

Warren A. Roberts

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**STATE TAXATION  
OF METALLIC  
DEPOSITS**

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**HARVARD ECONOMIC STUDIES 77**

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## STATE TAXATION OF METALLIC DEPOSITS

By WARREN A. ROBERTS

**A**LTHOUGH primarily a case study in public finance, this is the first book on mine taxation to give the background of the state laws, to analyze the reasons for the changes within various states, and to relate political and economic conditions to the differences in state mine-tax legislation. Mr. Roberts discusses some of the debated principles of mine taxation including the *ad valorem* tax, examines the aspects of mineral economics pertinent to the method of assessment and the weight of the tax, and shows the relation between the principles of taxation and the basic tenets of common law. He devotes a major portion of the study to the political history of certain mining states, particularly of Arizona, Minnesota, and Michigan. Most of this material is from original sources and has not been previously published.

Mr. Roberts, now on leave from Western Reserve University where he is associate professor of economics, has made a thorough study of mineral economics and mine taxation in the principal mining areas of the United States and has also acted as tax consultant to several state governments. He is at present a special assistant in the Department of State.

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# STATE TAXATION OF METALLIC DEPOSITS

BY

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*For*

**HAROLD HITCHINGS BURBANK**



## PREFACE

THIS is a case study and, as such, must deal with widely divergent topics: with the histories of the several states, with the theory of democratic government, with mineral economics, and with the specific problem of mine valuation. In a sense the result has, of necessity, been a series of separate studies, and few readers will find the various topics to be of uniform interest. In another sense, however, the study is tied together by two related threads of thought: by the technical theory of mine appraisal and taxation, and by the larger problem of political science. Even the state histories supplement each other. In no one state was there available in quotable form the information necessary to demonstrate the many facets of political pressure, but, taken together, the events in one state supplement those in another, and, unified by the general principles described in Part I, illustrate the basic relationship between political science and public finance. Because the problems of government have seemed to be the most important elements in this study, the choice of states has been influenced by the availability of material on pertinent political history, as well as by the existence of large ore deposits.

The source data used in a case study such as this do not gain value by arrangement in a bibliography, and none has been attempted.

Some of the material on the western states was collected several years ago, and a generous grant by the John Simon Guggenheim Memorial Foundation, in 1940, made it possible to examine the records in the mining states and to converse with those familiar with local affairs. The author is indebted, besides, to hundreds of individuals and a dozen historical libraries, and is warmly grateful to all those sympathetic persons who lent their memories and enthusiasm to this study. In particular he is indebted to Professor Donald G. Barnes, of West-

ern Reserve University, and to O. E. Kiessling, of the Bureau of Census, who read and criticized parts of the manuscript. He was assisted, too, by Julius Wendzel and Elliot Janney, who lent the stimulation of many an hour's discussion to the development of some of the principles in this book. The author extends his thanks, also, to Frank G. Pardee, without whose generous tutelage this undertaking would have been much more difficult.

He is especially appreciative of the patience of his wife and family during the progress of the manuscript.

Material for Chapter I was taken from a paper presented at the National Tax Conference, 1941, and is reproduced here by permission of the National Tax Association. Material for Chapter III was taken from an article published in the *Journal of Land & Public Utility Economics* (February 1939), pp. 21-29, and is used here by permission of the publisher.

The study was completed in 1941 and is intended to cover only material available at the end of that year.

WARREN ROBERTS

CLEVELAND, OHIO  
JANUARY 10, 1944

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*Idaho*

15 per cent of the gross income in the case of metal mines. Shall not exceed 50 per cent of the net income of the taxpayer.

Source: Letter from the Office of Tax Commissioner, July 31, 1941.

*Kansas*

(1) depletion based upon the cost of the property or, if acquired prior to January 1, 1933, the cost or fair market value thereof as of that date, whichever is greater; or, (2) depletion based upon a percentage of income in certain cases as specified in the act.

Source: Income Tax Law and Regulations 1937, Art. 56, p. 34.

*Minnesota*

In determining the amount of depletion, many factors are taken into consideration, that is, the rate of royalty, the term of lease, and the probable time within which the ore body will be mined out. Further, the character of the ore body, that is, whether high grade or low grade, whether mining will be hazardous or relatively stable, are among the factors that are given consideration in determining the present worth of expected income for the property. With these factors determined and the present worth established, the depletion rate thus established is effective through the life of the property.

Source: Letter from Department of Taxation, July 18, 1941.

*Michigan*

No state income tax and therefore no method for computing depletion is needed.

