

is now being made by the Yarrows, of London, who are building a first-class torpedo boat which has the middle screw driven by a reciprocating engine, and the outside screws by turbines. These turbines are not of the Parsons or Curtis type, more commonly known, but are the invention of Prof. Rateau, of Paris, who in a paper which will be quoted in next issue, states that the combination of reciprocating and turbine engines affords the easiest solution of the problem of marine propulsion.

We may add that the commission of experts recently appointed by the Cunard Company to investigate the performances of two sister ships—the Brighton with turbine engines, and the Arundel with the latest development of reciprocating engines—has reported, and though the report is not published in detail, it is known that these experts report definitely in favor of the turbine principle. A commission of experts from the United States navy also paid a visit to the Turbinia as she was running on Lake Ontario and has announced unofficially that it will endorse the turbine.



THE MODEL OF RAILWAY OPERATION.

The railways of Canada have before them two models upon which they may base their system of operation—the British and the United States. So far as the construction of rolling stock is concerned, the climate of the country, the relatively great distances between stations, and the habits of the people all point to an approximation to the United States system as the most suitable for Canada. But because the style of locomotives and freight and passenger cars approximate more nearly to the system of the United States, there is no reason why all the evils of the United States system of operating railways should be adopted as the model for Canada. If all the railways of Canada were owned by the state it is probable that before now, public opinion would have compelled the adoption of some at least of the European safe guards, which would make travelling much safer in this country than in the United States. A direct responsibility to the public, and a common ownership throughout all the provinces would render such reforms easier of accomplishment because each step in the reform could be applied at once to the whole country, and would have the sympathy of the people in carrying it out.

But whether our railways are owned by private companies or the state, there is no reason why Canada should deliberately select as its model the worst operated railway system in the civilized world—that of the United States. If Canadian railways could be either persuaded or compelled to adopt the more essential of the safe guards in use on the railways of the British Isles and in some European states the result in the lessened casualty list would be one of the best advertisements the country could have in the eyes of the world, and especially in the eyes of our American neighbors. The present loss of revenue caused by the increased expenses of these reforms would be more than made up by ultimate increase of traffic and enhanced reputation.

It is not an unusual thing for a British railway company to get through a whole year without losing the life of a single passenger, and in the year 1901, every railway in Great Britain and Ireland was free of a death list, though 476 received injuries in minor accidents. Compare this with the woeful record of railway operation in the United States. The bulletins prepared by the Interstate Commerce Commission show that last year in the States 9,984 people were killed and 78,247 injured in railway accidents. What an appalling disregard of human life! According to the press report an officer of the commission stated that the "increase of fatalities annually is regular, growing with the extension of the railroads and population. We have received reports from England which are as remarkable as the killings here. Approximately, the English average less than 50,000 miles of track to our 200,000, yet they do greater per mile business than we do. They haul more passengers than we do, yet there was not one passenger killed in a recent year." The records of the commission show that in the last ten years 78,152 persons have lost their lives in railroad accidents. These deaths are distributed yearly as follows:—1895, 6,136; 1896, 5,845; 1897, 6,437; 1898, 6,859; 1899, 7,123; 1900, 7,865; 1901, 8,455; 1902, 8,588; 1903, 9,840; 1904, 9,984.

We gave in last issue some statistics of accidents to Canadian railways. The causes of this heavy death and accident list on railways in this country and the United States are various. Lack of efficient signaling systems, the want of a safe train order system, and the long hours of train hands and station hands are among the most fruitful causes of disaster. As regards the last named cause some managers shelter themselves behind the fact that train hands and others, in order to earn extra pay, contravene the company's rules which usually limit the hours of duty. Since no plea of this sort coming from an employee would be tolerated by the companies themselves in the case of breach of the rules against intoxication, it is equally flimsy as a plea from a railway manager to the public when an accident is caused by the drowsiness of a train-hand or station-hand exhausted by long hours on duty.

Although it is a question whether the heavy loss of railway property (apart from the awful loss of human lives), and the many damages that have to be paid for personal injuries would not cover the extra cost of operating large roads on the British system, yet the idea of economy is at the root of the present reckless system of operation on this continent. A railway expert in Chicago said the other day: "The life of a railroad manager is short—in that office, I mean—and his only care is to make a good showing in earnings. That is one reason for the American system of operating railroads." While doubtless unjust to many railway managers personally, this is too true of boards of directors and is true of the American system as a system.

"A great deal has been said about the immunity from accidents on the English and continental railroads," says another critic of United States roads, "and the fact that the block system is universally used there is given as the cause. This system tends to prevent accidents, but we must go farther to find safety in this country. Many hundreds of miles are