

Coming Events:

Wednesday, June 6th, General Meeting, Blackburn.

June 16, 17, 18, (Queen's Birthday Weekend) Austraction 79, Echuca.

July 14th, Wine and Cheese night, at the home of Bryan Grant, 2 Bader Avenue, Nunawading.

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CCOCA membership:

Joining fee (new members) \$5.00

Annual Subscriptions:

Full member, \$15.00

Associate member, \$10.

Joint membership available to spouses of full members, no cost.

Overseas postage rates on application. All membership applications to Secretary.

CCOCA meetings are held at 8pm on the first Wednesday every second month from February, at the Blackburn Baptist Church, 19 Holland Road, Blackburn.



The magazine of the
Citroën Classic Owners
Club of Australia

Volume 3 Number 2
June/July 1979

"The aeroplane and automobile were both in their infancy and were regarded as the passport to discovery", says Mark Navin in a comment on Citroën and the half-tracks in this issue. The era of the *Chenilles* in Citroën's history is absorbing, both for the comments it makes on Citroën (the man — and his company), and also on the people and times.

This issue looks at the real originator of the Citroën half-tracks, Adolphe Kégresse, and at some of Citroën's involvement in half-tracks. Next *Front Drive* will look at the greatest of the half-track journeys, the Yellow Crossing, where members had to be everything from adventurer to diplomat, soldier to mountaineer.

The Citroën Half-Track Adventures:
Cover: One of the vehicles used on the epic Yellow Crossing, and Below: Typical 'road' on the Black Crossing.



Citroën and innovation have always been synonymous. One of the concepts that, early in the history of the firm, demonstrated André Citroën's readiness to accept and develop a new idea was that of the half-track for travel over irregular terrain.

The originator of the half-track system taken up by Citroën was Adolphe Kégresse. Born at Héricourt, France, in 1879, his father was a foreman in a cloth mill and his mother ran a small draper's shop. Described as a *technicien passionné*, Kégresse became interested in internal combustion engines during his studies at L'Ecole Pratique d'Industries of Montbéliard, and in 1898 developed a small engine for a cycle-car. He was employed by a motor manufacturer named Louis Jeanperrin and soon became foreman of his engine workshop. The sudden death of Jeanperrin cut short their plans for expansion and, encouraged by a friend who had already emigrated, Kégresse left for Russia in 1905.

He soon came to the notice of Tsar Nicolas II and his circle by repairing a frozen turntable that had immobilised the imperial train. Backed by Prince Orlov, Kégresse was appointed Technical Director of the Imperial Russian Motor Service in 1906. He was instructed to study the

The Kégresse Citroëns - Adolphe Kégresse Peter Simmenauer

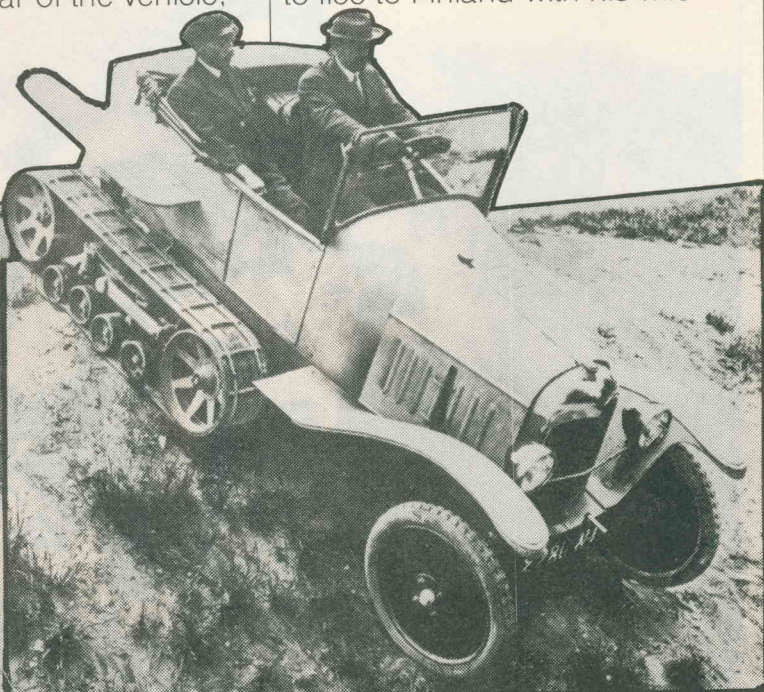
problem of travel on Russian roads in winter. There were plenty of vehicles using metal caterpillar tracks, but these were slow and cumbersome in the extreme conditions. Their weight was too great for certain kinds of ground, and their speeds did not exceed four or five kilometres per hour.

Kégresse's solution to the problem was what he called a motor sledge. The patent that he took out in Paris in 1913 described the vehicle as 'constructed by the addition to the front wheels of an ordinary motor car of leading load-bearing runners of fixed or variable height which automatically come into operation when the wheels can no longer grip on a snow covered surface. Further, a load-bearing flexible driving assembly is placed on each side of the rear of the vehicle.

comprising two large endless belts each wound around two pulleys, one of which is driven, and the lower part is guided by two strong rollers which distribute the load by means of levers and springs along the whole length of track, obtaining thus with ideal suspension a drive exactly matching the contours of the terrain and consequently effecting constant adhesion.' The rubber tracks used provided the light weight and flexibility lacking in the metal tracks of the time.

After numerous demonstrations and trials before different military and civil committees, the Russian War Ministry in 1916, convinced of the advantages of the Kégresse machine, ordered 200 assemblies for fitting to armoured cars, ambulances and snow-mobiles. Several cars were converted for the use of the imperial court as well. By 1917, several hundred half-tracks were in use in Russia, including the Packard in which Kégresse drove the Tsar to the front.

Kégresse continued to make further improvements to his system, and took out many world patents, but the revolution of 1917 forced him to flee to Finland with his wife



and three children, leaving behind all his papers and personal possessions. While in Helsingfors, he produced a half-track based on a Talbot, but Finland offered no prospects and he decided to return to France at the end of 1919. However, local manufacturers were not interested in his ideas, and his affairs had reached a desperate stage when Jacques Hinstin, then a partner of André Citroën, arranged for him to meet Citroën.

