

This sub-station has the same equipment that a permanent installation has; namely, transformers to step down to a moderate value the high voltage of the current received from the transmission line, a switch-board, and a rotary converter, which receives alternating current and delivers direct current. This apparatus is mounted in a car resembling an ordinary freight car.

When the work at a new development reaches the point where direct current is necessary the portable sub-station is hauled out to the workings, connected to the alternating current transmission system, and is started to work generating direct current. When the permanent sub-station is built the portable one becomes unnecessary and is taken to the next development.

A further use of this sub-station is to provide insurance against shut-downs. If accidents occur at any of the permanent sub-stations, the portable outfit is sent to carry the load until repairs are completed. One portable sub-station, therefore, is practically the equivalent of a duplicate set of apparatus at each permanent sub-station.

POWER EQUIPMENT FOR WINDSOR HOTEL.

The power equipment for the new Windsor Hotel, designed and installed under the supervision of Mr. Kelsch, consulting engineer, is more complete than usual because of the problems to be met. The power plant, which is in charge of Mr. Winkworth, chief engineer of the Windsor Hotel Co., is one of the most up-to-date isolated power plants in Canada. The main object of the power plant is to furnish light and heat to the hotel and power for the various motors used in the laundry, for ventilating fans, and in other parts of the hotel.

The steam equipment consists of three 200 h.p. Robb water tube boilers, each with a heating surface of 2,143 square feet. Two of the boilers are set in a battery and one is installed singly. The boilers, which are built for 175 pounds working pressure, are equipped with cotton blowers for burning anthracite screenings. This type of boiler consists of two horizontal cross drums with headers which are connected by a main bank of inclined tubes. The drums are connected by two rows of horizontal tubes, which complete the path of circulation for the water. At the extreme top, superheating tubes connect the drums so that the steam, which is separated in the front drum is thoroughly dried and slightly superheated when it enters the rear drum, from which it is piped to the engines.

This boiler is distinguished from other water tube boilers by the large throat area where the front header joins the front drum, giving a free and unrestricted passage for the large volume of water and steam passing from the main bank of inclined tubes into the drum. As the drums extend crosswise and the headers are as wide as the length of the drum, there is no contraction at the throat, as is necessary in many types where longitudinal drums are used.

Great flexibility is another feature of this new boiler, not only from the way it is placed in the setting on the supporting framework, but also because of the construction of the boiler itself. All the tube surfaces run in one direction and the plate surfaces in another, thus eliminating the strains caused in boilers where the longitudinal drums, headers, and tubes are connected rigidly together. A thoroughly modern design, this boiler has ample provision for cleaning, a

hand-hole being placed in the header opposite each tube.

In the engine room of this power plant there are installed three Robb vertical compound engines, which are run non-condensing. Each engine is direct-connected to a 150 k.w. electric generator, made by the Canadian Westinghouse Co. These engines will operate the generators at 25 per cent. overload for two hours and 50 per cent. overload for one hour. With steam at 150 pounds pressure, they will carry the normal load at a speed of 425 r.p.m. These engines are entirely enclosed, so that working parts are protected from accident, and there is no danger of oil being thrown about the engine room. Every revolving and sliding part is automatically lubricated by a system which consists of a pump and distributing pipes, in which a pressure of from 10 to 20 pounds per square inch is maintained. Of the vertical type, these engines have many features which have been very successful in marine practice, and modified for stationary practice enable the engines to maintain the speed desired for direct connection.

A fuel testing station has been established by the Mines Branch at Ottawa, the Dominion of Canada Fuel Testing Plant, to demonstrate that peat could be economically utilized as a fuel for power purposes in a producer gas power plant, and to test the fuel and power producing values—on a commercial scale and in a commercial gas producer—of the bituminous coals of the extreme eastern and western provinces and of the lignites of Manitoba, Alberta and Saskatchewan.

A plant is also about to be erected by the Government of the Province of Saskatchewan at Estevan, for the purpose of assisting the development of the coal mining industry by testing the lignite coal of that district.

COBALT SHIPMENTS

The shipments for the week ending December 19 were again over one million pounds, including a car of high grade from the Casey Cobalt. The Nipissing shipped no less than five cars of cobalt residue from the high grade mill to England and the rise in the price of cobalt on the European market will make that mineral worth something to Cobalt mines in the future, perhaps. Of the six mines shipping two contributed low grade, namely, Nipissing and La Rose, the latter company also sending out a car of concentrates. The bullion shipments were well up to average, though of the three companies shipping, Nipissing alone ran over the 50,000 ounce mark. The Nipissing has now shipped in bullion over six million ounces.

The ore shipments from the Cobalt mines for the week ending December 19, were:

	High.	Low.	Lb.
Caribou Cobalt	59,960	.....	59,960
Cobalt Lake	125,130	.....	125,130
McKinley-Danragh	257,310	.....	257,310
Nipissing . . . . .	.....	370,740	370,740
La Rose	86,680	60,000	166,680
Casey Cobalt	55,507	.....	55,507
	584,587	450,740	1,035,327

The bullion shipments were:

	Bars.	Oz.	Value.
Nipissing	115	134,807.58	\$77,851.38
Dominion Reduction	18	20,358.00	12,011.22
Penn-Can.	6	4,155.30	2,410.07
	139	159,320.88	\$92,272.67

—Cobalt Nugget.