

STATE OF MONTANA
BUREAU OF MINES AND GEOLOGY
E. G. Koch, Director

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D I R E C T O R Y
O F
M I N I N G E N T E R P R I S E S F O R 1 9 6 4

Compiled by

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Montana Bureau of Mines and Geology

with a

LIST OF ACTIVE COAL MINES, 1964

by Thomas Morgan
State Coal Mine Inspector

and a section on

THE MINERAL INDUSTRY OF MONTANA IN 1964

by

R. W. Knostman and W. N. Hale
U. S. Department of the Interior, Bureau of Mines



MONTANA SCHOOL OF MINES
Butte, Montana
March 1965

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I L L U S T R A T I O N S

Plate 1. Map showing distribution of mining districts in Montana

D I R E C T O R Y
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by
Robert D. Geach

I N T R O D U C T I O N

Each year Bureau geologists visit many mining properties in Montana in addition to work on their regular field projects. As it is not possible to visit in person all properties in the state during the year, information is requested from Montana mine operators and owners relating to their mining activities. The responses to this canvassing and personal interviews are then compiled and published annually in our Directory of Mining Enterprises.

Mining enterprises are listed systematically in categories in the main body of the Directory, either under Metal Mines or under Nonmetal Mines, Pits, and Quarries. In order, these categories are kind of ore or mineral produced; county in which the mine is situated; and the name of the mine. Additional information includes location of the property based on legal subdivisions of land survey; type of ore mined; mining district in which the property is situated; number of employees; mill capacity, if any; operator's name and address; owner's name and address; and yearly status, i.e., whether the property produced ore during the year, is still producing ore, was developed without any production, or remained totally inactive. To facilitate looking up a mining enterprise if only the name is known, an index of mine names is included at the back of the Directory.

The Directory also contains a list of presently inactive mines. The list is not a complete one, as it is not possible to list all such mining properties in Montana in a publication this size. For this reason, the list is a compilation of only those properties that have undergone development work or have produced ore within recent years but were inactive for a period of more than one year. Mines inactive for a period of three consecutive years are dropped entirely from the Directory.

The rest of the Directory contains a list of Montana coal mines active in 1964 and the state coal production report, by Thomas Morgan, State Coal Mine Inspector, and a report entitled The Mineral Industry of Montana in 1964, by R. W. Knostman and W. N. Hale, of the Bureau of Mines, U. S. Department of the Interior, Region I.

The author wishes to thank the many Montana mine owners and operators for allowing information on their activities to be published. Special acknowledgment is due Mr. Morgan and Mr. Knostman and Mr. Hale for their part in this publication.

Every effort has been made to publish exact and complete information. The fact that a property is listed in the Directory, however, is not to be regarded as an endorsement of the property by the Montana Bureau of Mines and Geology. Conversely, if a property is omitted from the Directory, the omission is not to be taken as questioning its value or future. Such omissions are known to occur, but most are traceable to failure by the last known operator to respond to repeated requests for necessary information. Nevertheless, in most such cases, the missing data have been supplied from the best sources available.

If any additional facts or corrections can be provided, please submit such information to the Montana Bureau of Mines and Geology, Butte, Montana. Your help is needed to keep this yearly publication as authoritative as possible.

The abbreviations used throughout the Directory are: sec., section; T., township; R., range; and t/d, tons per day.

PART 1, METAL MINES

COLUMBIUM MINES

RAVALLI COUNTY: Hamilton, County Seat

RYE CREEK PROSPECT	Columbium,	Rye Creek district,
Operator: J. T. Abbey and	rare earths	sec. 29, T. 3 N.,
M. Wilson, Box 47		R. 20 W.
Darby, Montana		
Owner: Same as operator		
Status: Developing		

GOLD, SILVER, COPPER, LEAD, ZINC MINES

BEAVERHEAD COUNTY: Dillon, County Seat

AMARANTH MINE	Lead,	Argenta district,
Operator: George V. Elder	silver	sec. 29, T. 6 S.,
Box 14, Dillon, Montana		R. 10 W.
Owner: G. V. and A. V. Elder		
Box 14, Dillon, Montana		
Status: Inactive		

BLUE EYED ANNIE MINE	Gold,	Elkhorn district,
Operator: Gunnar S. Johnson	silver	unsurveyed, T. 4
707 S. Alder		N., R. 12 W.
Anaconda, Montana		
Owner: Jack Miller		
Polaris, Montana		
Employees: 2		
Status: Developing		

BURGIE ROSA GROUP	Silver	Vipond district,
Operator: George Gluck		sec. 34, 35, T.
Ramsay, Montana		2 S., R. 11 W.
Owner: Same as operator		
Employees: 1		
Status: Developing		

CHARTER OAK MINE	Gold,	Blue Wing district,
Operator: L. B. Wilkinson	silver,	sec. 4, T. 8 S.,
1900 Miller Ave.	lead,	R. 11 W.
Burley, Idaho	zinc	
Owner: Same as operator		
Employees: None		
Status: Produced		

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

BEAVERHEAD COUNTY, contd.

CLEVE-AVON MINE Operator: L. B. Lively Melrose, Montana Owner: Same as operator Status: Producing	Gold, silver	Bryant (Hecla) district, sec. 2, T. 3 S., R. 11 W.
COMET MINE Operator: Western Engineering Co., Riverton, Wyoming Owner: Roger Pierce 521 S. Washington, Dillon, Montana Status: Producing and developing	Silver	Elkhorn district, sec. 22, T. 4 S., R. 12 W.
COOLIDGE MINE Operator: Mark Dayley Owner: John Hand Argenta, Montana Employees: 1 Status: Produced	Gold, lead, silver, zinc, copper	Argenta district, sec. 18, T. 6 S., R. 10 W.
CROSS MINE Operator: Carl and Stanley Shafer, Dillon, Montana Owner: John Shafer and Associates, Dillon, Montana Status: Producing	Gold, silver	Argenta district, sec. 11, T. 6 S., R. 11 W.
DIADEM GROUP (ARNOLD) MINE* Operator: Diadem Co. 618 S. Jefferson Ave. Spokane 4, Washington Owner: J. F. Arnold Wisdom, Montana Status: Developing	Gold, lead, silver, copper	Wisdom district, sec. 7, 18, T. 3 S., R. 14 W.
ERMONT MINE Operator: R. A. Wellborn Grant, Montana Owner: Same as operator Status: Inactive	Gold	Argenta district, sec. 35, T. 6 S., R. 11 W.
FAITHFUL MINE Operator: Phil Hannifan 312 W. Gold, Butte, Montana Owner: Helen J. Browne Estate Box 399, Butte, Montana Employees: 3 Status: Developing	Gold, silver	Vipond district, sec. 3, T. 2 S., R. 11 W.

*Open pit.

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

BEAVERHEAD COUNTY, contd.

<p>GLADSTONE-ARGENTA MINE Operator: Silver King Mines Dillon, Montana Owner: Morse, Farnsworth, et al., Dillon, Montana and New York City Employees: 3 Status: Producing and developing</p>	<p>Gold, silver, lead</p>	<p>Montana district, sec. 13, T. 5 S., R. 10 W.</p>
<p>GOLDSMITH MINE Operator: Frank Bissell 319 N. Excelsior Butte, Montana Owner: Goldsmith Mining Corp. Status: Producing</p>	<p>Silver, lead, zinc</p>	<p>Argenta district, NW$\frac{1}{4}$ NE$\frac{1}{4}$ sec. 30, T. 6 S., R. 10 W.</p>
<p>MAIDEN CREEK COPPER MINE Operator: Chester A. Given Route 1, Box 44-C Arco, Idaho Owner: Same as operator Employees: 1 Status: Developing</p>	<p>Copper, silver,</p>	<p>Chinatown district, sec. 23, T. 11 S., R. 13 W.</p>
<p>MAULDEN MINE Operator: Hand Mines 30 S. Arizona St. Dillon, Montana Owner: Ida B. Hand Dillon, Montana Mine production: 20 t/d Employees: 3 Status: Producing</p>	<p>Gold, silver, lead</p>	<p>Argenta district, NW$\frac{1}{4}$ NW$\frac{1}{4}$ sec. 29, T. 6 S., R. 10 W.</p>
<p>MIDNIGHT DUMP* Operator: Rudy Nygren Argenta, Montana Owner: Monidah Trust Butte, Montana Employees: 1 Status: Producing</p>	<p>Silver, lead</p>	<p>Argenta district, sec. 24, T. 6 S., R. 10 W.</p>
<p>NEW DEPARTURE MINE Operator: Spokane National Mines, Inc., 414 Fernwell Bldg., Spokane, Washington Owner: Same as operator Mill capacity: 100 t/d Employees: 30 Status: Developing</p>	<p>Gold, silver, lead, copper,</p>	<p>Blue Wing district, NW$\frac{1}{4}$ NW$\frac{1}{4}$ sec. 26, T. 7 S., R. 11 W.</p>

 *Open pit.

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

BEAVERHEAD COUNTY, contd.

POLARIS MINE*	Silver	Polaris (Lost Cloud) district, sec. 28, T. 5 S., R. 12 W.
Operator: Lee M. James Polaris, Montana		
Owner: Milton E. Hayes Dillon, Montana		
Employees: 2		
Status: Producing		
 SYLVIA MINE DUMP*	 Gold, silver, lead	 Argenta district, sec. 24, T. 6 S., R. 10 W.
Operator: Rudy Nygren Argenta, Montana		
Owner: George Elder and John Collins, Dillon, Montana		
Employees: 1		
Status: Inactive		
 VIRGINIA GULCH MINE	 Gold, silver	 Argenta district, sec. 14, T. 6 S., R. 11 W.
Operator: John H. Allen Salt Lake City, Utah		
Owner: Alumont, Inc., Dillon, Montana		
Status: Inactive		
 WHITE CAP MINE	 Gold, silver, copper, lead, zinc	 Dickey Bridge district
Operator: George H. Henderson Box 1032, Anaconda, Montana		
Owner: G. H. Henderson and Wm. I. Ferguson, Box 1032 Anaconda, Montana		
Status: Developing		
 YELLOW BAND (SHAFER GROUP) MINE	 Gold, silver	 Argenta district, SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 2, T. 6 S., R. 11 W.
Operator: John H. Shafer 205 W. Center, Dillon, Montana		
Owner: John H. Shafer and Associates, 205 W. Center Dillon, Montana		
Status: Producing and developing		

BLAINE COUNTY: Chinook, County Seat

LINDA MINE	Silver, lead	Bear Paw Mountains district, sec. 19, T. 29 N., R. 19 E.
Operator: Bear Paw Develop- ment Co., c/o Homer Pike 1639 - 5th Ave. N.W., Great Falls, Montana		
Owner: Same as operator		
Employees: 2		
Status: Developing		

* Open pit.

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

BROADWATER COUNTY: Townsend, County Seat

<p>COPPER QUEEN 1, 2, and 3 GROUP Owner: John J., Elmer, and Louisa Rothfus Butte, Montana Status: Inactive</p>	<p>Gold, silver, copper</p>	<p>Cedar Plains district, NE$\frac{1}{4}$ sec. 9, T. 5 N., R. 1 W.</p>
<p>DIAMOND HILL MINE Operator: Palmer Engh Box 231, Townsend, Montana Owner: Same as operator Mill capacity: 25 t/d Status: Developing</p>	<p>Gold</p>	<p>Park (Indian Creek) district, sec. 36, T. 7 N., R. 1 W.</p>
<p>GOLD BUG and MARY ROSE MINE Operator: T. E. Carpentier 1847 Princeton Ave. St. Paul, Minnesota Owner: Same as operator Status: Developing</p>	<p>Gold, silver, copper, lead</p>	<p>Cedar Plains district, sec. 18, T. 6 N., R. 1 E.</p>
<p>KEATING MINE Operator: Peter Antonioli 1001 W. Gold, Butte, Montana Status: Inactive</p>	<p>Gold</p>	<p>Radersburg district, sec. 18, T. 5 N., R. 1 E.</p>
<p>NORTH STAR & BLACKHAWK MINES Operator: Roy F. Nicolls Toston, Montana Owner: Same as operator Employees: 2 Status: Producing and developing</p>	<p>Gold, silver, lead, zinc oxide</p>	<p>Cedar Plains (Radersburg) sec. 16, 17, 20, T. 4 N., R. 1 W.</p>
<p>PIONEER MINE Operator: Wm. Lowery Townsend, Montana Owner: Same as operator Status: Developing</p>	<p>Silver</p>	<p>Park (Indian Creek) district, sec. 35, T. 7 N., R. 1 W.</p>
<p>SILVER KING & QUEEN MINE Operator: Rougle and Whitney, Radersburg, Mont. Owner: T. E. Carpentier and Guy Christian 1847 Princeton St. Paul, Minnesota Status: Developing</p>	<p>Gold, silver, copper, lead, zinc</p>	<p>Park (Indian Creek) district, sec. 18, T. 6 N., R. 1 W.</p>

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

BROADWATER COUNTY, contd.

<p>SILVER SADDLE MINE Owner: Harold Hogan 923 Wilder Ave. Helena, Montana Status: Unknown</p>	<p>Silver, lead, zinc</p>	<p>Beaver (Winston) district</p>
<p>VALLEY VIEW MINE Operator: Warren Schreiner Box 665, Townsend, Montana Owner: Same as operator Status: Developing</p>	<p>Gold, silver, lead, zinc</p>	<p>Park (Indian Creek) district, sec. 24, T. 7 N., R. 1 E.</p>

CASCADE COUNTY: Great Falls, County Seat

<p>LEXINGTON MINE Operator: Lexington Silver- Lead Mining Co. 621 Columbia Bldg., Spokane, Washington Owner: Same as operator Mill capacity: 125 t/d Employees: 5 Status: Producing</p>	<p>Gold, silver, lead, zinc</p>	<p>Montana district, sec. 28, T. 14 N., R. 8 E.</p>
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DEER LODGE COUNTY: Anaconda, County Seat

<p>ALTURAS MINE Operator: Pete Fortunati Philipsburg, Montana Owner: The Anaconda Co. Butte, Montana Status: Produced</p>	<p>Silver</p>	<p>Silver Lake district, sec. 33, T. 5 N., R. 13 W.</p>
<p>CAMERON QUARTZ LODE MINE Operator: Thomas M. Moe Anaconda, Montana Owner: The Anaconda Co. Butte, Montana Employees: 2 (part time) Status: Producing</p>	<p>Gold, silver, silica</p>	<p>Nelly district, sec. 21, T. 5 N., R. 12 W.</p>
<p>CHAMPION SILVER MINE Operator: Champion Silver Mining Co., 411 Metals Bank Bldg., Butte, Montana Owner: The Anaconda Co. Butte, Montana Employees: 8 Status: Developing</p>	<p>Gold, silver</p>	<p>Oro Fino district, sec. 28, 33, T. 6 N., R. 8 W.</p>

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

DEER LODGE COUNTY, contd.

MINNIE HA HA, HORSESHOE, HELENA	Gold, silver	Sec. 9, T. 5 N., R. 13 W.
Owner: William J. Dean		
309 S. Arizona		
Butte, Montana		
Status: Developing		
MOUNTAIN LION MINE		Oro Fino district
Operator: Vernon Wallace		
Elliston, Montana		
Status: Developing		
SILVER CHAIN MINE	Silver, copper	Olson Gulch district, sec. 9, 10, T. 5 N., R. 12 W.
Operator: G. H. Henderson		
Box 1032, Anaconda, Montana		
Owner: Same as operator		
Status: Produced and developing		
SILVER KING MINE	Silver	
Operator: Nick Laslovich		
Anaconda, Montana		
Status: Unknown		
SILVER REEF MINE	Gold, silver	Silver Lake district, sec. 22, T. 5 N., R. 13 W.
Operator: W. C. Montgomery		
1818 W. Park		
Anaconda, Montana		
Owner: Same as operator		
Status: Producing and developing		
SUNSHINE MINE		
Operator: Val A. Galle		
and Earl Foster		
Anaconda, Montana		
Status: Produced		

FERGUS COUNTY: Lewistown, County Seat

BIG GRASSY GROUP	Gold, silver	Warm Springs district, sec. 30, 31, T. 17 N., R. 20 E.
Operator: Blue Range Mining		
Co., Box 534		
Lewistown, Montana		
Owner: Same as operator		
Employees: 2		
Status: Developing		
BLACK BULL MINE	Gold, silver, copper, lead, zinc	Warm Springs district, sec. 7, T. 16 N., R. 20 W.
Operator: G. S. Abbott		
Gilt Edge Route,		
Lewistown, Montana		
Owner: Same as operator		
Status: Producing and developing		

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

FERGUS COUNTY, contd.

