Supplementary REPORT . . . OF LEGISLATIVE COMMISSION ON TAXATION OF IRON ORE

SUBMITTED TO
THE MINNESOTA LEGISLATURE OF 1959

LEGISLATIVE COMMISSION ON TAXATION OF IRON ORE

Senate Members

Thomas P. Welch, *Chairman*
Buffalo, Minnesota

B. G. Novak, *2nd Vice-Chm.*
747 Van Buren, St. Paul

C. E. Johnson
Almelund, Minnesota

*John A. Johnson
Preston, Minn.

J. R. Keller
Winona, Minnesota

Elmer Peterson
Hibbing, Minnesota

Thomas D. Vukelich
Gilbert, Minnesota

Donald O. Wright
Plymouth Building
Minneapolis, Minn.

House Members

Fred A. Cina, *Vice-Chairman*
Aurora, Minnesota

Lloyd Duxbury, Jr., *Secy.*
Caledonia, Minnesota

Alf L. Bergerud
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Pelican Rapids, Minn.

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3415 Knox Ave. N.
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Alfred I. Johnson
Benson, Minnesota

Francis LaBrosse
Duluth, Minnesota

Leonard E. Lindquist
Brooklyn Center, Minn.

Martha May Wylie, *Secretary*

**Succeeded Archie H. Miller, Deceased*

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Preliminary Statement

The Legislative Commission on Taxation of Iron Ore was originally created by Laws 1951, Chapter 714. By Chapter 522, Laws of 1953; Chapter 795, Laws of 1955 and Chapter 958, Laws of 1957, the work of this Commission was extended and continued.

The officers unanimously elected in 1951 were voted to continue in their respective offices each interim. They are as follows:

Senator Thomas P. Welch, *Chairman*
Representative Fred A. Cina, *Vice Chairman*
Senator B. G. Novak, *Second Vice Chairman*
Representative Lloyd Duxbury, Jr., *Secretary*

Also, Martha May Wylie, Secretary, has been continued in her employment since the Commission was created.

A veteran member, Archie H. Miller, died in February, 1958. John A. Johnson was appointed to complete the term. Otherwise the membership of the Commission remained the same as during the 1955-1957 interim, thereby maintaining an equal number of majority and minority members of both Houses.

The Report submitted to the 1955 Legislature by this Commission represents basic factual and statistical material to which the Commission submitted a supplement in 1957.

During the last two years the Commission held numerous meetings and hearings on the subjects assigned to it. In particular, it heard detailed presentations by representatives of the iron mining industry, the Department of Taxation and the School of Mines of the University of Minnesota on the subjects of changes in the mining industry and their effect on Minnesota reserves and operations and its competitive position; and on the subject of the valuation of mining property and non-mining property for ad valorem tax purposes. It also held a hearing at Ely at which presentations were made by the officers of Ely and representatives of civic organizations on the subject of the assessment and taxation of underground Vermilion Range stockpiles, and at which the problems presented by the closing of the Zenith Mine were discussed.

In addition, representatives or subcommittees of the Commission inspected iron ore operations in Brazil, Peru and Chile; inspected the taconite operations of Erie Mining Company; inspected the Sparrows Point Plant of Bethlehem Steel Corporation and Fairless Steel Works of United States Steel Corporation; kept in touch with the St. Lawrence Waterway development through conferences with government officials

PRELIMINARY STATEMENT

in Washington, as well as inspection of the Canadian and American lock and channel work near Massena, New York and the present lake transportation of iron ore from Lake Superior ports to lower lake ports.

Members of the Commission also attended the fiftieth anniversary of iron ore beneficiation at Coleraine and the recent meeting of the American Institute of Mining Engineering at Duluth. Numerous articles from technical and trade magazines, as well as statements submitted in connection with hearings before the Commission have been studied by the Commission.

These hearings and inspection trips supplemented previous investigations made by subcommittees and members of the Commision of iron ore and taconite operations in Minnesota and iron ore operations in Alabama, Michigan, New York, Steep Rock, Canada and Labrador, as well as inspection of steel plant and blast furnace operations in various parts of the United States.

This Supplementary Report to the 1959 Legislature refers to the Commission's previous Reports in many instances, bringing charts and tables down to date. Several new factors and conditions affecting Minnesota's position as an iron ore producer have become apparent to this Commission and will be hereinafter set out.

Brief History of Iron Mining

The trend of iron ore production from Minnesota climbed stead
upward between 1940 and 1954. During this period the major conside
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called direct shipping ores.

In 1957, production from Minnesota iron ore mines, as well as
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In Minnesota we still speak of "direct shipping" ores but events of the past few years have practically eliminated that designation. In recent years mining companies have been required to crush and screen the so-called direct shipping ores.

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BRIEF HISTORY

Receipts and Sources of Ore

	1957	*1958*	*Percentage Decrease*
Total receipts at iron and steel plants...	139,233,430	95,937,279	—31%
Consumption of iron ore at U.S. Steel Plant	130,901,646	94,819,212	—27.6%
Receipts from Lake Superior shipments (including Minnesota but not Steep Rock)	82,763,514	52,272,080	—36.8%
Receipts from other United States sources	20,195,363	14,646,296	—27.5%
Receipts from Canadian sources, Lake Superior (Steep Rock and Michipicotan)	3,617,483	2,519,571	—30%
Other Canadian Sources..............	10,117,416	7,311,190	—27.7%
Other foreign sources.................	22,539,654	19,188,142	—14.9%

The Association reports that lake shipments from Minnesota (this does not include all rail shipments to the Duluth steel plant or blast furnace, or all rail shipments from Fillmore county) were 67,224,045 in 1957 and 41,777,908 in 1958, a decline of 37.8%. It is significant that while there was this sharp drop in total shipments from Minnesota, the shipments of taconite pellets from Silver Bay dropped only from 5,121,172 in 1957 to 4,994,174, or about 2.5%, and (because of Erie's commercial plant going into operation) the shipments of taconite pellets from Taconite Harbor increased from 113,674 tons in 1957 to 2,670,389 tons in 1958. If these taconite shipments were taken out of the total Minnesota shipments for both years, the decline in Minnesota lake shipments was from 61,989,199 in 1957 to 34,113,345 in 1958, or a drop of 45%.

This sharp drop in Minnesota production and shipments has presented many questions to the local communities, the mining companies and to the state.

Digest of Minnesota Laws Applicable to Iron Ore Taxation

AD VALOREM TAX

OCCUPATION TAX

ROYALTY TAX

TACONITE AND IRON SULPHITES

EXEMPTION FROM INCOME TAX

SUMMARY OF TAX LAW CHANGES

	1958	Percentage Decrease
0	95,937,279	—31%
6	94,819,212	—27.6%
4	52,272,080	—36.8%
3	14,646,296	—27.5%
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SUMMARY OF TAX LAW CHANGES

(This provision avoids the escapement of tax, on lands leased after May 1, on ore that may be mined before the following May 1. By mutual agreement between the Department of Taxation and the Mining Company this same provision has been followed in the case of privately owned mineral property.)

6. M. S. 1957
Sec. 273.02
Omitted Property

This section provides for entry on the tax records of any real or personal property found to have been omitted or undervalued in any preceding year; such entry being for the year or years originally omitted.

6-a. Subd. 1
Discovery
6-b. Subd. 2
Limitation

A time limit of six years is herein provided for **entry of omitted property** in the records; and for **correction of the valuation or classification of real property,** the time limit is **one year after December 1** of the year in which the property was **assessed or should have been assessed.**

6-c. Subd. 3
Rights Not
Affected

Rights of a good faith purchaser of property **acquired prior to the correction of assessed value thereof** by the county auditor are not affected. In the case of **rights adversely affected** by action of the auditor, **application may be made** for reduction under the provisions of Sec. 270.07, relating to powers of the **Commissioner of Taxation.**

7. M. S. 1957
Sec. 273.11
Valuation of
Property

All property to be valued by itself, at its true and full value. Value of **land,** and of **buildings or structures,** to be **listed separately.**

8. M. S. 1957
Sec. 273.12
Assessment of
Real Property

Duties of assessor: To consider every factor that affects market value, including other comparable lands, so as to **secure uniformity,** and **avoid discrimination.**

9. M. S. 1957
Sec. 273.13
Subdivision 1
Classification
of Property

All real and personal property, **subject to general property tax,** and **not subject to any gross earnings or other lieu tax,** comes under this section.

9-a. Subdivision 2,
Class 1—Iron Ore,
Mined or Unmined

To be assessed under **Class 1, at 50 per cent of its full and true value. Unmined ore to be assessed with and as part of real estate** where same is located. **Underground ore (ore mined by underground methods)** and **placed in stockpile after August 1 of any**

year and before the next May 1 . . . for 2 taxable years after b mined, shall be listed and assessed in the district where mine its unmined rate. Ore and land to be valued separately.

9-b. Class 1-a
Ore Processed
Within Minnesota

All direct products of the blast and o hearth furnaces that are utilized in the f produced, and are not further processed, s constitute class 1-a, and shall be valued an sessed at **15% of the full and true value the**

10. M. S. 1957
Sec. 273
Subdivisions 1 & 2
Definitions

. . . The following words, terms and phrase purposes of Sections 273.14 to 273.16, are g these meanings: "person" may be an indivi co-partnership, company, joint stock comp corporation, or association.

10-a. Subdivision 3
Deposit

A body of iron-bearing materials best mine a unit.

10-b. Subdivision 4
Low-Grade Iron-
Bearing Formations

Commercial iron bearing deposits, exclusiv paint rock, located below surface, which in natural state need beneficiation to make the for use; and which then produce, in tons, less 50% of the original tonnage of crude ore material delivered to the t ing plant; and which must be mined using good engineering and m lurgical practice to produce such concentrate.

10-c. Subdivision 5
Beneficiation

The process of concentrating that part of crude ore entering the beneficiating plant b moval of silica and moisture therefrom.

10-d. Subdivision 6
Concentrates

Products of a beneficiating plant, so impr **as to be fit for blast furnace use.**

10-e. Subdivision 7
Tonnage Recovery

Ratio of weight of concentrate to weigh crude ore entering beneficiating plant.

11. M. S. 1957
Sec. 273.15
Classifications
of Low-Grade
Iron Ore

Low-grade iron-bearing formations define Sec. 273.14 are classified according to reco ratio, as follows:

For tonnage recovery between 49 and 5 the assessed value is 48½% of full and true.

For tonnage recovery between 48 and 4 assessed value is 47% of full and true.

year and before the next May 1 . . . for 2 taxable years after being mined, shall be listed and assessed in the district where mined, at its unmined rate. Ore and land to be valued separately.

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A body of iron-bearing materials best mined as a unit.

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Commercial iron bearing deposits, exclusive of paint rock, located below surface, which in their natural state need beneficiation to make them fit for use; and which then produce, in tons, less than 50% of the original tonnage of crude ore material delivered to the treating plant; and which must be mined using good engineering and metallurgical practice to produce such concentrate.

10-c. Subdivision 5
Beneficiation

The process of concentrating that part of the crude ore entering the beneficiating plant by removal of silica and moisture therefrom.

10-d. Subdivision 6
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Products of a beneficiating plant, so improved as to be fit for blast furnace use.

10-e. Subdivision 7
Tonnage Recovery

Ratio of weight of concentrate to weight of crude ore entering beneficiating plant.

11. M. S. 1957
Sec. 273.15
Classifications
of Low-Grade
Iron Ore

Low-grade iron-bearing formations defined in Sec. 273.14 are classified according to **recovery** ratio, as follows:

For tonnage recovery between 49 and 50%, the assessed value is 48½% of full and true.

For tonnage recovery between 48 and 49%, assessed value is 47% **of full and true.**

For each further drop of 1% in tonnage recovery, the percentage of assessed to full and true value is to be cut another 1½% of the full and true value; but the assessed value is not to go below 30% of the full and true value in any case.

The land, exclusive of such formations, is to be assessed as otherwise provided by law.

12. M. S. 1957
Sec. 273.16
Determination of
Classification

Classifications of iron-bearing formations under Sections **273.14 to 273.16 are to be determined as follows:**

Anyone mining low-grade ore such as above described, whose tonnage recovery of concentrate for a taxable year has been below 50%, may file a petition with the Commissioner of Taxation, requesting classification of their deposit under the provisions of Sections 273.14 to 273.16. The taxpayer must furnish such data and information as the Commissioner may require. The Commissioner then submits such petition and data to the University of Minnesota Mines Experiment Station. The latter considers the deposit referred to in the petition as a unified commercial operation; and, based on all data furnished, next files a written report thereon with the Commissioner of Taxation, who, after hearing duly held, may approve or disapprove such report. If a reclassification is made covering such deposit, the Commissioner of Taxation has to give appropriate notice thereof to the interested taxing districts.

If the Commissioner disapproves such classification, his findings and order thereon may be reviewed by a writ of certiorari from the supreme court on petition of the aggrieved party presented to the court within 30 days after date of such order. Such classifications are also subject to further review by the Mines Experiment Station, from time to time, upon request of the Commissioner of Taxation, or upon further petition by the taxpayer. Valuations determined hereunder are subject to the provisions of Sections 270.19 to 270.26.

13. M. S. 1957
Sec. 273.19
Lessees and
Equitable Owners

This section relates to property held under lease for a term of 3 years or more, or under purchase contract either from the State or from any religious, scientific, or benevolent institution, or any railroad or other organization whose property is not taxed like other property; or when the property is school or other state land, and is considered, for tax purposes, as belonging to the current holder thereof.

The ad valorem tax goes to the State, counties, townships, school districts and local taxing districts according to the levy of the respective taxing units.

OCCUPATION TAX

1. Constitution
of Minnesota,
Article IX
Section 1

Following the fundamental provision in IX, Section 1 of the Constitution, that the to tax shall never be suspended, or cont away, comes the specific provision, in Sectio for the **occupation tax.**

2. Section 1-A
Providing for
Occupation Tax
(a) Occupation Tax
Not a "Lieu Tax"
(b) Time of
Payment of
Occupation Tax

The constitution provides that **anyone en in the business of mining or producing ir or other ores in this State,** shall pay to th of Minnesota an **occupation tax on the val of all ores mined or produced,** which tax s **in addition to all other taxes provided** h said tax to be due and payable from such **. . . on May 1 of the calendar year next f ing the mining or producing thereof.**

(c) Valuation
of Ore as Basis
of Tax

The **valuation of ore** for the purpose of mining the **amount of tax** to be paid shall be tained in the manner and method **provid law.** (Method to be described later.)

(d) Apportionment
of Ocupation Tax

Pursuant to Laws 1955, Extra Session, C 6, by an amendment to the Constitution a at the 1956 General Election, the distribu the occupation tax was changed so that 50% of the funds derive the tax should go to the State General Revenue Fund; 40% for t port of elementary and secondary schools; and 10% for the support of the University.

3. M. S. 1957,
Sec. 298.01,
Subd. 1 and
Subd. 2 as
amended by
E. S. Laws 1957
OCCUPATION
TAX ON PRO-
DUCING ORES

Subdivision 1 repeats the provision, numb Article IX, of the State Constitution, for pa of the occupation tax by producers of iron Minnesota; and states the rate of such tax for 1947 and each year thereafter, compu the valuation of ores mined or produced person during the preceding calendar year

Subd. 2 imposes on producers of iron ore taconite) a surtax at the rate of 15% (rais 11% rate to 12.65%), such surtax to be i for two taxable years following December 31, 1956, specifically pr that the 15% surtax is computed on the gross occupation tax deduction of labor credits.

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poses, as belonging to the

counties, townships, school
to the levy of the respective

OCCUPATION TAX

1. Constitution of Minnesota, Article IX Section I

Following the fundamental provision in Article IX, Section 1 of the Constitution, that the power to tax shall never be suspended, or contracted away, comes the specific provision, in Section 1-A, for the **occupation tax.**

2. Section I-A Providing for Occupation Tax
(a) Occupation Tax Not a "Lieu Tax"
(b) Time of Payment of Occupation Tax

The constitution provides that **anyone engaged in the business of mining or producing iron ore or other ores in this State,** shall pay to the State of Minnesota an **occupation tax on the valuation of all ores mined or produced,** which tax **shall be in addition to all other taxes provided by law,** said tax to be due and payable from such person **. . . on May 1 of the calendar year next following the mining or producing thereof.**

(c) Valuation of Ore as Basis of Tax

The **valuation of ore** for the purpose of determining the **amount of tax** to be paid shall be ascertained in the manner and method **provided by law.** (Method to be described later.)

(d) Apportionment of Ocupation Tax

Pursuant to Laws 1955, Extra Session, Chapter 6, by an amendment to the Constitution adopted at the 1956 General Election, the distribution of the occupation tax was changed so that 50% of the funds derived from the tax should go to the State General Revenue Fund; 40% for the support of elementary and secondary schools; and 10% for the general support of the University.

3. M. S. 1957, Sec. 298.01, Subd. I and Subd. 2 as amended by E. S. Laws 1957
OCCUPATION TAX ON PRODUCING ORES

Subdivision 1 repeats the provision, number 1-A Article IX, of the State Constitution, for payment of the occupation tax by producers of iron ore in Minnesota; and states the rate of such tax as 11% for 1947 and each year thereafter, computed on the valuation of ores mined or produced by any person during the preceding calendar year.

Subd. 2 imposes on producers of iron ore (except taconite) a surtax at the rate of 15% (raising the 11% rate to 12.65%), such surtax to be in effect for two taxable years following December 31, 1956, specifically providing that the 15% surtax is computed on the gross occupation tax without deduction of labor credits.

4. M. S. 1957 Sec. 298.011 Validated by the Constitutional Amendment to Art. IX, Sec. 1 Adopted Nov. 27, 1950. Veterans' Compensation Fund

This section sets forth: "Notwithstanding the provisions of Section 1-A of Article 9 of the constitution, a portion of the **proceeds of the occupation tax, on the valuation of all ores mined or produced, . . . equal to the proceeds of a tax of 1% on such valuation . . . shall be paid into the Veterans' Compensation Fund before the remaining funds derived from the occupation tax are apportioned by Sec. 1-A of Article IX of the constitution."**

This amendment when approved by the people and proclaimed, all as provided by law, was made effective Jan. 1, 1949. In the event that the provisions of the preceding sentence are held unconstitutional, the remaining provisions of this section are to stand as valid and continue in full force and effect. "This section of the constitution shall expire on Dec. 31, 1958, except as to the proceeds of the occupation taxes theretofore levied and thereafter collected."

5. M. S. 1957 Sec. 298.02 Low Grade Ore; Credit for Cost of Labor

Any taxpayer coming under the provisions of Sec. 298.01 may qualify for a credit for high labor costs of mining, development, or beneficiation, as defined in this section, as follows:

(a) In the case of underground mines or merchantable ore produced in open pit mines which has resulted from beneficiation within the state by jigging, heavy media, cyclone process, roasting, drying, drying by artificial heat, sintering, magnetic separation, floatation, agglomeration, or any process requiring fine grinding, a labor credit was allowed for 10% of the cost of labor over 70¢ per ton and not exceeding 90¢ per ton and 15% of the cost of labor over 90¢ per ton.

(b) In the case of tonnages produced by other methods or at other mines, a labor credit is allowed of 10% of the amount by which the cost of labor exceeds 80¢ but does not exceed $1.05 plus 15% of the amount by which such average labor cost per ton exceeds $1.05; this labor credit applies only to the first 100,000 tons produced from any mine.

(c) This labor credit shall not exceed 75% as applied to underground and taconite operations and 60% as applied to all other operations of the total occupation tax paid by the mine and the total amount of all these labor credits, (except as to underground mines or taconite operations) cannot exceed 6.2% of the aggregate amount of the occupation tax.

6. M. S. 1957 Sec. 298.02 Subd. 2. Credit in Lieu of Cost of Labor

In lieu of the **labor credit,** at the electi
taxpayer, a **credit** may be allowed against the
pation tax as follows: **two-thirds of one pe**
of the **gross tax for each one per cent of th**
production of iron ore from any mine wh
made into pig iron, sponge iron, or pow
iron within the State.

7. M. S. 1957 Sec. 298.03 Value of Ore. How Ascertained Specified Statutory Deductions Under Sec. 298.03

The law specifies **the value of the ore,**
brought to the surface of the earth, as the
of the tax; "such value to be determined
Commissioner of Taxation."

(1) Mining (cost of labor and supplies).
(2) Development—open pit.
(3) Development—underground.
(4) Royalty paid.
(5) That part of the realty tax allocated
mined in calendar year.
(6) The amount or amounts of all the
ing subtractions shall be determined
Commissioner of Taxation.

8. M. S. 1957 Sec. 298.04 Ores Subject to Tax

This section provides that **all ores min**
produced after December 31, 1936, shall b
ject to the provisions of Sections 298.01, 298.
298.04.

9. M. S. 1957 Sec. 298.05 Mining Companies to Report Annually

Producers of iron ore are required her
file, on or before March 1 of each year, w
Commissioner of Taxation, under oath,
port, in such form and containing such in
tion as the Commissioner may require, co
the operations of each of their mines during the preceding ca
year.

10. M. S. 1957 Sec. 298.06 Commissioner to Determine Tax

Upon receipt by the Commissioner of T
of such report, he shall determine . . . whet
report is correct or not; and if found corr
must, on or before May 1, determine the
of tax due from each person.

h: "Notwithstanding the
A of Article 9 of the con-
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as applied to underground
to all other operations of
d the total amount of all
mines or taconite opera-
amount of the occupation

6. M. S. 1957
Sec. 298.02
Subd. 2. Credit
in Lieu of Cost
of Labor

In lieu of the **labor credit**, at the election of taxpayer, a **credit** may be allowed against the occupation tax as follows: **two-thirds of one per cent of the gross tax for each one per cent of the total production of iron ore from any mine which is made into pig iron, sponge iron, or powdered iron within the State.**

7. M. S. 1957
Sec. 298.03
Value of Ore.
How Ascertained
Specified Statutory
Deductions Under
Sec. 298.03

The law specifies **the value of the ore, where brought to the surface of the earth, as the basis of the tax; "such value to be determined by the Commissioner of Taxation."**

(1) Mining (cost of labor and supplies).
(2) Development—open pit.
(3) Development—underground.
(4) Royalty paid.
(5) That part of the realty tax allocated to ore mined in calendar year.
(6) The amount or amounts of all the foregoing subtractions shall be determined by the Commissioner of Taxation.

8. M. S. 1957
Sec. 298.04
Ores Subject
to Tax

This section provides that **all ores mined or produced after** December 31, 1936, shall be subject to the provisions of Sections 298.01, 298.03 and 298.04.

9. M. S. 1957
Sec. 298.05
Mining Companies
to Report Annually

Producers of iron ore are required hereby to file, on or before March 1 of each year, with the Commissioner of Taxation, under oath, a report, in such form and containing such information as the Commissioner may require, covering the operations of each of their mines during the preceding calendar year.

