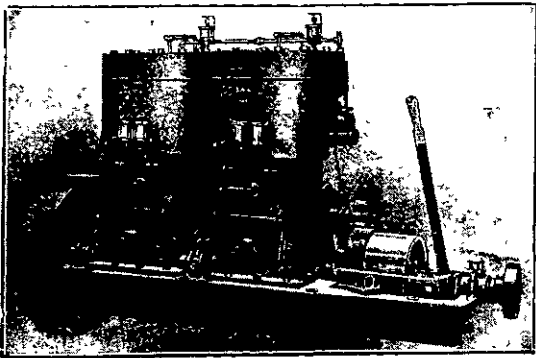


The White Marine Motor.

The White motor, illustrated below, possesses many distinguishing features. Each engine is equipped with the White patent overflow suction feed. After once opening the valve, the feed requires no further attention, and it also does away with any chance of having gasoline leak from the valve into the boat. The White is equipped with electrical ignition and self-cleaning electrodes. Heat, rust, grease and soot cannot collect upon or in any manner affect the working of the ignitor. The contact points do not wear out or become battered with use, and do not have to be removed or cleaned. A ball-governor is used embodying the principles adopted in the Corliss engine. The speed can be instantly changed and regulated by the operator, and the governor will maintain the speed without further attention. The engine is built on the four-cycle principle, taking an explosion in each cylinder at every other revolution, and it is designed



LATEST TYPE OF WHITE 4-CYCLE MARINE MOTOR.

especially for marine purposes, being made as light as practicable, and with the centre of gravity as low as possible.

The method of supplying gasoline for the engine is free from danger. The gasoline tank is placed in the bow of the boat below the level of the engine. No match or flame is used in starting. A special feature of this engine is that under no condition can there be a premature or back explosion. This is an essential point in the safe and economical running of an engine. With the White method of gasoline feed there is absolutely no chance for a leak of gasoline from the feed valve into the boat.

At Belfast, Ireland, was recently tested a steam engine said to be the most economical ever built. The lowest steam consumption per horse power was 8.585 pounds, obtained in one of a series of runs. Nearly as good results were obtained in two other tests, and all were excellent. The engine is an inverted vertical cross-compound marine type, rated at 500 h.p. at 100 revolutions per minute, with a steam pressure of 120 pounds, and was built by Messrs. Cole, Marchant and Morley, of Bradford, England.

CONSIDERATIONS FOR A PROSPECTIVE PURCHASER.

By W. RUSSELL GRIMWADE, B.Sc., F.C.S., in the Scientific Australian.

This contribution is from the pen of a motorist of considerable practical experience. It treats interestingly of the salient points to be considered by an intending purchaser who desires to choose a car with his eyes open.

THE main difficulty in the way of offering advice to an intending buyer of a motor car is the consideration of price, and it is such a dominating factor that in this article it will be neglected, and advice on minor points offered. When it is quite settled how much money is going to be spent, and what amount of luxury is desired, the relative merits of various types of cars may be discussed. At the outset it should be understood that, broadly speaking, the bigger the car the greater the comfort and the cost of upkeep. Steam and electric cars are for the time being out of it, and, unless a man is or wishes to appear peculiar, petrol cars only are considered. Instances are often met with where a man after long delay makes up his mind to buy a car, and, after inspection, decides on a big powerful four-cylinder machine. This is always a pity for several reasons. The car is from the start in the hands of beginners, and suffers accordingly, and the owner is dissatisfied because the machine is not performing as well with

him as it should. Moreover, a great deal of pleasure is lost by an introduction to motoring by a powerful machine. If a more modest car be made the medium of initiation, the full joys of anticipation may be had, and as the car is changed for something better the goal of one's ambition is reached by stages, and each acquisition yields its own peculiar pleasures. If a car is to be used as a vehicle only, and to be driven exclusively by a motorman, this does not apply with such force, and there is no reason why luxury should be bought by degrees—the passenger never feels the need of "more power" as forcibly as the driver. It is an excellent plan for a man wishing to enjoy the full pleasures of motoring to start off with a single cylinder, carry on to a twin cylinder and so work up to a four. Experience in driving and the general management of a car can be well and inexpensively gained by driving somebody else's machine, but as owners are inclined to be exclusive this is not always possible. It is preferable to be reasonable with one's desires, and buy a small second-hand car for a start, and when some knowledge has been gained, to exchange it for a larger one. That is, of course, assuming that the owner wishes to drive himself, and does not intend to employ a professional driver. When an owner is driven only, and never drives, more than half the pleasure of motoring is lost, and the car becomes merely a vehicle of convenience, and, moreover, it is well for an owner not to be absolutely dependent on his motor man, as many fine cars are not doing themselves credit because their entire management is left in irresponsible hands.

Upkeep is a very important item, and should be considered before purchase. Apart from depreciation, it is a fair thing to assume that in Melbourne a small runabout car can be run for a total cost of not more than twopence per mile all the year round, on figures of a year's running, and includes everything—i.e., petrol, lubricants, tyres, renewals, repairs and insurance. Depreciation is a decreasing item, and may be considered to approximate the total running cost, so an expenditure of fourpence a mile will easily cover the maintenance of a small machine. These figures are only approximately true for an annual mileage of from 6000 to 10,000. The maintenance of large cars is, as a rule, more than proportional to their size, and in many instances runs up to over a shilling per mile. Tyres are a very expensive item, and alone cost more than fuel, but the expense they entail is dependent upon the care and skill of the driver.

