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Edited by Bryan Gostlow
 Distributed by Tony Harper

How does he do that?
 an interview with Dave Banks



If you've ever looked closely at or had the chance to pick up one of the scale pilots that Dave Banks produces then you've probably asked yourself, "how does he do that?"

the process at a glance

Once his research is complete Dave models the figure or master from milliput epoxy putty. When satisfied that he's got all the detail right and *most importantly* the pilot's face then he can go on to form the mould. The material used for this is silicone rubber which needs above all to be thin and flexible. From each mould something like fifty figures can be formed before the repeated peeling leads to tearing and it's time to go back to the master and make a new mould.

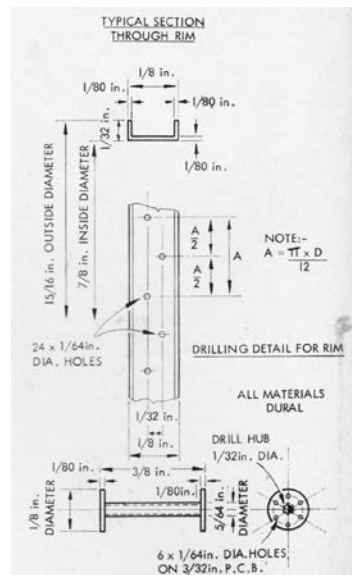
Each time Dave makes a figure he paints the inside of the mould with a mix of resin and fairing filler to form a tough shell and later adds the foam filling. With care the figure can then be released from the mould and is ready to be painted.



ghostly trio of master, mould and subsequent figure

how he got started

As a lad Dave moved to East Dulwich and was delighted to come across Blackburn's model shop practically at the end of his street. The window was filled with rubber models and better still, the owner turned out to be someone who could guide Dave through his first few builds to the point where he never looked back. Money was tight but after a Keil Kraft apprenticeship Dave's interest turned to aircraft of the Great War. Around 1973 Doug McHard started to design peanut scale models around a Brown Campus A-23 CO2 motor. Dave quickly got the CO2 bug and built a number of Peanut models.



Aeromodeller
 Jan '76

The January '76 Aeromodeller has a piece by Dave describing how to make spoked wheels and features his 1/24th scale Bristol Scout. Sure enough there's a pilot in the cockpit.



Dave's Sopwith Tabloid

By day Dave has been a piping designer, think pipes but think big, along the lines of petrochemical plant. He answered an Ad in his local paper. A nearby model making company were having difficulty reading a plan and, in particular, understanding the pipework. Dave was able to help them out but was struck by the techniques being used. He quickly picked up on making a silicone mould and then using self-levelling foam to create multiple copies of objects. Working through some of the many Military Modelling magazines he was able to gradually refine his technique. He lives just down the road from the RAF Museum in Hendon and combining frequent visits there with a collection of books on pilot clothing has been his approach to research



above all, get the face right

the range

Beginning with open cockpits, military in particular, his range of pilots now includes WWII, German, US, Russian and Japanese pilots available in a range of sizes from 1:32 through 1:24 1:20 1:16 1:12 1:10 1:8 and right up to 1:6

Each is available unpainted or finished by Dave himself. He says it can take up to three hours to paint a figure and, to my mind, doesn't charge nearly enough as the quality is superb. He can also make cowls, engines, exhaust stacks and wheel spats.

As you may have read in the July newsletter Dave was approached by Pete Iliffe to come up with not just any pilot but Adolf Galland for his superb Me 262.



Adolf Galland in the office

You might think that a downside of the technique Dave employs is the need to create a new master for every scale, but surprisingly this isn't necessarily true. He's come up with a way of 'head shrinking' which doesn't owe anything to the natives of Borneo – at least that's what he says.



amazingly - three for the price of one

Dave still finds time for model making, but only just as his business has taken off – no surprise there. You'll maybe bump into him at Old Warden or one of the IVCMAC Public days.



Mitsubishi A5M possibly

SAMS carry a number of Dave's figures, but for the whole catalogue search the internet for: *david banks pilots*

Tiny writing and a nice smell of balsa wood

Andrew Hewitt writes about the *Comper Swift* – *Bluebird Models*

It must have been in the mid-seventies, when hair was long and flares were wide, very wide, that I read the review by Eric Coates of the new British P-nut kits designed by Andrew Moorhouse. Now I had been aware of Andrew's models from the Flying Scale Column in the *Aeromodeller*, where pictures of his models appeared from time to time. There were reports of amazing indoor scale competitions from airship sheds and sports centres, but it was all miles away from me stuck in Nottingham, I couldn't even build a scale model that would fly, it was all another world.

My dad had the ¼ scale plan of the *Comper Swift* from Dennis Bryant and I took a fancy to it. We had also been on holiday in Cornwall and found a *Comper Swift* at Land's End Aerodrome by complete accident and that also got me interested, it looked so fantastic. The *Aeroplane Monthly* had also recently had an article on a *Comper Swift* in the Preservation Profile column and the Ultralight series. Everywhere I looked I was seeing *Comper Swifts*! Then Eric Coates was raving about these new kits for the *Comper Swift* and *Luton Minor* for £1.25 each, they were just in reach. A few weeks later I had earned and saved enough pocket money to go to the post office to get a postal order to send off for the *Comper Swift*. With a letter in hand with a stamp on it I shot off to the post office and was devastated to find out that a £1.25 Postal order cost about £1.30, I was gutted I only had £1.25. I had to wait another week to get the full amount. I sent it off and checked the mail every day for 2 weeks!



one of the familiar boxes

Finally it arrived and I have been totally hooked on scale models ever since. The white box with a black and white photograph of Andrew's prototype on it was eye catching, inside the smell of the fantastic balsa wood was overpowering. I had never seen real balsa wood... my dad built control line models, enough said.

The plans together with some red and white jap tissue, were so tightly rolled up that it was a struggle to unwind them for fear of ripping both.



On carefully unwinding I was struck by miles of tiny writing as if written by Elves, who lived in a word of real balsa wood and great aromas. On reading these little words my life changed, they gave a detailed understandable step by step guide on building a P-nut that would fly. Those tiny words told me how to make a propeller, how to cover in tissue, how to put the decoration on, how to make a dummy engine and how to trim it. If you have never seen one of Andrew's P-nut plans, then you may not understand how tiny the writing is, all hand done, fantastic (I now wear glasses!).



Andrew Hewitt's original Swift

The instructions were so good that I built it and flew it on my local football pitch and my best time was 20 seconds, euphoria does not do justice to the elation I felt at my success. The plans also had all the formers and ribs drawn out so that I could build another and another. Each one was better than the last and Nottingham Model Club was having indoor meetings at Chilwell Olympia Sports Centre on a Sunday afternoon. I was able to get my *Comper Swifts* to do 47 seconds from a take-off, with no dihedral either, the real one had none. I seem to have been doomed to like aircraft with not much dihedral ever since. So all this made Andrew Moorhouse a bit of a celebrity to me (not like the ones who are on telly).

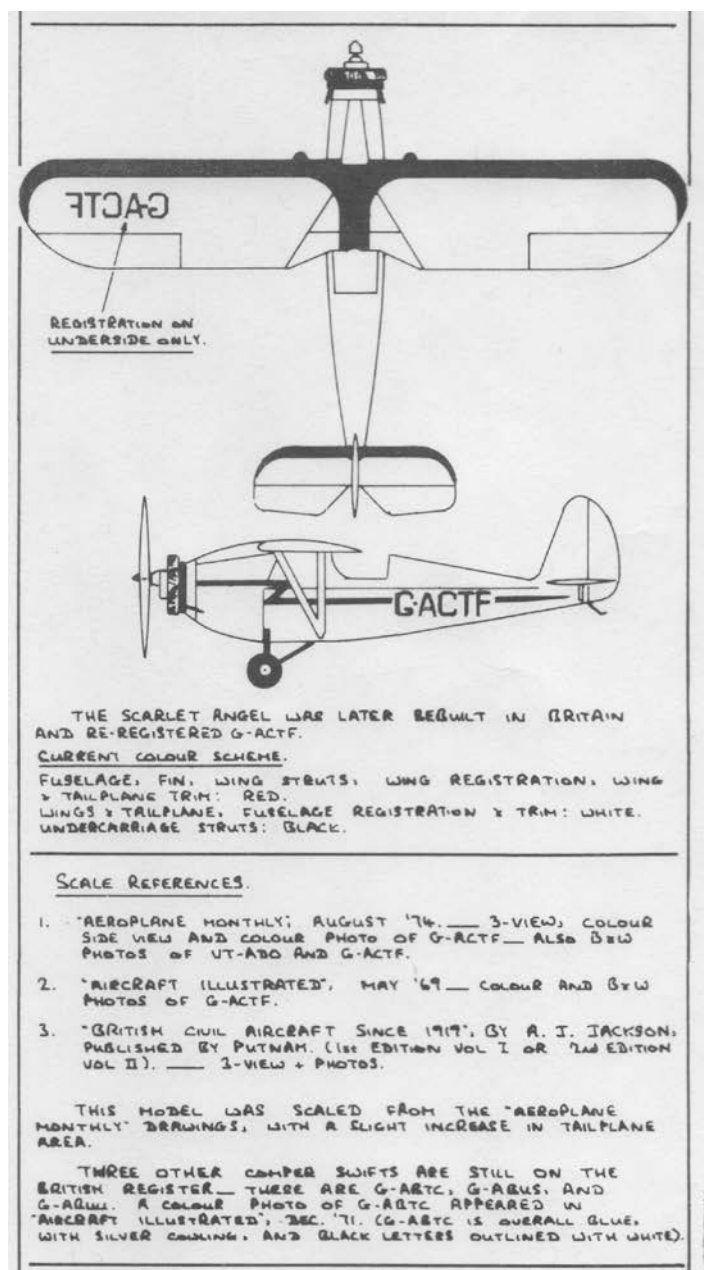
At some time in the Seventies I talked my Mum and Dad to take me to the Indoor Nationals which were local at Derby, where I

flew my second Swift all day in between contests (flown by real Aeromodellers, not me then).



