

# IN YOUR NEXT ISSUE

ON SALE DEC 29

## BUILDING THIS AERO-ENGINEED MONSTER

And loads of stuff on normal cars too

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- Buyer's guide to the Ford Escort Mk I
- Buy a fleet of three cars for £5000 all in
- Failed your emissions test? Read what to do

**MORE P.I.G.** ● Ignition parts continued and the start of alternators.  
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Page 44 puzzle answers: A, Peter owns both; B, Andrew owns a Minor; C, Sue owns an E-type. Did you guess right?

170 PRACTICAL CLASSICS JANUARY 2005

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#### EDITORIAL

MEDIA HOUSE, LYNCH WOOD,  
PETERBOROUGH PE2 6EA  
TEL: 01733 468000 Fax: 01733 468397  
EMAIL: [practical.classics@emap.com](mailto:practical.classics@emap.com)

EDITOR Martyn Moore

DEPUTY EDITOR Beri Field

NEWS EDITOR Nigel Boothman

FEATURES WRITER Keith Moody

ART EDITOR Karen Elliott

PRODUCTION EDITOR Jenny Cripps

ADMIN MANAGER Glynis Vaughan

PRODUCT TESTER James Stanbury

CONTRIBUTORS Theodore J Gillam,  
Brian Cox, Mark Dixon, Russ Smith,  
Bandy Hopkins, Malcolm McKay, Malcolm  
Griffiths, Dale Drinnon, James Stanbury,  
Rob Hawkins and Richard Dredge

BRAND MANAGER Claire Forsyth

#### ADVERTISING

MEDIA HOUSE, LYNCH WOOD,  
PETERBOROUGH PE2 6EA  
Tel: 01733 468000 Fax: 01733 468228  
Email: [nic.glossop@emap.com](mailto:nic.glossop@emap.com)

ADVERTISEMENT MANAGER

Betty Helin

BUSINESS MANAGER (ADS) Al Rush

BUSINESS MANAGER (SHOWS)

Gary Coddington

CLASSIFIED SALES EXECUTIVE

Debbie Jordan

DEALER REPRESENTATIVE Richard Luff

CLASSIFIED SALES EXECUTIVE

Zoe Wynn

PRIVATE CARS FOR SALE Elisha

Chomiuk

SALES SUPPORT Sam Richardson/  
Natasha Lewis

AD PRODUCTION Nic Glossop

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## RESTORED CAR

# GREAT SCOTT!

A ten-litre Hall-Scott aircraft engine makes this Austin special very special indeed... and its creator is pretty unusual, too

WORDS: MARK DIXON. PHOTOGRAPHS: MALCOLM GRIFFITHS

**S**OME PEOPLE are so talented that they make you sick. People like Oliver Way, who built this aero-engined Austin special. It has the authentic, time-worn appearance of something that battled around Brooklands racing circuit in the Twenties but Oliver created it from the ground up only a few months ago. He designed it, did all the engineering and machining, made the bodywork, everything; and he's still only 25 years old.

Despite having a fearsome array of skills, Oliver, who lives near Petworth in Sussex, is one of the most self-deprecating people you could hope to meet. And he'd be the first to admit that having a dad who is a seriously keen vintage car enthusiast was a big help. 'The first word I ever learned was "Itala", which I saw on the front of a radiator at a vintage race meeting,' he says.

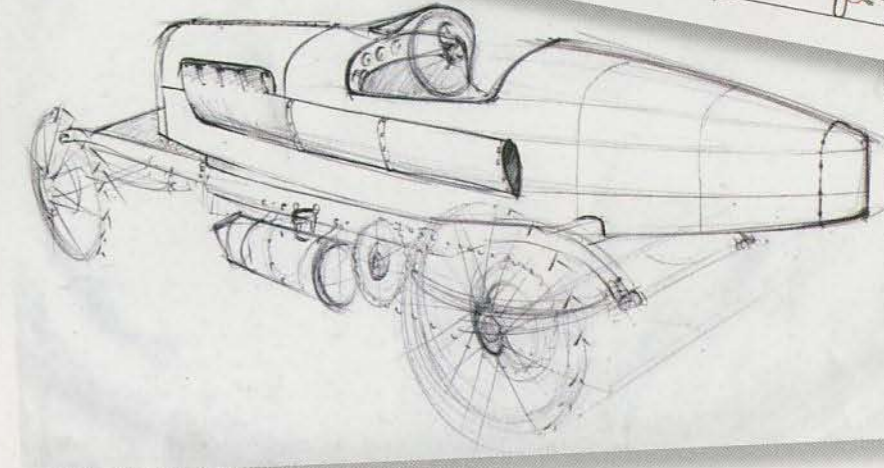
Oliver had just graduated from university when he began the Austin project. He'd studied car design at Coventry University and was hoping to land a job at Zagato, the Italian styling house, but in the meantime thought he'd have a go at making a vintage special: something big and powerful, in the spirit of the monstrous race cars that were all the rage before and after World War One.