In 1920, Kégress and Hinstin invited Citroën to a demonstration of half-tracks, held on the sandy banks of a canal at Saint-Denis. Citroën, always on the alert for new developments, and always ready to make decisions, was sufficiently impressed to start a half-track department at Javel, putting Kégresse and Hinstin in charge.

The first public demonstrations were held at Mont Revard in 1921 with vehicles based on the Type 'A'. Their success confirmed Citroën's commitment to the development of the half-tracks. Three exploits, known as *Raids* (long-distance runs) were to make the half-track legendary, as well as highlighting the endurance and strength of Citroën mechanical units and providing the firm with an immense amount of publicity. The first was the first crossing of the Sahara desert, from Touggourt to Timbuktu by five B2 half-tracks, a distance of 3,200 kilometres completed between 17th December 1922, and 6th January 1923.

The next feat, known as the 'Black Cruise', was the first trans-continental crossing of Africa, from Colomb-Bechar to Madagascar. This time, eight B2's left Colomb-Bechar on 8th October 1924, and reached Stanleyville on 12th

March 1925, having covered 9,000 kilometres of desert and bush. The mission, led by Georges-Marie Haardt, was divided at Kampala into four groups of two cars, with four or five people in each group. The Audouin-Dubreil group went around Kilimanjaro and arrived on 14th May 1925 at Mombasa, where they met the Bettembourg – to – Dar-es-Salaam group and embarked for Madagascar. The Haardt group moved down to Mozambique and the Brull group set off towards the Cape. After the Mozambique-Majunga phase, Haardt rejoined the other two groups which had already come ashore at Madagascar and, from the Cape, Brull also took ship for Madagascar. The four groups arrived at Tananarive on 29th June 1925 after covering more than 20,000 kilometres.

This expedition carried out some scientific studies of importance en route, but the main motive appeared to be publicity, in particular to support a proposal for the setting up of a regular trans-African service by Citroën. While the expedition was in progress, a new half-track powered by a 15 taxable horse-power engine was exhibited by the factory at the Paris Commercial Vehicle Show, which was intended for this service. It never eventuated, for political reasons (it was said that Renault, who later set up a trans-Sahara service, influenced the affair).

The 'Yellow Cruise' was the last of the official Citroën runs, and the largest. C4's and C6's divided into two groups, the 'China Group' of eighteen people, led by Lieutenant Victor Point, and the 'Pamir Group' of twenty-four people, led by Haardt and Audouin-Dubreil, crossed Asia in this *raid* in 1931 – 2. Seven C6

half-tracks left for Peking on 6th April 1931 to meet seven C4 half-tracks that had left Beirut on 4th April. The two groups joined at Aksu on 8th October and set off on the route to Peking, where they arrived on 12th April 1932, having covered more than 12,000 kilometres including the crossing of the 4,000 metre high Pamir.

Conventional trucks provided back-up liaison with the supply bases. The return journey was cut short by the death from fever of Haardt, the unstable political situation in China, and financial problems. The remaining vehicles were shipped via Indo-China to Marseilles.

In 1934 a private expedition, organised by M. Bedeaux, known as the 'White Cruise' was set up to liaise between Alaska and the Polar expeditions. However, the many difficulties met by this effort led to the cars being sold before they reached their objectives.

Some of the historic vehicles used on the *raids* still survive. One of the trans-Sahara vehicles is in a museum in Saint-Jean d'Angely, the birth-place of Louis Audouin-Dubreil. A B2 from the 'Black Cruise' is in the Compiègne Museum, a second is owned by a Parisian collector. Haardt's C4 is in the Le Mans Automobile Museum, and a 'Yellow Cruise' C6 remains at Guilghit.

What difference did the half-tracks make to the motoring scene? They were used in a wide range of applications, including forestry, trailer towing, barge towing, armoured vehicles, ambulances, gun carriers and generally on transport vehicles required to travel over difficult terrain, particularly sand and snow. They became less popular after the

early thirties because of the development of low-pressure tyres for heavy vehicles and of four-wheel-drive systems. The relatively low power of the Citroën engines of the period made it impossible to use them on heavy vehicles, where their main utility lay. Wearing qualities of the rubber tracks became inferior to those of the metallic tracks that were eventually developed to overcome the disadvantages of the earlier types. Nevertheless, though now of historical interest only, the half-track system was in the forefront of automotive technical development for nearly twenty years.

Kégresse himself left Javel after Citroën's death in 1935, and set up in Croissy-surSeine where he worked on automatic transmissions, a remote-controlled anti-tank device, and built a steam engine, among other activities. Included among the many patents taken out by him were specifications for spark plugs, independent suspensions, valve sleeves and servo-assisted automatic transmissions. He died in 1943.

Peter Simmenauer.



Les Chenilles The Citroën Half-Tracks

Citroën half-track production stretched from the B2 range in 1921 to the post-1934 range (after the advent of front-wheel drive and OHV engines) and up to 1938—9, when the sturdy P36 half-tracks were built for the French Army.

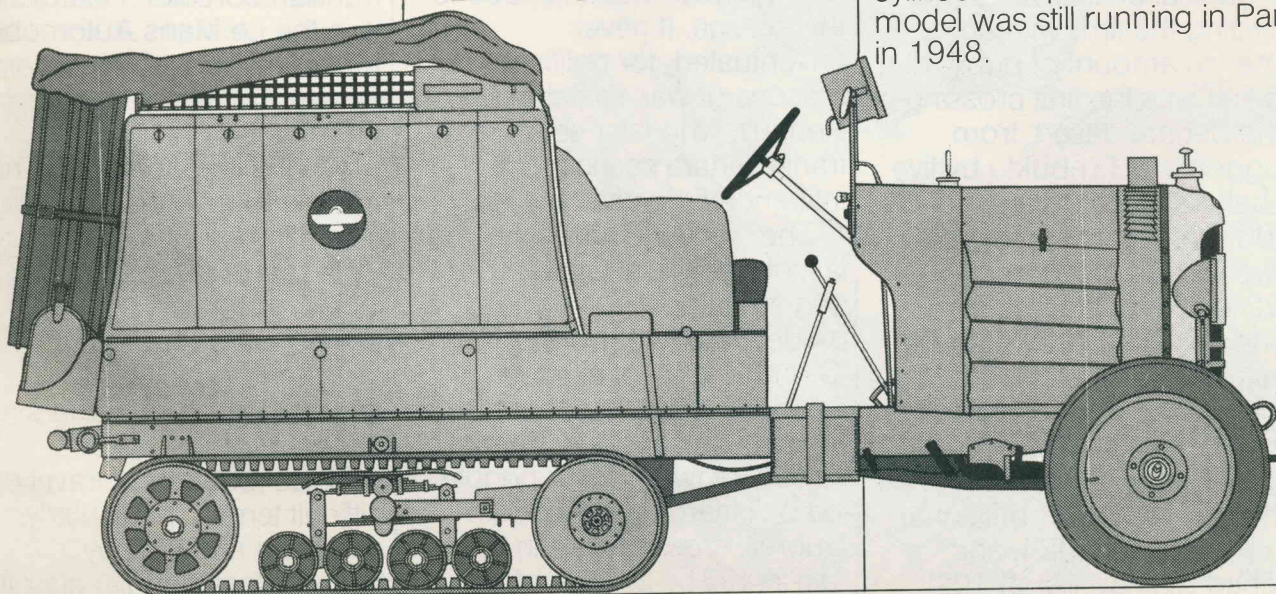
Elastic tracks, made of rubber, as were the undercarriage rollers, were built according to patents taken out by Adolphe Kégresse. Originally designed to run over snow, elastic tracks were to prove invaluable over rock and sand before opening the road for half-tracks 20 years later. The *Chenille*, or Half-track caught the attention of André Citroën, who purchased exclusive rights in 1921.

