STATE OF OREGON
DEPARTMENT OF GEOLOGY & MINERAL INDUSTRIES

PORTLAND, OREGON

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TAXATION OF MINES

There is the Law of Diminishing Returns and the fable concerning the demise of the goose that laid the golden eggs - both pertinent to the probable effects of taxing mines under the latest Federal tax bill.

These effects are however primarily concerned with the amount of money to be collected.

Based on an entirely different viewpoint, there is another effect which we wish to emphasize as strongly as we can - that of the effect of such tax regulations on production.

Nobody can successfully deny that we need to raise all the money by taxation that we can possibly raise to pay on the war costs. But maximum production of metals is paramount in our war program - much more important than raising money to pay the costs.

Any plan then to increase tax revenue at the expense of production at this period of our trial by fire would be ill-advised, to put it mildly. More definitely the full program advocated by the Treasury would throttle down mine production, scare away venture capital and effectively stop exploration projects by experienced operators.

Mr. S. H. Williston, President of the Oregon Mining Association, gave testimony before hearings of the Senate Special Sub-Committee which met at Reno July 16 and 17, Salt Lake City July 20 and 21, and Denver, July 24, to investigate at first hand tax difficulties of mine operators.

Knowing of Mr. Williston's intimate knowledge of the subject, we asked him to prepare the following paper of the probable effects of the proposed tax program on Oregon's mining industry.

It should be emphasized that most strategic mineral projects are short-lived. They are "war babies". As Mr. Williston points out, profitable operation of most of them after the war would be unlikely. Experienced capital will not be risked on a project which stands little chance of recovering even capital costs.

It has been reported that the Treasury has labelled depletion allowance "special privilege" and advocated abolishing it. Experienced mine operators find it difficult to understand how such a position may be taken intelligently.

Mines are not the same as manufacturing enterprises whose capital investment is continually renewed by replacement. An ore deposit is the capital of a mine. Each ton of ore removed depletes the mine's capital and likewise proportionally shortens the mine's life. Without a depletion allowance a tax on receipts from sale of ore is a capital tax. If we must have a capital levy, let's have it applied fairly and universally--not on a single industry whose maximum effort is considered essential to winning the war. Surely even the Treasury must realize the importance of producing all we possibly can of copper, lead, zinc, chromium, manganese, quicksilver, tungsten, antimony, etc.

Statements have been reported from those in authority that profits from some large mines have more than repaid capital and interest and that these mines continue to operate at a profit, still taking advantage of depletion allowance. If all facts could be assembled and balanced by an unbiased accountant, we think there would probably be presented a different picture; but assuming that such statements are one hundred percent accurate, a whole industry should not be punished because in a few cases exceptionally fortunate enterprises have been quite profitable. Without some such cases to brighten a history containing so many financial failures, the industry would certainly present a dubious investment opportunity.

The general impression among people inexperienced in mining that it is highly profitable is definitely erroneous. Mining, like any other business, may be profitable if conducted by qualified operators. But it is a business with certain definite hazards to capital some of which are the result of Government regulations. Further difficulties imposed in the form of additional tax burdens may be just too much for the industry to take, particularly the small to medium-sized new operations. If we ever needed a healthy mining industry, we need it now. Any action taken which would have the effect of reducing mineral production other than that of gold would be dangerously close to obstructing the war program.

TREASURY DEPARTMENT VS. PRODUCTION OF CRITICAL MINERALS

By S. H. Williston, President Oregon Mining Association.

The provisions of the 1942 tax bill which has passed the House and is now being considered by the Senate Finance Committee make it advisable for mine operators attempting to maintain and increase production of strategic metals in the State of Oregon to examine their position under this new tax bill. Since the bill has not yet been passed there is still a possibility for many changes by the Senate Committee but every individual mine operator must take into account what will happen to him and his property if remedial changes are not made in the Senate.

