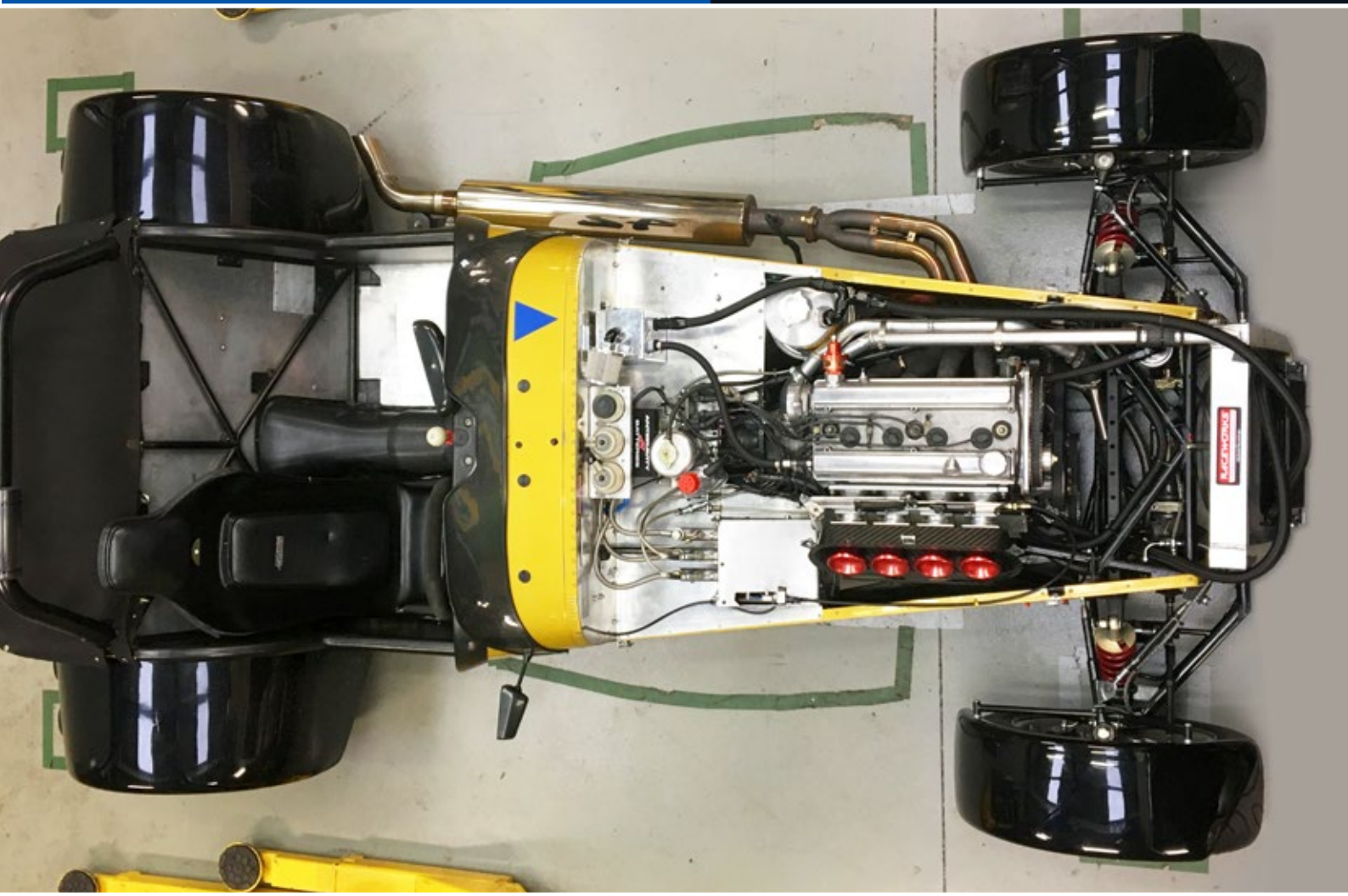
26/9 OCTOBER 2020 [$10]

LOTUS NOTES



THE OFFICIAL MAGAZINE OF LOTUS CLUB VICTORIA and LOTUS CLUB QUEENSLAND

2020

- Off street parking in Cairns
- Targa 2020 for Rookies
- One of a kind? No, another twin cam Elite exists
- Birkin Clubman Upgrade

Print Post Approved 100001716

OCTOBER 2020
VOLUME 26 • ISSUE 9

FEATURES →

REGULARS →

A bird's eye view of Les Bone's Birkin.
(See story page 18.)

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Lotus Notes Magazine Editorial

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Queensland President's Report

by Steve Lennox

By the time you read this we would have had the Grand Tour for 2020, this year driving some of the best roads through the Fraser Coast and South Burnett regions. Once again we will be spending money in these regions and also supporting some of the local charities, this is a great initiative of the club, and in particular, Ken Philp, who works hard to put together these runs.

Ken your dedication to trying out the roads and restaurants, bakeries, coffee shops, wineries and other attractions is appreciated by us all.

Plenty of motorsports on as well. Round 4 of Morgan Park has been run, plus ICC rounds at Mt Cotton hillclimb, and the khanacross.

The Targa series has kicked off again with Targa Great Barrier Reef. The Seymours entered in the open class, so serious stuff there. Almost a podium except for a minor off – unfortunate for them and hoping for better luck next time. But it does prove how competitive they were, well done.

We had our second club meeting at Holland Park Sporting Club, and it was a success again, this is now the new home of our monthly meetings. Last meeting, we had an interesting talk from Mark Jansen of Oldtimer Australia about the classic car market and what cars, vintages and history can do to make a classic car desirable.

See you at the next meeting on Thursday 1st October.

Club Christmas Dinner 2020

The Christmas Party has been booked for Saturday 28th November, at the Greek Club again, and we have reserved the terrace and opted for the delicious Greek banquet (although it will be individually plated rather than share platters). There will be a limit of 60 to meet the restaurant's COVID-safe plan. Further details and prices will be announced in the next month.

Lotus Nationals 2022

COVID restrictions have impacted another Lotus event, this time LOTUS 2021 is being postponed to 2022. This event will now be held in February 2022. It will still be a tour of Tasmania as per the previous event. For further details visit the website.

www.lotus2021.com.au

So, plenty of activities for the members. If anyone has ideas for activities that we aren't doing or they would like to see happen in our club, please talk to me or someone on the committee and we will be only to happy to expand the club activities to include these ideas.

Keep safe
Steve

WELCOME

New Members

David Wood [Lotus Elite}
Daniel Birt

Victoria ADDING Lightness

by Vicky Rowe

Blossoms are blooming and days are getting longer. Ah spring is so alluring, but even more so this year, after a long and dreary winter in lockdown.

Based on the average case numbers (at time of writing) we are tentatively optimistic about regaining some of our freedom very soon. Despite the cloud of uncertainty that prevails I would like to share with you what the committee has planned for the months ahead, subject to restrictions:

Virtual club meetings

Despite the likely lifting of restrictions we've taken a conservative approach to keep our club meetings 'virtual' for the remainder of the year:

- Tuesday 13th October 2020 – Ric Kemp of Multi Dampers
- Tuesday 10th November 2020 – Clive Roberts joins us from the UK (former Exec engineer of vehicle development on numerous Lotus projects)

Motorsport

Subject to restrictions Motorsport returns. Here's what MSCA has planned:

- 22nd November 2020 Sandown
- 5th December 2020 Phillip Island
- 19th December 2020 Phillip Island

Early Morning Runs

As soon as it's possible to run a safe 'anti-social' EMR we will. Stay tuned!

LCV Annual General Meeting

With continuing uncertainty regarding face to face functions and meetings the committee has decided to defer the AGM until Tuesday 9th March 2021

LCV Christmas party

The committee also decided to defer the Christmas party to Sunday 13 December 2020 (which is the latest feasible date before Christmas). It is to be held at the Killara vineyard/reception centre in Seville East.

Snowfields Tour

Rescheduled to be held from Friday 26th February 2021 to Sunday 27th February 2021 – This will be a great weekend of touring on some of the best roads the state has to offer. Spots are limited and costs are reasonable at around $350pp twin share. Please contact Euan Brown if you'd like to come along.

euan.brown@optusnet.com.au

Look out for electronic communications for further details and updates. Stay safe and well.

LOTUS NOTES FOOT NOTE:

I would like to take the opportunity to give recognition to those who have worked hard this year to deliver Lotus Notes in trying circumstances. With so few club activities this year it's been challenging to come up with content, yet I'm delighted to see lots of interesting articles, news and colourful pics appearing each month. Thanks to Peter (our editor) and to the many and various contributors.

There will be a changing of the guard (so to speak) in 2021, with production of *Lotus Notes* moving to LCQ. As a result, LCV will create two new 'magazine co-ordinator' roles (Motorsport & Social) to help facilitate LCV content. Please don't hesitate to me contact me if you have any questions about the changes or want to know more about the new roles. I'd love to hear from anyone considering helping out next year, so we can continue to deliver a valuable member focused publication.

Mid Week Run

by Russell Carter

The morning of the 25th August saw a gathering of Lotus at the BP Servo, Yatala, all ready to head off on a mid-week run organised by Mal Kelson.

Eleven Lotus (three Exige, four Elise, two Esprit and two Caterham) together with the beautifully restored VW Fastback of Giles and Janet Cooper from the Gold Coast.

A nice surprise was meeting Terry Bosworth from the Gold Coast. Terry has a one-owner, yellow, Series1 Esprit. In 1977 his father purchased this car new in the USA. The car is LHD with a very low mileage and in original condition.

On leaving the servo we all headed on a direct route to Tamborine Mountain, stopping at the Bearded Dragon hotel on the way, to meet up with some Gold Coast members.

We then had an exhilarating drive up the mountain and down the other side to Canungra, where we stopped for morning tea at the Metz Cafe. After a lot of talking and eating we then made our own way home.

Unfortunately, on the drive home, Mark Mathieson had an engine fire in his Series 3 Esprit. A split oil pressure sender pipe sprayed oil over the hot exhaust.