<p>SHEEP MOUNTAIN MINE Operator: Lawrence Lenling Box 74, Lewistown, Montana Owner: Same as operator Employees: 1 Status: Developing</p>	<p>Gold, silver, copper, lead, graphite</p>	<p>Judith Mountains district, sec. 4, 5, T. 16 N., R. 20 E.</p>
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<p>SILVER DYKE MINE* Operator: Tom Downen 1000 W. Main, Lewistown, Montana Owner: Same as operator Status: Developing</p>	<p>Gold, silver</p>	<p>Warm Springs district, sec. 2, T. 16 N., R. 19 E.</p>
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FLATHEAD COUNTY: Kalispell, County Seat

<p>OLE MINE Operator: Dan Grant 267 - 2nd Ave., E.N. Kalispell, Montana Owner: Northern Pacific Railway Co. Status: Developing</p>	<p>Gold, silver, copper</p>	<p>Hog Heaven district, sec. 18, T. 25 N., R. 23 W.</p>
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<p>SANKO CREEK MINE Operator: Marion Fishel 742 - 6th Ave. W. Kalispell, Montana Owner: Same as operator Status: Producing</p>	<p>Gold, silver, copper</p>	<p>Star Meadow district, NW¹/₄ sec. 29, T. 31 N., R. 24 W.</p>
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<p>WEST FLATHEAD MINE Operator: Waino Lindbom 1545¹/₂ - 7th Ave. W. Kalispell, Montana Owner: The Anaconda Co. Butte, Montana Employees: 8 Status: Producing</p>	<p>Silver, lead</p>	<p>Hog Heaven district, sec. 17, T. 25 N., R. 23 W.</p>
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GRANITE COUNTY: Philipsburg, County Seat

<p>ALGONQUIN DUMP* Operator: Ernest Mazza and Kenneth Bauers Philipsburg, Montana Owner: Trout Mining Co. Philipsburg, Montana Status: Unknown</p>	<p>Gold, silver, copper, lead, zinc</p>	<p>Flint Creek district, sec. 30, T. 7 N., R. 13 W.</p>
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*Open pit.

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

GRANITE COUNTY, contd.

BLACK PINE DUMP*	Gold, silver, copper, tungsten	Flint Creek dis- trict, sec. 16, T. 8 N., R. 14 W.
Operator: John C. Bork 519 W. Porphyry Butte, Montana Owner: Same as operator Employees: 2 Status: Producing		
BLACK PINE TAILINGS*	Gold, silver	Black Pine dis- trict, sec. 16, T. 8 N., R. 14 W.
Operator: Ben Walkup Philipsburg, Montana Owner: August Buschmann Estate Seattle, Washington Status: Producing		
BLACK TAIL NO. 1 and MINNIE LEE 2 & 3 MINES	Silver, copper	Silver Hill dis- trict, W $\frac{1}{2}$ sec. 1, E $\frac{1}{2}$ sec. 2, T. 4 N., R. 14 W.
Operator: L. A. Sherrill 744 E. Mercury Butte, Montana Owner: Same as operator Employees: 2 Status: Unknown		
BROOKLYN MINE	Silver, copper, lead, zinc	Boulder Creek district, SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 4, 5, T. 7 N., R. 12 W.
Operator: Black and White Mining Co., c/o R. Little 2316 Cloverdale Dr. Missoula, Montana Owner: Same as operator Employees: 2 Status: Producing and developing		
COMANCHE EXTENSION MINE		Flint Creek dis- trict, sec. 19, T. 7 N., R. 13 W.
Operator: Joe Metesh Philipsburg, Montana Status: Unknown		
DOLLY QUARTZ and NEW SEATTLE MINES	Gold, silver, copper, silica	Maxville district, sec. 4, T. 8 N., R. 13 W.
Operator: Phil Salois and John McDonald Philipsburg, Montana Owner: Grace Maehl and Fannie Collins, Philipsburg, Montana Status: Producing		

COMBINATION MINE (See page 71)

*Open pit.

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

GRANITE COUNTY, contd.

GOLD REEF MINE Operator: Keith Rush and Associates Butte, Montana Owner: Larry McLane 212 Washington, Anaconda, Montana Status: Developing	Gold, silver	South Boulder district, T. 7 N., R. 13 W.
HARPER MINE Operator: Montana Climax Corp., Philipsburg, Montana Status: Unknown	Gold, silver, copper	Henderson district
HOBO or HYNES & LYNCH* Operator: Wm. Byran Hynes Box K, Philipsburg, Montana Owner: Same as operator Status: Inactive	Gold, silver, lead, zinc	Flint Creek dis- trict, sec. 29, T. 7 N., R. 13 W.
HOPE TAILINGS* Operator: Contact Mining Co., c/o Frank Antonioli 724 S. Western Ave. Butte, Montana Owner: Same as operator Status: Produced	Silver	Hope Hill district, sec. 19, T. 7 N., R. 13 W.
I - B MINE Operator: James Patton and Wm. McLure, Philipsburg, Montana Owner: Same as operator Status: Unknown		
MICKY MINE Operator: Eugene Garrett Box 324, Anaconda, Montana Owner: Same as operator Mill capacity: 15 t/d Employees: 1 Status: Developing	Gold, silver	Red Lion district, sec. 22, 27, T. 6 N., R. 13 W.
MONTANA LABORATORY MINE Operator: Montana Laboratory Co., Philipsburg, Montana Owner: W. L. Dagenhart and E. T. Irvine Philipsburg, Montana Status: Inactive	Gold, silver, copper, lead, zinc, manganese	Flint Creek dis- trict, sec. 28, 33, T. 7 N., R. 13 W.

*Open pit.

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

GRANITE COUNTY, contd.

MOUNTAIN BOY MINE Operator: Joe Metesh Philipsburg, Montana Status: Unknown		Flint Creek dis- trict, sec. 19, T. 7 N., R. 13 W.
MOUNTAIN VIEW MINE Operator: Tim E. Colver Drummond, Montana Owner: John Khor Status: Developing	Gold	Garnet district, T. 12 N., R. 13 W.
MYERS QUARTZ CLAIM Operator: Charles Byam Philipsburg, Montana Owner: Same as operator Employees: 2 Status: Developing	Gold, silver, copper, lead, zinc	Moose Lake dis- trict, sec. 25, T. 4 N., R. 16 W.
PARNELL GROUP Operator: P. J. Heaney, Sr. Box 130, Philipsburg, Montana Owner: Paul J. and Ethel Heaney Box 130, Philipsburg, Montana Status: Developing	Silver, copper, lead	Flint Creek dis- trict, sec. 7, 8, T. 7 N., R. 13 W.
RUMSEY TAILINGS* Operator: Dick Tunstill Philipsburg, Montana Owner: Mrs. L. R. Nesbit Philipsburg, Montana Employees: 2 Status: Produced	Gold, silver, silica	Flint Creek dis- trict, sec. 15, 16, T. 6 N., R. 13 W.
SALLY ELLEN MINE Operator: Ben Walkup Philipsburg, Montana Owner: Walkup and Puyear Philipsburg, Montana Employees: 2 (part time) Status: Developing	Silver	Maxville district, sec. 16, T. 8 N., R. 12 W.
SILVER CREST MINE Operator: John C. Bork 519 W. Porphyry, Butte, Montana Status: Unknown		

*Open pit.

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

GRANITE COUNTY, contd.

SUNDAY MINE	Gold	Boulder district,
Operator: R. J. MacCalman		SW $\frac{1}{4}$ sec. 27,
1010 - 5th St.,		T. 8 N., R. 12 W.
Deer Lodge, Montana		
Owner: R. W. Marshall, New York City		
and A. V. Corry, Butte, Montana		
Employees: 2		
Status: Unknown		

JEFFERSON COUNTY: Boulder, County Seat

AJAX MINE	Gold,	Homestake district,
Operator: Delmas Brown	silver,	sec. 6, T. 2 N.,
1830 Banks, Butte, Montana	copper,	R. 7 W.
Owner: Same as operator	lead,	
Mill capacity: 50 t/d	silica	
Employees: 4		
Status: Developing		

ALTA MINE*	Gold,	Colorado (Corbin-
Operator: Lahey Leasing Co.	silver,	Wickes) district,
506 W. Aluminum	copper,	sec. 10, T. 7 N.,
Butte, Montana	lead,	R. 4 W.
Owner: Alta Mines Corp.	zinc,	
c/o Fred Small,	silica	
Helena, Montana		
Status: Produced		

BERNICE (SALVAIL) MINE	Gold,	Colorado district,
Owner: William Mason Estate	silver,	sec. 17, 18, 19,
2165 Center Dr.	copper,	20, T. 7 N.,
Butte, Montana	zinc	R. 4 W.
Status: Inactive		

BLUEBIRD NO. 1 & 2 MINE	Gold,	Whitehall district
Operator: Maurice R. Haigh	silver	
Three Forks, Montana		
Owner: Same as operator		
Status: Producing and developing		

BOULDER MINE	Gold,	Cataract district,
Operator: James Bragg	silver,	NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 13,
1916 C Street	zinc	T. 6 N., R. 6 W.
Butte, Montana		
Owner: Same as operator		
Status: Inactive		

*Open pit.

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

JEFFERSON COUNTY, contd.

<p>BULLION MINE* Operator: D. M. Bullock and John Bullock Basin, Montana Status: Developing</p>	<p>Gold, silver, lead, zinc</p>	<p>Cataract district, sec. 13, T. 7 N., R. 6 W.</p>
<p>CRYSTAL MINE Operator: Delbert Bullock and Allan J. Bullock Basin, Montana Owner: Chester Bullock Basin, Montana Status: Producing</p>	<p>Gold, silver, copper, lead, zinc</p>	<p>Cataract (Basin) district, sec. 20, T. 7 N., R. 5 W.</p>
<p>EDELWEISS MINE Operator: Leo Bitnick Wickes, Montana Owner: Ivor and Glen Jenkins, Russell Tintinger and Roy Nicolls, Jefferson City, Montana Status: Developing</p>	<p>Gold, silver, lead</p>	<p>Wickes district, sec. 1, 2, T. 7 N., R. 5 W.</p>
<p>HOMESTEAD MINE Operator: Joe Metesh Philipsburg, Montana Status: Unknown</p>		
<p>HOPE and BULLION MINES Operator: Romerio Mining Co. Box 281, Boulder, Montana Owner: Mrs. A. K. Romerio Torrance, California Status: Producing and developing</p>	<p>Base metals</p>	<p>Boulder (Comet) district, sec. 6, 31, T. 7 N., R. 6 W.</p>
<p>HUMBOLT MINE & BOYCE CLAIMS Operator: Mr. and Mrs. Stanley Boyce, Box 206 Butte, Montana Owner: Same as operator Status: Developing</p>	<p>Silver, copper</p>	<p>Homestake dis- trict, sec. 9, T. 3 N., R. 6 W.</p>
<p>JIB MINE Operator: Norman Rogers Co. Box 1719, Helena, Montana Owner: Jefferson Development Co., Everett, Washington Status: Producing</p>	<p>Gold</p>	<p>Basin district, sec. 15, 17, T. 6 N., R. 5 W.</p>

 *Open pit.

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

JEFFERSON COUNTY, contd.

JIB TAILINGS*	Gold	Basin district, sec. 17, 18, T. 6 N., R. 5 W.
Operator: Joe Metesh Philipsburg, Montana		
Owner: Jefferson Development Co., Everett, Washington		
Status: Unknown		
KLONDYKE MINE	Gold, copper	Elkhorn district, sec. 11, T. 6 N., R. 3 W.
Operator: Klondyke Gold Mines, Inc., c/o Wade V. Lewis Boulder, Montana		
Owner: Charles and Lilah Schreiner, 3011 Richardson Butte, Montana		
Employees: 2		
Status: Producing and developing		
LUCKY HIT MINE	Gold, silver, copper, lead, zinc	Whitehall dis- trict, NW $\frac{1}{4}$ sec. 19, T. 2 N., R. 4 W.
Operator: Everett Bowers Whitehall, Montana		
Owner: Mrs. Francis Wolfe Whitehall, Montana		
Employees: 2		
Status: Inactive		
MAY and LITTLE SALLIE MINE	Gold, silver, copper, lead, zinc	Colorado (Katy Gulch) district, sec. 1, T. 7 N., R. 5 W.
Operator: John K. Sarri 305 Clancy St., Helena, Montana		
Status: Developing		
MEADOW MINE	Silver	Clancy district, sec. 34, T. 9 N., R. 3 W.
Operator: Mascot Mines, Inc. Kellogg, Idaho		
Owner: Albert Haab Clancy, Montana		
Status: Inactive		
MORNING GLORY MINE	Gold, silver, lead, zinc	Cataract district, sec. 33, T. 7 N., R. 5 W.
Owner: P. O. Dorweiller Algona, Iowa		
Employees: 2 (part time)		
Status: Unknown		

*Open pit.

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

JEFFERSON COUNTY, contd.

<p>MT. THOMPSON MINE Operator: William Olson Basin, Montana Owner: J. A. Poore, et al, Silver Bow Bldg., Butte, Montana Status: Produced</p>	<p>Gold, silver, silica</p>	<p>Cataract district, sec. 34, T. 7 N., R. 5 W.</p>
<p>NELLIE GRANT MINE Operator: Barmont Mines, Inc., 2624 Edwards St. Butte, Montana Owner: C. E. Pew, Helena, Mont. Status: Developing</p>	<p>Gold, silver, lead, zinc</p>	<p>Clancy (Lump Gulch) district, sec. 14, T. 8 N., R. 5 W.</p>
<p>NEW BALD EAGLE MINE Operator: William Mulcahy Box 21, Butte, Montana Owner: Same as operator Status: Developing</p>	<p>Gold, silver, lead</p>	<p>Big Foot district, sec. 16, T. 4 N., R. 5 W.</p>
<p>PERHAPS LODE CLAIM Operator: Lester Lindquist Box 373, Whitehall, Montana Owner: The Anaconda Co. Butte, Montana Employees: 1 Status: Developing</p>	<p>Gold, silver, lead</p>	<p>Whitehall dis- trict, sec. 13, 18, T. 2 N., R. 3, 4 W.</p>
<p>POTEE MINE Operator: Associated Mining & Metals, Inc. R. D. Potee, Vice Pres. Box 95, Clancy, Montana Owner: Same as operator Mill Capacity: 80 t/d Employees: 5 Status: Developing</p>	<p>Gold, silver, molybdenum</p>	<p>Warm Springs dis- trict, sec. 13, 23, 24, T. 8 N., R. 3 W.</p>
<p>RUBY MINE Operator: New Park Mining Co., Box 929 Park City, Utah Owner: Frank Benich 814 Waukesha, Butte, Montana Status: Developing</p>	<p>Gold, silver</p>	<p>Lowland district, sec. 2, 11, T. 5 N., R. 7 W.</p>
<p>SILVER HILL MINE Operator: Harold Guilio Boulder, Montana Status: Produced</p>	<p>Gold, silver, copper, lead, zinc</p>	<p>Cataract district, sec. 36, T. 7 N., R. 5 W.</p>

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

JEFFERSON COUNTY, contd.

SILVER QUEEN MINE	Gold,	Whitehall district,
Operator: James Leary,	silver,	sec. 6, T. 2 N.,
Wm. Eagan, and Wm. Bette	copper	R. 5 W.
Butte, Montana		
Owner: James P. Leary		
2830 Yale Ave., Butte, Montana		
Employees: 2		
Status: Producing and developing		

SUNNYSIDE MINE	Gold,	Cardwell district,
Operator: Lester Lindquist	silver	SE $\frac{1}{4}$ sec. 13,
Box 373, Whitehall, Montana		T. 2 N., R. 4 W.
Owner: Same as operator		
Employees: 1		
Status: Unknown		

JUDITH BASIN COUNTY: Stanford, County Seat

GOLD BUG (WEATHERWAX) MINE	Gold,	Yogo district,
Operator: W. Lehman, Box 780	silver,	sec. 29, T. 14 N.,
Lewistown, Montana	copper	R. 10 E.
Owner: Same as operator		
Status: Developing		

LIBERTY MINE	Silver,	Barker district,
Operator: G. V. R. McBride	lead,	sec. 6, 7, 18,
Monarch, Montana	zinc	T. 15 N., R. 9 E.
Owner: Faith Mining Co.		
Box 1681, Helena, Montana		
Employees: 2		
Status: Producing and developing		

MT. TOP NO. 1 THROUGH 12	Gold,	Yogo district,
Operator: Grant Canoy	silver,	sec. 2, T. 14 N.,
3717 - 1st Ave. S.	copper	R. 9 E.
Great Falls, Montana		
Owner: Grant and Roland Canoy		
and Dave Oja, Great Falls, Montana		
Status: Developing		

TIGER MINE	Gold,	Barker district,
Operator: Croff and Montague	silver,	sec. 5, 6, T. 15
Box 69, Monarch, Montana	lead	N., R. 9 E.
Owner: Clendennin Mines, Inc.		
c/o John T. Nightengale		
Boston, Massachusetts		
Employees: 2		
Status: Producing and developing		

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

LEWIS AND CLARK COUNTY: Helena, County Seat

CONSOLATION MINES	Silver	Heddleston district, sec. 21, T. 15 N., R. 6 W.
Operator: J. A. Thompson		
Lincoln, Montana		
Owner: Same as operator		
Employees: 5		
Status: Produced and developing		
COPPER HILL MINE	Gold, silver, copper, silica	Canyon Creek dis- trict, sec. 13, 18, 19, and 24, T. 11 N., R. 4 W.
Owner: G. H. Henderson, Al McVay, and Wm. Steyle		
Box 1032, Anaconda, Montana		
Status: Developing		
EMMA MILLER MINE	Gold, quartz	Marysville dis- trict
Operator: Carlos Hieber		
1706 Jerome Place		
Helena, Montana		
Owner: St. Louis Drumlummon Mines, Inc.		
St. Louis, Missouri		
Employees: 2		
Status: Producing and developing		
EMPIRE MINE	Gold, silver, lead	Marysville dis- trict, sec. 33, 34, T. 12 N., R. 6 W.
Operator: Jack Vandenberg		
5 Hilmen Rd., Helena, Mont.		
Owner: Same as operator		
Mill capacity: 300 t/d		
Employees: 4		
Status: Inactive		
FRANKLIN MINE	Gold, silver, copper, lead	Scratch Gravel district, sec. 11, T. 10 N., R. 4 W.
Operator: Helena Minerals Co., Inc., c/o C. Leirness		
1900 - 11th Ave.		
Helena, Montana		
Owner: Thomas Cruse Mining and Developing Co.		
c/o Fergus Fay, Secy.		
446 W. Lawrence, Helena, Montana		
Employees: 1		
Status: Developing		
FREE SPEACH MINE	Gold, silver, lead	Rimini district, sec. 4, T. 8 N., R. 5 W.
Operator: T. L. Thompson		
Box 1435, Anaconda, Montana		
Owner: Red Mt. Consolidated Mining Co., St. Paul, Minnesota		
Status: Producing		

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

LEWIS AND CLARK COUNTY, contd.

