



FRONT DRIVE



Australia's National Magazine
for Citroën Owners and Enthusiasts

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

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Trucks & Tanks

Postal Address

CITROËN CLASSIC OWNERS' CLUB of AUSTRALIA Inc.

The address of the Club and this magazine is:

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The Club's website is:

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.

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

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.

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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 19:30. The venue is the Frog Hollow Reserve Rooms, Fordham Ave., Camberwell.

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Cover Image

The cover image is taken from Citroën's website: <https://business.citroen.co.uk/citroen-for-pro/van-history.html>

Contributors

Contributors to this edition of 'Front Drive' include Peter King, Max Lewis, Peter Lynch, Ian Macdermott, Giles Tabuetau and Rita Ying

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SPARE PARTS & TOOLS

Contact Lance Wearne.
Phone: 0424 054 724 [if you do phone, please do so at a reasonable hour] or 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
NSW www.citroencarclub.org.au
QLD www.citroenclubqld.org
SA www.clubcitroensa.com
WA www.citroenwa.org.au
Tas www.citroentas.org

Ed Sed

Welcome to your next edition of 'Front Drive'. No, you have not made a mistake; the last magazine you received was also 'Front Drive' and while there is normally an edition of 'démarrreur' in between each 'Front Drive' the pressure of being on holiday just got too much for me.

Back in October 2020 the edition of 'démarrreur' that was published focussed on Citroën's commercial vehicles. So, you might ask why are we there again? Trucks are not fundamentally that interesting. But that edition [which newer members can find on-line on the CCOCA website] was about Citroën and the Tour de France and the promotional vehicles that were created around that, and other, sporting events. We also looked at Citroën's now defunct truck business. This of course was 'sold' to Renault at the same time as Peugeot ac-



quired the car arm of Citroën.

This time club member Peter Lynch takes a look at FWD commercial vehicles in general: not just from Citroën. While today FWD vans are commonplace on our roads this was not always the case and some of the early players in the field may surprise you. Care for a Lancia or an Alfa Romeo equivalent of a HiAce van? In the 1940s, '50s and '60s that was very possible.

Arguably of a more prosaic nature are the multitude of post-War German examples: brands which have since been subsumed into Mercedes, VW or simply disappeared.

Many of you will be unaware that Citroën supplied gear sets for the rudders for the White Star Line and these were installed on Olympic, Britannic and Titanic. I hope to bring you more on that in a future edition.

But did you know as well that in the lead-up to World War II Citroën designed and built tanks for the French and other international armies? You can read about that venture on page 30.

For the truly technical amongst you there is a fascinating article about the engineering design intricacies of the Citroën/NSU rotary engine. Noted engineer Peter King has penned this especially for CCOCA and concludes by noting 'With [its]

Continued on page 6

Prez Sez

Dear Members,
I want to thank and congratulate Leigh [and Philip] for maintaining services to us while undertaking their European sojourn. This edition of Front Drive has offerings that delve into Citroën's fascinating historic technical innovation ~ from their development of tanks to the creation of the market for small, front-wheel drive commercial vehicles, to the incredible GS Birotor. It's an engaging read that cleverly brings together what is profound about our Marque ~ it's origins so influential and significant in human experience. There is so much in the issue to reflect upon and enjoy.

On the subject of human endeavour, I have been amazed at all the images coming through on Facebook from the 2CV Raid. With ingenuity and adventure they made it to the top and will be nearly home by the time you read this. There will be many stories to share. This trip has made me reflect upon the early history of Citroën in Australia and how significant the marque is in our automotive story. Well done to this fun-loving yet intrepid troupe.

Unfortunately, I was unable to attend our Bastille Day celebrations at Sorrento due to contracting COVID that week [since well-recovered]. Reports

suggest a great time was shared and thank you to Marg Towt and Peter Moloney for a great event.

I'm pleased to have purchased Ted Cross's '67 DS 21M Pallas. After a bit of fettling I have the RWC and am loving driving it. I have been very keen to get back into a D and my restoration of a '57 Slough DS 19 is taking a long time ~ so I went for this amazing '67 in the meantime. I had actually owned this car for several years in the late-'90s having purchased it from a club member. It was very exciting at the time but I had too much on to begin the restoration. Good to have it back!

Enjoy the read all, and hope to see you at an event sometime soon.

Tim Cottrell ~ President



Ed Sed

Continued from page 4

design deficiencies, it is truly amazing that the Wankel engine has been made to work as well as it has. But that makes the Citroën GS Birotor more of a classic car to treasure'. Catch his highly technical feature on page 58.

We also have the promised third article based on our 'Garage' survey from the start of the year. This one is about which Citroën was the most important model of the 20th century. While the final answer will probably not surprise you, there are some interesting detours along the way. And finally we share with you the news of the passing of an-

other star in the Citroën pantheon. Fabien Sabatès died on June 1 this year. Read about his legacy on page 23

Enjoy!

Leigh F Miles ~ Editor.

PS: And finally, an apology. This edition of 'Front Drive' should have been with you on August 8. Unfortunately, the theft of British Telecom's copper cable in the area on July 29 left us, and half the village, without either a phone line or internet [and we have no mobile phone coverage here either] for two weeks.

The next edition is due after we return to Melbourne. Fingers crossed for an on-time 'démarréur'

A-Tractions

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

• September

Ted's 2CV Technical Day

WHEN: Saturday, 10 September

TIME: 10:00

WHERE: Ted Cross's Factory,
5/513 Hammond Rd.,
Dandenong South

COST: Free

BOOKINGS: Essential by
Saturday, 3 September

BRING: Your questions and
expertise



MORE INFO: Ted Cross,
0400 592 208

Servicing & Technical Tips Day
for 2CVs and Derivatives

Do you want to know how to
service your car or need more
knowledge about its mechanical
workings, then this gathering is
for you?

A light lunch will be provided as
well.

Visit to The Healey Factory

WHEN: Wednesday, 14 Sep-
tember

TIME: 19:00 to 21:20

WHERE: The Healey Factory,
646 Whitehorse Rd,

Maroondah H'way, Mitcham

COST: Free

BOOKINGS: Essential by 31
August

MORE INFO: Peter Moloney,
0438 286 181

peterm@crosstrees.com.au

The Healey factory has once
again invited us to attend their
workshop.

This has always been a great
experience, with their special-
ists staying back for the evening
to show us all stages of the res-
toration process. There is a lot
to learn, whether you are doing
a restoration yourself, or if you
are having one done by others
and want to effectively super-
vise the quality of the work and

know what questions to ask.
While they specialise in Austin
Healey, last time I was there I
saw other makes undergoing
the process including a very
rare Facel Vega.

If you would like to come along,
and we encourage you to do so,
please register your attendance
at the CCOCA website.

If you have friends who are also
motor enthusiasts, you are wel-
come to bring them along. You
will need to Register them as
well as yourself.

As numbers are somewhat
limited, early registration is
encouraged. Tea coffee and bis-
cuits provided. Looking forward
to seeing you and your friends
there.

Peter Moloney President CCOCA

Lancefield Day Run & Pub Lunch

WHEN: Saturday, 24 September

TIME: 9:00am

FROM: Plane viewing site,
northern end of Tullamarine



A-Tractions

TO: Lancefield
 COST: Market purchases and
 pub lunch
 BOOKINGS: Essential by
 Saturday, 17 September
 FURTHER INFO:
 Ian MacDermott,
 0419 362 375
treasurer@citroenclassic.org.au



DIFFERENT PEOPLE, DIFFERENT CARS!

We will be joined by members of the BMC Leyland Club at this event. This idea for a shared event is based on the well-supported 'Battle of Waterloo' held annually in Canberra by English and French car clubs. Lancefield is about 70km from Melbourne and centrally located for plenty of our regional Victorian members. Perfect for a day run! Our first destination will be Riddells Creek for a coffee then on to the Lancefield Farmer's Market, held under shady trees along the plantation strip of Main St. You can stock up on locally grown spuds, vegies, organic meat, fresh honey,

and olives while listening to great live music. Afterwards we will adjourn to the Lancefield Hotel for a meal in their well-regarded dining room. DO NOT CALL IAN TO REGISTER! You must register/book via the CCOCA website <https://citroenclassic.org.au>

• October

Australian National Show & Shine ~ Euroa

WHEN: Sunday, 2 October
 TIME: 08:00 to 15:00
 WHERE: Seven Creeks Park,
 Euroa
 COST: Show cars \$10, inc



CCOCA members
 John and Jenny
 Grieve attended
 the 2015 National
 Show & Shine
 at Euroa.

driver, general public \$5pp,
 under 16 free
 BOOKINGS: On line booking
 essential
 MORE INFO: www.australian-nationalshowandshine.com.au/

After two years of disappointing COVID-caused cancellations of the annual event, the Australian National Show and Shine is back with plans to be bigger and better than the last event in 2019.

A picnic atmosphere in the beautiful Euroa streets and parks. Over 70 trophies will be awarded. Unique and exceptional vehicles from all eras including cars, motorbikes, trucks, tractors and engines. Food and drink stalls. Miniature train rides, jumping castle, petting zoo for children. Horse & cart rides, market and many more attractions.

Tickets available on line www.ticketebo.com.au/euroa_anss

Motorclassica Reimagined

WHEN: Friday, 7 to Sunday, 9
 October
 TIME: TBC
 WHERE: Royal Exhibition
 Building, Carlton Gardens, 9
 Nicholson St., Melbourne
 COST: TBC
 BOOKINGS: TBC
 MORE INFO:

www.motorclassica.com.au/

For over a decade, Motorclassica has been Australia's true festival of motoring, capturing

CCOCA members
 John and Jenny
 Grieve also attended 2019 Motorclassica where they won the trophy in the Post-War Classic Closed class.



the imagination of a city with a range of events and attractions. Motorclassica brings together a community of more than 20,000 enthusiasts. What all our visitors have in common is their passion for the automobile and an appreciation of the motoring lifestyle. At the time of preparing this edition of 'Front Drive' there was very little detail about this event available on their website.

A-Tractions

Early Warning

• March 2023

*CitIn 2023 ~
Murray Bridge, SA*

2CV 75th
Anniversary
1948
2023



WHEN:
Friday, 17
to Monday, 20 March,
2023

WHERE: Murray Bridge, SA

COST: TBA

BOOKINGS: Essential

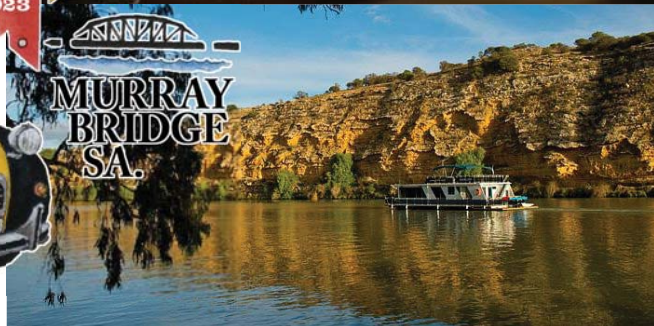
BRING: Everything for a long
weekend away

MORE INFO: Greg Moorhouse
0499 600 841

gmoo3419@bigpond.net.au

The rivers, the lakes, the Co-orong, the wineries, Monarto Zoo, the Bend, the clear night skies; the bustling rural town of Murray Bridge and its surroundings are well worth exploring.

The new Bridgeport Hotel in the centre of town, overlooking the mighty River Murray will be the event's hub.



Our CITIN Committee has been hard at work planning a diverse range of activities that are sure to keep you entertained!

COVID-willing, this 54th gathering of combined Australian Citroën Car Clubs will commemorate 75 years since the 2CV was launched in 1948 and continued in production until 1990 with more than 3.8 million 2CVs produced.

VENUE & ACCOMMODATION
Bridgeport Hotel rooms will be held for CITIN registrants who book before Christmas in 2022. To book, phone [08] 8532 2002. A selection of alternative op-

tions including motels, b&bs and caravan parks will be publicised shortly.

Remember, securing accommodation is your responsibility.

