TABLE IV.

Cost of Operating Electric Plant.

Cost of current for thirty days	$1.744 26
" employees' wages	270 00
" oils, waste, etc	73 00
Total cost for 30 days, exclusive of maintenance and depreciation	$2.087 86
Average cost per horse-power per month	3 87
Average cost per horse-power per annum	46 44
Cost for each 100,000 cubic feet of air compressed	1 46
Cost per drill shift	1 17

Note—80,000 cubic feet taken as the average consumption per shift of one 3¾ inch drill.

TABLE V.

Showing Comparative Results between the Two Types of Compressors, based on each 100,000 cubic feet of air compressed from Atmospheric Pressure to 95 pounds Receiver Pressure.

Cost for each 100,000 cubic ft. of free air compressed by steam plant (see Table III)	$1 56
Cost for each 100,000 cubic ft. of free air compressed by electric plant (see Table IV)	1 46
Result, saving by electricity over steam	6.4 per cent.

The saving shown in Table V would be affected adversely if the electric plant was operated singly and the entire air compressed was not used. For the reason that electrically driven compressors must be operated at constant speed, and loss of air at safety valve would be considerably increased over the same loss at steam plant, which could be run at the speed required to compress the amount of air actually required. This loss would, however, be slightly offset by the increased cost per horsepower by working the steam compressors on underload.

I wish to draw special attention to the noteworthy results obtained from the system of intercooling used on the compressors tested.

In Table I, it is shown that the steam plant required 13.4 horse-power to compress 100 cubic feet of air to 85 pounds gauge pressure per minute. The best power factor recorded that has come under the writer's notice, for doing the same amount of work by a two-stage compressor, is 14.5 horse-power, which shows a saving of 8 per cent. resulting from the use of specially designated intercoolers, for which the manufacturers are entitled to receive the credit.

How this result is obtained can be best understood by reproducing the average of a number of tests made on the efficiency of the intercooler during the progress of the power test. The results of the tests are shown in Table VI.

TABLE VI.

Temperature of cooling water at inlet of intercooler	42°F.
Temperature of cooling water at outlet of intercooler	50°F.
Rise in temperature of cooling water while passing through intercooler	8°F.
Temperature of air at outlet of low pressure cylinder and before passing through intercooler	196°F.
Temperature of air at inlet of high pressure cylinder after passing through intercooler	54°F.
Reduction in temperature of air after passing through intercooler	142°F.

In conclusion, permit me to state that this paper has not been prepared with the idea of recording the performance of these two plants, except, in so far as comparisons can be drawn between the relative efficiency of the two systems, so that engineers, knowing local conditions, can have some record of actual performance before them.

PATENT OFFICE REPORT.

WE are indebted to Mr. Rowland Brittain, of Vancouver, for the following list of patents issued to British Columbia inventors during the past month:—

E. A. Marshall, Vancouver, a United States patent on his improved jar seal, which has now received a lengthy trial of shipment to the Eastern States, Great Britain and Australia, and in every case his specialty of potted fish and meats has been reported on as having been received and kept in good condition. A Canadian patent has just been issued to G. A. Roedde, the well-known bookbinder of Vancouver, on an improved loose leaf binder, which is designed to be applicable to books of special form or size. Heretofore such have had to be specially made at the factory when required, while Mr. Roedde's securing clasp can be applied by any practical bookbinder. George Cassady, Vancouver, a Canadian patent on a sash lifter designed to overcome the difficulty commonly experienced in opening and closing the top sash of an ordinary window. The device, which is entirely supplementary to the ordinary sash weights, consists of a small reel secured to the centre of the sash frame and having wound on it a cord, the off end of which is secured to the top rail of the upper sash and continued down to afford a means for pulling the upper sash open. The reel is provided with a spring, the tendency of which is to pull the sash shut, and is controlled by a gravity pawl of that class that will only fall into engagement while the reel is at rest or rotating slowly, and will fall out of engagement when the sash is pulled down. H. Condren, Vancouver, a Canadian patent on a body indicating buoy. This consists of an inflated chamber forming part of an ordinary hat or cap, and connected by a light line to the person of the wearer, the line being coiled within the cap. It is intended to be worn by anyone exposed to the risk of drowning, while either boating, bathing or skating and on the person being submerged the cap will float and the line being attached to the body, will afford a ready means of rescue. If help should not be forthcoming and the wearer drowns, the cap indicates the locality of the body and enables it to be quickly recovered.

MINING PATENTS.

A Canadian patent on a method of desulphurising coal, granted to Oscar Daube, of New York. Patent No. 78,080. Claim: The method of carbonizing organic material or material of organic origin, which consists in subjecting the material to be carbonized to a preliminary fusing blast, and then to a carbonizing blast as described and for the purpose set forth. This patent is covered by nine claims, which can be obtained by application to the Patent Office.

To John Morrisett, Vancouver, on an ingenious improvement on a steam engine piston, whereby the weight of a heavy piston is centrally sustained in the