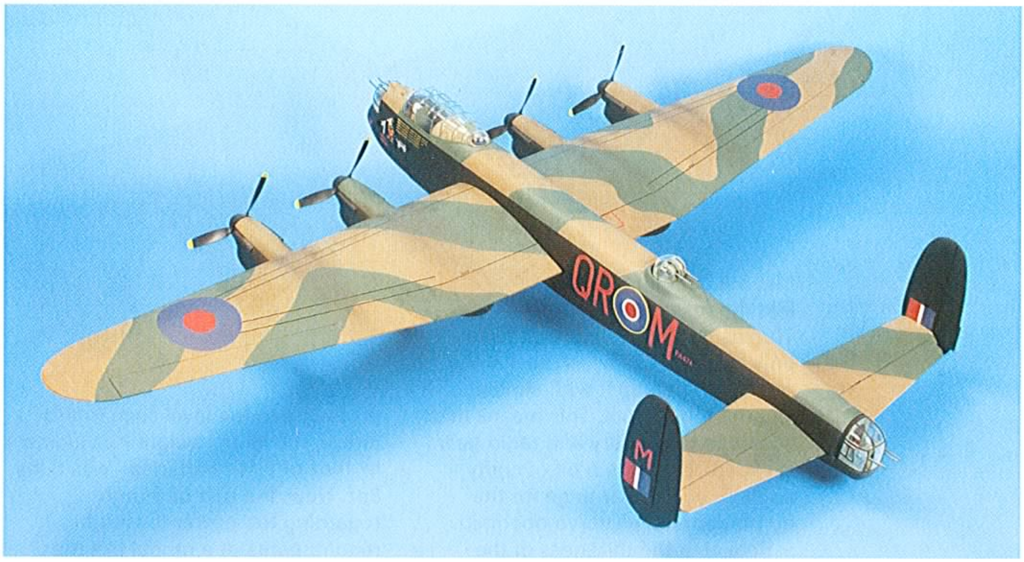
If you ask the people at Airfix - an historic brand now saved for the nation thanks to Hornby and the patron saint of plastic sprue - they'll tell you that their three best-selling kits have been the Spitfire, Hurricane and the Lancaster, in that order. You don't get a more resounding endorsement of popularity than that, do you? So it really shouldn't have come as any surprise to me that my 72"-span electric version of the Battle of Britain Memorial Flight Lancaster, which was launched some five years ago, has been one of *RCM&E's* most successful plans.

I suspect that three things have probably contributed to its success. Firstly, it's a Lancaster - an iconic and very British aeroplane that captures the hearts and imagination of both the old and the young. Secondly, its 72" wingspan means that it's a comfortable size for most club flyers - and just as importantly, it's a convenient size for their cars. Finally, it's designed around a cheap and simple electric power set-up which - together with the CNC-cut wood pack, and vac-formed canopies, domes, blisters and turrets sold by the *RCM&E* plans service - makes it an attractive entry route for the modeler tackling multi-engine aeroplanes for the first-time.



Here it is, my new Lanc', incorporating a host of changes that improve the model's scale accuracy, usability, and flight performance.

CHANGE FOR CHANGE'S SAKE?

When the model has all this going for it, you might be wondering why I've decided to meddle with it. Well, this isn't change for change's sake: over the years, I've received many useful suggestions regarding mods from modellers who've built the Lanc', and gleaned other ideas for improvements from the web-based forums, www.rcmf.co.uk included, which sprang up around the model.

Also, things move on: there's been a marked development, for example, in the field of electric motors, controllers and batteries in the six years since the plan was introduced. Back in December 2001, when the model was launched, the electric scene was populated by 2000SCR Sanyo NiCads and the ubiquitous Speed-series of brushed motors. NiMH batteries were around, of course, but they were incredibly expensive, and struggled to match the performance of the NiCad / brushless set-ups.

The original power-to-weight calculations were based on a simple eight-cell pack and four motors wired in series, and produced a weight target of $5^1/_2$ - 6 lbs. This was quite achievable if you had access to good quality light balsa, but as I found over the years, some builders still struggled to achieve the optimum weight, mainly because their finishing and detailing was of such a high standard. Some models ending up weighing as much as 8 lbs, which made for a very underpowered aeroplane.

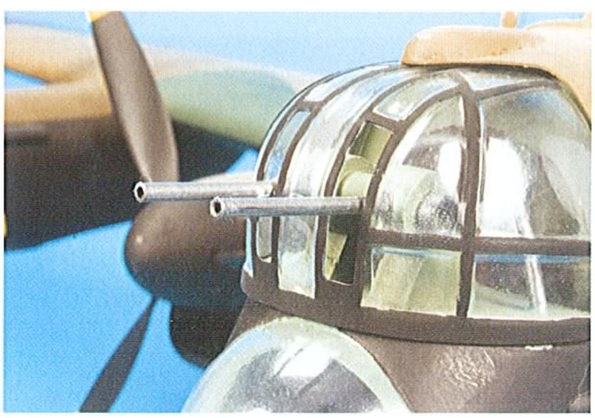
IMPROVING THE BREED

So where have all these improvements been made? The most obvious change, of course, has to been to the outline which has been redrawn using original three-view drawings. The result is a nigh-on perfect scale outline which really does look well. The tail sections have also been redesigned, while the wing now features a new aerofoil which gives good lift and low drag characteristics coupled with stability in turbulent conditions.

