# THE HORSELESS AGE

...EVERY WEDNESDAY...

Devoted to Motor Interests

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## THE HORSELESS AGE

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### Knowing the Law.

Many cases of violation of automobile provisions are a result of ignorance of the law on the part of automobile drivers. A man cannot obey the law without knowing what it requires. Automobile drivers are not likely to slow down to a speed of 10 miles an hour through a thickly built up section of the country if they are ignorant of the fact that the law demands this.

Of course, every man is presumed to know the law. He who has committed an offense cannot excuse himself because he is ignorant of the fact that his conduct in the particular case was illegal. An automobile driver who runs his car without displaying numbers, for example, cannot excuse himself on the ground that he did not know that the law prescribes the carrying of numbers.

Infractions of the speed law are always due to one of three causes: First, the automobile driver does not intend to obey the law; second, he does not know what the law commands in reference to speed; third, he knows what the law requires, but does not know when his machine is exceeding the speed limit.

Knowledge of the mechanical side of automobiling is required by all the automobile enactments in this country. One who wishes to operate an automobile is obliged to produce evidence to the effect that he is capable of running the machine. In many of the States, New York for instance, the automobile driver is granted a license as a matter of course upon the filling out and filing of certain formal statements. In other States an examination is required, and rather convincing evidence must be produced by the applicant in order to prove his proficiency in automobile operation. But are these mechanical requirements enough?

A good engineer may not be a good driver of a vehicle on the public highways. In fact, one may be an expert mechanic and at the same time not be a careful, prudent and intelligent driver. Almost all the accidents that have occurred have resulted from faults of steering and road management, and not from faults in the engine. Knowledge in reference to road management is highly important, it would seem, and this includes knowledge of the rules by which traffic on the highways is governed.

Every automobile operator should know and should be required to know the speed limits in the various places through which he may drive. He should also know what is required of him in reference to the carrying of lights, what he should do on meeting horses, and what he should have in reference to equipment. Upon all these matters he should be examined, and the granting of a license should depend not only on his knowledge of the mechanical side of the automobile, but his knowledge concerning everything which has to do with careful, proper and legal driving.

### Fad Chasing.

Nowadays, when some more or less radical departure is made in automobile construction, the occasion is seized upon by the press and often made much more of than the importance of the matter warrants. This not infrequently gives the reading public an entirely erroneous impression of the real tendencies in automobile construction. Among the subjects which have been widely discussed during the past two years, and frequently overrated as to their importance, may be mentioned six cylinder engines, alcohol fuel, removable rims, spring wheels, etc. Of course almost any innovation, if it possess any practical merit at all, will meet a demand for a time, especially if it represents a development in the direction of increased luxuriousness, in which line new ideas seem to be at a premium. The conservative manufacturer, however, will not be misled by any tempo-

rary demand for novelties which have not sufficient practical merit to successfully compete with the articles or forms of construction they are intended to replace. He may run the risk of being regarded behind the times by some of his customers, but if he considers new developments carefully to distinguish between fads and real advances in the art, he will profit by his policy in the end, and will do a great service to the industry at large, because nothing is more ruinous to an industry than fad chasing and its encouragement.

## Excessive Automobile Tolls.

Why should drivers of self propelled vehicles be compelled to meet a tax which the drivers of horse drawn vehicles are not required to pay? Is there any justice in charging the motorist more than the driver of an animal drawn carriage for the privilege of passing over a toll bridge or a toll road? Is there any reason for the discrimination?

That motorists are discriminated against in respect to the payment of bridge tolls and road tolls is a well known fact. Almost everywhere where the automobilist has occasion to pass over a toll bridge or a toll road, he finds that the schedule of rates is higher for automobiles than for ordinary wagons. The secretary of a toll bridge company recently informed one of our staff that his company established a higher rate for automobiles because ordinarily the automobilist "could be made to stand for it," notwithstanding the fact that the company realized that the pneumatic tired vehicle did not create as much wear and tear on the bridge as a carriage having metal tires on the wheels and heavy horses to do the hauling.

The discrimination against the automobilist is thus admitted to be intentional. In most cases toll bridges and toll roads are maintained and operated by corporations, and these corporations are quasi public, i. e., they carry on business which is devoted to the use of the public, and it may be asked what is the status of such a corporation and what are its rights in the matter of charging tolls, especially in discriminating against one class of vehicles.

Toll bridge and toll road companies, which occupy a status very similar to that of a street railroad corporation, are obliged to charge reasonable, and no more than reasonable, tolls for all who have occasion to use their facilities, and there is no authority to discriminate against any particular class of vehicles. On the contrary, a discrimination against one class of carriages, such, for instance, as automobiles, is absolutely illegal and may be prosecuted.

In many cases we find these excessive tolls charged at toll bridges spanning rivers and streams separating two States, and the discriminating tax is thus laid against interstate commerce, the only kind of traffic which goes over such bridges. The Federal Government, which has exclusive jurisdiction over interstate commerce, has the power to prohibit and prosecute the illegal, discriminating exaction of excessive tolls from the drivers of motor vehicles.

## Convict Labor in Road Building.

In the construction and maintenance of the proverbially fine highways of Continental European countries, which render these lands such fine fields for the operation of motor cars, a very large use is made of compulsory convict labor.

On account of the peculiar conditions which have existed and still exist over most of the United States, there has been very little use made of this kind of labor in this country. The common American practice, under which each town builds and maintains its own roads, and that other much abused custom which permits taxpayers to "work out their taxes," are very firmly entrenched. Since prisoners are usually in the custody of the county or the State, the towns have had, as a rule, no right to their labor.

At the present time the construction of main traveled highways is beginning to be undertaken by the State as a whole, or by the State in co-operation with the county and the town or towns through which the road passes.

It would seem that with the development of the State highway system might properly be inaugurated a free use of convict labor upon the highways of this country. As a matter of fact, however, the use of the labor of prisoners in building roads has been but tentatively initiated in any but the Southern States. Quite a considerable number of States have made small experimental beginnings in the employment of convict labor upon their highways, and Georgia, North Carolina, South Carolina and Texas have adopted the practice quite extensively, but the Northern States have done very little in this direction thus far. It has been a very common practice for a State to sell the labor of its prisoners to contractors, who employ the convicts in the production of some of the coarser classes of manufactured articles. Convict labor has thus been brought into competition with free labor, and considerable ill feeling has been engendered in industrial circles, while at the same time the contractors' profit on the labor has been lost to the State. It has often been hinted that clever politicians manipulated these contracts to their own marked advantage. An impression has prevailed that enforced labor of this kind, whether employed in road building or manufacturing, was necessarily inefficient, as compared with free labor, but recent figures which have been compiled seem to show that this is not the case, so far, at least, as road building is concerned. Assuming that the labor of convicts belongs to the State in which they are held, it would seem that the most obviously advantageous use of this labor must be in supplying the most crying need of the average State—that of good roads. When worked in gangs of suitable size, under competent overseers and subject to the direction of good road engineers, it would seem that convict labor should prove more valuable to the State than when used in any other manner.

It is rather to be expected that the small beginnings already made along this line will be greatly increased in the near future, and that a rapid increase in the mileage of good roads in this country will be the result.

A free discussion of this question in automobile circles cannot fail to prove of advantage.

## Need of Heating Garages.

Where automobiles are operated regularly or periodically during the winter months it is advisable to keep them in a heated house, as this greatly facilitates starting of the motor when the car is to be taken out, and renders any work around the car more congenial than if it must be done in zero temperature; in fact, the mechanism is much more likely to receive its proper attention if the motor house has a heating installation. On the other hand there is no advantage in keeping in a heated room a car that is laid up for the winter, provided the bright parts, tires, etc., are properly prepared for storage. Neither rubber nor metal suffers permanently from very low temperature, though the properties of these materials are temporarily affected thereby.

## The Motor Car in Manitoba.

By A. Emmett,
Secretary of Winnipeg Automobile Club.

Since the year 1902, when the late Professor Kenrick imported a three wheeled Knox runabout, the automobile business in Winnipeg has developed at a fairly rapid gait, but the past season has seen the largest increase, both in the number of cars sold and in the horse power of cars in use.

The manufacturers at present represented by cars are as follows: Cadillac, Oldsmobile, Marion, Franklin, Darracq, Frayer-Miller, Ford, Winton, Northern, General, Waverley Electric, Pope-Tribune, Premier, Wolseley, Siddeley, Holsman, Russell, Swift, Argyll and Panhard.

The greater number of cars are imported from the United States, the other countries represented being England and France, while the Russell at present is the only genuine Canadian car on the market.

McCulloch & Boswell, of Winnipeg, are, however, building an experimental car, which they hope to try out at an early date. It is driven by a four cylinder, 20 horse power, combination air and water cooled motor, the water system being connected in such a manner as to make it readily detachable during the winter months.

Purchasers of automobiles may be divided into two distinct classes, viz., those who buy the higher priced cars for merely pleasure purposes and those who buy them for business and pleasure combined. The latter class are in nearly all cases owners of either Cadillac Model M or the Oldsmobile 1905 runabout and the past season's light touring car.

The real estate agents are nearly all using a car for the purpose of conveying land seekers to view land offered for sale, and the use of the automobile for this purpose has considerably affected the volume of business in real estate. Should the difficulty of keeping cars in service in the winter be overcome many of the wealthier class would become owners of big cars.

At the present time there are no commercial vehicles in use in Winnipeg, and little effort has been made to introduce them, the only agents taking the matter up at all being McCulloch & Boswell, who have issued a pamphlet comparing the relative cost of the operation and maintenance of horse vehicles with horseless vehicles. There is a good field for an enterprising company who would be prepared to contract for the delivery of goods with motor delivery wagons, business men being willing to supply the traffic, although they will not venture their capital until satisfied by actual performances that the power wagon will do what is claimed for it.

Nearly 200 automobiles have been imported the past season. The agents are as follows:

McCulloch & Boswell—Darracq, Frayer-Miller, Holsman, Cadillac and Franklin.

Dominion Automobile Company—Ford, Pope-Toledo, Thomas, Premier, Pope-Tribune, Winton and Russell.

J. Maw & Co.—Oldsmobile, Marion, Reo.

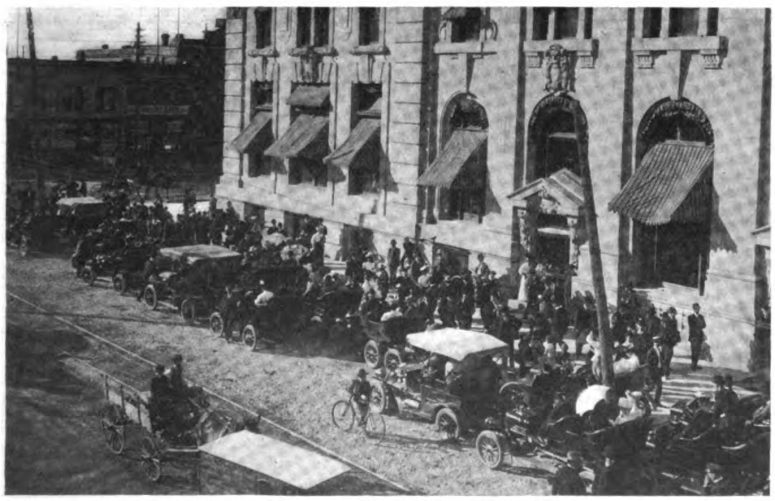
Northern Automobile Company—Northern and Wayne cars.

The two photographs reproduced herewith show the automobiles that were placed at the disposal of the members of the Manufacturers' Association on the occasion of their visit to Winnipeg September 19 last. The two illustrations taken together show all the cars drawn up in line near the Canadian Pacific Hotel.

Owing to the 35 per cent. duty, the price of cars is considerably higher than in the United States, and this tends to keep away buyers, who would not hesitate to purchase cars at the American price. The following are prices ruling: Cadillac, Model M, $1,300; Model K, $1,025; Model S, $2,400; Oldsmobile runabout, $850; Oldsmobile, Model T, $1,250; Oldsmobile, Model S, $2,500; Holsman, buggy, $1,250; Ford, four cylinder runabout, $750; Ford, six cylinder, $2,400; Russell, $1,300 to $3,200; Darracq, $2,750 to $4,200; Premier, $1,900 to $2,750; Franklin, $1,890 to $3,350; Frayer-Miller, $4,500; Pope-Tribune, $600; Winton K, $2,500; Marion, $2,500; Wayne, $1,350; Northern, $950 to $3,000.

Trading is principally done on a spot cash basis, as cars are shipped here with bill of lading attached for full amount of manufacturer's invoice. This, to a certain extent, cripples business, as agents do not care to carry heavy stocks without assistance of some sort from the manufacturers. A considerable amount of business has been done this year by trading cars for real estate, which can be

Motor Cars at the Canadian Pacific Hotel, Winnipeg.
Canadian Pacific Depot in Background.



Visit of Manufacturers' Association at Winnipeg.

readily turned into currency by mortgaging or giving as security against a bank loan. Dealers in some instances will in this manner get a far better price for their car in the long run.

Made roads are practically non-existent outside of the city limits of Winnipeg, but there are some fine prairie trails stretching away west for hundreds of miles. A good roads committee has been recently organized, with the object of improving the roads within a 20 mile radius of Winnipeg, and all classes are showing considerable interest in the movement.

Winnipeg is well equipped with repair stations, garages, etc., there being four garages and repair shops in the city. McCulloch & Boswell's garage has facilities for the storage of 150 cars and workshops for all kinds of repairs. The Dominion Auto Company have built a fine garage the past season. The Northern Auto Company and J. Maw & Co. have moderate garage room, but both firms are planning extensions for 1907.

Very little touring is done, owing to the short time the country has been opened up, which has not permitted of the issue of road maps or marking of routes by means of sign posts, etc.

The scenery is chiefly agricultural until some hundreds of miles west, when the beautiful Rocky Mountain scenery can be enjoyed.

The Winnipeg Automobile Club has an active membership nearing the hundred mark, and the club is doing its utmost to carry out a good roads program.

The laws governing automobiles within the city limits fix the legal speed at 12 miles an hour, and the police enforce the regulations very strictly. The police department have a Model K Winton, which is used as a patrol car for detecting offenders. Beyond the city limits no ordinances are at present in force, and cars go at practically whatever speed the roads will permit of.

## Development of the Rubber Industry.

The production of rubber is proceeding rapidly and intelligently in all parts of Ceylon. It is the most attractive industry on the island and promises the richest rewards. In 1865, when her coffee plantations went down before a disease that no one was able to check, Ceylon turned to rubber. The results surpassed expectations. Year after year the acreage assigned to rubber trees increased till it is now 75,000 or more acres. In 1900 there were 1,750 acres, yielding 7,300 pounds. These sold at $1 per pound. In 1905 there were 40,000 acres; the yield was 150,400 pounds, which were sold for $1.58 per pound. The 75,000 acres of today will doubtless yield a correspondingly larger amount, for which a correspondingly larger price will be paid. The Ceylon rubber, largely of the Para kind, contains 94 to 95 per cent. caoutchouc and loses only 1 per cent. in washing; hence its high price.

### RUBBER INCREASES IN PRICE.

The rise in price in recent years of Para rubber was rather remarkable. For example, it was $1.19 per pound in 1903, $1.42 in 1904. The rise in price in recent years of fine Para and plantation Para rubber is also worth noting. For example, fine was $1.16½ in 1903 and $1.28 to $1.29½ in 1906; plantation Para was $1.19 in 1903 and $1.43 to $1.45 in 1906. As it costs little either in care or in coin to cultivate rubber, Ceylon is taking to it kindly. The island is eminently suited both by soil and climate to its cultivation. The yield to each tree is about 2 pounds, and the trees run 120 to 150 to each acre, thus yielding from $300 to $450 an acre. Not only Ceylon but India, Burma, Java, Borneo and the Malay Peninsula are putting in rubber trees whenever possible, and usually the Para variety.

Consul General Michael calls attention to an exposition of rubber products to be held in Paradenya, three and a half hours by rail from Colombo, capital of Ceylon. It is the first strictly rubber exposition ever held anywhere. It would pay Americans interested in rubber, either as manufacturers or producers, to be present either in person or by representatives.

### DEVELOPMENT IN BRAZIL.

In connection with this subject it is interesting to note the work going on in Brazil's production of rubber, as reported by *Export*, a leading German trade journal. The writer thinks it is possible to push the rubber yielding plants, parasites and trees to the high position compared with their yields, qualitatively and quantitatively, in the past occupied by the sugar beet roots of today, compared with those of seventy-five or 100 years ago, when the beet root sugar began its wonderful career. There seems to be no good reason why careful selection, scientific planting, care in the choice of suitable sites for the rubber orchards, etc., should not yield as rich a harvest in rubber as similar efforts have secured in so many agricultural and horticultural lines. While admitting the tropics and sub-tropics as best suited to the production of the plants and trees that yield rubber, he sees no reason why a careful investigation may not hit upon plants or trees in the temperate zones where sap can be converted into rubber, sap which, if not chemically caoutchouc, is at least so like it as to serve the purpose to which caoutchouc is put.

### CULTIVATION IN JAMAICA.

A letter from Jamaica, printed in the London *Telegraph*, states that many banana planters in Jamaica are giving up the production of bananas and planting rubber trees. The writer of the letter, who set out rubber plants six years ago, has met with great success. He predicts that rubber cultivation will become large and profitable in Jamaica. He says that a friend of his in Costa Rica receives $45 a year from only five trees. Rubber trees are not easily affected by a hurricane, as is the case with bananas. The cultivation of rubber is expanding greatly in various countries, but the demand is constantly increasing.