In the past the taxpayer usually computed the amount he had to pay the Government. At present it is simpler to figure instead on what the Government is going to let the taxpayer keep. After computing income before taxes, depreciation and depletion, the operator may take the following deductions:

If he has no Certificate of Necessity* he may deduct 10% of his investment in his plant as depreciation and retain that 10%. He may then deduct 15% of his gross sales (not to exceed 50% of his net profits) for depletion and he may be able to keep that. He may then retain 4.4% of his invested capital and $5,500 of the first $10,000 profit. From any additional income he may retain only 10%, paying the balance to the Government.

*Certificates of Necessity are issued by the War or Navy Department; application forms may be obtained from the War or Navy Departments or the W. P. B. They are only issued when the operation is highly essential to the war effort, and permit amortization on a five instead of the usual 10 year basis.

This tax procedure is applicable to new prospects, new properties and new mines which were not in operation prior to January 1, 1940, and since practically no strategic metals other than quicksilver were produced in the State of Oregon prior to that time it applies to every new development or operation in the State.

Figure 1. shows a few examples of the amount of invested capital which may be recovered under certain fixed conditions. There are so many variables that it is impossible to include them all, but if we assume that a corporation formed or to be formed, to develop deposits of this type, has a capital investment of $100,000 the chart will show what percentage of that capital may be recovered under varying conditions. If we assume that the $100,000 capital investment has gross sales of $200,000 the first year and a net profit before taxes, depreciation and depletion, of $75,000, the operator will at the end of two years have his investment back. If he should show a profit before taxes, depreciation and depletion of only $50,000 it will be two and one-half years before he gets his investment back. Should he by any chance have a profit of $100,000 he will get his investment back in two years and make 5% on his money.

The effect of this on the mining of strategic metals is easily apparent. These metals were strategic because domestic deposits could not compete before the war and it is almost certain that very few, if any will be able to compete after the war. Most of the deposits are not large and therefore they are short-lived. In the event that the deposit

is exhausted within two years or in the event the war is over in two years, the best that the operator can look forward to is to get his money back. Should the deposit not be up to expectations or should the cost of labor or materials be higher than anticipated, or if additional taxes be imposed within the next two years, then there is little possibility that the operator could get his money back.

Of the amounts recovered from these short-lived strategic metal deposits, a very large proportion of the investment is recovered from percentage depletion allowance. At the present time the Treasury regulations having to do with depletion permit the full 15% provided under the law only to those mines which concentrate their ore by flotation or gravity methods. Any other method is arbitrarily penalized and the cost and proportional profit on a basis of cost is deducted before depletion allowances are made. Mercury mines have already been arbitrarily penalized in this respect and it seems likely that tungsten, chrome, magnesium, manganese and nickel might be penalized in a similar manner. This penalty is severe and may easily alter the percentage depletion from 15% of the gross to 10% or even 5% of the gross, not to exceed 50% of the net. The Treasury Department is attempting at present before the Senate Tax Committee to have all percentage depletion stricken from the bill. If Treasury recommendations are adopted, recovery of investment within two and one-half years is no longer possible.

The recent hearings before the Senate Sub-committee at Salt Lake City, Reno and Denver to explore the effect of taxes upon metal mining brought out many examples of proposed mining operations which would have to cease as the result of the tax bill. Many more examples were given of operations started under the Senate's promise to exempt strategic metals from excess profits taxation which would fail to recover more than a fraction of invested capital since that exemption has been removed.

It has been stated that broad relief provisions have been included in the tax bill but an examination of these provisions shows that in not over one case in one hundred are they applicable to the mining of high cost or marginal strategic and essential metals.

Another injustice in the present tax bill is due to its effects on operating costs caused by shortage of men in the mining industry. Most of the mines in the country are now operating with a man power shortage varying from 20% to 50%. Practically no development work is being carried on due to man power shortage. Reserves and shipments to smelters are both falling off to a marked extent, and that money which would normally be spent on labor for development work in preparation of additional ore for mining now goes into profits. 90% of such development money would be paid to the Government for excess profits tax. Later when men are available to do development work the mining companies will no longer have the money and it is hard to see how such development work could then be done.