This Austin must be the first vintage car ever to have been designed on a computer. 'After making a few sketches on paper I used AutoCAD, the standard industry software, to draw up a plan view from the fixed dimensions I had, like the wheelbase, the track, the position of the engine behind the front axle and so on,' says Oliver. 'Then I scaled the plan up to full size on the garage wall with thin black tape. I was actually putting into practice all the stuff I learnt at college.'

Oliver already knew what engine he was going to be using. A while back his dad had acquired a ten-litre Hall-Scott aero engine, of the type used in American biplanes during World War One. Rumour has it they weren't terribly reliable and had a reputation for catching fire in mid-air, which may explain why little-used examples still turn up in barns and warehouses. At about £10,000 for one in good running order, they're not stupidly expensive – relatively speaking.

'This engine came from Canada and was still in its original packing crate,' says Oliver. 'It had

Oliver started with a sketch of what he wanted his new project to look like. Fixed dimensions such as wheelbase and track were then used to make computerised drawings.



probably been a spare for a postal service aircraft. We had a grand firing-up ceremony at midnight during a millennium celebration party. We wound a length of flat belting around the flywheel, tied one end onto a tractor and drove away as fast as possible.'

The chassis for Oliver's project also came from his dad's stash of vintage spares. Somewhere along the way he'd picked up a couple of big, early Austin chassis and one of them was passed from father to son. There was no gearbox with it, but Oliver found something suitable at an autojumble; it may even have started life in an Austin because its casing was made by the same foundry that Austin used at the time.

Transmitting ten litres of aero engine power to the rear wheels taxed Oliver's ingenuity to the limit. He wanted chain drive for that authentic Brooklands-racer look, so the differential unit from the Austin back axle was shorn of its brake drums and hubs and moved up the chassis. Finding the parts for the chain

drive was easy: they were bought off-the-shelf from an agricultural machinery supplier. All Oliver did was drill some extra holes in the sprockets for appearance's sake, and voilà – an Edwardian final drive. The gearbox, though, was trickier. Old aeroplane engines turn over relatively slowly and the Hall-Scott has a working maximum speed of about 1500rpm so the gearing had to be adjusted to suit.

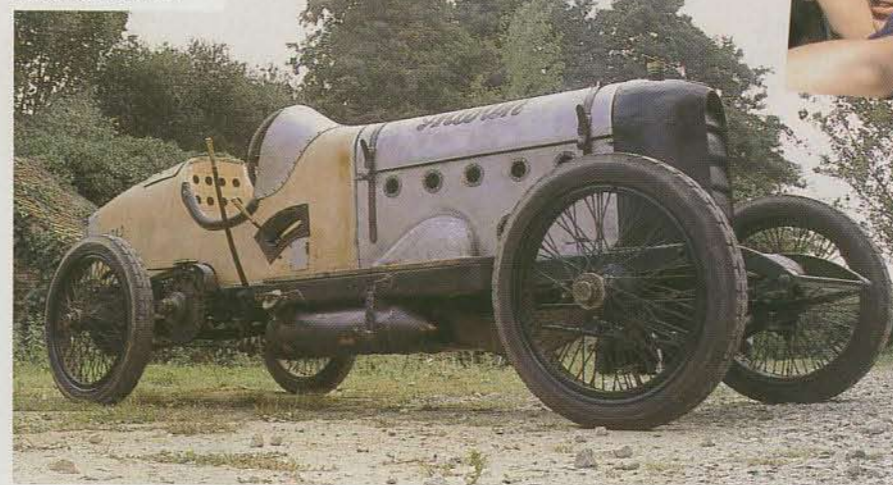
'Most people would have used an additional step-up gearbox but we didn't really have enough room, due to the length of the engine,' says Oliver. 'Instead, we swapped the constant-mesh gears around on the input shaft and layshaft so that the layshaft now revolves at twice rather than half the input speed.'