<p>GOLD DOLLAR MINE Operator: Earl Foster Lincoln, Montana Owner: Same as operator Employees: 2 Status: Unknown</p>	<p>Gold, silver, copper, lead, zinc</p>	<p>Poorman district, sec. 5, T. 13 N., R. 8 W.</p>
<p>HUMDINGER MINE Operator: Ray W. Crumb Avon, Montana Owner: Same as operator Mill capacity: 4 t/d Status: Producing and developing</p>	<p>Gold, silver, copper</p>	<p>Madison Gulch district, sec. 35, T. 13 N., R. 9 W.</p>
<p>JULIA MINE Operator: John Longmaid 564 - 3rd St., Helena, Montana Owner: Same as operator Status: Inactive</p>	<p>Gold</p>	<p>Scratch Gravel district, sec. 14, T. 10 N., R. 4 W.</p>
<p>MIKE HORSE MINE Operator: The Anaconda Co. Butte, Montana Owner: Norman Rogers Mining Co., Box 1719, Helena, Montana Status: Developing</p>	<p>Silver, copper, lead, zinc</p>	<p>Heddleston district, sec. 28, T. 15 N., R. 6 W.</p>
<p>MONTE CHRISTO MINE Operator: Hans Moe, Box 284 Helena, Montana Owner: Same as operator Status: Developing</p>	<p>Gold, silver, copper, lead</p>	<p>Rimini (Vaughn) district, sec. 17, T. 8 N., R. 5 W.</p>
<p>ORO FINO MINE Operator: W. R. Wade Marysville, Montana Owner: Same as operator Status: Developing</p>		<p>Marysville dis- trict, T. 10 N., R. 4 W.</p>
<p>SAM GATY MINE Operator: Helena Minerals Co., Inc., c/o C. Leirness 1900 - 11th Ave. Helena, Montana Owner: C. E. Pew, et al 617 Holter Ave., Helena, Montana Employees: 8 Status: Developing</p>	<p>Gold, silver, copper, lead</p>	<p>Tenmile district, sec. 11, T. 10 N., R. 4 W.</p>

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

LIBERTY COUNTY: Chester, County Seat

<p>SWEETGRASS MINE Operator: L. R. Hannah and Cedor Aronow, Box 792 Shelby, Montana Owner: Same as operator Employees: 2 Status: Unknown</p>	<p>Gold, silver, copper, lead</p>	<p>East Butte dis- trict, sec. 25, T. 36 N., R. 4 E.</p>
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MADISON COUNTY: Virginia City, County Seat

<p>AMAZON MINE Operator: Tom Pritchett and Charles Richardson Owner: R. A. Malesich Dillon, Montana Status: Inactive</p>	<p>Silver, copper</p>	<p>Stone Creek dis- trict, T. 7 S., R. 6 W.</p>
<p>BIG BERTHA MINE Operator: Fred R. Starner Box 223, Sheridan, Montana Owner: Same as operator Status: Developing</p>	<p>Gold, silver</p>	<p>Tidal Wave dis- trict, sec. 34, T. 4 S., R. 5 W.</p>
<p>BLACK ACE MINE Operator: Louis R. Lepp Whitehall, Montana Owner: Lewis C. Rollins Box 4, Waterloo, Montana Status: Producing and developing</p>	<p>Gold, silver, lead, zinc</p>	<p>Tidal Wave dis- trict, NW$\frac{1}{4}$ NE$\frac{1}{4}$ sec. 34, T. 3 S., R. 5 W.</p>
<p>B.L.M.W. MINING CORP. Operator: Walter H. Myers, Virginia City, Montana Owner: Everett Barnett, James Webster, J. M. Leptich, Seattle, Washington, and Walter H. Myers, Virginia City, Montana Employees: 3 Status: Developing</p>	<p>Gold, silver</p>	<p>Fairweather dis- trict, sec. 26, 34, T. 6 S., R. 3 W.</p>
<p>DICTATOR & BELLE UNION MINE Operator: Woodford Corp. 2041 S.W. 58th Ave. Portland, Oregon Owner: Union Bank and Trust Co. as Ex. Est. Wm. A. Clark Helena, Montana Employees: 2 Status: Producing and developing</p>	<p>Copper</p>	<p>Ramshorn (un- organized) district, sec. 1, 12, T. 5 S., R. 4 W.</p>

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

MADISON COUNTY, contd.

<p>FLORENCE (COOK) MINE Operator: Mike Dilulo Whitehall, Montana Owner: Northern Pacific Railway Co., St. Paul, Minnesota Status: Unknown</p>	<p>Gold, silver, copper, lead, zinc, iron</p>	<p>Bone Basin dis- trict, sec. 9, T. 1 S., R. 4 W.</p>
<p>GOLCONDA MINE Operator: Silver Peak Mining Co., c/o Arnold Jorn 38525 Blackhawk Dr. Oconomowoc, Wisconsin Owner: A. J. Jorn, Box 93 McAllister, Montana Employees: 2 Status: Developing</p>	<p>Gold</p>	<p>McAllister dis- trict</p>
<p>HAZEL MINE Operator: George Haine Pony, Montana Owner: Same as operator Status: Developing</p>	<p>Silver</p>	<p>Washington district</p>
<p>HIGH RIDGE MINE Operator: Madison High Ridge Co., 2015 - 14th St. West Billings, Montana Status: Inactive</p>	<p>Gold, silver, copper, lead</p>	<p>Tidal Wave dis- trict, SE$\frac{1}{4}$ SE$\frac{1}{4}$ sec. 27, T. 3 S., R. 5 W.</p>
<p>HILL CREST MINE Operator: Fred Starner Twin Bridges, Montana Owner: Same as operator Status: Producing</p>	<p>Gold, silver, lead</p>	<p>Sheridan dis- trict, T. 5 S., R. 4 W.</p>
<p>MISSOURI-McKEE MINE Operator: H. Denny and Elling Estate, Box 374 Sheridan, Montana Owner: Same as operator Employees: 1 Status: Inactive</p>	<p>Gold, silver</p>	<p>Washington dis- trict, N$\frac{1}{2}$ sec. 30, T. 4 S., R. 2 W.</p>
<p>MORNING STAR MINE Operator: R. B. Farnsworth 109 Willson, Bozeman, Montana Owner: Same as operator Employees: 1 Status: Developing</p>	<p>Silver</p>	<p>Lower Hot Springs district, sec. 28, 29, T. 3 S., R. 1 E.</p>

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

MADISON COUNTY, contd.

MUELLOR MINE Operator: McLaughlin, Smith, and Nyhart, Twin Bridges Montana Status: Produced	Gold	McCarthy Mountain district
OXIDENTAL MINE Operator: Shermont Mining Co., c/o John Magnus Twin Bridges, Montana Owner: Elling Estate Co. 1612 Alameda Ave. Alameda, California Employees: 2 Status: Developing	Gold, silver, copper, lead, zinc	Sheridan district, sec. 35, 36, T. 3 S., R. 4 W.
PACIFIC MINE Operator: Ed Scheitlin Virginia City, Montana Owner: Easton Pacific Co. and Riverside Mining Corp. c/o Ed Scheitlin Virginia City, Montana Employees: 3 Status: Producing and developing	Gold	Virginia City district, sec. 4, T. 7 S., R. 3 W.
RED PINE MINE Operator: Shermont Mining Co., c/o John Magnus Twin Bridges, Montana Owner: Ruby Valley Development Co., Inc., 14503 Washington Ave. S.W., Tacoma, Washington Mill capacity: 100 t/d Employees: 8 Status: Producing and developing	Gold, silver	Sheridan dis- trict, sec. 5, T. 4 S., R. 4 W.
ST. LAWRENCE MINE Operator: St. Lawrence Consolidated Mines, Inc. Virginia City, Montana Owner: E. W. Smith Virginia City, Montana Employees: 2 Status: Developing	Gold, silver, copper	Browns Gulch dis- trict, sec. 23, T. 6 S., R. 3 W.

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

MADISON COUNTY, contd.

SCALDED CAT MINE Operator: Emmett Clary Pony, Montana Owner: Same as operator Employees: 1 Status: Developing	Gold, silver	Mineral Hill district, sec. 14, T. 2 S., R. 3 W.
SHORT SHIFT MINE Operator: John Layton Butte, Montana Owner: Same as operator Mill capacity: 20 t/d Employees: 1 Status: Developing	Gold, silver	Rabbit district, SE $\frac{1}{4}$ sec. 6, T. 2 S., R. 7 W.
SILVER BULLION MINE Operator: Horse Creek Development Co. 1327 W. Granite, Butte, Montana Owner: Mrs. Reba Storer 1611 - 6th St., Walkerville, Montana Status: Developing	Silver	Mill Creek dis- trict, sec. 27, 28, T. 4 S., R. 4 W.
SILVER HILL MINE Operator: Julio Delgrosso Box 123, Virginia City Montana Owner: Same as operator Status: Developing	Gold, silver, copper	Browns Gulch (Fairweather) dis- trict, sec. 33, T. 6 S., R. 3 W.
STRAWBERRY (EXTENSION) MINE Operator: Fred Box Pony, Montana Owner: Elling Estate Co. Alameda, California Mill capacity: 25 t/d Employees: 2 Status: Inactive	Gold, silver, tungsten	Mineral Hill district, NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 14, T. 2 S., R. 3 W.
TAMARACK MINE Operator: James Tolson Sheridan, Montana Status: Unknown	Gold	Mill Creek dis- trict, sec. 17, T. 4 S., R. 4 W.

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

MEAGHER COUNTY: White Sulphur Springs, County Seat

<p>COPPER STATE GROUP Operator: Cliff Mines, Inc. c/o E. C. Ecklesdafer 532 North Ave. W. Missoula, Montana Owner: O & H Mining, Butte, Montana Employees: 2 Status: Developing</p>	<p>Zinc</p>	<p>Studhorse Creek district</p>
<p>CUMBERLAND MINE Operator: HOCO, Inc. c/o Clarence Oliphant Box 0, White Sulphur Springs Montana Owner: HOCO, Inc. Lennep, Montana Employees: 3 to 10 Status: Developing</p>	<p>Silver, lead</p>	<p>Castle Mountain district, sec. 14, T. 8 N., R. 8 E.</p>
<p>LUCKY DOLLAR MINE Operator: C. K. Berg Martinsdale, Montana Owner: C. K. Berg and G. A. Voldseth Martinsdale, Montana Employees: 2 Status: Developing</p>	<p>Silver, lead</p>	<p>Castle Mountain district (un-organized) sec. 12, T. 8 N., R. 8 E.</p>
<p>YELLOWSTONE MINE Operator: George Voldseth Hamilton Mines, Inc. Lennep Route, Martinsdale Montana Status: Producing and developing</p>	<p>lead, zinc</p>	<p>Castle Mountain district</p>

MINERAL COUNTY: Superior, County Seat

<p>BONANZA GROUP Operator: G. M. Gildersleeve Box 565, Superior, Montana Owner: Same as operator Status: Developing</p>	<p>Gold, silver, lead, barite</p>	<p>Cedar Creek district, sec. 17, T. 15 N., R. 26 W.</p>
<p>EAST COEUR D'ALENE SILVER MINE Operator: East Coeur d'Alene Silver Mines, Inc. Scott Bldg., Wallace, Idaho Owner: Same as operator Status: Developing</p>	<p>Silver, copper, lead, zinc</p>	<p>Keystone district, T. 17, 18 N., R. 26, 28 W.</p>

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

MINERAL COUNTY, contd.

GREEN MOUNTAIN MINE T. 20 N., R. 28 W.
 Operator: Dick Tunstill
 Philipsburg, Montana
 Status: Produced

KEYSTONE (PROSPERTY) MINE Silver, Keystone district,
 Operator: Fred W. Wilson copper, T. 18 N., R. 26 W.
 and M. E. Engdahl lead
 1716 S. 9th West
 Missoula, Montana
 Owner: Prosperity Mines, Inc.
 1716 S. 9th West, Missoula
 Employees: 2
 Status: Producing and developing

NANCY LEE MINE Silver, Keystone district,
 Operator: E. G. Smith lead, sec. 31, 32,
 Osburn, Idaho zinc T. 18 N., R. 26 W.
 Owner: Nancy Lee Co.
 410 Main St., Kellogg, Idaho
 Mill capacity: 100 t/d
 Employees: Unknown
 Status: Producing

REDEMPTION 1 & 2 and SILVER STREAK 1, 2, & 3
 Operator: Roscoe Henderson Gold, Cedar Creek dis-
 Box 441, Superior, Montana silver, trict, sec. 7,
 Owner: Same as operator copper, T. 15 N., R. 27 W.
 Status: Developing lead

SILVER KEYSTER MINE Silver, Keystone district
 Operator: Fausett & McCorkle lead
 c/o Wallace Diamond Drill
 Co., Inc.
 Owner: Silver Keyster Mines, Inc.
 c/o Rodney Helterline, Vice Pres.
 W. of Missoula, Missoula, Montana
 Employees: 4
 Status: Developing

SPITFIRE MINE Copper Sevenmile Creek
 Operator: D. A. Graham district, sec. 35,
 St. Regis, Montana, and T. 19 N., R. 27 W.
 Jack Howes, Paradise, Montana
 Owner: D. A. Graham, St. Regis
 Employees: 2
 Status: Producing and developing

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

MINERAL COUNTY, contd.

<p>TARBOX and MEADOW MOUNTAIN MINE Operator: McIssac Co. Saltese, Montana Owner: Mineral King Mining Co., 220-224 Dixon Bldg. Missoula, Montana Status: Developing</p>	<p>Gold, silver, copper, lead, zinc</p>	<p>Saltese-St. Regis district, sec. 36, T. 20 N., R. 31 W.</p>
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MISSOULA COUNTY: Missoula, County Seat

<p>NINEMILE MINE Operator: William Lamon and L. R. Allen, Huson, Montana Owner: Same as operator Mill capacity 15 t/d Status: Inactive</p>	<p>Gold</p>	<p>Ninemile district, sec. 21, T. 17 N., R. 24 W.</p>
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<p>SUSAN MINE Operator: Cecil Trickey Seeley Lake, Montana Owner: Same as operator Status: Developing</p>	<p>Silver, copper</p>	<p>Sec. 4, T. 16 N., R. 14 W.</p>
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<p>WARD LODGE MINE Operator: Ward Development Corp., 321 N. Higgins Ave. Missoula, Montana Owner: Same as operator Status: Developing</p>	<p>Gold, silver, copper, zinc</p>	<p>Sec. 22, T. 11 N., R. 22 W.</p>
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<p>WALLACE CREEK MINE Operator: Hera Incorporated 712 Jones Bldg. Seattle, Wash. Mill capacity: 50-75 t/d Employees: 2 Status: Developing</p>	<p>Gold, silver, copper, lead</p>	<p>Wallace Creek district</p>
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PARK COUNTY: Livingston, County Seat

<p>CROWN BUTTE and MELISSA MINE Operator: Scott Riley Box 356, Cooke City, Mont. Owner: Same as operator Mill capacity: 5 t/d Status: Developing</p>	<p>Gold, silver, copper,</p>	<p>New World district, unsurveyed, T. 9 S., R. 14 E.</p>
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GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

PARK COUNTY, contd.