The War Production Board and the whole war effort depends primarily on the production of metals. The action of the Treasury department effectively prohibits the development and extraction of these metals by private capital. At present the only alternative is to have the Government go directly into the mining business. The Bureau of Mines, the U. S. Geological Survey and the Defense Plant Corporation would find, develop and equip deposits of strategic and critical metals. While we have the highest regard for the Geological Survey and the Bureau of Mines, if this whole load is put on their shoulders there is little possibility of getting these metals to the manufacturers in time to be of any help whatsoever in the war effort.

EXAMPLES

1. Small Hard Rock Chrome Mine:

Capital Investment	$ 25,000
Gross Income	60,000
Net Income before taxes, depreciation and depletion	30,000
Oregon Income Tax	1,600
Net Income after Oregon Income Tax and before Federal taxes, depreciation and depletion	28,400

The amount which may be retained by the operator under these conditions is $19,090 which means that he will get his money back in one and one-third years. 45% of his total recovery is obtained through depletion allowance.

2. Medium Size Beach Chrome Operation:

Capital Investment	250,000
Gross Income	700,000
Net Income before taxes, depreciation and depletion	200,000
Oregon Income Tax	8,000
Net Income after Oregon Income Tax and before Federal taxes, depreciation and depletion	192,000

Under these conditions the operator will be able to recover in the first year $141,600. He will be able to recover his investment in one and two-third years. Of the total recovery 60% is recovered under the 15% depletion allowance.

3. Small Mercury Mine:

Capital Investment:	100,000
Gross Income	250,000
Net Income before taxes, depreciation and depletion	100,000
Oregon Income Tax	4,000
Net Income after Oregon Income Tax and before Federal taxes, depreciation and depletion	96,000

The amount of investment recovered in the first year would be $41,270. This would return the investment to the operator in two and one-half years. Of the amount recovered 40% is obtained through the depletion allowance.

The above examples are good properties with ore blocked, and under normal conditions there would be no hesitancy whatsoever in private capital developing and producing these metals. If good properties on this basis show only a bare possibility of the recovery of investment during the war period and no profit, there is little possibility of private capital being persuaded to invest in such operations.

There is an infinitely lesser possibility that intelligent private capital would be willing to invest in a prospect which under favorable conditions might possibly be developed into a prospective mine similar to those given. The net result would seem to be a complete cessation of the development of prospects or the placing of developed prospects into production.

PROPOSED CORRECTIONS IN THE TAX BILL WHICH MIGHT MAKE MINING POSSIBLE

1. That the wording of the depletion allowance be so altered as to make it clearly evident that mines are to receive their full 15% depletion allowance and that the Treasury be prevented from arbitrarily making regulations counteracting the expressed desires of Congress.

2. That short-lived deposits of strategic metals which could not compete before the war and which cannot compete after the war either be given the chance of making a profit by removal of the excess profits tax as promised by the Senate two years ago, or be given some guarantee of return of capital investment.

3. The granting of a unit of production credit so that those mines which have doubled their production and shortened their lives, and are now mining next year's ore this year should not have next year's normal profits taxed by this year's excess profits tax. Without such a provision these operators who have patriotically increased production are now subject to a 90% confiscation of their normal income of future years under this year's tax bill.

4. One other provision must also be made where man power is insufficient to carry on development work. The normal budgeted amount for development work must not be taxed as excess profits. The life of the mines depends on development work and if, due to temporary man power shortage, this money is taken by the Government there will be no money available for future development to maintain next year's quotas as well as those of succeeding years.

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MOLYBDENUM CONTENT OF SCHEELITE

A new and quick method of determining molybdenum content of scheelite has been announced by the U. S. Geological Survey in a release dated July 16, 1942.

In the past the molybdenum content in the tungsten ore, scheelite, has been detected only by chemical analysis. The new method announced by the Survey uses a fluorescent light - the same light which has been used in the past few years for prospecting for scheelite. This mineral fluoresces under the ultra-violet light, giving a color which ranges from blue through white to yellow. It has been discovered by the Survey that the yellow color is due to material amounts of molybdenum. The bluish color indicates practically pure scheelite. When the fluorescence is white, the mineral contains roughly from 0.35 to 1.0% molybdenum and when the scheelite fluoresces distinctly yellow, the mineral contains more than 1%. Since scheelite concentrates containing more than 0.4% molybdenum are subject to a penalty, the value of the quick method of estimating molybdenum content of such concentrates is obvious.

