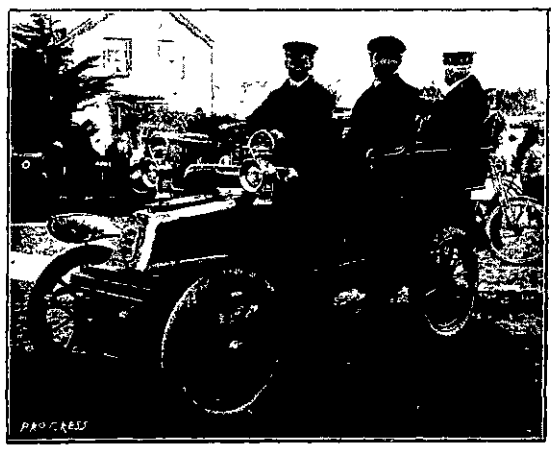
Mills, Dr. R. W. Anderson, Dr. F. G. Gibson; Treasurer, H. J. Ranger; Secretary, E. Nordon. The Association has an official garage, situated in Worcester street, Christchurch, and attached thereto are Club rooms with all conveniences. Visiting motorists are welcome to the use of these rooms, which contain maps of the various parts of Canterbury.

At South Canterbury there is also an Automobile Club, founded by Dr. Barclay, the pioneer of motoring in the district. Briefly speaking, the objects of the Club may be summarised as better roads, more bridges, and a general use of lights by vehicles using the roads after sunset.

## The Auckland Automobile Association.

Being formed in May, 1902, the Auckland Automobile Association is probably the first body of its kind established in the Southern Hemisphere. A goodly number of motorists are enrolled, who, besides owners or part owners of cars, include importers, and any person interested in the sport. Motor cyclists are also eligible for election. A subscription of £1 1s. per annum is charged, country members paying only half this amount. Every member, however, must at once appear for examination on being notified by the Secretary. The examination comprises the theory and practice of motor driving (steam, electric or petroleum). The following are the office-bearers.— Patron, His Excellency the Governor, Lord Plunket; Vice-Patron, Sir John Logan Campbell; President, W. B. Leyland, Esq.; Vice-Presidents, Drs. Knight and Purchas, and A. Meyers, Esq. (Mayor of Auckland); Committee, Drs. Purchas and Knight, Messrs. Chatteris, A. Skeates, Petford and Stuart Milne; Hon. Treasurer, J. A. Moody, Esq.; Hon. Secretary, A. Cleave, Esq. A meeting of the members is held at the Club Rooms, 52 Queen street, Auckland, on the second Tuesday in every month at 8 p.m., and the monthly run is held on the following Saturday afternoon.



MR. W. G. T. GOODMAN, DUNEDIN, AND HIS 8-H.P. DE DION.

## The Proper Number of Cylinders.

WITHOUT peering too far ahead into the realm of the turbine, some authorities state that the ideal engine is a two-cylinder one which shall run as smoothly as the four. It is not an impossible ideal, they say, but it cannot be regarded as a practical one at present, because no such engine has been made, and it is questionable whether it would be worth while to make one, because the only objection to four-cylinders worth mentioning is the extra complication. A two-cylinder engine which gave the same results as the four could scarcely be a simple, single-acting type. The question arises whether the three cylinder engine can be taken as a reasonable compromise between the two and the four. In regard to the three-cylinder engines a great deal of misunderstanding undoubtedly exists. Those who ardently believe in them say that they are better in every way than four-cylinder engines. Those who object to them imply that they are no good at all. As is generally the case, the truth lies midway between the two. For balance of reciprocating and revolving parts the three-cylinder engine has not been proved equal to a four, and when the distributing element of the explosion behind the piston is introduced, the four-cylinder is unquestionably the better engine, so far as absence of vibration and higher frequency of impulse are concerned. So far as smoothness of running is concerned, it may be said the more cylinders the better, as their turning effort of the engine becomes more and more nearly constant. On the other hand, it is found that the four-cylinder engine is a wonderfully satisfactory compromise, because it gives much freedom from vibration at all speeds, and it is not unduly complicated. Undoubtedly six or more cylinders have certain advantages of their own, but these engines are far above the average requirements.

