The Motor
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AMERICAN TOPICS.

NEW YORK, *November 25th*, 1903.

Growth of Motoring.

Trade conditions, according to the makers, are of the brightest for 1904. Many of the leading automobile factories are being enlarged, lines are being greatly increased, and in many cases the prices of vehicles are being increased rather than decreased. This increase in prices is due mainly to the many improvements being made. American makers have adopted the best features of the foreign cars, and have added a great many improvements which are distinctly American.

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The Motor League has quadrupled its membership, and is in receipt of a large and ever-increasing list of applicants daily; automobile clubs everywhere are thriving, and new clubs are being formed in all parts of the country. Automobile tours are increasing in number throughout the country. The season opens with the New York Automobile Show at Madison Square Garden, January 15th. Following the New York Show, the Florida race meet claims attention. This meet practically opens the season of racing, for many of the competitors at this meet go on a circuit of the south and far west, which will extend practically through the year.

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The American Show.

Allotments of space for the Automobile Show in Madison Square Garden have been made. So great was the demand for space that twenty-four applicants have been denied representations, while the floor area asked for by many others has been cut in half. In the arrangement of exhibiting space not only the main floor and the first gallery, but the second gallery, basement and restaurant have been called into requisition.. The list of exhibitors is still withheld, through a desire to accommodate as many as possible of those to whom it has so far been impossible to grant any space at all. Many applicants are looking for space only four or five feet square, if no more is to be had, and they will undoubtedly be able to arrange for some sort of representation in the booths of others in many cases.

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An Overflow Exhibition.

In the meantime, the big firm of R. H. Macy and Co. have come forward to the rescue, and announce their decision to hold an overflow show on their mammoth exhibition hall on the ninth floor of their new store building at Broadway and Thirty-fourth Street. Alfred Chasseaud, who will manage this exhibition, states that the Macy Hall, with 60,000 square feet of floor space, is the largest, brightest, and best equipped exhibition room in America. "This Show," he states "is in no manner designed to interfere with other fixtures or shows. We desire to afford the many important concerns which are not able to secure space at the Garden an even chance to meet the trade in a representative and dignified co-operative exhibit." The admission fee to the Macy Show will be twenty-five cents, and an attendance of 100,000 is predicted by Mr. Chasseaud.

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American Gordon-Bennett Team.

Entries for the American team to compete in the International cup race, which takes place in Germany next summer, must be received at the Automobile Club of America on or before December 15th. George Isham Scott has issued a circular letter calling for entries and also calling attention to the fact that entrants for the race must at the same time apply for membership in the Automobile Club of America, providing they are not now members. Entrants must describe the machine they will drive, and its state of completion at the time of entry. Each entry must be accompanied by 600 dols., which will be returned to the applicant should he not be chosen a member of the team. It is possible that this provision, that contestants must be members of the local club, will cause trouble in the near future, while Barney Oldfield, America's foremost racer, is a professional

The Standard, an American Petrol Motor Launch.

pure and simple. European clubs handicap themselves with no such provision: De Knyff, Gabriel, Fournier, Edge and Jarrott are all former professional cyclists.

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The Motor Launch Movement.

Following close upon the achieved popularity of the automobile, the automobile boat has appeared as a candidate for favour, and automobile boating seems destined to equal, if not, indeed, to surpass, automobiling upon the land as a sporting pastime in the near future.

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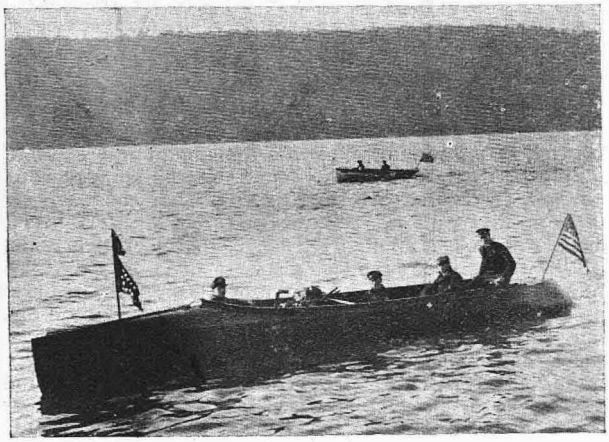
A regatta for the new craft is planned in connection with the automobile race meet at Ormond, Fla., next January; a National exposition of motor boats is to be held in this city in February; regattas on Long Island Sound and in Newport Harbour next summer are proposed; and it is announced that various prominent automobilists have ordered automobile boats for the coming season, while there is scarcely an automobile manufacturer or importer of prominence who has not declared his intention of entering the business of undertaking



Smith-Mabley Motor Boat, the fastest in the States.

to supply the sudden demand for the new craft, and there is a reason for the popularity of the automobile boat. On land the automobile is hindered and hampered by both natural and artificial restrictions of many kinds. Not only must he contend with all the difficulties and hazards of the roads, such as poor pavement, steep grades, crossings, rail way tracks, etc., as well as looking out for other vehicles, pedestrians and domestic animals, but he must regulate his speed according to the legal rate. On the water all this is changed. The highway stretches away broad and smooth, devoid of grades, turns, or intersections, and with little interference from other traffic, while best of all, speed restrictions are unknown, and the only speed limit is the ability of the boat and its driver, which already, in some cases, has reached almost forty miles an hour. Under these circumstances it is not to be wondered at that, with automobile road racing almost everywhere interdicted, makers and users of motor vehicles are turning to the water for opportunities to demonstrate their skill.

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Some Recent Launch Trips.

An automobile boat, cutting through the waters of the Hudson River, recently made remarkable time for a craft of her size. Dashing over a measured course off Yonkers, a light 30 foot launch travelled a mile with wind and tide in 2 mins. 26 secs. This is at the rate of almost twenty-five miles an hour, and claimed to be the fastest time ever recorded for a motor boat of her length. The craft had previously covered the distance against a strong tide and stronger head wind in 3 mins. flat. It was the first speed trial of the Smith and Mabley automobile boat, and Mr. A. D. Proctor Smith was at the wheel. Even that time was considered notable under the circumstances. With all the characteristics of an automobile speeding on land, the new craft responded quickly to the touch of her driver, and, with the waves breaking over her bow, cut through the water as if the resistance had been no greater than that offered by the atmosphere. With the throbbing of the engine and the steadiness of the onrush, a passenger might easily have imagined himself dashing on wheels over a macadam road. To the crowds who watched the performance from shore, the speed of the low-lying craft was amazing. The boat, which has been named the Vingt et Une, is built of Honduras mahogany. It is equipped with a Smith and Mabley four-cylinder motor of 21 h.p., placed forward. One man does the steering and controls the engine, exactly as in an automobile. The gasolene capacity is twenty-five gallons, which is said to be sufficient to drive it three hundred miles. Five passengers may be carried. The launch is of slightly less than four foot beam, and has a turtle back deck forward. The total weight with engine is only 770 pounds.

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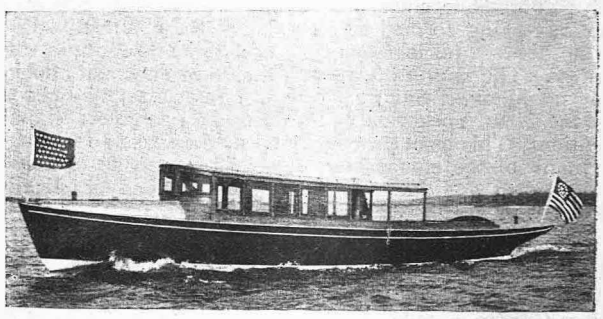
Lewis Nixon's automobile launch, the "Standard," scored a decisive victory over the speedy steamer "Monmouth," in a run up New York Bay. The larger of the two flyers did not reach the Battery until five minutes after the trim launch had passed that point, cleaving the water like a knife. For some time the "Standard," which first attracted the attention of yachting circles to its great speed during the recent International yacht race, had been anxious for a brush with the "Monmouth." The conditions of wind and water were perfect for the struggle. For several miles neither boat scored any appreciable advantage. The "Monmouth," huge in comparison with her rival, trembled from stem to stern with her added exertions. No one on board, neither officer, stoker, nor passenger, wanted to be beaten by that tiny, low-lying craft, which so impudently raced alongside, and refused to be left behind. As the minutes fled the interest and excitement increased. Then slowly, but gradually, the "Standard" forged ahead. Ferries and tugs on their way up the bay were passed so rapidly that they seemed to be standing still. Passengers on the ferries, quick to grasp the situation, cheered the flyers, and saucy little tugs tooted encouragement. There was much clanging of bells and signals on the big boat, but to no purpose, for the speedy "Standard" increased her lead and won, the loud toots of her whistle sounding her victory.



The high speed petrol launch "Express."

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Racing Rules.

Growing out of protests made at the recent automobile race meet at Brighton Beach, there has been much discussion of the rules governing this new class of sport. By many it is held that the present regulations, which are largely an adaptation of cycle racing rules, are wholly inadequate for automobile competition. One of the points raised is, that the judges, having publicly announced the winner of a race, should not have the power to reverse their decision. That would require protests to be made and acted upon before the official announcement of winners. It is suggested that it ought to be the duty of the officials, or of a committee especially appointed for that purpose, to examine competing machines as to their equipment when they line up for the start of a race.

"Wheel."

CYCLOMOT'S CAUSERIE.

The New Regulations. I am sure that anything in the nature of a warning is quite unnecessary, so far as the vast majority of our readers is concerned, but to the unthinking it is as well that something should be said. I heard the other day of a foreigner, resident in this country, who had expressed his intention of illuminating the rear plate of his car by means of an electric light, which he could control from a switch, and whenever he was running fast or liable to have his number taken, he would switch off the current and only light up again when it was desirable to comply with the law. There are also suggestions for vibrating number plates, the coating of the plates with grease so that dust may adhere, and other devices of the sort intended to get the individual out of a difficulty or enable him to avoid the consequences of his doings. I have even heard of a man who is considering which council he should register with, his desire being to get a letter which can be obscured by dust and made to look like something else. For instance, he favours the letter "F," because by painting it with oil and extending the foot with a horizontal line he can cause it to pick up the white dust and thus look like the letter "E." And he is carefully studying the numerals so as to see how they can equally be fudged. In other words, he, an unmitigated scoundrel, is aiming so to alter his plate that somebody else's identification mark may be noted down, and that other person be put to the annoyance of being summoned and the trouble and expense of proving an alibi.

The evil is two-fold. In the first place, the results of the ill-doings of these miscreants will be visited upon the innocent, and each one of us will be liable to be called, perhaps to the other end of the kingdom, to answer a charge which has no reference whatever to the accused person; in some cases injustice will be done, and even in the remaining cases the guilty person will go scot-free. The second evil is this: the Local Government Board will be watching very carefully to see whether its regulations are successful in giving effect to the Act, and if it finds that they are being evaded by unscrupulous persons it will, without the least hesitation or the slightest consideration for well-behaved folks, proceed to make them more stringent and more onerous. If the Board learns that the number plate is too small or is usually placed in such a position as to be unreadable by day, it will enforce the use of a larger plate placed conspicuously in what we shall deem to be hideous positions. And if it is found that motorists are using but feeble lights or are failing to comply with the spirit of the law, new regulations will be issued which will compel us to do what the law intended. We must not forget that the Act was framed for the purpose of enabling every motor vehicle to be identified by day or night. The regulations, in detailing the methods whereby the law shall be complied with, have treated us leniently and considerately, and if we do not carry out the behests of the Local Government Board, the regulations will be made so stringent that they will be distasteful to all right-minded and well-behaved motorists. This being so, it is at once obvious that it is our duty to see that the thoughtless ones, and the others whose desire it is to evade the Act, are not allowed to prejudice the cause of automobilism. If this is not done, the good will simply have to suffer for the misdeeds of the bad, and we shall, moreover, materially reduce our chances of securing the introduction of a moderately-phrased Bill when the matter again comes up for discussion in the Session of 1906.

To Keep the Extremities Warm. Now that the cold weather is upon us we are confronted with sundry little difficulties which are usually overcome in a very simple manner. It would be a very good thing if readers who are in possession of little wrinkles would drop me a line on the subject, when I should be happy to give publicity to the suggestion. We can, as a rule, keep warm enough in the body, as suitable motor clothing is now obtainable in various forms, but the hands and feet are the portions which seem to suffer most from the cold. My tip for meeting this objectionable chilliness of the extremities is—wear silk. A pair of silk socks under the usual stockings and a pair of silk gloves (a discarded pair of white dress gloves serves the purpose admirably) worn under the heavier kid gloves will be found to keep the extremities quite warm; silk, as is well-known, being by far the warmest material for its weight. A point I like about the use of an inner pair of silk gloves is that the interior of kid gloves gets very dirty if one happens to get one's hands black and greasy and then puts the gloves on again without having a chance to get a wash first. The result is that the dirty interiors make the hands constantly grimy. The silk inner gloves can always be washed, however, and so the hands will be found to keep considerably cleaner by their use.

Clothing for Motorcycling. My motorcycling friends used to look on me as a bit of a faddist because I declined to wear leather clothing, twitting me because, as they alleged, I considered appearance before comfort. But, as the time passes, I observe that, one after another, they are dropping leather, and only the other day one of them, a confirmed "leatherer," carefully eyed me up and down and then asked if my own cloth suit was really waterproof, as he had heard me assert. After satisfying himself on this head and about its being windproof, he straightened himself out and said he would get one like it the very next week. Naturally, I was constrained to ask him why he was thus deserting the leather he used to love. "Well, to tell the truth, old man, this kind of suit looks fit for a mechanic and nothing more, and I find that leather absorbs the rain almost as freely as ordinary tweed," with which I agreed, for unless one pays a very big sum the leather is as absorbent as chamois leather; so much "skiver" (the under layer of skins) being used. We all know, too, how boots will soak up the wet and how long it takes to dry the moisture out of the leather. After all, there is nothing that looks nicer than a well made cloth suit; whilst, if it has undergone the special waterproofing method adopted by one or two motor tailors, rain need not be feared for an instant, and, by the use of a wool lining and a suitable inter-lining, the suit will be both warm and windproof. I had a suit made for me in the early summer, and it has been so successful that it has been worn to the exclusion of everything else ever since, and when I have chanced to be caught by the rain it has always come through and behaved like a mackintosh, the water falling off when the clothes are shaken. As a result, I have quite discontinued carrying the waterproof overalls which are usually considered indispensable. The suit incorporates a few ideas from my own coterie of acquaintances as the outcome of experience, and so it fully meets all requirements and it always looks neat and smart. Another thing, it was much cheaper than a good quality leather suit would have been. I should be pleased to tell any reader by post where I bought the suit.

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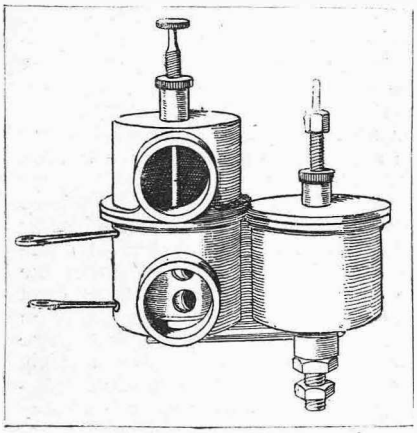
SOME INTERESTING NEW THINGS.

The New Phœnix Carburetter.

A feature of the new Phœnix motor-cycles for next year will be the special carburetter designed by Mr. Hooydonk, and made by Phœnix Motors, Ltd., of Blundell Street, Caledonian Road, London, N. It is shown in the two accompanying illustrations: one, an exterior view showing the float chamber on the right, with the petrol inlet at the top, whilst on the

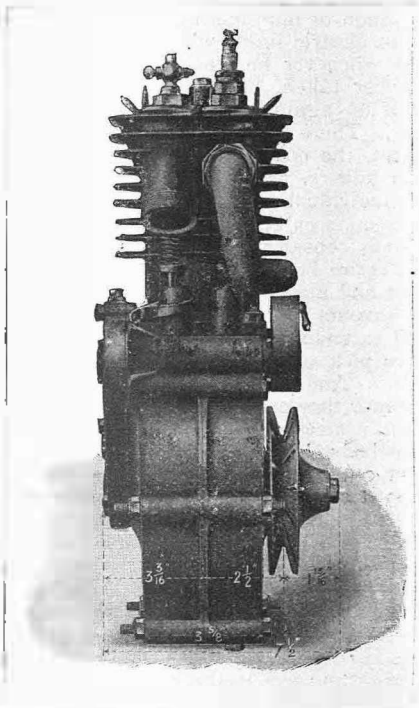


Exterior view of Phœnix Carburetter.

left are the two mixing chambers. Warm air is drawn from around the engine through the lower port, whence it passes into a jacket, then through adjustable ports (just visible) into the carburetting tube, and thence into the upper chamber, whence it is drawn out of the upper port by the action of the engine. The interior view shows the action of the float and the way in which the air passes from the jacket through the small holes in the sleeve. The outer sleeve can be revolved by means of the lever, and thus the air supply be controlled. If more air is required the upper ring of holes can be opened when the mixture is perfected in the upper chamber. It will be observed that the air is thus all drawn from one source, even the slots in which the levers work being carefully kept airtight. The rate of petrol feed can also be modified from outside of the carburetter by means of the threaded rod which ends in a cone at the spraying nozzle. Thus it is possible to exactly set the carburetter to suit the engine to which it is fitted, and to make any adjustments from the exterior, whilst in action the device has proved efficient and reliable, and, once set, perfectly easy to control, because the adjustment of the air supply also acts as a throttle, the second lever scarcely needing to be touched.

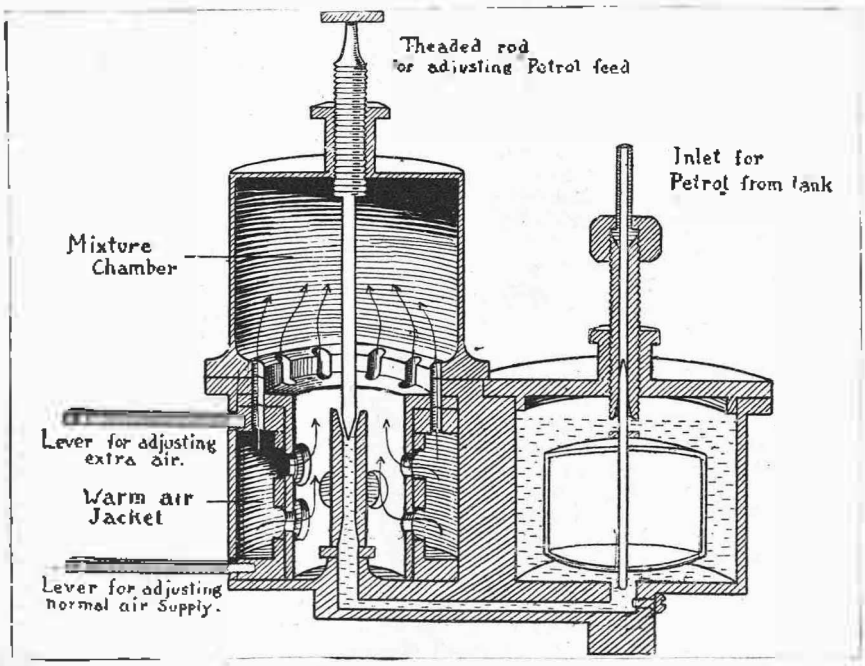
Two Excellent Engines.

The Coronet Motor Co., Ltd., Coventry, are not newcomers into the motor industry, but have had the benefit of several years' experience in it. They have also moved with the times as regards plant and premises, and as a result their productions are remarkable both for their quality and workmanship. The accompanying figure illustrates their latest pattern 3¼ h.p. (air-cooled). They also make a 3½ h.p. (water-cooled). The former which has a bore and stroke of 3 3-16ths by 3 3-16ths respectively, only weighs 60lbs., while the over-all width (including the driving pulley, which is especially designed to prevent any slipping on the part of the belt) does not exceed 7½in. The valves are of exceptionally large diameter and are mechanically operated. An exhaust valve lifter is employed and the exhaust tube itself is large and direct. The cylinder and cylinder heading are in one casting, while the shafts are stamped solid with the fly-wheels. The 3½ h.p. water-cooled engine is practically identical with the air-



3¼ h.p. Air-cooled Coronet Engine.

cooled type except, of course, as regards the cylinder which is completely water jacketed. It may also be mentioned that the valves are also similarly cooled—which is an advantage. Longuemare carburetters are fitted on both engines, but we understand that these will be superseded shortly. The firm has been for some time past experimenting with a carburetter of the single chamber spray type, and the results are so satisfactory that arrangements are being made to manufacture it in large quantities. With regard to the motors, it is worth noting that renewals and spare parts are always obtainable, and what is equally important at very low prices. The Coronet Motor Company are also busy with a new 8 h.p. four-seated car. This will possess a tonneau body and be placed on the market at as reasonable a figure as good style and workmanship will allow. There is no doubt that the company have mapped out a thoroughly progressive policy and we have every confidence that they will reach the goal of success for which they are making.



Interior view of Phœnix Carburetter.

MY IMPRESSIONS OF THE RECENT SHOWS.

By "A Motorcyclist Visitor."

When I saw the extent and variety of the motorcycle exhibits at the recent Shows I could not help thinking that the modern motorcyclist is, indeed, a luxurious dog. Every detail conceivable for his comfort and convenience seems to have been considered, and when I contrast it with the meagre exhibit three years back it seems hard to believe that such a short space of time has elapsed. At that time I felt very proud indeed when I had completed a 50 mile run on an old Minerva 1¾ h.p.—nominal—but a good one to go for all that. Such a luxury as a pump for lubrication was unheard of: I used to carry the lubricating oil in a little can in the toolbag; also an empty cartridge case, which I found gave just the right measure of oil for the engine. Every twenty miles I would stop, unscrew a plug in the crank case, fill the cartridge case with oil and pour it carefully in. The wiring of that machine was, to put it mildly, rather flimsy. One day near Staines I found that

UNSCREWING THE SWITCH MADE NO DIFFERENCE,

the machine continued to run merrily. The only way I could regulate the speed was by altering the mixture (surface carburetters were the rule then—they are the exception now) and opening the compression tap.

Windsor High Street is, as some of my readers doubtless know, rather steep. At that time a cab rank stood directly under the walls of the Castle—I do not know if it is still there. At any rate I shall not forget the objurgations showered on me as I went down the hill, the compression tap fully open, the motor popping merrily, and the cabbies vainly trying to calm their frantic steeds! I found out afterwards that a short circuit caused by the bad insulation of the wiring gave all the trouble, but not before I had pedalled some miles with the belt off after the motor had "petered out" utterly. Oh, that belt! I do not think that motorcyclists nowadays really know what belt-slip is like. The pulleys were oval in section, and when they had worn smooth the fun began. The fastener had a trick of breaking on a steep hill, and the belt was about as often on the road as on the machine. However I ought not to complain, for the experience I gained in that best of schools, the roadside, has stood me in good stead since.

Then it was "l'homme propose, mais le moteur dispose"; now "nous avons changé tout cela," and the modern motorbicycle is a thoroughly reliable machine.

I THINK THE MOST STRIKING FEATURE

is the all-round increase in power; anything below 2 h.p. is rare, and 2¾ h.p. seems the rule. Of course this is very nice, but I hope it will not be abused, for a 2¾ h.p. machine can travel, and pace is dangerous at times; and, moreover, I am afraid many of the machines that were shown are too heavy. I am the last person to decry ample strength in all parts, but a single track machine ought not, in my opinion, to weigh much over 100 lbs., and I fancy a good many makers understate the weight of their machines. I think girder forks are necessary on the heavy machines; I know I should not care to ride these machines unless such forks were fitted, having only one neck to break. I am glad to find many makers fitting two accumulators and ignition details of good quality. The spray carburetters have been improved, and tanks are more capacious. Provided he can get a spark at the plug, and gas into the cylinder, the motorcyclist can always manage to "get there."

FROM THE NUMBER OF CHAIN AND GEAR-DRIVEN

machines that were shown I fancy the belt is not going to have all its own way in the future. The majority of motorcyclists, however, seem satisfied with the V belt, and it appears to be the standard. I noticed that Werners are now using the V belt on their new machines. They have been such staunch upholders of the flat belt in the past, and the non-slipping pulley they showed last year struck me as a really good thing. Their new carburetter, tucked away inside the tank, is very neat, and I like the sensible throttle lever fitted. I notice a good many makers are fitting ratchets to the levers. I prefer a cone fitting which can be easily adjusted, or a Thackeray washer, as the ratchet levers are sometimes very stiff. But, of course, a loose lever shaking about is a nuisance, and anything which does away with that trouble is welcome.

