

STATE OF IDAHO
Chas. C. Moore, Governor

BUREAU OF MINES AND GEOLOGY
Francis A. Thomson, Secretary

A PRELIMINARY STUDY
OF
CERTAIN REPORTED PLATINUM OCCURRENCES
NEAR
COEUR D'ALENE, IDAHO.

By

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Preface

To

Second Edition

The first edition of this pamphlet which at the time it was issued was thought to be of largely ephemeral value has met with such steady demand as to require its reissuance.

Obviously, as the report of a definite and very limited investigation no material revision would be appropriate or permissible. Shortly after its first issuance, the local assayers who claimed to have found platinum disappeared from the state, and even those citizens who were most positive in their claims and most hostile to this report appear to have tacitly accepted its conclusions.

Similar "platinum discoveries" are however reported from time to time, usually based upon returns received from various "assayers" at Grants Pass, Oregon. Samples and specimens from numerous points are constantly being received by the Bureau with the request that they be assayed for platinoid metals. A method for dealing with such requests has been devised and is set forth in detail in Appendix B. of this edition.

It is to be noted that in two cases platinum has been found in samples examined by the Bureau, in one case the sample was placer concentrate, containing notable amounts of platinum and osmiridium, in the other a low-grade cupriferous pyrrhotite was found to contain platinum in amounts too small to be commercially profitable.

As an illustration of proper procedure in such matters, and as an object-lesson of the need for caution in accepting unsupported claims as to the discovery of rare metals it appears that this report will have value for some time to come.

Francis A. Thomson.

INTRODUCTION.

The following report gives the results of a cooperative investigation, designed to confirm if possible, the reported occurrence of platinum in certain mining prospects in Kootenia county, Idaho. Those deposits were reported to carry, not only platinum, but in some cases other metals of the platinum group.

Cooperating with the Idaho Bureau of Mines and Geology in the field and laboratory investigations connected with the study were the United States Geological Survey, the United States Bureau of Mines, and the Columbia Section of the American Institute of Mining and Metallurgical Engineers. A designated representative of each of those organizations has carefully studied this report and concurs fully in all its statements and conclusions.

Reasons for Undertaking the Study.

It is perhaps pertinent to set forth the circumstances which led the Idaho Bureau of Mines and Geology to initiate such an investigation. These may be enumerated as follows:

First - The importance of such a discovery; It being well known that one of our most crying national needs, so far as mineral resources are concerned, is the need for platinum, for although we import from five to ten million dollars worth of platinum annually, we produce ourselves, an insignificant amount, usually in the neighborhood of one hundred thousand dollars worth. So that in this, one of the most essential of metals in war and in peace alike, we are almost wholly dependent upon a foreign supply, which comes mainly in normal times from Russia and from the United States of Columbia. It is evident, of course, that few things could be of greater importance to the mineral industry of the state of Idaho, than the discovery at Coeur d'Alene or elsewhere in the state, of significant deposits of metals of the platinum group. It was, therefore, with the sincere hope of confirming, upon unquestionable authority the presence of platinum in these deposits that this investigation was begun.

Second - Wide publicity had been given in newspapers and periodicals to the reported discovery and public interest throughout Northern Idaho and Eastern Washington had been keenly aroused. It is manifestly in the public interest therefore, that the truth of the situation, so far as it could be ascertained, should be made known at the earliest possible date, in order that further search might be encouraged in the event that the reported discovery could be confirmed, or discouraged if it could not.

Third - Charges had been publicly made by various persons, quite without the slightest evidence or justification, that the Idaho Bureau of Mines and Geology had refused to make an investigation of the properties and that the Bureau was condemning the finds, without knowledge as to the presence or absence of platinum in the properties and without making any attempt to obtain such knowledge, (Spokane Chronicle, March 27, 1923.)

Finally it was known that conflicting reports had been received from assayers and reputed assayers to whom interested persons had submitted samples from the various properties. It appearing, however, that the results from assayers of known and accepted reputation were generally negative, but that results from persons of doubtful ability or uncertain reputation were almost without exception favorable.

Personnel of Party.

The party making the field study and subsequent investigation was made up of the following persons, representing the organizations indicated.

A - The Idaho Bureau of Mines and Geology represented by its administrative officer, Francis A. Thomson, a mining engineer and metallurgist of wide experience.

