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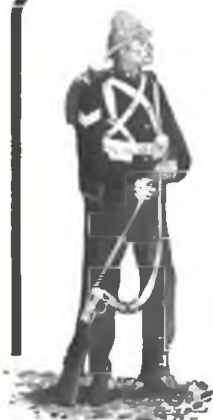
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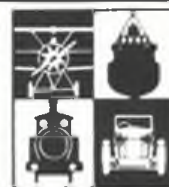
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MODELLER

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JANUARY 1984

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Cover

Action from 'Down Under' as Dick Johnson launches his free flight power model at the World Championships held at Goulburn Australia. Inset above is the triumphant British Team having just won the Team Award for F1A. Inset below John Watters with his attractive model of the DH Cirrus Moth, this month's full size free plan

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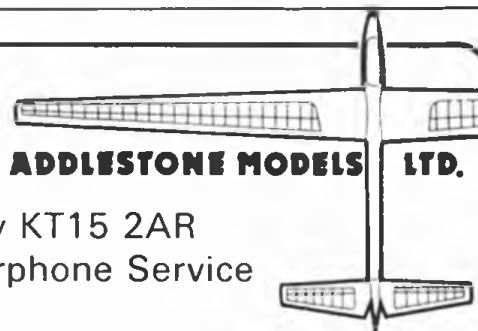
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Left: before the R/C Nationals 1983, heat of the Chuckie Championship - which of these youngsters will qualify for the final? Right: the winners of the National Supergloy Chuckie Championship 1983 with their prizes. Left to right: Robert Shipton aged eight, 2nd place. Paul Etherton aged nine, 1st place. Steven Johnstone aged 11, 4th place. Lee Dolby aged 12, 3rd place. Below: 'Christmas Hang Ups' by Royle, illustrated by Kenneth McDonough G.A.V.A. (see text).

Model Engineer Exhibition

As the new year dawns, that remarkable annual event for model makers, the Model Engineer Exhibition, will have already opened its doors to several thousand people. To be opened this year by Rear Admiral Sir John Woodward KCB, this exhibition represents many things to many different people. To some it is the opportunity to visit probably the greatest model shop in the world, to others it is the 'make or break' moment when they will find out if the model on which they have lavished so many hours or love, hate, toil, sweat, despair and hope has won one of the coveted prizes. Models of all shapes and sizes will be on display, from the smallest military masterpiece to those gigantic working scale models of yesterday's steam giants. It does not matter what your speciality may be, at Wembley Conference Centre between December 31 and January 8 YOU will find something to make your visit worthwhile. This column is really too small to list all the attractions but aeromodellers seem to be well served on the following dates:

Saturday December 31: All types of Round the Pole Flying in the Auditorium.

Sunday January 1 RTP (as above)

Monday January 2: Lecture on scale R/C aircraft by Dave Boddington.

Tuesday January 3 An introduction to aeromodelling by John Stroud and how to maintain R/C Equipment by Bill Burkinshaw

Thursday January 5: Indoor flying in the auditorium

Friday January 6: Indoor flying in the auditorium also lectures as above by Dave Boddington and John Stroud AND a history of indoor flying by Reg Parham.

If you are not able to make one of these days do not despair, there will be plenty for you to see and buy. Many useful tools are

to be found at the ME Exhibition that are not usually found in aeromodelling model shops. The model engineering section provides useful 'goodies' in the form of either materials or tools — don't miss it, make a date NOW

Where have all the circles gone?

After some issues in the recent past, one or two bold people have suggested that *Aeromodeller* has not had enough pages devoted to free flight — this issue could well result in similar letters from the control-line fanatics! Please do not worry, control-line is far from forgotten and will undoubtedly return like the proverbial boomerang in the future!

Christmas hang-up

No not the stocking at the end of your bed but Christmas cards for the aviation enthusiast! There is still time to send a few last minute cards — why not look out for the new series of famous pioneer flying machines by *Royle*. Each has a superb illustration by Kenneth McDonough G.A.V.A. (of past *Aeromodeller* covers fame). The back of each card gives a brief history of the original and also a three dimensional cut out model to build between eating mincepies and Christmas cake!

DPR Models Indoor Flying Day

On Sunday October 16 all but two of the 30 young finalists who qualified during the year for the *National Supergloy Chuckie Championship Finals* travelled to Milton Keynes from all over the country with their families and friends along for support.

Upon arrival each youngster received an exciting bag of goodies comprising a DPR 'Rare Bird' kit and a slot-together 'Superfighter,' an exclusive *Supergloy Chuckie Championship* T-Shirt and a selection of adhesives, a DPR



hat, poster and special badge.

Quite a few indoor enthusiasts took the opportunity to make use of the excellent facilities of the large hall and by the time the first competition for the youngsters started at 12 o'clock the air was full of models of all shapes and sizes from peanut to very large indoor scale models, lightweight rubber duration and high performance chuck gliders, as well as all the youngsters practising with their 'Chuckies' and 'Superfighters.'

The first competition of the day was the 'Superfighter' event for youngsters under 13 years of age using *DPR Models* slot-together 'Spitfire,' 'Me109' and 'Mustang' rubber powered aeroplanes. Not only did this provide an opportunity for any of the youngsters there to enter, as well as the finalists, it helped keep their precious 'Chuckies' in one piece until the finals at 2 o'clock, and also cleared the air to enable the older enthusiasts to trim out their more delicate creations!

Twenty eight youngsters took part and after a fly-off between Steven Nottingham and Peter Sillwood, the results were as follows:

1st. Steven Nottingham, age 9

from Peterborough who won the DPR 'Superfighter Trophy.' 2nd Peter Sillwood, age 12 from Bovingdon, Hemel Hempstead who received a DPR 'Winner' kit. 3rd Neil Godfrey, age 7 who received a DPR 'Tornado' kit.

National Supergloy Chuckie Championship Finals

The main event of the day started just after 2pm and after pre-flight briefings each of the youngsters had five flights with the best duration to score.

Right from the first round nine year old Paul Etherton from Sidcup, Kent set a very high standard with a 22 second flight, his 'Chuckie' glider climbing in a left spiral to just under the high ceiling and then dropping into a right hand turn on the glide, as for a classic demonstration flight. Two further flights of 20 seconds each confirmed that all his practice had paid off, and it soon became clear that the remainder were competing for the runners up prizes.

It seems significant that the younger lads did extremely well in this under 13 competition since Robert Shipton age eight from Peterborough narrowly beat 12 year old Lee Dolby from



Sheffield by only half a second in a fly off for second place, both having achieved a 15 second flight during the first five rounds. In fourth place Steven

Johnstone age 11 from St. Ives achieved a best flight of 14 seconds with youngest competitor Darren Bellworthy age six only two seconds behind.

Laurence Bagley

Talented aeronautical and marine artist, model designer and enthusiastic recorder of great historical occasions, Laurie Bagley died of a heart attack on October 22. His sudden demise at 61 robs the world of a specialist whose works have graced many publications, promoted countless prototypes and hang as prints or originals of merit to be enjoyed by all privileged to see them.

Long before he moved to his Gosport Studio, Laurie was engaged as a line artist with Model Aeronautical Press. His cutaway drawings became a prominent feature, developing a talent fostered at Airspeeds where he produced the definitive cutaway of the Horsa troop carrying a glider. Models, and model engines, even a prophetic gas turbine came off his board at Eaton Bray in those immediate

post-war years. He designed the flying scale models of the SPAD VIIIC and the Nieuport 17 which remain as popular today as they were 35 years ago. It was in the AEROMODELLER drawing office that he met Judy, his wife and fellow artist. Later, his particular skills appeared in a long series of two-colour covers through the '50s and '60s in MODEL MAKER, AEROMODELLER, and subsequently MODEL BOATS Laurie had a canny ability to add sparkle and movement. Only just recently, we commissioned him to paint an SE5a for the December issue of SCALE MODELS, a repeat of this subject from December '57 AEROMODELLER which was not lost to his many devotees and it was ironic that his last cover for MAP should be coming off the press just at the time of his death.

Our sympathies go to Judy, and their son and daughter.



Promotional poster design by Laurie from the 1950's when his work regularly graced the covers of Aeromodeller.

Twelve second flights were also achieved by Paul Carpenter age twelve, Peter Kelley age nine, Steven Nottingham age nine and nine year old Robert Young.

The final results were as follows:

1st place Paul Etherton, age nine from Kent, who qualified at the R/C National Championships at RAF Barkston Heath in August

In addition to the magnificent **Supergloy Chuckie** Championship Trophy, Paul received the new **Acoms** electric powered 61 in. wingspan 'Sirroco' motor glider, together with the latest **Acoms** three function radio control set with on/off motor relay facility and all the necessary rechargeable batteries and even the charger.

2nd place Robert Shipton, age eight, who qualified during the MAP holiday week at Primrose Valley, Filey, North Yorkshire in April. Robert received the latest Ripmax Futaba two function radio control outfit and a trophy provided by **DPR Models**

3rd place Lee Dolby, age 12, who qualified at the Free Flight National Championships at RAF Barkston Heath in May, won a **DPR Models** trophy and a **Micro Mold** 'Piper Cub' kit and Turbo Tank 3000 CO₂ motor

4th place Steven Johnstone, age eleven, who qualified at Plumpton Race Course in August, won a **Micro Mold** kit and a standard CO₂ motor.

Special awards of **Supergloy** hot weld guns were presented by **Henkel Chemicals** to the competition heat organisers in recognition of their efforts to make the competition successful.

Finally, we must mention John Viner, headteacher of Throwley CEP School at Faversham in Kent. Mrs. Viner travelled all the way from Kent to enable one of the youngsters who qualified in their competition heats to take part in the finals, after John had a motor cycle accident which prevented him from attending the competition himself. John had put in considerable effort in building and flying over 40 'Chuckie' models with youngsters from his school and surrounding areas.

John had also made the 'Chuckie Competition' the main event of the school fete, inviting other schools from the area to take part and make up a team. He contacted local papers and radio stations and even arranged for a fly-by with a full size glider.

Senior Chuckie Competition

The Senior Chuckie Competition for adults and over

12 year olds followed at around 4pm, and attracted 20 entries. The only rules were that the models had to be built from the **DPR** 'Chuckie' kit and must maintain the original outline! Some excellent flying produced the following results (best of three flights).

1st Place Mark Benns, 28 seconds (27, 26) who won the **DPR Models Senior 'Chuckie'** Trophy.

2nd Place Chas Campen, 27 seconds (24, 22) who won a 'Winner' kit. Both Mark and Chas built their models from kits purchased during the day and showed just what could be achieved!

3rd Place Rob Etherton (Paul's Dad — flying the same model!) 19 seconds (6, 7) Rob won a new 'Chuckie' so that he can try and beat Paul!

A good flying day was had by all, with no clashes between scale/duration enthusiasts who had held their own competitions, organised by Laurie Barr, and the youngsters

The **Supergloy Trophy** was presented to Paul Etherton by Ray Fifer of Henkel Chemicals, manufacturers of **Supergloy** Products, without whose assistance the Championship would not have been possible.

Also thanks to **Richard Kohntam Ltd, Ripmax Models** and **Micro Mold**, who provided superb prizes and the **SMAE** for their continued support and co-operation, particularly in providing the excellent facilities this year at both National Championships at RAF Barkston Heath.

It is the intention of **DPR Models** that the 'Chuckie Championship' will become an annual event, and next year may incorporate another age group for 13-16 years, with another Senior competition on the day. For all those wishing to take part or anyone wishing to receive details in due course, please write to **DPR Models**, Unit 9, The **Vanguards**, Shoeburyness, Essex SS3 9QY

What's On .

| | |
|------------|---|
| January 29 | NORTHERN AREA WINTER RALLY Venue: Church Fenton F.F.O.R. O.P.O. GL Vintage combined with R.C. Scale fly-in. Fly for fun aerobatics thermal event. Contact Dave Kerswell phone 0653 2580 |
| March 25 | F3-B & 100S 2 METRE TASK SCALE FLY IN FLY FOR FUN AEROBATICS Venue: Church Fenton Contact Dave Kerswell Phone 0653 2580 |



FREE-FLIGHT WORLD CHAMPIONSHIPS - 1983

Full report and results from Goulburn, Australia by Martyn Cowley

MUCH CONFUSION has arisen since Australia first made its proposal to host the 1984 Free-Flight World Championships. Offers from other countries, Argentina and Israel, were being considered and an offer from Austria was withdrawn after it had already been accepted! Final notification of Australia's selection left too little time to time-table the event early in '83, the preferred calm of the Australian Autumn. Instead, October was chosen, in order to give sufficient time for teams world-wide to prepare models and travel plans. A gamble was taken, that the changeable October Spring weather would favour a model flying Championships.

The huge continent of Australia suffers the disadvantage that modellers are spread thin over the huge land mass. So it was primarily a small group of very dedicated enthusiasts in New South Wales who carried the responsibility for staging the 1983 World FF Championship at Goulburn, situated 70 miles inland, mid-way between Sydney and Canberra.

The nearby Victorian F.F. Society hosted an FAI Open International at the field the week before, a very important feature which allowed visiting teams to acclimatise. Rather worryingly Saturday's events had been blown out by high winds.

But on the Monday the weather improved, producing two perfect days of model flying in which the U.S. team took six of the top nine placings in the three events!

It was inevitable when the Champs were known to be in Australia that this would not be a 'full event'. The difficulties of travel outside their own country made the appearance of Eastern Bloc countries seem unlikely. Surprisingly, even some European countries were not present, notably France and Denmark. With host Nations thin on the ground, there is no justification for not letting the Championships travel round the world, FAI Free-Flight is a global sport and international

airlines make travel easy if not inexpensive. 18 countries were represented at these Australian Championships.

The site was a broad expanse of short grass with a number of wire fences dividing up the land. The area has suffered from a five year drought, but recent rains now left the field dotted with soggy patches and a newly formed 'lake' of standing water in a low-lying area to the north.

The event got underway with processing on Thursday which proceeded with few problems. Friday, the day for the official opening ceremony dawned clear, bright and calm.



Heading: competitors from 18 nations line up for the opening ceremony to the 1983 F/F World Champs, at Goulburn. Below: the highly successful 'Poms.' Left to right: Brian Spooner F1B Bick Johnson F1C, Mick Howick F1B, Martin Dilly team manager, Martin Gregorie F1A, Stafford Screen F1C, Ivan Taylor F1B, Steve Philpott F1A, Andy Crisp F1A, and Ken Faux F1C. Above and right: the most important equipment on the field, organisers' wind speed meter could average readings of over 10 or 100 second period, often registered velocities in excess of FAI recommended limit of 10 metres/sec during contest.

The British fielded a strong team of seasoned competitors organised by hard working Martin Dilly, who for so many years has acted as New Zealand's team manager at distant Champs. The F1A Glider team comprised of Martin Gregorie, also usually associated with homeland team of New Zealand, Steve Philpott and Andy Crisp.

Andy was attending his third championships, stepping in for Biggles club-mate John Cooper, who was unable to attend. New faces in F1B were Mick Howick and Ivan Taylor, who joined Brian Spooner, each flying models representing their own individual approach to the Wakefield event. Brian was chosen to fly after Dave Hipperson and Laurie Burrows were unable to go. Potentially the strongest team was F1C power with Ken Faux (3 champs), Stafford Screen (4 champs) and Dick Johnson (2 champs) who took Ray Monk's place as he too was unable to attend.

Several teams benefited from sponsorship at this year's event and the British contingent were very pleased to have an excellent retrieval vehicle at their disposal, courtesy of Land Rover.

F1A Glider — Saturday Oct. 1st Round 1

The first round of any contest is always a proving ground for the organisers. Half an hour before the start, preparations were complete, with starting poles and timekeepers in evidence. The only problem was the early morning mist.

Very sensibly, Contest Director, Dave Simons,





Left: top British flyer in fifth place, Martin Gregorie only missed first round max, flying his distinctive short coupled 'Deta-G' nordic, the following week he made seven fly-off rounds at Sierra Cup! Right: Chinese team had excellent models, but again could not handle unfamiliar windy conditions, here team manager braces model as Cunzhi Lu prepares to fly, finishing fourth.



announced a hold, to allow the mist to clear. At 7.20 a.m. with conditions now perfect, a Green start signal flare was met with a round of applause. Almost immediately several models took to the air. Holland's Arno Hacken and Australia's Vin Morgan sampling the air, joined by Canadian Carl Schueler and Kai Sun of China.

Just five minutes into the round Arno found good air, followed soon after by America's Matt Gewain, launching into the same patch, while the Canadian stalled his launch badly. Meanwhile upwind Kai Sun launched alone and unnoticed, into another excellent piece of air. Arno's flight was the first max of the day — he caught it at 3:35, saying he always winds the time fully for such calm air, so he can enjoy the flight. Matt's flight was the 2nd max and the Chinese also caught his model at 3:45 to prevent it from landing in the wet grass. Italy's Paulo Sauve managed the first line cross of the day to take a second attempt of only 149 seconds.

First of the Brits to fly, Steve Philpott felt confident of his model's performance under these conditions, however a slip on the soggy ground robbed him of a decent launch and the model stalled badly on release as it failed to transition into the glide, scoring 2:41. Martin Gregorie started towing soon after and moved away downwind. Twenty minutes later he was still parked downwind having been joined by America's Jim Bradley.

With only 20 minutes still remaining, Peter DeBoer (Netherlands), who had been upwind keeping out of trouble found the first real thermal of the day, which naturally attracted many other flyers. Downwind Martin Gregorie was unable to centre on the lift, only recording 2:23, but Jim Bradley made no mistake, making 3 maxes for the U.S. team.

Now only five minutes remained and Andy Crisp was towing last to fly for Great Britain, with Ledocq (Belgium's only competitor) about to take his 2nd attempt. Australia's Col Colyer also on his 2nd attempt contacted a good thermal, which Andy also tried to work but tangled with Ledocq who released for 149 sec., while Andy towed in. Now he was in the hands of launcher Ivan Taylor who had to work very fast to free Andy's model and

prepare it for a re-fly. Only one minute remained as Ivan and Andy ran back to the launch pole. A tense moment for the British team. Andy had to tow up-and-off as fast as possible to even record a score. The model was released, the flight was on, only seconds later the red signal flare exploded alongside the model. Andy scored only 110 secs. Spirits were very low, there could hardly be a worse start to the Championships for the British.

The Yugoslavs achieved a full score, together with Australia and the United States, all other teams having dropped at least one flight. Of the 49 competitors only 24 maxed the first round.

Round 2

As the second round got underway, the real thermals of the day started up, and conditions began to look easy. Once again the three American flyers put in a solid performance, all scoring maxes. Local lad Col Colyer was the first Australian to drop with 99 secs., flying models based on Gerry Ritz's 'Continental', using undersurface sheeting and symmetrical tail section. The New Zealanders were also finding thermals elusive, Ian Weston making 90 sec. and Pete Wheeler just missed with 176 sec. The inquest on Gregorie's first flight suggested trim had changed during prolonged tow, altering both tow characteristic and glide circle. Changing to a reserve model cured the problem to score a max. Team-mates Philpott and Crisp also scoring maxes.

Already 60% of the competitors had dropped time in the opening two rounds, with 35 maxes scored in the second round. The United States and Yugoslavia led the team results with perfect scores.

Round 3

Before the start of this next round, the organisers announced a 10 minute hold, to allow them to move the starting pole line. This was re-positioned some distance sideways to avoid downwind trees as the breeze picked up, showing Contest Director, Dave Simons, was really on the ball.



Left: Matt Gewain's winning model, 'Pacer' features much use of carbon fibre structure reinforcing in wings plus Horejsi style timer delayed auto rudder. Right: proving the strong yet smooth wind was really no problem, Holland's ace flyer Peter DeBoer often towed for 20-30 minutes, note Dutch style mini-rod winch.



situation. Wings started breaking during tow at an increasing rate, while others released towlines or launched prematurely to save their models.

A change in flight tactics was evident with many choosing to wait on the ground for calm thermal patches, rather than risk extended towing. Thermister detectors started appearing, unusual for a glider event. Again the organisers were quick to prevent the positioning of equipment which might be in the way of others during tow.

Herbert Schmidt in the German Team for the 7th time was forced to use up-and-off tactics sooner than most. He had injured his ribs bouncing off a trampoline in Goulburn and was now unable to run without pain. Assisted by Lothar Doring, the reigning Wakefield Champion, who interpreted combined wind and temperature meters, he was putting together a solid string of maxes.

Australia's Paul Lagan, one of the few remaining with perfect scores, using the old 'AL-29' which had helped him place 3rd in '81 changed to a Mike Fantham 'Robin' design for his 4th max. Peter DeBoer kept his full house after an impressive 30 minute tow, proving the conditions were no problem if you had the right model. Matt Gewain maxed again and Jim Bradley, flying right at the end of the round just held towline altitude to keep his score intact for USA. No problems with the wind for the British lads, who were now feeling right at home scoring 3 more excellent maxes.

Yugoslavia were clearly dominating the event despite the wind, with Italy, Israel, Finland and Germany all less than 100 sec. behind. The round had been by no means unflyable with 36 maxes.

5th Round

Very sensibly the lunch break was shortened by 30 minutes, to make up for the delays earlier and bring the event back onto schedule. The windspeed during these later rounds was about 6-8 metres/sec., occasionally gusting to 9 metres/sec. — which is the new FAI limit. The organisers were again well prepared with a chart recording anemometer to document conditions, in case of protest.

Steve Philpott flew soon after lunch, his model failed to hook into the lift to score 2:48. Gregorie and Crisp made no mistakes with 3:00 each. With so many bad flights from other competitors, the British were in fact slowly climbing back up the result sheet, with Martin Gregorie now in the top ten!

The current Champion, Anton Vidensek (Yugoslavia), made what should be his only mistake — unlatching for a flight of 28 sec. Italy's M. Gobbo was just 12 sec. short of a max., but because Vidensek had also dropped, the Italian team now jumped ahead into top spot, together with Holland and Great Britain close behind in 3rd and 4th.

Jim Bradley was having difficulty towing and threw the line to take an attempt. On his second attempt his hook unlatched, forcing him to release for a disappointing 113 secs. Now only Matt Gewain was left 75 maxes one of the only 10 full scores remaining, after what was to prove the toughest round with only 21 maxes.

6th Round

As the Championships drew towards a conclusion, conditions were worsening. With the wind speed right up near the FAI limit of 9 metres/sec. the thermals were getting harder to find. Not a good round for Andy Crisp, who had been flying his trusty 66-inch span 'Flashback' and a newer model of Russian extraction, appropriately named 'Tchip Tchop'. He really came unstuck with a 1:32 but again Martin Gregorie maxed, and so too did Steve Philpott.

Only four flyers got their sixth max Brussolo of Italy, Gewain of U.S.A., Karanovic of Yugoslavia, and Lagan of Australia.