Most machines seem to be fitted with an exhaust lifter, and I notice that this is not so often combined with the spark advance as it was last year: this is only as it should be, for there is no earthly reason why one should always have to retard the spark when the exhaust valve is raised: the Bowden wire seems very popular for the purpose. I hope makers are fitting it properly, as it gives a deal of trouble otherwise. More rim brakes than ever are fitted—I suppose because they give least trouble. I like a band brake myself, but of course it

REQUIRES ADJUSTMENT FROM TIME TO TIME

if it is to be kept efficient. It seems to be rather difficult to fit a brake to act on the inner side of the V belt pulley, which I suppose, accounts for the small number of this type that were shown. Some of the fore-carriages are fitted with foot brakes. I have no doubt these are very powerful, but I doubt if they can be applied as gradually and sweetly as a hand brake. If they are carelessly used the tyres must suffer. Nearly everybody uses Mr. van Hooydonk's "Trimo" type of fore-carriage with the stays running back to the rear axle, so this seems to be the only practical type. Fewer side-carriages were shown than I expected, and for my part I think the fore-carriage is the more mechanical attachment of the two. I am inclined to think that water-cooling will come in more and more for this type of machine. The Triumph Trimo is quite a little car with its honeycomb radiator and pump, although it is belt-driven and not gear-driven as I should have liked. The Humber and Excelsior Trimos also have water-cooling, and I daresay it will be found worth the extra complication. Wind scoops may help

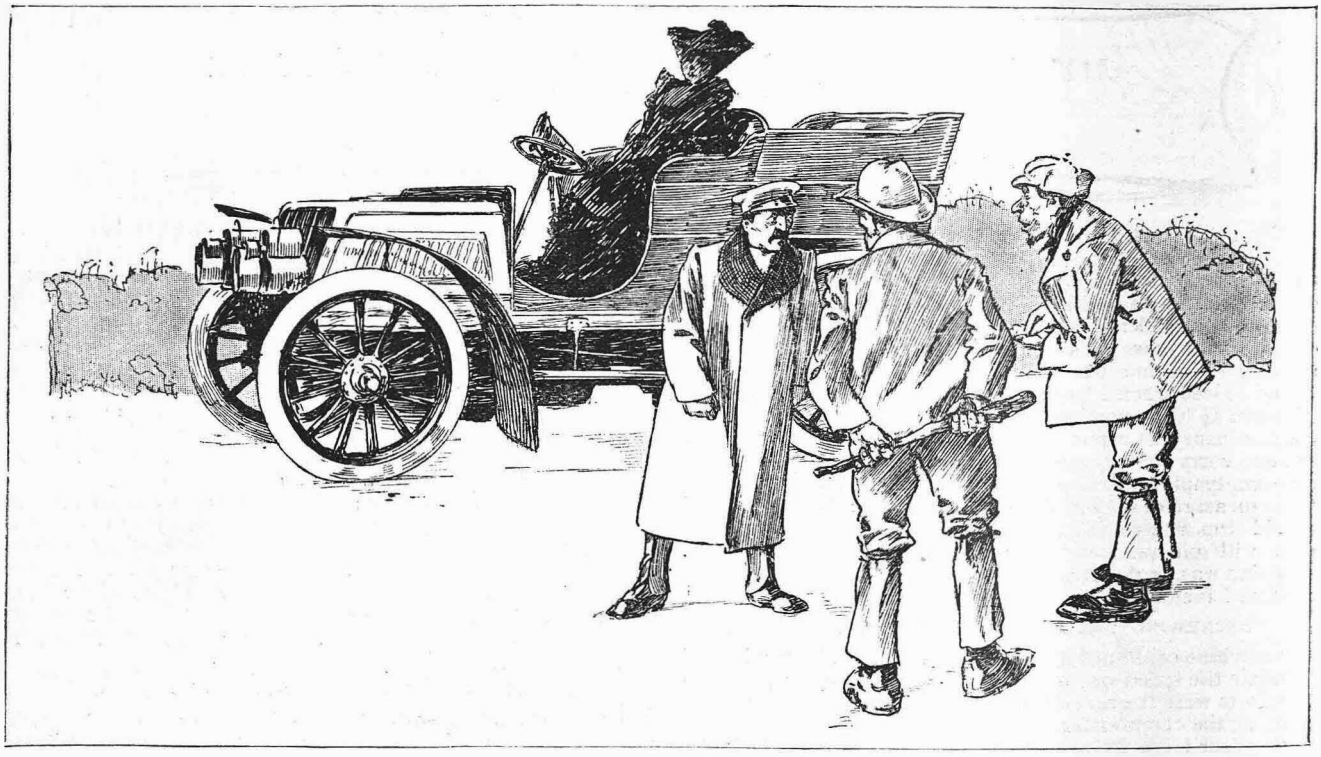
TO PARTIALLY OVERCOME THE OVERHEATING

difficulty, but I think too much is claimed for these devices. Makers seem undecided whether to fit belt or chain-drive to the three-wheelers. Van Hooydonk's twin belt-drive ought to prove efficient, but I have not the least doubt that something better than the belt-drive will ultimately prove necessary on these machines.

Quite a number of clutches and two-speed gears were shown. The small space available on a motorcycle makes exceedingly careful design necessary if these devices are to be rendered efficient. The Humber clutch struck me as requiring more power to let it in and free it than it should want. Van Hooydonk's clutch and two-speed gear is ingenious, and in the coming season will have ample opportunity of justifying its claims. In the Bowden machine the engine can be started by hand, as is also the case with the Humber, the Iris and the Jehu. Some sort of governor ought to be fitted to machines with free engines (Werners seem to be the only makers doing this) if the engines are not to be ruined by "racing." Werners have an arrangement inside the contact breaker case by which alternate sparks are cut out when the engine is running free. This should form a fairly efficient governor. For my part I should prefer to see

A GOVERNOR ACTING ON THE INDUCTION PIPE

on the inlet valve, as governing on the charge is far more mechanical and sweeter. I do not care for governing on the



OUR DAYS ARE NUMBERED!

FIRST SCOUNDREL: "Now, Guv'n'r, you'd better brass up 'all a thick 'un, 'cos me an' my pal can swear yer was drivin' furious."
SECOND DITTO: "That's right, Guv'n'r. Yer can't get out of it, see. We've got yer number!"

exhaust as it tends to overheat the engine, and an air-cooled engine is none too easy to keep cool at the best of times. It is comparatively easy to govern the mechanical valves, which are coming more and more into vogue, by varying the lift.

I daresay fashion has induced many makers to adopt the mechanically operated inlet valve. No doubt it allows of more elasticity in the motor, but it certainly adds to the complication. Formerly we only had one cam inside the crank case, and I know from sad experience what it is to have that one come loose. It happened on the long rise between Newmarket and Bury St. Edmunds, and I simply trained to the latter town. Few people are competent, I imagine, to take the crank case to pieces by the roadside. Now that there are two cams, the chances of such an accident are doubled, so I hope the makers are paying particular attention to the design of the valve gear. I only saw one motor—the Minerva—in which provision for taking up the wear of the contact breaker on the sleeve on which it bears is made. I think this is distinctly practical, and it might be copied with advantage.

A LOOSE CONTACT BREAKER

is likely to cause a deal of misfiring. Even now I should like to see many of the contact breakers more substantially built; there is still a good deal of improvement possible in this direction. In the J.A.P. motor the exhaust and inlet valves are worked from one shaft: this reduces the complication, but, of course, the parts have to do double duty and would therefore wear quicker. I think if makers had devoted a little more attention to the design of the atmospheric inlet valve, we should not have such a demand for the mechanically operated valve. In most of last year's motors the inlet valve was only accessible after undoing one or more connections. In a well-designed atmospheric valve the spring ought to be exposed, thus keeping its temper better and facilitating replacement. The little Clement motor, for example, has a well-designed inlet valve.

Magneto ignition does not seem to be making any great headway. This, I take it, is due to the all-round

EXCELLENCE OF THE HIGH TENSION SYSTEM.

I was shown a machine fitted with two accumulators, each good for a thousand miles. This ought to satisfy the most exacting, and the space taken up was no more than with one old type 20 ampere-hour cell. The wiring on some of the machines is very neat. I think nothing is uglier than festoons of wire looped all over the frame. The new Simms high tension magneto seems to be an improvement on the low tension, but it weighs 10 lbs. or so, which is no inconsiderable item on a motor bicycle. Of course accumulators are far from light, but even these are being made of greater capacity for a given weight and size. In any case I do not care for any magneto ignition which does not use the ordinary sparking plug. The Eisemann and the new Simms are certainly advances in this direction.

The Starley gear-driven motor-bicycle is ingenious and I think every encouragement ought to be given to a maker who has the courage to strike out in a new direction. The Binks 4-cylinder motorcycle is certainly a very unconventional type. I always found that one cylinder gave me enough trouble on a motor-bicycle. I am also afraid that if the motor is fitted lengthways, as shown on one machine, all but the most forward cylinder would overheat, as the others are

SHELTERED FAR TOO MUCH FOR EFFICIENCY.

If the motor is fitted crossways the effect is far from pretty, and the machine takes up too much room. However, we may yet see multi-cylinder engines for motorcycles becoming popular. They certainly help to reduce vibration and give a sweeter drive, owing to the balanced thrust and more equal torque. In any case the experiment is worth watching. It must not be forgotten that increased complication also means increased expense, for a four-cylinder motor cannot obviously be manufactured so cheaply as a single cylinder, and I think the present price of a good motor-bicycle quite high enough.

(To be concluded.)

NEWS.

The Paris Show.

A wonderful exhibition.

It is reported as fully as possible this week, but there are necessarily many things still to be dealt with.

Three cases taken up recently by the Motor Union were decided in favour of the motorists.

Steam motor waggons can be relied on, on the average, to run 5,000 miles without a breakdown.

In 1899 the number of motor waggons in this country was under 20. To-day there are more than 1,000.

Stray cattle and somnolent carters are two road evils which automobile associations must take sternly in hand.

The new Corniche road between St. Raphael and La Napoule in the Riviera is declared to be one of the most beautiful and most dangerous roads in Europe.

Major N. H. Balfour will lecture at the Royal United Service Institution, Whitehall, at 3 p.m., on Wednesday, February 10th next, on "Motor Traction in War."

The Rex Motor Manufacturing Company of Coventry, have received a splendid testimonial from a rider who has ridden a Rex motor-bicycle about 6,000 miles without a breakdown.

The early days of December were marked by a succession of motor club dinners. Amongst others, the Scottish A.C. (western section) and the Yorkshire A.C. held their annual functions.

The motor omnibus is making its presence felt in all parts of the country. One of the latest services to be announced is between West Hartlepool and Bishop Auckland. The 'buses will carry 20 passengers and light luggage.

M. von Marx, the mayor of Homburg, is showing great interest and activity in preparing, at this early date, for next year's Gordon-Bennett. He announces the erection of two large stands capable of seating 3,000 people and united by a bridge spanning the course.

The Holbeach Rural District Council is an enlightened body, composed mainly of farmers. These gentlemen, who have their own particular views regarding motorcars, have just passed a resolution to the effect that automobiles should be restricted to a speed of ten miles an hour on the whole of the roads under their jurisdiction. Besides having an objection to the erection of warning boards for the benefit of motorists, they consider that cars should be taxed at £50 each, and motorcycles at £10. These festive farmers are worthy of the Star Chamber. It is also sad to relate that the members of the Evesham, Yardley and Spalding District Councils entertain very similar old-world notions; while a Worcester Council, who are equally behind the times, are very much concerned lest the erection of warning boards should spoil the beauty of the Nickey Hills. It is all very dreadful!

A National Motor Boat Exhibition will be held in New York next February.

A transparent horn mask fitted with glass goggles is being used in France.

The action of the Automobile Club in regard to the County Council and registration fees has been roundly condemned.

The Harvard-Yale football match—the "Derby Day" of the Yankee football world—was attended by *hundreds* of motorcars.

M. de Pallange, the injured mechanician to the late Count Zborowski, is claiming £4,000 damages. The family of the late mechanician to Mr. L. Porter is also bringing an action for compensation.

The motor industry and sport looms largely in the exhibitions of the present and the immediate future. The international exhibition to be held at Nantes next May will devote one large hall to a motor section.

An Irish View of the Motor Danger.

"People say," observes the "Irish Times," "that motor-bicycles are most dangerous in a town, but when properly ridden they are not. The chief inconveniencies are the policeman who stands where he ought not to, trying to control the traffic, ladies getting in and out of trams or running after them, who never think that there is anything coming after the tram, and the boys who set the points of the tram lines. It is an extraordinary thing how few people when about to cross a street think of looking round to see what is coming, and these people are the greatest danger to the motorcyclist, even when going at his slowest pace."

It has been decided to construct a motor race track on the outskirts of Spa.

English M.P.'s have been enjoying themselves in motorcars at Nice, Mentone, and other resorts on the littoral.

The Hon. C. S. Rolls gave a most interesting paper on his roadside experiences at the Automobile Club last Thursday.

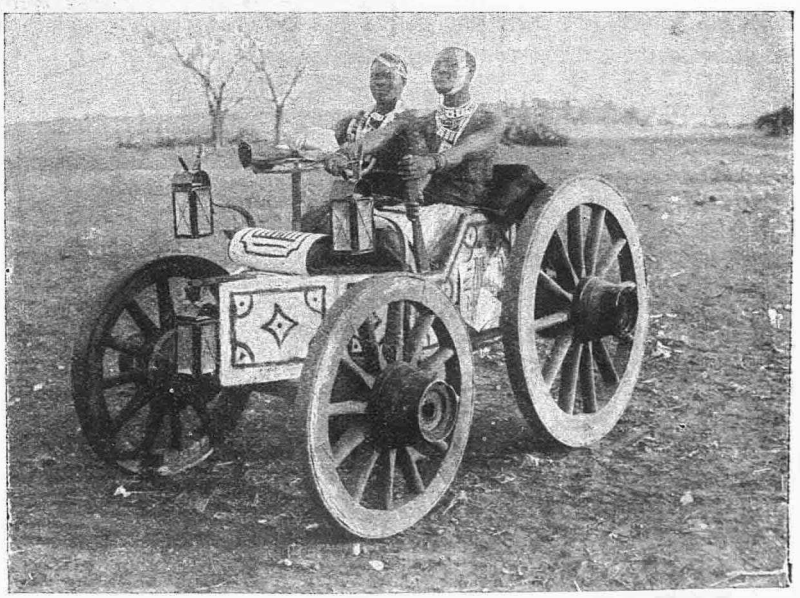
A trial of steam motor 'buses between Windermere and Grasmere took place last week with successful results, and it is proposed to inaugurate a public service of similar vehicles shortly.

At the first annual dinner of the Motor Volunteer Corps, held last week, General Hildyard in his speech referred to the performers of the motorcycles in the late manœuvres—"They never failed. The corps is the first of its kind in Europe."

The Gordon-Bennett Race.

The following firms will compete in an eliminatory contest for the one place still open to Germans for the Gordon-Bennett race:—Benz and Co. (Mannheim), De Dietrich (Niederbronn), Duerkopp (Bielefeld), Neue Automobil-Gesellschaft (Berlin), Motorenfabrik "Protos" (Berlin). No eliminatory race is expected to take place in Belgium. The Compagnie Belge de Construction d' Automobiles has entered three "Pipe" cars, and these will be put to a speed trial, in which they must reach an average speed of 100 kilometres an hour.

Our Berlin correspondent understands that there is a likelihood of Holland entering with a "Spiker" car. Should Holland enter, eight nations will be represented in the race.



NATIVE BUILT AND NATIVE DRIVEN.
Photograph of a quaintly constructed car sent us by a South African correspondent.

So many applications have been received for the automobile section of the Madison Square Garden Show which is to be held from January 16th to 25th, that over 50 have been crowded out: these will be accommodated in a huge hall called the Herald Square Exhibition Hall, which has the largest level single floor space of any permanent exhibition hall in New York.

A Side-slip Preventer Competition.

The Automobile Club are organising a side-slip competition for next season. A committee will first of all examine drawings of the non-skidding devices submitted, and eliminate those they consider unworthy of a practical test. The selected devices must be fitted by the competitor to a car, and a test made upon a specially prepared greasy surface on a twisting course, which distance must be covered in a given time. All devices submitted must comply with the conditions of the L.G.B. as to width of tyres, damage to roads, etc. The final decision will be made by judges appointed by the executive committee.

An American Climb.

W. K. Vanderbilt, junior, whose record hill climb up the Eagle Rock was chronicled in our last issue, drove a 30 h.p. Mors, the same car in which he did some remarkable performances in France in the summer of 1902. The one mile course up the Eagle Rock is of an average gradient of 1 in 10, but in parts the pitch rises to 1 in 6; there is a catchy double twist at one part of it, and one or two other turns which necessitate skilful driving. The old record, which the motor millionaire beat by over a minute, was made more than two years ago. Young Vanderbilt is one of the keenest and most daring drivers in America. He has just been elected a vice-president of the American Automobile Club. We give three illustrations of this event on this page.

Messrs. Panhard and Levassor have entered three cars for the eliminatory trials of next year's Gordon-Bennett.

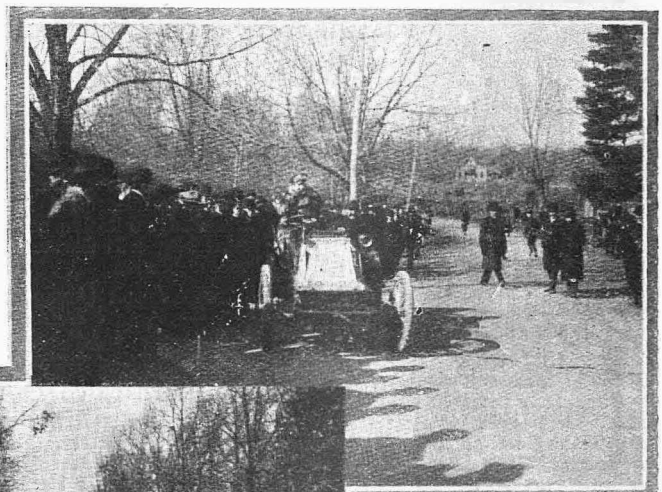
A Sparking Plug Protector.

An attachment for fixing to the terminal end of a sparking plug has been patented by E. W. Lewis, 2, Albany Road, Coventry. It consists of a vulcanite tubular L piece, made so that one end screws on to the terminal shank of the plug, whilst the cable is held in the other part. It is constructed in two halves, and the strands of the cable are tied into a knot and secured in a recess cut in the attachment. The ends of the strands can either be made to press up against the screwed shank or come within a very short distance of it, and thus form a spark gap. The halves of the protector are kept together by rubber rings, and can thus be quickly attached and detached. The protector, it is claimed by the maker, is an effectual safeguard against leakage of current by wet or dust settling on the porcelain.

The Anglo-American Oil Co., Ltd., announce that they have recently reduced the price of Pratt's Motor Spirit as follows:—"A" grade 1d. per gallon. "B" grade 2d. per gallon.

The French Trials.

Mons. G. Gobron has addressed a letter to the President of the Motorcycle Club of France refusing the special prize and medal awarded to the Gobron-Minerva motorcycle in the recent reliability trials, on the ground that the final examination of the machines was made three days after the trials, giving unscrupulous competitors time and opportunity to make alterations to their machines, fit improved silencers, etc., etc., and that Kubling, who drove the Gobron-Minerva, claims to have made non-stop runs every day.



THE CLIMB UP EAGLE ROCK.

1. W. K. Vanderbilt on the 30 h.p. Mors, which did fastest time.
2. Light Car taking the steepest part in good style.
3. A 15 h.p. Steam Car rushing the hill in a steam cloud.

Tracks for Motor Racing.

Recognising that nearly all the danger of motorcar racing consists in the turns, Barney Oldfield has suggested a D-shaped track, to do away with two of the curves of the oval. On such a track, Oldfield reckons he could do the mile in 50 secs. clear. A width of 125 feet at the turns is suggested as a minimum.

The Eastern Division of the National Union of Conservative Associations, of which Lord Iveagh is president, has just appointed a committee to make arrangements for the supply of motorcars at elections. There is no doubt that the automobile is a splendid vote catcher.

Increasing Trade in British Motors.

The Board of Trade returns issued for last month afford satisfactory reading for the British motor manufacturer. Imports of motorcars and motorcycles for November, 1903, were of the value of £101,357 as against £78,672 in November, 1902; and for the eleven months of 1903 they were £1,650,226 as against £934,942. Exports during November, 1903, equalled £22,545 as against £13,301 in November, 1902; and for eleven months, £244,940 as against £125,580 in 1902. Thus, whilst our import trade in motorcars and motorcycles has increased about 45 per cent., our export trade has increased 85 per cent. And in British made "parts" the export trade last month shows an increase of 80 per cent. over November, 1902, and the trade for eleven months shows an increase of more than 200 per cent. over the figures for 1902.

A French inventor is trying to induce the police authorities to experiment with a speed-indicating contrivance he has completed. It consists of a rectangular box, to be fixed to one of the car wheels. When the legal limit is exceeded a bell rings, and a red disc flies out of the box, affording a ready means of identification to the police.

The Automobile Club of America.

Winthrop E. Scarritt succeeds A. R. Shattuck as president. New vice-presidents are: H. R. Winthrop, H. P. Whitney and W. K. Vanderbilt, junr. Treasurer, Jefferson Seligman. The club numbers 464 members, of whom 395 actually own cars; as some members have from four to ten cars, it is estimated that at least 500 cars—valued at one and a half million dollars—belong to the club.

A Thames Valley Motorcycling Club.

A meeting of motorcyclists was held at the Bridge Hotel, Staines, recently, at which it was decided to form a motorcycling club for the district. A strong committee has been formed and already 25 motorcyclists have notified their intention of becoming members. Runs, hill-climbing and reliability contests will form special features of the club's programme. The honorary secretary is G. W. Manning Lud Lodge, London Road, Staines, who will be pleased to give any further details.

Over the Gordon-Bennett Route.

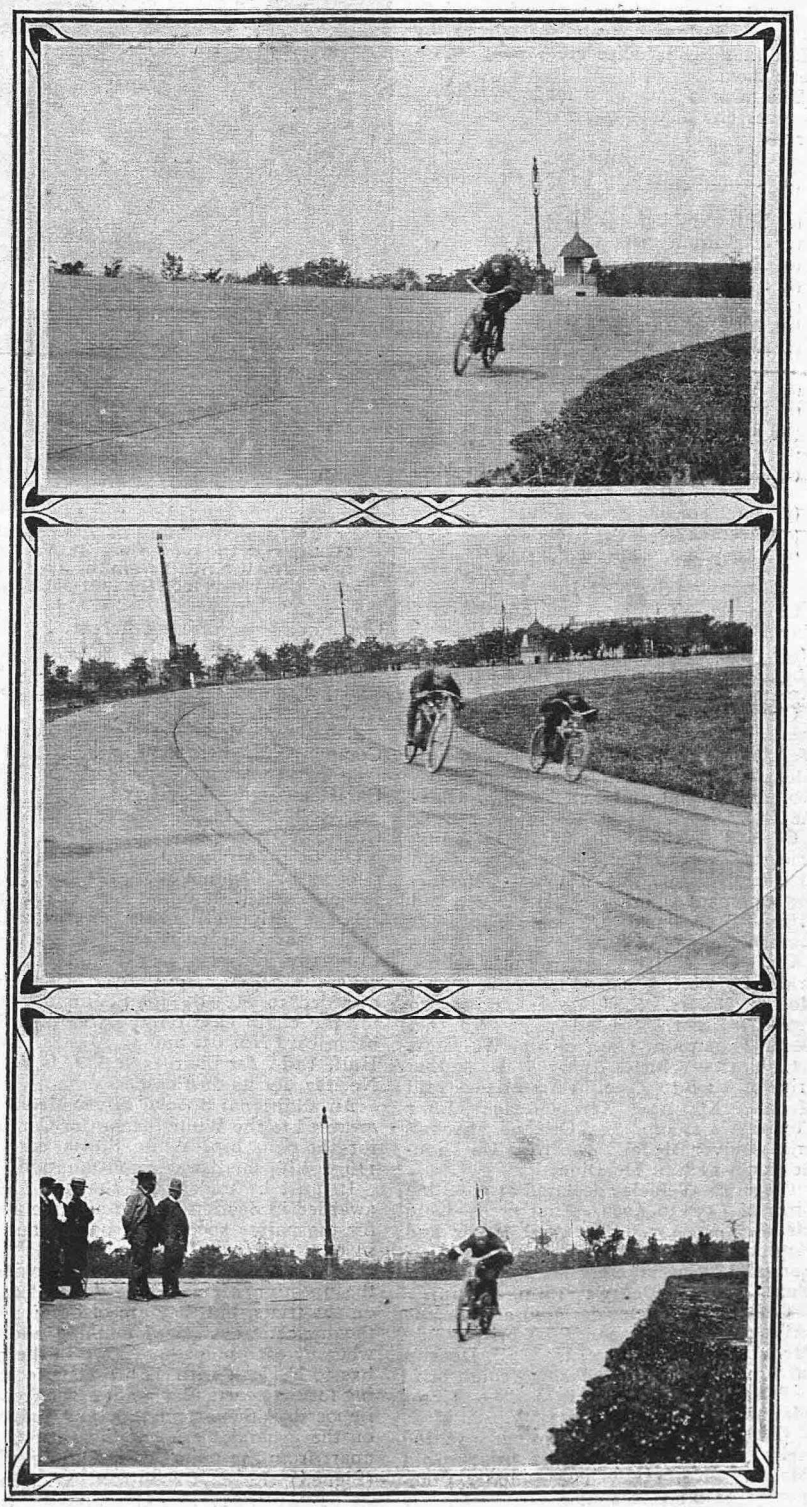
The "Deutsche Motorradfahrervereinigung" (copyright), whose headquarters are in Stuttgart, is arranging for a reliability competition over the Gordon-Bennett race course in the Homburg district at the end of March or beginning of April next year. The "Motor Cyclists' Association," to give the Teutonic monster its English equivalent, proposes that the run shall last for several days, from 100 to 200 kilometres being run off daily. About the same time the first German Motorcycle Congress is to be held in Frankfort-on-the-Main.

A Motorcycle "Twenty-four."

A. A. Hansen, a well-known American road and track motorcycle racer did a remarkable ride in September at Garfield Park, Chicago, details and illustrations of which have come to hand. One of Hansen's objectives is to ride a thousand miles in 24 hours, and although he is nearly 300 miles away from his goal as yet, he hopes, with luck, to do it eventually. In the ride under notice he had particularly bad luck with his tyres and with the weather, experiencing eleven punctures, and being seriously hampered by rain on eight different occasions: indeed, so unlucky has he been in this respect throughout his racing career that he has earned the nick-name of "Rainmaker." The actual distance covered in the 24 hours was 701 miles 1,330 yards, 67 miles better than his previous record. The actual riding time was estimated at 20 hours 25 mins. 52⅖ secs.—about 29¼ miles an hour all through. He rode a "Mile-a-minute" Mitchell motor-bicycle; and a companion, Geer, mounted on a similar machine, rode by him at intervals and handed him food and drink—also a big cigar which he lighted from the glowing stump of Geer's smoke and puffed at with gusto till it was finished.

Paul Baras now admits that the forthcoming race track at Juvisy will be undertaken under his supervision. The track will be 22 yards wide on the average, and 35 yards when approaching the winning post. Baras estimates that speeds up to 115 miles an hour will be practicable.

The "Grey Wolf," a petrol speed launch 25ft. long and 4ft. in the beam, is capable of doing 14 miles an hour. It is of Canadian make, and draws only six inches of water with two passengers and petrol supply for five hours. It is the fastest launch of its length on the American Continent.



A TWENTY-FOUR HOUR MOTOR-BICYCLE RIDE IN AMERICA.
1. Hansen at Daybreak. 2. Preparing to give Hansen food. 3. Hansen doing 30 an hour

September Reliability Trials, 1903.

AWARDS.

The committee of the Automobile Club have, on the recommendations received from the judges' committee appointed by the club, awarded the medals shown below.

Medals have not been awarded unless recommendations have been made to the effect that the vehicles are worthy to receive them.

