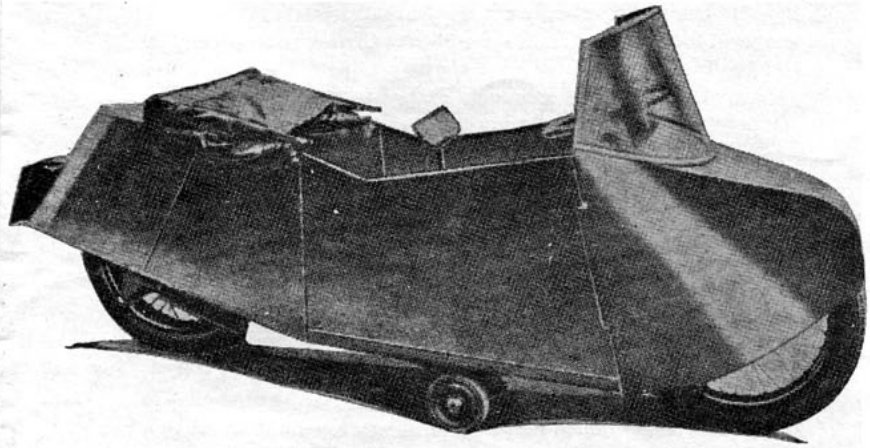
THE MONOCAR

A History of the Species

SOME months back the learned P. C. Vincent gave us his idea of a single-track city car. The dream of a fully enclosed motorcycle was revived. With little imagination it is easy to conjure up visions of svelte monocars banking and swooping, the occupants warm and snug, the heater at full blast and the radio crooning softly. Not a new dream, of course, save for the bit about the radio and heater. It is a dream that has engaged the imagination almost from the day the motorcycle threw away the crutches of what was quaintly known as L.P.A. (light pedal assistance). That was a big laugh too. Ask a vintagent who has tried to pedal assist a flagging engine up a hill.

It may interest you, therefore, to read of some of the earlier experiments in the monocar field and have a detailed run down on what was probably the last though not the first one to be marketed. British too! It will also provide me with an opportunity to snare a "hare" I started some time ago when writing about the Morgan three-wheeler.



"Full weather protection for the driver and passenger is provided by the Whitwood Monocar. Note the outrigger wheels that can be lowered when the machine is stationary." So wrote the caption writer for this photograph in the 8 November 1934 issue of "The Motor Cycle"

First let us examine our terms of reference. We must differentiate between a motorcycle provided with car-type bodywork and various degrees of enclosure, but retaining the motorcycle's automatic stability (or untoward instability) and the two-wheeled car of car-type construction with or without auxiliary stabilizing devices. History provides examples of both. I will deal with the latter variety first because they can be more easily dispatched as not quite our cup of tea.

You will not, for instance, have more than a passing interest in American Biautogo (what a dreadful name) of 1913 which was a massive car on two wheels at least 20ft long slung between huge steel artillery-type wheels and powered by a vee-eight of 35 h.p. (but 5-litre) watercooled engine. The front forks were certainly of motorcycle type, quite the biggest bottom-link forks ever with leaf springs and rear springing was by half elliptics either side of the wheel like the Coventry Eagle Pullman models of the later 30s. This monstrous vehicle (the Biautogo, not the Coventry Eagle) was a three-seater . . . mercifully the driver sat centrally behind a car-type wheel . . . and must have weighed a couple of tons. It was stabilized (prevented from falling over) by smaller artillery type wheels at least as big as those of an Imp. According to contemporary reports the side wheels were brought into play below 20 m.p.h. Above that speed, which is interesting for reasons which will emerge later, the Biautogo was balanced "like a bicycle".

The Americans always did things in a big way but the biggest single-track car ever was made in Britain to the order of a Russian designer and tried out in 1914. This colossus on wheels was a seven-seater as big as a small charabanc balanced on huge wire wheels and was built by Wolseley Motors a long time before they got taken over by Morris. It had no stabilizing wheels at all because it was balanced by gyroscopes. I forget now how many tons the contraption weighed, and it does not really matter, but it did work and "balanced like a bicycle" once it got under way. It too had motorcycle-like forks, unsprung in themselves, but the whole steering head was sprung to the chassis . . . I have seen this idea used on something else but the application escapes me. Could it have been the Seal three-wheeler?

