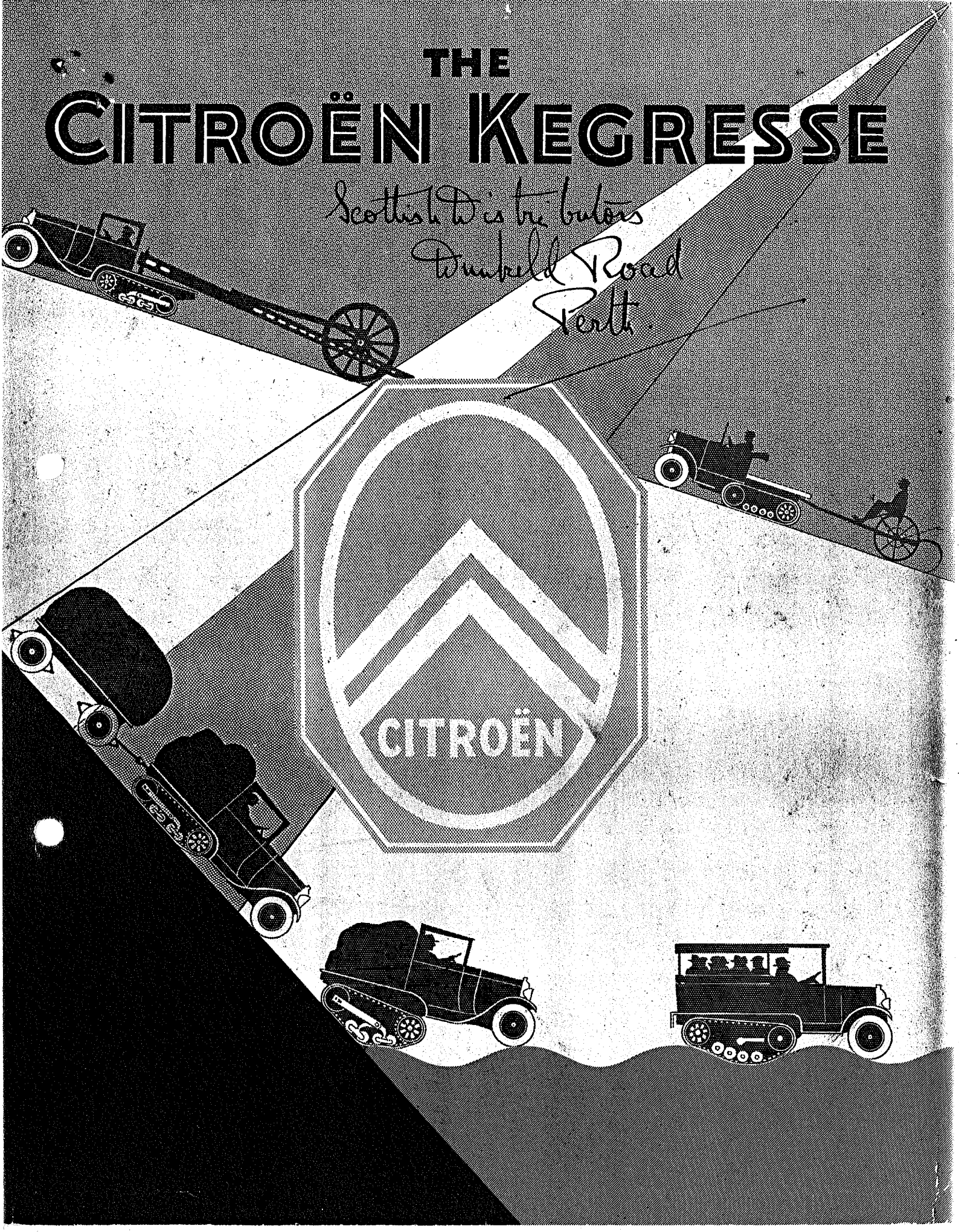

THE
CITROËN KEGRESSE
Scottish Distributors
Drumhill Road
Perth.
CITROËN

HISTORY OF THE KEGRESSE ATTACHMENT

"TO travel at all speeds either over deep snow and ice or roads covered with lightly packed snow, or on dry and stony roads, in a vehicle which can leave the road and proceed to travel across country without stopping or slowing down."

Such is the formula according to which MR. KEGRESSE, the then Technical Manager of the Imperial Garages in Russia, carried out, in 1910, his first researches.

As a result he evolved an attachment which was submitted in 1920 to MR. ANDRE CITROËN, who immediately realised its importance and acquired the exclusive right to exploit it.

A special Department has been organised at the Citroën Works with a view to further improving vehicles of the flexible band type and developing their manufacture.

Creeper track cars were used for the first time in France in 1921, at the Motor Coach trial held on Mont Revard. A few days later, 10 H.P. Citroën cars equipped with Kégresse-Hinstin attachments climbed the Lautaret and crossed the Mont Genèvre pass.

In September, 1921, under the supervision of the military authorities, three of these cars travelled from Paris to Arcachon, one of them having in tow a caravan weighing 3½ tons. Varied experiments made on the Pyla sand hills revealed that for moving over sand and snow alike, Citroën Kégresse cars had an almost unlimited scope of action.

In February, 1922, trials were held in the snow in the Alps and the Pyrenees, and the new invention was thus made known all over the world.

At the same time, formal trials were held in Sweden and Norway and Citroën Kégresse cars put up wonderful performances.

In 1922-23 the first crossing of the Sahara by motor was carried out by the Citroën Kégresse vehicle. Fuller details of this achievement are given overleaf.

In 1923 and 1924, H.H. Prince Kemal organised scientific expeditions with a caravan of Citroën-Kégresse cars in Egypt and the Libyan desert, with a view to archeological research.

In addition to numerous achievements in all parts of the world the Citroën Expedition through Central Africa, under the leadership of Messrs. G. M. Haardt and Audouin-Dubreuil, also used a fleet of Citroën Kégresse cars with very good results ; the Expedition crossed the whole of Africa from Algeria to the Cape, pursuing on its way scientific researches of the greatest interest (November, 1924 — July, 1925).

From the military standpoint the numerous uses to which this new form of transport has been put, such as cars for liaison and reconnoitring work, artillery tractors, tanks, infantry supply column lorries, armoured cars, ambulance cars, aeroplane and observation balloon tractors, afford ample proof of the interest taken in it by modern armies.