Andrew flying in the '70s

Unbeknown to me Andrew Moorhouse came and stood next to me and watched my burnt offering circling doing it's 40 second flight. I had painted it cream and blue as G-ABUU, complete with spats and a naff pilot. He complimented me on my model's flying. I ran off to tell my Mum!

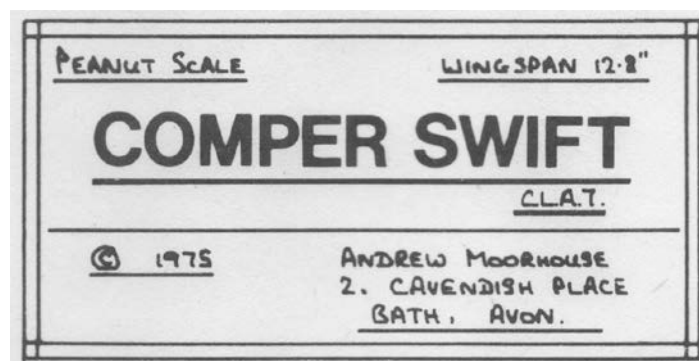


Those kind words from Andrew pushed me into a low earth orbit, spurred me on to fantastic model designing, building and crashing and to employment within Aerospace Engineering.

What a bargain, £1.30 and a few kind words!

I still have a couple of his kits that I have not got around to building, a Comper Swift and a Luton Minor, I still look over them once or twice a year, unroll the plans and squint at the writing. They still generate the same feelings I had before I was a teenager, pure inspiration. I also still have the remains of Comper Swift number three, just to remind me of the journey I am still on. If I see Andrew at a meeting I make sure I shake his hand and thank him for what he has given me, he must think I'm a nutter. If I see a youngster trying to fly a model I will always offer my help or kind words because I know this sort of thing can have legs that can last a life time.

Andrew Hewitt



thanks go to Alan Hunter for making a kit available to photograph

You can read what Eric said in his kit review – page 12

Just possibly, the Swift is a favourite of Andrew Moorhouse too



photo Aeromodeller January '80

Andrew winning the Rubber Scale contest held at Old Warden.

SWEET "P30"

Spencer Willis P30 kit review by Ed

Let's be clear, your editor is a rookie where free flight rubber is concerned, but then Michael Marshall is such an enthusiast and can be so persuasive about competing in the REN Cup. I'd seen a very nice P30 that Phil Haines had built from a kit so went online at www.freeflightsupplies.co.uk and ordered a Spencer Willis Sweet "P30" kit:

These short run kits are "hand made" with care by Spencer. All kits include all materials, including selected balsa, laser cut sheet parts, Esaki tissue. Value for money.

SWEET "P30" P30 rubber model. Laser cut balsa and ply parts, tubular balsa fuselage ready to finish, 2 rubber motors. £32.50 plus post.

I began building in good time and included a photo in the March newsletter of me planning the tail's trailing edge.

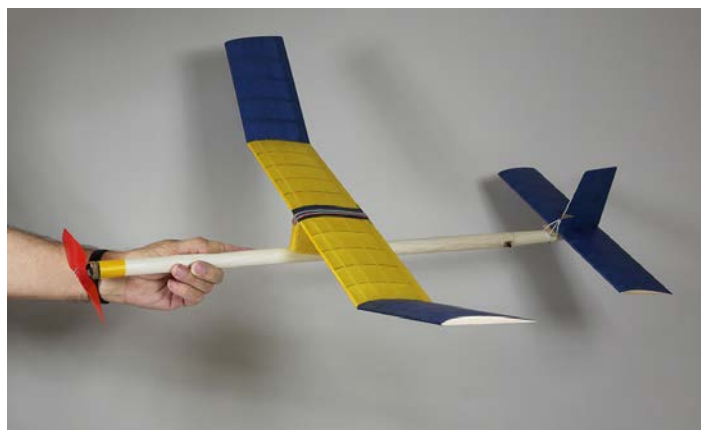
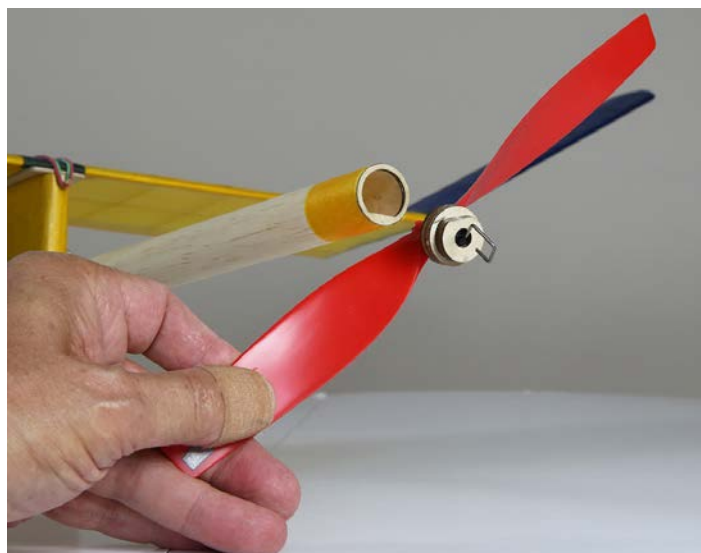


Throughout building I was impressed by the kit's quality and completeness. It went together quickly though I was last minute in getting round to covering. I'm always afraid that I'm going to ruin the model and I'm really not comfortable using Esaki. I needn't have worried as the kit Lite Flite tissue [supplied by Mike Woodhouse] went on as easy as anything and I wouldn't hesitate to use it again.

Michael Marshall was gently insistent that I fitted a DT timer, which I did, building a small pylon to take it – this is before I learned that they work more reliably if mounted horizontal!



The nose block seemed nicely thought out and the rolled balsa fuselage was especially good to work with.



Come the day of the REN Cup I made up a motor from the rubber supplied with the kit – there was enough for two – and took myself off to Newmarket Heath.

A little packing produced a satisfactory glide and so I put on some turns and the model was up and away! So convincing was its first powered flight that Michael suggested that I must have done some sneak trimming beforehand!

As mentioned above, I'm a rookie when it comes to Rubber FF and so I'll wrap up the review at this point – except to say that it was a pleasure to build and flew much better than I'd hoped for.



Thankyou Spencer Willis and Mike Woodhouse.

2016 Competition Round Up

by Michael Marshall

3 June

First competition of the year, 3 June, was an event for combined hand launched and catapult launched gliders on the playing fields. Five flights with a one minute maximum, flights less than 10 seconds not to count.

Five competitors, no lost models, results as follows.

Chris Strachan	157 s
Bruce Lindsay	149
Andrew Moorhouse	102
Michael Marshall	60
Gerald Cooper	13

70th Anniversary Competitions

Two competitions were held on the playing fields before lunch. One for HLG/CLG and the other for any Malmström rubber model. The HLG /CLG contest followed the rules for the previous glider contest plus the restriction that if a model left the field there would be no score.

There were four competitors in near perfect conditions with little wind and very positive lift.

Andrew Moorhouse	95 s
Bruce Lindsay	91
Chris Strachan	89
Phil Haines	12

The rubber model contest was for five flights, best three to score, with a one minute maximum, out of the field no score. Nearly every competitor chose to fly a Viking, probably one of Ray's best performing models and ideally suited to small field flying.

Gordon Hannah	146 s	<i>he only needed to make three flights</i>
Michael Marshall	129	
Clive Anderson	105	
Andrew Moorhouse	96	<i>not flying a Viking</i>
Bruce Lindsay	55	<i>subsequent flights models lost out of field</i>

22 June

The 22 June, almost midsummer, was chosen for the Ren Cup competition and it was a truly wonderful evening, a little cloud but barely any wind and perhaps just a little humid. In addition the light wind was blowing in a direction that permitted launches from the parking area with little risk of landings in the wrong places.

The competition was for P30 models or models with a wing span of no more than 25 inches. Three flights, one minute maximum and no reserve models. Every one chose to fly P30 except Gotthelf Wiederman who flew a beautifully executed, quite small model that he told me had been in his loft for many years. Ray Fella and Bryan Gostlow were there to help with the timing and John Wynn, our chairman was there to provide encouragement and give out the prizes. Bryan did have a model but slipping clutch problems prevented him from making a contest flight. The finale led to some close finishes with people failing to max in the rounds by only one or two seconds.