I don't think the Russian inventor ever got his brainchild home, the war must have intervened, and I believe the Gyrocar hung about for years until it was scrapped. I wonder if Wolseley Motors got their money.

The gyroscope stabilizing idea is, of course, tempting if cost does not matter, and another single-track car so equipped was the Giesberger which appeared at the Paris Salon in 1921. This had gyroscopes inside the rear wheel and a drive shaft either side of the wheel . . . I imagine one shaft drove the gyro and the other the wheel. The rest was car stuff. A pressed steel chassis, a water-cooled four-cylinder engine, a radiator straddling the front wheel and wheel steering.

The name suggests German origin and so does the probability, for at this time the Germans were simply mad about monocars. Continental correspondents were constantly sending over reports and pictures of new single-track experiments. If you will forgive the little joke, it seems as if German designers in the early 20s had single-track minds. Well developed by 1922, for instance, was a true enclosed motorbicycle called the Mauser. This had motorcycle forks and wheels, a full-size car-type screen above a bonnet like an early Morgan and very wide but unmistakably motorcycle handlebars. It was stabilized at low speeds by side wheels of approximately 12in diameter which permitted a fair degree of cranking over. I do not know whether they were retractable but it would appear from a demonstration photograph that the Mauser could be banked over enough for normal riding with them fixed.

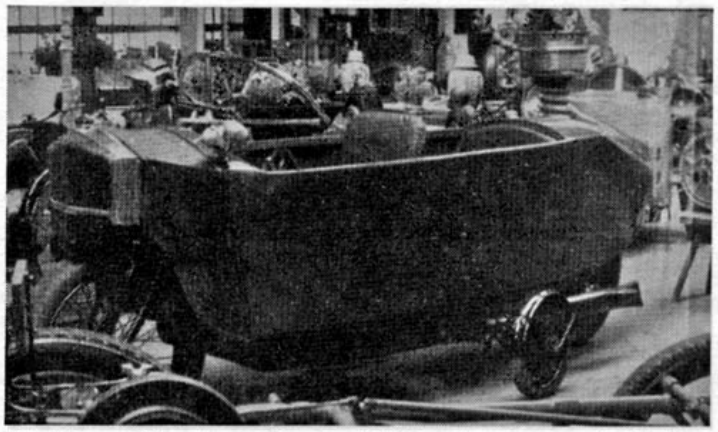
Judging again from the photograph, the Mauser was a fully developed machine (it had electric lighting with twin headlamps) and was not a lash up. Other photographs which came out of Germany at around the same period were of a much larger tandem-seated monocar somewhere between the Mauser and the Giesberger in size but with motorcycle forks and retractable stabilizing wheels. It was shown tackling rough stuff in a very purposeful way.

The time is now ripe for me to refer to my "hare". In earlier articles about Morgans I mentioned a monocar called a Morgan Monotrace which is preserved in the private museum of the Cheval Noir Hotel at Cleres near Rouen, northern France. A description and photo of this machine appeared in the excellent monthly magazine of the Morgan Three Wheeler Club and the contributor, Richard Brown, said M. Pichon, proprietor of the hotel, told him it was designed by our Mr. Morgan, the late H.F.S., was built near Lyon by a man named Monotrace and that some 200 were produced. Six were supposed to be still in existence. This particular example had a frame and engine number of 281 (manufacturers rarely if ever started numbering at one. Common practice was to start at 100. It looked better). The Monotrace had motorcycle forks and a semi-steering wheel. It was powered by a horizontal single engine rated at 4CV and was chain driven through a three-speed box. The rear forks and brake mechanism were distinctly reminiscent of an early three-wheel Morgan.

Faced with all this and M. Pichon's statement, too, Richard Brown concluded this was some secret enterprise of H. F. S. Morgan. Knowing him to have been a great experimenter, I felt so, too. The rear end looked so early Morgan.

