SPEED HEAT DUST NOISE

California's El Mirage dry lakebed has been home to speed runs for decades, and still holds six major events a year, with cars and bikes regularly topping 200mph. We just had to visit

Words David Lillywhite // Photography Matthew Howell

Above and right
Steve Tillack's turbo'd Toyota-powered 240Z lines up in the start lane, as the car in front awaits the obligatory push start; anything goes at the El Mirage Off-Highway Vehicle Recreation Area.

SOME KIND OF sand creature, half man, half earthy elements, careers across the track on a machine that wouldn't look out of place on the set of *Mad Max*. It's all chassis tubes, suspension and dirt. Up ahead a ratty Henry J hot rod is kicking up a rooster tail of dirt, which we're using as a direction marker. Without it we'd be completely and utterly lost on this vast plane of featureless, shimmering dry lakebed.

Welcome to the El Mirage Off-Highway Vehicle Recreational Area. I'm not sure it should exist but I'm very pleased it does. The lakebed is used for speed runs, a lesser-known and marginally more hospitable counterpart to the Bonneville salt flats, while light aircraft and microlights are also permitted to land on the lakebed, and the surrounding mountains are a playground to quads, motocrossers, sand rails, dune bugs and mountain bikers. It's very dusty and very hot.

El Mirage is roughly halfway between Los Angeles and Las Vegas, 870m above sea level in the Mojave Desert's hinterland of scrub, shabby houses and long-abandoned cars. It's only a couple of hours out of LA but after a few miles of broken-up tarmac and missing signs, it's easy to wonder whether the sat-nav has got it wrong.

And then at last there's a sign, courtesy of the catchily named US Department of the Interior Bureau of Land Management, pointing us down a long, straight road with, incongruously, speed bumps every few hundred metres. At the end there's a turn-off to the El Mirage visitor centre, where a $15 ticket allows access for a full day of madness, whether you're a spectator, competitor or off-road lunatic. This is a relatively new development, along with a high, chainlink fence around the six miles long, two miles wide area.

Drive through the gates, down a short, bumpy slope and up ahead there's a remarkable panormamic vista of almost nothing but nothingness, so vast and bright that eyes struggle to cope. Where to go? It seems sensible to keep well away from the wild-eyed off-roaders and follow the hot rods tearing across the hard earth. The baked silt surface is as unyielding as concrete and remarkably smooth but we don't even try to keep up, relying instead on following the clouds of dust.

Soon we can just about make out traffic cones and a few vehicles shimmering in the distance but there's still something so disorientating about the featurelessness and the heat haze that we're unsure whether we're really going the right way. The cones and cars gradually loom larger in the windscreen, but our sunblinded eyes and jetlagged brains are still failing to work together to distinguish what's what. Then, suddenly, we're alongside the strip, just as a '60s Oldsmobile shoots past, close enough to give us a clear view of the flames licking out from under the bonnet. A fire truck and ambulance follow in hot pursuit. Seems we've found the right place. →

The Oldsmobile pulls up and the driver jumps out, but the fire is already under control. We drive on, past increasing ranks of RVs, trailers and competition vehicles and into the haphazard paddock. We climb out just as the place goes quiet – not for the two pale limeys staggering back under the force of the heat but in acknowledgement of the work that's now going to be needed picking up fragments of supercharged V8 from the scorching lake floor before another run can take place.

Have I mentioned that it's hot?

'It's not too bad,' says event official Steve Davies, as we seek shelter under the awning of the scrutineering trailer. 'Sometimes it gets close to 120 degrees [Fahrenheit, of course] but there's a breeze today.' Could have fooled us. The fierce sun attacks from every angle, reflecting off the baked crust of the lakebed, from the shiny fittings of the myriad beige RVs, and most of all from the countless white 'speed record' T-shirts of varying vintages adorning just about everybody who's not in race overalls or leathers.

A quick aside here: the most coveted T-shirts are of the 200mph Club, of which a competitor only becomes a member by beating a *class record* at over 200mph. Merely achieving 200mph is not enough here.

The history and atmosphere of the place hit as hard as the heat. There have been speed runs on the various Southern Californian dry lakes since the turn of the 20th Century – Muroc (now the site of the Edwards Air Force Base) was the first, starting off around the same time as racing on the salt flats at Bonneville, Utah, followed by Harper, Rosamund and then El Mirage – but it really took off in the late 1930s, helped along by the formation of the SCTA (Southern California Timing Assocation).