The B2 Black Cruise shown in the illustration is a B2 of 1924—5, a reinforced model (Mark 2). In this particular

model, front suspension was by half-springs, while that of the tracks was dependent on 2 small superposed straight semi-elliptical springs. The vehicle as a whole was considerably strengthened, while its cooling-water capacity was unusually large (auxiliary tank and expansion chamber) the radiator being made up of a number of removable finned tubes (with blind fixing nuts).

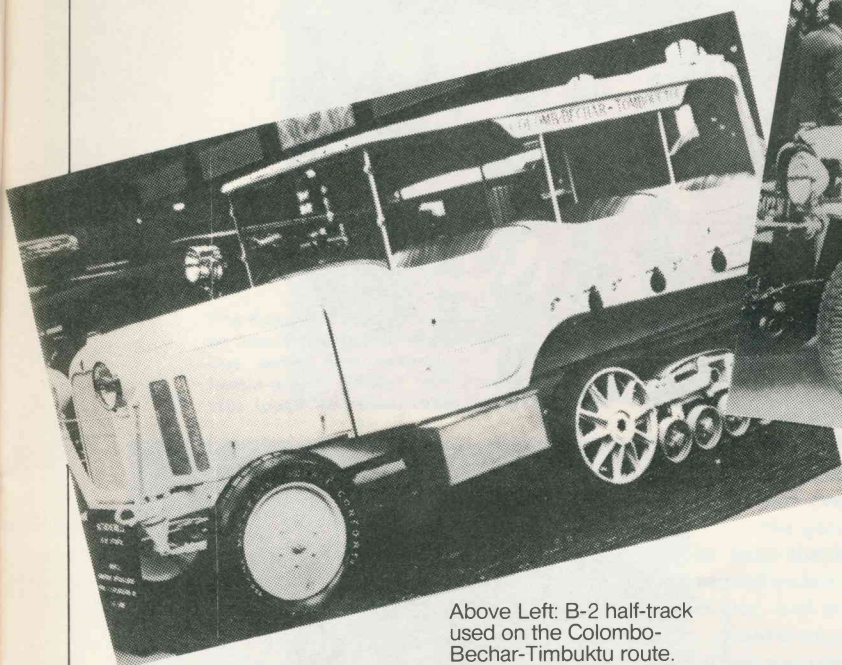
Two types of suspension were marketed — the Normal, for goods; and the Flexible, for ambulance work and as a personnel carrier.

The equipment with which other half-track versions were fitted was extremely variable, since it was determined according to the climatic conditions in the various regions to be crossed. After the last of the great cross-country attempts, the Alaska Expedition, or White Cruise, wheeled vehicles increasingly started to supplant tracked vehicles, particularly with the introduction of multiple axles. This is not to say that they disappeared altogether — C4 and C6 half-tracks were used the French army, and P38 half-tracks, some of them to be built under licence by Unic, were used in 1940. Numerous half-tracks of all types were used for hauling barges along canals. Some of them were even re-converted into very sturdy conventional wheeled utility vehicles; they performed in extraordinary fashion. One 4-cylinder 15hp 'Sudan' wheeled model was still running in Paris in 1948.

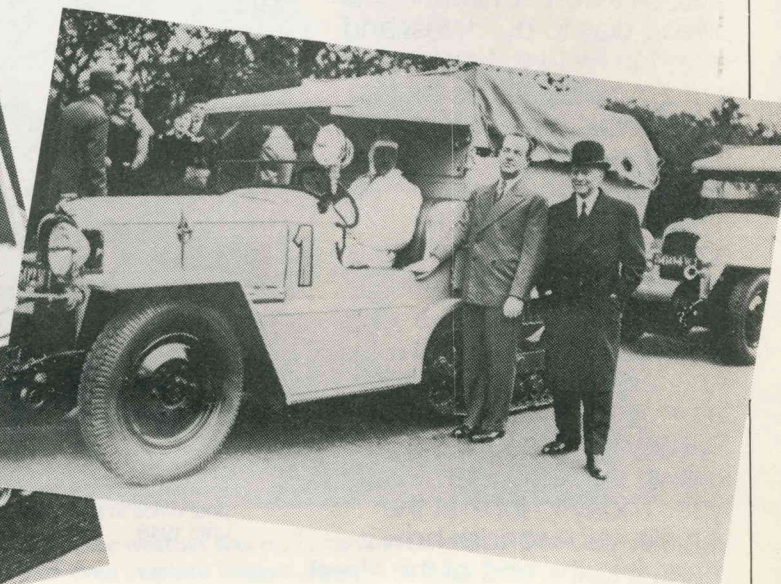




Left: The half-track department, assembly shop.



Above Left: B-2 half-track used on the Colombo-Bechar-Timbuktu route.



Above Right: The departure of the White Cruise (not factory-backed) — the expedition leader, M. Bedeaux, left, and André Citroën, right.



Above: B2 displayed at the 1924 Paris Motor Show in the commercial vehicle section.
Left: B2 ambulance.

