tions in pressure from exhaust of engines working with starts and stops without interfering with the running of the main engine.

The steam regenerator of Dr Rateau, professor in the School on Mines, Paris, is of unique construction. The apparatus is based upon the principle involving the applicaion possessed by a saturated steam and saturated liquid when brought together. With great rapidity heat exchanges take place between the steam and the water through the medium of metallic surfaces or directly.

With certain conditions of temperature and pressure these two fluids, steam and saturated water and saturated steam, preserve a reciprocal of equilibrium, as they are composed of similar molecules. When this equilibrium is disturbed there is a transformation of one form of fluid into the other, and there is an absorption of heat or a liberation of heat, as the case may be.

In the Rateau steam regenerator there is a receiver of considerable dimensions containing water and cast-iron, and when the intermittent exhaust steam is conducted to this apparatus the heat is absorbed by the cast-iron, and upon the surface a certain quantity of steam is condensed, remaining in the state of water, which is steam saturate. There is, therefore an accumulation of heat whenever a large supply of steam is received in the accumulator, owing to this condensation, causing an elevation of temperature. There is also a slight rise in pressure, due to the steam which is not condensed, although this is adjustable, and only relative as the operation is usually at or below atmospheric pressure.



Fig. 2.

The steam turbine of the low-pressure type, as it demands more steam, lowers the pressure when the supply of exhaust steam stops, and the heat equilibrium is distributed so that the latent heat of the steam vaporizes a certain amount of water due to the heat held by the cast-iron, and, therefore, the turbine has a flow of steam supplied to it which is maintained absolutely constant, these exchanges of heat taking place almost instantaneously.

By means of this unique regenerator accumulator and a specially designed relief valve the fluctuations of temperature and pressure are exactly regulated, and correspond in a way to the flywheel of an engine, which ordinarily stores the excess energy and gives it out when required, or it may be compared to a storage battery, which absorbs electric current when there is an excess, giving it out during the peak of the load.

The Rateau system of generating power has been adopted by the Steel Company of Scotland, and it is stated that they have laid off by its use the equivalent of three steam boilers, saving the coal consumed in those boilers, as well as the wages connected with operating the same, as the power was obtained from this steam regenerator system into the waste steam, which would otherwise have gone out

The steam regenerator of the Steel Company of Scotland is 30 feet long and about 11 feet in diameter, and the weight of water is 55 tons. It takes care of absolute stopengines driving the reversible mill and the three high-roll mill as well as steam hammers.

The steam turbine is of the Rateau low-pressure type of 500 horse-power capacity, and was constructed by Fraser & Chalmers, of London. One turbine is directly coupled to a Siemens alternator, supplying a current of 250 volts pressure, and is driven at a speed of 1,500 revolutions per minute. The turbine receives the steam at atmospheric pressure exhaust 2734, and it is stated that two more sets of 1,000 kilowatts capacity are under construction, the steam regenerator having a sufficient storage capacity for this amount of power with an interruption of one minute for the main engine.

In Germany, at the Rombach Sutten Werke, there is a steam regenerator installation, with Rateau steam turbine, with a capacity of 2,500 kilowatts. At the steel works of South Chicago, Illinois, the exhaust steam from a reversible blooming mill is utilized, the steam regenerator taking care of two minutes absolute stoppage of the main engine. It is maintained that it will supply steam for full load on the two Rateau steam turbines without calling for live steam from the boilers for the bove periods of time. The normal rate of capacity of these steam turbine generators is 500 kilowatts, and the speed is 1,500 revolutions per minute. The admission steam pressure at the turbines is atmospheric, and the exhaust 271/2, an Alberger barometric condenser being employed. The dynamos are direct connected to the turbines, and supply a continuous current of 250 volts pressure.

The Belgian steam turbine plant above referred to, noted in the accompanying illustration (Fig. 4) shows one of the two tandem steam turbine sets installed in the new power station of the Societe d'Electricite du pays de Liege. Another three-phase turbo-alternator of the same output is also being erected in this station.

The two units shown in the accompanying illustration (Fig. 2) are of 2,700 horse-power each, the steam turbines as well as the direct current and alternating current generators having been designed and constructed at Baden, Switzerland, by Brown, Boveri & Cie. The steam turbines are of the Parsons type of horizontal construction, operating at a speed of 1,500 revolutions per minute.

To each steam turbine are directly coupled in tandem two electrical generators, one of 1,800 kilowatts, supplying a three-phase alternating current, and the other of 850 kilowatts, generating a continuous current, the latter for railway service and the former for lighting and power distribution at Liege, Belgium.

The three-phase alternator of 1,800 kilowatts supplies a current having a frequency of 50 periods per second and a pressure of 6,300 volts to the lighting and power service line, while the direct current generators of 850 kilowatts supply a continuous current of 550 to 600 volts pressure to the railway feeders.

RAILROAD EARNINGS.

The followin	or are the	latest figure	es:-		
Week ending.		1907.	1908.	Change.	
C. N. R	.Aug. 7	\$ 196,700	\$ 174,400		3233,300
C. P. R	.Aug. 7	1,565,000	1,470,000	-	95,000
G. T. R	.Aug. 7	915,430	794,562	-	120,868
T. & N. O	.Aug. 7	17,500	18,200	+	701
Montreal St	.Aug. 8	70,530	69,864	-	666
Toronto St	.Aug. 8	67,856	67,482		374

A matter of concern to Canadian patentees holding British patents is the coming of the appointed day, August 28th, after which applications can be made to revoke patents that are not worked here. Abroad, there has been a good deal of needless alarm, for the Act leaves several loopholes. Revocation is in no case possible until the patent is four years old. And with a fine sense of strategy, foreign holders of patents are putting themselves into a strong position. They are advertising in English papers that patent No. So-and-So is for sale, thus showing willingness to have their monopoly worked in the United Kingdom. It may be that they have no desire to agree with a buyers' valuation of the patents' value. They are holding out their offers under advice and precautionarily.