PROGRAMME

- Friday, 17 March
Registration, welcome supper and general conviviality and camaraderie.
- Saturday, 18 March
Show and Shine by the river: motorkhana, informal dinner.
- Sunday, 19 March
Observation run, visit to Monarto Zoo, formal dinner and presentations.
- Monday, 20 March
Bon voyage breakfast.

POST CITIN RUN

Join us for 'The River Run', a leisurely Journey from Goolwa along the 'Mighty Murray Way' to Renmark and beyond, visiting and staying in selected Riverland towns well before the Easter rush on April 7.

Chit Chat Tuesday

WHEN: 1st Tuesday
6 September,
4 October,
1 November

TIME: 10:00am

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, plenty of parking, under-cover seating if the weather is wet. This is a low key 'DIY' event for like minded Citroën owners to meet and chat.



Book Review: *SM Citroën's Supercar*

Hello folks. I have picked a book on this iconic model 'SM Citroën's Maserati-engineered Supercar' by Brian Long and Philippe Claverol from my library as it looked like a good book to write about.

Over the last day or so... mainly at night as I don't sleep so well and I have time to cogitate in peace, I thought I would write something about this model.

So... in my view, the man responsible for this most desirable Citroën was Citroën himself.

A long bow or stretch but stick with me and you will see how I came to this conclusion.

As you know André Citroën started in the automobile business in 1919 a bit later than others... Ford, Austin, Morris, Renault, Mercedes to name just a few.

Prior to World War I Andre had been in the motor car manufacturing business for a while working for other companies: Mors for one and he must have seen once the war was over and peace once more beckoning, the need to build automobiles with a distinct purpose in mind.

The need to make money was not the sole purpose rather André Citroën realised a need to manufacture small, well-engineered [for the time] cars that would be mass produced and thus put France and the world

on four good reliable wheels.

A social experiment if ever there was one.

Citroën did not produce large exotic models for the wealthy nor the well to do rather for those who would be attracted by a low priced reliable automobile to replace the horse and cart.

He saw that in the future [and I am sure Citroën looked way into the future as if he had a crystal ball!!!] mass produced affordable automobiles was the way to go.

The very early cars with timber braced bodies soon gave way to an all steel body [tout acier] through the C-Series, Rosalies and thence to the most revolutionary model of the times... the Traction Avant.

Now you all know what a giant leap this was into an efficient, affordable, safe and reliable model this was [once the bugs had been sorted] but it was the end for André Citroën as he passed away just after the Traction appeared.

What has this got to do with the SM... well read on.

André left an indelible mark on his car company with his heart and soul becoming a unique journey with the assistance of his loyal acolytes demonstrated with the 2CV and thence the DS/ID family.

This series of cars like that of

the Traction shattered all other car makers with this astonishingly futuristic design leaving in its wake mostly sit up and beg cast iron mobile scrap yards.

It was during this time that the SM was dreamed up and shapes were played with and eventually prototypes and production units left the factory.

Yes, I have left the best to last.

Where was Citroën going to get a half decent engine to compliment what the Citroën car maker saw as the need to produce a gran routier.

At around this time a certain Italian marque was in financial troubles and Citroën purchased the Maserati concern... possibly just to get its hands on the dinky 2.7-litre 6-cylinder engine.

The capacity of 2.7 litres was

just the right size as over this figure the French tax/registration figure went very expensive and yet a 3-litre version did appear with just over 1,600 examples.

The marriage to Maserati did not last that long.

André's far reaching embrace of the weird and wonderful was residing just beneath the surface of all at Citroën [well almost all as some management bigwigs were not that impressed and were to set the fuse and light it to end the SM journey later on] and that is how I see the stretch or long bow!!

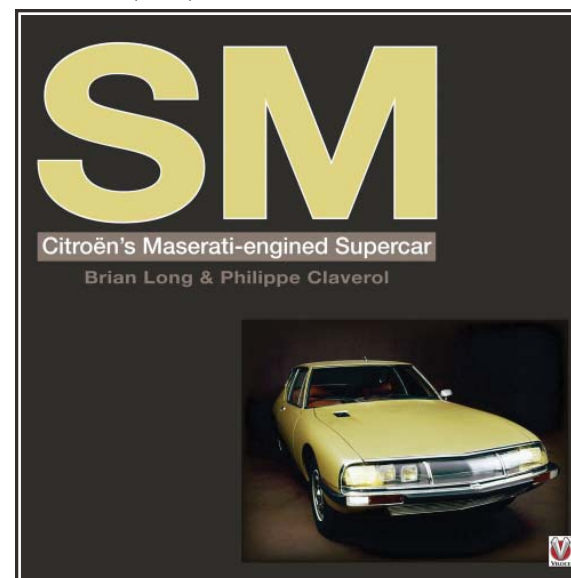
The book is mostly meant for the coffee table as a pictorial tour de force but light on the heart and soul.

The SM saw just 12,920 examples built. A far cry from what was thought to be a production run of a considerably greater figure.

The SM came as a 2-door gran routier, a presidential car, a four door example, a topless model and road and rallye race cars [with a not too small a clutch of victories].

The end came mainly with the 1973 fuel crises [this is where OPEC saw it could hold the world in its vice like grip on the short and curlies of the Automobile world] from a series of middle eastern military conflagrations and thus consigned the SM to history. Vale SM.

Max Lewis ~ Librarian



Recent Doings: OzTraction '22



Finally... fourth time lucky! All of Lee's frustrations battling COVID-induced cancellations, and all her hard work organising our first OzTraction gathering since 2019 came to a finale on a cold and slightly damp June long weekend.

It was a well-attended event with 42 participants, and one of the best roll-ups of Traction for quite some time. Particularly welcome were new members Joe and Bev Wilson, and Andrew Nielsen and Jo Robinson. Both couples have recently become Traction owners. Joe and Bev were using OzTraction as the halfway point of a long distance drive from Brisbane to Victoria in their magnificent pre-war Traction cabriolet. Unfortunately, Andrew and Jo's attractive IIBL has some gearbox problems, so we'll have to wait for another occasion to see the car, no doubt with a big smile on the face of the driver when he gets it sorted.

Other long-distance travellers included Loui and Helen Burke, who came from Adelaide in their Traction. And OzTraction

Just three of the nine Traction that were at OzTraction 2022. Top to bottom: Joe and Bev Wilson's pre-War cabriolet, Loui and Helen Burke's Light 15 and Mike Neil's IIBL. You can read all about Loui and Helen's car in 'Front Drive' Volume 36, No 6 [Nov/Dec, 2012]

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Recent Doings: OzTraction '22



provided the opportunity for Mike Neil to give his recently-restored IIBL a decent [and successful] outing on country roads.

Lee and Graeme provided people coming from Melbourne with some quieter routes to Bairnsdale on country roads much more agreeable for aging vehicles, and perhaps for aging people, than the option of thundering down the Princes Highway.

Saturday began with a photo shoot near the hotel where most people were staying. Even though it was only about half a kilometre away, there were enough Citroëns driving around the local streets looking lost that doubts were raised about the chances of the whole party arriving at the right places at the right times for the rest of the weekend.

As usual, members of the public saw the collection: nine Tractions, three 2CVs, and a number of newer Citroëns and stopped in for a chat. It continues to surprise how many people have fond memories of Citroëns which their family once had, even though they no longer have one.

The day progressed with a leisurely drive to Metung for a

Yet more Tractions! This selection is owned by Mark McKibbin, Len Jenkins and Ian and Cathy Macdermott.



wander around the farmers' market and a cup of coffee. Not so leisurely was the wind whipping in off the lake, and encouraging members to quickly head indoors. With most people taking only a cursory walk around the market, the poor farmers probably remained poor. Such is life on the land.

Then it was on to Lakes Entrance for a quick lunch, and then a cruise on the lakes. Somehow the wind died down a bit and the trip was remarkably calm. Unsurprisingly, in spite of the unbelievable amount of housing and boats that we went past, there were very few people out of doors on a cold and gusty afternoon.

Dinner on Saturday night at the Grand Terminus Hotel was a noisy affair, providing members with a chance to get to know each other better, or to catch up with old friends.

Sunday morning's observation run was organized by local members Rob Barton and John Deed, both of whom were unfortunately unable to participate. Once again, the few people out and about were treated to the sight of Citroëns driving in opposite directions on the same

But wait, there were also 2CVs to be seen as well. Top to bottom these were in hands of Helen and Ted Cross, Marg and Barb Towt and Graeme and Lee Dennes.



Recent Doings: OzTraction '22



stretch of country road, and they must have wondered if one or both were lost. Fortunately everyone turned up for lunch at the Bullant Brewery in Bruthen. No-one, however, seemed to know the answer to the question about the Goon Nure Grot. That will have to remain a mystery unless Rob or John chooses to come clean about it.

After lunch the party returned to Bairnsdale via Rob's farm, where we were treated to a demonstration of his marvelous collection of bulldozers. This included firing up the fabulous Caterpillar D7, which Wikipedia describes as a medium

This page: Local identity Rob Barton was there showing his Big 6. The sole DS was piloted by Brian and Elvira Smart. But the whole show was stolen by Rob Barton's D7 Caterpillar bulldozer. Drive it anywhere. Who is going to stop you? Facing page: Dinner on Saturday night at the Grand Terminus Hotel was a noisy affair. Prizes were awarded at dinner on Sunday. Clockwise from upper left: Joe and Bev Wilson [Longest Distance Travelled], Marg and Barb Townt [Iain Mackerras Memorial Trophy], Ted and Helen Cross [Hard Luck] and of course it was the opportunity for the 'Madelines' to thank the organiser, Lee Dennes.



Recent Doings: OzTraction '22

sized bulldozer. One can only wonder what a big one is like! This particular beast has a petrol engine to warm up and then start the diesel engine, before it gets going properly.

On the day it turned out to be a two-person job to coordinate the starting, before it belatedly came into life. It's a good thing there is some space between Rob and his neighbours.

Sunday night's dinner at the RSL was another high-decibel affair. Awards for the weekend were:

- Greatest Distance Travelled: Joe and Bev Wilson
- Observation Run & Iain Mackerras Memorial Trophy: Barb and Marg Towt, with a score of just 16 out of 24! [Is CCOCA a wandering advertisement for Specsavers?]
- People's Favourite: Joe and Bev Wilson

GSS in the Dordogne

Part of Philip and my time overseas, as you are aware has been spent in France. Indeed in the last edition of 'Front Drive' I shared our tail of woe regarding our twice broken-down C4 Picasso.

But other experiences were far more positive. The last major stop on our six-week French trip was a multi-day stay near Beynac-et-Cazenac which sits

- Hard Luck Award: Ted and Helen Cross ~ worthy winners, indeed.

Ted could have been given the award for all the work he put into trying to get his Normale running properly in the days before OzTraction, before surrendering and coming in a 2CV. But being so distracted that he forgot to put fuel in the 2CV was enough for the judges to make their decision.

All in all, it was a great weekend. All we need now is for a member to volunteer to organize OzTraction 2023. And if anyone is wondering about attending next year, remember OzTraction is an event for all CCOCA members, regardless of which car you choose to arrive in.

Ian Macdermott wrote the words and he and Rita Ying supplied the pictures.

on the banks of the Dordogne River. For centuries the river marked the border between French France and English France.

Remember for centuries the Kings of England controlled more of France than did the Kings of France. This is, apparently, the reason the Kings of France were often referred to as the French Kings.

But that is by the way.



GSs in the Dordogne

In addition to having been strategically very important... numerous castles still tower over the river... it is also a very attractive tourist destination. It has been popular with British tourists for decades and many an ex-pat Englishman calls the Dordogne home.

Of course, Brexit is having rather an impact on these ex-pats as, unless they take out French citizenship they must abide by the same rules as we do as Australians. They can only stay in their French homes for 90 days in any 180 days. Suddenly the appeal of French home ownership looks less desirable.

But none of this is the reason for this little article.

One day as we were driving around I spied a Citroën GS. This was a rarity. Over our time in France we did not see many 'oldtimers' or indeed 'youngtimers' on the road. I do not recall seeing a Traction, but we did see a DS, a CX and a couple of XMs and BXs, although none were Series I examples. Even Series I C5s were thin on the ground.

Of course, Philip and I had

seen Alan Brown's very early GSA, but that was it.