Both Phil Bailey and Michael Marshall completed maxes of three minutes which led to a fly off with the amazing result of both models landing at exactly the same time

Phil Bailey	104 s
Michael Marshall	104 s

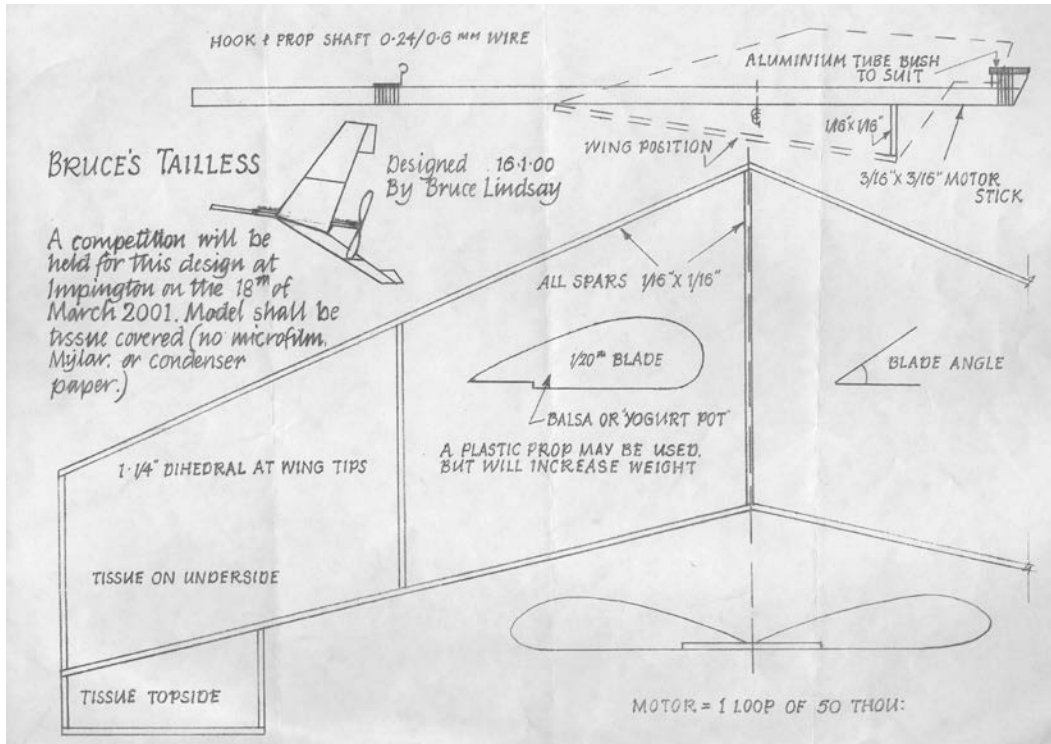
Gotthelf Wiederman	178 s
Phil Haines	175
Andrew Moorhouse	74

Many thanks to those members who supported these events.



Bruce's Tailless

Terry King's drawing from 2001



One of the first of Chris Strachan's *Public Days* was held on the 18th of March, 2001 – for which Bruce produced a competition model and drawn up by Terry.

Chuck Glider competition

photo thanks to Sonja Clarke



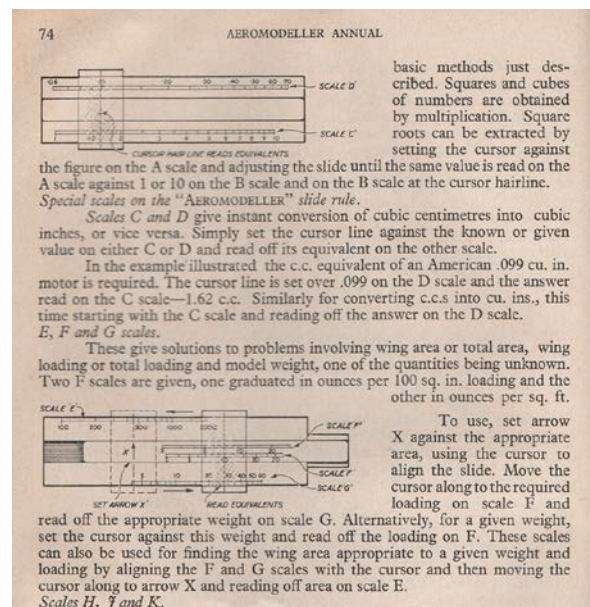
This photo first appeared in the Cambridge Evening News and was sent to John Wynn by Sonja. The competition was held in the Gropius hall and this snap taken in the old common room in the IVC community wing. So far names have been put to Paulette, John McIntyre, Andrew Hills, Andrew Crinson and Richard Bull . . and Bruce of course! We think 1973 or 74 but if you can add anything then please get in touch.

Slide Rule for Aeromodellers

Aeromodeller Annual 1956

Tony Harper has been carrying out Terry's wish that some of his models, plans, balsa and books go to IVCMAC modellers. Terry's aim was to support the Arthur Rank hospice.

So it was that the 1956 *Aeromodeller Annual* came my way and browsing I turned up an article about making a slide rule with scales devised to help modellers:



Can't help wondering how many people, at the time, sent off an SAE with 6d postal order for best quality art paper scales. Come to that, when did you last use a slide rule?

Schneider Trophy 1929 and 1931

Britain's unbeatable best

I ended a piece 'The Fawn and the Fox', Nov 2015 like this:

There was someone else in Cowes that day in 1923 when Dick Fairey and his brother visited. He had a dog in the fight and the Schneider trophy winning Curtiss made a profound impression on him too. Who was he? R J Mitchell, chief designer at Supermarine and the rest is history.

- ever since writing that I've been itching to write the sequel and, with apologies for the length, here it is.

leading up to the 1927 race held in Venice . .

Specifications for three new types of high-speed seaplane had been drawn up by the Air Ministry in March 1926. The main requirements were speed at low altitudes, controllability at high speeds, stability, manoeuvrability, and seaworthiness, and there also special provisions as to performance; speed at 1,000 feet had to be not less than 265 m.p.h., and alighting speed had to be not more than 90 m.p.h. An extensive programme of wind tunnel tests with quarter-scale models of the three types of machine – the Supermarine S.5, the Gloster IV and the Short 'Crusader' – designed primarily to test performance, was begun in the same month, and this extended to ancillary items such as floats, wing radiators and airscrews.



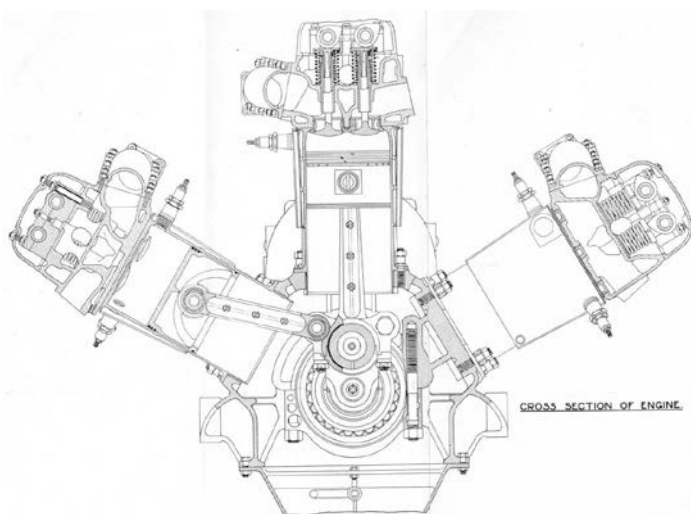
Short 'Crusader' powered by one of Bristol's Jupiter radials

The 1927 race held in Venice was won by Flt Lt Webster at an average 281.65 mph in a Supermarine S.5 with an 875 hp Napier Lion engine. But how near the Italians were to a second victory was underlined six weeks later when de Bernardi set up a new world speed record for any type of plane of 296.94 mph – the British would clearly face a formidable challenge next time.

On the afternoon of the 12th March 1928, after a delay of several days through bad weather, Flt. Lt. S. M. Kinkead took off from Calshot in a specially-tuned S.5 to go for the record. That he would beat it seemed certain, but conditions were again imperfect, and by the time he began his first timed run it was late and a mist was forming over the water. A glassy sea made judgment of height difficult, and worst of all there was no horizon. Kinkead, perhaps, should have waited for the morrow. Anyway he went into his approach dive towards the measured straight and never pulled out.

"My mind is quite made up", wrote Sir Samuel Hoare, government Secretary of State for Air, "that if the next contest

is to be held in England the Air Ministry must be responsible for seeing that there is a really efficient British entry." However the Chief of the Air Staff, Hugh Trenchard, believed that it was definitely to the *detriment* of the R.A.F. and its officers that they should be exploited in this sort of competition. Consistent with his distaste for the 'ace' pilot mentality he made clear that Air Ministry would be merely assisting by the loan of such high speed aircraft as were available.



Napier Lion 12 cylinder broad-arrow engine

For Britain it was inevitable that they should rely further development of the existing Supermarine and Gloster designs. But to keep their lead both aircraft needed more power, and the Napier Lion, boosted from its original 450 hp of ten years earlier to 898 hp at Venice, was surely nearing its limit. The question for the designers was whether they should go for a new engine, with all the uncertainties and risks that that involved, or stick to the power unit which had served them so well in the past, relying on a small improvement in horse-power and the maximum practicable reduction in head resistance and weight to hold Britain's lead.



R J Mitchell and Henry Royce

Mitchell was suffering from so many qualms and misgivings about this decision that he went to Bulman (a leading test pilot and responsible for engine development at the Air Ministry) for advice. The only possible alternative to the Lion would be a new engine from Rolls-Royce. "What do you think of these chaps at Derby?" asked Mitchell. Bulman, who knew them well, said he

had a hunch that they could do it if given the chance. "Right," said Mitchell, "that's decided it."