Opportunity suddenly opened for those who had only dropped a few seconds, to keep in the race with good flights. Chenzhi Lu (China) maxed to slip into 5th place followed by Martin Gregorie and Gobbo of Italy.

Team placings were now wide open, with Italy still on top, ahead of Yugoslavia, but now Great Britain and Germany were closing the gap.

7th Round

World Championships have the reputation of being decided by large fly-offs. In 1981 no-one reached the fly-off and again this year the chances looked remote. Conditions were very difficult and first Karanovic failed to find suitable air to land at 158 sec. Then Italy's last hope Brussolo dropped badly with just 88 seconds. But two flyers were not about to give up. Australia's Paul Lagan and America's Matt Gewain both found the lift they needed to finish up with the perfect seven maxes.

The top placings were secure with Karanovic unreachable in 3rd, Lu and Gregorie both maxed for 4th and 5th place.

The final round was a crucial one for the British — good solid maxing throughout the day had elevated them to third team place at the end of the sixth round, but with the Italians and Yugoslavs having made poor flights, the top team place was available only if the British could all score maxes. Philpott and Gregorie had maxed, so it was all up to Crisp to complete the victory. Choosing to use his third model, a brand new 'Tchip Tchop', Andy started towing, only to have the model veer off and tow into the ground. Now down to his last model, having also wrecked his 'Flashback' and his second attempt, he waited for a lull before launching. The air was very marginal with the model stubbornly hanging on at towline height for a couple of anxious minutes before climbing away for a max. They had done it — the British were FIA Team Glider Champions after a gap of almost two decades. The weather proved to be the nearest thing to an advantage that the Brits could have expected — if only the 1st round had been windy too!

Fly Off

Reminiscent of the showdown over the America's Cup only a few days earlier, this was to be a classic fly-off. Australia's Paul Lagan, a very experienced competitor over the years in a wide range of events, 3rd in '81 in FIA at Burgos, for New Zealand, 4th in FIB at Taft in '79, only recently nationalised as an Australian he was definitely on home territory now. Matt Gewain, top at the U.S. finals and attending his first World Championships, definitely the hottest flyer in the United States right now.

Both flyers were favourites to win!

Right at the 15 minute Start signal Lagan launched his 'Robin' and flew it kite backwards, with perfect control in the wind, running to a downwind position 100 yards behind Matt. 2½ mins. into the fly-off Matt started towing and by comparison was only just able to complete a circle despite running full speed towards his model.

With that unpleasant experience in mind, he decided to release as quickly as possible, leaving Lagan downwind in the perfect tactical position lined up on Matt's model as it glided towards him. As the model passed him below full line height, he lost interest and continued to tow. Then about 1½ mins. into the flight, Matt's model continued to hold altitude, and if anything, appeared to glide more strongly in improving air, now gaining height with just over 1½ min. to go seeming certain to do four minutes.

The pressure was now clearly on Lagan, as Matt's max was confirmed. But suddenly while still towing, Lagan unintentionally unlatched and now committed to release, lost his footing in the wet, allowing the model to fall off two just 8½ mins. into the round. Lagan's model progressively sank lower and lower, he was surely finished. The concentration and silence of competitors and spectators watching the flight was broken by the shout of 'We got ourselves a World Championship' from Roger Simpson, U.S. Team Manager. The crowd erupts. Matt Gewain has done it. He is the 1983 FIA World Champ.

F1B Rubber — Sun., October 2nd

The Wakefield Cup never made it to Australia. Tradition was broken in 1954, when for the first time an Australian, the late Alan King, had won the premiere model flying event. The Wakefield Cup. Up until then, the country of the winner would host the next World Championships, but Australia was too far to go! In fact even the trophy never made it home, due to a stop-over in England by the Champion. Similarly in 1958 when fellow Australian, Bond Baker won the Wakefield Cup, neither it nor the Championships made it to Australia.

Round 1

Conditions at the start of the opening round for the Wakefield F1B rubber powered event seemed ideal. Clear sunny skies and little wind heralded a prompt start, exactly on time at 7 a.m. However, earlier trimming flights had shown that wind speed at the top of the climb 200-300ft. up was considerably more, and models were already drifting a long way on quite modest flights.

No one was allowed to take the officially weighed 40gram rubber motors from the polystyrene storage chests, watched over by the timekeepers, until after the starting signal. Therefore, activity was slow to start with models or cartridge winding systems still being loaded in the first few minutes of the contest.

One of the first to launch, Great Britain's Ivan Taylor, had the disappointment of being clocked off at 2:59.26 and 2:58.67 on the two digital watches used by the time-keepers, this being averaged to 2:58. Although the French were not present their designs were, as Ivan favours the high aspect ratio solid balsa wings typified by the 'Ostrogoth'. He also uses 'Tommy' timers from plastic walking toys extended to run for 3min. plus.

Other early flyers were Yugoslavia's Kapetanovic, and Wenyi Zang from China (the latter's model featuring small vertical fins at each wingtip) both of whom made 180sec. with ease.

Ten minutes into the round and the U.S. team got off to a bad start. As George Schroedter launched his model, the wing caught on his team cap and it skewed at an angle. The flight tightened up to spiral in for 50 seconds. A most unlucky time for a one-in-a-million accident to happen. George was flying his 'Wake-Up' design, kitted by himself, but using a 7% undercambered wing, which he intends to offer as a contest option, as it consistently exceeds 4 mins. — hats permitting. Steve Beebe had no problems and Walt Ghio climbed away on a 48sec. prop run to fly for 4:37, being caught downwind by retrievers. Britain's other two Wakefield flyers, Mick Howick and Brian Spooner, had no problems with their flights, both recording maxes.

Now halfway through this first round, the breeze was already freshening and for those still to fly the task was getting harder.

In all 33 flyers maxed the first round from a field of 47. Top teams so far were Germany, Sweden, China, and Yugoslavia all with perfect 540 sec. totals. Defending Champion Lothar Doring flying in addition to the German team was also amongst those maxing.

Round 2

By the start of the second round it was already apparent that this would be a windy competition. Upwind aluminised Mylar Streamers, used to help pick thermals, stood out horizontal from a forest of 20ft high poles.

One of the more impressive models able to cope with these gusty conditions, was that of Bror Eimar (Sweden), a fast vertical climb sending him towards his second max. Team-mate Eric Hansson was less fortunate with 160 sec.

F1A Glider Individual Results

| | | | | | | | | | | Total |
|---|--------------|-----|------|-----|-----|-----|-----|-----|-----|-------|
| 1 | Gewain, M | USA | 1260 | | | | | | | 240 |
| 2 | Lagan, P | AUS | 1260 | | | | | | | 124 |
| 3 | Karanovic, M | YU | 180 | 180 | 180 | 180 | 180 | 180 | 180 | 1238 |
| 4 | Lu, C | CHN | 153 | 180 | 180 | 180 | 180 | 180 | 180 | 1233 |
| 5 | Gregorie, M | GB | 143 | 180 | 180 | 180 | 180 | 180 | 180 | 1223 |
| 6 | Strable, K | D | 142 | 180 | 180 | 180 | 180 | 168 | 180 | 1210 |
| 7 | Philpott, S | GB | 161 | 180 | 180 | 180 | 180 | 148 | 180 | 1209 |
| 7 | Schmidt, H | D | 180 | 180 | 180 | 180 | 180 | 180 | 129 | 1209 |
| 9 | Weiss, I | IS | 180 | 180 | 180 | 180 | 180 | 180 | 117 | 1197 |
| 9 | Wendel, B | S | 117 | 180 | 180 | 180 | 180 | 180 | 180 | 1197 |

A very good round for Taylor and Howick each scoring maxes, and an interesting flight for Brian Spooner when his model was attacked in mid-air by magpies, but it continued, to also max.

After a very promising start all three Yugoslavs were upset by the wind. Sinanagic with 132 sec., Kapetanovic with 170 and Jusufbasic with 166sec. to drop their team off the top spot, surprisingly only down to 4th place. Only 20 flyers were by now left with double maxes after this round that produced 26 three-minute flights, only China and Germany had full team scores with Great Britain in third just 2 seconds down after Taylor's flight.

Round 3

As the third round got under way the organisers anemometer was already registering gusts up to 8¹/₂ metres second. England's Brian Spooner, who at one time worked in Europe and flew with Reiner Hoffas, still prefers 'German style' models, came unstuck this round with a stalling flight of 126sec. to spoil his score. Mick Howick, then Britain's only remaining full house scorer, also made a bad flight of 82 seconds with his 54inch span conventional layout design. Only Ivan Taylor maxed, surprisingly his extreme 75inch span 'Thin Liz' had no problem with the windy conditions.

The Chinese were working very efficiently as a team, typically winding and launching immediately. When they decided to wait for more than a few minutes, a second flyer would prepare and wind a fresh motor, and if the first flyer had not launched, would take his place, ensuring they were always ready to fly freshly wound models. So far they led the team scores with only Guoca Wang missing a max this round with 123sec. Germany had lost their equal top spot when Busch scored only 79 sec.

A difficult round, with only 25 maxes, and the one that claimed Paul Lagan with 102sec. Argentina's top Wakefield flyer Arcangel Armesto flying the latest of his 'Chango' designs, scored 100sec. and Sweden's hopes faded with 115sec. for Eimar. Now only 12 full scores remained, including three Germans, Lothar not being on their team, Beebe and Ghio — U.S.A., Andrew and McGillivray — Canada, Zhang and Lu of China. New Zealand found itself in 3rd team place thanks to 3 maxes this round and U.S.A. was now 4th.

Round 4

It was still early in the day, but many eyes had been anxiously watching the official wind speed meter. This device could be set to average wind over 10 or 100 second periods, to damp out gust readings. No prescribed manner exists as yet in the FAI rule book. It was clear though, that which ever way one chose to interpret the figures, it was very windy — above 9 metres second in fact. Contest Director, Alan Edwards, called for a quick jury meeting where Gordon Burford, Ian Kaynes and Sandy Pimenoff agreed that the contest should be suspended, taking an option allowed for in the rule book.

Some 30 minutes later the worst of the wind had blown through, and the contest was resumed. Steve Beebe got away to an early max in strong lift proving at least the thermals had not deserted the flyers, but his model, like many others, was returned in pieces, damaged upon landing.

Once again the wind speed was increasing and was gusting to 10 metres/sec. but once in progress

a round cannot be interrupted.

Walt Ghio was late to fly in the round and made a quick launch soon after winding, as conditions appeared good. Alan, he went just too soon, Jack McGillivray, launching from the adjacent pole only seconds later, climbed out to great height, while poor Walt's flight was only 125sec. Herbert Chmelik from Austria was also now out of the running with 113sec. flying his Korean style models. The wind was proving difficult, all the British team dropped time, Howick 2:08, Spooner 2:9 and Taylor just a few seconds short at 2:57. However, under these conditions they did better than most other teams. Even the timekeepers were having a hard time trying to keep models in sight using binoculars!

The 24 maxes in the fourth round left only 8 full scores. Seasoned flyers Barnes and Malkin had dropped again and New Zealand disappeared from the top three without trace, to be replaced by Israel now in 3rd place and another good round for Great Britain brought them up to 4th just ahead of the United States. China still led, despite Jita Lu losing 18 seconds and Italy jumped from 7th place into 2nd, illustrating how open the contest had become in these conditions.

By the end of the fourth round the wind was consistently over 10 metres second — still not up to the old FAI standard! Good sense prevailed, as the jury stepped in and abandoned the contest for the day, announcing the event would be concluded the day after next, following the FIC power event.

This gave a definite advantage to the lucky 8 full scores, who could now return to the college to repair models and even contemplate further trimming flights before the contest resumed.

Round 5 — Tuesday, Oct. 4th

The final Tuesday, also scheduled as Prize-giving dawned very wet. Gone were the clear sunny skies, instead heavy clouds produced rain at regular intervals, the wind was mercifully light, but it was very cold and miserable. The only redeeming feature was that there appeared to be plenty of solid lift about from early in the morning.

Ivan Taylor was soon away with what looked like only a mediocre climb, but the glide notched into very solid lift to climb away for another max. Mick and Brian maxed also for a very satisfying if damp round.



Above: only the third competitor in history ever to win two consecutive F/F World Championships. German Lothar Doring showed complete mastery of the event in tricky conditions, again flying a Reiner Hoffas inspired 'Espada'. Left: official timekeeper checks Wewy Zang's model prior to flight, note unusual tin plates on wings. Team used 2 x 1mm rubber manufactured in China. Right: dramatic flight for Holland's Anselmo Zeri in closing minutes of last round secured second place, wings use invigorators as described in recent NFFS Symposium report

Steve Beebe had worked hard repairing his models and test flying, but his 5th round flight put him out of the running with 125sec. Only Walt Ghio who had been out since 5.30 a.m. trimming, maxed for U.S.A. this round. Canada's only full-house, Jack McGillivray landed 15 seconds short. He used a torque operated VIT and a vibrating elastic turbulator in front of the wing giving rise to the amusing name 'Whistler's Brother'.

Ossi Kilpelainen from Finland, flying a model featuring much use of composites, managed four maxes before scoring 156 seconds this round. The last remaining Chinese, Wewy Zhang, also dropped, scoring 164 sec. but they still remained firmly in command of the team spot. All the Italians maxed holding on to second place and all the British team maxed jumping into third, flying now in conditions just like back home! So only four competitors remained maxed out — Guzzetti of Italy and unbelievably three Germans, Silz, Klemke and Doring!

Round 6

The realisation that the bad weather was quickly diminishing the full scores gave fresh hope to those who would normally never have a second chance at a World Championships. Usually to fail even a single max is to finish outside the top twenty.

However, Britain's Ivan Taylor who had only 3 maxes on the score board was incredibly now in 5th position! Admittedly his mistakes had been small, just 2 and 3 seconds short in rounds 1 and 4. Flying at his first World Championship, Craig King from New Zealand found himself in 6th place, 11 secs. adrift and Holland's Anselmo Zeri was also there with a chance 13 seconds behind.

The top flyers were definitely under pressure, and they started to collapse. Bernd Silz fell apart with 89 seconds, Gunter Klemke made a more respectable 154 and L. Guzzetti managed just 116 seconds. Only one man kept his head — the 1981 Champion, Lothar Doring, the only competitor to get his 6th max.

Now the whole contest was up for grabs. Ivan Taylor made a bad mistake for 161 sec. and unfortunate Craig King fell back down the list with only 89sec. Only Anselmo consolidated his position with 180sec. as places were changing thick and fast. This was to prove the hardest round of the contest with only 19 maxes recorded, yet surprisingly the team placings remaining unchanged.

Round 7

It has been many years since the Wakefield Cup has been won without a fly-off. Already this was certain as only Lothar Doring had, up until then, preserved a perfect score. But being busy himself, and flying separately from his team, while also assisting them with thermal detecting, he was at this stage unaware of his own leading position.

At the start of round seven, Lothar was at his pole concentrating on the incoming information from his twin, wind and temperature thermal detector, which has served him so well. Choosing his moment in advance, he wound frantically, to be ready to launch as the thermal peaked. In the



F1C Power Individual Results

| | | | | | | | | | | Total |
|----|----------------|-----|------|-----|-----|-----|-----|-----|-----|-------|
| 1 | Lustrati, S. | I | 1260 | + | 240 | + | 254 | | | 1260 |
| 2 | Agren, G. | S | 1260 | + | 240 | + | 177 | | | 1260 |
| 3 | Venuti, G. | I | 1260 | + | 216 | | | | | 1260 |
| 4 | Achterberg, M. | USA | 1260 | + | 209 | | | | | 1260 |
| 5 | Chen, Z. | CHN | 180 | 180 | 180 | 180 | 180 | 171 | 180 | 1251 |
| 6 | Zito, M. | ARG | 180 | 180 | 180 | 166 | 180 | 180 | 174 | 1240 |
| 7 | Weston, I. | NZ | 180 | 180 | 180 | 180 | 180 | 180 | 147 | 1227 |
| 8 | Rocca, M. | I | 180 | 180 | 180 | 180 | 180 | 180 | 141 | 1221 |
| 8 | Velunsek, O. | YU | 180 | 180 | 180 | 180 | 180 | 141 | 180 | 1221 |
| 10 | Reda, S. | D | 180 | 180 | 180 | 171 | 146 | 180 | 179 | 1216 |

F1B Wakefield Individual Results

| | | | | | | | | | | | Total |
|----|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|------|-------|
| 1 | Doring, L. | W/C | 180 | 180 | 180 | 180 | 180 | 180 | 180 | 180 | 1260 |
| 2 | Zeri, A. | NL | 180 | 167 | 180 | 180 | 180 | 180 | 180 | 180 | 1247 |
| 3 | Klemke, G. | D | 180 | 180 | 180 | 180 | 180 | 154 | 180 | 1234 | |
| 4 | Lu, J. | CHN | 180 | 180 | 180 | 162 | 180 | 169 | 180 | 1231 | |
| 5 | Zhang, W. | CHN | 180 | 180 | 180 | 180 | 164 | 180 | 161 | 1226 | |
| 6 | Wang, G. | CHN | 180 | 180 | 123 | 180 | 180 | 180 | 180 | 1203 | |
| 7 | Kilpelainen, A. | FN | 180 | 180 | 180 | 180 | 156 | 180 | 146 | 1202 | |
| 8 | Chen, Z. | IS | 180 | 165 | 180 | 180 | 176 | 137 | 180 | 1198 | |
| 9 | McGillivray, J. | CDN | 180 | 180 | 180 | 180 | 165 | 180 | 110 | 1175 | |
| 9 | Spooner, B. | GB | 180 | 180 | 126 | 149 | 180 | 180 | 180 | 1175 | |
| 11 | Taylor, I. | GB | 178 | 180 | 180 | 177 | 180 | 161 | 117 | 1173 | |

generally soggy conditions his new 'Espada' model had become wet, and as he launched the solid balsa wings started fluttering as the model dived into the ground, breaking the tips.

Without hesitation Lothar reached for his spare model, waiting in an equal state of readiness, and within two minutes it was wound, launched and on its way to a convincing max. Lothar Doring was quite surprised and scarcely able to believe that he was already the 1983 F1B Wakefield World Champion. Only the third person in history to win at two consecutive Championships.

With first place secured, the battle was on for the remaining positions. At the start of the last round Anselmo was 2nd followed by McGillivray, Zhang and Kilpelainen. Zhang scored 161sec. and Kilpelainen 146 showing the event was by no means over yet! Jack McGillivray had changed models in the wet conditions, choosing one covered in Micafilm, which would be waterproof. It only managed 110secs. Meanwhile Gunter Klemke whose sixth round flight had dropped him to eighth place, scored a rare 180, putting him back in the running.

As all other places changed, one important flight was yet to be made. Anselmo Zeri, under the helpful guidance of Dutch Team manager Peter DeBoer stood alone on the line waiting to launch. Several good patches of air passed them by, with models appearing to climb well overhead — but they had to be certain. With only 20 minutes remaining it started to rain again, more heavily. Having held his motor now for some considerable time, Anselmo took this opportunity to change motors and rewind. Time was running out and eventually he launched. The climb was good and the conditions were moderate. It was probably the longest 180 seconds that any Dutchman can remember — Anselmo Zeri was 2nd. As other scores came in it was confirmed that Gunter Klemke had taken 3rd.

Britain had started the last round in 3rd place, just 15 seconds behind Italy. Cassi and Guzzetti both dropped their flights at 2:34 and 2:29, but the Brits too were in difficulty. Ivan Taylor, with high hopes of still finishing well up the list, misjudged his thermistor and could only manage 1:57. Brian Spooner scored a max but Mick Howick only did 2:40. The consolation was they held onto their 3rd team place.

Had Lothar been on the German Team, instead of flying individually they could have taken team prize too. As it was, the Chinese were convincing winners, having held top position unchallenged throughout the contest. Italy held onto 2nd place and Great Britain, having their best Champs for years, placed 3rd.

F1C Power, Mon. Oct. 3rd Round 1

After two days of increasing winds, which had interrupted the F1B event, Sunday dawned much calmer — the bad news was that it was raining! Low clouds covered the sky, and it was certain to be an unpleasant day. Once again though, the organisers opened the event exactly on time, and soon afterwards Rol Anderson put up one of the first maxes for U.S.A. Another early flight by Finland's R. Saukkonen had an off-tune motor producing poor altitude to score 96 secs.

In the F1C power event, making a 3-minute flight from a 7 second engine run is relatively easy, so naturally competitors were keen to make their flights before the thermals and down-draughts began. Many early flights had rough engine runs though, probably the result of the cold damp conditions, compared to the much different weather of the preceding practice days. Competitors often seemed unwilling to make ground runs to adjust and tune their engines

before committing their model to flight.

Ken Faux, first to fly for G.B. had a heart-stopping launch as his engine faltered with fuel surge, only to pick-up again and take him away for an opening max.

Canada's Frank Schlacta, was one of the first to overrun after a very shallow climb with modest bunt action used to push the model through into the glide. Sigfried Reda, veteran of many German Teams looked impressively on trim, so too did 1979 Champion Mario Rocco flying his new 'Modello No. 9' a large span model with five panel wing in his favourite egg box construction. Mario now uses a single blade folding propeller on his model which bunts into the glide with the application of down elevator as the motor cuts during transition.

Undoubtedly the most impressive single team this year was the Chinese, all flying near identical designs, with many machined parts in the fuselage assembly. Wings had aluminium surface balsa skin centre panels, with typically, built-up tips. Most used American made Nelson 15G motors with folding two blade props. Their climb patterns were uniformly straight up sometimes leaning left with a very reliable bunt into the glide.

Twenty-five minutes into the round two models were clocked off out of sight into clouds, with the team managers of Yugoslavia and Austria quick to protest the conditions. The rules clearly state timekeepers should allow 10 seconds for models to reappear before considering the flight terminated. However, with one event already suspended, and the likelihood of more bad weather on its way, the organisers faced a sticky decision as to whether or not they could even complete the event in the allotted time. Common sense prevailed and re-flights were allowed for both competitors — each of whom maxed.

A lot of mistakes were made in what by now was considered reasonably good weather, accounting for the sparse 26 maxes from the 41 contest flights at this stage. Full team scores from the strong Italian and Chinese teams together with Yugoslavia again starting well, and U.S.A. close behind just 3 seconds adrift.

Round 2

The weather was really no better at the start of the next round. Mike Achterberg was off downwind trimming his 3rd model, after his best one got waterlogged landing in standing water earlier. One of the new trends appears to be the growing use of single blade props mostly also folding. All the Japanese flyers were thus equipped.

Attending his first World Championships for Australia, Stewart Sherlock exhibited much individual creative thinking in his 'Joe Super Cool' models. Stewart's models have flood off, bunt, auto rudder, glide VIT, and wing wiggler with the pattern flying right during power, left on glide! He dropped 7 secs in the opening round but now got into his stride with a 180.