### THE CEYLON PRODUCT.

The writer thinks the Ceylon rubber is superior to that of the Brazilian forests because of the better care bestowed upon it. Experts in Para say that the best soil for rubber is a loamy soil with rich humus, not swampy, but still subject to rich rain showers. To succeed best, they think the atmosphere of the rubber orchard should be warm and moist. It would seem as if parts of the Amazon country contained ideal conditions. And yet, the writer remarks, only a Raubban—a robber or wanton like gathering—is liable to go on in the Brazilian woods. This will yield large quantities as long as the primeval forest furnishes trees; but above a certain increase the yield will never pass. The poorer kinds of rubber are being cultivated in central and southern Brazil. If there is a large increase in the better and middling grades elsewhere the movement in Brazil may be seriously affected. At one time it furnished 75 per cent. of the world's total supply. This fell off to half. Still it has in its soil and climate the capacity to go up again to its former position.

The loss of its sugar trade, then of its raw cotton trade, and the recent falling off in receipts from coffee has led Brazil to look for a substitute for all these products.

This, she thinks, is to be found in rubber. From Maranhao, in the north, to San Calarnia, in the south, trees of the coarser or inferior kinds are being planted. These grades are increasing. In 1903 Brazil exported 662 tons of Maugabeira rubber, worth about $483,200, and of Marricoba rubber, 1,722 tons, worth $1,646,000. In 1904 she exported of these, respectively, 855 tons, worth about $762,000, and 2,216 tons, worth $2,330,000. At 83 cents for 2.2 pounds, raising rubber in Brazil does not pay, and that was the average price for the inferior grades. When the export tax of 23 per cent. of the market price is added, as it is in many provinces, plus all the other costs, raising rubber of the cheap grades is far from being what it might be or what it ought to be. The yield of Para in 1899-1900 was 9,957 tons, valued at $13,930,000, the yield for 1904-5 was 11,740 tons, valued at $16,849,725.

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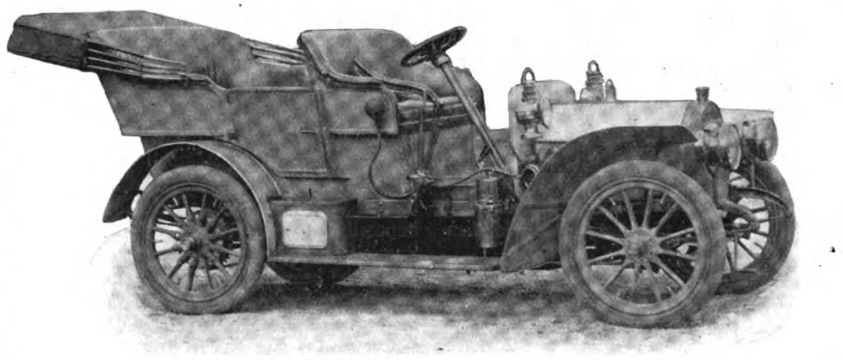
The death is reported from France of A. Herisson, professor of hydraulics at the Agronomical Institute of Bordeaux, France. He was the inventor of the friction clutch for automobiles named after him, and described in our columns about a year ago, and of a special brake system for making horse power tests of automobile motors on the frame or chassis. His death was the result of an automobile accident.

# NEW VEHICLES AND PARTS.

## Locomobile Changes for 1907.

The Locomobile Company of America, Bridgeport, Conn., are continuing for the coming season their two models known as Type E, of 20 horse power, and Type H, 35 horse power. These cars are both of equal workmanship and material. The features of the smaller car are practically the same in detail as those of the 35 horse power machine, which, however, is very much more luxurious in its body equipment, seating seven persons comfortably, all facing forward. This car is fitted with a four cylinder motor of 4½ inch bore by 5½ inch stroke, which, although rated at 35 horse power, is claimed to easily develop, driving a dynamo, 40 horse power. The wheel base is 120 inches, and the wheels are 34, using 4 inch front and 4½ inch rear tires. The change speed gear provides four forward and a reverse speed, and is of the selective type, with direct drive on the fourth speed. The side chain drive is retained as in their previous models. The springs are of the semi-elliptic type, those at the front being 2 inches wide and 40 inches long, while the rear springs are 2 inches wide by 50 inches in length. The smaller car has a motor of 3¾ inch bore by 4½ inch stroke, which is said to give over 21 horse power; the wheel base is 96 inches, with 32 inch wheels fitted with 4 inch tires. This car is equipped with a three speed sliding gear and double side chain drive. As in previous models, the make and break ignition from a low tension magneto is employed, 1907 being the fourth year of magneto ignition as a regular equipment. Perhaps one of the most marked changes, which is a deviation from their tradition, is the introduction in the 1907 models of annular ball bearings in the wheels and in many other places which previously have been fitted with plain bearings. The accompanying photograph shows the 1907 35 horse power model.

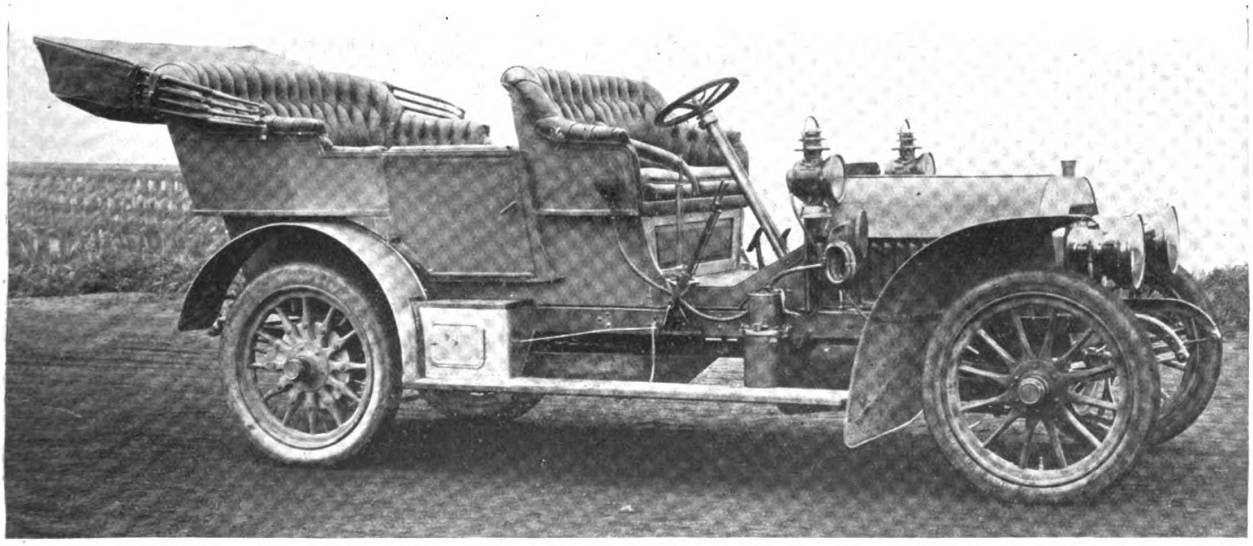


TWENTY HORSE POWER LOCOMOBILE, 1907 MODEL.

Much attention has always been given in this factory to tests, and one of the developments from this is a process of standardizing or equalizing the compression in all of the cylinders of their engines. The equalizing is accomplished by changing the form and distance of insertion of the new external hexagoned caps over the valves. This step has been taken as they realize the importance of equal compression in all four cylinders in obtaining a smooth running engine. Practically no changes have been made in the engine itself except that oil holes have been drilled through the crank pins with communicating holes to the surface of the pin, as shown in the accompanying drawing. Holes are also drilled into the edges of the crank webs so that the oil can be carried through the hole in the pin; no forced lubrication is employed at this place. The flywheel is now marked for facilitating valve setting, and a pointer is fastened to the rear cylinder. All the bearing surfaces are finished by grinding, including the cylinders and pistons.

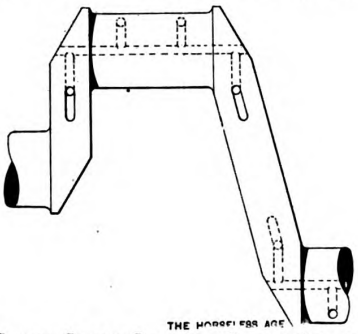
IGNITION.

The ignition system, which is of the make and break type, has been slightly altered in the design of some of the detail parts, such as the igniter. The parts of this igniter are shown in the accompanying photo, the upper portion being an external view of the mechanism showing the arm which is lifted from the outside by a vertical rod operated by the igniter cam, a spring being interposed so that when the contact points in the cylinder have touched they will be firmly pressed together without injury. In the middle portion of the photo is shown the inner end. The contact point is now a globule of iridium. This material is rather costly, but burns off very slowly, which obviates the necessity for frequent retiming of the engine, and the spark is very large and hot. Much difficulty was experienced



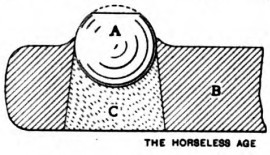
THIRTY-THIRTY-FIVE HORSE POWER LOCOMOBILE, 1907 MODEL.

in determining a suitable method for holding this globule. The accompanying sketch illustrates the method finally adopted. This is a drawing of the end of the movable electrode in which A is the globule of iridium which is forced into a taper hole in the piece B, and the space C back of the globule is filled with metal, while the surface of B around the globule is calked. The top, as shown by the dotted lines, is then



CRANK SHAFT SHOWING OILING SYSTEM.

ground flat. This method of retaining it has proven very satisfactory. The insulated electrode is shown at the bottom of the photograph just mentioned and is now made in the form of a brass tapered plug insulated at each end by a series of mica washers which are compactly drawn together. This has a taper fit into the cylinder and can therefore be drawn up perfectly gas-tight. In case oil in time works into the washers, it is simply necessary to leave it in gasoline over night and it will operate again as well as ever. This construction has been found much more satisfactory than the porcelain bushings previously used. The low tension magneto of their own manufacture remains practically unchanged, with the exception that ragboard insulation has taken the place of micanite cloth. This magneto, they claim has operated exceptionally well, as only one per cent. has ever been returned to them for their attention. The greatest of care has been exercised in the methods of insulating and preventing oil from getting on to the armature winding. The bearings are oiled by a vertical felt wick, the lower end of which is in a small oil chamber which can be filled from above, and is arranged with an overflow hole so that it is impossible to put too much oil into it. Special grooved washers are interposed between the bearings and the armature windings to throw off any excess oil which might work in that direction. Dust caps are provided at each end and an extra ground contact plug is also arranged at the end and spring pressed to make doubly sure of this contact. This magneto is held by a single band and nut, and it is further prevented from moving by four dowels which enter the base. This method of fastening allows of its easy removal. It rests on a support formed integrally with the forward arm of the crank case. The method of timing the ignition, as last year, consists of reciprocating the ignition cam shaft, the cams of which are integral and of a helical form, so that a slight longitudinal motion gives accurate variations in the timing. A special machine has been devised for duplicating these

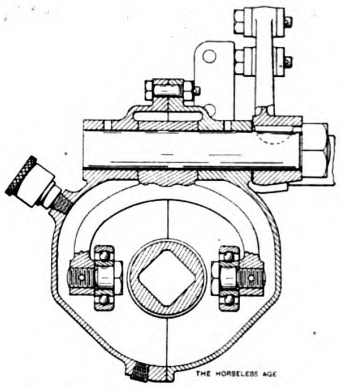



IRIDIUM CONTACT.

shafts, the surface of the cams of which is accurately ground.

LUBRICATION.

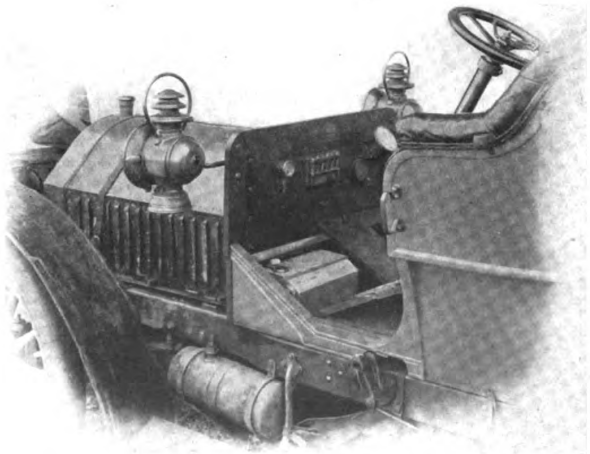
Splash lubrication is employed, the oil being forced from a large mechanical lubricator driven by a steel belt. This is located in a rather unusual but ap-



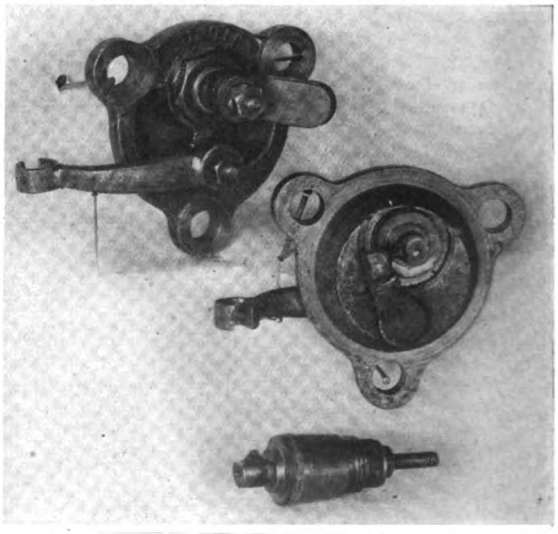
BALL BEARING CLUTCH ROCKER.

parently good position directly beneath the hinged floor boards to the rear of the dash, in which position it is protected. The oil is kept fluid by the heat of the exhaust pipe, the dash is less encumbered, and in filling and while running oil is not dripped over the dash and foot boards. A sight feed is placed on the dash and the oil is led to the engine crank case. The accompanying photograph of the rear of the dashboard shows the location of this oiler and the appearance of the dash, which, however, should also show an auxiliary hand force pump for supplying extra oil to the engine in cases of exceptionally heavy going. In the lower portion of the photo will be seen a small auxiliary oil tank which is provided on the large model. From this oil can be forced to the lubricator by air pressure created by a small hand pump.

The engine case, as well as that of the transmission, is, as in previous years, made of manganese bronze instead of aluminum. However, an aluminum pan is fitted for the oil; and the engine case for this year is made in two sections instead of three as previously, the upper section which supports the weight and takes the stresses be-



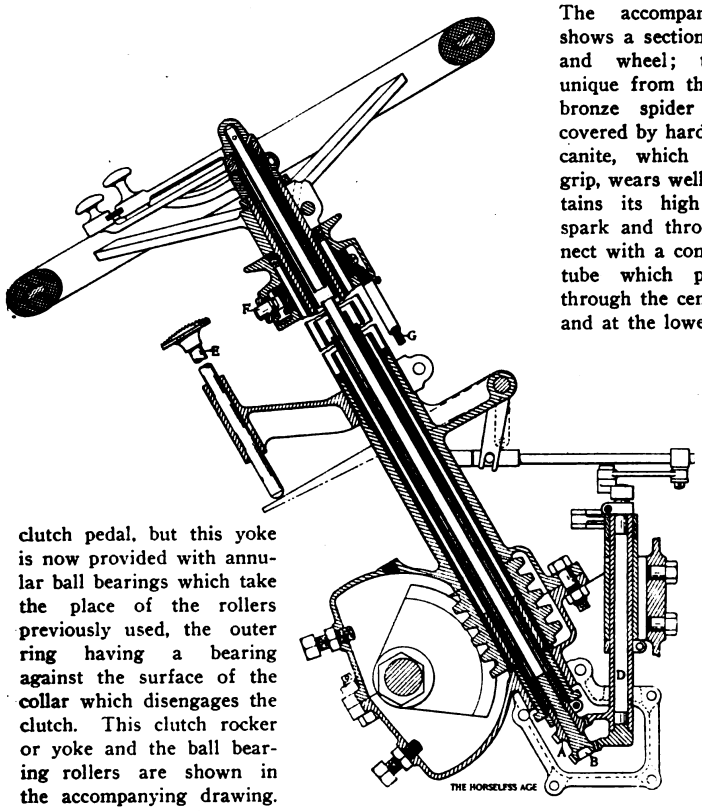
REAR VIEW OF DASH SHOWING LOCATION OF THE OILER.



LOCOMOBILE IGNITION PARTS.

ing manganese bronze. All the gears at the forward end of the engine are enclosed.

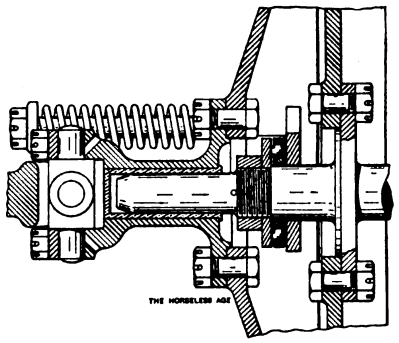
The leather faced cone clutch provided with spring pressed plates under the leather for insuring gradual engagement has been retained and is operated by the usual forked yoke connected to the cross shaft from the clutch pedal, but this yoke is now provided with annular ball bearings which take the place of the rollers previously used, the outer ring having a bearing against the surface of the collar which disengages the clutch. This clutch rocker or yoke and the ball bearing rollers are shown in the accompanying drawing. The entire mechanism runs in grease in a closed case.




STEERING COLUMN ASSEMBLY.