B - The United States Geological Survey represented by one of its geologists, Francis B. Laney, who has had some fifteen years experience in the study of metalliferous ores.

C - The United States Bureau of Mines, which through S. C. Lind, Superintendent of the Precious and Rare Metals Station at Reno, Nevada, extended every possible cooperation; although Dr. Lind was not present at the field investigation, the party has had the advantage of his counsel throughout the study, and his full concurrence in and approval of, the procedure followed.

D - The American Institute of Mining and Metallurgical Engineers, represented by Messrs. Raymond Guyer, L. K. Armstrong, Chairman and secretary respectively of Columbia Section, and by Mr. Rush J. White, of Wallace, all of whom are mining engineers of wide experience and established reputation.

In addition, the party had as a technical assistant, Mr. C. A. Sargent, of Osborne, Idaho, a practical miner who had taken up the study of mining engineering and who, at the time, was a senior in the School of Mines of the University of Idaho. Mr. Sargent was employed as an aid to assist in cutting the samples in cooperation with and under the immediate supervision of some other member of the party.

Local Cooperation.

As a preliminary to the investigation and in view of the great local interest, it was felt wise to enlist the assistance

and cooperation of the local Chamber of Commerce and pursuant to a request placed before the Secretary, Mr. George F. Weeks, the president of the Chamber, appointed a special committee for the purpose, consisting of Messrs. Palmerton, Sampson, and Drennan. The interest displayed by this committee in the matter is appreciated and gratefully acknowledged.

It was made quite clear to the management of each property concerned that they were under no obligation whatever, either to admit the party to their property or to cooperate in any other way, but, at the same time, the advantage of their doing so was pointed out, and it is a pleasure, therefore, to be able to state that cooperation was in every case received, although in somewhat different measure in each case as will be noted below.

The Home Builder Mining & Development Company was represented at the preliminary conference in Coeur d'Alene, on April 13th. by Messrs. F. M. Slagle, of Pullman, Washington, president, and C. C. Titus, local manager and assayer. Messrs. Slagle and Titus stated that it would be entirely agreeable to them for us to visit their property on the following day. Mr. Slagle explaining, however, that he would be unable to be present, giving no further reason except that he must return to Spokane. Mr. Titus stated that he, also, would be unable to be present owing to the fact that he must go to see a teamster in regard to hauling a second-hand air-compressor. However, both Mr. Titus and Mr. Slagle stated positively that Mr. Wm. O. Halliday, their engineer at the property was thoroughly familiar with the workings and would be able to point out the places from which Mr. Titus had secured numerous samples, which Mr. Titus had personally assayed and found to contain commercial amounts of platinum. It is perhaps desirable to point out that all members of the party were impressed with the evident sincerity and candor of Mr. Halliday and to acknowledge his courtesy.

In our contact with the Caribou Mining Company, Ltd., we met as its representatives, Messrs. G. R. Scott, J. W. Boothe and Mr. F. W. Reed, and at the conference previously mentioned Mr. Schott stated that they welcomed such an inquiry and would extend to us every possible facility and this promise was fully carried out. On the 15th, the members of the party, with the exception of Mr. Guyer, went by launch to the Caribou property in company with all three of the gentlemen mentioned and as their personal guests.

The Wilson Mutual Mining and Milling Company, through its representative, Mr. J. S. Green, extended to us full permission to visit and sample their property. Mr. Green, however, did not accompany us on our visit to this property but stated that all of the material on the dump at the portal of their tunnel was "high-grade ore" and upon our return from this property, the samples collected were submitted to Mr. Green for his inspection and he pronounced them all "fine ore".

Properties sampled and studied.

As indicated above, three properties, the Home Builder, the Caribou and the Wilson Mutual or "Green", were studied and sampled.

The Home Builder property is located in what appears to be a phase of the St. Regis formation, intersected here and there by basic dikes, so highly altered that classification was not possible but which are probably gabbroic in character. It is these altered dikes that are regarded as the ore deposits. However, a careful microscopic examination failed to reveal in them any metallic mineral, beyond possibly a very minute amount of pyrrhotite and some pyrite. Although, to a casual observer, these rocks might in some respects resemble the peridotites which, in some cases carry platinum careful microscopic examination failed to show any resemblance whatsoever. As part of the study of the Home Builder, a geological sketch map of the workings was prepared based both upon the company's mining map and upon observation of Messrs. White and Laney.