But when I was digging up material for this little piece I came across a piece of information which suggests a quite different explanation : a fragment from patent files to the effect that in May 1922 one Alfred Morgan of Berlin patented under No. 186980, a monocar improvement. The appropriate drawing showed a means of actuating spring-loaded stabilizing wheels for monocars. The wheels were on the end of pivoted half shafts (think of a Triumph Herald), were spring loaded via coil springs, and by a cunning linkage could be raised or lowered simultaneously by a handle lever. The attitude of these side wheels was reminiscent of the Mauser monocar previously described. So I am no longer inclined to attribute the Monotrace to our Mr. Morgan. Germany was at that time the cradle of the light monocar and Mr. Alfred Morgan was involved enough to be patenting improvements and he was a trifle nearer Lyons. I have also quizzed a number of people who knew H. F. S. Morgan well and none of them had ever heard of him being interested in monocars. A very old friend, John Sylvester of Nottingham, was "in" on most of Morgan's experiments and he does not think it likely that H.F.S. had anything to do with the Monotrace. As I wrote at the time I don't really believe Monotrace was the constructor's name for it means simply "single track". It was more likely part of the manufacturing title. But the Morgan Monotrace is the nearest in layout and dimensions to the British monocar, the Whitwood Monocar of 1934.

The Continental monocars of the early 20s were rather clumsy and suggestive of a hip bath on wheels, but a "one off" designed by veteran T.T. rider A. H. Alexander of Edinburgh in 1922 had really sleek stylish lines. The front wheel was exposed with a Neracar-type front guard but the rear end treatment—the complete enclosure of the rear wheel—was really smart. The complete styling reminds me very much of the prototype Osca scooter which "wowed" an Earls Court Show in the 50s but never got off the ground. The Osca was an early two-wheel project of former racing motorist R. D. Poore, the man behind the Norton-Villiers set up. "Alfie" Alexander's enclosed motorcycle had a pressed steel chassis under the panel work and an



The Morgan Monotrace—photographed in a private museum in Northern France. Although the name's the same, and the rear end is distinctly "Morgan," the writer believes that the Monotrace was in fact the work of one Alfred Morgan of Berlin

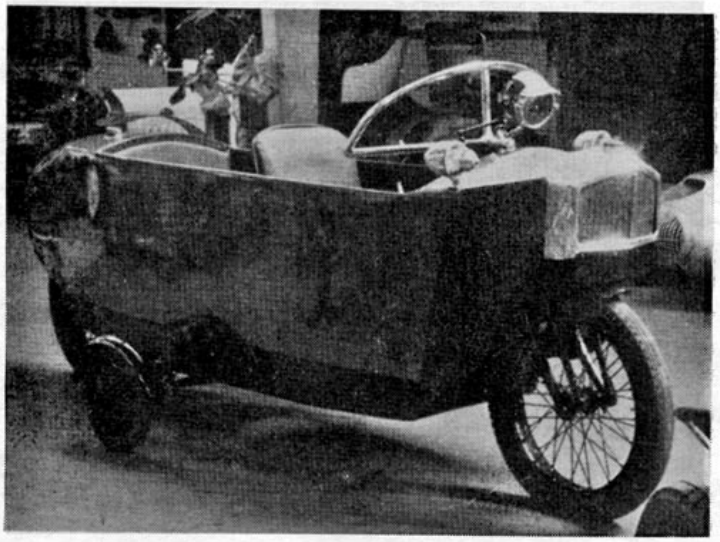
open midriff to allow "footing". A most effective demonstration of its capabilities was staged. A Mr. Fairley rode it in a local mud plug trial wearing only a lounge suit and won a "gold". The advantages claimed were cleanliness, absence of skidding due to a low centre of gravity, and cheapness of production, it being emphasized that only the outer skin required an expensive paint.

It may come as a surprise to some to know that Scotland had a lively car and motorcycle industry of its own in the early 20s and a local Show. Some quite advanced models came from over the Border, including one with an improbable engine which had one poppet valve for exhaust and inlet and a rotary valve to sort out which stream of gas should use it next.

As the Whitwood Monocar was, to the best of my knowledge, the only enclosed motorcycle—or car on two wheels, whichever you prefer—to get on the market I think it is worthy of description in detail. By "getting on the market", of course, I mean that it appeared as a finalized design at a motorcycle show, Olympia in 1934 actually, and was offered for general sale to the public with a wide choice of engine options at fixed retail prices. How many were actually produced and sold I know not. Nor do I know if any still exist. If anyone does know the whereabouts of one I do hope he steps smartly forward, for quite apart from the museum value I think it would be most worth while to road test one. Discounting the limitations of the 1934 components such as engine, transmission and brakes it would, I think, provide interesting information about the more intangible problems of the monocar. I am thinking of the difficulty of a non-motorcyclist in steering a vehicle which has to be banked and even the difficulty a motorcyclist might find in handling a machine which cannot be "ridden" in the full sense of the word. Someone braver by far than me might even be prepared to get one in a slide and demonstrate the results. But if the public did not queue up to buy or if the makers were unable to produce any quantity some did actually get on the road.