Source: Letter, Department of Conservation, August 4, 1941.

*Montana*

Same as under the Federal Income Tax Law.

Source: Letter, Board of Equalization, July 31, 1941.

## APPENDIX II

THE FOLLOWING tables present supporting data for charts on distribution of "Lake Erie Value" of Michigan and Minnesota ores, compiled from figures published by the Department of Conservation of Michigan and from the reports of the State Tax Commission of Minnesota.

TABLE 1  
MICHIGAN ORE VALUES AND COSTS PER TON BASED ON PRODUCTION (ANNUAL)

	Production Mil. tons	5-yr. total	Ore value at Lake Erie	Transpor- tation and market- ing	Value at mine	Extrac- tion columns	Value in ground	Royalty to owner	Taxes Ad val. occupa- tional royalty	Operator's equity inc. interest, all federal taxes and profit	Int.
1921	7.1	...	\$5.56 <sup>a</sup>	\$1.79	\$3.77 <sup>a</sup>	\$2.99	\$ .78 <sup>a</sup>	\$.43	\$.50	Loss \$-.15 <sup>a</sup>	\$.09
1922	10.3	...	5.14	1.64	3.50	2.24	1.26	.36	.37	.53	.08
1923	14.2	...	5.61	1.67	3.94	2.24	1.70	.38	.27	1.05	.09
1924	12.2	..	4.93	1.61	3.33	2.32	1.01	.33	.31	.37	.06
1925	14.5	58.3	4.36	1.63	2.73	2.05	.68	.30	.25	.13	.05
1926	15.2	66.4	4.33	1.57	2.76	1.94	.82	.29	.24	.29	.05
1927	15.1	71.2	4.32	1.58	2.74	1.90	.85	.29	.24	.31	.04
1928	13.7	70.7	4.40	1.58	2.82	1.90	.92	.28	.26	.33	.04
1929	15.2	73.7	4.58	1.58	3.01	1.78	1.23	.28	.24	.71	.04
1930	13.5	72.7	4.66	1.59	3.07	1.87	1.20	.31	.27	.62	.04
1931	7.5	65.0	4.66	1.59	3.07	2.06	1.01	.28	.52	.21 <sup>b</sup>	.08
1932	2.5	52.4	4.65	1.66	2.99	2.71	.28	.40	1.17	Loss - 1.29 <sup>b</sup>	.21
1933	2.4	41.1	4.74	1.64	3.10	2.66	.44	.27	.88	Loss - .71	.06
1934	5.0	30.9	4.72	1.58	3.14	2.00	1.14	.29	.34	.51	.03
1935	5.2	22.6	4.78	1.69	3.09	2.04	1.05	.27	.32	.46	.03
1936	9.1	24.2	4.80	1.73	3.07	1.75	1.32	.30	.19	.83	.03
1937	12.0	33.7	5.17	1.67	3.50	1.88	1.62	.32	.17	1.13	.01
1938	5.9	37.2	5.23	1.74	3.49	2.41	1.08	.34	.34	.40	.01
1939	9.1	41.3	5.22	1.72	3.50	1.99	1.50	.32	.22	.96	.01

<sup>a</sup> Figures in these four columns are too high because much ore is sold below L.E. price.

<sup>b</sup> 1931 additional idle expense was 7c, 1932 idle expense was 40c.

TABLE 2  
MICHIGAN ORE VALUES AND COSTS PER TON BASED ON PRODUCTION (5-YEAR AVERAGE)

	Lake Erie value	Transport. and marketing	Value at mine	Extrac- tion	Value in ground	Royalty	Tax	Operator's equity
1923 .....	\$5.07	\$1.66	\$3.41	\$2.30	\$1.11	\$.35	\$.32	\$.44
1924 .....	4.85	1.62	3.23	2.15	1.08	.33	.28	.47
1925 .....	4.69	1.61	3.08	2.08	1.00	.31	.26	.43
1926 .....	4.45	1.59	2.86	2.01	.85	.30	.26	.29
1927 .....	4.40	1.59	2.81	1.91	.90	.29	.24	.37
1928 .....	4.46	1.58	2.88	1.88	1.00	.29	.25	.46
1929 .....	4.51	1.58	2.93	1.88	1.05	.29	.28	.48
1930 .....	4.57	1.59	2.98	1.92	1.06	.29	.34	.43
1931 .....	4.63	1.59	3.04	1.97	1.07	.30	.39	.38
1932 .....	4.68	1.60	3.08	2.07	1.01	.30	.46	.25
1933 .....	4.70	1.62	3.08	2.18	.90	.29	.54	.07
1934 .....	4.75	1.67	3.08	2.05	1.03	.30	.42	.31
1935 .....	4.91	1.67	3.24	1.94	1.30	.30	.27	.73
1936 .....	4.98	1.69	3.29	1.97	1.32	.31	.25	.76
1937 .....	5.06	1.71	3.35	1.97	1.38	.31	.23	.84