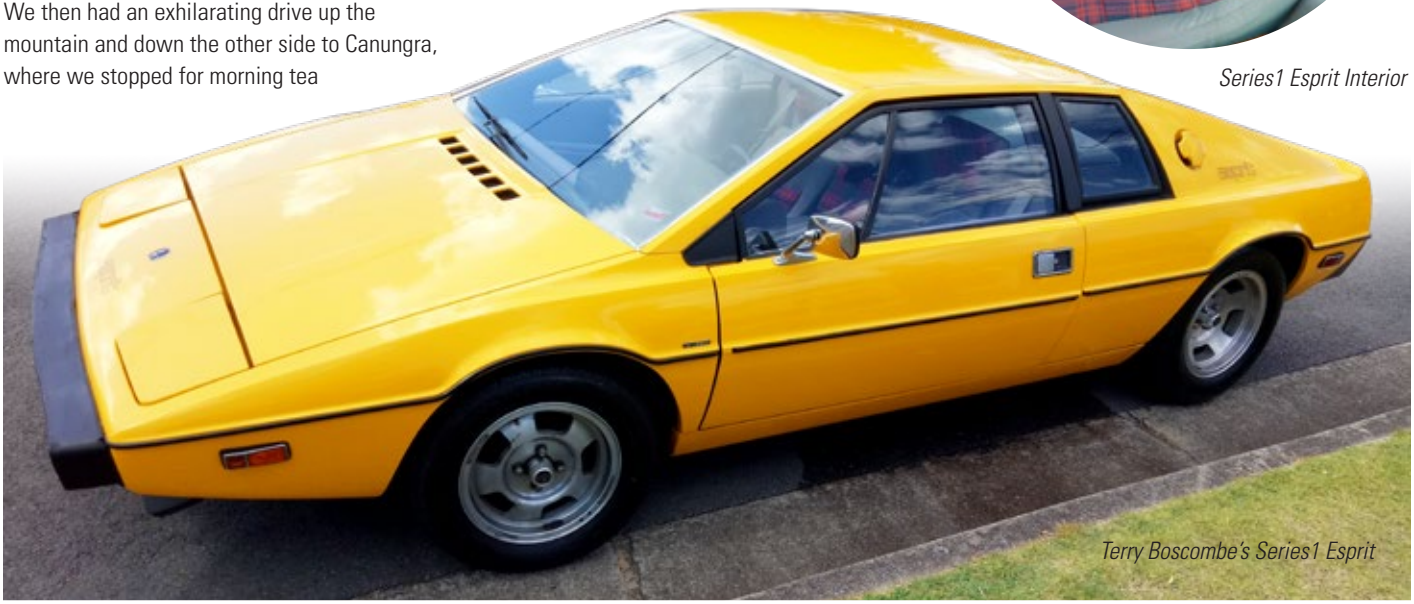
Fortunately, the night before the run, Mark had installed a Blazecut fire suppression system, which did its job and not a lot of damage was caused. He was helped by some construction workers working on the road, who seeing the black smoke arrived with fire extinguishers to help. Thanks to these guys.

All in all a great day was had by all. It was nice meeting up with some new faces from the Gold Coast area.

Thanks to Mal for organising the day.

Participants included locals Daryl and Moira Wilson, Mark Mathieson, Pip and Kent Andres, Dave, Chris and Mal Kelson, Leigh and Russell Carter. And from the Gold Coast, Giles and Janet Cooper, Winno Piddington, Terry Bosworth, Ngaire and Paul Bolton, Des Hill and Evan. Apologies if I missed anyone out.

Series1 Esprit Interior

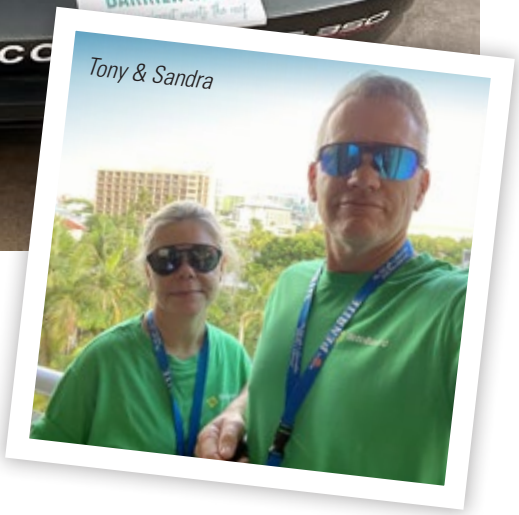


Terry Boscombe's Series1 Esprit

Off street parking in Cairns

by Tony Seymour

Perfectly prepared



Tony & Sandra

Both Sandra and I felt very fortunate to be able to attend Targa Great Barrier Reef in 2020. The field was reduced to around 80 cars, and with no possibility of getting monstered by Vipers and RS Porsches we decided to enter the outright category. A look at the entry list, and with only three entered in our class, a podium (or last place) looked pretty good. For company we had Tony Quinn in the R35 GTR and Luke Anear in a new AMG SLS GTR Mercedes. Doing my homework on the opposition I quickly worked out I had the oldest car, the slowest car, and the least amount of experience. I was also the poorest guy in this category by around 600 million, just saying.

DAY 1 and our first accident as we left time control, with the breath test guy running into the back of us and badly damaging the rear clam. I did wonder if he had breath-tested himself, but fortunately Targa insurance will cover the repairs. Onto the action, and what a blast going up and down Gillies Range and Copperlode Dam. These stages really suited the Lotus, and I finished the day in second place, sandwiched between Tony and Luke. An outright stage win coming down Gillies Range was the highlight for me, a feat I may never repeat.

DAY 2 and out we went to the all new stages around Mission Beach. These were fast and flowing stages, and, with wet roads and some light rain, I approached with caution. In GT Sports we were limited to 130kph, and stepping this up to over 200kph in many cases required some getting used to. I slipped down to third place, but my times in comparison to the others improved as we got more comfortable with the speed.

DAY 3 opened with everyone's favorite, the iconic Kuranda Range Targa stage. What a fantastic piece of bitumen. From there we headed out to the tablelands for the balance of the day. Luke unfortunately exited on the next stage, seemingly completely missing the 7 right turn and going straight ahead into the paddock just before the finish. We were behind and were flagged by a spectator but kept going with the Merc being so far down the paddock we couldn't see anything.

This then elevated us to second and we finished the 15-minute-long Millaa Millaa stage two seconds behind the GTR. Things were going well, but with the GTR being two minutes in front overall we decided not to push with only two stages to go. And I have to say that Targa racing requires your utmost attention all of the time, and triple caution boards are put in place for a reason. I did get the call "huge dip" from the navigator and did brake somewhat, but at 114kph was probably a little quick. We then hit the culvert slightly off center and this threw the car sideways. We managed to keep it straight and for a moment I thought we may be OK, but a rather deep ditch put an end to that, with us eventually ending up buried in the bush. If only we had gone off on the opposite side where it was flat.

We both had to get out the drivers side, and I no longer have to wonder what it's like standing on the side of the road waving the OK boards as the rest of the field goes by. We have however joined a not-so-exclusive club of fast targa drivers who haven't finished. I'm thinking Glenney, Morton, Sher, Meletepoulo, Fengels, Seymour etc. Not bad company really.

And so with all these things there's always an upside, and with new front and rear clams on the way we will have a change of colour on the car and it'll feel like a new one. But the big win is the navigator (who did a fantastic job btw) telling me on Monday to "get the car fixed asap" just in case we can do High Country, and then adding "we're not going back to GT Sports, it's much better in the outright class". Beauty I say!

Sizing up the competition

Thanks for that


Deep in the bush

Dragging it back out

Not so bad

Targa 2020 for Rookies

by Drew Dundas

Through the canefields

Two years of lead-up

After volunteering to help out in TARGA GBR 2018 and 2019, I thought it was my time to race. After all, how much fun would it be to race on closed roads and enjoy the comradery of fellow competitors?

Which Car?

After many hours research and surveying the cars and owners that entered TGBR, I purchased a 2012, 1.8l supercharged Elise, for the purpose of competing at some local club events and ultimately to enter TGBR 2020. The salesman told me it was driven to church once a week by a dentist, how could I go wrong?

Navigator

TARGA is a team event and you must have a navigator. So after a few drinks with a mate, Mick, and establishing that he doesn't get motion sickness – 'ever', the invitation was made about navigating with me in TGBR.

Category

Our discussions from this time on revolved around possible sponsorship ideas and which category to enter. After considering budgets, what modifications I was prepared to make to the car, my ability level as a driver and how busy the navigator wanted to be during the rally, we decided to enter ourselves in the TSD Trophy category. Average speed over a set distance – how difficult could it be?

Preparation

The obtaining of obligatory items such as fire extinguishers, helmets, inter-helmet communications, timers and clothing was undertaken gradually at first, and then with more haste when it appeared the event was still going ahead as some states came out of Covid lockdown. We had intended on using the Lotus race support package to take the worry out of car preparation, but had to think about our options when border closures prevented SSC from attending the event.

Friends and mates who wanted to be involved and absorb the atmosphere of motor racing, kindly volunteered to be crew and run spares and tools around the various stages.

Simply Sports Cars were very supportive of a couple of rookies, who were doing their best to prep an Elise for their first competition. Through sponsors Wescto Motors, Fuch's Oils and Bursons Autoparts, Fuch's oils were obtained and an oil change, brake fluid flush and check of brake pads was completed with time to spare. On a side note, since the Fuch's oil has been used, the niggling timing chain tensioner rattle, has all but disappeared.

Day 1

There were six stages on day 1 and it started with a fairly short and easy stage to work ourselves into a routine. Butterflies, adrenaline and a heavy foot had us in before time and a hefty penalty, but more was to come.

The Gillies Range was next up and our aim was 20km of 200 plus corners at 82kph average. This was the stage we were all looking forward to. Driving on the wrong side of the road didn't feel right at first but once the tyres came up to temperature we settled into a routine. We arrived a little behind schedule this time for more penalty points.

Some teams and crew were looking very pale and glad to have some down time at Atherton, after racing up the Gillies range. After some laughs, lunch, stories and tips, it was the Gillies Range in reverse direction, this time to really test the motion sickness stamina of the drivers and their crew.

All smiles!

Next was Lake Morris and Copperlode Dam Road. It is 12kms of the narrowest and most challenging roads around the Cairns area and 10 minutes of the most fun you could hope for in a Lotus. Credit to my navigator who managed to navigate, keep time, call corners and have lunch two more times on this stretch of road.

The other Lotus in this class, driven by Peter Quinn and Ross Johnson, was always there to say "hi" and to offer tips on how to get the best out of a Lotus. Thanks for the help boys.

There is something about driving an Elise fast around challenging roads that brings a grin to the face of anyone who remotely loves cars.

We were running fifth, mid-field we thought, was not embarrassing.

Day 2

There were six stages on day 2 and after consuming some motion sickness medication, we were ready to race.

South Johnson and Mena Creek district offered flowing stages that bisected the canefields in the area. It was difficult to keep the Lotus under the maximum speed of 130kph and it did give us a lesson on the nuances of TSD.

We managed to complete one stage in exactly the time required for a perfect score, or so we thought. Thanks to the Marshall boys in their Ford Falcon Pursuit Ute, who pointed out to us that we needed and extra .3 of a second to get a perfect score of 0. Marshall's were only too willing to give tips and help two rookies get one perfect score of 0 on the day.

Lunch at Mission Beach and then the morning stages in reverse.

Running fifth – and feeling good about our achievements.

Day 3

There were six stages on day 3 which started at the Kuranda Range and went onto Milla Milla and Ravenshoe.

We were really into the routine of times, speeds and calling cautions out by now. The Kuranda Range is 11km long and needed to be driven at an average speed of 92kph. A slow time had us penalised a hefty amount of points but still holding onto fifth place.

The challenging 28km stage on the Old Palmerstone Highway was such an adrenaline rush with the bends, narrow roads and cautions all making for a memorable stage. The Lotus was designed for these types of roads and I discovered on many corners that the car will perform at a level the mind has difficulty comprehending.

