DRIVESHAFT NOTES

When Andre Citroen decided to build his new car, the Traction Avant, in the early 1930s, it was to have several modern features of which front wheel drive was perhaps the most notable. And therein lay one of the cars major and continuing weak points - the driveshafts or more precisely, the constant velocity joints (CVs) needed to ensure smooth power transmission to the driven wheels.

Something of the dilemma of the joints has been presented in an excellent series of articles by "R.H." (CCOCA member Richard Howarth?) in Winter 1984 issue of the South Island Citroen (NZ). The article is reproduced here in part.

Oddly in view of the subsequent success of the Rzeppa joint and its now virtually universal adoption in front-drive vehicles, it did not satisfy initially, and the hastily cobbled up double Hook joint by Glaenzer was used by the factory over the life of the Traction. Oddly, the joints driving the front wheels of the rugged 4WD Mercedes Benz Unimog are also the Glaenzer type, and it may be that under extreme conditions which might tear the rubber boots of the Rzeppa joints, the Glaenzer joint is still most satisfactory overall.

The Gregoire Tracta joint went on to be refined and used in several light-weight vehicles (Auto Union, Panhard Dyna, Hartnett etc) and some rugged vehicles such as Scammell.

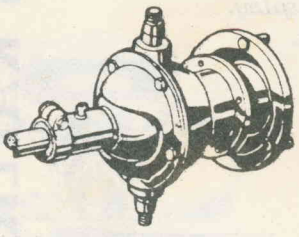
Renault 16s were equipped with both Glaenzer joints and another type, the Dunlop-Weiss joint, and some Panhards were also fitted with Glaenzer joints. Very confusing!

There were also "after-market" versions of shafts produced for Tractions, at least one of which, by Villard, appears to have a Tracta joint, and to permit tighter turning without damage. In this sense, the modern shafts being produced in the UK for the Traction and using the Rzeppa-Birfield joint from a Range Rover (£155 in UK) might be thought of as just another "after-market alternative."

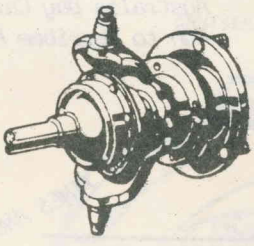
Although fitted to keep dirt out of the Glaenzer joints on later (July 1955 on) Tractions, rubber "concertinas" were also fitted to some very early Tractions, possibly where the more open Rzeppa joint was fitted, or maybe it was an early attempt to protect and extend the life of the Glaenzer joints, something which overseas Tractionists claim they do very effectively.

W.G.

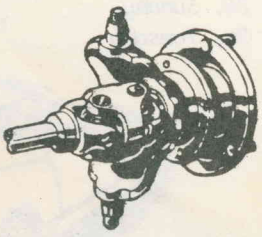
However, the real problems experienced with the development of the Traction were associated with the gearbox and driveshafts; the former due largely to André Citroën's insistence on the use of an automatic gearbox developed by a millionaire inventor with the imposing name of Robert Dimitri Sensaud de Lavaud, and the latter complicated by bitterness and in-fighting at the works. The proposed constant velocity driveshaft joint was known as a 'Tracta'; being invented by a gifted young engineer called Jean-Albert Gregoire. Unlike an earlier Gregoire design, the 'Tracta' joint specified for the Traction featured a housing which turned with the shaft, hence the name 'rotating joint'. Intensive testing during 1933 revealed serious weaknesses - overheating and leaking lubricant leading to seizure of the joint. Bendix, the manufacturers of the 'Tracta' joint, made a half-hearted attempt to improve the sealing, but aware of prejudice and unease at the Citroen factory regarding f.w.d., ultimately renounced the design altogether. Gregoire, meanwhile, having had an inspector check the manufacture of his joints, learnt that not one met his specifications. Tolerances were poor and assembly was faulty. In March 1934, Gregoire took the parts to Norroy, the 'Quality Director', threw them on his desk and accused him of sabotaging the production of his 'Tracta' joints! Meanwhile, Citroën, who had tried and discarded an alternative American Rzeppa ball bearing joint, was getting desperate. Finally, an old supplier, Glaenzer, was approached, and asked to quickly design a conventional double 'Hook' type joint with needle rollers. The early Glaenzer joints also gave trouble with lubrication of the central spider, so Gregoire came back with a redesigned 'Tracta' joint - reverting to his original 'stationary', or non-turning housing design. Although both types were used on production models during 1934, by 1935 the Glaenzer joint had been perfected, remaining virtually unchanged until Traction Avant production ceased in 1957. R.H. South Island Citroen 5 1984.