At the Caribou property the situation is somewhat different for although most of the workings are in quartzitic phase of the Belt sediments, possibly St. Regis; the portal of the lower adit is in granite but passes out of this at about the sixty-foot point into Belt sediments, which are intersected by numerous small basic dikes, of a general lamprophyric character. In the upper workings and also at the top of the hill a small quartz vein is exposed, which shows rather intense mineralization, with arsenopyrite, pyrite, galena and sphalerite. This vein in places no doubt would give fairly good assays in gold, silver, and lead. The lamprophyric (?) dikes, however, show no evidence of mineralization. Platinum was stated to have been found both in the quartz vein and in the basic dikes.

At the Wilson Mutual or "Green" property, no detailed investigation was possible, owing to the fact that the tunnel was locked. Inspection of the material on the dump, which as previously stated, Mr. Green declared to be "all high-grade ore" shows that it consists of crushed and altered sediments representing, possibly, a slaty phase of the St. Regis, together with a small amount of an altered type of intrusive acid porphyry.

Standard methods of mine sampling were employed in all cases, and the sampling places were in every instance cleaned, scraped, and chipped until new faces were presented, both to avoid possible "salting" and to exclude foreign material. At the Home Builder property large belt samples were cut in channels three-fourths inch deep, by six or eight inches wide and were taken over lengths from ten to twenty-four feet, at places designated by Mr. Halliday, the company's engineer, as these from which previous platinum assays had been secured. The same procedure was followed at the Caribou property, the samples being taken in every case at points designated by Messrs. Scott and Reid as those from which previous samples, showing high assay in

platinum and platinum group metals had been collected. At the Wilson property, for reasons already stated, it was impossible to follow any systematic sampling method, but large and representative samples were taken by hand and by shovel, from the dump mentioned.

In every case all individuals not connected with the official party were requested to withdraw in order to avoid any possibility of salting or other interference with the samples. The samples were in every case cut, quartered, sacked, sealed, and boxed by some member or members of the party, and no one else was permitted to come near them.

Dr. Laney's samples were cut separately from the other samples, taken by him personally to Moscow, and shipped from there direct to the U.S. Geological Survey laboratories at Washington, D.C.

The twelve (12) large samples, weighing some 350 pounds were taken direct to Moscow by Messrs. Thomson and Sargent and were there, with the seals unbroken, turned over to Mr. Richard M. Westover, the Bureau's analyst, under whose supervision each sample was carefully crushed to about forty mesh, separated on a riffle sampler into sixteen equal parts, placed in large standard pulp envelopes and sealed. Sets of the twelve samples were then sent to the various laboratories listed below.

U.S. Bureau of Mines Precious and Rare Metals Station, Reno, Nevada.

Idaho Bureau of Mines and Geology, Moscow.

Provincial Government Assayer, Bureau of Mines, Victoria, B. C.

Colorado School of Mines, Golden, Colorado.

Abbot A. Hanks, San Francisco, California.

Ledoux & Co., New York City.

Canada Consolidated Smelting Co., Trail, B. C.

Anaconda Copper Mining Co., Great Falls Montana.

American Smelting and Refining Co., East Helena, Montana.

Bunker Hill & Sullivan M. & C. Co., Kellogg, Idaho.

Irvington Smelting & Refining Works, Irvington, N. J.

(through Mr. E. P. Mathewson).

Baker & Co.

Every member of the Committee has expressed himself as absolutely satisfied with the entire validity of the sampling methods employed.

Assay Results.

The following tabulated statement of assay returns together with the comments of Messrs. Ransome, Hanks, and Ledoux seems hardly to call for further discussion.

Results of Assays
for
Platinum and Platinum Group Metals
on samples from
Properties near Coeur d'Alene City, Idaho.