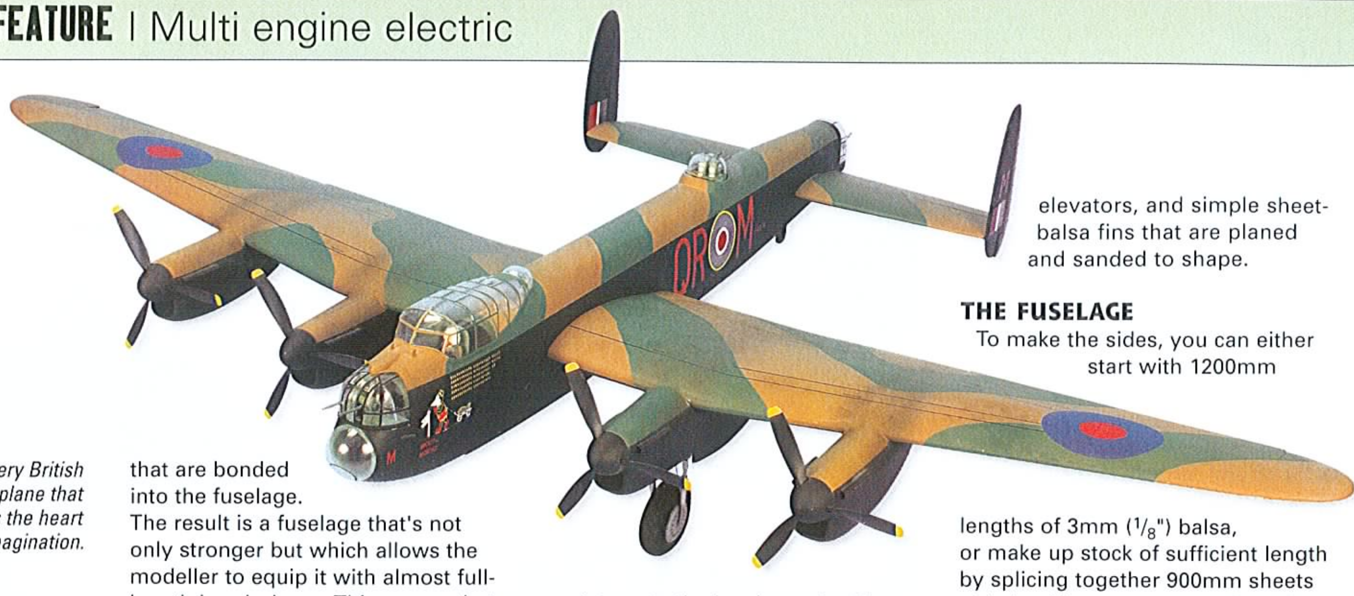
New moulds have been made for the vac-formed canopies and turrets to give them a more detailed finish, and a set of four engine cowls has been added to the plan pack, along with a set of scale spinners. Scale connoisseurs will also be delighted to hear that the model's lovely three-bladed scale props aren't just for show, but I'll tell you more about those later.

To make the model easier to transport, the wings are now built in two pieces, and plug onto wing tubes

Vacuum-formed mouldings are now available for the nacelles, likewise the spinners.



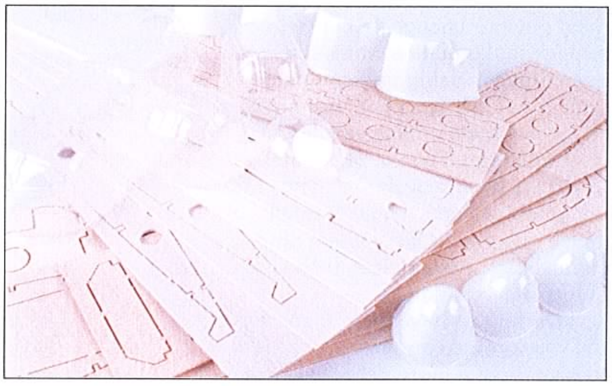
The latest turrets have more detail, too, which all adds to the overall scale effect of the model.



A very British aeroplane that captures the heart and imagination.

that are bonded into the fuselage. The result is a fuselage that's not only stronger but which allows the modeller to equip it with almost full-length bomb doors. This means that access to the battery and radio gear is superb, and with a bit of crafty fiddling, you can arrange for the bomb doors to be servo-operated.

Reducing the thickness of the liteply in the CNC pack from 3mm to 2mm, meanwhile, has also made a useful weight saving.



CNC cutting's a wonderful thing: the prototype parts slotted together perfectly. Don't expect a full kit though! Wing ribs, formers, fin and rudder parts, nacelle frame components, and a smattering of braces is what you'll get. Superb value for the time and effort saved.

MORE POWER

Surprisingly perhaps, the types of motor recommended for use with the model have remained unaltered. Instead, I've changed the way that they're wired, and the types of batteries used to power them.

"But is this enough?" you ask. Well, I can put your mind at rest on that score. By the time I'd built, covered, finished and detailed the prototype to the level seen in this article, the all-up-weight - including 1 lb 10oz of flight batteries - was 6 lbs 8oz. Now, the rule of thumb regarding the power-to-weight requirements of a model like the Lancaster suggests that you need around 50W for every 1 lb of weight, which equates to just under 325W. The power set-up as suggested on the plan, meanwhile, is able to produce 600W at 32A - a margin that should help convert a few more i.c. boys to electric power! The figures become even more persuasive if we assume that the model will fly on 300W, which then equates to a 17A current drawn from a 5s 3p set of 6500mAh Li-Pos, giving a possible flight duration of around 23 minutes! That's three seven-minute flights, or a mornings's flying for many people.