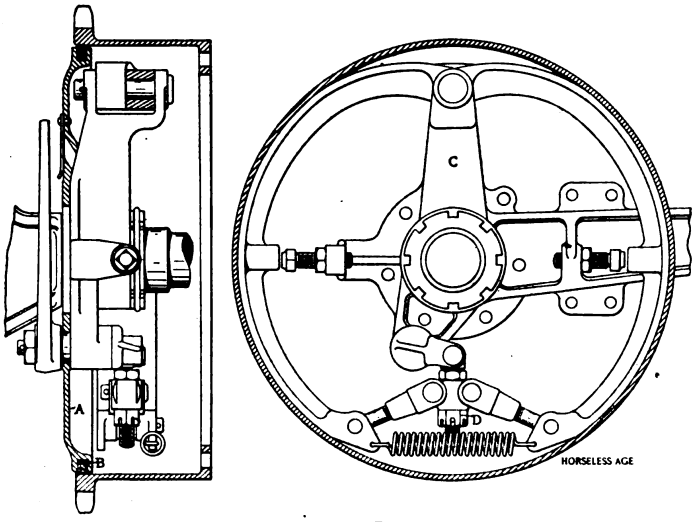
The two large universal joints have now been replaced by a small joint of their own design, as shown in the accompanying drawing in connection with a portion of the cone clutch. These joints are not unusual in construction, but are very much more compact than the device previously used. The change speed gearing remains the same as in the 1906 models. However, the gear shifting lever is now provided with a button release at the top in place of the former latch. The same arrangements have been made on the emergency brake lever, which has been changed to a pull instead of a push lever. This operates the expanding cast iron shoes against steel drums on the rear wheels. Some changes have been made in these brakes, as illustrated in the accompanying drawing. An aluminum dust shield, as shown in the end view at A, which is fitted with a ring of felt B, now completely closes the inner opening of the drum, making it dust and oil tight. This shield is riveted to an integral support on the radius rod, which is of manganese bronze. The support C for the pivot of the brake shoes is also integral with this radius rod. The brake is operated by a powerful toggle joint action which can be easily adjusted by the nut D. The running or foot operated brake, which is very broad, remains practically the same, but is now entirely independent of the clutch.

Several detail changes have been made in the steering column and control levers. The accompanying drawing shows a section of the column and wheel; this wheel is unique from the fact that the bronze spider is completely covered by hard rubber or vulcanite, which gives a good grip, wears well and always retains its high polish. The spark and throttle levers connect with a concentric rod and tube which pass downward through the centre of the post, and at the lower end are fitted with small bevel gears A and B which mesh with segments on a small vertical column D composed of another rod and tube; from the upper end of this column links connect with the sliding ignition cam shaft and throttle. Around the gears A and B a neat bronze case, as shown, has been provided which completely protects these delicate parts from dirt and undue wear. The governor arrangement enclosed in the aluminum case surrounding the two to one gears still controls the throttle independent of the setting of the steering wheel. An accelerator foot plunger E, however, throws out this governor and also acts independent of the wheel setting. For this purpose a long rod, to which the throttle valve is attached, passes through the carburetor. This has now been made in two pieces, the ends of which abut inside the carburetor. This construction does away with any chance of a binding action in the rod. The small helical springs on the auxiliary air inlet have been replaced by a large scroll spring similar in shape to the hair-spring of a watch; to the centre of this is joined the rod connected to the throttle valve. This arrangement throws very little work on the spring, which is very soft in its action and under the slight deflection which it takes in operation is practically unbreakable. Another innovation on the steering column consists in placing a cut-out button F, as shown, just below the steering wheel, by means of which it is possible to instantly cut off all ignition on the engine. The wire which runs to this device is shown at G and is encased in a neat brass tube.




UNIVERSAL JOINT AND PART OF CLUTCH.

Practically all of the little conveniences and time saving devices, such as the integral lugs cast on the cylinders to be used as a fulcrum for the tool when removing the valves, and the lever projecting from under the engine case which allows of




EMERGENCY BRAKE.

testing the oil level in the case without reaching under the car, etc., have been retained. A very neat oil can bracket has been devised and fastens to the front of the dash under the hood. This is arranged with a spring pressed yoke which grips the can around the neck and forcibly holds it in position on a pad on the seat of the bracket. The arrangement for the compression relief by means of sliding the cam shaft from the front of the car has also been retained, but is now arranged so that it can be locked in either the open or closed position.

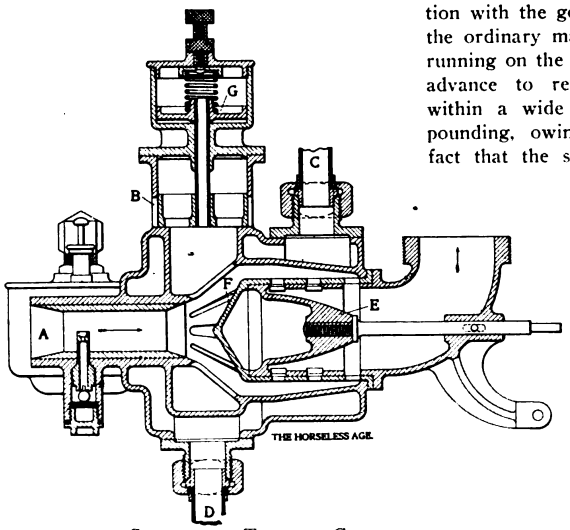
## 1907 Thomas Flyer.

The E. R. Thomas Motor Company, of Buffalo, N. Y., have made many detail changes for the coming season in connection with their model known as the Thomas Flyer. The general specifications of the car are as follows: The wheel base is 118 inches, with a 56½ inch tread. The wheels are fitted with 36x4 inch front and 36x5 inch rear tires. The engine is rated at 60 horse power at 1,400 revolutions per minute, and is 5¾ inch bore by 5½ inch stroke. A four speed and reverse sliding gear change speed is used, operated by a new type of gear shifting lever on the selective principle. The Atwater Kent spark generator operating with dry cells and also a Simms-Bosch high tension magneto are provided as the regular equipment. The same general body lines and finish are employed as formerly, so that the machine has lost none of its distinctive appearance.

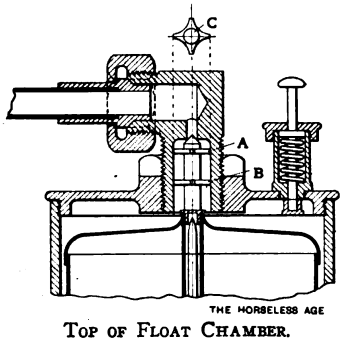
Although many changes have been made, the car is substantially the same as previous models, these changes being for greater ease and accuracy of adjustment and handling, very few being made which really affect the principle of the design.

### ENGINE CHANGES.

The engine, although if anything more powerful than before, is 80 pounds lighter. Part of this reduction in weight has been accomplished by reducing the cylinder and




SECTION OF THOMAS CARBURETOR.




TOP OF FLOAT CHAMBER.

piston length, and by some improved processes of machining other parts. All the gears at the forward end of the engine are now housed in a separate aluminum case and packed in grease. The belt driven fan arrangements have been superseded by a gear drive, which, however, is provided with a frictional device, so that no damage can be done by sudden shocks due to starting on the spark or from a back kick of the engine.

### IGNITION.

A complete double ignition system is now employed, two sets of plugs being used, one being placed over the inlet valves and connected to the Simms-Bosch high tension magneto, and the other placed in the sides of the inlet valve chambers and connected to the new Atwater Kent generator. These two systems are complete in themselves, but are so arranged as regards timing that if desired they can be operated in unison. The Atwater Kent device is placed on the dash, and its timer operated from the rear end of the pump shaft by a small vertical shaft provided with universal joints which comes up through the flooring into the bottom of the generator, thus making a very compact and unobtrusive mechanism which is protected by the floor boards. Current is furnished by a set of six No. 6 dry cells, and it is claimed that a very much greater mileage is obtained from these in connection with the generator than when used in the ordinary manner. It is possible while running on the magneto to allow the spark advance to remain practically stationary within a wide range without the engine pounding, owing to the timing and the fact that the spark increases in size and intensity with the speed, thus having within limits the effect of a spark advance. By this setting and arrangement it is possible to operate the car very satisfactorily at ordinary speeds by the throttle alone.

The Simms-Bosch magneto is mounted directly on a base integral with the forward crank case supporting arm, and driven by a small shaft containing a partial universal joint from the half time gears.

### WATER CIRCULATION.

The piping of the water circulation has also been somewhat modified. Instead of horizontal water pipes from the cylinder heads, they slope gradually upward toward the forward end, so that an easy and graceful connection is made to the radiator without introducing any sharp curves in the pipe. This construction was also more or less demanded on account of the lowering of the top of the engine, due to shortening the cylinders. The inlet pipes on the left side of the engine consist of one long pipe from which short smaller pipes run to each of the cylinder jackets near the lower side. This tube or header tends to equalize the feed.

### CRANK CASE ALTERATIONS.

The crank case has also been altered so that the upper half forms the main bearing caps, and the bearings are now held by bolts from the top of the case, and not by studs from the bottom as previously. As these are through bolts, there is no opportunity for stripping off the aluminum threads. The crank shaft runs on five liberal sized white brass bearings. The case has been enlarged so that it now contains the cam shaft which previously was enclosed in housings bolted to the outside. This shaft runs on four Hess-Bright and one bronze bearing at the rear end. The rocker arms for lifting the valves have been discontinued, and ordinary valve lifting rods carrying a hardened steel roller at the lower end are employed. The lower portion of these rods which work in the guides are greatly enlarged to give ample wearing surface, and are prevented from rotating by the extended ends of the roller's axle, which work in slots in the guide. The valves are three-eighth inch larger in diameter, and the tapered stems are increased in diameter. The valve spring retainers have been changed to a split collar which fits into a slot around the valve stem and is retained by a flanged washer upon which the spring rests.

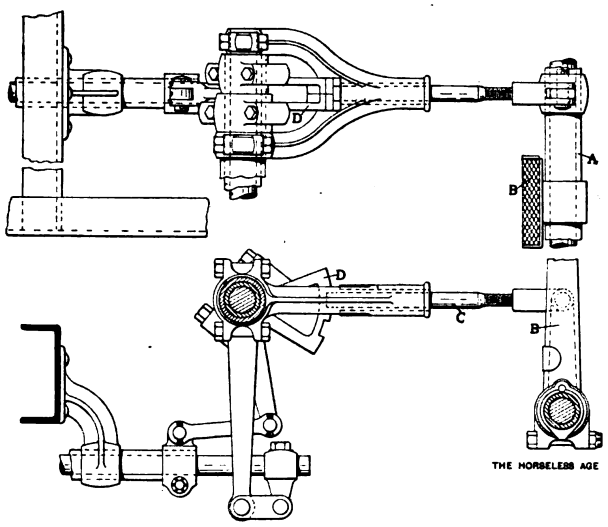
### OILING.

A McCord oiler, gear driven from the rear end of the intake cam shaft, is located on the dash. This is provided with six leads, one to each of the cylinders near the base, one to each compartment of the engine base, and the remaining one to the bevel gear fan drive. The case on each side forms an integral pan which protects the carburetor, pump, magneto, etc., above it from the dirt and splash of the road.

A small but important addition in connection with the engine is an arrangement of the exhaust cam shaft, so that by pulling a small lever at the front of the radiator the exhaust valves are held open, giving a compression relief, but as soon as the engine speeds up the shaft snaps back into position automatically.

### NEW CARBURETOR.

The company have developed a carburetor of their own for 1907, as shown in the




NEW INTERLOCKING DEVICE.

accompanying sectional drawing. At the left and rear, as seen in this view, is the float chamber with a gravity feed inlet pipe to the top. A special needle is used at this point, as shown in the small drawing of the upper portion of the float chamber. As will be seen this needle has two collars A and B, the shape of which is shown in the plan view at C; these act as guides so that the conical upper end must necessarily be in alignment with the inlet opening, and yet they do not offer bearing surface enough to be objectionable on account of friction. Referring again to the general section of the carburetor, the air is drawn in at the opening A and passes over the nozzle, the spray being carried against the roughened surface of the cone F, which aids in its vaporization. The sides or walls of this cylindrical piece, of which cone F forms the end, have rectangular slots, as shown, which can be made to coincide or not, as desired, with the cylindrical sliding throttle E, which is provided with similar openings, and the gas passes on to the engine as shown by the arrow. The slots in this valve are so arranged that a motion of three-eighth inch will give a full opening. In the upper portion of the carburetor an auxiliary piston air valve, which partially or completely coincides with the series of openings B and is connected with a dash pot piston G, is provided. The stem of this valve is hollow, so that the suction created in the carburetor communicates to the chamber in which the dash pot operates, thus producing a partial vacuum, so that the auxiliary valve is lifted and the air openings increased. This lift is against the action of a small adjustable spring in the chamber, as shown. It is claimed that tests show that the action of the auxiliary air valve is moderate and gradual, and that there is no fluttering, which is so common with many auxiliary air inlets. The entire carburetor is water jacketed, the circulating water passing in at C through the hollow walls and out at D, thus preventing freezing and keeping a uniform temperature, which militates for a better mixture.

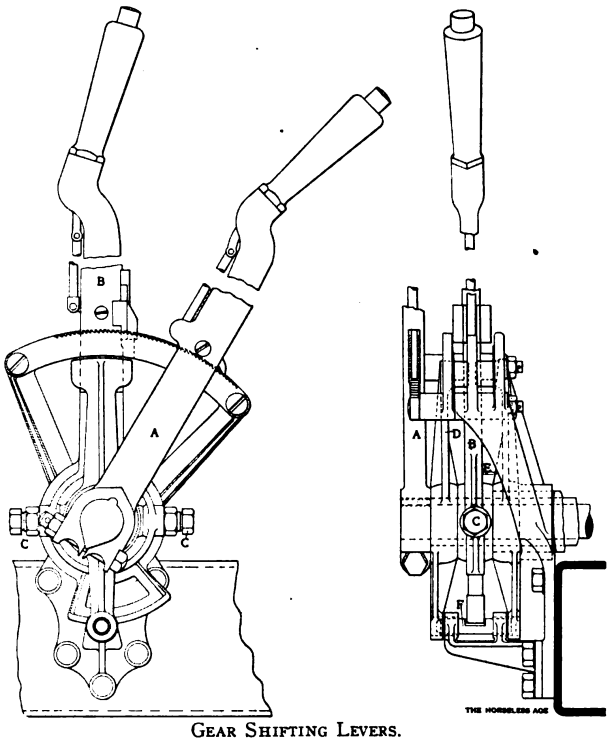
The change speed gears and case remain practically unaltered, but a new interlocking device, as shown in the accompanying drawing, has been arranged to be operated by the motion of the clutch pedal, so that stripping the gears will be impossible. The upper or plan view shows a portion of a cross shaft and sleeve A upon which the clutch pedal B is mounted. The motion of this pulls the rod C so that its end disengages from notches in an arc D, which is fast to a cross sleeve, from which arms are connected to the gear shifting rods. By this arrangement it is impossible to move the gear shifting rods, and therefore the gears, until the pin C has been released. The parts of this mechanism, as will be seen, are amply large, which insures sufficient strength.

GEAR SHIFTING LEVERS.

Several important changes have been made in the gear shifting levers, which, up to this time, operated on the Mercedes selective type. In the accompanying drawing two views of the levers, sector and portion of the frame are shown. The outer lever A operates the emergency brakes on the rear hubs, while lever B controls the gear shifting rod. This lever is pivoted on the bolts C C so that its upper end can be moved laterally. When moved in one direction it engages a short lever D so that its forward and backward motion gives two speeds, but when moved in the opposite direction it engages the lever E, whose forward and reverse motion in the same manner gives two more speeds. The lower end of the gear shifting lever B, as well as the lower ends of the levers D and E, is prolonged, so that the motion of lever B to one side shoots the pin F into a hole in the opposite short lever, thus completely locking it against any motion, so that when one is in use the other is locked. A thumb button is arranged at the top by means of which a latch is lifted when it is desired to mesh the reverse gear. This arrangement of levers gives a minimum motion and is very easy to operate.

The steering gear mechanism, which consists of a hardened worm and sector, is now provided with Timken roller bearings, one on each side of the sector, these taking the place of the bronze bushed bearings of last year. Several changes have been made in the running board, which is several inches wider at the forward and rear than previously, and is now provided with a dust and mud shield, which extends from the side of the frame to the inner edge of the step, thus preventing the mud from being thrown onto it. The box shaped guard over the forward sprockets on each side is now larger, so that the upper surface which is used as a step for the tonneau is considerably broader. While the general design of the frame remains unaltered, the front pressed steel cross member now forms a cradle in which the radiator rests instead of being supported on two small brackets as previously. The rear end of the front springs were formerly shackled to a special bracket riveted to the frame, but are now shackled directly to the frame itself, doing away with the bracket. These semi-elliptic springs are now 40 inches in length, while the rear are 52 inches in length and their forward ends are supported directly on the jack shaft hanger brackets.

In the 1906 model two sets of brakes, one internal and the other external, were applied directly to the rear wheel drums. In the 1907 the external brake remains on the rear drums, but the internal brake has been done away with and in its place contracting band




GEAR SHIFTING LEVERS.

brakes, operating directly on steel drums bolted to the forward sprockets on the jack shaft, are used. These bands are faced with leather, and are controlled by the side lever operating on the notched sector. The motion of the lever rotates a transverse shaft concentric with a tube which operates the pull rods to the rear hub brakes. Both brakes are operated through a single tree type of equalizer. This arrangement of the brakes now allows the ratchet and pawl mechanism used in place of a sprag to be placed on the inside of the rear brake drum, which in turn can be made much more compact, so that the radius rod now has a direct pull instead of being offset, as in last year's model, when it was fastened under the spring supports. This radius rod is now an I beam section forged from nickel steel.