Overshadowed by Napier's immediately after the war, Rolls-Royce concentrated in the immediate post war years on new marks of existing engines. Then, under the pressure of Richard Fairey's desire after the 1923 Schneider race to build the Curtiss D-12 engine in England under licence for the Fairey "Fox", Rolls-Royce were stimulated into producing the Kestrel, as it later came to be known. One of the D-12 engines was stripped and examined, but Rolls-Royce eventually decided to design afresh. The Kestrel differed radically from its forebears in that each of the banks of six cylinders was formed from a single aluminium-alloy block, resulting in a very light and rigid engine. In its various marks it powered many British and foreign aircraft of the period, and from it was developed the 36.7 litre Buzzard, larger and more powerful than the Kestrel but similar in design, and giving 825 hp at 2,000 rpm at sea level. (all directly as a result of the Curtiss D-12 seen that day at Cowes in 1923)



Rolls-Royce Kestrel installed in a Hawker Hind

It was too late for Rolls-Royce to attempt a completely fresh design, but the Buzzard served as a useful starting-point: many of the moving parts of the new engine, especially in the early stages, were the same.

Rolls-Royce management were by no means unanimous in wanting to accept the contract; indeed the Managing Director, Basil Johnson, firmly believed that the company should stick to the motor car. But three men who were in favour, Hives, Rowledge and Lovesey, went down to see Royce at his home and headquarters at West Wittering in October 1928 and found him enthusiastic.

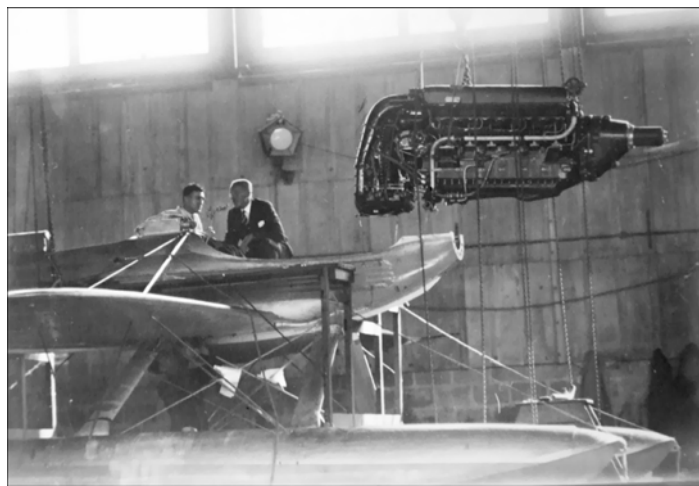
a sheltered spot

It was a bright autumn morning and Royce suggested a stroll along the beach; as they walked he pointed out the local places of interest. But Royce, who waked with a stick, was a semi-invalid and he soon tired. "Let's find a sheltered spot", he said, "and have a talk."

Seated on the sand dunes against a groyne, Rolls sketched the rough outline of a racing engine in the sand with his stick. Each man was asked his opinion in turn, the sand was raked over and adjustments made. The key to the engine was simplicity and like the Kestrel and the Buzzard the new engine would have only 12 cylinders, against the 18 of the Isotta-Fraschini and the 24 of the Packard. The bore and stroke would be 6" by 6.6" and the compression ratio 6:1. The secret of increased power would lie in *supercharging*.

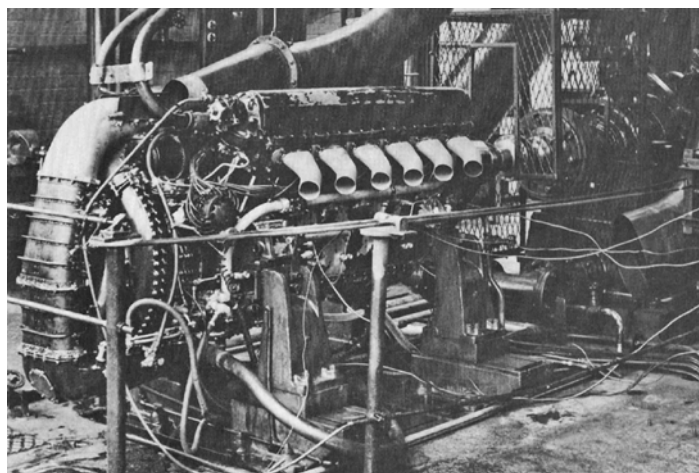
On Rowledge's recommendation Royce had brought in an expert on supercharging from the R.A.E. in 1921 named James Ellor, a man who had advanced further than anyone else in

what was then an embryonic science. The power of an engine depends upon the mass of air it can consume in a given time, and a supercharger provides a means of getting additional air through an engine of given size and capacity. Ellor had introduced supercharging in aero engines in its fullest sense for the first time in the Kestrel and the Buzzard; part of his design was a forward-facing air intake which converted forward air energy into pressure, unique at that time. The 'R' (racing) engine supercharger was designed to have the largest diameter consistent with the airframe design, even so it was necessary to use a double-sided compressor in order to handle an adequate airflow.



S.6 airframe receiving the new Rolls-Royce 'R' engine

Royce eventually guaranteed to produce an engine of around 1,500 hp. Mitchell began work on the design of what was to become the S.6. Considerably bigger and heavier than the S.5 the wings and tail surfaces were all-metal, and semi-monocoque construction was used. With the increased engine size and consumption, both floats were now utilised as fuel tanks. The final shape of the S.6 could not be decided until the engine had been fully developed, and this accounted principally for the late delivery. By May, designing, detailing and production of the first engine had been achieved and the 'R' engine was born. On the 14th May, running at 2,750 rpm, the engine gave 1,545 hp, but after fifteen minutes parts began to fail.



'R' engine on test

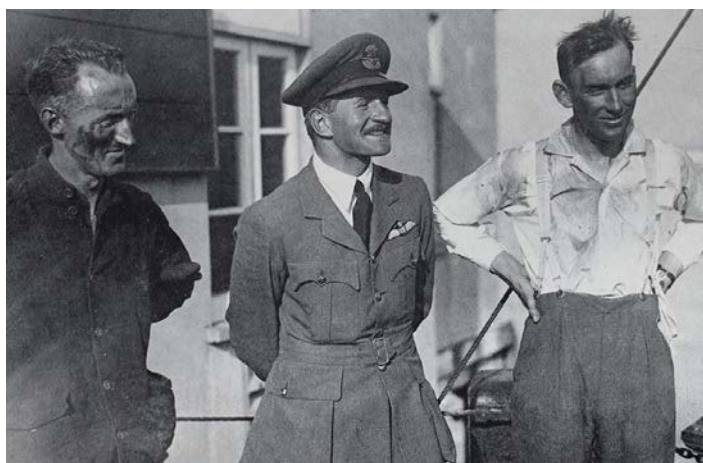
Throughout that summer the test beds at Derby reverberated with the sound of the new engine, and of the auxiliary engines which were an integral part of the test rig. There were three of

these, all 600 hp Kestrels. Two were driving fans, one to cool the new 'R' engine crankcase and the other to disperse the noxious fumes that filled the test house; both of these engines were running at full bore during the testing. The third auxiliary engine drove a special fan which provided an air-flow into the forward-facing air intake of up to 380 mph, simulating the conditions that would be encountered during flight. The noise of these four engines going full blast could be heard all over Derby. The sound acted as a barometer of progress; when the new engine ran sweetly there was optimism, when it remained silent for long periods there was despair.

The target that men like Rowledge, the designer, Hives, in charge of the experimental department, Dorey, who supervised the testing, and Lovesey, technical assistant to Hives, had set themselves was an hour's run of a proof engine at maximum speed and boost. Thirteen times an engine broke down before the hour was up, but on the 27 July, less than six weeks before the race, an engine ran for the full hour. Within another few days the decision was taken to halt development and a proved engine shipped to Supermarine. A satisfactory life of 100 minutes at 1,850 hp had been achieved.

Meanwhile the fuel problems that had been causing valve distortion, overheating and the sooting up of plugs had been solved by 'Rod' Banks who mixed a 'cocktail' of 78% benzole and 22% aviation spirit plus 3 cc per gallon of tetra-ethyl lead for the suppression of detonation and pre-ignition, and this proved about right.

The first S.6, N.247 was launched at Woolston on the 5th August and towed to Calshot. Orlebar, carrying out the first tests, found that he couldn't get the machine off the water. "On each attempt I was deluged with quite three times as much spray as the old types had ever thrown up," he wrote afterwards, "and the machine . . . swung violently to port, digging her left float so deep into the water that the wing-tip seemed only an inch or two off the surface." It took some time to develop a successful take-off technique, but once off the water the machine reacted beautifully and its behaviour in the air was exactly as forecast by Mitchell. The chief problem that remained was overheating; there was not enough radiator surface to get rid of all the heat generated at continuous full power. One answer was to fit extra patches of radiator to the floats, and Mitchell also found a way of cooling the inside surfaces of the wing radiators by means of air scoops.



1929 pilots D'Arcy Greig, Waghorn and Atcherley

Johnson's 'Neverleak'

Another problem with the S.6 was leakage from the wing radiators, which occurred after every flight.

Wing flexing during the turns, straining the rivets and joints in the coolers, was the cause, and the engineers could find no remedy. It happened that D'Arcy Greig had been having radiator trouble in his Austin Seven, and he had stopped the leaks by pouring a patent sealing compound called Johnson's 'Neverleak' into the radiator. This somewhat desperate remedy was eventually tried with the S.6 and there was no more trouble with the radiators.

