



# FRONT DRIVE



Australia's National Magazine  
for Citroën Owners and Enthusiasts



**CITROËN CLASSIC OWNERS'  
CLUB OF AUSTRALIA**  
Australia's National Citroën Car Club

June/July 2023 Vol 47 No 1  
GS Birotor

## Postal Address

CITROËN CLASSIC OWNERS' CLUB of AUSTRALIA Inc.

The address of the Club and this magazine is:

PO Box 52, Balwyn, Victoria, 3103.

The Club's website is:

[www.citroenclassic.org.au](http://www.citroenclassic.org.au)

Citroën Classic Owners' Club of Australia Inc. is a member of the Association of Motoring Clubs.

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The Club cannot accept any responsibility for, or involvement in, any business relationship that may occur between an advertiser and a member of the Club.

## Membership

Annual Membership is \$35 and printed editions of 'Front Drive' are posted to Australian addresses for an additional \$45 per year.

## Meetings

Club meetings are held on the fourth Wednesday of every month [except December] at 7:30pm. The venue is the Frog Hollow Reserve Rooms, Fordham Ave., Camberwell.

## Citroëning

Club Permit applications to VicRoads must be accompanied by a RWC [pre 1949 cars can be inspected by a Club Safety Officer], ownership validation and VicRoads forms endorsed by

the Club including financial validation. New Permit holders must supply the Club with approved photos, club permit number and expiry date. While Club permit renewals

can be done via the post CCOCA encourages you to do this via the internet and email. It is faster, simpler and safer than the post. Payment can also be completed via your VicRoads on-line account.

## Committee

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## Cover Image

The cover image was downloaded from [www.carthrottle.com](http://www.carthrottle.com). It was posted by Samuel Pincin.

## Deadline

The deadline for the next edition of 'démarrreur' is Friday, 16 June and for 'Front Drive' it is Sunday, 30 July.

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Max Lewis

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Rita Robinson 0435 530 780 [M]

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## Life Members

The committee awards life membership to Club members in recognition of their contribution to, and support of, the Club. Life memberships have been awarded to:

Arthur and Nance Clarke 1984

Jack Weaver 1991

Peter Boyle 2003

Ted Cross 2012

Rob Little 2012

Sue Bryant 2017

Brian Wade 2017

Leigh Miles 2022

Lance Wearne 2023

## Contents

ED SED PAGE 4

PREZ SEZ PAGE 5

A-TRACTIONS PAGE 6

CAR SNOBBERY PAGE 18

THE WANKEL MOTOR  
PAGE 21

THE FIRST 1,000KM IN NO 1  
PAGE 34

WHAT'S IN A NUMBER  
PAGE 45

2023 CONCOURS IN PICTURES  
PAGE 50

A FORGOTTEN CENTEN-  
NIAL PAGE 54

PRODIGY TO PARIAS  
PAGE 58

LOST AND FOUND PAGE 66

TOTALLY TRACTION  
PAGE 71

## Contributors

Contributors to this edition of 'Front Drive' include Chris Bailey, Quentin Cornish, Garth Foxwell, James Kraus, Max Lewis, David Milloy, Rita Robinson, Barb Towt and James Walshe.

## SPARE PARTS & TOOLS

Contact Max Lewis. Phone: 0458 993 771 [if you do phone, please do so at a reasonable hour] or [spareparts@citroenclassic.org.au](mailto:spareparts@citroenclassic.org.au)

## CLUB SHOP

Club Shop is presently not operating. For further information please contact the Club's President.

## OTHER CLUBS

Vic [www.citcarclubvic.org.au](http://www.citcarclubvic.org.au)  
NSW [www.citroencardclub.org.au](http://www.citroencardclub.org.au)  
QLD [www.citroenclubqld.org](http://www.citroenclubqld.org)  
SA [www.clubcitroensa.com](http://www.clubcitroensa.com)  
WA [www.citroenwa.org.au](http://www.citroenwa.org.au)  
Tas [www.citroentas.org](http://www.citroentas.org)



Over the years Citroën has been accused of turning out a number of 'white elephants'. Sometimes the company has been smart enough to put said 'elephant' out of its misery [the 22CV Traction springs to mind], others like the SM were allowed to soldier-on until the Peugeot bean-counters put as end to them. I know, I have just incurred the wrath of SM owners the world over, but I am sure even the most die-hard SM owner would have to agree that the SM was well outside Citroën's mainstream experience. It could be argued that even in recent times the decision to launch the C6 was flawed. And we own and love ours.

But surely there can be little argument that the GS Birotor was a 'white elephant', and we own one of them as well. Is there a pattern emerging here?

As you will discover in this



edition back in the 1960s the Wankel rotary engine was seen as a true saviour for the motorcar industry. Manufacturers from Mazda to Rolls Royce saw the advantages. Yet only Citroën, Mazda and NSU really embraced the technology.

In this edition you can read the history of Felix Wankel and his revolutionary motor and the manufactures who embraced it.

Read the story of the GS Birotor's fall from grace: the path from Prodigy to Pariah. While it is easy to lay the blame at the feet of the engine itself, the pricing of the model, its lack of visual differentiation [both internally and externally] from the regular GS cannot have helped its cause. Those bean-counters have a lot to answer for!

The rotary theme continues with the first French road test of the M35. The journalist drove 1,000km in the very first rotary Citroën. The review and the reported in-depth discussion which followed makes revealing reading.

Chris Bailey is with us sharing the 'Artificial Intelligence' view on the Traction Avant four-speed gearbox. I kid you not and vintage Citroën owner Garth Foxwell reminds us that May, 2023 was a centennial month in Citroën's Australian annals.

Continued on page 6

Well, CCOCA is getting back into the swing of social events again. Helen and I have been very busy with club business; enjoying recent club activities leading up to winter, which, as I write this piece, starts tomorrow.

We had a very successful AGM and wish to thank Eric Bishop for running the evening. All nominations were accepted, so we did not take long to approve these ~ then we had a great wine and cheese supper. Thank you to Helen and her merry band of helpers.

Since then, we have had the joint CCCV/CCOCA Concours at Rippon Lea, which was a good location, but the weather was a wash-out. We managed to run a successful event and thank the Management Team at Rippon Lea for improvising and granting us an under-cover room to do our presentations and enjoy the welcome lunch they provided.

I see that Leigh has admitted to owning at least two of Citroën's dubious models out of the three he mentioned. I personally think there could be another one lurking in his extensive garage collection of interesting Citroëns.

This year we are trying some different activities that we hope will appeal to our members and their partners. Earlier this month we had an entertain-

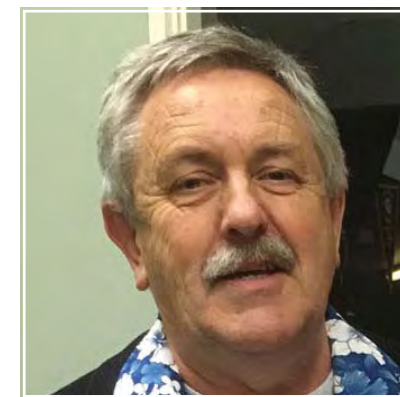
ing talk from true crime writer Robin Bowles, who gave us a fascinating insight into true crimes in Australia. Please look for her many books and enjoy her thought provoking stories.

Also, something different for CCOCA is our new Facebook page, dedicated to reporting the activities of our club members around Australia. Thank you, Rita Robinson. Your passionate role promoting Citroën stuff around the globe is already making an impact. Please like and follow if you are a Facebook watcher. There is a link on our CCOCA website to click onto.

Finally, thank you to our newest members and their partners. I look forward to seeing you somewhere at an event this year if you can make it.

I now need to pack our 2cv for the Swan Hill OzTraction weekend which is not on the actual long weekend. Who will win the longest distance travelled in a Citroën this year?

Ted Cross ~ President



## Ed Sed

Continued from page 4

Lots of events are on the horizon and by the time this is in your hands OzTraction '23 will be done and dusted. But, the revised plans for Cit-In in Tasmania are underway and the Pre Cit-In Tour looks fascinating.

We have a couple of articles from our friends in the UK: one about the importance of welcoming new members who own models you may not see as 'classic' and about an automotive graveyard in France.

After Max's success with 'What's in a Name' he has taken

the plunge to produce a series of articles 'What's in a Number?' He will look at the numbers from one to nine and see how they fit in the Citroën firmament. The introduction is here.

With Max on my mind let me remind you, should you need it, that our new Spare Parts Officer is Max Lewis. His Club email is still [spareparts@citroenclassic.org.au](mailto:spareparts@citroenclassic.org.au) and his mobile number is 0458 993 771.

Something for everyone? I hope so!  
Enjoy,  
Leigh F Miles ~ Editor

## A-Tractions

*Please note: To book or RSVP for a CCOCA organised event you must register on line at the club's website. Do not contact the organiser to register your attendance.*

*In line with Government guidelines CCOCA no longer requires proof of vaccination if you attend events arranged by CCOCA. The requirements of other organizations is not impacted by this decision.*

*The Club strongly recommends wearing a mask in areas where you cannot maintain social distancing.*

### • June

#### Battle of Waterloo

WHEN: Sunday, 18 June  
TIME: 10:30 for 11:00 departure  
FROM: Stamford Hotel, cnr Wellington and Stud Rds  
TO: Cardinia Reservoir, Duffy's Rd., Emerald [off Wellington Rd.]

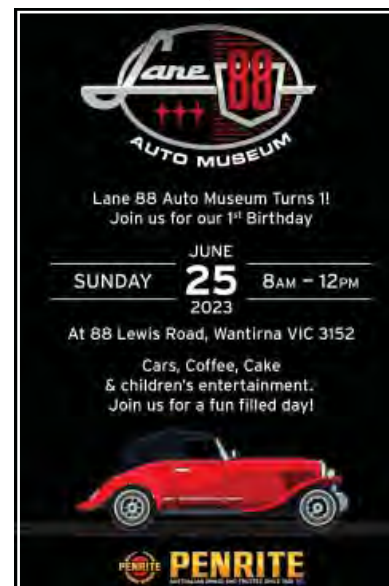
COST: Free  
BOOKINGS: Essential to Paul Buck  
BRING: Everything for a picnic  
MORE INFO: Paul Buck, 0412 627 711

The BMC Leyland Car Club have invited CCOCA and CCCV to join them for a picnic lunch and get together at Cardinia Reservoir.



After such a success last year with our joint outing with the BMC Leyland Club we promised to do something again this year. This time we are off to Cardinia Reservoir. There are on-site BBQ facilities available here as well.

#### Lane 88 Auto Museum First Birthday



WHEN: Sunday, 25 June  
TIME: 08:00 to 12:00  
WHERE: Lane 88 Auto Museum, 88 Lewis Rd., Wantirna

BOOKINGS: Not required  
Lane 88 Auto Museum is a small private collection of vehicles owned by John 'JD' and Margaret Dymond. The collection has been accumulated over many years and was inspired by JD's own mechanical interest, and his love of classic cars and historic motor racing. Cars, coffee, cake and children's entertainment. Join Lane 88 for a fun-filled day.

#### June Monthly Meeting

WHEN: Wednesday, 28 June  
TIME: 19:30  
WHERE: Frog Hollow Reserve Rooms, Fordham Ave., Camberwell

COST: Free  
BOOKINGS: Essential for catering by Monday, 26 June  
BRING:  
MORE INFO: Lee Dennes,



## A-Tractions

[l.dennes@bigpond.net.au](mailto:l.dennes@bigpond.net.au)

DO NOT CALL LEE TO REGISTER! You must register/book via the CCOCA website

<https://citroenclassic.org.au>

### JUNE BOOKING

#### • July

##### *Bastille Day Lunch*

WHEN: Sunday, 16 July

TIME: 12:00 for 12:30

WHERE: Churchill-Waverley  
Golf and Bowls Club,

82 Bergins Rd., Rowville. 3178

COST: \$40.00pp, refreshments  
to your account

BOOKINGS: Essential by Friday,  
7 July

BRING: Your wallet

MORE INFO: Marg Towt,

[marg.towt@bigpond.com](mailto:marg.towt@bigpond.com)

DO NOT CALL MARG TO REGISTER! You must register/book via the CCOCA website  
<https://citroenclassic.org.au>



### BASTILLE BOOKING

Join your fellow Citroënists from CCOCA and CCCV for a two course lunch at this inviting venue. The price, of \$40 per person, has been subsidised by the Club, but refreshments are to your account. So, bring your wallet! As always, be sure to drink responsibly.

Please wear your name tag!

Should you need to cancel your booking, any refund will be at the discretion of the organizers.

### *World 2CV Meeting: Switzerland*

WHEN: Tuesday, 25 to Sunday,  
30 July

WHERE: Region Delémont,  
Switzerland

COST: €150pp

BOOKINGS: Essential

The preparation of the World



Meeting of 2CV Friends is underway. The team is working hard to put together an event in the purest spirit of the 2CV. It will be great to meet everyone for this event! We know that there are Australians already registered. If you are one of them, why not let the Club know?