Then at 8.30 a.m., half-way through the second round, more models disappeared into clouds on glide and Zhijian Cheng's model went through the clouds during the seven second climb! The Championships were again interrupted by a jury decision and flyers took refuge as the rain came down harder.

Cheng's flight under 20sec. would get a reflight anyway, but the jury decided so too would Hans Lindholm, Sweden. Bill East, Australia and Rex Bain, New Zealand, all of whom were clocked off in lift.

Two and a half hours later the rain had stopped and the clouds lifted sufficiently to continue the event. The big concern now was if there would be enough time remaining to complete the contest. Despite the delays, the round proved to be the

easiest one of the day with 33 maxes. Easy, except for Stafford Screen, normally Britain's most consistent power flyer, who uncharacteristically went off pattern for 165sec. Top teams were still Italy, China and Yugoslavia all with perfect 1080's.

Round 3

By now the worst of the low clouds appeared to have gone and competitors could again worry less about conditions, and concentrate on their flying.

Again Stafford was way off pattern with his model going over the top and losing a lot of height transitioning into glide. Stafford had rebuilt his motor the night before, and the model now couldn't handle the extra power. This performance was most uncharacteristic for Stafford, whose reputation over the years has been one of super consistency. Again Faux and Johnson maxed, but Great Britain was now way out of the running in the team event.

Bill East was one of the originators of the Australian Championships idea, flying a very individual right, left pattern, now found himself out over 'the lake' following a wind shift, and at 1:36sec. discovered the true meaning of 'flood off' as his model splashed down. Only organisers totally prepared would have had a rubber dinghy on hand for such occasions — and they did!

Two more competitors to miss their maxes were German Dittmer Meissnest with 148sec. and Yugoslav Jenko Groselj with 129sec. Both these teams fell back letting U.S.A. into third place.

Round 4

Today there would be no lunch break, after the delays earlier the competition now continued uninterrupted. Frank Schlacta, previously on Canadian teams in '77 and '79 has been developing high aspect ratio designs which have over the years often let him down with poor flights, attributed to constructional problems. Moving the CG forward 10% to 55% and the introduction of a bunt mechanism now gave him better results, however, this round he narrowly missed by 3secs.

Stafford now changed to his hunter, which he had felt might not perform in the wind, but it flew just fine. At last a good, if unpleasant round for the British with maxes for Screen, Faux and Johnson.

By half-way through the round the rain had started again and many chose to fly on regardless. Sigi Reda dropped by 9 seconds and Argentina's number one power flyer over the years, Maurice Zito, now using Nelson 15G and Monoblade prop, failed by 14 seconds. Yugoslavia now had only one perfect score after Svetozar Jovin did 1:30secs.

Round 5

Since the last World Championships, the American made Nelson — 15G has become a more widely accepted alternative F1C motor, to the once dominant Rossi 15. One interesting new motor to appear this year was Canadian Dave Sugden's hand-made unit. It has long been a dream of Dave's to fly at a Championship using his own motors, but he admitted he used Rossi's this time as his engines need more development. He survived until the 5th round when a D.T. at the end of the climb put him out with a 45sec. flight.

Once again three more maxes for the British lads with Ken Faux now sitting on five maxes, one of the remaining 13 flyers with full scores.

Austria had only fielded two flyers, but up until now they both had maxed out. Werner Kraus, probably better known for his F1A ability, scored 110sec. Still dominating the event were the Italians and Chinese both still with full scores, and now Australia edged USA out of 3rd place after some consistent maxing from East, Sherlock and Hines, who uses semi-symmetrical tail and

Eppler 392 airfoil wing chosen after reading the Althaus low Reynolds number book. Stan is now contemplating asymmetric wing area instead of warps to control the climb. Interesting approach these Aussies have

Round 6

Wishing to waste no time at this stage, as one round ended the next began and going into the penultimate round, 13 full scores remained.

Now there was a problem for '79 Champ, Italy's Mario Rocca, whose new model was damaged landing downwind. He changed models and still managed to keep the Italian team score intact. Up until then the Chinese had also performed perfectly, but a bad mistake by Zhijian Chen, IT'd 9 seconds short. Ruiliang Feng, their youngest competitor at 22 years old, rolled left during climb, stalled after the bunt, and with not enough height remaining he scored 127sec. Another good round for the U.S. however, with all maxes, taking them into 3rd place again ahead of Australia, as Stan Hines drops another 10 seconds.

Our hopes now rested firmly with Ken Faux, who has put in many winning performances at recent Internationals in Europe. Unfortunately this round was to be his undoing with a left launch and terrible upside-down looping pull out leaving him no altitude to score only 46 seconds. Dick Johnson also dropped another 12 sec. and only Stafford maxed. Austria's hopes also faded with Reinhardt Truppe's equally bad 25sec. and Yugoslav Oton Velunsek dropping with 141sec.

A hard round with only 23 maxes. Now only eight competitors remained with a chance of reaching a fly-off. There almost seemed a remote chance for other high scores, Sherlock 7 seconds down, Chen 9 seconds and Zito 14 seconds behind.

Round 7

Once again the weather appeared more threatening, and competitors were anxious to get their flights over with as soon as possible.

New Zealand's Ian Weston, who flew using his own Weston Flett plunger type propeller brake, which is made in small numbers, missed a chance in the fly off by 33 seconds. Mario Rocca too, ended his chance with a 141sec. Hans Landholm, one of Model Flying's unique characters and top Swedish power flyer, also disappointingly dropped time, scoring 114sec. China's last remaining full score, Zhixi Wang, had a terrible upside down pattern and only managed 72 seconds.

The other two Italians, Giorgio Vernuti and veteran flyer Silvano Lustrati made seven maxes, so too did Sweden's other hope Gunnar Agren.

In the US Team, Mike Achterberg flying with all maxes so far, made a terrible launch; the model racing away flat to the right with an 8.2sec. over run.

With only 20 minutes remaining he hurriedly assembled his spare, while downwind, retrievers raced to get his best model back. Norm Poti still had to fly, and then the rain and wind really started up. The next ten minutes were incredible with competitors trying to make preparations, lashed by rain and wind as team-mates tried to

protect them with tarpaulins flapping loudly in the wind.

US team manager, Roger Simpson, requested Contest Director, Dave Thomas, to interrupt the event as the wind was again over 10m/sec. and visibility was understandably poor. The jury had already decided to halt proceedings, when both rain and wind died down again.

Quickly Norm Poti flew and maxed and with little time left, Mike reflew with his original model. Again the launch was bad, but the air saved him — he was to join the three others in a fly off. A triple max for US in the seventh round lifted them into 2nd Team Prize ahead of China with Italy unquestionably Champions, having placed in the top three in all the classes.

A final round of three maxes was little help to the British team who finished 6th overall, in an event in which we might have hoped for much more.

Once again the rain returned and this time the organisers called a halt. The fly-offs would be decided the following morning with the last half of F1B.

4 Minute Fly-Off

The remaining four competitors in the F1C fly-off were indeed fortunate to have had all night to get themselves prepared. The weather, though overcast and wet was certainly better than they would have faced the previous evening, and trimming flights by other F1B competitors showed there to be little to be gained.

At 7.25 a.m. in light drizzle, the fly off period got underway. Mike Achterberg was quick to start up, but again made a mess of launching his model, which went flat and over ran. As it turned out, the air was good enough to take the model away for what would have been a max, forcing him to use his reserve. Immediately starting his other model he had another indifferent flight, with the model stalling on the glide after a 5.9sec. run, but again good air saved him from what might have been a 1' min. flight. Then Venuti launched into a brilliant vertical pattern, half a roll and the model bunted away downwind, to great cheers. Agren started up, and flew a much slower but safe corkscrew pattern — even more enthusiastic cheers followed as it transitioned smoothly into its glide. Lustrati prepared — another very fast Italian climb, with a good bunt into the glide to more applause. All three models glided away downwind, separated by perhaps half a minute each. Venuti 2 minutes into his flight, the Swede gaining height in lift, and Lustrati also very high. Scores came in, Achterberg was out with 3:39, so too was Venuti with 3:35, but both Agren and Lustrati made 4 minute maximums.

5 Minute Fly-off

At 9.10a.m. the five minute max fly-off round was opened. Five minutes elapsed and Silvano Lustrati fired up his engine, concentrated on the conditions and launched. A truly immaculate climb, vertical with slight roll to the right, bunting perfectly into the glide — 6.8sec. engine run. Already Gunnar had his motor running, having decided to fly in the same air. By comparison his climb was slow, and he transitioned to glide at

perhaps only half the height, his model relying on a superior glide. Both competitors were applauded truly a tortoise and hare situation, loud cheering out as Gunnar's model started bumping into lift — could he catch the Italian? All eyes watched the flight's progress, but five minutes is a long time and soon Gunnar's model landed at 2.57 making Silvano Lustrati the 1983 F1C World Champion with a final flight time of 4:14, a worthy winner.

Close Out

And so another World Free Flight Championships drew to a close, certainly one of the toughest competitions for many years with organisers, participants and those not to be forgotten supporters and retrievers downwind, having to contend with some pretty rough, demanding conditions.

It was a Championships that proved emphatically just how weather dependent our Free Flight FAI classes are. Considering the conditions that prevailed, the organisers are to be congratulated for even completing the event timetable in such unfavourable weather.

As modellers once more dispersed around the world, what lessons have been learned? Certainly competitors must have with them a range of models, able to cope with all weather conditions. Calm conditions can be as unfamiliar to some nations as wind obviously was to some others at this event. A new FAI rule proposal allowing for models should in future ease the problem of which models to process.

We learned that you cannot blame the organisers for the weather conditions, but to be constructive for the future, every opportunity should be taken beforehand to ensure the highest statistical probability of fair weather at Championships. As it was, the final prizegiving day had to be used in order to complete the event.

As a suggestion, future Champs could expand to a six day programme, allowing greater flexibility in case of bad weather. The extra days, as needed, could profitably be spent on symposiums to exchange technology, taking advantage of this unique, bi-annual gathering of top Free Flighters.

In conclusion, we hope the real benefit remains with the grass roots modellers of the host nation who otherwise would never get to see or meet model flyers of this calibre, and hope that it inspires them to take up the eternal challenge of Free Flight.

To all the 1983 Champions — Matt Gewan F1F, Lothar Doring F1B, Silvano Lustrati F1C, our congratulations. Free Flight Forever!



Right elegant engine cowling, in the Italian tradition for fine craftsmanship, from new champion Lustrati. Very impressive model drew applause in fly-offs for tremendous climb and bunt transition into climb. Left Champion in '79 Mario Rocca would have made fly-offs but for time lost in last round, his new 'modello No. 9' was damaged landing in the fifth round.



Team results

| | | | | | | |
|-----------------|------|--|---------------|------|---------------|------|
| F1A | | | F1B | | F1C | |
| 1 Great Britain | 3534 | | China | 3659 | Italy | 3741 |
| 2 Yugoslavia | 3515 | | Italy | 3479 | USA | 3662 |
| 3 Italy | 3468 | | Great Britain | 3438 | China | 3610 |
| | | | | | Great Britain | 3497 |

Transfers

Well, I suppose that it had to happen! Following my description of period transfers in the August 1983 issue, Keith Harris was quick to buttonhole me at the SVAS Meeting on 17th July to point out that the first issues of the NGA transfers bore the legend 'Volas Cum Cura'. I had been aware of this, but thought to simplify my brief explanation by using 'Vola Cum Cura', which was the Guild motto used for most of the life span of the NGA/NGM. Now reader Ronald Fielding of Rochdale has sent in a detailed description, backed up by his own membership cards, that show 'Volas Cum Cura' was used from the inception of the scheme until sometime (possibly January/February) in 1942, when the 's' was dropped. Why this change was made is not known, possibly a Latin scholar will enlighten us on the difference between 'Vola' and 'Volas'. Modellers re-creating a 1939/1942 model would be 100% authentic in using the original motto, it being a simple matter to add the missing 's' if using a post 1942 transfer or one of the replica NGA transfers currently available.



Vintage Scots

Bruce Duncan sends details of a vintage meeting held at Montrose at the beginning of last summer. The turnout was reduced by poor weather but Bill Waddel was able to undertake long flights with his blue and white R/C 'Powerhouse' fitted with an OS 80, and a 'Junior 60', now on its third covering decorated with Swedish markings also braved the elements. Rubber models predominated and amongst the best flyers was the ever popular 'Ajax' and Bill Watson's replica of Ian Lucas' 'Diasphere'. Ian Granger flew a 'Mick Farthing' glider and

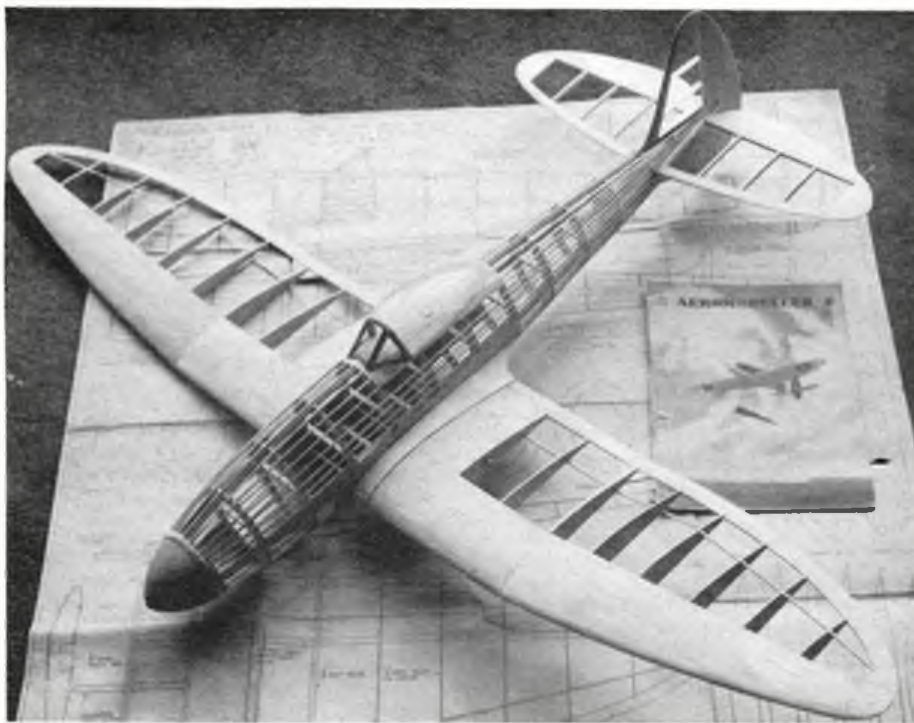
Chic Davis fielded a 'Gosling Baby Gull'. Bruce hopes that future meetings will be blessed with better weather. To show that the weather North of the border is not always inclement, good conditions were experienced by George Blair during the outings mentioned below.

Some weeks ago I found myself in Edinburgh with a spare evening and contacted George who suggested that he pick me up from my hotel and take me flying. There followed an enjoyable session in the Pentland Hills near Balerno flying George's 1.3 Mills Mk. I powered 'Answer'. The trimming flights eventually ended in a tree but a glider tow-line (always carried in George's car boot) enabled the model to be retrieved without damage with the help of fellow enthusiast Jim Nelson. In a recent letter George mentions that the model is insensitive to rudder, possibly because of that forward C.L.A. but is enthusiastic about the excellent glide of the Ritz wing, which I witnessed. He also told me about an earlier adventure and writes: "... I had been flying in a Free Flight power competition at Newbiggin on a glorious day. Later in the afternoon I started flying the 'Answer'. It was about time to leave for home but I just had to have that last flight. Of course, it hooked a

thermal and disappeared OOS on the binoculars after about 10 minutes! There was no way that I was going to find it so I headed for home, hoping that some honest local would find it. I was lucky, two days later I got a phone call from a farmer... the model had flown six miles! Makes me think that there is a cause for fitting a DT even on a model like this."

Fly-away

G. W. W. Harris was flying his 'Igo' glider (plan available from MAP as G/222X price £2.10 plus 50p postage) in the Weston Cup from Epsom Downs on 14th May 1944 when his model disappeared OOS. His official time of 18 minutes 49.4 seconds gave him second place and a few days later he received the following letter from two members of the WAAF stationed on the



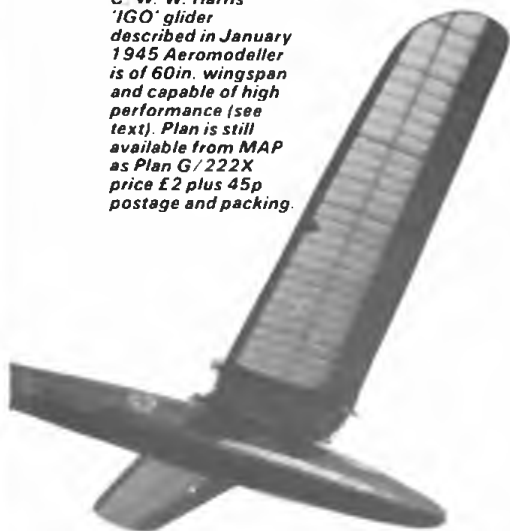
Above left: layout of the original NGA transfer which was issued from January 1939 until January 1942 (see text which corrects my comments made in the August 1983 issue). Above Derek Ridley posed and photographed this attractive arrangement of the 42in. wingspan 'Fighter Glider' that was described in January 1945 Aeromodeller. Plan is still available from MAP as G/107X price £1.50 plus 45p postage and packing. Left: members of the Lancashire Model Aircraft Society, Whitfield near Manchester, 1936/37. The combined efforts of Messrs Sawyer and Smith has resulted in almost complete identification of this historic group. Left to right H. Holbrook, Jeff Monk, N. H. Sawyer, C. S. Rushbrooke, C. A. Ewart, Phil Smith. '?' Can any reader confirm the date and the name of the modeller on the right?



Royal Air Force aerodrome at Ford in Sussex, it read:

"Your model plane landed on this aerodrome at 8.15 this evening. We watched it make a perfect landing from the window of our billet, it is quite intact apart from a small tear on the wing. If you will forward instructions as to how we may dismantle it and pack it, we will be delighted to return it to you as soon as possible. We may add that it was a great thrill when we saw it hovering

C. W. W. Harris'
'IGO' glider
described in *January 1945 Aeromodeller* is of 60in. wingspan and capable of high performance (see text). Plan is still available from MAP as Plan G/222X price £2 plus 45p postage and packing.



in the air, the birds flew around it in great numbers, wondering what it was. A local policeman tried to confiscate it, but we would not let him, of course. We shall be most interested to hear, how long it had taken for its journey."

The letter was signed by 457811 LACW Cristine Stanley-Hughes and 433637 Corporal Pauline White. The model had been launched in windy conditions around 5.30pm, so its total elapsed time to cover the 34 miles straight line distance was some two and three quarter hours. On another occasion this machine covered the 88 miles straight line distance from Epsom to Melbury Abbas near Shaftesbury in an unknown time.

Nocturnal Wakefield

The sight of Bob Copland rebuilding Ken Young's fuselage at the 1947 Irish Nationals (photograph in September 1983 issue) caused Phil Smith to relate some adventures of his Wakefield 'Contender' designed by Lockton Park and described in March 1939 *Air Trails*. "... That was the day I lost my own model in a thermal, a Lockton Park (USA) very high aspect ratio Wakefield, after a de-thermaliser failure. The model was found several months later in the central hills of Ireland, but I never did get it back, nor the motor of 26 strands of genuine pre-war MRL brown rubber (1/8) that I imported from America about 1936. The

model was the most remarkable flyer I ever came across and on one occasion, whilst testing at Eaton Bray (when I worked there), I launched it on a late evening trimming flight in very warm still air. Naturally I never thought of the de-thermaliser! It went straight up through the cloud layer OOS. It was seen descending next morning about 9.30 by a policeman's wife at Cheddington, Beds, when it flew into a row of French poplars in the field opposite the police station. There had been tremendous heat all day, so the model must have been sucked right up into the upper stratas in the atmosphere, 30 to 40 thousand feet, until the layers cooled and it commenced the long glide down. This model had an aspect ratio of 18 to 1 and used the Clipper section NACA 6412, the best section ever evolved for thermal work! I am determined to build a replica one day! Roll on some spare time!"

Electric Brigadier

Jack Hardwicke of Enfield is mainly interested in Radio Assist, but like many other modellers has become hooked on electric power and has built a *Berkeley 'Brigadier'* so powered, but is perplexed at the differences that he sees in the other 'Brigadiers' around. This model was designed by Bill Effinger for beginners, and it was its simple construction that caused it to be accepted by the Air Youth of America late in 1941. Since the time when this 58in. span Class 'B' model was flown free flight with engines like the *Ohlsson 23*, various plans for it have emerged that claim that they are based on the original. Doubtless this is so but structural differences are apparent on almost all these drawings, changes obviously made due to the personal whim of the respective draughtsman/modeller, and the only sure way to ensure 100% accuracy is to build from an original *Berkeley* plan.

Jack made the Electric 'Brigadier' described by Mitch Poling in the *Model Builder* magazine for September 1982, and offers the following tips for any modeller building this particular version. He writes: "... Apparently the model will easily come out tail heavy, since it has a very short nose. Use only 8lb. wood except for longerons (12lb.) and the spruce fin-post. Go lighter still where you dare, but the 1/4in. spruce short top longerons under the wing are a

Right: the late Norman Lane, a regular attender at all our vintage meetings will be sadly missed. Norman, who collapsed and died at Old Warden on July 17, 1983 at the SVAS meeting, is seen here with his 42in. span Mills powered Southern Dragon. Below right: Chic Davies dwarfs his Baby Gull Glider, the smallest version of the well known vintage design by R. F. L. Gosling.



Below: Forty seven years on! Four members of the 1936 British Wakefield Team together again at Old Warden on Vintage Day. Left to right, Alwyn Greenhalgh, Bert Judge, Bob Copeland and Dennis Fairlie, all regular attenders at our flying meetings.



VINTAGE CORNER

good idea. I used snakes in tubes because when I made up push rods I felt that all that ironmongery at the back end was wrong (it's quite a long piece of wire for the rudder), closed loop would be even better I am sure. My model has the *Hummingbird* '20' in an ivory board (printers top quality menu card) tube at the nose with eight 1.2A Hour cells piled vertically immediately behind the firewall undercarriage mount. The undercarriage plugs into a ply and spruce box (as on the 'Tomboy' plan). I have then got 225 mA Hour radio battery, two standard servos in balsa ply faced tray and 'push on - push off' switch (worked by down elevator) all as close up as possible. Finally at the rear of the cabin, wrapped in foam, (under the snakes) is the lightest item of all, the receiver. It was not necessary to add ballast to make the model balance at the spar (about 3in. back from the leading edge) ... The 'Brigadier' has only put in some 15 flights to date, we get 6-8 minutes each time and it climbs very high (the flying is done by Jack's son who is used to gliders). With the wing loading of around 11lb. per sq. ft. there is not much trouble with penetration but the landing approach has to be right first time and stalling speed is about 20mph. To date we have had four good landings, on the wheels without bending the undercarriage ... it is great fun and as far as I am concerned truly an Old Timer that is silent enough for me to fly out of my local recreation ground without anyone realising it is not a glider!" Jack also comments on the improved performance from using a 7 x 4 propeller instead of the 8 x 4 specified, he has fitted riblets and uses sandwiched nylon ribbon for hinging the control surfaces.