During the Satory Military trials in 1923, 1924 and 1925, the French War Office formally acknowledged the great advantages of the Citroën Kégresse car, the only vehicle in the light tractor class to have been awarded a Government subsidy since the institution of trials of this nature in 1920.

These events have shown beyond all possible doubt the superiority of the Citroën Kégresse car over all other motor vehicles. Sands, marshes, snow, alike fail to hinder their progress, and further achievements will doubtless be added to their brilliant record, which already shows that the field open to Citroën-Kégresse cars is unlimited.

The First Crossing of the Sahara

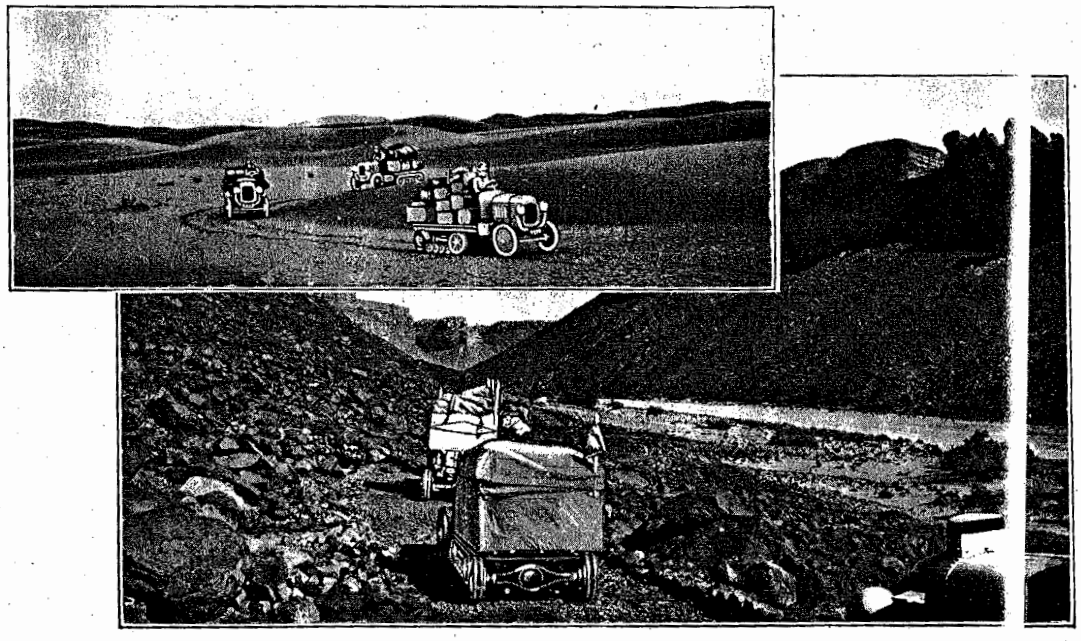
FROM October to December, 1922, Citroën Kégresse cars were sent to South Algeria and the region around Timbuctoo with a view to reconnoitring the country and preparing the crossing of the Sahara.

At the end of 1922, the expedition set out to attempt for the first time the opening up of a direct way of communication between North Africa and the Niger Valley. Mr. Haardt, general manager of the Citroën Works, assisted by Mr. Audouin-Dubreuil, was in command of the expedition.

Five cars left Touggourt on December 17th, and, after having covered 600 miles, reached In-Salah on the 21st.

They travelled across the Hoggar and the Tanezrouft, or "Land of Unquenchable Thirst" without knowing of any beaten track or route followed previously by other expeditions or caravans; they reached the river Niger at Bourem on the 4th of January and followed the river down to Timbuctoo where they arrived on January 7th, having covered 2,000 miles in 22 days.

After a stay of one month in Timbuctoo, the Expedition left Bourem on February 9th on its return journey and encountered at Tadjmout, 150 miles south of In-Salah, on February 26th, another expedition under the command of Mr. André Citroën, who had decided to come to meet the explorers to convey to them his congratulations personally, the return journey having been accomplished in 24 days.



THE KEGRESSE-HINSTIN ENDLESS BAND ATTACHMENT

BRIEFLY, the fundamental difference between a Kégresse vehicle and a normal four-wheeled vehicle is that the Kégresse attachment takes the place of the rear wheels of the latter.

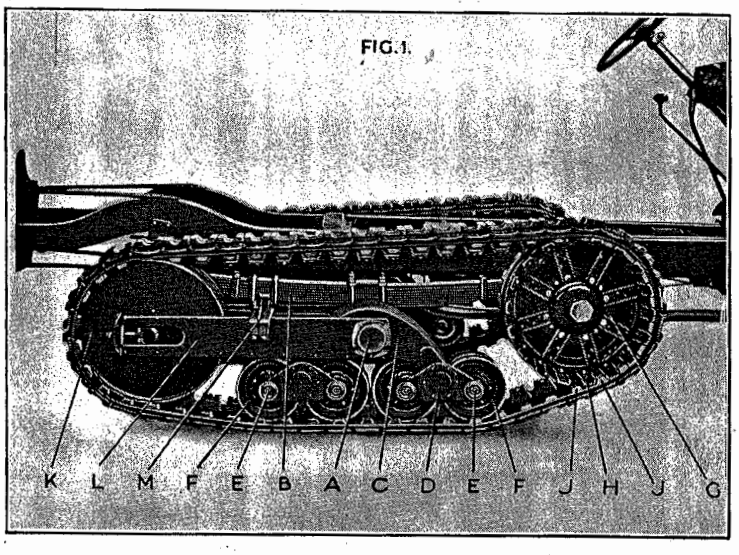
The results obtained from this substitution are, however, far reaching :—thanks to the large supporting area of the bands and the fully sprung and compensated weight carrying mechanism the vehicle can traverse practically any type of ground whether boggy, sandy, rocky, or even deep snow.

By reason of the great ground adherence the steepest gradients can be climbed and all the functions of a tractor filled.

The bands, being flexible, of the lightest possible weight consistent with ample strength and durability, and entirely free from all pin joints, the vehicles are silent and capable of high speed on good roads, thereby combining in one vehicle a tractor and a car or lorry.

The details of construction of the attachment have by constant experiment been rendered very simple and durable. Referring to Fig. 1,—A. is the weight carrying axle extending the full width of the vehicle ; it is connected to the chassis frame by long semi-elliptic springs B. On each side of the axle is freely pivoted a main compensating beam C. at the ends of which are mounted the compensating levers D. which in turn carry at each extremity a spindle E. on which is mounted a twin weight carrying roller F.

