STATE OF OREGON
DEPARTMENT OF GEOLOGY & MINERAL INDUSTRIES

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THE ORE.-BIN

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NOTICE

In order to divert more of the Department's efforts directly to strategic mineral work as well as to conserve both labor and materials, the size of the Ore.-Bin will be reduced for the duration.

TAXATION BY DECREE

by

S. H. Williston, President, Oregon Mining Association

The Senate Finance Committee has approved the reinstatement of the 1940 exemption of strategic metals from excess profits in the 1942 tax law. Miners of strategic metals are naturally pleased, but it is important that they realize that this exemption no longer means what they had been led to expect.

From the time the percentage depletion provision was enacted in the 1932 Act up to the beginning of 1940 the Bureau of Internal Revenue did not attempt to reduce the amount of gross income from the property by deducting therefrom the costs of concentration by gravity or flotation or equivalent processes; and leaching, quicksilver furnacing, etc. were considered as equivalent to concentrating. Furthermore, if there were additional treatment processes performed by the mine operator before marketing the product, the cost only of such processes was deducted from the selling price of the product in determining the gross income from the property.

Although there has been no change in depletion allowances nor has there been any change in the wording of the strategic metal exemption, the Treasury Department and the Bureau of Internal Revenue have adopted regulations and unpublished rulings that very effectively alter the effect of the tax law.

By a new interpretation of the words "gross income from the property" the costs of beneficiation other than by flotation and gravity methods (and proportionate profits based on cost) are now deducted from what used to be "gross income from the property". Depletion allowances and exemptions from the excess profits are granted only on the remaining amount. Flotation and gravity concentration methods are still held as a part of mining, but all other methods are considered by the Treasury to be beyond the pale.

This is a very critical matter when production of strategic metals is considered. Low grade manganese, chromite, tungsten, quicksilver, and nickel ores are, in many cases, best handled metallurgically by methods other than flotation and gravily concentration. They will therefore be penalized and the penalty is a heavy one.

The effect of the Treasury and Bureau of Internal Revenue rulings is to give these minerals a 5 to 10 percent depletion base instead of the 15 percent base to which they are entitled, and to allow them only a partial exemption from the excess profits tax. In most cases the strategic metals held exempt from excess profits under the law will have to pay an excess profits tax on from 30 to 50 percent of their profits, as calculated by the Treasury, profits which in fact will probably be only a return of capital invested.

This activity of the Treasury Department and of the Bureau of Internal Revenue is an extremely short-sighted one. It is going to have a serious effect upon the development of strategic metals - not only in Oregon but throughout the West.

The change in the law by Bureau interpretation was made without thought or understanding of the strategic mineral industry, and since that effect has been discovered there is no tendency evident upon the part of the Treasury and Bureau to retract their ill-advised action.

It is interesting to note the relation of this action upon the research activities of the U. S. Bureau of Mines. Over a period of years the Bureau has been investigating and developing methods of treating low grade strategic mineral ores. The action of the Treasury, if uncorrected, makes almost worthless a large part of this research program.

What is the practical value to the industry of research outlining metallurgical economics and processes which may not be used economically by the mine operator because of tax rulings? This thought leads to the conclusion that the Bureau as well as the mine operator needs to consult a tax expert before approving or applying any beneficiation process. It could very well be that a less efficient metallurgical process would be a less costly one after taxes.

Since the mine operator must recover a large portion of his capital from depletion allowance, it is self-evident that if that depletion allowance is cut in half as a result of using some metallurgical process not approved by the Treasury Department, he is not going to be able to recover his investment.

It would appear that the Treasury and Bureau rulings are going to have a very appreciable effect on slowing down production of strategic metals and probably some of the base metal production as well.

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MINING LABOR

Miners in nonferrous metal mines in the west are to be "frozen" in their present jobs according to late reports from Washington, D. C. The Man Power Commission has issued a directive designed to prevent further depletion in numbers of employees in metal mining and timbering. During the past year, the shift of miners to the so-called defense industries because of the high wages paid by "cost-plus" government contracts became so serious that production of metals was adversely effected.

Better late than never, but we wonder how such action will bring about any increase in number of miners, particularly as there appears to be loop-holes in the directive. Incidentally welders can be trained in two or three weeks; not so with miners. Mining is more than running a machine. After his first year's work underground a miner would have picked up the rudiments of underground mining - if he had had proper instruction; but he would still be a beginner. Real miners, who can recognize and take care of bad ground, who can safely handle explosives, and who can break ground by placing drill holes properly are made only after years of work under a variety of conditions common in underground mines.

