

but little opposition. Should the experimental buses now being sent out to Sydney be as successful as it is hoped they will, the Railway Commissioners intend to build the bodies of the other vehicles which will be required in the State, but to continue to import the chassis from Great Britain.

A powerful new motor fire engine has just been built for the Johannesburg Corporation by Messrs. Merryweather and Sons, Limited. The engine, which will be the first of its kind in South Africa, is capable of pumping 500 gallons a minute, and is to travel at a speed of 30 miles an hour. The motive power is steam, and the firing is done with common paraffin. The engine has double cylinders and pumps, and is fitted with solid rubber tyres. The machine carries fuel and water for several hours' continuous running. It can turn out within one minute of the alarm being given, the motor not only running the engine to the scene of the fire, but being ready at the same moment for pumping work. The engine carries 10 men and 1,000 feet of hose. A similar machine is being built for Capetown.

The Russell patent pneumatic steel tyre is another attempt to deal with the ever-present tyre question. In this arrangement we find circumferential bands and galvanised steel hooks restraining flat tread pieces of the same metal, the edges of which are upturned in the shape of lugs to secure on the tread of the tyre the stone rubber tread. Whether this tyre is likely to solve the whole question or not must remain for experience to prove, but from examination on the stand it appears to us that considerable wear and friction would be set up by grit engaging with the innumerable hooks and links of which the sides of the tyre are composed.—J. Russell and Co., 4-5, Westgate Road, Newcastle-on-Tyne.

The Diesel Engine in a New Sphere.

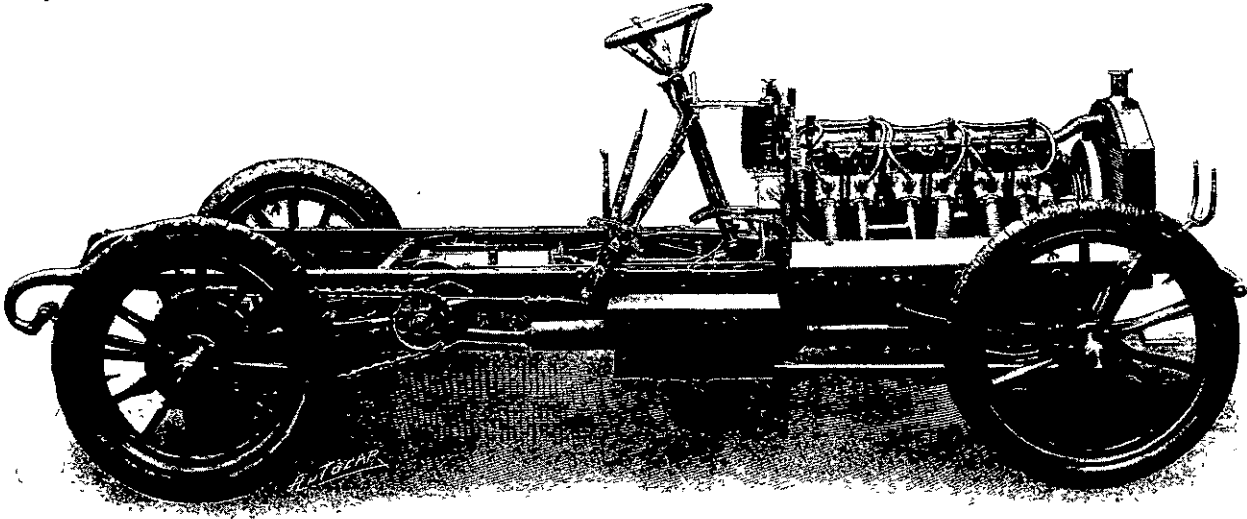
When the Diesel engine was first brought before the public, great expectations were not unnaturally entertained as to the possibilities of applying it to automobile propulsion. These expectations have from various causes not yet been realised. The Diesel engine presents great possibilities. It consumes practically any kind of fuel and has a great flexibility, from both of which points of view lorry builders and engineers, concerned with the design of the heavier classes of automobile vehicles, have always kept an eye upon it. The fact that it has not hitherto been successfully applied to self-propelled traffic is perhaps mainly due to the weight of flywheel necessitated, and to the difficulties of starting involved by the high degree of compression at which the engine necessarily works, and of the consequent need for compressed air storage for starting it. The Diesel engine, however, has, it is now reported, been successfully applied to locomotive propulsion in the United States. The locomotive itself appears to be something on the Heilmann principle, that is to say, the engine is employed to operate a dynamo which in turn supplies electric current to motors geared to the driving wheels. In the particular locomotive which is now, we understand, running on the Southern Pacific Railroad, a 4-cylinder Diesel engine is employed, and is at present running on crude petroleum oil from the wells. Of course, it is a long way from a locomotive to a motor car, and it is possible that the Diesel engine may possess peculiarities which suit it for locomotive propulsion, even though the difficulties that have up to the present stood in the way of applying it to automobiles may not yet be got over, but the successful

adaptation to the locomotive would certainly seem to indicate the possibility of its being so adapted at any rate to the heavier classes of self-propelled vehicles, a result which might have a very beneficial influence on the future of this important branch of the industry.

