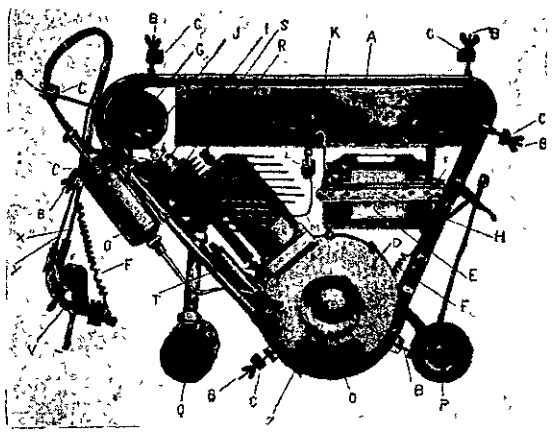
THE MOTOSACOCHE.

Motor cycles of to-day are considerably over weighted and over powered, and while manufacturers have been making heavier cycles, with higher powered motors to drive them, Messrs. Dufaux & Co., of Geneva, have solved the problem from a totally different standpoint. Their Motosacoche is a complete motor attachment containing accumulators, coil, fuel, and oil tanks, etc., enclosed between two enamel plates or protectors, and having a total weight of 32lbs. The whole mechanism is built into a tubular steel frame similar in shape to the ordinary roadster cycle, and is capable of being attached to the latter by means of seven sets of winged screws in the short space of



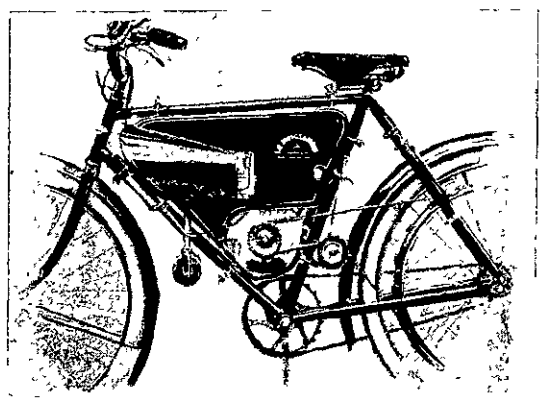
THE MOTOSACOCHE.

five minutes, and detached therefrom in sixty seconds. This tubular steel frame plays a most important part, as the manner in which it is attached to the bicycle makes the cycle frame considerably stronger. If a simple bow string is added to the front forks, a bicycle is stronger many times than if without the Motosacoche attachment. Another important part that this tubular frame plays is to absolutely absorb all vibration, because being practically suspended inside the cycle frame by the winged screws the shocks caused by the explosion never reach the frame of the cycle at all. The silencer is so effectual that by properly regulating the control levers almost silent running can be attained.

In looking over the Motosacoche one is struck forcibly with the simplicity of the arrangement, nearly all wiring and connections being dispensed with, and the evidence of perfect workmanship displayed. Perhaps this is not so surprising when we remember that the factory of Messrs. Dufaux & Co. is in Geneva, "where the watches come from." It seems hard to believe that a cycle with the Motosacoche attached, the total weight being about 60lbs., can as satisfactorily do the work as the heavy motor cycle, weighing anything from 130 to 180lbs. or more, yet it appears quite possible after examining its record of performances, amongst which are to be found the following:—Great Endurance Race, Paris, 1903, of 620 miles, 1st and 2nd prizes; 1st gold medal for regularity of speed; 1st gold medal of the Automobile Club of France, beating 127 competitors from all countries; Endurance Race, Milan to Nice, 1904, gold medal, diploma of honour, highest awards; Road Race Trelex, St. Cergues, 1st and 2nd prize. Coming nearer home, the Motosacoche matched against all competitors, some on motors developing 3½ h.p., came 1st and 2nd in the Kemsley Cup, Sydney to Melbourne, a distance of 620 miles, portions of which contain the worst roads in the colonies.