I seem to recall that someone on *Motor Cycling*—the Green 'Un—actually road-tested one when they were "news". I am pretty sure it was that book's seemingly ageless C. P. Read, but a contemporary road test would hardly provide factual information. In my experience road tests between the wars were influenced by a see-no-evil, write-no-evil policy. In any case it would be very difficult to evaluate such a revolutionary device in a short road test. I have had the good fortune to talk to someone who actually owned one for a short time a long time ago. More of this anon.

The Whitwood was an enclosed motorcycle because it would have passed the best test of all. Stripped of its bodywork, it could have been ridden as a motorcycle, the stabilizing wheels being then superfluous. Underneath the bodywork there was a complete duplex-framed motorcycle, a very low built one with a horizontally mounted engine, but a motorcycle notwithstanding.



In these days of ultra low sidecar machines and sprinters the design would not cause much surprise and those who were surprised or unbelieving must have forgotten a rather similar layout in 1927, the F.E.W. Paramount Duo which was a low-frame tandem-seater motorcycle. The front end suspension and steering arrangements were pure O.E.C. Duplex, the front wheel being supported by an arrangement of pivoted tubes. Describing how O.E.C. steering worked without diagrams is completely beyond me. One could easily demonstrate it with a model—a child's playpen would do—but suffice it to say that the design gave pronounced, perhaps excessive, self-centring at the expense of limited steering lock. It aimed at providing the rigid location

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of the front spindle of the Wallis and the Neracar without the complication of a pivot in the centre of the hub. It achieved the "no hands" stability of those designs but was heavy in weight and in feel and took a bit of getting used to. But the O.E.C. duplex design lent itself to the construction of a monocar because it could be kept low, there being no steering head, and it had this pronounced self-centring auto-stability effect.

According to published descriptions, the O.E.C. steering was made under licence. I suspect that the machine, or at least the cycle parts, were made by the Osborn Engineering Co. for it had an O.E.C. look about it. And the fact that Whitwood Monocars and O.E.C. Motorcycles both had an address in Highbury Street, Old Portsmouth, was surely more than a coincidence. If you are familiar with the layout of the Corgi miniature you can easily picture the Whitwood frame for it was more or less the same though bigger and longer. The four-tube centre section enclosed engine and gearbox and was swept up at the rear to accommodate a 19in wheel. At the front the top tubes were swept up steeply to reach what served as a steering head and the lower frame tubes were extended forward to support the lower stanchions of the O.E.C. steering. The major masses of engine and transmission were below rather than above wheel-spindle height. To preserve the car-on-two-wheels illusion steering was by a car-type wheel on which were mounted throttle, air and ignition controls Morgan fashion, plus a hand brake to satisfy legal requirements.

In one contemporary description it is stated that the steering wheel operated the O.E.C. "forks" through a reduction gear. No details of this were given and I would guess it was a chain and sprocket arrangement. If the reduction was more than fractional it must have been very difficult to get used to.

The rest of the control layout was very car like. The driver's legs straddled the front wheel, and on the left at a point somewhere near the front spindle was a clutch pedal and on the opposite side a brake pedal. A normal motorcycle gate change gear lever was mounted ready to hand low down on the offside of the engine tunnel and the engine was started by a pull up hand lever horizontal on the offside. In a like position on the near side was the all important lever for the retractable side wheels. The body was laid out as a two-seater, rider and passenger sharing an upholstered seat above the engine and gearbox, the passenger supported by a car-type squab. In the original sectioned drawings it seemed that there was nothing for the rider . . . sorry, driver . . . to lean back on. He had a wheel to hang on to, of course, but by the time the finished machine reached Olympia a back rest for all the world like the ones scooterists now fit had been added.

A single-seater version with more luggage space at the rear was also offered. The fuel tanks, incidentally, were mounted pannier wise under the tail.