Readers' Letters

Mention of Ernst Schlachter's auto foam spray for engine cleaning causes Ron Palmer of Eaton Bray to tell us that he uses *Amuacay* 'Industromight' diluted 1 to 4 for this purpose to good effect.

One of the readers who sent in a copy of the heading photograph was N. H. Sawyer of King's Lynn (the other was Phil Smith) who writes: "It had been about 40 years since I bought a copy of *Aeromodeller*. Thumbing through the pages of your August issue I was pulled up short by the picture of the replica of C. S. Rushbrooke's 'Mayfly II', which I recognised immediately. I enclose a photograph of a group of Lancashire Model Aircraft Society members showing 'Rushy' holding the original 'Mayfly II' ... It is worth noting what the well dressed model aircraft enthusiast wore at the time!"

Another modeller who has built Ian Lucas' 'Diasphere' is Ron Randall from Coventry, whose letter contains some interesting thoughts on propellers he writes: "... one thing about it that gives me great pleasure is the particular airscrew used, as you will see, it is of the 'Chauviere' type and whether or not it is considered appropriate to this model must I suppose, be a matter of personal opinion. They were advertised as being suitable for lightly loaded duration models and it is certainly contemporary with the first 'Diasphere' that I built circa 1941. It was bought off the shelf, as of course, were all hardwood airscrews at that time, for about four shillings (20p). Each time I handle it however, I never cease to marvel at the beautiful workmanship of this

artefact, so delicately carved by the hand of some unknown craftsman in doubtless primitive conditions in a far off country. He probably received a mere pittance for mass producing by hand an article, which as an ordinary modeller, I could not possibly hope to match. Rather sad in a way that he should be unknown and unrecognised, and I, all these years later should derive such pleasure from his work. How lucky we were once in this respect! This airscrew, like quite a few others I have, was bought by mail order from J. W. Kenworthy of Bourne-mouth and what a range of types he stocked! Half a dozen different styles, different shapes and widths of blade, even two and three bladed variable-pitch 'Roto' types, in all diameters from 5in. to 18in., a veritable *treasure trove* of airscrews! Contrast this with the visit I made to my local model shop recently. I selected a 12in. length of balsa block in order to carve the airscrew for my latest vintage project. "What on earth do you want that for?" asked the proprietor. "To carve an airscrew" ... *carve an airscrew?* I've got some lovely 12in. plastic props here!" Philistine! *Plastic* airscrews on vintage models, indeed! This does however, raise an interesting point. Whilst most vintage plans provide details of block sizes for carving an airscrew, certain models (i.e.

'Diasphere', 'Condor', 'Clipper', *Club* and *Veron* models, etc.) simply specify, an 'X' diameter and 'Y' pitch propeller on the natural assumption that you just pop down to your local model shop and purchase the requisite item. Now that we are limited to plastic propellers, does this mean that the truly representative replica of this type of model is, rather like the *Brown* 'Junior' engine situation, limited in number solely by the quantity of original type airscrews which are surviving?"

Help Required

Despite earlier appeals in this column for the loan of historical material, including plans and photographs, in order to document the early days of the hobby, the response has been very low. Especially required is the information on petrol-engined models like B. Stalham's 'Peggy', J. W. Bishop's 'Lonehand', 'Endeavour' and large autogiro, as well as designs by B. K. Johnson, J. B. Allman and R. J. Trevithick. Also required is information on lesser known models of later vintage, including, as mentioned elsewhere, Bill Lunn's 'Premier Pacemaker' also 44in. 'Hoho' by G. W. W. Harris. Any material loaned will be handled carefully and returned as soon as possible.



Above: George Blair of Edinburgh built this fine Mills 1.3 powered Answer, designed by George Murray (another Scot!) that was described in *Model Airplane News* August 1940 and in the currently available book, *Air Age Gas Models*. Right: attractive black and yellow example of Ian Lucas' Diasphere built by Ron Randall from Coventry, is fitted with an "SO" wide blade HO-wood Chauviere propeller. Below: Electric Brigadier made from Mitch Poling's description in *Model Builder*, September 1982, by Jack Hardwicke from Enfield.



A BEGINNERS GUIDE TO FREE FLIGHT SCALE

PART 1

BY BILL DENNIS

THIS SERIES OF ARTICLES is aimed at helping the beginner to get started in F/F scale and hopefully avoid the many pitfalls that lie in wait to trip him up. My qualifications for handing out all this advice over the next few months are that I must have made just about all the mistakes that it is possible to make, and so have learned from them!

Like many people I began and nearly finished my aeromodelling career with the *Keil Kraft* and *Veron* range of rubber power scale models. I specialised in the biplanes and at the time I thought they were the last word in realism — remember those silly plastic wheels that served everything from a 'Camel' to a 'Spitfire'? Of course the real kiss of death was that plastic propeller that whizzed down in about ten seconds. If the model hit the ground more than 20ft. away I felt I was doing well.

The second false start came a few years later with an old *APS* design, the *RE8*, with a *Frog 100* up front. Again, I thought it was magnificent but looking back at it now, any resemblance to an *RE8* is purely accidental. It flew moderately well but each landing resulted in damage and a half hour's worth of re-rigging. Again, I gave up F/F scale as being impractical.

The turning point came in the early 70's when Eric Coates wrote his series of articles in *Aeromodeller* and revealed how F/F scale models could be made to look realistic, fly

well, and be resilient enough to give years of flying, rather than seconds. Following Eric's constructional techniques, I modified the *APS BE2e* and met with instant success, placing second (by a considerable margin) to Terry Manley's *DH4* at the 1974 Nationals.

When the editor asked me to write this feature I was initially doubtful, until I realised that Eric's tome was written over 12 years ago. Following that series there was a surge in interest in F/F scale after years of depression. A similar situation is with us today, with relatively low active interest — most scale modellers seem to either have turned to R/C or retreated indoors.

The great thing about scale is that it covers all the aeromodelling disciplines, so there is something to suit all temperaments. For the direct feel of flying a complex, possibly multi engine type, then C/L is for you. Radio offers the chance to steer the model around the sky for 15 minutes and make the wheels go up and down, while indoor models have guaranteed good weather and are less prone to stability problems.

So why bother with free flight? This question is often asked by incredulous members of R/C clubs, who started the hobby last year and will give it up next! The fact that you are an *Aeromodeller* reader means that you probably already appreciate the intangible appeal of the free flying model, of any type. This appeal is always difficult to explain but when your first scale model is flying perfectly, at scale speed, registering, and compensating for, all the air movements around it, then you will be

hooked. Practical advantages of F/F models are that they are relatively cheap and quick to build and flying them is less nerve-wracking than with the R/C or C/L model, for which a crash is usually terminal. Finally, the F/F model is the easiest of all types to build, since it is big enough to get your hands around it, yet you can get an air of realism without going into colossal detail. It is a fact that the larger a model is, the better you have to build it for the same effect.

Well, I hope by now I have talked you into having a go. As a beginner to scale, you will almost certainly want to start with an *APS* design, of which there are a great many. The drawback here is that many of them were published in the heyday of F/F, back in the Fifties, and their constructional techniques have become outdated. Structures are frequently too flimsy for regular flying — perhaps there was more long grass around in those days! There was often scant regard paid to representing the scale structure, and tail areas seem to have been enlarged as a matter of course.

So, rather than do a straight re-hash of Eric's articles, I felt it would be more valuable to combine a general description of techniques with a practical modification and construction of one of the old *APS* designs. The one I have chosen is the large *Sopwith 'Pup'*. It may seem odd to choose a biplane as a beginner's model but there are several reasons for this. Firstly, I *could* do a boring old *Cessna 'Bird Dog'* but most people prefer biplanes. Secondly, the structure of a high wing cabin monoplane is too similar to that of a sport model to make it interesting, yet the cabin/wing root struc-



Left: a Mills .75 - actually a Doonside replica - fitted with a shaft extension. This is simply a hollow threaded bolt which fits closely into a spacing collar. Right: this Tiger was built by Charlie Newman, and has ideal proportions for free flight. A shaft extension is used to bring the motor back from the front cowling. Below: this Hawker Nimrod is by Eric Coates by an ED Super Fury. Photo C. De la Nougerede.



ture can be quite complex. The 'Pup' is large enough to give realistic and safe flight, and should be easy to trim. Also, the structure is very simple and yet will show all the basic constructional techniques of the type, i.e. an open structured fabric covered aircraft. I will, of course, describe the methods applicable to other types.

Naturally, much of what I have to say will be familiar to the experts but I make no apology for this, since my aim is to get new faces into the hobby. This should be appearing during the traditional building season and some of the accompanying photographs will help stimulate you into action. If you cannot wait to get started then the best thing you can do is get hold of a copy of the APS plan for the BE12b (APS FSP 1183), since this encapsulates most of the up-to-date methods. If you apply these to your chosen subject, you will not go far wrong.

Looking ahead to when you have finished your first model I strongly recommend that you attend some of the scale rallies and contests. Not only will you meet a lot of very friendly and helpful fellow enthusiasts but by talking to them and enquiring how they've tackled problems on their models, you will learn much more than articles can teach.

You will notice that I make no mention of the rubber model. This class has become very popular over the last few years, with many exponents in the Midlands and in the hands of experts, they can perform very well. However, they are undoubtedly more difficult to trim than a power model and extra care needs to be taken during construction to keep the weight down. They are really limited to calm conditions, such as we get in the evening and early morning at the Nationals. Better to leave this type until you have gained a 'feel' for structures and trimming techniques.

With a scale model the outline shapes given to us by the designer may be far from ideal from the viewpoint of structural

strength. No sport model would sensibly have a rear fuselage as narrow as that of a BE2e, or wings and tail as thin as an Albatros BII. There are two factors we must consider in designing the structure of our model. Firstly, if we are to capture that elusive air of realism, we have to simulate (not necessarily duplicate) the original structure. Wing sections must be of near-scale thickness and held to the fuselage by invisible means — the elastic band is no longer acceptable. We should aim for the correct number and positioning of ribs and equally important, hide those parts of the structure that were not visible on the full size, notably wing spars and fuselage spacers on a fabric covered aircraft.

The second factor is to compensate for the loss of strength inherent in going to a scale structure. In a sport model it is easy to get great strength from an all balsa structure by arranging wing spars on the upper and lower surfaces where they can exert the maximum resistance to bending forces. Or, by using a large boxy fuselage with thick balsa longerons. As soon as we consider a thin wing with buried, single spars, we have to look for ways of compensating for this loss of efficiency. If you look at an older scale design, like the Pup, it will consist of a number of rigid, all balsa components held together by various 'knock off' attachments designed to give way in a crash and so absorb the force of the impact. One disadvantage is the time taken to re-rig the model after each flight. The classic example here is the APS Blackburn 'Monoplane' — a beautiful flyer but a rigging nightmare! The wings are located on short pegs and braced to a mast and the U/C by rigid wires. After every landing, the U/C skids dig in and inevitably distorts the U/C structure. Thus by the time you've found all 24 rigging wires, they are all the wrong length because the U/C has moved!

The other draw-back with knock-off arrangements is the scale model's unflinching

ability to hit the ground at all angles, most of which were not catered for in the design. For example, an end-on impact on a wingtip resulting from a sideslip will more than likely snap that panel in half, since it cannot 'knock-off' through the fuselage, nor can it flex.

The way out of all this, as outlined originally by Eric, is to make the entire structure flexible, so that in a heavy landing it will bend and distort but stay together. This means replacing balsa with spruce in the vital areas of wing spars and fuselage longerons. The flexible components are then held together semi-permanently by wire dowels in tubes, so that all that is required following a heavy landing is to shake it back together and off you go again. Models built on this system can take an amazing amount of punishment and rarely suffer damage that stops flying for the day.

Choosing the first model

Looking back at Eric's second article he says he does not intend to go into detail on aerodynamic theory and then proceeds to give a long and comprehensive account on the subject as it applies to the scale model.

In my case, when I say I shall be brief I mean it! For one thing there are many articles and books written by people much more knowledgeable than I am and I have seen too many unlikely looking models fly well to be dogmatic. What I will do is give some simple guidelines to follow.

The most important attribute of the outdoor model is dihedral. Three degrees is sufficient in a biplane, or above-the-shoulder monoplane. As a beginner, avoid low wingers.

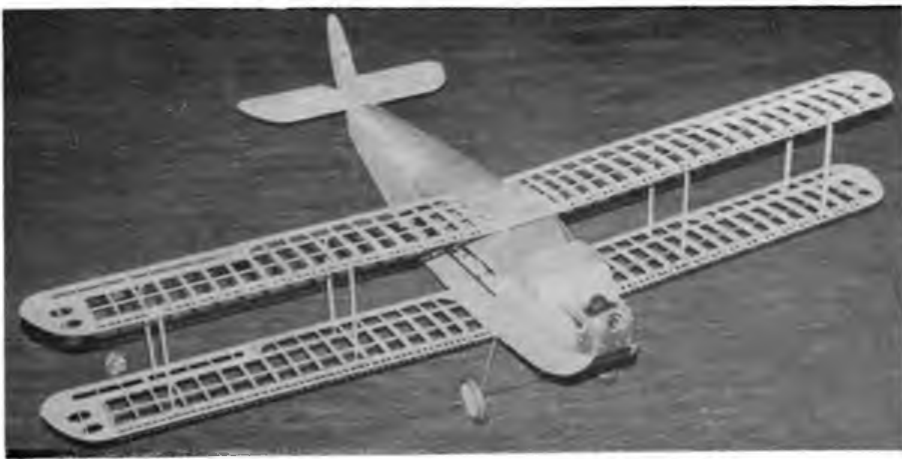
Tail area is less critical and I have gone down to eight per cent with careful trimming, although naturally a long tail moment helps. If there is plenty of wing area linked to a small tail, it can help to reduce the incidence of the lower wing to 2°, leaving the top wing at 3°. This means there is less lift for the tail to counteract.

Fin and rudder areas are more tricky. It seems that it is more important to have an adequate slipstream flowing over the fin than a large area *per se*, so beware of bulky fuselages that can blank off the air flow to the tail.

A vital feature is the angle of incidence of the wing and tail. Ideally, wings should be at +3° (measured along the bottom of the aerofoil) with the tail at zero. Most British aeroplanes were close to this set up but some types, notably Fokkers, had the tail set at a large positive angle and it would be difficult to disguise the large alterations necessary.

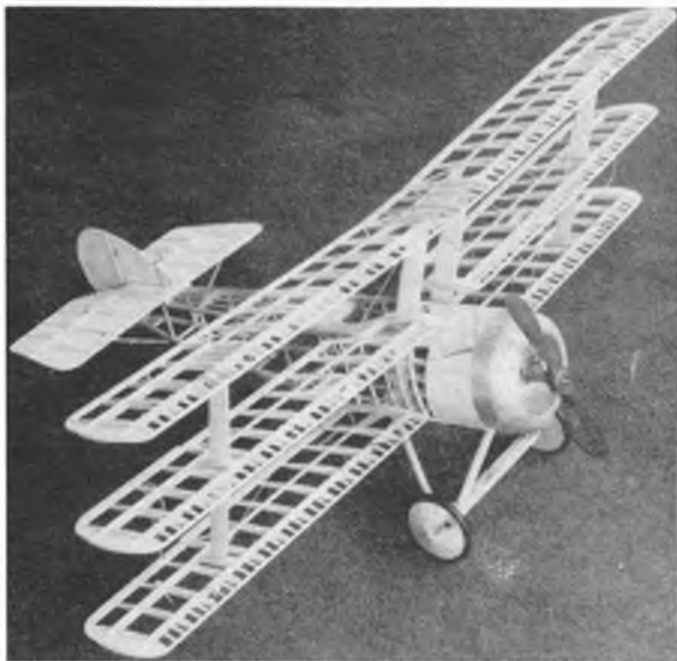
Finally, try to choose a model with a thrustline reasonably close to the datum line. When you are trimming the model the thrustline has to be brought above the CG, and if the thrustline is low, then excessive downthrust needs to be used.

I have compiled a list of APS designs which I consider most suitable for modification into a first model by a beginner: Auster AOP9 FSP/580



Above: the author's DH34 at an early stage. With sheeted fuselages, cabin detail has to be planned and built from the very beginning. The first parts to be built on this model were two sets of curtains and ten wicker seats! Left: the author with his 1/10 scale AW FK8 seen at Odiham in 1977. Bill hasn't taken up smoking - it's a compression adjuster for use in confined spaces. Photo: C. de la Nougerede. Right: John Coker's latest is this Spartan Arrow, in attractive blue and white colour scheme. The quality of the metalwork is evident and makes for a realistic model.





Left: beautiful construction on John Coker's Sopwith Triplane. Note the scale sprung U/C and expertly hand beaten cowl. John's tips on metalwork will appear in a later article. Above: another fine structural shot is Michael Smith's Bristol Fighter. This model is larger than average 55in. and flies very sedately. It uses all the standard techniques for a fabric covered biplane.

DH C2 Beaver FSP/388
 Bellanca Skyrocket MA/396
 Avro 540 K FSP/343
 Fokker EIV FSP/551
 Sopwith 1 1/2 Strutter FSP/907
 BE2e FSP/721
 BE12b (no mods necessary) FSP/1183
 AW FK8 FSP/960
 Sopwith Pup (the large one) FSP/305
 Sopwith Schneider FSP/1019
 Hawker Hind Trainer FSP/476

Engines

Diesels are almost universally used for F/F scale. Size for size, a glow motor will develop more power but only at high rpm using a small propeller, which will not make much of a draught around a large scale cowling. The other major drawback is that the glow motor's exhaust residue will attack unfuelproofed finishes. I shall come to finishes in a later article but suffice for the moment to say that a model finished in cellulose is easy to repair since clear dope is compatible when applying patches. Try doping over a fuelproofed finish and a rather nasty mess will result. However, diesel fuel, especially when mineral oil is used, will leave a dope finish unscathed.

For scale use, the old sideport and rear-induction diesels have never been improved upon and the Mills 1.3 and .75 are the classic examples, together with the ED 'Bee' and ED 'Racer'. Unfortunately, this is the age of the engine collector who has emerged in the wake of the vintage revival. Where once you could pick up decent secondhand motors in the Classifieds, they are now prefixed 'Collector's item' and an outrageous price is asked. The result is that all these motors are disappearing behind glass cases, gloated over but not flown.

All is not lost however, since a very good replica Mills 1.3 is being produced and would be an ideal investment for someone wanting a practical engine to use for F/F scale. I have no experience of the Indian versions but I understand their quality has improved since they first appeared. The 'Racer' is still in production but apart from that, the other current engines are all front induction which makes operating the needle valve more tricky in a close cowling. Most difficulties can be overcome and the really important thing is that the engine starts and runs well.

The first thing to do when choosing an engine is to check that it will fit in the cowling! A common problem, especially with a Mills, is that the crankshaft is too short. The accompanying photo shows a Mills .75 fitted with an extension shaft — one or two specialist services advertise from time to time who can do this simple job. Note also that an allen screw replaces the compression lever, enabling adjustments to be made through a small hole in a cowling.

Tools and adhesives

Nothing special is needed in the way of tools over and above those possessed by most aeromodellers but there are one or two items which make life much easier. The first of these is a comprehensive set of sanding blocks. It is essential that you maintain sharp square edges on your model and you cannot do this with bits of sandpaper held in the hand. Half an hour's work will produce enough blocks of different shapes to cover most needs. For example, the wedge shaped block can get in behind a cabane strut fairing, where the angle between it and the top deck sheeting is too tight. Glue the sand-

paper on with PVA, so that it can be soaked off when worn smooth. On a smaller scale, a set of needle files is indispensable.

Several years ago I was bought one of those miniature drills with many attachments and although it may be considered a luxury, I don't know what I would do without it. In addition to drilling small holes in awkward places with one hand, you can do all sorts of grinding and routing jobs.

The variety of adhesives has changed dramatically ever since I began aeromodelling. In those days balsa cement was king but now I use it very rarely. For all wood joints I use Borden wood glue, which is similar to PVA, but is more sandable. This type of glue sets in about 20 minutes, so it gives you time to get things right. You can apply it on the end of a stick or pin into those awkward spots and it does not shrink and distort thin structures. Finally, if you make a mess of something, drop it in the bath and it will just float apart!

In the past I haven't got on too well with cyanoacrylates but on Eric Coates' recommendation, I have found Ripmax 'Grip' much more reliable. I doubt if I would ever use it for general structural work but for some applications it is excellent. For example you can make instant balsa plywood for light but strong formers.

Epoxy resins are, of course, one of the greatest steps forward and have virtually eliminated the skill of binding metal to wood with thread and 'smearing with cement.' Five minute epoxy is fine for most joints but for those which are subject to great stress, I use 24 hour Araldite. I set up the cabane, for instance, using dabs of five-minute epoxy, then when I am sure all is well, finish it off with the 'real stuff.' If a mistake is made, the resin can be ground away using the mini drill referred to above.

Finally, a word on materials. It is becoming difficult enough to find model shops that stock decent balsa but spruce is almost impossible to buy 'off the shelf' and even if you locate some of the right size, it will probably be hopelessly bent. In the past I have got my spruce by mail order from the Punctilio Model Spot in Hincley, and another supplier is the Balsa Cabin. The latter will also cut 'odd' sizes if they are practicable. The most common sizes for our use are 1/16 in. and 3/16 in. x 1/8 in. for spars, 1/8 in. square for longerons and 1/16 in. x 1/16 in. for stringers. For the smaller models, 3/32 in. square longerons and 1/16 in. x 1/16 in. spars may suffice.

Having dispensed with the introductory waffle, next month we can begin to look at actual construction methods.

Another model from John Coker is this Arrow Active, posed realistically on 1/8 scale grass. Suffered con-rod failure during a qualifying flight at the 1977 Nationals.



