and Scale. All the usual fun of the fair with *Seamews*, *Corsairs* etc, manoeuvring around for a hopeful hook up.

CAPTION CONTEST



SEPTEMBER WINNER - GILES HUNTER, BRISTOL

Our next report comes from Mr R. G. Harris, PRO and Major Domo of the **Debdenairs Model Flyers** of Loughton Hall, Essex. This is yet another club suffering from the summer doldrums; the loss of a few hardcore members has thrown some doubt on the club to maintain itself in the splendours of the Community Centre amenities. At least members have the use of a private flying ground somewhere in Essex, but why, oh why, will the odd maverick flyer jeopardise this hard won concession by flying over the farm cottages? Rupert Harris asks if we must have a book of rules when common sense should dictate the nature of the flying. In trying to build for the future, the club should be stocking up with junior members, but so far none to hand. Interest at the moment is F/F contest flying and R/C Soaring – the latter being the most suitable for the tree ringed flying field. Mostly the free flighters have been trying their hand at Bassingbourn, steadily gaining experience but, so far winning no laurels. New members are always welcome at the club's informal evenings on the 3rd Friday of each month at Loughton Hall, Rectory Lane, Loughton, where light refreshments or even a noggin can be enjoyed.

A quiet month, too, for the **Banbridge Aeromodelling Club** of Northern Ireland with so many members on holiday. This sabbatical trend is reflected in the thin content of the club's newsletter. Mostly the club activity is of the powered radio kind with plenty of interesting craft winging around the club field. One such is an 'Expo 80' with bomb doors fitted. Just the job for the public display, particularly as the children can be bombarded with sweets from above – or even flour bags if they give lots of agro. A recent highlight was the visit of Scale expert, Joe McCollum to the club. He brought along his **Volksplane V11** which, for constructional detail, is the last word in scale verisimilitude. Joe even moulds the wheel tyres himself, with pukka tread and maker's name. Members were treated to a film of the maiden flight in the projection room. It was hairy, but the model came down in one piece.

Your reports and newsletters welcome.

Clubman



September Issues Caption Challenge seems to have left many of our famed humourists speechless for once, but we had offerings including "I STILL DON'T SEE HOW IT MAKES OMELETTES" from A. Johnson of Attleborough, Norfolk; "DID HE GET HIS PRAYER WHEEL TO FLY?" by G. Robert, Durrington, Wilts; "IT MIGHT BE QUICK TO BUILD BUT WHICH WAY DID IT GO?" from Peter Bewes, Carnforth, Lancs. Geoff Gree of High Wycombe, Bucks., suggested "ON A GOOD DAY I CAN GET RADIO LUXEMBOURG!" and from M. Cooper of Loan Head, Midlothian, "... NOW I'LL NEVER GET THE MOWING FINISHED!"

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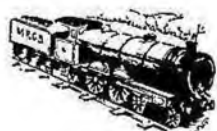
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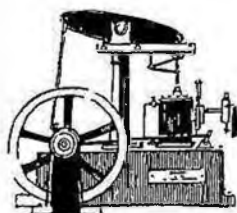


