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ECONOMIC GEOLOGY ENGINEERING GEOLOGY
1312 PUBLIC SERVICE BLDG.
PORTLAND, OREGON

September 8, 1941

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SEP 9 1941

STATE ASSAY LABORATORY
GRANTS PASS, OREGON

Mr. R. C. Treasurer
State Department of Geology & Mineral Industries
Grants Pass Ore

Dear Ray:

I have your two letters of recent date and will reply to the first one first.

I am somewhat disappointed in your report on the chrome situation but was glad to get your slant on it nevertheless. Perhaps something can be done with it later, and I intend to keep my ear to the ground and watch developments very closely.

I had a letter from Bartlett asking for \$1500 the same day that I received your letter. He seemed to be in a terrific hurry and wanted the money by Saturday night. I tried to call him long distance without success, and then I wired him as he had suggested, asking him to get in touch with me by long distance telephone. To date I have heard nothing from him so presume that he was able to get the money elsewhere. I had made arrangements for the money and would have gone along with him had everything been as represented.

Regarding the second letter, in which you mention Philip Hoyt and grinding pebbles, I have done a lot of work on the grinding pebbles and have a large file of correspondence with various dealers and users, and I have come to the conclusion that the quartzite pebbles in this locality are not very satisfactory as grinding media. In the first place, they contain an appreciable percentage of iron, which is an objectionable feature for grinding most materials for which the pebbles are used. In the second place, the hardness of these pebbles is not what it might be. I have had some tests run on them which indicate that the abrasion is several times more rapid on these quartzite than on Danish flint pebbles. However, be that as it may, I wouldn't mind sending some to Mr. Hoyt just the same. If he can do anything with them, more power to him. So far as the best locality is concerned, I am convinced that some of the streams in Clark County, Washington not very far out of Vancouver offer the best possibilities for quantity and concentration. Some of the localities northeast of Hood River have high concentrations, but I am not so sure about the available quantities that could be mined cheaply.

We will thresh that all out when you get up here, and don't fail to get in touch with me as soon as you get in town so that we can arrange to spend a little time together on this matter.

Mr. R. C. Treasher

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As you may have heard, I am now a member of the staff of the U. S. Engineers, and hope to remain there permanently. I still have my office and will carry on my private practice just the same, which makes a very satisfactory arrangement.

Best regards.

Yours very truly,

A handwritten signature in blue ink, appearing to read "C. P. Haldredge". The signature is written in a cursive style with a large initial "C" and "P".

CPH:BM

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OCT 17 1941

STATE ASSAY LABORATORY
GRANTS PASS, OREGON

October 15, 1941

AIRMAIL

Mr. Phillip S. Hoyt, Vice-President
Southern Mining & Milling Co
Franklin N C

Dear Sir:

I have your letter of October 8th regarding grinding pebbles. I talked with Mr. Treasher shortly after you were out here regarding this same matter.

My opinion is that the quantities of quartzite pebbles of sufficient roundness to serve for grinding pebbles in the localities referred to by Mr. Treasher in southern Washington, are not adequate for long time production. Furthermore, the pebbles in that area occur in widely scattered deposits and would have to be picked up by hand off the ground. I have had in mind for some time other deposits in the vicinity of Vancouver, Washington of identical pebbles. In this locality they occur in enormous quantities, of which a rather high percentage, say 20%, are of sufficient roundness to be used for grinding pebbles, but there are also sizes both too large and too small and there are foreign pebbles. Therefore, the material in this locality would also have to be hand picked.

In the past six months I have given these pebbles considerable attention and have had some tests made by two different laboratories of their resistance to abrasion. Abbott A. Hanks, Inc. of San Francisco made wet shot rattler test on Danish pebbles and our quartzite pebbles as follows:

Danish pebbles, loss in 10,000 revolutions,	0.19%
Our pebbles, loss in 10,000 revolutions,	1.139%.

Another test run by the E. W. Lazell Laboratory in Portland under the procedure of the A.S.T.M. Standard - Abrasion of Rock D2-33:

Weight before test	160 oz.
Weight after test	158.75 oz.
Loss by abrasion	1.25 oz.
Percent loss	0.78%

The foregoing will give you some idea of their ability to resist abrasion, or their wearing qualities as compared with Danish pebbles. I fee that it is not particularly encouraging.

Most of these pebbles are not brittle but are so tough that it is very difficult to break them with a hammer or even by throwing them against other rocks. Only rare pebbles have cleavage planes. I have made no hardness or load tests, but I am sure that both the hardness and the load carrying capacity of this material is high. As seen under a hand lens or low-powered microscope, this material is a true quartzite composed of quartz grains cemented by silica, but they do contain an appreciable amount of iron oxide (perhaps as much as 5%), and a comparable amount of alumina. I have been attempting to market this material to an electro-metallurgical company soon to start operations in this district for the purpose of making ferrosilicon. If that could be done, the most satisfactory stones for grinding purposes could be picked out by hand as the material passes over a belt at very little additional expense, since certain impurities have to be removed by hand from the material before it is satisfactory for metallurgical purposes.

The deposit is located in a stream valley within a mile of a branch line railroad, and a paved highway crosses it. The haul from the deposit to Portland is about 20 miles. The total quantities of quartzite pebbles of all sizes and shapes in these deposits is probably in the neighborhood of a million tons at least.

I have tried to give you an accurate and honest picture of the situation as I see it. I have done considerable work and carried on a lot of correspondence with possible purchasers and dealers in grinding pebbles and have become quite discouraged in regard to the sale of these pebbles as grinding media. However, when you come West I will be very pleased to discuss the matter with you and to show you pebbles and leave the entire matter up to your judgment. If you wish to go further with the matter then, I am sure that some sort of an arrangement can be worked out along the lines suggested by you in your letter.

If you still wish me to send you a sample of these pebbles, I will be very glad to do so.

I might add one thing -- and that is that I haven't made abrasive tests on the pebbles from southern Washington referred to by Mr. Treasher, and the climatic conditions there are much more arid than in the vicinity of Portland

Mr. Phillip S. Hoyt

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where we have a relatively humid climate. In our climate these pebbles may have been subjected to a certain amount of leaching, thereby reducing their abrasive qualities.

I wish to thank you for your letter.

Very truly yours,

CPH:BM