10. M. S. 1957
Sec. 298.06
Commissioner to
Determine Tax

Upon receipt by the Commissioner of Taxation of such report, he shall determine . . . whether the report is correct or not; and if found correct, he must, on or before May 1, determine the amount of tax due from each person.

11. M. S. 1957
Sec. 298.07
When Report Is Incorrect Commissioner to Fix Amount of Tax

. . . If the report is found by the Commissioner to be incorrect . . . he shall find and determine the amount of tax due from such person.

12. M. S. 1957
Sec. 298.08
Procedure When No Report Is Filed. Penalty

If any iron ore producer in Minnesota fails to make the report as required under Sec. 298.05, at the time and in the manner therein provided, the Commissioner of Taxation shall . . . **ascertain the kind and amount of ore mined or produced, together with its valuation, and determine the amount of the tax due. . . . There shall be added thereto a penalty for failure to report, equal to 10% of the tax imposed, to be treated as part of the tax.**

13. M. S. 1957
Sec. 298.11
Time for Payment of Taxes. Penalties.

If the tax provided for in Secs. 298.01-298.16 is not paid before June 15 of the year when due . . . a penalty of 10% thereof shall immediately accrue; and 1% per month is added to such tax until paid.

14. M. S. 1957
Sec. 298.17
Occupation Taxes to be Apportioned

By an amendment to the Constitution adopted at the 1956 General Election, all occupation taxes except the 1% dedicated to the Veterans' Compensation Fund are distributed as follows:

50% to the State General Revenue Fund; 40% for the support of elementary and secondary schools; and 10% for the general support of the University.

15. M. S. 1957
Sec. 298.19
Ore-Carrying Roads to Report to Commissioner

Every railroad company or other common carrier receiving iron ore for original shipment from any Minn. mine is required to report in writing to the Commissioner of Taxation, on or before May 10 and November 10 of each year. The report is to state the **number of tons received for shipment as provided in Secs. 298.19 and 298.20 up to and including the last day of April and the last day of October of each year; including the total tons received for shipment from each mine, and tons received since the date of the last preceding report. The report also has to show the place where the ore was received for shipment and name of shipper in each case.**

16. M. S. 1957
Sec. 298.22
Subd. 1

This section provides that, beginning M 1941 (to Apr. 30, 1942), **5%**; and beginnin 1, 1942, **10%** of all amounts credited in general revenue fund, from the proceeds **occupation tax,** is appropriated to the **Iron Range Resourc Rehabilitation Commission.** This section also creates the o Commissioner thereof, who is to be appointed by the Governo advice and consent of the Senate. **This Commissioner is auth to use such amounts of this appropriation as he may deem sary and proper in developing the remaining natural resou** any county in need as a result of **removal of its natural reso** and in the vocational training and rehabilitation of its residents.

ROYALTY TAX

1. M. S. 1957
Sec. 299.01
as amended by Ex. S. Chapt. 1
Royalty and Rate of Tax

This section had provided a tax of 11% all royalty received during each calendar y permission to explore, mine and remove o lands in Minnesota. By Laws 1955, Extra S Chapter 2, Article III, there was imposed a tional tax at the rate of 15% upon all r making the total rate 12.65%. Such additio tax to be in effect for the two taxable years 1955 and 1956. By Law Extra Session, Chapter 1, the addition to the royalty tax as stated was continued for an additional two years following December 3

2. M. S. 1957
Sec. 299.011
Veterans' Bonus Tax on Royalties

This new section provides for a **1% tax royalty received in each calendar yea 1948,** in addition to the 11% tax levied by 299.01. **Proceeds of this 1% tax** are depos the state treasury to the credit of the Ve **Compensation Fund.** This section became effective January 1 and is to expire on December 31, 1958, **except as to the collect taxes theretofore levied and unpaid.**

3. M. S. 1957
Sec. 299.02
Definitions
Subd. 1. Royalty

Royalty, as here defined, is the amo money or value of property received by a son having any right, title, or interest i any tract of land in this State for permis mine and remove ore therefrom.

Subd. 2. Person

The word "person" includes individua partnerships, associations, companies and rations.

16. M. S. 1957
Sec. 298.22
Subd. 1

This section provides that, beginning May 1, 1941 (to Apr. 30, 1942), **5%**; and beginning May 1, 1942, **10%** of all amounts credited in to the general revenue fund, from the proceeds of the **occupation tax,** is appropriated to the **Iron Range Resources and Rehabilitation Commission.** This section also creates the office of Commissioner thereof, who is to be appointed by the Governor, with advice and consent of the Senate. **This Commissioner is authorized to use such amounts of this appropriation as he may deem necessary and proper in developing the remaining natural resources** of any county in need as a result of **removal of its natural resources;** and in the vocational training and rehabilitation of its residents.

ROYALTY TAX

1. M. S. 1957
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as amended by
Ex. S. Chapt. 1
Royalty and Rate of Tax

This section had provided a tax of 11% upon all royalty received during each calendar year for permission to explore, mine and remove ore from lands in Minnesota. By Laws 1955, Extra Session, Chapter 2, Article III, there was imposed an additional tax at the rate of 15% upon all royalty, making the total rate 12.65%. Such additional surtax to be in effect for the two taxable years 1955 and 1956. By Laws 1957, Extra Session, Chapter 1, the addition to the royalty tax as stated above was continued for an additional two years following December 31, 1956.

2. M. S. 1957
Sec. 299.011
Veterans' Bonus
Tax on Royalties

This new section provides for a **1% tax on all royalty received in each calendar year after 1948,** in addition to the 11% tax levied by Section 299.01. **Proceeds of this 1% tax** are deposited in the state treasury to the credit of the **Veterans' Compensation Fund.** This section became effective January 1, 1949, and is to expire on December 31, 1958, **except as to the collection of taxes theretofore levied and unpaid.**

3. M. S. 1957
Sec. 299.02
Definitions
Subd. 1. Royalty

Royalty, as here defined, is the amount in money or value of property received by any person having any right, title, or interest in or to any tract of land in this State for permission to mine and remove ore therefrom.

Subd. 2. Person

The word "person" includes individuals, copartnerships, associations, companies and corporations.

4. M. S. 1957
Sec. 299.03
Reports to Commissioner of Taxation

This section provides for a report to be made by each **recipient of royalty on mineral lands in Minnesota.** This report is to be made and filed with the Commissioner of Taxation on or before February 1 of each year, reporting the **amount of royalty received by such recipient during the preceding calendar year;** also such other information as the Commissioner may require.

5. M. S. 1957
Sec. 299.04
Contents of Reports by Payors of Royalty

This section prescribes the duty of every person **paying royalty,** on or before February 1, to file with the Commissioner a report covering the preceding calendar year, showing

(1) **the number of tons mined from each tract of land on which he pays royalty;**

(2) **the amount of royalty paid on each tract of land separately;**

(3) **the name and post-office address of each person to whom royalty is paid;**

(4) and such other information as the Commissioner of Taxation may require.

6. M. S. 1957
Sec. 299.05
Tax on Royalties Assessment by Commissioner

This section provides for the determination, by the Commissioner, of the amount of tax due; and, on or before May 1 of each year, he is to make a certificate of tax due, and the amount paid thereon; and file one copy of the certificate with the State Auditor on or before May 1 of each year, and one copy with the State Treasurer.

7. M. S. 1957
Sec. 299.08
Lien of Tax

This section makes the royalty tax a specific lien upon the land from which the ore is removed and provides that every person paying royalty to another which is subject to the tax, shall withhold the amount of the tax upon such royalty and remit the same to the State Treasurer.

8. M. S. 1957
Sec. 299.13

The proceeds of the 11% royalty tax are credited to the State General Revenue Fund.

TACONITE AND IRON SULPHIDES

1. M. S. 1957
Sec. 298.23
Taconite and Iron Sulphides Defined

Taconite: ferruginous chert, compact, sili ous, fine-grained and hard, which cannot made merchantable by simple methods of be ficiation.

Iron sulphides are defined as chemical combi tions of **iron** and sulphur, known as pyrrhot pyrites, or marcasite, that cannot be made m chantable except by **methods beyond ordinary washing.**

2. M. S. 1957
Sec. 298.24

This section provides for a tax on taconite iron sulphide concentrates, of 5 cents per of merchantable iron ore concentrate as p duced, plus 1/10 cent per gross ton for each 1% that the iron c tent of the concentrate exceeds 55%, when dried at 212° Fahrenh

3. M. S. 1957
Sec. 298.25
Additional Taxes

The above tax is **in addition to the occupat tax and the royalty** tax, but **is in lieu of other taxes except those on the surface la and on other products than iron ore or i sulphides,** that come under the general property tax law.

4. M. S. 1957
Sec. 298.26
Tax on Unmined Taconite or Iron Sulphides

This section provides in any year when at l 1000 tons of iron ore concentrate are not produ **for a tax on the unmined taconite or iron phides at the mill rate prevailing in the ta district, with the provision that the tax shal exceed $1.00 per acre.**

5. M. S. 1957
Sec. 298.27
Collection and Payment of Tax

This section specifies that the tax provided Section 298.24 **is to be collected and paid in same manner and at the same time as provi by law for payment of occupation tax.** The s is true as to form and manner of filing of rep as to hearings; and as to collection of the tax, including provisions penalties and for appeals.

6. M. S. 1957
Sec. 298.28
Apportionment of Proceeds

The Taconite Tax is distributed as follows: 22% to the city, village or town; 50% to school district; 22% to the county; 6% to the S If the mining and concentration or different thereof are carried on in more than one taxing

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This section provides for a tax on taconite and iron sulphide concentrates, of 5 cents per ton of merchantable iron ore concentrate as produced, plus 1/10 cent per gross ton for each 1% that the iron content of the concentrate exceeds 55%, when dried at 212° Fahrenheit.

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This section provides in any year when at least 1000 tons of iron ore concentrate are not produced, for **a tax on the unmined taconite or iron sulphides at the mill rate prevailing in the taxing district, with the provision that the tax shall not exceed $1.00 per acre.**

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Collection and Payment of Tax

This section specifies that the tax provided by Section 298.24 **is to be collected and paid in the same manner and at the same time as provided by law for payment of occupation tax.** The same is true as to form and manner of filing of reports; as to hearings; and as to collection of the tax, including provisions for penalties and for appeals.

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THE PRECEDING

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#14178
O.D.

Supplementary REPORT . . .

OF

LEGISLATIVE COMMISSION

ON

TAXATION

OF

IRON ORE

SUBMITTED TO

THE MINNESOTA LEGISLATURE OF 1959

LEGISLATIVE COMMISSION ON TAXATION OF IRON ORE

Senate Members

Thomas P. Welch, *Chairman*
Buffalo, Minnesota

B. G. Novak, *2nd Vice-Chm.*
747 Van Buren, St. Paul

C. E. Johnson
Almelund, Minnesota

*John A. Johnson
Preston, Minn.

J. R. Keller
Winona, Minnesota

Elmer Peterson
Hibbing, Minnesota

Thomas D. Vukelich
Gilbert, Minnesota

Donald O. Wright
Plymouth Building
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House Members

Fred A. Cina, *Vice-Chairman*
Aurora, Minnesota

Lloyd Duxbury, Jr., *Secy.*
Caledonia, Minnesota

Alf L. Bergerud
Edina, Minnesota

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H. P. Goodin
3415 Knox Ave. N.
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Alfred I. Johnson
Benson, Minnesota

Francis LaBrosse
Duluth, Minnesota

Leonard E. Lindquist
Brooklyn Center, Minn.

Martha May Wylie, *Secretary*

**Succeeded Archie H. Miller, Deceased*

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Members of the Senate
C. E. JOHNSON
JOHN A. JOHNSON
J. R. KELLER
B. G. NOVAK, 2nd Vice-Chm.
ELMER PETERSON
THOMAS D. VUKELICH
THOS. P. WELCH, Chm.
DONALD O. WRIGHT

State of Minnesota
LEGISLATIVE COMMISSION
ON TAXATION OF IRON ORE
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FRED A. CINA, Vice-Chm.
ROY DUNN
LLOYD DUXBURY, Jr., Secy.
H. P. GOODIN
ALFRED I. JOHNSON
FRANCIS LaBROSSE
LEONARD E. LINDQUIST

February 27, 1959

To the President of the Senate
To the Speaker of the House

Honorable Sirs:

In accordance with Laws 1957, Chapter 958, this Commission submits herewith its report on the taxation of iron ore.

Respectfully submitted,

LEGISLATIVE COMMISSION ON TAXATION OF IRON ORE

By Thomas P. Welch
Thomas P. Welch, Chairman

TPW:mw

#14178 O.D

STATE OF MINNESOTA
DEPARTMENT OF STATE
FILED
JUL 29 1959
Joseph L. Donovan
Secretary of State

Preliminary Statement

The Legislative Commission on Taxation of Iron Ore was originally created by Laws 1951, Chapter 714. By Chapter 522, Laws of 1953; Chapter 795, Laws of 1955 and Chapter 958, Laws of 1957, the work of this Commission was extended and continued.

The officers unanimously elected in 1951 were voted to continue in their respective offices each interim. They are as follows:

Senator Thomas P. Welch, *Chairman*
Representative Fred A. Cina, *Vice Chairman*
Senator B. G. Novak, *Second Vice Chairman*
Representative Lloyd Duxbury, Jr., *Secretary*

Also, Martha May Wylie, Secretary, has been continued in her employment since the Commission was created.

A veteran member, Archie H. Miller, died in February, 1958. John A. Johnson was appointed to complete the term. Otherwise the membership of the Commission remained the same as during the 1955-1957 interim, thereby maintaining an equal number of majority and minority members of both Houses.

The Report submitted to the 1955 Legislature by this Commission represents basic factual and statistical material to which the Commission submitted a supplement in 1957.

During the last two years the Commission held numerous meetings and hearings on the subjects assigned to it. In particular, it heard detailed presentations by representatives of the iron mining industry, the Department of Taxation and the School of Mines of the University of Minnesota on the subjects of changes in the mining industry and their effect on Minnesota reserves and operations and its competitive position; and on the subject of the valuation of mining property and non-mining property for ad valorem tax purposes. It also held a hearing at Ely at which presentations were made by the officers of Ely and representatives of civic organizations on the subject of the assessment and taxation of underground Vermilion Range stockpiles, and at which the problems presented by the closing of the Zenith Mine were discussed.

In addition, representatives or subcommittees of the Commission inspected iron ore operations in Brazil, Peru and Chile; inspected the taconite operations of Erie Mining Company; inspected the Sparrows Point Plant of Bethlehem Steel Corporation and Fairless Steel Works of United States Steel Corporation; kept in touch with the St. Lawrence Waterway development through conferences with government officials in Washington, as well as inspection of the Canadian and American lock and channel work near Massena, New York and the present lake transportation of iron ore from Lake Superior ports to lower lake ports.

Members of the Commission also attended the fiftieth anniversary of iron ore beneficiation at Coleraine and the recent meeting of the American Institute of Mining Engineering at Duluth. Numerous articles from technical and trade magazines, as well as statements submitted in connection with hearings before the Commission have been studied by the Commission.

These hearings and inspection trips supplemented previous investigations made by subcommittees and members of the Commision of iron ore and taconite operations in Minnesota and iron ore operations in Alabama, Michigan, New York, Steep Rock, Canada and Labrador, as well as inspection of steel plant and blast furnace operations in various parts of the United States.

This Supplementary Report to the 1959 Legislature refers to the Commission's previous Reports in many instances, bringing charts and tables down to date. Several new factors and conditions affecting Minnesota's position as an iron ore producer have become apparent to this Commission and will be hereinafter set out.

Brief History of Iron Mining

The trend of iron ore production from Minnesota climbed steadily upward between 1940 and 1954. During this period the major consideration was for tonnage production. In the beneficiation plants the emphasis was on weight recovery in the concentrated product—that is, upon recovering a larger percentage of the crude material. During this period anything with a reasonable iron content could seemingly be sold, and tonnage appeared to be the principal blast furnace requirement. Minnesota increased its production at the expense of substantially lowering the average grade of the ore shipped. A substantial part of the increase, not only in iron ore shipments from Minnesota, but in the estimates of reserves remaining, was the result of this down grading in quality of the ore formerly considered merchantable.

Beginning about 1954 the situation changed. That year may be taken as a significant turning point in the consideration of the problems confronting the iron ore industry in Minnesota. Iron ore from foreign sources had started to move into the United States in larger quantities. Experimental work on the magnetic taconites had been done, pilot plants were in operation and commercial plants were being constructed. The capacity of the steel industry was being expanded and the operators of blast furnaces were reassessing their costs and operations and found great economies could be accomplished in the blast furnace by the use of higher grade ores and by the use of ores with more favorable physical structure. As a result, the blast furnace requirements have been rather radically changed, altering the competitive position of Minnesota's direct shipping and intermediate ores.

In Minnesota we still speak of "direct shipping" ores but events of the past few years have practically eliminated that designation. In recent years mining companies have been required to crush and screen the so-called direct shipping ores.

In 1957, production from Minnesota iron ore mines, as well as employment, and tax revenues therefrom, were at a very high level. The Minnesota shipment of 68,296,308 tons was the seventh highest annual shipment in Minnesota's history.

The year 1958 was a period of recession and low production in the iron and steel industries generally. The decline in receipts of iron ore and consumption of iron ore in United States steel plants and in shipments of iron ore from the various sources for the years 1957 and 1958, is indicated in recent statistical reports of the American Iron Ore Association as follows:

BRIEF HISTORY

Receipts and Sources of Ore

	1957	*1958*	*Percentage Decrease*
Total receipts at iron and steel plants...	139,233,430	95,937,279	—31%
Consumption of iron ore at U.S. Steel Plant	130,901,646	94,819,212	—27.6%
Receipts from Lake Superior shipments (including Minnesota but not Steep Rock)	82,763,514	52,272,080	—36.8%
Receipts from other United States sources	20,195,363	14,646,296	—27.5%
Receipts from Canadian sources, Lake Superior (Steep Rock and Michipicotan)	3,617,483	2,519,571	—30%
Other Canadian Sources..............	10,117,416	7,311,190	—27.7%
Other foreign sources.................	22,539,654	19,188,142	—14.9%

The Association reports that lake shipments from Minnesota (this does not include all rail shipments to the Duluth steel plant or blast furnace, or all rail shipments from Fillmore county) were 67,224,045 in 1957 and 41,777,908 in 1958, a decline of 37.8%. It is significant that while there was this sharp drop in total shipments from Minnesota, the shipments of taconite pellets from Silver Bay dropped only from 5,121,172 in 1957 to 4,994,174, or about 2.5%, and (because of Erie's commercial plant going into operation) the shipments of taconite pellets from Taconite Harbor increased from 113,674 tons in 1957 to 2,670,389 tons in 1958. If these taconite shipments were taken out of the total Minnesota shipments for both years, the decline in Minnesota lake shipments was from 61,989,199 in 1957 to 34,113,345 in 1958, or a drop of 45%.

This sharp drop in Minnesota production and shipments has presented many questions to the local communities, the mining companies and to the state.

Digest of Minnesota Laws Applicable to Iron Ore Taxation

AD VALOREM TAX

OCCUPATION TAX

ROYALTY TAX

TACONITE AND IRON SULPHITES

EXEMPTION FROM INCOME TAX

SUMMARY OF TAX LAW CHANGES

AD VALOREM TAX

Under our tax laws the word "person" includes firm, company, or corporation. Minnesota Statutes 1957, Section 272.03, Subdiv. 9.

1. General Provision
Minn. Statutes 1957, Sec. 272.01
Property Subject to Taxation

All real and personal property in this state, and **all personal property of persons residing therein,** including the property of corporations, partnerships, banks, banking companies and bankers, is taxable, **except such as is by law exempt** from taxation.

2. M. S. 1957
Sec. 272.03
Subdivision 1
Real Property Defined

For the purposes of taxation, **real property** includes **the land itself,** and **all buildings, structures,** and **improvements** or **other fixtures** attached thereto, and **all rights or privileges belonging or pertaining to it and all mines, minerals, quarries, fossils,** and **trees on or under it.** (Thus it is clear that special effort was made to obtain a definition that is **all-inclusive.**)

3. M. S. 1957
Sec. 272.04
Mineral, Gas, Coal, and Oil Owned Apart from Land

This section provides for the assessment and taxation of **mineral interests** that may be owned separately from interests in the surface of the land; and for their identical treatment both as to taxation and as to sale for delinquent taxes.

4. M. S. 1957
Sec. 272.05
Reserved Timber or Mineral Rights

This section deals with lands conveyed or **transferred either to the U. S. or to the State of Minnesota,** or to **any governmental subdivision** of either one, in which the **timber or mineral rights** are **reserved by the owner.** It provides for the same tax treatment of such rights as would apply to other real property, regarding both taxation and sale for delinquent taxes.

5. M. S. 1957
Sec. 273.01
Listing and Assessment Time

All real property subject to taxation shall be listed and assessed **every even numbered year** with reference to its value on **May 1 preceding the assessment, and all real property becoming taxable in any intervening year shall be listed and assessed** with reference to **its value on May 1 of each year.** Personal property, however, is assessed on May 1 of each year.

Provision is also made in this section for the **assessment of mineral lands** leased by the State **after May 1 of any year,** on the basis of **value of all ore shipped therefrom before May 1 of the next year.**

(This provision avoids the escapement of tax, on lands leased after May 1, on ore that may be mined before the following May 1. By mutual agreement between the Department of Taxation and the Mining Company this same provision has been followed in the case of privately owned mineral property.)

6. M. S. 1957
Sec. 273.02
Omitted Property

This section provides for entry on the tax records of any real or personal property found to have been omitted or undervalued in any preceding year; such entry being for the year or years originally omitted.

6-a. Subd. 1
Discovery
6-b. Subd. 2
Limitation

A time limit of six years is herein provided for **entry of omitted property** in the records; and for **correction of the valuation or classification of real property,** the time limit is **one year after December 1** of the year in which the property was **assessed or should have been assessed.**

6-c. Subd. 3
Rights Not
Affected

Rights of a good faith purchaser of property **acquired prior to the correction of assessed value thereof** by the county auditor are not affected. In the case of **rights adversely affected** by action of the auditor, **application may be made** for reduction under the provisions of Sec. 270.07, relating to powers of the **Commissioner of Taxation.**

7. M. S. 1957
Sec. 273.11
Valuation of
Property

All property to be valued by itself, at its true and full value. Value of **land,** and of **buildings or structures,** to be **listed separately.**

8. M. S. 1957
Sec. 273.12
Assessment of
Real Property

Duties of assessor: To consider every factor that affects market value, including **other comparable lands,** so as to **secure uniformity,** and **avoid discrimination.**

9. M. S. 1957
Sec. 273.13
Subdivision 1
Classification
of Property

All real and personal property, **subject to general property tax,** and **not subject to any gross earnings or other lieu tax,** comes under this section.