In a mining operation underground work is in two classifications--mining and development. The latter includes the work of finding new ore bodies and opening them up so that they may be mined. If production is to be maintained with a depleted mine force, it is inevitable that development work will be reduced or stopped. But it is obvious that production cannot be maintained for long without finding new ore. Therefore, stopping development work in order to maintain production is living off capital; it is pernicious anemia to the mine.

In Oregon, as well as in all other western states, the mining industry has been fighting this loss of workmen. One Oregon mine with a newly-built concentrating mill which was turning out copper, lead, and zinc concentrates on a 3-shift basis, has shut down because of labor shortage. Our quicksilver mines have had their underground forces reduced from 25 to 40 percent and in most cases have been obliged to suspend development work.

As surely as water runs down hill, labor will gravitate to the plants paying the highest wages--particularly when the labor demand at the "war plants" appears to be insatiable. This is not intended to detract from the essential role of such plants; but

if there is a shortage in mine production, what happens to the war production program? You may not think much about where the materials used in ships, planes, tanks, and explosives come from, but in nine cases out of ten the stuff comes from ore, dug out of the ground, without any publicity, without champagne and ribbons, without Navy "E's" or stars. Where would all this fanfare be if this smudgy old ore isn't dug in the required quantity? The answer is - you wouldn't have any ships, planes, tanks, etc.

It looks like a nearly impossible situation, with one industry paying very much higher wages than another for equivalent work. The one industry has a guaranteed profit; the other has a ceiling price on its output. In the one case everything is centered on speed--engineering organization is there necessarily, but dollar economy is in the back ground. In the other case a production schedule is based on ore reserves to be extracted at a profit dependent on the operator's ability. The amount to be produced safely is set to a large extent by sound engineering practice. The profit depends on economical management and efficient labor. Without these two factors which mean dollar economy, there will be no profit. "No profit" really means "loss", and no private company can operate long at a loss.

This problem is a tough one, but it can be solved and must be solved. It must be met squarely and honestly, for it will not solve itself. Past errors of judgment should be written off; political weather vanes should be blacked out, and precious time should not be lost. Otherwise the pernicious anemia alluded to above may reach the stage where no injections or transfusions by government will save the patient. You can let your imagination go on from there.

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SALTING*

Sometime in the third century before Christ, Archimedes, a Greek mathematician, was confronted with the problem of proving that a metallic crown either was or was not gold. After many days of deep thought on the subject, he hit on the idea of specific gravity and was able to solve the problem. Thus we know that even in those early days, all gold bricks were not what they seemed and that even the cleverest men of the ancient kingdoms were called upon to prove the fact.

"Salting", may be defined as the act of enriching ore artificially, usually with fraudulent intent. "Salt" may be applied to the mine itself, to the samples after they are taken to mill runs, or even to the assay itself. High values result, and gullible buyers are tricked into purchasing worthless properties.

Theodore Jesse Hoover, in his book "The Economics of Mining" describes lucidly the prevention of fraud and salting. Following Mr. Hoover's outline, I will try in the next twelve minutes to cover some of the methods used by tricksters in salting mines, and precautions to take against these methods.

Salting may take place in the mine itself. The shotgun method is very simple and effective. Gold filings from coins or jewelry, loaded into a 12-gauge shotgun shell, are fired at random at the vein to make good ore out of the poor. Carefully placed shots make even better ore. A slight variation of this scheme is to load dynamite with the filings. Using this dynamite the examiner, who blasts down a fresh face in order to avoid any chance of salting, unwittingly enriches the ore himself. In dry mines the faces may be painted with gold chloride or silver nitrate solutions to up the values.

Cases are on record where "veins" were actually made in fissures in the rocks. In one such case cassiterite, the ore of tin, was very cleverly mixed with other minerals and tamped into cracks and joints of the barren country rock. A soluble silicate was then

* From a talk by Robt. G. Bassett given August 25, 1942, on Station KUIN, Grants Pass, Oregon.

added, and, when this had solidified, a truly artificial vein was formed. When later the hoax was exposed, an experienced Cornish miner who had originally recommended the property explained that "he was not accustomed to the particular vintage of champagne used on the expedition".