After lunch it was a return to Cairns with the reverse of a couple of the stages with us getting within 3 points of fourth place.

TGBR is an event that really needs to be viewed from both a volunteer's and competitor's perspective to appreciate and understand what goes into running a successful TARGA event, and what happens behind the wheel and the work required to have a team compete.

Total fuel for three days of fun: $140
Total oil for three days of fun: $0

Thanks to Mick for calling the cautions and navigating throughout the three days.

The Elise is one of those cars that makes you smile when you drive it, and take a second peek when you see it. People want to ask questions about it and kids want to sit in it.

Will we be back next year – definitely.

Member Profile

Peter Fortune

by Peter R Hill

Stop watches have been an important part of Peter Fortune's life, both in his role as an athletics' coach and as a competitor in both his Lotus cars. Peter has been involved with Lotus and the club since 1987, joining the club even before he purchased his first Lotus. He got involved, writing the *Wobbly Web* newsletter for a while. Needless to say, he has a very low number on his membership card.

Peter still owns and drives a Europa and an Elan. With friends like Chris O'Connor, David Mottram and Gavin Taylor, there was going to be a Lotus or two in his life. Being keen to get involved in Marque Sports sprints, a Lotus Europa seemed to be the least expensive way in. So, coincidentally, on the same day that Richard Mann bought his Europa in Adelaide, Peter bought a Europa S2 from Canberra.

The car had originally been blue but was red when Peter purchased it. With the Renault (cross-flow) engine rebuilt, Peter started competing in 1988 in all manner of events, sprints, hillclimbs, a six-hour at Winton, and even an event that included the Thunderdome at Calder. Gary Ryan, Chris O'Connor and Rohan Hodges were his team mates for the six-hour.

Perhaps because he works with a stopwatch in his hand, Peter has a good recall of his lap times, a 1.10 at Winton and a 2.02 at Phillip Island. He held the class record at Rob Roy for a while, not that he was aware of it at the time, someone told him about that later. This record was subsequently broken by Mike Byrne in his Europa.

Peter competed until 1991 when a combination of events caused him to stop racing – the Europa holed a piston while at the Phillip Island historic meeting, and he was coaching Cathy Freeman which demanded a lot of his time.

The next year, David Mottram was called on to fix the Europa engine. He must have done a good job as Peter is still using the car regularly with that same engine. He's now considering a Gordini 12 transplant that should be able to develop 140bhp.

It seems that one Lotus is never enough, so in '93 Peter purchased a dark blue Elan S4 that Gary Ryan owned. When the car was restored in '96 the colour was changed to yellow and the car was used as daily transport. When I worked in Southbank, I used to run along the Yarra bank and I'd see the Elan parked by the river on most days. It was also used for sprint competition at MSCA events.

From 2006 until 2014 Peter lived in Tasmania, working for the Tasmanian Institute of Sport as a coach and administrator. He took the Elan with him and used it as his everyday car. On one of his trips back to Melbourne in 2008 the Europa almost met its demise when a young lad in a Commodore shot out of a driveway between a couple of parked cars and Peter cleaned him up. The fibreglass proved its worth as a crumple zone, absorbing the shock, but the front of the car was destroyed and the vehicle written off. Peter retained the wreck but it languished for a while until Iain Palmer convinced Peter that it should be fixed and put back on the road.

Iain and Robert Nowlan got cracking on the chassis work. Iain made up a jig that fitted on a rotisserie that Robert had in his shed/workshop. Robert did the welding, ensuring that all the known weak points of the Europa chassis were strengthened. The reincarnation was completed in January this year, the car reappearing in white with some stripes. "I'm too old for stripes, but I did it anyway," says Peter.

Peter is a big fan of the Renault 16 engine that Lotus used in the Europa. "It was quite advanced for its day, being aluminium, so light. And you could get good power out of it." He is also enamoured with Renault cars, having owned Renault models 8, 10, 12, 16, 16TS, 17, Clio and Megane. "I can't imagine buying any car other than a Lotus or a Renault. And I've never been let down by a Lotus, although I did lose a wheel on a couple of occasions at Winton … the hubs can break."

Peter coached Cathy Freeman through pretty much her whole time as an athlete including her world records and silver and gold medals at multiple Commonwealth and Olympic games. He is still coaching athletes, one of his current charges being Catriona Bisset, the holder of the national 800 metres record. The man has a love of speed.

Photo: rawpixel.com

Townsville Supersprint

by Jason McGarry photos: @indycimagery

With 2020 being the year of disruption, confusion and challenges, it has enabled me to compete in an event that will probably never be repeated again. The opportunity came at the recent Winter Noosa Hillclimb event, where my fellow competitor Chris Ching (Evo and Porsche driver) asked me if I would be interested in going to Townsville to compete in a sprint event, my obvious answer was yes. Two days later I secured a spot to compete in the second weekend of the Townsville SuperSprinters support category for the Townsville Supercars. The event consisted of five races, three on the Saturday and two on the Sunday, each being 25-minute sessions in a sprint format, so we were racing against the clock and not position on the track.

Setup was on the Friday, with scrutineering, workplace safety and Covid inductions. The event was under the control of Supercars so it was very heavy on compliance and adhering to their rules, the biggest one being that we had to stay in our own Bubble. I set up beside my fellow friends from south-east Queensland, Chris Ching (Porsche 911) and Roy Davis (Triumph GT6) with their very capable wives as pit crew. My pit crew flew in later that afternoon and got acclimatised at the Townsville Yacht Club, organising drinks and diner for our arrival. Both guys have beautifully restored Datsun 2000s, so the night was a feast of motoring information.

The event was run by the Marque Sports Car Club of NQ, and Drive-it, which is the group behind developing and building a permanent track and driver education facility about 40 minutes out of Townsville. Have a look at the Drive-it website, it is very exciting as stage 1 is complete, and stage 2 of construction should occur early in the new year. The array of cars competing were, from the fastest, being Michael von Rappard in a Stohr where he got down to a 1m 16s (which was within a 2.5 seconds of Scott McLaughlin's Mustang), to Roland Dane in a 1967 Camaro, and Paul Morris in a XJS Jaguar. Regulars competing in south-east Queensland events were Chris Ching in a Porsche 911 Cup Car, Roy Davis in a Triump GT6, Trent Laves 200SX and, of course, yours truly in the Caterham R300. The Caterham was great to drive around the tight street circuit, except for the main straight that seemed to go on for ever, as I just ran out of legs heading down it (the Exige would have been a better choice). I decided to take the Caterham as I thought it would be great to show this type of car at an event like the Supercars so it would achieve some exposure, which it certainly did, especially on the Saturday afternoon, where the commentators talked at length about Caterhams. In the end my time dropped from 1m 46s in the first race down to 1m 36s in the last race, positioning me 23rd out of 32 cars which I was really pleased with, and no serious mechanical issues or damage other than a fuel leak and destroying a set of soft race tyres over the weekend.

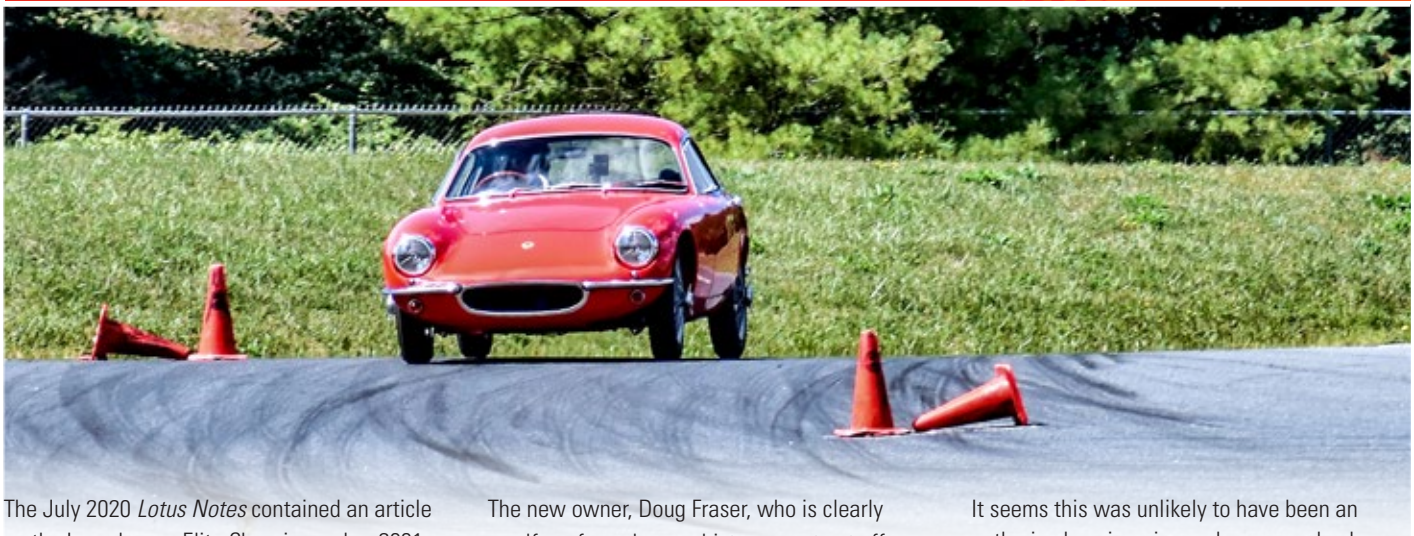
The year 2020 will go down in history as a year of change and disruption, but I will remember it as the year where I, and the green R300 (Hulk), competed in a V8 Supercar event!

Photos by Simon Kirbstock

One of a kind?

No there's another, Elite Chassis No: 1559

by Doug Fraser with Peter Murray



The July 2020 *Lotus Notes* contained an article on the Lazenby car, Elite Chassis number 2001, and told the story of this well-known twin cam Elite.

Whilst reading the January 1968 *CAR* magazine article by Nick Brittan, I read two paragraphs alluding to an earlier "factory" twin cam car, speculating that Chapman initiated an experimental twin cam engine car. The article said in part,

"Five days later the first twin cam Elite was on the road running and running fast. The trouble was it didn't handle. They'd dropped the engine too far forward and the result was that the back end kept wanting to be the front and the whole thing was slightly off balance. The car was eventually sold and was last heard of being extracted from a hedge in Northamptonshire."

Chris Harvey's book *Lotus: The Elite, Elan, Europa* says the first twin cam Elite was built "in a matter of hours."

Fast forward almost fifty years and this car was found in the USA, parked for about 45 years with only 11,400 miles on the clock, and sporting a depressing level of corrosion under the bonnet.

The new owner, Doug Fraser, who is clearly a self-confessed masochist, was not put off. He purchased Elite chassis number 1559 in 2016 and set about bringing it to concours standard.

