

connection with the Carmichael-Bradford gypsum process. It has since been superseded by the Dwight-Lloyd continuous process without gypsum. Its efficiency factor was about 1,800 pounds per square foot per day.

The principal reason why the efficiency factor of the intermittent apparatus is lower than that of the continuous is because of the time lost in the former by the operations of charging, igniting and discharging, and the difficulty of knowing just how the process is progressing and when it is finished. This loss of efficiency has been found to be 30 to 50 per cent. Under reasonably favourable conditions the writer has found the efficiency factor of the down-draft intermittent method to be 1,000 to 2,000 pounds per square foot of hearth per day.

Continuous Process.—No attempt will here be made to describe the details of this method. It is sufficient to say that in the method now generally used a thin layer of the ore is fed on a continuously moving conveyor, with grated bottom, travelling over an air-tight box connected with an exhaust fan, which causes air cur-

RESUME OF EFFICIENCY FACTORS.

I. Roast heaps and stalls	5 to 20 lb.	Good
II. Reverberatory Roasters:		
(1) Hand roaster	24 to 35	Fair
(2) Mechanically stirred:		
average conditions	33 to 75	Too fine
special conditions	150	Too fine
(3) Revolving cylinders	128	Too fine
III. Blast roasting pots	500 to 900	Excellent
average	600	Excellent
IV. Blast roasting of thin layers (Dwight-Lloyd system):		
(1) Intermittent down-draft pans	1000 to 2000	Excellent
(2) Continuous sintering machines	2000 to 3000	Ideal

rents to be drawn down through the layer of ore and the grate upon which it rests. Immediately after the stream of ore emerges from the feed hopper its level top surface is ignited by momentarily passing under an igniting device. Thenceforward the heat necessary for the propagation of the roasting and sintering reaction is derived from the internal combustion of the sulphur or other combustible ingredient of the charge. The speed of travel is so regulated that when a given portion of ore has travelled across the suction box to the point of discharge, the zone of sintering action has progressed down to the grates, and the operation is complete. The fact that all the adjustments are reduced to mechanical terms makes it possible to keep the closest watch on each condition independently and quickly to correct any departure from normal.

The hearth area for purposes of calculation is the horizontal area of the layer undergoing treatment, which is the same as the top area of the suction box. Assuming average figures for specific gravity of ores and for sulphur contents, a standard Dwight-Lloyd sintering unit (type E, 42 X 264 in.), with an effective grate area of 77 square feet, will easily treat 85 tons per day of average suitable material without a pre-roast, which is equivalent to an efficiency factor of 2,200 pounds per square foot hearth area per day; while with a charge corresponding to those with which the best results are obtained in the pots; the capacity runs as high as 120 tons per day, equivalent to an efficiency factor of 3,000 pounds per square foot per day.

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List of Publications issued during 1911.

69. Chrysotile—Asbestos: Its Occurrence, Exploitation, Milling, and Uses (Second Edition)—by Fritz Cirkel, M.E.—pp. 316; illustrations 154; maps 2.
82. Bulletin No. 5: Magnetic Concentration Experiments with Iron Ores of the Bristol Mines, Que.; Iron Ores of the Bathurst Mines, N.B.; A Copper Nickel Ore, from Nairn, Ont.—by G. C. Mackenzie, B. Sc.—pp. 28; illustrations 4.
84. Gypsum Deposits of the Maritime Provinces—by W. F. Jennison—pp. 171; illustrations 55; maps 3.
88. Annual Report of the Division of Mineral Resources and Statistics on the Mineral Production of Canada, during the calendar year 1909—by John McLeish, B.A.—pp. 291.
89. Proceedings of Conference on Proposed Legislation on the Manufacture, Importation, and Testing of Explosives; Held House of Commons, Sept. 23, and Sept. 30, 1910—by Dr. Eugene Haanel—pp. 41.
92. Investigation of the Explosives Industry in the Dominion of Canada, 1910—by Capt. Arthur Desborough—pp. 16.
93. Molybdenum Ores of Canada—by Dr. T. L. Walker—pp. 64; illustrations 24.
102. Preliminary Report on the Mineral Production of Canada for the Calendar year 1910—by J. McLeish, B.A.—pp. 21.
103. Mines Branch Summary Report, 1910—pp. 237; illustrations 17; map 1.
114. Production of Cement, Lime, Clay Products, Stone and other Structural Materials in Canada, 1910—by J. McLeish, B.A.—pp. 60.
115. Production of Iron and Steel in Canada during the Calendar Year 1910—by J. McLeish, B.A.—pp. 38.
116. Production of Coal and Coke in Canada during the Calendar Year, 1910—by J. McLeish, B.A.—pp. 31.
117. General Summary of the Mineral Production in Canada during the Calendar Year 1910—by J. McLeish, B.A.—pp. 37.

Reports now in the Press

83. The Coals of Canada: An Economic Investigation—conducted at McGill University, under the Auspices of the Dominion Government—by Professors J. B. Porter and R. J. Durley,—and others. In six volumes:—
 - Vol. I.—Coals: Sampling, crushing, washing, mechanical purification, and coking trials.
 - Vol. II.—Coals: Steam boiler, producer, and gas engine trials, also Chemical Laboratory work.
 - Vol. III.—Coal Washing Tests: Tables and Diagrams.
 - Vol. IV.—Boiler Tests: Tables and Diagrams.
 - Vol. V.—Producer and Gas Engine Tests: Tables and Diagrams.
 - Vol. VI.—Chemical Tests: Tables and Diagrams.
100. Report on the Building and Ornamental Stones of Canada—by Professor W. A. Parks.
104. Catalogue of Publications of Mines Branch, from 1902 to 1911: containing Tables of Contents, and List of Maps, etc.
110. (Bulletin No. 7) Western Portion of Torbrook iron ore deposits, Annapolis County, Nova Scotia—by Howells Frechette.
111. Diamond drilling at Point Mamainse, Ont., by A. C. Lane, Ph.D., with Introductory by A. W. G. Wilson, Ph. D.
118. Mica: Its occurrences, exploitation, and uses—by Hugh S. de Schmid.
143. Annual Report on the Mineral Production of Canada during the Calendar year 1910—by J. McLeish.