These rollers run along the path formed by the inner surface of the endless belt and, owing to the method of mounting described above, will conform to any irregularities of the ground negotiated by the vehicle.



The Kégresse-Hinstin Endless Band Attachment (*Continued.*)

The drive is transmitted to the endless band by means of the driving pulleys G. situated at the forward end of the attachment: lugs H. on the periphery of the pulleys engage with the driving teeth J. spaced along the inner surface of the band giving positive drive under all conditions.

The drive is transmitted from the engine unit through a normal gear box, cardan shaft and bevel back axle with differential, but a two-speed gear is provided between the outer ends of the half axle shafts and the driving pulleys, thereby duplicating the gear ratios available in the normal gear box.

K. are idle pulleys mounted in slides in the arms L. whereby the tension of the band is adjusted; the arms L. are pivoted on the weight carrying axle and the idle pulleys are thus free to rise and fall; this movement is however limited by the stop M. which normally holds the pulleys clear of the ground.

The bands themselves are of simple construction. As shown in Fig. 2 they consist of an endless belt of rubber and canvas which is the main member of the band; to the inner surface of this belt are bolted the driving teeth and the tongues which simply act as guides to hold the band in position.

To the outer surface are bolted the light metal shoes which protect the belt and ensure the necessary ground adherence under difficult conditions, and the rubber pads on which the vehicle runs when on hard surfaces.

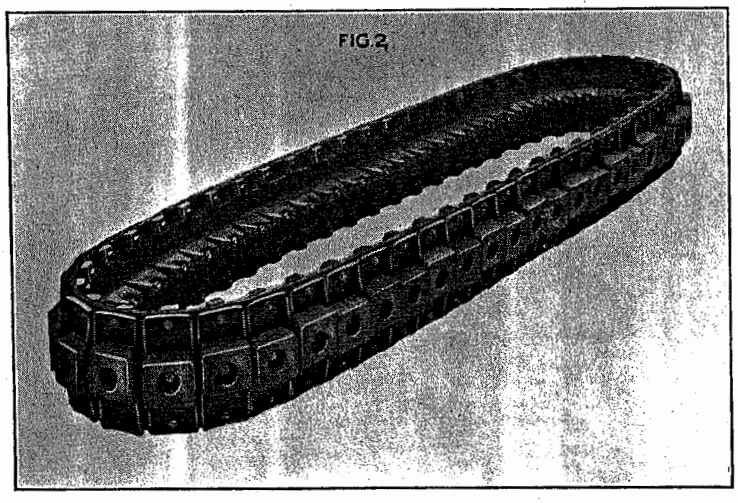
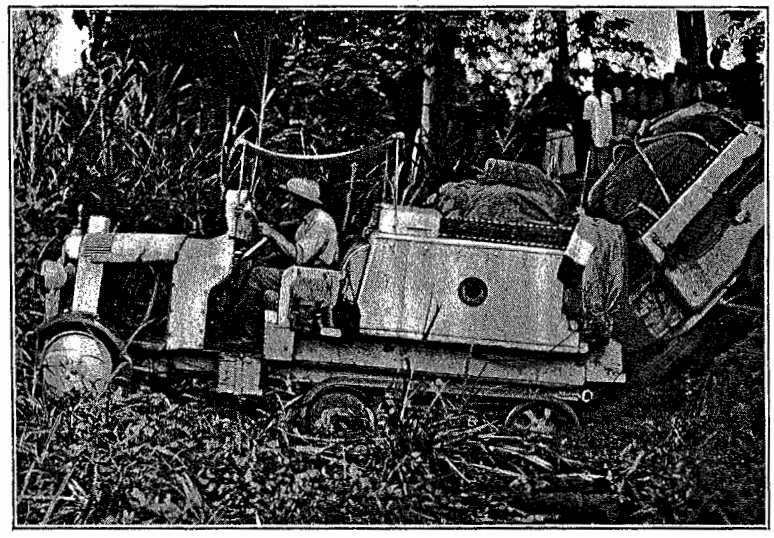


FIG 2.

CROSS COUNTRY TRANSPORT

"THE KEY TO THE PROBLEM LIES IN MAKING OUR TRANSPORT VEHICLE SUIT THE GROUND INSTEAD OF ATTEMPTING, AS HAS BEEN DONE IN THE PAST IN THE CASE OF BOTH ROADS AND RAILWAYS, TO MAKE THE GROUND SUIT THE VEHICLE."

MAJOR-GENERAL SIR ERNEST SWINTON,
in *The Motoring Outlook*,
October, 1929.



THE world-wide need for cross country transport is one which has so frequently been emphasized by the most prominent experts, that the briefest summary of a few outstanding features in this connection will suffice to focus attention on this development.

Railways and good roads are ideal means of transport where their cost of construction and maintenance can be justified by their earnings, but in sparsely populated and undeveloped areas this cannot be the case and it is in the development of an area to the point at which the productiveness will economically justify the laying down of good roads or railways that the cross country vehicle can play such an important rôle.

Similarly in a country possessing a limited road or railway system the area that can usefully be exploited is confined to a narrow belt on each side of such roads or railways as exist—here again this area can be vastly increased by the employment of suitable cross country vehicles as feeders to the roads or railways.

There exist also in many parts of the world seasonal roads which are quite suitable for light wheeled traffic in dry weather but are impracticable to all such forms of transport in the rainy season. In such conditions, if all the year round transport is to be maintained, it is essential that the transport vehicle should have a good performance during the favourable season and should also be capable of negotiating roads under the most difficult conditions.

It will be found that the Citroën Kégresse's unique performance, which enables it to maintain high speed where conditions are good or on the other hand to negotiate the most difficult country, offers an ideal solution to the problems outlined above.

It has the further advantage that it can both carry a load and where circumstances permit, haul a trailer.