In the meantime, they would like to keep you informed by means of regular newsletters of the latest news concerning the world meeting of 2CV Friends. You can also follow them on their website:

[www.2cv2023.ch](http://www.2cv2023.ch)

[2CV WORLD MEETING SITE](http://www.2cv2023.ch)

### *July Monthly Meeting*

WHEN: Wednesday, 26 July

TIME: 19:30

WHERE: Frog Hollow Reserve  
Rooms, Fordham Ave.,  
Camberwell

COST: Free

BOOKINGS: Essential for catering by Monday, 24 July

BRING:

MORE INFO: Lee Dennes,  
[l.dennes@bigpond.net.au](mailto:l.dennes@bigpond.net.au)

DO NOT CALL LEE TO REGISTER! You must register/book

via the CCOCA website <https://citroenclassic.org.au>

### JULY BOOKING

#### • August

##### *August Monthly Meeting*

WHEN: Wednesday, 23 August

TIME: 19:30

WHERE: Frog Hollow Reserve  
Rooms, Fordham Ave.,  
Camberwell

COST: Free

BOOKINGS: Essential for catering by Monday, 21 August

BRING:

MORE INFO: Lee Dennes,  
[l.dennes@bigpond.net.au](mailto:l.dennes@bigpond.net.au)

DO NOT CALL LEE TO REGISTER! You must register/book via the CCOCA website <https://citroenclassic.org.au>

### AUGUST BOOKING

#### • September

##### *September Monthly Meeting: Dumpling Cooking with Rita*

WHEN: Saturday, 16  
September

TIME: 13:00

WHERE: Cheltenham Community Centre, 8 Chesterville Rd.,  
Cheltenham

COST: \$15pp

BOOKINGS: Essential by  
Wednesday, 13 September

MORE INFO: Rita Richardson,  
[facebookmoderator@citroenclassic.org.au](mailto:facebookmoderator@citroenclassic.org.au)

DO NOT CONTACT RITA TO

## A-Tractions



REGISTER! You must register/ book via the CCOCA website <https://citroenclassic.org.au>

### SEPTEMBER BOOKING

Club member, and our Face-Book Moderator Rita Robinson, has offered the Club's chefs and budding chefs the opportunity to learn the art of dumpling making. Numbers are limited to just 16 participants, so if you want to learn from an expert register soon! Your \$15 covers all costs, including ingredients.

## Looking Ahead

### • March 2024

### Pre Cit-In & Traction Avant 90th Birthday Run, Tasmania

WHEN: Thursday, 14 to Friday, 22 March 2024

WHERE: Anti-clockwise around Tasmania, ending in Devonport, Tasmania

COST: TBC

BOOKINGS: Essential

MORE INFO: Grahame Vaughan

0412 593 075

[vaughan.grahame@gmail.com](mailto:vaughan.grahame@gmail.com)

PREAMBLE [Please read carefully] An anticlockwise trip around interesting parts of Tassie over eight days finishing for the start of CIT-IN 2024 in Devonport. The Tour is ideally suited to Tractions and will celebrate the 90th Birthday, so please drive yours! Naturally, other models all welcome.

Accommodation is TIGHT and will be first in best dressed, so book ASAP.

So get together with your friends and share IF POSSIBLE as this will less expensive and will help with accommodation tightness.

Telephone or email the venues; if you look on their websites they may appear 'booked out' because space is being held for us.

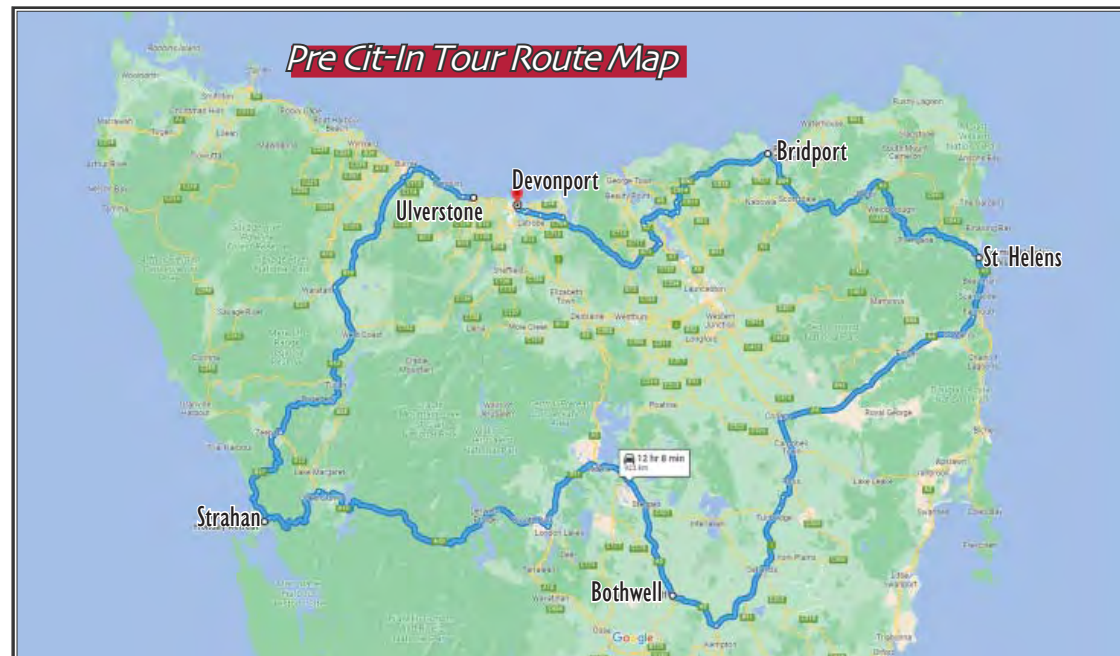
You will need to Register with me to get updates [see later]

Apologies if I mislead you re run detail when chatting before, but venue changes happened. So recheck please.

Book and pay yourselves for all accommodation.

### ROUTE

- Day 1: Thursday, 14 March  
Ulverstone [22kms from ferry]  
Meet at Ulverstone Big 4 Caravan Park
- Accommodation  
Big 4 Caravan Park, 57 Waterson St., Ulverstone. Barbara



or Katrina [03] 6425 2624 or Beachway Motel. Ken, [03] 6425 2342. [About 100metres from Caravan Park].

- Day 2 Friday, 15 March  
Ulverstone to Strahan [205km]
- Accommodation [2night stay]  
Big 4 Caravan Park, 10 Innes St., Strahan. Jill or Ginny [03] 6471 7442. [Situated left on the way into Town]
- Day 3 Saturday, 16 March  
At your leisure in Strahan  
NB: APT Train will depart from both Strahan and Queenstown and both go halfway turnabout and return. Plenty to do otherwise in-



## A-Tractions

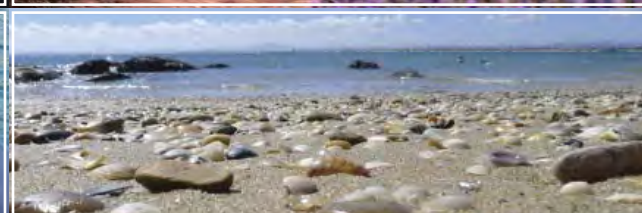
cluding Gordon River Cruise both day and twilight including meals

- Day 4 Sunday, 17 March Strahan to Bothwell [248km] Travel to Bothwell, population under 400!

- Accommodation [2night stay] Ratho Farm, 2122 Highlands Lakes Rd, Bothwell. Jo or Michael [03] 6259 5553. [On the edge of town, Miena side.]

This is home to the Southern Hemisphere's first Golf Course and still going with 1830s house and outbuildings now used as accommodation for Weddings; so used to house larger groups. Great rustic charm with many shared outbuildings recently renovated mostly each room with own en suite and central area for shared meals/drinks etc. They have seven overflow en suite rooms upstairs in town [maybe 1-2kms away and local pub similar digs with some AirBnB shared cottages. Tents/Vans are OK at Ratho Farm.

- Day 5 Monday, 18 March At your leisure in Bothwell Hobart is about 1 hour away [76km] if you wish to do a day visit to Mona etc
- Day 6 Tuesday, 19 March Bothwell to St Helens [207km]



- Accommodation [2night stay] NRMA Caravan Park, 18 St Helens Point Rd., St Helens. Now trades under Tasman Holiday Parks. [sthelens@tasmanholiday-parks.com](mailto:sthelens@tasmanholiday-parks.com) [03] 6376 2332. Good Cabins/Tents/Vans/Restaurant  
NB: Will only hold until end of July, so book early but there are plenty of alternatives.
- Day 7 Wednesday, 20 March At your leisure in St Helens A local club member will lead a scenic drive.
- Day 8 Thursday, 21 March St Helens to Bridport [120km]
  - Accommodation in smaller venues only. We will be at Platypus Park Retreat 20 Ada St., Bridport. Gina [03] 6356 1873. Smaller some shared '70s style but pleasant.
  - or Bridport Bay Inn Motel 79 Main St., Bridport. [03] 6356 1238, [leanne@bridportbayinn.com.au](mailto:leanne@bridportbayinn.com.au) Basic accommodation, book early held few just a months or share at The Old Pier Apartments 6x2 bedroom, good spot also has a 3 bedroom cottage 2km away. Colleen 0400 352 369 holding for a few months. NB: Plenty of AirBnB
- Day 8 Friday, 22 March Bridport to Devonport [139km]



## A-Tractions

Arrive at Cit-In for registration!

### REGISTRATION

Contact Anne and Grahame to Register for Pre Cit-In run. Email is the best contact method: Please use 'Pre Cit' as the Subject so I actually notice them.

[vaughan.grahame@gmail.com](mailto:vaughan.grahame@gmail.com)

If you are desperate the mobile numbers are:

Grahame 0412 593 075 and Anne 0409 980 100

- I need you to please email me when you have booked with your email/mobile details immediately. Car and registration number when it is convenient so I have some idea who is coming to organise meals, routes etc.

Also, I will acknowledge your contact but note we are overseas for approximately three weeks from 18 June.

Looking forward to the Event and Cit-In 2024

### POST CIT-IN NOTE

Launceston is about one hour away and Hobart around three hours from Devonport and I hope your read all this and I will quiz!

### *Cit-In 2024: Devonport, Tasmania*

WHEN: Friday, 22 to Monday, 25 March 2024

WHERE: Devonport, Tasmania

COST: TBC

BOOKINGS: Essential

MORE INFO: Michael Barrett,



President CCCT,  
0407 360 443

[mikesgarage123@outlook.com](mailto:mikesgarage123@outlook.com)

WEBSITE: <https://citroentas.org/cit-in-2024/>

[CIT-IN 2024 SITE](#)

Welcome to Tasmania, the host state for Cit-In 2024  
'Qur Little Secret'

As Chair of the Tasmanian Cit-In committee, I am writing to advise that due to events beyond the Tasmanian Cit-In Committee's control, we have had to make the uncomfortable decision to relocate the 2024 Tasmanian Cit-In event.

As you would all be aware, we recently presented the 2024 Tasmanian Cit-In event at Murray Bridge when the event was to be held at St Helens on the East Coast of Tasmania from the 22-25 March 2024.

Fortunately, we have been able to secure a new location at Devonport on the Tasmanian North West Coast and have booked the recently opened luxury Accor Novotel, situated on the banks of the scenic Mersey River opposite the East Devonport Spirit Ferry terminal. The previously advised dates of 22-25 of March 2024 will still apply so you will not need to change your Spirit of Tasmania bookings.

The Novotel is centrally located in this small coastal city with the adjacent Paranapple Centre also booked to host our Saturday

and Sunday evening dining activities and a nearby riverside park providing plenty of areas for a show and shine and relaxing early morning riverside walks to the Bluff lighthouse.

Novotel have reserved 70 rooms in their 180 room complex starting from \$185 for Cit-In registrants. They will shortly provide us with a link which includes a booking code for you to receive the discounted room rate. [Do not book Novotel accommodation until the link is provided to ensure the discount applies].

We also have the Nearby Gateway Motel offering availability of rooms within easy walking distance of the Paranapple function Centre and the Novotel.

Devonport offers a number of attractions, being the centre of Tasmania's North West Coast and gateway to the rich agricultural hinterland including Sheffield, Gunn's Plains and Cradle Mountain to the South. Mole Creek, Deloraine and Tamar wine region to the East and Penguin, Burnie and Table Cape to the West.



Cit-in 2024 



## 90 Years of the Traction Avant

International Traction Avant Meeting  
Thursday, 9 to Saturday, 11 May, 2024  
Circuit de Charade, Puy de Dome, France



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## Looking Forward...



*Next Issue of  
Front Drive...  
We are focussing  
on another Citroën rarity:  
the Bijou. It may be French  
for Jewel, but did it have any  
redeeming facets?*

## Chit Chat Tuesday

WHEN: 1st Tuesday  
4 July,  
1 August,  
5 September

TIME: 10:00

WHERE: Laneway Espresso  
Café, Dromana

COST: Cheap Eats

BOOKING: Not required

CONTACT: Warwick Spinaze  
0407 016 719

Laneway Espresso Café, next door to the Dromana Hotel, 167 Nepean H'way, Dromana. Easy to find, under-cover seating if weather wet. This is a low-key 'DIY' event for like-minded Citroën owners to meet and chat.