He discovered that Miles Wilkins had also written about the car in his book *Lotus Twin Cam Engine*. At page 30:

"Other interesting work carried out at Cheshunt included a one-off re-design of the Elite rear suspension based on a Jaguar rubber system (this was done by Brian Luff in 1962) – apparently it felt like driving jelly and was not a success. Victor Grimwood who stayed with Lotus carried out a private 1558cc conversion to his Elite in 1963 …"

While he is still around, it appears that Grimwood has found God and won't talk about anything else.

The chassis number would place the bodyshell as having been produced by Bristol around 1960/1961. The Warren King list of Elites shows a delivery invoice to the first owner, R.J. Fuller, on 19 December 1963.

So could it have been a "test mule" for the factory between 1960 and 1963?

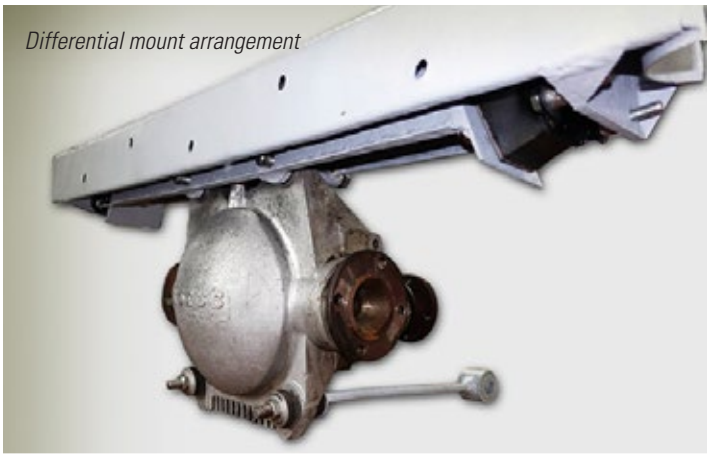
It seems this was unlikely to have been an authorised engineering endeavour and, when confirming that 1559 was the car he referred to in his book, Miles Wilkins told Doug that "Brian Luff did it purely on his own for a bit of fun to see what's what."

Doug has established that the car was imported to the USA from England in 1970.

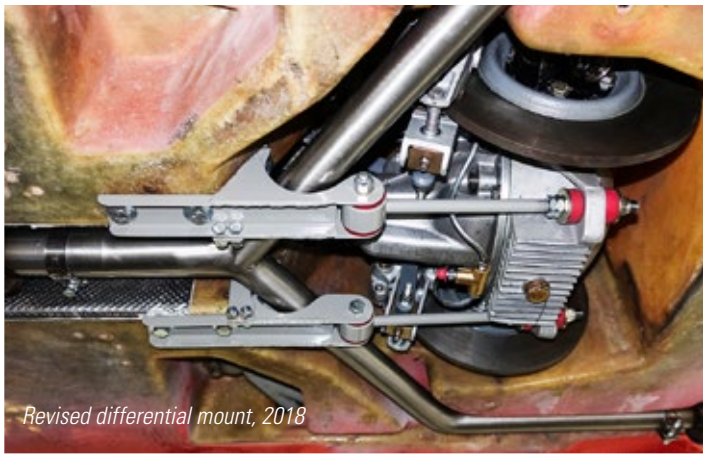
When he took delivery of the car, Doug discovered the differential was mounted differently to any other Elite he had seen. It was in a steel sub-frame suspended in rubber.

During the strip down he found that the original mount in 16GA sheet metal had failed, but had been beaten back into shape and reinforced with 1/8" steel, with two tubular supports added at the front.

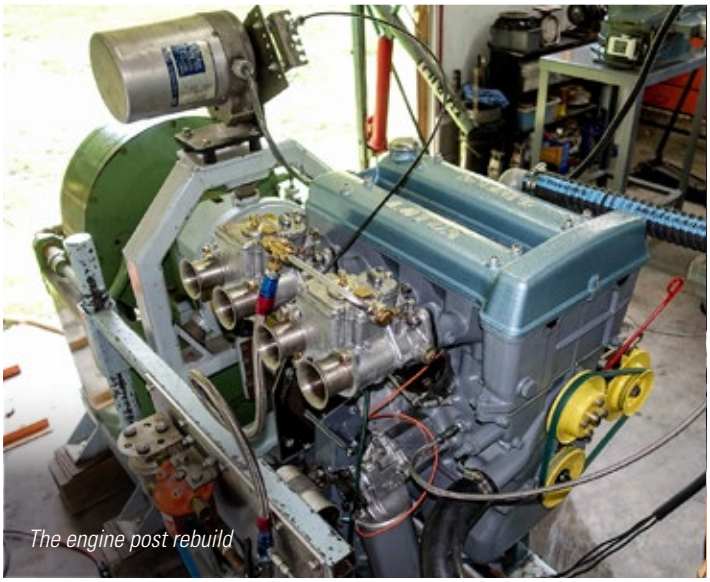
He also discovered the number "31" stamped into the side of the engine block and another number "LP 326" stamped in the back of the cylinder head. The number 31 was recorded on Warren King's list, but the correct engine number was LP 326. Doug determined that this engine block was cast on May 9 1963, and the cylinder head is stamped April 30 1963, so the engine is maybe a late replacement twin cam to allow Lotus to quit the remaining stock of unsold Elite shells.



Differential mount arrangement



Revised differential mount, 2018



The engine post rebuild

Engine mounts

During the engine rebuild, Doug discovered the internals were essentially as new, with the only damage being as a result of the car being parked for 47 years.

The gearbox is a Ford 2000e ultra close ratio alloy housing which originated in the Cortina Rally Program and was fitted to early Elans.

Interestingly, the gearbox castings were stamped with the characters "M251." "M2" being the internal factory designation for the Elan project.

The engine mounts are convoluted and were manufactured, then obviously revised with forward braces to the tops of the shocker mounts suggesting the first attempt failed.

As for the bodyshell, there was some evidence of damage to the right rear quarter, including a bent strut, but it was not extensive and easily repaired.

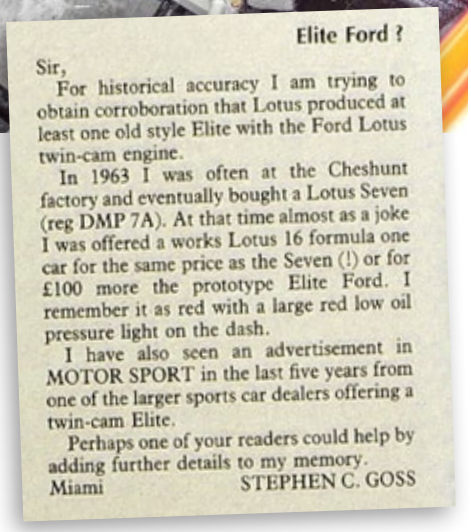
The car does not seem front-heavy, but there is an additional 8 kilograms of steel supporting the differential. The suspension is all standard Series 2 suspension.

There is some speculation within the Lotus 14 owner group that the car may have been a test bed for the Lotus Elan, as the differential mount is a fair representation of the Elan system.

So it seems this twin cam car was built some three and a half years before the better known Lazenby Elite.

Doug finished the restoration in time for the Lime Rock Historics in 2018, where the car took "Best of Class."

At this event, he was delighted to have the chance to meet Stephen Goss, who had written to *MotorSport* magazine in 1984, inquiring as to the whereabouts of the "prototype Elite Ford" that the factory had tried to sell him in 1963.



Elite Ford ?

Sir,

For historical accuracy I am trying to obtain corroboration that Lotus produced at least one old style Elite with the Ford Lotus twin-cam engine.

In 1963 I was often at the Cheshunt factory and eventually bought a Lotus Seven (reg DMP 7A). At that time almost as a joke I was offered a works Lotus 16 formula one car for the same price as the Seven (!) or for £100 more the prototype Elite Ford. I remember it as red with a large red low oil pressure light on the dash.

I have also seen an advertisement in MOTOR SPORT in the last five years from one of the larger sports car dealers offering a twin-cam Elite.

Perhaps one of your readers could help by adding further details to my memory.

Miami STEPHEN C. GOSS

Stephen Goss letter of March 1984

The restored Elite at Lime Rock 2018

Some months ago, when we were drafting this article, I asked Doug whether the car handles as poorly as described in the earlier reports. I was somewhat surprised when he replied that, despite finishing the restoration two years ago, he had only driven the car around his back yard and for a very short distance at the Lime Rock Historics. He explained that in the state of Vermont, there is a tax of 6% on the book value of a vehicle in order to register it, and the book value is deemed to be US$130,000. In addition, he already has two Lotus licensed for the road, so he has been hesitant to road-register the car.

In mid-August, Doug advised:

"However, despite the Vermont state police barracks being just a few miles North of me, I took the car out anyway in early August. I drove a couple of miles (south), down the road then drove back."

Miles Wilkins said in his book that the car "… felt like driving jelly," and in my subsequent conversations with him, he said, "the back end will be a bit wobbly but never mind."

He didn't do it justice: It handled like s**t. It was downright scary! Perhaps 'jelly' is an accurate description.

I thought that ultimately, we might have to cut out the modified diff and restore the original mounting, but later, back in my workshop, checking everything and trying to understand what was going on, I found a slightly loose rear wheel. So I re-tightened all suspension mount points and, on a second drive with a ball indicator mounted on the diff and a camera to record any movement, I found the diff was very solidly mounted with negligible lateral movement and only a small fore and aft movement under acceleration and braking. The car felt much better, so it is now our assumption that the reinforced subframe cured the original "jelly wobble".

For those interested, see Doug's blogs.

www.lotuar.com

http://blog.dougfraser.com

See this video of Doug's second test run, at up to 90 miles per hour.

https://vimeo.com/447301551

POSTCRIPT 1

In early September Doug entered the car in an Autocross at a nearby racetrack in Canaan, New Hampshire, where it performed well beyond his expectations. His video from inside the car is here:

https://blog.dougfraser.com/wp-content/uploads/2020/09/EliteAtCanaan.mp4

Doug has further increased his tyre pressures from the Factory Manual recommendation and is almost satisfied with the on-track performance.

Photo by Simon Kribstock

The ball indicator to record differential movement

POSTSCRIPT 2

So, one of a kind, or even more twin cam Elites from the factory?

This has been an interesting research journey for me and has elicited responses from so many Elite enthusiasts and historians in the USA and UK. We now think that:

Chris Cadogan Rawlinson, Lotus factory manager in the period 1962–1965, built a twin cam Elite but was unhappy with it and dismantled it. Dennis Ortenburger's second Elite book says Rawlinson gave his drawings to a friend, Vic Grimwood, who assembled another in 1963(?). This was chassis number 1559, subject of the article in this issue. My UK acquaintance is attempting to find and make contact with Grimwood.

Chassis number 1789, with a Climax motor, initially invoiced to S. Moss in February 1962, was returned or purchased back by Lotus, fitted with a Ford twin cam, sold to H. Young and then purchased by Bill Hutton and taken to the USA. It is believed the car was much later re-fitted with a Climax motor and is now in Japan in boxes. It seems this was the car that ended up in a hedge in Northamptonshire whilst being driven to the docks for export to the USA, and not chassis 1559 as reported in Nick Brittan's road test review of Chassis 2001 in January 1968 *CAR* magazine.