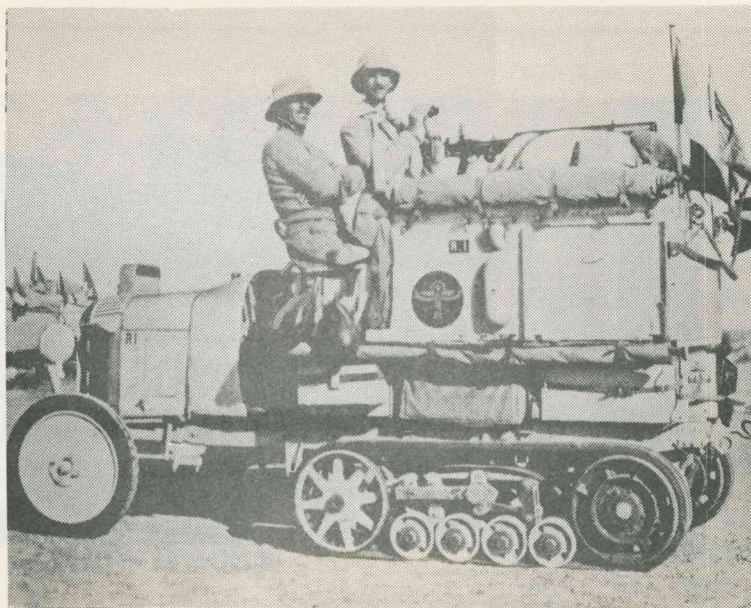
The Half-Tracks in Perspective

Mark Navin

While the Raids were tremendous adventures, with fine displays of bravery, courage and endurance, they took place in an era when all kinds of activities were embarked upon, all in the name of 'Science and Progress'.

The aeroplane and automobile were both in their infancy and were regarded as the passport to discovery. Citroën's contribution to this period was to build, test and man the half-track vehicles and send them to places that an automobile had never been. It should be pointed out that Citroën was not alone in their activities. People were embarking on trips to cross continents, oceans and mountains in almost any conceivable vehicle. The Australian, Francis Birtle's famous trip from London to Sydney in a Bean is a well known and epic journey of this type. Today to look at the vehicle, you wonder how it made it to the end of the street, much less traversed half-way round the world.

André Citroën was a genius for selling his name and company (see *F.D. André Citroën edition*) and the Raids apart from numerous other reasons, were seen as an ideal way to promote his product. Many modern manufacturers continue this practice, e.g. the specially prepared rally cars being used to sell the garden variety model. There's little resemblance between the two models, but it sells cars! André Citroën also ensured that each expedition carried a full complement of photographers and cameramen to record every detail, the film obtained being then used to promote Citroën, at fairs, theatres, etc. The raids also showed up another side of André Citroën's genius — that of picking highly talented men to fulfill his dreams.

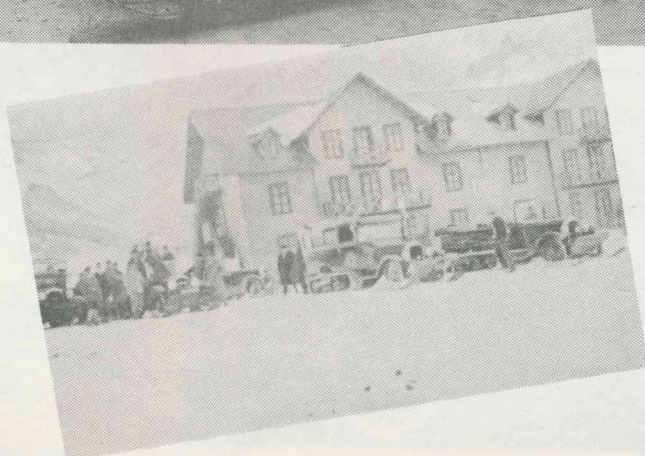


Vehicles used in the Sahara crossing.



A C6 used by the Austrian post office in some areas until 1948.

Half-track derived from 2-ton commercial, with skis at front.



OLD SOLDIERS NEVER DIE . . .

And Some Don't

Even Fade Away,

Says

ALEC MENHINICK

The Kegresse deals with snowy slopes or heathland gullies with contemptuous ease, and despite its modest horse-power rating will haul man-size loads up remarkable gradients.



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THE MOTOR

WHEN the weather was really bad in the wilds of West Wiltshire and even tractors bogged down, a strange beast crept out of the garage of Mr. Clements, in East Knoyle and waddled off to help the luckless victims of the elements. Heads turned as it moved sedately on its way, for this was no ordinary Thing and few, if any, had seen the like of it before, or would do so again, maybe.

Rounding a bend in the road the driver of the beast saw the object of his excursion. At the bottom of a long and slimy slope a 3½-litre Jaguar lay belly-deep in mud and near it, with a wire hawser stretched between the two, was a heavy tractor, helpless, with mud up to its axles.

Without a pause the Thing was headed down the slope and turned about above the tractor. Another wire was passed. It seemed unbelievable that one small unit could hope to pull the two heavily bogged vehicles out of the mire but five minutes later all three were moving, ever so slowly, up that slippery grass slope. When they were safely back again on the road and the towing wire was unhitched the Citroën Kegresse, for such was the unorthodox vehicle, made a dignified and unruffled return to its lair, there to remain until something really worth while again called for its services.

It was this incident that interested me so much that one snowy day in last February's cold spell I asked Mr. Clements if he would take me out for an airing in this wonderful old-timer. Airing proved to be the right word, for it has an open "tourer" body and the East wind and snow combined to bring the mercury down to 27 degrees Fahrenheit.

Mr. Clements is an enthusiast for this old Citroën, the actual age of which is unknown. He told me that he had never seen a vehicle which could take on such heavy collar work and the time had yet to come when it would let him down on a towing job. When all else failed the Kegresse was called in.

Some readers will remember this famous Citroën half-track model when it hit the headlines in 1922-23 with the first crossings of the

Sparsely furnished and instrumented, the cockpit of the Kegrèsse contains the normal pedal controls, plus hand-brake, gear-lever and a lever to operate the two-speed final-drive gearing. The engine is a four-cylinder 1,453 c.c. side-valve unit, with ducted fan behind the radiator.

OLD SOLDIERS NEVER DIE . . .