# Car Snobbery...

## Why it Cannot be Tolerated Any More

The CX isn't a classic car', said the older gentleman, as he stabbed a finger at my GTi Turbo. 'The CX is too complicated to ever be a classic. Nobody will want to restore them'.

It was 1999 and I had turned up at the Citroën rally in my 1985 Series 2 CX. It was a classic to me. Why? Because the CX was a car my dad drove. I got taken to school in a CX. We had family holidays in a CX.

He then began having a pop at the young chap in a nearby Visa. The fellow club members in question considered his DS worthy of display, yet not ours. I was bewildered. His unsolicited comments made me want to leave the club I had not long ago joined.

As a teenager, I remember being at a car show and hearing the owner of a 1950s Ford Consul angrily telling a Capri enthusiast that his car wouldn't ever be a classic. That really stuck in my head ~ and now, here I was, a young member at my first Citroën rally, being told the same thing. Thankfully, nowadays, the world has changed. There is an acceptance of the 'modern classic' because we've grown up and realised all cars mean something to people. Includ-



ing younger folk. Where once we told 'complex' Nineties cars would be impossible to fix, here we are, with a laptop and a basic tool kit, doing just that.

Yet not everyone has changed with the times. Some misguided snobs are still lurking about the place, crowing about modern classics, alienating the young and achieving nothing but an air of mean-spirited unkindness that leads to young enthusiasts taking that fresh-minded passion and money elsewhere.

How can a Plurial or a C5 be a classic? Surely they are just old cars, aren't they? Well they are to me, because I am of a certain age. But talk to teenager George Kavanagh who went to great lengths to find his grandmother's old Berlingo [Front Drive Vol 46 No2], and you get an entirely different take.

She had sold it years ago but he launched a campaign to locate it and then buy it. He will never sell it. Speaking to youngsters getting giddy for Saxos and C2s. Or the younger children who squeal at a Xsara Picasso ~ it is the car that transported them to primary school.

If you are lucky enough to own any of Citroën's old, more valuable models, remember that sometime in the 1970s and '80s were mature folk who considered the Traction and DS little more than just old, complicated heaps. Innovative engi-



neering or not, both were considered by many [particularly those in the trade] as worthless junk that nobody wanted. I met a teenager at a recent National Exhibition Centre show who had no interest in the 2CV or Traction. Or DS, SM, GS, CX or any of the other models many of us adore for a multitude of reasons. Nope... the object of his desire? A Xsara. Rather than go off into a rant about it 'not being a proper Citroën', I did that thing we all forget to do sometimes: shut my gob and lis-

tened.

He rambled at length about the posters on his wall and the day his dad bought their first VTS home. His enthusiasm was joyous and infectious. No mentions of hydropneumatics or DIRAVI. Given the encouragement to join the club, perhaps he might himself get into older vehicles, but who cares? His gusto and hard-earned cash is needed to support our community. The future of all car clubs depends on how we support younger members ~ and it begins with how inviting we are to them in the first place.

This article by James Walshe first appeared in 'Citroënian', the magazine of the CCCUK and is reprinted here, with slight modification, with their permission. It may not be reproduced elsewhere without their permission.



## The Wankel Motor

### The 1960's Engine of the Future

Automobiles can trace their reciprocating-piston engines back to the early days of steam power. As internal combustion replaced steam as the preferred method of powering transport, the concept of using reciprocating pistons to convert energy into motion was carried over.

As the automobile matured,



the efficiency and operating smoothness of the reciprocating piston engine gradually improved through the use of a multiplicity of smaller cylinders, shorter piston strokes, counter-balanced crankshafts and other refinements. By the dawn of the 1960s however; the automobile was seemingly falling behind aviation, which had switched to smooth continuous-combustion jet engines. A number of auto manufacturers experimented with gas turbine engines, but none entered mass production.

Nevertheless there was another alternative engine on the horizon; one that likewise promised velvety smoothness, high rpm capability and significant size and weight advantages.

Felix Wankel, a self-taught German engineer had been working on the idea of a rotary internal combustion engine since his teen years, and was

# SPIDER

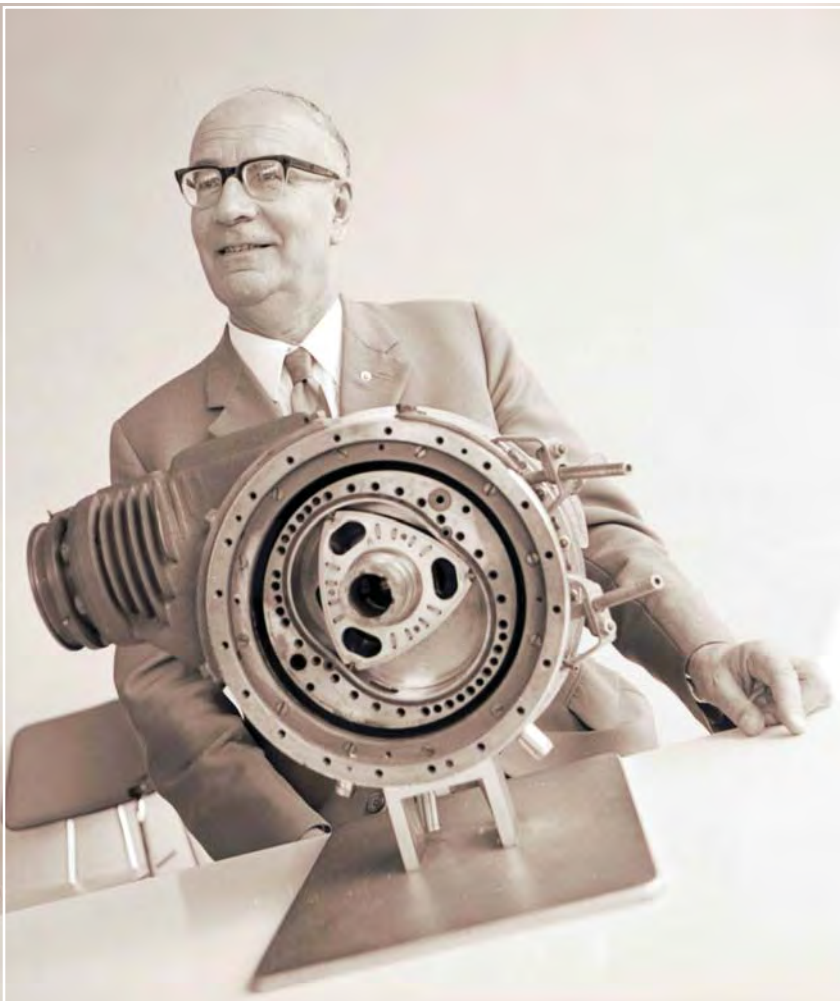
NSU-



The world's first Wankel-engined production car, the 1964 NSU Spider. Images: [www.mikipress.com](http://www.mikipress.com)



# The Wankel Motor



Felix Wankel with  
DKM 54 Prototype.  
Image: Audi  
Ski-Craft ski tow.  
Image: [www.ard-mediathek.de](http://www.ard-mediathek.de)

awarded his initial patent in 1929. Interrupted by the war years; he resumed his rotary development at NSU Motorenwerke, a German motorcycle manufacturer who were laying the groundwork for launching their first post-war automobiles.

The initial prototype NSU-Wankel DKM 54 motor began testing in January of 1957. This design used a trochoidal piston spinning within a epitrochoidal housing, which itself spun at a slightly higher



speed inside the engine case.

Later that year, further research and development would center on a simplified version of the engine with the trochoidal piston orbiting around a stationary gear in the engine case without the concentric circulating inner housing. This simplified version was largely the work of Dr Fröde.

The simplified engine concept was proven to be workable and

NSU began licensing the design in 1958. Several automotive firms bought manufacturing rights, attracted to the compact form factor, light weight, smoothness and simplicity of the Wankel. By the end of the 1960s, Alfa Romeo, Citroën, Daimler-Benz, Toyo Kogyo [Mazda] and Porsche had signed contracts.

The first rotary for sale to the public was not actually in an au-

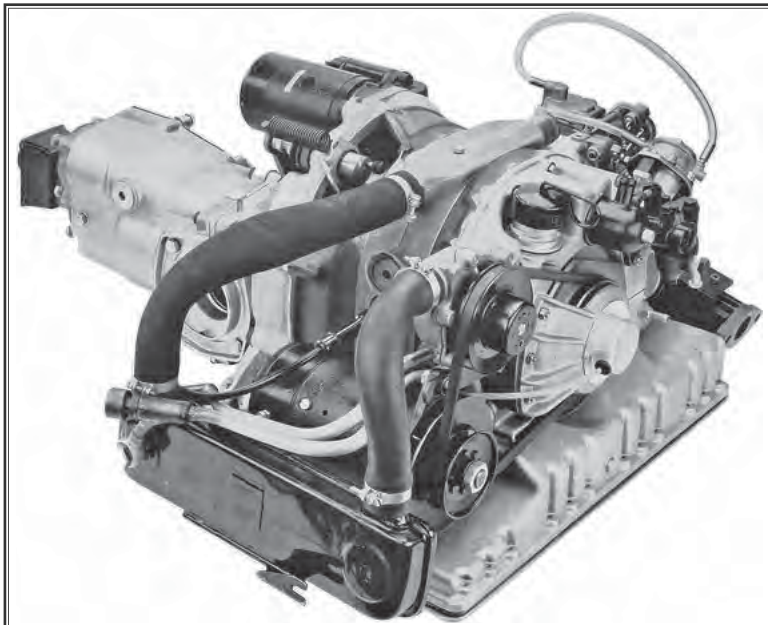


At the 1963  
Frankfurt Auto  
Show, NSU displayed the very  
first rotary-powered automobile;  
the NSU Spider.  
Images: [www.carrosso.nl/](http://www.carrosso.nl/) and  
[www.mikipress.com](http://www.mikipress.com)





## The Wankel Motor



NSU Spider engine and transaxle. The dark object in foreground is the oil/coolant heat exchanger.

gine was fitted with a large oil/water intercooler and the sump held a generous 4 litres of oil.

The Spider produced 37.3kW/50hp; providing 74.6kW/100hp per litre. This com-

tomobile at all. It could be found inside the Ski-Craft Wasserskischleppgerät ski tug launched in October of 1962. This remote-controlled unmanned unit pulled a water skier along without the need for a boat and skipper. It was powered by a NSU 150cc Type 61 single-rotor Wankel.

At the 1963 Frankfurt Auto Show, NSU displayed the very first rotary-powered automobile; the NSU Spider. It went on sale in 1964, fitted with a single-rotor 500cc Wankel engine. The chamber housing was water-cooled, while the inside of the trochoidal piston was cooled with engine oil. To keep the oil temperature in check, the en-

gine was compared quite favourably with NSU's own conventionally-powered four-cylinder 1.0-litre Prinz 1000, which produced 31.3kW/42hp per litre. The engine had very little torque below 3,000rpm, behaving much like a highly-tuned conventional engine with fairly aggressive valve timing. This would prove fairly typical of all Wankels to follow, and was not unexpected given the high specific power output.

While NSU did not have a works team, many privateers entered the new Spider into competition. Karl-Heinz Panowitz and Rainer Struntz won the 1966 German GT Rallye Championship with a slightly

modified Spider that produced 48.5kW/65hp. In the US, Al Auger successfully campaigned his NSU in SCCA road racing. In 1967, Günther Irmcher drove a Spider to victory in the Tour d'Europe Rallye.

Also that year, 23-year-old NSU rally driver Christine Beckers took second in class and 11th overall at the 12 Heures du Huy.

In 1967 and '68, legendary



NSU tuner Siegfried Spiess won the German Hill Climb Championship with his personally tuned Spider that delivered nearly 74.6kW/100hp at an astronomical 11,000rpm.

Almost 2,400 Spiders were built before the model was phased out in 1967.

Meanwhile, Mazda was quickly developing their own licensed version of the Wankel, displaying prototypes at the 1964 Tokyo Motor Show. In May of 1967, Mazda unveiled the fruits of their labour; the Cosmo Sports 110S.

In development since 1962, the Cosmo's dual-rotor 1.0 litre 0810 engine was all aluminium with iron rotors. Induction

was via a four-throat dual-stage carburettor. The efficiency was 10% better than the NSU



Left: Belgian driver Christine Beckers took second in class and 11th overall at the 12 Heures du Huy. Below: Christine behind the wheel of her Number 25 NSU Spider, Huy, 1967. Images: [www.autouniversum.wordpress.com](http://www.autouniversum.wordpress.com)



# The Wankel Motor

Right: Mazda Cosmo Sports 110S.  
Below: The 110s at the Marathon de la Route at the Nürburgring, August, 1968 Images: Mazda

Spider, with an output of 82.1kW/110hp per litre. To put that in perspective, it was 3.7kW/5hp per litre greater than the specific output of the legendary limited-production 1967 Porsche 2.0-litre 911R engine.