GLENGARRY CLAIMS	Gold,	New World dis-
Operator: Como Mining Co.	copper	trict, sec. 12,
Cooke City, Montana		T. 9 S., R. 14 E.
Owner: Harriet White		
Spokane, Washington		
Mill Capacity: 40 t/d		
Employees: 6 to 8		
Status: Producing		

PHILLIPS COUNTY: Malta, County Seat

LITTLE BEN MINE	Gold,	Little Rockies
Operator: Continental	silver	district, sec. 15,
Materials Corp.		T. 25 N., R. 24 E.
412 W. Main, Lewistown, Montana		
Owner: Little Rockies Mining		
& Development Co.		
Lewistown, Montana		
Employees: 6		
Status: Producing and developing		

RUBY GULCH MINE*	Gold,	Little Rockies
Operator: Gold Reserve Corp.	silver	district, sec. 7,
Professional Bldg.		T. 25 N., R. 25 E.
Bozeman, Montana		
Owner: Same as operator		
Mill capacity: 300 to 400 t/d		
Status: Developing		

POWELL COUNTY: Deer Lodge, County Seat

CHARTER OAK MINE	Gold,	Negro Hill dis-
Operator: Charter Oak Mining	silver,	trict, NW ¹ / ₄ SE ¹ / ₄
Co., c/o J. T. Bonner	lead,	sec. 36, T. 9 N.,
Box 566, Elliston, Montana	zinc	R. 7 W.
Owner: Same as operator		
Mill capacity: 50 t/d		
Status: Developing		
HARD LUCK MINE	Gold,	Elliston district,
Operator: L. F. Ward	silver,	sec. 14, 16, 17,
Elliston, Montana	lead,	20, 21, T. 8 N.,
Owner: Hard Luck Mines	perlite	R. 6 W.
Elliston, Montana		
Status: Developing		

*Open pit.

GOLD, SILVER, COPPER, LEAD, ZINC MINES, conts.

POWELL COUNTY, contd.

<p>HIDDEN HAND MINE Operator: Howard C. Banks Box 514, Deer Lodge, Montana Owner: Same as operator Employees: 2 Status: Developing</p>	<p>Gold, silver, lead, zinc</p>	<p>Zosell (Emery) district, NW$\frac{1}{4}$ SW$\frac{1}{4}$ sec. 2, T. 7 N., R. 8 W.</p>
<p>MONARCH MINE Operator: Monarch Minerals, Inc., Box 33 Helena, Montana Owner: Same as operator Employees: 3 to 5 Status: Unknown</p>	<p>Gold, silver, copper,</p>	<p>Ontario district, sec. 30, 31, T. 8 N., R. 6 W.</p>
<p>NANCY HELEN MINE Operator: C. J. Smith Avon, Montana Owner: Same as operator Status: Developing</p>	<p>Copper</p>	<p>Ophir (unorganized) district</p>
<p>NEGROS MINE Operator: J. F. Hopkins 401 N. Montana Helena, Montana Owner: Same as operator Status: Producing</p>	<p>Gold, silver, lead</p>	<p>Negro Hill dis- trict, SE$\frac{1}{4}$ SW$\frac{1}{4}$ sec. 36, T. 9 N., R. 7 W.</p>
<p>PARDNER MINE Operator: Everett Adams Helmville, Montana Status: Produced</p>		
<p>PRICE GROUP MINE Operator: W. C. Boellard 3705 Mesa Vista Way Bonita, California Owner: Same as operator Employees: 3 (part time) Status: Developing</p>	<p>Gold, silver</p>	<p>Ophir district, NE$\frac{1}{4}$ NE$\frac{1}{4}$ sec. 29, T. 11 N., R. 7 W.</p>
<p>SUNRISE MINE Operator: Enard A. Lindquist Box 334, Elliston, Montana Owner: Same as operator Employees: 2 Status: Developing</p>	<p>Silver, lead</p>	<p>Negro Hill dis- trict, sec. 12, T. 8 N., R. 7 W.</p>
<p>SILVER REEF MINE (See page 71)</p>		

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

POWELL COUNTY, contd.

THIRD TERM AND FOURTH TERM MINE	Gold,	Unorganized,
Owner: Howard L. Wells	silver,	sec. 28, T. 9 N.,
Elliston, Montana	copper	R. 6 W.
Mill capacity: 50 t/d	lead,	
Status: Developing	zinc	

V and G MINE
 Operator: Willis A. Pugh
 Drummond, Montana
 Status: Unknown

WOLVERINE MINE	Silver,	Elliston district,
Operator: Wolverine Corp.	lead	sec. 18, 19, 20,
2711 Miles Ave.		T. 8 N., R. 6 W.
Billings, Montana		
Owner: Wolverine Corp.		
c/o P. L. Driscoll, Musselshell		
Montana		
Employees: 2		
Status: Developing		

RAVALLI COUNTY: Hamilton, County Seat

COPPER CANYON MINE	Gold,	Mineral Point
Operator: Wm. D. Hale	silver,	district,
Rt. 1, Box 55	copper	sec. 20, T. 3 S.,
Anaconda, Montana		R. 22 W.
Owner: Copper Canyon Mining Co.		
Box 77, Darby, Montana		
Employees: 2		
Status: Developing		

SANDERS COUNTY: Thompson Falls, County Seat

BLUE CREEK MINE	Silver,	Blue Creek dis-
Operator: Harold Pellens	copper,	trict, sec. 3, 10,
602 Michigan, Libby, Mont.	lead,	T. 27 N., R. 34 W.
Status: Developing	zinc	

BONANZA GOLD MINE	Gold	Silver Butte dis-
Operator: Bonanza Gold, Inc.		trict, sec. 6, 7,
c/o Frank H. Duval		T. 24 N., R. 30 W.
E. 15 Walton Ave.		
Spokane, Washington		
Owner: Same as operator		
Employees: 2		
Status: Inactive		

GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

SANDERS COUNTY, contd.

<p>HEIDELBERG MINE Operator: Heidelberg Mining Co. of Montana c/o G. A. Myers, 1001 Court St. Pasco, Washington Owner: Same as operator Mill capacity: 15 t/d Employees: 5 Status: Developing</p>	<p>Gold, silver</p>	<p>Noxon district, SE$\frac{1}{4}$ sec. 29, NW$\frac{1}{4}$ sec. 32, T. 27 N., R. 31 W.</p>
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<p>HOLLIDAY MINE Operator: Silver Mark Mines, Inc., Box 197, Noxon, Mont. Employees: 2 Status: Developing</p>	<p>Silver, copper, lead, zinc</p>	<p>Pilgrim Creek district, sec. 26,31, T. 26 N., R. 34 W.</p>
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<p>JACK WAITE MINE Operator: Al Tofte and Les Sanderson, Wallace, Idaho Owner: Jack Waite Mining Co. 680 - 5th, 22nd Floor New York City Status: Developing</p>		<p>Eagle district, W$\frac{1}{2}$ sec. 17, T. 22 N., R. 32 W.</p>
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<p>RAVEN MINE Operator: Cliff Mines, Inc. 532 N. Ave. West Missoula, Montana Owner: Raven Mining Co. Kalispell, Montana Mill capacity: 25 t/d Status: Producing and developing</p>	<p>Silver, copper</p>	<p>Copper King (unorganized) district</p>
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<p>ROCKY CLIFF NO. 2 MINE Operator: A. C. Walkup Box 644, Philipsburg, Montana Owner: Austin Monk Marion, Montana Mill capacity: 25 t/d Status: Produced</p>	<p>Silver, copper</p>	<p>Thompson River district</p>
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SILVER BOW COUNTY: Butte, County Seat

<p>BADGER MINE Operator: The Anaconda Co. Butte, Montana Owner: Same as operator Status: Producing</p>	<p>Gold, silver, lead, zinc</p>	<p>Summit Valley dis- trict, NE$\frac{1}{4}$ NW$\frac{1}{4}$ sec. 7, T. 3 N., R. 7 W.</p>
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GOLD, SILVER, COPPER, LEAD, ZINC MINES, contd.

SILVER BOW COUNTY, contd.

BERKELEY PIT*	Gold, silver, copper	Summit Valley district, NE $\frac{1}{4}$ NW $\frac{1}{4}$ sec. 18, T. 3 N., R. 7 W.
Operator: The Anaconda Co. Butte, Montana		
Owner: Same as operator		
Status: Producing		
KELLY MINE	Gold, silver, copper	Summit Valley district, SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 7, T. 3 N., R. 7 W.
Operator: The Anaconda Co. Butte, Montana		
Owner: Same as operator		
Status: Producing		
LEONARD MINE	Gold, silver, copper	Summit Valley district, cen. SW $\frac{1}{2}$ sec. 8, T. 3 N., R. 7 W.
Operator: The Anaconda Co. Butte, Montana		
Owner: Same as operator		
Status: Producing		
MOUNTAIN CON MINE	Gold, silver, copper	Summit Valley district, NE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 12, T. 3 N., R. 8 W.
Operator: The Anaconda Co. Butte, Montana		
Owner: Same as operator		
Status: Producing		
STEWARD MINE	Gold, silver, copper	Summit Valley district, NW $\frac{1}{4}$ NE $\frac{1}{4}$ sec. 13, T. 3 N., R. 8 W.
Operator: The Anaconda Co. Butte, Montana		
Owner: Same as operator		
Status: Producing		
TUXEDO MINE*	Gold, silver	Summit Valley district, sec. 28, T. 4 N., R. 9 E.
Operator: Ed Hughes W. 307 - 17th Spokane, Washington		
Owner: Same as operator		
Employees: 3		
Status: Producing and developing		
WEED CONCENTRATOR		
Owner and operator: The Anaconda Co. Butte, Montana		
Capacity: 40,000 t/d		

TOOLE COUNTY: Shelby, County Seat

GOLD BUTTE MINE	Gold	Gold Butte dis- trict, T. 36 N., R. 3 E.
Operator: Ham Mining Co. Box 255, Shelby, Montana		
Owner: Same as operator		
Status: Developing		

*Open pit.

IRON MINES

BROADWATER COUNTY: Townsend, County Seat

IRON CROSS MINE*	Iron ore	Cedar Plains dis-
Operator: R & S Iron Co.,		trict, sec. 12,
Inc., Radersburg, Montana		T. 5 N., R. 1 W.
Owner: Ralls & Harris Bros.		
Box 114, Radersburg, Montana		
Employees: 4		
Status: Producing		

MADISON COUNTY: Virginia City, County Seat

RAMSHORN MINE*	Iron ore	Sheridan district,
Operator: F & S Mining Co.		sec. 1, T. 5 S.,
1300 Chicago, Butte, Montana		R. 4 W.
Owner: Same as operator		
Status: Inactive		

MANGANESE MINES

GRANITE COUNTY: Philipsburg, County Seat

CADGIE TAYLOR MINE	Manganese	Flint Creek dis-
Operator: Joe Metesh		trict, SW $\frac{1}{4}$ NE $\frac{1}{4}$
Philipsburg, Montana		sec. 19, T. 7 N.,
Status: Produced		R. 13 W.

TROUT ALGONQUIN MINE	Manganese	Flint Creek dis-
Operator: Trout Mining Co.		trict, SE $\frac{1}{4}$ SE $\frac{1}{4}$
c/o C. A. McKinley, Gen. Mgr.		sec. 30, T. 7 N.,
Philipsburg, Montana		R. 13 W.
Owner: Same as operator		
Mill capacity: 150 t/d		
Status: Inactive		

TRUE FISSURE, DURANGO & MOORLIGHT MINE	Manganese	Flint Creek dis-
Operator: Taylor-Knapp Co.		trict, W $\frac{1}{2}$ NW $\frac{1}{4}$
c/o Don Johnson, Box FF		sec. 29, T. 7 N.,
Philipsburg, Montana		R. 13 W.
Owner: Same as operator		
Mill capacity: 120 t/d		
Employees: 40		
Status: Producing		

*Open pit.

THORIUM MINES

BEAVERHEAD COUNTY: Dillon, County Seat

LAST CHANCE MINE	Thorium	Lemhi Pass dis-
Operator: Sawyer Petroleum		trict, sec. 20,
Co., Suite 314		28, 29, T. 10 S.,
650 S. Grand Ave.		R. 15 W.
Los Angeles, California		
Owner: Same as operator		
Employees: 3		
Status: Developing		
STATE LAND LEASE	Thorium,	Lemhi Pass dis-
Operator: Harvey Bell	uranium	trict, part sec.
J. R. Goggins, Harry Katseanes,		28, 21, T. 10 S.,
C. J. Moore, and Fred Rose		R. 15 W.
Salmon, Idaho		
Owner: State of Montana		
Status: Developing		

GOLD PLACERS

GRANITE COUNTY: Philipsburg, County Seat

CONFIDENT, RADAR, CASTLE PLACER 1, and CASTLE PLACER 2		
Owner: William J. Dean	Gold,	Sec. 22, 23,
309 S. Arizona	silver	T. 6 N., R. 13 W.
Butte, Montana		
Status: Developing		
SUNSET PLACER	Gold	Maxville district,
Operator: Ben Walkup		sec. 20, 21,
Box 644, Philipsburg, Montana		T. 8 N., R. 12 W.
Owner: Same as operator		
Employees: 2 (part time)		
Status: Developing		

JEFFERSON COUNTY: Boulder, County Seat

FLAG PLACER	Gold,	Homestake district,
Operator: H. K. Mining Corp.	platinum,	sec. 1, T. 2 N.,
Box 1924, Butte, Montana	rare earths,	R. 7 W.
Owner: Del Brown	black sand	
1830 Banks Ave., Butte		
Employees: 6		
Status: Developing		
SKOOKUM PLACER	Gold	Comet district,
Operator: Theodore Nyquest		sec. 12, T. 5 N.,
Box 133, Boulder, Montana		R. 6 W.
Owner: Same as operator		
Status: Developing		

GOLD PLACERS, contd.

MADISON COUNTY: Virginia City, County Seat

GERMAN BAR PLACER	Gold	
Operator: Herbert Hanson	(dredge tailings)	
Box 117, Alder, Montana		
Status: Inactive		

MEAGHER COUNTY: White Sulphur Springs, County Seat

LAST CHANCE PLACER	Gold	Beaver District,
Operator: Ted Bykari		sec. 24, T. 11 N.,
Box 14, Belt, Montana		R. 2 E.
Owner: Same as operator		
Status: Developing		

MINERAL COUNTY: Superior, County Seat

OREGON CREEK PLACER	Gold	Oregon Creek
Operator: Calmont Mining Co.		district
Spokane, Washington		
Supt., Don Hammond		
Superior, Montana		
Capacity: 38,000 cu yd/d		
Status: Producing		

STEMWINDER PLACER	Gold	Cedar Creek
Operator: George Gildersleeve		district, sec. 17,
Box 565, Superior, Montana		T. 15 N., R. 26 W.
Owner: Same as operator		
Status: Developing		

MISSOULA COUNTY: Missoula, County Seat

EILEEN MARSHA PLACER	Gold	Ninemile district,
Operator: E. A. Dotson		sec. 2, T. 16 N.,
2837 Hermosa Ave.		R. 23 W.
Hermosa Beach, California		
Owner: Same as operator		
Status: Inactive		

TWIN CREEKS PLACER	Gold	Sec. 26, T. 17 N.,
Operator: Victor Demin		R. 24 W.
Rt. 4, Missoula, Montana		
Owner: Same as operator		
Status: Developing		

PARK COUNTY: Livingston, County Seat

W. M. CLAYTON PLACER	Gold	Emigrant district,
Operator: W. J. Clayton		sec. 29, T. 6 S.,
Box 54, Pray, Montana		R. 9 E.
Owner: Same as operator		
Status: Developing		

GOLD PLACERS, contd.

POWELL COUNTY: Deer Lodge, County Seat

CHARLES PRYSE PLACER Gold Sec. 11, T. 12 N.,
Operator: H. C. W. Richter R. 9 W.
842 - 8th Ave., Helena, Montana
Owner: Same as operator
Status: Inactive

L and M PLACER Gold Washington Gulch
Operator: C. E. Mitchell & district, sec. 7,
Sons, 308 - 4th Ave. S. 18, T. 12 N.,
Great Falls, Montana R. 8 W.
Owner: Same as operator
Employees: 2
Status: Unknown

OLD SHOE NO. 1 PLACER Gold Finn district
Operator: A. H. Roat and
Sons, 1821 S. 13th W.
Missoula, Montana
Owner: Same as operator
Status: Developing

RAVALLI COUNTY: Hamilton, County Seat

HUGHES CREEK PLACER Gold, Overwich district,
Operator: Hughes Creek silver N $\frac{1}{2}$ T. 3 S.,
Dredging Co., Inc. R. 21 W.
Hamilton, Montana
Owner: Asbury Smith
Hamilton, Montana
Status: Inactive

LARRIGON PLACER Gold, Hughes Creek
Operator: Larrigon Mining silver district
Co., Hamilton, Montana
Owner: Same as operator
Status: Inactive

SILVER BOW COUNTY: Butte, County Seat

JANE CLAIM Gold Highland district,
Operator: Highland Placers sec. 32, T. 1 N.,
2619 Walnut St., Butte, Montana R. 7 W.
Owner: Bill Franks, George
Richardson, and George Hoopes,
Butte, Montana
Status: Producing and developing

PART 2, NONMETAL MINES, PITS,
AND QUARRIES

ASBESTOS MINES

GALLATIN COUNTY: Bozeman, County Seat

KARST MINE*	Anthophyllite	
Operator: Galaxy Mining Co.	asbestos	Karst Kamp
Billings, Montana		district, sec.
Owner: Interstate Products		36, T. 5 S.,
Co., c/o Charles Lester		R. 4 E.
Bozeman, Montana		
Status: Developing		

LINCOLN COUNTY: Libby, County Seat

VERMICULITE MOUNTAIN MINE*	Tremolite	Rainy Creek dis-
Operator: Zonolite Division	asbestos	trict, sec. 14, 15,
W. R. Grace & Co.		22, 23, T. 31 N.,
135 S. LaSalle St.,		R. 30 W.
Chicago, Illinois		
Owner: Same as operator		
Status: Developing		

BARITE MINES

BEAVERHEAD COUNTY: Dillon, County Seat

LUCKY JIM BEAM GROUP MINE	Barite	Jackson district,
Operator: Lee R. Stoddard		sec. 25, 26,
R. P. Jackson, and		T. 4 S., R. 14 W.
R. M. Shepard, Jackson, Montana		
Owner: Same as operator		
Status: Developing		

MISSOULA COUNTY: Missoula, County Seat

ELK CREEK MINE	Barite	Elk Creek district,
Operator: National Lead Co.		sec. 15, T. 13 N.,
Box 392, Missoula, Montana		R. 24 W.
Owner: Same as operator		
Mill capacity: 8 t/h		
Employees: 20		
Status: Producing		

*Open pit.