Chassis 2001 – subject of the initial article "One of a kind?" In July 2020 *Lotus Notes*.

It would appear that three Ford twin cam engine Elites were constructed in the factory.

However, let's not start on twin cam Climax FPF engine cars like that prepared by Lotus for the 1960 Le Mans 24 hour.

A very special thank you

by Mal Kelson

I am selling my car and needed to obtain a Vehicle Safety Inspection Certificate. Unfortunately the car failed due to the rubber gaiters on the steering rack being split. When I removed the front wheels from my Elise, I discovered that the inner end of the gaiter was 150mm inside a small box section of the chassis, and almost impossible to secure the cable ties that held it in position. Taking the steering rack out also appeared to be a very difficult job and I was feeling very dejected.

Giles Cooper arrived at my place a short while later and I asked him about the best place to obtain new gaiters and how to fit them. Giles did not have the answers but assured me he would endeavour to find out.

An hour or so later, Giles rang to find out the best time his team could arrive. At noon on Thursday, Giles (with very special double-acting, extra long pliers), Joe Arico (with tools and gaiters), Daryl Wilson, Barry Mather, Phill, Winno Piddington, and Alex Molocznyk arrived in force.

After two hours of most enjoyable banter, superb skill and engineering knowledge, the team had the gaiters fitted and the car back on its wheels.

I have shed many tears of joy as I have thought about the generosity of all the people who helped. Thank you.

Mal

Barry at work

The banter's an important part of the task

Many hands make light work

Lucky Giles didn't tell any more people, the whole club would have turned up to help!

The troops arrive

Frame upright and re-panelling continues

Covid Re-build PART 2

Then Covid Struck! … The story continues

by Neil Roberts

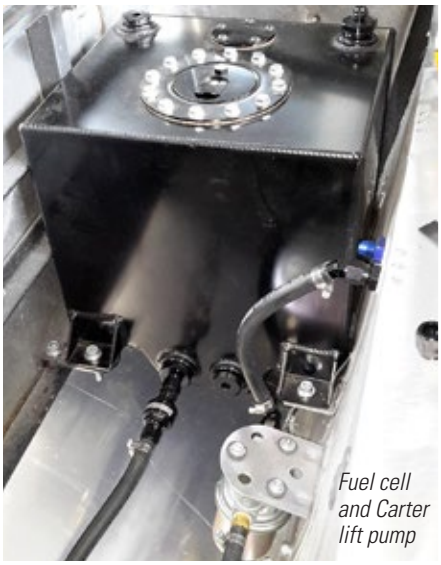
Lockdown (version 1) meant that I had to get out of Hassa's workshop and return to my own shed. Fortunately I had completed not only the fabrication tasks that needed his help, but I also had a set of cut and folded panels ready to be fitted back onto the car. At home, I had the mechanical aids to allow me to handle the chassis and the heavy components. The frame was positioned on a wheeled work-frame (borrowed from Hassa of course) and this assisted in achieving good access to each part of the car. Dummy drivetrain out, frame upside down, and new floor glued and rivetted in place. Front suspension removed and new side panels, ditto.

The type 9 gearbox had oil leaks, so new gaskets and seals were required. This meant total disassembly of the gearbox. Rapid climb of the learning curve for me. The differential had been making a mess with oil leaks for ages, so this seemed the right time for new gaskets and seals there too. The rear brakes had to come off, of course, so they also got the treatment required.

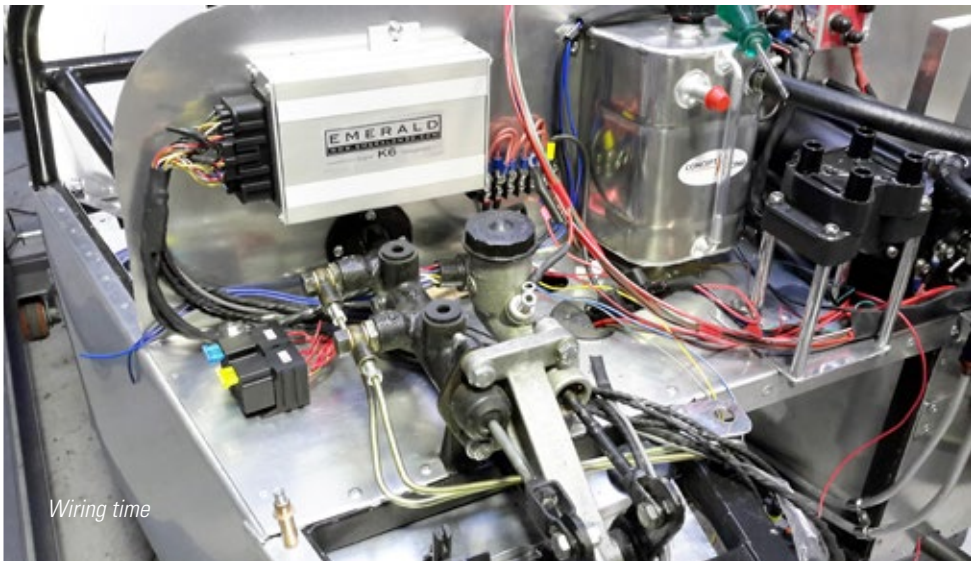
Dummy engine back in and the fitting of the oil and cooling systems could begin. For the most efficient and effective cooling we dispensed with the Ford mechanical water pump and re-routed the engine inflow point through the front of the old water pump body. A Davies Craig electric water pump, along with their electronic controller for both the pump and the radiator fan, now looks after cooling and its management. The controller ensures that the pump only works as hard as is needed and will even work after the engine is shut down to eliminate damaging heat-soak. A Raceline dry sump kit from the UK was chosen as it uses a two-stage oil pump *fitted in the same location as the original Ford pump*, i.e. inside the engine block and driving off the timing chain just like the original. Alternative dry sump pumps mount externally and require more complex plumbing and crankshaft drive belts. An off-the-shelf oil tank was purchased and mounted on the front of the passenger fire wall.

Rear axle renovation complete

Induction system by EFI Hardware



Fuel cell and Carter lift pump



Wiring time

Hassa was confident that he could extract all the power potential using a couple of big Weber DCOE carburetors. The tractability and ease of starting of injection was so appealing to me, however, that I elected to go throttle-body injection – in this instance, EFI Hardware's locally sourced units. That decision had its implications, of course. A high-pressure fuel system along with fuel lines for flow and return to tank are required. So, out with the old fuel line and in with new 3/8 flow and 5/16 return lines. The old steel tank was a bit naf, so in went an alloy fuel cell and Carter lift pump (all plumbed to be E85 capable, of course). The high-pressure bit is handled by a US-sourced FiTech unit that integrates reservoir, high pressure pump and pressure relief system all in one unit, and mounts in the engine compartment next to the firewall.

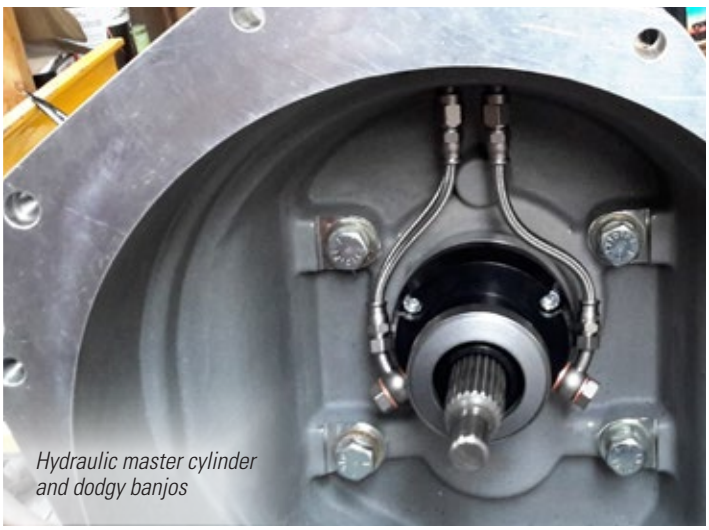
The Duratec is a distributor-less wasted spark type ignition engine, so an ECU must be used. My earlier project (Elan+2 Zetec) used the Emerald unit and this provides all the potential features we needed at a modest price. Yes, MOTEC would be better, but at a much higher cost. Emerald provided their unit with a "Duratec" tailored ECU loom and Lambda sensor. This loom connects the sensors from the Duratec engine, i.e. flywheel, cam, water temperature and throttle position, to the ECU itself. Other sensors, like oil pressure and temperature, required wiring into unused input points on the ECU and being programmed accordingly. On the dyno, the ECU tuning map can be programmed to optimise performance based on these various inputs. In fact, this car has dashboard switches to allow the driver to switch to one of three internally stored maps at will. (The third map, for E85 fuel, must only be chosen if that fuel is on board or else …. That switch is key locked to prevent accidental tripping of that map setting.)

While in the disemboweled state, a front and rear wiring loom was built and fixed in place. The rear loom passes along the transmission tunnel, so careful placement and fixing is essential. Apart from the brake pressure switch wiring, all engine bay wiring is confined to one conduited wiring cluster leading to relays in those cases where high current devices are involved. Electrical safety is via Cartek electronic battery protection (with kill switches both inside and outside the car) and Cartek power distribution modules to manage ignition, fuel pump, accessories and starting.

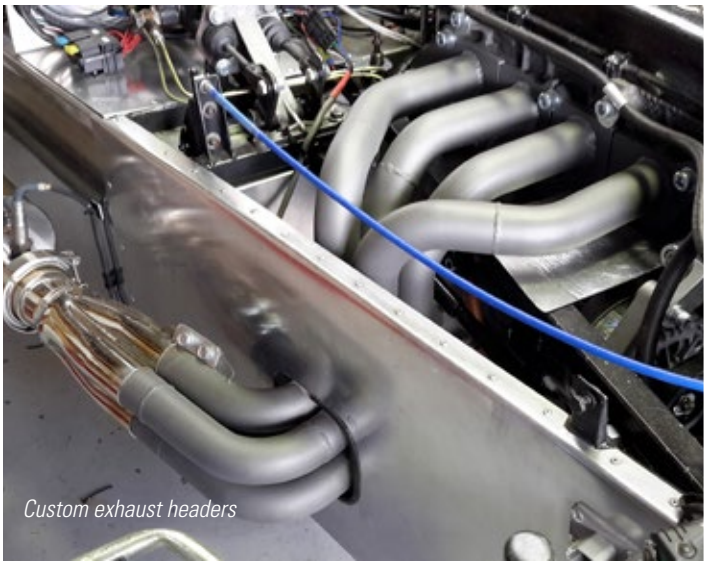
The fire damaged dash and instruments were a complete throw-away, so the chance to go modern was accepted. All instrumentation is now through a Haltech electronic dash and speed sensing (via a Hummingbird GPS) displays there, along with engine revs, gear change points, oil, fuel, indicators, lights, etc. These systems are user programmed and get most of their data from the ECU via a CAN bus. Simple inputs like high beam and indicators are hard wired direct from source. The resulting dashboard layout is very minimal – the battery kill switch, the four button Cartek pdm cluster, a headlight switch, a headlight flasher switch and a turning indicator switch. Oh, yes, (just because you can) two switches for the three ECU maps.