All 1907 models will be fitted with a special double conical helix spring shock absorber. Four of these, one at each of the four springs, are used. One end is fastened pivotally to the axle and the other adjustably to the body. The end coils, it will be noticed, are much smaller in diameter than those near the middle, which gives the spring a progressive action; in other words, for very small motions, the middle portion only, which is extremely flexible, acts, but when any extreme motion takes place the central turns of the spring come in contact and the stiffer end portions begin to come into action, their stiffness increasing as the pressure increases. These springs are applied while in tension, or, in other words, when the body is unloaded the rear shock absorbers are exerting a downward pressure on the body which keeps it level, so that when loaded the spring is in a normal condition. The following figures show the action of the spring both under compression and on the rebound:

Compression Test.

| | | | | | |
|---|---|---|---|---|---|
| 80 | pounds | produces | ½ | inch | deflection. |
| 190 | " | " | 1 | " | " |
| 319 | " | " | 1½ | " | " |
| 487 | " | " | 2 | " | " |
| 711 | " | " | 2½ | " | " |
| 960 | " | " | 3 | " | " |

Rebound Test.

| | | | | | |
|---|---|---|---|---|---|
| 90 | pounds | produces | ½ | inch | deflection. |
| 195 | " | " | 1 | " | " |
| 305 | " | " | 1½ | " | " |

The gradual stiffening or increased carrying capacity of the spring is very clearly shown by this table. Note the difference of carrying capacity in pounds for a one-half inch deflection between one-half and 1 inch, which is 110 pounds, and between 2½ and 3 inches, which is 249 pounds. The same action is true on the rebound, but to a very much less degree.

## Premier 1907 Models.

The Premier 1907 line will consist of four models, practically the same chassis being used for all. Two will be continuations of Model L, the 1906 four cylinder, air cooled, shaft driven touring car. The new models will be practically the same, with the exception of the engine, which will be a four cylinder water cooled. The following description applies particularly to Premier 24, which is the water cooled touring car, but the runabout model is similar, except for such changes as are necessary to give a well balanced design with that type of body, such as longer hood, more inclined steering column, front axle moved forward beyond the radiator, etc.

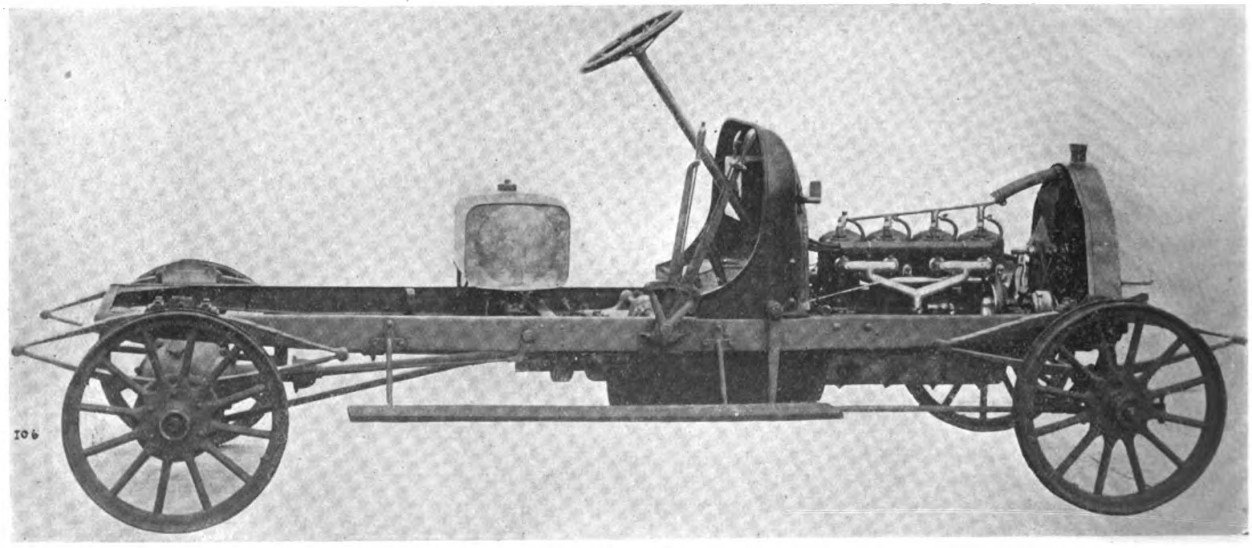
The motor is of 4¼ inch bore and 4¼ inch stroke. The cylinders are individual, with domed heads and large valves in pockets, the inlet and exhaust valves being opposite. The spark plugs are carried in screw caps over the inlet valves, while the exhaust valve caps contain the relief cocks. The crank case is similar to that used in 1906, the upper portion being of gray iron, the oil pan of aluminum, and four arms extending from the upper part to the frame sides to support the motor. The helical gears for driving the cam shafts are enclosed in a separate aluminum case, which also contains the rawhide pump driving gear.

The crank shaft is a drop forging, its bearing surface being ground and run in bushings of Cramp's white brass. The connecting rods are I section drop forgings. The lower end is bushed with white brass, and the piston end with phosphor bronze, as in 1906. The pistons have crowned heads and are fitted with four rings, three above and one below the wrist pin, as in 1906 models.

Drill rod is used for the cam shafts, and the hardened cams are secured by Woodruff keys and taper pins. The cooling water enters the cylinders just below the inlet valves, a little to one side, through a cast aluminum pipe flanged to the cylinders and to the outlet of the centrifugal pump. It returns to the top of the radiator through another flanged cast aluminum pipe connected to the centre of the cylinder heads, and a piece of rubber hose. The radiator is a Mayo honeycomb, and a ball bearing, belt driven fan supplies a forced draught of air.

The high tension wires are carried in a fibre tube, shown in the illustration. Current is supplied by a 6 volt, 60 ampere hour storage battery under the driver's seat, where is also carried the reserve equipment of four dry cells. A quadruple Splitdorf coil is mounted on the dash, and the timer is on a vertical shaft, gear driven from the rear end of the exhaust cam shaft. A multiple disc clutch is used, the same as in last year's Model L, but two more plates have been added, making nine, five of which are steel and slide on studs fastened to the flywheel, the other four being phosphor bronze and slipped over an extension of the change gear shaft. The change gear is a three speed and reverse selective type, fitted with annular ball bearings, as in Model L.

Steering is accomplished by a screw and nut gear acting on a lever hung outside the frame. The front axle is an I section drop forging instead of the manganese bronze casting formerly used. The rear axle is the same as used this season, the wheels running on roller bearings and the bevel driving gears on annular ball bearings. Two Spicer universal joints and a sliding



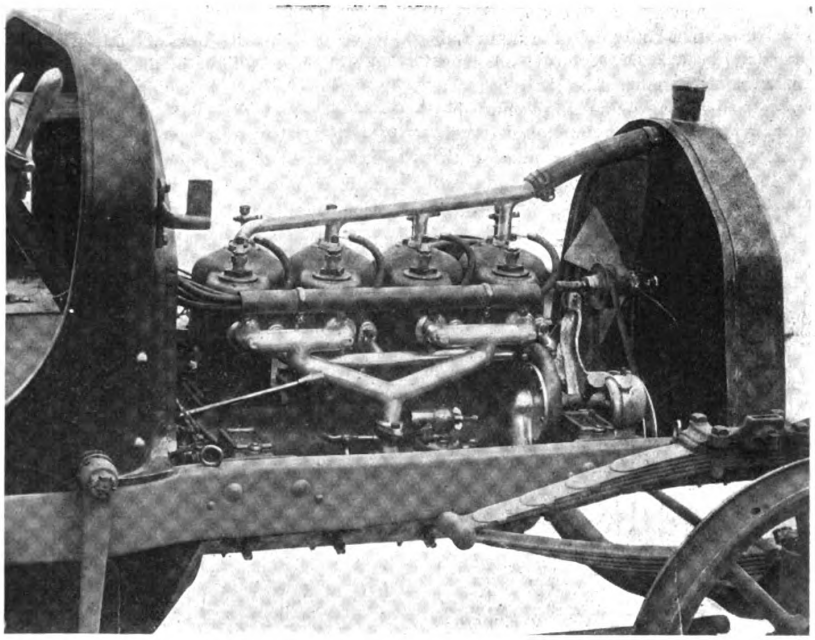
Chassis of 24 Horse Power Premier.

square are used on the driving shaft. No struts are used to the rear axle, but a torsion truss is used, consisting of two tubes, one from the bottom and one from the top of the driving gear casing, which meet near the middle cross member of the frame and are connected thereto by springs. By this arrangement one tube is always in tension.

The spring suspension is the same as employed this season, consisting of four 2 inch full elliptic springs, with special heads to retard recoil, hung outside the frame. The frame is of No. 8 gauge pressed steel, the side members being 4½ inches high. The front and rear cross members are also of pressed steel. The change gear is carried upon a tubular underframe supported from the middle cross member and the rear of the crank case, as in the 1906 models. Ball bearings are still used in the front wheels, which are 32 inches, fitted with 4 inch tires.

Brakes and control are similar as on the 1906 models. There are expanding brakes on the rear hubs, operated by the outer hand lever, and a band brake to the rear of the change gear case, which is applied by the right pedal. The selective gear shifting mechanism is interlocked with the clutch. Attention should be called to the careful manner in which small ball and socket joints are applied to the spark and throttle control levers. A piston throttle applied to the Schebler carburetor controls the fuel supply. Gasoline is carried in a rectangular tank under the driver's seat, but supported by brackets from the frame.

With the exception of the cylinders and piping and a few small parts the air and water cooled motors are identical, and for this reason the Premier designs for 1907 offer the best opportunity ever offered for comparing the two methods of cooling.



TWENTY-FOUR HORSE POWER WATER COOLED PREMIER ENGINE, INLET SIDE.

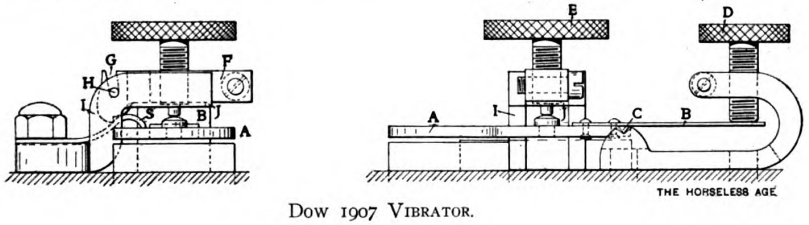
## Device for Temporarily Repairing Leaky Radiators.

In France a device for temporarily repairing leaky cellular radiators is being placed upon the market; it consists of two rubber plugs, with metal caps, connected by a coiled spring, the ends of which engage into hooks passing through the rubber and soldered into the metal caps. A wire with hook ends is used for drawing the spring through the leaky tube.

The German Automobile Manufacturers' Association has recently appointed a technical committee, which met in Berlin on October 11, and discussed "racing and touring events for 1907" and "uniform horse power rating for name plates, catalogues and advertisements."

## The Dow Improved Vibrator.

The Dow Portable Electric Company of Braintree, Mass., have lately sent us for inspection and description a sample of their 1907 model vibrator coil, which shows an improvement in the vibrator, in that the bridge or contact screw support can be removed for cleaning of the contact points without disturbing the adjustment. The drawing shows three different views of the vibrator and makes its construction perfectly plain. The armature A and vibrator spring B are mounted on a knife edge support C, and the strength of the spring is adjusted by means of the adjusting screw D, and the adjustment locked by means of a clamp screw as shown. The contact screw E is similarly locked in adjustment in the movable support F. The latter is provided with a deep slot G at one end to engage the pin H in the supporting block I, and when the movable support F is in its normal position a spring S presses the bottom of the slot securely against this pin. The opposite end of the movable support F then rests on a bridge J between the two arms of the supporting block H. Owing to the peculiar form of the movable support F at the point where it contacts with the spring S, it is securely held in position, while it can at the same time be readily removed for cleaning, and replaced, by taking hold of the opposite end, without loosening any screws or other fastenings.



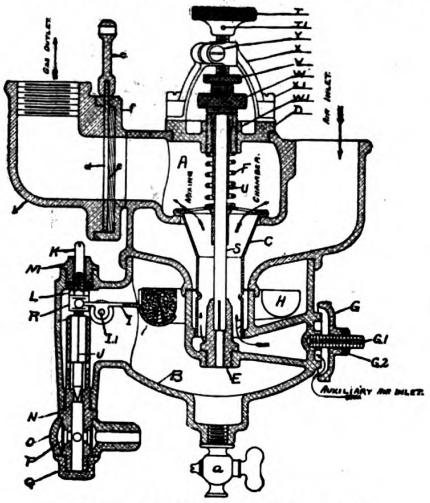

DOW 1907 VIBRATOR.

## Improvements in the 1907 Universal Carburetor.

The improvements in the Speed Changing Pulley Company's Universal carburetor for 1907 relate to the float chamber and the mixing chamber. The mixing chamber is now provided with a vertical inlet, and either a vertical or horizontal outlet to the engine, using either a butterfly or a piston throttle valve. The part where the air valve C seats is now cast integral with the mixing chamber. There is also an adjustable stop V provided for the lift of the air valve C. The bracket X for holding the gasoline adjusting stem S now forms an arch instead of a single arm bracket as before, making a more rigid support for tube X.

The mixing chamber is held to the float chamber by two long screws passing through the mixing chamber and threaded into ears in the float chamber. The float chamber joins the mixing

chamber at its outer rim, and also at the central portion, where there is a small tubular member in which the lower or suction part of the air valve C operates. This central member has the gasoline nozzle screwed into its base, and has also an outlet which communicates with the atmosphere through the side of the float chamber. This outlet has an adjustable cap to regulate the amount of



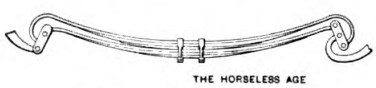
SECTIONAL VIEW OF CARBURETOR.

air passing through the lower part of air valve C.

A fulcrum float is used in all 1907 carburetors, which exerts a strong pressure on the float valve, holding same tight when in a closed position. The float valve is adjustable; the part R can be screwed up or down on the valve to regulate the height of the float, and has a lock nut to lock it in position. The float valve seat is detachable, screwing into the lower part of the valve chamber. The gasoline connection swivels upon the float valve seat member, so the gasoline pipe can be run from any direction, and is locked in position by cap nut Q. The gasoline inlet is provided with a wire screen, which cleanses the fluid before it enters the float chamber. The float chamber has a settling chamber at its lowest central part to which a drain cock is attached.

## The McIntyre "Faultless" Spring.

The Perfection Spring Company, of 251-253 Superior viaduct, Cleveland, have placed on the market their "Faultless" double spring for automobiles, which is the invention of their superintendent, Mr. McIntyre. Referring to the cut, the spring is so constructed that the lower or semi-elliptic portion practically carries the normal unloaded weight of the car, while the scroll portion of the spring comes into use in accordance with the amount of weight carried and the variations in the road surface. The semi-elliptic portion is connected to the two spring horns by depending shackles; the ends of the scroll portion of the spring are connected to the same shackles, but the connection for the two ends are different, one end of the scroll spring connecting between the end of the semi-elliptic and the spring horn bolt, and the other end of the scroll spring connecting to the end of the shackle extending below the spring horn bolt. It is claimed by the manufacturers that just as much tension is placed on the scroll spring as is required by the weight, the speed of the car and the road surface, and shock absorbers are claimed to be unnecessary in connection with these springs. We are informed that the springs are all hand made, of high grade material, and are tempered in oil. Mr. McIntyre, it is stated, first applied the spring to an automobile in 1902, and since that time it has been tried out thoroughly on different makes of cars under all sorts of conditions. The experiments having proven satisfactory, the spring is now being placed on the market.




MCINTYRE AUTOMOBILE SPRING.

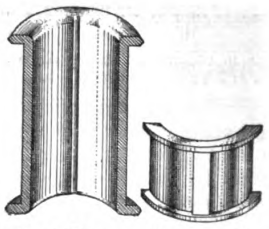
## New Buckeye Jack.

The Buckeye Jack Manufacturing Company, of Louisville, Ohio, have added to their line a new single acting automatic jack, which they call their No. 05. This jack raises the load only on the downward stroke of the lever, which is claimed to make it very convenient to operate, and it can be operated with the foot, while the hands are engaged with something else. It operates automatically, the same as their No. 0 jack. The pawls and racks are high carbon crucible steel drop forgings.


THE NEW BUCKEYE JACK.

## Die Cast Babbitt Bearing Boxes.

The American Die Casting Company, 813 South Delaware street, Indianapolis, has been organized by H. Pokorney, manager, A. Rauh, metal chemist, and L. Olsen, mechanical engineer, to manufacture cast babbitt bearings for automobile and stationary explosion engines, etc. The process under which these bearings are cast is said to be entirely new, and not to require any machining, as the surface is as smooth as glass, the edges are as sharp as a knife, and the variation in size is not more than one-thousandth part of an inch in large quantities. In the illustration the large



DIE CAST BABBITT BEARING BOXES.

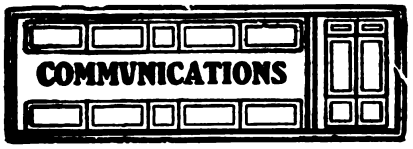
view shows a bearing bush with the oil groove cast in, ready to be placed in the engine, while the small view shows a bush with a rib on the outer periphery to prevent it from turning.

## British Comment on American Press Bureau Work.

As British interest in the American language has lately been stimulated by the offer to improve our own, a letter I have just received should be found interesting. It further illustrates the strenuous methods of American advertising and the inability of the typewriter to keep pace with traditional American hustle. The letter is "Furnished by the Press Bureau of the Ford Motor Company of Detroit. Any use of this matter in reading columns will be appreciated:

"One of the most striking objects to prove the simplicity of control afforded by the spurplanetary transmission gear is that to which Detroit people are treated every day in the driving of Master Edsel Ford, the twelve-year-old son of Henry Ford, president of the Detroit automobile manufacturing concern. Ford junior is very small even for his age and yet he handles the big Ford 6-40 (which is the new way of designating the six-cylinder forty horse power touring car) as if it were one of the new runabouts. As a matter of fact, the little fellow obtained his knowledge and skill in handling cars from driving the first of the four-cylinder runabouts, which is still his father's favorite car for city driving; but not satisfied with that he now drives the big constantly. He has to slip down almost off the seat to reach the brakes, but it speaks well for Ford brakes to say his tiny strength is sufficient to stop the big car in its own length under almost any conditions. At first there was much comment, and not a little criticism about permitting so small a personage to handle so large a proposition, but his unerring skill has now become well known, and people delight to point him out to visitors as one of the smallest drivers in the world."

