PERFECTION IN ELECTRICS Good Roads

Carrying Capacity of Electric Cars is Now Almost Unlimited.

SCOPE FOR USE IS WIDENING

Weight of Battery is Reduced and Tire Problems Are Being Solved to Make These Popular.

Concomitant with the advances in electrical vehicles were the improvements wrought in storage batteries. The success drag: of the electrical vehicle depends almost skelusively upon the obtainable success of was settled in common for the several as used in vehicles of this class was refined in connection with street rallway and other work. In the early days, before the perfection of the chassis and the details of the electrical system, the problems were more diverse in their characteristics and far more difficult to solve.

The tire problem was more acute in connection with electrical vehicles because the weight of the battery mounted up to a considerable figure. In some of the earlier types of trucks it was not uncomn observe a weight of two tons in the battery alone. Gradual advances in battery construction resulted in a very material re duction in the total weight, and this reduction, in view of improvement wrought it. tires, resulted in the elimination of what winter are in much better shape to withwas long termed "impossibilities" in connection with the electrical vehicles. True there remains what is called the tire prob- of the roads is a critical time with them. but it has been reduced to a commercial basis, in that the electrical auto-mobiles do so much and such good work provement, but, if neglected, becomes a as to earn excellent returns on the investment, besides settling for tires and the remaining costs.

mobile the facilities for charging the bat- number of times and the care with which teries were so crude as to be indescribable. the drag is used:

A battery follows very well known and

1. First of all, the water standing in nificance of these laws, and every violation the traveled way to the side ditches. of any one of them carries with it a penalty. There was a time when experts in of evolving types of battery, less in point of the roadbed. of weight on the one hand, and of greater stability on the other. In the long run reliance was placed on the batteries as they are today, and when it was found that relief was to come by way of careful attention to details, rather than through the sides of the ditches will be smoothed down good office of some revolutionary inven-, and the center of the road will be built up,

Electrical Pleasure Automobiles. As a general proposition an electrical au- 5. By dragging the side ditches with the tomobile will carry the equal of its own drag bitched at an angle of more than weight. The motor equipment is of such a forty-five degrees the ditches can be character as to deliver the requisite torque cleaned of wash or dirt thrown down by under the most severe conditions of service. the front from overhanging banks and the An electrical delivery automobile, then, road gradually widened. will make headway on bad roads, up ster atively slow, they are sure. Because of this large measure be destroyed now. reliability, electrical vehicles lend them- 7. If the soil is just moist, each time the a new battery, plus a fair return, ere the much shorter time. battery wears out.

There is nothing that looks more pleas- reduce the dust in June, July, August and ing than a little "piano box" type of elec- September. trical runabout, picking its way through | 3. The action of the frost has put the soil busy streets or on boulevards, with a in such condition now that the two horses woman at the lever. These little cars are, will do the work of four a little later. perfectly simple to manage; they obtain a | 10. The waves and ruts can be taken out speed of from twelve to eighteen miles an of gravel roads now, and the material hour, and they rarely ever get out of order which has been forced toward the side if the batteries are managed by persons of ditches brought back onto the traveled way. fair skill. These cars can be handled by at- The wheels will do all the rolling neces most anyone at all, and in connection with sary. other automobiles in a well equipped gar- Il. By reversing the drags on hills and age they are extremely useful. There are throwing the earth moved from the center other types of electrical automobiles that of the road to the side ditches, deep and are well worth mentioning, as, for illus- dangerous ditches at the roadside may soon

landaulets and a type of cabriolet. Medical doctors, in their practice, espe- The responsibility for having the drag preciate comfortable and sure means of the town trustees and the road superin- Held at Chicago During Ninth Annual transportation. The first year that the tendents. brougham type of electrical automobile was Tile drainage on steep hillsides, or on introduced in the city of New York seven- flat, wet stretches of road where the in the extreme without defeating stability. Wide Range of Uses.

In private service the electric vehicle may be in divers forms. From the little car with the "plane box" body to the most luxurious type of the town car is a long way, and space forbids a detailed discussion. Moreover, the subject is well threshed out. Even so, it may not be far-fetched to say a word or two by the way of calling attention to the fact that in various ways consistent with the well known abilities of the particularly apparent during the spring 'electric" the service has been on the increase to a very great extent. From early class can remain in constant service, beginning with the safe and comfortable de. Good Protection for Eyes in All livery of the master of the house to his office in the morning, by which time madam protentious touring cars.

Cause of Short Circuit.

Easy to Make At Small Cost

Split Log Drag Goes Long Way Toward Solving the Problem of Road Work in Country.