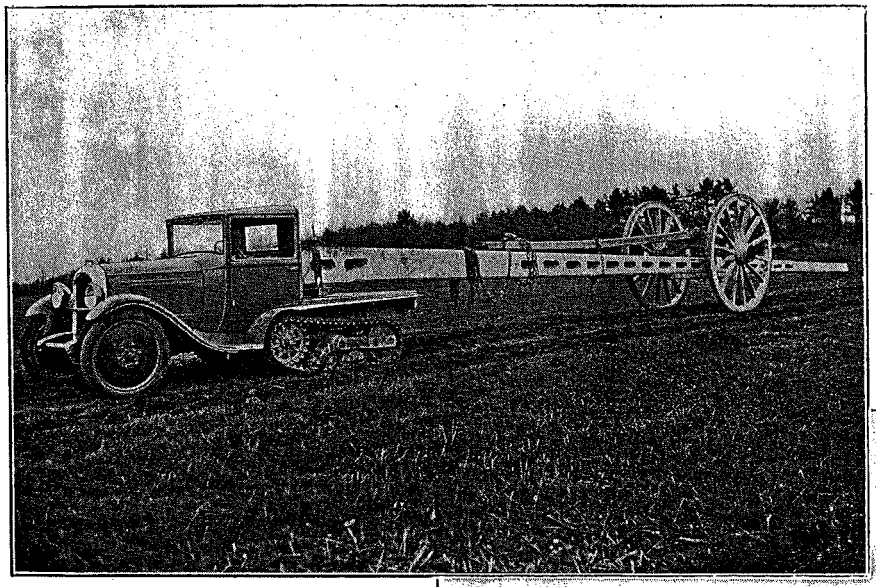
Its low petrol consumption is a valuable asset in countries where this fuel is expensive and difficult to obtain. It is, moreover, of very robust and simple construction and its maintenance cost is low.

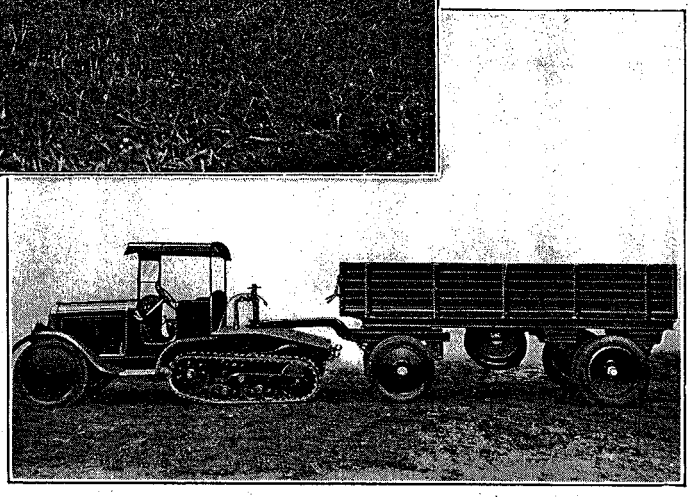
KEGRESSE VEHICLES HAVING A CARRYING CAPACITY OF 3 TONS AND CAPABLE OF HAULING UNDER FAVOURABLE CONDITIONS A GROSS LOAD OF **10** TONS, ARE MANUFACTURED UNDER LICENCE IN THIS COUNTRY.—PARTICULARS WILL BE FORWARDED ON REQUEST.

INDUSTRIAL APPLICATION

THE Citroën Kégresse can with advantage be employed for many industrial uses, as for example, forestry work, for the haulage of timber; in quarries; for the conveyance both on road or across country of telegraph and electric transmission poles; for hauling railway waggons in factories and sidings; for heavy road haulage, etc.

A special application for which these vehicles have most successfully been employed is the haulage of barges on canals, a large number of these vehicles being in use on the canal systems in Northern France and Belgium which are noted for their high efficiency. The high drawbar pull of the Citroën Kégresse enables loads up to 1,000 tons to be hauled by the standard P.10 model, and when returning unladen at the end of a haul full advantage can be taken of the capacity of these vehicles for high speed, which results in a great saving of





AGRICULTURE

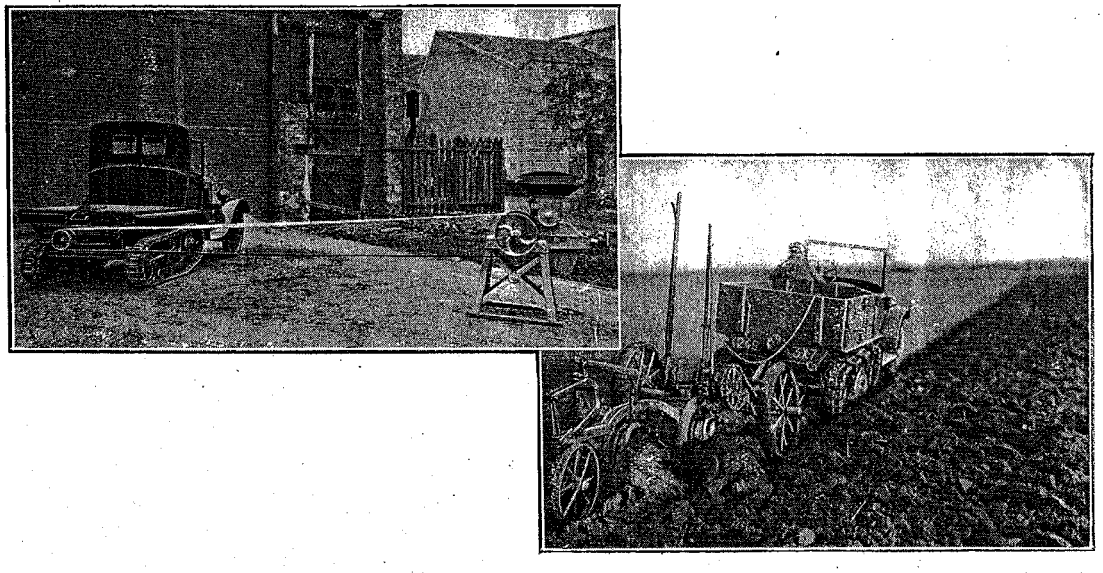
BY reason of its use as a tractor combined with its use for general transport, the Citroën Kégresse offers to the farmer an ideal all purpose vehicle which can be kept in use all the year round.

As a tractor it will perform all normal duties such as ploughing, cultivating, harrowing, harvesting, etc. Its efficiency both as regards time and consumption of petrol and oil is indicated in the table subjoined.

Nature of Work.	Time. Hours.	Area dealt with.	Consumption per Acre. Petrol. Gallons.	Oil. Gallons.
Ploughing	8	5 acres	1.47	.13
Reaping and binding ..	81	148 ,,	.5	.13
Harrowing	10	20 ,,	.44	.11

Fitted with a special pulley it can operate stationary machines such as pumps, root and chaff cutters, circular saws, threshing machines, etc.