England, with all thy faults, I love thee still. It is restful to think that here at least we shall not meet Ford, junior, driving his forty horse spurplanetary proposition, even if he can almost reach the brakes without climbing down off the seat. I would a lot rather face George Washington and his little hatchet.—*London Daily News.*




## Ball Bearing Crank Shafts.

*Editor* HORSELESS AGE:

It was with the greatest satisfaction that I read the letters of Messrs. Henry Hess and Hugo C. Gibson. I wish to thank Mr. Hess for his indorsement in the main of the lines I laid down, which represent in brief the substance of a long series of careful experiments with ball bearing crank shafts, these having interested me from various points of view for the past two and a half years. I am also obliged to Mr. Gibson for raising discussion, unfortunately so rarely to be found in the American technical press. The subject is one which calls for a thorough investigation, since its effects upon manufacture are so far reaching that its importance cannot be overestimated, and, although his arguments are weak and his applied mechanics misty, he has set an example that I trust others will follow, not only upon the subject in hand but upon many others that must necessarily come into prominence. There are many points in Mr. Gibson's letter that show a certain perversion of ideas, not the least singular of these being the denial of the usual practice of taking half the maximum load in calculating bearing stress on a crank pin. He says that Professor Unwin's expressions should not be used. Surely, as these apply directly to the case of connecting rod ends, there is some justification for utilizing them. However, it is not difficult to expound the fact that a live load such as we are considering can be reasonably considered as less than a dead load.

Let us, therefore, consider the effect of the explosion pressure in the cylinder. If the piston and its attached parts were not harnessed to the crank shaft the effect of the explosion would be to impress upon them a velocity forcing them outward like a shot out of a gun. As it is, however, they are attached to a crank shaft, which is being rotated at the time of the explosion from the reserve power stored in the flywheel, and consequently this velocity, which would otherwise be evolved, is restrained and the energy thus transmitted to the crank shaft used in continuing its rotation against the load. However, the velocity that would be attained in the event of the piston and connecting rod being free would be proportional to the weight of those parts, and consequently we can see in the first place that there will be a diminution in the actual load upon the crank pin bearing, owing to the fact that the explosion has to overcome their inertia. Moreover, the crank shaft is in a state of continued rotation. In other words, it is constantly running away from the thrust of the connecting rod. Naturally, therefore, the load upon the bearing will depend upon the difference between the angular velocity of the crank pin and the velocity, which would be impressed upon the pistons in a free state. A glance at a gas engine diagram will show that in the case of an internal combustion engine the explosion is very rapidly consummated, with the result that the pressure in the cylinder runs up almost instantaneously to its maximum value, but as rapidly falls off. We have then to consider a heavy load speedily applied and a subsequent load very much less than the primary impulse. Mr. Gibson points out that there is danger in the use of a ball bearing of the size I quoted, since it would be unlikely to withstand dead centre firing. That this fear is unfounded is not a difficult matter to demonstrate, for, when in either dead centre position, the bearing relative to the crank pin is stationary, and in such a condition naturally loses its claim to be considered under bearing rules, since it is to all intents and purposes a rigid piece. Consequently all that it is necessary to consider in the case of dead centre firing is whether the crushing strain of the balls is sufficiently high to withstand the accumulated load, for, with the commencement of rotation, there is a rapid diminution of stress, a condition most desirable to attain. Thus we may dismiss fears for the bearing on account of dead centre firing, and I have already shown that the load upon the bearing must be greatly reduced in intensity from the actual pressure on the piston head, so that my previous assumption upon general practice that this load should be multiplied by .5 in order to secure an indication of its necessary dimensions is feasible. This factor is in everyday use, and I can see no reason why it should be necessary to change it in considering the use of a ball bearing.

Now let us look at the question in another light. We have at the commencement of the stroke a high pressure, which continues for a short portion of it, falling off rapidly as the piston proceeds on its outward journey. Consequently, assuming we have a bearing capable of withstanding under constant rotation a load equal to the mean pressure, we have it that there is an overload in the beginning and then a subsequent period wherein the load is beneath the safe limit of the selected bearing. I have always understood that the greatest of the very many valuable qualities pertaining to the radial type of ball bearing was its capacity for taking a rhythmical overload. In this I am convinced that Mr. Hess will uphold me, and it is surely a condition which we attain in the case of a connecting rod end. With regard to the use of ball bearings for the crank shaft supporting members, I have no more to say. Their success needs neither further argument or demonstration than their growing use in everyday high class practice.

There is one point upon which I would like to interrogate Mr. Gibson, since I, too, have had a little experience with manograph work. He quotes an engine of 80 pounds (cold) compression, and places the maximum normal pressure at 400 pounds. I would like to ask him what he expects his running compression to amount to, and whether he ever got any really satisfactory results from such an engine, provided that it had not got a completely machined combustion chamber. I can understand if he is using an engine with any such compression that the preignition trouble which he seems to fear in the choice of a ball bearing may be frequent, and I would certainly question the quality of the design, using it if following present lines. With a compression of 80 pounds when running (hot) and reasonable care in designing the combustion chamber, I would say that preignition was almost an unknown factor. As regards too great an advance of spark, this will occur to any unskillful driver, and is probably the most fruitful source of broken crank shafts. In this direction the ball bearing shaft has a very distinct advantage, since it permits the use of a bearing between each throw and the making of an unusually short shaft, both tending to greater torsional strength and stiffness.

WARREN NOBLE.

## Ball Bearing Crank Shafts.

*Editor* HORSELESS AGE:

I find I must reply to the letter of Mr. Hess in order principally to correct an error therein. The maximum loads, 3,771 and 6,285, given in the table therewith, purport to be respectively those calculated by Mr. Noble and myself, whereas Mr. Noble gave it that the maximum load which the bearing had to take care of was $\frac{3771}{2} = 1{,}885$ pounds. It was the extraordinary lowness of this load which attracted my attention and caused me to point out the mistake of assuming Unwin's factor of .5 for receding surfaces. I note that Mr. Hess partially corroborates my view in his table, for the smallest bearing recommended by him for a 4 inch cylinder has a steady load capacity of 2,800, while the larger runs to 4,000 pounds. I do not think that Mr. Hess would recommend a bearing having a capacity of only 1,885 pounds for this size cylinder.

I still think it likely that a connecting rod crank end bearing for continuous service in an engine having the high pressure attained today would have to be larger than those shown in the table, and I note that the one in the table having the highest load capacity, viz., 4,000 pounds, has a diameter of 5.9 inch.

Perhaps someone is able to give us some facts as to tests made on this subject which might settle the point under discussion. I for one should be most interested, as the adaptation of the ball bearing to the automobile engine has been a favorite idea with me for quite a long while. By the way, Mr. Hess says at the end of his letter: "This is the important fact, the development and experience of years on

crank shafts of automobile gasoline engines, etc., are incorporated in the suggestion made." Yes; I do not question that the experience referred to applies to crank shaft bearings, but we were discussing the crank end bearing of the connecting rod, the point about which is, the absence of "steady load," and the suggestions made by Mr. Hess appear to embody steady load.

HUGO C. GIBSON.

## Engine Compression.

*Editor* HORSELESS AGE:

The article on compression by Mr. Noble, in your issue of the 17th, fills a long felt want. It has been a full year since I wrote you along the same line, expressing my belief gathered from experience with engines of different compression, and also expressing my intent to make a complete series of tests when time and opportunity permitted. This compression matter was pretty thoroughly discussed about a year ago in your columns, and it was generally agreed that the low or moderate compression was better than the high. One man, Mr. Landau, October 25, 1905, asked "Why?" and I am not aware that anyone replied to this. Mr. Noble's cards show why, and make the fact quite plain, but it seems to me that this fact ought to be backed up by a reason, so I will give what seems to me the reason. When I took up the gasoline motor for auto work, I had in mind the steam engine as the ideal affair toward which I must work in the development of the gas engine. I have not had occasion to change the ideal, but some of my apparently brightest thoughts on the subject have fallen flat when put to trial. My experiments along the line of the Brayton engine have not been satisfactory, yet I am not convinced that a satisfactory auto engine of this type cannot be developed.

A steam engine does not have an enormously high pressure at the beginning of the stroke and it may, under certain conditions, carry its boiler pressure nearly or quite to the end of the stroke. The ideal auto gas engine should do substantially the same thing, and this is secured by using a large compression space, with consequently low compression and low pressure at the beginning of the stroke. In this large compression space the new charge and the residue of the preceding charge are compressed as in a boiler, and give forth their energy with not greatly diminished power as the piston moves the full length of the stroke. When the exhaust opens the escape of the gases is violent and noisy, and undoubtedly some energy, otherwise usable, gets away, but the sweetness of running, ease of starting, freedom from vibration and constant torque secured by the lower compression, as compared with the high, are all in its favor for auto use. The average driver uses the motor at low speeds on the high gear a half dozen times where he employs the maximum speed of the motor once, so it is much to be desired that satisfactory results should be given at low speeds instead of at high, if both cannot be had. With the high compression and small compression space, the explosion pressure is much higher, producing violent strain on the parts, while the pressure falls rapidly as the piston moves, because there is no large chamber containing a sufficient quantity of gas under pressure to follow up the piston movements. These facts can be readily seen if one will imagine two engines, one having practically no compression space, the other an extremely large one. In one case the pressure falls with extreme rapidity as expansion takes place, while in the other there is very little fall in the pressure because of the comparatively small expansion. In short, the low compression engine more nearly gives steam engine results. How low the compression can be and yet give satisfaction, I have not attempted to determine, but hope someone will experiment with this. I have convinced many skeptics, however, that a gasoline engine can handle a vehicle under all ordinary conditions by the use of throttle only, and thus for practical purposes closely approximate steam engine results.

CHAS. E. DURYEA.

## Starting on the Spark—Tests to Determine Reliability of This Method With Six Cylinder Motors.

*Editor* HORSELESS AGE:

I enclose you a report which I received this morning from one of my people in reference to a six cylinder Napier engine starting on the switch. It is rather interesting to show how very easy the six cylinder engine is to start. It started on the switch actually 100 consecutive times.

S. F. EDGE.

(*Inclosure.*)

REPORT RESTARTING ON THE SWITCH OF SIXTY HORSE POWER CHASSIS 1,227.

The following gentlemen were present during the test: Mr. Freeston, of the *Car;* Mr. Sharp, of the *Motor,* and Mr. Holland, of the *Standard.*

The engine was rigged up so that cold water was constantly passing through, and the cylinders were kept practically stone cold by the constant stream from the main. No alteration was made to the car other than this, with the exception that the fan belt was removed, because, as the fan sucking air through the radiator also carried the water that was running over from the radiator through the honeycomb onto the first two plugs, the result would have been that the cylinders one and two would not have fired properly. This was the only alteration made, and could have no possible bearing on the starting.

We started the engine 100 times straight on end, and it responded and started up each time. It stood for a little while, and it was started up again four or five times; then Mr. Freeston switched on and it failed to respond; it was touched with a starting handle and went away. It was started up again five or six times and again failed to respond; the reason for this was that it stopped between contacts. On pulling round to the contact it started. Altogether the test was most successful and demonstrated that the engine is capable of starting on the switch in the great majority of times. Out of 112 times it only failed to respond twice, and on one of these occasions the reason was its stopping between contact, which is extremely unusual.

S. SMITH.

## The Question of Technical Advisers to Courts.

*Editor* HORSELESS AGE:

I agree with Mr. Stoddard's utopian view as to the advisability of technical advisers to the court, and have considered and discussed the adoption of such a system in England. My understanding of the matter is that in the choice of a judge the whole country is on the list, and the qualifications are knowledge of the law, honor and common sense; whereas in choosing a technical adviser the range of choice is narrowed down considerably by the fact that another qualification must be added, viz., a knowledge comprehensive of the whole field of science. It would be difficult to imagine all these qualifications in a man, and more difficult to imagine such a man in the position suggested being absolutely without bias on all subjects. Why, the very fact of his being a scientific man brings him within the range of the microbe of invention (a pernicious germ which makes deadly war against the unbiased condition of mind). No, it appears to be better to let the man who has the ability to give opinions give them to men who are usually unbiased on scientific subjects, and who are trained to discriminate between the true and false. It is then the duty of the scientist to drop his technical language as far as possible, and put the common sense end of the matter in such a way that the judge is in a position to exercise his discriminating powers. The whole suggestion practically comes to the appointment of an arbitrator, a method of settlement of intricate questions frequently resorted to in England; but still many litigants when given the privilege of arbitration elect to have their case tried in ordinary courts in preference to trusting to one or two scientific men whose absence of bias they can never be quite sure of.

HUGO C. GIBSON.

## Florida Tour Impracticable.

*Editor* HORSELESS AGE:

A. J. S. cannot get to Florida from Pennsylvania in an automobile. It would be impossible to get even from Charleston, S. C., to Savannah, Ga. I started to do that in 1904 in a 35 horse power Peerless, but it was absolutely impossible to get more than a few miles out of the city. At Savannah, Ga., there are 75 to 100 miles of good roads running from 10 to 20 miles

out of the city, but beyond these roads an automobile cannot go. The roads of Florida are such that one can generally run in and near the cities, but not beyond into the country in any case. Better leave the auto at home. The rate for transporting an automobile to Florida is high. By rail it is out of the question. Send by steamer from New York or Boston, if the automobile must be taken, but it won't pay.

H. C. BAXTER.

## In the Market for a Planetary Transmission.

*Editor* HORSELESS AGE:

I desire to purchase a planetary transmission, two speeds forward and reverse, for very light service. The transmission No. 1 type is both too large in diameter and too heavy for the purpose.

Should like something not more than 7 inches in diameter, weight about 20 pounds.

I am rebuilding a buckboard and desire to keep down the weight as much as possible. Any information you can give me regarding such a device will be appreciated.

I. W. PERCIVAL,
310 Olive Street, St. Louis.

## Who Manufactures Small Rubber Balls?

*Editor* HORSELESS AGE:

Can you put me in correspondence with some rubber manufacturing concern who make small specialties? I am looking for someone who can make a lot of small rubber balls, about one inch in diameter and one-thirty-second of an inch in thickness. I shall require about a thousand of these balls. E. C. S.

[Replies from those interested are requested, to be addressed to our office.—ED.]

## Preparing a Car for Winter Storage.

*Editor* HORSELESS AGE:

With the approach of cold weather, many readers of THE HORSELESS AGE will probably be storing their cars for the winter, and therefore confronted with the problem of preventing the finished metal parts from corroding. I have found the following very satisfactory. Mix heavy valve or steam cylinder oil with white lead in about equal proportions, or until about the consistency of molasses. Then apply to all polished parts. This compound will become nearly hard in about a month, but is easily removed with a little kerosene or gasoline. W. F. D.

## A Non-Freezing Solution Recommended.

*Editor* HORSELESS AGE:

For the past three winters I have used with great success an anti-freezing mixture consisting of

| | |
|---|---|
| Water | 4 gallons |
| Wood alcohol | 1½ gallons |
| Glycerine | ½ gallon |

Reinforce with about 1 pint of wood alcohol each week, and enough water to keep up the normal quantity of mixture.

E. H. LYON.

## The Everett-McAdam Continuous Electric Blue Printing Machine.

This machine consists of a rotating glass cylinder which lies in a series of narrow belts, and within which cylinder are placed two mercury vapor lamps. The roll of paper to be printed is placed in a box on top of the machine and feeds in continuously between the belts and the cylinder; or, if only a few prints are wanted, previously cut sheets of paper may be fed in. The tracings are inserted between the paper and the cylinder, and, after passing three-fourths around the circumference of the cylinder, are deposited with the paper in a box in the front part of the machine, the printing being done from the inside of the cylinder as the paper and tracings travel around it.

It is claimed to be possible to make prints 5 feet wide of any length whatever, and the device is particularly adapted to making numbers of small prints on one long sheet of paper or on previously cut sheets —which come out in a regular stream—and of an absolutely uniform tone. One valuable feature of this continuous machine is that it is only necessary to handle one tracing at a time, the small ones being fed in side by side, while the paper feeds in automatically from a continuous roll. The tracings go in and come out on the same side of the machine, so that the leading edge of a tracing may be started into the machine again before the trailing edge comes out, saving considerable time where more than one print is wanted from one tracing.

A number of one and a half inch belts are used instead of a single broad one, in order to obtain perfect contact, which is not possible with a single broad belt.

The lamps used are said to be particularly adapted to this kind of work, as they give out only actinic or chemical rays; and as the printing is done from the inside of the cylinder, the light strikes the paper at right angles and the machine has a maximum electrical efficiency.

The machine is very compact, requiring a space only 2 by 5 feet, and is entirely self-contained. It is driven by a motor, and the speed can be instantly changed to any rate desired by moving a convenient lever. Forty of these machines are said to be already in use, and recently the Revolute Machine Company, of 523 West Forty-fifth street, New York, has been incorporated to take up the manufacture of the device.

