

the machine is not perfect, nor does it lend itself to the sort of work which is often demanded of it. A peculiarly bad feature is the return of the middlings to the same table. This unnecessarily complicates the mechanism, and, worse still, it is based upon the false assumption that the middlings represent a product of mixed gangue and ore which should have been separated. In this conception the middlings constitute an accident, which, were it true, would indicate that the machine is not doing the fine work which it showed theoretically. As a matter of fact this product is inevitable, consisting of particles of approximately equal mass, which must of necessity issue together. Normally this product would constantly increase as more ore was fed to the table, whereas it represents a constant quantity as the machine is now operated. Hence it becomes necessary in practical work, if this middlings-return is adopted, to compromise the matter by splitting the discharge into heads and middlings at such a point as to allow more gangue to go over with the heads than should be permitted. To obtain really perfect work a separation of heads and middlings should be made, and the middlings subsequently recrushed or ground, and then returned to the table. With some ores such an extension of the system might not be as economical as that now in use, but there are many cases where it would unquestionably prove profitable. Another defect in the use of this machine is that of feeding to it unclassified pulp. The concentrator yet remains to be invented which will do as good work with mixed sands and slimes as with material which has been sorted in a hydraulic classifier. A recognition of this fact in practice will greatly increase the efficiency of the riffle-washer.

#### Selective Action of Cyanide Solutions.

Some interesting notes have recently appeared (Trans. Inst. of Min. and Met., Nov. 15, 1899,) upon experiments made by Mr. H. H. Greenway, to determine the selective action of potassium cyanide solutions on ores containing copper, gold, and silver. He arrives at the very startling result, widely at variance with preconceived ideas, that a cyanide solution for dissolving gold and silver and not the base metals associated with them is a saturated and not a weak one. He gives figures showing a gradual increase in cyanide consumption on ores containing copper up to the point of saturation, at which the amount consumed "was almost incapable of estimation." This offers an interesting field for further investigation, which may lead to important practical results.

A point of no little moment in cyanide work, which has not received the attention which it deserves, is the velocity of the percolating solutions. It is generally understood that the highest rate of solvency of gold and silver is accomplished when the speed of the solvent is just sufficient to remove the film of saturated solution around the precious metal particles as fast as it forms. This is true, but the superficial area of the particles has much to do with the matter, so that the same velocity will not apply in all cases. There is a maximum velocity of solvent at which a maximum rapidity of solution can be effected, which should be determined for each ore. And it should be borne in mind that this velocity is not the same for silver and gold. By leaching at the proper velocity for the gold, and subsequently at another velocity for the silver, very great improvement in total extraction can in many cases be obtained. The only exception apparently is where the gold and silver are alloyed, when the same velocity will give the maximum possible extraction with that ore.

The output of Zinc ore in Ontario last year was about 1,300 tons. It was the yield of the Zenith mine near Rosspoint, on the C.P.R. Several other deposits of the metal have been located in the same neighborhood.

#### The late Addison C. Rand.

It is with much regret that we make the announcement in these columns of the death of our old friend Mr. Addison C. Rand of the Rand Drill Company, New York, the Laffin and Rand Powder Company and other large American enterprises associated with the mining industry. The sad event occurred unexpectedly at his home in New York, on Friday evening, 9th instant. The late Mr. Rand was one of the pioneers in rock drilling and air-compressing machinery. During the excursion through Canada in 1889 with the American Institute of Mining Engineers, he quickly recognized the possibilities of our mining industry and immediately established at Sherbrooke, Que., the branch establishment of the Rand Drill Company, which has grown and prospered into the large works at that point now operated by the Canadian Rand Drill Co.

The late Mr. Rand was a fine type of the American business man. Shrewd and enterprising in business, genial and hospitable in private life, he was universally esteemed and had a wide circle of friends. He was identified with many of our mechanical and engineering societies. He was one of the founders of the Engineer's Club of New York, and officiated as its treasurer from its organization to the time of his death. He was also prominently identified with the American Institute of Mining Engineers, the American Society of Mechanical Engineers, the New York Chamber of Commerce and other bodies. We extend our sympathies to his family in their sore bereavement.

#### ONTARIO NOTE AND COMMENT.

The record of the Mikado gold mine for February was as follows: Mill ran 26 days; crushed 853 tons ore (2,240 lbs.), yielding 621 ounces gold from plates; cyanided 479 tons tailings (2,240 lbs.), yielding 179 ounces bullion. The value of the output was over \$12,000. It is reported that the yield for the first two weeks of March was upwards of \$14,000.

Returns to the Bureau of Mines show that in 1899 the gold mines of Ontario yielded 27,594 ounces of gold worth \$424,568, which is an advance of 11,333 ounces in weight and \$149,490 in value over the output of 1898. The bulk of the gold came from the mines in western Ontario, though the two or three producing properties in the eastern part of the Province, such as the Deloro and the Cordova, contributed a fair share. To these is likely soon to be added the Diamond mine, situated about six miles from Madoc, near the village of Queensboro, which has been sold by Mr. D. E. K. Stewart to a company under the management of Mr. Leopold Meyer. A \$12,000 stamp mill is to be erected, 600 cords of wood have been contracted for, and it is expected that bullion will be turned out at an early period of the coming season.

The quantity of iron ore raised in the Province in 1899 was 16,911 tons, which came entirely from eastern Ontario, and consisted mainly of magnetite supplied to the blast furnace at Hamilton. There were smelted 64,749 tons of pig iron, valued at \$808,157, a considerable advance over any previous year. The domestic ore mined is as yet far from meeting the requirements of Ontario furnaces, it being understood that the charcoal furnaces at Deseronto ran throughout the year mainly, if not wholly, on foreign ores.

Payments made by the Ontario Government out of the Iron Mining Fund during 1899 amounted to \$8,647 19. This is a fund of \$125,000, established by the Legislature five or six years ago, out of