**TABLE 3**  
**PERCENTAGE DISTRIBUTION OF VALUE OF MICHIGAN ORE AT LAKE ERIE (5-YEAR AVERAGE)**

	5-yr. ave. Lake Erie value	Transport. and marketing		Extraction		Royalty		Tax		Operator's equity	
			%		%		%		%		%
1923 .....	\$5.07	\$1.66	32.7	\$2.30	45.4	\$ .35	6.9	\$ .32	6.3	\$ .44	8.7
1924 .....	4.85	1.62	33.4	2.15	44.3	.33	6.8	.28	5.8	.47	9.7
1925 .....	4.69	1.61	34.3	2.08	44.4	.31	6.6	.26	5.5	.43	9.2
1926 .....	4.45	1.59	35.7	2.01	45.2	.30	6.8	.26	5.8	.29	6.5
1927 .....	4.40	1.59	36.1	1.91	43.4	.29	6.6	.24	5.5	.37	8.4
1928 .....	4.46	1.58	35.4	1.88	42.2	.29	6.5	.25	5.6	.46	10.3
1929 .....	4.51	1.58	35.0	1.88	41.7	.29	6.4	.28	6.2	.48	10.7
1930 .....	4.57	1.59	34.8	1.92	42.0	.29	6.4	.34	7.4	.43	9.4
1931 .....	4.63	1.59	34.3	1.97	42.6	.30	6.5	.39	8.4	.38	8.2
1932 .....	4.68	1.60	34.2	2.07	44.2	.30	6.4	.46	9.8	.25	5.4
1933 .....	4.70	1.62	34.4	2.18	46.4	.29	6.2	.54	11.5	.07	1.5
1934 .....	4.75	1.67	35.2	2.05	43.2	.30	6.3	.42	8.8	.31	6.5
1935 .....	4.91	1.67	34.0	1.94	39.5	.30	6.1	.27	5.5	.73	14.9
1936 .....	4.98	1.69	33.9	1.97	39.6	.31	6.2	.25	5.0	.76	15.3
1937 .....	5.06	1.71	33.8	1.97	38.9	.31	6.1	.23	4.6	.84	16.6

TABLE 4  
MINNESOTA ORE VALUES AND COSTS PER TON BASED ON PRODUCTION (ANNUAL)

	A Production		B Ore value at Lake Erie	C Transpor- tation and market- ing	D Value at mine	E Extrac- tion columns (3 + 8)	F Value in ground D - E	G Royalty to owner	H Taxes Ad val. occupa- tional royalty	I Operator's equity inc. interest, all federal taxes and profit
	Mil. tons	5-yr. total								
1921	17.5	....	\$5.78 <sup>a</sup>	\$2.03	\$3.75 <sup>a</sup>	\$1.24	\$2.51 <sup>a</sup>	\$.47	\$1.17	\$.87 <sup>a</sup>
1922	28.8	....	5.22	1.78	3.44	1.03	2.41	.48	.76	1.17
1923	44.8	....	5.61	1.93	3.68	1.01	2.67	.44	.60	1.63
1924	32.4	....	4.84	1.88	2.96	1.13	1.83	.46	.69	.68
1925	37.6	161.1	4.35	1.89	2.46	1.05	1.41	.45	.58	.38
1926	41.7	185.3	4.32	1.89	2.43	.94	1.49	.44	.50	.55
1927	36.5	193.0	4.28	1.89	2.40	.99	1.41	.45	.57	.39
1928	38.5	186.7	4.25	1.89	2.36	.87	1.49	.45	.52	.52
1929	46.9	201.2	4.46	1.89	2.57	.79	1.78	.45	.47	.86
1930	36.2	199.8	4.48	1.91	2.58	.88	1.70	.46	.57	.67
1931	18.4	176.5	4.54	1.93	2.60	.95	1.65	.44	1.02	.19
1932	5.5	145.5	4.59	2.15	2.44	1.31	1.13	.55	3.01	2.43 Loss
1933	12.6	119.6	4.47	1.98	2.49	.84	1.65	.42	1.42	.19 Loss
1934	16.2	88.9	4.47	1.92	2.55	.85	1.70	.41	1.19	.10
1935	19.9	72.6	4.47	2.02	2.45	.81	1.64	.44	.96	.24
1936	32.5	86.7	4.47	1.97	2.50	.82	1.68	.40	.65	.63
1937	49.6	130.8	4.93	1.97	2.96	.84	2.12	.38	.56	1.18
1938	14.7	132.9	4.98	2.03	2.95	1.26	1.69	.39	1.26	.04
1939	31.8	148.5	4.96	2.01	2.95	.88	2.07	.43	.70	.94