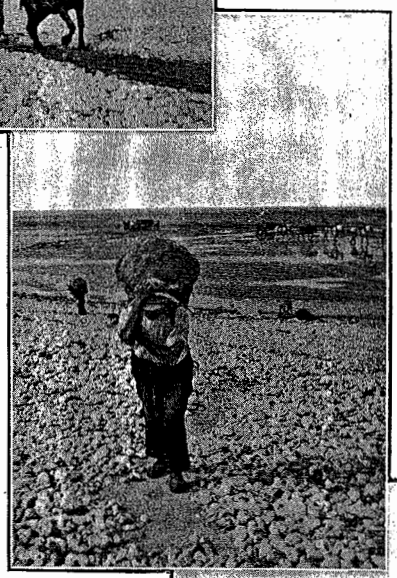
From the general transport point of view, crops, etc., are rapidly conveyed from the fields to the farm, rail head, or market ; labour transported from the farm to the scene of operations in the morning and brought back after the day's work. The Citroën Kégresse can both carry and haul ; for details in this respect see the Technical Specification.

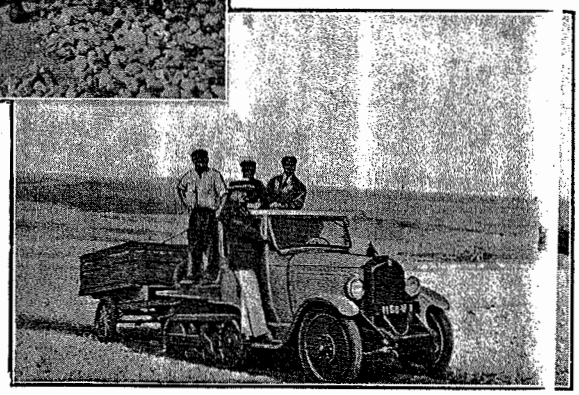


time. Far from damaging the tow paths, which is the case with so many tractors, the Citroën Kégresse tends rather to improve than to damage. The above factors, accompanied with the low running and maintenance costs of the Citroën Kégresse vehicle, makes these machines far more economical than horses for this type of traction.

A great number of instances can be quoted to illustrate the varied uses to which the Citroën Kégresse machines have been put, but lack of space prevents this. The following example is, however, quoted as a typical one :—

The problem in question was the cartage of sand from the seashore over a steep shingle beach. Originally porterage was employed and it was necessary for one man to make 18 trips for the conveyance of one ton of sand. Subsequently seven horses were employed for hauling a load of two tons. The same load of two tons is now dealt with by one Citroën Kégresse vehicle with a trailer which shows a great saving as regards time and expense.





"A SUCCESSFUL TRACTOR"

Reprinted from "**The Field,**" *Thursday, March 8th, 1928.*

THE problems arising from wet soil, expensive and inadequate labour, neglected arable land, cartage of manure, timber cutting and removal of odd piles of rubbish, must appear on most estates and cause considerable waste of labour, time and money.

To deal with these problems, I purchased a Kégresse tractor early in 1925, and as I am completely disinterested in the Citroën Company, a brief description of the work it has done will possibly be of interest to others.

No technical description is necessary here, except to say that by means of an endless band instead of a rear driving wheel a machine has been evolved capable of proceeding under its own power across any country under any conditions of weather. The tractor drives like an ordinary car, and has been taken up several gradients of one in three, across big water-logged ditches and over wet fields, with such ease that only a personal demonstration can convince the sceptical. One great advantage is that the machine exerts its full tractive power at very slow speeds and can rarely be "stalled."

With such a brief general description the work done by the machine may be described in more detail. Its immediate convenience was demonstrated by the necessity of lopping overhanging hedgerows and branches prior to ploughing. With a wagon in tow, the tractor ran along the hedgerow and the overgrowth was cut by axe, saw or slasher, and dropped direct into the tractor body or wagon, and carted away across country. Two men produced an enormous pile of branches in two hours which would ordinarily have taken four men and a horse and cart almost a full day.

The bugbear of the estate, a field of six acres ploughed in 1918 and since allowed to grow thistles and weeds, was next tackled. This had been ploughed by horses in eight days with little result, as the plough kept on fouling up with rubbish. A nine-tined Martin cultivator was attached with the tines 9 in. deep, and the tractor pulling easily on second gear at about 4 m.p.h. cross-cut the area in nine hours, ironstone existing in the field being torn up sometimes in 2ft slabs.

A 3-ton ring roller was then put on behind, and the area crushed down by rolling in four hours. A chain harrow was attached in the same afternoon, and enormous quantities of rubbish were removed in the same time. The field was left for ten hot days, and then was

A Successful Tractor (*Continued.*)

again pulled to pieces by the tined cultivator, this time in seven hours, and chain-harrowed once more in four hours. It was finally ploughed and landed up in five days with horses and grew an excellent crop of wheat.

An analysis of this operation shows that six acres were torn to bits and all rubbish killed in 28 working hours, and this effected a saving of three days in the final ploughing. The total consumption of petrol was 14 gallons, and the work was of the roughest description, and would have necessitated teams of three horses and considerable risk of sprained tendons.

The haymaking was then started, the meadows being cut with horses, but all the hay was picked up and carted by the tractor. Tow bars were fitted to two wagons, and it was found that the tractor could back on to a wagon, hitch up and get away in under one minute, i.e., before the horses could be backed and the shafts lifted and hitched up. In the field the tractor, moving on low gear, ran along the ted of hay at below walking speed, the movement being so steady that it did not affect the men loading on the top, and on straight work the driver left his driving seat and helped to load. When the load was completed, the tractor drew off to the rick at 7 to 9 m.p.h. on second gear. It was found possible to run out an empty wagon, load and bring it alongside the rick again, faster than two men could unload the other wagon on to the elevator.

In previous years, four extra men were employed, but this was found unnecessary owing to the above arrangements.

The harvesting was done entirely by the tractor, a Massey Harris binder, requiring three horses, ran at 6 to 8 m.p.h. with the tractor on second gear, even up severe slopes, and this speed was only necessary at the urgent request of the man on the binder! Twelve acres were easily dealt with in nine hours, and working with a change of drivers it would be possible to cut sixteen acres. The corn was picked up later in a similar manner to the hay.

The tractor was then used with a Massey Harris two-furrow self-lift plough. No difficulty was experienced in ploughing two acres in six hours on second gear, the shares going down 9 in.

