

	Bid.	Asked.
Consolidated Mines	150	155
Can. Gold Fields	7½	8½
Granby Consolidated	13¾	14
Rambler-Cariboo	28	30
North Star	15	20
Monte Christo	2	3
White Bear	9	10
California	...	6
Virginia	6½	10
Deer Trail	...	2
International Coal	65½	70
Sullivan	7½	10
Cariboo-McKinney	3½	5½
Denoro	10½	16
Diamond Vale Coal	26	30
Dominion Copper	5	5¼
Novelty	3	3½
Dominion Coal (com.)	68	68½
Dominion Coal (pref.)	...	...
Dominion Iron & Steel (com.)	26¼	26½
Dominion Iron & Steel (pref.)	69	70
Intercolonial Coal (com.)	...	...
Intercolonial Coal (pref.)	...	...
Nova Scotia Steel & Coal Co.	70	71
Nova Scotia Steel & Coal (pref.) ..	115	...

INDUSTRIAL NOTES.

The Canadian Mine and Smelting Company of Vancouver, B.C., have bought a standard Dodge Crusher from Allis-Chalmers-Bullock, Limited, of Montreal.

The O'Brien Mines have added a number of "Ingersoll" rock drills and a "Lidgerwood" hoisting engine to their equipment already purchased from Allis-Chalmers-Bullock, Limited, of Montreal.

The Cleveland-Cobalt Mining Co., has purchased from Allis-Chalmers-Bullock, Limited, of Montreal, a mining plant, including three-belt driven compound "Ingersoll" air compressors, "Ingersoll" rock drills, plunger sinking pump, "Lidgerwood" hoisting engine and necessary fittings.

The Sullivan Machinery Company desires to announce the opening of a branch office and warehouse at 319 Howard street, San Francisco, California. The best obtainable facilities are provided for the prompt handling of business. Mr. Howard T. Walsh will be manager of this branch.

The McKinley-Darragh-Savage Mines have purchased from Allis-Chalmers-Bullock, Limited, of Montreal, a large amount of mining machinery, including a powerful cross-compound air and compound steam "Ingersoll" air compressor, "Ingersoll" rock drills, two 80 h.p. boilers, a feed water heater condenser, air pump, "Lidgerwood" standard mining hoisting engine, air receiver, etc.

Within the last few years Hadfield's Steel Foundry Company, Limited, Sheffield, have gone extensively into the manufacture of machines for stone and ore-breaking, and have established a special department for handling this portion of their business. This department also deals with all orders and inquiries for repair parts in connection with crushing machinery, such as jaw faces for stone breakers, tires for crushing rolls, edge-runner rings, tube and ball mill-lining plates, etc.

We illustrate one of the Hadfield and Jacks patented "Heclon" rock and ore breakers. These are of the gyratory type, and are made in various sizes, ranging from in capacity from two to 100 tons per hour. At present we understand that the company has in hand ten of the largest size, and one of these forms the subject of the illustration. They are intended for the Premier (Transvaal) Diamond Mines, Limited, and will be used for breaking the diamondiferous blue ground preparatory to its further reduction by large crushing rolls. This, we are informed, is one of the largest single orders ever placed for crushers of this type and the combined capacity of the

ten machines will be upwards of 1,000 tons per hour. Great attention has been given to the perfection of details in the Heclon breaker, and it claims to be, from an economical point of view, the best machine on the market for the coarse breaking of stone or ore.

The machine embodies several improvements as compared with similar machines heretofore constructed. For the benefit of those who are not already familiar with the gyratory type of breaker we may point out that this machine has a true breaking action. At first sight it is difficult to understand that this is so, but if one bears in mind that the head and hollow shaft, which are practically one piece, do not revolve, and that all the motion is due simply to the excentric turning inside the bottom end of the hollow shaft it will be apparent, that, as regards any two diametrically opposite points on the crushing cone, the motion is simply backwards and forwards.

In the breaker under consideration a central shaft, with a ball at the upper end, is used to support the hollow shaft at a point where the motion is practically nothing, while the hollow shaft fitting over the outside of the excentric is said effectually to exclude all dust and dirt. The hollow shaft is much stronger than the usual solid shaft, and as this is the part that has to bear the whole of the crushing strain, the advantage is obvious.

Any lost motion in the gyratory type of breaker is detrimental to the output of broken stone. Therefore, it is important so to design the machine that renewals be easily and quickly made. As regards the upper end of the hollow shaft, when the bearing in the spider becomes worn, there is a steel bush provided which can be taken out and replaced with a new one, bored to suit the worn condition of the shaft. In the case of the excentric the bushes which are subject to wear are of anti-friction metal, and arranged in such a manner that spares can be carried in stock and slipped into position as required in order to reduce the lost time to a minimum. By raising or lowering the hollow shaft and crushing cone it is possible to vary the size of the broken product within certain limits, and the arrangement of worm wheel and worm in combination with a thread cut on the lower end of the central shaft has proved, so we are informed, a most satisfactory and effective method of accomplishing this purpose.

As might naturally be supposed the excentric bearing requires careful lubrication. The use of only the best oil is recommended by the makers, and the method of conducting it to the excentric is simple. Small tubes carried up through a hollow in the central shaft, with projecting drip pieces, deliver the lubricant in a thin, but steady stream to both inside and outside surfaces of the excentric. The flow is maintained by connecting pipes to a source of supply slightly higher than the discharge.

In the foregoing remarks we have only mentioned the novel features in the design of the breaker, but there are several points as regards the material employed in the construction which are worthy of attention. For example, the parts most subject to abrasive action of the stone are all protected with renewable linings of Hadfield's patented "Era" manganese steel, and the machine is designed especially with the idea of using these various linings in this material. The crushing cones, as already explained being of "Era" manganese steel, are simply thin mantles, secured to cast steel centres in such a way that when they are worn beyond further usefulness only a very small proportion remains to go to the scrap pile. As compared with solid chilled iron cones, the saving in this one item alone amounts, we are informed, to a very considerable economy. The lower body, bottom plate, and driving pulley are made in best cast iron, as this material is amply strong for these parts, but in the case of the top shell, spider hopper and driving gears, which have to stand the strains of crushing, Hadfield's best toughened cast steel is used. The arms of the spider and the upper surface of the inclined diaphragm are protected from the cutting action of the stone by means of renewable covers of "Era" manganese steel. All parts are made interchangeable.