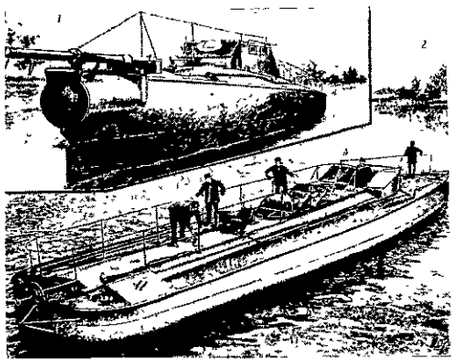
A Torpedo Boat Driven by Kerosene.

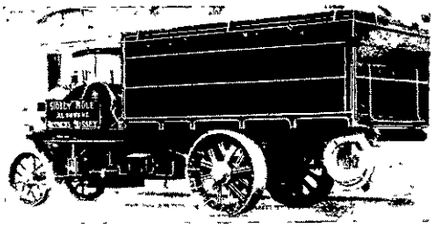
A kerosene-driven torpedo boat has been constructed for the French navy according to designs furnished by M. Récopé, a retired naval engineer and now the vice-president of the yachting committee of the Automobile Club of France. The boat is about 56 feet long, and has a hull of sheet steel 1-12 inch in thickness. It is equipped with two explosion motors which burn illuminating oil (kerosene), and together develop 150 (French) horse-power, at 900 revolutions per minute.



The motors are of the Cazes marine type, and have four cylinders. The transmission and speed-changing mechanism has been considerably simplified by the employment of a reversible screw propeller, of the Krebs type. The torpedo tube is placed at the bow. The torpedo weighs about 1000 pounds and carries 220 pounds of explosive. Its initial velocity is 30 knots. The speed of the boat is 16 knots, and its radius of action exceeds 100 nautical miles. With its hoods closed it is almost invisible at a little distance, while its small size admits of its being carried on the deck of a warship.—*La Nature.*

A Farmers' Waggon.

It is yet a far cry to the universal employment of steam wagons by farmers, but we believe the example of prominent fruit-growers and market-gardeners will shortly be followed by those who lay down cereals and root crops. Not every farmer can provide the traffic to keep a traction engine busy, but large numbers may well turn to account a steam wagon, the power from which can also be used externally for the driving of threshers, etc.



Mr. Sidney Hole, of Yew Tree House, Albourne, Hassocks, Sussex, has used a Foden wagon, for farm purposes, the conveyance of milk, the haulage of grain, etc., for nearly three years, and is well satisfied with the results, though he points out that a certain amount of scheming is necessary, in the arrangement of loads and work, to ensure financial benefit in the case of a farmer. The body of this wagon is made extra deep. It is lined with sheet iron when grain is carried.

Protection and Freedom for the Driver.

Few people know how much of the front-seat passenger's comfort depends on the provision by the makers of good high side doors to the driving seats. Often no doors of any kind are supplied, and, even when they are fitted, they are generally too low to be of much good, and in addition to this they usually spoil the smart appearance and general symmetry of the coach-work, as the lines set out by them are not in keeping with the rest of the carriage The difficulty is to make side doors of such a kind that the change-speed lever and brake can be operated in comfort without the off-side door getting in the way. The near-side door, does not, of course, offer any difficulty to designers, and it is merely a question of that on the driver's right hand side. Messrs. W. T Clifford-Earp, Ltd., are fitting a good device to all standard bodies supplied with six-cylinder Thames cars. The "gate" change speed lever works inside the door, and the brake lever is outside. The top of the door comes level with the top of the dashboard, and the door itself is carried back in a graceful curve to the body at the side of the driver's seat The near-side door opens in the ordinary way but that on the off-side drops down into its place and is kept secure by the support of the glass wind-screen fixture.

New Ball Worm Gear for Motor Driving.

There is much talk about a curious form of worm gear recently patented by Mr Collier It was devised primarily for the purpose of a direct drive in automobiles, as well as for the purpose of a speed-change gear It must be realised from the start that the teeth of the worm wheel are steel balls sunk to their equatorial line in cups bored in the body of the wheel The wheel runs in a guard, which prevents the balls from leaving their sockets, and in practical work an oil-bath container is used The worm which gears with this ball wheel may have any number of threads. Usually it will be single, double, or triple threaded. Obviously the contact of the worm and of a ball can only be, at most along a quadrant of a circle on the diametral plane taken parrallel with the face of the worm wheel; that is to say, on the longitudinal centre line of the worm

If the pitch from centre to centre of adjacent threads is always made equal to the distance apart of the balls which form the teeth, then any worm, no matter what its type, single, double, or multiple threaded, will gear properly with the ball tooth gear wheel. Thus, while forming a direct drive upon the axle, this gear admits of as many changes of speed as there are worms upon the worm shaft

The worms are made to fit around the curvature of the wheel rim Thus a worm may be quite loose on a feather key, yet it will not screw itself out of gear as would a plain parallel worm Thus no particular device is needed to counteract this tendency, though such a one may be mechanically desirable

LOCAL NOTES.