One of the Rolls-Royce mechanics, changing a sparking plug in Waghorn's machine, found a spot of white metal on the electrode. The cause could only be piston failure. The cylinders were in blocks of six, so the whole block would have to be changed. The block was too heavy to be lifted by hand, the new block would have to be lowered into position absolutely truly. Under race regulations the changing of an engine was not permitted after the navigability trials. Hives, the man in charge of the Rolls-Royce experimental department, knew that a party of his fitters (the entire experimental team) had arrived in Southampton from Derby earlier that evening to see the race. He drove to the Crown Hotel in the town, where many of them were staying and told them to "get cracking, there's a cylinder block needs changing". It was daylight when the machine was pushed out on to the slipway in front of the Castle to test the engine. They said nothing to Waghorn.

Fg Off. Waghorn won at Calshot in 1929, flying the Supermarine S.6 1,900 hp Rolls-Royce 'R' at 328.63 mph

"I can see nothing of value in it."

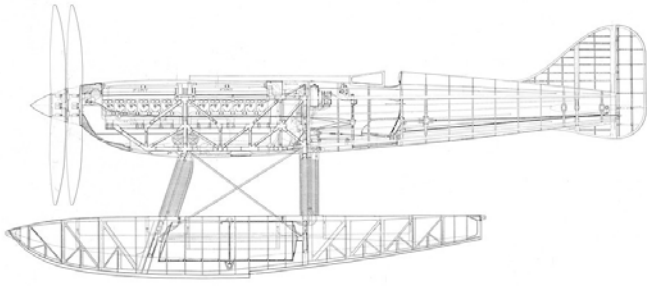
Hugh Trenchard relinquished his post as chief of the British Air Staff at the end of 1929; and one of his last acts was to re-establish his earlier stand against the involvement of the RAF in air racing. "I am frankly against this contest," he minuted the Secretary of State for Air on the 10th September 1929, three days after Britain's victory and Calshot. "I can see nothing of value in it." The government handed over responsibility for funding and organising for 1931 to the Royal Aero Club.

Italy and France determined

The evident determination of Italy and France to enter the contest and to build new machines for 1931 meant that Britain must build afresh too. The cost now involved, assuming the building of two new machines with the necessary engines, was about £100,000. Could such a sum be raised by public subscription? Public opinion as ventilated in the press appeared to be strongly in favour of an attempt to secure the trophy. When at the end of December the entries of Italy and France were finally confirmed the Royal Aero Club made strong representations to the Air Ministry for a reversal of the earlier government decision.

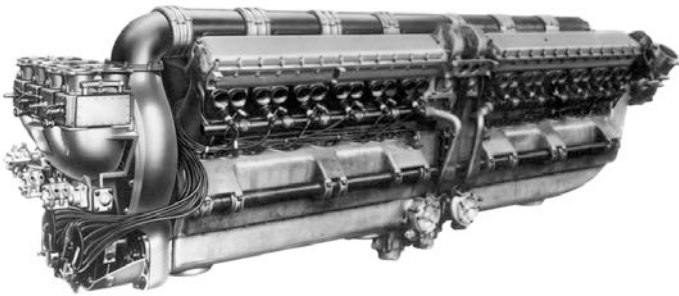
The bitterest opponent was Snowden, Chancellor of the Exchequer, who went beyond his brief by demanding that the government action to "put an end to this pernicious form of rivalry" by approaching other governments to get them to abandon the race as well.

While the first Labour Party Prime Minister Ramsay MacDonald was reviewing the government's position he received a telegram which seems likely to settle the financial question once and for all. "To prevent the socialist government being spoilsports," it read, "Lady Houston will be responsible for all extra expenses necessary, so that Great Britain can take part in the race for the Schneider trophy."



the Macchi MC.72
which still holds the world speed record for propeller floatplanes

Having looked into the failures of 1929 the Italians concluded that a project combining a Macchi airframe and Fiat engine was the only viable one, and after the frustrations of 1929 both companies were keen to work together. Fiat put up a new project for a new engine with contra-rotating propellers. The advantage lay in the vast improvement that would result in gyroscopic balance (cancelling out the torque problem on take-off and in the turns), and in the adsorption of power.



FIAT AS.6 aircraft engine

The A.S.6 was virtually two 12-cylinder V-type 1,500 hp engines bolted back to back to produce contra-rotation. The crankshaft of each engine being connected to the mid-engine reduction gear, from which concentric airscrew shafts ran forwards within the vee of the front group of cylinders to the airscrews.

testing day and night

At Derby the requirements were equally clear. First they had to increase the power output of the 'R' engine from 1,900 hp to 2,300 hp; and second they had to reduce the fuel and oil consumption. Meanwhile 'Rod' Banks mixed another of his fuel cocktails (which this time contained 10% alcohol) to give extra power and a better fuel consumption. Testing at Derby went on day and night under the same conditions as in 1929 but this time the simulated air-flow was raised to a maximum of 400 mph. At last, on 12 August, exactly a month before the race, the engine past its test, running at 3,200 revs for a full hour and giving 2,350 hp.

The difficulty of taking-off remained and Jerry Brinton's first attempt in the second S.6A (N247) went badly when the aircraft began porpoising. The floats were torn off, the machine turned over and Brinton was killed.

In 1931 the aircraft used at Calshot were: two S.6s with new engines and redesignated as S.6As (N247 that won at Calshot in

1929 and S.6A N248, disqualified at Calshot in 1929), and the newly built S.6Bs, S1595 and S1596.

Shortly after noon on the 13th September Flt. Lt. J N Boothman flying S.6B S.1595 completed the course at an average speed of 340.08 mph so retaining the Schneider Trophy. In the second S.6B S.1596 Stainforth flew four high-speed runs of three kilometres each and broke all previous records with an average of 379.05 mph.

Following the personal intervention of Sir Henry Royce, the Air Ministry permitted one more attempt. On 29th September, flying S.1595 with a new sprint engine and a special fuel, Stainforth became the first man to exceed 400 mph on a measured run when he set up a new world record of 407.5 mph.



S.1595 being brought into the Science Museum's third-floor gallery in 1961

what you probably already knew

R J Mitchell said, "It is quite safe to say that the engine used in this year's winning S.6 machine . . . would have taken at least three times as long to produce under normal processes of development had it not been for the spur of international competition." Few would argue that the development of the Merlin owed much to the 'R' engine Mitchell referred to.

When the Air Ministry issued specification F7/30, Mitchell advised his company to tender and work started in 1932, but the machine he produced, which first appeared in 1934, was *not* accepted. The specification which called for a low landing speed and a short landing run was too restrictive.



Type 224 - performance was disappointing: maximum speed was 228 mph

Mitchell persuaded Vickers-Supermarine to let him go ahead and design a fighter as a private venture, unhampered by official specifications. He was confident that by utilising all the

experience gained with his racing seaplanes he could produce a fighter so superior to anything then known that the government would be certain to award his firm the contract.

On 5 March 1936, the prototype (K5054) took off on its first flight from Eastleigh Aerodrome. At the controls was 'Mutt' Summers, chief test pilot for Vickers, who is quoted as saying "Don't touch anything" on landing.

and maybe, what you didn't know

The design and development of the type of blower used in the 'R' engine bore unforeseen fruit some years later when Frank Whittle's first successful jet engine embodied a unit of this basic type.

The Junkers Jumo 004 which powered the Me262 had seemingly advanced axial compression with an overall pressure ratio of 3.14 : 1 whilst Whittle's W.2 with double sided centrifugal blower had a *superior* pressure ratio of 4 : 1

This links back to Royce bringing in James Ellor, an expert on supercharging, from the R.A.E. in 1921.

Lastly, the special fuel development work of 'Rod' Banks was to play a dramatic part at a crisis point in the Second World War. At the time of the Normandy landings and the threat from the German flying bomb, the potential was remembered and a similar fuel was developed at the R.A.E. which gave Mustangs and Spitfires another 30 mph at low level.

The Schneider Trophy Races by Ralph Barker
Schneider Trophy Aircraft 1913 – 1931 by Derek N James

Flying Scale Column by Eric Coates

Aeromodeller November 1975

One notable absentee from the regular entries at Cardington on the 18th August was Andrew Moorhouse. This is not surprising as Andrew has been concentrating on establishing his own kit manufacturing business. To Andrew must go the honour of producing the first Peanut Scale kits in the British Isles – trading under the name of Bluebird Models of Bath. Andrew has his first two productions available at Cardington. It is with great national pride therefore, that after reviewing endless offerings from the USA, some good, some bad. I can at last recommend a native product!

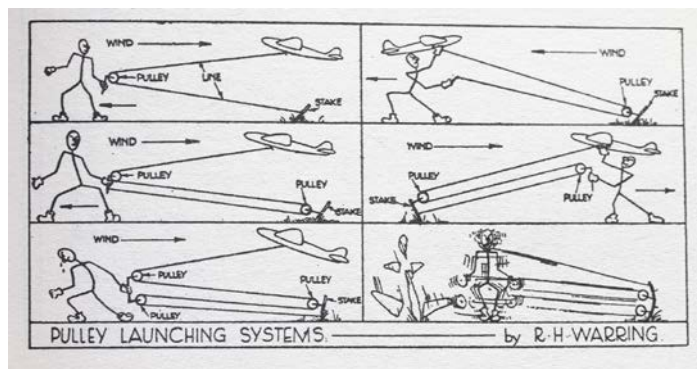
Both prototypes now offered in kit form have been exhaustively test flown in the Cardington shed and I can vouch for their flyability. The models presented initially are the Luton Minor and the Comper Swift. Both are relatively simple to build and are aimed at the beginner to miniature scale modelling rather than for out-and-out duration performance. To this end, the structure is relatively 'beefy' utilising 1/16 in. sq. framework 1/16 in. sheet formers and 1/32 in. ribs.