9-a. Subdivision 2,
Class 1—Iron Ore,
Mined or Unmined

To be assessed under **Class 1, at 50 per cent of its full and true value. Unmined ore to be assessed with and as part of real estate** where same is located. **Underground ore (ore mined by underground methods)** and **placed in stockpile after August 1** of any

year and before the next May 1 . . . for 2 taxable years after being mined, shall be listed and assessed in the district where mined, at its unmined rate. Ore and land to be valued separately.

9-b. Class I-a Ore Processed Within Minnesota

All direct products of the blast and open hearth furnaces that are utilized in the form produced, and are not further processed, shall constitute class 1-a, and shall be valued and assessed at **15% of the full and true value thereof.**

10. M. S. 1957 Sec. 273 Subdivisions 1 & 2 Definitions

. . . The following words, terms and phrases, for purposes of Sections 273.14 to 273.16, are given these meanings: "person" may be an individual, co-partnership, company, joint stock company, corporation, or association.

10-a. Subdivision 3 Deposit

A body of iron-bearing materials best mined as a unit.

10-b. Subdivision 4 Low-Grade Iron-Bearing Formations

Commercial iron bearing deposits, exclusive of paint rock, located below surface, which in their natural state need beneficiation to make them fit for use; and which then produce, in tons, less than 50% of the original tonnage of crude ore material delivered to the treating plant; and which must be mined using good engineering and metallurgical practice to produce such concentrate.

10-c. Subdivision 5 Beneficiation

The process of concentrating that part of the crude ore entering the beneficiating plant by removal of silica and moisture therefrom.

10-d. Subdivision 6 Concentrates

Products of a beneficiating plant, so improved as to be fit for blast furnace use.

10-e. Subdivision 7 Tonnage Recovery

Ratio of weight of concentrate to weight of crude ore entering beneficiating plant.

11. M. S. 1957 Sec. 273.15 Classifications of Low-Grade Iron Ore

Low-grade iron-bearing formations defined in Sec. 273.14 are classified according to **recovery** ratio, as follows:

For tonnage recovery between 49 and 50%, the assessed value is 48½% of full and true.

For tonnage recovery between 48 and 49%, assessed value is 47% of full and true.

For each further drop of 1% in tonnage recovery, the percentage of assessed to full and true value is to be cut another 1½% of the full and true value; but the assessed value is not to go below 30% of the full and true value in any case.

The land, exclusive of such formations, is to be assessed as otherwise provided by law.

12. M. S. 1957
Sec. 273.16
Determination of Classification

Classifications of iron-bearing formations under Sections 273.14 to 273.16 are to be determined as follows:

Anyone mining low-grade ore such as above described, whose tonnage recovery of concentrate for a taxable year has been below 50%, may file a petition with the Commissioner of Taxation, requesting classification of their deposit under the provisions of Sections 273.14 to 273.16. The taxpayer must furnish such data and information as the Commissioner may require. The Commissioner then submits such petition and data to the University of Minnesota Mines Experiment Station. The latter considers the deposit referred to in the petition as a unified commercial operation; and, based on all data furnished, next files a written report thereon with the Commissioner of Taxation, who, after hearing duly held, may approve or disapprove such report. If a reclassification is made covering such deposit, the Commissioner of Taxation has to give appropriate notice thereof to the interested taxing districts.

If the Commissioner disapproves such classification, his findings and order thereon may be reviewed by a writ of certiorari from the supreme court on petition of the aggrieved party presented to the court within 30 days after date of such order. Such classifications are also subject to further review by the Mines Experiment Station, from time to time, upon request of the Commissioner of Taxation, or upon further petition by the taxpayer. Valuations determined hereunder are subject to the provisions of Sections 270.19 to 270.26.

13. M. S. 1957
Sec. 273.19
Lessees and Equitable Owners

This section relates to property held under lease for a term of 3 years or more, or under purchase contract either from the State or from any religious, scientific, or benevolent institution, or any railroad or other organization whose property is not taxed like other property; or when the property is school or other state land, and is considered, for tax purposes, as belonging to the current holder thereof.

The ad valorem tax goes to the State, counties, townships, school districts and local taxing districts according to the levy of the respective taxing units.

OCCUPATION TAX

1. Constitution of Minnesota, Article IX Section 1

Following the fundamental provision in Article IX, Section 1 of the Constitution, that the power to tax shall never be suspended, or contracted away, comes the specific provision, in Section 1-A, for the **occupation tax.**

2. Section 1-A Providing for Occupation Tax
(a) Occupation Tax Not a "Lieu Tax"
(b) Time of Payment of Occupation Tax

The constitution provides that **anyone engaged in the business of mining or producing iron ore or other ores in this State,** shall pay to the State of Minnesota an **occupation tax on the valuation of all ores mined or produced,** which tax **shall be in addition to all other taxes provided by law,** said tax to be due and payable from such person **. . . on May 1 of the calendar year next following the mining or producing thereof.**

(c) Valuation of Ore as Basis of Tax

The **valuation of ore** for the purpose of determining the **amount of tax** to be paid shall be ascertained in the manner and method **provided by law.** (Method to be described later.)

(d) Apportionment of Ocupation Tax

Pursuant to Laws 1955, Extra Session, Chapter 6, by an amendment to the Constitution adopted at the 1956 General Election, the distribution of the occupation tax was changed so that 50% of the funds derived from the tax should go to the State General Revenue Fund; 40% for the support of elementary and secondary schools; and 10% for the general support of the University.

3. M. S. 1957, Sec. 298.01, Subd. 1 and Subd. 2 as amended by E. S. Laws 1957
OCCUPATION TAX ON PRODUCING ORES

Subdivision 1 repeats the provision, number 1-A Article IX, of the State Constitution, for payment of the occupation tax by producers of iron ore in Minnesota; and states the rate of such tax as 11% for 1947 and each year thereafter, computed on the valuation of ores mined or produced by any person during the preceding calendar year.

Subd. 2 imposes on producers of iron ore (except taconite) a surtax at the rate of 15% (raising the 11% rate to 12.65%), such surtax to be in effect for two taxable years following December 31, 1956, specifically providing that the 15% surtax is computed on the gross occupation tax without deduction of labor credits.

4. M. S. 1957 Sec. 298.011 Validated by the Constitutional Amendment to Art. IX, Sec. 1 Adopted Nov. 27, 1950. Veterans' Compensation Fund

This section sets forth: "Notwithstanding the provisions of Section 1-A of Article 9 of the constitution, a portion of the **proceeds of the occupation tax, on the valuation of all ores mined or produced, . . . equal to the proceeds of a tax of 1% on such valuation . . . shall be paid into the Veterans' Compensation Fund before the remaining funds derived from the occupation tax are apportioned by Sec. 1-A of Article IX of the constitution.**"

This amendment when approved by the people and proclaimed, all as provided by law, was made effective Jan. 1, 1949. In the event that the provisions of the preceding sentence are held unconstitutional, the remaining provisions of this section are to stand as valid and continue in full force and effect. "This section of the constitution shall expire on Dec. 31, 1958, except as to the proceeds of the occupation taxes theretofore levied and thereafter collected."

5. M. S. 1957 Sec. 298.02 Low Grade Ore; Credit for Cost of Labor

Any taxpayer coming under the provisions of Sec. 298.01 may qualify for a credit for high labor costs of mining, development, or beneficiation, as defined in this section, as follows:

(a) In the case of underground mines or merchantable ore produced in open pit mines which has resulted from beneficiation within the state by jigging, heavy media, cyclone process, roasting, drying, drying by artificial heat, sintering, magnetic separation, floatation, agglomeration, or any process requiring fine grinding, a labor credit was allowed for 10% of the cost of labor over 70¢ per ton and not exceeding 90¢ per ton and 15% of the cost of labor over 90¢ per ton.

(b) In the case of tonnages produced by other methods or at other mines, a labor credit is allowed of 10% of the amount by which the cost of labor exceeds 80¢ but does not exceed $1.05 plus 15% of the amount by which such average labor cost per ton exceeds $1.05; this labor credit applies only to the first 100,000 tons produced from any mine.

(c) This labor credit shall not exceed 75% as applied to underground and taconite operations and 60% as applied to all other operations of the total occupation tax paid by the mine and the total amount of all these labor credits, (except as to underground mines or taconite operations) cannot exceed 6.2% of the aggregate amount of the occupation tax.

6. M. S. 1957
Sec. 298.02
Subd. 2. Credit
in Lieu of Cost
of Labor

In lieu of the **labor credit**, at the election of taxpayer, **a credit** may be allowed against the occupation tax as follows: **two-thirds of one per cent** of the **gross tax for each one per cent of the total production of iron ore from any mine which is made into pig iron, sponge iron, or powdered iron within the State.**

7. M. S. 1957
Sec. 298.03
Value of Ore.
How Ascertained
Specified Statutory
Deductions Under
Sec. 298.03

The law specifies **the value of the ore, where brought to the surface of the earth, as the basis of the tax; "such value to be determined by the Commissioner of Taxation."**

(1) Mining (cost of labor and supplies).
(2) Development—open pit.
(3) Development—underground.
(4) Royalty paid.
(5) That part of the realty tax allocated to ore mined in calendar year.
(6) The amount or amounts of all the foregoing subtractions shall be determined by the Commissioner of Taxation.

8. M. S. 1957
Sec. 298.04
Ores Subject
to Tax

This section provides that **all ores mined or produced after** December 31, 1936, shall be subject to the provisions of Sections 298.01, 298.03 and 298.04.

9. M. S. 1957
Sec. 298.05
Mining Companies
to Report Annually

Producers of iron ore are required hereby to file, on or before March 1 of each year, with the Commissioner of Taxation, under oath, a report, in such form and containing such information as the Commissioner may require, covering the operations of each of their mines during the preceding calendar year.

10. M. S. 1957
Sec. 298.06
Commissioner to
Determine Tax

Upon receipt by the Commissioner of Taxation of such report, he shall determine . . . whether the report is correct or not; and if found correct, he must, on or before May 1, determine the amount of tax due from each person.

11. M. S. 1957
Sec. 298.07
When Report
Is Incorrect
Commissioner to
Fix Amount of Tax

. . . If the report is found by the Commissioner to be incorrect . . . he shall find and determine the amount of tax due from such person.

12. M. S. 1957
Sec. 298.08
Procedure When
No Report Is
Filed. Penalty

If any iron ore producer in Minnesota fails to make the report as required under Sec. 298.05, at the time and in the manner therein provided, the Commissioner of Taxation shall . . . **ascertain the kind and amount of ore mined or produced, together with its valuation, and determine the amount of the tax due. . . . There shall be added thereto a penalty for failure to report, equal to 10% of the tax imposed, to be treated as part of the tax.**

13. M. S. 1957
Sec. 298.11
Time for Payment
of Taxes.
Penalties.

If the tax provided for in Secs. 298.01-298.16 is not paid before June 15 of the year when due . . . a penalty of 10% thereof shall immediately accrue; and 1% per month is added to such tax until paid.

14. M. S. 1957
Sec. 298.17
Occupation Taxes
to be Apportioned

By an amendment to the Constitution adopted at the 1956 General Election, all occupation taxes except the 1% dedicated to the Veterans' Compensation Fund are distributed as follows:

50% to the State General Revenue Fund; 40% for the support of elementary and secondary schools; and 10% for the general support of the University.

15. M. S. 1957
Sec. 298.19
Ore-Carrying
Roads to Report
to Commissioner

Every railroad company or other common carrier receiving iron ore for original shipment from any Minn. mine is required to report in writing to the Commissioner of Taxation, on or before May 10 and November 10 of each year. The report is to state the **number of tons received for shipment as provided in Secs. 298.19 and 298.20 up to and including the last day of April and the last day of October of each year; including the total tons received for shipment from each mine, and tons received since the date of the last preceding report. The report also has to show the place where the ore was received for shipment and name of shipper in each case.**

16. M. S. 1957
Sec. 298.22
Subd. 1

This section provides that, beginning May 1, 1941 (to Apr. 30, 1942), 5%; and beginning May 1, 1942, 10% of all amounts credited in to the general revenue fund, from the proceeds of the **occupation tax,** is appropriated to the **Iron Range Resources and Rehabilitation Commission.** This section also creates the office of Commissioner thereof, who is to be appointed by the Governor, with advice and consent of the Senate. **This Commissioner is authorized to use such amounts of this appropriation as he may deem necessary and proper in developing the remaining natural resources** of any county in need as a result of **removal of its natural resources;** and in the vocational training and rehabilitation of its residents.

ROYALTY TAX

1. M. S. 1957
Sec. 299.01
as amended by
Ex. S. Chapt. 1
Royalty and Rate of Tax

This section had provided a tax of 11% upon all royalty received during each calendar year for permission to explore, mine and remove ore from lands in Minnesota. By Laws 1955, Extra Session, Chapter 2, Article III, there was imposed an additional tax at the rate of 15% upon all royalty, making the total rate 12.65%. Such additional surtax to be in effect for the two taxable years 1955 and 1956. By Laws 1957, Extra Session, Chapter 1, the addition to the royalty tax as stated above was continued for an additional two years following December 31, 1956.

2. M. S. 1957
Sec. 299.011
Veterans' Bonus
Tax on Royalties

This new section provides for a **1% tax on all royalty received in each calendar year after 1948,** in addition to the 11% tax levied by Section 299.01. **Proceeds of this 1% tax** are deposited in the state treasury to the credit of the **Veterans' Compensation Fund.** This section became effective January 1, 1949, and is to expire on December 31, 1958, **except as to the collection of taxes theretofore levied and unpaid.**

3. M. S. 1957
Sec. 299.02
Definitions
Subd. 1. Royalty

Royalty, as here defined, is the amount in money or value of property received by any person having any right, title, or interest in or to any tract of land in this State for permission to mine and remove ore therefrom.

Subd. 2. Person

The word "person" includes individuals, copartnerships, associations, companies and corporations.

4. M. S. 1957
Sec. 299.03
Reports to
Commissioner of
Taxation

This section provides for a report to be made by each **recipient of royalty on mineral lands in Minnesota.** This report is to be made and filed with the Commissioner of Taxation on or before February 1 of each year, reporting the **amount of royalty received by such recipient during the preceding calendar year;** also such other information as the Commissioner may require.

5. M. S. 1957
Sec. 299.04
Contents of
Reports by Payors
of Royalty

This section prescribes the duty of every person **paying royalty,** on or before February 1, to file with the Commissioner a report covering the preceding calendar year, showing

(1) **the number of tons mined from each tract of land on which he pays royalty;**

(2) **the amount of royalty paid on each tract of land separately;**

(3) **the name and post-office address of each person to whom royalty is paid;**

(4) and such other information as the Commissioner of Taxation may require.

6. M. S. 1957
Sec. 299.05
Tax on Royalties
Assessment by
Commissioner

This section provides for the determination, by the Commissioner, of the amount of tax due; and, on or before May 1 of each year, he is to make a certificate of tax due, and the amount paid thereon; and file one copy of the certificate with the State Auditor on or before May 1 of each year, and one copy with the State Treasurer.

7. M. S. 1957
Sec. 299.08
Lien of Tax

This section makes the royalty tax a specific lien upon the land from which the ore is removed and provides that every person paying royalty to another which is subject to the tax, shall withhold the amount of the tax upon such royalty and remit the same to the State Treasurer.

8. M. S. 1957
Sec. 299.13

The proceeds of the 11% royalty tax are credited to the State General Revenue Fund.

TACONITE AND IRON SULPHIDES

1. M. S. 1957
Sec. 298.23
Taconite and
Iron Sulphides
Defined

Taconite: ferruginous chert, compact, siliceous, fine-grained and hard, which cannot be made merchantable by simple methods of beneficiation.

Iron sulphides are defined as chemical combinations of **iron** and sulphur, known as pyrrhotite, pyrites, or marcasite, that cannot be made merchantable **except** by **methods beyond ordinary washing.**

2. M. S. 1957
Sec. 298.24

This section provides for a tax on taconite and iron sulphide concentrates, of 5 cents per ton of merchantable iron ore concentrate as produced, plus 1/10 cent per gross ton for each 1% that the iron content of the concentrate exceeds 55%, when dried at 212° Fahrenheit.

3. M. S. 1957
Sec. 298.25
Additional Taxes

The above tax is **in addition to the occupation tax and the royalty tax**, but **is in lieu of any other taxes except those on the surface land, and on other products than iron ore or iron sulphides**, that come under the general property tax law.

4. M. S. 1957
Sec. 298.26
Tax on Unmined
Taconite or
Iron Sulphides

This section provides in any year when at least 1000 tons of iron ore concentrate are not produced, **for a tax on the unmined taconite or iron sulphides at the mill rate prevailing in the taxing district, with the provision that the tax shall not exceed $1.00 per acre.**

5. M. S. 1957
Sec. 298.27
Collection and
Payment of Tax

This section specifies that the tax provided by Section 298.24 **is to be collected and paid in the same manner and at the same time as provided by law for payment of occupation tax.** The same is true as to form and manner of filing of reports; as to hearings; and as to collection of the tax, including provisions for penalties and for appeals.

6. M. S. 1957
Sec. 298.28
Apportionment
of Proceeds

The Taconite Tax is distributed as follows:
22% to the city, village or town; 50% to the school district; 22% to the county; 6% to the State. If the mining and concentration or different steps thereof are carried on in more than one taxing dis-

trict, the Commissioner apportions the tax between them, giving 40% to the operation of mining and 60% to the processes of concentration.

7. M. S. 1957 Secs. 294.21 through 294.26. Gross Earnings Tax on Taconite Railroads

Provisions are made for a gross earnings tax on taconite railroads as follows:

(1) A taconite railroad company is defined as a company operating, other than as a common carrier, a railway principally used for the transportation of taconite concentrates. It is required to pay annually into the State Treasury, an amount equal to 5% of its gross earnings, which are defined as a sum equal to the amount which would be charged under established tariffs of common carriers for the transportation of an equal tonnage of iron ore from Mesabi Range points to ports on Lake Superior, including the charges for loading ore on boats.

(2) **(294.23).** If a company transports the crude taconite from mines to concentrating plants over a railroad (other than a common carrier), the gross earnings are computed on the same basis as if the tonnage, equal to the tonnage of concentrates produced, were transported from the Mesabi Range to Lake Superior.

(3) **(294.24).** The gross earnings taxes imposed on these taconite companies is in lieu of all taxes upon the railway and dock properties of these companies. The effect is to subject them to the same tax which they would pay if they were common carriers. The tax is collected in the same manner as the gross earnings tax of railway companies.

(4) **(294.26).** Division of proceeds of tax. The proceeds of the tax are distributed between the State and the various taxing districts in which railway operations are conducted in the following proportions:

22% to the city, village or town; 50% to the school district; 22% to the county; 6% to the State. If different operations or different steps are carried on in more than one taxing district, the Commissioner apportions equitably the proceeds of the part of the tax going to cities, villages or towns among such subdivisions, upon the basis of attributing 40% of the proceeds to the terminal facilities at each end of the railway line and the remaining 20% to the railway trackage connecting such terminal.

EXEMPTION FROM INCOME TAX—M. S. 1957
Section 290.05

(2) Corporations, individuals, estates, and trusts engaged in the business of mining or producing iron ore; but if any such corporation, individual, estate, or trust engages in any other business or activity or has

income from any property not used in such business it shall be subject to this tax computed on the net income from such property or such other business or activity. Royalty (as defined in Section 299.02), shall not be considered as income from the business of mining or producing iron ore within the meaning of this section.

Summary

Changes in Tax Laws Since 1957 Report

By Laws 1957 (Extra Session), Chapter 1, (Omnibus Tax Bill), the 15% surtax on the occupation and royalty taxes which had been imposed by Laws 1955, Extra Session, Chapter 2, was continued for an additional two years, except as to taconite.

By Laws 1957, Chapter 856, Section 298.02, Subd. 1, of Minnesota Statutes, was amended so as to allow labor credits to the first 100,000 tons of ore produced from any mine (not entitled to labor credits under the previous law) in the amount of "10% of the amount by which the average cost per ton of labor employed at said mine, or in the beneficiation of such ore at or near the mine, exceeds $.80 but does not exceed $1.05 plus 15% of the amount by which such average labor cost per ton exceeds $1.05, multiplied by the number of tons of ore produced at said mine not exceeding 100,000 tons * * *." The previous law (Section 298.02 , Subd. 1, as amended by Laws 1955, Extra Session, Chapter 2, Article II, Section 2) had provided similar credits (with different breaking points) for underground ores requiring concentration by processes more complicated than direct shipping or straight wash ores, which allowances were continued by the 1957 law.

By Laws 1957, Chapter 362, Minnesota Statutes, Section 298.23, was amended so that the definition of taconite made clear that the material had to be in the form of a compact siliceous rock in which the iron oxide was so finely disseminated that substantially all the iron-bearing particles were smaller than 20-mesh, and which is not merchantable as iron ore in its natural state and cannot be made merchantable by simple methods of beneficiation. It was merely a clarifying amendment.

By Laws 1957, Chapter 363, Section 298.25, of the Statutes was amended to make clear that the surface values of land actually occupied by taconite facilities were within the lieu provisions of the taconite tax laws.

By Laws 1957, Chapter 364, Section 287.09, of the Statutes was amended to make clear that the mortgage registration tax on taconite facilities, including taconite railroads, went to the local taxing districts and not to the State General Revenue Fund.

By Laws 1957, Chapter 365, Section 298.03, of the Statutes was amended to permit the deduction, in computing the occupation tax on taconite operations, the full amount of taconite production taxes paid as well as taxes paid under the special laws imposing a special tax on taconite operations for school or other local purposes.

By Laws 1957, Chapter 785, there was appropriated from the General Revenue Fund 50% of all amounts paid and credited into said fund from the occupation tax on taconite operations to be distributed and paid to the various governmental subdivisions in which the taconite operations were conducted. The distribution was 25% thereof to the city, village or town, 50% thereof to the school district and 25% thereof to the county. There were provisions for apportioning the amount to be distributed where different parts of the operation were conducted in different governmental units.

There were a substantial number of laws passed at the 1957 legislative session with respect to tax levies of local governmental units in the iron range area; these included a general increase in the per capita limitation upon levies of school districts; an increase in permissible levies of Range cities and villages for permanent improvements; increasing the per capita limitation upon levies for current purposes in cities and villages; permitting special levies in excess of per capita limitations in certain school districts for building purposes; permitting specific levies against taconite operations in certain school districts for special school purposes.

RESERVES

Steel plants in the northeastern area of the United States have always used some ores other than Minnesota's but the proportion of these other ores has increased in the past 10 years. In 1947 the amount of non-Minnesota ore shipped to plants in the northeastern area was about 23 million tons and in 1957 it was about 50 million tons.