Back then, El Mirage would have attracted mostly road cars, four-cylinders and flathead V8s alike, with lights, 'screens and even suspension dampers removed to save weight, and engines tuned with aftermarket cylinder head conversions, to the point that cars were often identified simply by the make of their cylinder head.

El Mirage and the like later received another boost as ex-servicemen began to seek out new thrills after World War Two. Since then, the speeds have cranked up – a 'Lakester' achieved 312mph in 1999 and several bikes have topped 250mph – but the enthusiast nature has remained, with competitors more likely to be working from a beat-up day van than a slick pantechnicon.

We wander around, taking hit-or-miss chances on who'll be chatty, who won't. As in any motor sport paddock, if the vehicle is running fine, the team will be happy to talk. If it's not… well, out here in the desert, the blank looks seem all the more foreboding.

Most of the cars are vaguely classics of some sort, from the 1930s rods to the long, narrow single-seaters, but under the skin they're packing the very latest technology, engineered to startlingly high standards.

Ferrari specialist and Pebble Beach restorer Steve Tillack is here with his Datsun 240Z. He takes off the bonnet to reveal a gargantuan turbo suspended above the Toyota 2JZ engine on a bed-of-snakes manifold, before retreating into the cool of his motorhome.

A few bays along is – wait for it – a Triumph GT6. It's had a roof chop, and sports moon discs, huge tray spoiler and a parachute hanging out the back, but the surprise is the 300bhp Hayabusa engine and front-wheel drive. 'Ever thought how nice it is to have the front wheels spinning →

Clockwise from far left
Fantastic roof-chopped Triumph GT6; Subaru 360 with Kawasaki power and chain drive; cars are stuffed with high-tech engineering; most cars are push-started off the line; packing up the parachute after the run.

'A crash out there, at 150mph-plus, can't possibly end well but the racers are predictably blasé'

and to know where you're going?' points out owner Doug.

The crew of Paramount Force were hoping for 200mph but, as its driver gets increasingly agitated (even losing his race boots for a while as nerves take over), it becomes increasingly clear that electrical gremlins will end play.

Close by, tuner Jimmy Stevens fettles White Lightning, a 1933 Austin that's been running here since the 1950s. With its Ford V8 flathead converted to overhead valves, its best time is a remarkable 181.9mph. 'Getting faster with old technology!' one of the crew remarks.

Nearly an hour after the Oldsmobile self-destructed, the strip is declared open with a joyous announcement from the commentator. Within seconds, and with a cackle of engines and a blast of nostril-burning, eye-stinging nitromethane, the speed runs start again.

Competitors line up in one of four lanes. Lane one is for 200mph-plus vehicles, lane two for odd-numbered race entries, lane three for even numbers, and lane four for rookies (who are looked after well by SCTA officials).

The highest-geared cars are pushed off the line by their crews' pick-up trucks, of varying vintage and condition; it looks odd but it's the only way for these high-powered monsters to gain speed on the slippery surface.

Each race-car engine stutters and splutters into its powerband, then suddenly finds its sweet-spot and roars away, leaving the pick-up to peel off to the side and head for the end of the strip. Within split-seconds the car will be hundreds of metres away, shrouded in dust, every gearshift amplified across the sand. Sometimes we hear the revs rising too quickly as the car breaks traction, and everyone watching holds their breath until a higher gear is found and the revs settle down again.

And that's just the cars. The bikes are altogether more unnerving to witness, and when their revs rise, you know the rider is fighting for control as the rear wheel shimmies and spins across the powdery surface. A crash out there, at 150mph-plus, can't possibly end well, though the racers are predictably blasé.

'It's all about *how* you crash,' says the owner of a long, cigar-shaped dragster. 'Our last crash was pure textbook: [the car] just rolled onto its side. You don't wanna tumble!'

The strip is 1.3 miles long, at the end of which is a 132ft timing trap to log the speed; different from the flying mile or kilometre of salt flat racing. We watch more runs, listen to the untiringly excitable commentary and delve further into the machinery on display. Kawasaki-powered Subaru 360? Oh yes! The crews start to pack up, some happy, others mourning destroyed mechanicals.