The Iowa Highway commission, which has had a great deal of experience with the split-log drag, has issued a bulletin containing the following strong indorse ment of the benefits of the King split-log

The work of road maintenance in Iowa is largely confined to the care of earth the battery. The question of the chassis roads. Within the last two years the methods have undergone a complete change modes of automobiles. The electrical motor and the use of the split-log drag and other simple contrivances for this purpose has extended into every township and county of this state.

First, last and all the time the timely and liberal use of the road drag will pay bigger returns on the money invested than the use of any other road implement. This assertion, while apparently dogmatic, will appeal to those who know, as a good safe tule for the township trusees and road superintendents and street commissioners of the average lows town to adopt for 1010 and to put into force immediately. Much more can be accomplished during the pring and winter months than during the summer and fall months. The roads or which the drag has been used during the stand the succeeding wet and thawing weather. When the "frost is coming out The loose, moist condition, if taken adgreat sponge, ready to catch and retain the spring rains. The use of the drag now will accomplish the following results in In the early days of the electrical auto- a greater or less degree, depending on the

fixed chemical laws: it must be manipu- the ruts and depressions or running down lated by a man who appreciates the sig- ; the wheel tracks will be thrown out of

2. These ruts and depressions will be filled with moist earth, which in this-con this line worked continuously with the idea | dition will pack and become a solid part

3. The shoulders at each side will be built up where the traffic has flattened and slewed them into wide ditches. 4. Ridges which the wheels have formed between the center of the road and the tion, things looked up a bit and the bat- giving the water that falls on the traveled portion of the road an opportunity to ge

deep snow. They are not the road and side ditches waiting to grow vehicles for speed, and, while they are rel- into a mass of boxious weeds can in

selves to commercial work, especially to drag is used a thin layer will be added to heavy short hauls, and if they are used the traveled portion of the road, which wil continuously, as they should be, the bat- pack into any punt up a hard surface crust teries will serve best and earn for the under the traffic; if it is wel, the water owner of the car in every case the price of will be forced out, drying the road in a

8. Dragging in March, April and May will

tration, town cars as broughams, victorias, be filled and the grade of the whole hill lowered.

cially in the winter time, particularly ap- used has been fixed by the legislature on

ty-two doctors adopted this type of car for ground water stands at high level will supse in their service. Some of them com- plement the use of the road drag and prove plained that the cost was rather high, but a splendid investment. Such places as none of them made complaint because their these will show up as being particularly Uniform Laws are to Be Discussed radius of travel was increased and their bad, and will remain wet long after the zone of activity brought them better re- roads in the vicinity have dried. A six turns. In the long run they tired of com- inch tile, sometimes only a few hundred plaining, but they stuck to the brougham, feet long, down one side of the road, if and, from all accounts, the quality of the properly laid, may prove sufficient to drain service was improved from year to year, the road; only extreme cases will require until today it represents much of all there two lines; \$65 to \$70 per 1.000 feet should lay is of sturdy, reliable service and comfort six-inch tile three feet deep, and 10 per cent to 20 per cent of the road funds of the average township could well be invested in tile drainage. This would amount to \$100 to \$200, which at the above figures would lay a considerable amount of tile. It would profit each township to select its road superintendent at once, if this has not already been done, and send him over the principal roads of the township to note the length and number of places that are badly in need of tile drainage, as these places will be

morning to late at night the cars of this DRIVERS BETTER USE GOGGLES

Kinds of Weather.

For various reasons a great many motorwill command the attention of the car for a lats never wear goggles. In the case of the on line of the Chicago, Rock Island & Pashopping expedition. In the afternoon the fair sex it is no doubt the disfigurement same car will be available for calls or a of their appearance which counts, and thence the Texas-Pacific & Western railroll on the "boulevard." unless it is that probably there are quite a few of the other ome social function intervenes. In the op- sex who are visio enough to let the same era season the car will be in much do- reason influence them. Some men make mand, in which service it has long riveted quits a boast of never requiring them, no the attention of autoists. The time was matter how fast the car may be traveling. when the service that a battery would or how dust-laden or otherwise unpleasant render did not permit of a schedule such the atmosphere. This neglect to wear gogas this. That time is past; the batteries gles is a great mistake, and one that canaw embedy the requisite qualities, which not help adversely affecting the eyesight ans very adequately proven recently when eventually. In winter there are the outa car of this class made a touring trip ting winds to guard against, which are from Colorado to New York under its own necessarily intensified by the speed of the nower over roads such as were long looked car when journeying against them. In upon as entangling propositions for even summer, too, the continual impinging on the eyebail of flust must have a very can Automobile association headquarters in will be available at the American Automobile if engine troubles suddenly develop durspite of washing the eyes, on returning ing the 1,000 certificates actually in hand
ing a rainstorm, or while traveling over from a niotor ride without having used before the validating can begin on Tuesmuddy roads, it is very probable that water Roggles, there are pieces of dirt which day morning. February 8, it is imperative or mid is short-circuiting the secondary remain and work out in nature's good that certificates be deposited as soon after slways taking a hill on the high speed, broken flexible connection. Breaks in the on top. Talcum or soapstone should then knowledge of the operation of the car. current. This is especially liable to happen on a distributor system which is not that the eyes have been singled out for The holders of tickets will be entitled motor of requires the car to go too fast