PHOTO-PRIZE
with
Fliar
Phil
MODEL NEWS

WIN A
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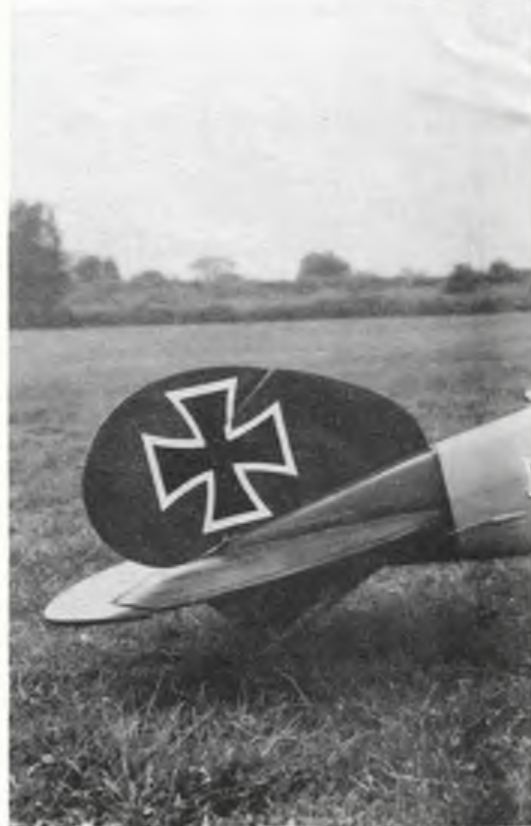


All entries should be good quality black and white or colour prints. Your name and address should be on the back of the print. Details if possible should be given about the model and its construction.

Send all entries to:
Aeromodeller.

Photo prize Feature,
PO Box 35, Wolsey Road,
Hemel Hempstead, Herts.
HP2 4SS.

Photos will be returned
after publication.



Aeromodeller



Well, as FP always says, "Once an aeromodeller — always an aeromodeller." The 'SE5A' is a free flight model, powered a 2.5cc PAW.

Photo 5 — Winner

When FP received this great photo of an *Albatros* DVa stand-off scale two-line C/L model he knew he had this month's winner in his hands. Model and background united together in a fine picture. It comes from Paul Sheldon of Hertfordshire, is powered with an *Irvine* .60, weighs 7 lb, spans 57in. Paul, (in a most interesting letter), is one of that band of aeromodellers who also fly full-size aircraft, having completed around 1,000 hours in various biplanes, the majority of which were aerobatic aircraft.

Photo 6

Yes indeed *another Albatros* — but this time an *Albatros* CIII. Yet another example of the scale builder's skill comes from Mr. Watters of Manchester. Mr. Watters designed and built it — and has sent this excellent photo to "put us in the picture!" His *Albatros* CIII spans 38in. and has a DC 'Merlin' 0.75 diesel up front. Adding to its looks, it is a fine performer. Readers will be pleased to know that Mr. Watters plans are due to appear in *Aeromodeller* later in 1984.

Photo 7

From a famous fighter of World War I to one of World War II — an *FW190 A3*. A most imposing model *and* photograph. It comes from Michael Sexton of Kent. Michael says it is built from a *Veron* kit, modified to full 1/12th scale. Power: Frog 500. Weight: 32oz.

Photo 8

From Italy comes this beautifully detailed 'peanut-scale' model of an *Ansaldo SVA4* 1918 scout. Features aluminium cowl, tyred wheels and carved pilot. Weight 16gm. Fliar Phil was not in the least surprised to learn that it was a winner in the 1978 'Model Builder' contest, including an award for the best foreign workmanship. Its creator is Daniele Vescevi from Ferrara, Italy.

That's it for this month friends — here's to the next time!

HAVING RATHER 'let himself go' with (the hopes!) informative comments on this month's modelling masterpieces. Fliar Phil only has space to say by way of introduction: "Let's go and enjoy ourselves!"

Photo 1

This feature has never received a photo of a model rocket in action — so FP just *had* to include this one, of a 'Saturn V.' Built by Dick Swan from an *Estes* Kit, the photo comes Stuart Lodge of Bath, Avon. A great sky background makes it hard to tell whether it was taken (as it was!) at a Plumpton Model Display — or Cape Canaveral! Model 44in. high. Flies to several hundred feet.

Photo 2

From modern rockets to a real 'old timer.' This *Rumpler 'Taube'* was designed by Mr. Faulkner of Cheshire. Built as a semi-scale (covered with condenser paper), it has all the

distinctive lines of its German original. Fliar Phil is happy to quote Mr. Faulkner "It's a good flier."

Photo 3

There were certainly no CO₂ engines around when Mon. Bleriot made his historic crossing of the Channel in 1909! This modelling masterpiece — a CO₂ powered 'Daspar Bleriot' comes from our old friend Ing. Lubomir Koutny of Czechoslovakia, span 800mm, weight 85g, *Modela* engine. Flight performance around the minute. FP is sure Mon. Bleriot would have loved it!

Photo 4

A dramatically-angled shot of that universal favourite of World War I scale fans — the 'SE5A.' It comes from Mike Knutton of Lincs. Built from a 1957 plan by Doug McHard, a very old friend of Fliar Phil. Mike mentions in his letter he has come back to aeromodelling after 30 years!



De Havilland 60 Cirrus Moth

31in. Free Flight Model
for 0.5cc to 0.75cc motors
by John Watters

Full size plan feature

IN LOOKING FOR a new lightweight four cylinder engine, Captain G. De Havilland used half of an existing French Renault eight cylinder engine, remodelled it and christened it 'Cirrus.' Always a glutton for work De Havilland designed the *DH 60* biplane to house the new engine. Captain de Havilland also had a keen interest in moths and butterflies. As most moths fold their wings back when at rest, De Havilland arranged for his *DH 60* to do the same. Putting a name to his new aeroplane was then ready made — thus the 'Cirrus Moth' was evolved.

The model is based on the aeroplane often seen with the *Shuttleworth Trust Collection* and has been kept as true to scale as possible, with no increase in areas. Construction techniques are straightforward, and mainly follow those described by Eric Coates in his 'Flying Scale Models' series of articles. Additional scale details can be obtained from the scale drawings in Plans Pack 2705 available from Aeromodeller Plans Service.

Wings

Make all the wing ribs and riblets from hard $\frac{1}{16}$ in. sheet by the sandwich method cutting out the spar holes before shaping the ribs. The ribs are slid onto the spars to their correct position and the spars pinned down over the plan, letting the ribs into the trailing edge. The wingtips are built up from $\frac{1}{16}$ in. sheet with $\frac{1}{16}$ in. sq. strips on either

side, curving the strips by nicking the inside of the strips with a thumbnail or razor saw. The interplane strut hooks and wing dowel tubes are epoxied to the spruce spars. The ailerons should be built as separate items, then glued to the wings afterwards. The wing centre section (which is also part of the fuselage) should be constructed with care and it is important to check that the wire parts are formed accurately and assembled square.

Tail surfaces

The tail and rudder construction are from $\frac{1}{16}$ in. stiff sheet (light quarter grain rather than having straight grain!) the shapes being marked off from the plan with the spars and ribs marked on both sides. The structures are then built up on both sides of the sheet and sanded to section when dry. The curved $\frac{1}{16}$ in. square edges are best formed like the wingtips by nicking the inside edges with the thumbnails or razor saw.

Fuselage

The fuselage is simply a box section construction with longerons and spacers. First construct two identical sides by building one on top of the other. Cement formers F1 and F3 in position (the formers should already have the undercarriage, cabin wires and tubes attached) along with the engine bearers. The shaping of the engine bearers comes about from initially choosing an

Allbon 'Dart' 0.5cc engine as the power unit, but not knowing whether this would have sufficient power. I made allowance for the fitting of a *Mills* 0.75cc. The two fuselage halves can be joined at the stern post and the remaining formers and spacers added. Sheeting to sides, top and bottom can now be added and the nose area built up using sheet and block. The cowling is best built up by spot gluing the formers and block to the fuselage and shaping to fit the nose area, with the exhaust being made either from balsa or aluminium.

Finishing and flying

The fuselage should be clear doped or sealed with sanding sealer and sanded smooth. The whole model was covered in lightweight tissue and doped with thinned-down dope (1 part dope: 1 part thinner). The colour scheme was applied by spray gun as this method gives very good results for very little gain in weight, providing you give a number of light *mist* coats. The rigging and control wires are made from nylon fishing line and the rigging attachment points from solder tags epoxied into the fuselage and wing centre section. The lines are fixed to the tags by looping through the hole in the tag and fixing with small pieces of aluminium tubing crimped flat. Loops can be made at the interplane struts end, by the same method.

Whether by good luck or good judgement, no ballast was required to obtain the CG position. After test gliding over the proverbial long grass, a low powered test hop showed a slight stalling tendency under power, this was cured by a washer under the rear engine lugs. This also showed that the *Dart* had quite enough power (you would have to have quite a few degrees of down-thrust before you noticeably affect the forward thrust ... *Ed.*). Further powered flights proved that the model did not have any hidden vices and circled naturally to the left. I hope your model provides you with as much enjoyment as I have had from mine.

Below: complete dummy engine is fitted to the removable section of the engine cowl which fully encloses the Allbon 'Dart' powerplant. Cowling line can be seen on the Photo-Prize pages. Fliar Phil would certainly approve of it!



FREE FLIGHT SCENE

DAVE HIPPERSON REPORTS

Southern Gala ... Odiham ... 2.10.83

We have come to expect the same wind direction every year at this event. No change for 1983, again — south westerly. The drizzle and low cloud held off apart from the occasional shower and the wind was never enough to give problems. In fact the maxes that stayed in the aerodrome were in the most danger — from a hangar roof downwind. Fortunately the station Fire Department offered a splendid retrieval service and numerous competitors owe them thanks for their speed and careful handling of models. Activity was patchy in some events and A1 with Open Rubber and Glider proved the favourites. Coupe d'Hiver usually very popular, attracted only about the same as 1-2A power this year. Perhaps this rubber class and to a certain extent HLG, suffered most from the tricky low level turbulence induced both by the ridge on the 'drome and the drop away upwind. They were also coincidentally the only events to have no trophies! Proceedings began awkwardly when the lone official at the control desk was besieged by contestants who had pre-entered and were discovering that no cards had been prepared for them. Pre-entry starts to become rather pointless in these circumstances. Another pair of hands at this stage might have eased the flow but sadly the other Area officials present seemed more interested in playing at car park attendants. Even determination of the max which has to be set before the start seemed rather an afterthought. A pity a little more preparatory work could not have been done the night before.

Classes not needing a flyoff included A1 where Chris Parry carried off top place with a full score. A second consecutive win for him ... must be something about Odiham that suits him. HLG had a much smaller entry but a very high standard. It appears more of an expert's event than ever. Phil Ball chasing Senior Championship points, produced the necessary five maxes in only six throws thanks to a colossal left arm and a very reliable thermistor set up. He topped Tipper who could only manage three maxes using all nine attempts. Coupe d'Hiver was won with some very determined flying from

Dave Greaves. His full score better representing his model's potential than usual. It is surprising that he doesn't dominate this class more often. 1-2A power too, returned only one full score and that from the very much on form Pete Harris.

Inevitably all the Open events went to flyoffs. A four minute max would have been more in keeping for Open Rubber, as many people reported flights well in excess of this and still on the aerodrome. As it was, 75 per cent of the entry qualified — silly. Those that launched nearly, Phil Ball amongst them, found good air. Then after a further five minutes or so, another lull suggested lift in which the eventual winner and runner up flew. The air seemed to deteriorate as models left the aerodrome and times were not as high as the climb heights would have had us expect. As cards filtered back it was obvious that something had gone wrong with the timing of Phil Ball's flight. His 5.17 bore no relation to the time he actually did or his eventual landing point close by the other leaders. Obviously a case of mistaken identity in the air. Perhaps the real disaster for him was not so much that the Flight Cup had eluded him again but this ill luck had robbed him of a certain place in this last SMAE Open Rubber event of the year. Had he placed he would have become the first person *ever* to have placed in every SMAE rubber flyoff in one season! Such are the disappointments lying in wait even when one has the best model.

The Power flyoff saw Peers, also chasing Senior Champs points, flying first, to return an excellent 6.5 minutes. Julian Hopper followed, climbing even higher and contacted good air but Trevor Payne who went next, showed the way it had to be, with a good climb and magnificent glide in the best air of all to clinch it with nearly nine minutes. All those that followed flew into sink.

Glider was last. This was a rather novel order but did at least allow the retrievers of those long earlier flights the most possible daylight in which to search — and they needed it. This Glider flyoff was rather an anticlimax but Pete Stewart did well to find the only decent patch and won it by some margin, despite a flight of well under a max.

Such was the steady direction of the wind all day and throughout the flyoffs that flights followed nearly identical routes. Many landing very close together consider-

ing they were up to two miles from the point of launch. Those downwind, searching for the Rubber flights were treated to the sight of the Payne and Hopper models floating overhead. Trevor Payne being sufficiently on form physically to locate both models just as darkness fell, much to the relief of both parties. Perhaps the best performance of all came from the Open Rubber winner. The well trodden path out of the aerodrome involved negotiating a rather inhospitable and well padlocked eight foot high gate. A convenient hole had appeared just to the left of this during the day and was just big enough to allow a person — but a bike? No way! John Carter demonstrated the perfect solution to this, which was every bit as impressive as his winning flight. Very reminiscent of a scene from the Royal Tournament. John approached the gate on his bike at some speed. Leaping off still some distance from the gate he picked up the bike and flung it into the air. Sheer forward momentum carried it cleanly over the high barbed wire whilst John dived through the hole. The bike crashed down onto the concrete the other side of the gate and John was through the hole and back in the saddle, all the while staying in radio contact with his clubmates at the launch point. That is Free Flight — a magnificent performance both in the air and on the ground!

Results

| | | |
|------------------------------|----------|-------------|
| Open Glider — 24 flew | | |
| 1 P Stewart | Crookham | 9 00 · 2 34 |
| 2 R Cherry | | 9 00 · 1 52 |
| 3 D Cox | Crookham | 9 00 · 1 37 |

| | | |
|---|----------|-------------|
| Open Rubber — 20 flew (Flight Cup) | | |
| 1 J Carter | Falcons | 9 00 · 6 31 |
| 2 D Hipperson | Grantham | 9 00 · 6 24 |
| 3 P Davies | B&W | 9 00 · 6 21 |

| | | |
|---|----------|-------------|
| Open Power — 11 flew (Short Cup) | | |
| 1 T Payne | Biggles | 9 00 · 8 56 |
| 2 J Hopper | Freebird | 9 00 · 7 09 |
| 3 R Peers | Falcons | 9 00 · 6 26 |

| | | |
|--|----------|-------|
| A1 Glider (Ripmax Trophy) — 24 flew | | |
| 1 C Parry | Biggles | 10 00 |
| 2 D Thompson | Croydon | 9 40 |
| 3 K Smith | Crookham | 9 39 |
| P J Harris | MFFG | 9 39 |

| | | |
|--------------------------------|---------|-------|
| Coupe d'Hiver — 12 flew | | |
| 1 D Greaves | B&W | 10 00 |
| 2 G Sharp | Croydon | 9 39 |
| 3 R Kenward | Croydon | 8 36 |

| | | |
|--|------------|-------|
| 1-2 A Power (Quickstart Trophy) — 11 flew | | |
| 1 P Harris | Birmingham | 10 00 |
| 2 T Payne | Biggles | 9 48 |
| 3 J Buskell | Crookham | 9 13 |

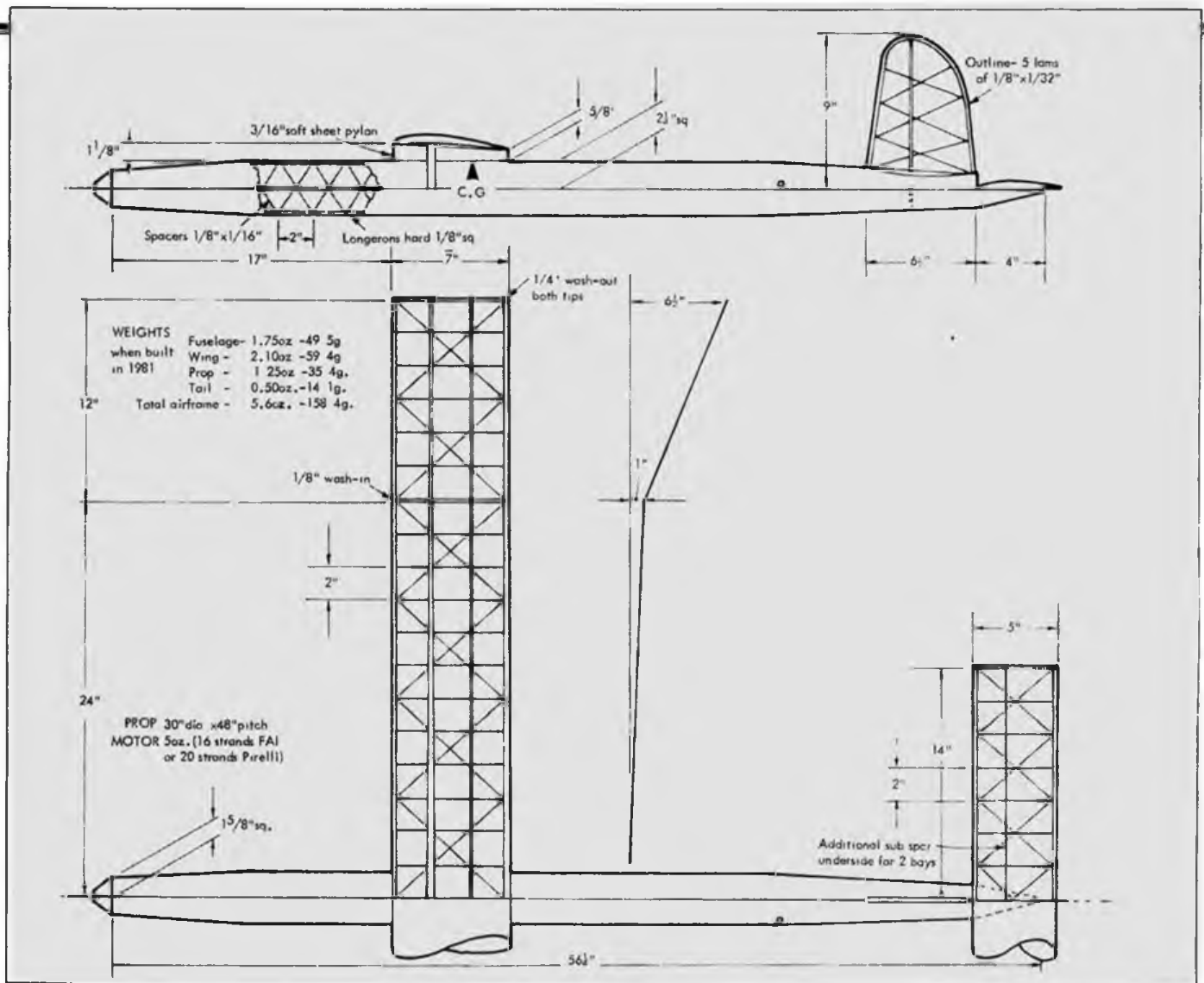
| | | |
|-----------------------|----------|------|
| HLG — (8 flew) | | |
| 1 P Ball | Grantham | 5 00 |
| 2 J Tipper | Lee Bres | 4 28 |
| 3 J Buskell | Crookham | 4 19 |

| | | |
|---|------|----------------------------|
| Vintage Wakefield (Unofficial event) | | |
| 1 A Wells, Anglia | 8 27 | (Gutteridge Trophy Winner) |



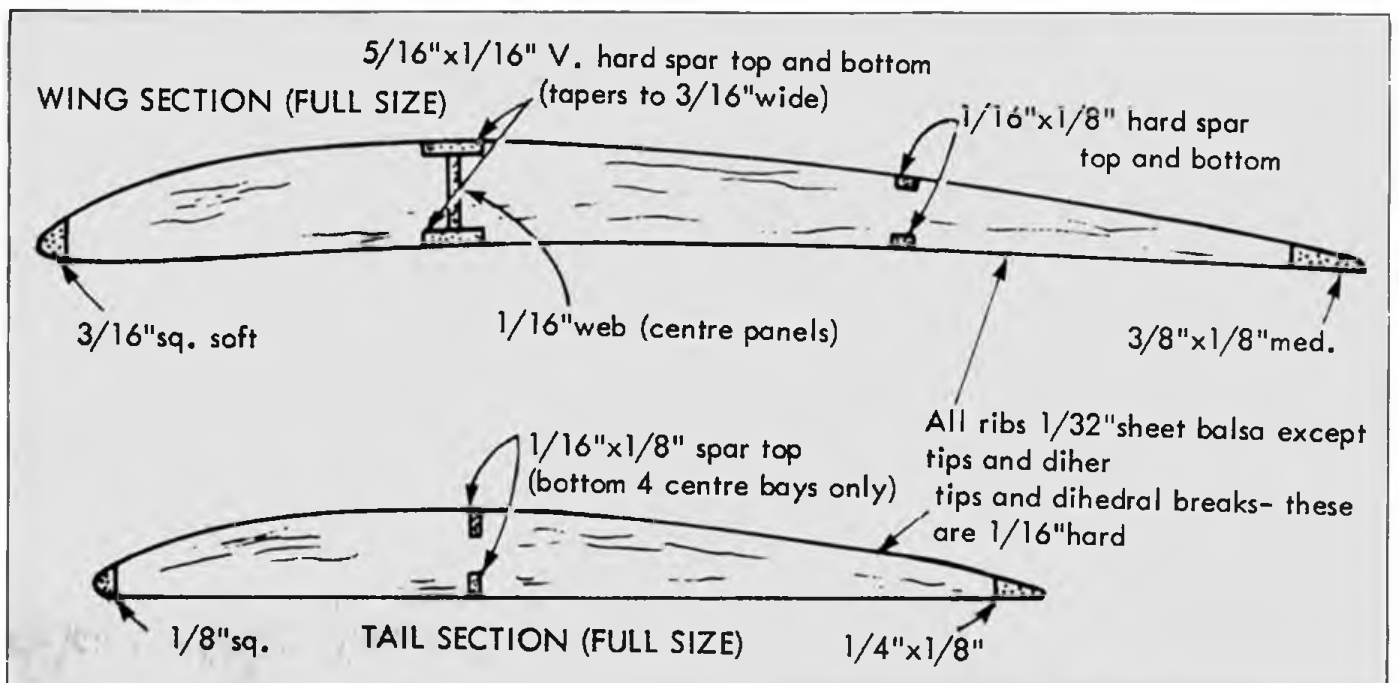
Left, busy Phil Ball prepares for the fly-off at Odiham, despite disastrous timing errors in Rubber event he produced the necessary five maxes in only six throws to win HLG. Right, Terry Diiks concentrates on the thermistor.





CABARET STAR

DESIGN BY MARK CROOMES
SCALE 1/10 FULL SIZE



Cabaret Star

If a model can outglide the competition, then in a thermal affected flyoff it has the potential to fly for the longest time. This becomes even more likely when it is in only very weak lift and distance visibility is not a factor. It also stands to reason that if the model is such an efficient glider then it could be made to climb high on quite modest power. Mark Croome thought this too when he drew up the forerunner of 'Cabaret Star' back in 1980. After some time in motor sports Mark was prompted to return to aeromodelling and large rubber models in particular, by the piece in Free Flight Scene April '79 suggesting an Open Rubber design around 600sq.in. might be interesting.

