

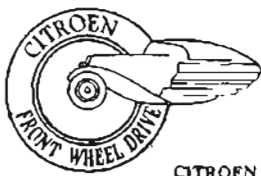




Wonderful Front Drive

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CITROEN

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Floating Power

Volume Three Number One

February Nineteen Hundred and Seventy Eight

Firstly, I must offer very sincere apologies to all Floating Power readers who are no doubt feeling a bit puzzled by the erratic arrival of the magazine — Christmas, and various other organisational hassles contributed to the last magazine being a month late, and we are extremely sorry about this. No doubt poor Tricia has received many irate letters about the non-arrival of the last Floating Power, as she tends to be in the front line for complaints — let me say that it was, unfortunately, a combination of circumstances that nobody could have foreseen. We'll all keep our fingers crossed that it won't happen again.

Perhaps this is an appropriate point at which to break the news that we shall be handing over the editorship of the magazine to the author of "Light 15 Corner", Graham Brice, after the April issue, having done our "two year stint". Graham very bravely volunteered to take over the editorship, having been warned about the amount of work involved, and has a lot of ideas about new features for the magazine. (One of these being a technical column, something which has obviously been needed for some time but which we haven't really felt ourselves to be capable of producing.) We shall continue to contribute to each issue and I'm sure Graham would be very pleased to hear of any ideas/suggestions/articles you might have. It's a fairly heavy task, and he will certainly need support from everyone: after all, he's proposing to take on single-handed a task that we have shared. (Although I have a sneaking suspicion that Tricia might lend a hand...) Our best wishes, Graham!

The Dutch Club are organising a very ambitious event in March, and would be happy to hear of any English tractionists who want to join in. They are planning a "round Europe joy-ride", and will be dropping in on England on 6th March. If you would like to join them in their subsequent journey through Holland, Belgium and France, contact Tricia Brice and she will let you have further details.

The Social Diary is going to be very much less detailed this year, as only a small number of events that the Social Committee organised last year were well attended — quite understandably, people are not going to drive long distances to attend small pub gatherings, and many members seem to be in the process of restoring their cars anyway. The regional meetings on the whole went well, so that we're going to rely on the various sections to organise their own events, and stage two national meetings a year, and really concentrate on making these a success. We hope that everyone will really make an effort to turn up to these.

A brief reminder that subs. once again fall due at the end March (doesn't it come round quickly?) Please send the correct amount to: Mike Wood, C.C.C. Treasurer, 119 Danebury Avenue, London SW15, quoting your membership number. Floating Power only = £6.50. Joint Subscription for the Citroën and Floating Power = £9.50. Do make sure that you renew within the allotted time, as you are liable to miss copies of both magazines if you send your sub. in late. Finally it just remains to wish you a very belated but sincere happy tractioning year, and may your driveshafts continue long into the future! G.W.



THE MILLER'S TALE

References have often been made in these pages to Harry Miller and the cardinal importance of his designs in the development of front-wheel drive, and it is interesting to trace back the history of the gem-like little racing cars whose phenomenal successes on the oval speedways so convincingly vindicated his belief in 'traction avant'.

The story goes back to 1902, to the very pioneer of front drive, John Walter Christie, who, with one of those rare strokes of totally original and radically innovative thinking that characterise genius, conceived his first car. Half a century before Issigonis, this extraordinary and anachronistic device had an in-line four-cylinder engine mounted transversely along the front-wheel centreline. Inside the crankcase were a gearbox with two speeds and reverse, and a set of slipping cone clutches that allowed differential action. Christie's independent front suspension, Lancia-like, left the wheel hubs free to slide up and down the kingpin, with vertical coil springs controlling deflections; the axles used double-jointed driveshafts on both sides. For the next six years, Christie built road and racing machines following the same basic principle, varying in size and potency from the 100 m.p.h. 1907 'Killer Christie' to the small 1908 taxicab (we hope to feature a more extended article on these achievements in a future issue); after this, he turned his inventive talents to multi-wheeled military vehicles and tanks.

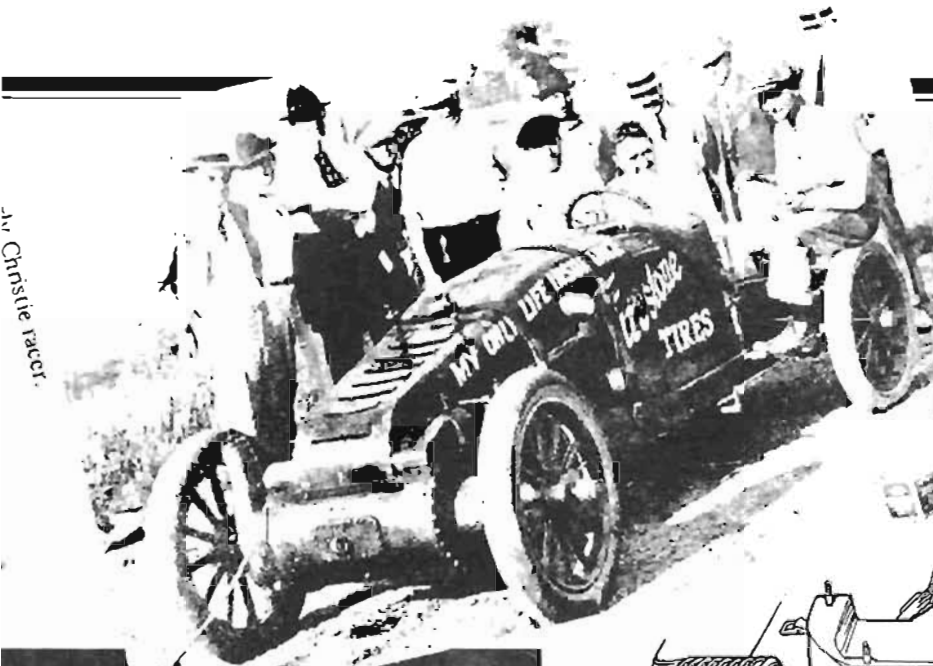
A young racing driver from Kansas City named Ben Gregory had been very impressed with the competition Christie he had driven in these early days, and happened to be stationed at Walter Christie's tank factory during 1918 while in service with the Army Ordnance Corps. There he became acquainted with Christie and his enthusiasm for front-drive, and Gregory, himself a competent engineer, was swayed by the persuasiveness of Christie's arguments to the extent of building, in the following year, his own car using a small Saxon four-cylinder placed conventionally in the frame with the flywheel at the front, driving forwards. It incorporated his first patented independent front suspension design, using twin transverse leaf springs, in the same manner as the post-war Panhards and the Amilcar Compound. In 1920 he built a second car, this time for racing, using a 90 b.h.p. Curtiss OX-5 aero engine with which he went barnstorming on the dirt tracks and county fairs of the Kansas City district; the car was significant in that it used for the first time a De Dion tube front axle, patented in 1921, which was to characterise all his subsequent front-drivers and which was to provide the biggest link with the Millers. Gregory used this configuration in a Hispano-Suiza 180 b.h.p. racer allegedly capable of 143 m.p.h., and in 1921/2 exhibited, and went into production with a small Saxon-powered f.w.d. passenger car. The thirty or so more powerful road cars he had built in that year by an engineering firm of Moline, Illinois, were plagued with steering troubles (the old story), and the 1922 recession which killed off so many small ventures proved the demise of this one as well, though Gregory continued building f.w.d.'s on a one-off basis until the fifties.