BUILDING - AN OVERVIEW

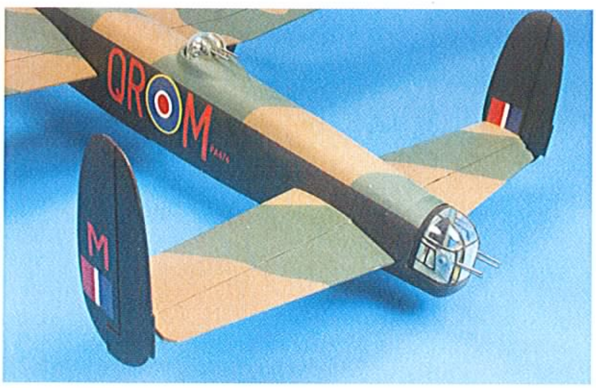
The Lancaster is a built-up model employing traditional construction techniques, so the fuselage is a box-type structure with slab sides and a top skin of rolled sheet. The wings are built in four sections, and fully sheeted across the top and bottom; their nacelles are built-in, with access to the motors provided by removable cowls. The tailplane, meanwhile, uses sheet-over-rib construction, with open-rib construction elevators, and simple sheet-balsa fins that are planed and sanded to shape.

THE FUSELAGE

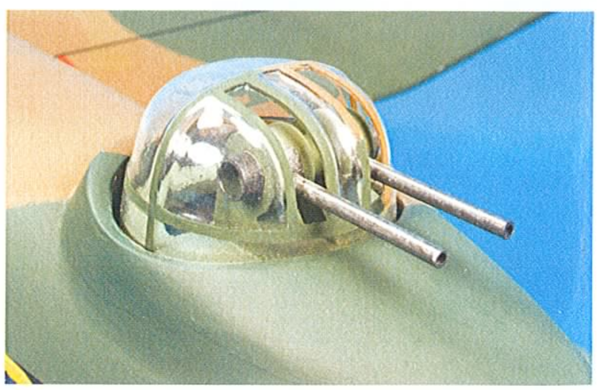
To make the sides, you can either start with 1200mm lengths of 3mm ($^{1}/_{8}$") balsa, or make up stock of sufficient length by splicing together 900mm sheets of balsa. However you go about it, you need to start by cutting out the lower fuselage sides and marking the positions of the formers.

Glue 12mm ($^{1}/_{2}$") triangular stock along the bottom inside edge, and 4.5mm ($^{3}/_{16}$") square stringer along the top inside edge, making sure that the stringer overhangs the edge by 2.25mm ($^{3}/_{32}$") so as to give you something to which the top sheeting can be glued.

Make some saw cuts in the triangular stock near the nose in order that the fuselage can bend when you pull the front together. When you've made up the fuselage



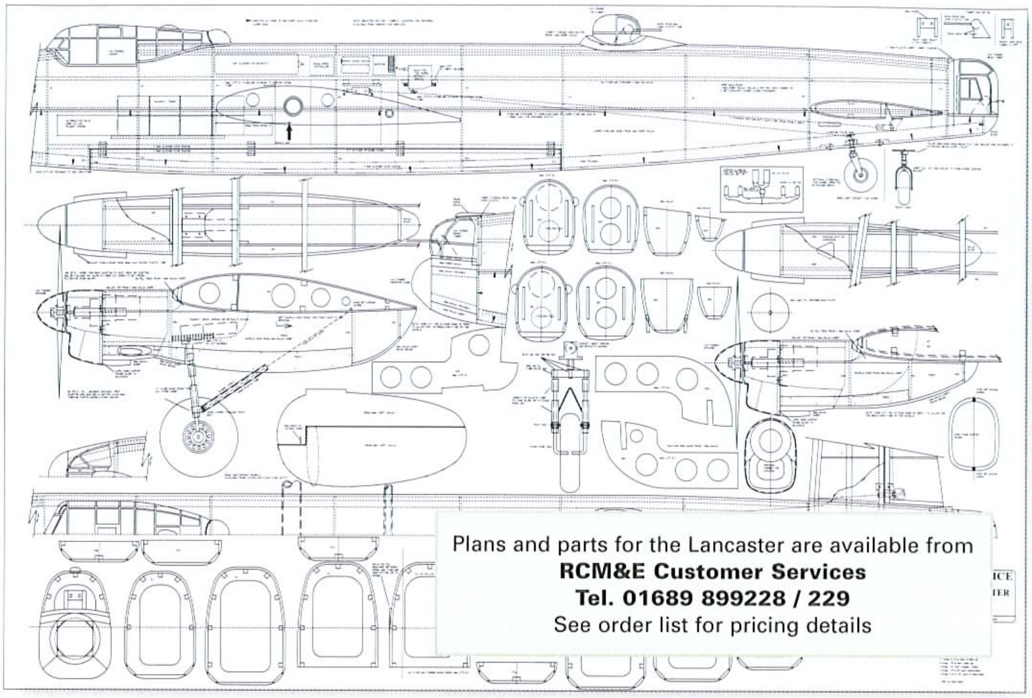
The tailplane uses traditional sheet-over-rib construction, but the fins are made from solid balsa sanded to shape.



formers, glue F2 - F7 into position on one side of the fuselage only. While doing this, insert and glue the bomb door framing stringers. Note that the gap between F2A and F2B, and between F7 and F7A should be a hacksaw blade's width - this will facilitate the removal of the bomb bay section later in the build.

