DIVISION E.

THE MATTER OF MILLING:

The present rates of freight and treatment on low grade ores are $7.50 for $10.00 ore and under, $8.25 for ore from $10.00 to $15.00, $9.00 for ore $15.00 to $20.00, $9.75 for ore $20.00 to $25.00 and in addition there is a charge of $1.00 per ton for sampling. I believe we have somewhat better rates; the above is the usual scale.

In Telluride, Colo., where ores are worked, which carry part of their values in tellurides of gold, the reduction costs do not probably average more than $2.50 per ton and an extraction of some 86% is usually attained. If such conditions could be introduced here the output would at least be doubled. In approaching this subject it must not be forgotten that some of the best heads in the business have given the matter their serious consideration and the best that they are able to do is illustrated by the present rates. On the other hand experimental work has lain dormant for 3 or 4 years and in that time the world of metallurgy has moved on a pace. There are now several processes of ore treatment which promise improvements in our present conditions that have passed the experimental stage and are working successfully on ores similar, in many respects, to our own. For instance there is a process of concentration and cyaniding, preceded by treatment with ammonia gas, which has been found excellent for the Camp Bird ores and which brought to my attention by our Mr. Dines. This process is the most attractive of all, for it would provide a cheap milling process for all the many classes of ore in the camp. Then there is the process of coarse grinding and cyaniding without roasting, which our Mr. Rice has shown is applicable to certain low grade, oxidised ores in the N. W. part of the camp and there is the process of fine grinding and cyaniding without roasting which has been successfully applied to unoxidised
telluride ores and there is the process of concentration depend upon the affinity of crude petroleum for metallic faces which has been the salvation of some of the Kalgoorlie Mines of W. A. All these departures of metallurgy are fairly recent and, I believe, that it would pay to find out if one or the other of them will not be of service to us.

As shown by the inventory of equipment in Division C we have on hand nearly all the machinery necessary for a small plant. The first experiments could be done at Henry Woods plant in Denver where the advice of the the most experienced metallurgists is available at a very low price, and if successful there, a small plant could be got together using as far as possible the material on hand. If this plant is successful then we can enlarge with assured success. There follow some statistics. I have written for a lot of information to various parts of the world and will make known the results in some subsequent report.
LIBERTY BELL MILL:

**Extraction 86%**. Ore contains tellurides of gold.

Glycine Plant. *(Cost per dry ton glycined.)*

**Labor.**
- Foreman: 0.016
- Solutionmen: 0.0675
- Laborers: 0.0825
- Assayer: 0.0270
- Repairs: 0.0026

**Supplies.**
- Glycine: 0.1720
- Zinc: 0.065
- Line: 0.0615
- H 20: 0.0045
- Lights: 0.0006
- Beltings: 0.0017
- Tools: 0.0013
- Misc.: 0.0022

**Totals (dry ton basis).**
- Labor: 0.1861
- Supplies: 0.3074
- General: 0.0900
- Total: 0.5835

Mill Stamp and Concentrator floors.

**Labor.**
- Foreman: 0.0182
- Amalgamators: 0.1133
- Welfley men: 0.0423
- Repairmen: 0.0212

**Supplies.**
- Quicksilver: 0.0068
- Screens: 0.0076
- Shoes: 0.0507
- Dies: 0.0108
- Fingers & Sockets: 0.0004
- Liners: 0.0029
- Stems: 0.0087
- Guides: 0.0002
- Chemicals: 0.0040
- Oil & Waste: 0.0021
- Lights: 0.0009
- Belting: 0.0012
- Tappets: 0.0002
- Feeders: 0.0021
- Other Misc.: 0.0162

Total: 0.1281
**Totals (7982 Dry tons)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Labor</td>
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<tr>
<td>Supplies</td>
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</tr>
<tr>
<td>General Mill</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td>$4961</td>
</tr>
</tbody>
</table>

**Note:**

Under Misc. supplies items are as follows:

- Repairs etc.: $0.0007
- Laundres: $0.0060
- Iron & Steel: $0.0011
- Misc.: $0.0104

Total Misc. = $0.0182

General mill expense includes power, light, assays, heating & pumping.

*Total cost: $0.05 per ton.*