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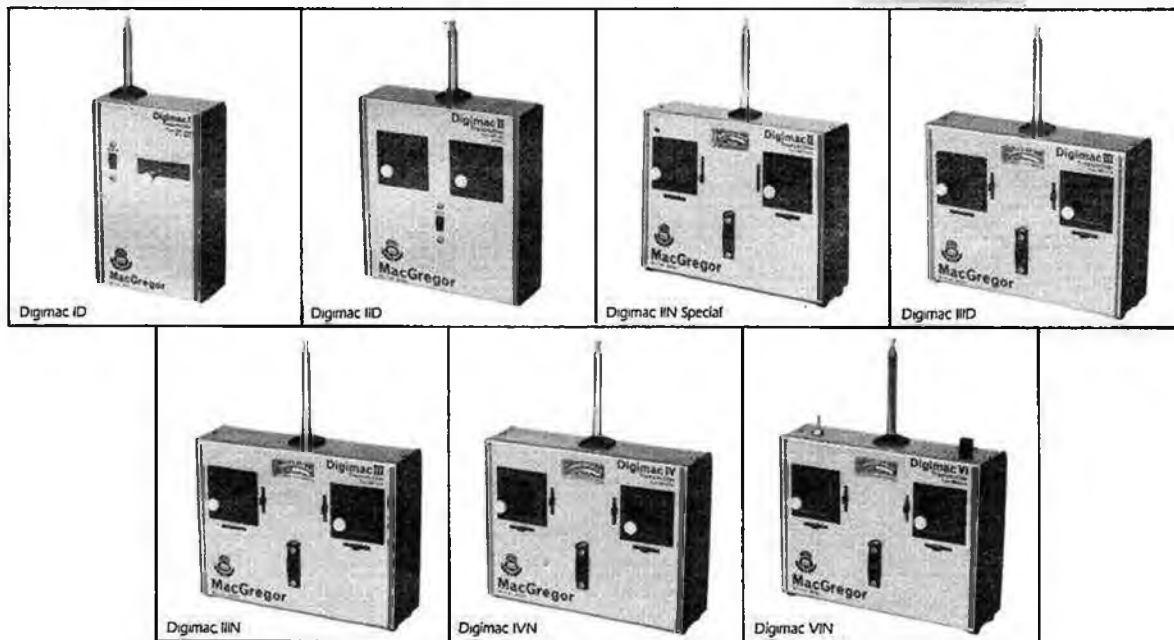
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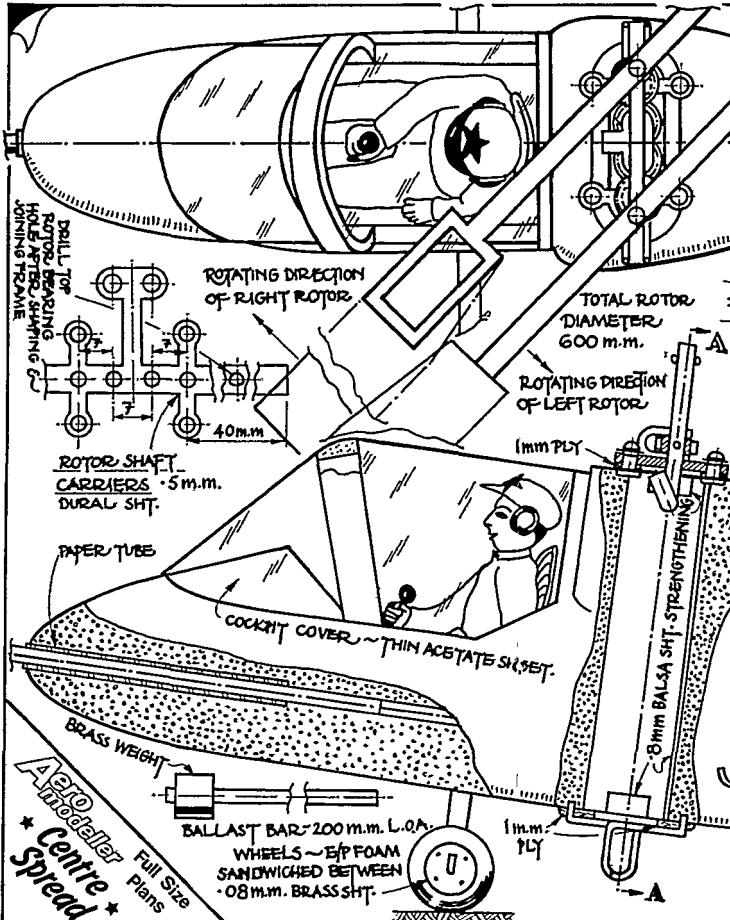
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DRILL TOP
ROTOR BEARING
HOLE AFTER SHAPING &
JOINING FRAME

ROTATING DIRECTION
OF RIGHT ROTOR

TOTAL ROTOR
DIAMETER
600 m.m.

ROTATING DIRECTION
OF LEFT ROTOR

ROTOR SHAFT
CARRIERS - 5 m.m.
DURAL SH.T.

PAPER TUBE

COCKPIT COVER - THIN ACETATE SH.T.

BRASS WEIGHT

BALLAST BAR - 200 m.m. L.O.A.

WHEELS - E/P FOAM
SANDWICHED BETWEEN
- 08 m.m. BRASS SH.T.

1 m.m.
PLY

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RIVET OR BOND &
EPOXY

2mm. BALSA
& BLADES

• 5 TO 1 M.M.
DURAL SH. —→
Ø .8 COPPER PIN

BLADE ANGLE OF ROTORS

PILOT FROM
E/P FOAM.-

WHEEL FIXING

FRONT VIEW

Ø-4 STEEL WIRE

5MM DURAL
SHT. UNDER-
CARRIAGE

FIN OUTLINE

SKID-THIN
E/P FOAM-

SECTION
A-A

BRASS GEARS

φ 2 m.m.
DURAL
WIRE
SHAFTS.

LINE OF
RUBBER
MOTORS
(4 STRANDS
4x1)

φ 7mm —
STEEL WIRE