His first effort saw the light of day at the 1980 Open Rubber Trophy. His enormous, fully geodetic model appeared underpowered as it waffled across the aerodrome on its three minute run using a comparatively small prop. However when Mark appeared again things had been re-jigged. A much larger prop coupled to a very powerful fairly short motor had rendered the arrangement competitive. The prop motor set up is still thought to be the heart of the model. Certainly its slow revs are in keeping with the large airframe but what is extraordinary, is how well the model will cope with wind and turbulence when necessary. Actually, Mark uses a smaller 400sq.in. layout for competition flights with the same 5oz motor and similar prop. The full 500sq.in. 'Cabaret Star' is used for the fly-offs no matter what the wind strength. Indeed one of its most convincing victories last year was the Caton Trophy at the Northern Gala with a ten minute plus flight. Such was the turbulence most of the competition had great difficulty clearing three minutes. This year in the Farrow Shield flyoff the qualifiers at Barkston had to watch it sail past them all on the climb with its prop ticking over and then outside them from a greater height to win by two clear minutes.

Its record is impressive. From eight flyoffs

flown, it has won four and placed third in two. That means it has only failed to place twice. Its average flyoff time is a staggering 8.25 and it has never had a check flight since first being set-up, despite various incidental damage repairs. Of course it flies quite slowly and is hardly a super lightweight which probably makes flying it quite non-critical. Even the 'sensible' weights quoted here have been exceeded now, as this version is two years old. Mark admits that today, the model weighs nearer 170 grams but lighter versions are on the way. He also has a couple of models half as big again but says these are really still at the experimental stage — thank goodness!

Is it aeromodelling?

Very few people ever win the Wakefield Trophy (1st place individual at the World Championships) — fewer still win it more than once and only two people in its history have won it twice consecutively. It is therefore with double the awe that we extend our congratulations to Lothar Doring winner on the last occasion in Spain and now again this year in Australia. We look forward to another visit to the UK by Lothar so that we might once again study his technique at first hand. Most of you will be familiar with his thermal detection system. A very sophisticated set-up measuring wind speed and air temperature both at the launch point and some distance upwind — the information thus gathered being shown visually on a drum recorder which Lothar consults when ready to fly. His resounding success with this system now twice against the world's best is obviously no flash in the pan. It will have undoubtedly sparked other individuals and nations to follow suit. They could well be thinking along the following lines and a certain well known Dane has already gone part of the way. My suggestion is — stop at two positions. Why not have 12 arranged in a rectangular matrix, three wide and four long stretching say half a mile upwind with the information gathered and relayed automatically by radio from each

station. Furthermore why not a number of wind and temperature sensors at each station suspended at various heights by balloons thus giving an informational feedback not just of the surface over the upwind area but a complete three dimensional picture. This is not so far fetched as it might sound as apparatus that would enable this is quite freely available now. Minute thermistors can be used for both wind speed and temperature measurement and the wider availability of CB and model radio equipment would make the transmitting of the information practical even if not cheap (also illegal to use in this way! — Ed.) Undoubtedly a very accurate, small scale weather station would result. With such input a suitably programmed micro computer would find it child's play to reshape this data into a moving diagram and display same in computer graphics on a screen thereby dispensing with the mechanical complexity of Lothar's drum recorder. We could literally watch the thermals forming upwind and coming through!

Another credit to Lothar is that he often appears to be working almost alone at these contests — such a set up described above would necessitate a considerable team to erect even if not to operate. That's fine whilst only one contestant has it. Imagine when half the entry turn up with such gear. Perhaps the organisers would do best to supply and install the system themselves and supply one 'read-out' terminal for each nation. One can imagine groups huddled around screens eagerly waiting for the growth and dispersal of thermals as they passed through, only having to decide which one they would have and when they would 'pick it off.' It would be like *Space Invaders* outdoors. At least it might get the kids interested again. This is micro-meteorology on a super sophisticated scale but is it Aeromodelling?



Left, Mark Croome (designer of 'Cabaret Star') dodges prop tips on launch - big blades! Right, Eric Hawthorne launches a bit crosswind in the Open Rubber Trophy at Odham.



Forty years have flown . . .

John Riding describes his 40 year association with a classic scale model aircraft designed by his father the late E. J. 'Eddie' Riding

EARLY ONE Christmas morning, shortly after the war, I awoke full of anticipation as to what a certain nocturnal benefactor had left for me at the foot of my bed. There, by the side of a well-stuffed pillow-case, was the fuselage of a model aeroplane. Even in the half light I recognised the shape as being a *Westland 'Widgeon'*, a model that my father had built a year or two earlier. It was bright red, it smelt of pear drops and banana oil, and it was the best present I had ever had.

During the first months of 1942, whilst my mother coped with the imminent arrival of her firstborn, me, dad had just completed another model for this journal. 'Eddie' Riding, for it was he, had already produced a number of successful designs for the Aero-modeller Plans Service and the 'Widgeon' was destined to become one of the most popular.

The 'Widgeon' was a rubber-driven, 1/12th scale model based on the 'Widgeon' III G-EBRO. The initial flights of this model were more than likely carried out at Leavesden aerodrome where dad was employed by London Aircraft Production, and

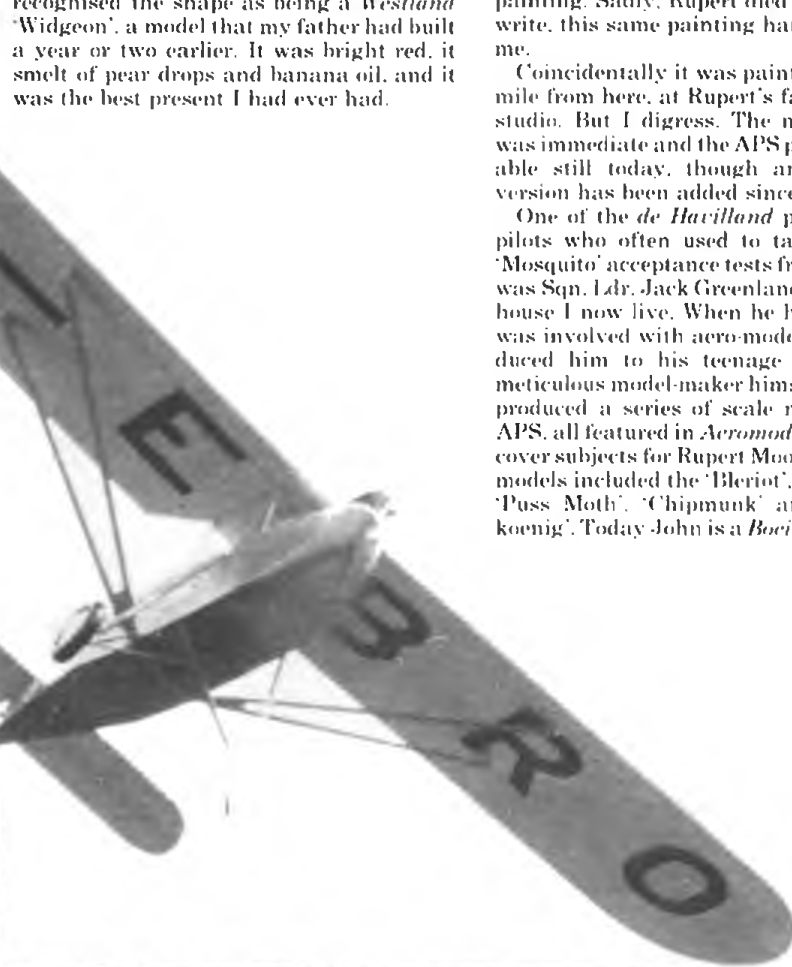
later *de Havillands* as an AID inspector, inspecting 'Halifaxes' and 'Mosquitos' built at Leavesden.

The model was the main feature of the April 1943 issue of *Aero Modeller*, in those days spelt as two separate words, and it was also the subject of Rupert Moore's cover painting. Sadly, Rupert died last year. As I write, this same painting hangs in front of me.

Coincidentally it was painted less than a mile from here, at Rupert's famous Radlett studio. But I digress. The model's appeal was immediate and the APS plans are available still today, though an engine conversion has been added since.

One of the *de Havilland* production test pilots who often used to take dad up on 'Mosquito' acceptance tests from Leavesden was Sqd. Ldr. Jack Greenland, in whose old house I now live. When he heard that dad was involved with aero-modelling he introduced him to his teenage son, John. A meticulous model-maker himself, John later produced a series of scale models for the APS, all featured in *Aeromodeller* and often cover subjects for Rupert Moore's brush. His models included the 'Bleriot', *Chilton* racer, 'Puss Moth', 'Chipmunk' and the 'Zaunkoenig'. Today John is a *Boeing 747* captain

Below left: John Greenland with his recently constructed 'Widgeon'. John now resident in Switzerland, finished the model in time for the 40th anniversary of the model's original flights



Full size copies of the plan shown here at 1/6 scale are available from Aeromodeller Plans Service, PO Box 35, Wolsey House, Wolsey Road, Hemel Hempstead, Herts. HP2 4SS. Price £2.10 plus 50p postage and packing. Please quote Plan No. FSR/211X when ordering.



with Swissair, and a close friend of mine. In later years John's aeromodelling activities rather gave way to his involvement with full-size aeroplanes but recently the bug has bitten him again and once more he has taken up the balsa knife.

About six months ago he thought it would be a nice idea to build an exact copy of dad's original 'Widgeon' model, following the plans faithfully, with no frills or additions. A telephone call to Ron Moulton quickly produced a set of plans and these were duly rushed off to Zurich. During the last winter, in between learning about the complexities of flying a 350-ton aircraft, John managed to complete the 'Widgeon' in time for its 40th anniversary.

The model

With the exception of the rear end, the fuselage of the model is built along the same lines as the full-sized aircraft. Other differences include a different wing section. On the full-sized aircraft the RAF 34 section

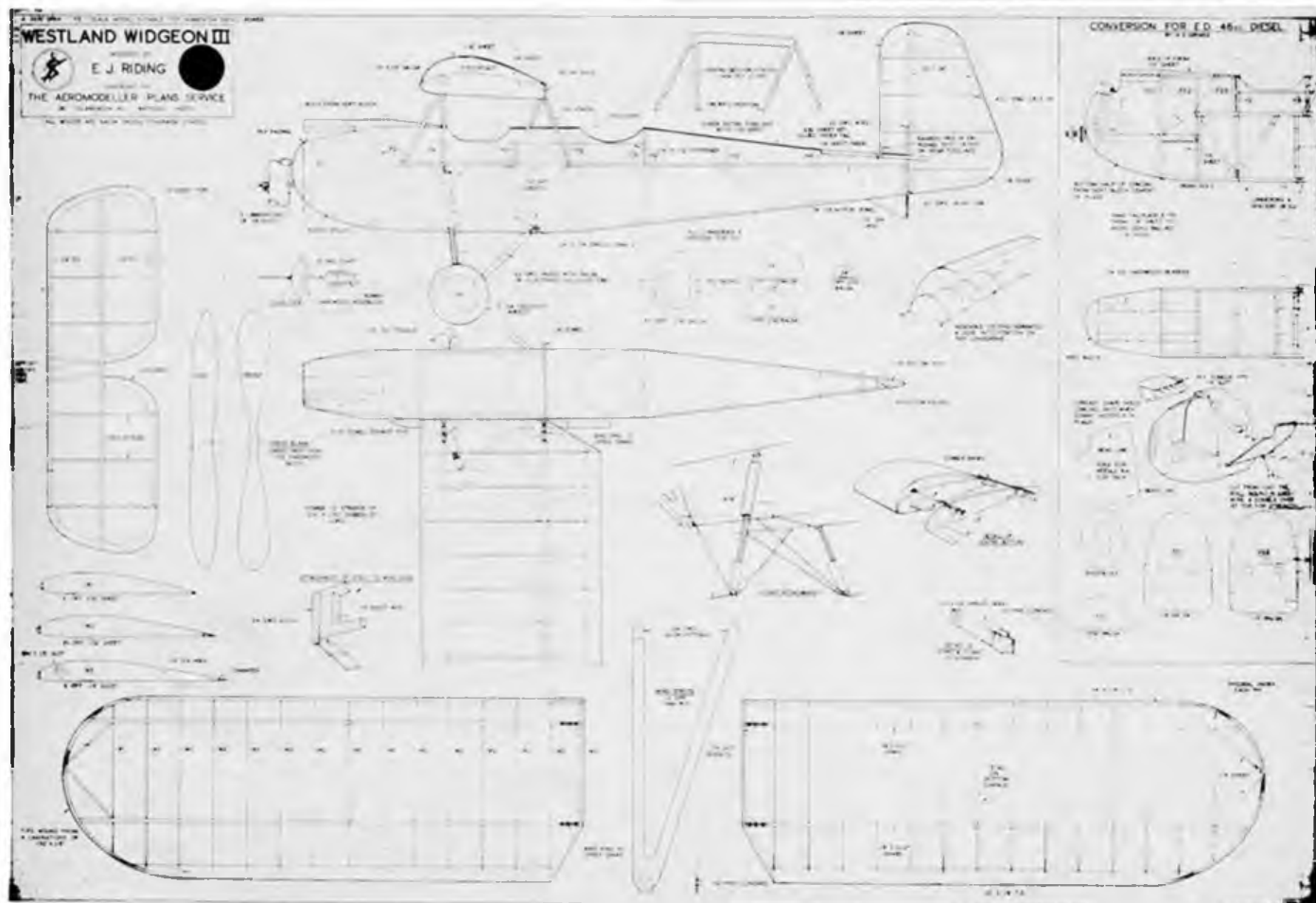
was used; on the model Clarke Y was chosen as a safe alternative. The tailplane and the rudder of the model are not to scale. The tailplane is of 12in. span instead of 8 $\frac{1}{2}$ in. and the chord of the rudder is $\frac{1}{2}$ in. more than it should be. An 8 $\frac{1}{2}$ in. dia. propeller of

yellow pine was turned by 10 strands of $\frac{1}{16}$ in. flat rubber and the all-up weight of the original model was 8 $\frac{1}{2}$ oz. John's model weighs 9oz.

The original model was found to be tail heavy in flight. When in correct trim though it had a steady flat glide and under power was a very fast flier. Landings were considered to be very good for a scale model and during one whole afternoon's flying the only damage sustained was a broken strand in the motor. The average duration of each flight was between 35 and 40 sec.

Many other E. J. Riding models followed the Widgeon and included the BE2C, Bristol 'Monoplane', Bristol 'Bullet', Fairchild 'Argus', 'Missel Thrush', 'Chrislea 'Acc' and the ABC 'Robin'. Amazingly, one of these models survives. Built during the war the BE2C managed to survive the perils of being in the proximity of a small boy and during the '50s was renovated by a friend and entered for the E. J. Riding scale trophy. It won!

Right: parts spread of the rubber powered original Conversion details for small diesel or glow motors are now included on the plan as shown below.



EXPERTS' FORUM

GLIDERS

by J. Cooper



Choice of Model

There are three main classes of glider, Open, A1 and A2. Whilst medium sized Open Gliders can form an ideal introduction to glider flying, e.g. the long established *Keil Kraft 'Caprice'*, I consider that they are virtually useless for contest flying. To gain a significant performance advantage they must be made very large and light, which limits their use to near flat calm conditions and their visibility advantage seldom helps in winning contests now that binoculars are allowed for timing.

A1s, whilst of a convenient size and being fairly cheap and easy to build, tend to be tricky to fly in windy weather and to my mind are a far harder proposition than their big brethren the A2s.

The A2 specification has been in existence for many years now and results in an eminently sensible model for all weather use. I suspect that even if there was only an Open class most models would end up at or around the current A2 size and weight. The popularity of this class remains high, regularly attracting over 100 entries at the Nationals. Most of my comments will thus apply to A2s but have relevance to most gliders whether they be for competition flying or not.

The big decision when choosing a model design must be whether or not to fit a circle tow system. These first came into general use in the mid-70s and have now become so widespread that many contest flyers, myself included, no longer build straight tow models. Although I must admit to having a few left for when the weather becomes very windy. A properly designed and trimmed circle tow model should be capable of controlled towing in up to a 15mph wind, although the amount of circling carried out in such conditions will be minimal. As a general guide I find that the weather is only

bad enough to need to use a straight tow model at about one contest in ten.

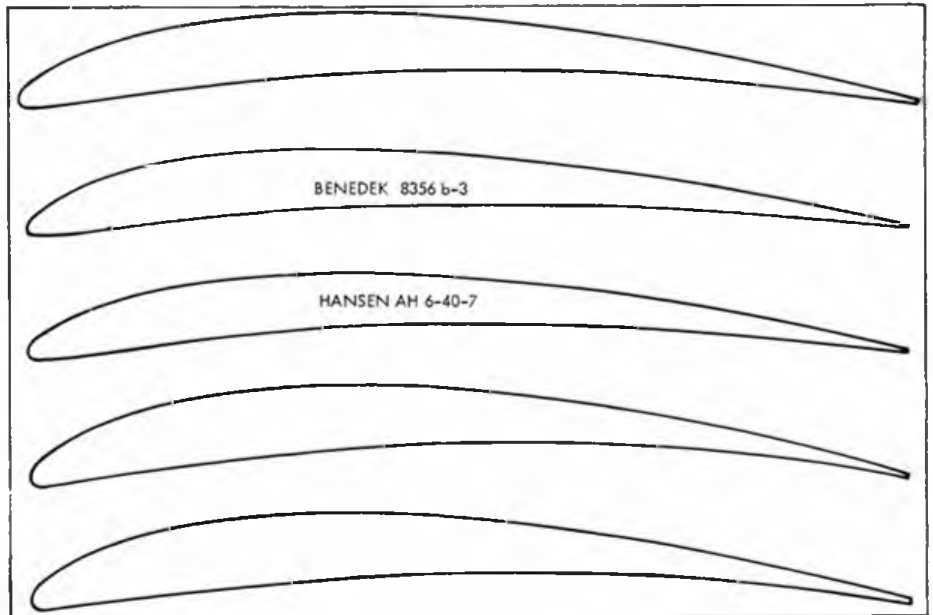
I personally have a contest fleet of three circle tow models, one good straight tow model and one old and battered straight tow model (for use when nobody else is brave or foolish enough to take the lid off their model boxes!). I have found that this enables me to cope with flying in all conditions without having to worry too much about losses or breakages and would recommend it as being the right number of models to carry around with you.

Since a straight tow model will only be used infrequently and in rough weather, its main attributes should be strength, simplicity and reliability. There are many

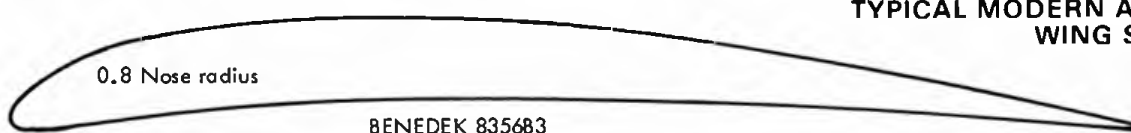
Above: John Cooper author of this Expert Forum displays his A2 glider featured opposite in 3 view plan form.

such designs around, e.g. *Aeromodeller Plans Service* for 'Flashback' (G 1331), 'Loner' (G 1226) or even my own 'Pink Elephant' (G 1366) which when built and trimmed should be capable of being thrown in the model box and then flown months later without prior test flights.

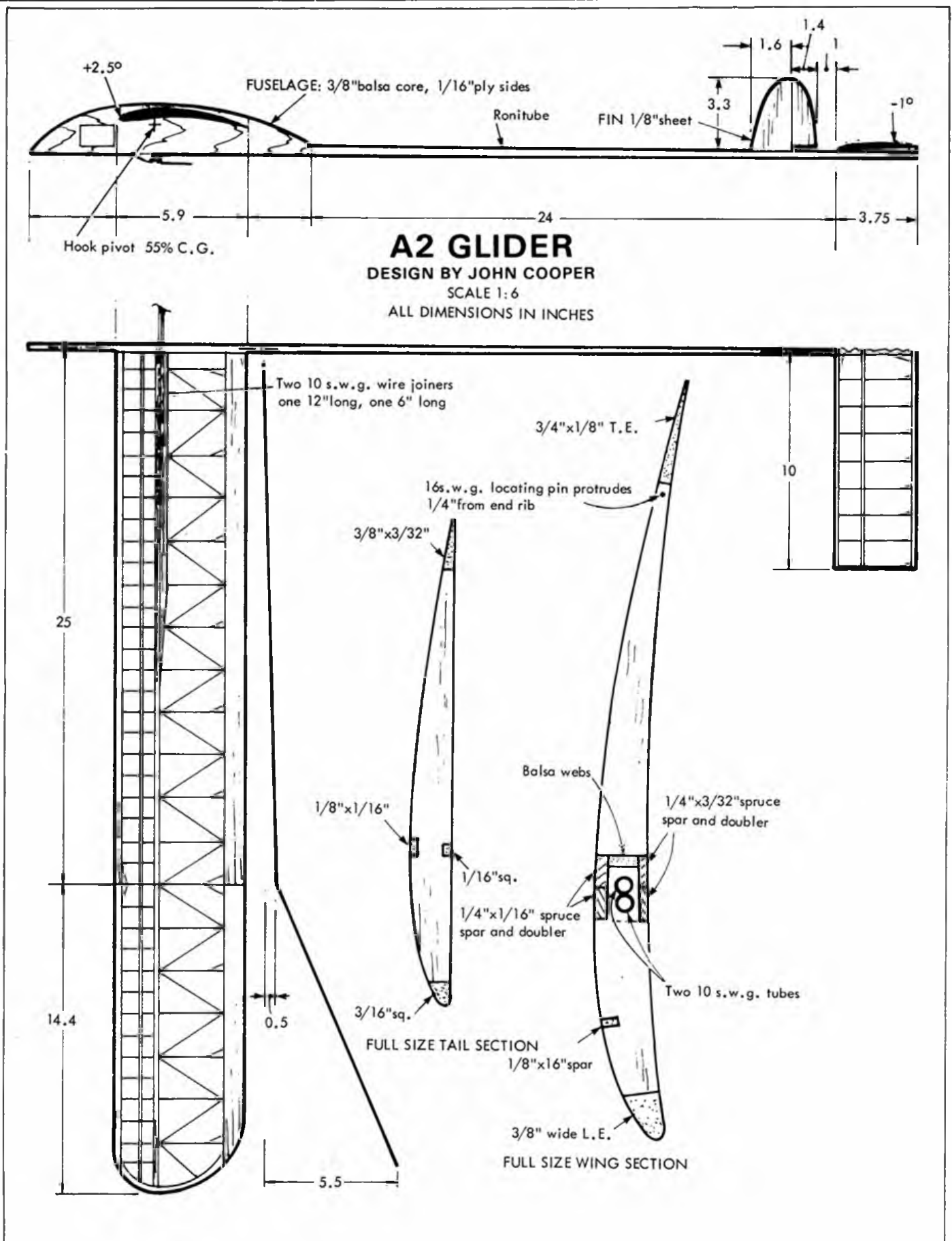
Circle tow models tend to follow two schools of thought, either models developed from old straight tow designs, or the Russian style. The fuselages and to a lesser extent the tailplanes used are fairly similar with the wings being the relevant area of difference.



