days and 18 hours. The causes of delays were as follows.

P	Days.	Hours.
$\overset{r \text{ or }}{\bigcirc}$ clean-ups	7	22
Owing to freezing of water supply	ín	
Pebruary	I	22
Dominion Day, holiday	••	12
^{Owing} to break in flume on Decemb	er	
²⁸ th		08
^r or other causes		02

It will be seen that for causes connected with the mill there have been only two hours delay from the beginning to the end of the year and including all sources of delay, except clean-ups, only three days and twenty hours delay. This is a record for which those who are responsible for the care of the mill are entitled to credit. The figures submitted on Table I. are full, and from them the history of the year's working can be studied in detail.

From the commencement of the year a steady improvement was effected all along the line until June, when a drop took place owing to causes recited above; from this time until the end of the year there was a steady upward movement, the best results being obtained in November, when 388 tons were milled. producing \$11,592.50 or at the rate of \$29.86; if this month can be compared with December, it will be seen \$30.25 were recovered in the latter month, but only 344 tons were milled; from a consideration of these figures it will be seen that it is only necessary by development to bring a sufficient quantity of ore to the mill to ensure satisfactory results.

The average fineness of the bullion for the first five months is 696 parts fine gold in every thousand parts of bullion, and the average fineness of the bullion during the last five months is 733 in one thousand; the value of the bullion during the first named period is \$14.38 per ounce, and during the second named period is \$15.15 per ounce.

The percentage of recovery in the mill has been, on the whole, satisfactory considering the character of the ore treated, and if the ore under consideration were of a low grade character, it would not be necessary to do more than improve, where possible, the concentrating plant. When ore of forty or fifty dollars per ton, however, is under consideration, the loss of 25 per cent. of these values is serious. Preliminary steps were promptly taken with a view to ascertaining whether

the cvanide process could be adapted to our needs and the results of these were so satisfatcory that a small experimental cyanide plant was erected in the mill where the process could be observed under our own care. In the meantime a substantial dam has been built in a convenient location and the tailings are being accumulated for subsequent treatment.

ASSAYS.

A convenient assay office has been furnished in which are made daily the following assays of the previous day's run:

- ^I. Sample of ore prior to milling.
- ². Sample of pulp after amalgamation.
- 3. Sample of tailings.
- 4. Sample of concentrates.

The samples are taken hourly with great care and the results harmonize closely with the results attained in practice, and the system affords much help to the successful operation of the mill. Frequent assays are also made of samples from the mine, especially from the points of development.

Check assays are made of the shipments of ore and concentrates to the smelter, and numerous other assays which occur in the course of special work which may be undertaken from time to time.

CYANIDE TESTS.

A rough cyanide plant has been erected of a sufficient size to furnish tests on a working scale and sufficiently numerous to be conclusive in their results. These experiments have been carried on under the direction of Mr. E. A. Paterson, who has had many years' experience in the cvanide plants of the Transvaal. Reference is made to Table V., where the results of the four last experiments made as shown. Experiments VI., VII., VIII are especially satisfactory; the percentage of recovery is high and the quantity of cyanide consumed is small. In order to carry the experiments through to the end, a zinc box was arranged and the gold precipitated in it; after which a clean-up was made resulting in a recovery of bullion which corresponded closely with the assay figures. Regarding the proportion of slimes which we cannot treat with the tailings, our figures are not complete, but from an observation of the catch boxes it would appear that it will not be necessary to allow more than 10 to 15 per cent. of the slimes to escape to obtain as good results as those shown in the table. Whether the quantity of slimes thus allowed to escape will be worth catching and treating in a separate slimes plant will depend upon the quantity of ore being treated in the mill.

The conclusions to be drawn from the above remarks are that the cyanide process is especially adapted to our tailings, and that these tailings should yield a net profit over and above all expenses of not less than \$5.00 per ton.

An admirable site exists below our mill, and I strongly urge that plans should be immediately prepared for the erection of this plant, so that its completion may be insured before the capacity of the dam is exhausted.

The treatment of the concentrates by this method is a matter for later consideration, but it is not improbable that the process can be adapted to this purpose and thereby effect an important economy.

COMPRESSOR.

The machinery for this plant arrived at the end of the vear, and at this date is now running. The full decription of this plant will be found in Mr. Mussen's report, and it is too soon vet to discuss the performance of the machinery. I have great hopes that the introduction of the machine drills will be the means of solving many of our difficulties, and that after they have been in operation for a few months the development of the mine will justify the addition to the mill of another battery of ten stamps.

The entire work of engineering, general management, purchase of supplies, correspondence, office and book-keeping at the mine and the mill site, is carried on by one engineer (or general manager) one assistant, and one time-keeper; when the number of men employed is considered, the varied character of the work and the area over which it is scattered, it will be seen that strong effort has been made to reduce the number of non-producers to the lowest possible limit.

The vein has fully answered our hopes in values, even if the breaks have rendered its extraction more