The awards have been made by adding together the marks gained by each car for:—

(a) Reliability. (Rule 39).
(b) Cleaning, replenishing, etc. (Rule 42).
(c) Hill-climbing. (Rule 45).
(d) Condition after trial. (Rule 56).
(e) Brakes. (Rule 47).
(f) Steering. (Rule 49).
(g) Absence of noise. (Rule 54).
(h) Absence of Vibration. (Rule 54).
(i) Absence of vapour or smoke. (Rule 54).
(k) Absence of dust-raising. (Rule 54).
(l) Speed on track. (Rule 51).
(m) Re-starting on hill. (Rule 53).
(n) Finish and appearance. (Rule 54).
(o) General cleanliness of motor and gear. (Rule 54).
(p) Fuel consumption. (Rule 50).
(q) Accuracy of h.p. (Rule 48).
(r) Cheapness. (Rule 52)

SECTION I.

Class A1.—Tandems and quadricycles above 170lbs. weight and below £160 in price. First Prize—Silver Medal. No. 1. The Century's Engineering Company's 5 h.p. tandem.

Class A.—Vehicles declared at a selling price of £200 or less. First prize—Gold Medal. No. 21. Jarrott and Letts' 5 h.p. Oldsmobile. Second prize—Silver Medal. No. 17. Jarrott and Letts' 6 h.p. Oldsmobile.

Class B.—Vehicles declared at a selling price of £200 to £300. First prize—Gold Medal. No. 39. The Motor Manufacturing Company's 8 h.p. M.M.C. Second prize—Silver Medal. No. 24. The Swift Motor Company's 6 h.p. Swift.

Class C.—Vehicles declared at a selling price of £300 to £400. First prize—Gold Medal. No. 41. S. F. Edge, Limited, 10 h.p. Gladiator. Second prize—No. 62. Oscar Thompson, Esq., 7½ h.p. Wolseley.

Class D.—Vehicles declared at a selling price of £400 to £550. First prize—Gold Medal. No. 92. New Orleans Motor Company's 12 h.p. New Orleans. Second prize—Silver Medal. No. 91. De Dion-Bouton's 12 h.p. De Dion.

Class E.—Vehicles declared at a selling price of £550 to £700. First prize—Gold Medal. No. 105. Speedwell Motor and Engineering Company's 10 h.p. Gardner-Serpollet. Special Gold Medal. No. 114. Capt. H. H. P. Deasy's 14 h.p. Martini.

Class F.—Vehicles declared at a selling price of £700 to £900. First prize—Gold Medal. No. 130. Capt. H. H. P. Deasy's 16 h.p. Rochet-Schneider. Second prize—Silver Medal. No. 133. The Motor Manufacturing Company's 20 h.p. M.M.C.

Class G.—Vehicles declared at a selling price of over £900. First prize—Gold Medal. No. 137. The Daimler Company's 22 b.h.p. Daimler.

SECTION II.

1.—Gold Medal—Clarkson's, Limited, Combined engine, differential gear, pumps, etc., complete.

2 and 3.—Silver Medal—Messrs. Clarkson's, Limited. Oil burner and boiler feed device.

4.—Silver Medal—Albion Motor Car Company. Magneto ignition.

8.—Silver Medal—New Orleans Motor Car Company. Gear box.

14.—Silver Medal—Hozier Engineering Company. Gear box.

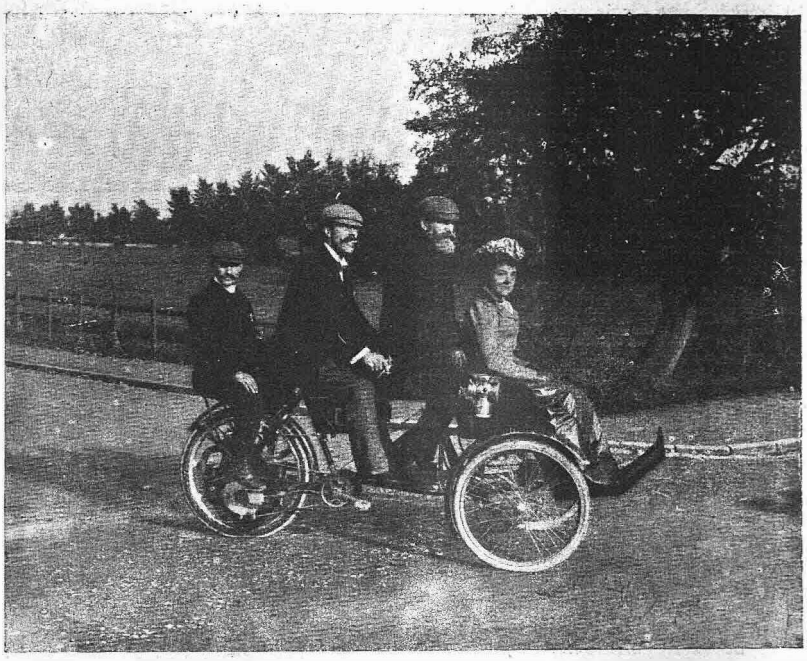
Of the three Special Gold Medals to be allotted by the judges, under Rule 36, to vehicles which they may consider to possess specially meritorious features, a Gold Medal was awarded to the Daimler Motor Company for their 22 b.h.p. 'bus for general excellence, and Silver Medals were awarded to Messrs. John Marston, Ltd., for the chain case on their 12 h.p. Sunbeam car, No. 65, and to Messrs. Evart, Hall, Ltd., for their 15 h.p. C.G.V. car, No. 127, for its dustlessness.

An additional Special Silver Medal was awarded to the White Steam Car Company for their 10 h.p. White Steam car, No. 116, for its small water consumption.

It must be understood that the Medals awarded in Section II. and seq. are purely for the points specifically named and not in any way for reliability.

The judges have carefully considered the question of making a detailed report on the trials, but they are of opinion that the inelastic system of marking adopted, whereby each point laid down in the rules has to be dealt with with a view to marking for that particular point alone, renders impossible the exercise of any judgment on the general merits of the various cars apart from the points actually marked.

(Signed), R. E. CROMPTON, W. WORBY BEAUMONT, DUGALD CLERK, E. H. COZENS-HARDY, JAS. SWINBURNE, R. E. PHILLIPS, LYONS SAMPSON, CHARLES H. H. NUGENT, Judges.



A GOOD LOAD

Two "Singer" fore-cars were out for a trial run, and, when returning, a burst occurred in the tyre of one of the machines, which it was impossible to repair on the road. The two riders from the disabled machine were therefore mounted on the other machine, which took the four passengers safely home, a distance of at least five miles.

How Identification by Number works in France.

Two instances of how the "identification by number" clause works in practice were reported recently in the columns of the French sporting Press. In the first case a motorist—Mons. X.—received a summons for furiously driving a car, No. 015, at St. Jean-de-Luz, on a certain date just one calendar month previous to the issue of the summons. Mons. X. promptly replied that he had never put foot inside St. Jean-de-Luz in his life, and on the date in question Car No. 015 was undergoing repairs at the makers! Six weeks later Mons. X. received a second summons in respect of Car No. 015, alleging that its lamps had not been lighted on the same date, to which the previous "furious driving" summons referred. The case will come up for trial about Christmas.

In the second case a well-known motorist, in the automobile trade in Paris, was summoned for furiously driving a car, No. XYZ, on a certain date. Now Car No. XYZ happened to have been sold to one of the alleged offender's customers before the alleged date. The alleged offender therefore communicated with this customer and learned that he (the customer) had informed the authorities—ten months before the date of the alleged offence—that he had just purchased a car registered in the number XYZ; that the authorities had thereupon assigned a new number, ZYX, to him; and that the original plates bearing the number XYZ had never been outside his coach-house. The alleged offender at once forwarded this information to the headquarters from whence his summons had issued, and received in reply a second edition of the summons. This case also is down for hearing about Christmas—on the same date in fact as the first case. It will be interesting to learn the result.

The Swift Cycle Co., Ltd., are shortly introducing a two-speed motor-bicycle with worm drive, free engine, one chain and no belt.

Trade Increase in Manchester.

On account of the large increase in the motor department of their Manchester branch, Messrs. Brown Bros., Ltd., have been compelled to occupy the adjoining building, No. 269, Deansgate. These premises, which have been well fitted and stocked, are now open for business. Brown motorcars and cycles are already very popular in the North of England, and it is their intention to carry as large and complete stocks of motor goods in the North as they do in London. This motor depot has also been opened in order that cycle agents in the Manchester district may introduce customers for motor vehicles, and, in return, receive a reasonable commission for their trouble. This arrangement has been in vogue for some time in London, and has proved very successful. Those traders who are desirous of doing a motor business without increasing their expenditure should write for Messrs. Brown Brothers' "Motor Agents' Proposition."

The New Act.

APPLICATION FORMS FOR LICENCES AND REGISTRATION.

London motorists can now obtain application forms for licence and registration from the London County Council, County Hall, Spring Gardens, S.W. To save time, it should be noted that the forms are supplied at Room 66, between the hours of ten and one. Applicants for a licence to drive (fee 5s.) should ask for Form 8. Besides giving full name and postal address, particulars have to be given as to whether the driver is applying for licence to drive a car or for licence limited to driving motorcycles. Furthermore, the applicant must state whether under 17 years of age, if applying for car licence, or under 14 if desiring a motorcycle licence. Three further questions deal with endorsement of licence, etc., and need not be considered if the application forms are sent in before the 1st of January. On the back of the form will be found the grounds of disqualification for obtaining a licence. In regard to

REGISTRATION

of a motorcar (fee 20s.) one requires Form 1. On this must be filled in name, address, description of car, type and colour of body of car, weight unladen (weight of water, fuel or accumulators used for propulsion, not included); whether intended for (a) private use; (b) trade; or (c) as a public conveyance; and particulars as to the position on the car in which it is proposed to place the identification plates. Form 4 is for registering a motorcycle (fee 5s.). Here particulars are required of the type and make, weight unladen (exceptions as for cars)—whether for private or trade use, and the position of the plates. In the case of a motorcycle not exceeding three hundredweight, the plate fixed on the front, if conforming with the regulations, can be fixed so that the letters or figures on one or other face of the plate are easily distinguishable, although they may not be distinguishable from the front of the cycle. Another form is for the registration of a manufacturer or dealer's general identification mark.

Motor Volunteer Corps.

The first annual dinner of the corps took place at the Trocadero on Tuesday night. Peculiar interest attached to the proceedings in view of a report which had been industriously circulated to the effect that Lieut-Col. Mark Mayhew intended relinquishing his command. In the last issue of "THE MOTOR" we were able to authoritatively contradict this rumour, which seems to have been set afoot by someone having a personal animus against Lieut-Col. Mayhew.

Lieut.-Col. Mark Mayhew, in the chair, was well supported by a large gathering of members, while the guests included Maj.-Gen. Sir H. Hildyard, Maj.-Gen. Oliphant, and other distinguished officers

Dr. von Marx, Burgomaster of Homburg who is already actively bestirring himself in regard to the Gordon-Bennett race.

who had the opportunity of observing the working of the corps during the recent manœuvres. The A.C.G.B.I. was represented by the chairman, Mr. Roger Wallace, K.C., and the club secretary, Mr. Julian Orde.

Dinner having been disposed of, the toast "The King" was given by the chairman, who alluded to the keen interest His Majesty had always taken in automobilism.

His Majesty's health having been duly drunk with musical honours "The Motor Volunteer Corps" was proposed by Maj.-Gen. Sir H. Hildyard, who remarked that this pleasant duty would have fallen to the lot of Lord Roberts, had it not been for the illness, from which, however, he was now happily recovering, and which prevented him from attending. The Commander-in-Chief had taken a keen interest in the formation and working of the corps. They were the first force of military motorists to be raised in Europe, a fact which would always remain to their credit. The satisfactory manner in which the corps carried out its duties during the manœuvres was proof of the energy and keenness of the members. During the manœuvres of 1898, he and Viscount Wolseley were compelled to ride from headquarters to the scene of operations and back again at the end of the day. If they had had motors then a good deal of fatigue would have been avoided, and much time saved. He would like to draw particular attention to the good work done by the motorcyclists in the recent manœuvres. Whenever he went out on a car, they were always accompanied by a motorcyclist who always got there at the same time as the car and sometimes sooner! (Applause and laughter).

The chairman, in acknowledging the toast, said he was sure that it was not the mere monetary compensation that was so much appreciated by the members, as the evidence that they were being treated with consideration. He hoped that the next manœuvres would find them among the combatants. They were proud to have been of use to the Army. The adjutant, Captain Skeffington-Smythe, D.S.O., gave the toast "The Automobile Club of Great Britain and Ireland," which, he said, had always done its best to afford every assistance to the corps.

Mr. Roger Wallace, K.C., replied. The other toast was "The Guests," proposed by Captain Lee and responded to by Maj.-Gen. Oliphant.

The Automobile Club.

The dinner of Founder Members was held at the Club House, Piccadilly, on Wednesday, December 2nd, when about 90—including some members of the Club and House Committees—sat down. Mr. Roger Wallace, K.C., chairman of the club presided. Sir John Thornycroft, who proposed the toast of the evening, "The Founder Members," referred to the growth of the club from a founder members list of 240 to a total membership of 2,400, and remarked that the growth of automobilism had been equally rapid and satisfactory. Mr. F. R. Sims in his reply sketched briefly the origin of the club and paid a tribute to Mr. Wallace's work in its early days. Dr. Boverton Redwood, who also responded, alluded to the valuable services of two other members, Sir David Salomons and Mr. Claud Johnson. He impressed upon every member of the club the personal responsibility which lay upon them of influencing automobilism in its relations with the outside world. In responding to the toast of the "Prosperity of the Club" which was appropriately proposed by Capt. F. E. Dyke-Acland, Col. R. E. Crompton, C.B., pointed out the importance attached to the opinions of members of the club on traffic questions by the Royal Commission. Lieut.-Col. Holden proposed the "Club and House Committees," and in response the chairman, after mentioning that the club's policy was to make no distinction between petrol and electric cars, congratulated the club on having gone over to Ireland in the summer and initiated the Irish in the use of automobiles. The toast of the "Press" was proposed by the chairman, who spoke of the useful work done by the automobile journals in educating the public. Messrs. Cordingley and Sturmey replied.

The C.T.C. and Motorcycling.

THEORETICAL AND PRACTICAL VIEWS.

The Metropolitan District Association of the C.T.C. opened its winter session on Tuesday last at the Lecture Room, Society of Arts, Adelphi, W.C. The programme which consisted of short addresses on motorcycling, followed by a discussion, proved most interesting and should be repeated later on in the season. Owing to the belated arrival of Mr. Rees Jeffreys, delayed by legislative work in connection with the new Motor Cars Act, his place as chairman was taken by Mr. Jo. Pennell. Mr. Chatterton, who opened the proceedings, compared our present intricate and distorted highways with the straight Roman roads of old, and trusted the old system would come again into existence. The fascination of motorcycling, said the speaker, might be defined as that of "seeing something in motion." The motorcycle was the epitome of all great natural laws—one of the most fascinating instruments man had constructed and with its different departments might be likened to a Technical Institute. By the aid of a diagram the speaker then passed on to some points regarding his F.N. bicycle; why he favoured a flat belt for driving, the vibration of engines and the amount of energy stored up in the fly-wheel. Mr. Candler, the hon. sec. of the Metropolitan District Association, C.T.C., then dealt with the question from a practical point of view.

DEALING WITH PRICES,

he strongly deprecated a cheap and nasty make, and advocated the payment of a fair price, say £40 and upwards. After a word of warning concerning the exorbitant charges made by some dealers in connection with the easy payment system, Mr. Candler gave the following advice to novices:—Engine not higher than 2 h.p. and weight 100lbs.; spray or surface carburetter immaterial, if other points were good; belt transmission; exhaust and inlet valves to be conveniently placed; as to tyres—his Clinchers had served him well. Regarding expenses, the speaker calculated that, driving carefully, and allowing for petrol, oil and electricity, the driver could go through the season at the cost of under a £5 note, if he took an intelligent interest in his machine and provided himself with a stock of spare parts. At all events the total cost should not be more than £10. Professor Sharp spoke highly

IN FAVOUR OF LIGHT BICYCLES

—his experiences having been with the Clement-Garard, and he contended that a 1¾ h.p. engine, with a little help, would get up a hill as well as a 3 h.p. machine unaided. The two-cylinder Clement-Garrard, he confessed, was very fast. He was an advocate of spring forks. The meeting being now open for discussion, Mr. J. A. Jackson (Bradbury's) deprecated the low-powered engine, and was equally emphatic against adopting that of too high a horse-power, which was not necessary for heavy men or hilly districts. One of the most important details to be considered, he thought, were the valves. Mr. Rees Jeffreys dealt on the bugbear of side-slip and also the need for educating repairers so as to secure competent men for the work.

In regard to the motorcycle regulations in the new Act, he admitted they were stringent, but claimed that, with the help of the clubs and the Press, important concessions had been secured. Mr. E. Perman urged that more attention should be paid to weight, and did not hold with those who pandered to the call for more power. The time had come to cut down weight, more particularly in regard to the fitments, and his choice for next season lay with a 2 h.p. machine, weighing not more than 80lbs., and in which efficiency played a leading part. Mr. Randolph Venn spoke from practical experience of the Whippet two-speed pedalling gear, 5oin. for starting and 100in. for helping the engine. His 2 h.p. Quadrant could take a trailer comfortably by means of the two-speed gear. Mr. Graham, who favoured belt drive, stated that he had covered 2,600 miles with only one side-slip, and urged the claims of the medium-powered motor. In conclusion, Mr. Jo. Pennell, admitted that motor-bicycles were getting a bit cumbersome and dangerous, but next year his motorcycle would be 5 h.p., which leads one to suppose that the genial artist is deserting his old love, the motor-bicycle, for a three-wheeler. A hearty vote of thanks to the chairman closed the proceedings.

Prices Lowered.

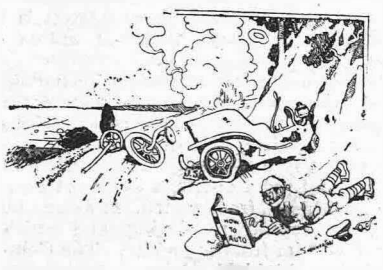
We have been asked to alter the prices of motor-bicycles in the advertisement of Messrs. Bradbury and Company, which appears in this issue, but as it has already gone to press we are unable to do so. The new prices are as follow:—2 h.p., £42 net; 2½ h.p., £47 net; 3 h.p., £50 net. Delivery of the 3 h.p. machine can be made at once.

A Correction.

In our Show review of the Hobart Bird motorcycle our reporter stated that the model was similar to that of last season, but this is not the case, the design having been quite altered. The makers have done away with one of the main frame tubes and have adopted a much larger tank, containing two accumulators (connected by a two-way switch) also providing room for the petrol, coil and lubricating oil.

A Later Type.

The Lanchester Engine Co., Ltd., write us as follows:—"We note in your issue of to-day (in an article by Mr. Mervyn O'Gorman, prior to his reading same before any meetings), a mention is made, together with illustration, of the Lanchester balanced engine. We would point out to you that though this illustration is perfectly correct, it is of the original single-cylinder patent taken out by Mr. F. W. Lanchester of the first balanced engine made, and is very different to the balanced engine used to-day, of which we are enclosing to you an illustration."



"B' gosh! I pulled the wrong lever!"

"Motor" America.

Messrs. Carless, Capel and Leonard ask us to state that they have reduced the price of their standard petrol 1d. per gallon.

A fire occurred last week at the Michelin tyre factory, Clermont Ferrand, when part of the workshops were destroyed. It is stated, however, that the fire will not greatly delay their output.

A Gordon-Bennett Stand.

Near the old Roman citadel known as the "Saalburg" on the eminence of the Homburg-Mainz road, a huge stand is to be erected for the Gordon-Bennett race. It will take the form of an amphitheatre bisected longitudinally by the course, a tunnel under the latter enabling the spectators to communicate with one another without touching the track. This stand will constitute the starting and winning points of the race. We are informed that the stand will provide seats for about 3,000 persons. It is hardly necessary to say that an Imperial box will be constructed. The road facing the Saalburg is to be considerably widened.

Reflections on the Reliability Trials.

Mr. E. H. Cozens-Hardy, in the course of a paper read at a meeting of the A.C.G.B. and I. on Thursday last, December 10th, made some interesting remarks and criticisms on the organisation of the recent reliability trials, as well as upon the system of marks and its working. Mr. Cozens-Hardy prefaced his paper by a short reference to the speed trials held in the Gordon-Bennett fortnight at Phœnix Park, Dublin. He suggested that in future events of a similar nature some dust-laying medium should be employed along the whole length of the course; that an independent telephone system for marshalling purposes and for the announcement of results, and an electrical timing apparatus are essential; and he pointed out that short races from a standing start are not genuine tests of speed, but rather tests of the clutch and of the adhesion of the driving wheels of the car. Passing on to the more interesting consideration of the recent reliability runs Mr. Cozens-Hardy admitted that the system of marking under 17 separate heads had proved to be a cumbrous method, and one which had not entirely accomplished the objects desired by the club—the feature of "reliability" not having been endowed with sufficient importance, under this marking system, as compared with less vital features such as "condition after trial," "dustiness," etc. Again, the bringing together of light and heavy cars had served to show not, as was expected, that the heavy cars were more reliable than the light cars or vice versa, but that the conditions of trial were unequal and unfair—for whereas a 5 h.p. car had to be continuously working at high pressure, a 25 h.p. car was for most of its time working considerably below its normal pressure. For this reason, Mr. Cozens-Hardy expressed himself of the opinion that last September's trials would be the last of their kind; and he advocated, in conclusion, some more severe form of the club's quarterly trials in order to test the reliability of new cars as from time to time they sought to engage public attention; and an annual competitive trial confined to cars which had gained the club's reliability certificate.

The Motor
INCORPORATING Motor Cycling & Motoring

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OPINION

The Paris Salon.

The finest and most comprehensive exhibition ever organised in connection with automobiles is the one opened by President Loubet on Thursday last at the Grand Palais, Paris. Never in the history of automobilism has such a varied and interesting display of cars, motorcycles and kindred devices been assembled under one roof, and the Automobile Club de France, under whose auspices the Salon is being held, is to be heartily congratulated upon the enormous success which has attended its efforts. Thousands of people were present at the opening ceremony, and immense cosmopolitan crowds have thronged the magnificent *palais* every day since. From the comprehensive details which appear in this issue from the pens of the three special representatives of "THE MOTOR," who were commissioned to inspect and report upon the principal features of the exhibition, it will be gathered that, generally speaking, while no radical departures are observable in the main designs, great attention has been given to details, and many improvements in this respect have been effected. Particularly is this noticeable in the large cars, many of which are magnificent specimens of workmanship, demonstrating beyond a doubt that standardisation is being approached, thus paving the way towards greater power, reliability and general efficiency. The growing demand for light automobiles is very evident by the large number of vehicles staged which come in this category. As in England, motors for men of moderate means are engaging the earnest attention of manufacturers, and many of the specimens exhibited are really fine machines and remarkable value for the money asked for them. Generally speaking, however, the light cars do not exhibit any strikingly new features; but it may be said in their favour that in most cases they are better finished and stronger than those shown last year, and that the framework is much stiffer and of larger dimensions. There appears to be a greater partiality for the gear-driven types than for the chain, and, in a number of instances, three speeds and a reverse are provided. Coming to motorcycles, several ingenious departures have been made from the standard models in many instances. The makers, however, are almost unanimously in favour of the engines being vertically placed, and nearly all have rejected surface for spray carburetters—the Longuemare and F.N. being the favourite devices. There also appears to be a greater tendency to fit water-cooled engines, whilst mechanically-operated inlet valves are gradually superseding the automatic types. Magneto ignition, too, has a number of advocates; although, of course, the majority of makers prefer the high tension system. On the whole, however, the Continental motorcycles lack the fine finish and strength of those turned out by the leading British makers, and we shall not be accused of insular egotism if we state that, at any rate, Britain takes the lead in this branch of automobile construction. Whilst this is so, it is significant to note that only two English-made machines—the Excelsior and the Bowden—are to be found at the Salon, which, notwithstanding the excessive duties that are levied upon motorcycles taken from this country on to the Continent, shows a sad lack of enterprise on the part of our manufacturers. Even amongst the firms displaying large types of automobiles England is only represented by half-a-dozen firms, viz., the Electric Mobile, Hozier, John Marston, Motor Manufacturing, Napier and Wolseley companies.

The Result of the Trials

When, in the course of our announcements of the light car run round London, we stated that the recent Reliability Trials were not satisfactory from the point of view of the light car, more than one of our contemporaries pitied our inexperience and flouted the suggestion as absurd. We gave little heed to these parrot cries at the time, believing them to be the outcome of bad feeling, and recognising that time usually proves the right and dispels the wrong. We have not had long to wait. Mr. E. H. Cozens-Hardy read an interesting paper at the Automobile Club on Thursday last reviewing the rules and organisation of recent trials, and in the course of his criticism of the Reliability Trials he pointed to the unfairness of the trial so far as small cars are concerned, and added:—"It is obvious that a 5 h.p. car must be continuously working at high pressure if it is to keep up to the requisite speed, whereas under the same conditions a 25 h.p. car can hardly prevent its water from freezing. For this reason, I think, the 1,000 Miles Trial of 1903 will be the last of its kind, and we shall have to find some other method of proving the qualities of various cars. The number of cars to be tested is certain to increase, and with it the difficulty of marshalling, observing and judging." It will be interesting to see what the critics will have to say to this confirmation of our views. As for the final results of the Trials, which are given elsewhere in this issue, we regard the whole thing as of very remote utility from the public point of view. The more elaborate and complicated a trial is made the less public interest will it excite, and from the first we regarded the marking scheme in these Trials as over elaborated. As a consequence, the public will regard the result as anything but convincing, and one can hardly wonder at this when such an authority as Mr. Cozens-Hardy, in common with the other judges, has come to the conclusion—to quote his own words—that the elaborate marking under no less than seventeen heads is a cumbrous method, very liable to defeat its own ends. Mr. Cozens-Hardy further expresses the opinion that the final marks have not placed the awards in accordance with the intentions of the Trials Organisation Committee. This confirms every word we wrote in connection with the organisation of our suggested run for light cars. Those interested in these matters desire to know the capabilities of vehicles under practically normal conditions without the element of luck entering too largely into the matter, and it should not be a difficult matter to arrange a trial that could be easily followed by those interested, and the final results of which could be made known within a reasonable time. The fact that it has taken three months to worry out a result in this case points to the complicated character of the scheme. And even now, after waiting three months, the public merely know that an altogether unnecessarily cumbrous system of marking has resulted in a number of excellent vehicles, which performed splendidly all through, being conspicuous by their absence in the list of awards for reasons which would not weigh for one moment with a probable purchaser. This is as unsatisfactory to those who have gained awards as to those who have not, whilst to the public it can only appear in the light of an utter farce

THE PARIS MOTOR EXHIBITION.