By the time that Gregory was perfecting his Dion system, Harry Miller was already an established racing car constructor. A second generation German immigrant, he was born in Wisconsin in 1875, and by 1915 had become a large-scale manufacturer of his own radically new carburettor, a precursor of the celebrated Weber. Because Miller carbs out-performed all others his Los Angeles factory became unofficial headquarters for the racing fraternity during its seasonal migrations west, and it became a clearing house for the exchange of ideas by many of the most astute racing designers of the day; and thus Miller became one of the most erudite experts of them all. His first major venture had been to redesign the classic twin overhead cam Henry-designed Peugeot Grand Prix in 1915, and within seven years he had progressed to a domination of American racing with his own straight Eight Millers. Miller, the ideas man who lacked formal training, designed these superb machines in conjunction with Fred Offenhauser, the peerless production engineer, and the creative draughtsmanship of Leo Goossen; the cars themselves reflected Miller's legendary preoccupation with aesthetics. 99% of their constituent parts were specially made — breaking with the established tradition of adapting production car components — and only the very finest materials were used: the finish of the machines was absurdly high. It was this uncompromising perfectionism, however, that enabled Miller to deviate so substantially from his competitors when the need arose.

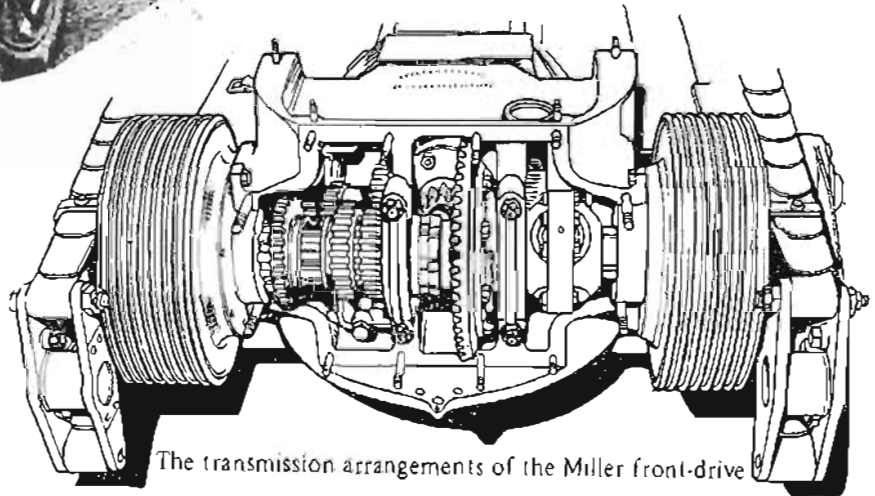
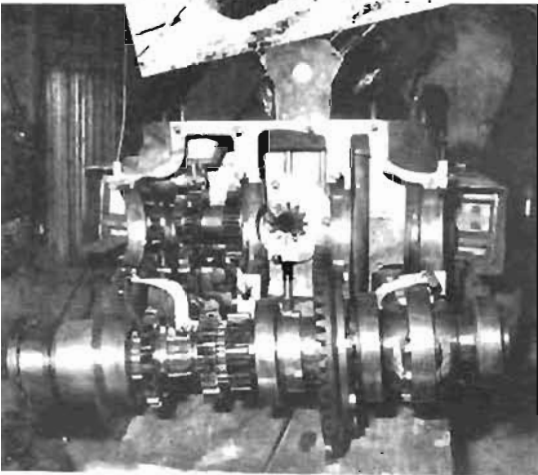
The need arose in 1924, when Duesenberg swept the board at Indianapolis by supercharging their engines; Miller needed a secret weapon with which to retaliate. The wealthy racing driver Jimmy Murphy sponsored and financed Miller for the development of the new car, a front-wheel drive racer, since Murphy felt he could remain competitive if he could negotiate the turns a few seconds faster. With Christie's precedent obviously in mind, Miller first proposed an east-west engine layout — this was rejected. Miller and Goossen then sketched out several designs with the engine in the conventional position and the gearbox and final drive ahead of it, but they came to the conclusion that whatever they did the gearbox took up too much space, necessitating the engine being pushed so far back in the frame that there was insufficient weight on the front wheels for proper traction. The design they eventually adopted had the three-speed and reverse gearbox not in tandem with the engine, but set transversely between the off-side chassis member and the bevel box, with which it was integral.

As a gearbox it had its limitations. For one thing, to avoid clutch slip, the clutch fitted to the car incorporated three steel pins which dropped into three holes when the clutch was fully engaged to lock the whole assembly. The clutch was very tricky to manipulate, and if power was applied before the pins were properly home, there was a horrible disaster, accompanied by rending noises. Such a clutch hardly lent itself to double de-clutching for downward changes; Harry Miller himself had a theory that because the gears were on the output side of the crown wheel and pinion they were turning slowly, and therefore clutchless changes could be made without much danger of stripping the gears. This was not a particularly sound theory, and in fact the gears were really too narrow for the work they had to do anyway. Being on the output side, they had to withstand higher torque loadings than normal

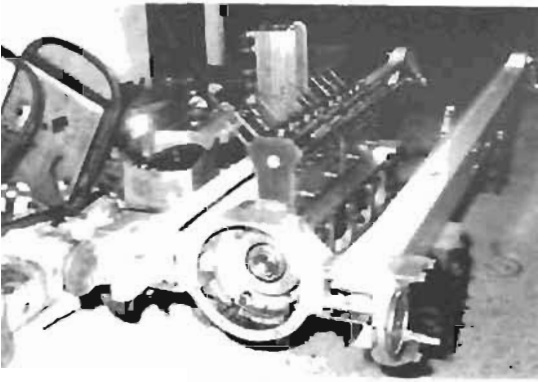
Mr. Christie racer.