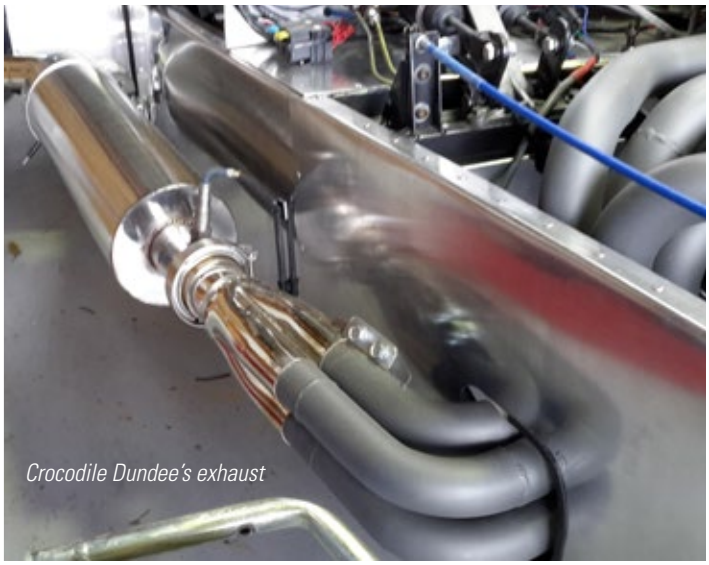
Time for the assembled and timed engine to go into the chassis. Everything had been dummied beforehand, so this stage seemed to be going very well. But sometimes things don't go to plan. The new bell housing to suit the type 9 gearbox uses a modern internal clutch slave cylinder which acts directly onto the clutch thrust bearing. Being buried inside the bell housing, this slave cylinder requires hydraulic plumbing

Moment of truth



Hydraulic master cylinder and dodgy banjos


Custom exhaust headers


Crocodile Dundee's exhaust

of both a pressure line (from the master cylinder) and a return bleed line to an outside bleed nipple. These lines are outside and inside the bellhousing. Two unsuccessful attempts to get the connecting banjos (and annealed copper washers) to seal, with each attempt involving a removal and re-fit of the engine, occupied most of one week. Hassa's version of sympathy goes something like this: "Harden-up, Princess. These set-backs are character building". I'd had enough character building by now so, finally, I threw out the banjos and replaced them with directly threaded elbow fittings.

The brief Covid lockdown pause allowed me to ferry the assembled car back to Hassa's workshop for exhaust fabrication. The bespoke headers he fabricated from off the shelf mandrel bends, which I then had ceramic coated to control radiant heat. The muffler (2½ inch straight though a 6-inch body) he fabricated from stainless tube, with the perforated inner packed out with wire wool and fibre glass wadding.

The Lambda sensor bung is welded in between the headers and the muffler. As Mick (Crocodile) Dundee would say: "Call that a knife (exhaust)? THIS is a knife (exhaust)!"

At the time of writing we are back in lockdown again (stage 4 this time, thanks Dan) so the car is all silent awaiting its return to Hassa's for first start-up, ECU programming and dyno tuning. I can't wait.

POSTSCRIPT: New bonnet and scuttle are being fabricated by ace tin-basher Rod Hoffman in Sydney. (Rod has done many a fabrication job for our CLA colleagues over the years.) I'll trailer the car up to him for final fitment, but that will have to wait until the plague lifts. Rod has also sourced a newly-molded nose cone and a pair of cycle guards, which I will paint in due course. Doubt if this car will make it to the LCV Xmas concours at this rate!

Birkin Clubman Upgrade

by Les Bone

Les & Mark at the track

For over 20 years I have owned, built, modified, and repaired Clubman cars, and during the early days it was simply for the pleasure of driving a homemade car on public roads. However, as time passed, my passion for 'cruising' a Clubman shifted away from the road and onto the racetrack, where I could better quench my thirst for speed.

I'm sure that some readers of this story (particularly those who attend MSCA events) will agree that *upgrade-itus* is a genuine affliction, a thirst that, in most cases, is only temporarily slaked by paying more money for something bright and shiny.

So it came to pass that in October 2019, during a trip to Adelaide, I was boring my wife with an in-depth discussion on the benefits of sequential gearboxes and dry sumps – neither of which graced my (then current) PRB. The PRB, by the way, was already quite quick, being only 520kg, with a worked 1800cc Toyota motor and many years of suspension tuning. However, as fast as it was, I still hankered for something faster and fortunately my wife, in a weak moment, agreed to have a look at a Birkin for sale in Adelaide.

To cut this part of the story short, I already knew the Birkin owner, knew how much effort (and cash) he'd spent on producing the best of both worlds for a road registered track car, so a deal was struck and the car was mine.

Back home, into the garage and up on the hoist I reviewed the package which included a Quaife straight cut, 6 speed sequential gearbox

Original 1600cc motor

Birkin new motor

Wishbone size comparison

Suspension parts

as well as Motec M4 ECU and Penski double adjustable dampers all round. Well, that was more than halfway through my wish list but, as good as the motor was, it was still only 1600cc. Recognising, of course, that upgrade-itus is often the result of on-track competition, I needed something close to 2 litres to be on an equal footing with front runners in my group.

Early in 2020 (before Covid hit) I managed to drive the Birkin a few laps around Phillip Island and Wodonga TAFE tracks which provided enough information on which to plan changes.

It is interesting to note that while standing around the Birkin with friends discussing changes, I told them the PRB would be sold after the Birkin was fixed. Well, the PRB must have been listening because ever since then, it has performed perfectly – no leaks, no breakages and even provided me with a new Personal Best lap time at Winton!

Anyway, back to the story where I met with another bit of good fortune. Quite by coincidence, another Victorian Birkin owner had contacted Chris Barry in NSW looking for a good 1600cc motor, but all Chris had was a worked 1950cc stroked Toyota 7AFE. Perfect! I bought the stroker, my new friend bought my 1600cc and then helped to remove it from my car and install the 1950cc.

By then, of course, Covid19 had really started to raise its ugly head and all track work ceased. On the bright side, I was able to keep myself and my mechanic mate, Daryl, busy for many months, especially while maintaining social distancing!

Installation difficulties? Well, fitting the dry sump tank and new oil cooler took more time (and cash) than expected. Speedflow fittings and hoses are NOT cheap. Setting up slide throttles, vacuum lines, catch tanks and changing the fuel system to E85 all presented their own difficulties. Thankfully, Chris Barry was near his phone to offer advice when we hit a snag.

Shortly after buying the Birkin I realised that the rear track had been widened but the front was left at standard width, a difference of 150mm overall. Apparently, there is a Birkin widening kit available for purchase but the challenge of building something from scratch was more inviting. So after making full scale drawings on the whiteboard, I ordered Chromoly tubes and built a couple of jigs to ensure both sides were symmetrical.

As the pictures show, original Birkin wishbones are well made, using aero profiled tubes and rubber bushes. However, I want the ability to easily change caster, camber and toe … hence the need to adopt left and right hand threaded rose joints.

Of course, making each side 75mm wider while retaining the existing damper fixing locations would mean that the existing dampers would be too short. So after a couple of hours on the drawing board, calculator in hand, it was time to attack some 50 x 25 RHS with angle grinder and welder to make a cross brace. The brace not only changes the damper angle, it also shares transferred loads to the chassis.

As the months passed while waiting for Covid to subside, the Stroker motor was subjected to a few Dyno tuning sessions which (I am relieved to advise) were pleasantly satisfying.

Then, like everyone else in Victoria, we played the waiting game for Covid clearance until we country folks were thrown a lifeline by Winton Raceway. They held an invitation-only event for those who live outside the Melbourne Metro area and 70 drivers took up the offer.

Out of sympathy for others, I will not labour the point, except to say it was a brilliant track day. Perfect weather, no track delays and we got 7 x 15-minute sessions. Also, for the first time in two years, my son, Mark, joined us to drive the PRB and proceeded to better my personal best with a lap time of 1:30.9.

How did the Birkin go? Well the first few sessions were absolutely terrible. Suspension balance was all wrong, brake balance all wrong and tyres were wrong pressure. In addition, my right foot was too heavy, and I quickly remembered that sequential gearboxes are not 'H' pattern! But then things slowly got sorted and, by the end of the day, lessons were learned and plans made for small changes.

It's going to need a lot more track time to maximise its potential but I'm reasonably confident that upgrade-itus is under control for a little while.

PROJECT COBRA

by Gerard Waldron

"This project started in 2011 when, having yearned for a Cobra since I first saw one racing at Lakeland hill climb, when it was new and I was young, I finally decided I would build a replica."

Extensive desk research led me to travel to the USA with my son, Lloyd, to do a Cobra build training course, at the Mott Community College. Ultimately the course convinced me that the Factory 5 Cobra was a good device but, ultimately, we decided that the UK's Gardner Douglas was the best option for us.

With parts due to arrive in 2013, the plan was that my sons, Des and Lloyd, would both be on the job with me and we would knock it over quickly. Good Plan! My sons' lives were in a different place when the parts finally arrived nearly a year later and so the assembly labour quickly diminished from three of us to one!

I should point out that my sons both made important contributions early on and throughout the build.

Lloyd and I dismantled an SS Commodore ute to get the engine, gearbox and sundry other parts. There's an interesting story about how this car caught fire – it only burned the rear where the owner's mates set fire to some cardboard as a joke!

Des designed complex parts, including the pedal assembly, gear selection mechanism, ABS reluctors, etc., which we built into the job as it went along.

The three of us got it up to rolling chassis stage and then life stepped in, with my day job requiring up to six overseas trips per year, TRACK's ups and downs, grandchildren, etc.

Three years ago, I decided it was time to get moving again and found that two of my oldest and dearest car enthusiast mates, Graham and Andrew, were keen to get involved in the project – on Tuesdays.

Not every Tuesday has been spent on the Cobra, however we are together, working on one another's projects, nearly every Tuesday. We might

be replacing rotten timber in a first floor balcony, stripping out an old bathroom, helping with the two- and three-man jobs in the restoration of a 1969 428 Cobrajet Mustang, or moving guitar manufacturing machinery.

I think we would all agree that project Cobra has repeatedly demonstrated that "the things we didn't know at first, we learned by doing twice", but in the end you see the finished product.

Still, with 100 little details to adjust and finalise, including a few daunting ones such as installing the soft top (always scary drilling holes in the body), it will obviously keep me tinkering for a while yet.

I had a Cobra Club run to Mt Macedon between Covid lockdowns and, with a few fine days, it's now done nearly 1000km in its life. Hence, we are growing in confidence in its reliability and are looking forward to more trips once we are out of Covid lockdown.