<sup>a</sup> Figures in these four columns are too high because much ore is sold below L.E. price.  
Columns B, C, D, are taken from Table No. 10 and E, G, H, are from Table No. 11 of the 1936 Tax Commission's Report.

**TABLE 5**  
**MINNESOTA ORE VALUES AND COSTS PER TON BASED ON PRODUCTION (5-YEAR AVERAGE)**

	Lake Eric value	Transport. and marketing	Value at mine	Extraction	Value in ground	Royalty	Tax	Operator's equity
1923 .....	\$5.10	\$1.89	\$3.21	\$1.07	\$2.14	\$.46	\$.70	\$.98
1924 .....	4.87	1.88	2.99	1.03	1.96	.45	.61	.90
1925 .....	4.71	1.90	2.81	1.02	1.79	.45	.58	.76
1926 .....	4.40	1.89	2.51	.99	1.52	.45	.57	.50
1927 .....	4.34	1.89	2.45	.92	1.53	.45	.52	.56
1928 .....	4.36	1.89	2.47	.89	1.58	.45	.52	.61
1929 .....	4.39	1.90	2.49	.88	1.61	.45	.58	.58
1930 .....	4.42	1.91	2.51	.87	1.64	.46	.67	.51
1931 .....	4.48	1.92	2.56	.87	1.69	.45	.80	.44
1932 .....	4.50	1.94	2.56	.91	1.65	.45	1.05	.15
1933 .....	4.50	1.98	2.52	.90	1.62	.44	1.26	.08 Loss
1934 .....	4.48	1.99	2.49	.86	1.63	.42	1.06	.15
1935 .....	4.64	1.97	2.67	.83	1.84	.40	.81	.63
1936 .....	4.70	1.98	2.72	.88	1.84	.40	.80	.64
1937 .....	4.78	1.99	2.79	.88	1.91	.40	.73	.78

**TABLE 6**  
**PERCENTAGE DISTRIBUTION OF VALUE OF MINNESOTA ORE AT LAKE ERIE (5-YEAR AVERAGE)**

	5-yr. ave. Lake Erie value	Transport. and marketing		Extraction		Royalty		Tax		Operator's equity	
			%		%		%		%		%
1923	\$5.10	\$1.89	37.1	\$1.07	21.0	\$.46	9.0	\$.70	13.7	\$.98	19.2
1924	4.87	1.88	38.6	1.03	21.2	.45	9.2	.61	12.5	.90	18.5
1925	4.71	1.90	40.4	1.02	21.7	.45	9.5	.58	12.3	.76	16.1
1926	4.40	1.89	43.0	.99	22.5	.45	10.2	.57	12.9	.50	11.4
1927	4.34	1.89	43.5	.92	21.2	.45	10.4	.52	12.0	.56	12.9
1928	4.36	1.89	43.4	.89	20.4	.45	10.3	.52	11.9	.61	14.0
1929	4.39	1.90	43.3	.88	20.0	.45	10.3	.58	13.2	.58	13.2
1930	4.42	1.91	43.2	.87	19.7	.46	10.4	.67	15.2	.51	11.5
1931	4.48	1.92	42.9	.87	19.4	.45	10.0	.80	17.9	.44	9.8
1932	4.50	1.94	43.1	.91	20.2	.45	10.0	1.05	23.4	.15	3.3
1933	4.50	1.98	44.0	.90	20.0	.44	9.8	1.26	28.0	-.08	-1.8
1934	4.48	1.99	44.4	.86	19.2	.42	9.4	1.06	23.7	.15	3.3
1935	4.64	1.97	42.5	.83	17.9	.40	8.6	.81	17.4	.63	13.6
1936	4.70	1.98	42.2	.88	18.7	.40	8.5	.80	17.0	.64	13.6
1937	4.78	1.99	41.6	.88	18.4	.40	8.4	.73	15.3	.78	16.3



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