(n.d.: Not determined)

LABORATORY	:	HOME BUILDER SAMPLES	:	CARIBOU SAMPLES	:	WILSON	:	SAMPLES
	:		:		:		:	
	:	A-1:	:	A-2:	:	"E":	:	"C":
	:	"D":	:	"E":	:	"F":	:	"G":
	:	"H":	:	"I":	:	"J":	:	"K":
U. S. Bureau of Mines		none	none	none	none	none	none	none
U. S. Geolog- ical Survey		(4)		(4)				
(1)		n.d.	tracenone	n.d.	n.d.	trace	n.d.	n.d.
Idaho Bureau of Mines		none	none	none	none	none	none	none
and Geology		none	none	none	none	none	none	none
B. C. Bureau of Mines		none	none	none	none	none	none	none
A.A.Hanks		none	none	none	none	none	none	none
(2)San		none	none	none	none	none	none	none
Francisco		none	none	none	none	none	none	none
Ledoux & Co		n.d.	none	none	none	n.d.	none	none
(3)New York		none	none	none	none	none	none	none
Canada Consol.		none	none	none	none	none	none	none
Smelting Co.		none	none	none	none	none	none	none
A.C.M.Co.,		none	none	none	none	none	none	none
Great Falls,		none	none	none	none	none	none	none
Montana		none	none	none	none	none	none	none
Am. Smelting		none	none	none	none	none	none	none
& Ref. Co.		none	none	none	none	none	none	none
E. Helena		none	none	none	none	none	none	none
Bunker Hill		none	none	none	none	none	none	none
& S. Co.		none	none	none	none	none	none	none
Colo. School		none	none	none	none	none	none	none
of Mines		none	none	none	none	none	none	none
Irvington		none	none	none	none	none	none	none
S.&Refining		none	none	none	none	none	none	none
Baker & Co.		none	none	none	none	none	none	none
Deavitt		none	none	none	none	none	none	none
Laboratory		none	none	none	none	none	none	none
Chicago, Ill.		none	none	none	none	none	none	none

FOOTNOTE NO. 1.

Under date of June 12th. Dr. F. L. Ransome, Geologist in Charge, Geology of Metalliferous Deposits, writes:

"I selected 5 of the 12 samples for assay, with the thought that if these showed no platinum in significant quantity, it would not be worth while to waste time and money on the other samples. The results are convincing. There is clearly no platinum present in sufficient quantity in any of the samples assayed to justify mining operations and there is some doubt whether any of the rock contains even a trace of the metal. Of course it is possible to find traces of the precious metals in many rocks when large samples are assayed, but such minute quantities are of no economic significance whatever".

A subsequent memorandum from the Survey, concerning samples A-2 and E, transmitted by Dr. Ransome and signed by Messrs. Geo. Steiger, R. C. Wells and E. T. Erickson of the Survey's analytical staff reads as follows:

(4) "Starting with fifty assay-tons a slight color was finally obtained with potassium iodide which was too faint, however to warrant the statement that it was certainly platinum."

FOOTNOTE NO. 2.

Under date of May 5th, Mr. Abbot A. Hanks, of San Francisco, an assayer of national reputation, writes:

"I am very glad to have had an opportunity to assist in the investigation conducted by your Bureau and the Government Departments. As a Custom Assayer for the past ten or fifteen years, I have frequently been involved in this question of platinum content of ores, the ignorant or dishonest assayers finding platinum metals which we were unable to detect. The client of course is likely to believe the more favorable report. I found sometime ago that the argument used by the so-called platinum assayer was to the effect that there was no standard method for the determination of platinum, that other assayers would undoubtedly fail to find it, but that he -- by a special and secret method -- would be able to get it, and that his results were correct, any statement to the contrary being inspired by jealousy on the part of the chemist who was unable to obtain results.

"With this in mind, some years ago I suggested to the Director of the Bureau of Mines Equipment Station at Berkeley the advisability of Government cooperation with a view to publishing some method, which in the hands of an honest, but not necessarily experienced, assayer would detect platinum if it occurred in commercial quantity. Very fortunately the Bureau of Mines was willing to undertake this question and the result was Technical Paper No. 270, which you have undoubtedly seen. This bulletin in

my opinion is extremely valuable for this reason; it gives a standard method which will determine platinum if present in commercial quantity. It does not require more skill or apparatus than the ordinary commercial assayer should possess, but it gives all of us a very convincing argument to use against the "Process Man", who claims to have a secret method of assay. We can now say "Why use a secret method when the Government has issued a publication dealing with the subject, and giving a standard method which they have shown will yield results that are accurate?"

FOOTNOTE NO. III.