Specifications: Replica 1965 AC Cobra

- Chassis and body by Gardner Douglas UK, https://www.gdcars.com
- Engine/Transmission: GM LS2 6litre alloy V8, Tremac T56Magnum, 6speed manual
- Suspension: fully independent front and rear, coil over spring shock absorber units
- Brakes: 4 wheel ventilated discs, inc front fully floating AP racing discs and 4 spot callipers
- Wheels 18x10.5 Rear, 18x8 Front – R spec tyres
- Weight 1100kg (bit over 1/2 the weight of the Commodore)

Two views of the donor Commodore

THE EUROPA MANN

PART 19

by Richard Mann

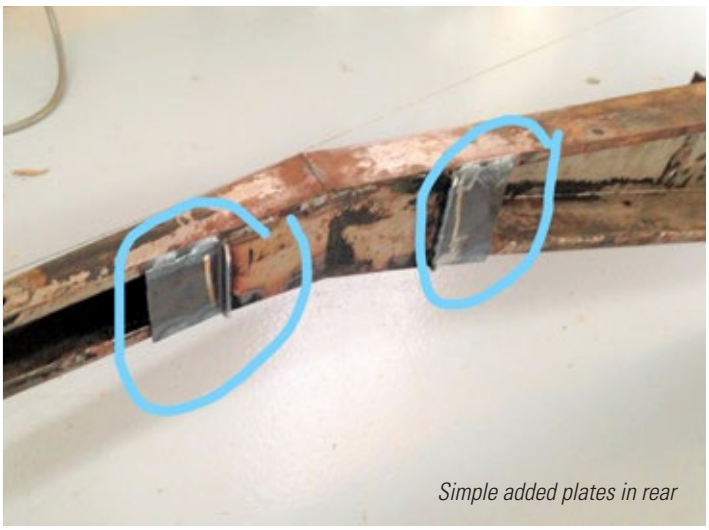
"Over the years I've repaired quite a few Europa chassis, and thought I should share my experiences and observations."

In 1962 the Elan set the bar high for handling, and adopted an entirely new chassis philosophy, which set the path for the Europa, Esprit, Eclat and Elite. It was not until the 1996 Elise that Lotus again redefined chassis design. The centre of the Elan chassis is a simple rectangular box section, made from folded steel sheet, 16mm thick (16 gauge). A large "Y" was added to the front of the box section to house the engine and gearbox. The rear had a much smaller "Y" to house the diff. A tower was added to each corner to mount the suspension. It was a simple and effective design. The Europa had a large "Y" at the rear to house its properly mid-mounted engine and gearbox. At the front of the centre box section is a big Tee, which vastly improved the stiffness of the front end/ suspension when compared to an Elan.

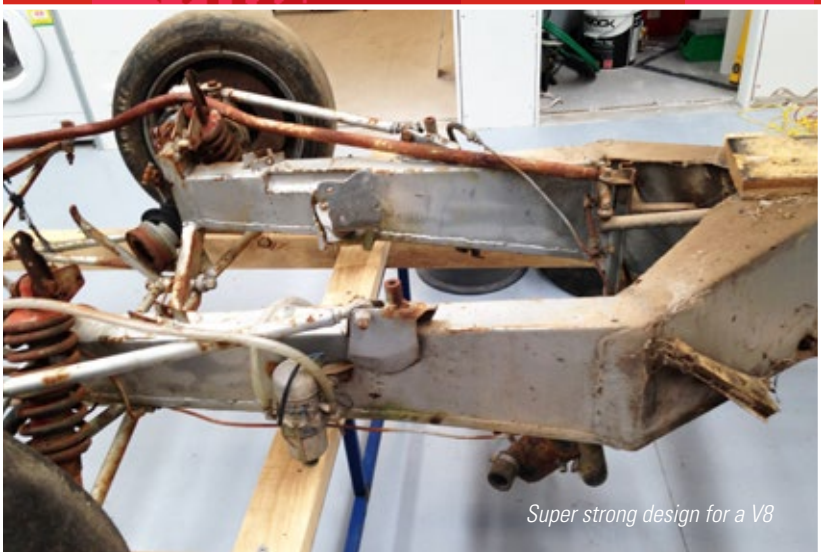
Such was the design of the S2 Europa chassis that the factory couldn't properly weld the centre box to the front Tee. It was well attached on both sides and the top but, at the bottom, a large flange barred the welder from attaching Tab A to Tab B! Every Europa chassis these days has cracks which need repair, plus a simple modification to get the stiffness and rigidity the Europa chassis deserves. Interestingly the Type 46 Series 1 Europa and the Type 47 sports racer were built properly and don't suffer these failures.

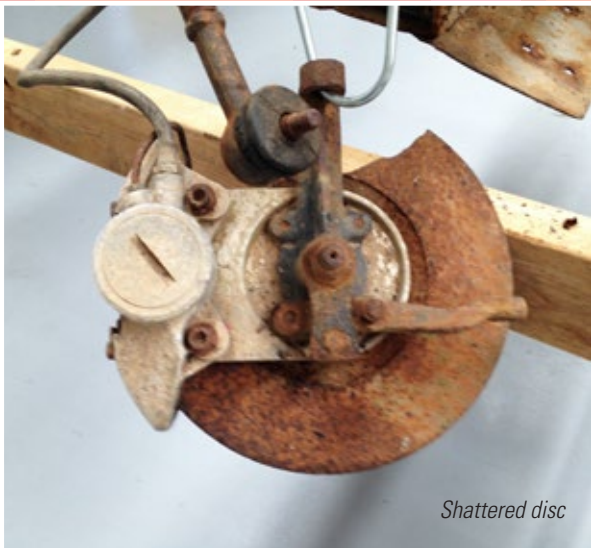
The Europa rear end has problems as well. The engine bay "Y" is long and wide, with a small rear-most cross member. It simply looks "spindly". The chassis "Y" legs are an open "C" section, which is great for bending like a beam, but average when it comes to twisting. So while we are flicking our beloved Europas through left and right corners, the chassis is twisting. If you want to view twisting of an apparently stiff structure, just google the Tacoma Bridge collapse. Luckily Europas and Elans don't fail quite as dramatically or as spectacularly as the Tacoma Bridge, but all that twisting results in rear chassis cracks near the shock absorber mounts. I added some very simple and effective stiffening plates to my Europa, and after 30 years the cracks didn't reappear. A few simple modifications ensure that the class-leading handling of the Europa will be enjoyed without fear of further failures. You'll be glad to know that I removed steel from the front to gain access for a weld repair and added a similar weight of steel

Underside of Tee gets welded



Simple added plates in rear


Super strong design for a V8


Shattered disc

to the rear, so the chassis won't be any heavier! "Phew" I hear you say as that Europa chassis was looking a bit porky at a massive 41kg.

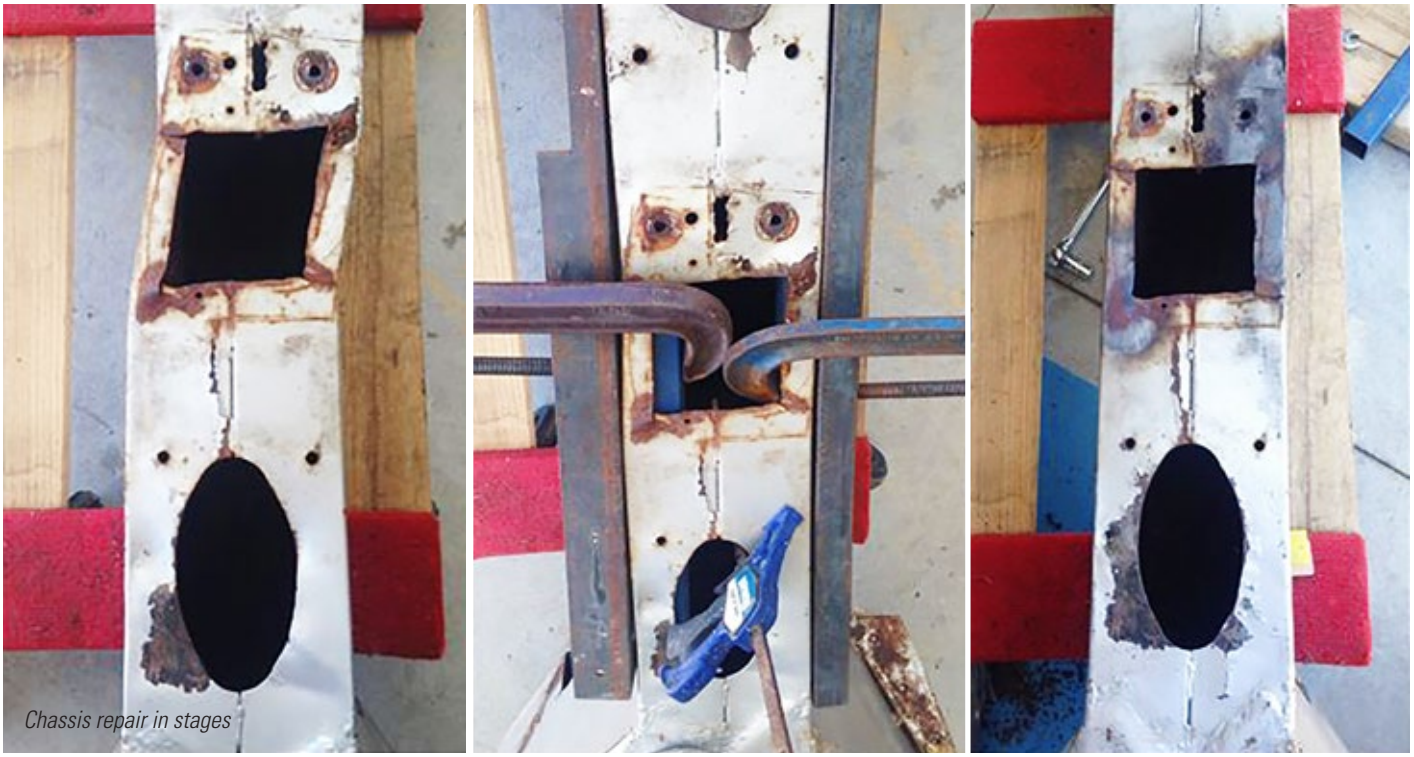
When I bought the red and white Europa, the one I wrote about earlier this year, I was very pleased to see the extent of the chassis mods made by Peter Simms back in the late 1970s. Peter planned to install a Rover V8 and incorporate Formula 1 and 2 style suspension. The "Y" of the chassis was completely re-engineered and featured fully boxed-in sections to create the ultimate Europa chassis.

However, there is one further area of Europa chassis that are still vulnerable. The centre box section of the Europa houses some water pipes, the gear shift, and handbrake cables. For access, an oval hole is included in the top of the chassis box section. This has never been an issue on a road car, but I have the remains of another Lotus 47 chassis where the sides of the chassis are almost completely cracked from top to bottom! Basically, the front and rear of the car weren't attached by much at all!