In working out the method, finely powdered synthetic preparations containing various percentages of molybdenum and tungsten were made up and showed that fluorescence was bright blue for pure calcium tungstate, paler blue for combinations containing traces of molybdenum, and neutral white when molybdenum is around 0.5%. The color becomes increasingly yellow as the molybdenum content rises above 0.5%. The color is strongly yellow for a compound containing 4.8% molybdenum but does not increase in intensity of the yellow color as the molybdenum content rises above 4.8%.

The results obtained using synthetic compounds were checked on chemically analyzed natural minerals. Examples of results obtained are as follows: By the fluorescent test, one scheelite sample from the Nightingale Mine in Nevada was estimated to contain

less than 0.05% molybdenum. Chemical analysis showed 0.014%. Scheelite from the Tungstar Mine in California was estimated to contain 0.57% molybdenum by the fluorescent test. Chemical analysis showed 0.51%. A third sample from the Seven Devils District, Idaho, was estimated to contain 1.18% molybdenum by the fluorescent method; chemical analysis showed 1.20%.

For use in the field the Survey states that a series of finely powdered synthetic preparations or a comparable series of natural minerals of known composition may be mounted in circular areas on black card. The series would be so placed as to show increasing molybdenum content. The following is quoted from the Survey release:

> "On cards that are being distributed to Survey geologists currently engaged in looking for tungsten ores, there are twelve standard synthetic preparations. Pure calcium tungstate is followed in sequence by compounds containing 0.05, 0.19, 0.33, 0.48, 0.72, 0.96, 1.4, 2.4, 3.4, and 4.8 percent molybdenum, and finally by one pure calcium molybdate, which is 48 percent molybdenum. Alternating with the circles covered with powder are circular holes of the same size. The card is used by placing a hole over a powdered sample of the scheelite to be tested and comparing the fluorescence color of the sample with those of the adjacent standards. By trying one hole after another, the sample will be found to have a fluorescence color, and hence a composition, between that of two adjacent standards. The composition can be further narrowed down by observing which of these standards the sample most nearly resembles. The accuracy of the determinations could be increased by mounting a larger number of standards on the comparison card."

An improved assay method depending on colorimetric chemical analysis has also been developed by the Survey. The following quotation from the release gives an outline of the method:

> "The improved colorimetric method, which was developed by F. S. Grimaldi, of the Survey's Chemical Laboratory, permits rapid, precise determination of molybdenum, when it does not exceed two percent, in specimens of scheelite, or in any molybdenum-bearing ores or concentrates, wherever laboratory facilities and the services of a trained chemist are available. This method eliminates the uncertainties of the usual colorimetric determinations, made with ether extractions, and obviates the need for the standards used heretofore. A stable amber to red molybdenum-thiocyanate color is developed in water-acetone solutions, ammonium citrate being used to eliminate interference by tungsten, and this color is matched by adding standard molybdenum solution to a blank."

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FELDSPAR TO EXTINGUISH MAGNESIUM INCENDIARY BOMBS

A cheap and effective means of extinguishing magnesium incendiary bombs has been developed by the U. S. Geological Survey according to a release by the Department of the Interior, dated June 14, 1942. Extracts from the release are given as follows:

"Because the problem of handling incendiaries may become of common concern, the Geological Survey sought a solution which would involve the least expenditure for equipment or material supplies, and yet be as nearly fool-proof as possible in handling. In the use of feldspar, ground to pass a 10-mesh screen and be retained by a 200-mesh screen, Geologist W. W. Rubey and Chemists Michael Fleischer and J. J. Fahey believe they have found an effective answer. The effectiveness of this material has been demonstrated on a

small scale in the Geological Survey laboratories, and on one-pound bombs at Edgewood Arsenal of the Chemical Warfare Service.

