STATEMENT OF THE NORTH STAR MINE

The North Star property at present consists of the North Star itself - an old patented claim, covering 1500 feet on the "North Star" and "Yellow Jacket" veins - and the Huntington, an unpatented location covering the entrance to the 5th level; which was intended to be the main permanent shipping level. Three patented claims adjoining the North Star, owned by Mr. W. H. Crooke, are also included in the price as now fixed.

The North Star was located in 1874; with its continuations on either side, it is one of the best known and strongest veins in San Juan County, while the North Star claim itself has always been regarded as the richest and most important on the vein. The gross output of this claim, from 1883 to 1888, when operated by the North Star M & S. Co., as far as is shown by the records of the Company, was between $1,300,000 and $1,400,000. This does not include all of the shipments made by Leasers, nor the output before the mine passed into the hands of the above mentioned Company - when it had already achieved a considerable reputation. The total output from the claim has probably been in the neighborhood of $2,000,000.

The North Star is not so much a single vein, as a network of veins averaging 5 or 6 feet in width, which connect or separate from time to time along the strike. Of these, some are exposed and have been worked in several different levels; others are only opened up on one or two.

The vein system outcrops along the summit of King
Solomon Mountain, near Silverton, at an elevation of over 13,500 feet above sea level; the deepest workings, at one place only, reaching a maximum depth of about 750 feet below the highest point. All the workings, with the exception of a sump of about 50 feet, are drained by adit levels from surface, and the natural configuration of the district is such that the vein can be opened up in this way to an indefinite depth. This can be readily understood when it is mentioned that the 2nd, 4th, and 5th levels are driven through the mountain, coming out to daylight in two or more directions in each case.

The mine has hitherto been worked only for the high-grade shipping ore, running $50 per ton and over, which occurs in irregular bunches throughout the vein. For several years the average of all shipments was over 200 oz. of silver per ton.

This ore consists of quartz, carrying galena, pyrite, chalcopyrite, and gray copper, in various proportions; with occasionally a little brittle silver ore; - the silver values generally accompanying the gray copper. It has averaged about .10 oz gold, 100 to 200 oz. silver, and 15 to 25 % lead. The bulk of the vein-filling, where mineralized, is very similar, excepting that the amount of sulphide mineral is much smaller, and the lead and silver values proportionately low. The gold average is however fully maintained; and in places rises to 2 oz per ton. Neither the lead nor the gold values, in fact, increase with the silver, – with reference to which the mine has been worked hitherto.
Most of the old stopes are filled with low-class ore, assaying from $5 to $10 per ton; and there are large bodies of ore opened up in the various levels which average somewhat higher. But the best criterion of the value of the vein material, after the shipping ore has been sorted out, is afforded by the dumps. Of these there are two classes; - the dumps from the sorting house, consisting entirely of ore from the vein; and the waste dumps, made up of the stuff broken in drift, mixed with a large proportion of waste rock from cross cuts, etc.

As to the former, a great number of samples average about .10 oz. gold and 14 ozs. silver per ton- a gross value of over $10-; and bulk shipments to smelter of over 2000 tons confirm these samples. The quantity was estimated by the late foreman and superintendent of the Company at over 25,000 tons; and while they are still entirely covered with snow, there is reason to think the estimate a moderate one.

The waste dumps have been less thoroughly sampled; it would however seem that the average assay value is about $6 per ton; and the probability is that they will pay to mill, after sorting out the obvious waste rock. It is not possible to estimate the quantity of such very low-grade material available here and on the stulls in the mine; it must however be very large.

During the last few years the mine has been ransacked by tributers, who have gouged out every little pocket of shipping ore, without doing any development work to open up more. There are however large blocks of unworked ground remaining in the upper levels, and there is every reason to think that raising
and drifting will prove some of these to be as productive as the portions already stopped.

The mine has never been equipped with any kind of tramway, although the sums expended - or wasted - in attempting to build road and trails, in an excessively rugged country, would have gone far towards providing the cost. It has been possible to ship only during the summer and fall, by burro pack-trains, at a cost of $4 to $5 per ton. The only practical attempt at milling has been during the last three years, at the Polar Star mill, in the Animas Valley; - an improvised ten-stamp mill, at which small quantities of the dump have been treated at an expense of probably $2 or $3 per ton. The cost of packing and milling, in fact, has been such as to swallow up all the possible profit from such ore as is at present exposed.

The average of a number of panning tests on such low-grade ore indicated that a saving of 78% of the gold and 70% of the silver might be expected. The rate of concentration was 14 to 1, the resulting concentrates being of high-grade, so that the costs of shipment and smelting would not be disproportionately high. It would appear that the sulphide minerals present are always valuable, and the grade of the ore is roughly proportionate to the quantity.

Some tests by cyaniding the waste after concentration suggest that a further satisfactory saving might, if necessary be realized by this means.

It is, however, probably that, with cheap transport and handling facilities, it would be found advantageous to crush and hand-sort the lower-grade ores on picking-tables, thus obtaining a large tonnage of low-grade shipping ore, and propor-
tionately reducing the grade of the final milling ore. Such ore is at present, and seems likely to continue, in great demand at the Durango smelter, and it should be possible to obtain favorable rates. This method of handling would present the further advantage of being very elastic, so that it could be readily varied to suit changes in the composition of the ore, or in the smelting rates.

Speaking generally, it may be said that the property now shows large quantities of low-grade material, which with cheap transport and milling facilities can be handled at a profit; while there is every reason to expect that intelligent development will show up other rich ore-bodies, as in the past. It is reputed to have been very profitable at one time; its ill-success during the last few years is obviously explained by the neglect of development work, and the lack of the equipment without which the lower grade ores cannot be profitably handled.

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