A factor important to Minnesota's iron ore industry has been the increased use of high grade ores and concentrates due to the changing demands of the blast furnaces. Minnesota underground ore reserves are dwindling more rapidly than they are being mined because certain zones of operating mines are being eliminated from consideration due to the fact that in these zones the material is no longer ore by definition.

As direct reduction of iron ore develops, some reserves previously carried as direct shipping ore require reclassification as wash or perhaps even heavy media ore. Reserves of wash ore are also being reclassified downward to heavy media ore and some heavy media ore can no longer be considered as reserves unless and until processes can be found to provide economical treatment for removal of silica beyond that possible with existing methods.

Research groups are working diligently on processes which have promise of making high quality products from Minnesota's low grade iron ores and non-magnetic taconites. It has been recognized that there is no shortage of iron units to supply the country's demand for iron and steel in the United States or in the rest of the free world.

Emphasis has shifted from quantity to quality of iron ore and there is great promise that Minnesota, with continuing research and technology in the development of processes to concentrate the iron formations in Minnesota, can maintain its place competitively.

UNITED STATES

MINNESOTA

Jones & Laughlin Steel Corporation is opening a mine near Coleraine in Itasca county; also, the Oliver Division of the U. S. Steel Corporation applied for and received a permit to use water for a proposed plant near Buhl in St. Louis county for concentration of some of the poorer grade material encountered in their Sherman Mine operation.

Pickands Mather & Company announced the permanent closing of the Zenith Mine on the Vermilion Range, one of the three remaining underground properties on that Range. Warren S. Moore and the North

RESERVES

TABLE NO. 1
IRON ORE RESERVES OF MINNESOTA

Estimated Reserve Tonnage (Including Stock-piles) in Gross Tons

Year May 1	*Mesabi Range*	*Vermilion Range*	*Cuyuna Range*	*Fillmore Co. Dist.*	*Total*
1920	1,305,926,735	10,927,844	24,819,959	......	1,341,674,538
1930	1,154,434,031	14,250,540	66,542,939	......	1,235,227,510
1940	1,139,314,272	13,841,272	65,431,104	......	1,218,586,648
1945	973,129,581	12,715,183	59,787,900	......	1,045,632,664
1950	923,769,792	13,183,901	43,415,199	589,000	980,957,892
1951	906,225,928	12,110,218	41,869,807	913,165	961,119,118
1952	869,104,825	12,965,994	44,808,481	574,908	927,454,208
1953	855,380,607	13,286,060	45,751,154	647,500	915,065,321
1954	842,178,641	12,538,740	60,831,429	711,652	916,260,462
1955	805,294,358	11,715,324	60,848,084	793,847	878,651,613
1956	758,322,168	10,818,665	56,376,181	1,044,570	826,561,584
1957	722,362,256	9,943,606	53,599,289	1,243,126	787,148,277
1958	646,448,673	9,598,769	45,824,409	2,289,487	704,161,338

Note: The above figures represent the estimated reserve tonnages as reported by the Department of Taxation, and comprise the tonnage of ore in the ground plus the ore in stockpiles. These figures do not include ore on State lands that were not under lease as of May 1st of each year; the estimated total tonnage for May 1, 1957, was 2,628,505 tons.

Source: Minnesota Department of Taxation.

TABLE NO. 2
CLASSIFICATION OF IRON ORE RESERVES OF MINNESOTA AS OF MAY 1, 1958

(In Thousands of Gross Tons)

Classification	*Mesabi Range*	*Vermilion Range*	*Cuyuna Range*	*Fillmore Co. Dist.*	*Total Minnesota*
Direct Ore:					
Open Pit	298,729	3	9,199	17	307,948
Underground	126,708	9,039	28,860	....	164,607
Total	425,437	9,042	38,059	17	472,555
Concentrates:					
Open Pit	160,176	2	4,897	2,272	167,347
Underground	35,824	....	2,285	....	38,109
Total	196,000	2	7,182	2,272	205,456
Total Ore:					
In Ground	621,437	9,044	45,241	2,289	678,011
In Stockpile	27,843	555	583	....	28,981
Total	649,280	9,599	45,824	2,289	706,992

Note: The above figures represent the total estimated iron ore reserves in gross tons as of May 1, 1958, and include the reserve tonnages shown in Table 1 as of that date, together with the tonnage of ore on State lands that were not under lease as of May 1, 1958.

Source: Compiled by the Mines Experiment Station from the records of the Minnesota Department of Taxation.

Range Mining Company have indicated that if they can get favorable treatment on the question of royalty and the personal property tax on stockpiled ore, and if they can make contracts for the ore on the open market, they may lease and reopen this property.

Pickands Mather also surrendered the Tioga No. 1 lease from the State of Minnesota covering property near Grand Rapids.

MICHIGAN

A "multi-million dollar" program aimed at doubling production capacity at the Humboldt Mining Company plant on Michigan's Upper Peninsula to 640,000 tons of iron ore pellets annually, was reported in a recent issue of ENGINEERING AND MINING JOURNAL. It was noted that the jointly owned Cleveland Cliffs and Ford Motor Company development could lead to opening of 200 million tons of low grade iron ore owned in the area by Ford; and that reserves at Humboldt could yield 15 million tons of pellets.

CANADA

QUEBEC

Quebec Cartier Mining Company, a subsidiary of U. S. Steel, is pushing development of a large-scale iron ore project in Quebec as a result of discovery in the Mount Wright-Mount Reed area of a low grade ore described as an easy-working specular hematite containing 30 to 35 per cent iron.

The historical background of the project was told in a recent report in the ENGINEERING AND MINING JOURNAL. U. S. Steel started its search for ore in Canada in 1901 and 50 years later exploration was revived, this time specifically for high-grade direct-shipping ore in Quebec. Little high-grade ore was found but great quantities of low-grade were uncovered.

Construction has started on a concentrator at Lac Jeannine. This plant, described as being among the largest in the world, will operate on energy supplied by a 60,000 h.p. hydroelectric power plant to be built on the Hart-Jaune river.

An ore shipping port to be known as Port Cartier is being developed on the St. Lawrence, about 300 miles below Quebec. Port facilities are expected to be completed by the end of 1960. Plans anticipate a town of about 1,500 persons at Port Cartier.

Also in the project is a 193-mile railway which will carry iron concentrate to Port Cartier during 12 months of the year.

The hydroelectric plant will furnish energy for the concentrator, electric shovels at the mine and for electricity required by the mining town, Lac Barbel, now being erected. A population of from 4,000 to 5,000 is predicted for the mining town. From 1,200 to 1,500 of those would be employees of Quebec Cartier.

The requirements of the concentrator call for 20 million tons of iron ore a year.

WABUSH LAKE, QUEBEC

Pickands Mather, according to the ENGINEERING AND MINING JOURNAL, has constructed a 42-mile railway connecting the Wabush Lake iron ore deposit in Quebec with a railway which connects Seven Islands and Knob Lake. The new railway represents the first step in the opening of the Wabush Iron, Ltd., orebody, said to run to one billion tons of beneficiable low-grade ore. Other stockholders in the Wabush project include Youngstown Sheet & Tube, Interlake Iron Corp.. and Steel Company of Canada.

ONTARIO

Little Current, Ontario, 120 miles east of Sault Ste. Marie, gained status as an iron ore shipping port in 1958. Little Current is a Great Lakes port on Manitoulin Island in the northerly extremity of Lake Huron. It is one of the principal towns on the island, said to be the largest fresh water island in the world. Little Current is the only point of entry to the island by rail or automobile.

First shipments of iron ore from Little Current were made in 1956 and SKILLINGS' MINING REVIEW, in a recent issue, noted that Little Current was the only iron ore shipping port in the Georgian Bay area in 1958.

For many years the port has handled great tonnages of coal but as demand declined one major dock began doubling the past three navigation seasons as an iron ore loading facility. In the 1958 season 11 cargoes, with a net tonnage of 73,229, of International Nickel's iron concentrate pellets were loaded out at Little Current.

The port also began in 1958 to make shipments of a by-product iron sinter that originated at Cutler, Ontario. Noranda Mines, Ltd., has a new sulphuric acid plant 30 miles northwest of Little Current. Noranda's plant also produces approximately 300 tons of high grade iron products per day. These are agglomerated by sintering and shipped by rail to Little Current for loading into lake vessels.

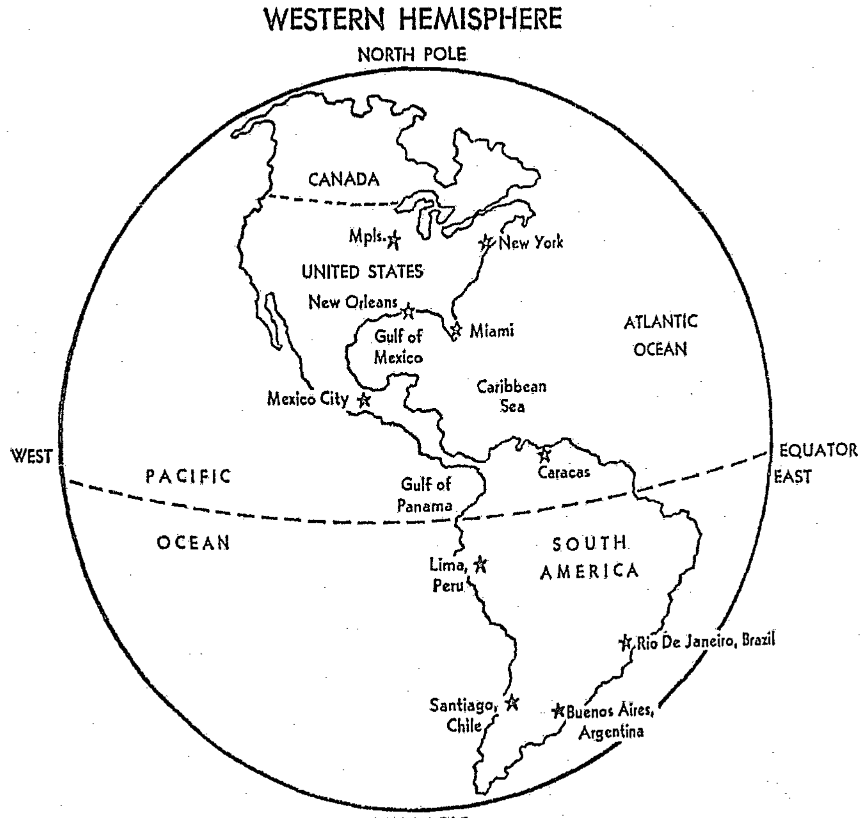
Another new ore movement through the Little Current port consisted of zinc concentrates which were shipped approximately 450 miles from a mine and mill operated by Willroy Mines, Ltd. The concentrates were then loaded into small ocean-going ships for delivery direct to Antwerp, Belgium. Seventeen cargoes were loaded and concentrates handled over the Canadian Pacific Railway dock totaled 17,374 net tons.

STEEP ROCK

Steep Rock: Iron ore shipments from Steep Rock Iron Mines, Ltd. at Steep Rock Lake, Ontario (pages 14-19, 1957 Report) amounted to 1,156,358 gross tons in 1958 as compared with 2,347,691 tons in 1957 and 3,317,073 tons in 1956. Shipments were very slow the first part of 1958 but were heavy during the last two months. It was pointed out in SKILLINGS' that the introduction of sized ore marked an important step in Steep Rock mining and that the Hogarth screening plant was converted for sizing direct shipping ore. Shipments started from this plant early in September.

SOUTH AMERICA

WESTERN HEMISPHERE



RESERVES

SOUTH AMERICA

PERU

Marcona Mining Company, San Juan Peru

The iron ore deposits are situated on a 2,600 foot plateau covering an area of about 65 square miles, about 210 miles south of Lima. Utah Construction Company of California and Cyprus Mines, Ltd. own the company which is operating the property called Marcona Mining Company, about 17 miles by highway from the Port of San Juan. The deposit is owned by the Government. The ores are hematite and magnetite analyzing plus 60% iron. The reserves *in all* deposits in Peru are estimated at 670 million tons averaging plus 56% iron.

The known reserve figure of the Marcona Mining Company mine is 300 million tons and about 5% of it is being mined each year, or about 3 to 3½ million tons of ore is mined each year and is exported as follows:

2 million tons to the United States—Sparrows Point

1 million tons to Germany

½ million tons approximately to Japan, Holland and Europe.

Mining is carried out by the open cut method and eight pits are opened at Marcona. Six of these eight pits are now in operation. The entire mine covers an area of some 12 by 19 miles. The ore is extracted from the pit in levels. The ore in this mine averages about 60% iron, with some running as high as 67% and 68% with very low silica content. Sulphur content is a problem and it has to be kept down to .15%. Some of the ore is right on top of the ground and some stripping has to be done in places where overburden runs from 20 to 45 feet.

After the overburden in the pits has been drilled and blasted the ore is loaded by means of power shovels into pit or dump trucks and transported to a hopper. From there it passes into the primary crusher—a Birdsbore Buchanan jaw-type that is one of the largest in operation anywhere. A secondary crusher, an Allis-Chalmers McCauley, recrushes the larger pieces of ore to sizes required. Next the ore is moved by conveyor belts to a high screening tower and then dropped into the stockpile. When it is ready to be transported to the Port of San Juan, 17 miles down hill, the ore goes through gates below the stockpile into another conveyor belt and then up to a truck-loading hopper.

Specially designed Kenworth tractors with Fruehauf trailers transport the iron ore from the mine to the port with hauls of 55 to 60 tons each. They operate six days a week on two-eight-hour shifts. All of the drivers are Peruvians, especially trained to drive these mammoth trucks up and down the steep grades between the mine and port.

The Port of San Juan is developing into a good sized town. One of the finest and best equipped dispensaries in Peru has been built. Free medical attention is provided for workers and their families. The dispensary has a modern dental clinic with adjoining laboratory. Other facilities at the dispensary include a major operation room, an X-ray room, dining rooms for doctors and nurses and an emergency power generator. The hospital has 66 beds now and ultimately will have 170 beds and is staffed with a chief doctor, one assistant chief doctor, two resident doctors and 20 nurses. The hospital was built originally with plans for expansion in mind as more space is needed.

A housing program for all personnel also is well advanced at San Juan. Concrete construction blocks are manufactured for the company by a private contractor at the port. There are 30 modern homes now and 50 more are being built. The population of the town is approximately 4,200 at present and it is expected to double within the next two years. The increase in population will consist of mostly Peruvians.

The expansion program is due to a new beneficiating plant to be built at a cost of $25 million. Under the new program two more schools will be constructed. Also, plans are to build a conveyor belt 30 miles long from the mine to the harbor at San Juan where the beneficiating plant is going to be built. In connection with this expansion program, the following article appeared in the New York Times on March 20, 1958:

> "The Export-Import Bank of Washington, overseas lending arm of the Treasury, announced yesterday a $10,000,000 credit to Marcona Mining Company, Peruvian iron ore subsidiary of the Utah Construction Corporation of San Francisco.
>
> "The credit, which will be repaid in twenty semi-annual installments beginning in 1960, will assist a $25,000,000 construction program. Of the total, $18,000,000 is expected to be spent on materials and equipment in the United States. The interest rate was not announced.
>
> "The new facilities, at Ica, (San Juan) about 265 miles southeast of Lima, will permit Marcona to beneficiate or upgrade low grade ore.
>
> "Since Marcona began operations in 1953, its ore production has risen each year, with more than 3,500,000 tons exported in 1957. The operation now contributes about 8 per cent of Peru's dollar exchange receipts, employs 1,300 persons and pays Peru taxes and royalties of about $4,000,000 a year. Its operating expenses, paid in local currency purchased for dollars, yield $6,500,000 more to the economy.
>
> "Of the employees, only twenty-eight are United States citizens.

Some 400 or 500, mostly Peruvians, will be required for permanent operation of the new facilities."

One of the biggest problems is fresh water which has to be hauled 45 to 50 miles. The cost last year for fresh water was $230,000. Some fresh water is provided by de-salting the sea water and experiments are underway constantly to perfect such a system. None of the employees lives at the mine but are transported from San Juan in company buses. About 700 persons work at the mine alone and 700 at the port—1400 employees in all.

The employees work on a six day a week basis. One shift starts at 7:00 a.m., stops for 30 minutes at 11 a.m. and works until 3:30 p.m. The next shift works from 3:30 p.m. to midnight. A truck driver is paid 66 soles or a little over $3.00 per day. Top man gets about $4.00 a day.

It takes about 11 days for a ship load of iron ore leaving San Juan to reach the East Coast in the United States. Charles McGraw, vice-president and general manager of Marcona Mining Company, stated that the company has paid over $16 million in taxes and royalties since they started in April, 1953. He said the company pays as much income tax there as it does in the States and its income tax there is equivalent to the federal and state taxes paid here in the United States.

The following article appeared in SKILLINGS' MINING REVIEW in the February 22, 1958 issue:

> 'The Marcona mine of Marcona Mining Co., located about 340 miles south of Lima, Peru, has been the scene of steady iron ore output and shipments since initial output in 1953. Late last fall, the operation saw the forwarding of its 10,000,000th ton of ore, and just recently Marcona had surpassed the 11,000,000 ton mark.
> "Marcona Mining Co. is operated by two U.S. concerns, Utah Construction Co., of San Francisco, and Cyprus Mines Corp. of Los Angeles. Ore output from the mine is loaded into ocean freighters at San Juan, Peru."

CHILE

Bethlehem Chile Iron Mines Co., Laserena, Chile

Bethlehem Steel Company's Chilean subsidiary opened the El Romeral Mine in 1955. It is located about 320 miles from Santiago, Chile, on the west coast of South America near the cities of La Serena and Coquimbo, Chile. Bethlehem's El Tofo Mine, which is about depleted, is a distance of 25 miles from El Romeral.

The El Romeral Mine, with an estimated reserve of 18 million tons of ore running from 60% to 65% iron, is set up to produce about 1,000,000 tons per year but the estimate for 1958 was set at 1,300,000 tons.

Romeral will contribute to the supply of Bethlehem's Sparrows Point plant and with the exhaustion of the Tofo mine will be the only active source of ore for Chile's steel plant at Huachipato in southern Chile. The development of the property and the construction of the port of Guayacan, about 20 miles from the mine, was financed jointly by Bethlehem and the Chilean steel company, Compania Acero del Pacifico.

Ore is brought from the mine to Guayacan, the port, in 50-ton capacity, 1-meter gauge, hopper-bottom ore cars over a 22-mile railroad haul. The Guayacan pier is an unusual type of construction described as a "free standing flexible type steel H-pile pier." It is 700 feet long and 42 feet wide. A power plant at the port consists of three 500-KW self-powered generator units plus one 100 KW unit for periods of light load. Limited facilities are located in the power plant building but the principal repair shops for the project are located at the mine site.

Taxes on Chilean ore are as follows: An income tax of 57%, 32% of which is at normal rate and 25% surcharge because it is a foreign company. The effective rate is actually about 50% because of benefits from depreciation and other allowances that are greater than similar allowances in United States under federal income tax. Chile has a very small property tax.

Labor: There are two types of workers—salaried employees or day laborers. If over 5% of a man's work is manual, he is classified as a daily worker, otherwise he is a salaried employee. The work week consists of 48 hours; after 8 hours a day, time and a half is paid. The maximum a man can work in a day is 10 hours. A truck driver who is a salaried employee receives about \$60 or \$65 per month. A day laborer, if he works six days a week, gets paid for the 7th day and earns about \$1.50 a day. The company pays 6% of an employee's earnings into a bank and the employee a like amount. After 35 years of work or the age of 65, he gets a pension from the fund. The employer pays for all medical attention and a family allowance is paid each employee monthly, in addition to his earnings, which is set by the government and paid from the funds accumulated at the bank. At present each worker receives about \$7.00 a month for each member of his family in addition to his salary.

The ore from the El Romeral Mine goes to Sparrows Point—about 1,000,000 tons per year—and the Bethlehem Chile Iron Mines Company must sell ore at cost to the steel plant in Chile. We were told that in 1957, 1,400,000 tons of ore running 65% iron was taken out of the area by just ordinary people who hand-dug the ore or "helped" themselves to the ore on the ore cars coming down to the port. They stockpile the ore near the port and sell it to anyone who wants to buy it. The majority of this ore goes to the states and these people receive anywhere from

$8 to $10 per ton for it. The total tonnage of iron ore from Chile going to the United States in 1957 was about two million tons.

It takes 12 days to haul ore from Chile to Sparrows Point, a distance of approximately 5,000 miles. Shipping costs run from $5 to $7 per ton. The boats handle about 25,000 tons and new boats are being built to handle 40,000 tons. The steel mill in Chile requires about one-third of the production of ore from El Romeral, or about 30,000 to 40,000 tons per month. So far about $15,000,000 has been invested in the El Romeral Mine.

DEPOSITS THAT MUST BE MADE TO SOCIAL SECURITY SERVICE AND TAXES ON WORKMEN'S WAGES IN CHILE

Deposits	*Employer*	*Workman*
I. Law 10383 (Social Security Service)—Medical Attention, Disability Payments, Old Age Pensions, Funeral Expenses—Article 53, Letters a) and b), and Transitory Article 9.	12%	5.5%
II. DFL 243, of 1953 (Indemnity for Years of Service)—Article 8.	2%	—
III. DFL 245, of 1953 (Family Allowance). Article 8. These rates must be fixed annually by the President of the Republic at the request of the Director General of Social Security. Payment of conventional family allowance shall apply, when more beneficial. In this event, that paid may be imputed to employer's deposit. (Transitory Article 2).	18%	2%

Pursuant to Transitory Article 1. Law 10383, deposits must be made in accordance with rates in force at moment of effecting them. Payments effected within 30 days after these rates become effective and originating in salaries liquidated prior to said date, are excepted. Any difference for overdue payment in employer's or workmen's deposits shall be for account of employer.

Article 9 of DFL 245 also provides that deposits referred to in said Decree with Force of Law must be made in accordance with rates in force at moment of effecting them. DFL 243 contains no provision in this respect.