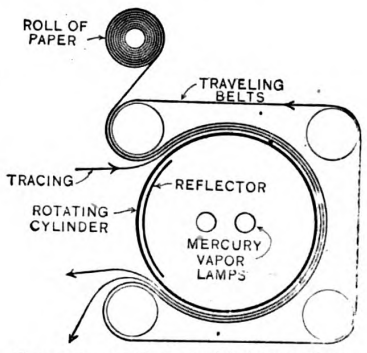
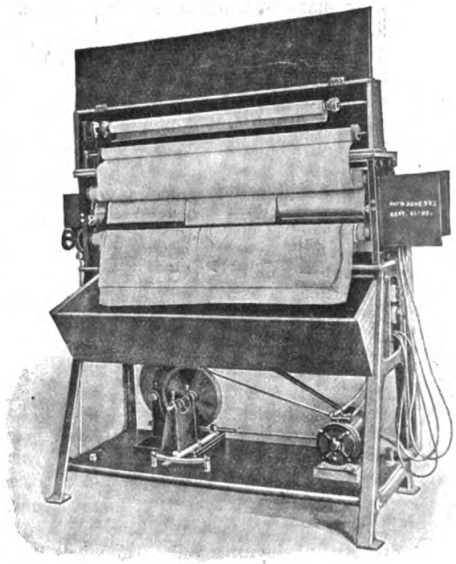



DIAGRAM OF EVERETT-MCADAM BLUE PRINTING MACHINE.



THE EVERETT-MCADAM BLUE PRINTING MACHINE.

## Wilkes-Barre Motorists Barred from Turnpike.

When the members of the Wilkes-Barre (Pa.) A. C. were denied access to the Bear Creek turnpike near that city by the Turnpike Company about a year ago they took the matter into court and asked that permission be granted for automobilists to use the road. The case was decided against the automobilists, and they thereupon made an appeal to Albert Lewis, president of the Turnpike Company. In their request to Mr. Lewis, the automobilists asked that they be allowed to use the road during certain hours and promised to drive at limited speed. This was refused for the following reasons:

"That it would not be possible to grant the privilege to members of the Wilkes-Barre Automobile Club, and refuse it to owners of automobiles generally. That it would be impossible to enforce the proposed regulations as to hours and speed. That owing to the nature of the road the running of automobiles over it would be a source of danger to travelers, keeping them off the road, and that the granting of the privilege asked for would consequently be giving automobilists a monopoly. The pike was constructed for driving purposes, and the interest of the drivers should not be set aside for a privileged few."

## Commercial Applications.

### A Motor Thresher from Kansas.

With the experience of a year behind it the motor thresher invented and patented by F. A. Ferguson, of Belleville, Kan., is to be placed on the market, and a company, which will shortly move its headquarters from Belleville to Kansas City, has been formed with $500,000 capital to manufacture the cars.

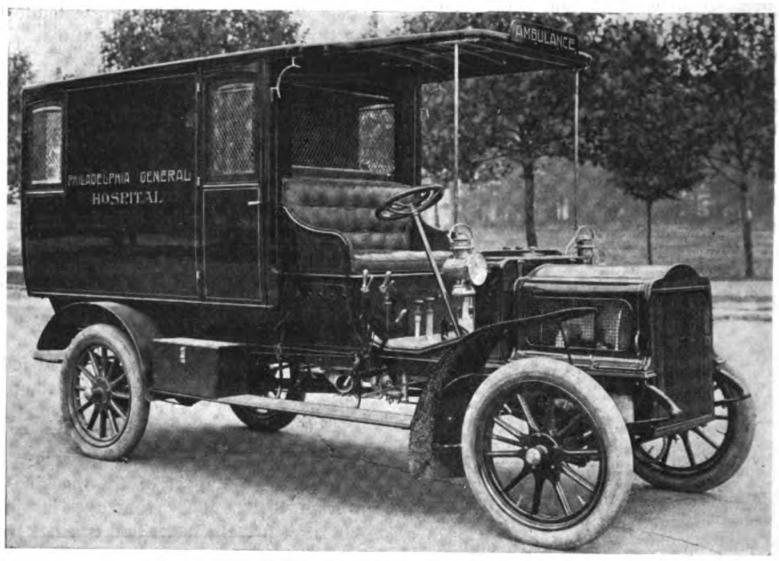
So far only one car has been built. It has run two seasons in the wheat fields of Kansas, and after such severe tests the inventor is satisfied that it is a thoroughly practical vehicle, not only for threshing, but for the various uses to which a tractor or heavy truck may be put in the country. It may also be used as a stationary power plant, utilizing the pulleys and belt layout employed on the thresher.

For purposes other than threshing the separator may be removed, leaving the chassis ready for the reception of any other sort of body. Without body it may be used to haul trailers to market or to draw gang plows or like machinery in the fields.

The power plant consists of a four cylinder, four cycle, 30 horse power vertical water cooled engine and a special transmission, the whole enclosed in a dust proof metallic case. This latter precaution is taken because of the danger of fire in the wheat fields, and the consequent risk of destruction to both machine and crop. Two sets of ignition are fitted to the engine. The weight is 20,000 pounds, which is 5 tons less than that of the usual steam traction engine employed for such work.

The transmission consists of a two speed and reverse gear and clutch combined, the whole being operated by a single lever, moving in both a horizontal and a vertical plane. For the gear changes it is moved toward or away from the clutch, while in transferring the power from the driving wheels to the thresher it is moved sidewise. The reversing device, it is explained, is carried in the male member of the clutch. The bearing surfaces of the clutch are metal to metal and fibre. The gear 16, illustrated herewith, is toothed both internally and externally, and gear 14 slips into it when certain speed changes are made.

Considerable is claimed for the thresher in the way of economy and utility. With only one man to operate it, the saving on labor and fuel is estimated at from $8 to $10 per day. Work can be done two minutes after the arrival of the thresher in the field. It takes the same length of time to prepare for the road. The efficiency of the thresher is high, as in a recent test it threshed 586 bushels of wheat in 3½ hours. In applying the power for threshing, pulleys are fitted on both sides, so as to make the running steadier. The only man who should have reason to worry when on the road is the driver, for whom a meagre seat is provided at the right hand side.

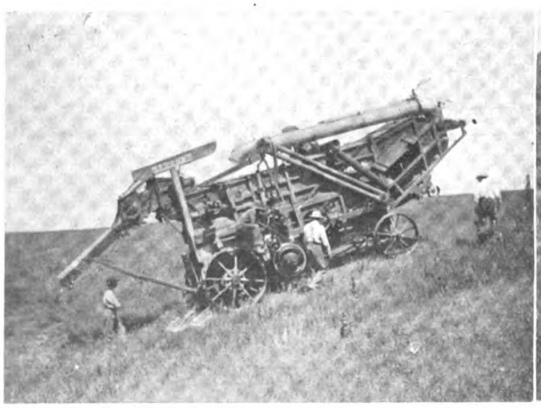



PHILADELPHIA GENERAL HOSPITAL AMBULANCE.

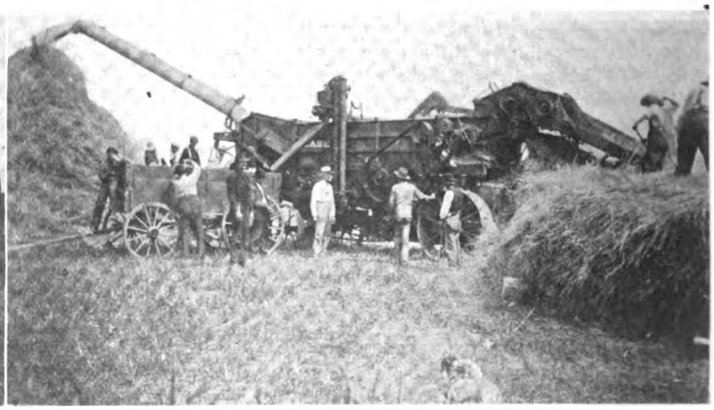
### Philadelphia General Hospital Ambulance.

The ambulance recently placed in service by the Philadelphia General Hospital is shown in the accompanying illustration. After a fortnight's service the hospital authorities are said to be so well pleased that they are considering the substitution of motor vehicles for all their horse ambulances. It is driven by an 18 horse power White steam engine, and has a 120 inch wheel base. Hartford-Truffault shock absorbers are used to make it ride easy.

The body is built with side doors besides the usual entrance at the rear end. Doctors or nurses can use the side door without disturbing the patients, when more than one is in the ambulance. Seats extend the full length on each side. As they are made of heavy oak frames covered with leather they can be used as beds when desired. On the floor are placed two stretchers with adjustable head rests covered with leather. There is room in the ambulance for four persons to lie down, or ten persons to sit. In front is a seat for the doctor or nurse. All the seats can be folded against the sides of the body, so as to take up the least possible space. Under the body is an extra stretcher pocket for emergencies. The floor is covered with brown linoleum. Every effort



AUTO THRESHER CLIMBING GRADE.



AUTO THRESHER AT WORK IN WHEAT FIELD.

has been made to make the vehicle absolutely sanitary.

The mountings are of brass, and the windows are protected by brass grilles. It has two dome lights and attachments for an electric fan, a storage battery being used. The body is hung low, with a step at the rear like most ambulances.

## Motor Furniture Truck at New Haven.

The accompanying illustration shows the Knox gasoline truck purchased by the Chamberlain Furniture and Mantel Company, New Haven, Conn., a year and a half ago. Mr. Chamberlain states that the repair bills were pretty large the first few months it was in operation, but these decreased as the drivers became more familiar with the mechanism of the machine.

The past summer it has given excellent service, making daily trips to the suburban villages and the nearby shore resorts. Mr. Chamberlain states that it has done the work of four single horse trucks. The illustration shows the truck loaded up for a run to Pine Orchard, a shore resort 9 miles from New Haven.


CHAMBERLAIN FURNITURE COMPANY'S TRUCK, NEW HAVEN, CONN.

## Motor Truck for Astronomical Observatory.

The Couple-Gear Freight Wheel Company, of Grand Rapids, Mich., has completed an electric truck, which is designed expressly to convey the big telescope of the Carnegie Institution of Washington from Pasadena, Cal., to the new solar observatory at the summit of Mt. Wilson. The trail is so difficult that a horse vehicle could not make the ascent with the heavy castings of the telescope, one of which alone weighs 5 tons.

The distance from Pasadena to the foot of the trail is 6 miles, and thence to the summit 9 miles, a continuous ascent, in the course of which an elevation of 5,000 feet above the city of Pasadena is reached.

The total length of the truck is 20 feet 6 inches; width to outside of hub caps, 6 feet 7 inches; tread, centre to centre of tire, 5 feet 2 inches; wheel base, 11 feet; height to top of platform, 37 inches; to top of seat back, 7 feet 10 inches. The framework is of I beams and oak joists, and the total weight is 10,900 pounds.

The truck is equipped with a 40 horse power, four cylinder, Continental gasoline engine. This is at the front of the truck, and is connected directly with a 12 kilowatt generator under the seat, which supplies a 110 volt current direct to the Couple-Gear motor wheels. The wheels are 3¼ horse power (railway motor rating), and the motors are capable of extreme overload.

The gasoline engine is erected to run the generator because of the difficulty of maintaining a charging station half way up the mountain side, and this independent electrical equipment is to be used in operating three Jap drills used in blasting and widening the trail to a uniform width of 8 feet; $25,000 is being spent on the trail.

The radiators are under the engine below the frame and the muffler, and additional radiator coils are on the sides about the centre of the body. A 40 gallon steel gasoline tank is at the rear.

The truck has a speed of 10 miles an hour on the level and 2 miles an hour on the mountain trail with a 5 ton load.

Coming down the grade, through manipulation of the controller, the four Couple-Gear motors are converted to generators, passing the current through three steps of resistance, and acting as a perfect brake with varying speeds. A mechanical brake is also provided for each wheel.

The chief peculiarity of the truck is in the driving mechanism. The power is applied to both sides of the wheel through a single shaft bearing two pinions, which pull up on one side of the wheel and down on the other side. An evener is provided on the armature shaft, which insures an even division of the work. The driving force in all other vehicles is applied to one side of the wheel only. This feature, with the advantage of the four wheel drive, reduces the loss of energy to a minimum, and an efficiency of 97 to 99 per cent. is claimed by the manufacturers.

The controller is of the cylinder type, giving seven speeds forward and seven speeds backward.

The truck is steered from both ends, enabling it to readily make the sharp turns of the trail. In some places it is necessary to switch back on an extension and run backward on the trail rather than to make an unusually sharp turn.

The wheels on either axle can be steered independently of the other. In turning corners the rear wheels follow directly in the track of the others; in the oblique steer the four wheels are turned in the same direction; or the rear wheels may be locked to run parallel with the body.

The truck is similar in construction to the regular 5 ton trucks of the company,

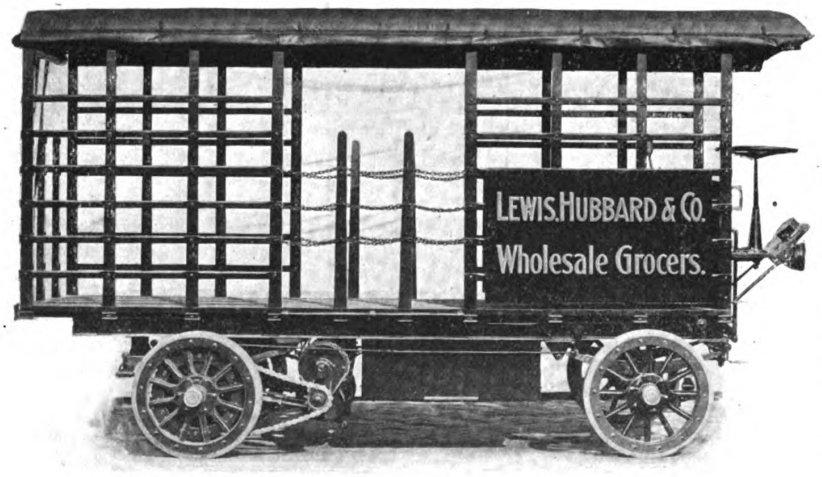
COUPLE-GEAR TRUCK WITH TEST LOAD OF FIVE TONS OF BRICK AND CONCRETE.

with the exception of the portable charging plant, and the batteries are more powerful, giving 110 instead of 80 volts of current.

The truck was shipped October 24, and it is expected that it will be in use carrying up supplies within three weeks. The telescope will not be taken up until spring.

## Electric Truck in the Service of a Southern Wholesale Firm.

Lewis, Hubbard & Co., wholesale grocers of Charlestown, W. Va., after an investigation of the motor vehicle problem covering a period of several months, are said to have decided to gradually replace their horse drawn vehicles with motor trucks. The first vehicle to be installed in their service is the Pope-Waverley electric truck here illustrated. This vehicle has a length over all of 17 feet and a total width of 7 feet 9 inches, the clear carrying space being 14 feet long, 5 feet wide and 6 feet 4 inches high,




Electric Truck of a Charlestown (W. Va.) Wholesale Firm.

somewhat larger than that of the standard 3 ton truck of the manufacturer.

The car has a wheel base of 118 inches and a wide tread of 73 inches. It is provided with a double motor equipment of General Electric construction. The motors are arranged in front of the rear axle, being hung from the body, and each one connected by a separate chain, with its corresponding driving wheel. The electric energy is furnished by a forty-two cell, fifteen plate storage battery. The steering is by means of a hand wheel on a vertical post through a sector and pinion. The wood artillery wheels of the car are all of 36 inch diameter and fitted with 5 inch solid rubber tires. The body, gear and wheels are painted a dark red, and the lettering is in black, the general finish being of a very high class for a commercial vehicle.

## Motor Cabs in Paris.

At an early hour Friday morning, October 12, a body of motorists and some members of the early rising public were gathered round half a dozen motor cabs near the Madeleine preparing for a race through Paris. Even in a city giving almost entire liberty in the matter of the speed of motor cars, it had not been thought advisable to draw the attention of the public to the event, and the spectators were confined to those who were "in the secret" and a few idle passersby. The "circuit" consisted of the Rue Royale, the Place and Pont de la Concorde, the Boulevard St. Germain on the south side of the river, the Boulevard Henry IV and the Grand Boulevard back to the Madeleine; the circular trip had to be covered three times, making a total distance of 31.5 kilometres. The "racers" were six taxameter motor cabs, one of each of the makes now plying in the city, viz., Chenard & Walcker, Tony-Huber, Renault, Panhard-Levassor, Bayard and Unic. At 7 o'clock Tampier, the A. C. F. official timer, started the Panhard-Levassor, the others following at two minute intervals, each cab having an observer on board. Although it was a fine, dry morning, the cabs were somewhat handicapped by the wet state of the streets. The Parisian boulevards have their morning bath between 4 and 8. In the Boulevard Henry IV the road is roughly paved; tram lines run along the entire length of the Boulevard St. Germain, and these are in a bad condition at certain places; on the whole, the track was only moderate, though there were no hills. On the first round the Tony-Huber led, its time being 20 minutes 50 seconds. The Panhard-Levassor was last with 24 minutes 15 seconds. On the second round the Chenard & Walcker made fastest time with 21 minutes 9 seconds; the Panhard was only a few seconds behind, and the Unic last. An exciting finish was witnessed. The blue Panhard cab and the red Renault raced "neck and neck" from the Opera to the Madeleine, the Panhard gaining a slight advantage as the end of the boulevard was reached. At the turn into the Rue Royale the Panhard driver cut out a corner and finished a yard ahead of the Renault, but lost on time allowance. Sixteen minutes remained for the Chenard & Walcker to arrive and win. Thirteen minutes passed, and then the yellow body rushed round the corner, followed closely by the Tony-Huber. It was a close race, as is seen by the official list for the three rounds: Chenard & Walcker (Jamois), four cylinder, 14-20 horse power, 1 hour 3 minutes 35 seconds; 2, Tony-Huber (Boutin), two cylinder, 10-12 horse power, 1 hour 6 minutes 24 seconds; 3, Renault (Galome), two cylinder, 9 horse power, 1 hour 7 minutes 10 seconds; 4, Panhard-Levassor (Heret), three cylinder, 8 horse power, 1 hour 9 minutes 9 seconds; 5, Bayard-Clément (Quercy), two cylinder, 8 horse power, 1 hour 11 minutes 59 seconds; 6, Unic (François), two cylinder, 8 horse power, skidded and collided with shelter.