The touring motorist has transferred his anathemas from the loose dusty roads of the drought to the floods and their deterient influence on pleasant tours. He is hard to please.

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The latest car to be seen in Wellington is a sumptuous looking 14-18 h.p. Renault chassis with landaulet body It has come to the order of the Hon. C. Johnston, of Karori.

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Mr. W B. Giesen is a familiar figure on the road between Feilding and Wellington. I caught a glimpse—a flash—of him and his gliding Clement as they slid by. The silver-grey Clement is quite a refreshing sight after the predominating number of dark-hued vehicles.

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No place is safe from the invasion of the ubiquitous motor car The latest from America tells of a car having been seen on Goat Island, which is the small jutting rocky plateau between the American and Canadian Falls, at Niagara. Query—How did it get there?

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The world's record for a 24-hours' continuous road race has been broken by Messrs Kellow and James, of Melbourne, on a 40 h.p. six-cylinder Darracq These ardent motorists covered no less than 777 miles in the time—an average of 32¼ miles an hour.

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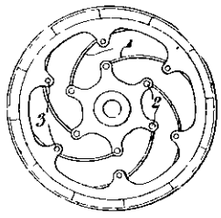
Efforts are being made the world over to improve the mechanically worked carburetter, with its combinations, of jet for petrol and orifice for air, which can never be correct in principle Just now we have amongst us a family of engineering experts who have evolved a plan which will at one hit strike right at the bottom of the matter. Mr. J. A. Paterson, sen., and his two sons, Messrs A. J. Paterson (Assistant City Engineer), and Mr. A. D. Paterson (Selwyn County Council Engineer) have devoted many years to this subject, and their carburetter is perhaps the best yet designed. With a car equipped with this device there is no danger of fire, as it would be perfectly safe to even apply a match to the tank, in which case no conflagration could possibly occur. We are waiting with interest the time when they will be on the market for car equipments, as they are at present for house lighting and power supply.

Resilient Wheel.

Our illustration shows a new wheel for motor cars, which has recently been patented by Herr Mannberger. A series of flat springs (1) are arranged between the hub and the felloe of the wheel, to take



the place of the usual spokes. These springs are pivoted to the hub (2) but are rigidly attached to the felloe (3).

PRINCE BORGHESE,

Winner of the Pekin to Paris contest. First favourite for the New York to Paris. This race has been altered. The new conditions are that motorists cross the American continent to 'Frisco, go by sea to Vladivostock, and motor to Paris. It is now a different thing. It is not even a New York to Paris race.

Storage Battery Hints.

By Peter Hoyt

The usefulness of the storage battery in automobiles depends almost entirely upon its reliability of action Anything which tends to interfere with the action of the battery directly affects the running of the machine The exercise of a little ordinary care will often prevent exasperating delays on the road.

One of the chief requisites to the satisfactory operation of the ordinary sparking battery is clean contacts Clean contacts are comparatively easy with most batteries, as nearly all the leading manufacturers are connecting the several cells together by means of lead straps instead of the old method of binding posts and copper strips This method of assembling leaves but two binding posts exposed, upon which verdigris can form, and these can easily be kept clean and bright by occasional scraping. Much unsatisfactory service was caused formerly by the high resistance offered to the current by the verdigris and dirt that accumulated on the various contact points when the copper strips and binding posts were used. The lead connections are not acted upon by the acid and by keeping the contact clean, resistance can be reduced to a minimum.

In a sparking battery it is not advantageous to discharge to too low a point. Sulphate forms while the cells are discharging at the low rate required by the coils, and after the surfaces of the plates have been covered with this sulphate it is difficult for the acid to get action and the discharge suddenly drops off and the battery fails. The average six volt sixty ampere hour battery will run a four-cylinder car from 1000 to 1200 miles on one charge. It will be found advantageous to re-charge after 1000 miles The battery should be re-charged once a month, whether the thousand miles are covered or not. If the battery has not been used much during the