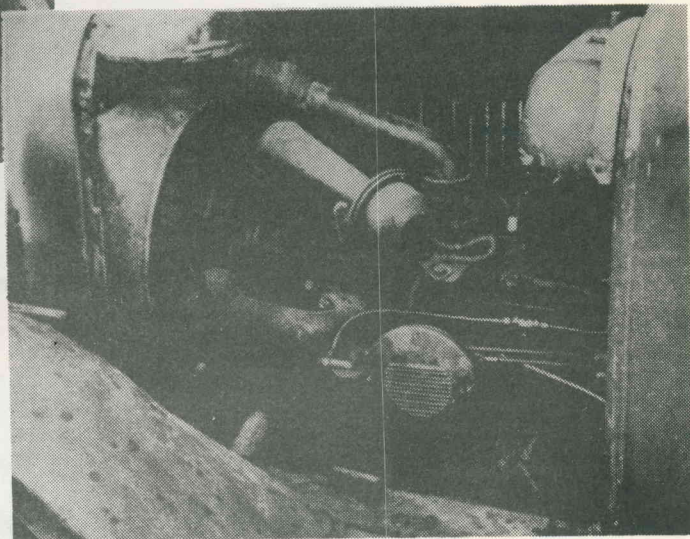
Sahara Desert by motor vehicles. Mr. Clements's particular vehicle was originally a French Army one and it is still in its original war-paint. Its first registered owner in this country was the Duke of Buccleuch at Drumlanrig Castle, Dumfries, where it was used as a shooting brake in the truest sense of the word. That was in 1926 and the Registration Book shows that it remained in the service of its distinguished owner until 1930.

From 1930 to 1936 there is a blank in its recorded history but the Kegrèsse first came to the notice of Mr. Clements when it was being used for hauling timber from the woods of Wiltshire. He coveted his neighbours' goods unashamedly but it was not until 1946 that his many attempts to buy it were eventually successful.

Since it came to live in East Knoyle the life of this fine old half-track has been no idle sinecure of a museum piece but that of a hard-working towing vehicle whenever conditions are too bad for the rest. It has never failed Mr. Clements and he has firmly declined the blandishments of would-be buyers.

The Kegrèsse is still in its original condition in all respects, with the exception of the front wheels, which are waiting to be replaced when the correct tyres can be obtained. Even the instruction book (in English) is in Mr. Clements' possession. In it the claim is made that the loads which can be handled are "On gradients not exceeding 8% . . . 5 tons. On gradients not exceeding 18% . . . 2½ tons. On gradients not exceeding 25% . . . 2 tons. On rails . . . 50 tons. On water (barge towing) . . . 1,000 tons." Mr. Clements, whose experience of the Citroën is confined to the land, is convinced that the claims are modest.

The four-cylinder side-valve engine is rated at only 11.4 h.p. (68×100), with a governor which limits its revs. to 2,300. An interesting feature is that the water impeller is fitted with a fan, placed behind and driven by the radiator



fan. Its speed varies in accord with the main fan and the arrangement works very well.

Two gear changes are provided, one being that of the normal three-speed gearbox and the other, operated by a separate lever, is a two-speed epicyclic in the driving pulleys. The steering is for left-hand drive.

We took the Kegrèsse out over the snow-covered hills, far from the beaten track. It was a delight to drive. No going was too bad for it (it still has its original rubber tracks) and in lowest gear, with the hand throttle set, its speed was so slow that it was possible to leave the driver's seat and prospect ahead, leaving the Kegrèsse to follow in its own time, like a well-trained dog. We did this several times and it never strayed from its straight course.

The steering was heavy and lacked self-centring action. One had to get used to the immediate deceleration when the clutch was depressed to change gear. Apart from this the Citroën was like a normal car to drive and more enjoyable than some I have tried. Its top speed is about 18 m.p.h. and its mechanical silence excellent.

After giving the old Citroën a no-holds-barred test which would have short-winded even a modern vehicle, I was "given furiously to think" on the subject of the progress we have made in the past 30-odd years.



Good ground clearance, little rear overhang, and flexibly-swinging rear tracks enable the car to tackle really rough country without grounding. Its rubber tracks also make it quite at home on normal roads.

Know-How

FIXING A LEAKING WATER PUMP

John Rollston.

I first carried out this mod some years ago on my '49 Light 15. Not one drop of water has since leaked. I now have a '51 French 11BL with slightly different pump housing (no ring nut), so my first step is to fit a modified "English(?)" pump. Could someone inform me, will I violate the originality by fitting a water pump with ring nut to the French '51 11BL?

No longer need that annoying *drip, drip, drip*, or worse, with its attendant risk of water in the clutch area, plague your every trip, or, at very least, show that unsightly puddle under the water pump.

This modification replaces the original packing with a neoprene seal, with no noticeable change in pump appearance.

The first step is to dismantle the pump and examine the bush at the impeller end for wear. If this is too loose, side play in the shaft will even cause the neoprene seal to leak. Having ascertained good shaft fit in the bush, parts required are:

1 seal, Gaco No.DPSMI5247,
OD 24mm, ID 15mm, modified by grinding OD down to 23mm to fit housing.

1 63022RS bearing for a clean front bearing area;

Both supplied by General Bearing Supplies, 463 Victoria St, West Brunswick, 3055, Phone 387 4966.

1 spacer sleeve —
OD 22.9mm, ID 16mm.

Length, 13mm, made from mild steel or similar, to fill out to original seal length and allow ring nut to retain seal in housing.

Preparation of shaft

To prevent damage to seal on assembly, bevel the rear corner of the groove which retains the bearing retainer collets.

Assembly

Pass shaft through pump bush and then ease seal onto shaft, ensuring the exposed spring faces rear. Then fit on spacer sleeve, original compressor sleeve and ring nut, finally bearing and pulley.

As can be seen, the removal of the original packing leaves some latitude in the positioning of the seal, so if your shaft is a bit rough in this area, you may position the seal on the best part of the shaft.

Club Library

Peter Simmenauer

Your committee believes that CCOCA has reached the stage that a formally established library is likely to be of benefit to the members.

Material owned by CCOCA should be listed and circulated so that members know what is available for consultation or loan.

Articles of interest to members or of value as source material for future editions of *Front Drive* should be identified and indexed so as to facilitate access to them. Any club library should contain material wanted by members. Suggestions are therefore wanted.

The committee is asking for your enthusiastic assistance to the librarian, Peter Simmenauer in the following ways:

If you are currently holding any club material, please give Peter the details so it may be listed for later distribution.