Now glue the other fuselage side into position, fit the remaining formers, and add the stringers to the top of the fuselage formers. Once this has been done, you can start to sheet the top half of the fuselage using soft 2.4mm ($^3/_{32}$") sheeting. One 100mm-wide sheet will do exactly one side, with the seam falling along the top center spar. Ideally, the fuselage should be held in a jig to avoid distortion while you're applying the sheeting, and don't forget to wet the balsa surface to prevent it splitting as you bend it to shape.

Since the rear of the fuselage requires the side sheeting to form a compound curve, you'll have to make a saw cut in the balsa at F9 so that it can flex sufficiently; a 50mm cut working from the top of the sheet downwards should do the job. Leave the fuselage to dry before removing it from the jig.



The lines of the plan incorporate five years of building and flying experience. A snip at just £18.50!

Using CAD techniques allowed me to scale-down original drawings to give the model a very accurate scale outline.

OPEN BOMB BAY DOORS!

Next, working from the bottom of the sheeting, make a 25mm cut between F2A and F2B, and F7 and F7A on both sides of the fuselage; this will take the guesswork out of finding the ends of the bomb doors. Fit the bomb door bottom stringers.

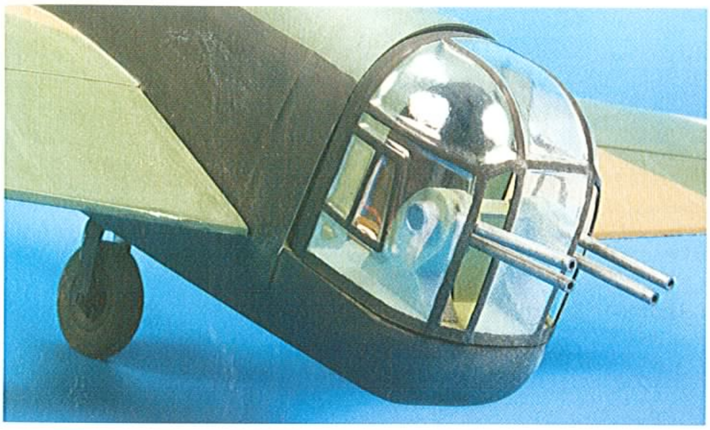
Begin the cross-sheeting of the fuselage underside using 3mm balsa, and start building up the nose section from 9 and 12mm sheet and triangular balsa. When you've trimmed and finished the tail end of the fuselage, use a razor plane and sanding block to start creating its profile, and build up the top turret fairing using 12mm balsa.

This is the moment when your bomb bay saw cuts come into their own, for you can use them as guides when cutting around the doors and between the 4.5mm square balsa stringers. To split the doors in half, you'll need to cut through formers F2B to F7A. The doors can then be attached to the fuselage using conventional model hinges, and either fastened shut or made operational by rigging them to an old servo.

The last task on the fuselage for the moment is to cut it to reveal the cockpit opening.

THE WINGS

Each wing half is constructed over the plan in two sections comprising an inner and outer. To keep the wing twist-free during building, the ribs feature jig tabs to keep them level.



Sting in the tail: the rear gunner had four .303s with which to fend off the threat from night-fighters.

The Lanc's lantern-jaw gives it an unmistakable profile, and leaves you plenty of room for a touch of nose art.

Make the outer panel first, and start by pinning the 6mm square hard balsa front and main spars to the plan. Ribs W4 - W15 come next, remembering that ribs W6 and W7 are angled to offset the nacelle against the wing dihedral. Fit the three remaining top spars, followed by the inner leading edge and the trailing edge at the aileron. At this point, the wing assembly can be removed from the plan, and the remaining lower rear spar fitted.

Before you start building the inner wing section, there are choices to be made: if you don't like the tube method of joining the wings, the plan offers an alternative technique. Once you've settled on your preferred method, trim the front and main spar to the correct length, and pin them down over the plan, noting that the top and bottom front spars are made from 6mm square obechi.

Trim the four W1 ribs to the correct length, and fit them to the top front and main spars. The wing braces B1 and B2 can then be glued into position, and the split ribs of W2 (which needs to be angled) and W3 installed. Fit the rear top spar, and then trim the inner leading edge and glue it into position. Remove the inner wing assembly from the plan, and fit the remaining lower rear spar.

PERFECT SKIN

When you've built the two sections of the other wing, tidy up the inner leading edges by trimming them flush with the tops and bottoms of the ribs. The plan shows how the shear webbing should now be fitted between the top and bottom main and front spars. The inner and outer panels can then be joined together at W3, and the top surface skinned with 1.5mm sheet balsa.

When covering large open-framed wings like these, it helps to glue together enough sheets of balsa to cover the whole wing in one go. If you do this on a flat work bench, and use a large sanding block (300mm long) to sand the resulting sheet flat, you'll be able to remove all the ridges that are usually caused by the jointing process, and finish up with a single, seamless sheet of balsa that's ready to be attached.

AILERONS

The ailerons are made by cutting the bottom sheet to size, then trimming and fitting the aileron l.e. so that it sits at the angle shown on the plan. Mark out and fit the ribs to the bottom sheet, cut the top edge of the aileron leading edge so that it's flush with the ribs, and then cut the trailing edge. Enclose the structure with the top sheeting, and trim the aileron once more to it's final shape.