OFFICERS OF THE CANTERBURY AUTOMOBILE ASSOCIATION. [*Standish & Preece, Photo.*

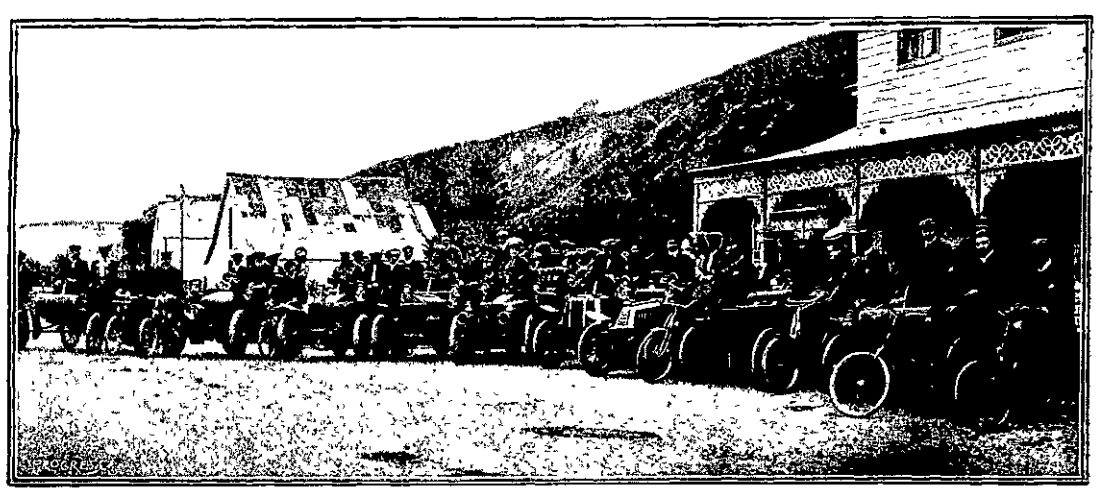
*Back Row*—E. SANDSTEIN, W. E. MILLS, J. H. PARKER, DR. F. G. GIBSON, H. THOMPSON.
*Front Row*—R. M. MACDONALD (Vice-President), A. E. G. RHODES (Vice-President), DR. THACKER (President), E. NORDEN (Secretary), W. E. THOMPSON (Vice-President).

The question, therefore, is which is the better compromise, three cylinders or four The three-cylinder engine is the simpler. It is not quite so smooth in running and, of course, at any speed, it must propel its car with three blows or explosions, where in a four-cylinder car there would be four of the same effort, but of less individual intensity; consequently, in this respect the three-cylinder engine must always be inferior to the four. This, however, in itself is not a great matter. Wonderfully smooth running has been obtained with one or two makes of three-cylinder engines, and while it might have been even better with four, the results were so good that the makers were justified in their contention that, so far as their particular engine was concerned, all average requirements were met by its excellence of running. There seems little doubt, however, that four or more cylinders will be used by those who, ignoring all other considerations, require the utmost possible smoothness of running, and this must remain the case till it is demonstrated that the three-cylinder engine is practically as good as the four.

## Motor Trams.

The number of municipal authorities who are considering the advisability of propelling their horse tramcars by petrol motors is steadily increasing, and there is likely in the near future to be a big demand for serviceable motors for this purpose. We do not advocate the construction of petrol motor or electric tramways, but we must admit that where a tramway is in existence the most economical means of furnishing the public with a fast and efficient passenger service is by fitting the horse trams with petrol motors. The experiences of Perth, Scotland, on the whole, went to show that this can be successfully done. It is somewhat surprising that those municipalities who have electrified their old horse tramway routes did not first of all experiment with petrol motors. To an engineer all things are possible. If a petrol motor will, and does, drive a 36-passenger 'bus easily and safely up and down gradients of 1 in 10, where it is admittedly dangerous to use electric tramcars, there is no reason to doubt its ability to successfully adapt itself to horse tramcars and thus save the enormous expense of reconstructing and equipping electrical tram routes. Certainly a tramcar has not the mobility of movement that a motor 'bus has, but the latter may be used to compensate for this disadvantage, and act as feeder to the tramway and render unnecessary any further tramway extensions. In England motor tramcars are constructed should existing horse trams not be deemed sufficiently strong for motor propulsion, but whether new motor trams are purchased or old trams are fitted with motors, the saving by using the existing tramway lines and the benefit to the public of increased and more rapid travelling facilities will be enormous. In a report on the International Tramways Exhibition in London, which Councillors James Macfarlane, W. F. Russell, and John Dallas have submitted to the Glasgow Tramways Committee, they suggest that in any further extensions of the tramways, consideration should be given as to whether it might not be wise to apply motor power to the cars in these outlying districts, instead of equipping an overhead system.

The directors and shareholders in the Daimler Motor Company are to be heartily congratulated on the splendid year's business they have had. A net profit of £83,167 has been earned. The prosperity of the company may be ascribed to the 35–40 h.p. model which has had such a triumphal series of successes.



MEET OF THE DUNEDIN AUTOMOBILE ASSOCIATION [*Guy, Photo.*