Engine cooling was well arranged. The covered in engine/gearbox tunnel under the seats was open at both ends and at the front the bulkhead opened out like a big funnel. As the nose of the bodywork had an upward tilt, conditions were ideal for a really good cooling draught. The range of engine options was almost bewildering. You could opt for a 150 c.c. Villiers (with which the performance must have been minimal) or a 250 c.c. ditto. If you preferred four-strokes you could have J.A.P. in side-valve or o.h.v. form up to 500 c.c. with a 1,000 c.c. side-valve vee-twin (30 b.h.p. !) for a real GT model. Was anyone that brave, I wonder?

The ones that actually got on the road seemed to have the 250 c.c. o.h.v. J.A.P. with coil ignition and about a foot of curly induction pipe to bring the carburettor in front of the cylinder head. The price structure, starting at £49 15s. for the 150 c.c. model and reaching £88 for the big twin, was very reasonable and, I would think, unrealistic. The equivalent big-twin O.E.C. motorcycle was listed at £78 10s. and I would not have thought the £10 differential would have covered the cost of the bodywork and the special bits and pieces.

Now for an owner's recollections of a Whitwood . . . the owner E. O. Blacknell of Nottingham. Ernest Blacknell, manufacturer of the Blacknell Sidecar, has in a lifetime in the car and motorcycle trade ridden and driven almost everything that has moved on wheels. With an incurable weakness for "off beat" and "one offs", it was almost to be expected that if any Whitwoods had got out of the works he would have ridden one. More than that he actually bought one secondhand from the owner of a small country garage . . . how it got there, heaven only knows. And what's more, while running his Whitwood he rendezvoused with another Whitwood fancier to compare notes. He thinks it was someone from Kings of Oxford.

"When I took delivery", he recalls, "the previous owner told me to keep the side wheels down until I got used to the feel of it and in any event keep them down below 20 m.p.h. I found that they were spring loaded to some extent so that you could travel quite normally with them down. The amount of spring allowed you to balance without the out-of-control feeling you get with a tricycle or a bicycle with fixed stabilizing wheels. The wheel steering was very direct but the handling was not difficult. It was, of course, just like a duplex steering O.E.C., and they took some getting used to ! You couldn't put your legs out, of course, for the doors had to be unlatched first. They were hinged from the rear anyway and would have been dangerous to open on the move. The stabilizer wheels worked very well, however. When you wanted to stop you pulled up a hand lever . . . I think it had a rachet like a handbrake . . . and rolled to a standstill. It was quite simple really."

"Blackie" did not keep the Whitwood long before he swapped it for a very old belt-drive big-twin Matchless. Why ?

"Well the worst trouble was the frightful noise and vibration. The engine was a 250 c.c. o.h.v. J.A.P. mounted horizontally under the seat. The engine made all the panelling vibrate and it was like being in a tank. The noise from the engine and chains was really indescribable. I think I decided I had made a mistake by the time I got home. The other chap I met with one had a radio in his. Of course, radio was a great novelty then."

What would have happened if he had got into a skid ? He could not have got a leg down or put down his undercarriage in time.

"I never went fast enough to get into a situation like that. I should think it would have slid until it caught something and started going over and over."

I can well imagine the noise. A small o.h.v. J.A.P. would hardly have been a quiet bedfellow, and surrounded by all that tinware . . .

I seem to think the road test one had an o.h.v. J.A.P. Did all the production ones, I wonder ?

The Whitwood was to the best of my knowledge, the last of the stabilizer-wheel enclosed motorcycles to be made for public consumption. There were, however, from time to time one off, "do it yourself" machines and the most sophisticated of these was made by the boss of the Sackville component concern for his own use. It was based on a Neracar, an ideal basis, and fitted with a beautiful little o.h.c. four-cylinder engine constructed by an engineer . . . a model engineer's engine. Oddly enough, it was eventually bought by E. O. Blacknell who could never resist anything unusual. What finally happened to it is uncertain. It was loaned to a friend, broke down, and vanished presumably stolen. (A description of this appeared in the June issue.)

Nothing much happened in the enclosed two-wheeler field until the Maico Mobil was imported in small numbers in the 50s. This was sold as a super de luxe scooter. This was the period of the great scooter boom, but it was in fact an enclosed motorcycle with a bonnet and scuttle to give forward protection and an

enclosed tail but the centre section was open like a scooter and you propped it up with your feet. Underneath the tinware there was an embryo motorcycle with fair-sized wheels. As you may have guessed, E. O. Blacknell had one and I had an opportunity to ride it. It handled quite well once you got used to having a big screen and a bonnet in front which did not turn with the bars so that you had a feeling that it was not answering the helm. You got the same effect with the full frontal fairings which became the fashion on roadsters until they were banned by the F.I.M. for racing and ousted by Dolphins.