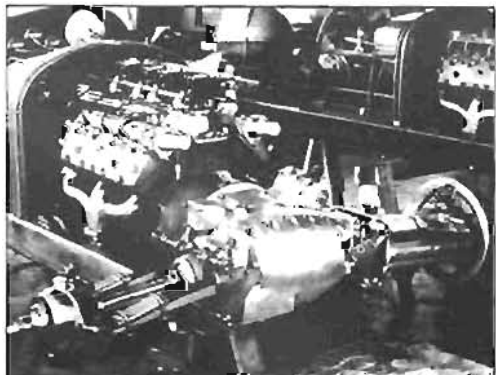
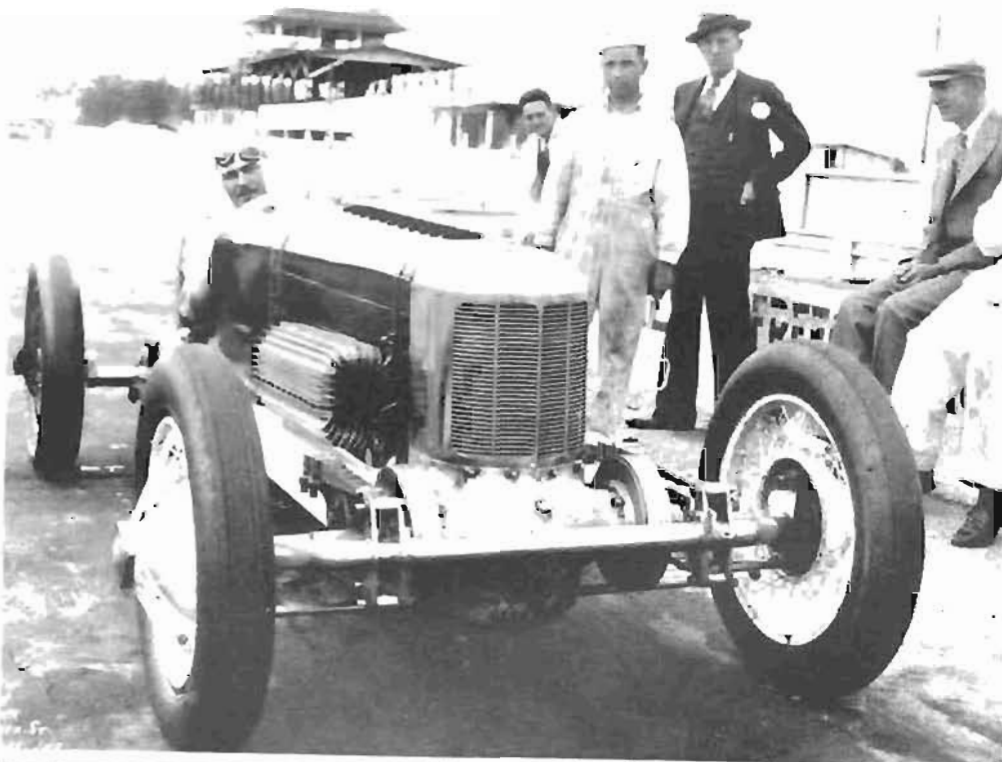
Ben F. Gregory's first effort — the 1919 Saxon-powered light front-drive roadster.



The transmission arrangements of the Miller front-drive



Photograph of the transmission partially dismantled; differential is at the right of the assembly in the foreground. Power was ingeniously transmitted through three telescoping shafts.



Leon Duray, in his Miller '91' Front-drive, set an Indianapolis record that stood unbroken for nine years. Projecting from the bonnet is the supercharger inter-cooler, note the De Dion tube prominent at the front.

1935 Miller-Ford track car.

transmission gears in a gearbox between the engine and the final drive, and therefore needed to be oversized rather than undersize.

Theoretically, then, the transmission had no right to perform as well as it did. It was reliable in sensitive hands and would only tolerate sedate gearchanges, and those only for getting up speed. Most drivers took no chances, and used push starts, with the mechanism in high gear. Changing down was entirely out of the question, but was also not among the requirements of oval track racing. The brakes, too, were only intended to be used for occasional pit stops: working against such handicaps, the successes of these cars in European races is all the more surprising.

The Miller's connection with Gregory was the use of the latter's De Dion front end, though suspended on quarter-elliptics rather than on transverse semi-elliptic leaf springs (though the Miller-Ford of a decade later made use of these in lieu of the backward-swept De Dion tube). The ramifications of the overall Miller front-drive design were enormous: between 1925 and

'27 their success, notably in the hands of Leon Duray, put front drive into the public consciousness. The Cord L-29 was its most obvious heir, down to the use of the Gregory front end (Miller, it will be remembered, was a consultant on the project — FP No.5), but the Ruxton, the Gardner and hosts of experimental passenger cars of the thirties were inspired by the sleek Millers. In Europe, Ettore Bugatti bought outright the Montlhéry record car and the 1500 c.c. car that broke the lap record at Monza in 1929 — these led directly, not only to 'le patron's' adoption of I.O.H.C. but to the 1932 four-wheel drive type S3 Bugatti; and there must be a direct link between Gwenda Hawkes' campaigning of a Miller in the late twenties at Brooklands and the consequent development of her Derby-Maserati front-drive single-seater. So, although the Miller cars themselves were very limited in their applications, their importance in giving credibility to the concept of front-wheel drive is difficult to overestimate; and in turn their evolution is traceable directly back to the principle's original exponent.

CITROENS IN BOOKS

Walford Bruen, who runs our Scottish section and owns what surely must be the most regularly used roadster anywhere, suggested at our Windsor meeting this year that we might start this occasional series of quotes referring to Citroens from books or magazines; accordingly, we start with one of his own submissions, an extract from a collection of stories of heroism ranging from Napoleonic times to the last war. This one is from a French Resistance story called 'Equipes Boulaya' by George Miller. He also mentions a book he saw recently by one Sir James Hutchinson called 'That drug — Danger', which is about the Maquis and is apparently full of photos of Tractions, machine-gun-festooned, liberating French villages. If any member has a copy, it would be appreciated. The picture reproduced below is a detail of the well-known 'Paris-Match' picture of the resistance roadster.

"Our old friend the Frisé became the first of the gangsters. In reality, the Frisé had to be banished because his indiscretions grew so grotesque that his presence endangered the whole organization centred on Vieilleilley. He was sent with a friend named Marcel, another ex-sailor, to form a new Maquis near François, west of Besançon.

Frisé departed with an air of 'you just wait and see', and within a few days he had produced fireworks, killing some Gestapo men and making their *traction avant* his own car. Wearing captured German uniform, he and Marcel began to tour the area. At first they only had one uniform. So Frisé wore the tunic and Marcel wore the hat. We expected them to get caught almost immediately, but they were a wily pair, the Frisé knew every road and track in the area, and many times they passed through impossible situations by sheer dash.

At first the Frisé confined his sorties to sabotage expeditions on the railways and telephones. But soon the necessities of his cars (after the first week he was not content with one, but always had two or three

Citroens in his woodland 'garage'), obliged him to make almost constant expeditions in search of what were now necessities to him, petrol, oil, and tyres. Despite this, we began to find the Frisé useful because he was mobile, and he was afraid of nothing."