The contents of the kits are almost identical. Both feature very clear and extremely detailed drawings; the quality of the printed sheet wood is superb and the fineness of line rivalling that to be found in Tern kits. The stripwood tends to be a bit on the hard side but this is no bad fault in a beginner's model. All curved outlines are built up from laminations of 1/32 in. x 1/16 in. balsa, with full sized patterns for all the formers for these outlines included in both kits. Although a little more difficult to produce than cut-out sheet outlines, this form of structure is lighter, looks neater and is far stronger. On the same sheet are

also full sized patterns for the registration letters and trim lines etc. which allow these to be cut directly from the coloured tissue provided.

The standard propeller included is the 5 1/2 in. dia. 'Sleek Streak' plastic unit. Although reasonably efficient, to get the best out of these models a Paddle Blader is recommended. A full sized drawing to make a laminated balsa unit by the spirally laminated 'McDonough' method is shown. These excellent kits are completed with a pair of lightweight plastic wheels, nylon nose button, propshaft and washers etc. and retail at a price of £1.25 each.

many thanks to Richard Staines for digging out this review



Putting on turns

SAM 35 has the answer

In June SAM 35 Speaks included a formula for calculating the number of turns to wind onto your motor:

take the length of the motor in inches and cube it, then divide by the weight in grams before taking the square root and multiplying by 44 . . . simples!

but if you want the result without the pain I've added a tool to our website which calculates the result . . . you'll feel nothing:

turns calculator

enter values for length and weight

length inches

weight g

calculated turns

example: a 30g motor of un-stretched length 29 ins
entering those values into the calculator and clicking on 'calculate' we get 1,255 turns

<http://impmac.co.uk/indigo.html>

Model Shop

Tony Harper visits Ely Cycle Centre

When we were lads and lasses it seemed that every town had a model shop, the bigger the town the bigger the shop. Smaller towns had to make do with a couple of shelves of modelling materials tucked away at the back of a shop which specialised in bicycles, prams and Dinky toys. There was such a shop in Newmarket now long gone. True model shops are very few and far between but there is one or two of the bicycle type shops dotted around and one can be found in Ely in the Cycle Centre.



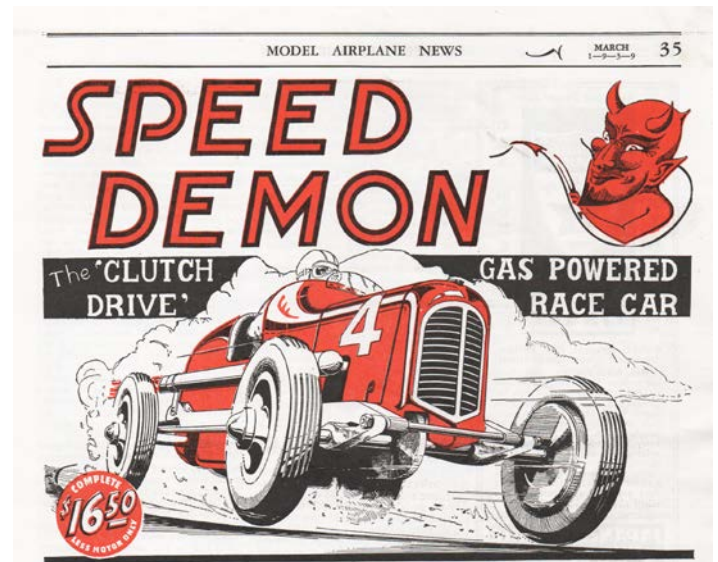
It is almost impossible for these “department” model shops to stock everything we could conceivably need but the one in Ely is, nevertheless, rather well stocked.



There is a good stock of wood, the Balsa is the well known “Orbit” range also Spruce, Obeche and other exotic wood such as Mahogany. Not much call for Mahogany in model aeroplanes but we do use ply and there is a good selection of that. At some stage we need to stick things together so we need glue, here you can find all the various adhesives made by Deluxe, Speed Bond, Aliphatic Resin, Super Phatic and so on. What looks to be the full range of Rocket Cyano’s can be found on the top shelf. There’s even a strange substance called Balsa Cement. If you need tube or sheet metal, Ali or brass, it’s all there in the KS metal stand and, I noticed this week, some carbon fibre rod. There is dope, thinners, sanding sealer and oil for squeaky bananas, brushes, paint and should you have the urge one or two plastic construction kits. To be honest the range of plastic kits is one of the best, I would think, in East Anglia. But don’t take my word for it pop in and have a look for yourself if you can’t see what you want have a word with Philip, the young man who oversees the operation. If he hasn’t got it he will try to get it and if you can’t collect it yourself you can always give me a shout and I can do it for you.

Tony Harper

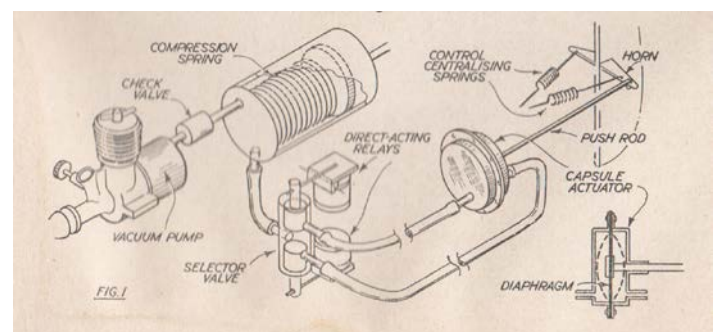
Model Airplane News - 1939



Terry King had around a dozen copies of pre-war Model Airplane News which I’ve had a chance to look through. Although well-thumbed, as you might expect after almost eighty years, they make fascinating reading.

Don’t go there!

Aeromodeller Annual 1956



Hydraulics for Aeromodellers – well, maybe not.

de Havilland Aircraft Museum

an overlooked gem



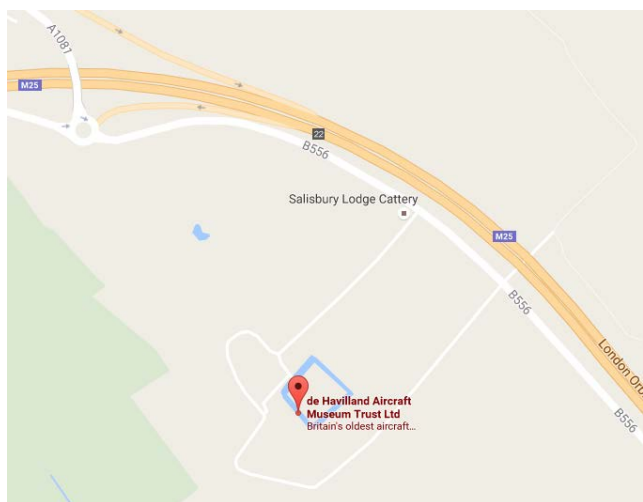
Salisbury Hall was built on the site about 1507 and during the 1930s Sir Nigel Gresley, designer of the Mallard, was in residence. Aviation first arrived in October 1939 when the de Havilland Mosquito design team moved in for reasons of security and secrecy.

A barn like hangar was erected across the moat where the first prototype was hand built out of wood by a team of craftsmen, using non-strategic material and non-strategic labour. A total of three Mosquitos were flown out of the surrounding fields to Hatfield saving a month of dismantling and reassembly. De Havilland left in 1947 and the Hall slipped into a derelict condition.

The Mosquito Prototype W4050 returned in 1959 to become the first aviation exhibit housed in a hangar behind Salisbury Hall, saved for posterity by Bill Baird and Walter Goldsmith. The collection began to expand in 1968 with the arrival of the Venom Night Fighter and now holds many de Havilland aircraft and engines.

This gem of a museum is often overlooked but easy to find: signposted *Mosquito Museum* you'll find it if you leave the M25 at junction 22 – about 3 miles west of where the A1(M) meets up with the M25.

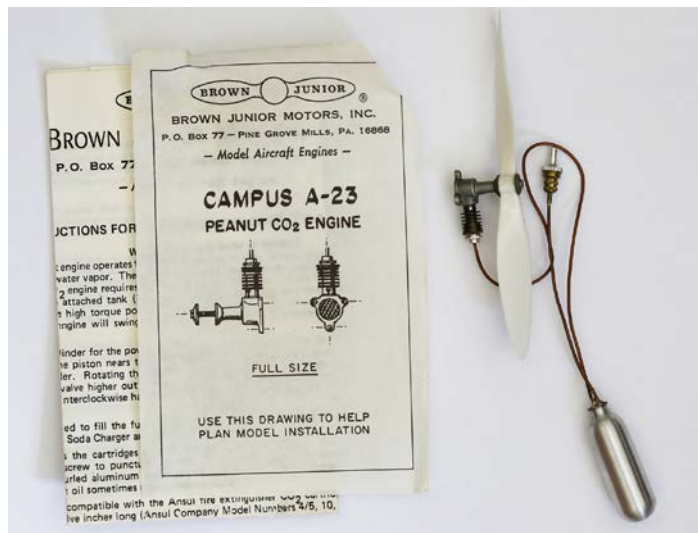
Belt and braces, enter AL2 1BU into you Sat Nav and take a packed lunch.