We enthusiasts thought at the time that the streamlined and partly enclosed motorcycle which would combine grace with pace and keep us clean and comfy was well on the way. Years before no less a visionary than Triumph's Edward Turner had forecast it would come and had sketched his idea of the motorcycle of the future . . . with room to get your legs out, of course. And I seem to remember Phil Vincent had released a sketch of his idea of the motorcycle of the future which had its steering gear and rear suspension attached to a sizeable squarish alloy box which contained a hush hush power plant. Am I right.*

The Motor Cycle in its time-honoured role of harbinger of the future connived with Royal Enfields to produce the streamlined roadster of all time, the very beautiful "Dreamliner".

Alas the dream faded, as it had done before in the early 20s, and the pendulum of fashion swung back and scythed away all the full fairings and the embryo enclosure of legshields and windscreens. Blame the F.I.M. if you like for halting the development of streamlining but explain if you can the fact that the interest in the enclosed or partially enclosed motorcycle came from tough enthusiasts with hair cropped short who thought nothing of knocking off a hundred miles before breakfast. The trend for stark naked near-racers sans protection of any kind came from a generation the oldsters think of as effeminate.

But I do not think the motivation for the car on two wheels ever came from the commuter or man in the street. And personally, and with no desire to pour cold water on Philip Vincent's two-wheeled city car idea, I don't think the unbelievers (those who have not been infected with motorcycling) will ever accept a vehicle with less than three wheels. Nor, I feel, will there ever be an enclosed motorcycle which will be acceptable to the enthusiast motorcyclist. The intangible appeal of the motorcycle to the enthusiast is the oneness of man and machine, the function of its engine, steering, suspension being transmitted to the senses through arms and legs and situpon. Transform the motorcycle into a car on two wheels and you lose those vital contacts and become a mere driver. It's been said, many times before, but there is no better simile. It's the difference between riding a horse and driving behind one. C. E. A.

*C. E. A. is quite correct in his recollection of an enclosed model of advanced design that was described by Phil Vincent many years ago, but this was not in the mid-50s but during the war, about 1942.

The design was based on a special 500 c.c. twin two-stroke engine with piston charging and opposed pistons with twin crankshafts asymmetrically timed to provide a lead for the operation of the exhaust port ahead of the inlet. This engine was developed for use in airborne lifeboats to an extremely high standard of fuel economy, with reliability and very long life. It was designed to run continuously at full throttle.

The original engine design was patented and a number of patents were granted covering special applications of the unit. One of these covered the special means by which cast arms were firmly bolted to the front and rear of the rectangular shape power unit. Suspension units and guides for the wheel supports were attached to the extremities of these two castings, supporting the front and rear wheel. Centre-hub steering was provided for the front wheel.

Weather protection casings were fitted over the engine unit and supported the rider, there being no form of tubular framework.

VINTAGE RACING

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to beat the leader, D. A. Cameron (1928 350 A.J.S.), over the line in the same way as Ivan Rhodes just missed third place in the racing class, both having started at the back, and in each case they didn't realize it was the last lap otherwise they would have made sure of getting by on the corner before the finish. But Chris Williams, also from scratch of course, made no mistake and with a spectacular performance went right through the field and led the race two laps before the end.

A popular win in the other racing class handicap was that of veteran Bill Wilshere, who, to quote the introduction in the programme, "complete with vintage leathers and Rudge serves as a deceptively fast reminder that motorcycling maintains a youthful spirit".

The post-vintage handicaps provided more success for Ivan Rhodes. In his race he took the lead fairly early from scratch and won easily from A. N. Richmond and M. A. Wilkinson, who, like Richmond, was on a Mk. VIII Velocette. Young J. T. Hawkins, also Velocette-mounted, led the other race for some while until he cooked a plug (it transpired afterwards he had stuck to the maker's recommendation in the instruction book, but someone should have pointed out that even the KSS is a road bike, and the plug mentioned was for touring!), then Maurice Patey took the lead and won from P. Robson, riding the only 500 c.c. post-vintage Norton (solo) in the meeting.

Once again it was the survival of the fittest in the three-wheeler handicap, and Roger Allen kept the Triumph going on both cylinders and won, with Archie Beggs second.