Our second extract is translated from "Réalités" dated January 1955, and is an extract of an article entitled "The Psychology of the French car".

"Simca's attitude towards publicity is all the more striking if you compare it with that of Citroën. When Citroën tests a new model, it is cloaked in as much secrecy as if it were a four-wheeled hydrogen bomb. Early in 1954, the offices of an automobile paper were even raided in Paris because it dared to publish details on what Citroën was planning in the way of new models. Of course, the raid brought a good deal more publicity than any amount of paid advertising.

Despite the manufacturer's effort to the contrary, the Citroën is probably the best-known of any French car abroad. You can't help noticing it. In an era of automatic transmissions, automatic windows, automatic steering, automatic brakes and automatic seat adjusters, the only thing automatic in the Citroën is the driver's foot on the accelerator. Its lines were revolutionary in 1935: today many a Frenchman reveres them as much as he does his Louis Quinze furniture. The Citroën has a trunk on its back end, headlights roosting on top of its non-aerodynamic fenders, a well-nigh square windshield (this windshield can even be opened in hot weather, remember?), a hand spark-control, a radiator grille which lets you see the radiator and a hood hinged in the centre to open the way car hoods used to open ... and not like the jaws of an alligator.

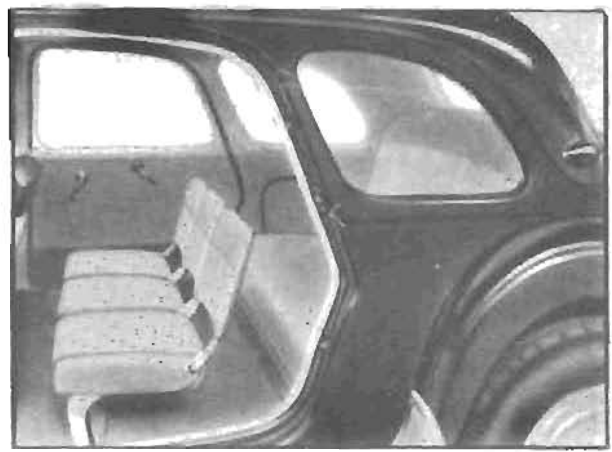
On the road, however, the Citroën is no antique. Its low-slung body and its front-wheel drive enable it to take corners at a hair-raising rate, all the

more hair-raising because Citroen wisely sets its speedometers to read about 10 per cent higher than actual road speed, thereby giving the driver a harmless thrill. As in the past, the Citroen is made in two versions, one with a four-cylinder engine and one with six cylinders. But there is more than a couple of extra pistons between the two. The Citroen 11 is a family car capable of turning in a good day's run. The Citroen 15 is a heavy-jawed shark of the highway known to lesser fry only by its tail lights.

The only possible reason that a man might have for buying a 15 is to drive like a demon. The 11 Normale is just as big, probably a little more comfortable and much less of a glutton for fuel. But the 15 will run 85 m.p.h. with its speedometer reading 95. Ever since it first appeared, no hold-up worthy of the name has been committed in France without a Citroen 15 as the get-away car. The term *gang des tractions avant* (the front wheel drive gang) has a hallowed place in French journalese and a persistent rumour in France holds that the police of Chicago operate in Citroens (it happens to be the police of Venezuela, but Chicago sounds more exciting).

Like a master craftsman spending his life on a single stained-glass window, Citroen retouches its cars continually. Two years ago, a trunk was added to the rear end and four years ago, the crank opening in the radiator was covered with a winged emblem instead of a round hub (French cars have cranks, for France Joes not yet have complete faith in the machine age). One year, the colour of the dashboard changed from cream to black, the next year it became grey.

A major innovation took place last year but it was only a return to a pre-war model — the Citroen Familiale. The Familiale is an eight-passenger car with opera seats and the modest difference between its price and that of the Citroen Normale is easily made up by the French government's generous family allowance to prolific parents. Its main selling point is its economy: for months, the Citroen showroom on the Champs



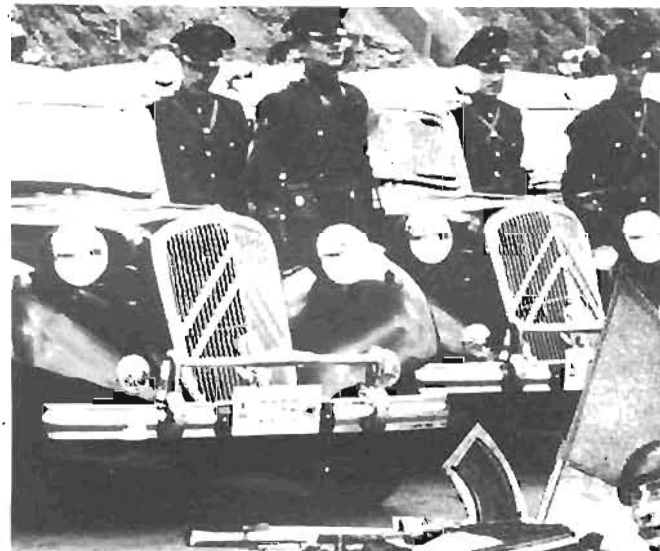
first being John Pole's (a celebrated Brooklands driver) verdict on his 1948 l.w.b. Familiale, and the second is Cecil Clutton, that vintagent of 1911 Itala fame, on his Six. Both were culled from the 'Cars I have owned' series.

Gordon Herner, Autocar's staff artist, once included this drawing and comment in one of his pieces:

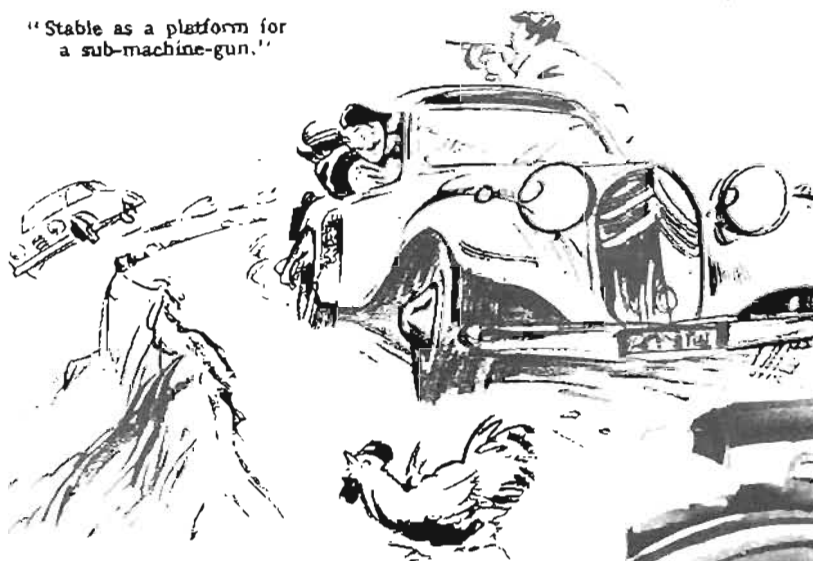
"I refuse to drag into this powerful article any reference to a well-known French car being the favourite mount of bank robbers because it is so stable as a platform for a sub-machine-gun, merely because you think it would make a nice sketch for you to execute.