The Cosmo introduced dual ignition to the Wankel motor. With this system, each rotor housing incorporated two sequential spark plugs, each controlled by its own distributor. The leading [primary] plug fired first, with the trailing plug firing 5 to 15 degrees later.



Facing page: In September of 1967 NSU introduced the R080.

NSU R080: Cutaway of twin-rotor Wankel engine and torque converter. Note in-board front disc brakes.

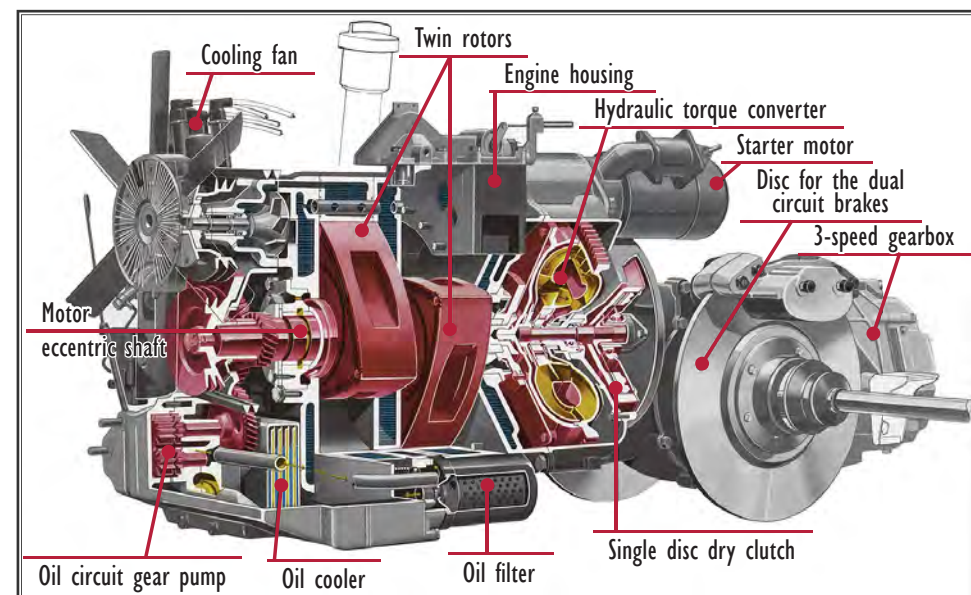


Mazda put together a works team and fielded two Cosmo Sports in the Marathon de la Route endurance race at the Nürburgring, with the lead car finishing fourth overall.

Slightly over 1,500 first-generation Cosmos were built from 1967 until production ceased in 1972.

In September of 1967, NSU introduced the futuristic R080

sedan, powered by a dual-rotor 1.0-litre Wankel coupled to a 3-speed clutchless semi-automatic gearbox, similar to Porsche's 4-speed Sportomatic. The R080 also featured 4-wheel disc brakes and fully independent suspension. Its most striking feature was the exterior design by Claus Luthe. It would still appear contemporary several decades later. The





# The Wankel Motor

Main image: The Mazda Familia R100 Rotary Coupé. Image: Mazda  
Inset: The same model in the hands of Peter Wherret and Bernie Haenhle on the track at Bathurst. Unfortunately this car was badly damaged in a roll-over during the race, which created its own compelling piece of Bathurst history. Image: autotpics.com.au  
Facing page: The Mazda R130 Luce Coupé [top] and Familia R100 prototypes at the 1967 Tokyo Motor Show.



RO80 garnered the 1968 European Car of the Year award.

Despite initial problems with tip seal degradation leading to enough warranty engine replacements to force the financially stretched firm into the arms of Volkswagen, over 37,000 were built until the car was discontinued in 1977.

The tip wear issue was eventually sorted and many of the later cars are still driving around on their original engines.

In July of 1968, Mazda offered for sale the first

rotary for the masses, the Familia R100 Rotary Coupé. Previous Wankel-powered cars were either two-place sports cars or the relatively costly RO80 sedan. The popular-priced four-seater R100 was powered by the 1.0-litre 10A Wankel from the Cosmo. To reduce production costs, the aluminum side plates of the rotor housings were replaced with cast iron. A smaller carburettor reduced peak power but allowed for improved fuel mileage.

Mazda entered three Familias R100's in the 1969 Spa-Francorchamps 24 Hour endurance race in Belgium, with two of the cars taking fifth and sixth overall. A month later a Familia

Rotary came home fifth in the Marathon de la Route.

In addition to the Cosmo and Familia, Mazda brought out a luxurious rotary front-wheel drive Coupé in autumn of 1969, the R130 Luce.

If the NSU RO80 was the Queen of '60s rotaries, the Mercedes-Benz C-111 was undisputedly the King. Its major drawback was that you could not buy one, and only a handful were built. The C111 was a strange beast; launched in the spring of 1969, it was built as an engineering prototype and test bed, yet was completely road-worthy down to the fitment of a Becker AM/FM radio. Mercedes-Benz Development Di-

rector Rudolf Uhlenhaut put several road kilometres on the cars personally, even taking one to the Alps on a skiing holiday.

The C111 started life with a 1.8-litre 3-rotor Wankel fed by Bosch high-pressure direct fuel injection that producing an amaz-





## The Wankel Motor

ing 115.6kW/ 155hp per litre. The mid-mounted engine sent power to the rear wheels via a 5-speed transaxle and ZF limited-slip differential. A second version was fitted with a 2.4-litre 4-rotor producing a more sedate 108.9kW/146hp per litre with greater low-end torque



thanks to a variable intake system.

The majority of the C111s were finished in metallic orange; an interesting choice as no contemporary production Mercedes-Benz was offered in orange despite its popularity at the time. The fully-padded large-hub four-spoke steering wheel and Bundt Cake alloys wheels introduced on the C111 did make it into series production however.

Citroën and NSU formed the Comotor partnership in 1967 to manufacture Wankel engines in Altförweiler Germany. The first car to receive a Comotor powerplant was the experimental Citroën M35 fitted with a single-rotor 1.0-litre en-

Mercedes-Benz C111, early three-rotor prototype. Images: Mercedes-Benz



gine. Like the Mazda 0810, the M35 engine used leading and trailing spark plugs. The M35 was the second and final automobile to be equipped with a single-rotor Wankel. Production began in late 1969. A total of 267 were built for testing and issued to selected loyal Citroën owners for long-term



evaluation.

Satisfied by the performance and feedback received on the M35, Citroën continued development of the Wankel and launched the GS Birotor in 1973. The Birotor featured a 1.0-litre twin-rotor Comotor engine with single-plug combustion chambers producing 79.8kW/107hp per litre. Unfortunately the car's reception was marred by the oil crisis of 1973; its relatively high fuel consumption dampening the interest of potential buyers. Less than 1,000 were built.

By the mid-seventies, excitement for the Wankel among automotive engineering staffs and the general public began diminishing due to increasing concerns over comparatively high emission levels and fuel consumption; issues which were gaining importance as the dec-

Main image: The final three rotor version of the Mercedes-Benz C111.

Inset: The 2.4-litre, 4-rotor version, dubbed the C111-II. Images: Mercedes-Benz





## The Wankel Motor

ade began drawing to a close. Mercedes-Benz halted development as did NSU, which by then had become part of the Volkswagen Group.

Citroën would prove to be the last automobile manufacturer to introduce a Wankel powered model, leaving only Mazda to continue developing and producing the engine for automotive applications.

Nevertheless, throughout

the 1970s, Wankel engines appeared in other applications including lawn mowers, snowmobiles and motorcycles.

The first available Wankel motorcycle was the Sachs DKW/Hercules 300cc single-rotor air-cooled W-2000 of 1974, followed later in the year by the 500cc single-rotor water-cooled Suzuki RE5.

The wildest rotary-powered motorcycle was the Van Veen OCR 1000 introduced in 1978.

The OCR 1000 used the same 1.0-litre water-cooled twin-rotor Comotor engine as the Citroën GS Birotor, sending power to the rear wheel via a



Citroën M35, Images: Acturial.



Porsche-designed gearbox and drive shaft. The forks and rear suspension were developed by Koni, and braking was via triple Brembo discs. This meticulously hand-crafted machine sold for the same price as a contemporary Mercedes-Benz 280 SL. A total of 38 were built.

The last Wankel-powered car, the Mazda RX-8, was recently discontinued as the rotary engine was unable to meet Euro 5 emission regulations.

One of the key advantages of the rotary engine when introduced was the simplicity of having no valves. That lack of valves now works against it from an efficiency standpoint in comparison to conventional piston designs. Today's infinitely variable valve timing and lift systems, notably BMW's Valvetronic and Fiat's MultiAir, eliminate pumping losses and broaden the power

band of conventional engines. The intake and exhaust ports of a Wankel double as valves and of course are not movable nor adjustable in size.

The Wankel does have a possible future as a constant-speed battery charging power source as an electric car range extender. Precisely tuning a Wankel to run at a constant speed or within a narrow range of rpm greatly reduces emissions and fuel consumption issues and the inherent smoothness of a rotary is a major advantage in an engine that needs to cycle on and off intermittently during vehicle operation.

This article, by James Kraus first appeared at [www.autouniversum.wordpress.com](http://www.autouniversum.wordpress.com) in 2012. It is reprinted here with his permission, and may not be reproduced elsewhere without the author's approval.



Hercules W-2000 motorbike. Image: Pinterest.



# The First 1,000km in No 1



Didier Merlin and Pierre West [right] discuss the rotary engine in the following pages.

In January 1970 the French magazine 'Europe Auto' was given exclusive access to the M35 Coupé. This was Citroën's test-bed for their rotary engine. But not just any M35. No, they were given access to Prototype No 1 and got to drive 1,000km in it. There followed a 'round-table' discussion of the car and we bring it all to you here.

## The 1,000km of the M35

Our colleague Jacques Foulon was the first journalist to have the privilege of testing the Citroën M35. He drove the first model to come out of the Quai de Javel workshops. His logbook gives an account of the 1,000 kilometres initially covered at the wheel of

the new French prototype: an exciting experience, as much as picturesque.

08:00: Departure from quai André Citroën. The car was previously taken out of the factory by an in-house tester. The first difficulty was to get inside the M35, which had been taken over by the crowd of curious people. It is necessary to lift the bonnet and give some brief explanations to these people eager for information. New expressions of interest on the ring road: the car is wedged in by some motorists. Others deliberately stay level with it in order to get a better look at it.

09:00: Arrival at Montlhéry. First measurements. Tests until 11:30am, on slippery ground, which enables the new Citroën's grip qualities to be appreciated. The manufacturers' testers stop to examine the prototype.

12:00: Lunch at Arpajon.

14:00: Back to the car, parked in the old square. The doors and the boot are wide open. Two fans, sitting inside... enjoy the comfort of the seats.

14:15: Direction Orleans. Quick departure to escape the curious. Stop in Orleans. Fill up with petrol, long explanations to the pump attendant.

15:30: Exit from Orleans, direction Vierzon. On the long straights, crossing the Sologne, I push the M35 to its maximum speed: 149 km/h.

16:15: Vierzon. Average speed over the 80 km from Orleans to Vierzon: 127 km/h. Direction: Châteauroux.

17:00: Châteauroux. New and very numerous testimonies of curiosity.

Last [night] stages: Tours, Le Mans, Alençon, Paris, 135km at an average speed of 75 km/h.

22:30: Stopped by a red light, Porte d'Orleans, the M35 is





## The First 1,000km in No 1

quickly spotted and circled, despite the late hour. Pressed with questions I have to transform myself once again into a lecturer and explain that it is not precisely an Ami 8...

### Round-Table with Jacques Foulon, Didier Merlin, Pierre West

Citroën, which has been at the forefront of technology with the famous front-wheel drive and the DS range, is now launching the first French car with a rotary engine. This car looks like an Ami 8 and has a revolutionary engine under its bonnet: it is the M35 coupé.

The M35 operation will begin shortly: it consists of allocating the 500 models produced to selected customers, benefiting from a special guarantee. In other words, the brand from Quai de Javel is openly engaging in dialogue with the user to better prepare for the future. The initiative is clever. It serves both the interests of the design office and those of the sales department, while allowing the firm with the chevrons to reach a new layer of customers.

The M35 prototype, which is undoubtedly the star of the month, is the subject of our round table discussion, around which we find our collaborator Jacques Foulon, the journalist who drove the first thousand kilometres at the wheel

of the new Citroën, as well as the two winners of the Klippan Safety Prize, Pierre West, from Europe No 1, and Didier Merlin... Three great specialists who have been joined by a representative of Quai de Javel, Mr Jean-Paul Cardinal.

Together, they take stock.

- At first sight, the M35 looks like the Ami 8. So, let's talk about its exterior first.