As we headed out of town I realised that there was not just a sole GS, there was a pair of them and a GSA and they were in the company of a CX!

While Philip humours me in my love of cars in general and Citroëns in particular, neither my brother or his wife [with whom we were travelling] have more than a passing interest in cars.

But despite their apparent lack of enthusiasm I determined that in the hope

this group of GSs was to make another stop soon, I was keen to follow them.

There were no groans from the back seat, so I took that as a ringing endorsement of my proposal. Indeed, it being a car club outing their subsequent stop was not that far away and I pulled into the carpark where they had placed themselves.

Their English was poorer than my French but I think they grasped the fact that we are the owners of a GSA in Australia. I was so in awe I totally omitted to tell them we also have a Birotor. Never mind.



Vale Fabien Sabatès: 25/9/51~1/6/22

We recently lost a big figure in the big wide world of Citroën. That remarkable French authority on all things chevronic, Fabien Sabatès, died aged 71 on June 1 in Thailand, where he had been living for the last 14 years. If you have any kind of decent Citroën library, then there is a fair chance his name will be on the spine of at least several of those books. He was also the man behind the Citropolis and Planete 2CV magazines, the reason behind those essential excursions into the local tabac or hypermarché on your French holidays.

Possessed of a reputation for single-minded ruthlessness which did not endear him to his peers, he had literally dozens of books to his credit ~ and not all Citroën related. He wrote with great authority about most of the grand marques: Alfa Romeo, BMW, Bugatti, Ferrari, Jaguar, Lamborghini, Mercedes Benz, Porsche, Rolls

Royce, and Simca to name but a few, along with a tribute to American Cars [Les Voitures Américaines de 1940 à 1950].

His last work was an update on his biography about the great maestro Bertoni.

His early years were spent sitting in the front of his uncle's Citroën 15CV. His first important gift was a 'Juni-Boy' ~ a square box camera which allowed him from the age of ten to learn about artistic framing. Being a 2CV enthusiast he participated in a raid to China for 2½ months.

Fabien was appreciative of French culture and wrote fascinating books on Maurice Chevallier and the construction of the Eiffel Tower [to name just two].

Suffice to say that there will never be another author who will pursue publishing in the manner that Fabien did. His accomplishments have earned the greatest respect of not only those in the Citroën community, but throughout the automotive world.



A Girl for Me

I'm pinching myself even as I type this. I cannot believe this has all happened! What you are about to read is ~ hopefully ~ concrete evidence that hard work pays off, dreams come true, and that you can in fact repeat the past, if you so wish...

My Grandma's Berlingo

I am 17 years old, and I live in a one-horse town, called Grimsby. I'm going to try and explain how I chased one of my childhood dreams ~ owning the 2002 Citroën Berlingo, that was my grandmother's, before she passed away in 2014. I closely link this car with her, as some of my fondest memories are of us driving around in it, listening to the same Irish cas-

sette tape, winding my mother up with the same boring songs ~ day in, day out. Together, we were a force to be reckoned with: making loads of money at car boot sales, going out for something to eat and entertaining ourselves, when I wasn't in school. No matter the activity, we always had the right car for the job ~ the practical Berlingo!

It's a 52-plate Berlingo Multi-space, with a greedy 2 litre HDi engine, 5 seats, and all the beautiful quirks of the old Berlingos that [in my mind at least] made them beautiful. Wind-down windows ~ in the noughties! ~ as well as cassette player, no air conditioning, and rear seats that fold entirely down to convert the car into a van in a matter of seconds!

It wasn't immaculate when my grandma had it. The front passenger door had to be locked and unlocked separately [a common fault], and it had its fair share of scratches. One day at a car boot sale, a bratty little girl engraved her initials into the side of the car ~ understandably, we were both furious! The mother wasn't interested [which says everything]... and my grandad's attempts to cover them up were in vain, so they stayed.

'My' Berlingo Had To Go

Berlingo wasn't perfect even in my memories, but it meant so much to my grandma and me. She referred to it as 'George's

car', promising that one day the car would be mine. But the MoTs got expensive in 2012 and 2013, then my grandma passed away in 2014, taking the whole family by surprise. Nonetheless, my grandad kept the car for three more years, but when I found out he was selling the car in 2017, I was distraught...

For years, he had spoken of buying a Mercedes, and sold 'my' Berlingo in exchange for a Merc. In hindsight, I don't blame him ~ he wanted to start a new adventure, and I wasn't old enough to drive at the time. The car's interior had deteriorated, as it became a dog-walking commodity. One of my final memories in the car had been a road trip to Mablethorpe in 2017, and the Berlingo was covered in dog hairs and smelt awful. It had become a shadow of its former self, so, maybe, it is good that it went when it did.

A Cherished Family Member

Non-car people ~ as Jeremy Clarkson once explained ~ do not see cars as anything more than a machine that gets us from A to B. However, to us, car people, they are more than that. They're friends, family; we get to know them, understand them, and work with them to travel wherever we need to go. We laugh in them, cry in them, and we fight to keep them alive and keep their engines ticking. Cars also carry the history of

your family with them ~ and my Berlingo is no different. That Berlingo has so many stories of now-gone family members, and if that doesn't make the car a significant part of our family, then I haven't a clue what does!

Must Look For It

For five years, I dreamt of buying that Berlingo back. I kept checking the MoT status online, giving a huge sigh of relief when it passed its MoT. Then, this January, I started a hunt to take me back to the car of my dreams.

In January 2022, I asked my grandad if he happened to have the phone number of the person, who bought the Berlingo back in 2017. He didn't, but told me that a 'young farmer boy from out of town' had bought it



A Girl for Me

~ my mother thought it would probably 'be trashed, if it's been living on a farm for years'. I had a tough choice to make: leave the memories alone, or continue trying to find the Berlingo and put my mind to ease. I chose option two, so I put a post on a Facebook page named 'Cars you don't see anymore', with a photograph, asking if anybody could give advice on how to contact the owner. Somebody recommended DVLA [Driver and Vehicle Licensing Agency], but they wouldn't give confidential information just based on sentimental grounds. Someone suggested finding the VIN, and asking a mechanic for the location of the last MoT. That didn't work either, with the test number needed. I was about to give up, when somebody suggested the Citroën Car Club. I wasn't convinced that they would be of any use, but club members helped me put the pieces of the puzzle together.

Getting Close

I reluctantly made a post on the club's Facebook page, again with a photograph of the car. Within a couple of hours, somebody replied to say that he had seen it driving around, about half an hour outside Grimsby. This was the adrenaline shot I needed. The Berlingo was close to home.

My friend, Tyler, and I went out, searching villages close to

where the car had been seen. We checked every driveway, every back street, and every public car park ~ to no avail. I was close to giving up, when I saw ...a silver Berlingo ~ no, up close it was a 51-plate Peugeot Partner! The search felt hopeless and I felt like throwing in the towel. But how far away could it have been?

My mentality changed slightly. If the car was in the area, why not call garages and enquire about it? One of them must've taken it in for a service or MoT? I phoned around 27 garages, until final garage told me where it had been serviced for the last five years. I called the garage that had seen it last, and they agreed to pass on my details to the owner.

A few text messages went back and forth, and, eventually, we set a date for me to come and view the car. My heart was racing. Months of work and conflicting mindsets finally paid off. As we got nearer to the destination, I began shaking like a leaf ~ and I am normally a confident person. [I even went on Britain's Got Talent, doing stand-up comedy, in 2016 ~ at 11 years old. That tells you everything!]

Found It!

We arrived at the destination, with a large bush blocking our view into the driveway. I told Tyler, 'I'm closing my eyes. If it looks like a shed, let me know

and we will drive away to leave the memories alone'. A few moments, and he concluded 'Eh, it looks okay, I think. Come on, take a look!'

We walked into the driveway, and my heart sank. It looked like my car, a bit more dilapidated, but my car, nonetheless. She was missing a couple of wheel trims, had a few new scratches tattooed on the body, and it seemed physically smaller, than I remembered. The car still boasted the original number plates, the original dealer sticker, and a logo for the local hospice [I have been an ambassador for them for almost ten years]. The remnants of the past were still there for all to see.

I soon found my confidence and began reminiscing with the owner about some of my fondest memories of the car.

After a while, we went for a test drive... I hadn't yet received my provisional driving licence, so it was down to Tyler to get a feel for what condition it was in. Since passing his test last year, he has been the proud owner of a Peugeot 107 and a C3 Picasso. With an even deeper interest in cars than me, I trusted his verdict, so I was slightly concerned when he flagged up a judder and gear shifts being difficult on a couple of occasions. But, after one more look around the car, I shook the owner's hand and went home.

As well as all the previous issues, the Berlingo needed some of the material in the front doors stitching up, as well as replacing the material covering the gear stick. I soon found out she also wanted a new stereo, because the tape deck was stuck permanently on fast forward.

However, I had come too far to turn around and leave 'my' car in the ownership of someone else. If I didn't buy it, and it was off the road in two years, I would regret it. Before leaving, I took the plunge and agreed a price that justified the owner buying a replacement.

Tyler was furious ~ the price was way too high for such a shed. But it wasn't any old shed ~ or any old Berlingo. It was my grandma's car. It was meant to be my car. I wasn't going to leave it to the scrap men in the near future.

Homecoming

Two weeks later, my mum was reflecting on the times she would be at work in her hair salon, and look up to see a silver Berlingo parking across the street, with my grandmother and me in it. Now, here we were again ~ the clock struck six o'clock, mum was sweeping up the salon, and I stood eagerly in the doorway, looking left and right. We both saw a silver Berlingo pull up across the street. The owner got out, log book in hand, and made their

A Girl for Me

way over to us.

Half an hour later, the car was legally mine. Taxed, insured, paid for.

I crossed the road and sat in the driver's seat, mum next to me. I played a song called *Smoke Along The Track*, our favourite from grandma's cassette tape from years before. I put my hands on the steering wheel, and I cried. I was lost in the moment. My mother's words still give me goose bumps now, a fortnight later. 'That's it. You've done it. It's your car.'

We took the car to see my grandad that same night, and he was gob-smacked I had managed to trace it down. We have taken it on runs out to Mablethorpe, and we plan to take it on one final car boot sale to de-clutter, and to engage again in an activity that my grandma and I adored.

I have ordered a new set of wheel trims for the car, and I've bought a new cassette player to play tapes on the go. What can I say? I'm a sucker for nostalgia. Last night I came home to a gift from my grandad ~ a copy of the tape we used to play in the Berlingo, when I was younger.

I have the car of my dreams, and I have the chance to hear that tape once again. I know every song on it.

My Girl 'Cynthia'

I'd like to take this opportunity to thank everybody on the

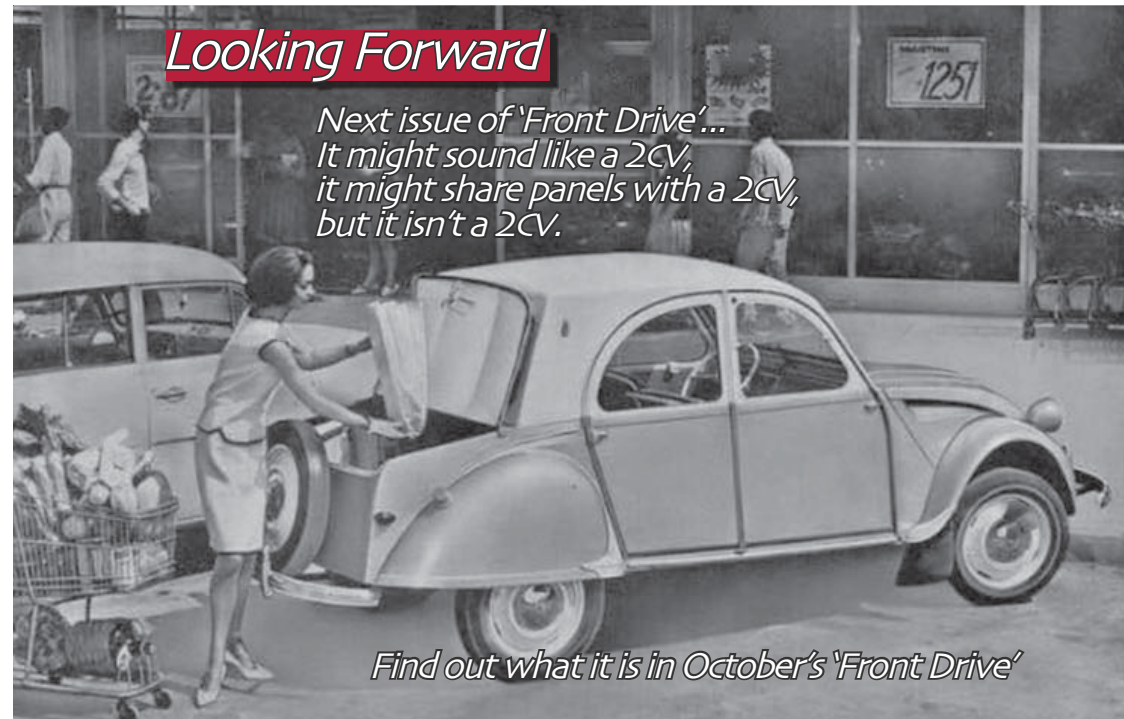
club's Facebook group for their continued love and support. I'll continue to post updates on Cynthia there! I keep in touch with the previous owner about the car, and how I am making every effort to preserve it for years to come. You heard me correctly ~ 'Cynthia' was the name given to the Berlingo by the former owner. It's a part of the car's history now, so I'm keeping it. In the words of an old Irish song: 'Horse it into ya, Cynthia, 'cos you're the girl for me'.