BENTONITE PITS

CARTER COUNTY: Ekalaka, County Seat

VARIOUS OPEN PITS Bentonite T. 9 S., R. 58,
Operator: National Lead Co. 59 E.
Baroid Division, Box 1675
Houston, Texas
Owner: Same as operator
Status: Inactive

VALLEY COUNTY: Glasgow, County Seat

BRAZIL CREEK PIT* Bentonite T. 28 N., R. 37 E.
Operator: Brazil Creek
Bentonite Co., Box 926
Glasgow, Montana
Owner: Same as operator
Status: Inactive

CLAY MINES AND PITS

CASCADE COUNTY: Great Falls, County Seat

ARMINGTON MINE Fire clay Sec. 30, T. 19 N.,
Operator: Robert Smerker R. 7 E.
Armington, Montana
Owner: The Anaconda Co.
25 Broadway, New York City
Mine production: 15 t/d
Employees: 3
Status: Producing

DEER LODGE COUNTY: Anaconda, County Seat

PLACER FIRE CLAY MINE* Clay Sec. 34, T. 5 N.,
Operator: Harold Snow R. 11 W.
Box 1155, Anaconda, Montana
Owner: Same as operator
Status: Produced

FERGUS COUNTY: Lewistown, County Seat

BEAVER CREEK and LEWISTOWN PITS* Brick clay Sec. 15, T. 15 N.,
Operator: Lewistown Brick R. 18 E.
and Tile Co., Box 573
Lewistown, Montana
Owner: Same as operator
Status: Producing

*Open pit.

CLAY MINES AND PITS, contd.

YELLOWSTONE COUNTY: Billings, County Seat

BENT CLAY PIT* Clay NE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 35,
Operator: The Lovell Clay T. 1 N., R. 26 E.
Products Co., 1312 Lockwood Rd.
Billings, Montana
Owner: Same as operator
Status: Producing

HALVORSON CLAY PIT* Clay Sec. 20, T. 1 S.,
Operator: The Lovell Clay R. 26 E.
Products Co., 1312 Lockwood Rd.
Billings, Montana
Owner: Same as operator
Status: Unknown

FLUORSPAR MINES

RAVALLI COUNTY: Hamilton, County Seat

CRYSTAL MOUNTAIN MINE* Fluorspar
Operator: Roberts Mining Co.
Box 365, Darby, Montana
Employees: Up to 25
Status: Producing (summer only)

GYPSUM MINES

CARBON COUNTY: Red Lodge, County Seat

JAY KAY MINE Gypsum Unorganized dis-
Operator: Jay Kay, Inc. trict, NE $\frac{1}{4}$ SE $\frac{1}{4}$
607 Garden Ave. sec. 19, T. 7 S.,
Billings, Montana R. 24 E.
Owner: Same as operator
Status: Developing

FERGUS COUNTY: Lewistown, County Seat

HANOVER MINE Gypsum Sec. 22, 27, T.
Operator: Ideal Cement Co. 16 N., R. 17 E.
420 Denver National Bldg.
Denver, Colorado
Owner: Same as operator
Employees: 8
Status: Producing

*Open pit.

GYPSUM MINES, contd.

FERGUS COUNTY, contd.

SHOEMAKER (HEATH) MINE	Gypsum	Sec. 1, 2, T. 14 N., R. 19 E.
Operator: U. S. Gypsum Co. Heath, Montana		
Owner: U. S. Gypsum Co. 101 S. Wacker Drive Chicago, Illinois		
Mill capacity: 500 t/d		
Employees: 73		
Status: Producing		

LIMESTONE MINES AND QUARRIES

CARBON COUNTY: Red Lodge, County Seat

WARREN QUARRY*	Limestone	Sec. 16, T. 8 S., R. 25, 26 E.
Operator: Weaver Construction Co., Box 60, Billings, Montana		
Owner: The Bighorn Limestone Co. Box 5308, Denver, Colorado		
Mill capacity: 750 t/d		
Employees: 20		
Status: Producing		

DEER LODGE COUNTY: Anaconda, County Seat

BROWNS QUARRY*	Limestone	Sec. 23, T. 5 N., R. 12 W.
Operator: The Anaconda Co. Butte, Montana		
Owner: Same as operator		
Status: Producing		

GALLATIN COUNTY: Bozeman, County Seat

TRIDENT QUARRY*	Limestone	SW $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 3, T. 2 N., R. 2 E., and sec. 9, 10.
Operator: Ideal Cement Co. Three Forks Portland Cement Div., 420 Denver National Bldg. Denver, Colorado		
Owner: Same as operator		
Employees: 14		
Status: Producing		

GRANITE COUNTY: Philipsburg, County Seat

SPRING GULCH QUARRY*	Limestone	Sec. 22, T. 11 N., R. 12 W.
Operator: F. H. Norborg Co. 703 Guaranty Bank Bldg., Denver		
Owner: American Crystal Sugar Co. Boston Bldg., Denver, Colorado		
Status: Unknown		

---*Open pit.

LIMESTONE MINES AND QUARRIES, contd.

JEFFERSON COUNTY: Boulder, County Seat

McCLELLAN QUARRY* Limestone McClellan district,
Operator: Maronick Construction sec. 7, T. 9 N.,
Co., Inc., East Helena, Montana R. 3 W.
Owner: E. P. Maronick,
East Helena, Montana
Employees: 5
Status: Producing

MONTANA CITY QUARRY* Limestone Sec. 12, 13,
Operator: Permanente Cement T. 9 N., R. 2 W.
Co., Montana City, Montana
Mill capacity: 5,000 bbls/d
Employees: 58 hrly.
Status: Producing

POWELL COUNTY: Deer Lodge, County Seat

ELLISTON QUARRY* Limestone Sec. 5, 6, T. 9
Operator: Elliston Lime Co. N., R. 6 W.
Box 149, Deer Lodge, Montana
Owner: Same as operator
Mill capacity: 200 t/d limestone,
25 t/d lime
Employees: 16
Status: Producing

PHOSPHATE MINES

BEAVERHEAD COUNTY: Dillon, County Seat

CANYON CREEK and EAST LA MARCHE MINES
Operator: Victor Chemical Works, Melrose district,
Division of Stauffer Chemical sec. 5, 6, 7, 30,
Co., 380 Madison Ave. 31, 32, T. 1, 2 S.,
New York City R. 9 W.
Status: Producing and developing

GRANITE COUNTY: Philipsburg, County Seat

DOUGLAS CREEK MINE Maxville district,
Operator: Montana Phosphate Products sec. 31, T. 9 N.,
Co., Garrison, Montana R. 12 W.
Owner: Same as operator
Employees: 110
Status: Producing and developing

*Open pit.

PHOSPHATE MINES, contd.

POWELL COUNTY: Deer Lodge, County Seat

ANDERSON MINE

Operator: Montana Phosphate Products
Co., Garrison, Montana
Owner: Same as operator
Employees: 70
Status: Producing

Garrison district,
sec. 3, T. 10 N.,
R. 10 W.

BROCK MINE

Operator: Montana Phosphate Products
Co., Garrison, Montana
Owner: Same as operator
Employees: 120
Status: Producing

Garrison district,
sec. 21, 22,
T. 10 N., R. 10 W.

GIMLET MINE

Operator: Montana Phosphate Products
Co., Garrison, Montana
Owner: Same as operator
Employees: 4
Status: Producing

Garrison district,
sec. 4, T. 10 N.,
R. 9 W.

JACK PINE (TROUT CREEK) MINE

Operator: Russell B. Luke
1021 E. Front St., Butte, Montana
Owner: Same as operator
Status: Developing

Elliston district,
SW $\frac{1}{4}$ sec. 35,
T. 11 N., R. 7 W.

LUKE MINE

Operator: Montana Phosphate Products
Co., Garrison, Montana
Owner: Same as operator
Employees: 30
Status: Producing

Garrison district,
sec. 14, 15,
T. 10 N., R. 9 W.

RELYEA MINE

Operator: George Relyea, Box 85
Garrison, Montana
Owner: Same as operator
Mill capacity: 300 t/d
Employees: 40
Status: Unknown

Garrison district,
S $\frac{1}{2}$ sec. 12,
T. 10 N., R. 10 W.

SILVER BOW COUNTY: Butte, County Seat

MAIDEN ROCK MINE

Operator: Victor Chemical Works
Div. of Stauffer Chemical Co.
380 Madison Ave., New York City
Status: Producing

Melrose district,
sec. 32, T. 1 S.,
R. 9 W.

SAPPHIRE MINES

GRANITE COUNTY

AMERICAN SAPPHIRE GEM MINE*	Sapphire	West Fork Rock Creek
Operator: Wm. and Helena Eaton and D. H. Bartelds, Box 26 Philipsburg, Montana		T. 6 N., R. 16 W.
Owner: Wm. and Helena Eaton 8310 Dayton Ave. N. Seattle, Washington		
Status: Producing and developing		

SHALE PITS

CASCADE COUNTY: Great Falls, County Seat

TREASURELITE PIT*	Shale, clay	Sec. 18, T. 21 N., R. 4 E.
Operator: Treasurlite, Div. of Treasure State Industrial Products, Inc., Box 1358 Great Falls, Montana		
Owner: Same as operator		
Mill capacity: 100 t/d		
Employees: 2 to 8		
Status: Producing		

YELLOWSTONE COUNTY: Billings, County Seat

LOCKWOOD FLATS PIT*	Expanded shale, lightweight aggregate
Operator: Montana Liteweight Aggregate Co., Box 3027 Billings, Montana	
Owner: Same as operator	
Status: Producing	

SILICA MINES AND QUARRIES

DEER LODGE COUNTY: Anaconda, County Seat

LUKE QUARRY*	Metallurgical silica	Blue Eyed Nellie district, NW ¹ / ₄ sec. 24, T. 5 N., R. 12 W.
Operator: Montana Ores, Inc., 110 W. 3rd St. Anaconda, Montana		
Owner: Russkin Mining Co. Butte, Montana		
Mill capacity: 800 t/d		
Employees: 5		
Status: Producing		

*Open pit.

SILICA MINES AND QUARRIES, contd.

DEER LODGE COUNTY, contd.

SNOW WHITE QUARRY*	Industrial silica	Lost Creek dis- trict, sec. 27. 28, T. 6 N., R. 11 W.
Operator: Boggs & Davis Inc., Ione, Washington		
Owner: Jack Meloy Anaconda, Montana		
Mill Capacity: 750 t/d		
Employees: 8		
Status: Producing		

JEFFERSON COUNTY: Boulder, County Seat

BASIN QUARTZ QUARRY*	Industrial silica	Basin district, sec. 16, T. 6 N., R. 5 W.
Operator: W. L. Kelso Pacific Silica Co. Basin, Montana		
Owner: Union Carbide Co. Portland, Oregon		
Employees: 16		
Status: Producing and developing		

LAHEY SILICA QUARRY*	Industrial silica	W $\frac{1}{2}$ NE $\frac{1}{4}$ sec. 26, T. 8 N., R. 4 W.
Operator: Benson & Bissell Butte, Montana		
Owner: Ed Kyler Boulder, Montana		
Status: Producing		

SOIL CONDITIONERS

GOLDEN VALLEY COUNTY: Ryegate, County Seat

R.K.R. PIT*	Shell rock	Sec. 23, T. 7 N., R. 22 E.
Operator: R.K.R. Soil Amendment, Inc. Cushman, Montana		
Owner: Same as operator		
Mill capacity: 5 or 6 t/hr		
Employees: 3		
Status: Producing and developing		

LAKE COUNTY: Polson, County Seat

HOWARD W. MARTIN PEAT	Peat	
Operator: Martin's Peat & Potting Soils Swan Lake, Montana		
Owner: Howard W. Martin Swan Lake, Montana		
Status: Producing		

*Open pit.

STONE (BUILDING) MINES AND QUARRIES

CASCADE COUNTY: Great Falls, County Seat

KINGS HILL QUARRY* Building Sec. 11, T. 13 N.,
Operator: Montana Stone stone R. 8 E.
Inc., 2301 - 10th Ave. S.
Great Falls, Montana
Owner: Same as operator
Employees: Approx. 15
Status: Producing

MONARCH QUARRY* Building SE $\frac{1}{4}$ SE $\frac{1}{4}$ sec. 23,
Operator: Montana Stone stone T. 5 S., R. 7 E.
Inc., 2301 - 10th Ave. S.
Great Falls, Montana
Owner: Same as operator
Employees: Approx. 15
Status: Producing

LEWIS AND CLARK COUNTY: Helena, County Seat

SIEBEN RANCH QUARRY* Building SW $\frac{1}{4}$ sec. 26,
Operator: Montana Stone stone T. 13 N., R. 5 W.
Inc., 2301 - 10th Ave. S.
Great Falls, Montana
Owner: Same as operator
Employees: Approx. 15
Status: Producing

WOLF CREEK SLATE QUARRY* Granite
Operator: Montana Stone
Inc., 2301 - 10th Ave. S.
Great Falls, Montana
Owner: Same as operator
Employees: 6
Status: Producing

MISSOULA COUNTY: Missoula, County Seat

BONNER QUARRY* Granite Sec. 15, T. 13 N.,
Operator: Chicago, Milwaukee, R. 18 W.
St. Paul and Pacific Railway
Co., Deer Lodge, Montana
Owner: Same as operator
Status: Producing

MC QUARRIE QUARRY* Railroad Clinton (Wallace)
Operator: Lyon Construction ballast, district, sec. 17,
Co., Clinton, Montana road metal T. 12 N., R. 17 W.
Owner: Northern Pacific
Railway Co., St. Paul, Minn.
Mill capacity: 1,500 t/d
Employees: 20
Status: Producing

*Open pit.

STONE (BUILDING) MINES AND QUARRIES, contd.

PARK COUNTY: Livingston, County Seat

MERRIAM QUARRY* Stone
Operator: Lyon Construction
Co., Clinton, Montana
Owner: Northern Pacific Railway
Co., St. Paul, Minnesota
Mill capacity: 400 t/hr
Employees: 25
Status: Producing

STONE (ORNAMENTAL) QUARRIES

GALLATIN COUNTY: Bozeman, County Seat

PICTURE FLAGSTONE MINE* Picture Sec. 29, T. 2 N.,
Operator: Orie B. McElwee flagstone R. 4 E.
Manhattan, Montana
Owner: Same as operator
Employees: 2
Status: Producing

FERGUS COUNTY: Lewistown, County Seat

PARADISE RANCH QUARRY* Travertine Sec. 13, T. 17
Operator: Montana Stone, Inc. N., R. 17 E.
2301 - 10th Ave. S.
Great Falls, Montana
Owner: Same as operator
Employees: Approx. 15
Status: Developing

MADISON COUNTY: Virginia City, County Seat

WHITE ANGEL QUARRY* Onyx marble Tidal Wave dis-
Operator: Norman Rogers trict, sec. 27,
Box 1719, Helena, Montana T. 3 S., R. 5 W.
Owner: American Chemet Corp.
Sheridan, Montana
Employees: 4
Status: Producing

PARK COUNTY: Livingston, County Seat

GARDINER TRAVERTINE QUARRY* Travertine Sec. 14, 24,
Operator: Livingston Marble T. 9 S., R. 8 E.
and Granite Works
Livingston, Montana
Owner: Same as operator
Employees: 12
Status: Producing

*Open pit.