Didier Merlin: First of all, let's be clear: many people buy a car for its design and this is always the element that attracts the public first. Here, however, the manufacturer stresses that the line is not important and that only the engine counts. I think that this is a restrictive formula and that Citroën, for example, is also experimenting with hydropneumatic suspension. Coming back to the line, if the front and the profile are quite attractive, the rear, on the other hand, gives an impression of heaviness which corresponds to reality. The M35 weighs 115kg more than the Ami 8 and if the 6CV engine which develops 36.6kW/49hp DIN can tow a significant weight, it is quite obvious that with four people on board, plus luggage, the performance will not be sensational. A minor objection, of course, as this car is not intended to be marketed.

Jacques Foulon: The bodywork looks pretty good to me,

### TRIAL ITINERARIES

#### CONSUMPTION AT TOURIST SPEED ON FLAT ROADS

Paris~Etampes	
Average speed:	60kph
Consumption:	7.8L/100km

#### CONSUMPTION AT SUSTAINED SPEED

Etampes~Orleans	
Average speed:	102kph
Consumption:	11.8L/100km

#### CONSUMPTION AT HIGH SPEED

Orleans~Vierzon	
Average speed:	127kph
Consumption:	14.1L/100km

#### CONSUMPTION AT MEDIUM SPEED

Vierzon~Chateauroux~Tours~Le Mans	
Average speed:	83.5kph
Consumption:	10.2L/100km

#### FUEL AND OIL CONSUMPTION

Fuel Regular Grade [82 octane RM]	
Test Distance	2,000km
Overall Consumption	6.3L/100km
Normal Range	7.5-5.1L/100km
Oil: SAE 20 Consumption:	0.06L/100km

#### MAXIMUM SPEEDS & ACCELERATION TIMES

Acceleration	Top	3rd	2nd
16-48kph	-	13.8	9.2
32-64kph	20.3	12.2	-
48-80kph	23.0	15.9	-
64-96kph	31.9	-	-

#### BRAKES

Pedal Load	Retardation [from 48kph in neutral]	Equiv. Distance
11.4kg	0.08g	115.8m
22.7kg	0.33g	28.0m
34.0kg	0.60g	15.2m
45.5kg	0.71g	12.8m
56.8kg	0.90g	10.2m
Hand-brake	0.58g	15.8m

#### CLUTCH

Pedal load and travel:	15.9kg and 11.4cm
------------------------	-------------------

compared with other prototypes. Citroën has done a good job of dressing up the creation. The brand with the chevrons could have offered us something more modern and more attractive, but it is true that in the circumstances, this problem relating to aesthetics is quite secondary. I would add that, although the line is neutral and very close to that of the Ami 8, the car is very much noticed by the public.

Pierre West: You just mentioned the neutral line and it seems to me that the Quai de Javel has deliberately sought this neutral line with a kind of cunning. They probably wanted to wrap this new creation in a cloak of mystery, or at least in camouflage, and I would like to suggest in passing that the grey colour was probably chosen deliberately. It's all very clever and typically Citroën-like. It is unfortunate that the body is so heavy.

Jacques Foulon: The increase in weight compared with the Ami 8 is indeed significant and is partly due to the adoption of the rotary engine. But the suspension is also different from the system used in the Ami 8 and I think, with Didier Merlin, that the M35 will be a decisive test bench for it. Unlike the exterior, the interior layout is almost completely new...

Pierre West: The cabin, or the cockpit if you like, is well



## The First 1,000km in No 1

designed: it offers comfortable seats, a gearshift and well laid-out dials. Space is satisfactory, even in the rear seats. While the exterior presentation is very secondary, it is obvious that the interior installation has been made according to precise and functional criteria.

Jacques Foulon: I would however make one criticism concerning the habitability. The accessibility of the rear seats is very poor. The main effort, in my opinion, has been made in relation to the seats.

Didier Merlin: They seem to break with the tradition of softness that Citroën has had in terms of comfort since the launch of the DS. This is a new direction.

Jacques Foulon: The M35 seat is between the so-called comfortable seat and the bucket seat and is a considerable step towards the ideal seat.

• What about the controls?

Didier Merlin: The steering is satisfactory and the M35 demonstrates, if proof were needed, that we are now making very elaborate steering systems.

Pierre West: But the steering wheel is too high. It should be placed so that in the normal position the arms are lower than the heart. This would eliminate an important element of heart fatigue and I am surprised that a problem of this nature is not of greater concern to manufacturers. Another reproach concerns the accelerator pedal, the

position of which, in the long run, causes a very unpleasant discomfort in the foot.

Jacques Foulon: It is to be deplored that Citroën is not at the cutting edge of technology in several areas as it is in the engine.

• What about the gearbox?

Didier Merlin: It is a bit different from the Ami 8 except for the location of the lever. It has good gear ratios.

Pierre West: And it gives very pleasant feedback, even if it is a bit complicated to manipulate.

### CHRONOLOGY OF THE ROTARY ENGINE

1588: The Italian Ramelli presents the water bladed pumps of his invention.

1636: The German Pappenheim invents the gear pump currently used to lubricate engines.

1782: The Englishman James Watt, who had already invented the connecting rod-crank system, designed a steam engine with an oscillating rotary piston.

1846: Galloway builds the first engine with a rotating piston and internal chambers with a five-bladed rotor.

1859: James modifies the Pappenheim pump with two geared rotors.

1938: Sensaud and Lavaud [France] patent a rotary piston machine.

1954-1969: Félix Wankel [Germany] develops the rotary engine.

Translated with [www.DeepL.com/Translator](http://www.DeepL.com/Translator) [free version]

Jacques Foulon: So, I would like to ask a question: why didn't you adapt a lever to the floor on this car, a car whose sporty character is being emphasised?

• What about the brakes?

Didier Merlin: The braking is very sound and allows you to maintain your trajectory.

Jacques Foulon: Its effectiveness translates into a significant response. There is no doubt that the M35 is an extremely polished and even slightly ostentatious car.

• We have already mentioned the suspension. Do you have any other comments?

Didier Merlin: The suspension system of the M35, simplified compared to that of the DS, offers, in my opinion, very interesting prospects for the future. Given the weight... but also and above all the rigidity of the body, it is part of a homogeneous whole. Hence less roll and additional stability.

• Is it possible to tell the difference between a rotary engine and a conventional engine when you start up?

Pierre West: Without a doubt: the rotary engine is characterised by a high degree of silence and an almost total absence of vibrations. There are no mechanical jolts. The acceleration is more fluid.

Didier Merlin: Another characteristic: if the rotary engine is cold, it takes a long time to





# The First 1,000km in No 1

**EUROPE  
AUTO**

LE PÉRIODIQUE AUTOMOBILE EUROPÉEN  
13<sup>e</sup> ANNÉE • JANVIER 70  
N° 34 NOUVELLE SÉRIE **3 F**

## CITROEN M35 ROTATIF

les 1000 premiers kilomètres  
du prototype N° 1



**MATCH PEUGEOT  
304** *quoi de plus que la* **204**

**SONDAGE EUROPE 1 / EUROPE AUTO**  
**Les Français et le stationnement payant**

warm up. This is one of the aspects of the Citroën engine whose quietness should not be exaggerated. This quality is mainly verified at high revs, and it is then that it can be truly appreciated.

- What are your particular observations on the M35's rotary system?

Pierre West: This engine is a revolutionary engine, which was developed only recently. However, I will tell you something that proves that forward-looking technology sometimes has to borrow from old processes. For example, the manufacturer has used a bronze pellet as a corrector to limit the temperature differences in the combustion chambers. Now, I collect old guns and I can certify you that the trick was already known in the days of the buccaneering. Having closed the parenthesis on this anecdote, I wonder: are we really getting the full 36.6kW/49hp DIN of the rotary engine?

Jacques Foulon: Yes, and in particular at a speed between 2,000 and 3,000rpm. You can see that there is a good reserve of power. The engine starts off happily. Starting is slow because of the unfavourable power-to-weight ratio, but you can nevertheless go from 60kph to 120kph in twenty seconds, which is not possible with many 1,000cc engines. Thanks to the

dual ignition system, acceleration is progressive. There are no holes to complain about.

Didier Merlin: I have noted a few reservations and I wonder if the user will not have any problems, at least at the beginning, if only because of the difficult cold starts. The torque of the rotary engine cannot be described as extraordinary. This is a fact that cannot be denied and I am trying to imagine the overall impression that will be formed by the owner.

Jacques Foulon: It must be admitted that the rotary engine has passed almost without transition from infancy and even from its infancy to maturity. We must think that it will be improved and that it is already the engine of the future.

- What chances do you give it, precisely?

Pierre West: The price of an engine accounts for about 25% of the total price of a car and on this point the economy will be in favour of the rotary engine, which will be less expensive to machine. I therefore believe in its future... within a certain period of time, ie before a new source of energy is discovered that can be miniaturised. That time may be near. So, in the present situation, I consider the rotary piston to be a stage, a transitional stage.

Jacques Foulon: My point of view is different insofar as I con-



## The First 1,000km in No 1

sider this possibility to be very hypothetical. As things stand, the rotary engine seems to be the best future solution.

Didier Merlin: I agree with Jacques Foulon's prognosis, emphasising two qualities of the rotary engine that seem essential to me: its simplified machining and its silent operation.

### The 'Official' Line

Jean-Paul Cardinal [Citroën] replies and explains...

Mr Jean-Paul Cardinal of Citroën's external relations department attended the 'Europe Auto' round table. Here he answers questions and criticisms from our contributors and provides a number of additional technical details, bringing the official viewpoint of the manufacturer.

- Europe Auto: It is unfortunate that the body is so heavy.

Jean-Paul Cardinal: This is not an obstacle to our research, on the contrary. For practical reasons, the M35 was made from the Ami 8.

- EA: The handling of the gearbox can be rather tricky.

J-P C: It's a question of adaptation. It is a reverse gearbox, different from that of the 2CV, Dyane and Ami 8. The four gears are synchronised.

- EA: Why didn't you provide a floor lever?

J-P C: The solution of the lever on the dashboard still has many followers.

- EA: The torque is low.

J-P C: The engine has been deliberately flanged because it is an engine under study. We have given ourselves a basis and we have limited the torque to obtain concrete results. We want to progress in stages. There will be variations in power. But for now, the 7m/kg is real. It is possible to drive the third at 120 km/h, which is both appreciable and quite rare in the case of a 1-litre motor.

- EA: The car takes a long time to warm up and frequently stalls.

J-P C: By the time this article is published the car will have been fitted with a multi-position choke which will solve this problem.

- EA: Will the rotary engine change the Citroën range?

J-P C: No. It is only a complement. It should be noted that since 1965, the rotary engine has made up most of the ground on the piston engine, which benefits from a very long experience [almost a century]. There is a tendency to be very demanding of this new engine from the start. In 1965, it was still in its infancy and had many faults: poor sealing, trochoidal cracks, excessive oil consumption, jerks during deceleration, etc. We then undertook, with the collaboration of the French Ministry of the Environment, to develop a new engine. We





## The First 1,000km in No 1

then set out, in collaboration with NSU, to solve these various problems. In the space of four years, the following improvements were made: new types of spark plugs and new sealing rings: dual ignition, developed by Citroën, lowering the temperature of the oil bath from 180° to 120°. We are now shortening the experimental period.

- EA: What exactly will the M35 bring? In other words, what are the specific qualities of the rotary engine?

J-P C: There are many. Its first quality, by definition, is to directly produce a rotary movement which does not need to be transformed. This results in a smoother movement, unaffected by dead time, increased flexibility and higher mechanical efficiency. The simplicity of the design and the simplification of the machining are reflected in the practical field: elimination of the valves and camshaft, thus eliminating distribution problems. As rotor breakage is practically impossible, the risk of breakdowns will be reduced accordingly. There will be no more valve break-in or head gasket replacement. The standard exchange will cost less. Finally, the performance will be accompanied by an unrivalled silence.

- EA: Will this engine have the longevity of the '4-cylinder'?

J-P C: It is difficult to establish a precise prognosis. But tests carried out after 80,000km of trials have revealed no apparent wear. The first tests are therefore encouraging and there is no reason why the longevity of this engine should be inferior to that of a conventional engine.

- EA: Do you believe, ultimately, in the success and implementation of the rotary engine?

J-P C: Two years ago, I would have had reservations. Now I am confident, for the reasons listed above. The rotary engine will, I think, impose itself by its qualities, which range from simplified industrialisation to mechanical advantages of use. Because combustion is more complete than in a conventional engine, the carbon oxide content of the exhaust gases is lower: this too is important. Then there is the performance. This is already very satisfactory in the M35, which is only a starting point. The rotary engine is designed to reach very high speeds and its possibilities are very vast. We will publish a regular review of the M35 experiment.

This article originally appeared in 'Europe Auto' in January, 1970. It was translated by the editor with the assistance of [www.DeepL.com/Translator](http://www.DeepL.com/Translator) [free version]. The article is taken from the editor's archive.

## What's in a Number?

In the last edition of 'Front Drive' you read about 'What's in a Name?' which turned out to be a roaring best seller, with it being showered international accolades. I jest of course but it is nice to have others comment on the article.