If you know of any publications that are worth the club acquiring, please let Peter know.

Are there any magazine or newspaper articles which would be worth including in an index to be used for future research. If so, please give full details to Peter.

He can be contacted by phone on 82 6539 (home) or 8198279 (business) or at 6 Rubens Grove, Canterbury, Vic.3126.

Club Calendar

Bryan Grant

June 6th General Meeting
June 16, 17, 18, Austraction 79, Echuca.

July 14 Wine & Cheese night at the home of Bryan and Joan Grant, 2 Bader Avenue, Nunawading.

August 1 General Meeting.
Technical night — Gerry Propsting on gearbox problems.

September 8th. Spares Auction and barbecue lunch.

October 3rd General Meeting.

November 6th Cup Day, Observation Run.

December 5th General meeting, followed by end-of-year socialising.

December 9th CCOCA Annual Concours in conjunction with the MG Car Club.

January 26th Proposed Motorkhana, to be confirmed.

February 6th General Meeting

March Annual Dinner

April Annual General Meeting

Club Shop

Pat Propsting

METAL BADGES

The order for these badges has been placed with Stokes Australia. They will be produced in Chrome, with white and dark blue enamel, designed to bolt onto your grille. Production of these badges is expected to take about 8 weeks.

T-SHIRTS AND WINDCHEATERS:
\$10 each plus postage, with either club or roadster design. Available in 3 colours — red, yellow, pale blue. T-shirts are \$5 each plus postage, with either Club or roadster design. Available in red, yellow, pale blue and white.

If other colours are wanted, please supply your own Exacto T-shirt or windcheater and we will print it for you. Exacto is specified because they seem to be the only ones that take the screen-ink without running.

LUBRICATION CHARTS
\$1 each (Light 15). Includes postage if necessary.

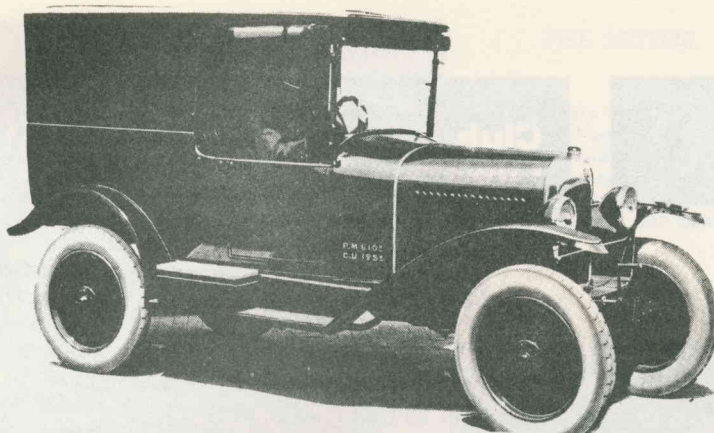
FRENCH SPARE PARTS CATALOGUES:

Reprinted by the Swedish club, good quality printing and binding. \$15 each plus postage.

1938 SALES CATALOGUES
Also reprinted by Svenska B11 Klubben, \$2 plus postage.

Spare Parts Report

John Couche



As a result of the May General Meeting discussion on spare parts and the follow-up Committee Meeting, the club now has the framework to enable a policy to be formulated to guide us in the purchase and sale of spare parts.

Several important points have been established:

- The club shall continue to deal in spare parts.
- The purchasing and re-sale of parts will be kept on a club basis only. In other words, CCOCA will not set itself up as a business to compete with established commercial operations.
- The club will continue to deal in both new and second-hand parts with an emphasis being placed on a wide variety of parts.
- As wide a selection of parts as possible will be purchased (finance permitting) with regular orders being placed to keep stocks current. Periodical large orders will be placed — as with the driveshaft order.

A set of by-laws governing the operation of the club's spare parts set up will be formulated shortly.

Austraction

If the reliability of your car is questionable, fear not! We have decided that discretion is the better part of valour, and have loaded up our Cit. with some spare parts that may be of help if you get stuck. Others please note that these parts are only to rescue stranded Cits, and are not for general sale.

Second-hand Gearbox Parts

The following parts have been cleaned, scrubbed, polished and priced for sale. Condition is considered reasonable, but no responsibility can be accepted.

1ST GEAR:

- Main cluster, \$2.
- 1st and reverse idler, \$2
- 1st & rev. idler bush, 50¢.

2ND GEAR:

- Main Cluster, \$5
- Pinion Shaft, \$2.

TOP GEAR:

- Main cluster, \$2
- Pinion shaft, \$2

REVERSE GEAR:

- Cluster, \$2.

- Synchromesh unit, \$2
- Synchro Hubs \$1
- Celeron washers, 50¢

- Pinion Shaft, \$2
- Pinion shaft thrust race \$2
- Pinion shaft shims (assort.) 50¢
- Pinion bearing \$2
- Pinion (fair cond.) \$Negotiable

DIFFERENTIAL:

- Output shaft \$2
- As above for '34 — '35 model, \$2
- Diff. '38 — '46 cond. unknown, \$Neg.
- Diff bearing saddle and ring nut, \$2
- Diff. bearing saddle, \$2
- MAIN SHAFT:
- Each, \$7
- With 1st and 2nd gear \$
- Bearing, \$2
- Rear bearing (in pairs) \$2.50
- Main shaft nut, \$1
- End cover, \$2.

- CLUTCH throwout bearing assy. \$2
- Speedo drives \$2
- Camshaft drive dog \$2
- Gearbox end cover \$1
- ID gear. (3rd) \$2.

Drive Shafts

Response to the opportunity to order reconditioned driveshafts has been very good, with deposits for nine sets being received. The order has now gone to Traction Avant Nederlands and the shafts should arrive within three months. Don't forget if you have ordered driveshafts, the changeover units must be forwarded to me immediately the new ones are received.