A long-avoided visit to the stiflingly and stinkingly hot plastic Portaloo rounds off a day of scorching sun, deafening exhausts, blinding, choking dust storms and dubious hot dogs. We're probably sunburnt, but who'd know under the layers of dirt. Photographer Matthew Howell looks back, wipes grit from his bloodshot eyes and says: 'I think this is one of my favourite places on Earth.' Mine, too. Oct

THE FABRIC OF CARS' EXISTENCE

For decades, fabric-bodied cars have had to be restored with incorrect PVC coverings. Now, after an amazing salvage operation, that's no longer the case

WORDS David Lillywhite // PHOTOGRAPHY Lyndon McNeil

'THIS COULD BE the biggest change in restoration for decades,' says Graham Moss, as he unlocks a small industrial unit on the edge of a quiet Bedfordshire village. I'm wondering if that could really be the case, and mentally listing restoration breakthroughs. Plastic filler? MIG and TIG welders? 3D mapping? They've made processes easier, but have they changed the appearance and authenticity of any car? Not really.

Graham swings open the doors to reveal a piece of machinery that looks run-of-the-mill, until a closer look reveals steam-age sprockets, drive chains, levers, dials and rollers that clearly don't belong in this century.

This, however, is the future – at least, it might be if you have a fabric-bodied car. The machine you see here enables the correct fabric to be used, rather than the PVC (in a limited range of colours, including just one shade of British Racing Green) that is all that's been available for fabric body restoration since the 1960s.

A bit of history: in the early days of the automobile, carmakers concentrated on running gear and chassis, leaving traditional coachbuilders to construct the bodywork. Ash frames were skinned in aluminium but early chassis were rather flexible, and the bodywork took the strain, resulting in unsightly cracks.

The alternative, which became a popular solution for everything from sidecars to limousines, was to cover the →

body in a fabric that was coloured to match (or contrast with) the painted metalwork of the vehicle. Two companies manufactured the majority of these fabrics: ICI in the UK and Dupont in the USA. The ICI version, 'Rexine', was used for bookbinding, tablecloths, public transport seat coverings, even wallpaper.

It was highly flexible, waterproof and durable, and it could be made in any colour, to a high-gloss finish – or it could be embossed at extra expense to show a grain. There are plenty of cars that, incredibly, still exist with their original Rexine, including Bentley 'Old No 2', the 1930 Le Mans 24 Hours Speed Six, which Graham's vintage Bentley specialist company RC Moss Ltd restored eight years ago (featured in Octane issue 46).

The Rexine on Old No 2 is intact, but only just. That got its owner – top-level collector Peter Livanos – and Graham thinking about what might have happened had the fabric not been usable. Could it be reproduced?

What happened next is uncanny. Bentley historian Clive Hay employed to document Old No 2, started to research Rexine. She came across the name of Waddle Storeyson the Stour estuary near Ipswich, once the home of Britain's first plastic manufacturer, and also of Rexine production. When she Googled the company, the first picture to come up was of the factory being demolished, taken by a photographer who specialized in urban decay. In fact, he'd taken around 80 photographs – just two days earlier. The demolition was still ongoing!

One of the pictures showed a huge, paint-spattered machine that Clive and Graham realised could have been used to produce the fabric. They contacted the demolition company and persuaded someone to let them take a look – as Graham recalls: 'It was an incredible place, a 77-acre factory, all steam-powered, with tiled floors throughout. The machine's saviour was the latest routing of an electric train line, which cut off part of the factory and left only a narrow tunnel under the line for access.

'We found the machine. It was 25-metres long and steam-heated. I thought, no, this is ridiculous! We'll walk away!' All the same, Graham mentioned the factory to Peter Livanos. 'I said to him "I wasn't going to tell you because I know what you'll say." And, of course, he said it – that we should rescue the machine. It's been a nightmare ever since! I kept thinking it over and finally I had a eureka moment – "Why do I need the oven?" – because either end of the machine was generic. I could take the ends, and halve the length of the machine.

'I arranged to buy it for scrap value, meeting in a layby with cash in an envelope. Only then was I told that the lagging around the heating tubes might be asbestos! I had to employ a man in a spacesuit to go in and analyse it. Turned out it was plaster of Paris. Then we had to work out how to get the machine out through the tunnel. We found a company that specialized in steam drain work, and they used a low loader to drag it out.'

So that's how Graham Moss came to be heading up the Vintage Fabric Company, based down the road from the spotless RC Moss workshops. But it's not been easy…

'We'd been told that the coating was 30% cellulose, 30% castor oil [to add plasticity], but when we tried that on the fabric, it would crack. It's incredible: Dupont made six billion yards of Rexine in 1928 alone and yet →

Above and right
The marvellous fabric machine, which in operation clanks and hisses like something out of Charlie and the Chocolate Factory, Graham Moss scrapes away excess paint using a broad-bladed palette knife.

there's so little information available on it. The British Library lists an instructional book but they can't find it!