Under date of May 10th, Ledoux & Co., of New York, a firm of assayers of unimpeachable reputation, write as follows:

"We are quite sure that none of the samples contain platinum group metals, even to the extent of a trace, which we would place at about 0.001 ozs. per ton. In fact there is no visible indication of platinum group metals, when working on large initial weights of pulp.

"Since we have been confronted with the statement that our methods sometimes fail to detect platinum metals and that some particular rock contains elements that may cause the platinum to volatilize or to disappear in some mysterious way, we have taken the trouble in this investigation, as in many others, to "salt" portions of these pulps with known weights of platinum in solution and then assay the purposely salted pulps by the same methods used in assaying the others.

"To sample "C", platinum equivalent to 0.01 ozs. per ton was added, while in sample "I" the added amount was equivalent to 0.005 ozs., per ton. Assay of the first gave 0.01 ozs. and of the second 0.005 ozs. We are quite sure that had the added platinum been equivalent to only 0.001 ozs. per ton, it could have been seen if not estimated.

"We believe that this test with minute known amounts of platinum added to the particular pulps in question will effectually dispose of the suggestion that is sometimes made about the inadequacy of assay methods."

Acknowledgment and many thanks are also due to Mr. W. Fleet Robertson, Provincial Mineralogist, and to Mr. D. E. Whittaker of the Government Assay Office at Victoria, B. C., for their courtesy in furnishing returns on a full set of twelve pulps. In view of the absurd claim gravely put forward by interested persons, that practically all assayers in the United States were in league with a mythical platinum trust, these wholly negative results from the laboratories of a foreign government take on additional importance.

It should be stated that samples were also sent, through the kindness of Mr. E. P. Mathewson of New York, President of the American Institute of Mining and Metallurgical Engineers, to the Irvington Smelting and Refining Works and to Baker & Co. Inc. the platinum dealers and specialist of Newark, N. J.

Local Assayers.

As an essential part of this report, it seems necessary to point out that this platinum boom in common with many others appears to have had its beginning in results obtained from assayers at Grants Pass, Oregon: particularly, in this case, in results returned by Mr. R. A. Dozier to whom, apparently, all three of the companies concerned had sent samples of their material and received most flattering assays.

Inquiry of the Oregon Bureau of Mines and Geology has elicited the information that Mr. Dozier has been known in the state of Oregon for some years as maintaining a laboratory at Grants Pass, from which flattering returns in platinum, iridium and other metals of the platinum group, have been received upon a very great variety of materials and from most widespread sources Mr. Dozier also claims to be producing platinum in commercial amounts, although the statistics of platinum production for the State of Oregon fail to record any increase due to his operation.

In numerous instances, and from different parts of the state of Idaho, identical samples have been sent to the laboratory which Mr. Dozier has established at Coeur d'Alene City, and at the same time to the Idaho Bureau of Mines and Geology laboratories in every case Mr. Dozier has reported high values, either in gold, or silver, or platinum, or iridium and sometimes in all four, upon material which, when tested by standard methods and in large amounts, failed to show the presence of any precious metal whatever. It is Mr. Dozier's claim that the explanation of this discrepancy lies in the fact that his methods are superior to those employed by anyone else and that no one is competent to determine platinum or the platinum-group metals except himself, his associates and his pupils.

Four typical illustrations of such discrepancies, taken from a long list, are perhaps sufficient:

Sample No. 1. - Finely crystallized quartz with abundant pyrite from the Rainbow Mining Co.
R. A. Dozier's Assay:
Gold 300 oz., Silver 100 oz., Platinum 3.35 oz.
Value \$6616.40 per ton.
Idaho Bureau of Mines and Geology Assay:
Gold 0.02 oz., Silver trace, Platinum none.
Value \$0.40 per ton.

Sample No. 2. - Highly siliceous quartzite, showing under the microscope an occasional tiny crystal of pyrite, from St. Maries.
R. A. Dozier's Assay:
Silver 42 oz., Platinum 3. oz., Iridium .80 oz.
Osmium 0.05 oz., Copper 2%
Idaho Bureau of Mines and Geology Assay:
Silver, none; Platinum, none; Iridium, none;
osmium, none; copper, none.
Value - nil.

Sample No. 3. - Pulp supplied by J. S. Green from mill test run of 150 lbs. made by R. A. Dozier at Grants Pass, on material from the Wilson Mutual property, elsewhere discussed.