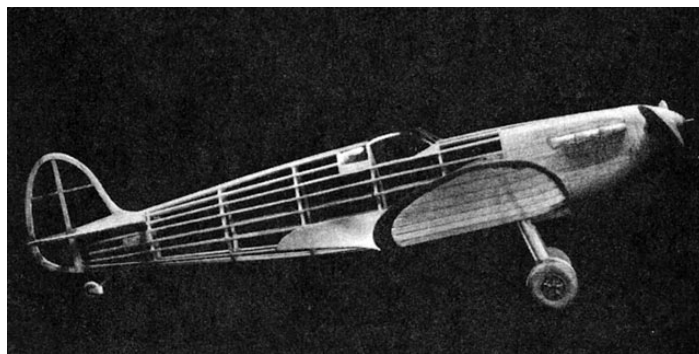
Treasured possession

in 1972 Doug McHard started something

Turn to the *Aeromodeller Annual* for 1972 and you'll find Doug McHard saying in page after page how the Brown Junior Campus A-23 was going to change everything.

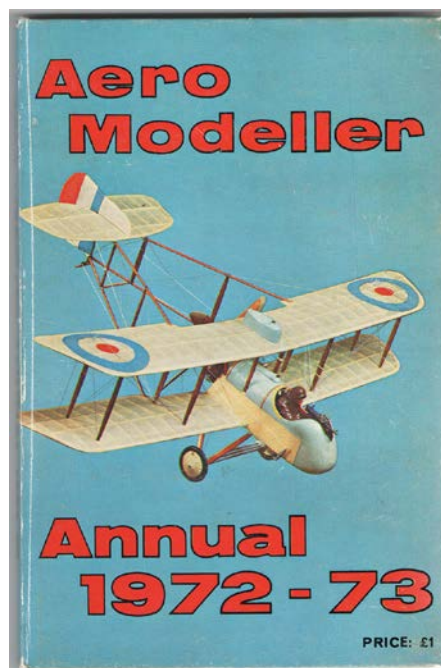


On the strength of that article I bought mine soon after and remember it costing an arm and a leg. That was one reason why I didn't fly it, the other was holding back until my models matched up to his . . . still, it remains a treasured possession.



from the hands of a magician

Doug wasn't far off in his prediction and CO2 changed a great deal for a while at least.

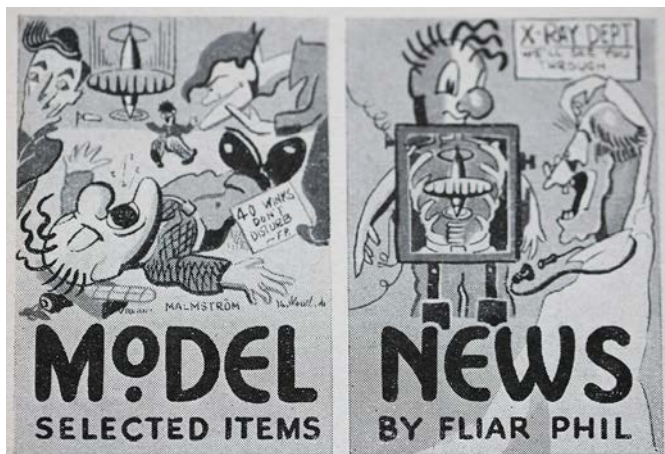


Read Gareth Evans piece in the June *Aeromodeller*, about using *Super Capacitors*, and you may come around to thinking that there's a modern equivalent coming onto the scene and worth following up. While you're at it you may as well glance at Fliar Phil's Fliar in the September issue.

Sightings

by Tony Harper

It's a long time since I gave you a sightings report about the aircraft over Ely. At the beginning of the year there was very little going on and it stayed like that for a few months. Nothing exciting was seen just the usual American heavies from Mildenhall and a few F15's from Lakenheath. It was well into May before I saw the Classic Wings Rapide and then only at weekends whereas last year it was around almost every other day. I had seen a few vintage aircraft over in the past but nothing this year so far. Things started to warm up a bit late June when B52's started going over very high West to East. These I had seen last year but this July eight came over one behind the other about three or four minutes apart also going West to East. A NATO exercise towards the middle of July brought a few oddities along, a couple of Dutch F16's and another Turkish Airbus A400M, You might remember I saw one last year it's a bit like a C17 with props. Also for the exercise were a pair of Mirage's, although France is not a member of NATO they seem to take part and oddly no name was given to this exercise at least not that I could find. Unlike the one at the end of July which was called "Jaded Thunder" for this one four old favourites were brought in from their base in Germany. It seems like a long time since we saw A10's but it was only last year. The latest group were based at RAF Leeming and I don't think they got down this way. The ground support and duty free supplies for the A10's were ferried about by Hercules's from Mildenhall. One afternoon when the wind was in the right direction a Rockwell B1 Lancer came over on approach into Mildenhall. It stayed for a day and then left, the two others I have seen in the past stayed for several days with electronic problems, it appears there is trouble getting Radio Luxembourg these days. Along with the B52's mentioned earlier several B1's have been seen going over and like the B52's going from West to East. One of the regular spotters, you can recognise them by the square shaped patterns on their faces caused by standing too close to the fence on sunny days, where was I? oh yes a regular spotter claims that Northrop B2 Spirits can be seen over flying but I can't say I've any. Recently F16's have been at Lakenheath supposedly from the Colorado Air National Guard also the Pennsylvania and New Hampshire Air National Guard, not only USAF aircraft but F16's from The Polish Air Force and the Royal Dutch Air Force. These National Guard deployments used to last for a few weeks, now only a few days. They still bring ground crews and other technical staff with them and not always in military transports.



In brief



Mike Woodhouse passed this photo to Michael Marshall
you can write your own caption



from - Aircraft of the British Empire
thanks to Raymond Fella



but who is that youngster?

East Anglia Gala

Michael Marshall reports



photo: Rachel Andrews

The event was the famous East Anglian Gala where this year John Wynn, Gary Flack and Gerald Cooper made a welcome appearance. John brought a large power model with him but did not find the time to make a flight. However Gary and Gerald entered the Bowden competition which is a precision flying event for power models. Inspired by Col CE Bowden. There are normally two flights, start your model in a two minute window, then make a flight of more than 30 seconds but less than 60 with a target of 45 seconds. Andrew Green from Rushden was first, our own Gary Flack was second and John Hook ,from Flite Hook, third. Gerald entered the competition but his model did not favour the breezy conditions for ROG take offs.

Freddie Bailey

what's a dog doing in an aeromodelling newsletter?



photo - Elli Bailey

Phil says Freddie is a cross between a Red Setter (mum) and a Lurcher (dad) – he supported the REN Cup competition. Just in case you're wondering why he's included in the newsletter – well, when I showed a photo of Butters* in Jan 2016, downloads from the web reached 2,977 – enough said.

* "the thing is he's not even *our* cat"

no disguising

a plane turned up by John McIntyre



the Pouchel

While carrying out research at Cambridge in 1967, Jocelyn Bell discovered a signal which was pulsing with great regularity, at a rate of about one pulse per second. Temporarily dubbed "Little Green Man 1" (LGM-1) the source (now known as PSR B1919+21) was identified after several years as a rapidly rotating neutron star.

What's not so well known is that the radio telescope she used was made by Mackays – *can you see where this is going?*



The Pouchet is a tandem plane designed around three aluminium ladders – though, after 120 plans were sold, the ladder manufacturer became concerned about his legal liability and ceased being a supplier!



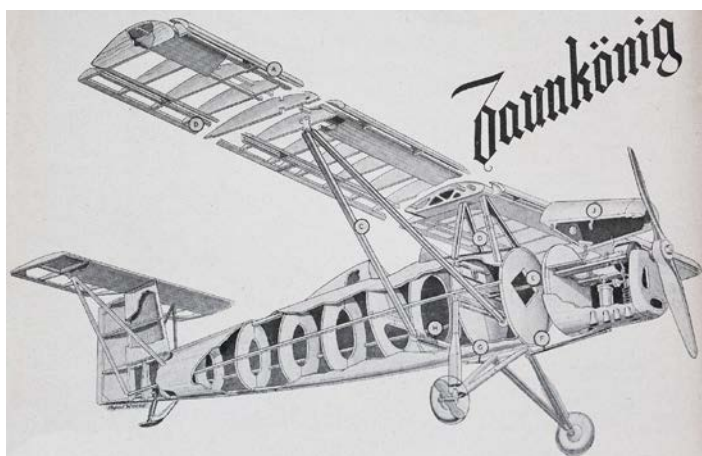
A Rotax 447 engine powered the prototype

Zaunkönig

ever thought, "that would make a great model"?



You can download from Outerzone a plane by John Greenland which was first published in Aeromodeller September 1950. It was also featured as 'Aircraft Described' in the same issue.



The LF-1 was designed by Prof Dr Ing Hermann Winter and some of his students from the Technical University of Brunswick, Germany. Winter was a former chief engineer at the Bulgarian company, *Drzhavnata Aeroplanna Rabotilnitsa* where he created a line of aircraft including the *Storch*.