It is pleasant to note that the inventors are meeting with the success they deserve, as they have received the largest motor order on record, viz.—12,000 Motosacoches from the Automobile Club of France.

We are indebted to Messrs. Herbert H. Smith for the accompanying illustrations.



THE MOTOSACOCHE ATTACHED TO AN ORDINARY BICYCLE.

Struggle for Speed.

NEW RAILS AND ENGINES FOR THE NORTH-WESTERN RAILWAY.

The great engineering works at Crewe, the hub of the London and North-Western Railway system, are now in a ferment of activity. One cause of this is the recent decision of the company to relay the permanent way of their trunk lines with 95lb. bull-headed steel rails, the present 90lb rails not being sufficiently strong to bear the largely increasing and faster traffic.

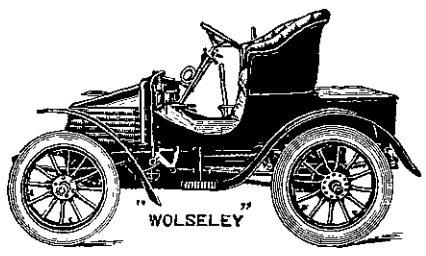
The task is a gigantic one, as at least 400 miles of line, all double, and in many parts quadruple, has to be entirely relaid without the daily traffic being interrupted. It is not likely that the work will be actually taken in hand before the spring.

Meantime the company's employees at Crewe have plenty of work before them in the rolling of their new rails.

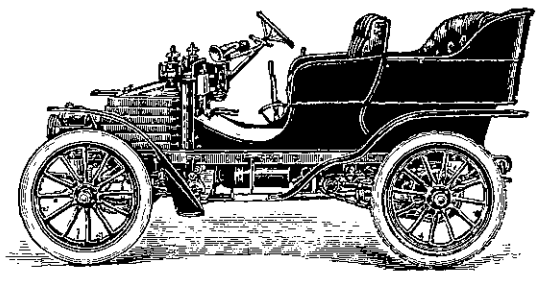
Another part of the renovation of this line, providing additional work at Crewe, is the changing of the type of locomotive. Mr. Whale, who succeeded Mr. Webb as chief mechanical engineer, is introducing, instead of the three and four cylinder compound engines, a less complicated but tremendously powerful locomotive adapted to the new conditions of traffic.

Wolseley Cars.

The 6-h.p. light car has been produced to meet the demand for a light, two-seated vehicle that can be easily driven, and looked after by the owner without necessitating the employment of a chauffeur, and with this view the design has been worked out on the simplest possible lines, while the construction is of a substantial character, making the car a most serviceable one for hard wear and tear in all weathers. This type of car has been largely adopted by doctors and professional men for business purposes, as by its use it has been found possible to effect a saving of many hours in a day's work.



WOLSELEY 6-H.P. LIGHT CAR.

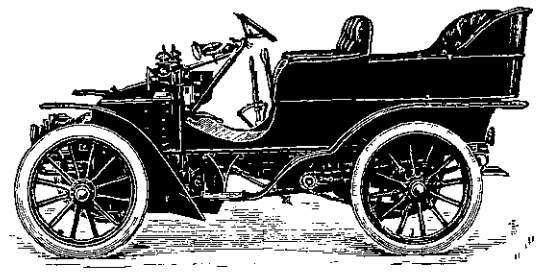


WOLSELEY 8-H.P. TONNEAU.

A vehicle of this type can also be fitted with a hood and weather screen, so that the passengers are entirely protected in bad weather. Since its introduction, this car has been most successful, and has secured the highest awards in various reliability trial runs and hill-climbing competitions. Two styles of body are made (Roi de Belge bucket seat and phæton), either of which may be fitted at the puchaser's option. The selection must be made when the order is placed.