This article was written by James Kavanagh and first appeared on the Facebook page of the Citroën Car Club of the UK. It subsequently appeared in their magazine 'Citroënian' and may not be reproduced elsewhere without the permission of the CCCUK.



Looking Forward

*Next issue of 'Front Drive'...
It might sound like a 2CV,
it might share panels with a 2CV,
but it isn't a 2CV.*



Find out what it is in October's 'Front Drive'

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Making Tracks

*The little-known history
of Citroën's interwar
armoured vehicle
projects*

The 1920s were a period of rapid development in the design of military vehicles. Sig-

nificant amongst the new types emerging was the half-track.

Credit for this invention goes to Adolphe Kégresse who had managed the Czar of Russia's transport fleet prior to the Revolution of 1917. In 1910, Kégresse had perfected a track to replace the rear wheels of

AMC Schneider P16



Kégresse motor cars and trailers in use by the French Army in the 1920s



the Czar's cars, in order to give better traction in the snow.

When Kégresse returned to France in 1919, he was hired by André Citroën in Paris. The entrepreneurial Citroën was impressed with the Kégresse half-track mechanism, which he soon fitted to some of his motor cars. In essence, the Kégresse track was a rubber band stretched around two guide wheels, with a small sprung bogie to spread the load. In the winter of 1922-23 Citroën equipped a motor car expedition across the Sahara to prove the cross-country capability of his Kégresse vehicles. The ensuing publicity led to military orders, notably from the US and UK armies, as well as, understandably France's own army.

The British used their Citroëns mainly as artillery staff cars, the Americans as light artillery tractors, while the French used them as gun tractors, troop carriers and recov-

ery vehicles. In military applications, the Kégresse track system was developed further; it consisted of tracks that, as opposed to a tank's separate, metal interlocking links, were instead constructed in a unitary, flexible rubber and fabric belt ~ this time more robust and embedded with metal plates. All enjoyed a cross-country ability which was beyond most wheeled trucks of the time. The broader story of Citroën's Kégresse cars and their expeditions abroad is available elsewhere; here we shall concentrate on Citroën's foray into the rapidly changing world of armoured fighting vehicles.

The P16

As has been said, many civilian half-tracks found their way into military service, but in 1924 Citroën developed a small armoured half-track, derived from the earlier Citroën-Kégresse Modèle 1923. It was to become the P16. The French Army had never really regarded these home grown offerings as suitable for front line duties until, eventually in 1931, and to give its official designation, the AMC Schneider P16 [aka M29] ~ for which Citroën eventually only provided the chassis ~ was accepted into French military service. Out of an initial order of 100 only a relative handful were still in service by 1939.

When the Germans invaded

Making Tracks

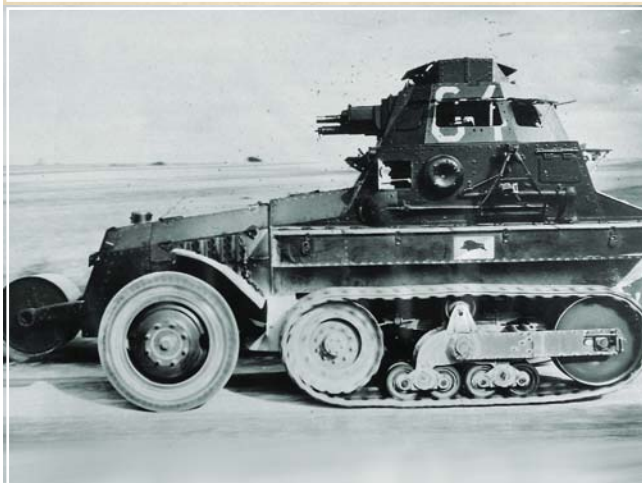
in 1940, on 14 May two valiant P16s of 1^{er} GRDI [Groupes de Reconnaissance de Division d'Infanterie] were crucial in the retaking Haut-le-Wastia from the Germany 5th Panzer Division's infantry, before withdrawing to avoid being cut off.

The Armistice saw the remaining eleven or so P16s ending their days with Vichy French units in Algiers [the Germans themselves did not press any captured P16s into service]. No P16s are known to survive.

The P28

In 1931 Citroën had also proposed the P28 Chenillette. In response to a request [the 'Type N' programme] from the French infantry, this was a hastily modified version of another Kégresse tractor, intended to be used as a turretless mortar/ammunition carrier. Three P28 tractor prototypes were produced and tested in the summer of 1931, but they did not provide satisfactory results and were not accepted by the infantry.

However, the rejection of the P28 as an infantry tractor did not stop development of the vehicle. While it was a programme initiated and conducted by the infantry, the Type N vehicles quickly attracted interest from the French cavalry, as they were very light and relatively mobile. The cavalry developed the concept of the Au-



Clockwise from top left:
P28 prototype with Schneider turret and 37mm gun.

P28 prototype with rectangular turret and machine gun.

The P28 Chenillette.

A P16 at speed, 18^e Dragoon Rgt. 1940.

tomitraileuse légère de contact [Light Contact Armoured Car].

The rôle required an only minimally armoured and armed vehicle suitable for reconnaissance missions. Although outwardly



it appeared similar to the P16, two examples of the new P28 were presented, each modified by Citroën in late 1931.

Two different turrets were experimented with. One, manufactured by the firm Schneider, was cylindrical in shape and apparently mounted a 37mm main gun, similar to the gun-armed Renault FT tanks. The other proposal featured a more rectangular-shaped turret armed with a single 7.5mm machine-

gun. As merely demonstration mock ups, these never progressed further but were sufficient to persuade the French cavalry to place an order for 50 of the armoured cars.

The P28 design which entered cavalry service in 1932 appears to have skipped the prototype stage entirely. The two first production vehicles were tested in July of 1932; one was given a 6-cylinder 2,400cc engine with an output of 41.3kw/55hp, and the other a 6-cylinder 3,020cc engine with an output of 50.3kW/67hp.

This later engine was finally chosen as the definitive one for the production P28. Although some technical issues emerged in the first months of the P28's introduction, the vehicle finally entered regular service with the French cavalry in April of 1933. Armament was the 7.5mm MAC 31 machine gun but it appears most were unarmed, being used primarily for crew training.

With a length of 4m, a width of 1.63m, a height of 1.96m and a ground clearance of 23cm, the P38 weighed in at 4,540kg. The transmission featured four forward and one reverse speed and in service could reach over 50kph on a decent road. The vehicle's armour had been increased to a maximum of 9mm, however, quite unbelievably for a production armoured vehicle, it was not military quality ar-

Making Tracks

The commander of the P28, as was the case with most French armour of the time, had a lot to do: as well as guiding the driver, navigating and observing, in combat he was expected to spot threats and targets, load the gun, aim and fire it!



Top: A P28 on the training course.
Below: A German soldier poses alongside an abandoned P28. There is no apparent damage so it may have broken down or run out of fuel ~ and the crew have taken the machine gun with them...

mour plate, but instead regular mild steel.

This meant the P28 had basically no protection at all, being vulnerable to even rifle-calibre rounds. Indeed, it appears the cavalry's P28 order was meant to be, from the very beginning,

for training vehicles; a stop-gap while specifications for a more advanced reconnaissance armoured car were being formulated. As a matter of interest, the famous Panhard 178 armoured car emerged from the same Light Contact Armoured Car specification of 1931 and examples were still in service in 1964!

So, the P28 remained confined to its training barracks. Even as war broke out with Germany in September 1939, they were typically kept as far from the front line as possible and retained by the Cavalry to train urgently needed drivers.

Nonetheless, although never intended to see combat it appears that as the military situation worsened for the Allies in northern France, P28s were sent from their training grounds to be used in a last-ditch effort to defend France.

These wholly inadequate vehicles, just like a variety of other armoured vehicles [such as the DI tanks urgently shipped back from North Africa, or BI Bis heavy tanks sent into combat without their turrets!] were pressed into service. Little is known of the P28's actions in the closing days of the 1940 campaign, but considering the vehicle's abysmal combat capabilities, it is unlikely to have performed well. Some photos do show German servicemen pos-

Making Tracks

ing around P28s, including some which appear to have taken battle damage.

Those examples that were captured intact, unlike many French armoured vehicles, were not adopted by the Germans. Entirely disregarded by the Wehrmacht, the surviving French P28s were most likely scrapped during the war.

Overseas Service

Despite being generally considered a mediocre vehicle, the P28 did receive one foreign order. In 1933/34, the Guardia Metropolitana Uruguayana, a military unit of the police of Montevideo, received three P28s which appear to have been part of the batch of 50 ordered by the French cavalry, and not built specifically for this order. Why or how the Guardia Metropolitana acquired the P28 is unknown; it has been suggested that the vehicles were actually intended to be delivered to Paraguay to reinforce its troops fighting in the Chaco war against Bolivia but may have ended up in the hands of the Uruguayan force instead of reaching their intended destination.

Whatever the case, the P28 vehicles, now painted in a very pale grey colour were pressed into service by Uruguay, becoming the first armoured vehicles used by the South American nation. Although its service record is unclear and few pho-



Top: The three Guardia Metropolitana Uruguayana P28s, 1933/34.

Centre: The surviving Uruguayan P28.

Right: A vehicle with the driver's hatch opened, showing the steering wheel used to drive. Source: char-français



tos of the P28 in Uruguayan service exist, the last surviving Uruguayan P28 is now displayed at the Plaza de Armas de la Guardia de Granaderos en Montevideo.

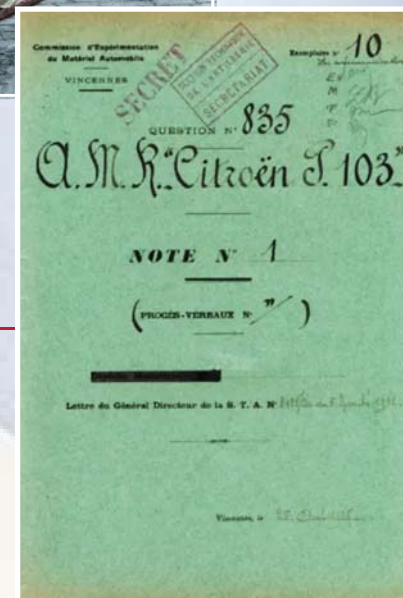
The P28, ill-suited to anything other than training as it was, is notable as one of the last military vehicles to employ the Kégresse track system. This clever innovation, so enthusiastically adopted by Citroën in the 1920s, finally fell out of favour largely due to the fragility of Kégresse tracks and the emergence of superior technologies. But the story of Citroën and armoured vehicles doesn't end there. There's a singular tank we need to talk about...