In selecting a car, special attention should be paid to:—(1) Accessibility of the engine and running mechanism; (2) clearance of the car above the ground; (3) ability of the car to run slowly on the top gear; (4) type of gear box and the ease with which gears are changed; (5) the efficiency of the water circulation and the cooling powers; (6) electrical connections and wiring. Accessibility is a very important point, as the running mechanism should by its position invite inspection. If access to vital parts necessitates the dismantling of rods and levers, their attention is unconsciously postponed, and the lack of a drop of oil leads to wear and early replacement. Some cars seem to be put together in a very awkward manner, and the writer has known an instance where the whole crank chamber had to be removed to allow of a bolt in the pump mechanism being replaced. The cost of such small replacements is often considered excessive, because the time spent in getting at the job and the subsequent reassembling is overlooked.

For country use the height of the undergear from the ground should be noted, but it must be admitted that it is surprising what rough tracks can be negotiated with good driving, with a clearance of only a few inches.

Some makers apparently design with speed as the only object. This may be very desirable on occasions, but for town or rough country use a car should not be fast beyond its power on its top gear. The lower the gear the more latitude there is in the range of speeds obtainable, and the car that is moderately geared is infinitely more comfortable to drive than the very fast one.

The gear box of a car is perhaps its most crucial part, and special attention should be paid to it. Several makers fit patent gear boxes, and those that are successful are vastly superior to the original Panhard gear box. With the latter type the skill of the driver is everything, and in expert hands they wear well and suffer no damage, but there are few gear boxes of this type that do not show heavy wear after having been in constant use for a year or so.

The water circulation and cooling of the engine should be ample, as they are often severely taxed on north wind summer days. Radiators fitted with fans for a forced draught are in vogue at present, but the fan is an additional running part that is apt to be a nuisance, and, as some big firms contrive to do without it, why should it not be omitted altogether? The engine should be able to run in the car when stationary for at least thirty minutes without causing the water to boil.

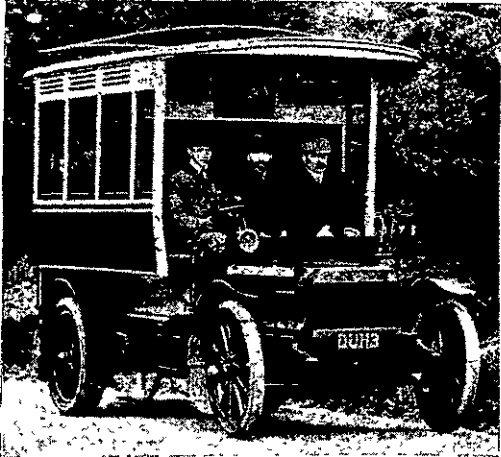
The details of the electrical portions of a car are big factors in its reliability. Cheap wires, poor switches, and insecure terminals often cause a stop on the roadside, and although they do not take long to rectify when discovered, they are often difficult to find, and are always a cause of annoyance.

The carriage springs of a car should be tested by a buyer by riding in the back seat when driving over a rough road at a moderate pace, and it should be remembered that, apart from the comfort of good springs, they are largely responsible for the life of the contained machinery.

The Motor Omnibus.

THE motor omnibus has an enthusiastic advocate in Mr. E. L. Holmes, of Melbourne. His evidence before the Railway Standing Committee was of a very interesting character, and forms a valuable summary of the advantages of this successful means of modern locomotion. In the course of a lengthy communication, Mr. Holmes states that the motor 'bus has long passed out of its experimental stage. In London alone, on October 19th last, no less than 149 modern motor 'buses were in active operation, and so great is the demand that it is estimated that over 2000 vehicles are on order for use in Great Britain. As an instance of the importance of this form of locomotion, Mr. Holmes points to the rapid increase by the large English railway companies, especially the Great Western, of feeder services of motor 'buses to connect their lines with small towns and villages.

Mr. Holmes continues as follows:—"That London 'bus companies and English railway companies



A TYPICAL "FEEDER" OF THE GREAT WESTERN RAILWAY.

have adopted the motor 'bus largely, and cannot obtain supplies fast enough, does not seem to carry the weight in argument which it undoubtedly should. Expert evidence shows that 10d. per mile is full cost of running motor 'buses, allowing most liberally for depreciation, and yet local authorities hesitate, and in many cases "land" their citizens with "electrical" white elephants. A recent illustration of this has been shown at Oxford (Eng.), where the Council called for comparative reports on motor 'buses and electric trams. The town clerk summarised the reports as follows.—

	Motor 'Buses.	Electric Trams.	Electric Trams.
Length of road served	9	10	8½
No. of vehicles ..	17	25	23
Seating capacity	34	48	48
No. of passengers	4,580,000	5,294,016	4,784,016
No. of miles run	490,000	661,752	577,752
Traffic receipts per mile run ..	11d.	10d.	10d.
Working expenses per mile run ..	8.70d.	6d.	6d.
Capital expenditure	£20,000	£130,147	£116,147
Total traffic receipts	£22,520	£27,573	£24,073
Total working expenses	£17,750	£16,544	£14,444
Loan charges, 6%	£1,200	£7,809	£6,969
Profit	£3,570	£3,220	£2,660

A receiver of stolen cars has been discovered in Chicago. At his establishment is a complete equipment for re-modelling, re-painting, and faking stolen cars, so that their owners cannot possibly recognise them. In the suburbs of Chicago a company of motor cracksmen attacks and robs passing motorists to such an extent that shot guns and revolvers are regarded by Chicagoans as essential motor accessories.