TALC MINES

BEAVERHEAD COUNTY: Dillon, County Seat

BANJO (Lease on State Land) MINE*

Operator: Wallis Banning and Lester Jones 1013 East Glendale Dillon, Montana	Talc	SW Ruby Mountains district, SE $\frac{1}{4}$ SW $\frac{1}{4}$ sec. 13, T. 8 S., R. 8 W.
Owner: Same as operator		
Status: Producing and developing		

BOZO MINE*

Operator: Norman Rogers Box 1719, Helena, Montana	Talc	Sec. 7, 12, T. 8 S., R. 6, 7 W.
Owner: American Chemet Corp. Box 1704, Helena, Montana		
Status: Producing		

CRESCENT MINE*

Operator: Tri-State Minerals Co., Box 227, Dillon, Montana	Talc
Owner: Same as operator	
Status: Inactive	

CROWN-SMITH-DILLON MINE

Operator: Tri-State Minerals Co., Box 227, Dillon, Montana	Talc	Axes Creek dis- trict, sec. 23, T. 8 S., R. 8 W.
Owner: Clyde Smith Dillon, Montana		
Mill capacity: 3,300 t/yr		
Employees: 5		
Status: Producing		

MADISON COUNTY: Virginia City, County Seat

BEAVERHEAD MINE*

Operator: Sierra Talc & Chemical Co., Div. of Cyprus Mines Corp. 1608 Huntington Dr. South Pasadena, California	Talc	Stone Creek dis- trict
Status: Developing		

REBISH AND IKE MINE*

Operator: American Chemet Corp., East Helena, Montana	Talc	Sweetwater dis- trict, sec. 7, T. 8 S., R. 6, 7 W.
Owner: Same as operator		
Employees: 4		
Status: Producing		

*Open pit.

TALC MINES, contd.

MADISON COUNTY, contd.

<p>REGAL MINE* Operator: Tri-State Minerals Co., Box 227, Dillon, Montana Owner: Same as operator Mill capacity: 500 t/yr Status: Producing</p>	<p>Talc</p>	<p>Sweetwater district, N$\frac{1}{2}$ sec. 2, T. 8 S., R. 7 W.</p>
<p>RUBY NO. 1 and NO. 2 MINE Operator: Sam Maloney and Bill Pettus, Box 174 Alder, Montana Owner: Same as operator Status: Inactive</p>	<p>Talc</p>	<p>Warm Springs district, sec. 11, T. 8 S., R. 4 W.</p>
<p>TREASURE STATE MINE* Operator: Tri-State Minerals Co., Box 227, Dillon, Montana Owner: Same as operator Mill capacity: 20,000 t/yr Employees: 2 Status: Producing</p>	<p>Talc</p>	<p>Stone Creek dis- trict, NE$\frac{1}{4}$ NE$\frac{1}{4}$ sec. 15, T. 7 S., R. 6 W.</p>
<p>YELLOWSTONE (CAMERON) MINE* Operator: Sierra Talc & Chemical Co., Div. of Cyprus Mines Corp. Box 370, South Pasadena, Calif. Owner: Same as operator Employees: 9 to 18 Status: Producing</p>	<p>Talc</p>	<p>Johnny Gulch district, sec. 4, T. 9 S., R. 1 W.</p>

VERMICULITE MINES

LINCOLN COUNTY: Libby, County Seat

<p>VERMICULITE MOUNTAIN MINE* Operator: Zonolite Division W. R. Grace & Co. 135 S. LaSalle St. Chicago, Illinois Owner: Same as operator Mill capacity: 3,000 t/d Employees: 130 Status: Producing</p>	<p>Vermiculite</p>	<p>Rainy Creek district, sec. 14, 15, 22, 23, T. 31 N., R. 30 W.</p>
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 *Open pit.

S U P P L E M E N T A L L I S T O F M I N I N G
E N T E R P R I S E S

This list includes mining enterprises that have been inactive for three or more years or that have not returned our questionnaires. The abbreviations used to describe their former status are A, active; D, developing; I, inactive, P, producing; and U, unknown.

BEAVERHEAD COUNTY

Amaranth	I 1964
Amazon	P 1961
Blackstone	I 1961
Calvert	I 1963
Carter Creek	I 1962
Clara (Martin)	I 1963
Excelsior	I 1963
GOB	I 1961
Gray Jocky	U 1963
Harrison	A 1962
Hendricks	I 1963
Idanha	U 1963
Jack	I 1962
Jackson	D 1962
Jumper No. 1 & 2	I 1963
Knight	U 1963
Maiden Rock	P 1962
May Day	D 1961
Moose Horn	D 1961
Quartz Hill Tailings	U 1963
Sparkle	U 1961
Sweeney	I 1963
Sylvia	I 1964
Three Acres	A 1962
Tuscarora	I 1961
White Lime	D 1961

BROADWATER COUNTY

Alpha Claim	I 1963
Custer Hyantha	I 1961
East Pacific	U 1962
Erickson 1, 2, & 3	D 1961
Green & Waddel placer	I 1961
Indian Creek graphite	D 1962
January	U 1963
Kleinschmidt	I 1963
Marietta	I 1962
Miller Slim Jim	P 1962
Palmer Engh placer	U 1961
Stabler	U 1963

CARBON COUNTY

Bice	U 1962
Cole Creek quarry	I 1962
Old Glory	U 1961
Perc No. 14, Marie & Bob Group	D 1963
Sandra	I 1961
Swamp Frog	I 1963

CASCADE COUNTY

Big Ben	I 1962
Star	I 1963

DEER LODGE COUNTY

4-Some	I 1961
Gold Coin	U 1963

FERGUS COUNTY

Big Push	D 1962
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FLATHEAD COUNTY

O. F. Martin	D 1962
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GRANITE COUNTY

Bi-Metallic & Granite	P 1963
Climax	A 1962
Dandy	I 1963
Gold King	I 1962
Gypsy Queen	I 1963
Jackie Marie	U 1962
Jefferson	A 1962
Little Emma	D 1962
M & T	D 1962
Maywood placer	D 1962
Middle Fork	U 1962
Mystery	I 1961
Non-Pariell	I 1962

SUPPLEMENTAL LIST OF MINING ENTERPRISES--contd.

GRANITE COUNTY, contd.

Potosi Lode dump A 1962
 Senate U 1963
 Thumper Lode No. 1 U 1962

JEFFERSON COUNTY

Big Jim D 1962
 Crescent I 1962
 Daily West U 1961
 Fourth & Fifth July I 1962
 Greater Mountain I 1961
 Lincoln A 1962
 Montreal Star I 1962
 Nancy A 1962
 Obelisk I 1962
 Poor Boy U 1963
 Union I 1963
 Uranium D 1962

JUDITH BASIN COUNTY

Bell D 1961
 Block P I 1964
 Doctor Kallock I 1962
 Willow Creek I 1962
 Yogo Sapphire I 1962

LEWIS AND CLARK COUNTY

Bald Mountain I 1964
 Black Watch P 1962
 Crystal I 1962
 Discovery & Margurete I 1962
 Gruell Bar A 1962
 Little Sampson I 1961
 Nick and Dick P 1961
 Paymaster D 1961
 Pearl I 1962
 Peck Mill A 1962
 Rosetta (Rosenfield) D 1961
 Silver Crescent I 1962
 Silver Cross U 1963
 Woodrow Wilson I 1963

LIBERTY COUNTY

Whitlash I 1962

LINCOLN COUNTY

Gloria D 1962
 Highland Silver I 1962
 Morning Glory I 1962
 North Star Group I 1962
 St. Paul U 1961
 Snowshoe U 1961
 Way Up I 1962
 West Fisher and
 Miller placer I 1961

MADISON COUNTY

Apex D 1962
 Boulder Cobalt I 1964
 Cabin & Cornucopia I 1963
 Clancy U 1961
 Colorado U 1961
 Fairview I 1962
 El Fleeda I 1962
 Garnet I 1963
 Gilliam I 1963
 Gold Plate D 1963
 Green Campbell I 1963
 Kearsarge D 1963
 Kelley-Massey P 1963
 Leadora U 1961
 Liberty Montana U 1962
 Lost Lode D 1963
 Mary Ingabar P 1963
 Mountain Flower A 1962
 Nichols I 1963
 Pika Gypsum D 1962
 Pollinger D 1961
 Ruby I 1963
 Ruby View U 1963
 Shoemaker I 1964
 Silver Bell D 1962
 Snow White U 1963
 Sparrow placer D 1961
 West Mayflower I 1961

MEAGHER COUNTY

Black Hawk I 1963
 Copper Duke P 1963
 Copperopolis I 1963
 Maxine I 1961
 Maybe I 1963

MINERAL COUNTY

Dutchman	A 1962
Gildersleeve	D 1961
Snowbird	I 1963

MISSOULA COUNTY

Coloma	I 1963
Crystal Springs	I 1961
Dixie	A 1962
Hidden Treasure	I 1963
LaChambre placer	I 1961
Mongar	U 1961

PARK COUNTY

Nebraska 1 & 2 placer	I 1962
Republic & Black Rock	I 1963
Sin Nombre	D 1961

PHILLIPS COUNTY

Blue Rock placer	I 1963
Hawkeye	D 1961
Jack Deuce	I 1962
Lucky Maud placer	D 1961

POWELL COUNTY

Bonanza	I 1961
C. D. Hurd placer	I 1962
Cyclone	D 1962
Hardrock placer	I 1961
Hobby Horse	I 1963
Jefferson Gulch	P 1961
Julia, Lilly, and Copper King	I 1963
Ophir	I 1963
Northern Pacific and Silver Reef	D 1962

RAVALLI COUNTY

Darkstar	I 1961
J & I	I 1964

SANDERS COUNTY

Letterman	I 1963
Montana Premier	A 1962
Sales	I 1961
State Group	D 1961

SILVER BOW COUNTY

Adelaid and Mat	I 1963
Carlu-Pauline	A 1962
Jewel	U 1961
Little Acre placer	I 1963

STILLWATER COUNTY

Gypsum Placer claim	I 1963
Mouat	I 1962

SWEET GRASS COUNTY

Half Moon	U 1961
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PART 3, COAL MINES

STATE COAL MINE INSPECTOR'S ANNUAL REPORT

Coal production in the State of Montana for the fiscal year July 1, 1963, to June 30, 1964, with 35 mines reporting was 345,259 tons as compared with 364,358 tons for the previous year.

The East Belt mine and the Magnuson mine did not produce any coal last year.

There were no fatalities in the Montana coal mines and only one lost-time injury.

There were no applicants for the mine foreman's examination during the year.

The Big Horn Coal Co. of Sheridan, Wyoming, purchased the Tongue River mine from Henry Yallowizer and will continue to operate it.

Production statistics and a list of the coal mines in Montana will be found on the following pages.

S/ Thomas Morgan
State Coal Mine Inspector

TABLE 1.--Production report, Montana coal mines, July 1963 - June 1964.

<u>Mines by County</u>	<u>Address</u>	<u>Ave. no. employees</u>	<u>Tonnage mined</u>	<u>Accidents</u>	
				<u>Fatal</u>	<u>Nonfatal</u>
BIG HORN Tongue River Coal Co.	Henry Yallowizer Decker, Montana	2	635	0	0
BLAINE Milk River Coal Co.	Lauren Sargent Box 661, Havre, Montana	7	2,845	0	0
Rocky Boy Mine	Ernie Friede Box Elder, Montana	2	312	0	1
CARBON Brophy Coal Co.	James Brophy Red Lodge, Montana	11	6,504	0	1
Roadside Mine	Frank Janskovitch Bearcreek, Montana	2	439	0	0
Smith Coal Docks	Samuel Carpenter Red Lodge, Montana	5	5,520	0	0
CASCADE Loveland Mine	Mrs. Earl Loveland Milligan Rt. Great Falls, Montana	1	411	0	1
Canyon Mine	Albert Korin Sand Coulee, Montana	2	80	0	0
Latham Mine	Dennis Yatsko Stockett, Montana	2	560	0	0
CUSTER Moon Creek Mine	Henry Freeze, 509 Pacific St. Miles City, Montana	1	118	0	0
Storm King Mine	Ralph E. Bair Box 113, Miles City, Montana	2	2,100	0	0

TABLE 1.--Production report, Montana coal mines, July 1963 - June 1964, contd.

<u>Mines by County</u>	<u>Address</u>	<u>Ave. no. employees</u>	<u>Tonnage mined</u>	<u>Accidents</u>	
				<u>Fatal</u>	<u>Nonfatal</u>
DAWSON Albrecht Mine	Jacob Albrecht Bloomfield, Montana	2	650	0	0
Peuse Mine	Gordon Peuse Lindsay, Montana	1	776	0	0
FERGUS Swanson Mine	William Swanson, Gilt Edge Rt. Lewistown, Montana	1	107	0	0
Tuss Mine	C. M. Tuss, E. Evelyn St. Lewistown, Montana	1	540	0	0
MC CONE No. 1 Mine	R. D. Stephenson Circle, Montana	2	150	0	0
MUSSELSHELL Divide Mine	Victor Carlson Roundup, Montana	5	8,593	0	0
Forstrom Mine	Victor Forstrom Roundup, Montana	4	2,985	0	0
Gildroy Mine	Ralph E. Gildroy Roundup, Montana	4	3,420	0	0
Johnny's Mine	Johnny Keosky Roundup, Montana	3	1,447	0	0
Nies Mine	William Nies Roundup, Montana	5	5,000	0	0
P. M. Mine	Paul Megeed, Golden Creek Rt. Roundup, Montana	3	1,450	0	0

Square Deal Mine	Virgil Cross Roundup, Montana	6	8,153	0	0
Western Coal Mine	Glenn Johnson Roundup, Montana	4	2,220	0	0
POWDER RIVER Coal Creek Mine	John Schoonover, Box 94 Ashland, Montana	3	1,188	0	0
Two Tree Mine	Antone Gali Epsie, Montana	3	60	0	0
Wilson Mine	J. L. Wilson Broadus, Montana	2	20	0	0
RICHLAND Bemer Mine	Neville Bemer Culbertson, Montana	2	950	0	0
Coal Bank Canyon	Cyrus Lowery, Box 882 Sidney, Montana	2	800	0	0
Knife River Coal Co.	Knife River Coal Co. Savage, Montana	16	281,118	0	5
Thiell Bros. Mine	Charles Thiell, Box 586 Sidney, Montana	3	1,322	0	0
ROSEBUD Foley Bros., Inc.	O. E. Rye Coalstrip, Montana	3	630	0	0
Lame Deer Mine	Lester Scott Lame Deer, Montana	3	1,100	0	0
SHERIDAN Acme Mine	M. F. Brenteson Coalridge, Montana	2	2,278	0	0
Lagerquist	E. C. Lagerquist, RFD 1 Westby, Montana	2	748	0	0



MINERAL INDUSTRY SURVEYS

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF MINES



Stewart L. Udall, Secretary

Marling J. Ankeny, Director

Area VII Mineral Resource Office
Mark L. Wright, Area Director

Albany Office of Mineral Resources
A. J. Kauffman, Jr., Chief

Area Report B-115
Albany, Oregon

THE MINERAL INDUSTRY OF MONTANA IN 1964

Preliminary Annual Report

The value of mineral production (\$205 million) in Montana exceeded \$200 million for the second time in the history of the State, according to a preliminary report by the Bureau of Mines, U.S. Department of the Interior. The near record output value, second only to that of 1956 (\$213.8 million), was \$23.0 million (13 percent) above the corresponding 1963 figure. Copper output accounted for a major portion of the increase as production jumped 31 percent and the value rose \$18.6 million because of the completion of a 42,000-ton-per-day copper concentrator at Butte and the resumption of near-normal operations by The Anaconda Company. Gold and silver output and value increased, and the value of lead and zinc production rose despite a drop in output below 1963 levels.

Petroleum (\$74.8 million) and copper (\$67.8 million) accounted for 70 percent of the total value of mineral production.

Output of mineral fuels and many nonmetal products remained approximately the same as in the previous year, but gains in cement, lime, fluorspar, peat, and phosphate rock were recorded; barite and stone production declined.

The Anaconda Company continued to ship low-grade manganese ore from the former Government stockpile, purchased in 1962, to Anaconda for concentrating and recovery of contained manganese and base metals.

The rising demand for silver resulted in an increased number of exploration and development projects. Office of Minerals Exploration (OME) loans were granted for work at potential silver-bearing properties in Beaverhead, Silver Bow, and Madison Counties. Major exploration projects were in progress in the Flathead mining district, at the Crystal property in Jefferson County, and at the Champion mine in Deer Lodge County.

Prepared by R.W. Knostman, Geologist, and W.N. Hale, Mineral Specialist,
Bureau of Mines, Area VII, Albany, Oregon, December 17, 1964.

TABLE 2 - Mineral production in Montana 1/

Mineral	1963		2/ 1964	
	Quantity	Value (thousands)	Quantity	Value (thousands)
Clays 3/	38	\$45	38	\$45
Coal (bituminous and lignite)	343	967	335	914
Copper (recoverable content of ores, etc.)	79,762	49,133	104,600	67,781
Gold (recoverable content of ores, etc.)	18,520	648	28,306	991
Iron ore (usable)	13	89	7	50
Lead (recoverable content of ores, etc.)	5,000	1,080	4,487	1,194
Lime	114	1,290	120	1,293
Manganese ore and concentrate	5,260	4/	18,315	1,311
(35 percent or more Mn)				
Manganiferous ore and concentrate	1,688	4/	5,107	96
(5 to 35 percent Mn)				
Natural gas	30,026	2,253	31,000	2,400
Petroleum (crude)	30,875	75,335	30,779	74,793
Sand and gravel	14,319	13,756	13,500	13,000
Silver (recoverable content of ores, etc.)	4,242	5,426	5,427	7,016
Stone	6,109	7,081	5,800	6,700
Zinc (recoverable content of ores, etc.)	32,941	7,576	31,017	8,375
Value of items that cannot be disclosed: Barite, cement, fluorspar, gem stones (1963), gypsum, natural gas liquids, peat, phosphate rock, talc, uranium ore, vermiculite, and values indicated by footnote 4/		17,351		19,182
Total		182,030		205,141

1/ Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

2/ Preliminary figures.