New Parts

- Bumper irons, \$43.20 pair
- L15 wheel bearings:
- Front outer, \$11.61
- Front inner, \$5.14
- Rear, \$5.46.
- L15 gearbox bearings, \$17.15
- L15 gearbox bearings \$17.63
- Big boot seal and clips, \$12.08
- Steering rack boots, \$6.95.
- Windscreen rubber, 75¢/m.
- Pedal rubbers, \$7.95
- Scuttle vent rubbers, \$13
- L15 Radiator hoses, upper \$4.99, and lower, \$5.37
- Filler neck rubbers (big boot) \$2.57
- Door and bonnet grommets 48¢
- Tie-rod ball sets, \$43.43

- Silentblocs (fr.) L15 \$60 approx. (Changeover)
- Upper and lwr. ball-joint seals (leather), \$3.43 each
- Big 6 exhaust gaskets (2-hole) 75¢
- L15 Head gasket \$4.60 (ID, but do fit)
- Gearbox coupling seals \$5.66
- Clutch bearing springs, 50¢
- L15 C/over radiator, \$25 approx.
- Gearbox bushes, \$26.52 set
- Locktabs, \$3.36 pr.
- Bonnet lacing \$4.00
- Window channeling \$13, enough for L15.

Furflex, Vinyl or rubber panel piping can be obtained through the Spare Parts Officer.

Contact Times

To ease the workload on the Spare Parts Committee, the following times have been set aside as the ONLY times that spare parts can be ordered or picked up, except in emergencies (which means the need to obtain a part to keep a registered and road-going car on the road following a break-down. Cars undergoing restoration do not qualify for emergency handouts.) To make this system work, your co-operation is requested.

The order times are 5pm to 9pm weekdays and 10am to 9pm weekends. John's phone number is listed in Front Drive.

Pickup Times

Parts may be picked up on the first and third Saturday of each month, except in emergencies. The dates are as follows: 2nd June, 23rd June (16th is the Austraction Rally), 7th July, 21st July.

The new Parts Order Form

months — i.e. parts not able to be supplied immediately will be put on 'back order' for twelve months, and the order will automatically lapse unless re-ordered on a new form.

This list, from TA Nederlands was published last year in *Front Drive* and is the first of several more lists to give you an idea of what is available.

<u>Part</u>	<u>Number</u>	<u>Price</u>
	<u>(Dutch florins)</u>	
Boot weatherstrip	224257	15
Door rubber (round)		25
Boot rubber post '53	802676	10
Boot rubber .post'53	802779	25
Scuttle vent rubber	221134	17.50
Knob(windscreen winder)	804104	3
Door anti-rattle buffer	233400	1

Thrust washers for synchro	500776	
	507272	
	500527	
	508335	ea.1
Bush—Rear of 1st/Reverse	500523	
Front of 1st/Reverse	500893	ea.5
Splined washer 2nd mainsh. pin.	500534	1
Celeron washer 50x30x : 2.6, 2.5, 2.8, 3.0		0.25
First/Reverse gear (20 teeth)	500756	15
" "(21 teeth)	500500	15
Outer circlip (rear mainsh.ballrace)	506979	1
Thrust washer 39.5x18x : 2.8, 2.6, 3.0, 3.2,		
2.7, 2.9, 3.1		1

Thrust washer (Reverse gear)	33.5x23.7x2	508070	1
Thrust washer (Reverse gear)	33.5x21x2	500719	1
Intermediate bush with flange (rev.)	32x18x36	508068	5
Reverse gear (16 + 32 teeth)		508069	30
Locking nut- front ball bearing on layshaft		500375	2.50
Third gear (28 teeth)		500515	20
Second gear (34 teeth) (layshaft)		507206	20
Lockwasher 1st/Rev. laysh. pinion		500533	5
1st/rev. layshaft pinion 26, 29 teeth		507270	30
Bush casing for differential		408463	25
Celeron washer 52x25.5x var.sizes			0.25
Planet gear 16 teeth, 16 splines		408236	
		508329	20
Spindle for satellite pinions-long		508425	5
short		598426	2.50
Crosshead for satellite pinion		508330	2.5
Packing washer - various sizes			0.50
Double lock washer (fixing cup to diff.)		508427	5
Adjusting nut (For tapered roller bearing)		408452	5
Coupling flange (up to 1950)		508012	10
(since 1950)		508354	10
Bolt (8 diam)		40830	1
Bolt (10 diam)		508512	1

Pressure plate	with exchange	95
Clutchplate	with exchange	85
Housing clutch thrust race		7.5
Bush for clutch withdrawal fork	451670	2.5
Bearing cap layshaft front bearing-10mm		
	501001	5
	- 12mm508275	5
Bearing cap mainshaft fr. bear'g.	501005	5
Cap for starting handle	500539	2.5
Cork gasket for st. hand. dog cap	500532	1
Front cap Reverse gear inter.shaft	501002	1
Speedo drive pinion socket	500504	5
	507244	5
Fixing plate for speedo socket	500837	1

Drain PLug	2950	6
1st rev. selector fork	500537	5
Shaft 2nd/top sel. fk.	501180	5
Shaft 1st/rev. sel. fk.	501181	5
Mainshaft with 25 spline for clutch disc -	515702	75
End cap for mainshaft	508006	5
Pin for startet handle dog	500840	1
Washer- fr. mainsh. & fr. m. locknut	508052	1
Lock washer with tabs	500374	1
- for fr. ends of main- & layshafts	611007	1
Housing for front ballbearing-mainsh.	501003	5
Washerbetween mainsh.fr.ballbear'g and top speed pinion	500526	1
Bush - Mainshaft top speed pinion	500521	5

Front Axle cradle complete -11B	308505	100
Lower link arm left	441290	50
Upper link arm right	426565 D	50
" "left	426517G	50
Nut(locking upper ball joint)	426531	7.50
Shim for regulating up.ball joint)	426606	1
Packing shim for lwr ball joints	426201	0.25
Leather oil retainer	426618	4
Shock absorber rubbers		1
Shock absorbers(2) Koni		165
Torsion Bars ea.		15
Drive shaft with exchange		100
Ring nut,fixing stub axle outer ball race		5
Wheel nut		2.50

Bearing front crankshaft spigot housing (40x17x12)	89500	5
Clutch thrust withdrawal bearing (72x35x17)	89971	15
Roller for layshaft rear (30x72x19)	500367	20
Tapered roller diff bearing 80x40x19.5	408451	20
Bearing front of shaft driving dynamo and water pump (47x20x14)	89475	6
As above, for front (42x 20 x 14)	89482	6
Bearing, water pump shaft (42x15x13)	89951	5
Dynamo bearing 47x17x14	6303/702252	6
40x17x12 (ducellier)	6203/89500	5
	88067	7
	88066	7
	600897	7

Outer oil retainer for stub axle	425948	7
Inner oil retainer for stub axle	426020	7
Oil retainer rear stub axle (7-11BL)	2165 S	5
" " (11B)	2185 S	5
Oil retainer for diff.	408453	10

Torsion bar		15
	441584	25
Rod for link arm adjustment (7&11)	420920	7.50
Suspension link hub-inner splines		
at end	421325	20
Rear link arm Left	421185G	15
Right	421186D	15
Rear axle buffer (rubber)	421363	10
Double cored rubber bush for		
tie-rod clevis	421014	1
Shock absorbers Koni(2)		165
Shock absorber rubbers(2)		1

Handbrake	3 lengths	25
Speedo		20

[illegible]

ONLY ORDERS MADE ON THIS FORM ARE VALID.