'The downside is that fourth – which has the usual direct drive from the input shaft – is now lower-g geared than second and third. Consequently the gearshift is in an X-pattern, with first to the left and up, second to the right and down, third to the left and down, and top to the right and up. You do get used to it surprisingly quickly.'

If the mechanical bits impress it's the body that showcases Oliver's design skills. The way he solved the problem of making the tricky compound curves involved in the long, tapering tail was quite brilliant. He overlapped strips of plywood around a wooden core of 'formers' and 'stringers' – bulkhead-like cross-sections and whippy lengths of wood strip – which he then covered in fabric and sealed with dope (a fluid that shrinks and waterproofs fabric).

'A mate of mine is a boat builder and came up for a couple of weeks to show me how to do it,' says Oliver. 'The ply strips are only 1.5mm thick so they bend quite easily without having to be steamed to shape, but we put on two layers in opposing directions to give a total wall thickness of 3mm. The fabric isn't proper aircraft stuff – these days, the finish is just too good for what we wanted – but ordinary muslin, like the cloth used for straining jam.'

Oliver, right, used computer skills to help restore the Austin.





To keep the proportions right, the car was built to a full-size plan marked out on the garage wall. Rear body resembles an aircraft fuselage, with its shape dictated by wooden formers and stringers.

radiator and steering wheel. 'They're made from several pieces of steel, literally beaten to shape and welded together. A bit crude, but then they don't need to look immaculate. I've had to learn this stuff as I go along and the way I do it is probably wrong but it seems to

work. The only machining I couldn't do was the splines for the wire wheel hubs and also the gear cutting for the transmission.'

Any special worth its salt includes a few star finds from autojumbles and Oliver's is no exception. Without doubt, his luckiest discovery has to be the Hall-Scott tachometer that turned up at a Vintage Sports-Car Club meeting at the Prescott hill climb. The steering wheel, however, was made from scratch from two pieces of laser-cut steel and, whisper it gently, a wood rim of MDE.

Other details include the bronze filler caps for the fuel tanks taken from old Army trucks in a local scrapyard. The same scrapyard also yielded a heavy-duty lorry clutch to cope with the lorry-like amounts of torque that the aero engine produces.

Lateral thinking is an essential skill for the special builder so when Oliver needed to create the exhaust pipe that runs along the roadside of the body he contacted – who else? – a boiler-flue maker. The rearmost section of

the exhaust is the original aircraft part, now extended by a matching length with the same flattened-oval cross-section. Passengers must take care not to casually rest their left elbow on the cockpit side or they'll end up branded with an exact impression of an exhaust pipe joint. Mine took several weeks to heal up.

The pain was fair exchange for a ride out to the local pub. Oliver has already driven the Austin to Prescott and Goodwood. 'We took it to the Goodwood Revival and ended up in the central enclosure, despite not having an invitation. The marshalls kept waving us through,' says Oliver.

Getting going is a little tricky since Oliver hasn't yet found a suitable starter motor but it will fire up instantly if someone is willing to push. The Hall-Scott doesn't make the deafening roar that I'd been expecting and putters away like, surprise surprise, an old biplane motor. To ride shotgun in the big Austin down the Sussex lanes connecting Oliver's house with the nearest pub is to indulge in instant time travel. Tanking along at 40mph your face is pummelled by the slipstream and lightly moisturised by the drizzle of coolant escaping from the radiator cap. This is proper motoring. But when it comes to braking you have to be alert. Since the brakes are mechanical, and they work on the rear wheels only, you need to concentrate harder than any Playstation or Xbox gamer.

Since showing the Austin for the first time in 2004 Oliver has received a commission to build another Edwardian special and he's now thinking about turning his hobby into a career. Toad-of-Toad-Hall wannabes can email him at [aero@oliverway.co.uk](mailto:aero@oliverway.co.uk), though be warned – with the parts bill alone totalling £20,000 or more, a finished car is likely to cost at least double that. Oliver is already planning to make another car for himself, this time shoehorning a 1920s Curtiss V8 aero engine into the chassis of a monstrous German Fafnir.