In order to protect the public interest and to prevent exploitation of the method, the Department of the Interior by arrangement with the inventors acting through the Department of Justice has taken proper steps to obtain Government controlled patent protection for the invention. Under the patent, the Department will make the process and use of the material available to any commercial concern. Commercial development of the material will be encouraged by the Department of the Interior, but Government control of the patent will protect the public against price exploitation and extravagant and misleading advertising. Certain products already have been exploited which have been found to be unsatisfactory in actual use.

The use of feldspar for combatting magnesium incendiaries is recommended by the Geological Survey for the following reasons:

1. Feldspar is inexpensive. It should not cost more than 50 to 75 cents a hundred pounds wholesale, when shipped in bulk to a central point in any of the large cities of the east coast. The retail price would be slightly higher. A hundred pounds will fill two buckets, enough for the average small house.

2. Feldspar is readily available. It is the most abundant constituent of a large variety of common rocks (granite, syenite, pegmatite, aplite, anorthosite and monzonite).

3. Feldspar is easily handled. Its use does not require expensive equipment or the the services of trained crews. Once feldspar has been applied to burning magnesium (which can be done in a few seconds), the bomb requires no further attention. It is emphasized that in addition to having feldspar available to extinguish the magnesium bomb itself, the householder must have water available to combat fires started by flying sparks.

4. Feldspar is effective. With a lower melting point than sand, feldspar quickly forms a protective coating over molten magnesium which cuts off the supply of air from the magnesium and actually stops it from burning and its flame from spreading. It is superior to mixtures containing salt, pitch, ashes or fine powders as it does not burn, give off smoke, blow out,or scatter appreciably from the intense heat of the incendiary material. In laboratory experiments, it was shown that when magnesium or an incendiary bomb was ignited and placed on a pine floor or board and covered with ground feldspar, the fire was extinguished so quickly and the supply of oxygen was cut off so effectively that the wood was charred only to a depth of less than half an inch. Moreover, only about 50 percent of the magnesium was consumed in most tests with feldspar, the balance being put out before it burned.

The most common incendiary bombs consist of a core of thermite in a jacket of magnesium. When a bomb strikes any object, the thermite ignites and soon generates enough heat to kindle the magnesium which burns with a dazzling white flame and produces a very high temperature.

Sand has been recommended for controlling magnesium incendiary bombs. This is inexpensive and is generally available. It does not cause the bomb to cease burning, however, and the bomb should be carried out between thick sand layers as soon as possible. Several special mixtures and patented compounds have been proposed, but these are expensive and less effective than feldspar."...

"It is essential, laboratory tests have proved, that extra-fine material of less than 200-mesh screen size be eliminated, as it tends to clog interstices and prevent the ready escape of gases which would erupt with sufficient force to form miniature craters in the feldspar cover and destroy its effectiveness."...

"Syenite, 90 percent of which consists of potash and soda feldspars, is present in several scattered localities in the Atlantic Coast States. Where obtainable, ground syenite should be more effective than ground granite as a bomb extinguisher. Nepheline syenite rock should also be effective. Granite, by far the most abundant rock, furnishes screenings as a result of quarrying for crushed stone. Ground granite, consisting of about two-thirds potash and soda feldspars and one-third quartz and minor minerals, should be better than ordinary sand, although inferior to ground feldspar, as an extinguisher of magnesium bombs.

Granites also are abundant in the Pacific States, and pegmatite is associated with them in places. Besides granite, the rock monzonite, which is intermediate between granite and syenite in the quantity of feldspar content, is available at scattered localities throughout the West. Rhyolite and latite, volcanic rocks equivalent to granite and monzonite in chemical composition, also are abundant in the Pacific Coast region and are quarried for crushed stone. Screenings from these crushed rocks may not be as effective as feldspar, but they are worth trying, according to the Survey geologists." ...

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CLEARING HOUSE

No. 69-CH The American Lava Corporation, Chattanooga, Tenn., is reported to be the largest user of high grade steatitic talc for ceramic electrical insulation. This company desires to have samples and, where available, analyses of low-lime, low-iron talc from new sources.