"But," breathed the illustrator on the count of eight, "that French car really is the favourite of bandits, and my point is that even if a car does look a bit old fashioned it may still beat the rap, which all goes to show that you can't judge by appearances."

The Venezuelan Police

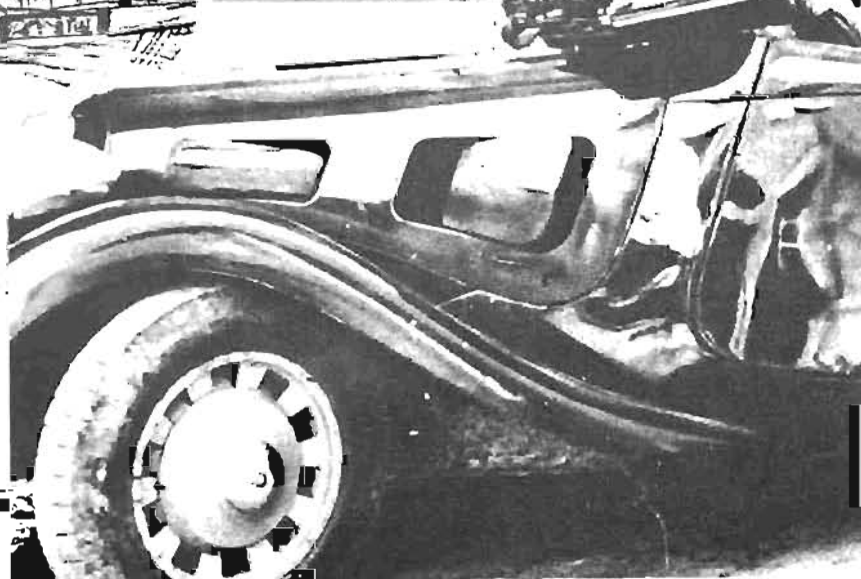


"Stable as a platform for a sub-machine-gun."



Elysees showed a table proclaiming that a Familiale could take eight passengers from Paris to Marseilles for less than the cost of making the trip by hitch-hiking. This is cut-throat competition for bus companies."

Leafing through some old motoring journals the other day, the following quotable asides were noted. They are taken from early sixties 'Motor Sports', the







The Airflow test, 1934.



Edward Budd in 1945 The crashed Traction on display



THE AMERICAN CONNECTION

The two greatest innovators in motor car manufacturing techniques were both American: Henry Ford with his moving production line, and Edward G. Budd, who pioneered the use of pressed steel bodywork, and, later, monocoque construction. Budd has cropped up several times in recent issues of this journal, notably for the influence on the 'Traction' of his 1930 light f.w.d. 'ideas' prototype, documented in the 'In the Budd' article of F.P. No.6. It was André Citroën who was responsible for spreading the Budd gospel in Europe, and his collaboration with the Philadelphia firm began as early as 1924, and the links between the two remained close and productive for more than a decade.

It is a truism to say that the motor car has been responsible for some of the most profound technological and social changes of the twentieth century; and in this context, Budd is of cardinal importance, since his methods were to lead, as it were, to the democratisation of the automobile, the break away from the hand-made coach-built conveyance for the wealthy to the cheap, solid, usable car for everyman and his family. His innovations came into their own after the Depression, when the labour-intensive coach-builders' techniques had been rendered totally uneconomic for the manufacture of mass transportation.

Edward Gowan Budd was born in Delaware in 1870, and joined the American Pulley Co when he was 19, having studied engineering at the Philadelphia Franklin Institute. It was during his employment at this company that he was initiated into the uses of pressed steel, a lighter, cheaper and better substitute for the traditional combination of wood and iron. He graduated to another firm working in this area, Hale & Kilburn, who produced pressed-steel components for railway trucks, and he became expert in gas and electric welding techniques in this application. During his ten years at the firm, he was deeply involved in the production of thousands of steel-bodied coaches for the Pullman Co.; the connection with the automobile industry is obvious, and as early as 1909, he was instrumental in selling the concept of pressed-steel body panels to the Hupp Corporation. These must have been very rudimentary, however, since Hupps of the time were light runabouts with minimal bodywork as such, just two bucket seats and a bolster tank.

He left Hale & Kilburn in 1912, since his vision of the eventual uses of pressed steel outstripped his employers' willingness to back his ideas, and founded, with Joseph Ledwinka, his own manufacturing concern. Although Budd cannot be credited with the first all-steel car body — many American firms were experimenting on the same lines at this time — his company were certainly the first to supply them in volume production. He had already sold examples of the new type of body, to Buick, Studebaker, Franklin, Cadillac, Willys, Garford and Oakland, but it was Dodge who first committed themselves to the principle in volume — they ordered no less than 70,000 units in 1916, and almost 100,000 the following year. These were mostly simple open tourers, assembled from about 1200 separate stampings, although four-door saloons were also produced.

By 1929, Budd's vast plants had 600 presses working for the American Motor Industry; one plant alone consumed 1,000 tons of sheet steel a day. A year after Citroen's first visit, William Morris (Lord Nuffield to be) went to Philadelphia, and returned home to set up the Pressed Steel Co. at Cowley, with Budd providing 50% of the finance. All was not co-operation, however, as Louis Renault found to his cost when he was sued through a German firm in which Budd had interests (Opel ?) for infringement of Budd patents on the Juvaquatre model.

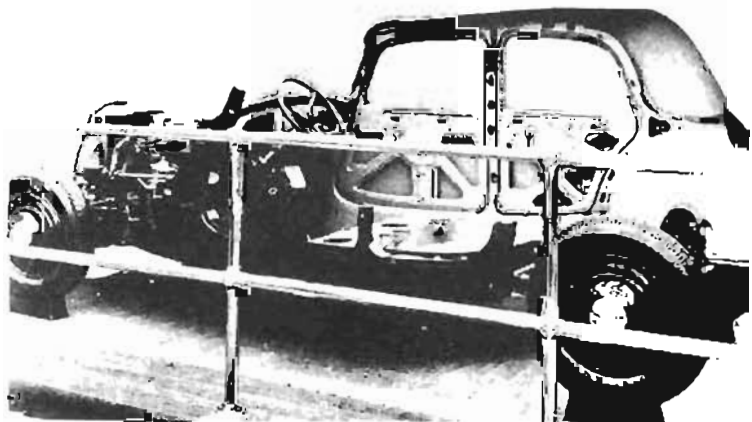
Budd's innovations were extensive in the field of process ancillary to the basic all-steel company. The consequent demise of wood in the motor industry led to the development of new concepts in vehicle upholstery and the formation of the spring clip industry. The drumming of unsupported metal panels led to sound-deadening compounds being developed, as was arc welding, when both gas and electric types became inadequate for the demands placed upon them by Budd's requirements. Without wood in the bodies, and with upholstery being a job that could be carried out after the body was built, high-temperature paint baking techniques were brought in, with a resulting increase in the quality of the finish achieved commensurate with the expected longevity of the body.