A Wonderful Display. French Taste. Appreciative Crowds. The Visit of the President.

The sixth Salon d'Automobile is now in full swing in the Grand Palais des Beaux Arts, the magnificent building erected for the great Paris Exhibition of 1900; and vast as is the collection of motor vehicles, bicycles and everything appertaining to them, yet the building is vaster, and there are annexes abutting on the gallery which could be used for further exhibits. The only thing is that the extra space would be more useful on the ground floor, where the heavy goods are shown. As it is, the cars extend into all the minor halls which are to be found in every direction from the balcony, and this means hard work and much of it, in order to get such heavy vehicles up the staircases to the level which is from six to ten feet above the ground floor level.

As usual,

THE SHOW IS IN EXCELLENT TASTE.

It seems to us that the superstructures of the stands are not quite so ornate as they were last year, but we must not forget that, writing after a twelvemonth's interval, one's impressions may have been mellowed, and an undue glamour may have been added to them. But whether that be so or not, it goes without saying that in almost every case the stands in the main salon are works of art, soft tones predominating. The general effect, as seen from the galleries or from any elevated place is thus one of surpassing beauty. The organisers this year have arranged a most extensive scheme of illumination, the dome being gracefully festooned with electric lights together with the vast roof spans and the arches supporting the roof; and as the lights are of a golden orange colour, the effect is at once beautiful and reposeful. The illumination of the ground floor is obtained by groups of incandescent gas lamps, and as almost every stand has a scheme of electric illumination, the Palais after dusk is

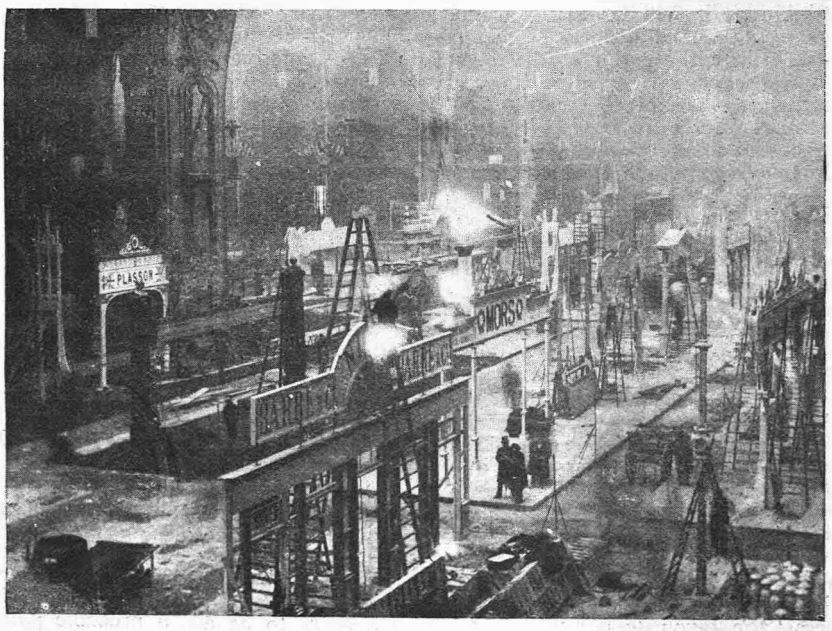
ONE GLORIOUS BLAZE OF HARMONIOUS LIGHT.

The day preceding the opening was a small edition of purgatory, for there was yet a week's work to be done in a few hours, but the few hours spent in sleep by the wearied pressmen (speaking entirely for ourselves) effected a marvellous change in the surroundings, for the thousands of busy hands had in those few hours painted signs and pillars and posts (many visitors found out to their cost the next day how new the paint was). Hundreds of cars had been brought in by means of trolleys and teams of horses, the stands had been swept of the indescribable filth and litter which had been either removed from the hall or buried in holes. The ground was then scattered with tons of small pebbles. As these in places lay somewhat irregularly and in small mounds, walking became as painful as a promenade over a stony seaside beach, but the stones had allayed the white penetrating dust, which was a blessing not to be sneezed at.

THE OPENING CEREMONY

was performed by President Loubet at ten o'clock on Thursday morning. The President, preceded by a military and police escort, and surrounded by the prominent members of the Automobile Club and other distinguished individuals, promenaded along the gangways, stopping here and there, particularly at the notable stands. His happy smiling face was a pleasant thing to see, and the smiles were reflected in the faces of the gentlemen to whom he spoke. M. Darracq's face was wreathed with them, but it must be admitted that the interest shown by his Excellency in the cars was of the most perfunctory nature. In this respect he differed noticeably from the Prince of Wales when the latter visited the Motor Show at the Agricultural Hall the year before last.

The gangways are very wide this year, but we have the impression that there are not so many of them. In the centre and extending for about half the way from the end of each nave is a wide space, the stands being pushed back at these places, and in one of them stands the motor train. The tractor is not yet in position, but coupled to it will be passenger vehicles and trollies of all descriptions. Each vehicle carries an universal shaft which gears on to a differential on the rear axle of each wagon and then passes on to an universal joint at the rear. All of these shafts are coupled up so that the power is communicated to each pair of rear wheels, all of which, therefore, drive. At first blush there seems to be little or nothing in the idea of a motor train without rails, as the arrangement is designed to be (except for military pur-



THE PARIS MOTOR SHOW IN THE MAKING.
A view of part of the great Exhibition two days before the opening ceremony.

poses), but when the inventor's intentions and plans are made fully known a better impression can be formed.

The Salon is fully representative of all that is best in automobilism, and even the Britisher who regards his own country as being absolutely first in everything must fain confess that in motor engineering and all its allied sciences the French have shown wonderful genius and initiative. We have, indeed, very little to teach our Continental neighbours in these matters, but instead can take to heart many lessons which will strike deeply at our slower and more conservative methods. The Paris Salon remains open until (and including Christmas Day), and it should be visited by everybody interested in such an absorbing subject as motoring. With regard to the technical side of the exhibition, our staff of writers and illustrators have gathered a mass of information and have presented it in a concise and precise form, so that, in whatever branch the reader may be interested, he will find in that particular section a description of anything that was worthy of notice. Many exhibits remain to be dealt with next week.

MOTORCYCLES AT THE PARIS SHOW.

Although the vast exhibition is primarily a show of cars, there is no lack of motorcycle exhibits to be found such as would take the enthusiast many hours to inspect even superficially. Although, as a result of the immensity of the Grand Palais, the motorcycles appear to be lost, on taking a bird's eye view from one of the galleries, there are very few stands indeed which are without something of interest to the motorcyclist. Glancing round at the exquisitely-decorated stands—such indeed as make our efforts at home look puny by comparison—one sees in every direction names that have made motorcycle history—De Dion Bouton, Clément, Minerva, Rochet, Gobron, Peugeot, Werner, Societe Francaise, Fabriques Nationales, Knap, Griffon, and innumerable firms of lesser note. At each succeeding exhibition the tendency seems to be to relegate the great majority of the motorcycle exhibits to the spacious annexes and galleries and underground areas, and it is in these departments that one is ever and anon coming across exhibits embodying strikingly original features. Although a visit to our own recent Shows proved that for good solid material and workmanship combined with high finish the British manufacturer cannot be excelled; the French machines on the other hand show more originality in design, and there is much less tendency apparently to follow a fashion or to work in a groove than is the case with our own makers. Hence it is that each individual machine exhibited in Paris proves so interesting to the enthusiast.

INGENUITY IN DESIGN

is the distinguishing feature—much more so than superfine finish, speaking generally, although in some cases a finish that would satisfy the most critical eye is not lacking.

The English visitor to the Show will be struck with the almost entire absence of machines of British manufacture. There can be no excuse for this short-sighted policy on the part of our manufacturers in not letting the elite of the Continental motoring world see that English talent can equal the best that the French and German can show us in the matter of sound workmanship and high finish. There is an impression abroad that we cannot make motor-bicycles to compete with the French and Belgian makers, and it is desirable that this impression should be removed, especially so as the probability is that less attention will be paid in the future to motor-bicycle manufacture on the Continent, owing to the fact that the cars will monopolise the attention of at least the French makers. A surprising fact—and one on which we can congratulate ourselves—is that there is very little in the way of forecarriages or sociable motorcycles at Paris, whereas at our own Shows they formed the most important feature (thanks to the attention paid to this branch of motorcycling by the makers), and there is no doubt that in this respect we have a very great lead over the French.

The features that characterise the machines, taken as a whole, are that the vertical position of the engine is the most generally adopted: belt drive transmission still outnumbers the chain in the proportion of six to one: very few machines have magneto electric ignition, the high tension system having a very firm hold—partly due perhaps to the fact that in the manufacture of coils and accumulators the French lead, and an immense amount of capital is laid out in factories. To find a surface carburetter in the exhibition is indeed a difficult matter

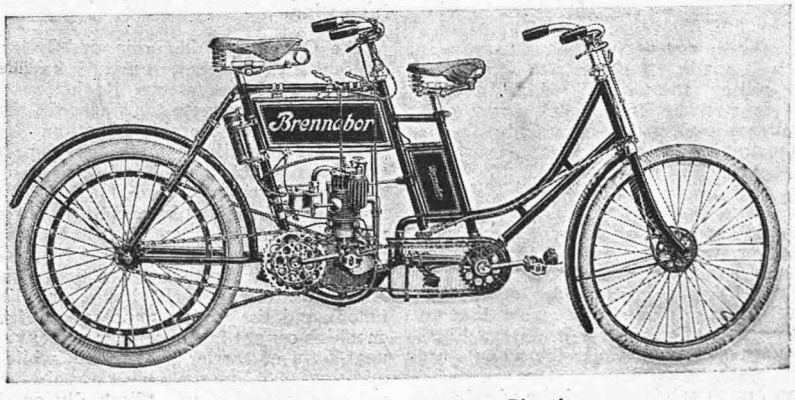
THE SPRAY TYPE BEING UNIVERSALLY USED.

The Longuemare pattern is perhaps the most popular. This season the French makers are more extensively adopting separate throttle, air, spark and valve lifting levers. In brake gear some considerable developments are apparent, the flimsy front tyre brakes of last season being replaced with either band or rim brakes; in fact, many of the brake systems are really ingenious. For machines with motors over 3 h.p. water-cooling is used in many cases, combined with radiators cleverly contrived to occupy the minimum space on the machine. Then there are quite a large number of clutches, two-speed gears, and non-slipping pulley devices.

Bozier, Neuilly-sur-Seine, exhibits a 5 h.p. motor tricycle. The cylinder is water-cooled all over, with the radiators fitted at the sides of the tank, which is of extra large capacity. The well-known Bozier two-speed gear and free engine is fitted on this machine.

The Brennab r-Fahrrad-Werke, Brandenburg, Germany. These machines are built on somewhat conventional lines, with vertical engine and belt drive, spray carburetter, and high tension ignition: the valve lifter and spark advance are operated together. The finish is very good, and the brake gear and mudguard equipment are of efficient dimensions

F. Haustgen, Paris. This maker is displaying some excellent samples of the "Iris" machines. These have an excellent name on the Continent, and they created a very good impression at the recent Stanley Show. In our report of this latter exhibition we fully described the special features of the Iris machines, and so we must refer our readers back to the special Show number. We noticed in Paris, however, that a new 4 h.p. two-cylinder water-cooled racing model is now being made. In this machine our representative noticed a new arrangement of radiators, which stand well away from the water tank. In other respects it does not materially depart from standard models.



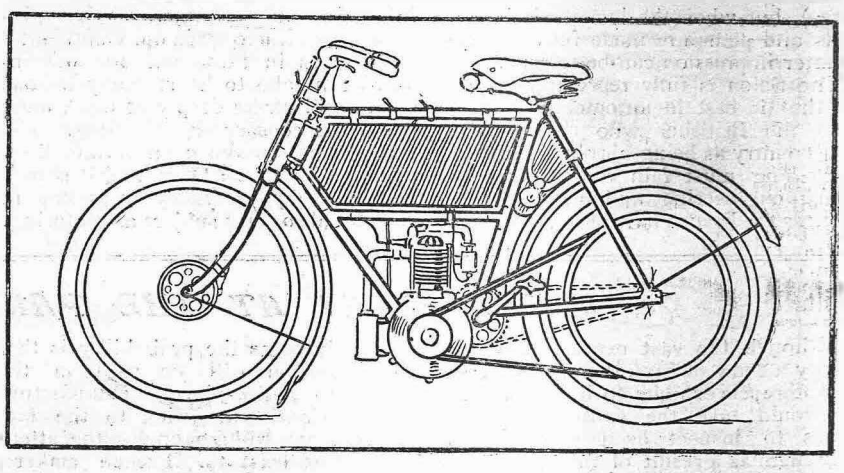
The Brennabor Tandem Motor-Bicycle.

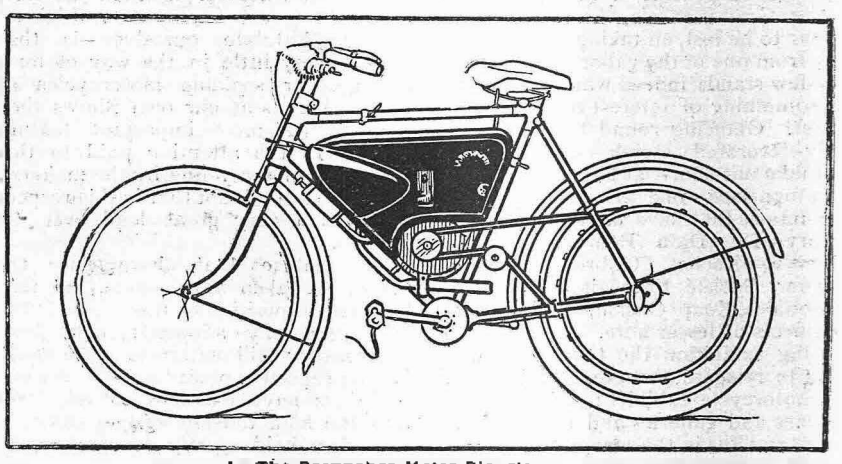
Cottereau et Cie, Dijon. Three belt-driven motorcycles are on the stand of this well-known company—including a lady's model. The frames are very strongly made, the lady's particularly so: a 2 h.p. engine is fitted to the latter, which does not depart much from the standard type, but is remarkable for its easy control. Of the others, the 2¼ h.p. is the more striking: the engine is fitted vertically in a special cradle, and magneto-electric ignition is used.

Griffon, Courbevoie (Seine). The successes which Griffon machines have met with on the Continent in open competition have made them well-known in this country. Specimens also created considerable interest at the last Stanley Show when we had occasion to refer to their particular features. The most striking machine on the stand is undoubtedly the 6 h.p. double-cylindered air-cooled and belt-driven racer: it is wonderfully light. The petrol and lubricating tanks and coils are attached to the top tube, and the accumulator is fitted to the diagonal tube just in front of the back stays. One carburetter supplies both cylinders, and the two exhaust lifters are actuated by one movement from the handlebar. A light lady's model is also worthy of inspection.

Societe la Touricyclette, Paris. Although not new, La Motosacoche is still looked upon by many as a novelty, and is attracting considerable attention. The name is given to a set of fittings (including engine of 1¾ h.p.), which can in a very short space of time be attached by the aid of four clips to an ordinary diamond frame machine, thus converting it into a motorcycle. Although many people look upon the arrangement somewhat sceptically, machines fitted with La Motosacoche have not proved themselves freaks, but have performed exceedingly well. The illustration clearly shows what the fittings are, and from an examination which we gave them we can say that the 1904 patterns are a great improvement over the older ones—being stronger and better finished. It will be noticed that air scoops assist in cooling the engine on this machine.

Breuil, 35, Avenue de la Grande Armée, Paris. This maker is exhibiting six very serviceable looking machines. Although not remarkable for their finish, they are not unattractive in appearance. All are belt driven, some having round belts and the others flat. The Breuil engines are of 2 h.p., and all are fitted to special cradles in vertical positions. The engines are light in weight for their power, and are well made. Including the non-slipping pulley, the over-all width in each case is well under 7in. A spray carburetter is used, and the contact breaker is of the trembler type. An improved form of silencer has been adopted. It is of very neat design, but, if anything, is too small, and it also struck us that the exhaust is hardly as direct as it should be. However, we were informed that the device is a very effective one, and that, besides being a good baffler of the exhaust, there is no appreciable loss of power. The valves on the Breuil machines are very accessible, while the mounts are very easily controlled. Two powerful band brakes are fitted, and the wheels are shod with Colliere tyres.





1. The Brennabor Motor-Bicycle.
2. The Motosacoche fitted to a Bicycle.

Strock, Amiens. Two motorcycles with belt drives occupy this stand. The engines, which are vertically placed, have a bore and stroke of 66 mm. by 77mm. respectively. The power of each is 1¾ h.p. Trembler contact breakers are fitted, as are spray carburetters. One-and-three-quarter inch belts have been used, and to the belt rim is attached a powerful brake, actuated by a cable from the handlebar. The accumulator, coil, petrol and lubricating oil are all accommodated in a nicely designed tank attached to the top tube of the frame. Although no special features are noticeable, the machines are excellently finished and will repay a careful inspection.

The Compagnie Generale des Cycles et Automobiles Rochet, Paris. Excellent specimens of the famous Rochet motorcycles—with magneto and electric ignition—attract considerable attention. Both types are beautifully made, and suggest that considerable care has been taken in their construction. The magneto (new Simms-Bosch) model has a 2¼ h.p. engine, which is very rigidly attached to the frame in a vertical position. It has a belt drive—the belt being rather wider than usual. All unnecessary weight has been eliminated, and the rakish appearance of the machine cannot fail to appeal to many. A neat form of carrier is attached, while in addition to a back Bowden rim brake a powerful retarder acts effectually on the belt rim.

Le Metais et Fils, Paris. Several of the widely-known 2 h.p. N.S.U. motorcycles are exhibited by this enterprising firm. Most of our readers are so fully acquainted with the details of these excellent machines—in fact, we described them in our recent report of the Stanley Show—that we need only repeat that the engines are fixed vertically, and that magneto, electric or high tension electric ignition is fitted, according to the choice of the purchaser. The inlet valves are mechanically operated, and all the parts are readily accessible. The popularity of N.S.U. machines may be gauged when we state that during the present year the firm have delivered over 3,000 of them. The N.S.U. motor carrier, which was shown at the Agricultural Hall last month, is also on the stand. This is fitted with a 3½ h.p. water-cooled motor. The inlet valve is mechanically operated, and a two-speed gear is provided. A comfortable seat (not a saddle) is also fixed, while the carrier can be detached and a seat for a second person substituted. Two brakes are fitted, and the carburetter and ignition (magneto) are easily regulated by the driver without any bodily inconvenience. The steering is by wheel, similar to that of a car. In fact, this excellent combination is in many respects a miniature car. The radiator system is carried behind the saddle on special brackets. We illustrated the motor carrier referred to above on page 434 of our issue of December 2nd.

Clement et Cie have practically all their space filled by cars, but they show one new pattern motor-bicycle, having a vertical 2½ h.p. motor and Longuemare carburetter. The coil and accumulators are carried in the frame tank, and transmission is by V belt. Two brakes are fitted, one being on the belt rim, and one on the front wheel rim.

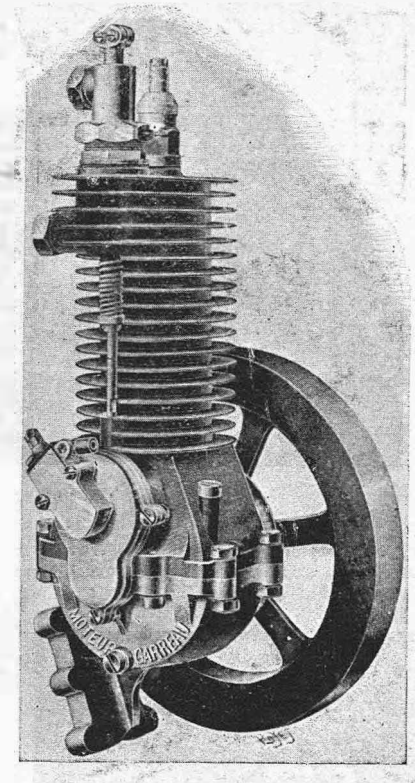
R. Rogers, Paris, has a fine show of Fafnir motors, from 2¼ h.p. upwards. The small motors are used by many well-known firms for motor-bicycles. Special features are the one-piece cylinder and head, positive make and break contact, extra large diameter valves, exhaust valve lifter, etc. The workmanship is very fine. In addition are shown some splendidly finished accumulator charging sets.

Gladiator, Le Pre Saint Gervais (Seine). Among the imposing array of cars and pedal-propelled cycles to be found on this fine stand, a nicely made belt-driven 2½ h.p. Gladiator motorcycle attracts attention. It is very light for its power; but, apart from the fact that the cover of the contact breaker is made to act as a cam for lifting the exhaust, it has no features differing from those found on standard machines.

Rene Gillet, 10, Villa Collet, Paris, shows several motor-bicycles possessing some novel detail features. They are fitted with 1¾ h.p. motors placed almost vertically between the main tubes; the control is effected entirely from the handles by Bowden wires, one lifting the exhaust valve, and the other working the spark advance: a very powerful band brake is fitted on the rear hub: the diagonal tube is made to serve as a tyre pump, and the carburetter and ignition gear are all enclosed in a frame tank.

L. Garreau. An exceedingly light and neatly constructed motor-bicycle scaling 55lbs. only is shown by this firm. The motor develops 1¾ h.p. and has an outside fly-wheel and one-piece cylinder and head: it is secured to the down tube by clamps on the cylinder and crank case. The surface carburetter, lubricator, and accumulator are carried in a case under the horizontal tube. Instead of an exhaust valve lifter the compression is released through the inlet valve when the spark is retarded. The transmission is by belt, and a back-pedalling band brake is fitted to the rear hub.

E. M. Bowden, Ltd., Paris. Three of the new pattern motorcycles, which were exhibited at the Stanley Show, and described in our report, are to be seen here. It will be remembered that they are chain-driven, and are fitted with 2¾ h.p. F.N. engines, vertically placed in strong cradles. The control is effected entirely from the handlebar by Bowden cables, with the exception of the lever actuating the clutch attached to the big chain wheel. This lever is fitted to the horizontal tube of the frame, and its operation provides either a free or a connected engine as desired. The frame of the Bowden motor-bicycle is unusually strong, and the forks are built on the girder system. The Bassee Michel coil is adopted, and, of course, the F.N. carburetter (spray) has not been dispensed with. The wheels are shod with Palmer tyres. On this stand there is also a very comprehensive display of adaptations of the Bowden wire transmission system.



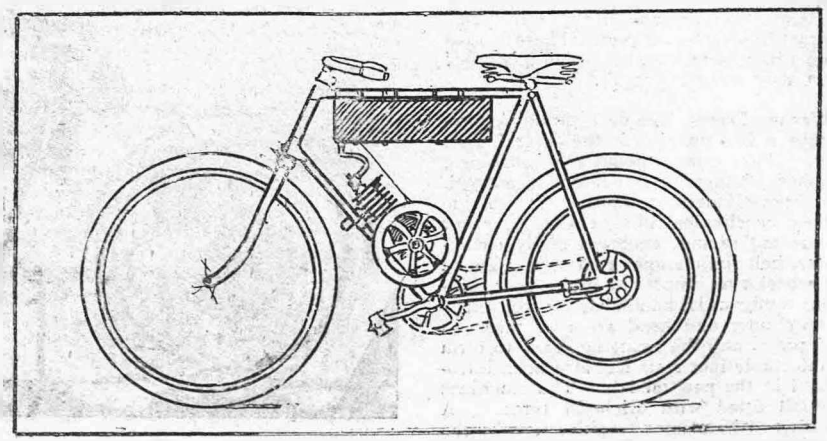
The Garreau Motor.

The Gobron-Minerva show on their stand a racer evidently built for pacing in bicycle races, as it has a safety roller on the rear of the frame. The motor is 4½ h.p. air-cooled, driving by a flat belt: the tank is of a torpedo shape and the coil and accumulator are supported on a bracket in front of the steering column: it looks a very speedy mount indeed, despite its somewhat freakish design. The standard road machine has a vertical 3 h.p. Minerva engine held in brackets between the main and diagonal tubes, and has the latest Longuemare carburetter fitted: the drive is by a V belt of unusual width: only a single band brake on the rear hub is fitted: and a new style of handlebar is used, this being rather wide and brought well back. Altogether a most interesting display of cycles.

G. Givaudan, Lyons. In addition to a good display of motors—some of which have two cylinders—several complete motorcycles are shown by this maker. These vary in power from 2 to 3 h.p., and, although well designed and made, they are not distinguished by any remarkable departure from the standard types.

The Societe Francaise have several 2¾ h.p. motor-bicycles on exhibition. The special features about the engine are the mechanical inlet and valve boxes placed in the front of the cylinder. The new Longuemare carburetter is fitted, and transmission is by V belt. Duplex forks are used, and a detail worth noting is the extra strength of the mudguard stays to withstand the vibration. A band brake, of the double lap pattern, is fitted on the rear rim. The valve gear is carried on a horizontal shaft in line with the main axle. The cylinder and head are in one piece, with the sparking-plug in the centre. In its general lines this machine is not unlike the new Werner, especially in the frame and engine design.

Peugeot Freres show a series of machines of specially interesting types. One of these is a 3 h.p. machine with an extraordinary form of spring fork suspension for the front wheel: the wheel is carried by a series of jointed arms which work against a pneumatic spring concealed in the head tube: the arrangement looks ugly and complex: another feature of this machine is a back rim brake acting on the pulley rim by a Bowden wire. The standard pattern machine is very much on the lines of last season, except that a larger engine is fitted and also wide and extended mudguards. Another of these machines has the Simms-Bosch "arc light" ignition fitted, and driven by a small chain. Another specimen has a Moto-Cardan transmission with the motor arranged transversely. A lady's motorcycle shown has a "Zedel" engine arranged a la Minerva, is also fitted with cushion forks. A 4 h.p. racer exhibited has the motor constructed with a very small number of radiators: it has a belt drive and the usual features. A chain driver shown has a reducing gear on the engine and a spring controlled chain wheel on the rear; the chain is protected by a celluloid guard. Several of the machines are fitted with a double rim brake on the back wheel.