No. 70-CH Mr. L. S. Hackney, 132 N. Kenmore Ave., Los Angeles, Cal., wishes to secure a manganese or chrome property.

No. 71-CH Mr. H. Stein, 754 Natoma St., San Francisco, Cal., has a 1-Ton per hour capacity Mace smelter and might be interested in equipping an Oregon mining property with it on an equitable basis.

No. 72-CH Complete Mining and Milling Equipment for sale-- in one lot if possible. Included are new wire rope tramway, never installed, compressors, drills, cars, buckets, 7 x 6 ball mill, Oliver filter, tanks, shafting, belting, flotation cells etc. Location: Western Montana. Inquire E. B. Davis, 7307 North Ivanhoe Street, Portland, Oregon.

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COAL INVESTIGATION

Mr. George Watkin Evans, consulting mining engineer of Seattle, has been retained by the U. S. Bureau of Mines to study production possibilities in the Coos Bay coal field. Mr. M. R. Geer, mining engineer at the Bureau's Seattle station is assisting in the work. Proximity of the Coos Bay field to new army cantonments in Oregon makes production in this field of major importance.

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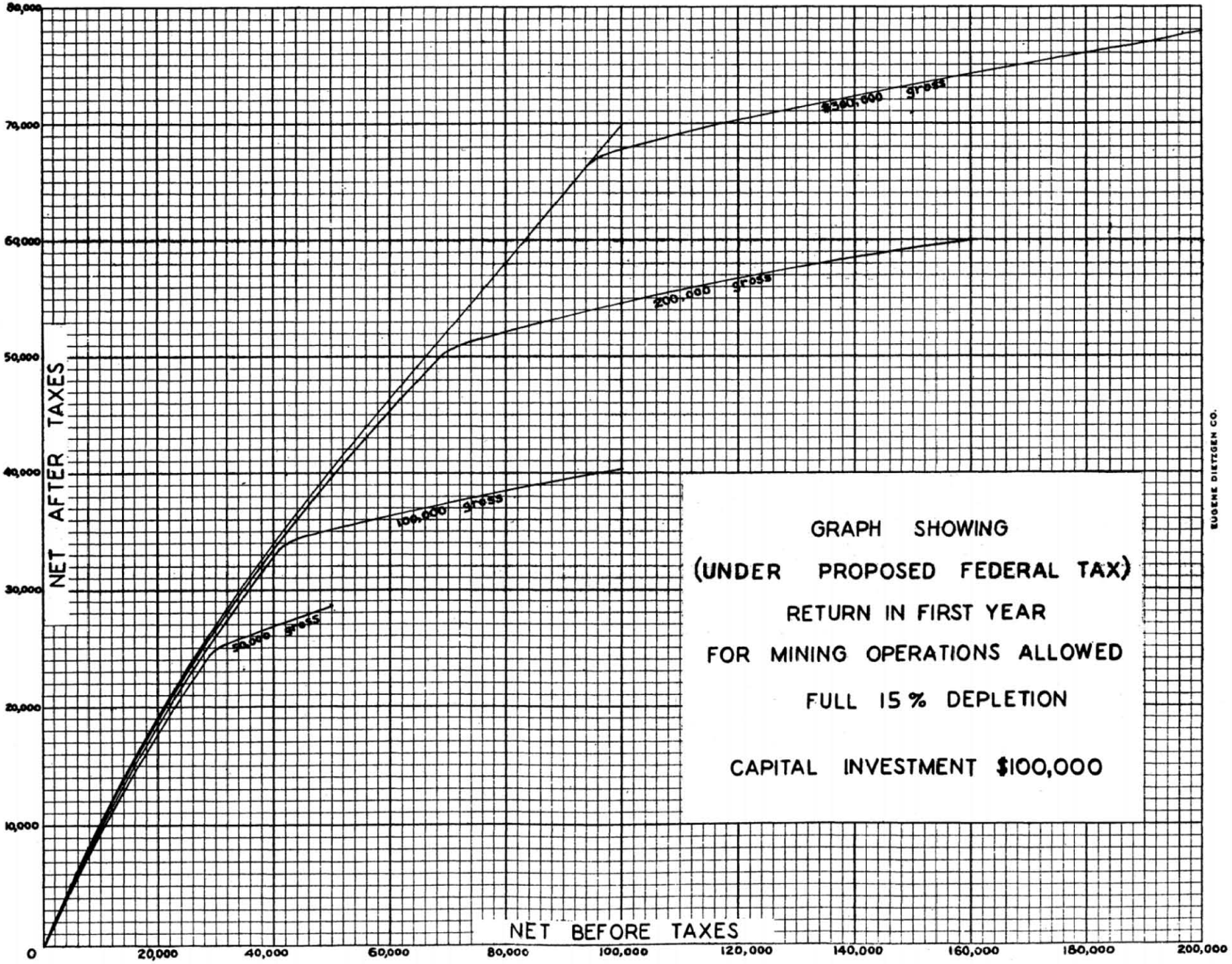
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
NET AFTER TAXES
$300,000 gross
200,000 gross
100,000 gross
50,000 gross
GRAPH SHOWING
(UNDER PROPOSED FEDERAL TAX)
RETURN IN FIRST YEAR
FOR MINING OPERATIONS ALLOWED
FULL 15 % DEPLETION
CAPITAL INVESTMENT $100,000
20,000
40,000
60,000
80,000
100,000
120,000
140,000
160,000
180,000
200,000
NET BEFORE TAXES
EUGENE DIETZGEN CO.