The P103

In 1934 the French army is-

sued a request for new tank, in the class AMR [Auto-mitrailleuse de Reconnaissance]. The army's overly conservative thinking at the time was still at the stage of simply replacing horses

Above: The sole prototype of the P103, numbered 84374. Right: The original P103 proposal.



with machines, rather than conducting in-depth research on the tactical and strategic applications of armour ~ something the Germans were keenly doing. It's apparent now of course, but the French army's stubborn

Making Tracks

dismissal of progressive military trends would have dire consequences. But back to the story...

Proposals were presented by a number of prominent manufacturers, with Citroën amongst them. The company of course had extensive experience in the production of Kégresse half-tracks and their proposed design used structurally similar solutions and components. Employing a similar engine to that used in the production P28, the P103 as it was known, also used reinforced metal-plated belts as tracks. Armour was 5-15mm: The frontal area, which used cast steel, was the toughest, but the rest of the hull was assembled from riveted plates, which were easier to manufacture but were less resistant to explosive shocks and impacts. Overall, the



hull was sufficient to resist rifle-calibre bullets and shell splinters but little else, with protection being sacrificed in exchange for mobility and speed, which was apparently over 30kph [and its

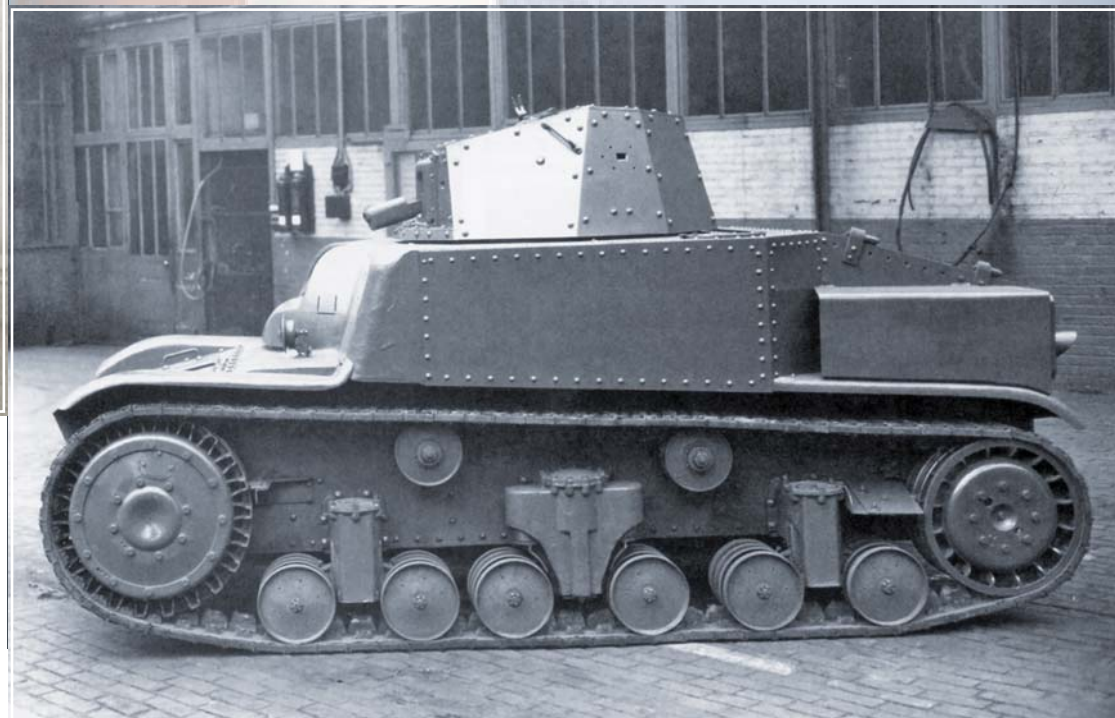
range around 200km]. Weight was 5,000kg and length 4m.

The crew consisted of driver and commander [who ~ in keeping with French tank philosophy of the time, would also have the job of spotting, loading, aiming and firing the planned 25mm Hotchkiss main gun]. The prototype's offset turret was smaller than the proposed production version so its armament was limited to a 7.5 mm MAC 1934 machine gun.

The layout of the tank was in general, standard for vehicles of the AMR class. The transmission was located in the front of the hull, the fighting compartment was in the middle and the engine and fuel tank were in the

rear.

Now we come to the suspension: It was to be a fully hydraulic system [it translates as an 'elastic' system] and featured on each side, six independent track rollers with a combination spring and hydraulic mounting, two support rollers, front driving and rear braking/steering wheels; plus the large Kégresse belt consisting of 75 steel single-ridged track plates. Apparently the front drive sprocket was further cushioned by blocks of rubber which were supposed to absorb shocks when crossing obstacles. It all sounds very Citroën and, hardly surprisingly the P103 was said to be comfortable for the crew.



Making Tracks

Trials were conducted during 1935, with Renault, Hotchkiss and the Citroën prototypes taking part. Though rigorous, all apparently passed the initial tests and it seemed good news for Citroën and the others, but the military then went silent. What happened is not clear, but Citroën were left hanging. And then Hotchkiss, with their frankly superior H35 proposal were announced as winners. Later it transpired that the PI03 when compared to the others, was by far the slowest yet offered superior protection for the crew. However the chassis and hydraulic transmission was shown to be very unreliable and complicated. This combination of factors sealed the PI03s fate. The lone prototype, No. 84374,

An abandoned P28 beside a destroyed truck that appears to have been fitted with a quadruple Vickers AA mount, 1940. Source: char-français



was subsequently dismantled.

It seems that Citroën lost interest in working with the military at that point, which given their track record is entirely understandable, but it is ironic that one of the most iconic French vehicles of the war was their Traction Avant: Albeit largely commandeered by the Germans, it will be forever associated with the French Free Army ~ with a defiant 'FFI' daubed in white paint on its flanks.

This article was written and researched by Phil Chidlow and first appeared in 'Citroënian', the magazine of the Citroën Car Club of the United Kingdom. It is reproduced here with the approval of the author and publisher. It may not be reproduced elsewhere without their specific approval.

Leading the Load

Traction Avant has found its rightful place in cargo transport and Peter Lynch looks at some of the fascinating history behind these vehicles.

Front wheel drive commercial vehicles got off to an uninspiring start but are commonplace today. Citroën played a major role in this evolution from 1935 onwards with their revolutionary TUB, H and A-Series vans.

The world's first mechanically powered load-carrying vehicle was a three wheeled carriage built by French inventor Nicolas-Joseph Cugnot in 1770 for military use. A steam boiler was mounted above the front wheel and drove it by means of pistons and a ratchet mechanism. With

no means of keeping the boiler topped up while moving and poor stability the vehicle was not a great success. It reportedly collided with and demolished a stone wall on one demonstration run, further tarnishing its image. Subsequent steam powered traction engines and trucks evolved around a rear wheel drive layout.

By the 1920s petrol powered goods vehicles were widely used but rear wheel drive was still the preferred means with driven front axles only added for off road applications. Caldwell Vale of New South Wales, Latil of France and the FWD Company of Wisconsin USA were notable pioneers in this area.

After World War I light commercial vehicles were usually based on rear wheel drive car chassis with bodywork built by an aftermarket coach-builder. A major drawback of these was the high loading floor and limited dimensions which

Cugnot's Steam Carriage in a confrontation with a wall.



Leading the Load

placed most weight over or behind the rear axle. Payload was limited to around 400kg.

Citroën saw room for improvement and conducted a detailed market survey of users in 1935. Three key requirements that emerged were; direct access from the driving position to the cargo area, low floor level and wide doors for easy loading. By 1937 a prototype van had been built which

Left to right: Citroën's early vans, such as this stylish mid-'30s Rosalie IIUB, were limited by the rear wheel drive layout.

Large door openings and a low floor allowed best use to be made of the TUC's cargo compartment.

A Citroën TUC van on the French quayside in 1941. The small doors on this side allowed access to the spare wheel and battery.

addressed all of these issues.

Despite the company being in a poor financial situation Pierre Boulanger, Chief of Engineering and Design, pushed engineers ahead with the innovative new concept. The TUB [Traction Utilitaire Type B] was a 'one box', forward control design based around the 1,628cc engine and front drive assembly of the Traction Avant car. To maximise interior space the Traction mechanicals were rotated 180 degrees placing the engine in front of the differential and the three-speed gearbox behind. Therefore the engine had to rotate in the opposite direction [anti clockwise at the flywheel] and was also detuned slightly to produce 26.1kW/35bhp at 3,200rpm [9CV rating].

Front suspension used double wishbones and torsion bars

[as per the Traction Avant] on a lightweight chassis with simple beam axle and leaf springs on the rear. Steering incorporated a rack and pinion assembly behind the front axle line with two mitre boxes and a horizontal shaft under the floor taking motion back from a forward mounted column. The brake system used hydraulically activated drums but this proved prone to lockup of the rear wheels when unladen. Electrics were also basic with a 6volt generator, battery, twin headlamps and a single stop/taillight above the rear door.

The TUB was designed from the ground up as a delivery vehicle, suited to the narrow lane-ways and cobbled back streets of Europe. Within its compact 4.04metre length and 2.35metre wheelbase the TUB offered

6cubic metres of load space and 850kg payload. Walk through access from the driver's seat to the rear was possible with a side sliding door allowing goods to be unloaded at the kerbside. A low floor height of 420mm and hinged tailgate provided best use of the loadspace from the rear. Fabric curtains with translucent windows covered both sides and the roof was covered with soft imitation leather.

Production commenced in 1939 and an upgraded TUC model [1,911cc and 1200kg payload] was produced in small numbers during 1941. An ambulance version [TAMH] with metal sides accommodating up to six stretcher cases was built for the French Army however most of these ended up in German hands during the occupation. Petrol shortages during war-



Wouter Bregman 14-08-2011



Leading the Load

time saw some TUBs converted to electric power and sold as the Fenwick Urbel. In all, only about 1,700 of these vans were built and surviving examples are much sought after today.

After World War II, Citroën came back with their improved and enlarged H-van model going on sale in 1947. It was the product of a team led by engineer Pierre Franchiset and designer André Lefèbvre. A distinctive angled front replaced

Left to right: The ambulance version TAMH could accommodate up to six stretcher cases.

The left side curtain could be rolled up in a mobile shop situation or for ventilation when carrying livestock.

Development of the H cab/floor model was limited only by the imagination of the coachbuilder. Here is a utilitarian horsebox.

the rounded look of the TUB with all steel bodywork. Length of the basic model increased slightly to 4.26metres, wheel-base around 2.52metres and cargo volume of 7cubic metres. Suspension was now fully independent with traverse torsion bars and trailing arms at the rear.

Cab doors were usually hinged at the rear, the sliding kerbside door was retained and the back changed to a three way setup with the upper half swinging upwards and two vertically hinged doors below which opened outwards. These could be used to support a counter-top in mobile shop usage with the upper section acting as an awning.

Larger versions soon followed providing payload of up to 1,600kg and 15cubic metres

interior volume. A second letter and numbers were added to the model number to indicate such variations e.g. HY indicated 1,500kg payload whereas the higher geared HZ model was limited to 850kg. Later innovations were 12volt electrics, a single piece windscreen, an optional Perkins four cylinder diesel engine from 1961 onwards, brake upgrades and hydropneumatic rear suspension for ambulance conversions.

That early 1,911cc petrol engine was found wanting in power, lacked an oil filter and used white metal bearings which could not be changed in the field. In the mid '60s it was replaced with more robust 1,628cc and 1,911cc alloy head units offering 33.6/45 and 43.3kW/58bhp respectively. The Perkins diesel was replaced with a French

built Indenor unit of 1,810cc offering 37.3kW/50bhp and later upgraded to a 1,946cc version with 42.5kW/57bhp.

The unitary construction [chassis and body combined] of the H-van was key to its success and was reflected in corrugated exterior panels which added strength to the body. It was also available in Plateau [pickup truck] style where the box section sides resisted bending forces, or in cab/floor form with load bearing body and roof to be added by a coachbuilder.

For major servicing the entire front suspension, steering, engine and transmission could be wheeled out as one unit.

