"MINING AS AN INVESTMENT"

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perience that mines eventually become impoverished in depth, just as surely as men grow old, and also to the assumption that a 60 degree ore-reserve, that is, having 60 per cent. of the market value 'in sight,' furnished ample security. In the attempt to introduce one or two academic factors of safety the public was led to ignore the very essentials of the business, namely, that it involved no small risk, under the best conditions, and that the risk must be compensated by large dividends. Instead, the public accepted 6 or 7 per cent. as an adequate return and failed to recognize that they held a wasting asset. During the speculative —the frankly adventurous—stage of Rand mining it made money for nearly everybody engaged in it, but when the chicanery of the few was combined with the ignorance of the many into creating a false notion that the speculative phase had been transformed into one of secure investment, then it was that share-dealing on the Rand became a cause of great loss to the public and a blot on honest industry. From the moment when the change in sentiment was effected, and the fallacy was established, the mining of the gold became less profitable than the mining of the pockets of the public.

"This investment idea, of minimizing risks and limiting possibilities, would soon cause mining to die for want of breath. Before a profitable outcome is assured every mining enterprise must pass through several stages of speculativeness as surely as a child must take the chance of bumps and bruises, of measles and mumps. The biggest fortunes are made during the early stages of development; on the whole, more money is made by selling than by buying mines, simply because the final or so-called investment stage of a first-class mine is likely to represent an over-valuation, caused by an erroneous supposition that the essential hazard is precluded. I would even say that more money has been lost by the over-valuation of the great rich mines of the world, like the Con. Virginia, Mount Morgan, Broken Hill, and Nipissing, than in a multitude of worthless prospects. Small men lose their money in big mines, and big men in small mines. The inference, therefore, is not to try to get rid of the essential risk—because it cannot be done—but to require a rate of profit proportionate to it. A much more intelligent policy is to engage in such mining as allows a liberal margin both ways, taking a larger risk for the sake of the larger gain, that is, to speculate with eyes wide open and not to invest with eyes half-shut.

Fifteen years ago the careful sampling of ore as a means of valuing mines was becoming advanced to an art and the tendency was to place great reliance upon it, with the consequence that capitalists began to think themselves safe in buying ore. They thought to escape the essential risk by assuring themselves a return of their money, diminishing the speculative features of the business as much as possible. Exploration companies were organized in London, New York, and Boston to scout for promising mines on which to apply the newly developed methods of valuation. Most of these seekers after bonanzas were disappointed; they failed to repeat the successes of the pioneers in this type of mining finance—such as the Exploration Company of the Hamilton and Smith era—because they were too timid; they expected to have their money in sight when they bought a mine; they were looking for a bet on the sure thing, with all the profits of a speculation. They lacked the temperament needed for adventure and should have placed their money in a bank, where at 4 per cent. it would double itself in 15 years. Many directors of these exploration companies bluffed themselves into the idea that they were bold navigators, when as a matter of fact they were only fair-weather sailors.

"As I remarked at that time, 'ore-reserves are not everything; expansion and development are the essence of successful mining.' The big successes have been made by developing prospects into mines, not by buying blocks of ore that have been exhaustively sampled by meticulous young men. The profit to be made must depend upon the further extension of the ore; the larger the proportion of ore already proved the smaller the possibilities beyond. As Mr. Hoover pointed out, the probable depth of extension is more critical than the proportion of profit in sight. He worked out a rough rule for the gold mines of Western Australia, namely, the minimum extension of an ore body in depth should be not less than one-half its length. He called it a 'yard-stick' for use in forming a judgment, but he laid stress on the need for investigating the characteristics of the individual ore body, more particularly its geologic structure and that of the district in which it lies. Such a rough and ready formula, however, would fit only the mines that are dependent on one or two large shoots; it would be of little service in the valuation of mines depending on a series of recurring ore-shoots, as, for example, the Goldfield Consolidated, in Nevada, the Nipissing, at Cobalt, the Yoquivo in Mexico. Mr. Hoover made the shrewd observation that "the quantity of ore in reserve is a matter of management not necessarily dependent on the size of the mine." In 1912 Morton Webber protested against the use of formulas in mine valuation and showed that 'the relative magnitude of the ore-reserve in any particular mine is largely a matter of administrative policy.' I myself remember, when practising as a mining engineer, advising a client not to extract the ore in his mine if he hoped to sell it to advantage, as he wished to do. The extension of the ore-body was menaced by a fault. He listened to a saw-mill engineer, enlarged his mill from 20 to 40 stamps, extracted all the ore, and barely made enough profit to pay for the enlargement of the plant, leaving a hole in the ground in which several later operators have buried their good money. This was a gold mine in Idaho. Another example occurs to me—a small silver mine in Colorado. The ore was only five inches wide, but high-grade. A careful sampling showed \$150,000 worth of ore assured, which would yield a net profit of \$110,000. The owners were willing to sell for that sum, half cash and half in six months. I advised my clients not to buy, because the winzes below the adit-level showed that the vein was poor and much faulted. The history of neighboring mines was not promising as to prospects in depth. I considered the business unattractive because the risk of the known ore yielding less than the amount of profit estimated seemed to outweigh the chances of finding more ore. The subsequent story of the mine justified my opinion. On the other hand I advised the purchase of the Camp Bird, in Colorado, for \$6,000,000 when the bottom workings looked poor, and gave no promise of the ore persisting, because I believed that horizontal exploration would lead to the uncovering of more ore bodies especially westward, where the rising surface gave virgin ground increasing to a height of 1,200 feet above the adit. The mine had reserves equal to \$6,118,000 gross, but the value of it lay largely in the good prospect of the further finding of rich ore, without sinking, as the sequel proved, for the Camp Bird has produced \$20,000,000 since then, although poor in depth. Please pardon these reminiscences of a time, 20 years ago, when I was a mining engineer, not a journalist; I give them because personal experience is direct evidence.

"In 1911 M. H. Burnham contributed a series of articles on sundry principles underlying the finance of mining enterprise, more especially the 'rick-rate.' He insisted rightly that the buyer of mines or shares in mines should expect not only a bank-rate of interest on his capital, but as much more as will cover the additional risk inherent in the business of mining. If, as I suggested at that time, he bought into the Goldfield Consolidated, in Nevada, then the most productive gold mine in the world, but with a reserve of ore so small as compared with its annual production as to ensure the return of only a small part of its market value, he, the sane speculator, ought to expect a dividend of 35 per cent. per annum, or 31 per cent. more than the 4 per cent. bank rate, that is, the mine should be valued on