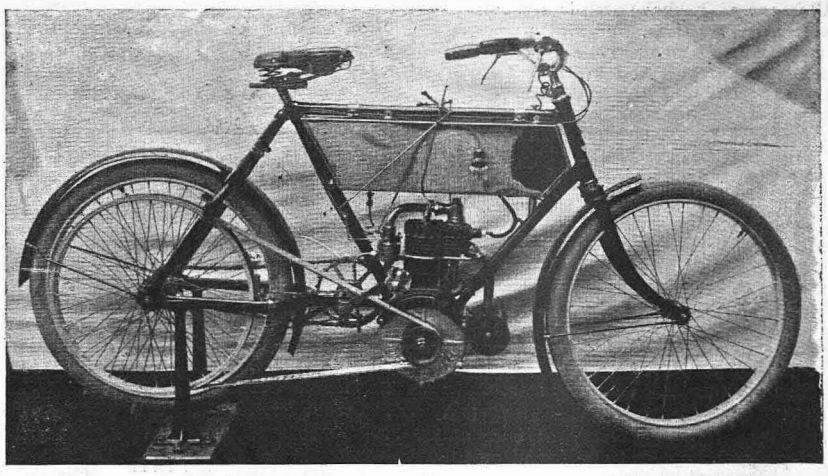


The Garreau Motor-Bicycle.

W. H Dorey, 14, Rue Torricelli, Paris. A very practical motor-bicycle clutch is shown here. It is suitable for either a V or flat belt, and will transmit up to 4 h.p. It has a particularly easy action, very slight pressure of the lever being necessary to put it in gear.

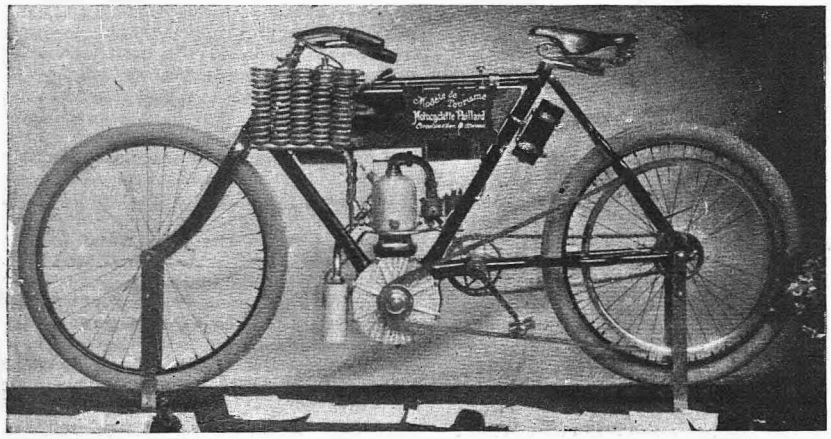
La Foudre et Cie., Paris, show several touring machines, with 3 h.p. Buchet engines mounted vertically, and driving by a wide flat belt. Duplex forks, spray carburetter, and compression release on the inlet valve are notable points. It is interesting to note that the Buchet engines have the exhaust valve lift gear mounted on top of the cylinder.

Gebr Koerting, Hanover, exhibit a special line of valveless or two-stroke motors, of 3 h.p., for cycles. In this engine the crank case is used as a compressor for the charges of mixture, and the exhaust is automatically released through a port opened by the piston. A variety of launch motors are shown, and also a very fine two-cylinder set, coupled direct to a large dynamo, for lighting or accumulator charging purposes.



The Rochet Motor-Bicycle.

Auto-Bicyclettes "Stimula" have a very interesting stand. All the machines have 3 h.p. engines fitted slightly out of the vertical and driving by a flat belt of special material. A special feature is a back pedal brake acting on the face of the belt rim. A lady's machine is shown here, but there is not sufficient dress clearance in the frame: the petrol tank is placed behind the diagonal tube. This machine also has a 3 h.p. engine, and belt drive —unprotected by the way.



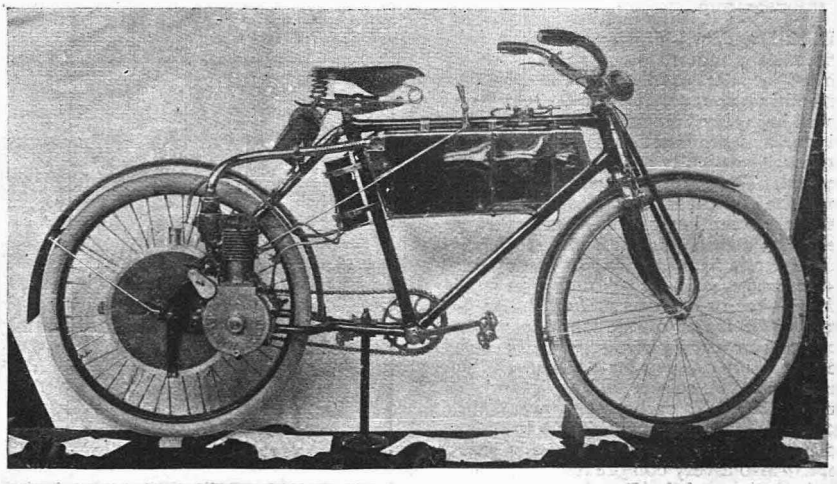
The Paillard Motor-Bicycle.

A. Paillard, 9, Rue Daumesnil, Vincennes, exhibits a water-cooled motor-bicycle of 3 h.p. A striking feature of this machine is the arrangement of coil tube radiators in front of the tank: it has belt drive and band brakes. A popular model shown has a 2¾ h.p. "Pipres" motor, and carburetter fixed close up to the inlet, but the other features are of the usual order.

The Georgia Knap exhibit is always an interesting one. The motor is fixed on one side of the rear wheel, and drives by gear and pinion, with spring buffers on the rim of the gear wheel. This make of machine is one of the very few fitted with surface carburetters: the gas is carried to the motor by a large diameter flexible tube. There are two rim brakes fitted, and also duplex front forks. To withstand the strain of the direct drive very strong spokes are fitted in the rear wheel. Several powers of motor of the air-cooled type are fitted. This interesting motor-bicycle is illustrated on this page.

Bonnet and Jaccard, Romainmotier (Suisse). Amongst many other interesting exhibits to be found on this stand a 3 h.p. belt-driven motor-bicycle is prominently displayed. The engine is fitted vertically to the frame, and has a mechanically operated inlet valve. The carburetter is regulated by a disc indicator, and a well-designed form of trembler contact breaker is adopted. There is also a long belt drive, and the wheel base is of more than average length.

Werner Freres, Rue de la Grand Armée, occupy a fine position in the central transept. They stage about 16 machines, finished off in various colours of enamel. The special features are the free engine pulley, mechanical inlet, engine governor to prevent racing, enclosed spray carburetter, belt rim clamped to a central flange on wheel rim, improved brake gear, efficient mudguards, handlebar control, etc.: the cylinder and head are now made in one piece, and the swinging crank to form comfortable foot rests has also been introduced in the new models. The machines are all fitted with Michelin tyres. A number of handsome trophies won by the firm's machines are effectively displayed.



Motor-Bicycle shown by Georgia Knap.

The "Pecourt" exhibit boasts, in addition to the juvenile machine already referred to, a good display of standard road machines fitted with 2¼ h.p. vertical engines of the Zedel make. In some cases the coil is fixed on the horizontal tube. These machines have two brakes, one acting on the rear rim, and one on the hub. The other equipment is of the usual class.

Ciguet Freres, Paris. A very smart 2½ h.p. motorcycle is worthy of careful inspection here. In addition to the usual features, it will be noticed that the exhaust valve lifter is worked by the cover of the trembler contact breaker, and that the cylinder and head are in one casting The crown of the forks (girder type) is also of special arched design.

Le Bichrone, Paris. The Bichrone motorcycles are shown here. They are similar in every respect to those exhibited at the Stanley Show, and therefore they need no further description here. It will be remembered that the special feature of the Bichrone motor is that it is a two-stroke type, with separate pump for the inlet and has an external fly-wheel. It is fed by a spray carburetter, and has a wipe contact.

Debaralle, Argentieul, are exhibiting on this stand a particularly neat two-speed gear machine: the transmission is by belt with a 6in. pulley on the motor and thence to a slightly larger one on the rear hub: the gear is contained in a box on the hub and is actuated by a finger lever on the handlebar: the motor is of 2¾ h.p. Another very originally designed machine has a V belt drive and a very compact free clutch for the engine: there are two substantial looking band brakes on this machine. Still another machine on this stand has a single chain drive and free engine clutch in the rear hub.

A. Lambert et Cie, Paris. A weird-looking pedal-less belt-driven 8 h.p. racing machine causes one to pause at this stand. The machine (the frame of which is enamelled in red) is the identical one which created a world's record between the Paris and Arras, the distance covered being 216 kilometres, and the time occupied only five hours: the spirit used on this occasion was alcohol, and it proved so economical that only two litres were consumed on the journey. Several interesting features are observable on the machine. A free engine is obtained by slipping the belt from the driving to a free pulley by means of a lever: this, however, is hardly good practice, for the belt gets considerably out of alignment, and as the belt rim is very narrow there must be a tendency for the belt to rise over the flanges—thus causing undue stretching. The inlet valve is mechanically operated, and the control gear is reduced to a minimum; that is to say, it is exceedingly simple. The machine is somewhat ungainly, but notwithstanding this its speed powers are remarkable, and after all a racer is built for speed. It is constructed by Lamaudiere and Co., Levallois. It is notable that certain of the French makers have used air-cooling for the cylinder of a motor of such high power as the above, and even this is obtained with a minimum of radiating surface.

Terrot et Cie., of Dijon, have a series of rather well-finished machines on standard lines with a 2¼ h.p. motor mounted vertically: the cylinder and head are in one piece, and features calling for special mention are the very wide rear hubs, jockey pulley adjustment for the belt and a very excellent cable brake.

Hurtu, Avenue de la Grande Armee, exhibits a motor-bicycle on conventional lines except that the tank is cased in with wood. The motor is of 2½ h.p. with tapering flanges, and is fixed in a loop in the down tube, the main support being near the bracket *à la* "F.N." construction. The cylinder and head are made in one piece, and a spray carburetter and belt drive are used.

H. Petit, 306, Rue de Vaugirard, Paris. A two-speed gear machine is to be found on this stand. The crank case is of a very deep section and the change gear is concealed therein, being actuated by a lever on the top tube: the gear also gives a free engine. The motor has a one-piece cylinder and head, and outside fly-wheel. The main tube of the frame is bent into a deep U section. A spray carburetter, high tension ignition, and belt drive are used.

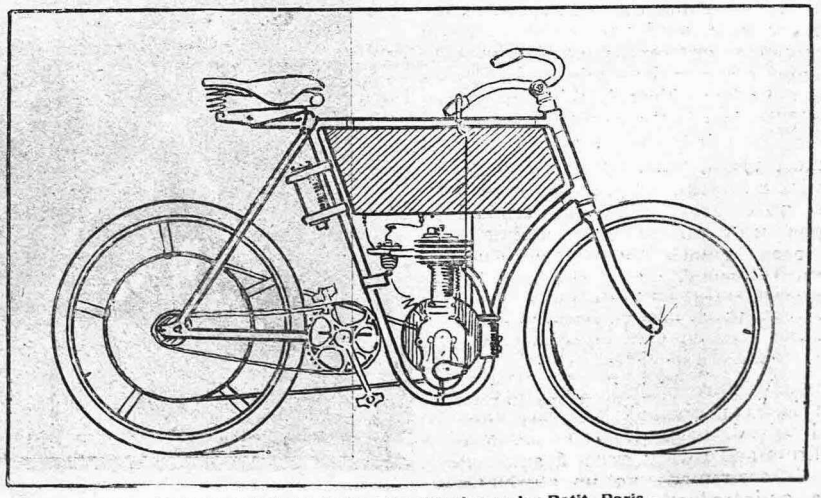
Bailleul, Levallois, have a very fine 3 h.p. motor-bicycle, with water-cooled cylinder, the jacket being of aluminium pressed on. The inlet is mechanically operated, and a free engine clutch is provided in the pulley. The drive is by a flat belt on to a built up wood rim. A very novel feature of this engine is that the inlet and exhaust valves are both fitted in the centre of the head, and are arranged concentrically with each other, the operating rod for the exhaust being hollow, and having a central shaft through it to work the inlet. An inspection port and compression release is provided in the head. Taking the machine in general, it is distinctly original in design. Specially good is a band brake on the rear hub, worked by a Bowden cable. The cooling water is carried in the forward part of the tank, and an extra large capacity for petrol is provided. All the regulating levers are mounted on the top tube. The usual high tension ignition is used, and the finish is above the average. It will be noticed from inspection that folding cranks are fitted to this machine.

Cycles Liberator. On this stand is exhibited a machine to all appearances identical with the Kerry motor-bicycle, which is so popular in England. The motor is 2¾ h.p., fitted vertically in a loop frame.

Lamaudiere, Mauger et Cie, 94, Rue des Arts, Levallois-Perret, Seine, show several new and interesting models. They now make a 4 h.p. engine, fitted vertically in front of the bracket, and specially designed for racing: this machine has an immense fly-wheel and a two-speed pulley. The 2¾ h.p. machine is also made in a vertical pattern, in addition to the type in which the motor forms part of the down tube. A novel type of carburetter is used, and a jockey pulley for tightening the belt and freeing the engine. All the machines have triple fork crowns.

La Metropole, 17, Rue St. Maur, Paris, have a motor-bicycle of light construction, with a 1¾ h.p. motor placed vertically in the angle between the two main tubes. The petrol tank is fixed behind the saddle, and the coil and accumulator are clamped to the down tube. The drive is by a twisted belt. The exhaust lifting gear is of a curious type, being carried on a separate bracket. Another feature is that the carburetter is placed very close up to the inlet. The pedal gear on this machine is of the Acatene bevel wheel and shaft type. There is also a double band brake, and duplex front forks fitted.

F. Bruneau and Co., Tours and Paris exhibit a fore-carriage with chain transmission, and free engine with water-cooled head: the gearing is of a very substantial class, the rear chain wheel being 18 inches in diameter. A centre of interest on this stand is a gear-driven machine. The engine gears on to a large cog-wheel, and inside this is a bevel wheel driving a shaft through the rear tube, and thence by bevel gear to the hub, exactly as in the gear-driven bicycles so popular a few seasons ago: inside the large chain wheel a series of spring buffers are fixed to take up the shocks. The small pinion on the engine shaft is driven through a friction clutch operated by a lever on the horizontal tube; and all the gearing is enclosed in aluminium cases. A standard pattern of chain-driven machine is shown, some being fitted with water-cooled heads.



Two-speed Gear Motor-Bicycle shown by Petit, Paris.

LIGHT CARS AT THE PARIS SHOW.

The time will, we think, shortly arrive when purchasers of light cars will cease to look to France for these vehicles, and when even Continental users of the popular and inexpensive voiturette will come to England for the satisfaction of their requirements. We say this deliberately and with the experience and knowledge of all that has taken place both in France and England during the last few years. And we must look rather more deeply into matters than might at first be thought necessary in order to see that the position is quite a logical one. Let us look, first of all, at the effect produced by the progress of automobilism upon the adherents of the pastime. France opened the ball with small power (as things go to-day), heavy weight, and but small efficiency. In every direction progress has been rapid from year to year: power has increased, weight has come down considerably, transmission is doubly efficient, and reliability has been attained together with absolute comfort for both driver and passenger. The consequence has been this: the average French automobilist to-day wants a four-cylindered car which can do its thirty or forty miles an hour and which can be relied upon to take him and a full load of passengers to his journey's end without trouble. The little two-seater is a small matter to him because his friends own big cars and he is able to afford them himself. If he cannot afford a new one he will buy a second-hand one rather than drive a small car, That is the first reason. The second is this: the middle-class in France is not a strong one, so that when the three thousand De Dion Populaires have been sold in a year the demand for such vehicles has been almost exhausted. These facts provide us with the reason why

EVERY MAKER IN FRANCE MAKES BIG CARS.

The time spent on the manufacture of a small car and in the selling of it is nearly as much as that spent on the big vehicle, whilst the profit may not exceed ten or twenty pounds in one case and will run to three substantial figures in the other. Now, in this country our middle-class is the strongest class and, moreover, it is the one which can find most use for the motor vehicle; and with a limit to speed on the road there is no disgrace in driving small low-powered cars. In these circumstances we can quickly foresee that England must inevitably take the lead in the manufacture and in the use of the light car, and it is worth noting in this connection that a large factory in France is almost exclusively devoted to the manufacture of light and moderately priced cars the bulk of which come to England, being imported by various firms and giving general satisfaction.

These remarks not unnaturally serve as an introduction to the statement that

THE LIGHT CARS SHOWN AT THE PARIS SALON

embody scarcely any improvements upon last year's pattern. The mechanically-operated valve is not found on one car in fifty because the extra expense in manufacture is said not to be warranted for a single cylinder, and the two-cylindered engine has not been largely introduced of less power than about 8 or 10 h.p. In fact, the popular 6 h.p. engine, identical with last year's production, shows no tendency to be departed from. Clutches are no larger, gear boxes, brakes and wheels are much the same, and the only matter of alteration is, perhaps, in the form of radiator, the combined radiator and tank being generally used, the former being of the tubular type with radiating gills; the honeycomb radiator not having made much advance in association with the light car. In frames there is great diversity, the tubular holding the field perhaps the most strongly, but the combined wood and steel frame is making some headway, whilst the channel iron frame is not very greatly used. The possible improvements are the adoption of a two-cylindered engine governed on the inlet; the more perfect silencing of the engine (by means of a modification of the valve gear, the use of the mechanical inlet valve, an automatic carburetter giving perfect mixture at all times and under all conditions, and by the adoption of a silencer that silences); the fitting of internally expanding brakes; the lengthening of the wheel base, and the use of larger tyres. But all of these things mean added cost, and at present the aims of manufacturers are towards cheapness; so it is evident that users of light cars in this country must pass through their natural stages of development and, as a result, the perfect light car will be reached in the fulness of time. We describe and illustrate some light cars on view at the Salon, and we have endeavoured to avoid describing the same car over and over again under different names. Where it has seemed apparent to our staff that the exhibit is that of a concern with so small an output that there can be no possibility of the cars being introduced into this country, the features have only been dealt with from the point of view of gaining knowledge as to methods and devices

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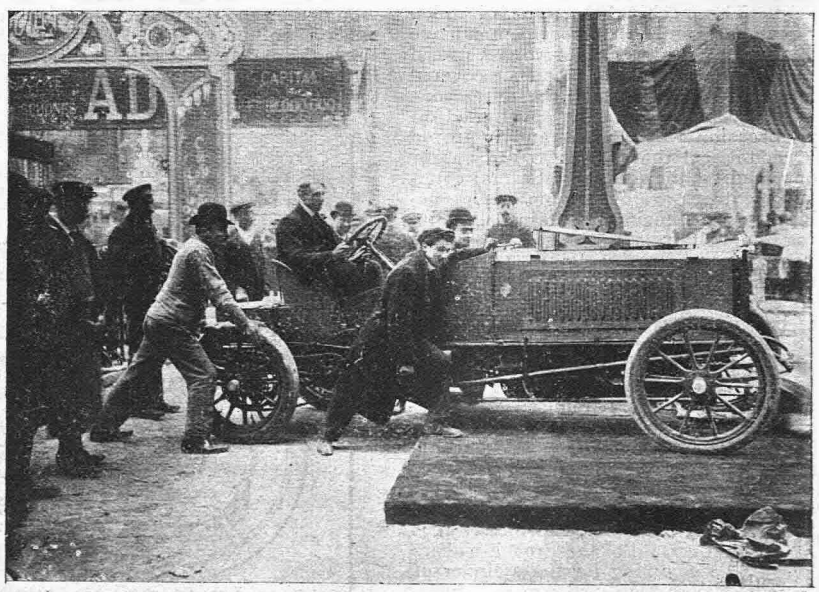
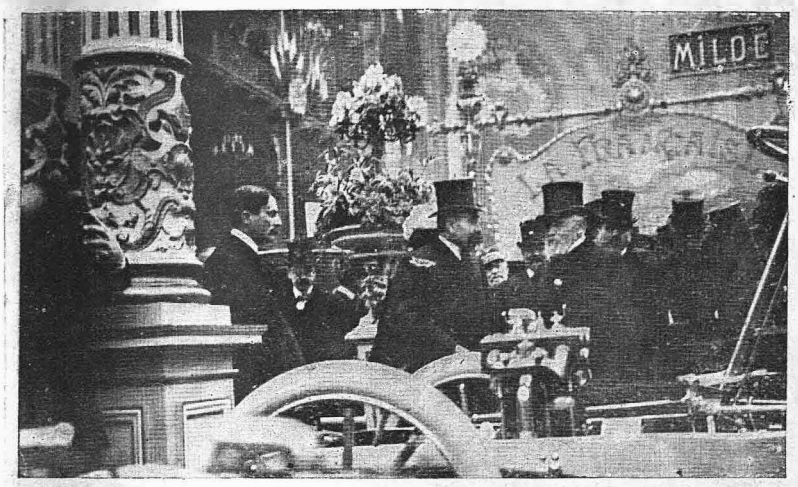
J. Lamy, 160, rue Oberkampf, Paris, are showing some distinct novelties in light voiturettes. The smallest of these are single-seaters, with all the outlines of a large car built in perfect miniature. The engine is placed in the rear and drives through a Bozier gear, which gives two forward speeds. A reverse is considered unnecessary because of the light weight of the car. A box, looking just like the bonnet over an engine is placed in front for tools, etc. The frame is of wood, and an inclined wheel is provided for steering. The wheels are of wire shod with tyres of various sizes, according to the purchaser's desire. Thus the 3 h.p. car with 2¼in. tyres sells at 1,950 francs (nearly £80), whilst with a 4 h.p. engine and 3in. tyres the price is 2,750 francs. The weight of the former is about 180 kilos, and of the latter very little more. An oil tank and lubricator pump are placed on the outside of the body within the driver's reach, and all control levers to the engine and the change speed and brake levers and the foot pedals are all handily situated. This little single-seater, says the maker, is practically a glorified quad with all the lightness and convenience of that machine, with the added comfort of the car seating and control. The 4 h.p. car is also provided with a two-seated body and sells at 2,900 francs.



NOT QUITE A LIGHT CAR.
Manipulating the 100 h.p. Gobron-Brillie on to its stand at the Paris Show.



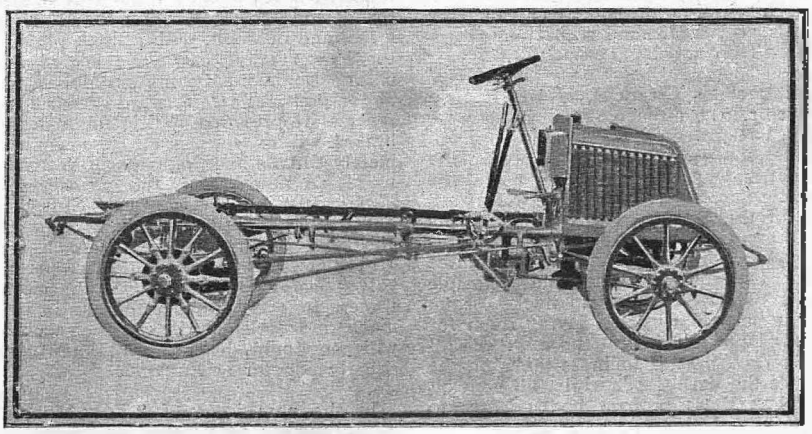
THE PARIS SHOW.
President Loubet at the Opening Ceremony.

A. Christophe, of 31, Avenue de Neuilly, Neuilly sur Seine, is showing an Albany two-seated car made by the Albany Company, of Willesden, London, under Lanchester's system. It is driven by a 10 h.p. engine placed horizontally forward under the bonnet driving through a very large fly-wheel and a gear box giving two forward and one reverse speed. The frame is of channel iron and a very long wheel base is allowed. The body gives a couple of comfortable bucket seats and a large tool box at the rear. The car presents a very fine appearance and is priced at 5,000 francs or £200.

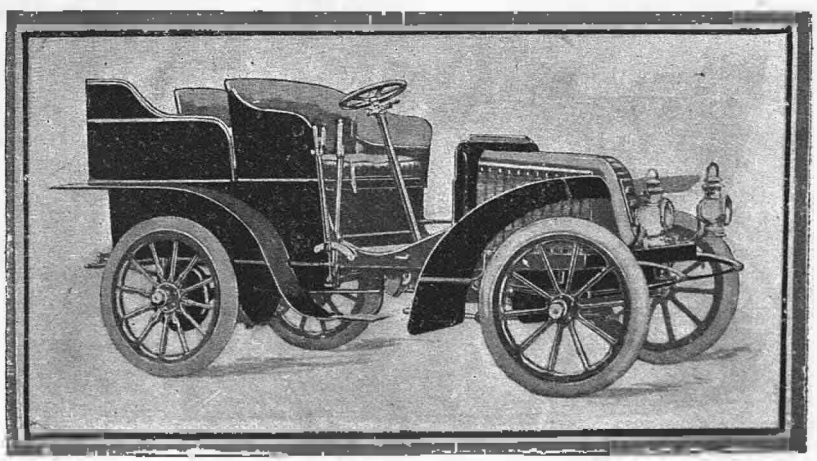
The Olds Motor Works, of Detroit, U.S.A., make a very fine show with the Oldsmobile, having secured a good position in the centre of the building. The features of the car, its ease of control, its silence, its comfortable springing are all well-known and need not be commented upon here. An interesting item on the stand is a car with a glass panelled body showing the mechanism (which is cut through here and there in order to show the working parts) in operation driven by an electric motor. Two other interesting cars are the delivery vans which look thoroughly useful and workmanlike.