Citroën's heavier trucks resumed production after World War II and continued to use rear wheel drive mechanicals.

There was an obvious mar-



Leading the Load



Above, left to right: A Dutch assembled 'Plateau' version with an early 2CV on board. For some obscure reason the Dutch models had front hinged doors.

As we have said, development opportunities were only limited by the designer's imagination. Here is rather more stylish idea: a Cochinelle III camper.

Below, left to right: The prototype G-van scaled down the H model layout with running gear from the 2CV. It was around the size of an AUZ250 but offered twice the cargo capacity.

But for the most extreme options the designers were let loose to develop the advertising vans for use at events such as the Tour de France must 'take the cake'. This one was done for the French Milk Marketing Board by Pierre Charbonneaux in 1960. It was originally white. More similar examples can be found in 'démarréur', Volume I, No 2.

Early and late versions of the 2CV van. Load capacity grew from 250kg and 1.9cubic metres in the AZU250 version to 400kg and 2.5cubic metres in the AK400 model.

ket for a smaller FWD van and a prototype Citroën G model was built in 1948. This combined the one box, unitary style of the H with running gear from the 2CV. An enlarged 475cc twin cylinder engine sat forward of the driving wheels providing room for two seats and around 500kg or 4cubic metres of cargo.

However Citroën decided on a van version of the 2CV, aimed specifically at users needing a smaller and economical vehicle. The 'Fourgonnette' [Minivan in French] was released in 1950 and proved highly popular with over 1.2million units eventually produced. Technically it was a return to the pre-war bonnet-



Leading the Load

ed/chassis design but the 2CV van fitted well into the market. Numerous parts shared with the car version meant vast economies of scale and lower costs as well as driver familiarity. Specifications over its 30 year production life generally followed those of the 2CV car with lower gearing and larger tyres.

A ute version sold in smaller numbers but at least one of these found its way to Australia and was recently advertised for sale. There was also a service

Left to right: A commercial version of the Ami 8, known as the Break Service Tolee, was sold in parallel to the 2CV van.

The Acadiane replaced the 2CV van in 1978 and ran through to 1988.

The DKW Schnell-Laster was available in a variety of configurations.

Inset: One of these was as a 8-seater mini-van.

van model of the Ami 6, 8 and Ami Super produced between 1963 and 1978, offering more modern appearance but less cargo volume.

Other European manufacturers also introduced front wheel drive models, usually either car based vans of about 300kg capacity or forward control box vans of about 1,000kg rating.

The post war Pons Plan that was intended to rationalise the French automotive industry by restricting manufacturers to certain categories of vehicle seems to have been widely ignored.

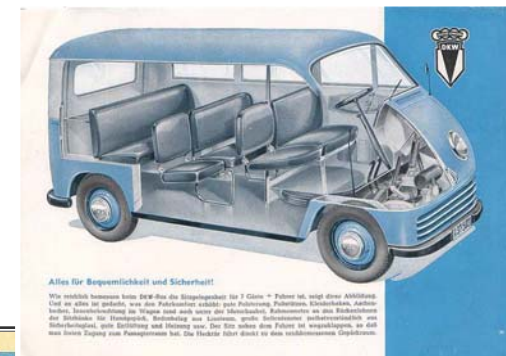
The DKW Lieferwagen, produced by Auto Union from 1937 was a van version of their F7 front wheel drive car. It was of conventional [bonneted] appearance, powered by a transversely mounted 684cc two stroke twin cylinder engine and

three speed gearbox. DKW later went on to produce the forward control front wheel drive Schnellaster and F1000 models in conjunction with AutoUnion and Mercedes Benz.

Chenard-Walcker had introduced their T60 front wheel drive van in 1940. It was of similar size to the Citroën TUB but intended for payloads of up to 1,500kg. With a two stroke flat twin engine of 720cc and gross weight of 2,600kg on-road performance would have been poor. The T60 eventually evolved into the CPV 1500 forward control van of 1947 and when Peugeot took over the company in 1950 this became the Peugeot D3. By this stage the engine had grown to a 1,290cc in line petrol four cylinder [enlarged again to 1,458cc in the D4 model of 1955] driving the front wheels.

Panhard brought out a stylish van version of the Dyna X in 1948 with a 602cc engine, four speed transmission and 450kg payload. This was followed by their F65 van/ute version based on the Dyna Z however sales never seriously challenged Citroën's 2CV.

Vidal & Sohn of Hamburg in Germany, produced their Tempo Matador front wheel drive one tonne truck in 1949. This unusual design used an 1,100cc VW engine and transmission



Wouter Breg



Leading the Load



CHENARD & WALCKER

Left to right: The FWD Peugeot D3 van evolved from a Chenard-Walcker two cylinder design of the 1940s, growing a short snout to accommodate a four cylinder engine.

Tempo Matador was also available in cargo van or utility configuration in addition to this minivan.

This Barkas B1000 has had a second unpowered rear axle added to increase payload. There was even a prime mover version boasting 42bhp from a 1,000cc 3-cylinder engine.

Inset: Australia was one of the first countries in the world to import the Tempo Matador. They were imported by a number of dealers, such as Continental Motors, Sydney and Australian National Motors, Melbourne, both of whom had been agents for DKW and other smaller German manufacturers.



under the cab driving the front wheels. It had a tubular chassis and independent suspension all round. Volkswagen realized this was a direct competitor to their own Kombi van and stopped supplying components in 1951, with later Matadors using Muller or Austin engines.

Volkswagen released their Kombi van in 1950, sticking with the rear engine/rear wheel drive layout of the Beetle car. The Kombi was highly successful but lacked the generous cargo volume and loading ease of a FWD design. VW finally moved to a front engine/front wheel drive layout with their T4 Transporter of 1990.

Major American auto builders generally stuck to RWD designs but front wheel drive was used by specialist manufacturers. The MacDonald Truck and Tractor Company of Califor-





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nia built FWD lo-bed trucks in small numbers from 1920 onwards. Their 7.5ton AB model incorporated hydraulic power steering and a powered capstan winch for dragging heavy items aboard.

Linn Trailer Company of Oneonta [New York] was an-

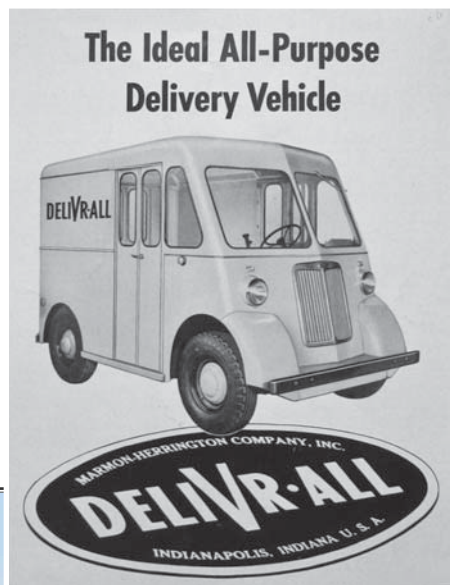
other early advocate of FWD. They built two and three axle front wheel drive commercial vehicles from 1938 onwards with their Linn Speed Van going into volume production in 1947. This 1.5ton payload van used an in-line petrol six and four speed gearbox driving back to a custom built transfer case which took the power forward to a Timken drive/steer axle. Other innovative features were space frame bodywork in various lengths, low floor height, torsion bar suspension and a separate sub frame which allowed the entire engine/transmission and front axle to be wheeled out and changed over in an hour.

This big car carrier Linn built for La Crosse Trailer Corporation in 1949 pushed the FWD concept to its limits. As shown in the photo it did allow the

Leading the Load

cartage of one extra car with-in legal lengths but probably struggled for traction once off level pavement.

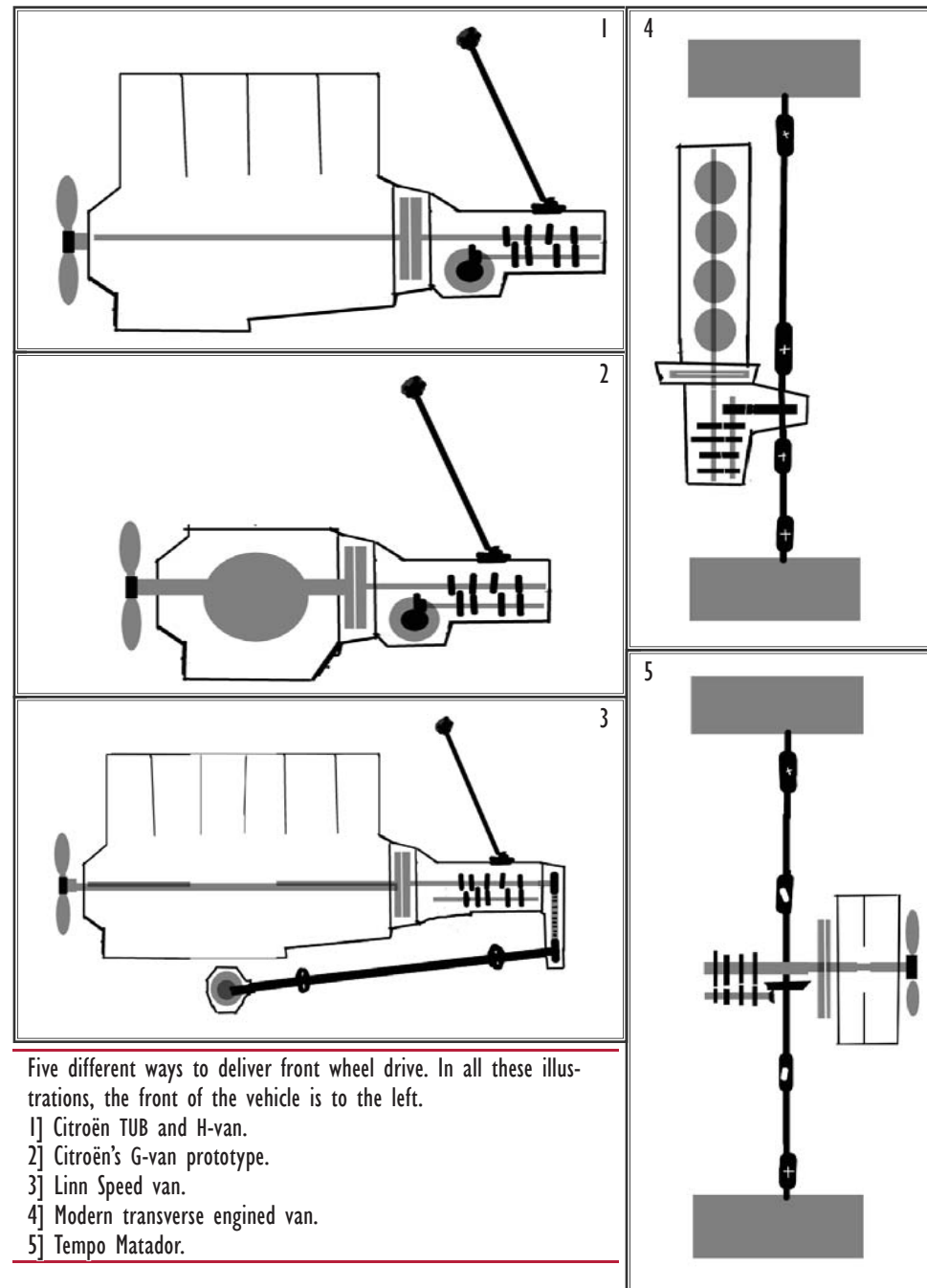
Another innovative American vehicle was the Marmon Herrington DELIVR-ALL which appeared in 1945. This half ton



delivery van used a transversely mounted Jeep engine, gearbox and transfer case/differential to drive the front wheels. Once again the entire drive train and front end could be rolled out for maintenance.

Back in Europe, Renault moved to FWD with their Estafette model of 1959 using the 845cc engine from the Dauphine car and offering payload of 600kg. In 1961 they introduced a van version of the R4 to take on the 2CV van in lighter applications.

German maker Borgward introduced a front wheel drive light van designated the Lloyd LT500 in 1953 with a tiny 386cc two stroke engine and rated payload around 600kg. It was succeeded by the LT600 model with a 596cc four stroke engine



Leading the Load



The Editor craved the indulgence of our author, Peter Lynch, and has included the images on this double-page spread, none of which were selected by Peter to accompany his article.

