leading American roads are at last beginning to see that this enormous annual destruction of property apart from the criminal destruction of life and the evil reputation it gives their roads is a dear price to pay for the so-called economies in labor and safety devices. It should not take Canadian railway managers so long to perceive that the block and automatic stop devices and a few extra employees are a very cheap insurance against collisions, seeing that 17 deaths and 24 cases of injury with accompanying personal damages and loss of rolling stock were due to collisions, a class of accidents which would be completely eliminated from the casualty lists if such improvements were adopted.

-THE LAZIER GAS ENGINE.

The evolution of appliances for the production of power from the primitive steam engine up to the apparatus of the present day includes the complete history of modern progress along industrial lines.

The steam engine accomplished wonderful results, but for many purposes the gas engine has outclassed it. With its aid automobiles are enabled to run at a speed which a few years ago was deemed unattainable ; submarine boats dive into the depths of the sea, and it has placed power within the reach of even the farmer.

The principle of the gas, or air-expansion engine, was from the first 'accepted as a new and most important discovery in power development, which would eventually supersede steam, and since that time the efforts of mechanical engineers have been directed to simplifying the gas engine.

One of the latest types of engines being placed on the market is that manufactured by the Lazier Gas Engine Co., of Buffalo. Mr. Arthur A. Lazier is one of the pioneers in the gas engine business, and he has associated with him some of the best-known gas engine experts on the continent.

The Lazier engine is of very simple construction, which makes it much less liable to get out of order than engines



Sectional Side View.

that are more complicated, and, as most of the mechanism is exposed, the making of adjustments and repairs is considerably facilitated. Unlike other gas engines, the one illustrated has a double system of ignition, which can be run either separately or in combination, and it is so arranged that the time of firing the charge can be changed while the machine is in operation. The cams and cam-shaft run in oil, although they can be seen by the operator at

new, since there are only four spiral gears on the machine, which run in oil, making the operation almost noiseless. Arrangement has been made for taking up the lost motion of all working parts, the lack of this being an objectionable feature on many types of engine. The "splash" system



Sectional End View.

of lubrication is used, and the engines are provided with automatic self-starters.

These engines will operate on almost any kind of fuelalcohol, kerosene, distillate, illuminating gas, or producer

They are made in sizes ranging from 2 to 300 H.P., and the simplicity of their construction enables the manufacturers to market them at a much lower price than that asked for any reliable machine at present built.

AUSTRALIAN METHOD FOR REDUCING IRON ORE

Claims for a new method for reducing iron ore to iron or steel have been received from Sydney, N. S. W. They are as follows:-

"Lesser cost of plant, which is estimated at one-fifth the cost of a blast furnace and converter of equal capacity.

"A saving in fuel; the consumption being 12.46 hundredweight as against 21 hundredweight of the old indirect process.

"Saving in fluxes; for every ton of pure metal produced under the old process 21 hundredweight of fluxes is required and under the new process only 21/2 hundredweight.

"Saving in labor; under the new process the treatment of the ore from the feeding hopper to the ingot truck is absolutely automatic; the labor cost, therefore, is reduced to a minimum.

"In the saving of time, which is still more pronounced; under the old stystem, from entry at the blast furnace to the discharge by converters, time occupied is from twentyfour to thirty hours; by the new direct process pure iron can be made in from two to four hours. Summarized, the saving in plant is 80 per cent. and in cost of production of malleable steel or iron, 25 per cent."

For the purpose of demonstration, a plant has been erected at Melbourne.

Samples showing the treatment of the native ores have been submitted to United States Consul O. H. Baker at Sydney. Samples may be procured from him by parties who wish to investigate the process.

PRINCE EDWARD ISLAND TUNNEL.

A tunnel under Northumberland Strait, from Pictou shore to P.E. Island is estimated by Ottawa engineers to cost \$15,046,000. M. J. Butler, C.E., deputy minister of railways, instead of a tunnel recommends a great causeway with two swinging bridges. This he thinks more feasible all times. The system of operating this cam-shaft is also and less expensive than a tunnel, costing only \$10,000,000.