While the business possibilities in motor vehicles for agricultural and haulage work in this country are sufficiently encouraging to induce manufacturers to give special attention to this branch of the automobile industry, the needs of such mechanism are far more pressing in certain of the colonies where vast areas have to be cultivated and animal power is not easily obtainable. This is the case with many parts of Africa, whence inquiries are constantly being received for self-propelling, tilling and other requisites. From the British East African Protectorate, for instance, there is a demand for motor ploughs capable of being dismounted for camel transport, while in India interest has been taken in mechanically propelled ploughs, which would certainly find a good sale if suitable types were put on the market. For the moment, the motor plough is in a purely experimental stage, and although one or two are now under construction there is no actual data yet available to show what the motor plough is capable of doing. We hope, however, to be able to give an account of trials of a new motor plough which, we are assured, will shortly be ready for practical work.

The Younger Generation of America.

Young Americans, whether the sons of stonecutters or railway presidents, plunge into the strenuous life of industry with enthusiasm, writes Frank Fayant in the *Magazine of Commerce*. An heir to a great fortune would be ashamed to confess that he was not at work. Idleness is almost a crime in America. When the American boy enters the university, he has his mind fixed on a career—electrical engineering, railway operating, the law, medicine, shipbuilding, architecture, civil engineering, banking, the ministry—and his studies gradually converge toward his speciality. There are no "gentlemen's careers." The young man simply follows his bent, whether it be saving souls or building bridges. If he has a love for the sea he becomes a naval officer or a shipbuilder—more likely the latter, for the industrial careers appeal more to the rising generation than the old-time "learned" professions. America's wonderful progress has been a material progress, and the great men of the nation are the captains of industry.



THE CHASSIS OF A 20-H.P. "NAPIER."

A Revolutionising Steam Wagon.

As the outcome of a series of experiments made with a view to doing away with the complicated machinery at present necessary in some steam wagons, and also with the excessive vibration which adds so greatly to the wear and tear, a new type of motor wagon has been evolved and will shortly be placed upon the market. The engine runs approximately at only 80 strokes per minute, and is decidedly unique in construction. The driving or transmission gear is novel also, and consists of two ratchet wheels attached to sleeves on the driving axle, fitted with four clutches (two to each wheel), operated by the connecting rods of the engine. The clutches are connected by pawls which engage with the teeth of the ratchet wheels, there being double sets of pawls fitted to each clutch, by means of which the forward or backward motion is attained. The ratchet wheels are so constructed that the usual differential gear is done away with. There are no revolving shafts in the engine or driving gear, and there are no dead centres. The boiler has been designed to secure the advantages both of the fire tube and the semi-flash without the disadvantages of either. The wheels are shod with wood, and have been specially designed to prevent slipping on setts, and also to provide a cheap wheel which can be repaired anywhere without the necessity of taking it off. The saving in tare weight over the present machines is about 25 per cent., due to the frame or body being lighter. The cost of producing a 6-ton wagon capable of carrying 10 tons with trailer is said to be at least £150 less than any motor lorry at present made. The wagon has been designed especially for heavy work. A syndicate is being formed to exploit the wagon.

A CITY'S PROGRESS.

Buildings in course of erection in Wellington, and those to be erected at an early date, are as follows:—

FOR.	ARCHITECTS.	BUILDERS.	APPROXIMATE COSTS.
D. I. C. ..	Crichton & McKay ..	Mitchell & King ..	£40,000
*Bank N. S. W. ..	" ..	" ..	35,000
Western Hotel ..	James O'Dea ..	Allan Maguire ..	25,300
Victoria College ..	Penty & Blake ..	" ..	25,000
Bank of Australasia ..	Crichton & McKay ..	J. & A. Wilson ..	24,000
National Bank ..	John S. Swan ..	—	25,000
Union Bank ..	John S. Swan ..	—	25,000
Public Trust Office ..	Government ..	—	20,000
P. Hayman & Co ..	W. C. Chatfield ..	Meyer & Illingworth ..	20,000
E. W. Mills & Co. ..	" ..	Sanders Bros. ..	16,000
R. C. Convent ..	John S. Swan ..	J. Ransom ..	15,000
Fruit Markets ..	T. Turnbull & Son ..	Donald McLean ..	15,000
Wellington B. & Investment. Co. ..	" ..	Hunter & McDonald ..	15,000
Arcadia Hotel ..	J. Bennie ..	Howie & Matthews ..	15,000
M. Kennedy ..	John S. Swan ..	W. L. Thompson ..	11,000
C. H. Izard ..	" ..	Meyer & Illingworth ..	11,000
Harcourt & Co. ..	J. C. Maddison ..	J. Trevor & Son ..	8,000
Young & Tripe ..	" ..	" ..	6,000
South Wellington School ..	T. Turnbull & Son ..	—	7,000
Dalgety & Co. ..	Crichton & McKay ..	Sanders Bros. ..	6,500
Dr. Teare ..	J. O'Dea ..	Murdock & Wallis ..	5,000
*Herbert Rawson ..	Crichton & McKay ..	J. & A. Wilson ..	6,000
Veitch & Allan ..	R. R. McGregor ..	T. Carmichael ..	5,000
Hall & Knight ..	John S. Swan ..	John Wood ..	4,000
Technical School ..	T. Turnbull & Son ..	D. McLean ..	3,000
Various Wellington and Suburban Properties ..	—	—	50,000
*Completed.			
TOTAL ..			£437,800