Well, what is going through your mind with this 'spin off' so to speak? Let me illustrate what I mean.

'What's in a Name?' is all about the Citroën dynasty... a clearly defined topic by any definition. But, 'What's in a Number?' can be anything under the sun.

But no, it is once again Citroën centric.

Why would I want to talk about any other automobile?

OK, now we have got rid of the

weeds, we get to the flowers!!

The number topic I envision is to do with significant numbers in the Citroën's history up to date.

Over the coming nine editions of our magazines, I will count from one to nine: one number per edition.

Here's a little taster of some of the topics which might be covered in more detail than I will right now. Indeed, you might care to add additional topics for review in the forthcoming editions. Feel free to email me at [spareparts@citroenclassic.org.au](mailto:spareparts@citroenclassic.org.au) with your ideas.

### One

That's easy because there is the little runabout C1, which while not available here has been a big success in Europe. But, remember as well that for many decades Citroën was the Number ONE manufacturer in Europe.

### Two

Well here we begin an avalanche. 2CV springs to mind which is not difficult as the number represents possibly Citroën's most famous car... the 2CV if for no other reason that it was produced in the millions, FOUR+ I think and had an almost unequalled longevity.

This marvellous auto had TWO cylinders [another tick for the number 2] in a flat boxer configuration and this engine









## What's in a Number?

expectation for Citroën to show that the company could make a model to compete if not wipe the floor with its competitors [Renault's Nervastella and the other stellars... all pedestrian lumps of iron if ever they were] but it fell from grace.

Too much weight over the front and apparently a tricky car to drive.

Exit the EIGHT-cylinder Traction... there has not been an EIGHT-cylinder Citroën ever.

### Nine

2024 will mark the NINTH anniversary of the launch of the DS brand as a free-standing entity to sit at the top of the ladder in the PSA portfolio. Whether this was Peugeot finally recognising that the brand

would always be the runner-up to André, or merely a way to cash in Citroën's illustrious history is a moot point. Yes, it is only 2023 now, but by the time we publish number NINE in this series, it will be April, 2024!

### The Total?

That's the sum total and if you are as crazy in the nut as I am with such minutiae...  $1+2+3+4+5+6+7+8+9 = 45$ .

What a nice number don't you think? It is also the power output of the ground-breaking 1,222cc Citroën GS at it's launch in 1973 and 2024 marks 45-years since the replacement of the GS by the GSA.

See, almost every number has a place in the Citroën firmament!

Next month, learn all about the number ONE!

Max Lewis



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# 2023 Concours in Pictures



The pictures for this feature were supplied by Rita Robinson and Barb Towt.





# 2023 Concours in Pictures





# A Forgotten Centennial

Creetings Comrades of Chevrons! (Specifically, CCOCA, Michel in UK and of 'Amicale 5hp', Willy in Switzerland of the '5CV World Register', Bozi also in UK, Tom and Ralph in WA, Serge in Qld, Alan and Dave in SA, Bernard in France, the Phipps in Tasmania and the Seery offspring in WA, Christian in Canada, Citroënet in the UK, Citroënvie in North America, Ian Nixon of Citroën and DS Automobiles [Facebook] and the 'Conservatoire'.)

Well, it is now May 2023! [Ed: Unfortunately Garth's great article did not arrive in time for inclusion in our May edition of 'démarréur'. So while you are reading this in June, the centennial was indeed in May.]

For Citroënists in Australia ~ and indeed the world over ~ this is a momentous month. A month for reflection and celebration. We note it by looking back [a bit!] One Hundred Years!

On April 29, 1923, the Perth, Western Australia newspaper ~ 'The Sunday Times' recorded a list of new motor vehicle registrations. One of the listings read as follows: '4223, Citroën car, Walter J Phipps, Slade Street Bayswater.'

This is the start of something great! In this instance the Citroën was a Citroën 5CV [god forbid ~ marketed as a 'Baby

Citroën!'] Soon this car would be a 'Giant-killer'!

The journal of the Royal Automobile Club of Western Australia ~ the 'WA Motorist' reported in its 20 May 1923 edition, that on 1 May 1923 two young men, Messers WJ Phipps and J Seery departed Fremantle and later arrived in Adelaide on 14 May 1923 in their 7.5hp 'Baby' Citroën.

Other newspapers of the day report the arrival of the two in Melbourne as being 14 May and in Sydney on 18 May. This seems the more correct cou-

**The vehicle as it appeared on its departure in the 'WA Motorist'.**



ple of dates as their arrival in Sydney is reported in a Sydney newspaper dated 19 May. Various, different newspapers collectively provide a more complete record. Key points drawn from these newspapers are as follows.

- The first striking point to note is that the vehicle is reported as weighing in total '18 hundredweight'! Not bad ~ some 914 kilograms of which 500kg was contributed by the car! The added weight comes from carrying 23 gallons [104 litres] of 'benzine', eight gallons

**Phipps and Seery with the Adelaide Agents ~ Maugham Thiem Motors [image copyright to State Library of South Australia.]**

[36 litres] of water, oils, tools and of course, some personal requirements.

- It seems the two originally set out from Western Australia with the aim of completing the crossing to Sydney in a record time. To do this they would 'travel by day and night, one sleeping, while the other drove'. This is supported by the lighting set-up evident in the photo above. One large 'spotlight' mid-mounted above the radiator and two other lights ~ one mounted on each of the windscreen



## A Forgotten Centennial

mounts and able to be manually directed.

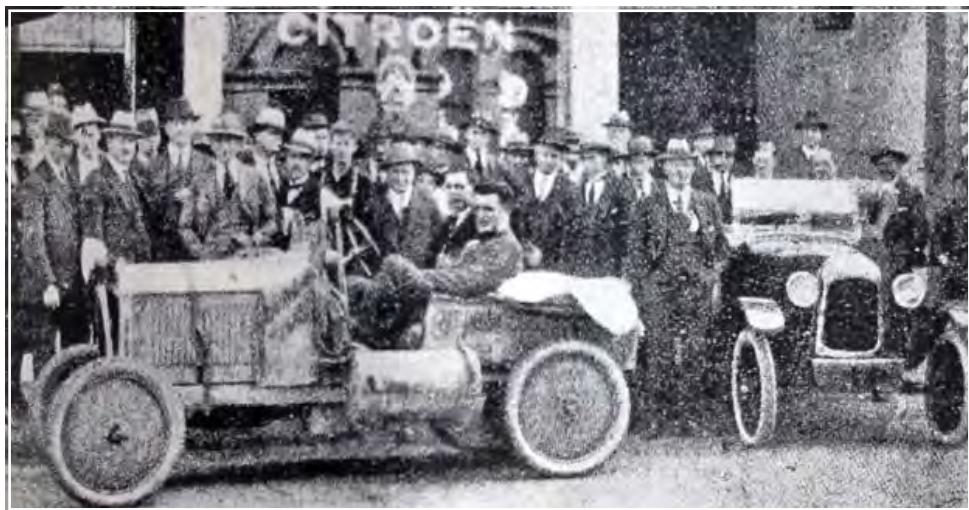
- Some distance [believed around three hundred kilometres, although reported as '100 miles'], east of Kalgoorlie [at Naretha], driving at night, they struck an unseen tree stump and broke a wheel hub. Reports of a four day [in one case a five day] wait for replacement parts wrecked their record attempt too. The replacement parts were transported to them by way of the nearby railway.
- While the record for the crossing was not achieved, they were reported as having established a record for a 'light vehicle' making the crossing ~ a distance of nearly 3,000miles [roughly 4,800km. Yes, there is a shorter more direct option, but theirs was by way of Adelaide and Mel-

On arrival in Sydney [with the agents ~ Salmons Motors.]

bourne!].

- On arrival in Adelaide [stated as 1,769miles in 157hours of driving time], the two said they were on a 'holiday trip' to Melbourne and Sydney!
- In one section of the trip from Kalgoorlie to Adelaide, through the 'Yardu' Sandhills [sometimes 'Yadu' or 'Yardea'], so arduous was the journey, it took five hours to cover 12miles [19km]. It is said theirs was the first car to cross this area without the aid of real 'horse' power.
- Phipps is also reported as having said he planned to undertake the trip by motorcycle but received an offer from the Agents of the small car to use one instead. He then asked Mr Seery to accompany him.

Be assured, those of you in other places, this was a truly



tough and significant journey! It is not known precisely, but it is likely that no more than 250km of the total 4,800km would have been on surfaced roadways. The rest dirt and sand! In fact the road [track] travelled ~ alongside the 'Trans-continental Railway', is today basically dirt [gravel] from Kalgoorlie [Western Australia] to Port Augusta [South Australia], and no doubt still plenty more!

### Who Were They?

Walter John Phipps was born in Surrey, England, coming to Australia in his late teens. John Joseph Patrick Seery was born in Perth, Western Australia. Both completed apprenticeships, Phipps in Electrics and Seery as a Mechanic.

Both enlisted in the Australian Imperial Forces. Phipps went in early in 1915. He suffered injury in the course of 1915 which probably precluded overseas service. Notably he served as a 'Driver'! Seery undertook Mechanics duties and saw service in the UK and France.

On return to Australia, Seery operated a Mechanic's workshop some one hundred and sixty kilometres from Perth in a locality called Moora. How they come together to complete their transcontinental crossing in 1923 is unknown. Eventually, both left Western Australia, Phipps to settle and live out his life in Burnie, Tasmania. Seery

relocated to Sydney where he too remained the rest of his life.

So now, as the month of May 2023 passes, perhaps you might think of these two men and their wonderful and adventurous undertaking. One that contributed to strengthening the presence of the Citroën brand in Australia.

Perhaps cheekily, I do want to pose one other question. Might it be that another young West Australian ~ Nevil Westwood, saw the various reports of Phipps and Seery and was subsequently inspired? Inspired to go on to something greater when he and, for the most part of the journey, Greg Davies, circumnavigated Australia for the first time by car in 1925, The car of course was also a 'Baby' Citroën. Quite a thought!

Sometime towards the end of May, think of this as a good reason to pop the cork on a bottle of fine Australian 'Sparkling Wine' and celebrate the feats of Phipps and Seery in their Citroën 5CV.

Note: For further interest go to [trove.nla.gov.au](http://trove.nla.gov.au) This is an electronic service of the National Library of Australia. Type in the 'Search' box the term 'Phipps-Seery' [and this should take you to several articles about this story. Another search term to do so is 'Pioneering Citroëns'. Enjoy!

Garth Foxwell



## Prodigy to Pariah

Can you remember the last time you saw a Citroën GS Birotor in the metal?

No? Oh well, if it's any consolation they weren't exactly thick on the ground even before Citroën destroyed most of the 847 built between 1973 and 1975.

Yup, you read that right: Citroën built them, marketed them and then destroyed them.

But why did this happen? Was

the Birotor so awful that Citroën felt compelled to commit the automotive equivalent of genocide on one of its own products? Or was there some other reason for their actions?

Let's find out, shall we?

### *The Rotary Club*

There's no doubt that the Citroën DS represented a major step forward in car design and technology. Forget traction avant, this was avant garde

in the most emphatic way. Everything from its beautiful, aerodynamic shape to its innovative suspension led the way for others to follow. Everything, that is, except its engines.

Anyone looking at a DS might

have been forgiven for thinking that such a car had to be powered by something more sophisticated than a fairly agricultural four-pot petrol engine. Citroën were acutely aware of this, of course, but were hindered by both the French system of vehicle taxation, which penalised large capacity engines, and the costs involved in developing new engines.

After much Gallic head-scratching, Citroën made two decisions that would prove to be costly. The first was their purchase





## Prodigy to Pariah

of Maserati in 1968. The second was even more significant: the acquisition and development of rotary engine technology.

The pistonless rotary engine, the brainchild of German engineer Felix Wankel, offered a number of advantages over conventional internal combustion engines. It was small, light, smooth and had remarkable power to size and power to weight ratios. It was therefore natural that a forward-looking company like Citroën would think that such an engine might be an ideal fit for their technologically advanced cars.

And so it came to pass that in 1964 Citroën entered into a joint venture with German car-maker NSU to develop rotary engine technology. Three years later, the two companies went a step further and a new engine manufacturer, Comotor, was born.

In 1969, the first rotary-engined Citroën hit the streets. This car, the M35, was powered by a small, single rotor engine. It was not intended for series production, however, but to act as a real-world test-bed for its Comotor powerplant.

Citroën originally planned

to produce 500 M35s. These would be sold to selected customers who each agreed to cover at least 30,000km a year. The performance and reliability of the M35 fleet would then be monitored through the Citroën dealer network. It was a bold and imaginative idea, and it worked. Although only 267 M35s were actually built, a substantial amount of useful data was fed back to the Citroën and Comotor technical departments.

At the end of the test programme, Citroën bought back and destroyed many of the M35 prototypes. It was a taste of things to come.