All the vehicles were taken at hazard from those in daily use on the streets, and were in their ordinary running condition. With the exception of the accident to the Unic cab, which skidded round on itself three times and finally came into collision with a shelter, everything passed off smoothly, and no cab had to stop for mechanical or tire troubles. The winner averaged 19.5 miles an hour.—*Commercial Motor.*

## Killed at an Automobile Race.

John Holcomb, eighteen years old, a spectator at the automobile races at the Pennsylvania State Fair at Bethlehem, October 27, was run down and killed by a 50 horse power Peerless racer, driven by Walter S. Lovatt, son of J. Walter Lovatt, president of the Bethlehem Automobile Association and the Pennsylvania State Fair Association.

The accident occurred in the second heat of the seventh event. While rounding the lower turn on the third lap far in the lead Lovatt's front tire exploded. The car swerved to one side and crashed through the outer fence, plunged down a 25 foot embankment and raced on through the length of the large grounds before stopping. The youth killed was sitting on the fence watching the races. Young Lovatt was hurled 50 feet, but escaped serious injuries.

## Must Display License Tags Plainly.

The board of township commissioners of Lower Merion Township, near Philadelphia, Pa., have issued the following order to their police officers:

You are hereby instructed to stop all automobilists who carry their license numbers parallel to the running gear of the machine, and instruct the operators to place the license tag across the front and rear of the machine, perpendicular to the running gear so as to make the number plainly visible.

Also do not permit automobiles to carry licenses so covered with mud and dirt as to make them not plainly visible and legible. Stop such automobiles and instruct the chauffeur to clean the tags.

If any operator refuses to obey the aforesaid regulations, arrest him under the act of Assembly provided in such cases.

## Exhibitors at the Chicago Automobile Show.

Manager Samuel A. Miles has given out the following list of exhibitors at the sixth annual automobile show to be held in the Coliseum and the First Regiment Armory, Chicago, February 2 to 9, under the auspices of the N. A. A. M.:

AUTOMOBILES.

Studebaker Automobile Company.
Wayne Automobile Company.
Winton Motor Carriage Company.
Stevens-Duryea Company.
Waltham Manufacturing Company.
Baker Motor Vehicle Company.
Olds Motor Works.
The Autocar Company.
Royal Motor Car Company.
Cadillac Motor Car Company.
Babcock Electric Carriage Company.
George N. Pierce Company.
Locomobile Company of America.
Premier Motor Manufacturing Company.
Maxwell-Briscoe Motor Company.
Packard Motor Car Company.
Smith & Mabley Manufacturing Company.
E. R. Thomas Motor Company.
H. H. Franklin Manufacturing Company.
Corbin Motor Vehicle Corporation.
Haynes Automobile Company.
Peerless Motor Car Company.
Elmore Manufacturing Company.
F. B. Stearns Company.
Pope Motor Car Company.
Thomas B. Jeffery & Co.
Apperson Brothers Automobile Company.
National Motor Vehicle Company.
Duryea Power Company.
Electric Vehicle Company.
Knox Automobile Company.
St. Louis Motor Car Company.
White Sewing Machine Company.
Daimler Manufacturing Company.
Pope Manufacturing Company.
Dayton Motor Car Company.
Woods Motor Vehicle Company.
Lozier Motor Company.
Mitchell Motor Company.
Holsman Automobile Company.
Reo Motor Car Company.
Welch Motor Car Company.
The Bartholomew Company.
Grout Brothers Automobile Company.
Northern Motor Car Company.
Maumee Motor Car Works.
Auburn Automobile Company.
Meteor Auto Works.
Columbus Buggy Company.
Cleveland Motor Car Company.
Kansas City Motor Car Company.
Acme Motor Car Company.
Rauch & Lang Carriage Company.
Adams Company.
American Locomotive Auto. Company.
Knight & Kilbourne.
Dolson Automobile Company.
Moon Motor Car Company.
Nordyke & Marmon Company.
Rainier Company.
Smith & Mabley, Inc.
Rapid Motor Vehicle Company.
C. H. Blomstrom Motor Company.
St. Louis Car Company.
Jackson Automobile Company.
Aerocar Company.
Western Tool Works.
Evansville Automobile Company.
Monarch Motor Car Company.
Austin Automobile Company.
Buckeye Manufacturing Company.
Kissel Motor Car Company.
Logan Construction Company.
Dorris Motor Car Company.
C. A. Tileston & Co.
Dragon Automobile Company.
Oscar Lear Automobile Company.
Palais de l'Automobile.
Motorcar Company.
Wayne Works.
Pierce Engine Company.
Biddle-Murray Manufacturing Company.
Harrison Wagon Works.
Simplex Motor Car Company.
Moline Automobile Company.
Star Auto Company.
Deere-Clark Motor Car Company.
De Luxe Motor Car Company.
Chicago Pneumatic Tool Company.
Triumph Motor Car Company.
Staver Carriage Company.
Reliable Dayton Manufacturing Company.
W. S. Kessler.
Moline Pump Company.

ACCESSORIES.

Western Malleable Steel Company.
Lipman Manufacturing Company.
Hancock Manufacturing Company.
Turner & Fish Company.
Jos. Dixon Crucible Company.
R. H. Smith Manufacturing Company.
Rands Manufacturing Company.
Atwater Kent Manufacturing Works.
William Cramp & Sons Ship and Engine Building Company.
J. H. Sager.
Gemmer Engine Company.
Detroit Lubricator Company.
Consolidated Manufacturing Company.
Bethlehem Steel Company.
American and British Manufacturing Company.
F. H. Wheeler.
Imperial Brass Manufacturing Company.
London Auto Supply Company.
W. C. Robinson & Son Company.
Kilgore Air Cushion Company.
Avery Portable Lighting Company.
Kinsey Manufacturing Company.
Hartford Auto Parts Company.
Oliver Instrument Company.
W. S. Jones.
Hess-Bright.
Diezemann Shock Absorber Company.
Sprague Umbrella Company.
Republic Rubber Company.
McGiehan Manufacturing Company.
S. F. Bowser & Co., Inc.
Weed Chain Tire Grip Company.
Valentine & Co.
Gabriel Horn Manufacturing Company.
Steel Ball Company.
Wray Pump and Register Company.
Aurora Automatic Machine Company.
Pennsylvania Rubber Company.
Chicago Battery Company.
Diamond Rubber Company.
Hyatt Roller Bearing Company.
Whitney Manufacturing Company.
Motsinger Device Manufacturing Company.
Shelby Steel Tube Company.
Morgan & Wright.
Dayton Electrical Manufacturing Company.
J. W. Jones.
C. F. Splitdorf.
International Rubber Company.
R. E. Dietz Company.
McCord & Co.
Midgley Manufacturing Company.
Hartford Rubber Works Company.
Fisk Rubber Company.
Badger Brass Manufacturing Company.
Veeder Manufacturing Company.
Gray & Davis.
Goodyear Tire and Rubber Company.
Rose Manufacturing Company.
B. F. Goodrich Company.
Timken Roller Bearing Axle Company.
Baldwin Chain and Manufacturing Company.
Brown-Lipe Gear Company.
Spicer Universal Joint Manufacturing Company.
Adapt Machinery Company.
Vesta Accumulator Company.
Reading Standard Cycle Manufacturing Company.
Long Manufacturing Company.
Swinehart Clincher Tire and Rubber Company.
Diamond Chain Manufacturing Company.
Webb Manufacturing Company.
Warner Gear Company.
A. W. Harris Oil Company.
G and J Tire Company.
Prest-O-Lite Company.
New York and New Jersey Lubricant Company.
Warner Instrument Company.
Pantasote Company.
Schwarz Wheel Company.
Remy Electric Company.
Firestone Tire and Rubber Company.
Muncie Auto Parts Company.
Cook's Railway Appliance Company.
Oliver Manufacturing Company.
Edmunds & Jones Manufacturing Company.
National Carbon Company.
Hartford Suspension Company.
Byrne, Kingston & Co.
Michelin Tire and Supply Company.
Electric Rubber Manufacturing Company.
Standard Lamp and Manufacturing Company.
Beckley-Ralston Company.
Auto Supply Company.
Eugene Arnstein.
Thomas Prosser & Son.
Cullman Wheel Company.
Rushmore Dynamo Works.
Hensel Battery and Manufacturing Company.
The Hendee Manufacturing Company.
HORSELESS AGE.
*Cycle and Automobile Trade Journal*
*Motor Age.*
*Motor Way.*
Chicago School of Motoring.

## Hill Climb at Rochester, N. Y.

The second hill climbing contest given by the Rochester (N. Y.) Automobile Club was held October 20, on the Penfield dugway, which measures 3,100 feet and has an average grade of 6 per cent. About 1,000 people witnessed the contest.

The principal interest was in the free for all, in which William Knipper, driving a 60 horse power Thomas, and J. P. Grady, driving a 28-30 horse power Pope-Hartford, were tied in 51 4-5 seconds. The tie was ordered run off, but the owner of the Pope-Hartford car refused to allow Grady to make the ascent the second time, and the cup was awarded to the owner of the Thomas car.

The summary of the events follows:

CARS OF 16 H. P. OR LESS.

R. G. Finucane, Franklin, 12 h. p. ..... 1:13 2-5
R. Foote, Franklin, 12 h. p. ..... 1:19

CARS OF 17-22 H. P.

N. B. Stetsel, Ford, 18 h. p. ..... 1:07
John Kelly, Stevens-Duryea, 20 h. p. ..... 1:10
R. Foote, Franklin, 20 h. p. ..... 1:12 2-5
R. G. Finucane, Franklin, 12 h. p. ..... 1:13
C. L. Whiting, Buick, 22 h. p. ..... 1:15 4-5
C. W. Voshall, Buick, 22 h. p. ..... 1:14 2-5

CARS OF 23-30 H. P.

A. Demmler, Pope-Hartford, 28-30 h. p. .... 0:54 1-5
N. B. Stetsel, Ford, 18 h. p. ..... 1:05 1-5
R. C. Finucane, Franklin, 12 h. p. ..... 1:10
W. J. Graham, Columbia, 24 h. p. ..... 1:13 4-5
A. V. Hart, Haynes, 20 h. p. ..... 1:15 1-5
R. Foote, Franklin, 20 h. p. ..... 1:19 3-5
J. N. Heberger, Corbin, 24 h. p. ..... 1:21 2-5

CARS OF 31-40 H. P.

John Meiser, Pope-Toledo, 35-40 H. P. ..... 0:59
N. B. Stetsel, Ford, 18 h. p. ..... 1:05
Rowe, Royal Tourist, 40 h. p. ..... 1:13
Carl W. Storandt, Stoddard-Dayton, 30-35 h. p. ..... 1:17 3-5
E. Stein, Pungs-Finch, 28-32 h. p. ..... 1:59

CARS ABOVE 40 H. P

Carl W. Storandt, Stoddard-Dayton, 30-35 h. p. ..... 0:57 3-5

A. V. Hart, Thomas Flyer, 50 h. p.....1:06 4-5
J. S. Bingeman, Stearns, 40-45 h. p.....1:15 3-5

FREE FOR ALL.

Wm. Knipper, Thomas, 60 h. p.....0:51 4-5
J. P. Grady, Pope-Hartford, 28-30 h. p.....0:51 4-5
John Meiser, Pope-Toledo, 35-40 h. p.....0:56

ELECTRICS.

Geo. J. Bauer, Babcock.....1:55
Vernon Adkin, Columbus.....2:04 1-5
A. V. Hart, Columbus.....2:23 3-5

## Regulations Regarding Production and Use of Denatured Alcohol.

J. W. Yerkes, Commissioner of Internal Revenue, has issued the departmental regulations controlling the making of denatured alcohol, its handling and uses. These regulations will render effective the law passed by Congress to take effect January 1 next, and provide for the withdrawal from bond, tax free, of domestic alcohol when it is rendered unfit for beverage or liquid medicinal usage by the admixture of suitable denaturing materials. The tax now amounts to about $2 per wine gallon on alcohol at 180° proof, and the denatured article after January 1 will be free from that tax. Mr. Yerkes, speaking on the subject, said:

There will be two classes of denatured alcohol—first, that styled "completely denatured," which will pass into general use for general consumption, and can be purchased at the stores without limiting regulations as against the private consumer; and second, "especially denatured," in which the material demanded by the needs of manufacturing interests will be regarded. As to this latter there are limitations confining it to the special manufacturing industry for which it is prepared.

This especially denatured alcohol will be kept under strict surveillance and governmental supervision.

For the completely denatured article ten parts of wood or ethyl alcohol and one-half part of benzine will be added to 100 parts of ethyl alcohol. In other words, to every 100 gallons of ethyl alcohol will be added 10 gallons of wood alcohol and one-half gallon of benzine.

The denaturing process will be accomplished on the distillery premises where the alcohol is produced, in special bonded warehouses designated and used alone for denaturing purposes and for the storage of denaturing materials. These buildings and the operation itself will be under closest governmental inspection and control. Denatured alcohol will supplant very largely the consumption of wood alcohol for both domestic and manufacturing purposes, as it will be cheaper.

While the price of the completely denatured product cannot now be definitely stated, it is believed it will not be more than 35 cents a gallon. The price of the specially denatured alcohol will naturally vary according to the cost of the denaturing ingredients selected to meet the necessities of the manufacturing industries. These special formulas will only be used where it is made perfectly apparent to the department that the industrial interests involved cannot use completely denatured alcohol by reason of the presence of wood alcohol or benzine. In that case some other denaturing agent or agents, which will accomplish the purposes of destroying, as far as possible, the potable or beverage qualities of the alcohol, and at the same time adapt the denatured article to the special ends desired, will be determined upon.

The adoption of this legislation will require some extension of the force of the Internal Revenue Bureau, especially for field work. It will also add very largely to the work of the chemical division of that bureau.

## New Petroleum Refining Process.

The Macalpine oil refining process, on which a patent has been granted in England, is designed to cheapen the process of refining mineral and petroleum oils by simplifying and shortening the operations required, and lessening the amount of waste products, and to improve the color of the oil.

There are three stages in the new process. First, neutralizing any acid which may be in the oil under treatment by mixing with the oil an alkaline solution prepared by dissolving one pound of carbonate of soda in 10 pounds of water, and using about one pound of the solution to every 20 pounds of oil, and agitating the whole for half an hour, afterward subjecting the oil to a preliminary distillation; second, taking the distillate, or oil not requiring the acid neutralization and preliminary distillation, and treating it with an excess of weak sulphuric acid in order to precipitate the substances in the oil, which cannot remain in solution in presence of this acid, and thus render the remaining impurities susceptible of easy oxidation, and third, treating the oil so prepared with weak sulphuric acid in the presence of suitable oxidizing agents, and then preferably rapidly boiling the same.

In carrying out the second part of the invention the oil is mixed with 5 per cent. by weight of sulphuric acid, say about 1.72 specific gravity, and the whole maintained at a temperature of about 40° C., with intermittent agitation for about half an hour, after which the oil is allowed to settle for four or five hours and then drawn off from the tars, when it is fit for the last treatment. This consists in passing the oil into a suitable boiling vessel having an inverted condenser attached and adding to the oil the oxidizing agent, such as the oxides or hydrates of manganese, preferably finely ground black oxide of manganese ore, in proportion of about 5 per cent. of the oxidizing agent to the weight of the oil, and 10 per cent. of weak sulphuric acid of a specific gravity not exceeding 1.2. After the reaction has ceased the solution of sulphate of manganese, together with any excess of sulphuric acid which may be present, are allowed to settle, after which the oil is drawn off, and after the usual treatment with acid and alkali is distilled in the usual way.

In regard to the failure of previous attempts to refine mineral oil by means of the combined use of sulphuric acid of usual commercial strength and oxidizing agents Dr. Macalpine says that in his opinion such want of success has been due to the fact that the acid used was of a strength sufficient to disintegrate the oil and dissolve the manganese and result in an oxidization of too vigorous a character. It is claimed for this invention that it obviates these disadvantages by the use of an acid so weak as to have no action upon the oil and which does not act upon the oxidant itself except by the interposition of the impurities in the oil.

## Automobile Mail Service at Detroit.

The Detroit postal authorities state that bids will be received until December 4 for furnishing that office with automobile service for carrying mail from the depots to the main office and thence to the different stations throughout the city. During the past year a single cylinder Olds runabout has been furnished by the Auto Express Company, and Assistant Postmaster Mayworm states that it has been very successful, running both winter and summer, and giving much faster service to Station F than the horse vehicle formerly used.

The Washington authorities are skeptical regarding the efficiency of the cars in winter, and will withhold their decision regarding the service until January 15 next. The contracts, for which many concerns will bid, are to begin July 1, 1907, and last until July 1, 1911.

## Badges for Chauffeurs.

Secretary Woodward, of the District of Columbia automobile board, is of the opinion that every automobilist who drives in Washington should be compelled to wear a badge pinned upon his clothing in a conspicuous place bearing the words "Regis-istered Chauffeur No. —, District of Columbia." He proposes that it be made unlawful for a driver to voluntarily permit another to wear his badge, or a fictitious badge. He further recommends that all motor vehicles be required to display prominently a metal sign, approximately 2 inches in diameter, stamped with the words "Registered Motor Vehicle, District of Columbia," and the number of the automobile.

## Motorists Fined $50 in Hoboken.

Recorder Stanton, of Hoboken, has been fining non-resident auto drivers $50 for running their machines through the streets without a New Jersey license. The majority of the arrests have been made at the ferries and steamship piers.

## MINOR MENTION

The Duryea Power Company, Reading, Pa., are asking for an extension of time from their creditors.

The Reo Motor Car Company, Lansing, Mich., are laying a brick pavement on their half mile testing track.