NEXT MONTH

Well, that's the big bits made, but there's still a lot to be done - tail and turrets, motors, cowls and covering. Oh, it's a big bomber, all right!

DATAFILE

Name:	Avro Lancaster
Model type:	Electric W.W.II bomber
Designed by:	Tony Nijhuis
Wingspan:	72" (1829mm)
Wing area:	4.3sq. ft.
All-up weight:	6 lbs 8oz (2948g)
Wing loading:	26oz / sq. ft.
C of G:	85mm from l.e.
Motors:	4 x 400
Gearboxes:	2.33:1
Battery:	2 x 8-cell 1700CP or 5s Li-Po
Speed controller:	50amp (Li-Po compatible)
Radio:	5 / 6-channel with mini servos
Control functions:	Aileron, elevator, rudder, throttle, retracts, optional bomb doors

ORDER LIST

Item	Code	Price
Plan	RC2039	£18.50 plus p&p
Mouldings	COWRC2039	£25.00 plus p&p
CNC selection	CNCRC2039	£70.00 plus p&p
Lancaster plan pack (inc. all of the above)	SETRC2039	£109.00 plus p&p

Ah, the classic Lancaster profile - you can almost hear this picture!

Avro Lancaster

TONY NIJHUIS DELIVERS ON HIS PROMISE AND PROVES THE SUPERIOR PERFORMANCE OF HIS LATEST LANC'

Spitfires always sell well in this country and, given the aeroplane's immense contribution to the war effort, coupled with its undoubted beauty, it's popularity is hardly surprising. What about the Lancaster, then? Clearly a popular aeroplane for many of the same reasons, but can it really be such an attractive proposition to modellers, bearing in mind the complexity of the design with its four engines, twin fins and smattering of turrets? Well, until the publication of my first Lancaster plan, back in December 2001, I'd have said no, but clearly I'd have been completely misguided. That early 400-size electric design sold by the hundred and has been selling in steady numbers until very recently when news of this latest version began to circulate. With a closer-to-scale outline, redesigned tail sections, new high lift / low drag wing section, vacuum-formed nacelles, scale props, operational bomb doors and a host of smaller detail improvements, the 2007 Lancaster is very much an improved beast that makes the most of today's battery technology using faithful old Speed 400 or 480 brushed motors. The result is a significant improvement on the earlier winning combination, and one that we hope will keep Lancaster enthusiasts satisfied for a good few years to come.

In the previous issue of the magazine we detailed the history behind my 72" span Lancaster series and noted the pertinent points of fuselage and wing construction. Here, then, I plan to take you through the construction of the tail, assembly of turrets and cowls and, finally, covering and painting. Let's get cracking, then.

Turrets, canopy, nacelles and spinners - all are available from the RCM&E plans service.

Difficult to detect here but, although the top surface is flat, there's a small amount of dihedral in the underside of the tailplane.

NACELLE NEWS

As with the first Lancaster, the nacelles are a fairly time consuming part of the build, although in this instance, at least, the cowls are made for you - providing you've bought the vacuum-formed goodie bag, that is!

The main nacelle sides and formers lock together fairly quickly, so it shouldn't be too long before you have each nacelle structure ready for skinning. Before you fit the motor bulkhead you'll need to decide which type of gearbox you're going to use. MP Jet 2.33:1 'boxes are shown on the plan, these being available from Puffin Models or Fanfare, along with, of course, the 400 - 480 size motors. If you plan to use a handful of these gearboxes but haven't ordered them yet, you can still proceed by cutting a hole to the size and position shown on NI1 and NO1. With all the side pieces and formers in place, cut and fit the undercarriage mounts, noting that you'll need your preferred retract mechanism to hand in order to set out the mounts correctly. For the prototype I used the Eurokit spring air retracts available from Motors & Rotors. For the undercarriage legs, however, I cobbled together a semi-scale arrangement from piano wire and various bits of plastic and aluminium tubing. If you fancy doing the same, take a look at the plan for further details. Note, also, that the outer skin of the inner nacelle is sheeted using three parts, whilst the skin of the outer nacelle uses two. From the plan you'll see that the perimeter of each is numbered to show its boundary in relation to the supporting structure and, of course, any adjoining sheets. With this in mind, start by gluing part 1 in position, mindful of the fact that you may need to wet the outer surface of the wood at the back to accommodate the curvature of the rear formers. When dry, parts 2 and 3 can be added noting, once again, that part 3 on the inner nacelle splays out slightly between NI2 and NI3. The rolled top planking can now be added between the firewall NI1 / NO1 and NI2 / NO2 respectively. With this done, make sure to feed the power wiring through NO1 on the outer nacelle.

One look at this and you have to wonder if it isn't time to start building!

I covered my model in silver Solarfilm, keyed with wet 'n' dry then painted.

To finish the nacelles ready for final profiling, trim the bottom edges and cross-sheet to enclose. Finally, make up the tail blocks and glue into position then, to complete the detail, infill the gap between the underside of the wing and part 1 with scrap balsa. Incidentally, you should only attempt to sand and profile the nacelle after the cowls have been fitted.

COWL CAPERS

Having purchased the CNC pack you'll find that it includes four rear edge cowl support formers, which give the vac-mouldings much needed rigidity when attached to the nacelle. Before fitting, neatly trim the cowls and open up the prop shaft aperture and air intake. Fit the supporting former, then trim any overhanging plastic so that it's flush with the rear face. Position the cowl on the nacelle using the gearbox propeller shaft and spinner backplate to establish the final position, then, when happy, tack-glue the cowl in position and sand the nacelle so that the two items blend in. Top tip: To prevent the cowl from becoming scratched during the sanding operation, it's a good idea to protect the edge with masking tape.