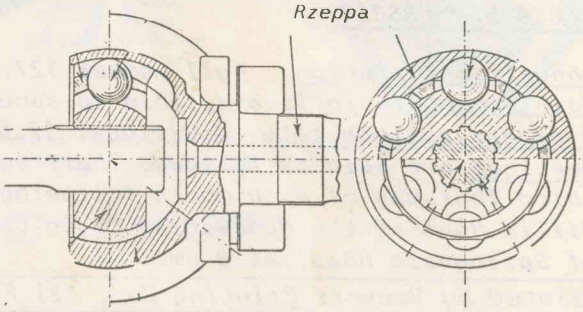
Non-turning Tracta



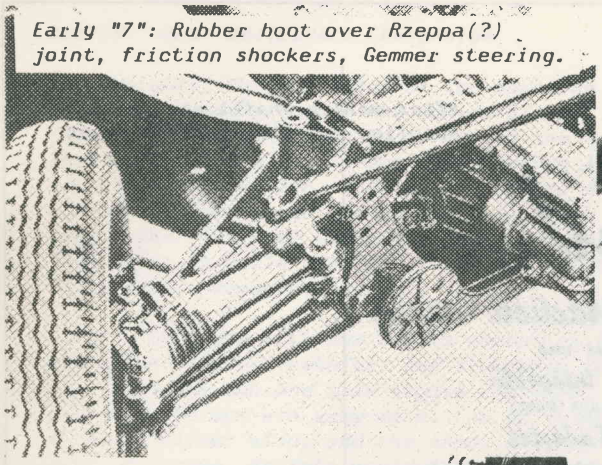
Turning Tracta



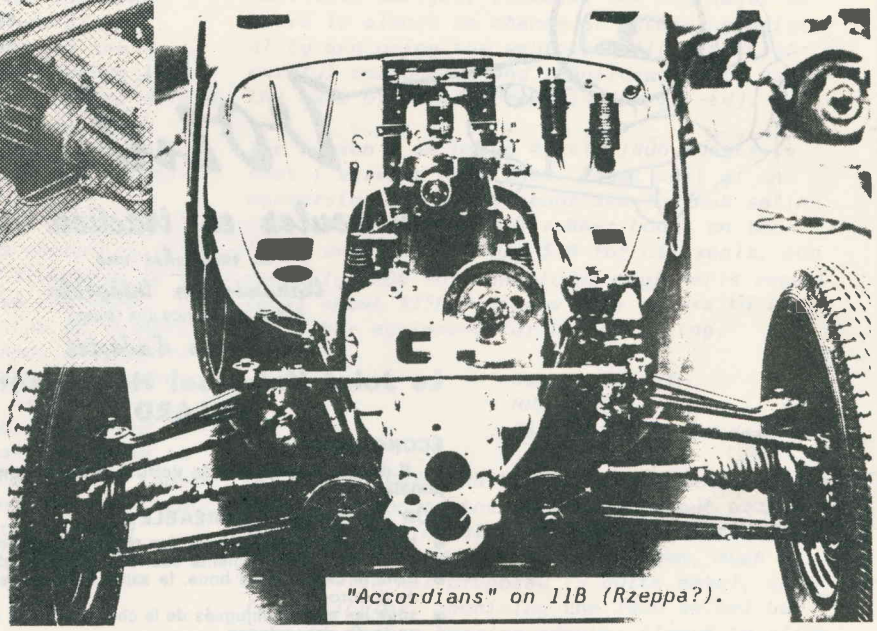
Glaenzer



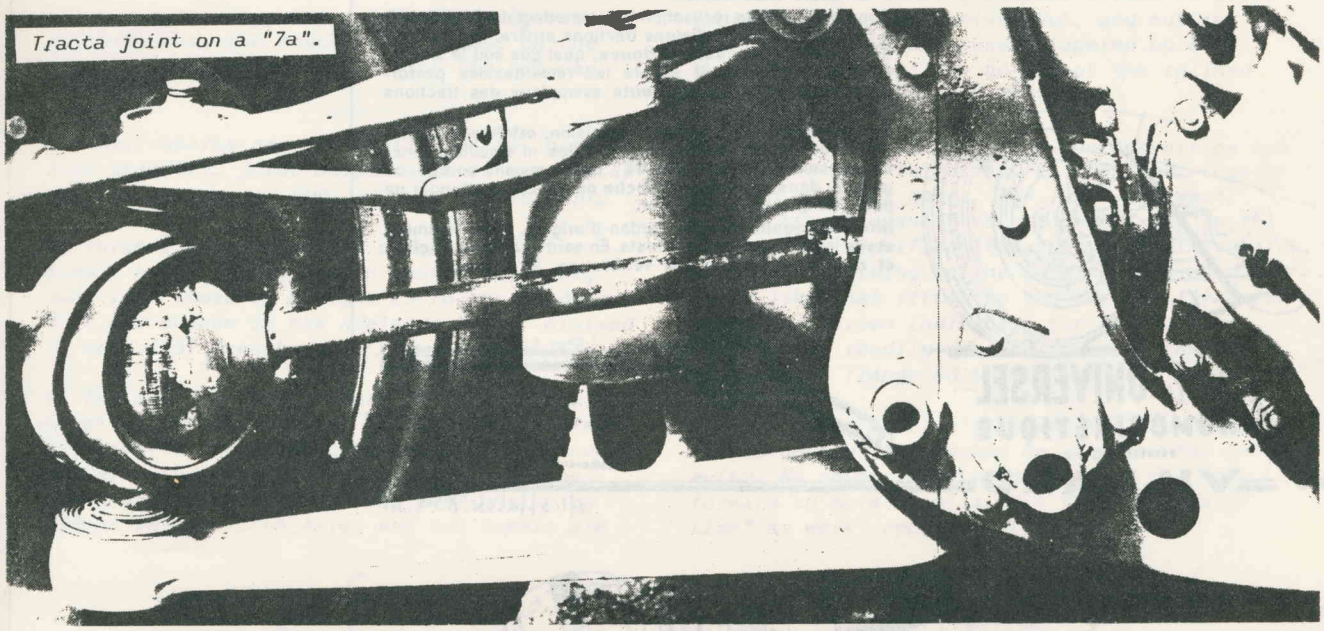
Driveshaft joints fitted to Tractions



Early "7": Rubber boot over Rzeppa(?) joint, friction shockers, Gemmer steering.

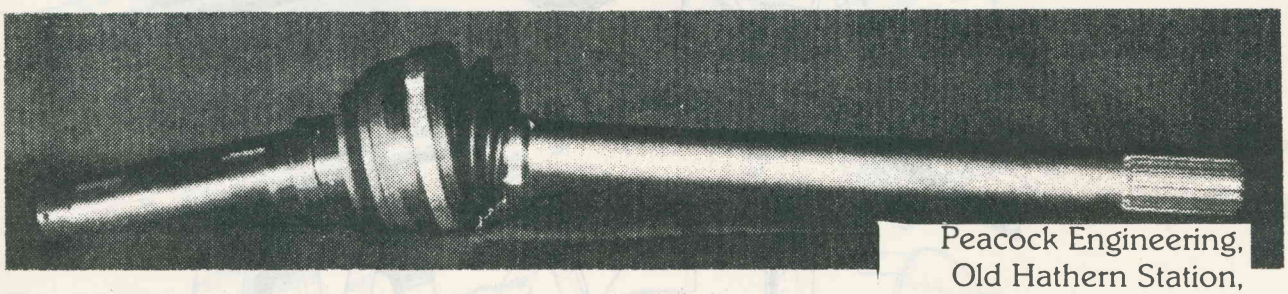


"Accordians" on 11B (Rzeppa?).



Tracta joint on a "7a".

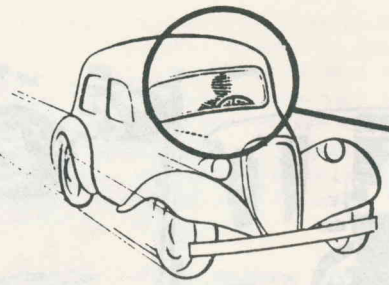
Close-up views of alternative driveshafts fitted to early Tractions.



Modern Rzeppa-Birfield joint fitted to reproduction shaft by Peacock Engineering (UK). (£155 ea).

Peacock Engineering,
Old Hathern Station,
Normanton-on-Soar,
Near Loughborough,
Leicestershire LE12 5EH.
Tel: 0509-842560

After market shafts and CV joints supplied for the Traction Avant.



Vous...

qui rouler en traction avant

et rechercher une

transmission intégrale

(de la puissance aux roues)

hâter-vous d'adopter

Le Joint Universel Homocinétique VILLARD

ÉCONOMIQUE :

Il dure... autant que la voiture et ne l'immobilise jamais.