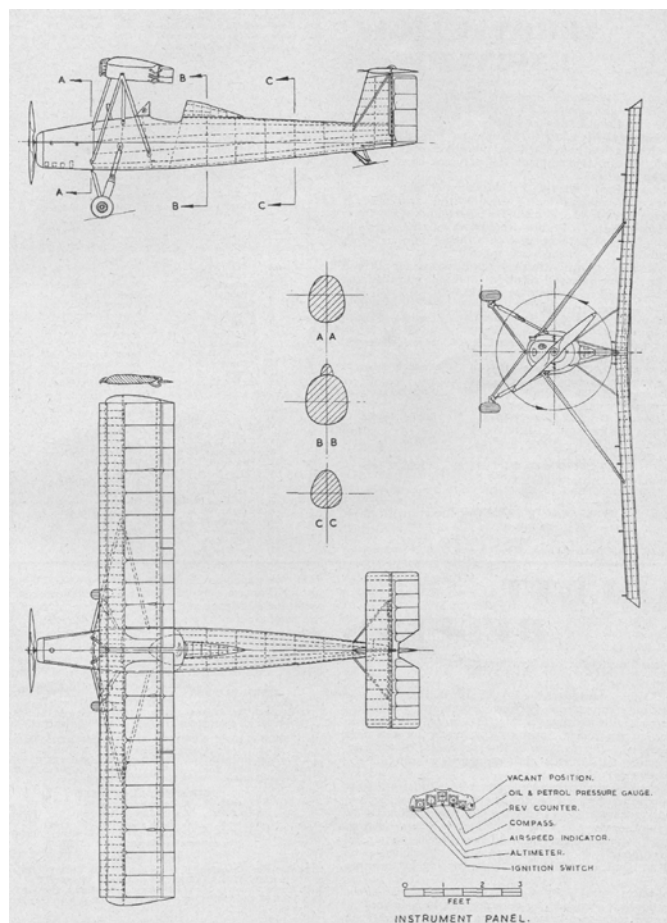
The LF-1, powered by a Zündapp Z 9-092 engine delivering 50 hp, was able to operate from a 330 ft airstrip. Full span leading edge slats extend automatically and full span trailing edge flaps / drooping ailerons can be extended manually by the pilot. The fixed tailwheel undercarriage attaches to the fuselage with long struts and oleo pneumatic shock absorbers.

It was a proof-of-concept design for a 'fool-proof' trainer intended for novice pilots with only one hour of ground instruction, the hour being reduced to five-minutes for those who had already flown gliders, and was intended to be impossible to either stall or spin.

Eric 'Winkle' Brown wrote, "This brings us to the question of whether there was ever a foolproof aeroplane. Well, I believe the *Zaunkönig* or *Wren*, was the nearest to it I ever flew."



second prototype
pictured here in the Schleissheim Air Museum in Munich

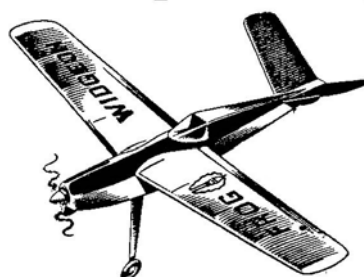


Who's to say if the full span slats and flaps would be effective on a model. Still, to maximise your chances, build to as large a scale as you can.

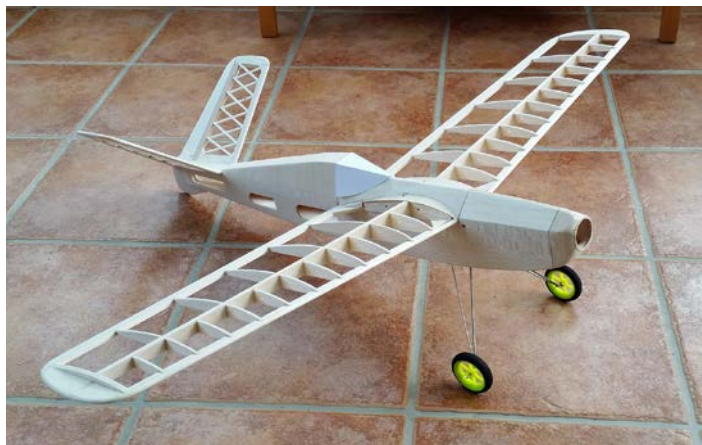
thanks to Richard Staines for making available Sept '50 Aeromodeller

Another SuperFROG

or a tale of two Widgeons by Gotthelf Wiedermann

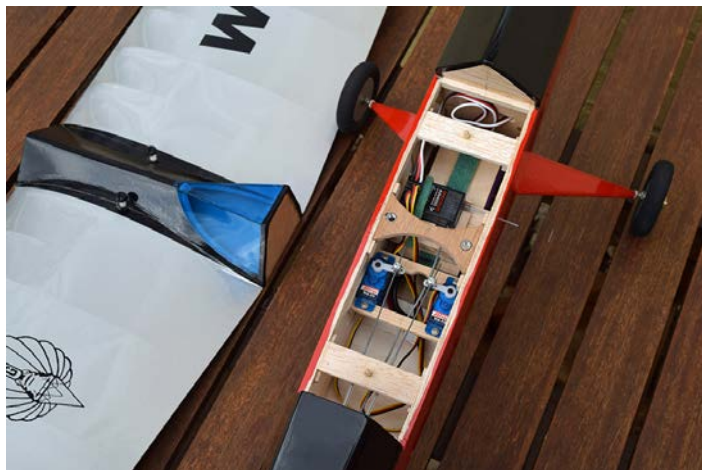


A few years ago I built a FROG Widgeon from a kit by A&DB Model Aircraft who specialise in reproducing kits of most of the original FROG rubber kits. Not only do you get a very nice, digitally enhanced, double sided copy of the original plan, but the wood is carefully selected and the laser cutting crisp and accurate. Pictures of the Widgeon kit and plan can be seen here: <http://www.adbmodelaircraft.co.uk/widphotos.htm> I think the Widgeon is the best looking model of that series. With its v-tail and shoulder-wing it looks distinctly racy and modern, not unlike some modern aerobatic planes.



I am, of course not the first person to whom it has occurred that the 18" FROG Senior series models seem to be eminently suitable for scaling up and fitting out with electric motor and R/C. Thus George Stringwell gave the Tom Tit this treatment and just this summer he published his twice size Widgeon in RC Model World. By the time this magazine issue was for sale, I had more or less finished my own version. I must admit that I did not like George Stringwell's interpretation of the Widgeon, as his design deviates from the original plan in several respects, resulting in a model that doesn't look quite authentic.

For my own project I simply doubled the kit plan on the photocopier. Some of the parts were stuck to sheet balsa wood with mounting spray and then cut out. On the whole, I stuck fairly closely to the original design, adding the odd reinforcements here and there. As the gaps between the wing ribs are quite large, each wing received 7 ribs, rather than the original 4, as well as half ribs forward of the main spar. The dihedral was slightly reduced. The entire wing, including the turtle deck and cockpit, can be removed and is held in place with nylon bolts. Once removed, the receiver and servos are accessible.



The ESC is located behind the motor, the battery behind the undercarriage, accessible via a hatch in the bottom of the fuselage. The undercarriage fairing cause me some head-scratching. I assumed that a stiff fairing stuck to a flexing piano wire wouldn't be terribly successful, so I added a second wire leg, soldered to the forward one near the wheel axle, then glued the fairing between the two wires. This, however, creates an almost unsprung undercarriage, and the rear wire legs will bend anyway in a hard landing. I am still pondering a solution that will be more satisfactory. For the tail plane I adopted George Stringwell's method of employing diagonal strips of 1/8 x 1/16" balsa glued crosswise on top of each other. This makes for a warp resistant structure.



For the colour scheme I followed the FROG advertisement (even though that was black & white), as I had already done with the 18" rubber model. I used red and black Solarfilm for the fuselage, and Solarfilm's Supershrink (a polyester film like Profilm/Oracover) in silver for the wings. The FROG and 'Widgeon' logos were lifted from the Internet, cleaned up and enlarged to the required size, then laser-printed onto clear waterslide sheet (thank you, Bryan!), sprayed with clear gloss acrylic, cut out and attached to the wings. The power train is an EMax CF2812 - 1534KV (150W) and a 20A ESC from BRC Hobbies. With a 2-cell 1000 mAh lipo and a GWS 9x4.7 prop this produces nearly 90W of power. The servos are HiTec HS55 9gr servos. All-up weight is 428gr or 15 oz. The center of gravity was exactly in the right place, so no additional balancing weight was required. Not having flown a v-tail model before (let alone one I had built myself!) I was a bit nervous how it would behave. I needn't have worried. The controls were very responsive and have subsequently been reduced by switching to the innermost hole of the servo arms. One thing you notice with v-tail models is that they are prone to drop the nose when turning. This can be corrected by applying differential aileron control on the transmitter (thanks for the tip, Richard!). In terms of power, there is plenty of it: My Widgeon can climb almost vertically for quite some time. I will experiment with different props (8x6 or 8x4). Having a fairly thin wing section, the model can fly fairly fast, but doesn't have to. It has an excellent glide angle, and landing dead-stick is easy. Flying times are around 15 minutes when just stooing around, less if enjoying vertical climbs or loops.



see George Stringwell's inspiring thread at
<http://www.rcgroups.com/forums/showthread.php?t=1485005>

plan available here:
<http://gb.trapletshop.com/tom-tit>

Gotthelf Wiedermann

Footnotes

One of the pleasures of editing a newsletter is that you have a great excuse for asking questions of people you really shouldn't be bothering. After meeting up with Dave Banks and talking about his spoked wheels [Aeromodeller January '76] I managed to track find the one – sadly just the one - that I'd made after reading his article forty years ago.



That youngster – page 15 – is Mike Nelson

If you've been thinking that the last few issues have had an 'improvised' feel about them, well, it's because finding good material has become increasingly difficult. Whilst I'd love to continue as editor, this is likely to be the *last* edition of the newsletter in my hands.

As always, if you've contributed in any way, thank you.