TAIL TALK

A traditional built-up affair the tailplane is constructed over the plan using fully symmetrical ribs. Since the section of the tailplane tapers in depth as it nears the tip, building the panel flat on the board has the effect of introducing a small amount of dihedral - i.e. when you lift the construction from the board and turn it over the upper surface of the tail will be flat whilst the underside will incorporate a small span-wise taper.

Start by cutting and pinning the trailing edge and top spar to the plan, then fit the ribs, the false leading edge and the bottom spar. Since one servo is used to actuate each rudder, now is a good time to install the servo mounts and wiring. Continue by trimming the trailing and leading edges flush with the ribs, then sheet the underside to just past T1. The tailplane can now be removed from the board, whereupon you should just be able to detect the positive dihedral. With this, you can enclose the construction by sheeting the upper surface safe in the knowledge that your building skills are holding up! The true leading edge can now be applied and the tip blocks cut to size and fitted. Last, but by no means least, shape the leading edge and tips to a smooth flowing curve.

A similar construction principal is also adopted for the elevators which are assembled inverted on the building board in order that the underside taper be maintained across the entire chord of the tailplane. As for fin and rudder construction, purchasers of the CNC pack will be delighted to hear that both are included as pre-cut items and only need shaping. Only glue these, incidentally, once the model is covered and ready for painting.

When all's said and done, I'm well chuffed with this one. As you can see, she's a good size for the car, too.

You can paint your own roundels and markings, or outsource to Pyramid Models who can supply all you need for the job.

The three-blade props are well worth the money and add greatly to the overall appearance.

FUSELAGE FETTLING

Before the wings can be fitted, the two wing support tubes (front and back) should be positioned in the fuselage. Slide the wings into place to check for alignment and if the tubes are found to be slightly 'out', you'll need to open up the holes in the fuselage to provide the necessary degree of adjustment. Fiddle and jiggle as required, then, when happy, epoxy the tubes in place. Due to the curvature of the fuselage you'll notice a gap at the top edge of the wing where the two components meet. Fill said gap with scrap balsa (glued to the wing), then carve and sand to fit. With the wing panels comfortably housed they can be secured with 2 x 12mm self tapping screws through the wing securing blocks and the aluminium tube respectively.

At the back end, mark and cut out the tailplane slot then slide the panel into position, checking that it's parallel with the wings when fitted.

A close look at the plan will reveal an indicative design for a steerable tail wheel assembly that's built into the rear access hatch. This, you'll note, uses a closed-loop system connected to a servo that's driven from a 'Y' lead, the latter using the rudder output channel as a master.

When it came to covering I used my time-honoured silver Solarfilm method, the surface keyed with 800 grade wet 'n' dry ready for the paint to be applied. This method is all very well of course, but it will wrinkle when subjected to variations in temperature and will need occasional attention with an iron. As I'm sure you're aware, the alternatives are either tissue and dope or lightweight glass cloth ($17g/m^2$) and dope.

Although the main roundels, lettering and artwork on my model were hand painted, there is an alternative! Pyramid Models will happily step in here and supply all you need to finish the job - just give them the sizes and they'll oblige.

CONSIDERING BRUSHLESS?

Since completing the design and test flight (almost a year ago now), the use of brushless motors has become more prevalent than ever and the cost is falling dramatically. Since I'm writing this in December 2006, it seems very likely that future builders will opt for a brushless set-up and this, I think, will offer great benefits in terms of electrical efficiency and performance. That said, if you're looking to go this way you will need to consult a specialist electric flight dealer bearing in mind that ultimately, as long as each brushless motor and prop deliveries you 150 - 200watts of power, the model will work well at the stated all-up weight.