A less difficult and less expensive means of salting is to adulterate the samples. When the sample is being taken, the metal may be flicked into it from the ash of a contaminated cigar, or dropped in enclosed in a ball of prepared clay. Long fingernails may be very useful to the salters. Gold, amalgam, etc., can be nicely hidden under these until the critical moment when someone is not looking too closely. T. A. Rickard tells of Phillipine women using this scheme. These women wore a "Mother Hubbard" kind of dress with a pocket over the left breast. This pocket was provided with gold dust which was transferred inconspicuously by means of wet fingers to the gravel in the gold pan. The women worked, each sitting up to her waist in water, with her pan near the pocket so that detection was difficult. Furthermore, the gold was taken from the property being examined which made impossible detection of fraud by means of the microscope

"Salt" can be added to the samples even though they are in sealed sacks by giving them a "hypodermic" injection. Solutions of various metals are shot into the bags with a syringe. Some of these solutions are very difficult to remove after they have dried. Such salting cannot always be detected by panning. Filings blown into the sacks this way are effective, but are more easily detected.

Where samples are crushed and quartered on the property, there is always a chance that some villian will spill a little "salt" in the machines that are used or in the samples themselves, using the long fingernail act again. He might employ a different technique here though and use a dirty handkerchief instead.

A misguided man might think himself safe, when at last he has satisfied himself that he has taken and prepared for assay a number of good clean samples; but look out, Mr. Gyp is still on his tail. Even the early alchemists placed precious metals in their crucible bottoms and covered them with wax or other substance to hide them until the assay is made. Holes in charcoal filled with gold and waxed over served to fool the unwary then, even as today. A more modern version of this artifice, which came to me from a very reliable source is the case of the powdered tin in a furnace oil supply. When the furnace was fired, a stream of tin-bearing oil blew merrily into the firebox coating everything at hand with the remarkable element.

Fluxes and acids used for the assay can be "salted" too, as can the crucibles. In one instance new crucibles were soaked in gold chloride and silver nitrate and dried. The assayer, failing to run blanks for a check, was greatly fooled; and, needless to say his reputation was ruined.

There are assayers, too, who don't mind being fooled a little; in fact who will purposely make out false reports. One successful engineer once told me that, "Wherever ore is bought and sold there will be someone doubting the results of the assayer". I was this man's assayer, and he told me to be a hundred percent sure of every assay I made. In some cases, as many as two dozen assays were made to get one result, but results were worth all the effort; for, although there were many controversies between buyer and seller, there was never an argument over the validity of an assay after all dissatisfied parties had tried several umpires and lost.

Besides making deliberate, false reports, an analyst might be guilty of "innocent" salting. This is the result of carelessness in keeping crushing equipment, reagents, and the laboratory in general clean, or the result of improper preparation of the samples. Most carelessness will lead to high results, though some procedures, such as careless mixing or improper fluxing, might bring about low assays.

High grade can be added to the mill circuit in the same manner as it is slipped into sample sacks. The crushing plant, ball mill, feed, tables, flotation cells, or reagent feeders are possible points for adding the "salt". Reagent feeders that operate continuously without attention serve very nicely since they are inconspicuous.

Some methods of defrauding prospective buyers do not call for the addition of foreign material, but rather the removal of undesired portions of the vein. Dressing the mine, as such practice is called, requires that low-grade ore be mined out leaving nice large chunks of rich stuff to stare the sampler in the face. Fine looking specimens scattered over the dumps add to the attractiveness of the underground picture. Such lures are termed "sucker bait".

A difficult trick to expose is that of sealing off the bottom of the mine. An empty shell of a mine may exist far below the bottom level seen by the examiner, the shell being sealed off from the upper workings by planks covered with rock, track, and running water. Perhaps the level examined will extend a mile or more and will have this condition of rock, track, and water existing throughout. How, then, would one discover one small hole leading to lower levels? One party found such a hole once when it accidentally caved under them, nearly killing them all. Drifts, too, can be built up or closed off to fool people. Rich veins built into the false faces make tempting bait.

Deception by these and many other means can take place; but, assuming they don't, there is still a way of tripping the unwary. That is by the use of fraudulent weights. Let us say, for example, that the gold is obtained in exactly the right amount from representative samples, and that the true weight of the gold, represents, therefore, the true value of the ore. But on determining the moment of gold in the buttons, if the weights have had corners cut away or bottoms filed down, the results will be falsely high. Hollow weights or aluminum weights substituted for platinum could be used in this farce.