3/ Excludes fire clay; included with "Value of items that cannot be disclosed."

4/ Figure withheld to avoid disclosing individual company confidential data.

Important nonmetal developments included petroleum refinery expansion, construction of a phosphate rock concentrator, and development of a silica deposit. Capacity expansions at the two petroleum refineries at Billings were accompanied by added facilities for recovering sulfur at the Montana Sulphur & Chemical Co. plant, Billings. The Douglas Creek phosphate mine flotation concentrator, Granite County, was completed and placed into operation; phosphate rock was upgraded and shipped to company fertilizer plants at Trail and Kimberley, British Columbia. Pacific Silica Co. leased the Basin silica deposit, Jefferson County, from Union Carbide Co. and began developing the property.

Montana industry employment reached record proportions during the year as the rising economic climate brought demands for an increased labor supply. Despite a drop in the petroleum and natural gas industry, the overall mining employment total for the first 10 months of 1964 (figures for November and December are not available) averaged 6 percent above that of the corresponding period in 1963, according to the Montana Labor Market. The 20-percent increase in metal mining industry employment resulted from the strong demand for miners at Butte district mines of The Anaconda Company.

Anaconda continued to experience a shortage of miners despite steps taken to recruit and train personnel. Efforts to obtain unemployed miners from former coal-mining regions of Appalachia resulted in several hundred men finding jobs in Butte mines. In addition, the company trained over 260 men from southwestern Montana as student miners.

The displacement of workers caused by the cessation of copper concentrating at Anaconda on October 30 seriously affected the community. Many workers commuted from Anaconda to jobs at the new Butte concentrator, but the highly automated operation at Butte required fewer men than did the Anaconda concentrator. Approximately \$675,000 in Government funds were allotted for training former mill workers for other occupations.

TABLE 3 - Estimated average monthly employment, thousands

	First 10 months, 1962	First 10 months, 1963	First 10 months, 1/ 1964	Change 1963-64, percent
Mining.....	6.7	7.0	7.4	+6
Metal mining.....	3.8	4.0	4.8	+20
Quarrying and nonmetallic mining, including coal.....	.8	.9	.9	0
Petroleum and natural gas production.....	2.2	2.0	1.6	-20
Manufacturing.....	21.6	22.5	22.1	-2
Lumber and timber products.....	8.0	8.6	9.1	+6
Primary metals.....	3.6	3.2	3.2	0
Petroleum refining.....	1.0	1.2	1.2	0
Contract construction.....	12.7	13.2	11.9	-10
Transportation and utilities.....	18.0	17.7	17.6	-1
All nonagricultural industries...	171.2	174.8	175.1	0

1/ Preliminary.

Source: Montana Labor Market, State Employment Service.

REVIEW BY MINERAL COMMODITIES

METALS

Aluminum. - Anaconda Aluminum Co. operated its Columbia Falls primary aluminum plant at capacity (approximately 67,500 tons annually) for the third consecutive year. Construction of a third potline to increase annual capacity to 100,000 tons was continued. Operation of the new potline was scheduled to begin in the third quarter of 1965.

Copper. - Estimated copper output jumped 31 percent (24,840 tons) over the 1963 total owing to the completion of a new 42,000-ton-per-day copper mill (Clyde E. Weed Concentrator) at Butte and increased production from Butte district mines. The 1963 output was depressed because the equipment transfer from the mill at Anaconda to the Butte concentrator necessitated curtailed mine production. Output at the new concentrator was gradually increased throughout the year until sufficient capacity was attained to handle all copper ore from Butte mines, thus bringing about closure of the copper concentrator at Anaconda on October 30.

Completion of the new concentrator, containing both LPF (leach-precipitation-flotation) and straight flotation circuits, was a major step toward returning Montana copper operations of The Anaconda Company to production and profit levels of previous years. Operating methods and equipment at the new facility were reported in three publications. 1/ 2/ 3/

The Butte deep level program to tap high-grade reserves at depth and to improve hauling and hoisting facilities was continued at a rapid rate. The Kelley No. 1 shaft (36 feet by 7 feet) was deepened to 5,847 feet; upon completion of connecting haulageways, the shaft was to be used for centralized hoisting from deep levels of the Mountain Con, Leonard, and Steward mines. Four of the five compartments of the shaft were to be equipped with hoisting skips, thus providing the capacity to raise more than 7,000 tons per day from the 4600 level. Over 1,000 feet of the planned 1,650-foot, 4600-level haulageway from the Mountain Con mine to the Kelley No. 1 shaft was completed. A connection from this haulageway was ultimately to provide passage to the

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- 1/ Wraith, William Jr., and T.G. Fulmor. Anaconda's Butte Concentrator. Mining Engineering, May 1964, pp. 55-73.
- 2/ Chemical & Engineering News. Butte Mining Perks Up with New Concentrator. July 27, 1964, pp. 40-42.
- 3/ Chemical Engineering. Process Innovators Concentrate on Copper Ore. August 3, 1964, v. 71, No. 16, pp. 46, 48, 50.

TABLE 4 - Mine production of gold, silver, copper, lead, and zinc, in terms of recoverable metals ^{1/}

Year	Mines producing		Material sold or treated ^{2/} (thousand short tons)	Gold (lode and placer)		Silver (lode and placer)	
	Lode	Placer		Troy ounces	Value (thousands)	Troy ounces (thousands)	Value (thousands)
1955-59 (average) ..	120	11	9,445	30,713	\$1,075	5,215	\$4,720
1960.....	129	13	12,317	45,922	1,607	3,607	3,265
1961.....	135	17	12,792	35,377	1,238	3,490	3,227
1962.....	107	5	11,835	24,387	854	4,561	4,948
1963.....	117	8	9,506	18,520	648	4,242	5,426
1964 ^{3/}	103	7	14,658	28,306	991	5,427	7,016

Year	Copper		Lead		Zinc		Total value (thousands)
	Short tons	Value (thousands)	Short tons	Value (thousands)	Short tons	Value (thousands)	
1955-59 (average) ..	85,215	\$57,210	13,015	\$3,693	50,143	\$12,220	\$78,919
1960.....	91,972	59,046	4,879	1,142	12,551	3,238	68,298
1961.....	104,000	62,400	2,643	544	10,262	2,360	69,770
1962.....	94,021	57,917	6,121	1,126	37,678	8,666	73,511
1963.....	79,762	49,133	5,000	1,080	32,941	7,576	63,864
1964 ^{3/}	104,600	67,781	4,487	1,194	31,017	8,375	85,356

^{1/} Includes recoverable metal content of gravel washed (placer operations); ore milled, old tailings and old slag retreated, copper precipitates and ore shipped to smelters during the calendar year indicated. Owing to rounding, individual items may not add to totals.

^{2/} Does not include gravel washed.

^{3/} Preliminary figures. Gold value calculated at U.S. Treasury buying price of \$35 a troy ounce, and silver at a preliminary average price of \$1.29293 a troy ounce. In calculating production values for copper, lead, and zinc, preliminary average prices in 1964 per pound of refined metal were used, as follows: Copper, \$0.324; Lead, \$0.133; Zinc, \$0.135.

TABLE 5 - Mine production of gold, silver, copper, lead, and zinc in 1964, by months, in terms of recoverable metals

Month	Gold (troy ounces)	Silver (troy ounces)	Copper (short tons)	Lead (short tons)	Zinc (short tons)
January.....	1,893	439,971	7,926	412	3,163
February....	2,054	416,862	8,757	321	2,786
March.....	2,518	553,478	9,753	380	3,120
April.....	1,292	310,704	6,049	242	1,903
May.....	1,955	386,876	7,815	290	2,162
June.....	2,467	448,111	9,017	265	1,910
July.....	1,979	425,810	9,521	290	1,885
August.....	3,101	471,756	9,889	536	2,642
September...	3,462	532,881	9,179	456	2,761
October.....	2,984	524,287	10,546	393	2,940
November....	2,301	458,000	8,074	443	2,831
December....	2,300	458,000	8,074	459	2,914
Total..	28,306	5,426,736	104,600	4,487	31,017

TABLE 6 - Mine production of gold, silver, copper, lead, and zinc in Silver Bow County, in terms of recoverable metals

Year	Mines producing		Material sold or treated ^{1/} (thousand short tons)	Gold, lode and placer (troy ounces)	Silver, lode and placer (thousand troy ounces)
	Lode	Placer			
1955-59 (average)...	19	1	9,331	23,339	4,786
1960.....	11	-	12,169	21,819	2,918
1961.....	11	1	12,635	18,391	2,765
1962.....	9	1	11,654	17,657	4,027
1963.....	10	2	9,346	14,287	3,951
1964 ^{2/}	10	-	14,481	21,113	3,782
Year	Copper (short tons)		Lead (short tons)	Zinc (short tons)	Total value (thousands)
1955-59 (average)...	85,096		9,777	43,634	\$75,760
1960.....	91,754		1,889	4,755	63,980
1961.....	103,788		435	1,384	65,881
1962.....	93,845		4,319	28,636	70,176
1963.....	79,636		3,185	24,140	60,850
1964 ^{2/}	104,443		4,004	30,783	82,684

^{1/} Does not include gravel washed.

^{2/} Preliminary figures.

Steward mine. Haulageways were planned to connect the shaft with the 4200 level of the Leonard and Belmont mines. All haulageways were to be of sufficient size to accommodate 36-inch gauge track and 120-cubic-foot cars with a capacity of 5 tons.

Deepening of the Kelley No. 2 shaft to a depth of 939 feet below the 3000 level was begun late in the year. Upon completion, the shaft was to replace the High Ore shaft as the central pump shaft for the district. Replacement of the High Ore shaft, located near the edge of the Berkeley pit, was necessary because of a planned pit expansion. Sinking of the circular Neversweat inclined (69 degrees) shaft was continued by Centennial Development Co. The shaft was intended mainly for ventilation of the Steward mine.

Experimental leaching of Berkeley pit low-grade material containing 0.1 to 0.4 percent copper was begun in January. Leach ore was piled on an impervious asphalt pad (3 $\frac{1}{4}$ inches thick) designed to minimize the loss of pregnant solutions. Hot water (85° F) from Butte mines was percolated through the leach dumps before being directed to the precipitation plant for recovery of the copper in solution.

The Anaconda Company and Bear Creek Mining Co., a subsidiary of Kennecott Copper Corp., staked mining claims and leased property aggregating nearly 20,000 acres in the vicinity of the Mike Horse mine near Rogers Pass, Lewis and Clark County. Anaconda drilled several holes that cut zones of low-grade copper.

Gold.- Production of gold, the highest since 1961, increased nearly 9,800 ounces over the 1963 total of 18,520 ounces. As with silver, the increase was largely due to the sharp rise in copper output from which gold was recovered as a byproduct. Approximately 65 percent of the output was as byproduct of copper production by The Anaconda Company.

Vitro Minerals Corp. continued to examine by diamond drilling and other exploration methods a portion of the Judith Mountains near Lewistown.

Iron Ore.- Production of iron ore dropped 44 percent to 7,443 long tons. The output was entirely from the Iron Cross mine near Radersburg, Broadwater County. Ralls & Harris Bros. operated the mine until June 1 when the Harris brothers sold their interest in the company. The mine was worked during the remainder of the year by R & S Iron Co. The Iron Magnet mine, which yielded 3,488 long tons in 1963, was not operated.

Lead. - Estimated production declined 10 percent below the 1963 output, but the value rose 11 percent because of a higher average price for the metal. As in the past, most of the production was a byproduct of zinc output from the Butte district and the slag-fuming operation at East Helena. A major portion of the output was from the Badger State mine (Butte), but lead also was recovered from zinc ore extracted at smaller mining operations throughout the State, from various mine dumps in the Butte district, and from the purchased Government manganese stockpile.

Manganese. - Estimated shipments of both manganese ore and concentrate (35 percent or more manganese) and manganiferous ore and concentrate (5 to 35 percent manganese) were more than triple the 1963 output. The increase in manganese concentrate shipments resulted from a sharp rise in the use of manganese nodules for producing ferromanganese by The Anaconda Company at the Anaconda Reduction Works, Anaconda, Deer Lodge County, and a substantial increase in demand for battery-grade manganese produced by Taylor-Knapp Co. Manganiferous ore production was entirely by Taylor-Knapp Co. from the Moorlight claim group in the Philipsburg district of Granite County.

The Anaconda Company continued shipping from the low-grade manganese stockpile at Butte, purchased from the Government in 1962, to the reduction works for concentrating. More than 60,000 tons of concentrate was produced and piped to the sintering plant for producing manganese nodules. Nodules were shipped for metallurgical and chemical uses and were consumed in the production of ferromanganese. The Anaconda ferromanganese plant was operated approximately 4 months, the first production since 1962.

Battery-grade manganese ore continued to be the major product of Taylor-Knapp Co. This product was best suited for use in dry-cell batteries not requiring a high drain rate, such as those used in flashlights, entrance lights, and blinker lights for construction projects.

Silver. - Estimated production of silver increased nearly 28 percent to 5.4 million ounces, compared with the 1963 total of 4.2 million ounces. Most of the output was as a byproduct of copper (64 percent) and zinc (24 percent) ores in the Butte district, with the remainder largely from miscellaneous shippers to smelters at Anaconda and East Helena.

Interest continued in exploring and developing silver-bearing properties in the State. Champion Silver Mining Co. completed shaft-sinking and cross-cutting at the Champion mine, Deer Lodge County, to develop ore cut previously by diamond drilling. Spokane National Mines, Inc., continued exploration and development at the New Departure mine in the Bannack district and concentrated ore in a flotation mill at Bannack. McIsaac Mining and Tunneling Co., Sudbury, Ontario, began reopening the Mineral King mine near Saltese, but ventilation problems postponed completion of the project. United Buffadison Mines, Ltd., of Toronto, Ontario, continued a diamond-drilling program started in 1963 at the Crystal property near Basin.

The acute silver shortage and price increase resulted in considerable exploration for silver ore in the Hog Heaven (Flathead) district of Flathead County. Midnite Mining Co., Spokane, Wash., began diamond drilling at a property leased by Waino Lindbom and at claims comprising the Ole property. The Anaconda Company conducted geochemical soil sampling and other exploration in the vicinity of the company-owned Flathead mine, and preparations were begun for underground work to check results of the surface examination. The Montana Bureau of Mines and Geology conducted geochemical soil sampling in the area. Northern Pacific Railway Co. continued an appraisal of company-owned land in the region.

Three OME contracts were awarded for silver exploration in the southwestern part of the State. Wayne Erickson received a \$61,500 contract for work in the Elkhorn mining district of Beaverhead County. Work in the Lowland mining district, 40 miles north of Butte, was conducted under a \$132,800 agreement with Ruby Silver Mines, Inc., Salt Lake City, Utah. B.L.M.W. Mining Co. received a \$20,550 contract for exploration in the Fairweather district, Madison County. Government participation was 50 percent of the contract totals.

The Bunker Hill Co. terminated exploration of the Nancy Lee property near Superior after sinking the shaft 400 feet, establishing two new levels, and conducting an intensive ore search during the 3-year period since the mine was leased in July 1961. Bunker Hill mined an average of 75 tons of ore per day just prior to terminating the lease; the ore was trucked to the company concentrator at Kellogg, Idaho. Late in the year, E.C. Smith, former operator of the mine, again leased the property, reactivated the mill, and made several shipments of concentrate to the East Helena smelter.

Thorium.- Interest in thorium-bearing deposits in the Lemhi Pass area was buoyed by the announcement that Dow Chemical Co. had optioned properties in the Idaho portion of the area.

Uranium.- There was no uranium output in the State for the first time since 1956. Production had declined each year since 1959.

Zinc.- A rise in metal price resulted in an 11-percent increase in the value of zinc production despite a 1,900-ton drop in output from that of 1963. As in previous years, most of the production was by The Anaconda Company from operations in the Butte district and from the slag-fuming facility at East Helena. An estimated 9,325 tons was recovered from fuming old slag at East Helena, and about 235 tons came from small mines outside of the Butte district; the remainder of the State total was from dumps, stockpiles, and mines owned by Anaconda.

The largest amount was from block caving low-grade ore at the Badger State mine, but a higher grade sector of the mine was extracted by cut-and-fill stoping methods. Ore also was shipped from the Anselmo mine, Syndicate pit and dump, Orphan Girl dump, and the Emma west dump. Processing ore from the Government low-grade manganese stockpile purchased in 1962 continued to yield significant quantities of zinc.