Sample No. 4. - Typical iron-stained vein quartz from Boundary County.
R. A. Dozier assay:
Platinum 56 oz. per ton.
Idaho Bureau of Mines and Geology assay:
Platinum, none.

After declining repeated requests to come to Moscow and make a demonstration of his methods in the Bureau laboratories, Mr. Dozier was finally prevailed upon to submit a signed copy of the method of assaying which he employs. Together with his description of this method Mr. Dozier submitted another method attributed to Wollaston and taken from Vol. II, Muspratts Manufacturing Chemistry, published in 1803. The Wollaston method submitted is apparently one designed for the purification of placer platinum concentrate a century or more ago, in Russia. Even though we may ignore the progress made in every phase of chemical science since 1803, and consequently the antiquated nature of the method itself, it is evidently not put forward by Wallaston as a method for determining the existence of platinum in ores, and bears only the vaguest resemblance in principle, and none whatever in practice to that proposed by Dozier as his avowed method for platinum determination, although claimed by Dozier to be identical with it.

The Dozier method is characterized as unscientific and incapable of yielding results claimed for it by all chemists and analysts to whom it has been submitted, such as Dr. S. C. Lind, now chief chemist of the U. S. Bureau of Mines; Dr. C. L. Von Ende, Head of the Department of Chemistry, University of Idaho; Mr. W. V. Leonard, State Chemist of Idaho; Mr. C. W. Davis, Platinum Specialist, U. S. Bureau of Mines and Geology, Reno, and many others. In order to give the method a fair trial, however, Dr. Thomson and Mr. Westover, the State Bureau analyst, following carefully the procedure outlined by Mr. Dozier made repeated tests upon pulp to which known amounts of platinum had been added and found the original platinum apparently in undiminished amount present in the washings and tailings from the Dozier treatment, showing conclusively that no extraction whatever had been made.

Another angle of the situation, with respect to Mr. Dozier, and his methods, is presented by the "results" sent to

the State Bureau by Mr. Green as having been recovered from half assay-ton charges of the samples "J" and "K" from his property. These "results" consisted in each case of various fragments in a small bottle. The bottle containing the purported results of Sample "K" included one piece of platinum weighing 1.25 milligrams and the bottle from sample "J" included two pieces, weighing 1.54 milligrams. These weights would be equivalent to 2.50 ozs. and 3.08 oz. of platinum to the ton of rock in each of the samples respectively and this upon material which twelve of the best known laboratories in the country report no platinum whatever! All three of these platinum fragments are rectangular in shape and under the microscope show, on their edges, considerable evidence of having been clipped or cut with a knife or scissors from larger pieces of thin sheet platinum, technically known as platinum foil. It is to be noted in this connection that Mr. J. S. Green, in the covering letter stated the "assays" in question were made by his son. Mr. Green, Jr., however, stated to Dr. Thomson in the presence of Major O. J. Chaffin, a mining engineer of the State Highway Department, at Coeur d'Alene, that the assays had been made by Mr. Dozier.

Further facts concerning Mr. Dozier's manipulations have been received, in confidence, from a mine manager in Northern Idaho, in whose laboratories Mr. Dozier worked for twelve days. The statements of the gentleman in question, supported by other competent testimony, and taken with the facts herein set forth, leave no doubt in the minds of the members of the party as to the methods employed by Mr. Dozier in getting his results.

With regard to the results said to have been secured by Mr. C. C. Titus, from the ores of the Home Builder Co., (See Page 61 - Pacific Northwest Mining Resources, 1923 - published by The Northwest Mining Association of Spokane) we feel it best to withhold comment, except to state that his results have apparently been uniformly much lower than Mr. Dozier's usually showing quantities of Platinum less than 1.0 oz. to the ton. Notwithstanding this fact, however, at last advices, Mr. Titus had consistently refused to assay the set of pulps which were sent to him from the samples taken in the Home Builder property as a part of this investigation.

Mr. J. D. Maxey, now of Coeur d'Alene, a student who has completed his freshman year at the University of Wisconsin, is reported, verbally to have secured results in platinum from the Caribou property, by the use of Dozier's methods. A set of the pulps from the Caribou samples are reported to have been assayed by him and platinum is said to have been found. No official confirmation of this had been received however and the Caribou company has declined repeated requests for a copy of their returns on pulps submitted to them.