Above, left to right: Two rare examples of Lancia's Superjolly which used the engine [and some design cues] from their Flavia.

The Austin 1800 ute may have been astounding, but only about 2,300 Australians agreed sufficiently to buy one. In the editor's eyes it's cleverest design feature is the use of Mark I taillights, turned vertically. They almost look as though they were designed for the model.

Finally the cover of the 1954 brochure for the Romeo Autotutto.

Inset: Two more images from the 1954 brochure designed to show the versatility of the Autotutto. With a modern eye it looks to be being advertised as suitable for call girls and burglars. But I may be wrong on both counts.

which was produced from 1955 to 1961.

Borgward also sold the larger Goliath Express front wheel drive van between 1953 and 1961. This started out with a 688cc two stroke twin which was subsequently replaced with an enlarged 886cc fuel injected two stroke and finally a 1,093cc four cylinder four stroke unit. Payload of the basic model was around 950kg.

Two stroke engines hung around for longer in Eastern Europe. East German manufacturer VEB Barkas-Werke of Chemnitz introduced their Barkas B1000 van in 1961 and various adaptations followed.

Italian maker Lancia produced their front wheel drive Jolly and Superjolly light commercial between 1963 and 1970. This was

powered by a 1.5 [later 1.8] litre flat four engine and available in van, light truck or minibus versions.

Alfa Romeo, better known for their sporting cars, also produced commercial vehicles up to eight tonnes capacity. Their 'Autotutto' model produced between 1954 and 1983 was of front wheel drive configuration and offered in van, minibus and pickup truck versions. Interestingly, these were not branded Alfa Romeo, just Romeo.

Fiat was the largest Italian light commercial supplier but slow to adopt FWD layout. The Fiat 238 model went on sale in 1967 but did not offer the interior room or wheelbase options of the Citroën H-Series. Lancia and Alfa Romeo are now part of the Fiat group and no longer make



Leading the Load



Left and inset: Ambulance conversion of a Citroën DS providing greater comfort and on road performance than a van. Right: Tissier's 'Loadrunner' conversions were usually worked hard but fortunately some examples survive in Europe.

commercial vehicles.

England was a major automotive supplier and exporter but stuck to conventional designs. The Mini van of 1960 and Australian engineered Austin 1800 ute [1968 to 72] were notable exceptions using front wheel drive technology from passenger cars.

Conversion of front wheel drive cars into high performance commercial vehicles was inspired by the Citroën DS and produced some unique vehicles. The DS Station wagon with its excellent on-road performance and self-levelling hydropneumatic suspension provided the

ideal starting point for an ambulance conversion however interior space was limited. Some conversions used a raised roof section while others went further with bespoke bodywork from the B-pillar rearward.

French coachbuilder Pierre Tissier took the concept further in 1972 with a eight wheel DS conversion to produce a high speed car transporter. This extended the wheelbase with three unpowered axles on hydropneumatic suspension and

smaller 10inch wheels. Tissier went on to develop 'Loadrunner' van conversions on CX and XM chassis which were used for express newspaper deliveries across France in the 1980s.

Conversions of heavier trucks to front wheel drive were more difficult. This usually took the form of a four wheel drive design having the rear differential and driveshaft removed to provide a lower loading height. French manufacturer Labourier of Mouchard offered four wheel drive and front wheel drive versions during the 1960s. The idea also gained some favour in England where FWD low loading trucks were trialed for beer deliveries by some breweries. More recent innovations in trucking such as tilt trays, hydraulic tailgates, on board cranes and air suspension have made the floor height less

critical. It is at the lighter end of the market that FWD has been widely adopted.

Today most European one tonne vans and light commercials use a traverse engine and front wheel drive layout. Electric and even fuel cell power is mooted but that forward control/unitary body concept introduced by Citroën seems to be universally successful. Citroën remains a major player in the light commercial market with their current Berlingo/Dispatch and Relay models in great demand for home delivery services during the COVID-19 era.

The iconic H-van lives on with those quirky looks, roomy interior and low floor height making it ideal for coffee and food vendors looking for a unique mix of French practicality and style.

Peter Lynch

The use of photos, assistance and information from the following is greatly appreciated: Archives Terre Blanche/Photonon-stop, Dennis Mathies, Citroënet website, Citroën Conservatoire Paris, CCOCA website, Marmon Herrington Co, Max Lewis, Maurizio Boi, Wouter Bregman, Dick Copello, Mark Griffiths, Perico001, Warwick Bryce, Wikipedia Commons, veikl.com, collections.museumsvictoria.com.au, italianclassicgarage.com, leroux.andre.fre.fr, thetruthaboutcar.com, hrminfo.in, autopaper.com and mpoweruk.com.

A Better Rotary?

Your editor, with Philip, attended the British and European Classic Show at Yarra Glen racecourse earlier in the year. We took the Citroën GS Birotor; a model which receives passing glances from the unaware and admiring stares from those who understand what is sitting in front of them.

But that is not the point of this story. A member of the public, who turned out to very determinedly in the latter group was the writer of the following short article.

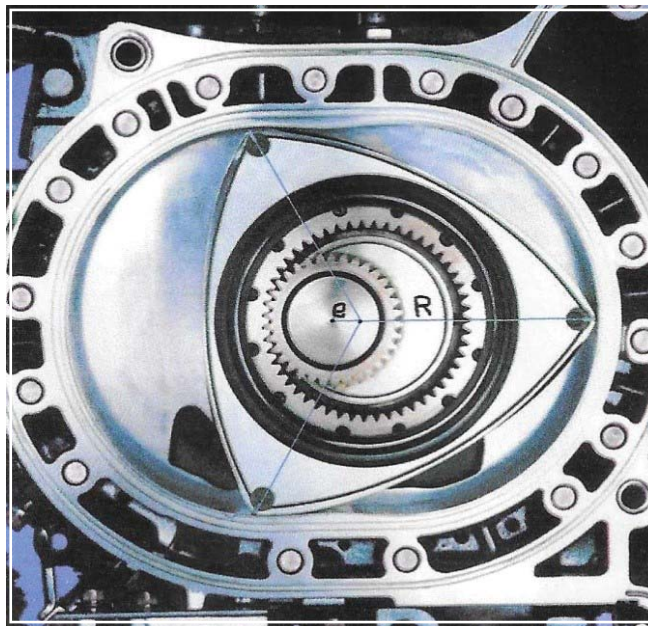
Peter King is a Partner of the Rotary Engine Development Agency and is the co-inventor of the Szorenyi Rotary Engine and has published a number of papers for the Society of Mechanical Engineers including SAE Technical Paper 2019-24-0168

In the early 1970s, Citroën produced its version of the NSU Wankel engine. The engine was fitted to an Ami 8 coupe for testing and then fitted to [a highly modified] GS model which went on sale in October 1973. The engine proved to be a failure and Citroën planned to buy back all the cars it had sold and to destroy them. Fortunately some have survived.

They are interesting cars and, given Mazda's later success with the engine, should have survived longer than they did. However,

the problems with the Wankel engine are numerous and it is impressive how Mazda managed to produce a successful engine from a concept that has such fundamental design issues. These issues can be understood by analysing the geometry of the engine.

The Wankel engine can be described as a mathematical engine. In the photograph of the internals of the Mazda Renesis engine below, the peanut-shaped stator profile can be seen. This stator profile is a mathematical shape known as an epitrochoid. The shape is such that the three apexes of the triangular rotor remain in contact with this stator profile as the rotor rotates. The centroid of the rotor is located a distance 'e', known as the ec-



centricity, from the centre of the crankshaft. The motion of the rotor is quite complex because, as the rotor rotates about its centroid, its centroid rotates about the centre of the crankshaft. The parameter e is crucial in the design of the engine as is the parameter 'R' shown in the photograph as the distance from the centroid of the rotor to each apex. Together with the rotor depth 'd', these three parameters determine major aspects of the engine design.

A surprising mathematical relationship of the Wankel engine is that the chamber displacement is determined by the simple formula $\sqrt[3]{3Rde}$. But the design of the Wankel engine is constrained by the ratio R/e as this determines the compression ratio of the engine. The parameters of the KKM-612 Wankel engine in the Citroën GS are: $R = 10.0\text{cm}$, $e = 1.4\text{cm}$ and $d = 6.7\text{cm}$.

This produces R/e ratio of 7.14 which is typical for gasoline powered Wankel engines. [All Mazda 13B engines used a ratio of 7]. Unfortunately, this ratio produces a stator profile with the characteristic peanut shell shape as shown in the photograph. This severe convex/concave profile imparts high oscillating loads on each apex seal as it follows the stator profile. This leads to gas leakage between

combustion chambers and so poor compression and poor combustion. A much better continuously concave profile is achieved for compression ratios around 20:1 which is used in a diesel engine. However, this requires a much larger R/e value, and the resulting larger, and so heavier, rotor causes such a big reduction in the rev limit that it makes a diesel version of the Wankel impractical.

The Wankel engine is often referred to as a high revving engine. The Mazda 13B engine in the RX-8 is redlined at 9,000rpm. However, this is misleading. There is a 3:1 gearing between the crankshaft and the engine rotor and so, at the rev limit, the rotor is only doing 3,000rpm. This is equivalent to 6,000rpm in a reciprocating engine because each chamber of the Wankel engine completes the engine cycle in one revolution of the rotor. However, a 3,000rpm rev limit of the rotor in a Wankel engine is very modest and requires some explanation.

The engine revs are limited by the centrifugal load of the rotor on the crankshaft. [The centrifugal load is proportional to R^2de times the square of the revs.] The crankshaft cannot be strengthened by reducing the distance between the supports of the crankshaft because this distance is the rotor

Love is in the Air

depth, d . The only other way to increase the rev limit would be to strengthen the crankshaft by increasing its diameter. But this is not possible for the Wankel engine because the crankshaft diameter has the dimension $4e$. If e is increased then R needs to be increased proportionally in order to keep the same R/e ratio, and d needs to be increased to keep the same rotor face proportions. Then increasing e would have the effect of increasing the rotor mass [proportional to R^2de] more than the increase in chamber displacement [$\frac{3}{2}Rde$] and this would lead to a reduction in the rev limit. So trying to increase the rev limit by increasing the crankshaft diameter actually reduces the rev limit! Accordingly, it can be seen that the Wankel engine design requires a delicate choice of the parameters R , e and d .

The Wankel engine also suffers from a large overlap of intake and exhaust timing. Each chamber spans 120° of arc from apex to apex, but each phase of the engine cycle [intake, compression, expansion and exhaust] requires 90° of arc. The difference creates 60° of overlap of the intake and the exhaust which is equivalent to 120° of overlap in a reciprocating engine. Although a small amount of overlap is usual in a reciprocating engine, the 60° of overlap in a Wankel engine is

excessive. The overlap leads to poor gas control and poor combustion.

The most alarming feature of the Wankel engine is a phenomenon called squish which occurs during combustion of the gases. Just before the chamber gases reach their maximum compression, the face of the leading half of the rotor almost touches the stator. This forces the gases into the rear half of the combustion chamber. Then just after the maximum compression point, when the gases have been ignited, the face of the trailing half of the rotor almost touches the stator. This forces the combusting gasses forward at high velocity into the leading half of the chamber. Experiments have detected gas velocities from the rear to the front of the combustion chamber of up to 120 metres/second at high engine revs! The effect is to extinguish the combustion. This poor combustion leads to many unburnt gases and high exhaust emissions.

With all these design deficiencies, it is truly amazing that the Wankel engine has been made to work as well as it has. But that makes the Citroën GS Birotor more of a classic car to treasure.

Peter King

Survey: Part III

and the further member who proposed the ID alone as the most important model of the century.

Add them all up and the D-Series does take the cake as the most important with a grand total of 41% of votes.

We did not ask, and so we do

not know whether those who voted for the D-Series are owners of the model or whether they are Traction owners who believe the innovations of 1955 exceeded those of 1934.

Because for both

the Traction and the D-Series the reason most commonly given for the nomination was the level of innovation each model provided.