Thus it is seen that the ways of the "salter" are many and clever. In fact, one might ask, is there any protection against such a racket? The answer is yes, but only by eternal vigilance.

Samples must be taken carefully, notes and observations being recorded at the time of sampling. Several low-grade samples which are known not to have been tampered with, can be mixed thoroughly and divided into unequal parts and each part saved separately. It will be impossible for anyone to salt these so that the assays will be the same. If, then, the assays are unlike and high, the samples have been salted.

Duplicate samples taken after the originals often reveal fraud. These samples may vary in size from the originals to make accurate salting difficult. Erratic checks of originals and duplicates are to be regarded with suspicion. The second set of samples should not have numbers corresponding to the first set as this gives a clue to their location. They should be numbered after samples of another part of the mine, an example being to number check samples 1-a and 2-a not to correspond with original numbers 1 and 2, say, but with numbers 7 and 8.

Dummy samples serve a purpose similar to duplicates. They are best made of waste rock or low-grade ore carefully crushed, mixed, and assayed. Portions of the dummy are put in sacks, tied and labeled along with the mine samples. Failure of dummy samples to check their true assay value is a certain indication of "salting". Brick, concrete, and grindstones are a little too obvious for dummy samples, but even these have fooled some "salters".

Cutting a fresh face of ore before sampling protects samplers against the possibility of either a salted face or a dressed face. Faces that change their appearance in many places when newly blasted should put one on his guard.

All samples should be quartered before being sent for assaying, one portion being saved for future reference and another for panning. Every sample should be panned for "salt" such as amalgam, metallic filings, or other foreign material. Fine particles of

lead added to the pan help in checking accuracy of the work; they should be recovered.

Another portion of the sample should be washed and both the pulp and the washings assayed. Gold chloride, gold cyanide, silver nitrate, or copper chloride used for salting can be detected in this manner.

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CLEARING HOUSE

No.73-CH For sale or lease black sand property fronts on coast near Geissel Monument a few miles north of Gold Beach, Oregon. Property extends back from sea cliff with bed rock about 30 feet above present beach and carrying considerable overburden. Property worked many years ago for gold and platinum. Communicate with Mrs. Mabel Miller, 1222 S. W. Montgomery Street, Portland, Oregon, or Gold Beach, Oregon.

No.74-CH Wanted to purchase, small placer property with plenty of water, ranch house and land for market garden use. Write G. L. Gaskell, 404 Alhambra Avenue, Alhambra, California.

No.75-CH For sale, 2000 feet 16-inch, 11-gauge steel welded pipe in 24 foot lengths; entirely unused, finished for welding, coated; located near Baker, Oregon. Robert S. Doubleday, 2306 Yakima Avenue, Tacoma, Washington.

No.76-CH Alfred A. Wright, 135 S. Olive Street, Los Angeles, California, states that he will sell or lease numerous strategic and critical undeveloped mineral deposits in Oregon.

No.77-CH For sale or lease, fluorspar deposit of commercial size and grade, located 20 miles west of Helena, Montana; rail facilities to mine; deposit tributary to metallurgical industries Oregon and Washington. Communicate with Paul E. Flynn, 823 Dearborn Avenue, Helena, Montana.

No.78-CH For sale: Mining property known as Davis Tungsten mine, located about 26 miles northeast of Baker and 6 miles northeast of Anthony Lakes. Elevation 4700 feet. All year work possible. 11 miles from railroad. Some bulldozer cuts made and drilling done. Assays of 1.88% and 8.80% tungsten reported. Communicate with Sam Wright, 6019 S. W. Corbett Avenue, Portland, Oregon.

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BRICK AND TILE

The following pertinent information is taken from The Hopper, published by the Oklahoma Geological Survey, issue of June, 1942:

There are four (4) basic processes used in the manufacture of brick and tile, namely:

Soft mud: made in moulds after the clay has been reduced by addition of water.

Stiff mud: adding a little or no water to the clay and extruding through a die by means of an auger.

Dry press: made from pulverized shale in a nearly dry condition, then formed into moulds and pressed.

Re-pressed: placing partially dried soft or stiff mud brick into a mould and compressing.

Products made are: common brick, face brick, hollow loadbearing tile, partition tile, face tile and drainage tile; at least these are the main divisions of the brick and tile industry.

In our present situation with defense industries booming and not being able to obtain the necessary materials and supplies, restrictions are definitely on their way here whether we like it or not.

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The ORE.-BIN
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