'The breakthough came when we found an old boy who'd worked on the machine. He said that three separate coatings were used: the first to seal the fabric; then the pigmented cellulose, but that would leave the surface so soft that you could use it as a crayon; and finally a rock-hard clear coat, just microns thick.'

Graham continued to experiment and began to perfect the coating, but still the fabric wasn't pliable enough.

'When we started I'd paid an expert to analyse the original fabric, and he'd told me that it was "a plain twill weave", with one warp under, one weft under. No! That construction locks it so that it can't be folded. Eventually I realised that the expert probably never analysed it, he just took the money. It turns out that it's a 6/1 weave, over six, under one, which is loose as hell and very pliable.'

Graham commissioned a mill in the north of England to produce the fabric, weaving it and then singeing the top layer with a naked flame to burn the fibres back, ironing it, shaving it, bathing it, stretching it to a uniform tension and finally backcombing it to a fuzzy finish. 'If they'd don't roll it properly it's game over,' says Graham.

All this before the machine was even up and running. Graham replaced the original steam-powered oven with a modern oil-fired unit, and installed it in its own building, away from the main site.

'I sent a letter to the Ipswich local paper, asking if anyone remembered using the machine, and a man phoned us up. He'd used it for seven years. He came down one Sunday and changed our would; he brought the machine alive. It took another seven months to get it right but by then I felt quite confident.' It's still a daunting process, though.

Below
The Wardle Storeys factory, as found mid-demolition by Graham Moss. In fact the narrow access tunnel (bottom left) has prevented further demolition work to the part of the factory that the machine was found in.

Above
The two finished cars: UV 7818, a 4½ with embossed fabric, and KD 123, a 3 Litre with smooth fabric. Graham uses a modern machine with custom-made roller for the embossing; the 'grain' (top right) must remain straight, so embossed fabric can only be used on square-backed bodies. The close-up (bottom left) shows what's underneath a Le Mans-type body covering

Graham works at one end of the machine, standing on a rubber mat to avoid static electricity build-up, scraping away excess paint with a knife. In the past, operators would climb up to the machine and tap the knife onto the end roller to earth any static, and so now the roller is pock-marked from decades of those little taps.

Another operator works from the opposite end, where a water-heated roller pulls the fabric through under tension. As the fabric starts to move – at some lick, it has to be said – Graham pours the paint mix (or sealant or top coat) onto the fabric, and a Stellite-tipped blade scrapes almost all of it away, leaving an initially invisible coating. The varying thickness and imperfections of the fabric are allowed for by a thick rubber blanket on the roller beneath the stellite blade, keeping the coating uniform at all times. Graham has to adjust barge boards on either side to keep the coating within 3mm of the fabric edge at all times.

The fabric then heads through the three-stage oven, each part working at a different temperature to evaporate the three solvents: cellulose, isopropylene and toluene. It is then directed around the opposite end of the machine from Graham, and gravity drops (to reduce creasing), cleverly concertinaing under the machine, then to be guided out the other end by adjustable rollers, operated by a third man to compensate for shrinkage in the fabric.

Job done? Oh no. This process, for the pigment stage alone, is repeated around 22 times, the coating building up and finally, in the last four or five passes, beginning to show its trademark high gloss. At any stage Graham might spot a flaw, or have to intervene with his knife to scrape away a build-up of paint, before the run is potentially ruined. The process is highly dependent on operating conditions, so that on a clammy summer's day the coating often won't migrate to the fabric. A crisp, cold day is much better. Fortunately, as the coating builds up the fabric smooths out, as does the process. 'And then,' Graham grins, 'the magic just happens!'

And after the magic? That's the (relatively) easy bit, because although re-upholstering a fabric body is a highly skilled process, it's much quicker than scratch-building aluminium panels – but with all that's involved with the fabric production, it's not much cheaper. The fabric is stretched around the frame, then padded out with horsehair to achieve the correct contours.

Several cars are now underway, and two have been completed: a Bentley 3 Litre and a 4½, both belonging to Peter Livanos, and due to be unveiled at Pebble Beach Concours this year. They look incredible, noticeably different from PVC-bodied machinery. The vintage car world is about to be thoroughly shaken up.