As one member wrote of the Traction : 'So many advanced features all in the one car ~ Front drive, monocoque body, wet liners, rack and pinion steering, torsion bar suspen-

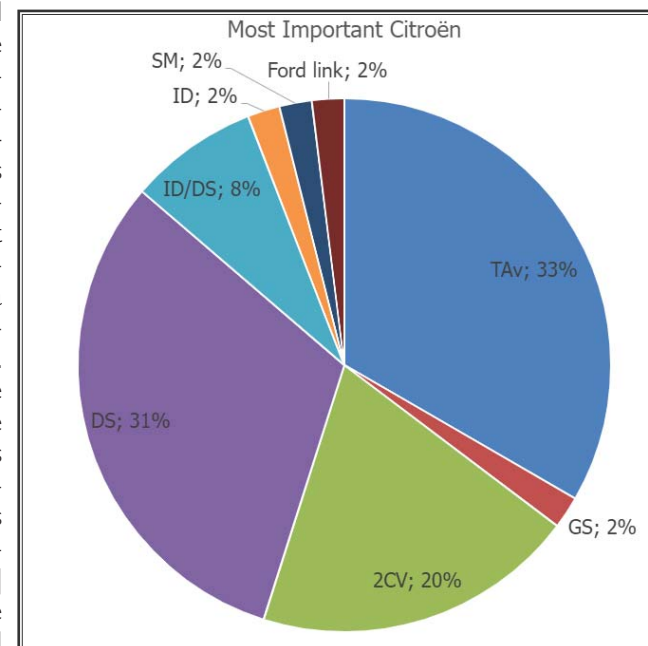
// suppose I should not have been so naive as to expect the unexpected in relation to member's thoughts regarding the most important Citroën of the 20th Century. We are a very predictable lot and that of itself is no bad thing.

Far and away the most popular individual answer was the Traction Avant being chosen by a third of respondents. While some members gave specific years [generally 1934/5] the more general response

was that any Traction represented the most important Citroën of the century.

Just trailing with 31% of responses was the DS. Although here specific reference to the model's launch year was more frequent.

But, of course we really need to add to that 31% the 8% who included both the DS and ID



Survey: Part III

sion, etc.'

Yet as a D devotee wrote: 'Technologically brilliant. An engineering marvel. And at the time one of the most elegant designs.' Others simply wrote 'groundbreaking innovation' and 'breathtaking innovation'.

One member wrote: 'For all the reasons that are all known. The Traction was highly innovative and ahead of its time but nothing prepared the world for the DS. As a ten year old, I attended the motor show in Melbourne in 1956 and we could not believe the shape and modernity of the car. That steering wheel! Bad luck about the engine though!'

Giles Tabuetau has written eloquently about the D-Series in 2013 when the model was displayed at the 65th Anniversary of the construction of Holy Name Church, Wahroonga. While his article can be found on the Club's website I thought to include most of it here as the link to the article was part of his

reply to the survey.

Next in line was the 2CV which garnered 20% of votes. Comments here were not about innovation. The word was not mentioned once.

The 2CV may be 'iconic, long-lasting, simple, fun-loving, international', but you do not see it as innovative.

Many others would not agree with that view: maybe [almost certainly] the 2CV is not the innovation power-house represented by either the D or the Traction, but surely that inter-linked, horizontal suspension which automatically adjusts to varying weights must count as innovation. As John Reynolds says that, 'four people and cargo on board the wheelbase increases by around 4cm as the suspension deflects, and the castor angle of the front wheels increases by as much as 8° thus ensuring that ride quality, handling and road holding is almost unaffected by the additional weight.' If that isn't innovation, I don't know what is.



GRAND DESIGN ICONS OF THE 1950S: CITROËN DS 19 ~ 1955 GILES TABUETAU

It is no irony that this truly magnificent, great, classical building of worship, and this car, should share the stage, when discussing Grand Design in the 1950s.

For this is no ordinary Church building.

And this is no ordinary car.

In the history of the motor car, no single design has been as extraordinary, and as revolutionary, as the Citroën DS.

The DS has inspired literature, taken centre stage in museums, and made motoring writers run out of words.

Breathtaking, radical, daring.

Enigmatic, intriguing, mysterious.

More than a car, more than art, it was a philosophy, a method of reasoning, a new way of thinking.

Its mechanical and technological innovations defied the limits of what car designers could imagine.

In a golden half-century of exceptional Citroën designs, between the 1930s and the 1970s, the DS stands at the pinnacle ~ between other legendary Citroëns such as the famous Traction Avant [1934], and the SM [1970].

Everything about the DS defied convention: the self-levelling, height-adjustable, hydro-pneumatic suspension; the brakes, the gear-change, the steering, all operated through a centralised, highpressure, hydraulic system.

The aerodynamic profile, the proportions, the interior, the details.

The list was endless.

It was futuristic. It was simply an amazing thing to see. When it moved, and when it stopped. How it seemed to glide, oblivious to bumps and dips on the road beneath it.

Far from being a random collection of individual design elements, the DS used a completely integrated approach.

For example, the conceptual theory behind the central hydraulic system was based on the human heart, and the arteries and veins, linking the lungs, the brain, and the limbs in the human body.

It was a car, and yet so much more. It was 'something else'.

Perhaps it is the DS's very name which best holds the secret in understanding what it really is.

Philosopher Roland Barthes, not long after the DS had been unveiled, contemplated its mythology. He wrote: 'The new Citroën manifestly falls from the sky... It has all the characteristics of one of those objects from another universe...'

The DS is foremost a new Nautilus... It may be that the DS heralds a change in the mythology of the automobile... Here, it becomes at once more spiritual, and more object-like... In exhibition halls, the automobile in question is visited with intense, devoted concentration: it is the great tactile phase of discovery, the moment when the visual marvel is put to the test, and touched... '.

Your editor has not been able to confirm this, but he would allege that the 2CV was also the first mainstream car [indeed the first car?] to have in-board mounted brakes. Inboard

brakes reduce the unsprung weight of the vehicle: rather important in a car as light as the 2CV.

As one member wrote: '[The 2CV] brought affordable mo-

Survey: Part III

toring to "The People" in a much more intelligent and creative way than other people's cars.'

But I will move on... albeit reluctantly.

Honourable [by which I mean single] mentions were given to the SM and the GS.

The SM supporter wrote: 'It broke the company and killed any chance of the most innovative of all manufacturers ever putting their necks on the line again.'

Perhaps a back-handed reason to nominate this model, but it is a pretty fair summation of the facts.

The GS received a more positive review, however: 'That [a GSX] was my first ever Citroën

from new, and I loved it, but I also think it saved Citroën from an untimely demise. I lived in Germany then and the GS was a very popular and reasonably priced but incredibly innovative vehicle.'

There we are: innovation once more provides the rationale for a nomination. But more importantly, personal ownership and connection with a model has clearly influenced this [and I guess many other members] to have nominated their choice for the model which is, for them, the Most Important Citroën of the 20th Century'.

I have left the most interesting nomination and comment to last. This member chose not to nominate a particular car but

to propose two quite left-field ideas.

The first being 'the development work André and his firm did with endurance trials in the Sahara desert etc' and 'his interest in mass production link with Ford'.

Mention of the former is timely as it was the Croisière jaune and Croisière noir that proved the Kegresse system and directly lead to the developments that bore fruit in the late 1930s with Citroën's development of the military vehicles that are the subject of 'Making Tracks' earlier in this edition.

It could be argued that it was the experience gained in those hostile environments that also bore fruit in the marque's Afri-

can rallies of the late-1950s and 1960s.

André Citroën's link with, and admiration for, Henry Ford has always perplexed me. Henry Ford is remembered for embracing, if not actually developing, the concept of mass production and Citroën adopted its use well before he made his first motorcar.

But Ford is perhaps less well-known for his early benign attitude towards his workers and their welfare. Another trait he shared with Citroën.

Ford was a pioneer of 'welfare capitalism', designed to improve the lot of his workers and especially to reduce the heavy turnover that had many departments hiring 300 men per year

Source: www.classic-trader.com



Source: www.petrolicious.com



Survey: Part III

to fill 100 slots. Efficiency meant hiring and keeping the best workers.

Ford astonished the world in 1914 by offering a \$5 per day wage, which more than doubled the rate of most of his workers. The move proved extremely profitable; instead of constant employee turnover, the best mechanics in Detroit flocked to Ford, bringing their human capital and expertise, raising productivity, and lowering training costs.

Ford's policy proved that paying employees more would enable them to afford the cars they were producing and thus boost the local economy. He viewed the increased wages as profit-sharing linked with rewarding those who were most productive and of good character.

Real profit-sharing was offered to employees who had worked at the company for six months or more.

In addition to raising his workers' wages, Ford also introduced a new, reduced workweek in 1926. On May 1, 1926, the Ford Motor Company's factory workers switched to a five-day, 40-hour workweek, with the company's office workers making the transition the following

August.

But it could be argued the flow of benefits for staff was not from the US to France, but the other way.

During World War I, with so many men fighting at the front Citroën called on women to become the workforce at his munitions plants. As a result he

established a range of social services for his staff that was without precedent. He set up canteens, nurseries for his staff. Indeed in the US Library of Congress there is a photo depicting André Citroën's factory, July 12, 1917; French

Minister of Armament Albert Thomas at the opening of a staff canteen; and General Pershing commander of American troops in France, visiting French workshops. The image, one of a folder

of 20 such photographs, was donated by General Pershing. Unfortunately the image does not appear to readily available.

In 1927 Citroën became the first employer in France to pay its employees a thirteenth month's salary.

But on the other side Ford also believed that in order to fully benefit from the profit sharing his workers must conduct their lives in a manner of which

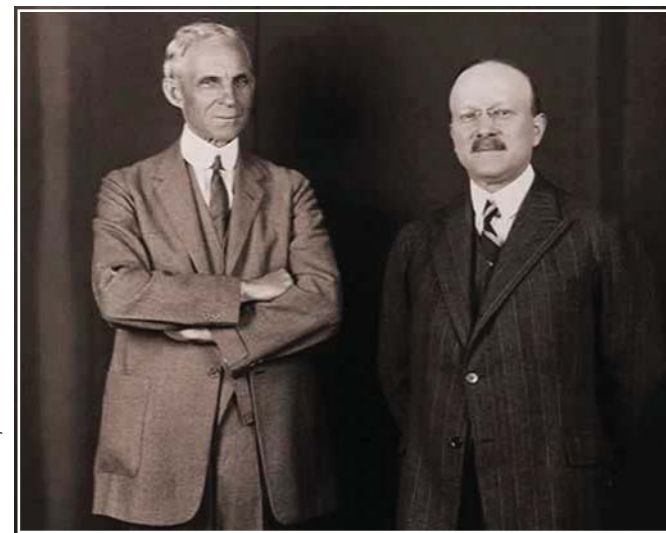


Ford's 'Social Department' approved. They frowned on heavy drinking, gambling, and on what are now called deadbeat dads. The Social Department used 50 investigators and support staff to maintain employee standards. He did later back away from these incursions into employees' private lives.

He was also vehemently anti-Semitic. His anti-Semitic writings were re-published in Germany under the title 'The International Jew' and he insisted the Second World War 'was the product of greedy financiers who sought

profit in human destruction'. In 1939, he went so far as to claim that the torpedoing of US merchant ships by German submarines was the result of conspiratorial activities undertaken by financier war-makers. The financiers to whom he was referring was Ford's code for Jews; he had also accused Jews of fomenting the First World War.

In the run-up to World War II and when the war erupted in 1939, he reported that he did not want to trade with belligerents. Yet Ford continued to do business with Nazi Germany, including the manufacture of war materiel and when Rolls-Royce sought a US manufacturer as an additional source for the Merlin engine Ford first agreed to do so and then reneged.



In July 1938, the German consul in Cleveland gave Ford, on his 75th birthday, the award of the Grand Cross of the German Eagle, the highest medal Nazi Germany

could bestow on a foreigner

So the apparent friendship between André Citroën and Henry Ford has always confounded your editor. But our member is right: the two men do seem to have been close and to have shared many common views: views which benefitted both their employees and ultimately their companies.



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