Renault Freres, of Billancourt, make a most attractive show, the central object of which is the rakish craft which we last saw at Bordeaux when Louis Renault rushed into the control the winner of the first and only stage of the ill-fated Paris-Madrid race. The partnership of the two brothers was sadly broken by the fatal accident to Marcel Renault in that race, but the incident has not acted as a check upon the go-ahead policy of the firm. The new cars present many interesting features. The 7 h.p. car, driven by a single-cylindered engine, is the lightest car made by Renaults. It is cooled by side radiators and thermal circulation, so that one source of worry, the pump, is abolished. The engine is governed on the carburetter, whilst the throttle lever acts on the inlet valve. The clutch is large, and of the internal type, and is placed very close to the engine, the gear box being close behind. The result is that the latter falls only just behind the dashboard, and a long propeller shaft thence communicates the power to the differential. All brakes are of the internal expanding type, the pedal-actuated brakes being applied on a cone close to the differential case. The frame is built of very large diameter tubes, and is braced girder fashion. Any type of body can be fitted, the car complete, except for the body, being priced at 5,500 francs or £220, an extra thousand francs being charged for a tonneau body

La Minerve Co., of Billancourt, manufacturers of cars and engines have made considerable strides during the past year. They have moved with the times which, in France, means that the sizes of the engines and the prices of the cars have risen in the scale, but concurrently the company has considerably improved its methods and designs. The new practice of casting the cylinders separately has been adopted, and thus the same size of cylinder (4 and 5 h.p. cylinders are being made) can be used for two, three and four-cylindered engines. Ash frames with stiffened flitch plates are used and the engine and gear box are thoroughly well supported. Three speeds forward and a reverse are given, the power being carried to the road wheels by side chains. The cars are well sprung, the wheels are strong and well made, and generally the cars are well up to everyday standard. The Minerve cars will probably be sold in England next year at the following prices: The two-cylindered cars will be priced at £220, with a two-seated body, and £240 with a tonneau body, whilst the car with a three-cylindered engine and accommodating five people will sell at £340. Later on we may be able to give the result of the negotiations now being conducted, but at present we only know of those negotiations under pledge of secrecy. A little voiturette for two persons is shown. It is priced at £120, but it is not likely the company will continue making it.



Chassis of the 7 h.p. Renault Car.



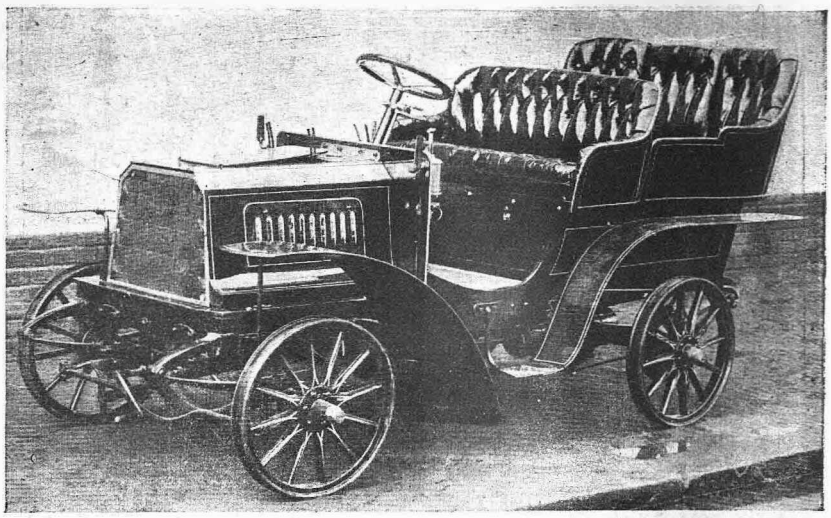
The 7 h.p. Renault Car.

A. Lambert et Cie., 27, Avenue de la Grande Armée, Paris, have just been established for the manufacture of cars. They show a voiturette of the ordinary type, with a 6 h.p. De Dion motor, two forward speeds and reverse, the top speed driving direct, the drive passing through a flexible shaft. The car complete sells at 3,100 francs, or £124; whilst with three speeds the price is 3,700 francs, or £148, a tonneau body adding yet a further 200 francs.

F. Mainaut, 22, Rue de la Grande Armee, Paris, shows a well-made four-seated voiturette, which sells at £156. It has a single-cylindered engine developing 6 h.p., made by the firm, driving through a three-speed gear-box with reverse, the drive thence being by means of a cardan shaft. The body is well shaped, and not at all badly finished, although the upholstery is not first grade, naturally. The car seems very cheap, but of the quality of the material it is not so easy to speak.

Farman Freres, of 3, Rue des Acacias, Paris, show a smart and well-finished car on the lines so well-known in England. It is a two-seated car with well-shaped bucket seats, and a small toolbox on the rear platform, mounted on a tubular chassis. The engine is a 6 h.p. De Dion, driving through gear box and flexible shaft, two forward speeds and a reverse being given. The enclosed combined water tank and radiator are mounted in front; powerful brakes are provided, and the wheels are wood, shod with Continental tyres. The car sells at a popular price.

Automobiles Creanche, of the Rue du Souvenir, à Courbevoie (Seine) show a 9 h.p. two-seated car driven by a De Dion engine, its water tank being under the bonnet and on the dashboard, whilst the radiators are suspended from the forward end of the frame. The engine and its parts are most accessible. The drive is through a clutch, a gear box giving three forward speeds and reverse, and a flexible shaft. The body has two bucket seats, and is particularly long, giving room for a very large tool box at the rear. Petrol and oil are carried in brass tanks on the rear of the dashboard, whilst all controlling levers are brought conveniently to the driver's hands and feet. The car sells at 6,000 francs (£240).



10 h.p. car exhibited by W. H. Dorey. This is a new car which is to be shortly placed on the English market at £224.

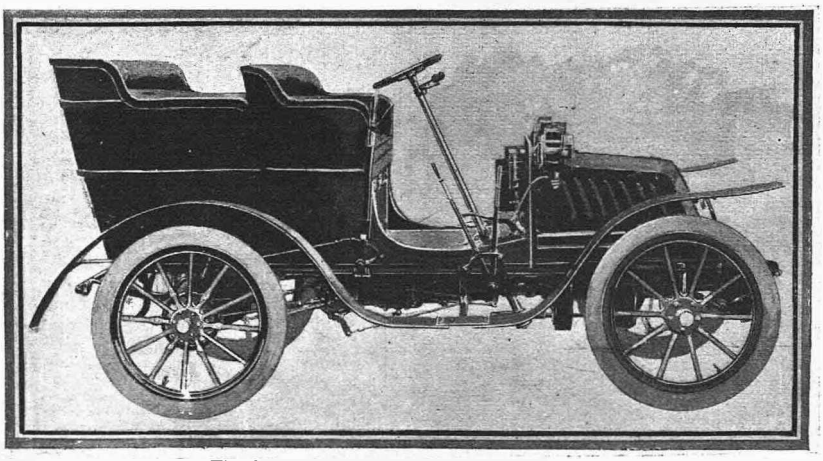
W. H. Dorey, of 14, Rue Torricelli, Paris, shows a complete car and a chassis of a make of car which is already well known in this country. These cars are made by a firm which only sells to the trade, Mr. Dorey having the cars built to his order, and to the requirements of the English market. The car has a framework of steel for the cheaper grade, which sells at about £140, and of wood, with a flitch plate, in the higher grade car. The engine is a 6 h.p. De Dion, driving through a propellor shaft. Three forward speeds and a reverse are provided, and in the matter of brakes, wheels, springs, etc., the cars completely fill the requirements of voiturette users. A new type is the car selling at £224. It is a four-seated car, with wood and steel frame, three speeds and reverse, the new 10 h.p. two-cylindered Tony-Huber motor, with mechanically operated valves, being used to provide the motive force. In every respect the car is well-made and satisfactorily finished, and it will, no doubt, become well known and equally popular in England.

In the next issue of "THE MOTOR" many further motorcycle and light car novelties will be described and illustrated.

The Compagnie des Automobiles Hurtu, of 29, Avenue de la Grande Armee, Paris, are showing three cars driven by Aster two-cylindered engines, developing 6 h.p., as well as cars of higher power. The frames are tubular of large section, the engine being carried on strong bearer lugs projecting from the frame, whilst the gear-box is supported by a secondary frame of channel steel. Three speeds forward and reverse are provided by means of sliding pinions. The 6 h.p. cars are sold at £210 for the chassis only.

The Gladiator Company, of 5, Rue Francois-Henri, Au Pré Saint-Gervais, near Paris, show an 8 h.p. car driven by the new two-cylindered engine, with mechanical valves, placed on the left-hand side of the cylinders. The engine is a fine piece of work, and is carried on a strong supplementary frame. A large fly-wheel, with internal clutch, carries the power to the gear box, which gives three forward and a reverse speed. From the countershaft the power is communicated to the road wheels by side chains. The frame of the car is of wood, stiffened by flitch plates, and the body is particularly comfortable. Wood wheels, shod with Dunlop tyres, complete the outfit. The price of the car is 6,800 francs.

Cottereau et Cie., of Dijon, are showing their new pattern voiturettes, which are not only cheap in price, but are excellent value. They are driven by single-cylindered engines developing from 7 to 8 h.p., driving through a clutch and propeller shaft to the gear-box, which is placed rather more to the rear than usual, and thence the power is conveyed by a single central chain of ample strength to the differential on the rear axle. The engine has mechanically operated valves, the lift of the inlet valve being controllable from the steering pillar. The frame is tubular, and is well sprung; efficient brakes are provided, and throughout the car seems well up to requirements. With a two-seated body the car sells at 3,900 francs (£156), and with a tonneau body at 4,300 francs (£172). We illustrate the 7 h.p. Cottereau car with tonneau body on this page.

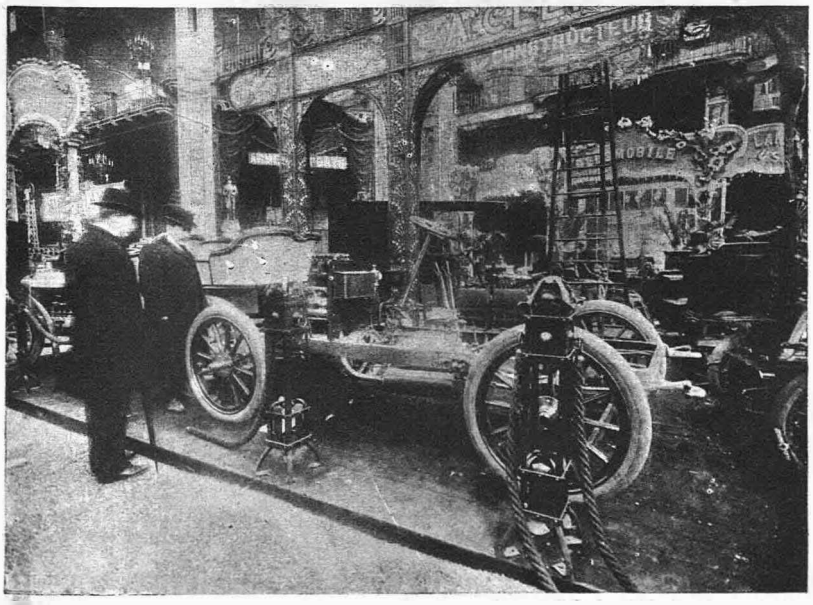


The 7 h.p. Cottereau with tonneau body.

A. Darracq and Co., 33, Quai de Suresnes (Seine), make a fine show, their large cars (12 h.p. and upwards) being built with a pressed steel frame, which is found elsewhere in the exhibition staged by a large steel foundry. This is a piece of engineering which causes one to literally marvel at the skill which has produced it. We shall describe it in another section. The lightest of the Darracq cars (which, by the way, find a very important outlet in England) is the 8 h.p. single-cylinder. The engine is governed in the inlet, has electric ignition, and the gear-box gives a choice of three speeds and a reverse, the top gear driving direct, a cardan shaft being used for the transmission. A strengthened wood frame is employed, the chassis being of good length. With a tonneau body the Darracq is priced at 4,500 francs, or £180.

6½ h.p. Bayard Car, showing body and engine.

Prosper Lambert, 18, Route de Cherbourg, Nanterre (Seine), made an impression with the thoroughness of his work last year. But he has not been content to stay still and we now see a very well-designed and in some respects novel car in the new single-cylindered 9 h.p. light car. The engine is most accessible, the radiator being placed below the level of the framework with the pump close behind it. The latter is perhaps in an awkward position, but it is driven direct from the engine and, as there is no side stress on the spindle to wear the bearing oval, there is nothing much to go wrong with it or to call for its removal. The engine is governed by a regulator on the inlet valve, the governor (through a lever) opening an extra air inlet, a spring tending to keep it closed. The commutator has one or two novel features. It is completely detachable in an instant by the release of two spring-held projections running in a groove on the engine shaft. The make and break contact points are also readily and quickly adjustable from the exterior, the trembler blade being held in a block which is free to revolve slightly. The blade extends beyond the block, and its end opposite to that carrying the contact-point can be moved to left or right by means of two milled-edged screws. These screws are taken in the thumb and finger of each hand and are together turned one way or the other until the adjustment is perfect, when the two screws are tightened one against the other. The gear box is a very sound piece of work. Three forward speeds and a reverse are provided. Internal expanding brakes are fitted, each brake lever withdrawing the clutch. With a strong frame, wood wheels, and a well-sprung body, the car conveys a very good impression of sound and thorough workmanship. The chassis of the Prosper Lambert sells at 3,900 francs, and with a two-seated body at 4,950 francs, or £198. The London agent is M. Gustave Lambert, 121, Lancaster Road, Notting Hill.



Chassis of Adolph Clement's Bayard Car.

M. Adolph Clement, who has severed his connection with the company making Clement motors, is now established at Levallois, Paris, and is making the Bayard cars under the old patents and by the same methods as those for which he has been noted for so long a time. He is making cars from the single-cylindered 6 h.p. up to the racing monster. The two voitures legeres are the most interesting from our point of view. The first is the 6 h.p. It has a single cylindered engine with mechanically operated valves placed on opposite sides of the cylinder, the bore being 90 by 120 mm. The engine is governed on the inlet, ignition is by coil and accumulators and the carburetter is in a new form. The pump is gear driven, the water passing through a Cloisonne radiator, the tank being on the dashboard under the bonnet. Three forward speeds and a reverse are provided by means of sliding pinions and the power is conveyed by flexible shaft to the rear wheels. The steering is irreversible; to the steering pillar are brought the engine control levers, whilst the foot pedals are large and strong. Three brakes are provided, one applied by pedal on the differential and holding in both directions, and the interior expanding brakes acting on drums on the rear wheels. With a comfortable four-seated body and large tyres on wood wheels the car sells in France at 5,000 francs (£200). The 7 h.p. two-cylindered car is similar in all respects except that of the engine. This has separated cylinders with a bore and stroke of 80 by 100 mm. With a tonneau body the retail price is 5,800 francs (or £232). These two cars are among the most interesting of the new light cars and as the work from beginning to end is splendid and the finish excellent they are very good value indeed. The Clement stand in general is proving a great attraction, and is surrounded by visitors the whole time. The graceful outlines of the iron scroll work of the stand is being much admired as an original conception. Two illustrations of the Bayard car are given.

C15

NEW FEATURES IN THE BIG CARS.

Perhaps not unnaturally, one visits the great Paris Show with the full expectation of the unveiling, by the leading makers, of secrets which have been carefully guarded from the world during months of experiment and preparation. With an industry which is learning some lesson every year, and which is ever on the qui vive to profit by the experience, and, if necessary, follow the example of the most enterprising of its constituent members, one instinctively enters the Salon on the tiptoe of expectation. Last year everybody found that everybody else had imitated the features which had brought

THE MERCEDES CAR

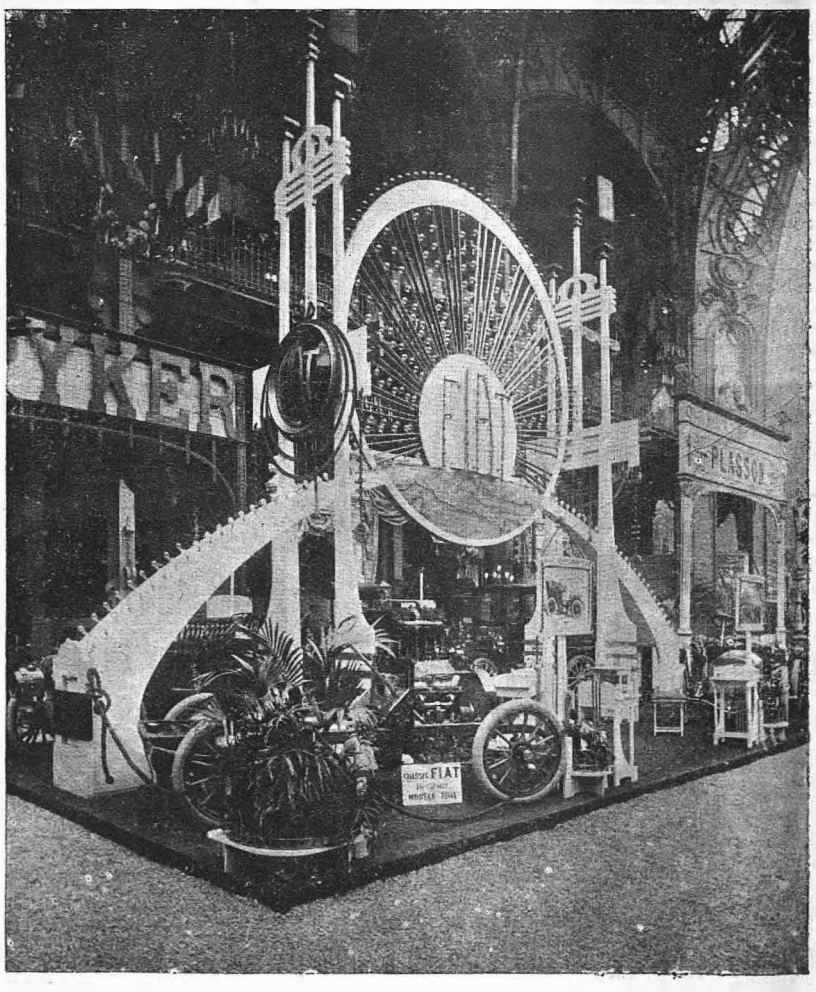
to the front, and so the pressed steel frame, the new honeycomb radiator, and all the other devices of the famous Cannstatt firm were found reproduced, either without change, or with some slight modification, on almost every stand in the Show. But this year there is a different feeling prevalent on all sides. The chassis embouti has been found to have its limitations and its faults. It is not so strong as it seemed, the Mors and other cars having got into troubles on occasions from this defect. In fact, the tie rod under the frame of the Mors in order to prevent central sagging possesses a very queer look. Moreover, in the event of an accident, the pressed steel frame often necessitated an extensive replacement, whereas a wood frame in the same circumstances could have been easily repaired. And yet a third defect was this. The cost of the dies for a frame was so great that the makers were limited to a certain size of frame, or, at least, to but a small range of sizes, and the consequence was that if a customer wanted a larger body on a certain chassis his requirements could not be met, and business was frequently lost in this way.

THE HONEYCOMB RADIATOR,

however, has set a new fashion, because it showed that by making full use of the space in the front of the bonnet, and by shredding the water into the finest streams, greater cooling efficiency could be obtained, and not only was it unnecessary for so much water to be carried, but the usual tank separate from and additional to the radiator could be abolished. However, the honeycomb radiator, as introduced on the Mercedes, had its defects—susceptibility to fracture, leakages, etc., and so we find that, all round, makers have used the idea of combining the radiator with the reservoir, and of using small channels, but have mostly plumped for small diameter pipes, with large radiating gills, and as these are packed very closely, the radiator is quite as smart as the honeycomb, and is more satisfactory.

The greatest changes are in the engine. The three-cylindered motor bids fair to oust the two-cylindered because the more perfect balance (almost equal to that given by four cylinders) more than repays the small extra cost. The cylinders are now being cast separately and this fact gives many advantages. A greater equality of thickness of metal is possible, and this makes for equal expansion and longer life. The cylinders are simpler and cheaper to cast, whilst, in the case of flaw the waste is less, and in the case of accident only one cylinder may have to be replaced instead of a number. From the user's point of view the whole of the engine gear is more accessible and it looks less complicate. Moreover, the longer crank case necessitated by the separation permits of a bearing for the crank shaft between each crank, so a four-cylinder engine can now have five crank shaft bearings instead of the customary three. Ball bearings at each end of the crank shaft have also become general. Spun brass water jackets have proved failures, and so we find the big makers reverting to castings again. Large fly-wheels, belt-driven radiator fans with means for quickly tensioning the belt, dust screens below the mechanism, and mechanical valves, these are all features of the 1904 cars. Magneto high tension ignition has come forward wonderfully and nothing could be simpler than the improved Eisemann system adopted by Panhards where the whole of the ignition gear is in a small box on the dashboard. Carburetters are more perfect in every way. They are entirely automatic and self-regulating and by providing a perfect mixture at any speed they conduce to engine silence. The clutch and brake pedals are now being extensively arranged to push forward as on racing cars, instead of downward. Larger axles, and, in the case of tubular frames, larger tubes are very noticeable. To sum up the points of the new chassis for 1904 it may be said that the aim of manufacturers has been to produce a very simple engine comprehensible at a glance. Circulating pumps are now nearly all driven from the two to one shaft, which has the advantages of being a more certain drive than is provided by the friction wheel whilst the wear on the spindle is less and the pump is lifted to a safer position under the bonnet. Many makers have adopted certain standard sizes for their cylinder which can be made up into combinations of two, three or four and so a wide range of power is secured with a perfect standardisation of parts. The flexible shaft for the transmission of power to a live axle is rapidly growing in favour whilst a direct drive on the top gear is universal.

As to the body work, the longer chassis now generally used for high-priced cars permit of more room being given in the tonneau and this is being utilised to provide for side entrances so that the bugbear of the tonneau—the need to step into the muddy road in order to enter it—is now overcome. Taken all round the big cars of 1904 show decided improvements in a multitude of details and they will be found to be quieter in their running and easier to manipulate than in the past.



A brilliant exhibit at the Paris Show, that of the Fiat Motors.

OTHER PEOPLE'S VIEWS.

NOTE.—These columns are set apart for the discussion of motor topics by bona-fide *readers of* "THE MOTOR," *and trade letters containing veiled advertisements are not admitted.*

The Editor invites correspondence on any motor subject, but owing to the very large number of letters received he directs attention to the following rules:

1. Plain Writing. Type-writing for preference.

2. All letters to be writ'en on one side of the paper.

3. Letters to be kept as brief as possible.

4. For the purpose of illustrating any letter, rough diagrams may be sent, which will be worked up by one of our artists

The Editor is not responsible for opinions expressed by correspondents in this section.

A Mysterious Accumulator.

Sir,—Mr. A. R. Holmes is perfectly right. If "Radio" draws a small diagram of the accumulator he will see that the acid electrolyte forms a very good circuit, with the result that there is no charge.—Yours faithfully,

"ELECTROMETER."

Police Methods.

Sir,—The letter from "A.W.S.A." in a recent issue regarding the policeman's proceeding at Streatham Common has, I am certain, roused some righteous indignation in the feelings of many a motorist. We may well say: "Whatever next will the police do?" It was not only an outrage of a serious nature on the rider, but might have considerably damaged the motor. These latter are not the sort of "little things" one can let fall about off-hand! My sincerest sympathies are with the owner, and I am certain motorists in general will agree with me when I say that the sooner this method of arresting alleged offenders is discouraged the better.—Yours faithfully

"ELECTROMETER."

Sir,—Referring to a letter under the heading of "Police Methods" in your issue of December 2nd, from "A.W.S.A.," I may say that I was the person pulled off by the policeman. The measured distance is one furlong, and the speed alleged was 21 miles per hour. Motorists are timed as they enter the beginning of the common by a policeman with a stop-watch. If you do not stop for him another policeman lies in wait round a bend in the road, and upsets you bodily. I was served with two summonses: one for not stopping when signalled to, and the other for exceeding the 12 miles an hour. Fined £1 2s. in each case. The machine I was riding was a borrowed two-year-old 4 h.p. Minerva. Wishing "THE MOTOR" every continued success.—Yours faithfully,

CHAS. M. DOWSE.

Testing Ignition.

Sir,—In reply to "J.T.B." (London, S.E.), re 5 h.p. Decauville, I would suggest that he try a battery direct on to the coil, one wire to middle terminal, and one to end (either side alternately). He will probably get a good action of trembler; if so, he may depend on it that there is some fault in the circuit. I have found this usually at the contact set screws on advance spark: the remedy is to remove cover and clean. I was troubled with misfiring, which was not continuous, and found that that was the cause.—Yours faithfully,

W.F.B.

Motorcar Gears.

Sir,—It seems curious that different makers of light cars do not appear to be agreed on this question, for in the car of one make there are three speeds and a reverse, in another two speeds and a reverse, and in this latter case one car is geared to 11 and 22 miles an hour forward, another to 7 and 21, and so on. Several cars are now being built with the high gear about three times as fast as the speed of the low, and the jump from the one to the other is not found to be too great, since engines can now be made extremely flexible as regards variation of speed, even from 2,000 to 200 revolutions a minute, though probably in practice a variation of 1,500 to 300 could not be exceeded without great loss of torque. Now this progress having been made in engine design, it is quite practicable to use a Crypto gear—in fact, several firms are doing so, and it seems to me that it would be a good thing if more cars adopted this type of transmission in conjunction with a single chain to a live back axle; there would be a great gain in mechanical efficiency thereby; besides there is no question as to the superiority of a Crypto gear over the usual sliding gear from a mechanical point of view; more than this, in changing gear, the use of only one hand is required, whereas in a sliding gear one hand and one foot are simultaneously employed; so that the driver of a Crypto geared car has one foot free to work a pedal exhaust valve lifter, as on the Century tandems. This does away with any necessity for a governor (and I may say that, having driven one of these tandems a great number of miles, I find it an ideal arrangement). Makers have to depend to a very large extent on the improvements suggested by users, though it is especially difficult for them to obtain reliable information from this source, owing to the majority of car users not being engineers. It rests, however, with the users to say that they do not want the sliding three-speed gear, with its attendant friction and risk of breakage in novice's hands. — Yours faithfully,

G. F. SQUIRE.

Variation in Power of Motor.

Sir,—Your correspondent, "A.G.G." (Liverpool) in your issue of November 18th, wants a remedy for a 2 h.p. 1903 Minerva motor dying away and then picking up, when he opens the throttle. Your advice suggests part of the cause, but not all. I was troubled in exactly the same way myself, and traced the trouble to the gauze covered main air inlet. I have no doubt if your correspondent cleans this thoroughly inside and out he will, like myself, have no further trouble. While he is at it, he might as well take the carburetter to pieces and clean it well in paraffin: he will be astonished at the quantity of dirt which will have accumulated in it —Yours faithfully,

A. DRYSDALE.

Illuminating Numbers

Sir,—I should like to make the following suggestion in "O.P.V." with reference to the illumination of the numbers upon motorcycles required by the new Act:—That an erecting prism or similar device should be placed upon each side of the cycle lamp somewhat lower than the usual red and green lamps frequently seen, and at such an angle that they would throw a beam of light upon the number tablet (figures on both sides), the said tablet being fixed upon the top of the lamp by a clip and thumb screw: it could then easily be taken from its daylight position and put on the lamp, or vice-versa.—Yours faithfully,

B. CHRISTIAN.

Numbers on Motorcycles.