TYPICAL MODERN A2 GLIDER WING SECTIONS



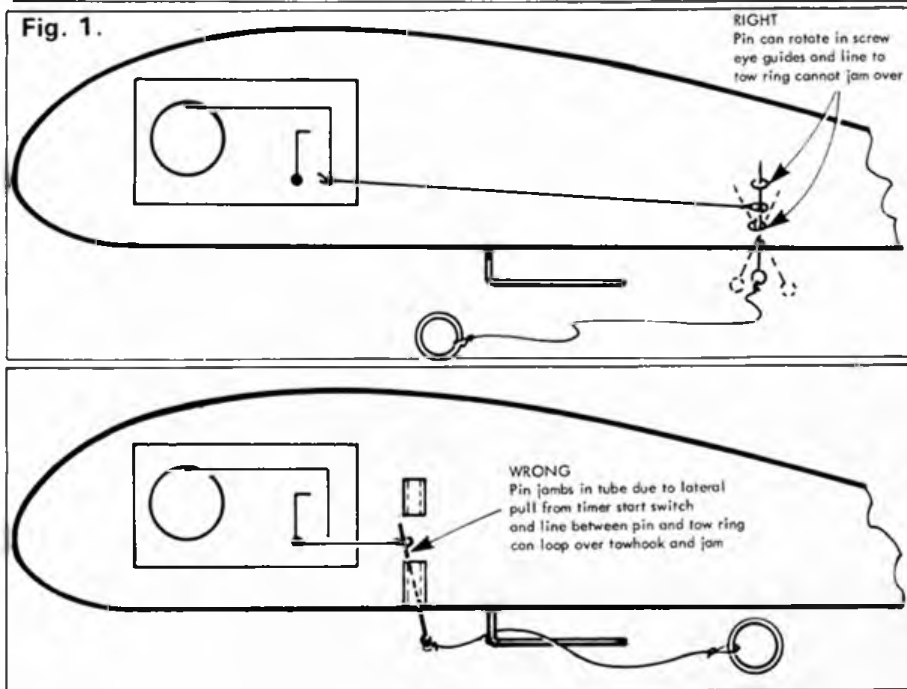
| Sta. | 0 | 1.25 | 2.5 | 5 | 7.5 | 10 | 15 | 20 | 25 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 95 | 100 |
|-------|-----|------|------|------|------|------|------|------|------|------|-----|-----|------|-----|------|------|------|-----|
| Uppr. | 1.1 | 2.95 | 3.95 | 5.45 | 6.55 | 7.45 | 8.7 | 9.4 | 9.85 | 10.0 | 9.9 | 9.3 | 8.25 | 6.9 | 5.05 | 3.15 | 2.0 | 0.5 |
| Lwr. | 1.1 | 0.25 | 0.05 | 0.05 | 0.45 | 0.8 | 1.45 | 1.95 | 2.4 | 2.65 | 2.9 | 2.9 | 2.6 | 2.1 | 1.55 | 0.9 | 0.45 | 0 |



The so-called Russian style models have been used by the Eastern-Bloc countries since at least the mid-60s and have been universally adopted since the mid-70s. They are characterised by *Benedek* 6356b sections, straight tapered tips and a very

rigid wing construction with a D-box leading edge and diagonal ribs. Models based upon old straight tow designs have a slightly thicker wing section, which allows use of a simpler structure and heavier

covering which does away with the need for a complex structure to maintain rigidity. Their *still air* performance is only marginally down on the Russian style and in the right hands are very successful. Mike Fantham's models are probably the best known examples and his record of Inter-



national wins in 1979 will take a lot of beating.

I consider that this latter type of model would be the most suitable for the vast majority of flyers in this country and has the bonus that the simpler structure with stronger covering produces a model less susceptible to minor damage on rough landings. It is also quite noticeable that a model with an open structure around the leading edge exhibits far better thermalling abilities than D-box structures, which is particularly useful in typically British turbulent weather.

Gadgets

The accent here must be on 100% reliability since any malfunction will almost certainly result in either a very poor flight or a lost model. Allied to this is the

suggestion that you only use gadgets that are absolutely essential to either improve performance or improve consistency, remember that if you don't have the gadget it can't go wrong!

For straight tow models the only items that are essential are auto-rudder and dethermaliser, the basic principles of which should need no explanation. As a starter system I would recommend the use of a single pin through two screw-eyes as guides for the pin, this allows the pin to half come out before the pull from the auto-rudder or timer start line jams the pin in the tube. With a screw-eye the pin can rotate until the line pulls off it.

I use K.S.B. timers to operate the D.T. and find that I have few problems with them

despite giving them no regular maintenance other than a quick check run on the night before a contest. If the timer is going to fail it will usually do so then. A five minute soak in a jar of petrol followed by a few drops of very thin oil will rectify any problems within the timer.

For a circle tow model the most obvious necessity is the hook itself. There are a couple of versions in production, namely the Elton Drew and Bob Hatschek systems, but most flyers appear to use one of the simpler latched towhooks such as the Issaenko type which has been featured several times in *Aeromodeller*. My own system, as the photo shows, is a very simple type with the rudder line linked directly to the latch. The basic design has worked well for me over the last seven years or so and is quite adequate provided that the tension needed to release the latch is high enough, 6½ to 7 lb., to prevent accidental releases.

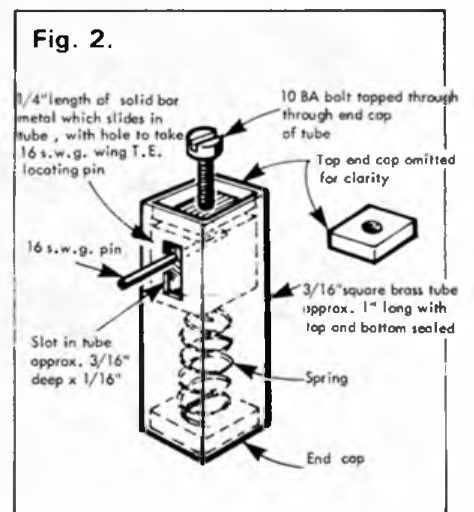
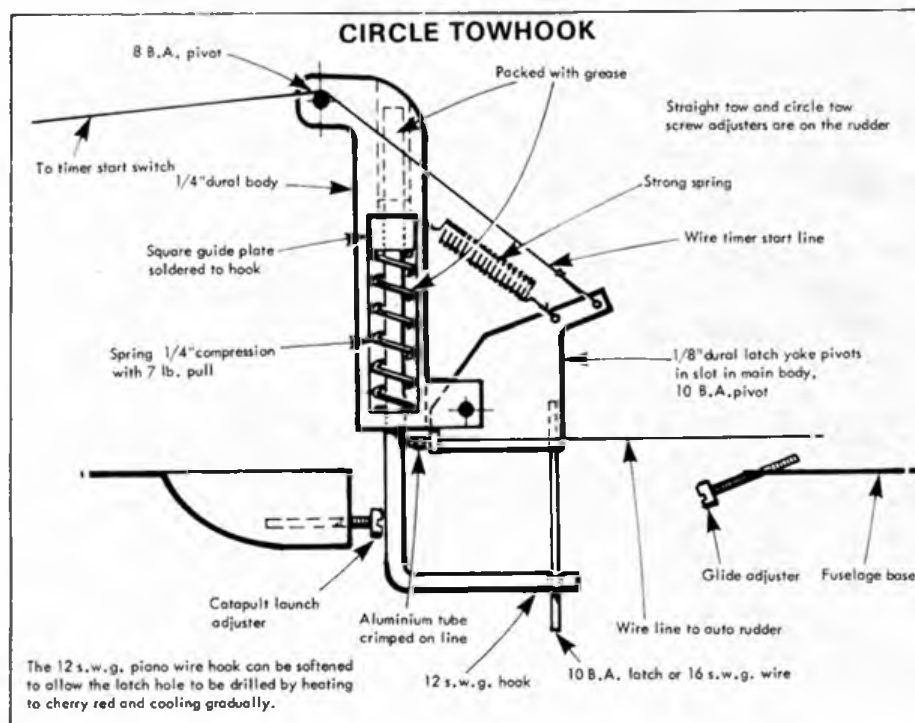
A timer start system isn't essential, but is fairly easy to incorporate by simply routing a line from the latch over the pivot to the timer start switch and does enable you to give smooth releases and makes it easier to set the model up for flight.

The latest fashion is a timer-operated delay on the rudder moving from catapult to glide setting. I have yet to see anybody in Britain gain a real advantage from such a system and I would suggest that you don't try to fit one unless you have severe problems with the model spinning following a catapult release.

One final gadget that I find useful, although nobody else seems to try it, is to use adjustable wing incidence on one wing to vary the trim of the model. I use two wing joiners spaced about ¼ in. apart and on my older models with wings held on with rubber bands, I put packing between the wing mount and one half of the wing's trailing edge to alter the relative incidences, (see *Aeromodeller* June 1979, p.346). Most of my newer models now have plug in wings and hence use a spring loaded adjustable locating hole on one side of the fuselage to take the trailing locating pin, see Fig. 2. I find that use of this simple gadget saves considerable time in trimming out new models, particularly in the circle tow mode.

One golden rule on all gadgets is to use springs rather than elastic bands wherever possible to power moving parts, they are far more reliable and their use saves endless fiddling about on the field to replace worn out bands.

Continued on page 42

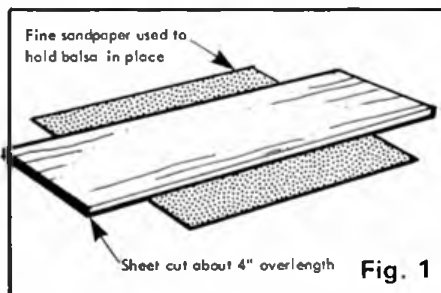


THE CONCEPT for the development of the *Fairey 'Fulmar'* came from the Royal Navy's need for an up-to-date fleet fighter to operate from the smaller carriers of the period. The result was an aircraft that was a delight to fly, reasonably heavily armed with a useful operational range. Sadly the specification called for an additional crew member to cope with the navigational requirements of a carrier based aircraft. This led inevitably to a reduction in performance compared to its land-based contemporaries. Nevertheless the *Fairey 'Fulmar'* stood the Navy in good stead until the later days of the war when American aircraft such as the 'Corsair' and 'Hellcat' made their appearance.

The *Fairey 'Fulmar'* was a development from the P.4/34 two-seat light bomber. The first prototype flew in January, 1940 and over 240 'Fulmar Mk1's' were subsequently built, powered by the Merlin VIII. Not surprisingly the 'Fulmar' was kept secret until mention was made in Parliament late in 1940. Its first operational sorties were in the Mediterranean theatre in 1941 where one squadron of 'Fulmars' from HMS 'Formidable' was involved in an attack on a group of enemy warships including Italy's finest, the battleship 'Vittorio Veneto'. In all some 650 'Fulmars' (Mk1 and II) were built during World War II.

Size your own wood

The plan shown here calls for some sizes of balsa that might not be available in your local model shop. There are two ways round this possible problem. First is to use fairly lightweight stock sizes in the nearest size up from those shown on the plan. The second option is to sand down some sheet to the right size and cut what you require from this! As we are dealing with a very small model the latter option becomes reasonably feasible. The best way to sand down sheet



for this purpose is shown in Fig. 1. The fine sandpaper is fixed to your bench with double-sided sticky tape or an adhesive which you can peel off afterwards, like cowgum. This will hold the sheet firmly in place whilst you are sanding it. Cut your sheet about 4ins. over size so that you are not having to sand to the ends. Sanding the ends can (a) be difficult to sand 'square' and (b) sooner or later you will catch the end as you sand 'in' to the sheet and snap your carefully sanded work! Use a fine sandpaper on a wooden block and sand both sides of the balsa sheet. If you sand one side then the wood will bow up towards the side sanded.

Tail surfaces

Laminate stabiliser tips and rudder tip from 2 pieces of .025 x 1/20 in. balsa. Make frame pieces from 1/20 in. square and 1/20 x 1/2 in. balsa as shown. When complete cover with tissue.

Wing

Laminate wing tips from two pieces of .025 x 1/20 in. balsa. Cut ribs as shown from 1/20 and 1/40 in. sheet. Use 1/20 in. square stock for spars, 1/20 in. x 3/32 in. for trailing edge, and 1/20 in. or 1/16 in. square stock for leading edge. Cut landing gear mount from 1/20 in. sheet.

Pin lower spar and trailing edge to plan. Glue ribs in place but not W1. Pin W1 in place but do not glue. Glue wing tips to trailing edge. Glue top spars to ribs W2, W3, and W4 but not to W1 or wing tips. For easier fit at W1 top spars may overlap at W1 by cutting notches in W1 wider and extending spars about 1/16 in. to either side of W1. Glue leading edge in place and glue wing tips to it.

When glue has dried remove pins from both panels and prop up wing tips 3/16 in. as shown and glue W1 to all spars and edges. When dry remove wing from plan and crack ends of spars and bend spars so they smoothly join the wing tips. Glue to tips.

Glue landing gear wires in place if used, after gluing gear mounts in place. Sand and carve to shape as shown. Cover wing with tissue at this time.

Fuselage

Fuselage is built using the half shell method. Cut all parts as shown from 1/20 in. or 1/42 in. sheet. Pin keel pieces to plan. Also pin 1/20 in. sq. top piece between formers 5 and 6 as shown. Pin 1/20 x 3/32 in. piece between formers 6 and 8 as shown. Pin 1/20 in. sq. pieces between former 10 and tail post. Next

glue left half of formers to keel, except for formers 4A and 5B which are added later. Then glue side longeron in place.

Next add stringers as follows:

- (1) 1/20 in. sq. stringer above and below side longeron from nose to tail.
- (2) Top stringer from 5 to 6 and from 8 to tail.
- (3) Short stringer below stabiliser opening between 10 and tailpost.
- (4) Lower 1/20 in. sq. stringer between keel aft of 10 to forward of 7, allowing extra length for trimming to fit wing.
- (5) Add 1/20 in. sq. stringer between 3 and 4. 2nd stringer below side longeron.
- (6) Do not add 1/2 in. sq. stringer to bottom nose or top nose until later.

Next remove left half from plan and add right side parts in same order as left half. Add 4A as shown. Then add 1/32 in. sq. stringer between 3 and 4A and add motor peg support. Cover with tissue except lower nose area. Carve nose block as shown. Glue to 3 after hollowing out. Glue 1A to block and finish sand. Cut and glue 1 and 1B together and drill a 1/4 in. dia. hole for Peck PA-1 thrust bearing. Test fit removable nose 1 and 1B to 1A. Fit should be snug.

Assembly of Parts

Test fit wing to fuselage. When satisfied with fit glue in place. When dry add former 5B to bottom of wing and glue to K-3. Next add 1/42 in. sq. stringers from 3 to 5B. When dry cover with tissue. Add tissue wing fillets as shown by outlines on plan.

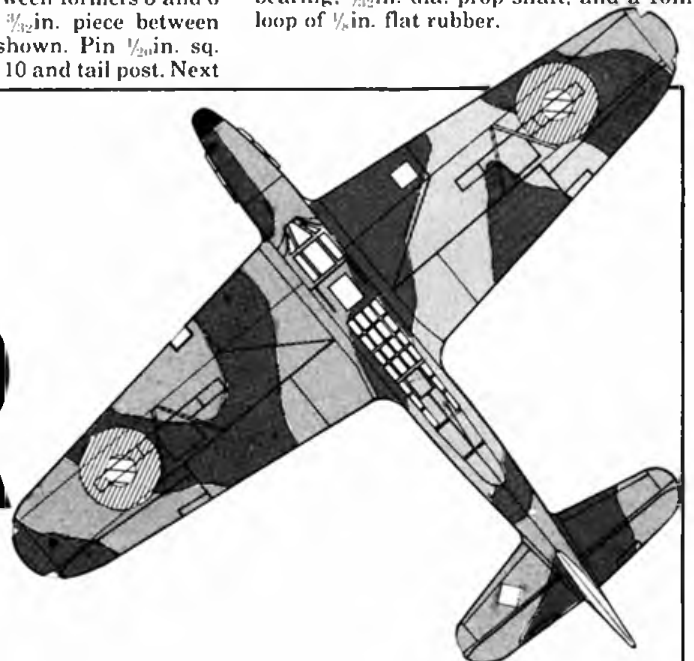
Add stabiliser and rudder. Then add whatever detail parts are desired such as tailwheel, aerial, wheel covers, engine exhaust, etc. Make canopy in 2 pieces if moulded. Or it can be fabricated of 3 pieces, windscreens, front canopy, and rear canopy. Wheels are balsa with aluminium tube hub.

Finishing

Colour details and more information on the *Fairey 'Fulmar'* may be found in Plans Pack 3047 from Aeromodeller Plans Service, PO Box 35, Wolsey House, Wolsey Road, Hemel Hempstead, Herts. HP2 4SS. Price £2.75 (plus 50p postage).

Power

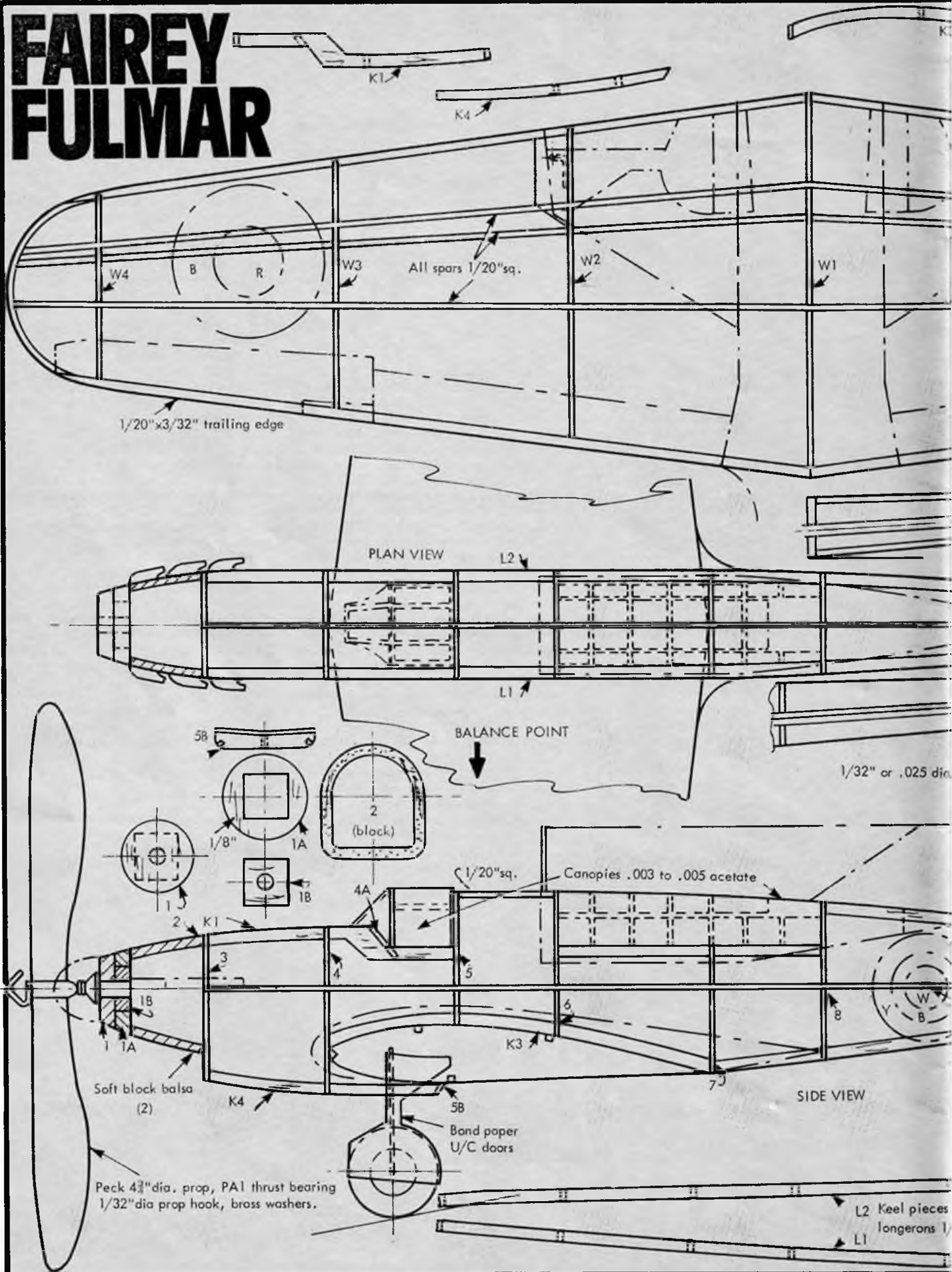
Use Peck 4 3/4 in. dia. prop, PA-1 thrust-bearing, 1/2 in. dia. prop shaft, and a 10in. loop of 1/4 in. flat rubber.