THANKS TO Graham Moss of RC Moss, www.vintagebentleys.com

THE OCTANE INTERVIEW

Don ‘Big Daddy’ Garlits

He’s the king of drag racing, worshipped for his lifetime of record-breaking. ***David Lillywhite*** *discovers a fascinating and unconventional hero*

PHOTOGRAPHS Getty Images

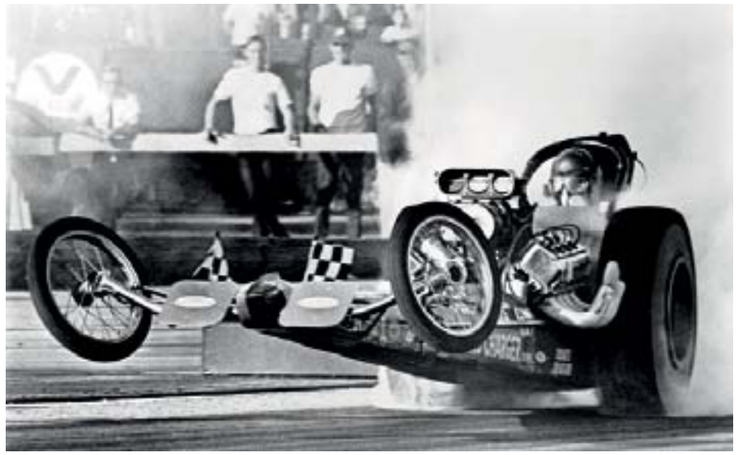
THE FIRST TIME we meet, Don ‘Big Daddy’ Garlits, the undisputed king of drag racing, is on his best behaviour. He’s even in a suit and tie, and though he’s wearing trainers, it’s only in deference to his crash-damaged feet.

We’re in the 13th Century Beaulieu Palace House, home of National Motor Museum founder Lord Montagu. Our host is Ralph [‘Rafe’] Montagu, the softly spoken, railway enthusiast son of Lord Montagu, who you might think would be out of his depth here.

But no, Ralph is quizzing 83-year-old Don on every aspect of drag racing, clearly fascinated by the subject – and knowledgeable too. Don’s family and I simply listen in on the conversation, as Don relays his achievements, turning his head to hear the questions in the less damaged of his engine-deafened ears, and answering in his Southern States drawl.

‘I was the first over 170mph, over 180mph, over 200, 240, 260, 270… I was the first to use a parachute; the first to use cycle wheels at the front, the first to use a hypoid Oldsmobile axle…’ Don’s not boasting, but he’s deeply proud of what he’s done, and retains the showmanship that earned him the nickname ‘Big Daddy’. He’s at Beaulieu to celebrate the 50th anniversary of his famous 200mph run, which propelled him to superstardom.

A few months later he’s back in the UK, for the Goodwood Festival of Speed. This time he’s got the comfort of his familar ‘Swamp Rat’ dragster, though surprised at the size of the Festival, and grumpy with the crowded paddocks and problems with the car. This was the first of his dragsters, so-named because the cocky California drag racers had laughed at newcomer Don’s Florida accent and innocence.



But Swamp Rat 1 is misbehaving. On the first day of the Festival its engine suffers a rare problem. A valve spring has broken and a valve has tangled with a piston, making a terrible mess of the combustion chamber. There’s no spare engine to hand so he’s done for the weekend, to his great disappointment.

After a miserable Saturday, Don revives on the Sunday, and regains the drive he’s so known for. ‘Heck! We can fix this. We’ll run it on seven cylinders! I’ve won championships before now on seven cylinders!’

With crowds gathering, Don rolls up his sleeves, removes the cylinder head, cuts out a piece of metal from a can of Sprite, fixes it over the intake port of the ruined cylinder with denture fixative (yes, really), and bolts it all back together. The Williams F1 team lends Don its battery packs and suddenly Swamp Rat lives again, making the last run of the weekend to huge applause. Another career highlight.

Which brings us back to Beaulieu, where we chat about Don’s early days in drag racing, starting with his first car, a 1940 Ford sedan, his job at a body shop, and his first read of *Hot Rod*.

‘Illegal drag racing was all I could afford at first. But then in 1949 a friend said, “Don, let’s race!” “What do you mean?” I asked.’

It was just an Army Air Corps landing strip, where local enthusiasts went to race, but it was Don’s first official event. ‘It was 300ft maybe, but it was so exciting.’