The rushes on a wet low-lying field were carted during wet weather, and the tractor easily pulled fully loaded wagons of these through wet places and across a nasty ditch, where the wagon wheels sank over a foot.

The mole plough was worked at a depth of 9 in. to 10 in. at walking speed, four acres being dealt with in two hours.

The problem of moving poultry was solved by a pig-net over the box body, 50 birds being carried at a time from the door of one house to the door of the other.

A Successful Tractor *(Continued.)*

In fruit picking the machine can easily be manipulated amongst the trees, and the box body forms a ready receptacle for the fruit, the pickers standing on the sides and getting most of the fruit without ladders.

The drive is rolled with an ordinary 2-ton roller, weighted with gate posts and lumps of iron to about 3½ tons.

When fencing is in hand the tractor is loaded with posts and rails which are tipped off as required, the tractor moving along at 8 m.p.h.

On the road, the machine can average 10 m.p.h. with a load of 15 cwt. and towing a trailer of about 2 tons.

It is invaluable when heavy weeding, manure cartage and transport of pot plants are in hand.

Two horses have been dispensed with since its purchase.

It has assisted in hauling several motor cars and lorries out of the local ditches, and during the last snow and silver thaw it was the only vehicle moving, and was invaluable for carrying out hay to the weather-bound animals.

In conclusion I consider the machine supplies a long-felt want, inasmuch as it will do almost anything on the estate quicker, more easily and with less man power, than is possible by any other means.

The machine has been running for three years, and is still in almost perfect condition. Over this period repairs have cost approximately £70, and a considerable portion of this was necessitated by the extraordinarily rough work I made it do the first six months to "try it out." It is difficult to calculate the saving effected, as this has been chiefly in time; for example, four acres of mangold were destroyed by fly, and the tractor pulled up the ground again and harrowed it, and the field was re-sown the same day. On a conservative estimate I should say that it has paid for itself in two years.

If any reader requires further details or a practical demonstration I shall be happy to do anything to assist, as I am convinced that in these days of costly labour something must be done to keep down costs in estate work. Moreover, the brief spells of fine weather must be utilised to the utmost.

The machine, supplied by Messrs. Citroën Kégresse, Ltd., through Messrs. Gordon England, Ltd., cost £425, and has given practically no trouble. The parent firm are, I find, most obliging with advice and supply of spares when necessary.

E. C. Abbott-Young.

North Breache Manor, Ewhurst, Surrey.

ESTATE WORK

and

SHOOTING BRAKES

ESTATE WORK

On large estates very full advantage can be taken of the many and varied uses of the Citroën Kégresse.

Apart from its use as an agricultural tractor, for forestry work, etc., already dealt with, it is invaluable for the inspection of distant parts of the estate difficult of access, for the conveyance of fodder, carting of fencing poles and a multitude of similar purposes.

AN IDEAL SHOOTING BRAKE

One of the great difficulties experienced in large shoots is the waste of time and fatigue to the " Guns " caused by negotiating arduous moves on foot or by pony.

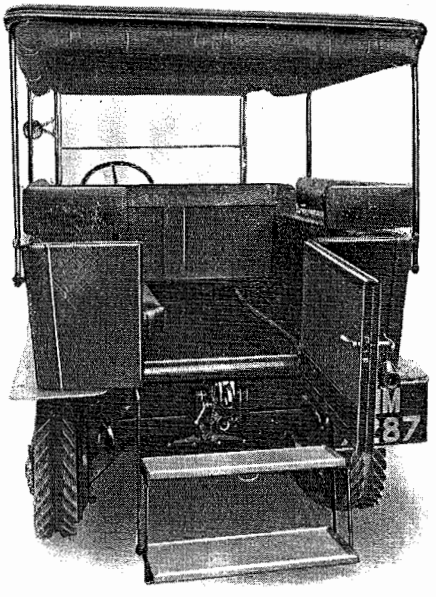
The Citroën Kégresse with its record of wonderful achievement on rough roads, on tracks and across country, together with its excellent performance on good roads entirely overcomes this obstacle.

It rapidly conveys the " guns " to the shoot and once there, transports them from one set of butts to another in comfort over any type of ground.

Being silent it does not alarm the game.

With a trailer it can convey beaters, dogs, cartridges and collect game.

The illustration shews a typical Shooting Brake Body, seating six persons in addition to two on the front seat, fitted to a Kégresse Chassis.



ESTATE WORK BY MOTORCAR

Practical Experiences of Endless-Band Drive on Scottish Moors and Mountains.

Reprinted from **"The Motor,"** *November 27, 1923.*

THE possibilities of the motorcar as a general utility vehicle for estate work are principally limited by the gripping capacity of its wheels. On farm tracks in the summer the vehicle should do everything that is required of it, but in winter time the tyre certainly has its limitations, while few owners would ever attempt to take a car across open country.

Some months ago Mr. Alex Keiller, of Morven, near Ballater, Aberdeenshire, bought a standard 10 h.p. 68 mm. × 100 mm. Citroën, equipped with endless-band drive, intending to employ it in a general capacity on his property. The car is fitted with a comfortable four-seater body, which is convertible into a thoroughly satisfactory light lorry or cart by the removal of the seats and hood, a metamorphosis that can be effected in a couple of minutes. The chassis is standard in every respect, the car being fitted with an electric starter, an efficient lighting set, the normal accessories and a ski attachment for the front wheels for work in the snow in winter time, a very serious consideration for those who live in the mountains round Ballater.

Regarded as an Impossible Feat

It was intended to use the vehicle for touring as well as utilitarian purposes, such as hauling stones and general station and estate work. So well did it perform these multitudinous duties during the summer that its owner recently decided as a culminating test to attempt the ascent of Morven Hill (Mhor Bheinn in the Gaelic means, "The Big Mountain," 2,826 ft. high), choosing this peak as being the highest acclivity in the immediate vicinity, and because it lay on his own estate. In the course of the day's work the Citroën had already travelled half-way up in order that it might bring down a bag of about 250 head of game after a day's shooting on the tops, such weight, incidentally, being quite beyond the powers of the ordinary hill pony. It was generally considered that the remainder of the ascent would prove impossible even to an endless-track-driven vehicle, since, assuming that the peat bogs which lie along the Shoulder of Morven, deep, slimy, treacherous places, were successfully crossed, the last third of the mountain presented perfectly terrifying gradients of one in three and worse, and the ground was thickly studded with large boulders calculated to smash the back-axle casing or front axle and undershield.