Back to Citroen, though. Budd had produced the necessary tooling for the 8, 10 and 15CV. 'Rosale' cars by the time the Traction design was being finalised. With the inherent advantages of strength and lightness that pressed steel conferred, Citroen had been persuaded on his earlier visit to Philadelphia to adopt a chassisless unit construction for the proposed 'Petite Voiture' (or 'PV', as the Traction prototype was called). Cuiet was responsible for the overall design of the body, and his ideas were translated into three dimensions by Flaminio Bertoni, working in plaster and plasticine. Once the final model was approved, it was scaled up and a full-size wooden mock-up constructed from which to take detail drawings and cross-sections. On the 6th November 1933, Cuiet embarked on the 'Ile de France' bound for the Budd works. The master plan measured 7' x 21', and, rolled in an enormous tube, was jealously protected throughout the voyage, especially since rival constructor Emil Mathis was on the same boat! Once the plan was unfurled on the vast table in the Budd studio, the Americans refused to work on it – all the dimensions were in centimetres! These were laboriously corrected to inches, and the vast sheet, ruled into 14 million millimetre squares, was re-presented. The car was nicknamed by Budd's designers the 'Bottom First' – not, presumably, because of its rear-hinged front doors, but because of its lowness. They worked on the project around the clock on eight-hour shifts, modifying here and there because of the requirements of the press tools, but retained the integrity of the overall design.

It is extremely difficult to calculate the stresses of a monocoque shell; certainly at this time, it was almost a question of trial and error. This pragmatic approach, in Citroen's case, however, led to the trials being made on the first customers' cars, and the resulting errors were sometimes catastrophic! Whether Budd's hadn't allowed sufficiently for this or that strain, or whether the French hadn't mastered the necessary welding techniques we don't know, but not a few of those very first production examples quite literally split apart at the seams, an occurrence which did nothing to

better the car's unenviable reputation for terrible steering and an insatiable appetite for its own driveshafts!

Within a short time, of course, these wrinkles were ironed out, and Citroen, convinced of the validity of the monocoque concept, set out to alleviate potential customers' uncertainty as to the new car's rigidity. For this, too, he turned to Budd, since he, too, had had to alleviate sceptics' suspicions with regards to his unit construction effort – the contemporary, and similarly much-maligned, Chrysler 'Airflow'. This horrifically ugly 'streamlined' motor car was conceived out of an ideology similar to Citroen's – 'overhauling the very fundamentals of car design, by ruthlessly scrapping the lingering traditions of the horse and carriage era' (Carl Breer, its designer). As is well known, it did not live up to expectations, but its welded steel body, Budd-inspired, was semi-unit construction. As spectacular proof of the car's rigidity, Budd arranged to have one driven off an enormous cliff, and constructed a publicity campaign with the resulting photographs, shown here. Spectacular they are, but believable, they're not! The writer finds it impossible to admit that the pristine 'Airflow', undented, glass intact and body undistorted, is the same one which left the top. The advertising worked, though, and this was the only criterion that interested André Citroen, who arranged in 1935 to repeat the experiment at home. He gave an added edge to his stunt by directly comparing the Traction's results with that of a Renault Primaquatre and a Mathis EMY, an uncharacteristic piece of cut-throat publicity. As can be seen from the shot of the crashed car in the Champs Elysées showroom after the event, the Traction came off extremely well. In fact, the unflattering comparative shots of the two competitors were never released to the general public: favoured concessionaires were given them to show their best customers. It must be remembered, however, that on neither side of the channel was there an equivalent to the Advertising Standards authority – if people would believe it, you could tell them whatever you liked. It is thought that Citroen, like Budd, was less than scrupulous in this particular demonstration – for while the Renault and Mathis were rumoured to have been seriously weakened by several simple expedients (just look at the Mathis, for goodness' sake! – like a stunt from a Laurel and Hardy film!), the Citroen was strengthened with a roll cage, doors welded shut, etc. Who knows? Even if these tests don't repay close scrutiny, the fact remains that the Budd/Citroen monocoque vindicated itself on its own merits in the end, and the cooperation of these two is of major significance in the history of the European motor car. Don't try driving off cliffs to prove it, is all ...