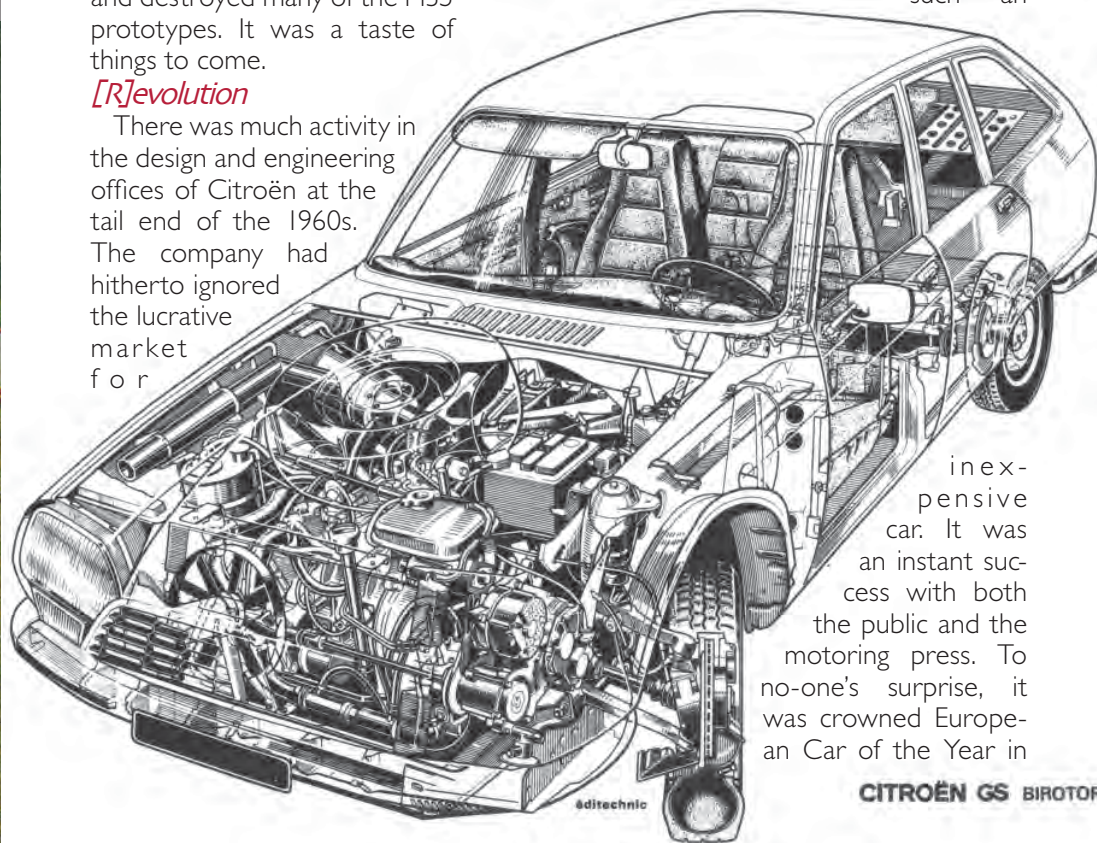
### [R]evolution

There was much activity in the design and engineering offices of Citroën at the tail end of the 1960s. The company had hitherto ignored the lucrative market for

mid-sized cars and was now anxious to rectify that omission. By 1969, its new mid-sized model, known internally as Projet G, was in the advanced stages of development. At the same time, design work had just commenced on Projet L, the replacement for the DS.

We would come to know these cars as the GS and CX.

When the Citroën GS went on sale in 1970, it brought more than a little sophistication to its market sector. It was pretty, modern, aerodynamic and had an impressive specification for such an



inexpensive car. It was an instant success with both the public and the motoring press. To no-one's surprise, it was crowned European Car of the Year in

**CITROËN GS BIROTOR**



## Prodigy to Pariah

1971.

As the GS established itself in the marketplace, the main focus of Citroën's attention turned to Projet L. Although it was inconceivable that the new car could repeat the remarkable technological leap made by the DS, it was intended that it would set new standards for comfort and refinement and come in a sleek, modern wrapper.

To that end, it was proposed that at least some of the models in the range would be powered by a new triple rotor engine developed by Comotor. This, it was envisaged, would provide high levels of refinement, smoothness and performance.

First, though, an upmarket version of the GS, powered by a twin rotor engine, would be launched.

### *A Different Spin on the GS Range*

The rotary engined GS, known as the Birotor, was launched in September 1973 at the Frankfurt Motor Show. Its specification was undeniably impressive: hydropneumatic suspension, all-round disc brakes, semi-automatic transmission and, of course, a water-cooled, twin rotor engine. The power output of 79.8kW/107bhp was more than respectable, but the engine had the typical rotary weaknesses of high emissions and a lack of low-end torque.

Although marketed as a GS,

the new model shared relatively few components with other models in the GS range. Apart from the engine, the hubs, floorpan, suspension, brakes, wheels, instrument panel, interior trim and many of the exterior panels also differed from those utilised in the core GS range.

The price also set the Birotor apart, it being about 70% more expensive than any other GS.

There was one other important difference between the Birotor and its siblings: fuel economy. The Birotor drank fuel at an alarming rate for a car of its size, especially in heavy traffic.

It may have been thirsty, but the Birotor was otherwise a generally well-sorted car. It had excellent road manners, sharing the same supple ride as the rest of the GS range but offering better handling with less understeer and reduced body roll. The gear ratios were suboptimal, however, and the Birotor lacked a little of the promised refinement.

It may not have been perfect, but the Birotor was more than good enough to merit an enduring place in the Citroën range. Fate, though, had other plans for it.

### *War. What is it Good For?*

In October 1973, war broke out in the Middle East. I'll leave the politics of that conflict for others to discuss, but one con-

sequence of it is germane to this tale: the Saudi Arabian-led embargo on oil sales to the USA and the resulting energy crisis.

Although much of Europe suffered little interruption to fuel supplies, the price of crude oil rose sharply. This had an obvious knock-on effect on petrol prices. It was precisely the wrong time to bring a thirsty car to market. In a blink, the Birotor went from niche model to white elephant. And fuel costs weren't its only problem.

### *Guilt by Association and Empty Pockets*

NSU, Citroën's partner in Comotor, had been quick to embrace rotary technology for the

road. They released the world's first rotary engined production car, the NSU Spider, in 1964 and followed it up with a twin rotor saloon in 1967. This car, the RO80, was stylish, quick and aerodynamic. It received a rapturous welcome from the motoring press and won the European Car of the Year award in 1968.

In spite of this, the RO80 failed to sell in the numbers that NSU, struggling financially after investing heavily in rotary technology, had been hoping for. In 1969, Volkswagen, keen to acquire NSU's impending K70 saloon, took over the ailing company and combined it with Auto





## Prodigy to Pariah

Union to form a new company: Audi.

The RO80 continued to be produced after the takeover, but sales fell when stories began to emerge about major reliability issues with its rotary engine. The problem lay with the rotor tip seals, which suffered excessive wear when the engine was cold. The problem was eventually solved, but irreparable damage had been done to the RO80's reputation and only 37,398 were built over its 10-year production run.

As the Birotor's engine was almost identical to that of the RO80, wariness on the part of potential purchasers turned

to disdain. Ironically, lessons learned from the RO80 debacle meant that the Birotor was less likely to be susceptible to the same problems as the NSU. It mattered not; it was guilty by association.

It's not inconceivable that the Birotor might, like the RO80, have weathered this storm. Fate, however, had one more card left to play: Citroën's desperate financial situation. Like NSU, it had invested heavily in Comotor. Unfortunately, the oil crisis, coupled with the RO80's engine problems, meant that the prospects of a return on that investment were, at best, negligible.

The same factors also prompted Citroën to abandon the notion of using a rotary engine to power the forthcoming CX, and the sole three rotor CX prototype was destroyed. The DS engines were therefore carried over to the new model in the absence of any other suitable alternatives.

The CX was released to much fanfare in August 1974 and was voted European Car of the Year in 1975. The damage was done, however, and Citroën was staring bankruptcy in the face. In December 1974, Peugeot purchased a 38% stake in Citroën, and a programme of cost-cutting measures was swiftly implemented.

### *The Turn of the Screw*

The writing was on the wall for the Birotor, and production ceased in 1975. As manufacturing and stocking spare parts for such a small number of vehicles was not financially prudent, Citroën attempted to buy back every Birotor which had found a purchaser. The terms of the buy-back offer were generous and many owners gladly accepted them.

One might have thought that Citroën would have retained at least some Birotors as donor cars to support those which remained at large. They did not do so. Instead, the company destroyed every Birotor that it had re-purchased as well as

all of its unsold inventory. No spares were kept.

[Ed. There are other stories which suggest that even after the dealers bought the cars back from their erstwhile owners, Citroën failed to collect them for crushing. After the cars sat unloved in the back of the dealerships for years they were either offered for sale or even returned to their previous owners.]

The brave, hardy souls who hung on to their Birotors in 1975 were on their own.

### *The Dude Abides*

Fast forward 40 years. In spite of everything, a number of Birotors [and M35s, for that matter] still exist.

But you'll struggle to find one. Indeed, the Birotor barely registers in the consciousness of most classic car lovers. And that's a shame, for in many ways it is the quintessential Citroën. Flawed, yes, but bold, imaginative and stylish.

High time, then, that it came in from the cold.

Acknowledgements: The author, David Milloy, wishes to express his sincere thanks to Julian Marsh of [www.citroenet.org.uk](http://www.citroenet.org.uk), an excellent source of information about all things Citroën, for his valuable contributions to this article which originally appeared on the Petrolicious website in September, 2015.





## Lost and Found

The following slice of French life recently appeared in the pages of 'Citroënian', the magazine of the UK Citroën club. As always, I must express my gratitude to CCCUK and to their editor, Anna Burmajster, for generously allowing us to reprint some of the wonderful features which appear in their excellent magazine.

Over to Quentin Cornish, who is that club's C5 [C Cinq] correspondent...

### Lost and Found: A Winter's Tale

Hervé and Clothilde, brother and sister of a mature vintage, had lived at La Bergerie, a farmstead on a hilltop overlooking an ancient stone-built village in the Aveyron for their whole lives. In the past, they had laboured hard raising sheep and goats, growing chickpeas and beans, and nurturing a tiny vineyard. Now, though, in a sort of retirement, their lives had settled into a quiet rhythm, with Clothilde pottering amongst a few chickens and Hervé pursuing a new vocation as a hoarder of old cars.

The village below them had changed over the past decades, as the old inhabitants had died, moved away to live with their children, or gone to residential care; their children had all long since left for the greater op-

portunities and modern habits of the city. The vacuum had been filled by Britons seeking rural tranquillity [on the condition that it came with efficient plumbing, easily-available gourmet food and a supply of domestic help]. Weekends became busy, as the holiday lets emptied and filled; shoulder seasons were busy, as the owners came to tidy and relax; in winter the village was deserted, except for a few old ladies, numerous grumpy cats and Agnès, the energetic woman of middle age who ran the agency providing cleaners, gardeners and pool cleaners to *Les Anglais*.

Ah, yes, the pools: looking down from their front porch, Hervé and Clothilde could see the village they had known for so long now studded with sapphire oblongs, glinting in the sun. Still, at least the place was now well looked-after, even if it was clearly no longer French in any way.

Hervé's car-hoarding had started by accident, as these things will. The old inhabitants of the village wanted someone to dispose of their well-worn vehicles, that were too far gone to be sold and of no use to their owners in their new lives. Hervé had the space, now there were no longer any sheep and the chickpea field was fallow. So a succession of grey, white or beige saloons and pick-ups,

Peugeots, Simcas, Renaults and Citroëns, along with the occasional Panhard and even one Hotchkiss, were driven or towed to the chickpea field nearest the house and parked in haphazard rows to face the weather and the passage of time. Clothilde didn't particularly like the new crop, but said nothing.

Things started to change when one of *Les Anglais* appeared at the door of *La Bergerie* one hot August afternoon, when all sensible [that is, French] people were indoors in the cool, asking in quite acceptable French whether it was possible to view *Monsieur's collection d'automobiles*? Well, no, of course it wasn't. Too hot, too sudden a request, too English a person asking. But when the same man came back a few days later, in the morning of an overcast day, to ask the same question, by luck it was Clothilde who answered the door. Happy with anything that reduced the still-growing car crop, she gave Hervé such a look that he had to lead the man out to the field and watch as he inspected each sad corpse with little cries of 'Wow!' and 'Well, I'll be damned!'

Shaking Hervé's hand much too enthusiastically for the old man's taste, the Englishman promised to return with a trailer to remove a particular Peugeot 203 in exchange for €300.

Hervé didn't catch a lot of what the strange foreigner said, but he did clearly hear '*trois cent euros*' and so felt that perhaps the unlooked-for tramp out to the field hadn't been too bad after all. Also, Clothilde was pleased when she heard about how they had just earned €250 for doing nothing [obviously, Hervé needed to keep a seller's premium on the sale].

And so, over the next few years, more men with trailers came to the door asking to inspect the chickpea field and its rusting inhabitants. The Aveyron in general has wet winters, but a quirk of geography and a shelter belt of poplars meant that much of the chickpea field was spared the worst of the winter rains, so the men with trailers were not disappointed.