Taxes	*For Account of Employer*	*For Account of Workman*
I. Income Tax, 5th Category.—Article 39, Decree 2106 and Article 37 d), Law 6640 (transitory surcharge of 1% up to December 31, 1958). Calculated on total income consisting of salaries, bonuses, remunerations, gratifications, etc., excepting transportation expenses and special allowances while travelling and obligatory deposits for social security, as per Article 39, Decree 2106. The minimum exempted according to Article 42, Decree 2106, Modified by Law 11575, is 1/60 of the vital salary of the Department of Santiago per day. For 1958 the exemption amounts to 702,000 pesos per day. This tax must be withheld by employer and paid pursuant to Article 76 and following, Decree 2106.	—	3.5%
II. FINANCING LABOR DEPARTMENT.—Article 22, Law 6528, and Article 145, Law 10343.—Paid jointly with deposits for social security.	2½%	—
Deposits	*Employer For Account of*	*For Account of Workman*
III. TAX CONSTRUCTION EDUCATIONAL ESTABLISHMENTS. In force as from December 30, 1954, Article 2 a) and b), Law 11766. That for account of employer is applied on workmen's wages, and that for account of workman is applied on wages or remuneration taxable for the effects of the Social Security laws. Paid jointly with the monthly deposits in the respective Social Security institution. That for account of workman must be withheld by employer.	¾%	¼%

DEPOSITS THAT MUST BE MADE TO PRIVATE EMPLOYEES' BANK AND TAXES ON EMPLOYEES' SALARIES

Deposits	*Employer*	*Employee*
I. RETIREMENT FUND, on salaries, etc. Art. 26 a) and b) Decree-Law 857, of 1925 Art. 167 a) and 168 b) Decree 269, of 1926. Calculated on limit of 6 vital salaries. (Art. 7, Law 10575).	5%	5%

RESERVES

	Employer	*Employee*
II. RETIREMENT FUND, gratification Art. 26 e) Decree-Law 857 and 170 c) Decree 269 Modified by Art. 63, Law 7295.	—	10%
III. RETIREMENT FUND, one-half first salary Art. 26 c) Decree—Law 857 and 170 a) Decree 269 Calculated on limit of 6 vital salaries. (Art. 7, Law 10475)	—	¼ first salary (twice)
IV. RETIREMENT FUND, difference voluntary salary increase Art. 26 d) Decree-Law 857 and 170 b) Decree 269. Calculated on limit of 6 vital salaries.	—	Total of increase
IV-a. RETIREMENT FUND, Vital Salary increase.	—	4 quotas totaling increase
V. FAMILY ALLOWANCE Art. 28, Law 7295 and 9 Decree 1216 of 1943. Variable percentage. For Santiago, 1958 21.5%		2%
VI. INDEMNITY FOR YEARS OF SERVICE FUND, on salary, additional salary and monthly commissions, within a maximum remuneration equivalent to 3 vital salaries of the Department of Santiago. Art. 38 Law 7295, 16 Decree 1216 and 2 Law 9581.	8.33%	—
VII. PREVENTIVE MEDICINE. — Law 6165, Art. 1, Decree 917, of 1954.	1½%	—
VIII. UNEMPLOYMENT—Art. 36 Law 7293.	—	1%
IX. REMUNERATIONS MIXED COMMITTEES FOR FIXING VITAL SALARY.—Art. 17 Law 7295, in January of each year only.	1.5%	1.5%
X. FINANCING RETIREMENT ON PENSION.* Transitory Art. 1, Law 10745. Calculated on limit of 6 vital salaries. (Art. 7, Law 10475).	As from Jan. 1, 1958—2% As from Jan. 1, 1960—3%	As from Jan. 1, 1958—2% As from Jan. 1, 1960—3%

XI. RETIREMENT FUND AND INDEMNITY FOR YEARS OF SERVICE FUND ON FAMILY ALLOWANCE.—The deposit is made on the amount of the Family Allowance. The Bank withholds it, paying to the employee the net allowance and deposits it to the employee's account. Arts. 28 and 32, Law 7295 and Decree 1216.

Retirement Fund	10
Indem. Fund	8.33%
Total	18.33%

Taxes	*For Account of Employer*	*For Account of Employee*
I.-INCOME TAX. 5th Category.—Article 39 Decree 2106 and 37 d) Law 6640 (transitory surcharge up to Dec. 31, 1958, 1%.—Calculated on total income consisting of salaries, bonuses, remunerations, gratification, etc., excepting transportation expenses and special allowance while travelling and obligatory deposits for social security, as per Art. 39, Decree 2106. Exempted: ¼ of annual vital salary of the Department of Santiago (1958: 10,526 pesos per month.)	—	3.5% this percentage must be withheld by employer and deposited pursuant to Arts. 76 and following Decree 2106
II.-FINANCING LABOR DEPARTMENT.—Art. 22, Law 6528 and Law 10343.—Paid jointly with social security deposits.	2%	—
III.-TAX CONSTRUCTION OF EDUCATIONAL ESTABLISHMENTS. — In force as from Dec. 30, 1954. Art. 2 a) and b) Law 11766. That for account of employer is applied on employees' salaries, and that account of employees is applied on salaries or remunerations taxable for the effects of the social security laws. Paid jointly with the monthly deposits to the Social Security Bank. That for account of employee must be withheld by employer.	¾%	¼%

RESERVES

BRAZIL

Probable Iron Ore Reserves of Brazil*

Hard, over 66% iron	500,000,000 tons
Soft, over 66% iron	250,000,000 tons
Less than 66%, over 60%	500,000,000 tons
Less than 60%, over 50%	2,000,000,000 tons
Less than 50%, over 30%	35,000,000,000 tons

It has long been known that one of the outstanding ore deposits in the world is in Brazil. The principal and best known deposits are located in the state of Minas Gerais, Brazil. Minas Gerais, one of the larger states of the United States of Brazil, has an area of 593,810 square kilometers (about 229,000 square miles) and more than 7,000,000 inhabitants.

In the south-central part of the state a rich iron formation crops out in long ridges within an area of about 7,000 square kilometers, and isolated remnants occur to the east and north. Large deposits of very high grade hematite, some of them standing as spectacular peaks high above the surrounding country, occur at several places along the formation. The iron region lies in the Central Highlands, near the headwaters of two large rivers, the Rio Sao Francisco and the Rio Doce. The altitude within the region ranges from about 1,800 to 6,400 feet.

The region has many small towns, most of which date back to the early gold-mining days. Ouro Preto was the capital of Minas Gerais for nearly two centuries, until a new city, Belo Horizonte, was built in 1897 on a site just north of the mountains. Belo Horizonte has a population of more than 300,000 and is growing rapidly.

Within an area near Belo Horizonte a number of mining operations have been started. Among the presently operating mines, the largest and most important are:

1. **Caue Peak,** near the village of Itabira operated by Cia Vale Do Rio Doce, a large Brazilian company, backed by Brazilian capital and loans from the Export-Import Bank. About 2 million tons of this ore are exported to the United States each year. It is exported from the Port of Vitoria which is connected to Itabira by a 370-mile narrow 1-meter, or 39.37 inch gauge railroad. This mine is owned by the government up to

*NOTE: The "Probable Iron Ore Reserves of Brazil" shown at the beginning of this report on Brazil are from a paper delivered by Dr. L. J. De Moraes, a Brazilian Geologist and Mining Engineer at the Symposium on Iron, XIX International Geological Congress in 1952 held in Algiers, Africa. It was apparent on discussing these reserves with geologists and mining men in Brazil that these figures were low and conservative as compared to presently known and estimated reserves.

85% and the other 15% is privately owned. The government elects a president of the company and the president chooses the directors. The mine has an estimated reserve of about 2 billion tons of ore running 60% to 68% iron.

2. **Casa da Pedra**—near Congonhas do Campo is operated by the Companhia Siderugica Nacional (National Steel Company). All production from this mine is shipped to the National Steel Works located at Volta Redonda over 257 miles of broad gauge railroad. The ore is very high; some of it runs as high as 70% iron, but the average is about 68%. The low grade ore is used for shoulders along the highway. A cable about three miles long runs from this mine to the loading area.

In this area are other smaller iron mines which mine ore for use at local blast furnaces and some for export through the port of Rio de Janeiro. Of the local users the largest is the Cia. Siderugica Belgo-Mineira with steel plants at Monlevade and Sabara and using ore locally mined from their own properties.

The M. A. Hanna Company now holds reserves in Brazil and Earl Irving of M. A. Hanna stated that Hanna's reserves contain the largest amount of high grade, as well as low grade ores, in one single unit in Brazil covering 100 square miles. Mr. Irving stated that the Brazilian government has expressed itself as being very desirous of Hanna getting into operation because they are having a very severe foreign exchange problem in Brazil. Coffee production is declining and there is nothing coming in to off-set this decline of income from coffee. Iron seems to be one of the major products that could be developed in Brazil.

Mr. Irving said that a complete study is being made of the transportation situation by Bechtel Corporation in San Francisco. The ore is about 300 or more miles from the ocean and the whole problem is transportation. If Hanna builds a railroad, it would probably be privately owned but, Mr. Irving said, it is very difficult to avoid being a common carrier.

With reference to disposition of the ore, Mr. Irving said Hanna feels that probably a good portion of the production would go to Europe. It is a little too far to the United States—about 1500 miles further. Rotterdam, he said, would probably be the spot. Hanna ships quite a bit of Labrador ore there.

Mr. Irving went on to say that Hanna purchased 11% of the stock of St. John D'el Rey Company in 1955 and then because of speculator purchasing it backed off for a couple of years from purchasing stock. The speculators, who were not mining men, finally went to Hanna, offered to sell the stock and gave stock options to Hanna for purchase in the future.

RESERVES

Other American companies are considering going to Brazil, Mr. Irving stated, and apparently Hanna's activity has stirred up other interests. He mentioned the Kaiser people were down there last fall, undertook a rather extensive study strictly from the transporation standpoint, and prepared a report which is now with the government.

Mr. Irving said the only figures Hanna uses as reserves are the figures given by the U.S. Geological Survey and Hanna has done no work yet to substantiate these figures. He said the survey gave a reserve of something like three or four hundred million tons down to a depth of 170 feet, and indicated the whole country of Brazil alone contains approximately 25% of the ultimate reserves of the world.

An article appearing in the *Time Magazine* of March 10, 1958 was pointed out by Mr. Irving and he said the article gave a pretty fair picture of Hanna's activity in Brazil. The article is quoted and is as follows:

"Ever since 1955, Cleveland's M. A. Hanna coal and iron company has had its eye on a South American lode that would make any miner sharpen his pick. The property: Brazil's St. John D'el Rey, which Brazilians romantically labeled the 'heart of gold within a breast of iron.' Spreading over 100 square miles in Minas Gerais state, some 200 miles north of Rio de Janeiro, the D'el Rey mines produced only gold for 120 years—and in recent times some heavy deficits for the company's British owners. What magnetized Hanna, which had been built into a $250 million empire by former Treasury Secretary George M. Humphrey, was not the gold heart; it was the iron breast, 2 billion tons of high-grade (60% to 70% pure) ore in the surrounding hills. But getting it was another matter.

"THREE FOR ONE. For a starter in 1956, Hanna quietly began to buy D'el Rey stock, then selling at $2.80 per share, bought 12% of the company. Then it discovered that it had competition. German-born Manhattan Investment Banker Leo Model, partner in Model, Roland & Stone and a man who had made (and lost to the Nazis) several fortunes, was also interested, bought in until he had 10% of D'el Rey's stock. When a third group—led by the small Manhattan brokerage firm of Osborne & Thurlow—started bidding and pushed D'el Rey stock up to $12 per share, both Hanna and Banker Model backed off. Eventually the Osborne syndicate picked up 35% of the stock and control of D'el Rey. The only trouble was that the new owners lacked the capital and the mining know-how to make the mine pay off, and asked Banker Model for help. He, in turn, went to M. A. Hanna.

"The man who came up with the answers was Humphrey, Hanna vice president and a director. He was interested in nothing less than complete control and took off on a whirlwind trip to Brazil. He looked over the mine, talked to Brazil's President Juscelino Kubitschek and in six days lined up a deal. Said D'el Rey's British manager: 'A very dynamic chap, Humphrey. He never even stopped for tea.'

"Last week M. A. Hanna announced that it had control of St. John D'el Rey and would operate it. The details of the deal were secret, but there was no secret about the richness of the prize. Though D'el Rey's British owners dug nearly $300 million worth of gold over the years from a maze of galleries running five miles into the earth, they never laid a serious shovel on the iron. In fact, they had bought the hematite ridges humping hundreds of feet high around the property only to protect water rights for their gold mining. Hanna will modernize the gold mine, but the main play is iron.

"GOLD FROM IRON. Hanna's gold is to turn D'el Rey into a major ore supplier for U.S. and Europe; D'el Rey will be almost as big as Hanna's Labrador project, which shipped 12.5 million tons last year. It plans to spend something like $300 million for equipment, a railroad and a port to get the ore to market. In winter, Hanna's fleet of 40,000-ton ore carriers will shift southward from ice-locked Labrador to Brazil, cut around the world carrying 10 million tons of ore annually to U.S. and European customers. Nor will the ships go down to Brazil empty. Hanna will load them with U.S. Coal, hopes to supply Brazil's entire need. Hanna's timetable: full operations within three years.

"To Brazil, Hanna's new project promised a bonanza of new jobs, new power supplies—and possibly $100 million annually of badly needed foreign exchange to help make up for slipping coffee exports. Hanna has made no estimate of the profits it expects, but they should be impressive."

The following is a talk given by Dr. Vlyeon de Paiva, Geologist, Consultant to Cia. Vale do Rio Doce.

"We have in the State of Minas Gerais quite a lot of iron ore of the low grade type and ore containing about 40% to 45% iron—some is lower and some is higher. Some of it is used in the blast furnace plants.

"We have another kind of ore we have been exploiting. Very high grade hematite ore containing 68.5% to 69% and very low in silica and phosphorus. It is a special kind of ore for the open hearth furnaces.

"Up to now this has been the only kind of ore that has been exploited because we are very far from any ports. All of our mines are very much inland and our big problem is transportation and we don't know when we will be able to export low grade ore at low cost because we might have to build new railroads and new ports—everything—to be able to export low grade ores.

"The high grade ore exported last year from Rio Doce Company and a few other small companies was 3 million tons or 3½ million tons and about 50% of this went to the United States.

"We could increase the exportation of high-grade ores to 3,500,000 tons for Rio Doce and maybe some million or 2 million tons for the other companies but this kind of ore is used only for open hearth furnaces on a small scale.

"As things are now, we use all of the lower grade ores we have in our local plants. The Brazilian Government has been doing everything possible to increase production of our plants and now we have another new steel plant in Sao Paulo for 1,000 tons of steel a day; another steel plant is being constructed near this plant for 1,000 tons a day and another is being proposed for Vitoria for 1,000 tons a day.

"So, we hope in the near future we will have a lot of low grade ore to be used in the country. We don't know whether some day we will be able to export lower grade ores or not but we are afraid that the distance from our ports to the United States is so big that we must use such big boats or big ships—over 30 or 35 thousand tons each to have an advantage in this transportaton and these boats could not be received in all the ports in the world. Right now this is a problem we don't know how to solve right now.

"Up to now our problem has been to export the very high grade ore which is called hematite. It is just iron ore and oxygen. The oxygen helps the steel furnaces, especially the open hearth. What we have been selling is not only iron ore but oxygen also. It contains just .2% or .3% silica and .02% phosphorus, nothing else. This is why we have been able to transport this ore even with the poor transportation we have. Compared to the iron formation there is very little of this ore, maybe 1 million tons against 2 billion of the low grade ore, several billion tons of this is 40% to 50% ore. We have another kind of ore which is just the cover of the mountains and has about 50% to 60%, 65% iron but is rather high in prosphorus. It is just the cover of the mountains.

"National Steel Company is merely a producer for the steel company here and then you have another company that exports the ore—that is our company. (Cia. Vale do Rio Doce.)

"St. John D'el Rey Mining Company was the largest holder of ore in the country and M. A. Hanna took hold of it just a few weeks ago. They intend to make some research in iron ore and gold and see if it is good to introduce modern methods of gold. They hold tremendous reserves and that is what they are probably interested in the most. They have the largest reserves of high-grade and low grade ore as a single company. The reserve in Rio Doce is about 100 million tons.

"The value of the ore at the mouth of the mine for tax purposes is determined by the government on the high grade ores. If it is $1.20 a ton on which a rate of 8% is applied and that is divided between the federal government which gets 3%; 3% to the state and 2% to Minas Gerais. The valuation at the present time is 80¢ a ton and is handled the same way as high grade ore. In regard to taxation of the low grade ore that is used in this steel mill, taxation is less on ore used here than that exported. There are three taxes. A social tax. The law establishes a tax of 6% on all ore exported. Ore is $14.60 per ton on board ship. Then we pay 6% of the freight rates on the railroad cars—this applied in Brazil to all public service transportation. We also pay 40% of the payroll for old age pensions, medical—this should be called a social charge because it is for old age assistance and medical care. The total amount of taxes is $1.50 to $2.00 per ton—this figure includes all taxes."

EXPLANATION OF TAXES: There are three taxes to which iron ore mining is subject in Brazil:

1. A property tax of about 25¢ per hectare (2.471 acres). This tax is uniform throughout Brazil and is not based on valuation.

2. A flat tax of 8% of the value of the ore at the mouth of the mine. This value was according to latest figures fixed by the government at $1.20 per ton on ores to be exported which run over 65% natural iron and 80¢ per ton on ores running less than 65%. A lower value is placed on ores used in Brazil. 3% of the tax goes to the federal government and the remaining 5% is divided between the state and local district.

3. A social tax on payrolls which is not strictly speaking a tax. The proceeds of this tax are used to provide a fund for medical and health benefits, pensions, severance and vacation pay. All industry pays this tax in Brazil.

The estimated total of these taxes on the high grade ore amounts to $1.50 to $2.00 a ton. This figure includes all federal, state and local taxes, any transportation taxes and the social benefits.

Taconite

In previous reports of this Commission the subject of taconite has been thoroughly covered.

Reserve Mining Company's shipments of taconite pellets in 1958 totalled 4,994,174 tons, just slightly under the 1957 shipments of 5,121,-172 tons.

Erie Mining Company has been engaged in breaking in its large commercial plant near Aurora with expected capacity of 7,500,000 tons, and shipped 2,670,000 tons in 1958. It was recently announced that it is putting in two new type pelletizing furnaces in an attempt to meet problems which have arisen in connection with its pelletizing process. It is expected to substantially increase its production in 1959 over 1958, though probably not to the anticipated capacity of the plant when constructed.

There is no doubt that the Minnesota taconite pellets have proved to be a desirable product than can compete quality-wise with other high grade ores and concentrates.

> In our 1957 Report, under the Taconite chapter, we stated:
> "Public interest has shown a marked shift from iron ore mining in Minnesota to the mining and processing of taconite. This interest is due not so much to the direct tax revenue to be derived from the taconite concentrate as to the hope of a great new industry that could continue for many generations, giving employment to more workers than have been employed in the mining of iron ore.
> "Two of the main factors affecting the large-scale development of taconite are labor and taxes. A fair degree of stability in both could encourage orderly progress in construction and permit building up of the taconite potential to equal that of imports—a goal to be reached in order that Minnesota may be able to hold its competitive position in the iron ore industry."

Not many years ago the possibility of developing the magnetic taconites seemed very remote. Now, in time, the non-magnetic taconites and intermediate ores may develop in much the same way, through the experimental work that is going on to improve methods and reduce costs. With success in this field, it will add enormously to the life of the Minnesota reserves.

TACONITE

TABLE NO. 3
TACONITE CONCENTRATE SHIPMENTS FROM MINNESOTA THROUGH 1957

Year	*Mesabi Iron Co.*	*Reserve Mining Co.*	*Erie Mining Co.*	*Oliver Mining Div.*	*Totals*
	Tons	*Tons*	*Tons*	*Tons*	*Tons*
1920-24	156,157	......	......	......	156,157
1949	......	......	15,756	......	15,756
1950	......	......	62,087	......	62,087
1951	......	......	137,607	......	137,607
1952	......	12,861	93,527	......	106,388
1953	......	245,643	211,240	104,464	561,347
1954	......	344,183	184,314	360,363	888,860
1955	......	333,352	189,829	632,195	1,155,376
1956	......	3,909,113	230,999	676,797	4,816,909
1957	......	5,421,205	262,094	664,243	6,347,542
Totals	156,157	10,266,357	1,387,453	2,438,062	14,248,029

Source: Minn. Mining Directory—1958.

New Developments

The Commission held hearings on the question of the future of the low grade ores and non-magnetic taconite at which representatives of the Mines Experiment Station of the University of Minnesota, as well as of the mining industry, appeared. These presentations were very informative to the members of this Commission and portions of them are quoted herein.

H. C. Wade, director of the Mines Experiment Station, appeared before this Commission and said in part:

"The iron ore producing industry of Minnesota appears to be facing a serious period of decreased production. This is partly the result of a drop in steel production. It is aggravated by the fact that neither the direct shipping ore nor the gravity type of concentrate that we have been producing in recent years is of as good quality as the consumers desire. Higher quality ore from competitive sources is reaching our markets in increasing amounts. Unless the quality of our product can be improved there will be a permanent loss of market.

"The treatment plants presently operating in northern Minnesota on the so-called intermediate type ores are finding it increasingly difficult to produce an acceptable concentrate. In trying to obtain a product that will be marketable, the mining has had to become more and more selective and the iron unit recoveries from the plants have had to be decreased to a point that frequently seems quite wasteful.

"It has seemed to us that the most desirable solution to this problem, certainly from a metallurgical standpoint, would be the construction of a number of large magnetic roasting and concentration plants. Initially these plants could be supplied with intermediate type ore as feed, which would result in high weight recoveries of concentrate of excellent quality.

"The reserve of intermediate type ore is not sufficient to amortize the cost of these large plants, but there is an ample reserve of the non-magnetic taconite. If the economics can be worked out to justify the construction of plants of this type, we would be in a position to make a much more effective use of our potential reserves and could produce a desirable type of concentrate that should be easier to market.

"It would appear that the technical problems involved in such a program can be satisfactorily solved. The less certain problems to

NEW DEVELOPMENTS

be worked out are those of an economic nature. The outlook for high production of concentrate from intermediate ores by present methods is not bright. If these ore materials might be considered along with the non-magnetic taconites and treated by magnetic roasting and concentration, an active concentrate production industry can be visualized, with a reserve tonnage large enough to permit continuous operation for many generations.

"This is a most attractive possibility and warrants a determined effort to assist and encourage industry to promptly convert this possibility into a reality."

Stephen E. Erickson, director of beneficiaton for the M. A. Hanna Company, appeared before the Commission with respect to the changed situation regarding concentrating Minnesota low grade ores. After pointing out that the cost of removing 1% of the excess silica in ores fed to the blast furnace had been estimated at between 20¢ and 25¢ per ton, he stated:

"Prior to 1940, the ore shipped from the Mesabi Range had averaged about 51.8% natural iron, and between 7½ and 8% silica. Between 1940 and 1954, as a result of the pressure for increased quantities at the expense of quality, the average analysis of these Mesabi Range shipments showed a decline in iron content to about 50.6%, and an increase in silica—the undesirable impurity—from 7.9% to 10.4%.

"For 1955 season, the blast furnaces began to put pressure on the ore producers and generally insisted on a maximum shipping grade of 10% silica. Largely by more selective mining, the average silica in Mesabi Range shipments was reduced to 10.2% in 1955 and 9.8% in 1956.