Don was hooked. He built a Mercury V8-powered Model T and started to campaign it on local quarter-mile strips. By 1957 he’d taken the brave step of turning professional, though he kept up the day job too.

‘I worked in my garage to make money. I built my own cars. I might not have gone so fast but I’d just keep coming back at them,’ he says. And he came back against the odds, →

Left and below
Swamp Rat 13's transmission explodes coming off the line in 1970 – the accident severed part of Garlits' foot and a spectator's arm; Don Garlits at the Festival of Speed this year, where he demonstrated Swamp Rat 1.

'We'd make money barnstorming one track, another track, then another. Three races a week!'

having cheated death early on when Swamp Rat 1's supercharger exploded during a 1959 event, engulfing Don in flames.

'I was on wide-open throttles when it blew up and for a few moments I kept them open. I had no gloves, no face mask, just a leather jacket that my wife had given me to wear right before the race. That jacket saved my major organs but all the skin on my hands just fell off onto the ground. They were red raw.

'At the hospital they said "We've got to take your hands off". I said I would rather die. My wife said "We'll find another hospital", and we went by train to a municipal hospital. I walked in, they took the bandages off, and the doctor said he'd treated 5000 sets of hands, all from Korean War tank burns. "Get him to theatre", he said. Don still bears the scars on his hands and face but he recovered, and the experience didn't slow him down.

'In 1964 I was at Island Dragway [in New Jersey] with Swamp Rat 5 and someone said "When you gonna go 200mph, Big Daddy?" Right now, I said! My wife push-started me and I did a 201.34.'

Breaking the 200mph barrier brought Don international fame. 'That's what put me on the touring circuit. We used to make money barnstorming one track, another track, then another. Three races a week!'

Don was riding the wave of his success but the wins started to dry up, and rumours started to circulate that perhaps Big Daddy's winning streak was over. Ever the showman, he announced that he wouldn't shave again until he'd broken the seven-second quarter-mile elapsed time. At the 1967 US Nationals he did just that, running a 6.77sec quarter-mile, the fastest ever recorded, in Swamp Rat 11.

'It was the greatest moment in drag racing,' says Don. 'I shaved my beard off there and then, in front of all those people, to celebrate.'

But the pressure was always on to go faster. Lining up on the strip in 1970, Don dropped the clutch and his transmission exploded, cutting the car in half and taking much of Don's right foot with it – along with a spectator's arm.

'Swamp Rat 13 blew my foot off,' he says simply, but he's admitted in the past that the pain has never gone away, and that's clear as he heads up to Beaulieu's private dining room.

We talk about his wife Pat, the 'first lady of drag racing', who accompanied him in every venture until she died in early 2014, leaving him utterly bereft. And of his faith in God, and of aliens, in which he – surprisingly – passionately believes. All this as he fixes you in his stare, his hushed tones at the stately dinner table adding extra gravitas to the subjects.

Don 'retired' several times, initially after an accident in 1987, when his car flipped. But he couldn't keep away, commentating and racing until 2009. He still attracts a huge following, fans flocking to the Don Garlits Museum of Drag Racing, next to his house in Ocala, Florida. It started with his own cars, but he's added other drivers' cars, bringing the total to around 300. The story of how it came about in the early '80s, after a long property search, reveals much…

'We had just $80,000 to spend. We looked up and down but found nothing, so one night we got down on our knees and prayed to God. The next morning, we go north. My wife sees a property and says "We could put the house there, the museum there." And we look round, and there's a little sign in the ditch – "For Sale"! We make a call and [voice lowers] – this will make the hairs on the back of your neck stand up – it was up for $80,000.

'We built our home and our museum there; in 1983 we sold 11,000 tickets and we weren't even officially open! Now we [daughter Donna is running the business] get 40,000 visitors a year, and we've bought the land next door so we can have swapmeets. We'll never be able to sell this property because God gave it to us.'

After Pat's death, a devastated Don busied himself rebuilding the race cars' engines, so that most are now in running order, but that wasn't enough. He needed a new challenge – and so he came out of retirement to achieve 200mph in an electric drag car.

'We've got to have quieter, cleaner vehicles. I decided we need electric dragsters – they might not replace petrol cars but they could be a viable alternative. It's not as easy as I thought but we've got to 185.60mph, so we're close.'

He pauses a moment. Leans in close again. Looks me in the eye. 'My reaction time is better than an 18-year-old's.' Long may that last.