Sir,—In view of the necessary numbering of motors next year, motorcyclists will be somewhat troubled to hit upon the best way to so arrange the number plate as to satisfy the law. It would, therefore, be a good thing if readers of "THE MOTOR" would send you any practical suggestions which they can make in this connection. I have hit upon the following, but have not yet given it a trial There seems, however, no reason why it should not work. A piece of semi-transparent material, such as waxed paper, is sandwiched between two metal plates (identical in all respects), from which have been stamped, in stencil fashion, the number allotted by the authorities. This combination is fixed somewhat to the side and in front of the headlight. If the metal part is enamelled black, the waxed paper will look white in comparison both by day and night, and will be visible from either side, because the waxed paper will allow some of the light to pass through. The actual fixing on the machine should present no insuperable difficulty. In this manner one plate would suffice to show the number on either side by day and night.—Yours faithfully,

E. W. KITCHIN.

B19

"Humberette" Experiences Wanted.

Sir,—No doubt there are some of your readers who have had considerable experience with the "Humberette" light car and would be able to give me some idea as to its capabilities for hard work. I should be thankful to them for any information on the subject.—Yours faithfully, "COUNTRY MAGISTRATE."

Gudgeon Pin Troubles: a Hint.

Sir,—Concerning gudgeon pin troubles. The set screws have come out of the gudgeon pin of my 2 h.p. Minerva motor twice, and on both occasions it bent the connecting rod and crank pin. In my opinion, you may make the screws as tight a fit as you can, and put in the largest split pin that will go in, but it only seems to be a question of time before the set screw unscrews itself and the split pin gets bent round the screw. I left the set screw out several months ago, and had the gudgeon pin ends ground so that they are slightly convex. The engine has been in daily use since, and the cylinder walls are in no way damaged.—Yours faithfully,

FRANK HUSBAND.

The Vibration Problem, etc.

Sir,—Referring to "Magneto's" interesting article in "THE MOTOR," for November 18th, on "The Vibration Problem," I think that last year the Ariel Company sold a pedal bicycle which had the upper ends of the back stays telescoping into larger tubes in which were fitted spiral springs. A friend of mine has one of these machines, and says it is splendid for overcoming vibration; perhaps the Ariel Company or some of the other firms may build motorcycles next year with this arrangement. I should fancy it would be welcomed by many riders. By the way, I wish "Magneto" would act up to his name and ride a machine with magneto ignition, and give his experiences thereof in the columns of "THE MOTOR." Machines fitted with magneto ignition seem from all accounts to be so much more reliable and to give so much less trouble than those fitted with the coil and accumulator system.—Yours faithfully,

"PRO-MAGNETO."

Anti-Vibrators.

Sir,—Respecting anti-vibrating devices for motor-bicycles, in my opinion some of the points to be kept in view are as follows:—No slides are admissible; they never can be effectively covered up from the dust which cuts and abrades the surfaces. Any rocking motions must be such that no lubricated surface is alternately exposed and then called upon to serve as a frictional surface. Springs alone unguided never can be successful on any single tracker or on the centre wheel of a tricycle, as they admit of the wheel rolling over sideways. In light cars where flat springs are used, they must be long to be effective; no light car should have springs less than 80 centimetres long by 50 millimetres broad. For motor-bicycles the problem is to have the vertical relative motions guided so as to work truly in the vertical planes and never give way sideways, have no slides, have no bearing shackle or joint that can ever wear shaky or seize, and above all a safety clause whereby, should a spring break, the rider can get home safely all the same.—Yours faithfully, "M.I.M.E."

An Effective Remedy.

Sir,—I feel that I must convey through you my thanks to "J.V." re his tip to "Humber" riders which appeared in your issue of October 28th. I lately purchased a Humber motor-bicycle, and experienced the most heart-rending struggles to start it during my first day's run. However, I remembered "J.V.," and, having examined the exhaust stem and tappet I came to the conclusion that my machine was suffering from the same malady as his. On my return home I promptly applied his remedy, with the result that, as in his case, "my trouble at once disappeared."—Yours faithfully, M.R.C.S.

How to Calm a Horse.

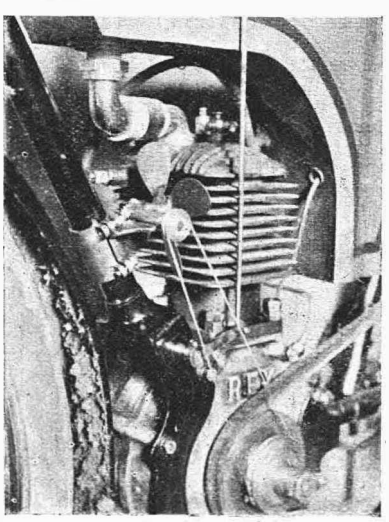
Sir,—Re your article in a recent "MOTOR" on "How to cure Motorphobia in a Horse," I have found it of very great assistance when passing a restive horse to speak to it from the car, and if any of your readers will try it they will invariably find it aids the driver considerably. Only recently I was approaching a large van horse (left quite unattended in the street) which turned round to run away immediately it saw the car approaching: I called out from the car "Whoa boy, Whoa!" and had the satisfaction of seeing the animal at once come to a standstill, and remain quiet. This simple plan averted what looked like being a very nasty accident.—Yours faithfully, H. B. SMITH.

Fan for Cooling Small Motor.

Sir,—I notice in "THE MOTOR," 28th October, a photo and letter dealing with a fan for cooling the engine of a small motor. I beg to forward you a photo of an invention of mine which I have had in working order on my Rex motor for the past four months. After experimenting I find that the best place to fix a fan is where the actual explosion takes place, so I have arranged mine in front of the engine so that it throws a draught of cold air all over the combustion chamber, and therefore, keeps the engine perfectly cool; it is driven by the pulley wheel of the engine and requires practically no power to drive. This arrangement is neat and in no way interferes with the other working parts of the motor.—Yours faithfully,

G. C. DIETZ.

48, Frith Street, Soho, London, W.



Illustrating letter from G. C. Dietz.

Police Trap near Ripley.

Sir,—Will you warn your readers that there is a well-arranged police trap just before entering Ripley, to which I fell a victim on a recent Sunday? The distance is a measured quarter-mile. A well-known police sergeant undertakes the duty of timing motorists, whilst a uniformed policeman stands in the village ready to catch his victims.—Yours faithfully, A.C.R.

A Riding Incident.

Sir,—Whilst out riding a fortnight ago, I was travelling at about 12 or 14 miles an hour, when without a moment's warning a troop of horses rushed out of a field. They had been behind a hedge, so I did not see them till I was almost on them. I could not possibly stop and, as I was certain to run into one or other of them, I ran to the side of the road, intending to run through an open gate into a field (as I thought), but on the other side of the gate a flooded sluice lay straight across, so of course I dashed in. The machine was completely under water, so as soon as I could I got out and "jacked" the machine up straight away. I was running on paraffin at the time, and expected to have a great deal of trouble to start up, but the machine (which is a "Coventry Eagle") started straight away without the slightest trouble. I have since had several runs, and have not had any trouble. I may say that the engine was not so powerful before as after the incident. The belt had just been dressed well with castor oil.—Yours faithfully, "A READER."

Fitting Outside Flywheel, Carburetter Notes, etc.

Sir,—I notice a correspondent in "THE MOTOR," of November 11th, who has had trouble with an outside fly-wheel working loose. I have had this happen on two occasions. The fly-wheel weighs 20lbs. and was fixed to a ⅜in. shaft by a cone and sunk key, and pulled up tight by a ½in. nut. In 100 miles the fly-wheel was three-eighths of an inch out of truth, the key was wearing a quarter round the shaft, and the shaft was bending. I turned a new cone and fitted a larger key, but this went in the same way. I have now entirely overcome the trouble by fitting the fly-wheel to the shaft with no key, but only a fine taper—namely, seven-eighths to three-fourths in one inch—and pulled up by a ½in. nut. Of course, I was obliged to have a new shaft made. Referring to the correspondence on "Surface v. Spray Carburetters," I consider they are at present practically equal, as each has advantages over the other. The surface can generally be throttled a great deal further than the spray and is certainly less liable to get out of order; but as petrol is getting heavier, and will evidently go on doing so, the surface must in time give place to the spray. One great advantage in the spray which seems to be overlooked is its ability to take paraffin. I find that I can run well on a mixture of 75 per cent. of paraffin and 25 per cent. of petrol, and start up all cold on it. I should not, however, advise anyone to run continuously on paraffin, as the cylinder head becomes carbonised after a time and this leads to overheating: but if one happens to run out of petrol, and has a spray carburetter, it is possible to get home on paraffin, which one could not do with a surface carburetter.—Yours faithfully, G. DE HAVILLAND.

Warming a Motor House.

Sir,—With reference to the enquiry made by "Frost" in a recent issue, if he chooses to empty the petrol out of the tank each time he houses the car, a "Tortoise" or any other coke or oil stove will answer; but the plan I have adopted, and recommend, is to fit in the front of the house an independent hot water boiler, such as the "Finsbury," with four-inch flow and return hot water pipes inside. This has the following advantages:—First cost, trifling; an amateur can fix it; takes up little space inside; fire outside, therefore no risk.—Yours faithfully,

EDW. C. WOOLLARD.

Sir,—In reply to "Frost" (Canterbury), in issue of November 25th, the following idea may not be practicable to an expert, but it seems to me that the lighting and heating of a car house might be done with an incandescent burner, whose whole air supply was drawn from the floor level, by fitting a zinc pipe under the burner. This would be so arranged as to allow no air to pass into the Bunsen burner, but what had come up the pipe from the floor. Would not this—if petrol vapour is heavier than air—serve to ventilate the floor, and would not the heat, if windows and doors were made fairly tight, keep the tanks are freezing? A gauze in the zinc pipe would prevent a lighting back of any vapour passing up.—Yours faithfully,

C.H.

Tips about Benz Cars.

Sir,—Seeing several letters of late in "THE MOTOR" on the above subject, I wish to remark that in my opinion the Benz engine has too much clearance when the piston is right back. I recently fixed a plate 1¼in. thick to the inside of the cylinder cover and improved the compression, increasing the force of explosion. I now think it would have been better to have made the plate even thicker, and it would have been possible to pull the flywheel over by hand. Care should be taken to leave a recess in the edge of such plate to communicate with the valve chamber, otherwise the opening would be blocked up. The Ratcliffe inlet valve opener has not been a marked success with me for some reason not yet discovered. "Gerard" points out that the inlet valve should not open until after the piston has discharged all the waste gases. This seems quite reasonable, but the makers of the Ratcliffe inlet valve opener state that the valve should be well open when the piston is at the end of its stroke and ready to draw in a charge. Which is correct? What do users of the mechanically operated inlet valve say as to their experience on this point? I should like to hear opinions on the following:—Is an advance spark apparatus of any advantage to Benz cars? I recently fitted one to mine and can get a much increased speed when running the engine alone and car standing; this may be useful for level road, but on hills the engine is soon pulled up and the spark has to be retarded. What is the usual size of the small driving pulley on the Benz engine? Mine is 5½ inches diameter, and drives the car about 6 m.p.h. Could I reduce this to 4½ inches for hill climbing? Would the belt not slip if I covered the pulley with leather?—Yours faithfully,

"ONE IN EIGHT."

Chain v. Belt.

Sir,—I should like to point out to Mr. G. E. Wilkes that, in my opinion, if his machine was fitted with a belt drive he would not have had to replace spokes in his back wheel, he would not be troubled so much with his tyres, and he would not be running the risk of side-slip every 50 miles—simply because the belt is a very much more flexible drive than the chain.—Yours faithfully,

A.B.

Sir,—Regarding the letter signed "M.I.M.E." in your issue of November 11th, I may say that in August last my brother and I bought one flat and one V belt from Messrs. Dick, of Queen Victoria Street, London, to fix on our 3 h.p. Rex and 2¾ h.p. Werner motorcycles, and have ridden every day since August, through all weathers, covering a distance of about 2,000 miles, and have never touched either the belts or fasteners. We get perfect transmission of power from the engine, and certainly, for our part, have no intention now of trying chain driving. We have frequently had trailers attached, with two passengers, and even under this strain the belts have neither slipped nor stretched. The belts are now in as good condition as when new.—Yours faithfully,

R. J. LISLES.

Motorcycling in Italy.

Sir,—Perhaps the following items of information may be useful to readers contemplating a trip to sunny Italy. In Italy motorcycles are under the law relating to pedal cycles, and there are no restrictions. Members of the Italian, French, Swiss and certain other Touring Clubs, and members of any recognised motoring Clubs can bring their motorcycles into Italy without depositing the customs duty, which, by the way, is the same for a motor-bicycle as for a pedal bicycle—viz., 42.60 francs (about 35s.) Those who do not belong to a recognised club, and have therefore to pay the duty, can recover it without difficulty when leaving Italy at any frontier station. My Phœnix Trimo was classed as a motorcar, and no persuasion could induce the officials to recognise it as a motorcycle. I had, therefore, to deposit 110 francs, which, however, will be refunded to me on obtaining a document from the Central Office of the Italian Touring Club of which I am a member, or when I re-export the motorcycle. The Trimo being classed as a motorcar, I have to obtain a driver's license which is not required of the owner of a motorcycle. It is not difficult or troublesome to obtain this license, and for motorcycling in France it is essential for all drivers of motorcars or cycles to possess one; so, as I shall be motoring in the French Riviera, it will be advisable for me to have a license. Petrol, called "essenza," is obtainable almost everywhere, and is generally better than Pratt's spirit. I find that the best is that called "touring benzina,' which is sold at fixed prices at depots of the Italian Touring Club all over Italy. Members of the club pay a reduced price for this petrol, which is in sealed tins and certified to be .680 in density. It is a very powerful spirit and economical in use, taking a tremendous amount of air to render it explosive. The price is 80 centimes a litre (roughly, 3s. a gallon), which is the usual price of petrol of other and inferior qualities. Tourists should obtain at the Custom House a "permission to circulate" for three months, at the end of which time the permission can be extended for another three months. A small fee is payable—generally 60 centimes. The roads on the Italian Riviera are distinctly bad, owing to the antiquated method adopted in repairing them. Metal is spread on the road and rolled lightly and then left to be pulverised by traffic! The result is a very bumpy surface. The rule of the road is puzzling in Italy, there being no general rule throughout the country.—Yours faithfully,

D. HERBERT.

The Non-slipping Pulley.

Sir,—With reference to Mr. E. Crawford's letter in your issue of November 25th, may I ask Mr. Crawford how he arrives at his figures of "8½ per cent. in extra vibration and wear, and that with a V shape pulley on back wheel the waste would be much greater, and the same applies to all belt gripping devices yet brought forward"? Mr. Crawford could never have seen a duplex pulley running, or he would have a far different idea about it, as my pulley is entirely different from any other kind of pulley used on motorcycles. Taking first the extra vibration, it is the chief feature of my patent pulley to do away with a large percentage of the vibration by automatically eliminating the impulse of the motor, which is still a defect with all ordinary cycle motors, whether belt or chain driven. The double winding of the belt tightens up at each impulse of the motor, and thus gives that elasticity required to take up the sudden shock of the motor; this is easily seen when the motor is running; the piece of belt which lies diagonally across the pulley can be seen to slip about 3-16ths of an inch towards the small diameter of the pulley at every impulse of the motor: this allows the belt to give in proportion to the power of the motor, and is one important point Mr. Crawford has overlooked. The V shape pulley on the back wheel does not make any difference with my pulley, as the waste friction which is present with all belt-driven motors is taken up on the engine pulley. I quite agree with what I take to be Mr. Crawford's idea that there must be a certain amount of belt slip with all ordinary belt-driven motors, and it was this fact alone which caused me to make a large number of experiments which ended in my introducing the patent pulley. As to the power wasted in friction, I have found from practical tests that I can get more power from a duplex pulley than from a V pulley and Lincona belt, which also theoretically appears quite clear when you consider that with a round belt running on a flat surface there is a very small amount of belt in contact with the pulley (taking ½ inch belt there would be from ¼ inch to ⅜ inch at the most if the belt was very soft), and this having to work down an inclined surface the power wasted in working the belt across the pulley is reduced considerably, and therefore, I claim, cannot be compared with ordinary pulleys. There are now 150 of these duplex pulleys running in the United Kingdom, and I constantly receive letters from persons who say they get more power transmitted from their motors than they did before with the ordinary pulley.—Yours faithfully,

F. BRITTAIN.

B23

Spray v. Surface.

Sir,—In answer to "O.P.V.'s" query re surface and spray carburetters, I may say that I have just done away with the surface carburetter on a Minerva 1¾ h.p. engine, and fitted a Longuemare type E, and the result is that up hills that actually could not be climbed before the machine will now run without any pedal assistance whatever, which I think shows some advantage for the spray over the surface carburetter.—Yours faithfully,

E. C. Armstead.

Sir,—I was glad to see in a recent issue Mr. F. Baker's letter re surface versus spray carburetters. For my own part I think spray carburetters more fashionable than useful on a small motor. For about two years I used an ordinary De Dion spray carburetter on my tricycle, having no trouble whatever; and I could almost guarantee an explosion at the first turn of the pedals: but as I wanted to be quite up-to-date, I purchased a Roubeau carburetter. This worked very well when it was adjusted to a nicety, and the weight of the petrol in the tank was exactly right for it; but it gave me a lot more trouble in starting, and on the whole was more troublesome and gave no increase of power, so I returned to my old surface carburetter again. About six months ago I purchased a Longuemare carburetter, this goes a great deal better when once started, but it is more troublesome to start, and I am troubled with flooding unless I turn my tap half off. I, of course, also use more petrol and cannot make the engine run nearly so slow when it is on the free position, and I have fully decided to again get rid of the spray and return to my old surface carburetter, which is reliability itself without trouble.—Yours faithfully,

"Surface Carburetter."

Motor Launches.

Sir,—The following information may be of some service to your correspondent Mr. J. F. Hastie, who enquires in a recent issue: (1) The motor should be of sufficient power to develop 1 b.h.p. at the propeller. If a specially designed marine motor of the two-stroke type is fitted (which I strongly advise), it should have a piston displacement of 3½ by 3½ inches. At 500 r.p.m. it will drive the 14ft. boat about 5¼ miles per hour. (2) These special marine motors can be purchased from several firms, whose addresses can be found in the columns of "The Yachtsman." (3) The retail price of the Palmer motor complete is now about £30. This price includes propeller, shaft, coil and battery, muffler, etc. (4) The work of installing is extremely simple, the chief difficulty being the correct alignment of the tail-shaft with the crank-shaft. I enclose a photo of a 16ft. boat I have designed specially for sea work. The beam is 5ft. 3in., which gives great stability in a seaway. It is fitted with a Truscott motor 1½ n.h.p., having a piston displacement of 4 by 4 inches. At a speed of 600 r.p.m. the power developed drives the boat, with four passengers aboard, at 6 knots per hour, equal to 7 statute miles. The sail area—100 square feet—is small, but sufficient for the purpose. The speed is astonishing for so short and beamy a boat, but this is accounted for by the sweetness of the lines and the clear run, giving the propeller solid water. I trust that your correspondent will not allow himself to be beguiled into fixing a car or cycle motor into his boat, or he will achieve nothing but disappointment. Marine practice calls for special methods. I shall be pleased to supply any further information if desired.—Yours faithfully,

"Motor Marine."

Launch Motor Details.

Sir,—In reply to J. F. Hastie's query, I would strongly advise him to write the Seal Marine Motor Co., Oilmill Lane, Hammersmith, for particulars of their engines. I had a 1½ h.p. engine three seasons, the first year driving an old ship's cutter 23 feet by 5 feet, and later a converted centre-board open boat 27 feet by 4 feet 6 inches, by 3 feet deep, draught 1 foot 6 inches aft. I was so pleased with the little engine that this season I purchased a double-cylinder 2½ h.p. engine from the same firm, which I have now in the latter craft; 1½ h.p. is the smallest size made of the Seal engine, and would drive the boat mentioned by your querist at at least 6 m.p.h. The Seal engine is simplicity itself to fix, and is unique in marine engines in that there is no circulating pump for cooling purposes. The cylinder is so low in the boat that it admits of a pipe conveying water and carrying the same off below the water line. The price of 1½ h.p. engine is about £33, weight 88 lbs, height 14 inches, breadth 14 inches, length 13 inches.—Yours faithfully,

"Trent."

Novel Fore-Carriage: an Enquiry.

Sir,—I read with great interest the description of "A Novel Fore-carriage" by "E.R.C." in a recent issue, and would be glad if your contributor would kindly say if he has had any trouble with the long chain from countershaft to back wheel, as I should think it would be very liable to jump the cogs if at all slack. I have been thinking of adopting a direct chain drive on my Rex, but have been deterred by the thought that the distance from the engine pulley to the back wheel (2ft. 9in.) is too great for a satisfactory drive, and I do not want to fit a countershaft if it can be avoided. I may say that I have driven my Rex with fore-carriage many hundreds of miles over hilly roads, and never had the least trouble with the engine overheating.—Yours faithfully, Wm. H. Jack.

46, Great James Street, Londonderry.

Fixing an Odometer.

Sir,—I found that the odometer as originally fitted to my Vauxhall car would not act properly, and I am told this is a common experience. The failure arises partly from weak plates, but mainly from its being placed too far from the centre of the wheel, and thus making the blows too severe. I have now fixed the striker (with strong iron plates and four screws) right back on the rim of the hub. I have also filed the striker to a half-moon section, so that it gets more clearance, and engages the tooth as high up as possible. To allow of this setting back, I cut away the whole of the bell apparatus at the back of the odometer (an appurtenance of little real value). An almost daily journey of 5¾ miles is now recorded without more than a few yards variation. It would perhaps be an improvement to fix the striker by boring a hole for it in the rim of the hub.—Yours faithfully,

Kenly Green.

Overheating Troubles.

Sir,—I would like to say in reference to the above subject that everyone does not want the trouble of being constantly worried by the thought that the engine is overheating, which, in my opinion, must certainly happen with an air-cooled engine of sufficient strength to drive a fore-carriage; that is to say, if the motor is to do the work required of it. It is all very well to write and say that a 3½ h.p. air-cooled fore-carriage took two people 1,000 miles or so without overheating. I do not doubt that the machine mentioned in a previous article on this subject did the good work claimed for it, but one must remember it was driven by an expert, and if this machine had been driven by an ordinary motorist it is very probable such a good result would not have been recorded. I have driven my 3½ h.p. air-cooled "King Two Car" over the hilliest parts of Surrey, two of us on board, doing upwards of 1,000 miles: the machine went splendidly, but there were times when the engine did overheat, in spite of the most careful manipulation of the throttle, and when this happens on a hill one wonders why something has not been done to obviate the difficulty. Why should the motoring community have to put up with this unnecessary bother (and waste of energy) when water-cooling will obviate the difficulty?—Yours faithfully,

H.H.H.

Explosion of Surface Carburetter.

Sir,—I have read with interest the items on the merits of surface and spray carburetters lately appearing in your paper; I have only had experience with the surface, with which I had not the slightest trouble as regards supplying the engine with vapour, but I have had an experience which I do not care to have repeated. I was starting away from home on my 1¾ h.p. Minerva machine, petrol tanks just filled up, pedalling down a slight incline, compression tap open, throttle and air taps half open, spark retarded to full, motor firing regularly. I put my hand down to close the compression tap when a terrific explosion took place in the carburetter, which burst the sides and bottom out, scorched my hand and petrol flew out all over my legs and saturated my clothes. Luckily for me the explosion did not fire the petrol and the engine and silencer were nearly cold, or I might have been badly burnt, and no doubt my machine also burnt up. I suppose the inlet valve did not close and the flame from the explosion in the cylinder travelled up the inlet tube and into the carburetter—there are several layers of gauze in the inlet tube just below the throttle tap. I should be glad to hear whether any of your readers have had a similar experience, and whether there should be anything more than the gauze in the inlet tube. Perhaps Mr. Hooydonk might tell us if in his experience he has heard of the same mishap happening to anyone else.—Yours faithfully, J.H.W.

[We should say the accident was most probably the result of a weak inlet spring. It is not impossible for an explosion to occur in the supply pipe from a spray carburetter and rip it up, although with a surface carburetter there is the reservoir of gas and air to blow up. If the gauzes are not a tight fit on the rings the flame will get through.—Ed.]

Efficiency of Various Forms of Transmission.

Sir,—Now that the question of power transmission is again receiving attention, it would be interesting to hear opinions as to what is the relative mechanical efficiency of the following methods of driving, as nearly as possible:—1, flat belt (as used on 1903 Werner); 2, twisted rawhide belt on V pulley; 3, V belt on V pulley; 4, single chain (as on low power Jehu); 5, double chain (as on Humber); 6, direct gear (as on Singer); 7, epicyclic gear as used for giving two speeds; 8, worm gear (as in Starley). Is there more loss of power in a double chain drive with the chains nearly at right angles—as in the Clement-Garrard—than when the chains are in the same line, as in the New Centaur? Perhaps some of your readers would give their views.—Yours faithfully,

F. ANTOINE ROSE.

A Cure for Slipping Belts: a Good Tip.

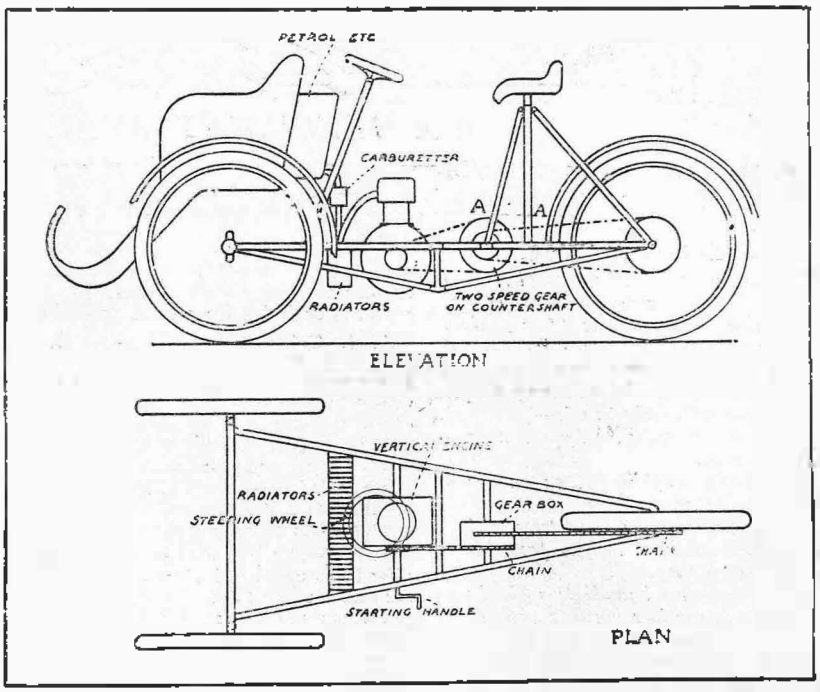
Sir,—I wonder how many motorcyclists are aware of the fact that the black, viscid fluid which separates out from burning india-rubber forms an absolutely perfect and infallible belt dressing? Ten years' experience of belt driving has convinced me that there is nothing in the world to equal it. It causes a slack or over-oiled belt to grip with astonishing power, and yet it has not sufficient tensile strength to cause the belt to strip or peel; and it never properly dries, but always remains slightly "tacky" to the touch. Let your readers try the following:—Take a piece of the best rubber obtainable (a few inches of an old inner tube answers admirably) set fire to it, and use it just like a stick of sealing wax. After it has burnt for about a minute blow out the flame and rub about half a teaspoonful of the fluid over the belt.—Yours faithfully,

Plymouth. W. H. SKINNER.