"However, by this time the high grade foreign ores, and high grade concentrates from taconites and other sources, were becoming available in constantly increasing quantities, and the blast furnace men could afford to be more selective in their choice of ores for the best economic result.

"By early 1957 a considerable number of these consumers had reached the definite conclusion that, in the future, ores from the Lake Superior District, in order to be acceptable, must have a silica content averaging between 7% and 8%, and an iron to silica ratio of at least 7 to 1, and preferably 8 to 1, or better.

"The iron ore producers in this area realize that unless they can reach these standards they are not going to be able to meet the competition with which they are confronted. These producers have raised the grade of the shipments of the last few years as much as

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"The iron ore producers in this area realize that unless they can reach these standards they are not going to be able to meet the competition with which they are confronted. These producers have raised the grade of the shipments of the last few years as much as possible by improved beneficiation plant operations in the present plants. The major part of the improvement in shipping grade has come about by more selective mining, with much closer attention paid to mine operations. This, of course, is only a temporary measure which will make production of higher grade products more difficult and costly in the future years. It is the reverse of the process which we went through in the years from 1940 to 1954.

"Iron mining in Minnesota is steadily becoming a much more complicated and costly undertaking than it was in the earlier days of the Ranges. There is a constantly growing variation in the ores remaining to be mined; there is also a decided deterioration of the quality of the remaining ores when viewed from the demand of the blast furnaces for better ores.

"The obvious answer to this will be a demand for new processes, new plants, greater investment, and more skill and experience. The obvious question is, can the competition in quality of product be met, and will it still be possible to produce economically?"

Mr. Erickson stated that the future method of concentration of these intermediate ores is going to resemble very closely the concentration of the non-magnetic taconites except that it may not be necessary to grind them quite as fine; and that a plant for the treatment of these complex intermediate ores may be a combination of a heavy media plant and a roasting and magnetic separation plant. Otherwise the process will probably be identical to the concentration of the non-magnetic taconites.

He pointed out that there are two basic methods which are now under consideration for the concentration of the lower grade of complex intermediate ores in order to obtain a high grade concentrate without wasting a large percentage of the crude material. Both of these methods involve fine grinding much like that found necessary in the concentration of magnetic taconite. He explained these two methods as follows:

1. Reduction Roasting Process. In this process the crude ore is roasted in a furnace under reducing conditions—in the absence of oxygen—and as a result the hematite and limonite present lose some of their oxygen and are converted to magnetite. This magnetite can then be recovered by the same general flow scheme that is used for the magnetic taconite. It was pointed out that although reduction roasting is a very expensive process, it has some definite advantages such as:

(1) Practically all of the iron present can be converted to the form of magnetite which can be recovered by magnetic sepa-concentrates.

(2) The heat treatment may tend to reduce subsequent grinding costs by making the material more brittle.

(3) Magnetite concentrates are easier to pelletize than hematite concentrates.

2. Flotation Process. This process is sometimes called froth flotation. (The Michigan Jaspers are treated this way. Pages 34 to 38 in our 1957 Report cover this subject.) A disadvantage of the flotation process is that it is not as readily adaptable to different types of ore as the reduction roasting process.

Mr. Erickson went on to say that whether reduction roasting or flotation, or some other scheme, will be the process selected will depend upon a very careful consideration of all the economic factors involved. Some of these factors are represented by cost of flotation reagents, availability of natural gas for roasting, cost of grinding and the variations in concentrating characteristics of the ore bodies. Both of these methods could be used in the treatment of all of the lower grade intermediate ores by only one relatively expensive process but there are objections involved from an economic point of view, although a one-process plant may be more desirable from a technical point of view.

He noted that as the concentration methods necessary to be applied to Minnesota iron ores become more involved, the capital costs of the plants, as well as the operating costs, increase at a rapid rate. He stated that the investment cost per ton of yearly capacity varies from about 25¢ for a simple scalping plant to about $25 to $30 for a combined heavy media and reduction roasting plant. The direct plant operating cost will vary from about 3½¢ per ton of product for a simple scalping operation to about $5 to $6 per ton of product for a combined heavy media and reduction roasting plant, not including cost of mining, mine development, taxes, royalty, amortization, interest on investment or administration and other overhead charges.

Mr. Erickson said that when treating the complex intermediate ores with the presently used concentrating processes, the industry knew they could not meet the quality nor grade requirements of the blast furnaces except on a limited tonnage where geological conditions were favorable and the ore material was sufficiently altered; they would have to selectively mine the deposits of this type of material, getting their higher quality at the expense of a very substantial reduction in quantity, and this would reduce the life of the operation. He stated that the industry can meet or even exceed the quality of ores going to the furnaces from outside Minnesota by the radical step of fine grinding and the combined heavy media and reduction roasting process if it can be done on an economic basis which depends on the following:

1. Further technological advances and developments.
2. Development and adaptation of as much automation as possible.

3. Means of improving the productivity of the necessary man-power.
4. Encouraging an intelligent tax and business environment.

He stated: "The problems are great. So are the rewards—in full employment, in lengthened industrial and community life, in benefits to the whole state—if we can be successful."

Fred D. Devaney, director of metallurgy and research for Pickands Mather & Co., presented a paper on the utilization of Minnesota non-magnetic taconites. He pointed out that the total tonnage of non-magnetic material is very large and while it is not unlimited, the available tonnage can be estimated in several billion tons of potential concentrate. The amount exceeds the tonnage of the magnetic taconite. He mentioned the processes which Mr. Erickson explained to the Commission and said that as difficult as the treatment of the magnetic taconites is, the concentration of the non-magnetic varieties is even more complex, and is very costly. The cost of the roasting runs $1.00 to $2.00 per ton of crude, depending upon the choice of the method used. "Unless further research greatly improves the presently known methods, it is evident that the production of non-magnetic taconite concentrates is even more costly than in the case of magnetic concentrates." He also said:

> "There are a few advantages which come about through the use of this process on non-magnetic taconite which may partially offset this added cost. One benefit is the fact that after the ore has been roasted it becomes more friable or brittle and grinding becomes easier. More grinding must, however, be done on the roasted, oxidized taconites than is necessary to secure the same grade of product as from magnetic taconite. Another substantial benefit is the fact that after a reducing roast, a better iron unit recovery can be made from these taconites than the overall iron unit recovery from natural magnetic taconites. * * *"

Mr. Devaney pointed out that a large capital investment was necessary in the case of the Reserve and Erie plants in treating magnetic taconite and in the case of treatment of the non-magnetic taconite this would be even greater. "The capital cost for opening up a mine and building the roasting, concentrating and agglomerating plants to produce 1,000,000 tons of pellets per year, excluding any capital costs which may become necessary for railroad, harbor, or power plant facilities, would be approximately $40,000,000 in the case of the non-magnetic taconites as against a cost of approximately $25,000,000 per million tons."

In **Mr. Devaney's** summary, he stated as follows:

> "I regret to say that I believe that the changes for the production of pellets from the non-magnetic taconites of Minnesota in the

relatively near future are not now as favorable as they seemed a few years ago. The principal reason for this is that other sources have been developed in recent years or are now being considered for development which seem to offer greater advantages. The high grade of the ores now available from Venezuela, Labrador and Africa, and the high grade concentrate that can apparently be produced from the Michigan, Ontario and Quebec low grade deposits, as well as from the magnetic taconites, have made it necessary that we think in terms of a product of higher grade than formerly. A grade of product that was acceptable eight or ten years ago is no longer satisfactory. At one time we thought that if we could produce a product that contained 61% iron and 12% silica that it would be satisfactory to the furnaces. Such a grade now would be entirely unacceptable, and, to be readily marketed, the minimum grade would have to be about 64% iron and 8% silica. Of course, this means finer grinding than originally anticipated, better methods of concentration, a lower recovery per ton of crude, and higher costs."

N. W. Moberg, director of mineral development for the Oliver Iron Mining Division of the United States Steel Corporation, called attention to the large deposits of high grade ores that had recently become available to the steel industry. He made the following statements:

"The fact remains, however, that the Minnesota Iron Ore Industry has entered into a period of drastic readjustment, the effects of which are far-reaching * * *. In our judgment, these facts stand out:

1. Minnesota's iron ore industry, in collaboration with the University Mines Experiment Station, is conducting intensive research into beneficiation of all types of iron ore materials to meet today's high quality standards.
2. Research to date on processes to produce high grade concentrates from the intermediate ores and non-magnetic taconites indicates that such beneficiation is not impossible. There remains the difficult problem of developing methods to make these products competitive from the standpoint of costs—an objective that is complicated by the high investment and operating costs of the possible processes.
3. Agglomerates from Minnesota's magnetic taconites are in demand, as are other high grade ores and concentrates.
4. Minnesota's once secure position as the number one source of iron ore for domestic consumption has suffered a severe setback. The average Mesabi and Cuyuna ores are no longer in wide demand, and Minnesota's ore reserves are being hurried

toward depletion by reclassification and elimination due to the pressure of high quality standards, as necessitated by the economics of pig iron production. Limitations of existing concentrating methods preclude up-grading of ordinary Minnesota ores to the point of being competitive with other available high grade ores and concentrates.

"Minnesota's iron ore industry faces a necessary transition to production of high grade concentrates. There is a concern on the part of the industry that the State of Minnesota and its local taxing districts will continue to depend on iron ore resources to provide a disproportionate share of tax revenue. This could stifle further growth of magnetic taconite concentration and undermine the competitive position of taconite agglomerates. Such continued dependence would deliver a death blow to development of processes for production of high grade, possibly competitive concentrates from intermediate ores and non-magnetic taconites. * * *

Minnesota is abundantly endowed with iron-bearing materials, but to maintain its competitive position in the iron ore markets will require mature thinking and a great deal of foresight on the part of those who write Minnesota's laws and assess Minnesota's taxes. "

Representatives of the M. A. Hanna Company have indicated to this Commission that they are considering a very substantial investment in a pilot or experimental plant in Minnesota to try out methods of concentrating semi-taconite or partially altered iron formation, intermediate between taconite and the low grade ores presently being concentrated.

Snyder Mining Company and Ashland Mining Company are both reported to have been acquiring leases and have manifested an interest in the taconite development in Wisconsin; Jones & Laughlin and Inland have also been reported to have shown some interest in a development in that state.

Besides these developments, there was much discussion at the recent meeting in Duluth of the American Institute of Mining Engineering on the possibility of using various processes called direct reduction processes on low grade ores. An article in the ENGINEERING AND MINING JOURNAL of December, 1957, lists more than a dozen different processes on which experimental work was being done.

Competitive Ores

Minnesota's iron mining industry is facing very serious problems because of changed competitive conditions, changed standards of quality of iron ore for blast furnace use and increased costs.

The high quality ores and concentrates now available to the steel industry, both from high grade foreign ore sources and from high grade domestic and foreign concentrates, have radically changed the standard of iron ore for blast furnace use, and have forced many revisions of ideas as to what is a competitive ore. As a result, much of the comparatively low iron and high silica ore which Minnesota was able to produce and market in the past ten or fifteen years has now become non-competitive.

Production of iron ore from sources other than Minnesota, both foreign and domestic, has been increasing rapidly in recent years. In 1957 Minnesota's share of the national market declined to less than 50%, where up to a few years ago Minnesota's share was 65% and over. Combined production of other domestic ores plus imports, in the United States in 1957, totaled 70,000,000 gross tons as against 68,000,000 gross tons shipped from Minnesota.

The amount of domestic ore, other than Minnesota ores, produced in the United States has increased from its wartime peak in 1942 of about 31½ million tons to 37 million tons while during this same period foreign ores have increased from less than five million tons to more than 34 million tons. Twenty years ago the northeastern steel consuming facilities obtained about 71 per cent of their iron ore requirements from Minnesota. In the year 1957 this same area obtained about 58 per cent of its requirements from Minnesota.

Last year nearly one-half of the iron ores shipped from Minnesota required treatment in expensive concentrating plants within the State before shipment. In addition, the greater part of the remainder of the Minnesota shipments were beneficiated by crushing and screening and sizing; the fines from the above processes must be sintered before being fed into the furnace.

Minnesota produces very little "direct shipping" ore in the ordinary meaning of that term; practically all our ores are now subject to treatment processes before they can be used in blast furnaces. There is no doubt that the extent to which these ores will have to be treated to raise their grade is going to increase rapidly in the future, if they are to meet the higher and more exacting specifications of ores now available from other competing sources.

In our 1957 report we referred to changes in blast furnace requirements and the competition of very high grade ores from other sources. We referred to the probability that "not only the low grade ore, but also most of Minnesota's better open pit ores, long known as direct shipping ore, will need to be upgraded if it is to remain competitive with high grade imported ores and manufactured concentrate." There have been continued developments along those lines as outlined in this Report under the chapter entitled "New Developments."

TABLE NO. 4
AVERAGE PRODUCTION COSTS OF IRON ORE PRODUCED IN MINNESOTA*

Year	Total Tonnage Mined	Total Cost of Development, Royalty, and Other Costs as Indicated, Except Taxes	Average Cost Per Ton of Development	Average Cost Per Ton of Mining and Beneficiation				Average Cost Per Ton of Royalty Paid	Total Cost Per Ton of All Preceding Items	Approximate Total Cost of Ad Valorem and Other Taxes	Average Cost Per Ton of All Taxes Levied	Percent of Total Taxes to Total Costs
				Labor	Supplies	Other Items**	Total					
1938	14,728,556	$ 24,197,575	$ .186	$ .409	$ .254	$ .407	$1.070	$ .387	$1.643	$18,481,689	$1.255	43.3
1939	31,789,650	41,771,509	.215	.241	.168	.258	.667	.432	1.314	22,186,212	.698	34.7
1940	48,304,658	54,780,886	.201	.183	.142	.212	.537	.395	1.133	23,075,470	.478	29.7
1941	63,736,394	72,018,215	.206	.207	.140	.162	.509	.415	1.130	24,787,232	.389	25.6
1942	70,048,716	85,168,023	.190	.234	.161	.240	.635	.390	1.215	23,644,204	.338	21.7
1943	69,004,461	89,147,416	.209	.281	.182	.269	.732	.352	1.293	21,957,593	.318	19.8
1944	65,073,476	86,156,863	.234	.253	.198	.288	.739	.351	1.324	20,667,685	.318	19.3
1945	62,482,046	83,099,814	.208	.251	.201	.324	.776	.347	1.331	20,639,726	.330	19.9
1946	49,650,356	68,658,404	.223	.271	.216	.325	.812	.348	1.383	20,599,468	.415	23.1
1947	59,967,761	89,303,822	.254	.304	.263	.336	.903	.332	1.489	25,278,693	.422	22.1
1948	65,013,706	107,734,083	.298	.308	.284	.405	.997	.362	1.657	26,927,951	.441	20.0
1949	55,187,871	101,501,196	.341	.360	.294	.492	1.146	.352	1.839	31,452,161	.570	23.7
1950	64,793,019	126,730,978	.305	.396	.247	.542	1.185	.376	1.956	36,713,983	.567	22.5
1951	78,307,286	165,854,594	.484	...	.696 ...	.580	1.276	.359	2.119	46,271,049	.591	21.8
1952	63,374,126	164,759,987	.558		.878	.790	1.668	.374	2.600	41,820,673	.660	20.2
1953	79,083,401	215,691,437	.659		.874	.800	1.674	.394	2.727	54,837,248	.693	20.3
1954	47,142,238	149,952,105	.659		.998	1.074	2.072	.449	3.180	40,728,252	.864	21.4
1955	66,545,405	182,477,851	.646		.788	.851	1.639	.457	2.742	56,638,885	.851	23.7
1956	57,528,667	181,127,012	.604		.989	1.062	2.051	.493	3.148	53,252,257	.926	22.7
1957	61,303,889	200,374,959	.660		.989	1.145	2.134	.474	3.268	63,312,361	1.033	24.0

*Tonnage of all ore mined in Minnesota; total costs and costs per ton of development and operation chargeable to mining; and total costs and cost per ton of all mining taxes, as reported for Occupation Tax purposes, for years 1938-1957, inclusive.

**Includes: administration (local and district), depreciation, beneficiation (including crushing and screening), stockpile loading, and miscellaneous costs.

Authority: Minnesota Department of Taxation.

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1941	63,736,394	72,013,215	.206	.207	.140	.162	.509	.415	1.130	24,787,232	.389	25.6
1942	70,048,716	85,168,028	.190	.234	.161	.240	.635	.390	1.215	23,644,204	.338	21.7
1943	69,004,461	89,147,416	.209	.281	.182	.269	.732	.352	1.293	21,957,593	.318	19.8
1944	65,073,476	86,156,803	.234	.253	.198	.288	.739	.351	1.324	20,667,685	.318	19.3
1945	62,482,046	83,099,814	.208	.251	.201	.324	.776	.347	1.331	20,639,726	.330	19.9
1946	49,650,356	68,658,404	.223	.271	.216	.325	.812	.348	1.383	20,590,468	.415	23.1
1947	59,967,761	89,308,822	.254	.304	.263	.336	.903	.332	1.489	25,278,608	.422	22.1
1948	65,013,706	107,734,083	.298	.308	.284	.405	.997	.362	1.657	28,627,951	.441	20.0
1949	55,187,871	101,501,196	.341	.360	.294	.492	1.146	.352	1.839	31,452,161	.570	23.7
1950	64,798,019	120,736,978	.395	.396	.247	.542	1.185	.376	1.956	36,713,983	.567	22.5
1951	78,307,286	165,854,594	.484	... .696	...	.580	1.276	.350	2.110	46,271,049	.591	21.8
1952	63,374,126	164,759,987	.558	.878		.790	1.668	.374	2.600	41,820,073	.660	20.2
1953	79,083,401	215,691,437	.659	.874		.800	1.674	.394	2.727	54,887,248	.698	20.3
1954	47,142,238	149,952,105	.659	.998		1.074	2.072	.449	3.180	40,728,252	.864	21.4
1955	66,545,406	182,477,851	.646	.788		.851	1.639	.457	2.742	56,638,886	.851	23.7
1956	57,528,667	181,127,012	.604	.989		1.062	2.051	.493	3.148	53,252,257	.926	22.7
1957	61,303,889	200,374,959	.660	.989		1.145	2.134	.474	3.268	63,812,861	1.038	24.0

*Tonnage of all ore mined in Minnesota; total costs and costs per ton of development and operation chargeable to mining; and total costs and cost per ton of all mining taxes, as reported for Occupation Tax purposes, for years 1938-1957, inclusive.

**Includes: administration (local and district), depreciation, beneficiation (including crushing and screening), stockpile loading, and miscellaneous costs.

Authority: Minnesota Department of Taxation.

TABLE NO. 5
AVERAGE PRODUCTION COSTS OF OPEN-PIT AND UNDERGROUND ORE PRODUCED IN MINNESOTA*

				Average Cost Per Ton of Mining and Beneficiation						
Year	Total Tonnage Mined	Total Cost of Development, Royalty, and Mining	Average Cost Per Ton of Development	Labor	Supplies	Total Labor and Supplies	Other Items (Including Benef.)	Total	Average Cost Per Ton of Royalty Paid	Average Cost Per Ton of All Preceding Items
Open Pit Operations										
1940	44,008,093	44,640,364	.217	.108	.109	.217	.184	.401	.397	1.015
1941	58,771,355	60,547,192	.218	.138	.109	.247	.149	.396	.418	1.032
1942	64,051,827	72,290,635	.202	.154	.131	.285	.232	.517	.394	1.113
1943	63,761,539	75,491,717	.221	.195	.152	.347	.267	.614	.352	1.187
1944	61,177,038	75,309,811	.246	.185	.170	.355	.279	.634	.351	1.231
1945	59,012,981	72,960,183	.217	.183	.175	.358	.320	.678	.341	1.236
1946	47,312,055	61,036,079	.282	.199	.188	.387	.325	.712	.346	1.290
1947	56,648,101	77,761,752	.266	.217	.232	.449	.331	.780	.327	1.373
1948	61,075,597	93,888,374	.313	.219	.251	.470	.405	8.75	.349	1.537
1949	51,804,480	88,647,173	.360	.260	.258	.518	.500	1.018	.333	1.711
1950	61,098,092	111,225,426	.416	.292	.221	.513	.531	1.044	.360	1.820
1951	74,882,218	148,105,427	.507	.....	.....	.570	.570	1.140	.344	1.991
1952	60,054,675	147,894,220	.587	.....	.....	.727	.785	1.512	.364	2.463
1953	75,780,280	197,481,036	.685	.....	.....	.743	.791	1.534	.387	2.606
1954	44,441,250	134,177,978	.693	.....	.....	.817	1.069	1.886	.440	3.019
1955	63,992,833	167,091,396	.668	.....	.....	.659	.838	1.497	.446	2.611
1956	55,354,588	166,459,480	.624	.....	.....	.853	1.048	1.901	.482	3.007
1957	58,704,361	182,712,776	.686	.....	.....	.830	1.132	1.962	.464	3.112
Underground Operations										
1940	**4,296,565	10,140,522	.040	.947	.487	1.434	.507	1.941	.381	2.362
1941	**4,964,992	11,466,023	.060	1.033	.501	1.534	.335	1.869	.380	2.309
1942	**5,006,880	12,877,388	.054	1.238	.543	1.781	.347	2.128	.344	2.526
1943	**5,242,022	13,655,699	.064	1.353	.550	1.903	.293	2.196	.343	2.603
1944	**3,896,438	10,847,052	.043	1.321	.628	1.949	.425	2.374	.367	2.784
1945	**3,469,065	10,139,631	.050	1.403	.637	2.040	.392	2.432	.441	2.923
1946	**2,337,701	7,622,325	.044	1.734	.780	2.514	.324	2.838	.379	3.261
1947	**3,319,570	11,542,070	.043	1.787	.797	2.584	.441	3.025	.409	3.477
1948	**3,938,109	13,845,709	.055	1.697	.808	2.505	.390	2.895	.566	3.516
1949	**3,383,391	12,853,923	.047	1.896	.846	2.742	.380	3.122	.630	3.799
1950	**3,694,127	15,511,552	.048	2.112	.668	2.780	.720	3.500	.645	4.199
1951	**3,925,078	17,749,167	.040	.....	.....	3.077	.764	3.841	.640	4.521
1952	**3,319,451	16,900,867	.051	.....	.....	3.608	.877	4.485	.535	5.091
1953	**3,294,121	18,210,401	.064	.....	.....	3.888	.994	4.882	.582	5.528
1954	**2,700,988	15,774,037	.060	.....	.....	3.967	1.172	5.139	.611	5.840
1955	**2,552,572	15,380,455	.094	.....	.....	4.024	1.167	5.191	.743	6.028
1956	**2,174,079	14,667,592	.091	.....	.....	4.465	1.423	5.888	.768	6.747
1957	**2,590,028	17,662,188	.085	.....	.....	4.567	1.430	5.997	.714	6.796

*Tonnage of all ore mined in Minnesota in years 1938 to 1957, inclusive; comparison of total cost per ton for development and other costs incurred in mining, as between *open pit and underground* operations.
**Percent of Total: 1940, 8.89%; 1945, 5.55%; 1950, 5.70%; 1951, 5.01%; 1952, 5.24%; 1953, 4.17%; 1954, 5.73%; 1955, 3.84%; 1956, 3.78%; 1957, 4.24%.
Authority: Minnesota Department of Taxation.