All prices quoted by the club are as a guide only, unless otherwise stated, and may not include costs such as freight, duty, club margin, etc.

Members participating in the Parts Loan are eligible for a 10% discount on the prices of new

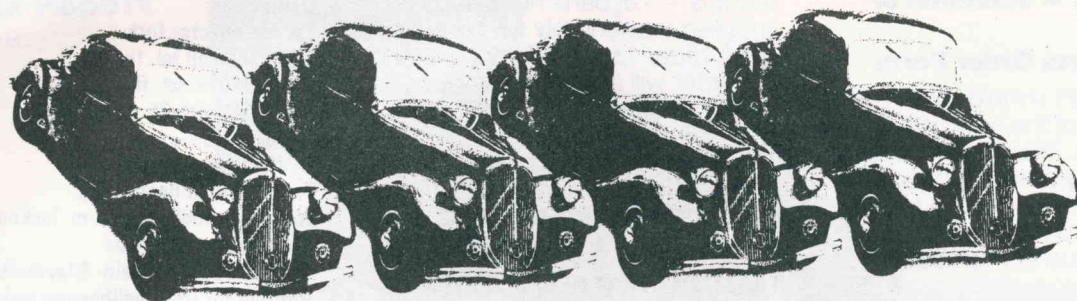
The club will supply as many parts as possible, but availability of parts is subject to variation. This order form is current for 12 months from the date of order, after which any parts not supplied must be re-ordered on a new order, if still required - you are advised to keep a copy of this order for your own records.

The other two objectives are (particularly for overseas parts) the establishment of a parts order to be sent on a regular basis, and whenever possible, the regular publishing of all parts currently available overseas, and their sources.

Even apart from the Dutch club, Traction Avant Nederlands, members may be surprised to learn of the extent of parts still available, both new and reconditioned, from sources such as Svenska B11 Klubben in Sweden, Depanato in France, Nori in the U.S., the T.O.C. in the U.K., and even Citroën itself.

To benefit from this availability to the greatest extent, you must of course have the information. *Front Drive* will therefore publish what parts are available and a rough guide to prices whenever possible. While this will open up more possibilities, the availability and pricing of parts is subject to sometimes major variation, and published lists can only be considered a guide, often being outdated or incomplete by the time we can get them. Pricing, particularly, is difficult to pin down, due to freight, customs & duty vagaries, exchange fluctuations, etc.

The new Parts Order Form is now the only acceptable way for parts which are not in stock, new, reco. or used, to be ordered — heavily aspirated phone calls, the backs of tram tickets, veiled verbal threats, will no longer be recognised. The form remains current for a period of twelve



FOR SALE

1927 B14 Roadster 2 seats with dickie seat — original Slough-built English body. Body re-panelled, new upholstery, hood, side screens, etc., new paint, battery, exhaust system, valves, wiring. Magneto, starter, generator, instruments completely overhauled. This unusual B14 model runs well and is quite economical, some spares included. Selling to defray costs on another vintage car project. \$NZ5,000 ONO. Freight to be purchaser's responsibility. Offers to Miss P.A. Bren, 556a Queen Street, Levin, New Zealand. Phone 84118 Levin.

COO-EE WHOOPEE BONZERS!!

2CV Owner's Club, cloth badge, sticker, and T-shirts are now available — for more details, contact Mark Navin, (03) 898576.

1973 Ami Super sedan, white, low mileage. \$3500. Further details, Stuart Clarke, Sydney. (02) 312690.

1973 Dyane Going, but not quite registered. Interest? Offers Stuart Clarke, Sydney. (02) 312690.

1951 Slough-built Light 15 with sunroof and easy-clean wheels. Condition very sound. Registered, going and RWC. Jan. 1980 reg. \$1500 ONO. Robert Belbin, (03) 534 4785.

1957 DS19 Good condition, unregistered. \$350. Andrew rankine, 489 7635.

DS21 Pallas 130,000 miles. Situated in Hobart, price around \$1500. All enquiries through Roger Brundle, (03) 509 0441.

WIDE RANGE OF NEW AND SECONDHAND PARTS for a range of years and models. Contact Parts Officer. Refer to this and back issues of Front Drive for listings of parts available.

SPECIAL TOOLS NEW ADDITIONS

The club has recently acquired some special tools, which will be available along with the tools already available through Roger Brundle. Tools are available for a period of one week — deposit on one tool is \$10, on two or more, \$25.

The new tools (hire charges on application to Roger):

Tool for checking brake lining and drum concentricity.
Gauge for positioning rear axle.
Spanner for steering-rack cap.
Gauge for checking length of track rods.

Spanner for outer ball-race retaining ring.

Vice for dismantling drive-shaft couplings during fitting.

Former tools and hire charges:

Spanner for adjusting brake shoe eccentrics 50¢.
Tool to adjust synchromesh 50¢
Valve spring compressor \$1
Vernier gauges \$1
Stub axle nut spanner \$1
Steering ball pin extractor \$1.50
Block for removing rear torsion bar \$1.50

Front hub extractor \$2
Upper balljoint extractor \$2
Outer front wheel bearing extractor \$2
Stub axle inner ring nut extractor \$2
Upper swivel ball spanners \$2
Extractor body for drive shaft spigot cup or ball joint \$2
A-frame for towing L15 \$2
Lower ball joint extractor \$3
Collets for ball pin extractor \$3
Collets for spigot cup extractor \$3
Chain block and tackle \$3.

Whilst every effort is made to ensure the accuracy of information and advice in this magazine, and in replies to readers queries, neither the Citroën Classic Owners Club of Australia nor the officers and members thereof nor the authors accept any liability.