A cutaway early 1934 car, showing its unit construction

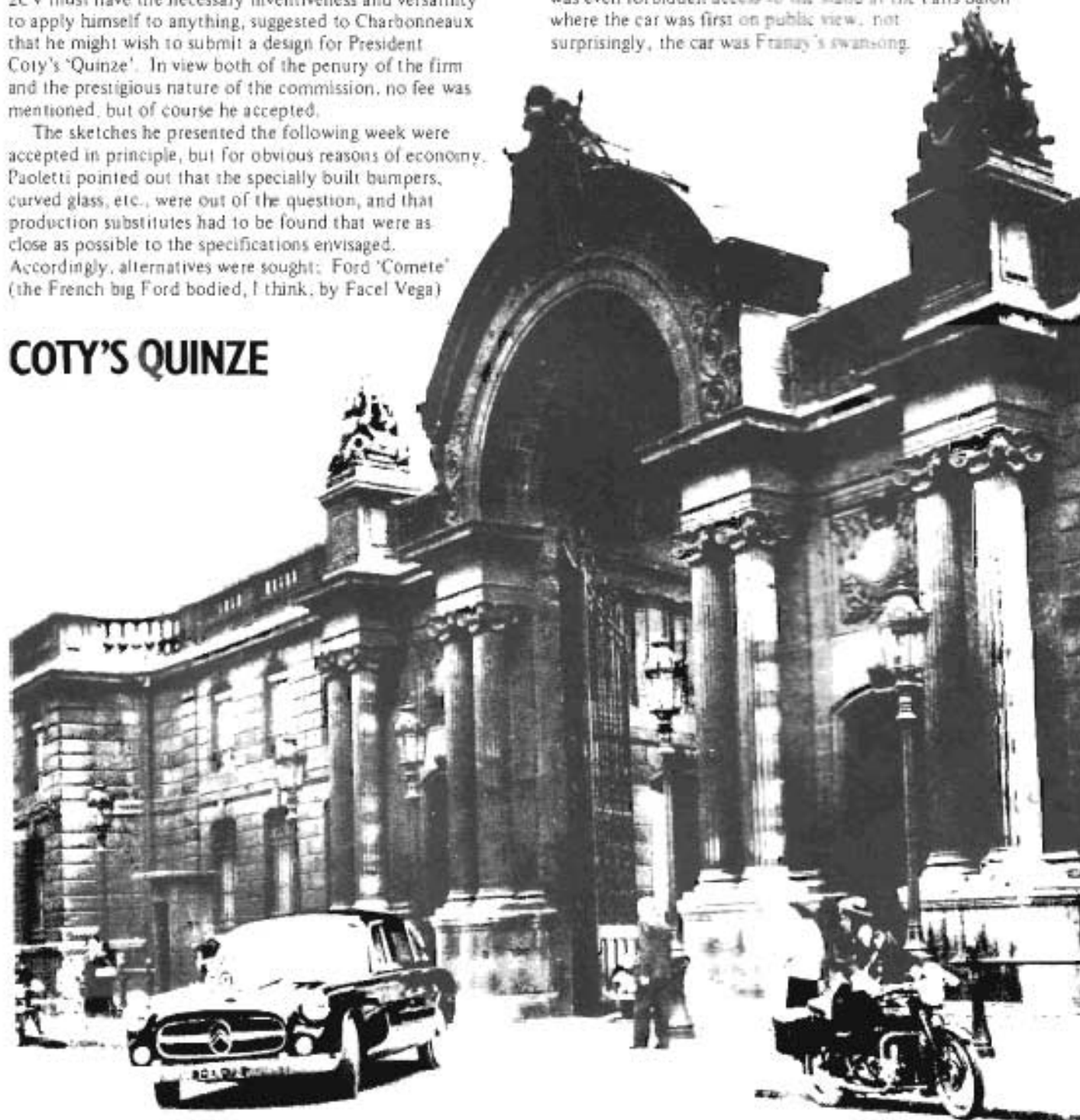
'We've had that Citroen 15CV platform over there for six months; the President of the Republic's office asked us to build a new State limousine on it, but I can't for the life of me think of how to begin' – so said Paoletti, then director of the Franay coachworks in 1955, indicating a tarpaulin-covered chassis lurking amongst the Delahayes and Talbots. He was speaking to the stylist Philippe Charbonneau, who had come with the improbable commission of asking them to build his own special body on a 2CV platform, of all things. This in itself was an indication of the sadly depleted fortunes of the once-renowned small French coachbuilding firms; Franay was one of the last remaining, together with Chapron, and was operating very much on the proverbial shoe-string. And Paoletti, probably thinking that anyone sufficiently hare-brained to want to build a coachbuilt 2CV must have the necessary inventiveness and versatility to apply himself to anything, suggested to Charbonneau that he might wish to submit a design for President Coty's 'Quinze'. In view both of the penury of the firm and the prestigious nature of the commission, no fee was mentioned, but of course he accepted.

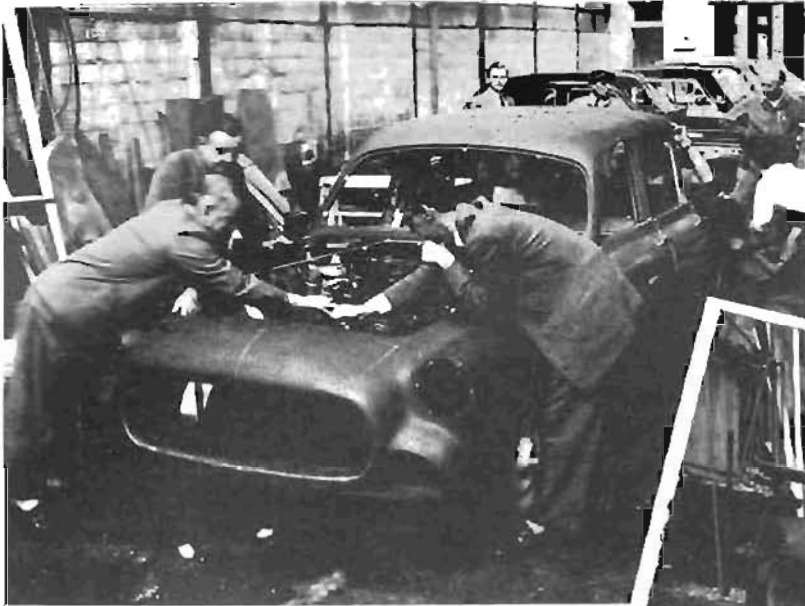
The sketches he presented the following week were accepted in principle, but for obvious reasons of economy, Paoletti pointed out that the specially built bumpers, curved glass, etc., were out of the question, and that production substitutes had to be found that were as close as possible to the specifications envisaged. Accordingly, alternatives were sought: Ford 'Comete' (the French big Ford bodied, I think, by Facel Vega)

was the source of the bumpers and windscreen, together with a 1949 Buick rear window, Chevrolet rear lights, Bentley doorhandles and Ford Vedette wheeltrims and boothandle were adopted.

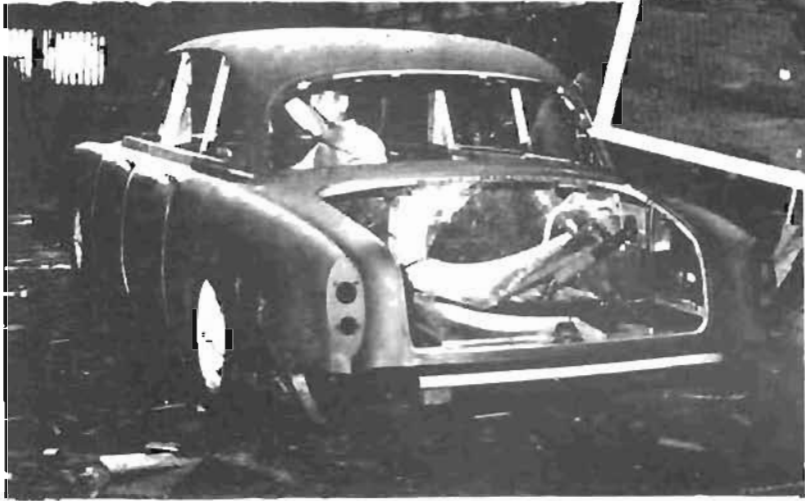
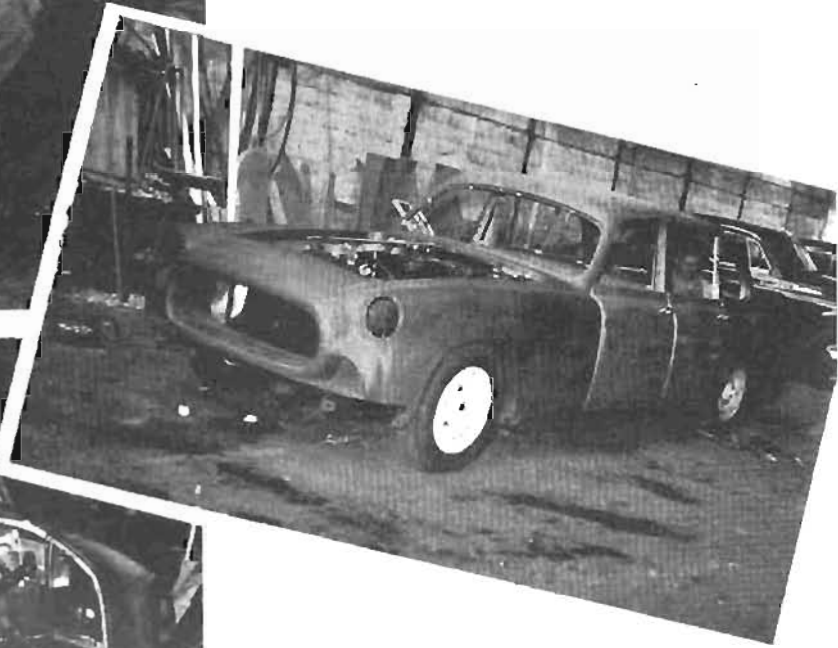
The wooden mock-up which was to form the basis of the bucks over which the panels were to be formed had to be made outside, for, inexplicably, Franay didn't have the facilities for this crucial and arduous task – one wonders how they managed at all! Anyway, this master former had to be dismantled for transport to Franay's Levallois works, and on his return from holiday, Charbonneau was horrified to discover that it had been reassembled wrongly at the front, resulting in a rather ungainly contour around the front grille aperture! The episode ended in acrimony, insofar as the unpaid designer was awarded no credit whatsoever for the design, and was even forbidden access to the stand at the Paris Salon where the car was first on public view, not surprisingly, the car was Franay's swansong.