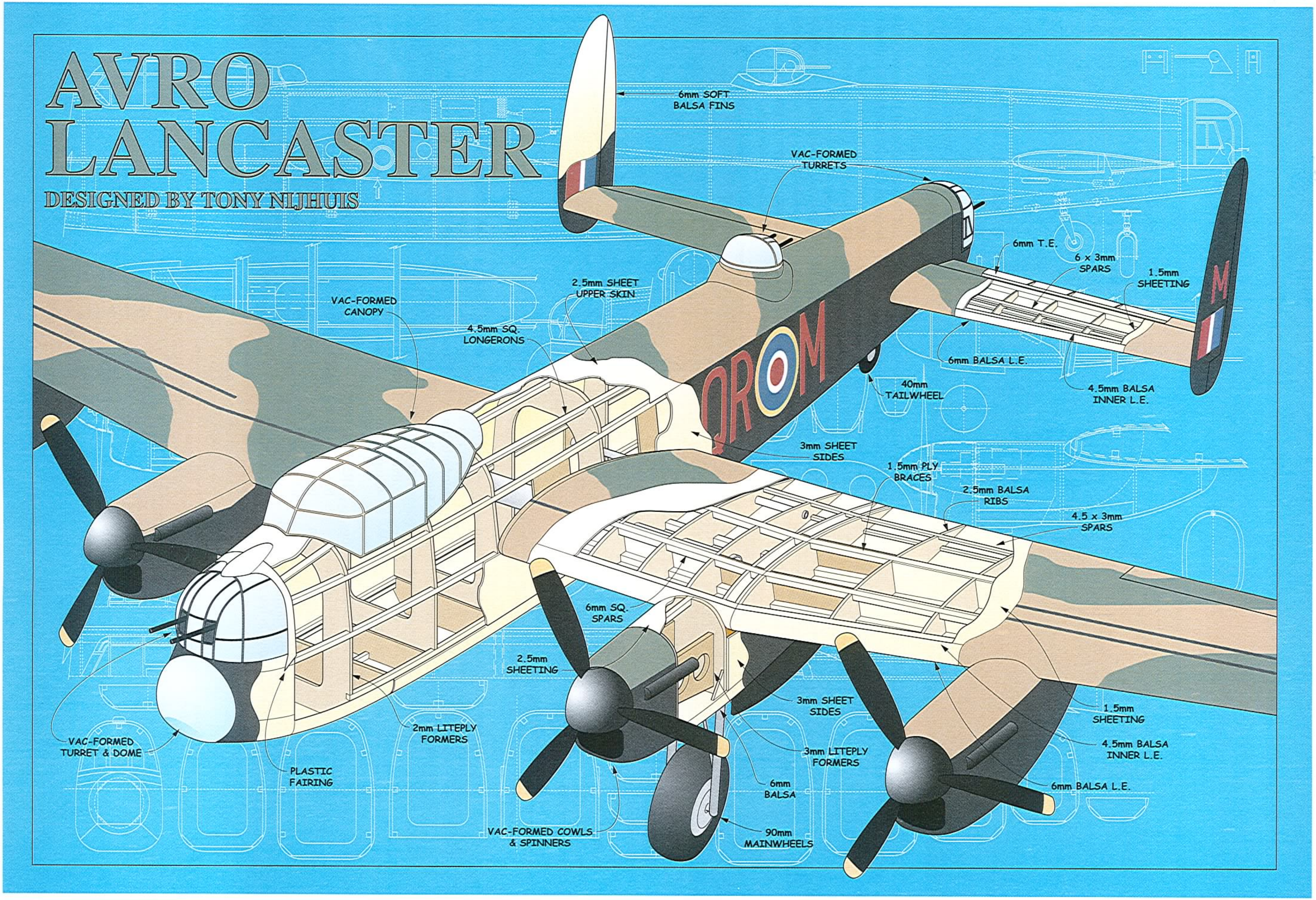
POWER APLENTY

Following the airborne success of my recent Airbus A400 and B-17, both being very similar in size to the Lancaster, I was convinced that four standard brushed motors and gearboxes, coupled to a single controller, was still the most sensible and economic way to power this model, especially with the target weight being in the region of 6.5 lb. With the motors connected in a series / parallel loop (detailed in a simple circuit diagram on the plan) 16 cells - or two packs of eight cells - are required and, of course, your ESC will need to be rated up to 16-cells.

The benefit of this set-up comes with the fact that you're operating at a higher voltage, i.e. 19.2V (16 x 1.2V per cell). Since power equals voltage multiplied by current, it's clear that a higher voltage requires less current to maintain the same power. In short, then, as all battery packs have an amps per hour rating on them, it follows that the lower the current being drawn the longer the battery pack will last. It's as simple as that!

With the 2.33:1 MP Jet gearbox and thin 8 x 6" APC electric prop, the maximum current draw was measured at just 24 amps. This was great news, indeed, with the scale propeller diameter being 8" the low current draw meant that I was able to purchase a set of three-bladed 9 x 7" props from Flitehook in Southampton (02380 861541). These little beauties have each blade separately secured to the centre hub, so if you break a blade you can simply replace it. Obviously, to reach a scale diameter they'll need to be trimmed and balanced, but they provide a perfect solution and look terrific when installed.

A beautifully scale, lumbering climb-out. That's what flying this model is all about, making her look real!



AVRO
LANCASTER
DESIGNED BY TONY NIJHUIS
6mm SOFT BALSA FINS
VAC-FORMED TURRETS
6mm T.E.
6 x 3mm SPARS
1.5mm SHEETING
2.5mm SHEET UPPER SKIN
VAC-FORMED CANOPY
4.5mm SQ. LONGERONS
6mm BALSA L.E.
40mm TAILWHEEL
4.5mm BALSA INNER L.E.
QR M
M
3mm SHEET SIDES
1.5mm PLY BRACES
2.5mm BALSA RIBS
4.5 x 3mm SPARS
6mm SQ. SPARS
2.5mm SHEETING
3mm SHEET SIDES
1.5mm SHEETING
VAC-FORMED TURRET & DOME
2mm LITEPLY FORMERS
3mm LITEPLY FORMERS
4.5mm BALSA INNER L.E.
PLASTIC FAIRING
6mm BALSA
6mm BALSA L.E.
VAC-FORMED COWLS & SPINNERS
90mm MAINWHEELS

Standing down between sorties, the Lancaster really turns heads, both on the ground and in the air.

On 16 cells and at full throttle, I measured an input power of 600 watts for a current draw of around 32 amps. Clearly, since each motor will be seeing something in the region of 9.6V and up to 15amps, it's well worth making provision for a good passage of cooling air past each motor. Without this, running the Speed 400s flat-out for any length of time will possibly damage them, so do consider cutting additional holes in the firewalls and, for the outer nacelle, a slot in the underside to allow cooling air to exhaust.