1/1000 OF AN INCH Is the Standard of Measurement in the



It may surprise you to know that even the costliest cars fall short of that fineness of measurement in the component parts upon which the operation and the life of the car are wholly dependent

What is the peculiar quality in any motor car for which you pay \$5,000 or \$6,000?

It is not reputation—no matter how fine that a reputation may be; because no reputation could be worth \$2,000 or \$3,000 to each. purchaser.

It is not mere external elegance.

It is a definite, concrete excellence, for which the maker is justified, in a sense, in charging.

You pay \$5,000 or \$6,000 for running qualities—and an element of longevity which no car of lesser price, save the Cadillac,

Those running qualities and that longevity are in turn directly dependent upon the accuracy with which more than 100 essential

parts are made and the perfect alignment resulting therefrom. Your \$5,000 car (or your Cadillac) runs more smoothly and lasts longer, because of the time, the care, the money and the expert workmanship expended in eliminating friction by producing between those hundred or more vital parts a fineness of fit which no eye can measure and no words describe.

And this leads to the disclosure of the utmost concern to every automobile owner.

In the production of more than ten thousand Cadillac "Thirtys" in the past fifteen months it has been demonstrated beyond peradventure that in this element of synchronization, harmony, fit and elimination of friction, the Cadillac standard has not been attained by any other plant or any other car.

FURNISHED AS TOURING CAR, DEMI-TONNEAU OR GENTLEMAN'S ROADSTER

CADILLAC MOTOR CAR CO.

Thus, the one element which justifies a \$5,000 or \$6,000 price is present to a higher degree in the Cadillac than in any other car in the world.

In the Cadillac there are 112 parts which are accurate to the onethousandth of an inch.

Thus-as a single illustration-the Cadillac "Thirty" piston is made to work perfectly within the cylinder bore, which is 41/4 inches. To gauge the accuracy of the piston diameter, two snap gauges are used. These snap gauges are shaped similar to the letter "U". The distance across the opening of one gauge is 4.248 (four inches and 248 one-thousandths of an inch) and is marked "Go." The other is 4.247 (one-thousandth of an inch less) and is Marked "Not Go."

The "4.248 Go" gauge must slip over the lower end of the piston, but the "4.247 Not Go" gauge must not. If the piston is so large that the "Go" gauge will not slip over it, the piston is ground until it does. If the piston is small enough to permit the "Not Go" gauge to slip over, it is discarded as imperfect.

Crank shafts, cylinders, pistons, gears-scores of essential Cadillae "Thirty" parts—are rigidly subjected to the scrupulous test of 1-1000 of an inch accuracy.

Not \$5,000 or \$6,000 can buy you the magnificent assurance of smooth, velvety operation and long life obtained in every Cadillac at \$1,600.

> The great Cadillac factory in Detroit is always open to visitors; and it would be a pleasure to us to offer you verification of the interesting information contained herein by a trip through the plant at any time that you may be in this city

Four cylinder; 33 horse power; 3-speed sliding gear transmission, shaft drive.....

(F. O. B. Detroit). Including the following equipment: Magneto, Delco system four unit coil with controlling relay and dry batteries, one pair gas lamps and generator, one pair side oil lamps, one tail lamp, horn, set of tools, pump and tire repair kit, robe rail, tire irons.

Detroit, Mich

Members Association Licensed Automobile Manufacturers. Licensed under Selden Patent. R. R. KIMBALL, 2026 Farnam St., Omaha, Neb.

RATES FOR AUTO CONVENTION

Automobile Show.

GIVEN ON CERTIFICATE PLAN

Which Will Make Touring More Easy Between States in This Country.

A convention of the American Automs bile association, in which all automobilists are invited to participite, will be held in Chicago during the ninth annual automobile show of the National Association of Automobile Manufacturers, February 5 to 12

Provided 1,000 certificates are presented for validating, a fare and one-half will be granted to all automobilists attending the convention from the territory of the Trunk Line association and the Central Passenger association.