The 8-h.p. tonneau is a new improved type of light, four-seated car, capable of maintaining a good average speed on the level, and possessing excellent hill-climbing qualities. This car has lately been entirely re-designed to supersede the old 7½-h.p., and is now practically a small model of the 12-h.p. car. The wheel base has been lengthened, and particular attention paid to the suspension of the car, thus making it very smooth and easy running. The motor and gearing are entirely enclosed and protected from mud and dust by a detachable shield. The chassis is so arranged that all mechanism lies below the frame, thus making it possible for many different styles of body to be fitted.

The 12-h.p. tonneau car is shown fitted with the type of body most generally used, and is one of the most popular motor vehicles in use at the present time. Since its introduction, this car has always been conspicuous for its consistent

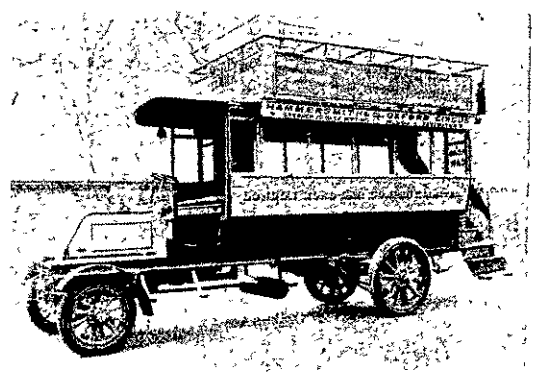


WOLSELEY 12-H.P. TONNEAU.

reliability and hill-climbing qualities. It is purposely constructed as simply as possible, without sacrifice of efficiency, so that it is possible for the owner to quickly learn how to drive and attend to what adjustments may be needed from time to time. In public reliability trials and hill-climbing competitions during the past three years Wolseley cars have created a remarkable record, having secured eleven gold medals and two silver medals in open competition with every well-known make of car. The chassis is so arranged that all mechanism lies below the frame, which makes it possible for any type of body to be fitted.

Prosperity is shown in the balance-sheet of Argyll Motors, Ltd., which shows a net profit of £26,633 on the year's work. Among the assets are the new works at Alexandria, valued at £64,538, and new machinery plant, etc., £57,635, a total of £122 173.

Diamond tools have been ably discussed by Mr. G. C. Henning before the American Society of Mechanical Engineers. It appears that hard rubber paper, hard stone, and hardened steel cannot be readily worked by the use of steel tools. Tools of a much harder material are required, and for this reason diamond is used. The diamond is of two kinds, totally different in appearance and quality. Black diamond has a very dark purple brown colour, is an amorphous, granular stone, with rarely any crystallisation visible or traceable, and is called carbon or black diamond. It is the hardest material known, and has great strength. Bort, on the other hand, is entirely crystalline, and generally transparent, and of all colours of the rainbow. Some are as clear and transparent as glass, and this kind is considered harder than any other bort, except some which is almost black. Bort is extremely brittle, and is readily fractured or split in the three directions of its cleavage planes parallel to the sides of the octahedral crystal, in which shape it is most commonly found. The dodecahedral crystals are also readily "cleaved" in a similar manner. In spite of the very great hardness of all kinds of diamonds, they are readily sawn, drilled, cut, and polished; carbon (black diamond) cannot, however, be polished, as is the case with bort. Diamond cuts diamond, while steel saws and drills and cast-iron discs, charged with diamond dust, are used for the other operations. All kinds of grinding wheels, being made of extremely hard materials, are most readily kept free from filling or glazing, and imperfect shape by diamond tools. In certain classes of work, where great accuracy and precision are primary requirements, or extremely fine lines are essential, the diamond is the only material that answers the purpose. Thus lithographers, engravers, and scale-markers use them for fine work.



24-PASSENGER STRAKER-SQUIRE 'BUS, FITTED WITH 24-H.P. ENGINE. 400 OF THESE 'BUSES HAVE BEEN ORDERED BY LONDON OMNIBUS PROPRIETORS.