TABLE NO. 6
IRON ORE IMPORTED INTO THE UNITED STATES
1947 through 1957

From Minn. Mining Directory
For years 1951-1957.

(In Gross Tons)

COUNTRY	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	TOTALS
Algeria	30,733	405,224	415,501	494,842	446,273	66,008	21,150	20,100	20,255	10,600	......	1,939,186
Argentina	......	......	20	......	......	......	......	......	......	......	......	20
Belgium & Luxemberg	21	2	......	......	......	......	......	......	......	......	......	23
Brazil	85,584	295,926	351,134	691,579	1,037,828	1,010,910	458,282	595,907	1,010,579	1,223,047	1,430,880	8,191,615
British W. Africa	22,970	18,528	59,548	192,669	255,817	217,760	231,600	250,820	137,699	161,698	169,646	1,718,755
Canada	1,553,245	985,846	1,023,891	1,859,109	1,961,990	1,822,038	1,840,988	3,537,489	10,077,238	13,740,806	12,536,809	51,544,534
Chile	1,662,241	2,631,907	2,627,007	2,569,980	2,767,207	1,861,575	2,363,401	1,664,300	1,035,399	1,563,783	2,740,709	23,487,599
Costa Rica	......	......	......	......	......	449	3,076	......	......	......	......	3,525
Cuba	153,050	34,500	11,589	29,000	4,228	87,536	196,076	32,165	40,107	93,041	33,166	715,143
Denmark	......	......	......	......	......	......	123	......	......	169	98	390
Dominion Republic	......	......	......	......	......	18,408	80,401	89,160	101,934	162,612	149,295	601,810
Egypt	......	......	7,500	......	......	......	......	......	......	......	......	7,500
France	702	9,041	......	500	......	......	......	......	......	......	......	10,243
French Morocco	......	8,690	......	......	......	......	......	......	......	......	......	8,690
Iran	1,500	3,000	1,500	3,000	1,500	2,972	2,953	2,953	......	3,937	......	23,315
Italy	16	9,451	......	......	......	......	......	......	......	......	......	9,467
Liberia	......	4	30	......	110,128	572,485	710,290	763,610	927,988	1,217,960	1,012,626	5,315,116
Mexico	54,966	163,149	169,823	190,958	109,563	114,309	241,036	140,803	176,293	132,934	235,910	1,790,404
Netherlands	......	......	7,114	......	......	......	......	......	......	......	......	7,114
Norway	28,246	108,616	......	......	......	......	......	......	......	......	......	136,862
Panama	......	......	......	......	......	......	......	......	......	268	......	268
Peru	......	......	......	......	......	......	844,481	1,031,920	1,554,101	1,840,320	2,358,886	8,529,709
Philippines	......	4,160	5,250	3,600	......	......	......	......	......	23,500	......	36,510
Spain	......	6,449	9,200	......	74,306	4,600	10,690	235	......	......	......	105,480
Spanish Africa	......	8,500	......	39,680	8,750	......	......	......	......	......	......	56,930
Sweden	1,286,896	1,358,962	2,027,155	2,037,249	2,522,011	2,111,100	2,097,522	1,543,753	1,221,334	999,124	676,929	17,882,035
Tunisia	6,000	56,358	82,815	119,093	134,775	19,200	19,700	......	......	......	......	437,941
Un. of S. Africa	8,952	......	......	......	9,450	4,800	1,000	......	......	......	14,298	38,509
United Kingdom	600	351	302	751	446	690	444	362	2,079	599	496	7,120
Venezuela	......	......	......	......	685,416	1,845,770	1,949,018	5,209,812	7,154,564	9,251,254	12,293,271	38,389,711
TOTALS	4,895,672	6,108,754	7,398,879	8,231,600	10,139,678	9,760,625	11,074,035	15,792,450	23,459,660	30,431,152	33,658,019	160,945,524

From Minnesota Mining Directory
Years 1941 through 1958

TABLE NO. 7

IRON ORE SHIPMENTS OF THE UNITED STATES BY DISTRICTS AND STATES

(Exclusive of ore containing 5% or more of manganese)

(In Gross Tons)

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	TOTALS
LAKE SUPERIOR DIST.												
Michigan	12,965,482	12,896,478	10,993,239	12,821,344	13,611,621	11,779,366	13,312,766	9,709,167	14,143,509	12,536,009	13,122,875	137,891,856
Minnesota	62,486,102	67,923,287	55,943,714	64,538,759	78,164,527	63,906,069	80,533,670	48,613,338	69,419,334	62,637,317	67,656,040	721,772,107
Wisconsin	1,543,099	1,468,953	1,405,775	1,701,619	1,745,120	1,485,845	1,655,331	1,428,910	1,880,029	1,488,361	1,576,057	17,385,099
	76,944,683	82,288,668	68,342,728	79,061,722	93,521,268	77,171,280	95,501,767	59,751,415	85,448,872	76,661,687	82,354,972	877,049,062
NORTHEAST. STATES												
New Jersey	468,895	436,872	448,480	588,199	657,930	685,406	815,905	476,102	759,550	......	876,605	6,218,548
New York	......	......	2,344,518	2,917,257	3,649,581	2,896,581	3,414,859	2,802,873	3,201,927	......	3,328,904	24,556,400
Pennsylvania	3,431,593	4,054,662	952,762	1,116,338	1,215,033	992,170	1,020,826	708,109	838,349	(3)	......	14,329,842
	3,900,488	4,491,034	3,745,760	4,621,794	5,522,494	4,574,107	5,251,590	3,987,174	4,799,826	4,924,989	4,205,509	50,024,774
SOUTHEAST. STATES												
Alabama	7,207,556	8,024,052	7,314,204	7,402,208	8,181,737	7,243,214	7,446,130	5,913,462	6,813,670	5,632,708	6,222,884	77,401,825
Georgia	295,992	278,735	228,689	202,427	357,754	319,959	259,964	221,576	......	......	442,672	2,918,207
Tennessee	......	......	......	......	35,908	14,172	......	......	315,430	(3)	......	35,908
Virginia	6,782	2,991	4,349	5,245	7,248	......	18,702	24,675	......	......	......	84,164
	7,510,330	8,300,778	7,547,242	7,609,880	8,582,647	7,577,345	7,724,796	6,159,713	7,129,109	6,040,754	6,665,556	80,848,150
WESTERN STATES												
Arkansas	......	......	......	1,444	1,348	115	254	718	......	(3)	6,973	10,845
California	373,574	345,868	584,109	849,489	1,182,799	1,463,239	1,697,652	1,270,292	1,776,536	2,414,277	(3)	11,957,830
Missouri	171,356	165,326	(2)	194,138	172,466	268,218	274,698	173,394	260,560	188,505	529,989	2,398,645
Montana	......	......	......	......	......	......	......	......	......	......	35,538	35,538
Nevada	5,452	8,945	(2)	5,465	209,010	911,657	444,081	351,250	324,602	916,592	904,455	4,171,509
New Mexico	......	......	......	14,284	32,210	7,793	7,525	3,316	9,218	(3)	150	74,496
Texas	289,273	746,274	568,722	1,189,415	1,058,131	787,193	1,014,087	881,190	875,448	(3)	......	7,405,578
Utah	2,821,293	3,283,122	2,698,682	3,111,167	4,687,239	3,990,505	4,617,288	3,040,046	3,847,402	4,001,789	4,155,988	40,155,021
Washington	2,268	5,364	(2)	......	......	......	......	......	......	......	8,591	11,228
Wyoming	651,471	689,591	539,554	491,906	616,949	484,945	654,285	458,287	748,881	(3)	786,184	6,071,908
Undistributed	......	......	147,645	......	......	......	8,609	12,522	16,470	(3)	4,558,067	4,743,371
	4,314,687	5,194,485	4,538,660	5,857,308	7,995,147	7,918,665	8,719,884	6,191,563	7,859,062	9,112,611	10,930,885	78,627,457
Puerto Rico	......	......	......	......	39,219	138,613	......	......	......	......	......	177,832
*By Product Ore	644,447	546,749	512,876	613,706	569,277	597,574	624,444	828,417	1,016,935	979,883	812,949	7,746,757
GRAND TOTALS	93,314,635	100,821,714	84,687,275	97,764,410	116,230,052	97,972,584	117,821,981	78,918,282	106,253,804	97,719,424	104,969,871	1,094,474,032

*Obtained from treating pyrites
(2) Included with Undistributed
(3) Tonnage for individual state not available—included in District and Grand Totals.

St. Lawrence Seaway

The immediate and long-range effects of the St. Lawrence Seaway project on iron ore traffic from Minnesota ports on Lake Superior remain to be seen. While the deepening of the Great Lakes channels may be seen as beneficial in speeding the flow of Minnesota ore to lower lakes steel mills, it also is likely to have similar effects on imported ore movement via the St. Lawrence.

The project itself was authorized solely on the basis of potential economic savings to United States bulk carriers moving iron ore, stone and grain. However, as the channels are deepened it opens the Great Lakes to ocean-going ships using the St. Lawrence Seaway. It should be noted, too, that Canadian ore also will be flowing to Great Lakes ports.

The 130 miles of Great Lakes connecting channels will be deepened to a minimum of 27 feet. Channels also will be realigned and widened. The Seaway has been described as an international waterway from the Atlantic Ocean to Duluth, a distance of 2,340 miles. When the project is completed it is estimated the 27-foot waterway will be deep enough for 80 per cent of the ocean vessels at a safe draft of 25½ feet.

Literally, the Great Lakes-St. Lawrence Seaway is an uphill battle, as Col. Desloge Brown noted in a report at a 1958 Minnesota resources conference at Virginia, Minn. He is a U. S. Army engineer, St. Paul district, assigned to the project in the Lake Superior area.

Colonel Brown told how ocean vessels, starting at sea level, and bound for Lake Superior, will climb to an elevation above sea level of 602 feet over the more than 2,000-mile course.

At the time of Colonel Brown's report the entire project of deepening the channels was considered about 10 per cent complete. Date for completion of the project was set at 1964 if requested funds for the time schedule were appropriated by Congress. Some lower portions of the Seaway were expected to be ready for deep draft vessel traffic in the spring of 1959.

It was noted that 50 years' past experience on the Great Lakes has shown that vessel interests always have taken advantage of the deeper channels. As a business advantage, it was shown that a one-inch increase in draft means 90 to 100 more tonnage may be carried in a ship, with resulting savings in transportation costs.

Three contracts on projects involving the deepening of the St. Mary's river from Lake Huron to Lake Superior are scheduled for completion by June of 1959.

ST. LAWRENCE SEAWAY

Benefits from the Seaway project are expected to be available when it is half finished by careful coordination of vessel traffic.

Need for harbor improvement also was indicated. Colonel Brown said Duluth-Superior harbor has 25-foot channels to the ore docks and 20 to 22 feet depths to other harbor areas. A study has been assigned to U. S. Army engineers to determine the advisability of further improvements of Great Lakes harbors in the interest of present and prospective deep-draft commerce.

Interim survey reports are being submitted first for harbors which are important in transportation of bulk commodities such as iron ore, coal, limestone and grain. The Duluth harbor is in this category with its 65 million net ton average marine commerce.

The study also involves traffic analysis for each harbor expected to utilize deep-draft vessels engaged in foreign commerce. A considerable amount of basic research is necessary because this is a new type of traffic potential on the Great Lakes.

Benefits for the State of Minnesota were seen by Colonel Brown as he pointed out that Duluth-Superior is the first harbor on the western end of the St. Lawrence Seaway route, giving it a strategic location for foreign and domestic commerce to and from areas west and south, including St. Paul and Minneapolis. He cautioned, however, against expecting a quick major change in the economy. In his opinion, it will take many years for Minnesota to realize the full potential of the Seaway.

Tax Evaluation

The 1955 Report of this Commission includes a section on the "Administration of Tax Laws." A Digest of Minnesota Laws Applicable to iron ore taxation are set out in this report on pages 7 to 22. In brief Minnesota imposes four general forms of taxation upon the iron ore industry as follows:

1. **The General Property tax,** levied on an "ad valorem" basis, against all real and personal property in the State, with certain exemptions. As applied to iron mining, it taxes iron ore, mined or unmined, and mining machinery, equipment and concentrating plants (other than taconite and taconite facilities).

2. **An Occupation Tax** (Minnesota Statutes 1957, Sections 298.01-298.21) upon the business of mining or producing iron ore or other ores in the State, at the rate of 13.65% (including the Korean Soldiers' Bonus Tax, and the 15% surtax), of the gross value of the ore produced less royalties paid and certain specified expenses of production. In the case of taconite and certain high labor cost operations, the tax is reduced by a "labor credit." The net over-all effective rate after labor credits was 12.67%, in 1957.

3. A **Royalty tax** upon royalties for permission to explore, mine, take out, and remove ore from land in the State, (Minnesota Statutes 1957, Section 299.01, et seq.) the present rate being 13.65% (including the Korean Soldiers' Bonus Tax, and the 15% surtax) on the gross royalty. While undoubtedly intended to be a tax on the royalty as income, payable by the recipient, a United States Supreme Court decision that it was a tax on the land measured by the royalty, rather than a tax on the royalty as income, has resulted in this tax being a liability of the operator rather than of the royalty recipient.

4. **Taxes upon taconite and taconite operations:**

   a. A taconite production tax (Minnesota Statutes 1957, Section 298.23, et seq.) upon taconite and the mining and production of iron ore concentrate therefrom. It is in lieu of the general property tax upon taconite or the lands in which contained, and the machinery, equipment or personal property used in such mining or production. It is at the rate of 5¢ per ton of concentrate produced, plus 1/10 of 1¢ per ton for each 1% that the iron content of the concentrate exceeds 55%.

   b. A taconite railroad tax (Minnesota Statutes 1957, Section 294.21, et seq.). This imposes a tax at the rate of 5% of gross earnings upon taconite railroads operating other than as a common carrier; it covers such railroads used for the transportation of taconite concentrates from plant to shipping point within the State or in transporting crude taconite from mine to concentrating plant. The rate is the same as applicable to common carrier railways in the State.

c. Various laws imposing special taxes on taconite operations for certain local purposes such as school buildings, etc.

d. Taconite operations remain subject to the occupation and royalty tax laws in the same manner as other iron ore operations except that the present rate of these taxes on taconite is 12% including the 1% Korean Soldiers' Bonus tax, (M.S. 298.011, 299.01) instead of 13.65% imposed on other iron ores. In the case of the Occupation tax this rate is further substantially reduced by reason of the "labor credits" provision.

During the past interim representatives of the mining industry have appeared before this Commission submitting that the State's approach to the taxation of iron ore should be based on an abandonment of the theory that the iron ore industry should be looked upon as a convenient source of taxes which no one else in the State wishes to pay.

The industry contends there should be a program of tax reform which will place the iron ore industry on substantially the same basis as other industries in Minnesota. It was stated by an industry representative that if the steps to accomplish this seem drastic, it is only because in the past the discrimination has been so great; that essentially the industry is not asking for tax favors—it is asking only for the removal of discrimination between the iron ore industry and the other industries in the state.

Representatives of the iron ore mining industry, before this Commission, proposed a program looking toward the reduction of taxes on iron ore operations to substantially the same level as taxes imposed upon other industries in the State.

In proposing such a program, W. K. Montague, attorney for the Lake Superior Industrial Bureau, an association of iron mining companies in Minnesota, stated that they realized that this program could not be carried out at one time and that the approach to it must be by a series of steps.

Mr. Montague also stated: "However, we (the industry) point out that unless substantial relief is provided immediately, the remedies may come too late. It may be regrettable that the changes were not made some years ago. The State may have suffered by the delay. In general, it can be said that the steel companies, both large and small—the customers for iron ore—are rapidly making long term commitments requiring very heavy investments for future sources of supply. Once these commitments are made, the competitive battle is lost, and it will be too late to attempt to reverse the decision."

With these considerations in mind, the industry made the following specific proposals to the Commission with reference to the four general forms of taxation upon the iron ore industry in the State (the four general forms of taxation are set out at the beginning of this Chapter):

Occupation Tax

A. Instead of the discriminatory occupation tax, the mining industry should be put under the Corporate Income Tax Law in the same manner and at the same rates as applicable to other industries in Minnesota, including other industries—such as the granite, limestone, sand, gravel, and timber industries—dealing with natural resources. Of course, this would require a constitutional amendment repealing the present occupation tax provisions of the Constitution.

B. Until such a constitutional amendment is approved, it was urged that the legislature take steps, within the framework of the occupation tax law, to reduce the burden of the occupation tax to the approximate level of the tax imposed on other industries by the Corporate Income Tax Law. This would require the following steps:

1. A reduction in the rate of that tax to a rate such that the burden of the tax will be substantially equivalent to the net income tax imposed on other business and industrial corporations in the State. Due to the method of conducting mining operations, it is difficult to provide for the deduction of Federal income taxes within the framework of the Occupation Tax Law, as is done in the case of other corporations under the Income Tax Law. Because of this fact, to achieve equality, the statutory occupation tax rate should be reduced to approximately 65% of the stated income tax rate for other corporations.

2. The special surtax imposed by Section 298.011 of the statutes for the Korean bonus, and the special surtax imposed by Laws 1957 (Extra Session), Chapter 1, Article IV, both of which expire on December 31, 1958, should not be continued.

3. Permit the full deduction, as a cost, of all ad valorem or general property taxes levied against a particular mining property, in computing the occupation tax against that property. At the present time, the Occupation Tax Law has an entirely illogical and unfair provision under which only a small proportion of the ad

valorem taxes is deductible as a cost in any year. For instance, if in a particular mine, there is a ten-year supply of ore, the ad valorem tax each year is levied upon and against that entire amount of ore, but only one-tenth of the amount paid each year would be deductible as a cost of operating the mine for occupation tax purposes. To illustrate the unfairness of this procedure, if a similar theory were applied to the corporate income tax on any other industrial concern operating a factory, where the building had a life of twenty-five years, the law would permit the corporation to deduct, as a cost, only one-twenty-fifth of the actual ad valorem taxes paid upon the building each year.

4. Permit the deduction of administrative, research and general business expenses, properly allocable to a particular mine, in the same manner that such expenses would be deductible under the Corporate Income Tax Law.

5. Permit the carrying forward of losses, including carrying charges during idle periods, to subsequent years in the same manner and to the same extent as in the case of other industries under the Corporate Income Tax Law.

Royalty Tax

A. It was urged that the Royalty Tax Law be repealed. It was originally intended by the legislature as a tax upon the royalty recipient, but, to avoid constitutional questions, the Supreme Court held it to be a tax on the land—therefore, payable by the operator under most mining leases. Because of this fact, when the Income Tax Law was adopted, the royalty received by the fee owner was subjected to State income taxation under the Individual and Corporate Income Tax Laws. The Royalty Tax Law, therefore, results in a doubling up of taxation, the royalty being taxed once to the operator, under the Royalty Tax Law, and the second time to the royalty recipient, under the State Income Tax Law.

B. Until such time as the repeal of the Royalty Tax Law is effective, the industry urged the following proposals relative thereto:

1. Permit the deduction as a cost, in computing the occupation tax, of royalty taxes if paid by the operator. They are business costs just as much as the ad valorem tax is, and should be deductible in computing the occupation tax.

2. Amend the Royalty Tax Law to provide that, in the case of any operating mine, the tax upon royalty paid by the operator shall be at the same rate as the effective net occupation tax rate, after the application of labor credits. In other words, the occupation tax and the royalty tax paid on a particular mining operation

should both be at the same net rate. This was proposed in a bill passed by the House four years ago, but was lost in the confusion at the end of the 1955 session. In view of the fact that the royalty tax is deducted at the source and paid quarterly on a tentative basis, there would have to be administrative provisions for revision and refund of credits when the net occupation tax has been determined.

Special Production Tax In Lieu of Ad Valorem Taxes Upon Ores Requiring Fine Grinding

Much of the low grade ore materials of the Western Mesabi cannot be made merchantable except by a concentrating process which will require fine grinding, roasting, magnetic concentration and pelletizing, or substitute processes just as complicated and expensive. The material differs from the non-magnetic taconite only in not being in compact rock form. Substantially the same investment in plant and equipment will be required as in the case of taconite. The production tax should be at a fixed rate per ton in lieu of any tax on the plant or the equipment or the material in the ground. Since at the present time there are no such plants in operation, and most of the material is presently worthless, there would be no substantial loss of current tax revenues.

Ad Valorem or General Property Taxes

A. An effective equalization of full and true values of both real and personal property as between mining and non-mining property in the Range taxing districts, put in such form that it can be enforced. In realization of the fact that this would probably have to be spread over a short period of years to avoid the sudden drastic changes that would otherwise be necessary, the basic provisions should probably require administrative action. However, they should be cast in such form that if the administrative officials do not act, relief can be had in the Courts. Such a bill might require the Commissioner of Taxation, in fixing or equalizing the valuation of iron ore properties, to apply to the full and true valuation determined by him, an equalization factor which, over a period not exceeding four years, would reduce iron ore valuations to the average ratio applicable to real and personal property, other than iron ore, in taxing districts. Or, in lieu thereof, over a period not exceeding four years, he should be required to raise the valuation of other real and personal property and reduce the valuation of iron ore, so that both are valued at the average ratio applicable to other property in the State.

Failure to make such adjustments should be a good defense in the tax proceedings.

B. Reduce the class rate applicable to iron ore from the present 50% of full and true to the 40% applicable to other industrial real estate, with corresponding reductions in the class rates applicable to low grade ore under Section 273.15 of the statutes.

C. Make applicable to the Vermilion Range underground ores the provisions of Section 273.13, Subd. (2), by which underground ore in stockpile is assessed at the same amount per ton as would be assessed if it were still unmined. Under present laws, the Vermillion Range underground ores are severely penalized since their whole winter's production of ore is in stockpile on May 1st and assessed at the increased value given to it by the mining operations.

D. Amend Section 273.13, Subd. (2), dealing with the assessment of underground ores and ores which must be concentrated to be suitable for blast furnace use, and which are mined and placed in stockpile. This should be made applicable to such ores requiring concentration both while they are in stockpile after concentration, and while stockpiled preliminary to or in process of concentration. The purpose of these provisions was to avoid the heavy penalties imposed on winter operations which would result if the stockpiled ore were subjected to taxation at the increased value given to it by the mining and concentrating operations. However, the limitations of the act are such that the stockpiled ore must be shipped within two years—otherwise it then becomes subject to assessment at the increased value. This restriction has worked to the disadvantage of employment during a recession year like 1958. In several cases companies might have increased their production of ore—and, therefore, their employment—if they had not been under this statutory compulsion to ship stockpiled ore in order to avoid the impending sharp increase in personal property taxes. It is probable there would be more employment in recession periods if the period were extended to at least four years, and the requirement that the ore must have been produced during the winter months were removed. The law would not then penalize the company which attempted to sustain employment during recession periods by continuing to produce ore which could not be shipped and would have to be stockpiled.