When the prototype was test flown, two 8-cell packs of Sanyo 1700mAh CP cells were used, giving upwards of six minute flights. However, since I'm now wrapped up in the lithium polymer revolution I also chose to fit the FlightPower 5s3p pack I'd been using in my A400. This gave a voltage equivalent to that of a 16-cell NiCad or NiMH but with a 6500mAh capacity and weighing only one ounce more than 16 Sanyo 1700 cells. Hmm, lithium polymer may be four times the price but you get four times the capacity (duration), at almost no extra weight. Food for thought! My last word before we fly: if you do follow the Li-Po route, make sure you fit a speed controller that supports the technology, or else use one of the new Li-Protector units which controls and shuts down a conventional ESC should the pack voltage drop dangerously low.

My model is powered by standard brushed motors married to gearboxes. The performance is great but stepping up to brushless units will undoubtedly provide performance efficiencies.

FIRST OUTING

My expectations were high for the test flight as anything other than a perfect performance from this model would be a disappointment! As always the sortie took place with the aeroplane in an uncovered balsa state, light by any standards and with 600 watts of power at my disposal, I had no worries regarding the expected performance. So, with the Lanc' lined up into the oncoming breeze the throttles were opened progressively and I readied myself for what might come next. There was no appreciable swing as a result of torque and the tail rose almost instantly, the aeroplane holding this line and position for about 30ft. Gentle application of elevator saw her rise into the air in a very scale-like manner upon which I was able to raise the gear and settle into the first circuit. Although she's of a similar size to the B-17, and has an identical powertrain, the Lanc' didn't feel as sprightly, a result no doubt, of the Avro's increased drag. All my previous Lancasters have displayed very authentic flying characteristics, certainly in terms of airspeed, and this one is no exception, she lumbers around beautifully.

After some two or three minutes of leisurely circuits and mild bomber type manoeuvres, I was more than happy with the design and chose to bring her in for her final spell in the workshop. The landing, incidentally, was delightfully uneventful, proving the suitability and operation of the retracts beyond doubt.

ONE YEAR ON...

Now, I don't normally wait this long between the maiden and second flight but our fine editor wouldn't let me fly the model until he had his studio pictures in the 'can'. And so it was, on a cold December day last year, that a lul in an otherwise appalling spell of weather gave us the perfect opportunity to get some flying shots and wrap things up. With preceding weeks of torrential rain, the patch at Graham's local flying site was saturated and pretty bumpy so trying to taxi the Lancaster proved a little difficult. Nevertheless, once on the runway I was confident that all would go to plan and that the extra weight of covering, paint and scale detail wouldn't make too much difference to the performance.

Opening the throttle progressively had a similar effect as before in that the tail lifted quite quickly into the

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She'll fly fast if you wish, but why would you want to? Slow her down and guide her round in a manner that befits a multi engine W.W.II heavy.

flying position. A small amount of up elevator was needed here to prevent the nose from pitching down, and this time a slight swing to the left was evident - corrected with a dose of rudder. Once the Lanc' had picked up speed, both rudder and elevator could be neutralised and after 50 or so feet I could sense her lighten on the wheels. Small progressive increments of elevator had her gently rising into the air and as she climbed out I tucked the undercarriage away. This, as a point of interest, has an appreciable effect of the efficiency of the airframe, indeed the climb rate is notably better without the extra drag.

Having reached a comfortable height, the model was re-trimmed and flown in a series of comfortable circuits at about two-thirds throttle. Clearly the extra 8oz of weight added through covering and finishing had very little effect on the performance.

Like many scale models the Lancaster isn't difficult to fly but is somewhat harder to fly in a scale-like manner. At two-thirds to full throttle the aeroplane has quite a turn of speed and if you wish you can 'bank and yank' the model just like sportster. But why would you want to? No, to do the model justice, slow it down, but remember that in doing so you'll need to use co-ordinated rudder to keep the back end from 'hanging' in the turns. The need for rudder becomes even more apparent at lower speeds where it almost becomes a primary control along with elevator. A slow flat bomber turn will require rudder to be held in while the ailerons are used to stabilize the angle of bank. This means you may end up putting opposite aileron in if the wing drops too low in the turn; one good reason why mixing rudder with aileron is not necessarily the answer!

When it comes to landing you'll have no problem with this one. When the motors are idling there's quite some drag from those three-bladed props, so approaches can be made with good height. She'll descend quite quickly but at no great speed and when within a few feet of the ground gently flair with elevator and she'll grease in bomber-style.

All in all the whole project has been very satisfying and if you're a Lancaster fan you'll love flying her, not for the manoeuvres she'll do, but for the simple sight of that evocative profile lumbering around the sky.

Surprising as it may seem, a little detail inside those turrets makes a multitude of difference to the overall effect of the whole model.

DATAFILE

Name:	Avro Lancaster
Model type:	Electric W.W.II bomber
Designed by:	Tony Nijhuis
Wingspan:	72" (1829mm)
Wing area:	4.3sq. ft.
All-up weight:	6 lbs 8oz (2948g)
Wing loading:	26oz / sq. ft.
Motors:	4 x 400 / 480
Gearboxes:	2.33:1
Battery:	2 x 8-cell 1700CP or 5s 6500mAh Li-Po
Speed controller:	50 amp (Li-Po compatible)
Radio:	5 / 6 channel with mini servos
Control functions:	Aileron, elevator, rudder, throttle, retracts, optional bomb doors

Well, there she is. If you'd like one there's nothing more than a bit of balsa-bashing standing in your way.