Conclusions.

The conclusions to be drawn from this study are quite obvious.

In the first place sufficient evidence has been accumulated to satisfy any reasonable man that platinum is not present in any of the samples collected from the three properties visited, and since the samples were carefully taken, under standard conditions and at points designated by approved representatives of the parties in question, as those from which previous platinum assays had been returned, the conclusion seems clearly inescapable that the owners have been mistaken with regard to the existence in their properties of platinum in commercial amounts.

So far as the local operators are concerned there seems every reason to believe that they have been honestly convinced of the existence of platinum in their properties, and that the responsibility for the unjustified platinum boom at Coeur d'Alene City must be placed upon certain so-called assayers rather than upon the good citizens of Idaho, who are the owners of the properties.

APPENDIX A.

If further evidence is required as to the reliability of R. A. Dozier's assay the following should be sufficient.

On July 2, 1923, Dr. Thomson in company with H. J. Steffy of Pierce City took a sample of a dark colored dike rock from the Oxford Mine near Pierce City, this sample weighing about eight pounds, was crushed, mixed and carefully divided into two portions. One of these samples was sent, after sealing, to Dozier at Coeur d'Alene by registered mail, the other sample was brought to the Bureau laboratories by Dr. Thomson. Dozier's returns on this sample were as follows, gold 2.27 ounces; silver 13 ounces; platinum 15 ounces. The Bureau's returns on this same sample were gold, trace; silver 1.5 ounces; platinum, iridium, palladium none.

A similar procedure was carried out by Mr. S. M. Ballard, a geologist of the Bureau staff, who on the 12th of July 1923 sampled a basic dike on the Gold King No. 7 claim in the Boise Basin, crushed and carefully divided the sample into two parts, one part was sent to Dozier, who made the following returns: gold 0.31 ounces; silver 3 ounces; palladium 18 ounces. The other half of the sample was assayed at the Bureau laboratories with the following results; gold none; silver trace; palladium none.

The above circumstances are all supported by affidavits of the persons who collected the samples and sent them to Dozier, also by affidavits of the Bureau's analysts. The samples were sent to Dozier by registered mail, were acknowledged by him, returns were received by registered mail on certificate signed by Dozier, and the assays were paid for in one case by postoffice money order and in the other case by bank check.

APPENDIX B.

So many requests are being constantly received by the Idaho Bureau of Mines and Geology for platinum determinations from persons in Idaho and other western states that the Bureau Board has authorized the following procedure in this matter.

All specimens sent in for platinum determination will be given the usual general examination to determine their mineralogical character and probable content, and a report will be forwarded promptly and without cost to the sender of the sample, as is done with all other samples sent in for identification.

It is not possible to determine, however, except by an elaborate and careful quantitative analysis, whether platinum or other metals of the platinum group, such as osmium, iridium, (often confused with radium), ruthenium rhodium or palladium are present or absent: furthermore, in view of the many false and misleading reports concerning the presence of such metals issued recently by fraudulent assayers in various parts of the West, we do not feel justified in undertaking the expense of an analysis of this kind unless there is very good reason to believe that the metals indicated are present in the sample.

The Bureau Board is anxious, however, to assist in every possible way in the discovery and development of the mineral resources of the state and in order that there may be no possible chance of a legitimate discovery of any of the platinum metals being overlooked, makes this proposal to all persons in the state who think they have platinum ore; namely, that they take a large and representative sample of their material, certainly not less than ten pounds, and send it to the Idaho Bureau of Mines and Geology, Moscow, Idaho, carriage prepaid. The Bureau Staff will crush and divide the sample into two equal portions and seal both of them - one the Bureau will keep, the other will be sent to one of the four following firms or to any approved assayer whom the sender may designate, to be assayed for platinum-group metals at the senders expense. This will cost from \$5.00 to \$10.00 for each determination.

C. M. Fassett & Co., Spokane, Wn.

R. H. Officer & Co., 169 S.W. Temple St.,
Salt Lake City, Utah.

Abbot A. Hanks, 624 Sacramento St., San Francisco.

Ledoux & Co., Inc., 99 John St., New York, N. Y.

If one of these firms reports the presence of appreciable amounts of platinum in the sample, then the Bureau will be willing to check this determination without cost to the sender.