* * *

Joseph Robertson, commissioner of taxation, appeared before this Commission and spoke on the subject of taxation. In part, he said:

"One of the biggest tax problems facing state and local government generally today is the problem of equalized assessments for ad valorem tax purposes. It is a problem that should be of concern to all Minnesotans because there are inequities in our assessments in this state and our property tax levies are substantial dollar-wise, now exceeding a $\$1/3$ billion annually. The state and its political subdivisions are currently levying in excess of $\$1/3$ billion annually on real and personal property, it is essential that this sum be allocated equitably among the taxpayers of the state. If this is to be done all property must be assessed equally.

"The law, as I understand it, long has contemplated that the original valuation of property for ad valorem tax purposes should be made on an equitable basis at its full market value. We all know this has not been done and according to the latest available data gathered by the Department of Taxation in the conduct of its assessment ratio study, this is about the situation that exists at the present time based on the 1956 assessments.

STANDARD OF ASSESSMENT OF REAL PROPERTY IN MINNESOTA 1955 SURVEY AND 1957 SURVEY

	Year of Survey	True and Full Value	Estimated Market Value	Ratio
Residential	1955	$ 837,913,470	$2,883,426,655	29.1%
	1957	1,012,515,558	3,488,655,179	29.0
Commercial	1955	230,744,926	747,217,850	30.9
	1957	266,293,299	829,487,138	32.1
*Industrial	1955	81,348,628	281,409,161	28.9
	1957	90,986,107	323,846,495	28.1
Public Utility	1955	63,145,766	139,043,765	45.4
	1957	58,843,652	136,180,453	43.2
Lakeshore	1955	24,506,228	151,288,775	16.2
	1957	31,500,845	196,730,464	16.0
Farm	1955	1,478,388,029	3,384,334,951	43.7
	1957	1,437,207,447	3,559,294,919	40.4
Rural Residential	1955	NOT USED IN 1955 SURVEY		
	1957	67,165,760	269,168,187	25.0
Total—1955		$2,716,047,047	$7,586,721,157	35.8
Total—1957		$2,964,512,668	$8,803,362,835	33.7

(Summary Report, Page 12)

* Iron ore reserves, which are assessed by the Department of Taxation at 100% of their current value, are not included.

"Our problem here in Minnesota is complicated by a number of other problems that are peculiar to our state. First, we have one of the most comprehensive and complicated classification laws in the United States, and I am sure that the assessors often find it extremely difficult to explain to many taxpayers why their taxes differ when the taxpayer realizes that the actual value of his property and the property of his neighbor is often similar. * * * * Please understand that I realize that it is not possible, or perhaps even desirable, to change our classification law at this time, but I do think it has complicated the assessment function in that it makes public understanding considerably more difficult than in many states.

"Our assessment problem in this state is seriously aggravated on the iron range where per capita limitation laws affect community fiscal affairs. Where these laws are in effect, every increase in the valuation of non-mining property results in a direct shift in the tax burdens from mining property to the non-mining property. You can, I am sure, see the serious consequences of making changes in valuations where this situation exists. Most students of property taxation maintain that the assessor's responsibility is to determine the values that are used for purposes of allocating the total levy among the various property owners. You can see, however, that changes in values by assessors within the per capita limitation framework shift tax burdens directly from one group of taxpayers to another. I do not want to belabor this point, but it is a complicating factor that very well can cause assessors to be subjected to a high degree of public censure.

"This problem becomes particularly acute when you consider that preliminary analyses that we have done in the Department of Taxation indicate that a full-fledged equalization program in St. Louis County alone, for example, would result in a shift of tax burden from 8 to 10 million dollars to residential and farm property from mining and business property.

"Another serious problem is the relationship of the valuation for ad valorem tax purposes of unmined iron ore and other types of real property. I would certainly agree with Mr. Montague when he says that tax authorities generally criticize the ad valorem method of taxation for mineral properties. Substantial reliance on the ad valorem tax on iron ore, however, is the established policy of this state. * * * * * There is a widespread belief that although considerable thought and effort has gone into fixing the valuations of iron ore for ad valorem tax purposes, that the reserve tonnage estimates have been quite conservative.

"* * * * I believe that part and parcel of any over-all program for improvement in the property equalization area should incorporate adequate facilities in the Department of Taxation and the School of Mines at the University of Minnesota for thorough and systematic reviews of reserve tonnage estimates on a regularly recurring basis. This is only fair to the mining companies and to the units of government involved.

"* * * * I believe that we have some particularly complicating factors on the Iron Range brought about as a result of our per capita limitation law applicable to that section, together with the difficulties involved in valuing iron ore in the ground for ad valorem tax purposes.

"Because the problem is particularly difficult in this state, however, should not keep us from seeking a solution to it. Where any county fails because of inadequate original assessments, the remaining counties are in effect forced to pick up the check and every time one taxpayer is improperly favored, necessarily another is improperly injured. He may never know that he has been hurt, but he has suffered the injury nevertheless. This is not fair, but any practice that continues for many years and that is generally accepted tends to become imbedded in the social fabric of the community and is extremely difficult to change.

"It seems to me that the nub of this whole problem is how to secure a sound original assessment in the first place. Most people who have studied the subject have concluded that the major weakness in assessment administration is the lack of equality of assessments at the local level in the first instance.

"As I indicated earlier, we have serious assessment inequities in Minnesota that we must give serious thought to. We are faced with a problem that has developed over many, many years, and I ask you seriously, gentlemen, is the soundest approach not one of careful consideration and gradual transition rather than one that leads to tremendous, abrupt overnight shifts in property tax burdens from one class of property owner to another.

"According to the preliminary data I referred to earlier that we have put together in the Department of Taxation, if all real estate exclusive of residential real estate, were equalized at the average ratio in cities above 10,000 a shift of approximately $9½ million in property tax levies would have occurred in 1956. This would be a shift in the tax levies to the home owners in those cities from owners of other types of property. It would seem to me that this impact would be particularly noticeable in the case of the smaller home owner because as residential values are increased, the value of the homestead exemption becomes progressively less.

"The effect of this type of program in the three first class cities of Duluth, Minneapolis and St. Paul would have been a shift of approximately $6½ million annually from the owners of other types of property to the home owners.

"In the case of the three major iron ore producing counties, Crow Wing, Itasca and St. Louis, the shift in real estate levies would probably approximate \$11½ million, about \$9.5 million in St. Louis county, about \$1.6 million in Itasca county and about \$0.2 million in Crow Wing county.

"Administrators are charged with the execution of policy. I realize and you realize that informed citizens know that the law relating to the assessment of property for ad valorem tax purposes is not being enforced at the present time. The question arises in my mind: Is it wise in terms of our long-range objectives of equality to attempt a drastic and abrupt policy change that will result in an over-night shifting of millions of dollars of our existing property tax levies from the owners of one type of property to another type of property?

"This problem of equalized assessments is not a simple one and deserves the continuous and serious thought of all thinking Minnesotans."

* * *

Members of the Commission met in Ely in December, 1958, to hear a discussion involving a proposal for an iron ore tax change aimed specifically to encourage the reopening of the Zenith underground mine there. The Zenith, a Pickands Mather operation, had been shut down several months prior to the meeting. It had been in operation since 1892.

Chief spokesman for the Ely delegation was Mayor J. P. Grahek. He said that the closing of the Zenith mine caused great concern in the community because it was an important factor in the city's economy. The mine had employed approximately 250 persons and in 1957 the total payroll for the year amounted to \$1,459,533.

As a result of the closing of the Zenith mine the mayor formed a New Development Committee and each organization in the community was asked to designate two representatives. The committee, the mayor said, had studied the situation thoroughly and determined that the problem of taxation was one of the reasons for the closing of the Zenith mine.

The New Development Committee recommended the abolition of personal property taxes levied on stockpiled ore produced in Ely underground mines. Mayor Grahek declared: "We are fully aware that the iron ore industry has changed * * * and that the ore on the Iron Range is now a very competitive product." He also noted that they were aware of the fact that the stockpile tax originally was passed as legislation favorable to the Vermilion Range.

It was brought out that the W. S. Moore Company in a joint venture with the North Range Company was considering leasing the Zenith property and reopening it if certain conditions were met. W. S. Moore and F. J. Haller were present at the hearing, representing the two companies.

Tax reduction or revision, purchase of mining equipment at reasonable cost and market for ore were listed as main steps necessary to put the Zenith mine back in operation. It was held that the tax load on the mining industry is most keenly felt in the underground operations because of rising production costs.

Underground mines were described as more valuable to a community than open pit mines because they could be operated on a more stable year-around basis and therefore should enjoy certain tax advantages. Mr. Moore noted that was accomplished quite well by labor credits. "But," he said, "the stockpile tax was the reverse of that and placed a double tax on the ore that was shipped because it was assessed as a reserve underground * * * and in stockpiles taxed again as personal property."

The estimated life of the Zenith mine, if back in operation, was placed at five to six years. This span would be doubled if substantial quantities of ore requiring special processing could be used.

The Pioneer mine, an Oliver Mining Division operation, and Soudan were mentioned as being similarly affected if stockpile tax revision or abolition were to apply uniformly over the Vermilion Range.

It was noted that an estimated 65 to 70 per cent of those left unemployed at the Zenith mine had been absorbed at the Erie mine at Hoyt Lakes, a distance of 50 miles from Ely. Bus transportation was being furnished at a cost of $1.25 per round trip.

Ernest A. Dargis, Ely city assessor, submitted an exhibit showing a breakdown of the tonnages on stockpiled ore for the Pioneer and Zenith mines from 1943 to 1958, and giving the total tax, city share, school share, county share, state share and county rural school share.

The discussion with Mr. Dargis indicated that the Oliver Mining Division (Pioneer mine) pays 63 per cent of the taxes in Ely, and that taxes on the Zenith mine provide another 18 per cent.

It was noted that if the stockpile tax were removed it would not be a total savings to the companies operating the mines because there would be a shift of a portion of the tax levies to the ore in the ground by an increase in the mill rate.

It was brought out that the Ely committee understood there would be shift of some of the tax lost by removal of the stockpile tax. Committee spokesmen explained that the community is aware that it faces the prospect of higher local real estate taxes to help offset the loss.

TAX EVALUATION

Pleas were heard for economies in local governmental unit expenditures in view of the revenue problems.

TABLE NO. 8

	IRON ORE TAXES				Total Tonnage of Iron Ore Produced*
	Ad Valorem	Occupation	Royalty	Total	
1914-1915	$ 13,935,202	....	....	$ 13,935,202	55,411,561
1916-1920	70,168,134	....	....	70,168,134	206,588,420
1921	18,185,156	$ 2,238,328	....	20,423,484	17,495,578
1922	18,411,500	3,440,597	....	21,852,097	28,770,120
1923	19,655,268	6,126,443	$ 1,027,847	26,809,558	44,843,457
1924	18,736,356	2,859,735	895,825	22,491,916	32,425,027
1925	18,570,829	2,316,432	845,072	21,732,333	37,580,850
1926	17,267,679	2,725,312	910,636	20,903,627	41,662,490
1927	17,342,382	2,183,308	916,825	20,442,515	36,474,549
1928	16,844,349	2,466,257	879,520	20,190,126	38,532,003
1929	17,251,700	3,786,352	1,044,696	22,082,748	46,922,911
1930	17,085,645	2,782,361	921,167	20,789,173	36,239,106
1931	16,617,217	1,383,145	649,804	18,650,166	18,370,526
1932	15,857,490	260,604	415,793	16,533,887	5,496,070
1933	16,582,129	958,388	335,600	17,876,117	12,597,805
1934	17,666,132	1,228,626	364,129	19,258,887	16,206,453
1935	17,323,829	1,387,546	459,951	19,171,326	19,954,430
1936	18,012,178	2,637,977	547,048	21,197,203	32,501,729
1937	17,269,567	9,033,930	1,305,385	27,608,882	49,619,930
1938	16,255,212	1,618,439	607,988	18,481,639	14,728,556
1939	16,431,322	4,888,964	865,926	22,186,212	31,789,650
1940	15,579,856	6,387,700	1,107,914	23,075,470	48,304,658
1941	14,564,253	8,399,387	1,823,592	24,787,232	63,736,347
1942	13,244,037	8,233,102	2,167,065	23,644,204	70,048,716
1943	13,300,103	6,711,683	1,945,807	21,957,593	69,364,022
1944	12,477,270	6,301,570	1,888,845	20,667,685	65,073,476
1945	12,588,313	6,289,279	1,762,134	20,639,726	62,482,046
1946	12,732,769	6,507,835	1,358,864	20,599,468	49,650,356
1947	13,923,528	9,700,773	1,654,392	25,278,693	59,967,761
1948	13,257,828	11,762,769	1,907,354	26,927,951	65,013,706
1949	14,901,587	14,355,466**	2,195,108**	31,452,161**	55,187,871
1950	16,565,954	18,822,662**	1,896,474**	37,285,090**	64,793,019
1951	17,241,113	26,275,375**	2,754,461**	46,271,049**	78,407,263
1952	18,721,241	20,788,836**	2,309,996**	41,820,073**	63,374,126
1953	21,039,931	30,305,803**	3,491,514**	54,837,248**	79,712,363
1954	21,622,447	16,587,915**	2,517,890**	40,728,252**	47,142,238
1955	21,848,319	31,501,136**	3,289,430**	56,638,885**	66,545,405
1956	22,170,815	27,480,461**	3,615,446**	53,266,722**	57,528,666
1957	26,587,154	33,106,380**	3,618,827**	63,312,361**	61,303,889
Total Taxes ..	$717,835,794	$343,840,876	$54,298,425	$1,115,975,095	1,851,847,149

*Production 1921 to date, as reported for occupation tax purposes.
**These figures include the additional 1% Veterans' Compensation Fund.
Authority for tax figures: Minnesota Department Taxation.

TABLE NO. 9
RATIO OF CONCENTRATES TO TOTAL PRODUCTION

Year	Washed		Other Than Washed*				
	Gross Tons	% of Total Concentrates	Gross Tons	% of Total Concentrates	Total Concentrates Gross Tons	Total Ore Shipments Gross Tons	% Concentrates of Total Ore Shipments
Prior 1907 .	0	0.0	0	0.0	0	148,247,423	0.0
1907-1910 .	668,136	100.0	0	0.0	668,136	106,968,014	0.6
1911	1,978,337	100.0	0	0.0	1,978,337	23,336,127	8.5
1912	2,875,769	93.0	215,585	7.0	3,091,354	34,195,682	9.0
1913	1,967,632	87.5	281,625	12.5	2,249,257	36,339,982	6.2
1914	1,831,504	90.9	182,833	9.1	2,014,337	23.352,360	8.6
1915	2,956,812	99.6	11,805	0.4	2,968,617	32,618,653	9.1
1916	4,072,420	96.2	162,290	3.8	4,234,710	46,189,617	9.2
1917	4,370,234	96.8	143,590	3.2	4,513,824	45,393,882	9.9
1918	4,655,198	94.7	260,290	5.3	4,915,488	44,070,710	11.2
1919	4,570,863	99.8	7,532	0.2	4,578,395	34,791,866	13.2
1920	4,973,497	98.8	59,971	1.2	5,033,468	40,348,663	12.5
1921	3,034,583	99.1	26,298	0.9	3,060,881	17,708,789	17.3
1922	4,683,906	93.4	332,876	6.6	5,016,782	30,772,162	16.3
1923	7,202,894	94.6	409,564	5.4	7,612,458	45,305,647	16.8
1924	4,852,828	91.0	478,456	9.0	5,331,284	31,589,464	16.9
1925	6,177,417	94.1	389,716	5.9	6,567,133	38,841,968	16.9
1926	5,288,071	95.1	269,804	4.9	5,557,875	41,919,575	13.3
1927	4,766,997	94.0	305,688	6.0	5,072,685	36,504,854	13.9
1928	5,296,789	90.7	544,286	9.3	5,841,075	39,167,842	14.9
1929	5,874,028	89.5	692,241	10.5	6,566,269	47,478,167	13.8
1930	4,947,841	78.0	1,391,759	22.0	6,339,600	34,881,010	18.2
1931	3,171,035	85.8	525,154	14.2	3,696,189	17,309,211	21.4
1932	266,282	91.0	26,176	9.0	292,458	2,250,200	13.0
1933	2,331,328	74.4	803,329	25.6	3,134,657	14,953,168	21.0
1934	2,656,315	77.2	783,726	22.8	3,440,041	15,967,819	21.5
1935	3,764,388	73.0	1,389,186	27.0	5,153,574	20,532,222	25.1
1936	6,693,102	86.2	1,071,399	13.8	7,764,501	33,829,341	23.0
1937	7,484,375	77.2	2,207,716	22.8	9,692,091	49,161,064	19.7
1938	2,235,037	79.1	591,407	20.9	2,826,444	14,815,811	19.1
1939	4,609,615	74.1	1,611,748	25.9	6,221,363	33,022,890	18.8
1940	7,230,091	78.5	1,977,590	21.5	9,207,681	48,949,322	18.8
1941	11,859,036	80.6	2,854,310	19.4	14,713,346	64,060,726	23.0
1942	14,268,146	79.4	3,697,070	20.6	17,965,216	75,299,667	23.9
1943	12,606,056	81.6	2,848,054	18.4	15,454,110	69,971,276	22.1
1944	12,332,746	82.1	2,696,074	17.9	15,028,820	66,586,264	22.6
1945	12,222,223	79.1	3,238,620	20.9	15,460,843	62,830,572	24.6
1946	9,710,307	82.4	2,068,771	17.6	11,779,078	50,010,067	23.6
1947	13,421,966	80.4	3,281,568	19.6	16,703,534	63,517,190	26.3
1948	14,466,947	80.4	3,516,420	19.6	17,983,367	69,108,906	26.0
1949	12,597,107	74.9	4,211,995	25.1	16,809,102	56,825,957	29.6
1950	13,056,077	65.6	6,841,058	34.4	19,897,135	65,331,865	30.5
1951	14,332,688	62.4	8,637,637	37.6	22,970,325	79,068,689	29.1
1952	10,960,437	55.8	8,686,749	44.2	19,647,186	64,719,898	30.4
1953	15,250,110	56.5	11,752,165	43.5	27,002,275	81,511,479	33.1
1954	9,829,256	52.8	8,800,011	47.2	18,629,267	49,080,759	38.0
1955	13,832,977	52.1	12,736,297	47.9	26,569,274	70,191,509	37.9
1956	10,620,341	38.3	17,080,862	61.7	27,701,203	63,203,316	43.8
1957	11,390.820	37.0	19,374,519	63.0	30,765,339	68,296,308	45.0
Totals ..	340,244,564	70.9	139,475,820	29.1	479,720,384	2,350,427,933	20.4

*Includes jigged, hi-density and other gravity concentrates, magnetite concentrates, sinter, sinter-dried ore, dried ore and taconite magnetic concentrates.
Source: Minnesota Mining Directory, 1958.

Conclusions – Recommendations

CONCLUSION

Today competition for iron ore markets has created an indisputable need for improvement in grade and texture of practically all ore mined in and shipped from Minnesota. Need for such changes has been developing in the iron ore mining industry during recent years as our reports have pointed out.

Now the change is so great that the mining industry could be renamed and called the "iron ore processing industry." The actual mining of iron ore is now only one step in the complicated procedure to produce a marketable ore acceptable for blast furnaces. Processing in some form is required for almost 100% of the Minnesota ores being produced. The so-called natural direct shipping ores are almost non-existent when compared to foreign sources. The processing of iron ore to meet blast furnace requirements is more costly, not only because of increased operating expenses but also because of the necessity of additional heavy investments in plants and equipment here in Minnesota, calling for the use of more and more labor.

Conditions have changed and Minnesota no longer has a monoply on low-cost open-pit iron ore. The supply of Minnesota high-grade ore is rapidly diminishing and high-cost concentrates made from low-grade ore are increasing. Plants to manufacture iron ore from taconite are now in successful operation and extensive experimental work is being done on low-grade intermediate ores to supplement the dwindling supply of acceptable natural ore.

Not many years ago the possibility of developing the magnetic taconites of Minnesota seemed very remote, yet great progress has been made in that field. Reserve Mining Company shipped close to 5,000,000 tons of taconite pellets in 1958 and Erie Mining Company, in its initial stage last year, shipped 2,670,000 tons. Taconite competes quality-wise with other high-grade ores and concentrates.

Minnesota non-magnetic taconites and intermediate ores can be developed in much the same way. The reserves of such ore in Minnesota are of such magnitude that they could provide a valuable potential source of marketable iron ore from this State for generations to come. However, close cooperation between the industry and the State is essential to encourage the development of ores requiring complex concentration methods. It will require every effort on the part of the industry to improve methods and reduce costs and a healthy economic climate must be provided by the State to bring about such development. A realistic tax policy can do much to insure that Minnesota retains its share of the competitive iron ore market of the future.

RECOMMENDATIONS

It is recommended that ores which are not merchantable and which, because of their fine structure cannot be concentrated by the ordinary methods of concentration, be given the same tax treatment as taconite.

It is recommended that labor credits be applied to the royalty tax so that the effective rate thereon will be the same as the effective rate of the occupation tax paid on the same ores.

CONCLUSION

At the present time we have a law which permits mined ore from underground mines to be assessed as unmined ore everywhere in Minnesota except on the Vermilion Range. This situation penalizes the Pioneer, Zenith and Soudan operations on the Vermilion Range because the stockpiles of these mines are now assessed as personal property. Such penalty has discouraged their operations. It is evident that both the industry and the community would benefit by placing the Vermilion Range stockpiles on the same tax basis as other stockpiles.

If the mining companies are to be encouraged to maintain sufficient stockpiles to permit extension of the plant operating season, all ore stockpiled for concentration and beneficiation should also be assessed as unmined ore.

RECOMMENDATION

It is recommended that legislation be introduced which would extend the benefits of the present law to the Vermilion Range underground ores and to ores stockpiled in winter months for the purpose of concentration.

* * * *

It has been called to the attention of this Commission that the State has been working on leases with interested parties in connection with potential copper-nickel deposits in a large area in and around Cook county. To encourage all possible development of this mineral in Minnesota, the following recommendation is made:

It is recommended that copper-nickel ores be given the same tax treatment as the taconite ores and that appropriate legislation be prepared and submitted to set up a tax policy on such minerals substantially the same as that now established on taconite.

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