Free Engines and Clutches.

Sir,—Referring to the criticisms on free engines and clutches by your correspondent, Mr. B. H. Davies, we can only surmise that this gentleman has never had the pleasure of riding a machine fitted with an efficient free engine clutch, controlled from the handlebar. The objections he raises are really, in our opinion, of little moment. Take the first one, "that they are an additional complication." Is there any other improvement that is added to a motor-bicycle against which the same complaint cannot be raised? Secondly, "that they are necessarily small in diameter." Why should this be the case? We claim that ours is quite large enough for efficient transmission, as has been proved by practical tests on the road. We can understand his objection from the experience he seems to have had with a quad, but by means of an exhaust valve lifter being brought to his handlebar the speed of the motor when running light is easily controlled, so that there is no objectionable noise or racing when the clutch is thrown out. As to saying that "the ease of control in traffic gained by an exhaust valve lifter is equal to that of a clutch, we must totally object to this, and should like a competition with Mr. Davies driving a fore-carriage loaded slowly up-hill with a block of traffic, say, half-way up. We agree with him as to ten minutes' "coffee-grinding" as against 200 yards pedalling (if the man is such a fool as to do it); but when mounted a man does not like to dismount in the false hopes that the motor may fire; whereas, using a starting handle, he will stop turning directly he finds the motor does not start.—Yours faithfully,

CHARLES CLAYTON,
For the Jehu Motor Co.



Illustrating letter from F. J. Cleminson.

Light Car Design.

Sir,—You have done a very great deal during the past year to encourage and foster the light car movement in the columns of your excellent paper. As the result of this there are now a number of cars to be had at prices varying from £120 to £200. But I should imagine there are many people in my position—people who, having had experience of motorcycling from the two-wheel point of view, are now anxious to take another step in the craft. They can, perhaps, afford the capital outlay necessary for a small car, but shy at the possible expense of upkeep; or perhaps, like myself, are inclined to distrust anything under, say, £160 as being perhaps of rather flimsy construction, and not likely to be such a sound piece of work as, say, a standard motor-bicycle with a fore-carriage attached. The latter arrangement has in my opinion, however, one or two grave disadvantages: (1) The discomfort of the driver. (2) The absence of two speeds and water-cooling. (3) The presence of the unnecessary bicycle frame and pedals. (4) The absence of wheel steering. It is true that most, if not all, of these disadvantages are absent from a machine of the Century or Eagle tandem type, but I imagine that the weight of these types would mean their exclusion from the motorcycle class under the new regulations. Their price, moreover, is that of a small car, and their back wheels are hemmed in by an unnecessary number of chains. There thus appears to be a distinct opening for a carriage of the type shown in the sketch which I enclose, and which differs in several important features from that fashionable compromise, the bicycle and fore-carriage. Its main features are: (1) A 4 h.p. water-cooled M.M.C. engine. (2) A very large and extremely silent exhaust box. (3) Wheel steering and hand starting. (4) A comfortable seat for the driver, with rubber-covered boards (as in the Rex Tri-car) for his feet. (5) A two-speed gear mounted on a countershaft to which and from which the power could be transmitted by a Hans Renold chain: the gear could be of the new Phœnix type, but removed from the back wheel to the countershaft. The absence of pedals would allow the tubes from the extremities of the front axle to the back hub to be straight (see plan enclosed) instead of curved as in the Phœnix Trimo, and such a triangular frame would be more in accordance with good engineering practice than a curved one (see plan). The driver's seat would be mounted at the summit of a pyramid formed by (1) a pair of tubes (A A in drawing) joining the frame at the ends of the countershaft bar, so that with the countershaft bar they would form a triangle. (2) A pair of compression stays, exactly as in an ordinary bicycle, running from seat lug to back axle. The price of such a carriage should work out at £90 to £95, and the weight at 2¼ to 2½ cwt. As I feel sure I am not alone in my desire for some such cycle as I have attempted to describe, I trust you will find room for this letter in the excellent pages of your journal headed "Other People's Views."—Yours faithfully,

F. J. CLEMINSON.

*** *A large number of interesting letters on a variety of subjects have been held over through lack of space, and the Editor desires to inform those correspondents whose letters have not yet been published that they will appear as soon as possible.*—ED. "THE MOTOR."

OUR INFORMATION BUREAU.

SPECIAL NOTICE.

The Editor is at all times pleased to answer any queries put to him by the readers, or to receive correspondence from readers upon any motor topic. In consequence of the large number of letters received, however, he must insist upon the following simple rules being strictly adhered to :—

1. Plain writing. Type writing for preference.

2. All letters to be written on one side of the paper only.

3. Questions to be clear, terse, and to the point, without tedious preamble or needless flattery.

4. Should an immediate reply be required, an envelope must be enclosed bearing a penny stamp, and the name and full address of the sender. NOT a stamped undirected envelope.

G.J.D.—The particular type of machine you enquire about is not in very extensive demand, but we can say that both makes specified in your letter are good.

E. S. Hick (Reading).—You can obtain the celluloid cement from the County Chemical Co., Moor Street, Birmingham. It is supplied in 1s. tins, we believe.

H. P. Evans would be glad if any reader could give him the address of the English agent for a 5 h.p. car made by the Compagnie Francaise, Paris, as he wishes to obtain some new parts.

F. T. Harris (London, N.W.)—You can obtain the regulations from Eyre and Spottiswoode, see the paragraph in our last issue. A line to our advertisement department will bring you information on the other matter.

M.A.P. (Sandy).—The 3 h.p. machine should suit you very well if you specify spring forks, N.A.B. spring pillar and Brooks' latest saddle. It would be better to have the 3 h.p., as you anticipate riding in hilly country.

Leakage of Petrol, etc.

W.E.J. (Bradford).—(1) The continual trickling of petrol along the supply pipe must be due either to a crack in the pipe itself, or else to the fact that the tap does not screw petrol-tight into the tank. The remedy in the first case is to solder the crack up; and in the second case to fit a good soft leather washer between the tap and its seating. (2) The continual ejection of smoke from the silencer looks as if your lubrication was excessive. If the smoke continues on a reduced supply of oil, we should say that the piston rings are slack. (3) The difference in power between the two identical machines could be accounted for by lack of compression or faulty carburation. (4) If the key-way in the pulley is worn, no amount of tightening of the nut on the end of the shaft will make it firm; the only remedy is either to fit a new pulley or have a new key-way made in the old one—although this may somewhat weaken the pulley.

F.G.C. (Chester).—The No. 2 car on your list would be the most suitable we think, under the circumstances. The extra power is desirable for a third passenger.

A. J. Oakes (Smethwick).—(1) E.I.C. coil and "Castle" accumulator. (2) Longuemare carburetter. (3) The power would be about 4½ h.p. (4) Overheating of the cylinder results in the engine being unable to take a full charge of gas. A small quantity may be drawn in, but this is expanded to such an extent that it fills up the gas space immediately, hence the charge is an exceedingly weak one.

C. E. Gentle (London).—(1) If the spark plug fouls up so quickly as you state you are either using too much oil, or your piston rings are slack. (2) If float is too heavy your only course is to get a new one; you cannot easily make it lighter. (3) The crank case does not require cleaning out with paraffin except about every 500 miles or so. It suffices to run off the used lubricating oil now and again. (4) There are any number of good plugs. The new "Davy" looks a good one from a non-fouling point of view. (5) A make and break contact if adjusted properly should give good results.

Loss of Power.

H. C. l'Anson writes:—I have a 1½ h.p. Minerva machine and have recently overhauled it, but now that I have it running again I find that it has very little power on hills, and a strong head wind is sufficient to so retard it that I have to use the pedals. The engine is set as nearly as can be in accordance with the article by "Magneto" in your issue of July 1st, No. 73, so that when the spark is retarded the piston has already begun its downward stroke. When the spark is retarded, how far should the piston have travelled after passing the dead-centre before the explosion should take place? Perhaps the engine is timed too fast. The piston rings are new and well fitted, also the pulley, and there is not any large amount of slip. I always use Carless' petrol, as it is a surface carburetter, but even when this is quite fresh there is no reserve of power. When going down grade, or with a wind behind on the flat, it runs well and the ignition is perfect. If I agitate the petrol I get a little more power.—The position the piston should be in when the spark is fully retarded should be a good third of the complete stroke. The timing should be set by the exhaust valve and not by the ignition cam. You may have too much lead on the exhaust; see that the valve just closes by the time the piston gets to the top of its stroke. The carburetter evidently is working sluggishly. Do you run off the stale spirit before starting? This is rather important in a surface carburetter. You do not say anything about the compression. It is possible this is not as good as it might be, especially as you have had new piston rings fitted. See that the head joints and valves are perfectly tight.

W. F. Laing (Leith).—The M.M.C. and De Dion engines are of the highest class both as regards efficiency, long life, and fine workmanship. Thanks for your appreciation of our efforts.

J. Quinlin (Liverpool).—(1) You can safely invest in the machine you specify (if a 1903 pattern). (2) You can have a Bowden valve lifter and circuit breaker fitted at an extra charge. (3) You can use a lower frame quite conveniently.

W.M. (Elwall).—(1) The total amount will be 25s. (2) Same as for a bicycle. (3) Eyre and Spottiswoode will supply publications about the new Act—see page 442, issue 95. (4) You will have to take out the same licence, etc., as any ordinary rider: there is no exemption made in the case of a machine being used to ride to and from business. This should be obvious to anyone.

J.T.B. (London).—We are pleased to hear that our diagnosis was satisfactory to you. The reason the original accumulator will not work the coil is most probably because it is "sulphated" up through neglect of charging, or else it is internally short circuited. If the vent plugs had got blocked up, the sides of the celluloid case would expand or bulge owing to the pressure exerted by the gases given off from the plates.

C. Green (Retford).—(1) The resistance of the secondary winding of the coil would be something between 400 to 500 ohms. (2) Voltage difficult to say exactly, 6,000 to 8,000 volts probably. (3) The usual form of condenser fitted on the primary circuit is made of waxed paper and tinfoil. (4) The spark will not jump anything like the same distance under compression, as it will in the air. Hence the necessity of bringing the spark points within 1-32nd of an inch.

Loss of Power.

A.H.A. (Boscombe) writes:—I have been riding a 2½ h.p. machine, and have been entirely satisfied with it till lately, but now, after it has been running two or three miles the engine seems to lose power and gradually stops. The engine is not overheated I may say. The carburetter is a Longuemare, apparently in good working order and clean, accumulator well charged, plug clean, and valves well ground-in. I have followed paragraphs in "Our Information Bureau" but have not come across a case similar to my own and shall be obliged if you can give me a hint as to what is the fault, and how it can be remedied. I may say I used my machine, with other members of the Cyclist Company, 4th V.B. Hants Regiment at this year's annual training as combatants, and our motor section was an object of great interest and spoken of very highly by the officers in command.—Scarcely enough detail to give an opinion. If it is not a case of overheating then look for loss of compression, failure of lubrication or stoppage of petrol supply.

"Wiring" (Streatham).—You can certainly utilise ordinary electric light flexible lead for the primary circuit if you wish. The insulation is good enough, but the drawback is that the wire strands are very thin, and not numerous, and easily break in consequence. The regular cable specially made for the purpose wears and looks much better.

"Friction" (Dublin).—We expect that your pulley groove has worn quite U shaped, and hence there is not an efficient grip of the belt. A slightly larger belt might improve matters; but your best plan would be to have a new pulley fitted, because you must have a sharp V groove to get the proper wedging action on the belt.

A.L. (Yoxhall).—(1) Your diagram of connections is correct. (2) The cylinder dimensions you specify should give 5 h.p. each easily. (3) Better not to have a right angle bend on your exhaust pipe, as it tends to throttle the exhaust. If you cannot avoid it keep the pipe as large in diameter as possible, and have plenty of space in the silencer.

"Compression Tap" (Dartford) writes:—Is it possible to fit a silencer over the compression tap of a 2 h.p. motor to minimise the sharp reports therefrom at starting?—Quite possible, and we know it has been done by fitting a miniature silencer on the tap. But the best way out of the difficulty is to plug up the compression hole and fit an exhaust valve lifter. The compression tap is not retained to any extent now on small motors.

W. Exell (Bristol).—You will not get good results with "B" spirit in the Wick carburetter: you require the lightest possible: we hear Carless' .680 is giving good results. Of course, if you have a Longuemare, or any other good spray, it will use any grade of spirit. The addition of paraffin in your present carburetter will make matters worse. It is not advisable and quite unnecessary to alter the compression space or the silencer.

Timing Gear.

A. Mackay (Malvern).—Proceed to set your timing gear as follows:—Put a piece of wire through the compression tap opening, and make a mark on it indicating the beginning and end of the stroke. Then set the large gear wheel in mesh with the small one so that the exhaust cam just commences to lift the valve by the time the piston has completed $\frac{7}{8}$ths of its down stroke; this you can easily judge by the position of the wire passing through the compression tap. It will be necessary to see that the amount of "lead" given to the exhaust is so ganged that the exhaust valve shuts dead on its seating before the piston has commenced to descend again on the inlet stroke. The setting of the ignition gear is simply a question of seeing that there is sufficient range of movement of the contact breaker to allow the spark to take place about 1$\frac{1}{2}$in. before the compression stroke is complete, and the same distance on the firing stroke. This will give the two extreme positions for advance and retard.

J. Joyce (Hastings).—Your wiring for a double accumulator is correct. The two negative wires from the accumulator are taken respectively one to each pole of the two-way switch.

E. A. Robinson (King's Heath).—(1) Explosion pressure may be 250 to 300 lbs. per square inch; exhaust 50 to 60 lbs. (2) The tensile strength of aluminium as given by the Aluminium Company's handbook is 37,000 lbs. per square inch.

A.W.D. (Bath).—There are numerous good books on electrical matters. One that is not too elementary is that written by Slingo and Brooker, and published by Longmans' Green. An elementary book is Jamieson's "Magnetism and Electricity," published by MacMillan; and there is Silvanus Thompson's well-known book by the same publishers.

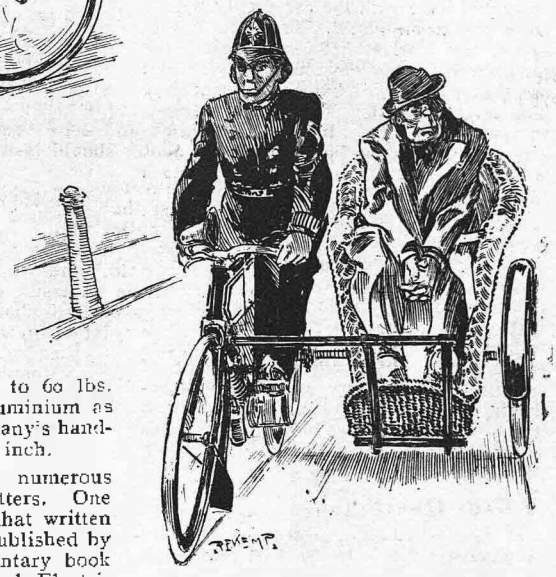
J. B. Milburn (Penrith).—The engine should certainly run better with the spray carburetter. Assuming that you have not disturbed the timing gear in any way and that the compression is strong, the fact that you get no power out of the motor shows that you cannot have the carburetter working properly. From what you say we think you have too much petrol coming through the spray and consequently giving an imperfect mixture.

"Interested" (Scredington). — The Minerva 3$\frac{1}{2}$ h.p. engine will suit you: it will fit the frame you mention. The Minerva Company would supply you with the complete set as you are in the trade. The smaller size coil and accumulator will work the larger engine just as well as it will the smaller one. (2) Much difference of opinion as to the possibility of using paraffin. The "Cremorne" carburetter, as supplied by the United Motor Industries, and the "Trusty" carburetter are about two of the best known that work with paraffin. There is no reason why a Longuemare should not act well.

S. Irwin (Tockington).—An addition of 15 to 20 per cent. of glycerine to the cooling water seems about the best to prevent freezing up. It is objectionable stuff to handle, however.

In reply to M. A. Burnby who enquired recently with respect to alteration of a launch friction gear.—The Addison Motor Co., 18 and 20, Addison Street, Liverpool, state that they are prepared to undertake this class of work.

A. Elce (Southborough).—(1) For a very hilly district a 3$\frac{1}{2}$ h.p. of the make you refer to should be suitable for trailer work. (2) Cubic contents are obtained as follows:—Square the diameter of the cylinder (bore in millimetres) and multiply by .7,854; this gives the piston area; then multiply this by the length of stroke.



Latent possibilities of the motor side-carriage. Developments of the cycling Petrol (pardon!) "Patrol."

W.L.W. (Birmingham).—We should make a close inspection of the contact ring: it is not improbable that the misfiring is due to a bad contact between the brass sector and the engine shaft. another reason may be that the coil trembler sticks now and again owing to insufficient tension on the spring.

"One H.P." (London).—We believe the Clement-Garrard 1$\frac{1}{2}$ h.p. is the smallest motor in extensive use. The bore is 55 mm. The smallest motor we have come across in our experience was the "Georgia Knap" 1 h.p. This had a bore of 50 mm. and stroke 50 mm.—about 2in. by 2in. The weight was 11$\frac{1}{2}$lbs.

Constructive Details.

T.W.E. (Doncaster).—(1) The combustion chamber walls can be 5-32nds thick: it will not do to have them too thick, otherwise the head will overheat. (2) A usual compression is 65lbs. per square inch. If you intend to use paraffin a higher compression would be an advantage; to get this the fly-wheel should be large and heavy in the rim. (3) Timing wheels may be 30 and 60 teeth. The greater the number of teeth for a given diameter, the finer the adjustment of the timing can be effected. (4) Personally we should much prefer a forged steel crank.

F.L.T. (Bedford).—The new regulations were fully dealt with on page 439 of issue 95.

W. H. Parr.—(1) The 3½ h.p. motor should prove powerful enough. (2) You could reasonably expect it to take a 1 in 10 gradient with a load of 25 stone. (3) The cooling system is quite satisfactory.

A. Shrimpton (Mitcham).—The figure 1.200 represents the density of the acid. You can purchase a small hydrometer from an accumulator maker. Sufficient acid—strong sulphuric—is added to the water till the hydrometer just sinks to the 1.200 mark. Approximately it consists of 1 part acid to 11 parts water.

"Jackson" (Hampstead).—If the carburetter you have is the original De Dion surface pattern we should say the difficulty you have with the car simply results from unsuitable petrol. Try some lighter spirit, say Carless' .680, and adjust the air chimney fairly close to the spirit and see that the hot air bye-pass is working. You really do not give us enough details to work on, but from the fact that the engine starts up again by agitating the float wire it would seem to be the carburation at fault.

G. F. Cook (Mansfield).—There should be little difficulty in disposing of a high-class non-trembler coil and contact breaker. There is always a demand for them at a reasonable figure; try our advertisement columns. Non-trembler coils cannot be made into trembler coils without going to a considerable amount of trouble: this difficulty was met by introducing the auto-trembler. We note that it is your opinion that hard inflated tyres undoubtedly are less inclined to skid than partly inflated tyres.

A Gear Question.

D.H. (Ospedaletti, Italy) writes:—In your answer No. 6 in the first paragraph of page 496 of your issue of the 1st July last you wrote that a three-inch diam. pulley is about the smallest that could reasonably be used with a V belt. Will you let me know whether in this case you measure the three inches from edge to edge of the pulley, or whether the measurement should be taken half-way down the groove? My reason for asking is that on my Phœnix Trimo, with 2½ h.p. Minerva engine, I have a four-inch pulley on the motor and a nineteen-inch pulley on the back wheel, outside measurements, and I find the gear, which works out to 1 to 4¾, is too high for hills. You recently recommended an enquirer to try a gear of 1 to 7 for a similar machine, but I cannot enlarge the belt rim, and I think that I should have no trouble on hills with a three-inch pulley, measured from edge to edge, if such a pulley would not be too small for grip, and would not injure the belt by too much bending or cause overheating.—The effective diameter of a three-inch pulley measured across the edges would only be about 2⅝ths inches—too small for an effective drive, even with a very flexible belt. The smallest size you can use is three inches, measured from centres of groove. Even with this diameter it would be necessary to keep the belt tight. It is possible that you could use a small diameter pulley of the Brittain type, and have a round belt. With careful driving there should be no trouble through the engine overheating.

Chauvesturis (London).—We can speak very favourably of the make of side-carriage you mention. It is quite safe, even when ridden without a passenger.

"No Name" (Aston).—The connections you mention are quite correct. It would, however, be an advantage to run a wire direct from the M terminal of coil to the switch. You are likely to get imperfect contact between the tank clips and the frame. (2) The Castle or P. and R. accumulator.

A.H. (Belfast).—Very likely the harsh running is the result of a defect in the lubrication, as you say. It may be that the cylinder bore has got cut up. It may improve if you give the engine plenty of oil. If not, take cylinder off and examine it.

V. Brown.—The cost of running a distance of 75 miles for petrol, electricity and lubricating oil should not exceed 1s. 6d. The parts of the motor that might wear out in a season and require replacing are exhaust valve, trembler blade and perhaps a new pulley and belt. The bearings on a good motor should last several seasons.

B.B. (Preston).—(1) If your driving pulley is less than three inches in diameter a jockey pulley running on ball bearings and fixed as near the driving pulley as possible would be necessary: it should be placed on the underside of the belt. (2) It is quite possible to charge a 4-volt battery from two large Bunsen primary cells by removing the series connection between each cell of the accumulator—not easy unless there are a double set of terminals—and joining them in parallel; that is, the two sets of positives and two sets of negatives together, forming practically one cell of them. Then when charged connect them back into series, and you will have your four volts. (3) Brass would not be a suitable material at all to use for an air-cooled cylinder. For one thing, the head and valve seatings would burn out, and it also expands much more than cast iron.

A Strange Experience.

J.G.C. (Grimsby) writes:—Having found some very useful tips in the correspondence part of your paper, could you or your readers help me in the following? The other day I was out with my brother on my 2¾ h.p. De Dion-Bouton quad, when the following astonishing incident happened: First of all a quantity of petrol was blown through the air pipe in the carburetter (surface); about eight miles further on the same thing occurred again, and the sides of the carburetter bulged out so much that a hole appeared, and the petrol naturally escaped, and we were in a fix for some time. Fortunately, we had plenty of petrol in the tank, and by taking a piece of cloth and tying it round we managed to drive the quad home, a distance of 15 miles. Can any of the readers of "THE MOTOR" inform me if they have had a similar experience?—It would appear to us that in the first instance a fire back into the tank had occurred, and blown the petrol up the air chimney. In the second case a regular explosion, or, at any rate, an ignition of petrol vapour, occurred in the tank and strained it. Fault at the inlet valve, we should say: either a weak spring, or the head has been hot enough to fire the charge before the valve closed.

W.F.C. (Stone).—The apparent loss of power may simply be the result of the spark advance not having enough range. As the machine has been overhauled it is very probable that the adjustment of the advance rod has been disturbed. The timing of the exhaust valve, you say, is quite accurate. The explanation of the motor knocking previously, when running uphill with the spark well forward, is simply that the firing was too early relative to the work on the motor, there not being sufficient energy in the fly-wheels to work against the initial pressure on the up-stroke.

ANSWERS BY POST.

In addition to answers appearing on these three pages the following correspondents have been replied to through the post:—

Thursday, Dec. 3rd.—E. J. Morling (London), W. E. Hackworth (Nottingham), J. Coy and Sons (March), J. A. Watson (London, S.W.), H. Gostling (Malvern), J. T. Lowe (Bedford), G. Piercy (Teddington), L. Vosper (Addington), W. H. Parr (Nottingham), G. Cheetham (Boarhills).

Friday, Dec. 4th.—Foster and Co. (Newry), H. Proud (Dublin), F. James (Exeter), G. Richardson (Liverpool), E. Goodbody (Limerick), J. Bowen (Hull), H. S. Smith (Maidstone), N. N. Haigh (Oldham), W. Urquhart (Forres), A. Mark (Beal), W. S. Mayles (Luton), Justin and Co. (Bristol), T. Travis (Manchester), A. J. Oakman (London), S. Featherstone (London).

Saturday, Dec. 5th.—G. F. Guthrie (Liverpool), C. Cumming (Trowbridge), H. G. Bardot (Dublin), W. Jacomb (St. Mary's), H. G. Boden (Sherborne), J. H. Barraclough (W. Hartlepool), R. C. Hawthorne (Granton), A. J. Oakes (Smethwick), C. Winterschladen (Middlesbro'), R. C. Chapman (St. Mary Cray), E. W. Winkle (Perry Bar), F. Davies (Reading), S. Wood (Wyvenhoe).

Monday, Dec 7th.—A. H. Abbott (Boscombe), W. C. Stewart (London), W. H. Delf (Beccles), L. T. Mallinson (Catford), A. Dunn (Workington), W. McGarry (Dublin), H. R. Henderson (Perth), T. Fletcher (Swinefleet), M. Stuart (Weybridge), T. G. Kelley (Desford Grange), A. C. Malin (London), A. E. Beattie (Dublin), K. Spensley (Chertsey), J. K. Entwisle (Liverpool), E. F. Spreckley (Sidcup).

AN EXPLANATION.

We are sorry that a delay of a few days in replying to a number of inquiries through the post is inevitable this week owing to the absence of the Editorial staff in consequence of the Paris Show. Will those correspondents who do not receive replies kindly note that this delay is unavoidable under the circumstances. Replies will be sent as soon as possible, and we trust that no inconvenience will be caused in the meantime.