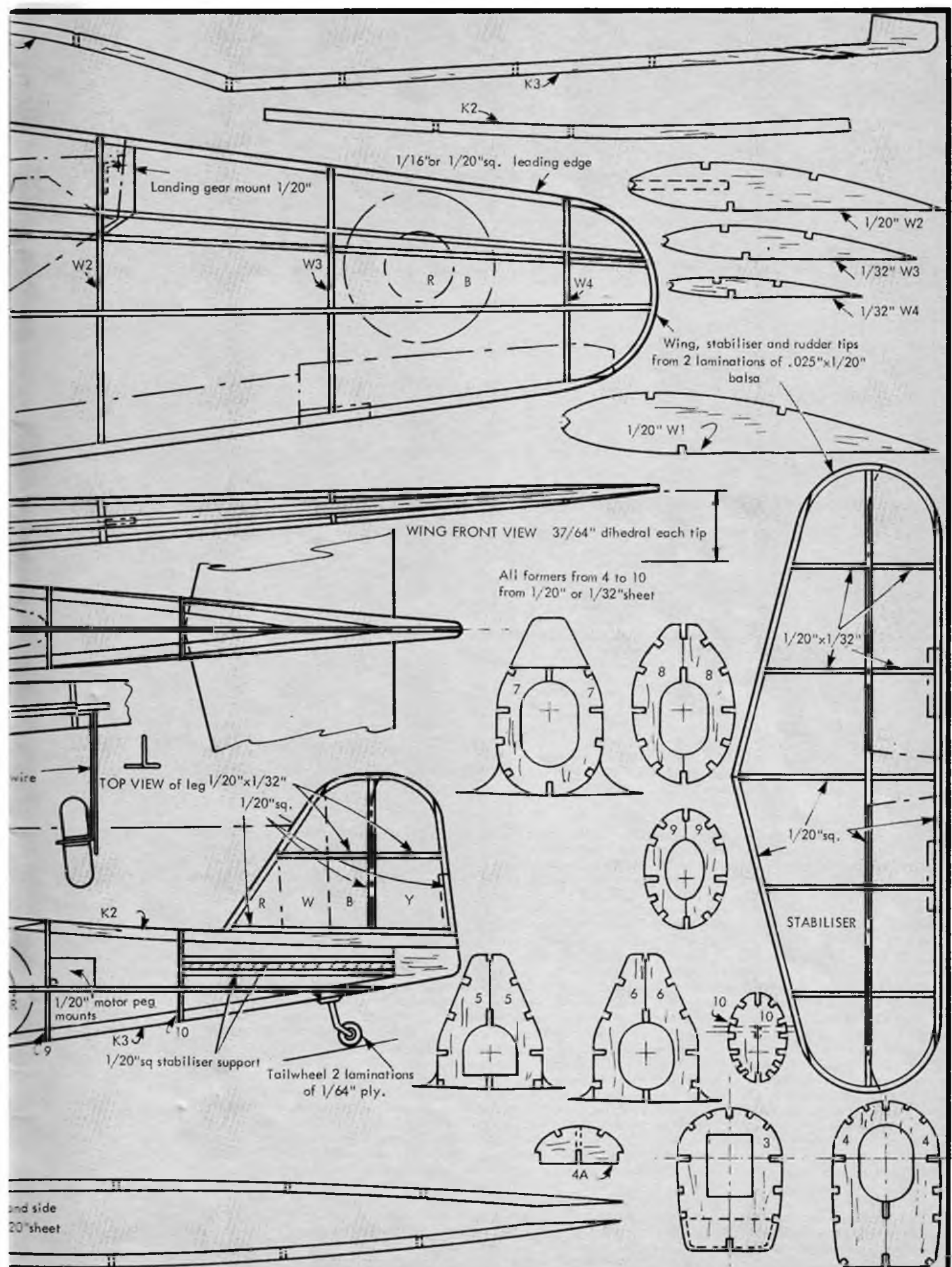


FAIREY FULMAR

Full size Peanut Plan
By David G. Diels

FAIREY FULMAR





SHOP TALK

NEW MODEL HOBBY PRODUCTS REVIEWED

Hotfix 180 glue gun

Hot melt glue guns must be the DIY fixing system of the 80's and this new low-cost type from *B&A Fastening Systems Ltd.* incorporates many features of far more expensive types. A new 'Positive Temperature Co-Efficient heater' performs in a similar manner to more expensive thermostatically

controlled units and a trigger-operated glue-feed system is incorporated.

Glue guns may not be every modeller's idea of the best way of building a model aircraft, but they can certainly find a place in most modellers' workshops. Price of the 'Hotfix' is around £19.50 from DIY shops.

Micromold control-line handle and connectors

A comfortably shaped, colourful moulded plastic control-line handle incorporating line length adjustment feature has just been introduced by *Micro Mold* backed up by robust line connectors with

locking ring built in. These items should be widely available priced as follows. Control-line handle £1.45, connectors 38p per pair.



Continued from page 38

Flying technique and equipment

The only real equipment used for flying gliders is a winch and towline and the choice of these is governed by choice of flying technique.

The modern method, again copied from the Russians, is to use no winch whilst towing and to simply hold onto the end of the line, pulling it in hand over hand when necessary to control the model. To release the model you simply release the end of the line. This obviously demands a model from which the line can simply fall off when tension is released i.e. no pins to pull out upon release to start the timer etc. This technique clearly has an element of risk to it since it is possible for the model to be accidentally released with the line still attached and the timer switched off. Hence the use of supplementary streamers on some circle tow models to indicate when the hook is unlatched and the timer has started.

It is also all too easy to end up with the line wrapped around your feet, or around obstructions on the ground, when circle towing, thus requiring considerable care when flying over rough surfaces! The best line for this technique would appear to be the stretchiest nylon monofilament possible, i.e. to increase launch height, providing that its breaking strain is adequate, say at least 30lb. The type of winch used is immaterial provided that it enables you to reconnect the line fairly rapidly after each flight.

The alternative technique is to tow with the line attached to the winch and control the model, if necessary, by using the winch to wind in and pay out line whilst towing.

Right: A2 glider nose showing position of KSB D.T. Timer and associated linkages plus circle tow hook. Note nose skid to protect the delicate hook mechanism.



This avoids the problems of releasing the model with the line still attached and tangling the line on the ground, but does have the disadvantage that to obtain smooth releases you need to retain spare line on the winch to pay out at the moment of release, hence a probable still air performance reduction of around 10 seconds. The most suitable line for this technique is the lowest stretch line possible and I find that 30lb. breaking strain *Dacron* is ideal. It also demands a strong tangle-free winch system, my personal favourite being an old grindstone suitably modified with the line guide inset into the drum holding the line. The winch should be strapped to your wrist when in use to prevent you from dropping it, which results in a zero score and could cause serious injury to a bystander as the model drags the winch around.

As you may have gathered from the above I use the latter approach preferring to lose a few seconds performance in the interests of ease of operation and reliability. Whichever system you choose I suggest that you stick with it at all times rather than alternating for different flying sites and conditions.

As a final summing up I would think that the most likely course for success for a

budding glider flyer with some prior experience would be an A2 with the following characteristics:

Wing: around 78in. (projected) span, 5 $\frac{1}{2}$ in. chord with a 7% to 8% thick section and 'I' beam spruce spars, covered in heavy-weight tissue. The two halves should be joined with two lengths of 10swg wire one 12in. long, one 6in. long, both situated on the main spar (this arrangement helps to avoid sudden stress changes in the spar). Weight with joiners should be around 190 to 200 grams.

Tailplane: 70 to 75 sq. in., flat bottomed section covered in lightweight Jap tissue. Weight around 8 to 10 grams.

Fuselage: based upon a *Ronytube* glass-fibre rod, to give strength, equipped with a circle tow system. Weight around 210 to 220 grams.

And lastly the most important factor of all, practice as much as possible to get used to the models that you intend to regularly use and don't restrict your practicing to good weather only or fool yourself by practicing on very short D.T.s. I usually reckon that it is best to spend six months or more getting to know a new model before I consider flying it in a contest.



Modelhob kits

The temptation to shout "Ole" was almost irresistible when the last layer of wrapping paper was torn from a recent parcel from *Micro Mold* for what was revealed was a trio of Spanish model kits from a newcomer to the model aircraft world, *Modelhob*.

All of the boxes are certainly attractive and makes one all the more keen to view the contents. Quality certainly lives up to expectations, good die-cutting, quality instructions, decals and hardware.

Out of the three kits examined the SE5 really took our fancy. Ostensibly a 610mm span rubber model, the possibilities of either CO₂ or even IC engine conversion are obvious.

This kit includes six sheets of die cut parts plus strip and sheet wood, very nice *mat* finish decals tissue, rubber, moulded plastic lightweight wheels and propeller in fact everything necessary except glue and dope. Illustrated with fully re-touched photographs which really do bring out the details of construction, the litho printed plans are very clear.

A control line model with the unlikely name of 'Yeyito' 900mm span for 2.5cc motors comes next on the list. A similar complement of parts is provided, no rubber of course, but a moulded plastic fuel tank, alloy undercarriage and wheels, bellcrank nuts and bolts, fuel tube etc.

Finally in this batch of kits, 'Siroco' a one metre span beginner's glider. Simple, easy to

construct built-up wings with sheet fuselage and tail surfaces; there should be no difficulties for the raw novice with this kit. Rubber bands for wing retention and lead shot nose weight are included.

Prices of this trio of kits are as

follows: SE5a £7.85, 'Yeyito' £9.75, 'Siroco' £5.75.

During discussion of these kits with *Micro Mold's* Roy Scott, we were promised one of the range for a full kit review — we will keep you posted on developments.



Electronic LCD stopwatch



Hillcote Electronics of Kerridge End, Rainow, Macclesfield, Cheshire are marketing various watches and stopwatches, one of which, the 'MQE Sport Supra' shown here, was used at the recent F3B Thermal Soaring World Championships held at York. In common with many multifunction timepieces today it offers several modes of operation. It has normal clock functions displaying hours, minutes, seconds, day and date (either as a 12 or 24 hour display). It also has alarm function chiming on the hour and sounding a 20 sec alarm at a specified time, it even

Jennican pump-up aerosol spray gun

If spray painting on a budget appeals to your pocket this novel device from *Jennican* will soon find a place in your workshop. In appearance, the *Jennican* pump-up aerosol spray is very similar to a normal aerosol spray can, the difference lies in the bulky 'Christmas-tree' unit at the top of the container which incorporates a Schraeder connector for car footpump and a pressure relief safety valve.

The top is removable to allow the user to fill the can with the chosen liquid for spraying. Once filled and pumped up to around 50psi spraying can commence using one of the three different nozzles supplied with the outfit. Just keeping pumping up as the pressure drops.

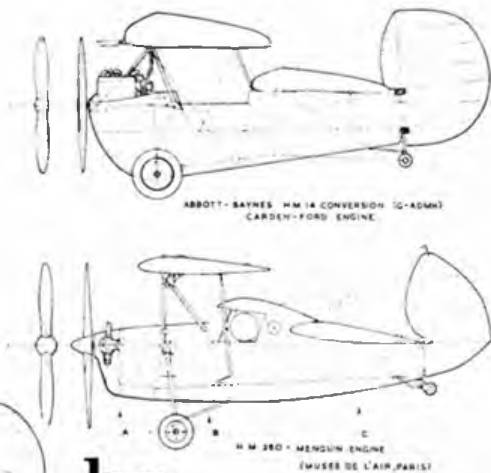
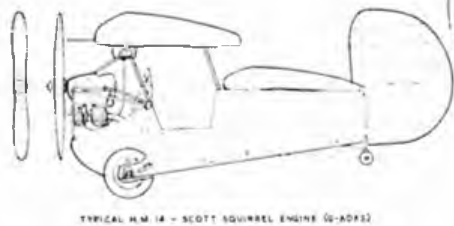
A handy pistol grip is also available which can be fitted to the *Jennican* spray unit or a conventional aerosol. This item should be widely available in DIY and model shops at around £9.95 for the spray can and £1.50 for the pistol grip.



has 'snooze' which will repeat the alarm after a five minute interval — just the thing for the slow wakers amongst us! The stopwatch functions, although fairly standard, do have the edge on a number of other models now on the market. It will record times up to 24 hours with a nominal resolution of 1/100 second. The buttons have a good firm 'click' action and pressing the start/stop button also causes a short 'beep.' You can time a glider in a crowded fly off and be reasonably certain the watch has started without taking your eyes off the model! Two modes of lap timing

are available (1) Standard: where pressing 'Lap' freezes the display at that time with the 'total' counter carrying on and pressing 'Lap' again updates the display (i.e. lap times are cumulative) or (2) Section: that allows you to measure individual lap times for each press of the lap button. Finally there is a PACER mode that will emit 'beeps' at a pre-selected rate (five to 155 beeps per minute). Intended to help joggers etc. to run at a steady pace this could conceivably help a team race pilot achieve a nice constant whipping technique! Cost of the 'MQE' is £12.50.

Building a Flying Flea



by
**Gildas
Jaffrennou**

THE ROMANCE of invention is dying out and the field of discovery has been allocated to scientists only. They have defeated the amateurs with their wind tunnels and computers, but in 1933 the building of an aeroplane was still a romantic undertaking. Many builders thought they could by-pass the laws of aerodynamics and by trial and error, invent an ideal flying machine. A Frenchman, Mignet, wrote a book at the time, in which he claimed that he had designed and tested such an aeroplane. The book was a tremendous success, and it was translated in many languages.

Having read what Monsieur Mignet had to say about his new flying machine, I was overwhelmed with enthusiasm. I called on my friend John, who was a baker by trade. When I arrived, he was busy mixing the afternoon batch, stripped to the waist and sweating profusely. I produced the book written by M. Mignet. John cleared off the dough and flour from his large hands, sat on

Right: uncovered 'Flying Flea' wing leaves the attic workshop over the bakery - or 'Boulangerie,' if you like. Below: with 'Flea' partially covered and a fair proportion of the beechwood discarded as shavings, time off for an engine test.



the cover of the kneading-trough, and glanced through the pages. He seemed very impressed. By the following day, he was as enthusiastic as I was and we decided to build our own aeroplane.

The timber was ordered straight away. Oregon pine for the main structure and a joist of well seasoned beech for the propeller. John was to make the framework of the two wings. I took charge of the fuselage, the controls and the engine. John's attic over the bakery became his workshop and I turned my garage and cellar into an aeroplane factory.

For ten months we devoted all our spare-time to aviation. We worked very hard and learned a great deal as the enterprise progressed. Our enthusiasm never failed. The aeroplane was a snappy single seater powered by a 20H.P., air-cooled, "Aubier-Dunne" engine. The designer called the new flying machine, the "Flying Flea", because it was to invade the roads of the sky, in the same way that Ford Model T motor-car (nicknamed "Road Flea") invaded the roads of America in the days of silent cinema and crystal radio sets.

Many Flying Fleas had already been built in France and Great-Britain and they were flying successfully. The cruising speed was 80 miles an hour and the ceiling was 6,000 feet. The machine had the general appearance of a giant butterfly, with a wing span of 20ft. Her main feature was that she had no tail stabilizer. The larger wing performed that function by rotating along its axis. It simplified the steering so much that you could pilot with the stick only, cross your legs if you wished. . . . And what you had to do, was to pull the stick if you wanted to ascend and to push it if you wanted to descend. Now, to turn left you pushed the stick to the left, to turn right you pushed it to the right. Simplicity itself. . . .

By spring-time the aeroplane was finished. We used to take her out in my garden, on the lawn and having made her tail fast to an apple tree, we had the engine roaring away for hours while we sat in turn in the narrow cockpit elated with the scent of castor oil and the wind of the propeller. The book said that it was essential to run in the engine for five hours at least before attempting any take-off. For good measure we did it for ten hours in all, until the neighbours started to complain!

Then, at last, having checked everything once more, we towed the Flying Flea to the field of a friendly farmer. It was a long meadow with a road one side and a trout stream on the other, absolutely ideal for flying and taxiing practice. In no time at all we had a crowd of spectators. Many came and asked questions. One man told me the machine would never fly, her wheels were far too small. . . . Another one started an argument that during the first world war he had actually seen dozens of aeroplanes in flight and on the ground and that he could see what was wrong with this one: there was not enough room between the 'belly' and the ground. "You will never have enough air under her, and I bet anything she will not take off. . . ."

The spectators were a nuisance. There were those who kept swinging the tail right and left and those who were not aware of the translucent disc of the whirling propeller until they were nearly in it. . . . All very infuriating, but we had to keep cool, to think and concentrate amid all that irresponsible chatter.

Right: proud owner Gildas Jaffreman alongside the completed aircraft. (Photo is very old and no negatives are available).

We managed to taxi up and down the field several times at high speed; it was great fun. Once, a sudden gust of wind caught me on the port side and I headed hopelessly towards the trout stream. I could not slow down and the river was approaching fast. Just in the nick of time, I remembered what the book said about such an emergency. "Grasp the two wheels"! I grasped the tyres with my gloved hands and managed to slow down, but not quite enough. I tucked my head in my shoulders, closed my eyes, and waited for the worse. There was a thump, a splash and sudden silence and there I was, sitting in the water.

Thank goodness the river was not more than two feet deep . . . You should have seen that crowd racing to the rescue. . . . But I was all right, and the damage to the Flying Flea was not important enough to be taken into account.

Two days later we were back in the meadow. It was a fine day and I told John that the take-off was now or never. A few taxiing runs up and down the field bored the crowd and most of them went home.

We checked and re-checked everything. I sat in the cockpit, John swung the propeller. The engine roared and I moved slowly to the far end of the field, in order to face the breeze. I turned round and I could see John waving at me in the distance. Then I took a deep breath, and tried to recount all the advice given in the book in the chapter *first flight!*

I opened the throttle and the ground went spinning past. A glance at the speedometer: 60, 70, 75 . . . this is it. I pulled the stick very gingerly and I was airborne . . . There were trees and bushes at the end of the meadow, another gentle pull on the stick and I cleared them, just . . . Now my heart was beating like mad, and I endeavoured to relax.

The wing over my head was very re-

Right: never mind the 'Flea,' that car in the background is the real puzzle! Below: people did actually wear shoes like that! Propeller seen 'tied here, note reduction gear on the inverted twin cylinder engine.



assuring. I saw a motor-car on the road, it stopped and two people came out. In the distance I could see my home town and the wonderful chessboard of the countryside right up to the horizon. It was absolutely beautiful and my trust in the Flying Flea was complete. I had a feeling of complete safety, but time was for action and I did not want to venture too far during the first flight. Stick gently to the right. Dear me, too much! The machine leaned on its side in a most frightful manner. I straightened the stick and this caused a jerk and a wild rocking . . .

Eventually the machine resumed an even course and I felt calm again. The long meadow was there again some 300 feet below. I crossed over it and then turned to the left, very very gently this time. . . . Now I



was facing the wind again and ready for landing. I slowed down the engine, pushed the stick forward a bit and the ground came up and up.

Careful now! Gently does it, said Monsieur Mignet. I was now approaching the field's boundary and hardly 15 feet from the ground.

Gas off! Pull her up a bit! The green grass was now spinning away just under my wheels. I touched the ground and bounced instantly in the air like a rubber ball, down again with a thump and I landed all in one piece.

There was John, very pale in the face, and all panting because he had been running after me. I sat on the grass in order to recuperate a bit. I was completely exhausted. But, what a thrill! I had flown my own aeroplane, solo, first time out with no licence. It was dead easy, just followed Monsieur Mignet's instructions! John said we should call it a day.

A week later we were back in the meadow. In the meantime, the Flying Flea was overhauled, cleaned of dead grasshoppers which had coated the windscreen and the propeller. The paint was touched up and everything was ship-shape when John sat in the cockpit ready for his first flight. I gave one swing to the screw and the engine whirred away happily. After one taxi run, John faced the wind and speeded off. In less than 150 yards, he was airborne.

He was about twenty feet up, when I saw the Flying Flea suddenly turn turtle, wheels up, and crash. It all happened so quickly . . . I ran as fast as I could to the scene of the disaster, and to my great surprise I saw dear old John crawling out of the machine. He had a ghastly cut on his forehead which was bleeding badly. A passing motorist took him to the doctor. I stayed with the Flying Flea and with the aid of kind helpers, turned her over to a more dignified position. She was badly damaged. The main wing was smashed, and so was the propeller which I had carved with so much care. The fuselage and the engine were all right. The reader will be pleased to know that John was all right too after a few stitches on his forehead.

After that disaster, we came to the conclusion that it was the end of the enterprise. The remains of the Flying Flea were pushed in a corner of my back garden. The children next door, used to come and sit in the cockpit and make noises to imitate the roar of the engine and I used to tell them all about the laws of aerodynamics, and to boast about the long solo flights I made in that machine, to Paris, London and Barcelona and about the narrow shave I had one day when I made a forced landing in Africa and I was nearly eaten by cannibals! . . .



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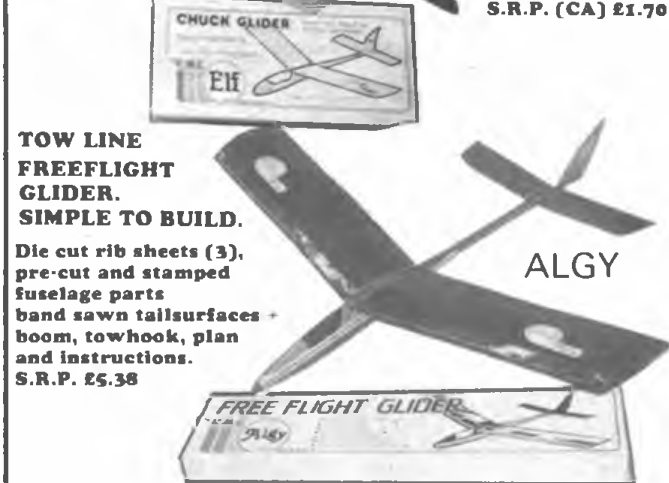
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| 29 BB Std. A/C | £24.35 |
| 35 Std. A/C | £18.75 |
| 35 BB Std. A/C | £25.50 |

Silencers are available for all the above Engines - Please ring for prices.

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| OS 10 FSR Stunt A/C | £17.75 |
| OS 15 Stunt A/C | £20.25 |
| OS 20 Stunt A/C | £22.75 |
| OS 25 Stunt A/C | £23.95 |
| OS 30 Stunt A/C | £25.50 |
| OS 35 Stunt A/C | £26.50 |
| OS 40 FSR Stunt A/C | £47.95 |

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| Master 2.5cc & 4cc | £6.00 |

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| Ben Buckle Buccaneer Std. | £32.50 |
| Ben Buckle Playboy Snr. | £32.50 |
| Ben Buckle Red Zephyr | £32.50 |
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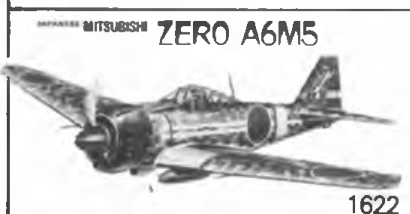
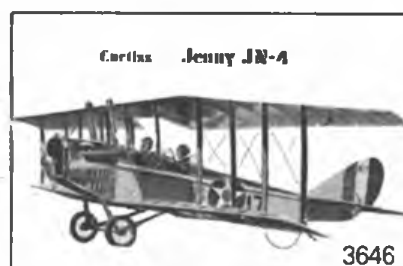
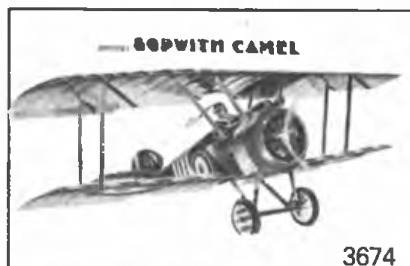
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APPENDIX: Links to plans

The magazine contains one free plan (De Havilland 60 Cirrus Moth) printed front/back on a folded pull out banner of four sheets. The banner is not included in the document.

De Havilland 60 Cirrus Moth by John Watters

Power scale

https://outerzone.co.uk/plan_details.asp?ID=1794

Westland Widgeon III by E.J. Riding

Rubber scale

https://outerzone.co.uk/plan_details.asp?ID=2737

Fairey Fulmar by David G. Diels

Peanut scale

https://outerzone.co.uk/plan_details.asp?ID=1790



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