The territory of these two passenger associations includes the states of New York, Pennsylvania, New Jersey, Delaware, Maryland, District of Columbia, Virginia points on Chesapeake & Ohlo and Baltimore & Ohlo), West Virginia, Michigan (east of Lake Michigan), Indiana, cities of Louisville, Ky., and St. Louis, Mo., and stations in Illinois and points east of and road to Burlington, thence Mississippi river to Cairo, Ill.

American Automobile association inempoints outside of the territory herein de- way, first class fare, to the point at which fined, should purchase regular one-way or the certificate was issued. This reduc-

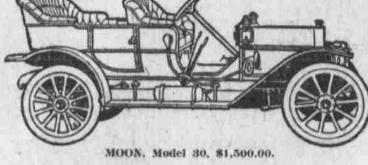
Tickets and certificates may be secured convention. not earlier than February 2, and not later than February 2. These tickets should be presented for validation at the Ameri- ment armory, and due notice of same damaging effect on the delicate mem- the First regiment armory on February & bile association headquarters in that buildbranes. When it is considered that, in 2, 16, 11. In view of the necessity of hav- ing, besides announcements in public print.

Mr. Prospective Purchaser!

In your automobile you want the maximum efficiency, speed and durability for the minimum price, don't you? Of course!

This 30 H. P. MOON, 4 CYLINDER, 41/4 in. x 5 in., at \$1,500, embodies the latest in design, workmanship and material. Call at our new garage, look the car over, test it and we will prove it to be the best car on the market for the price. Better even than most higher priced cars.

We are showing other good cars at different prices to suit your pocketbook and inclination.



32 H. P. PARRY, 4-Cyl. . . \$1,285. 45 H. P. MOON, 4-Cyl., 5-Pass. . \$3,000 50 H. P. AMERICAN TRAVELER . . \$4,000

Our storage facilities and repairing equipment are as good, if not better, than any in the west. Our new concrete and steel building insures your car against loss by fire. We invite inspection and our watchword is PROMPT SERVICE.

Mr. Agent! We want agents in unalloted territory, in Nebraska and Western Iowa.

Sweet-Edwards Automobile Co.

2052-2054 Farnam Street.

excursion tickets to the nearest point from tion can be secured by all members of the which a certificate reduction has been au- American Automobile association and althorised, and there purchase a one-way automobilists who attend the Chicago show ticket to Chicago and secure certificate. of the American Automobile association

vention will take place in the First regi-

Straining the Motor.

Little Things that Will Help the Worried Auto Owners

Horn troubles may be divided into three leads. The commonest is the presence of dust on the tongue of the reed. This is this tube, and to solder the union piece on instant'y remedied by passing a slip of to the cut end. thin paper under the reed-a cure that seems too simple to record, but many a motorist under these circumstances jumps Very many amateur motorists delight in curable by patching; and the third is a way, and then rolled up with the wires hand by an expert and examined as to his not realizing that this often strains a flexible tube are due to want of support, be freely sprinkled in the folds. well protected from splash, and a thorough cleaning will remedy the trouble, at least to go too fast the carried which, to say the cleaning will remedy the trouble, at least to go too fast and it is not the singlified of particles which, to say the up to and including Pebruary 16, to proup read over rough places that could be taken with less strain and slower on the lodgers.

The holders of tickets will be entitled motor or requires the car to go too fast and it is not the singlified over rough places that could be taken with less strain and slower on the lodgers.

When you want what you want what you want when his license at any time. These extreme taken with less strain and slower on the lodgers.

When sufficiently supported, the flexible may be rendered air-tight temporarily by Ad Columns.

from the repair outfit, and binding tightly with thread for an inch on each side of the break after which a piece of canvas should be wrapped over the rubber and tightly bound down. The first opportunity should then be taken to shorten the flex-

Care of Extra Tubes. Very careful attention should be given tween two different points of London. If to the conclusion that the tongue has lost to extra shoes and tubes, the latter is parits set, and begins to bend it about or pass ticular. When not in use they should be block or two he is not allowed the license, a knife blade under it, with the result that partially inflated and placed inside the but is given an opportunity to still study a new reed is required. The second trouble spare shoes. Extra tubes should be spread the map of the city. After this examinais a leaky or punctured bulb, generally upon a table with the valves spread half- tion is successfully passed he is taken in

and all automobilists residing at was made, at one-half of the regular one- SOLVING SOME HORN TROUBLES wrapping it in thin rubber sheeting taken DRIVER MUST KNOW HIS BUSINESS Strict Regulations for Motor Chauf-

feurs in Europe. It is not so easy to get a job as a chauffeur in London or Paris. Examinations there are very rigid and the chauffeur is required to pass two. The first one is for general knowledge of the city, and is given by the police department. The chauffeur is asked to name the most direct routs beregulations are very strict and the chauf-