COTY'S QUINZE





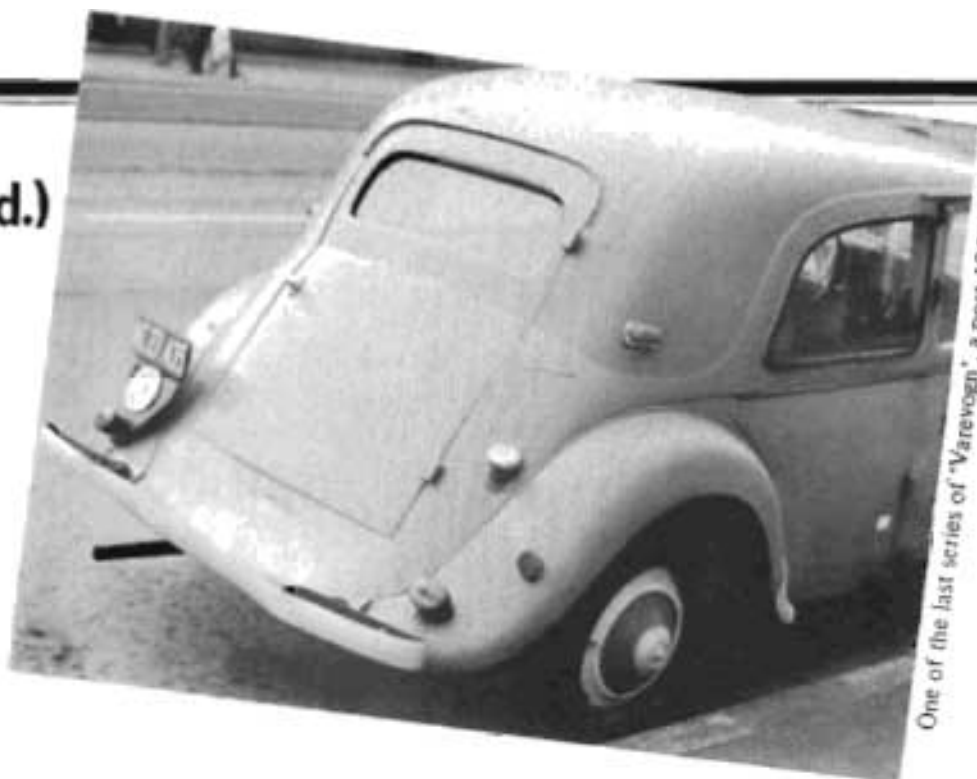
The Presidential Six in the course of its construction. The bonnet line is commendably low considering the height of the engine; the radiator, of course, is completely different. Charbonneaux (at right) was continuously involved in the day to day problems of construction.



The finished article at the 1955 Salon



TRACTION VANS (contd.)



One of the last series of 'Varevogn', a post-1953 example.

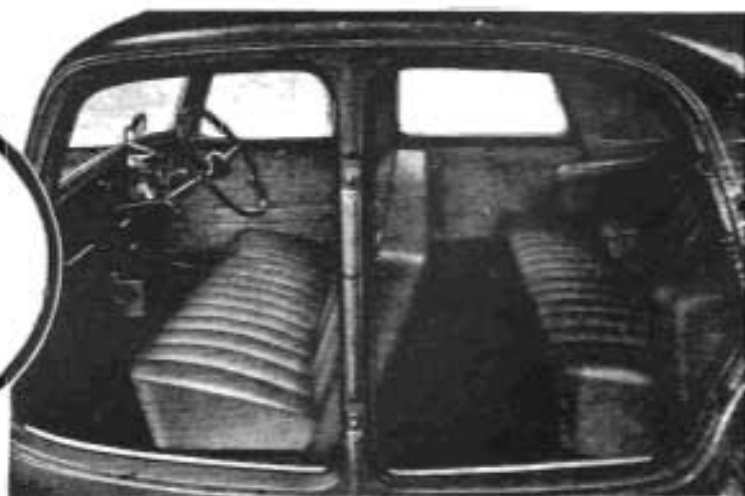
The Article we featured in 'Floating Power' Vol.2 No.2 on these vans was very short on background information about the Danish vans illustrated, principally because we are unable to read Dutch! R. Jansen, of Traction Avant Nederland has kindly rectified this by forwarding to us the fruits of Svenska Bil Klubben's research into these vehicles. Lorentz Osterling reported that the models were called 'Varevogn' or 'Kassevogn' and was produced at the Danish Citroen works at Copenhagen in the early fifties.

The vans all started off as fully assembled Light Fifteens, except for the very last series, for which

saloons were imported less rear seats and bootlids. The roofline was raised at the rear, the rectangular opening with its sliding wood-slat door fitted the petrol tank and filler pipe relocated, the rear doors welded shut and side windows covered in sheet steel.

The very last models (shown here) differed from their predecessors insofar as the saloon's overall profile was retained, the rear doors, though welded shut, being fitted with a fixed window and the rear having a one-piece side-opening door. These models were destined for small traders, travelling butchers and grocers, etc.

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