The fifth annual winter automobile meet on the Ormond-Daytona Beach in Florida will be held January 22-27.

The Wayne Automobile Company have moved their offices to their new building on Piquette street, Detroit, Mich.

The Artizan Brass Company, Chicago, Ill., have removed from 118 Michigan street to No. 4 Lincoln Park boulevard.

The W. K. Prudden Company, Lansing, Mich., manufacturers of automobile wheels, are erecting a large addition to their factory.

The Motsinger Auto Sparker Company have opened a Chicago office at 1254 Michigan avenue, with Chas. S. Slaker as sales manager.

In the article on "Compression," by Warren Noble, in our issue of October 17, the compression figures given were gauge pressure, not absolute pressure.

The engine plant of the Buick Motor Company, Flint, Mich., has shut down because of a reported disagreement between the workmen and foreman.

An automobile exhibition at which American manufacturers might find it profitable to show their cars is to be held at Calcutta, India, January 21 to 30.

An informal opening of the luncheon rooms in the new quarters of the New York Motor Club, 58th street and Eighth avenue, will take place at noon November 2.

The recently incorporated Jencick Motor Manufacturing Company, Port Chester, N. Y., have begun the manufacture of automobile engines designed by Stephen Jencick.

The theft of automobiles has become so common in Buffalo recently that the Automobile Club of that city has offered rewards for information leading to the capture of the thieves.

The course in E. B. Favary's Automobile Designing School, 1416 Broadway, New York, will open November 1 at 8 p. m. There are day and evening classes, and a correspondence course.

Frank Lawwell, who drove the Frayer-Miller car in the Vanderbilt Cup race, is reported as suffering from pains in his chest, thought to be due to injuries sustained while driving in the race.

According to the 1905 list of the A. L. A. M., there were 1,250 dealers in the United States handling all makes and grades of cars. The present list contains 1,545 names, an increase of nearly 24 per cent.

The Blood Brothers Automobile and Machine Company, Kalamazoo, Mich., have dropped "automobile" from their name, and will devote themselves to the production of their universal joints and steering gears.

E. L. Ferguson, of the technical committee of the New York Motor Club, is to assist Secretary Butler, of the A. C. A., in the commercial vehicle contest to be held under the club's auspices November 7 to 10.

The A. C. of Delaware County has been organized at Glenolden, Pa., with sixty-two members and the following officers: President, J. H. Weeks; vice president, W. P. Anthony; secretary, Dr. Von H. Stoever; treasurer, J. E. Mitchell.

The recently organized George H. Lowe Company, Boston, Mass., will represent the Aerocar Company, of Detroit, in the New England States, except Connecticut. They expect to secure a central location in Boston for their showrooms.

At last the automobile seems to have attracted the attention of the poets, for during the past week no less than three poetical contributions were offered us for publication. Unfortunately, a technical paper is hardly the proper medium for the publication of poems.

The name of the Truscott Boat Company, St. Joseph, Mich., has been changed to the Truscott Boat and Auto Supply Company. They will manufacture and sell automobile supplies in addition to their boat manufacturing business. The company is capitalized at $1,000,000.

The next year's model of the Simplex Automobile Company, of Mishawaka, Ind., will be fitted with a four cylinder, two cycle 5x5 inch motor, and the hinged subframe of the 1906 model will be abandoned. The output of the company has been contracted for by Atkins & Elwell, of Elkhart, Ind.

Benjamin Briscoe, president of the Maxwell-Briscoe Motor Company, returned last Monday to the factory at Tarrytown, N. Y., from his Western trip. He had no definite statement to make regarding the location of their new Indiana plant. The report that Newcastle, Ind., had been settled upon is said to be incorrect.

Members of the Manufacturers' Club, of Buffalo, are trying to persuade the Pope Motor Car Company, of Toledo, Ohio, to move their business to Buffalo. The officers of the company are said to be contemplating leaving Toledo on account of the trouble they have had with the labor organizations there resulting in expensive strikes.

A two cylinder 20 horse power Maxwell touring car is reported to have completed a 2,500 mile non-stop run over the roads between Boston and Worcester, Mass., early Tuesday morning in 139 hours and eight minutes, and at a total expense of $41.45 for gasoline, oil and repairs. The start was made October 24, and the drivers were Lucius Tyler and Ralph Coburn.

The Kansas City police department has authorized the purchase of two motor ambulances. Various types are now being investigated. The two Ford runabouts purchased by the park and water departments in that city have given satisfaction. Others will probably be purchased by the water department.

The Page Woven Wire Fence Company, Adrian, Mich., inform us that they will soon be in the market with three models of automobiles driven by four-cylinder, two-cycle, air-cooled motors. The models will be a light runabout and a light touring car, each of about 25 horse power, and a heavy touring car of 40 to 45 horse power.

The Meteor Automobile Company, of Bettendorf, near Davenport, Ia., are preparing to manufacture a car with a four cylinder engine of 24-28 horse power, Simms-Bosch high tension magneto ignition, 110 inch wheel base, and transmission gears and differential of Krupp nickel steel. Touring and runabout bodies will be put on the same chassis.

It is reported that the Victor Automobile Company are being organized at Ridgeville, Ind., and expect to begin operations early in 1907. Ridgeville and Indianapolis capital is interested, and it is understood that two models, a runabout and touring car, both fitted with the Carrico air cooled engine, made by the Speed Changing Pulley Company, of Indianapolis, will be placed on the market.

The Smith & Mabley Manufacturing Company, New York, are building two 50 horse power and two 30 horse power cars for use in the roadless deserts near Tonopah, Nev. They are fitted with axles giving more than ordinary clearance. The rear axles have a drop on each side leaving the entire frame and springs more than five inches higher than in the ordinary car. Special reinforcements of frame and special axles were made for this purpose.

H. J. Koehler, driving a 22 horse power Buick, won the 100 mile race at the Empire track, Yonkers, N. Y., October 27, in 2 hours 5 minutes and 31 3-5 seconds. Ernest Keeler, driving a 40 horse power Oldsmobile, was second, in 2 hours 5 minutes and 47 seconds. Maurice J. Bernin had driven a 60 horse power Mercedes 92 miles when the race was called. The left rear wheel of Tom Cooper's 60 horse power Matheson flew off at the end of the eighteenth mile, pitching Frank Irving, his mechanic, over a fence into a field and breaking his collarbone.

### Coming Events.

November 7 to 10—A. C. A. Commercial Vehicle Tests, New York.

December 1 to 8—A. C. A. show, Grand Central Palace, New York.

December 7 to 23—Paris show.

January 12 to 19—A. L. A. M. show, Madison Square Garden, New York.

February 2 to 9—Chicago show, Coliseum and First Regiment Armory.

February 11 to 16—Detroit show, Light Guard Armory.

March 9 to 16—Boston show, Mechanics Building and Horticultural Hall.

## Garage Notes.

Dr. O. B. Lundy, Bottineau, N. Dak., will erect a garage 30x80 feet in size this fall.

Peter Melchiors & Sons will erect a garage and repair shop on Howard street, Omaha, Neb.

The Philadelphia branch of the Autocar Company, 249 North Broad street, will be remodeled.

H. E. Hass is to erect a garage 40x100 feet in size on Macy street, Fond du Lac, Wis., this fall.

C. C. Carter will open the California Automobile Garage, Fourth street and Citrus avenue, Redlands, Cal., November 1.

Benjamin O. Defibaugh is building a garage on Richmond avenue, near Vreeland street, Port Richmond, Staten Island, N. Y.

C. J. Bronson, Grand Rapids, Mich., agent for the Winton and Cadillac cars, is building an addition to his garage 75x100 feet in size.

Assistant Sales Manager Kerr, of the Buick Company, has opened headquarters at the Burns Garage on West Jefferson street, Syracuse, N. Y.

H. C. Samson and A. F. Farman have moved their Phœnix Automobile Exchange from 686 Thirty-fourth street, Oakland, Cal., to 4495 San Pablo avenue.

The Black Diamond Automobile Company's works on Sunset avenue, Utica, N. Y., were bought at sheriff's sale October 17 by A. J. Seaton.

The Mortland Automobile Company, Pacific Coast agents for the Glide cars, have established a branch house at Twelfth and Oak streets, Oakland, Cal. Arthur R. Dawson is manager.

The Luce & Banks Company, Morton H. Luce and W. B. Banks proprietors, will open a garage on Divison street, near Pearl street, Grand Rapids, Mich., December 1. They have the Maxwell agency for the western Michigan territory.

Dr. John A. Hawkins has sold his interest in the Hiland Automobile Company, Pittsburg, Pa. He had been president of the company since its organization in 1904. It is reported that he will soon be connected with another company.

H. M. Griffin, formerly with the Pope Company's Boston branch, and Daniel Pattinson have formed a partnership, to be known as the Pattinson Manufacturing Company, and will open a garage and repair shop in the rear of 48 Stanhope street, Boston.

The garage on South State street, Syracuse, N. Y., formerly occupied by the Syracuse Motor Car Company, and afterward by Richard E. Kolbe, has been leased by the Syracuse Storage Battery Company, who will conduct a garage and also manufacture storage batteries.

The manslaughter indictment against John T. Fisher, manager of the Scranton (Pa.) Garage and Motor Company, for killing a young man in an automobile accident, has been withdrawn, and the civil suit brought again Fisher by the young man's mother settled out of court.

The recently incorporated Metropolitan Motor Car Company, Cleveland, Ohio, will erect a two story garage, 140 feet square, on East Nineteenth street, Cleveland. W. C. Anderson is president, J. Theo. Tehen vice president and H. L. Finley secretary and treasurer. They have the Pierce, Babcock and Cadillac agencies.

J. D. McInnes, manager of the Cadillac Automobile Company of Kansas City, Mo., will close his garage on McGee street November 1, and reopen in the spring in a new location. Cadillac users will be accommodated in the way of repairs and parts by the firm at the quarters of the Benz Engine Company, 2312 East Fifteenth street.

## Trade Personals.

Henry Cave, formerly with the Electric Vehicle Company, Hartford, Conn., has been appointed assistant chief engineer of the American Locomotive Automobile Company, Providence, R. I.

Harold Randolph Collisen, a stepson of Charles A. Singer, president of the Matheson Company of New York, has been appointed assistant secretary of the company.

Harry B. Remington, formerly of the Quaker City Automobile Company, of Philadelphia, has assumed the management of the Hump Motor Car Company, who have the Philadelphia agency for the Aerocar Company.

Charles J. Glidden will start about November 1 for his tour of Mexico. He plans to make the greater part of the journey on railroad tracks, for which purpose his automobile is to be equipped with railroad car wheels.

T. F. Randolph, formerly chief engineer of the Jeanesville Iron Works, Hazleton, Pa., has been appointed superintendent of the Dragon Automobile Factory at Detroit. He will construct the Dragon cars in accordance with the designs made by Leo Melanowski.

Joseph M. Gilbert, formerly with the Firestone Tire and Rubber Company, has been appointed general and sales manager of the Continental Caoutchouc Company, to succeed Emil Grossman, whose connection with the company was severed October 6.

J. Stewart Smith has resigned as sales manager of the metropolitan district for the Continental Caoutchouc Company, and has been appointed Eastern sales manager for the Electric Rubber Company, Rutherford, N. J., makers of Panther tires. He has opened headquarters at 253 West Forty-seventh street, New York.

Joseph Tracy, who won the American elimination trial September 22 last, driving a 90 horse power Locomobile, has been retained by the Locomobile Company of America as consulting engineer. He will not devote his entire time to that company, but will still retain his office at 1771 Broadway, New York.

## New Agencies.

Saginaw, Mich.—J. P. Beck, Maxwell.

Newark, N. J.—Percy H. Johnson, Grout.

Grand Rapids, Mich.—Luce & Banks, Maxwell.

Newark, N. J.—Jacob W. Mason, Maxwell (Essex County for 1907).

Philadelphia, Pa.—Horace B. Hills, Royal Tourist and Robert-Snider.

Salt Lake City, Utah.—Freed & Branford Automobile Company, Wayne.

Benton Harbor, Mich.—Benton Harbor Bicycle and Auto Works, Wayne.

Providence, R. I. — The Shepard Company, Haynes (Rhode Island for 1907).

Tonopah, Nev.—Lothrop-Davis Company, Wayne.

Peckville, Pa.—J. D. Peck, Wayne.

Aurora, Ill.—L. H. Brunemeyer, 12-14 La Salle street, Reo and Premier (Kane County for 1907).

Aurora, Ill.—The Anderson Auto Company, 41-43 Downer place, White and Rambler (Kane County for 1907).

## New Incorporations.

Auburn Automobile Company, Auburn, Ind.—Capital stock increased from $7,500 to $25,000.

The Hayes Carburetor Company, Nashville, Tenn.—Capital stock, $15,000; to manufacture, repair and sell carburetors and automobile parts.

Knox Automobile Company of Illinois, Chicago.—Capital stock, $5,000. Incorporators, Theodore C. Robinson, William W. Hodge and E. Rising.

Rambler Garage Company, Chicago.—Capital stock, $2,500; to repair, storage and hire of motors. Incorporators, Edward J. Batelme, Effie M. Abel and Edith S. Frankle.

Hurck Motor and Cycle Company, St. Louis, Mo.—Capital stock, $5,000 (all paid in). Incorporators, John Hurck, Alfred J. Carpenter and Mary H. Carpenter.

Washington Motor Car Company, Washington, Ind.—Capital stock, $150,000; to manufacture and deal in automobiles. Directors, Frank W. Fowler, Edward W. Strack and J. R. Fowler.

The Dock Gas Engine Company, 15 Exchange Place, Jersey City, N. J.—Capital stock, $400,000; to manufacture motors, boats and vehicles. Incorporators, John R. Turner, H. O. Coughlin and B. Stafford Mantz, all of above address.

Victor Auto Tire Repair Company, Passaic, N. J.—Capital stock, $30,000; to deal in and repair automobile tires. Incorporators, Victor E. Butler, Allan M. Chambers, James Maitland and Cornelius Post, the latter being the agent in charge.

C. V. G. Import Company, Jersey City, N. J.—Capital stock, $120,000; to import, manufacture and sell automobiles and supplies. Incorporators, Gaston R. Rheims, Hartley G. Petteties, Charles E. Conlon and John J. Treacey, agent in charge.

Jencick Motor Manufacturing Company, Port Chester, N. Y.—Capital stock, $50,000; to manufacture motors, etc. Incorporators, George E. Mertz and Leander Norton, Port Chester, N. Y., and Roger A. Young, Bronxville, N. Y.

The Royal Motor Car and Manufacturing Company, Cleveland, O.—Corporate headquarters transferred from West Virginia to Ohio. The company was reincorporated under Ohio laws with a capital stock of $500,000. Incorporators, H. A. Kelly, Horace Andrews, Gustave Von Den Steiner, W. B. Stewart and Julian W. Tyler.

## Patents Issued October 23, 1906.

833,763. Wheel for Vehicles.—William G. Titherington, Liverpool, England. Filed August 14, 1905.

833,802. Reversing and Speed Changing Transmission Gear.—Jacob Redding, Anderson, Ind., assignor to J. W. Davis, Anderson, Ind. Filed May 20, 1905.

833,828. Spring Wheel.—Abram Ellis, Augusta, Ga. Filed December 26, 1905.

833,833. Transmission Mechanism.—Josef Henrikson, Dyerville, Cal. Filed July 3, 1905.

833,839. Frictional Drive Mechanism.—George W. King, Marion, Ohio. Filed May 31, 1905.

833,912. Anti-Vibration Device for Automobiles.—George W. Bell, Liverpool, Engalnd. Filed November 27, 1905.

833,926. Face Protector.—Augustin Hendricks, Grand Rapids, Mich. Filed September 8, 1905.

833,951. Lamp and Lantern.—Charles Bergener, Rochester, N. Y., assignor to the C. T. Ham Manufacturing Company, Rochester, N. Y. Filed September 29, 1904.

833,974. Variable Speed Driving Mechanism.—Richard M. Ruck, London, England. Filed April 9, 1906.

833,981. Detachable Pneumatic Tire.—Charles S. Scott, Cadiz, Ohio. Filed October 30, 1905.

833,982. Clutch.—Charles O. Snyder, New York, N. Y. Filed July 20, 1905.

833,992. Air Brake for Automobiles.—Alexander Winton and Harold B. Anderson, Cleveland, Ohio, assignors to the Winton Motor Carriage Company, a corporation of Ohio. Filed August 10, 1905.

834,007. Motor Car.—Martin Fischer, Zurich, Switzerland, assignor to the firm of Martin Fischer & Co., Zurich, Switzerland. Filed May 25, 1905.

834,008. Motor Vehicle.—Monroe Grier, Pattonville, Mo., assignor of one-half to Albert C. Kunze, St. Louis, Mo. Filed September 9, 1905.

834,015. Rubber Tire.—Arthur H. Marks, Akron, Ohio, assignor to the Diamond Rubber Company, Akron, Ohio, a corporation of Ohio. Filed November 17, 1905.

834,025. Storm Cover for Vehicles.—Harry D. Pursell, Washington Court House, Ohio. Filed March 15, 1906.

834,082. Power Transmission Mechanism.—Charles P. Smith, Rochester, N. Y. Filed March 5, 1906.

834,106. Resilient Wheel.—Thomas W. Broomell, Watertown, N. Y. Filed November 28, 1905.

834,146. Automobile Truck.—Henry B. Lewis, Detroit, Mich. Filed October 23, 1905.

834,179. Sparking Plug.—Daniel W. Wilson, New Bedford, Mass. Filed February 16, 1904.

12,544. Transmission Gear.—Orson W. Davis, Rochester, N. Y., assignor to Gearless Transmission Company, Glens Falls, N. Y., a corporation of Maine. Filed March 19, 1906. Original No. 799,148, dated September 12, 1905.