Equally, it did not take long for Hervé and [especially] Clothilde to realise the wealth that sat on their land, and to raise their prices accordingly; although going as far as establishing market prices for their wares was not the sort of thing they did, preferring to see what they were offered and then ask as much more as they judged the level of excitement displayed by *Les Anglais* warranted.

Eventually, they were left with a few piles of rust, some detached bumpers and hub-caps, three no-hope 2CVs, a Simca Ariane, that they refused to



## Lost and Found

part with for reasons that are too complex to explain here, a Renault R8 containing an aggressive family of polecats and, mysteriously, a 2001 C5 in faded navy blue with a cracked windscreen and frontal damage that had excited no interest whatever among the visiting trailer men.

One sharp winter evening, sharing an after-dinner digestif with Ag-

nès, the conversation turned as it sometimes did to the topic of the cars. Agnès began to wonder aloud about the C5; she knew it had belonged to an elderly but well-to-do couple, who had lived in a villa on the road towards the city [a fact Hervé had forgotten, although Clothilde hadn't]. And that was where it grew interesting. Agnès had extensive information networks in the surrounding towns and villages, necessary for her task of sourcing domestic help, plumbers, builders, doctors and mar-

riage guidance counsellors [just the once] for the generally-clueless *Anglais*. A contact had heard from a cousin, who had it from a friend, who had read it in a local newspaper from Brittany [imagine!] that the old couple had died, one within a week of the other. The unwanted C5 was now truly an or-



phan.

And yet, was it?

It seemed only a few days later that a smartly-dressed young woman stood at the door of *La Bergerie*, saying she was the grand-daughter of the now-dead elderly couple, and asking if she could see the C5, which had sentimental value for her as she remembered being taken on outings from the village in it as a young girl.

Hervé, in thrall to the eyes,

the face, the hair, the ankles, the tout ensemble, was all for heading out to the field through the light covering of snow there and then. Clothilde, though, less easily distracted, deployed another Exocet-type look at her brother and asked the woman in for a coffee and a talk. How had she found them? *A/ors*, everyone around knew that they looked after the cars of those who had left. Clothilde did not like that 'looked after'; she preferred 'owned'.

The upshot was that the woman agreed to return the next day, when the car would have been 'made ready' for her to inspect. As soon as she had left, smiling and waving, Clothilde turned to her brother and said 'What are

you waiting for? Get yourself up to the C5 and go through it with a fine-tooth comb: there must be something hidden in it, treasure or documents. Go!'

And all through the late morning and afternoon, the old man struggled with the blue C5, first looking in the obvious places [glovebox, boot, door pockets, even the coin cubby] then in the spare wheel well and the engine compartment; having no torx screwdrivers, he relied on prising out the dashboard, various trim panels and the boot sides with a chisel; he discovered the wheel arch liners, and ripped them out; opened everything that had any aperture in it, and lots of things that didn't. By the time the sun set, he had found nothing. And to top it all, he was frozen cold, stiff and aching with cut hands and grazed forearms.

When he got back to the house, he went





## Lost and Found

straight to bed, exhausted and depressed at the fortune that he had somehow failed to find. Clothilde wasn't impressed, either, and the mug of broth she brought him in bed was delivered with a scathing 'Tut!'

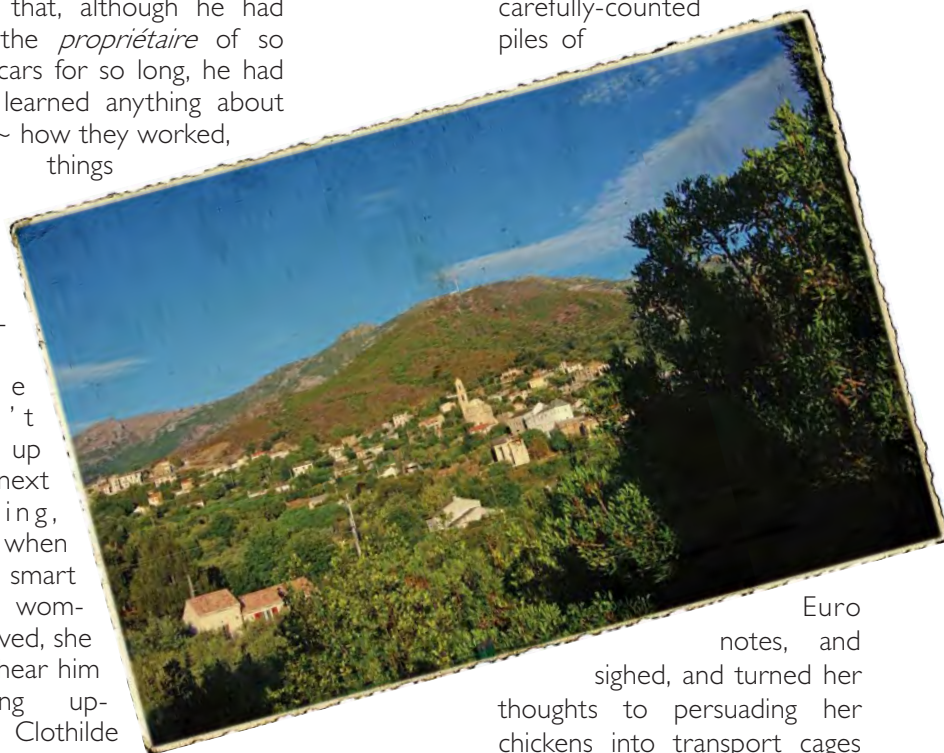
Hervé was bright enough to regret that, although he had been the *propriétaire* of so many cars for so long, he had never learned anything about them ~ how they worked, where things

were, how they were put together.

He didn't get up the next morning, and when the smart young woman arrived, she could hear him coughing upstairs. Clothilde led her out to the C5, where she quickly opened the back door, stuck her hand between the seat back and the arm rest, and extracted a small fluffy bear. 'Coco!' she cried, and turned to the older woman with shining eyes.

Hervé was buried in the village cemetery a month later;

Clothilde and Agnès were the only mourners. Before she shut up La Bergerie to move to a bungalow in Brittany, Clothilde took petrol and set fire to the C5, watching it burn with narrowed eyes. But then she remembered her brother, and the carefully-counted piles of



Euro notes, and sighed, and turned her thoughts to persuading her chickens into transport cages for the long drive to the West coast.

Quentin Cornish.

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## Totally Traction



I'm lucky enough to live close to Brooklands where this year's New Years Day Gathering was dry and well attended by a wide variety of cars. It was a good place to be and it was nice to meet a few old friends there. However, there was just one Traction ~ mine. We had to leave at midday so maybe missed later arrivals. Certainly, a DS showed up just as we were leaving.

But no matter, there at least there was one Traction for people to admire and we could look at the huge selection of everything else and make nerdy observations.

Question: apart from all being present at the Brooklands event, what does the Traction Avant have in common with the Bond Equipe, Chevrolet Corvette, Nash Metropolitan, Austin Healey Sprite and Standard 8?

Answer: they were all originally launched without opening boot lids which they lat-

er acquired later ~ although the Corvette lost it again for a while.

The earliest of these was the Traction Avant ~ both in its launch date and its acquisition of an opening boot. I don't seem to have ever taken a photo of an early Traction with no boot lid ~ at least I can't find one. So, the photo you see has been shamelessly stolen from Wikipedia and it attributed to Duke le Palois ~ Musée National de l'Automobile Mulhouse.

Would anyone buy a car now with a boot without an opening boot lid? No [maybe the Morgan is the exception?] ~ so





## Totally Traction

why was the Traction Avant not originally blessed with a boot lid? Was it the pursuit of lightness and/or cheapness? Maybe, but I suspect it was more because it was too soon to expect such a feature. Cars just didn't have integral boots.

In the 1920 a boot ~ or as Americans know it a trunk was often just that. A trunk ~ or a box ~ for stowage of muddy boots, was strapped to the back of the car body. The rear of the body was essentially upright and there was no space for luggage inside the car, behind the rear seat.

The Traction Avant was an early example of a more streamlined shape which made

space behind the rear seat. It was not obvious at that time that the rear panel should open to access it. A year of trying to access it through the back seat made it clear that an opening boot lid would be a very good thing and so in October 1935 it arrived.

The contemporary Renault Celtaquatre seems to have gone through a similar development path. While I do not have the details, it seems to have acquired a bulge at the rear, some five years before the Traction grew its big boot.

The Traction Avant must have been one of the first cars to have an integral boot, and then one of the first with an in-

tegral boot to have a boot lid.

I hesitate to make such a claim as I have done no research and have no evidence to support one. I am no historian and I am acutely aware that what is written here may well become a reference for some future researcher. I use back~issues of 'Floating Power' for my own research, as well as the internet and of course books by professional automotive historians.

A few years ago I wrote that Citroën developed swivelling headlights for the Traction Avant, twenty years before they were fitted to the DS. I referred to a real patent that was granted to a company in Paris and suggested there was link with Cit-

roën. I worry that future readers may not realise this was in an April edition of 'Citroënian' and I made up all the stuff about the Citroën link. As information becomes increasingly abundant and accessible the chance that it is accurate reduces.

We visited the Haynes Motor Museum over the Christmas break. I highly recommend a visit ~ like Brooklands there was a wide variety of cars there including one Traction Avant ~ but this time not mine. And like the Brooklands event there was also a DS and an SM. The Traction was a 1955 Normale in the usual black. The Haynes website describes it as a Light 15 IIB Normale ~ but of course





# Totally Traction

it is not a Light 15 because it is not a Slough car ~ and if it was a Slough car it would be a Big 15, not a Light 15 and not an 11B Normale. But that's me being very picky ~ except it is proliferating incorrect information.

Across the country there may be pub arguments being settled wrongly by reference to the Haynes website 'I told you it was a Light 15 ~ so it's your round'. The information posted on the sign in front of the car itself is correct though.

The car is in good condition and is representative of the model but shows a couple of opportunities for improvement. The embellishers at each of the bonnet hinge are missing which is a pity. I also noticed that the window surrounds on the offside doors have a painted woodgrain finish indicating that they came from a Slough car ~ hence the Light 15 reference? Otherwise, it's all good.

You will probably have heard of Artificial Intelligence [AI]. If you haven't you have certainly experienced it, whether with Premier Inn's or EasyJet's variable pricing, traffic light sequencing, the adverts that Facebook presents to you or using satnav on your phone.

I thought I would see if there's an AI app that could write this article ~ and there is! My son pointed me to one called GPT-3 which is found on OpenAI.com

and I asked it to write about 'the Traction Avant gearbox' ~ this is what it wrote:



*The Citroën Traction Avant was a pioneering front-wheel-drive car that was produced by the French automaker Citroën from 1934 to 1957. The Traction Avant was known for its advanced and innovative design, which included a unibody construction, independent front suspension, and a four-speed manual transmission.*

*The gearbox used in the Citroën Traction Avant was a manual transmission with four forward gears and a reverse gear. It was controlled using a traditional H-pattern gearshift, with the gears arranged in a 'H' shape on the shift lever. The gears could be selected by moving the lever up or down and from side to side. The first gear was located in the upper left position, second gear was located in the upper right position, third gear was located in the lower left position, and fourth gear was located in the lower right position. Reverse gear was located in the center position.*

*The gearbox used in the Citroën Traction Avant was a synchromesh design, which meant that it used synchronizers to allow the gears to be engaged smoothly without grinding. This*

*made it easier to shift gears, especially when driving at high speeds or under heavy load. The gearbox was also equipped with a freewheel mechanism, which allowed the car to coast when the transmission was in neutral.*

*Overall, the Citroën Traction Avant's gearbox was an important part of the car's design and helped to make it a reliable and capable vehicle. It was praised for its smooth shifting and overall performance, and remains a popular choice among classic car enthusiasts to this day.*

It's reads very credibly ~ the writing style makes you think this is a well-researched piece of work. You would be quite inclined to believe it unless you knew that the gearbox had three speeds with only two of them having synchromesh. Where did this AI app learn that

the gearbox was praised for its smooth shifting? And what's this about having a freewheel? And just how would a reverse gear located in the centre position work? And reliable?

So this app seems good at writing fiction [ask it to write you a story] but it looks like I have to keep doing the research and making things up myself until AI gets its act together.

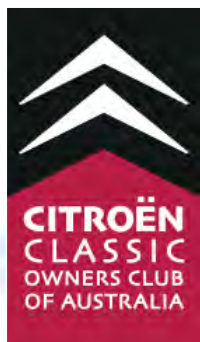
Meanwhile back in the real world we are enjoying a period of somewhat inclement weather, so I am really appreciating the wiper upgrade I made a couple of years ago. It doesn't look like the original but it works better.

Less appreciated is the failure of my indicator relay meaning I have to do the flashing by working the switch myself. Another little job to do.

Chris Bailey







# **CITROËN CLASSIC OWNERS' CLUB OF AUSTRALIA**

Australia's National Citroën Car Club