Shooting Game on the way

The day chosen for the climb was singularly unpropitious, lowering, bitterly cold, with showers of hail and sleet, and a fair covering of snow lying on the higher levels. Mr. Keiller was accompanied by his uncles, Messrs. James Greig, M.I.Mech.E., and John Keiller Greig, as observers. No particular time was taken and no attempt at speed was made, since such was not the purpose of the drive. Besides, the observers wished to shoot on the way up grouse, blackgame, ptarmigan and ground game, which are plentiful at various levels, but much too wild at this season of the year to be walked up with any success, seldom showing any concern at the approach of the car, which was apparently too novel a spectacle to cause

them any anxiety. Further, a good deal of prospecting for possible routes over seemingly impossible places, such as the peat bogs, took time, and finally the party lunched about half-way up. Actually, they left Morven Lodge at the base of the foothills of Morven at about midday, having brought the car up there at a spanking pace by road.

The lower slopes of Morven Hill are covered with deep heather, through which run a number of deep, broad, fast-flowing burns, which, of course, had to be negotiated en route. Higher up, heather gives way to coarse " tussocky " grass and whins—an excellent cover for concealed stones. On the higher levels the surface is composed of moss and boulders.

The real point of difficulty lay in negotiating the peat bogs, with their deep centres and precipitous mossy sides. Not only would no other vehicles have got out, once in, except this endless-track car, but it seemed probable that anything else, short of a Canadian toboggan driven by an air-screw, would have simply sunk in, and stuck there.

The final climb up the really terrific gradients was carried out at, considering the circumstances, a perfectly phenomenal speed, the car never hesitating for an instant and taking everything dead straight. All three occupants were somewhat relieved when they reached the cairn which marks the summit. The cold at this height was intense, so they turned round immediately and descended, using the engine as a brake, which proved so effective on the car's lower gears, that the foot and side brakes, which are both very powerful, barely needed to be used at all.

Early next morning the car was doing its normal day's work—fetching the laundry from the nearest village, carrying up petrol, hauling two-ton weights of stones on the flat-bottomed sledge across country, towing in a total stranger on a large car in trouble discovered on the main road, and so on—a wonderful vehicle in every way.

Since the successful ascent of Morven the car has accomplished the trackless ascent of Creag Phiobaidh, and also that of Creagan Riach and Carn Moine an Tighearn with the shoulder of Culardock, dropping down to Loch Buig in the latter case. Mr. Keiller has also taken the car by the Pollagoch Moss route to the watershed of the Muick, between Carn Vallich and Creag Leuchan, and to the top of the Gleann an-t'Sluigan, between Carn a Drochaidhe and the Meall an-t' Sluigan, in the Cairngorms.

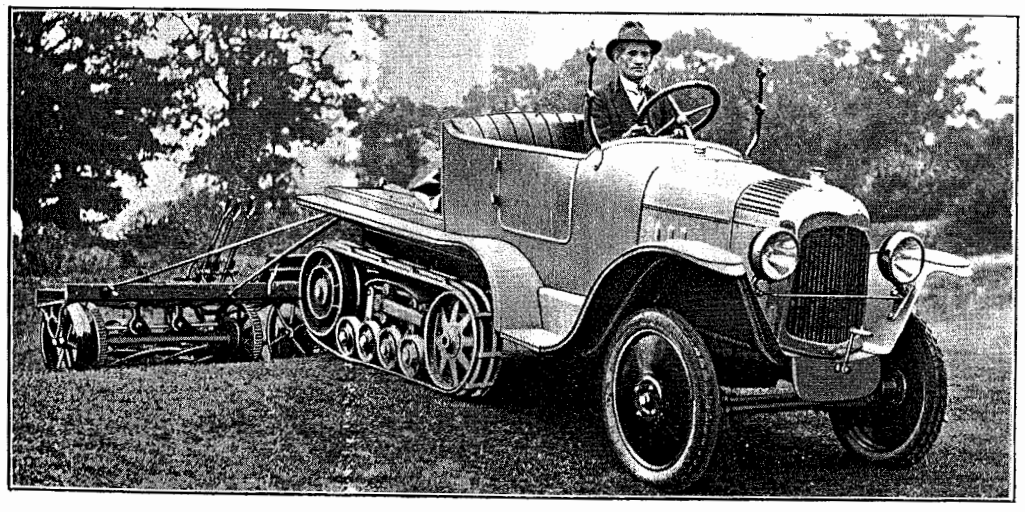
GOLF COURSES, RACE COURSES, POLO GROUNDS, PUBLIC PARKS

FITTED with a special type of band the Citroën Kégresse possesses the unique advantage of being able to travel over the fairways of golf courses, etc., even in wet weather, without in any way damaging the turf.

This, coupled with its great haulage capacity, permits the maintenance of golf courses under conditions which would render work with any other type of vehicle impossible.

One Citroën Kégresse will do fully the work of three single-horse mowers for a petrol consumption of approximately half a gallon per hour.

Golf courses can be mown more quickly than by any other means, which results in much less disturbance of the players.



SNOW

THE standard Citroën Kégresse will satisfactorily negotiate snow of a depth of say a foot, but a special snow model has been evolved for use under more severe conditions; this model is fitted with wider and longer bands, a special undershield for the engine and transmission, and skis under the front wheels, and can travel at will over deep virgin snow. Vehicles of this type have proved most satisfactory and an ample testimony to their capabilities was the ascent to the St. Bernard Monastery during the winter 1927-28.

This Monastery, which stands at the height of 8,100 ft., is completely isolated as regards normal traffic during approximately eight months of the year, the only means of communication then being by ski runners, yet the Citroën Kégresse carrying a full complement of passengers starting from Chamonix accomplished the journey without faltering. The route taken entailed the climbing first of Mount Montets (4,600 ft.), then of Mount Forclaz (5,600 ft.) and finally, from the Cantine to their ultimate goal, the negotiating of most severe gradients and expanses of deep drift snow.

The scope for a vehicle of this type is enormous, it enables mail services to be maintained throughout the year to places hitherto isolated, permits the regular transport of supplies and enables trade otherwise at a standstill in the winter months to be carried on without interruption.

As an adjunct to Winter Sports centres for the conveyance of visitors to distant ski-ing grounds, for the hauling of toboggans to the top of runs, for many other purposes, the Citroën Kégresse snow model must have a wide appeal.