STOP

**NEED TO KNOW**

Vintage Sports-Car Club, The Old Post Office, West Street, Chipping Norton, Oxon, OX7 5EL, 01608 644777 email [info@vsc.co.uk](mailto:info@vsc.co.uk)  
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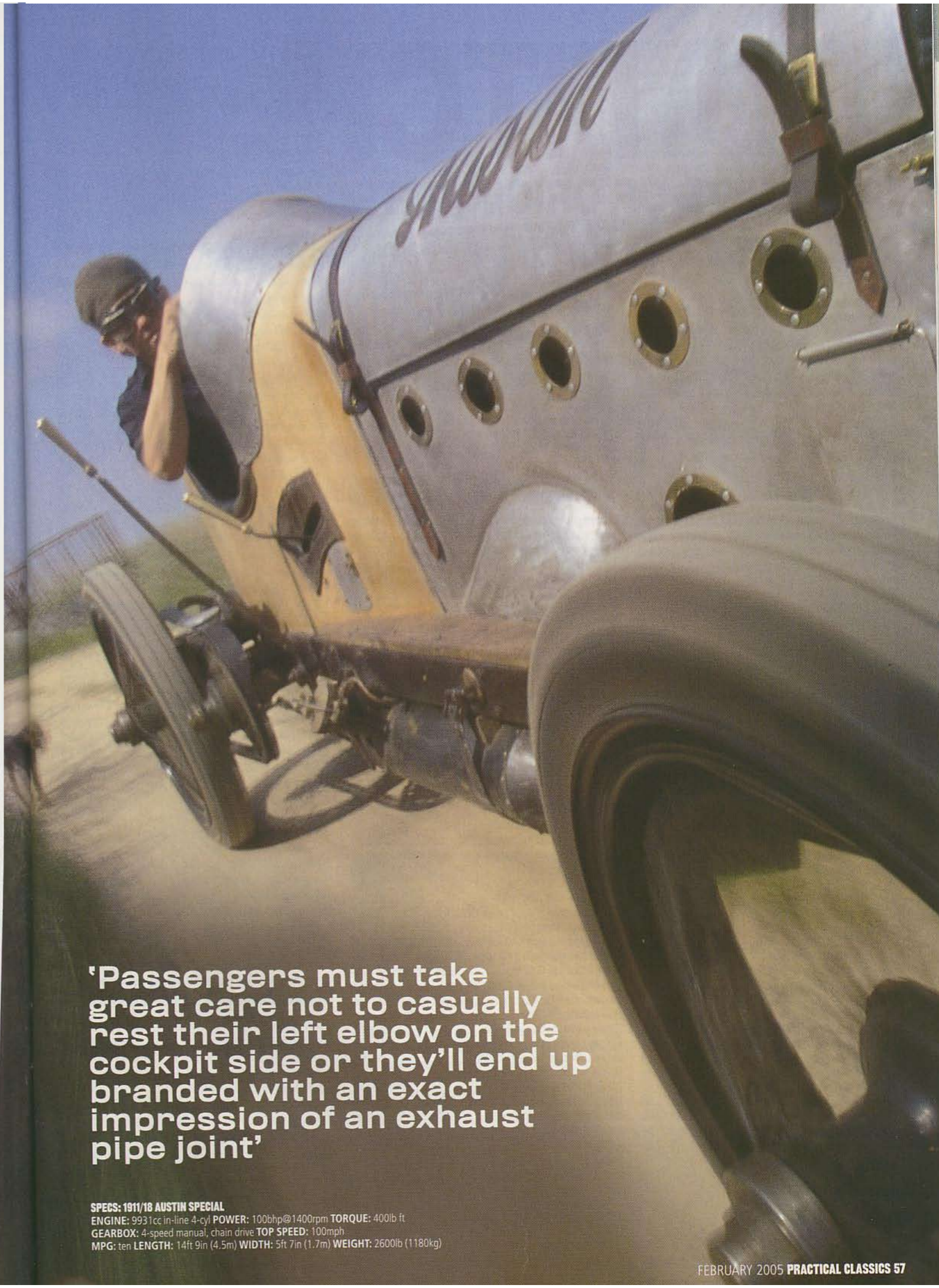
Laser-cut steel was used to make a new steering wheel.



The Hall-Scott engine was built for a World War One biplane.



Oliver's dad supplied the chassis from his stash of vintage spares.



'Passengers must take great care not to casually rest their left elbow on the cockpit side or they'll end up branded with an exact impression of an exhaust pipe joint'

**SPECS: 1911/18 AUSTIN SPECIAL**  
ENGINE: 9931cc in-line 4-cyl POWER: 100bhp@1400rpm TORQUE: 400lb ft  
GEARBOX: 4-speed manual, chain drive TOP SPEED: 100mph  
MPG: ten LENGTH: 14ft 9in (4.5m) WIDTH: 5ft 7in (1.7m) WEIGHT: 2600lb (1180kg)