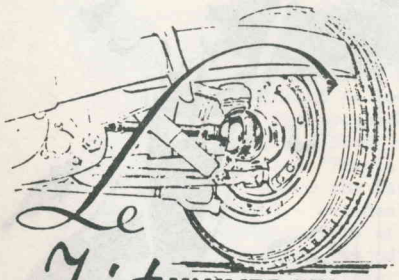
SÛR - EFFICACE - AGRÉABLE :

- sur les itinéraires en lacet des régions montagneuses ;
- parmi les encombrements des rues, parcs et garages ;
- dans le cailloutis, la boue, le sable, les flaques d'eau, de goudron ;
- sous les effets conjugués de la charge et de la vitesse, en toute circonstance.

Son principe et sa réalisation lui permettent de **BRAQUER à 50°**, comme les meilleures tractions arrière, la **direction** demeurant **impeccable et douce**, quel que soit le virage ; de sorte qu'il accroît encore les remarquables **performances** et la **tenue de route** exemplaire des tractions avant.

Son **mécanisme** d'une haute précision, extrêmement simple et robuste, ne comportant ni billes ni aiguilles, fonctionne sans **AUCUN BRUIT**, constamment enrobé de graisse, dans un **boîtier étanche** où nul corps étranger ne peut être projeté ni s'infiltrer.

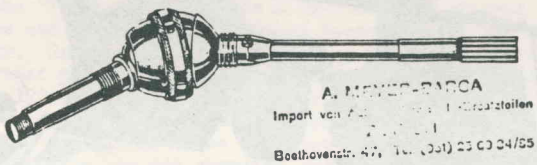
Interchangeable avec le cardan d'origine, il est aisément et vite installé par tout motoriste. En sont également **faciles et rapides**, l'entretien, la vérification, le réglage.



Le Joint UNIVERSEL HOMOCINÉTIQUE

BREVETÉ S.G.D.G.

VILLARD

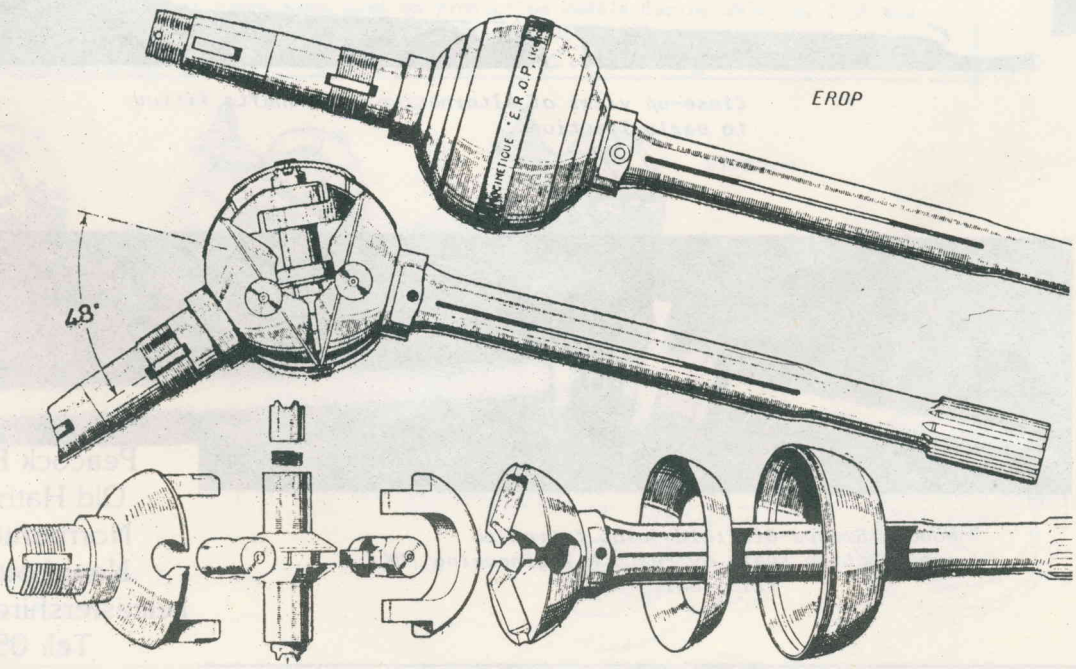


A. MEYER-BARCA

Import von [illegible]

Boethovenstr. 47, Tel. (0611) 23 03 04/05

VILLARD



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