ATTENTION: Holders Mine Serial Numbers

A telegram received by Dr. Wilbur A. Nelson, Administrator Mining Branch, W. P. B. states that, effective August 8, 1942, Order P-56 amended provides that holders of mine serial numbers may use A-1-a rating for part of their quotas. The Mining Branch is authorizing the use of A-1-a ratings for not to exceed 30 percent of the dollar value of third quarter quotas which have been assigned.

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According to the American Mining Congress weekly information service, requirement of the use of the system of "End Use of Symbols" and "Purchasers' Symbols" provided in Priorities Regulation No. 10 has been deferred until August 31. So many complications have arisen with this allocation classification system that its operation is being held up pending further conferences with industry representatives.

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DEPARTMENTAL NOTES:

A car of chrome ore has been shipped to Baker by Anthony Brandenthaler from the Winterville Chrome Mine in the Greenhorn Mountains. Mr. Brandenthaler has a contract with Metals Reserve. Sampling and assaying on this contract will be done by the Baker staff of the State Department of Geology and Mineral Industries.

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Small lots of chromite will be purchased at Baker by Mr. T. Ned Thomas, office manager of the Baker Mill & Grain Co. Mr. Thomas will act as Mr. Brandenthaler's agent, and the small lots will be incorporated in Brandenthaler's Metals Reserve contract.

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Paul Fitzsimmons, geologist of the State Department of Geology and Mineral Industries, is mapping the Pine quadrangle, southern Baker County. His work at present is centered around the Chicken Creek area where scheelite is known.

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Wallace Lowry, geologist with the State Department, and George Murphy, associate, are mapping manganese formations in the Lake Creek area east of Medford.

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Drilling to develop nickel deposit on Nickel Mountain by the Freeport Sulphur Co. is well underway.

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John Kennedy has taken over the Griffin chrome property at the mouth of Deer Creek at the mouth of the Illinois River.

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Dr. W. H. Twenhofel, Professor of Geology at the University of Wisconsin and noted authority on sedimentation, has been employed by the State Department of Geology and Mineral Industries to make a study of marine sand deposition in the ancient beach terraces of the southwestern Oregon coastal area. Particular attention will be given to occurrence of chromite sands in the terraces at high elevations concerning which little geologic information is available.

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A district office of the U.S.Bureau of Mines has been established at 806 Failing Bldg., Portland, Oregon. Henry Iverson is in charge. Under the new reorganization plan of the Bureau, the regional office for western states is at Salt Lake City with S. R. Zimmerly in charge.

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The ORE.-BIN
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