Back to the red and white S2 Europa. Here is what ended (suspended?) its career. The LH front brake disc shattered. This completely jammed the LH front wheel and the car speared off the track out of control. The LH front of the car took the brunt of the blow, dishing out the ultimate engineering strength test that no one ever wants to undertake. As I dismantled the car, my engineering brains and eyes were constantly looking for the effects of such a blow on the heavily revised Europa chassis. Something's gotta give, right?

If we ignore the body work, the autopsy revealed a bent front wheel, broken upright, twisted suspension arms, sheared wishbone pins, and a small tweak in the chassis where the pins mount. All as you would expect, and relatively simple to repair. It wasn't until I removed the body that I really understood where the next weak point in the chassis existed. It was bang in the middle of the immensely strong box section chassis. A larger than normal hole had been cut in the top surface of the chassis for a revised gear shift, and this is where you say to yourself "Houston, we have a problem".

The three photos, below, show the before, during and morning after. It was a fairly easy job to straighten, and will be finished off with a doubler plate to spread the load.


Chassis repair in stages

Mathilde

The story of how not to restore a 1902 Dutch barge

by Matthew Arnold

CHAPTER 7: SPUDS AND TUBS:
How to steer a barge and park it without hitting that much!

Dear Readers, OK, so enough of the poo jokes. Let's get ourselves out of last month's toilet bowel (oh how I love a pun) and onto something more cerebral.

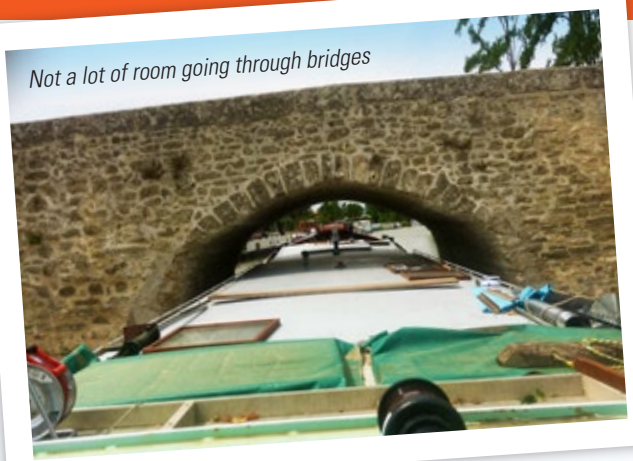
Ever thought of how you would go steering a large tanker or cargo ship? Out in the ocean? Not too much problem there. Not that much to hit. But what about getting in and out of port? Well, the more observant of you will have noticed that big ships in harbours are usually accompanied by tugs, pushing and shoving them into place. Why don't they just steer into the dock? Well, the short answer is they can't.

Rudders on ships work much like wings on planes. For them to work, they need water passing over their surface to create differential pressure and a turning force. No flow, no turn. So when a decent sized, i.e. heavy, vessel is travelling at a very slow speed, you can do what you want with the rudder, the boat is going to go where the wind, current and momentum wants to take it. At really slow speeds, a ship becomes a multi-thousand-tonne wrecking ball, without any outside help.

Now consider the inland canals of France, and Mathilde. Canals are about 15-20 metres wide. Mathilde weighs in at over 50 tonnes and is about 5 metres wide, which gives about 5-10 metres of space on either side when no-one else is around. But then you have other barges coming the other way. Hmm. Oh, and the sides of the canal are not vertical but sloped, offering up many grounding opportunities. Hmm. And you can only do about 5 km/h. And there are no tugs. Oh, and the entrances to bridges and locks are about a bee's dick wider than Mathilde. And there are a hundred hire boats around, that weigh 1/10th of Mathilde and are made of fibreglass, piloted by numpties constantly doing the wrong thing.
So get anything vaguely wrong, steering-wise, and you are grounded, and/or dented, and/or fishing crushed bodies out of the water. Hmmmmm. So, how to control a barge at slow speed?

After a full day's cruising, and having left your debris behind, it is beer o'clock and time to moor up and hammer out the dents in the bow.

Steering lessons. Helps if you have your hands on the wheel



Not a lot of room going through bridges

No problem, just pull over to the bank and stop. Hmm. Remember the sloping canal bottom that stops you getting close to the bank? Oh, and the fact that the barge deck is about 1.5 metres above the water/bank. Oh, and the wind is blowing a bit… and they have cut all the trees down on the Canal de Midi so there's nothing to tie up to. Hmm. So how to moor up?

Dear Readers, we were oblivious to all of this when we first bought Mathilde. As you do, we imagined cruising serenely down the canal waving politely to passers by as we made expert minor corrections to the tiller.

Our first trip soon educated us to the reality. So here is the scene. We needed to get to dry dock, which was only a few kilometres away. The wind was blowing hard, and it was summer, so lots of tourist boats were about. We started the engine (Dear Readers, remember the fun to be had here?). I jumped down to the bank, cast off the lines, scrambled back on board, and before we went anywhere the wind just pushed us straight onto the opposite bank where a little plastic hire boat was moored and minding its own business. Bang! Well, not really bang, more a dull thud followed by repeated crunching and cracking of fibreglass, and hysterical screaming by its occupants.

"Sorry about that…" as we screeched off. As our first casualty sunk slowly in our wake, we ricocheted off the banks, constantly over-correcting. Then around the corner came our first bridge. We slowed down. Big mistake. Bit like lifting in a Porsche mid corner. We were in the middle, then we weren't, then a puff of wind blew the bow off line, then lots of steering lock and full reverse to no avail, then bang! Yes, a real bang this time, as steel hit foundation stone and we came to an abrupt halt.

Good job we were heading to the dry dock for hull repairs. A few items were added to the work list.

"We have a problem," I said to our bad-tempered builder Francois.

"Oui, you do."

"What do we do?"

"Well, you learn to steer a boat properly."

"Yes, yes, anything else?"

"Oui, you need spuds and thrust!"

"Ok what…?"

He then went on to explain two of the most useful things we have built on Mathilde.

First the "thrust," or bow thruster. When you steer a boat, Dear Readers, you don't actually move the front of the boat, you move the stern. It's like having the steering wheels on the back, like a forklift, but with a heavily delayed reaction. It takes a lot of getting used to, but when you are underway you need to ignore where the bow is and instead focus on an imaginary point about half way along the boat. This is the pivot point. You turn the wheel and – after a while – the barge pivots around that point. Pre-emption is the key here. Steering on a barge is, shall we say, vague?! You need to anticipate where the barge needs to be about 50 metres away from where you actually are, and act now 'cos it takes most of that 50 metres to react. That in itself is tricky, but do-able with experience, and easier if you're moving at cruising speed.

But what about when you are stationary, or going into a narrow lock or bridge entrance?

Enter the mighty Bow Thruster. This consists of a pipe about a foot wide, running across both sides of the bow below the water line with an electrically powered impeller in the middle. Pull a lever and the impeller forces water from one side of the bow to the other, pushing it left or right. It is an absolute godsend. Approach a bridge, get a little offline, hit the thruster and majestically the bow swings over. Bored one day at a turning circle? Hit the thruster and do some donuts for the tourists!

Now the spuds. I have no idea why they are called spuds, they just are.

"So Francois, Mrs A does not like jumping down onto the bank landing in sewage infested water and trying to tie up the barge. What can we do?"

"She must learn to jump better."

"Any other suggestions?"

"Oui. Spuds."

"OK. What is a spud….?" (anticipating some lame French–English translation joke.)

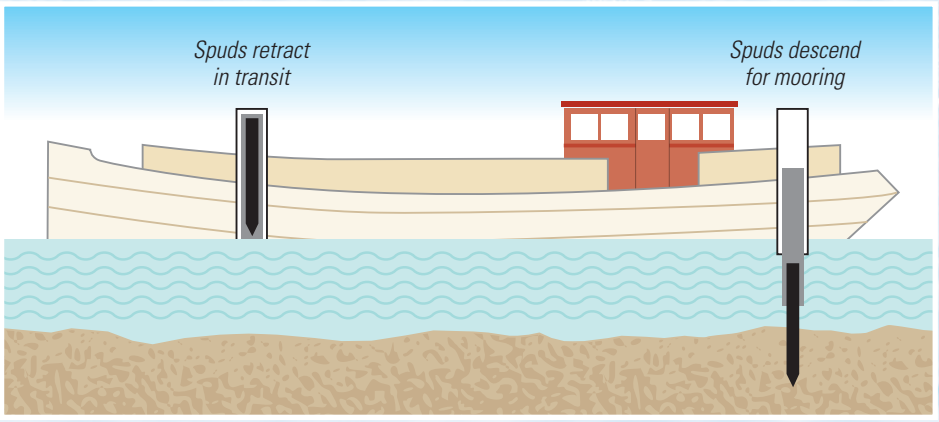
But Francois did not have a sense of humour.

"Well, we cut holes in the hull and put steel posts in the hole so it digs into the mud."

That didn't really help, so I googled it. It took a while to visualise it, but here is the translated version. (This is a job best left for the dry dock, for obvious reasons….)

Spud leg being lowered in


Front spud



First, you do indeed cut a square hole in the hull near the bow. Then you get a long piece of thick, heavy square tubing about 30cm across and about 4 metres long, and weld it vertically onto the hull. Then find a steel structural H beam that fits snugly into the tube, and lower it down until the bottom is flush with the hull. Then rig up a winch system strong enough to raise and lower it. Then put a safety chain on it, in case the steel cable snaps. Repeat for the stern, and hey presto, you have a foolproof mooring system that is simplicity itself.

Without spuds, the barge mooring procedure is roughly as follows. Try to get the barge alongside the canal bank as close as you can. Someone then leaps off the barge onto the bank, about 6 foot below, while holding a heavy mooring rope in one hand and a large hammer and mooring pins in the other. Miss the bank, land in the "water" (see previous article), drag yourself out onto the bank and then furiously hammer in a pin and tie up the barge. Then argue about each others' lack of competence and boat skills while the mooring pins work loose and you drift away. Not a convivial process.

With spuds, you do the following. When you want to moor you drive the bow into the bank and let muddy friction slow you down. When stopped, lower the front spud. The weight of the spud (about 400 kg) buries itself into the canal mud. Then spin the rudder, engage forward, and because the bow is pinned, it acts to force the stern sideways into the bank. Then lower the rear spud. You are then securely pinned to the canal fore and aft, and going nowhere. Then, with plenty of time left before dinner, bring out the gangplank and go ashore, or stay where you are and open a beer.

When you want to leave, raise the front spud, engage the bow thruster to push the bow out, raise the back spud, and off you smugly go.

As a footnote, it does pay to give close attention to making sure the spuds are fully up while the barge is underway, so as not to leave anything hanging out the bottom. A friend of ours didn't. The result? One bent spud jammed half in, half out, and the barge stuck in the middle of a canal. The repair required a diver, underwater metal cutting equipment, large cranes, and lots of swearing. Glad I wasn't steering!

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$	$
Size	Size
Rear Stitch ☐ YES	Rear Stitch ☐ YES
$	$
Size	Size
Rear Stitch ☐ YES	Rear Stitch ☐ YES
$	$
Size	Size
Colour	Colour
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