MILITARY USES

ALTHOUGH it may be contended that the requirements for a military vehicle differ materially from those of a commercial vehicle, there are obviously many vital features common to both, as may be gathered from the subsidies granted by various Governments to encourage the production of certain types of commercial vehicles with the view to their military use in emergency.

The successes obtained by the Citroën Kégresse in competitive military trials and the extent to which these vehicles have been employed both in the British and many European Armies afford ample testimony to their reliability, efficiency and capacity for operating over the most difficult ground.

Among the military uses referred to above may be mentioned :—

Reconnaissance cars.
Gun and ammunition haulage.
Machine gun transporters.
Armoured cars.
Wireless and ambulance cars.
Tanks.
Cranes.
Aircraft haulage and Floodlights.

TECHNICAL SPECIFICATION

TYPE P.10 / 1929

Chassis

Wheel base, front axle to weight carrying axle of Kégresse unit, 7 ft. 4½ in. or 8 ft. 2½ in. Wheel track 4 ft. ½in. Weight: 1 ton 6 cwt.

Engine

Standard Citroën 12.8 h.p. R.A.C. rating, 4 cyl., 72 m/m. bore, 100 m/m. stroke, developing 27 B.H.P. at 2,500 r.p.m., fitted with automatic governor limiting engine speed to 2,500 r.p.m. approx.

Gearbox

Standard Citroën type which, in connection with a two speed gear in the Kégresse driving pulleys, gives 6 forward speeds and 2 reverse speeds.

Brakes

Handbrake on driving pulleys, footbrake (Citroën vacuum servo, Westinghouse Licence) on driving pulleys, and front wheels.

Driving Axle

Placed at the front of the Kégresse unit, Citroën type, but fitted with Hypoid bevel and carrying at each extremity, incorporated with the driving pulleys, a 2 two speed epicyclic gear reducer.

Drawbar Pull

Maximum sustained effort, 3,000 lbs.

Maximum Load on Chassis

20 cwt. (including body).

Haulage Capacity

Maximum gross load on good roads:

Gradients not exceeding 8%	6 tons.
,, ,, ,, 20%	2½ ,,
,, ,, ,, 28%	2 ,,
On rails	50 ,,
On water (barge towing)	1000 ,,

Speed Ratios at 2000 r.p.m. of engine

	Driving Axle low gear	*Driving Axle high gear*
With 7/52 bevel ratio:—		
1st speed ..	.93 m.p.h.	4.54 m.p.h.
2nd ,, ..	1.62 m.p.h.	7.85 m.p.h.
3rd ,, ..	3.02 m.p.h.	14.55 m.p.h.
With 8/49 bevel ratio:—		
1st speed ..	1.13 m.p.h.	5.50 m.p.h.
2nd ,, ..	1.96 m.p.h.	9.50 m.p.h.
3rd ,, ..	3.65 m.p.h.	17.65 m.p.h.

Petrol Consumption

Approximately 12 miles per gallon on roads or good tracks without severe gradients (vehicle loaded, average speed about 28.8 m.p.h.).

PRICE LIST

(Ex London Works)

OF

CITROËN KEGRESSE CARS

NEW MODEL

WITH

POSITIVE DRIVE

GENERAL PURPOSE MODEL

Chassis only - - - - - -	**£315**
Platform Body (*2 seats in front*) - - -	**£360**
Convertible 4-Seater - - - - -	**£430**

SPECIAL BODIES, also SNOW MODEL VEHICLES, QUOTED ON APPLICATION.

Endless bands, each - - - - - - - **£20**

NOTE:—The above prices do not include Import duty which is payable by the purchaser on vehicles or bands imported for use in Great Britain.

General conditions of Sale and Guarantee

Prices.

Prices quoted in the Price-List are nett cash ex London works. All prices are subject to alteration and must be confirmed at the time of placing orders.

Payment.

£50 deposit with order, balance upon receipt of invoice when car is ready for delivery.
In the case of export orders, the balance is payable against shipping documents.

Guarantee.

All cars or chassis shall be accepted by the Purchaser subject only to the following express warranty which shall exclude all conditions, warranties and liabilities whatsoever, whether statutory or otherwise, which might exist but for this provision.

We guarantee our vehicles for a period of six months reckoning from date of invoice, against all defects of materials or construction. This guarantee in no circumstances covers damage caused through lack of care, oversight, inexperience or overloading. In all cases our responsibility, even in case of accidents to persons or things resulting from defects of materials or construction, is formally and strictly limited to the exchanging of such parts as may be recognised to be defective by our Technical Department, to the exclusion of all other indemnity, rights or claims, of any kind whatsoever. Such defective parts must be sent to us carriage paid for preliminary inspection, and will be exchanged if found defective, all expense for labour involved being charged.

This guarantee does not apply to pneumatic tyres or other articles manufactured outside of the Citroën Works.

Replacement of faulty parts.

Where the free replacement of any parts under the above guarantee is claimed, the parts in question must be forwarded, carriage paid, to CITROËN KEGRESSE LTD. for preliminary examination.

The free exchange of parts does not entail any liability whatsoever on our part either partially or wholly in respect of the labour charges for dismantling and reassembling.

Modifications.

We reserve the right to modify the chassis, bodies, or accessories, should we consider an improvement or an alteration desirable.

Departure from standard types.

Manufacture in large quantities does not allow of modification to the types shown in the catalogue to meet individual requirements, nor the fitting, in our Works, of accessories which are not specified in the Price-List.

Delivery.

Any estimate for delivery is contingent upon strikes, lock-outs, fire, delay or failure of sub-contractors or other unforeseen circumstances, and no responsibility can be accepted by us for delay caused by such contingencies.

Exhibition.

No vehicle purchased shall be exhibited, directly or indirectly, at any exhibition in Great Britain and Ireland without the written authority of CITROËN KEGRESSE LTD.

Arbitration.

If any difference shall arise between CITROËN KEGRESSE LTD. and the purchaser as to the interpretation or operation of this agreement, or the rights. duties, or liabilities of any party in connection therewith, the said differences shall be referred to a single arbitrator to be nominated at the request of either party by the President of the Society of Motor Manufacturers and Traders Ltd. of Great Britain, for arbitration in accordance with the provisions of the Arbitration Act, 1889, or any then subsisting statutory modification thereof.