The Anaconda electrolytic zinc plant at Great Falls was operated at capacity (8 units) in March, but by yearend, production had been curtailed to 6 units due to a shortage of concentrates. The plant was closed by a strike from mid-January to the end of the month by a labor dispute.

Block caving of zinc ore at the Badger State mine was described. 4/

NONMETALS

Asbestos.- Zonolite Division, W.R. Grace & Co., continued experimental recovery of short-fiber tremolite asbestos as a coproduct with vermiculite at an operation near Libby, Lincoln County.

Galaxy Mining Co., Billings, shipped short-fiber anthophyllite asbestos from the Karst property, Gallatin County, to the Colorado School of Mines for testing purposes.

Barite.- Tonnage and value of barite production were estimated to be 55 percent lower than the 1963 totals.

Production was from the Elk Creek mine, Missoula County, by Baroid Sales Division, National Lead Co. Ore was trucked 9 miles from the mine to a stockpile at the Greenough grinding plant. Material was processed according to market demand at the plant, essentially a gravity-concentrating unit with accompanying drying, grinding, and bagging facilities. Processed material, largely used as a weighting agent in oil-well drilling mud, was shipped to Pacific Northwest, Rocky Mountain States, and Alaskan consumers. Coarse quartz and granite-bearing tailings were dug periodically from a settling pond and sold to the State highway department for use in road construction.

Cement.- Quantity and value of cement shipments increased 23 percent compared with 1963 totals.

4/ Mitchell, Ronald J. Anaconda Block-Caves Zinc Ore at the Badger Mine. Metal Mining & Processing, November, 1964, pp. 19-21.

Production was by Kaiser Cement & Gypsum Corp. (formerly Permanente Cement Co.) at Montana City and by Ideal Cement Co. at Trident. Raw materials for making cement were obtained from quarries adjacent to the plants and from distant sources. Limestone, shale, and silica were mined near the plants. Iron ore used at Trident came from northwestern Montana, and iron-bearing slag used at Montana City was from East Helena. Gypsum for both operations was mined at Fergus County deposits near Lewistown. The Kaiser Cement & Gypsum Corp. Montana City plant was described in a report. 5/

Clays.- Output of both miscellaneous clay and fire clay was estimated to be about the same as the 1963 total. Miscellaneous clay and shale production for use in building products accounted for much of the output; a small quantity of fire clay was dug.

Fluorspar.- Output of fluorspar by Roberts Mining Co. at its Ravalli County operation was up sharply. Ore from the Crystal Mountain mine was trucked 26 miles to the company mill at Darby which utilized sizing and heavy-media separation. Metallurgical-grade fluorspar processed by the company was shipped to industrial consumers.

Gypsum.- Estimated production of crude gypsum was slightly less than the 1963 total. Output was from the Shoemaker mine of United States Gypsum Co. and the Hanover mine of Ideal Cement Co., both in Fergus County.

Lime.- Lime production increased 5 percent over the 1963 total. The Anaconda Company made quicklime in Deer Lodge County for metallurgical use at its own operations, and Elliston Lime Co. manufactured lime in Powell County for industrial use. Three sugar companies, operating their own kilns, calcined limestone to quicklime for use in refining sugar in Big Horn, Missoula, Richland, and Yellowstone Counties.

Phosphate Rock.- According to preliminary data, output and value of marketable phosphate rock increased 12 percent over the 1963 totals.

Initial output was recorded for the Douglas Creek mine flotation plant, Granite County, by Montana Phosphate Products Co. Low-grade rock from the Douglas Creek mine was upgraded at the 300,000-ton-annual-capacity plant to a concentrate containing 31 percent P_2O_5 which was shipped to fertilizer manufacturing plants at Trail and Kimberley, British Columbia.

Rock of suitable grade for use as mined was produced by Montana Phosphate Products Co. and George Relyea in Powell County. Montana Phosphate Products Co. shipped material mined in Powell County to fertilizer plants in Canada, and Relyea shipped material to industrial consumers in the Rocky Mountain area.

5/ Mitchell, Ronald J. Permanente Plant - New Montana Bonanza. Rock Products Mining & Processing, v. 67, No. 2, February 1964, pp. 57-62.

Phosphate rock from mines in Silver Bow County was washed and reduced to elemental phosphorus by the Victor Chemical Works, Division of Stauffer Chemical Co., at Silver Bow. Rock was treated thermally without reduction to make defluorinated animal feed phosphate products by Rocky Mountain Phosphate, Inc., at Garrison. Late in the year the Garrison plant was shut down because of litigation over alleged company responsibility for air pollution in the area.

Sand and Gravel and Stone.- Combined tonnage and value of sand and gravel and stone declined 6 percent from the 20.4 million tons produced in 1963 which was valued at \$20.8 million. The decline was due to smaller requirements for these commodities by the State highway department and at the Bureau of Reclamation Yellowtail dam project.

Pacific Silica Co. leased the Basin silica deposit, Jefferson County, from Union Carbide Co. and began developing the property. Crushed material was marketed to Pacific Northwest consumers.

Montana Travertine Quarries, Inc., marketed white, ivory, yellow, rose-tan, and coral-colored travertine from quarries in Park County. The travertine was hand-slabbed at quarries near Gardner and trucked to the Gardner railhead for shipment to Midwestern States and Pacific coast building material consumers.

Sulfur.- Output of high-purity elemental sulfur by Montana Sulphur & Chemical Co., contingent upon oil-refining operations of Continental Oil Co. and Humble Oil & Refining Co., was up 15 percent compared with 1963 production. Due to capacity expansion at the two petroleum refineries, facilities also were added to the sulfur-producing plant to recover additional sulfur.

Talc.- Quantity and value of talc production did not change, according to preliminary estimates. Talc was mined in Beaverhead County by Tri-State Minerals, Inc., and in Madison County by Sierra Talc & Chemical Co., Division of Cyprus Mines Corp. (formerly Sierra Talc Co.).

In addition to processing fine material in standard roller-type grinding mills, both companies produced micronized talc in fluid-energy mills to particle sizes ranging from 20 to less than 1 micron.

Vermiculite.- The quantity of crude vermiculite mined declined compared with 1963 output. The Zonolite Division, W.R. Grace & Co., open pit near Libby, Lincoln County, continued to be the principal domestic source of vermiculite.

Material was selectively mined from 20-foot benches and trucked to a transfer point for distribution of waste and ore before shipment by conveyor to the mill. At the transfer point, waste passed over screens to a disposal area and material passing through screens fell through an 85-foot inclined

shaft and was transported 1,200 feet on a 24-inch belt conveyor to mill feed bins. At the mill, waste was scalped from the vermiculite by means of a dry- and wet-milling circuit; both circuits utilized gravity concentrating methods. Some of the upgraded material was exfoliated by a company in Great Falls; however, most was shipped out of the State for processing.

MINERAL FUELS

Coal. - Output of bituminous coal and lignite totaled 335,000 tons, compared with production of 343,000 tons in 1963. Bituminous coal was mined principally in Musselshell County; mines in Richland County were the major source of lignite, which was used in the Montana-Dakota Utilities Co. steam-electric generating plant at Sidney.

Petroleum and Natural Gas. - Estimated recovery of crude oil was 30.8 million barrels valued at \$74.8 million, compared with output of 30.9 million barrels valued at \$75.3 million in 1963. Withdrawals of natural gas increased to 31 billion cubic feet valued at \$2.4 million, compared with a total of 30.0 billion cubic feet valued at \$2.3 million in 1963.

Drilling through October (November-December data are not available) totaled 316 wells, 26 wells more than in the comparable 1963 period; of this total, 112 yielded oil, 11 yielded gas, and 193 were dry holes.

As a result of the Fred and George Creek and Flat Coulee successes in northern Montana, there was increased exploration in that area. The most extensive drilling program in the State was near the Fred and George Creek field in Toole County where more than 55 wells were completed through October; some were producers, and others were failures.

Renewed activity in northeastern Montana in Sheridan and Roosevelt Counties led to successful completion of three Devonian discoveries. Amerada Petroleum Corp., while reworking a former Silurian producer in the Outlook field (Sheridan County), completed the well for a flow of 263 barrels of oil per day from the Duperow formation (Devonian). Further drilling apparently yielded one successful offset producer from the same formation. Murphy Oil Co. in Roosevelt County completed a discovery well flowing 145 barrels of oil and 60 barrels of water per day from the Nisku formation (Devonian). The discovery, the most westerly success in the Williston basin, was named Volt field; development work was underway. A discovery was completed from two zones in the Nisku formation (Devonian) by Murphy Oil Co. north of Tule Creek field in Roosevelt County, and reportedly a Devonian pool was discovered south of the Tule Creek field.

In eastern Montana, Pan American Petroleum Corp. completed a Devonian discovery about 16 miles north of the Deer Creek field on the Cedar Creek anticline in Dawson County.

In central Montana, north of Columbus in Stillwater County, rework of a failure abandoned in 1934 led to a 10-million-cubic-foot-per-day gas producer from a Cretaceous subsurface structure. In Musselshell County, Occidental Petroleum Corp. completed an Amsden formation (Pennsylvanian) discovery on the Pole Creek anticline.

Humble Oil & Refining Co. announced it would install a hydrocracking unit and additional water control equipment at its Billings refinery.

Continental Oil Co. in February put on stream units that would increase capacity of its Billings refinery from 15,300 barrels per day to 35,500 barrels per day. A products pipeline was completed by the company from the Billings refinery to Casper and Sinclair, Wyo. At Casper, the pipeline had access to the Wyco pipeline to Denver, Colo., and at Sinclair, the pipeline connected with the Pioneer pipeline to Salt Lake City, Utah.

This report summarizes mineral industry activity in Montana in 1964 and contains preliminary production data for the year as estimated from company monthly and quarterly production canvasses, smelter receipt reports, and information contained in industry publications. Final production totals for the State's mineral commodities will be published in mid-1965 after completion of canvasses of all mineral industry establishments.

GOLD, SILVER, COPPER, LEAD, AND ZINC MINES

GRANITE COUNTY: Philipsburg, County Seat

COMBINATION MINE

Operator: James Hunter
Box 421
Philipsburg, Montana
Owner: Montana Climax Corp.
Box 185, Philipsburg,
Montana

Silver,
copper,
tungsten

Black Pine dis-
trict, sec. 16,
T. 8 N., R. 14 W.

Status: Producing and developing

POWELL COUNTY: Deer Lodge, County Seat

SILVER REEF MINE

Operator: Silver Reef Mines,
Inc., Box 211
Deer Lodge, Montana
Owner: Ed C. Hughes
Spokane, Washington
Employees: 5
Status: Producing

Silver

Warm Spring Creek
district, sec. 26,
T. 11 N., R. 10 W.

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AND OPERATORS*

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4. Bannack
5. Beaverhead (Dark Horse) (Mulchy Creek)
6. Big Muddy
7. Blacktail
8. Bloody Dick (Beaverhead)
9. Blue Wing
10. Bryant (Hecla) (Glendale)
11. Chinatown (Armstead)
12. Dillon (Carter Creek) (Frying Pan Basin)
13. Elkhorn (Coolidge) (Wise River)
14. Horse Prairie
15. Jake Creek
16. Lost Creek (Brown's Lake) (Rock Creek)
17. Medicine Lodge
18. Monida
19. Mount Torrey
20. Niccolia
21. Nogo (Apex)
22. Pioneer
23. Polaris (Lost Cloud)
24. Ruby
25. Saginaw (Jackson)
26. Utopia (Birch Creek)
27. Vipond
28. Wisdom (Big Hole)

Blaine County, A-8

29. Bearpaw

Broadwater County, C-5

30. Confederate Gulch (Backer) (Canton) (Diamond City)
31. Deep Creek
32. Hellgate
33. Lone Mountain
34. Magpie Gulch
35. Park (Hassel) (Indian Creek) (Townsend)
36. Radersburg (Cedar Plains)
37. Winston (Beaver Creek)

Carbon County, D-7

38. Clark Fork
39. Hellroaring
40. Silver Run

Cascade County, B-5

41. Nelhart (Montana)

Deer Lodge County, D-3

42. Blue Eyed Nellie (Silver Lake)
43. French Gulch
44. Georgetown (Southern Cross) (Cable)
45. Girard
46. Heber (Mill Creek)
47. Lost Creek (Dry Gulch) (Antelope Creek) (Oro Fino) (Dry Cottonwood)

Fergus County, B-7

49. Cone Butte
50. North Moccasin (Kendall)
51. Warm Springs (Gilt Edge) (Maiden)

Flathead County, A-2

52. Hog Heaven (Flathead) (Kila)
53. Star Meadow (Lupfer)
54. Whitefish

Gallatin County, D-5

55. Eldridge
56. West Gallatin (Spring Hill)

Granite County, C-3

57. Alps (Bonita)
58. Antelope Creek
59. Combination (Henderson) (Black Pine)
60. Dunkleburg
61. Frog Pond Basin
62. Garnet (Top-o'-Deep) (First Chance)
63. Maxville (Wyman) (Gird Creek)
64. Moose Lake (Flint Creek) (Granite)
66. Red Lion (Cable Mountain)
67. Rock Creek
68. Rose Mountain (Gold Creek)
69. South Boulder (Princeton)
70. Welcome Creek

Jefferson County, C-4

71. Alhambra (Hot Springs) (Golconda)
72. Amazon
73. Basin (Cataract) (Comet)
74. Beaver Gulch
75. Boulder
76. Big Foot (State Creek)
77. Clancy (Lump Gulch) (Buffalo Creek)
78. Colorado (Corbin) (Gregory) (Wickers)
79. Elkhorn
80. Elk Park
81. Homestake
82. Little Pipestone
83. Lowland
84. McClellan (Mitchell Creek)
85. Montana City
86. Nez Perce
87. Pipestone
88. Whitehall (Cardwell)
89. Whitetail

Judith Basin County, B-6

90. Barker (Hughesville)
91. Running Wolf
92. Yogo

Lake County, B-2

93. Elmo (Chief Cliff)

Lewis and Clark County, B-4

94. Austin (Greenhorn)
95. Blue Cloud
96. Gould-Stemple (Fool Hen) (Peorman)
97. Heddeston (Blackfoot) (Silver)
98. Helena (Last Chance) (Springhill) (Unionville) (Owyhee)
99. Lincoln (McClellan Gulch) (Seven-up Pete Gulch) (Keep Cool Creek) (Liverpool Creek) (Stonewall Mountain)
100. Marysville (Bald Butte) (Ottawa)
101. Missouri River
102. Ophir

103. Rimini (Vaughn) (Bear Gulch)
104. Scratchgravel Hills (Grass Valley)
105. Wolf Creek (Gladstone)
106. York

Lincoln County, A-1

107. Cabinet (Fish River)
108. Libby (Snowshoe)
109. Rainy Creek
110. Sylvanite
111. Tobacco River
112. Troy (Grouse Mountain) (Calahan)
113. Wolf Creek

Madison County, D-5

114. Bismark (Willmah)
115. Cherry Creek
116. McCarthy Mountain
117. Norris (Lower Hot Springs) (Upper Hot Springs)
118. Norwegian Creek
119. Pony (Mineral Hill)
120. Potosi
121. Renova (Bone Basin) (Mayflower)
122. Rochester (Rabbit)
123. Ruby Mountains
124. Sand Creek
125. Sheridan (Mill Creek) (Brandon) (Indian Creek) (Pamshorn)
126. Silver Star (Iron Rod)
127. South Boulder (Mammoth)
128. Tidal Wave (Twin Bridges)
129. Virginia City (Summit) (Pine Grove) (Highland) (Fairweather) (Nevada) (Junction) (Alder Gulch) (Brown's Gulch) (Granite Creek) (William's Gulch) (Barton Gulch)
130. Washington (Meadow Creek) (McAllister)

Meagher County, C-6

131. Beaver (Elk Creek) (Thompson Creek)
132. Castle Mountains
133. Murray (Battle Creek)
134. Musselshell (Copperopolis)

Mineral County, B-2

135. Cedar Creek (Quartz Creek) (Trout Creek)
136. Denemora (Big Elk) (Saltese)
137. Iron Mountain (Superior)
138. Keystone
139. Packer Creek
140. Rock Island
141. St. Regis (Deer Creek) (Ward)

Missoula County, C-3

142. Clinton (Wallace)
143. Coloma (Potomac)
144. Copper Cliff
145. Elk Creek
146. Nine Mile Creek (Kennedy Creek)
147. Petty Creek
148. Woodman (Lolo)

Park County, D-6

149. Cowles (Haystack)
150. Crevasse

151. Emigrant (Chico)
152. Horseshoe
153. Jardine (Bear Gulch) (Sheepcater)
154. New World (Cooke City) (Blackmore)

Phillips County, A-9

155. Little Rockies (Landusky) (Zortman)

Powell County, C-4

156. Big Blackfoot (Helmville)
157. Ellison (Ontario) (Nigger Hill)
158. Emery (Zosell)
159. Finn (Washington) (Jefferson, and) (Buffalo Gulches)
160. Garrison
161. Ophir (Snowshoe) (Deadwood)
162. Oro Fino (Gold Creek)
163. Pioneer (Racetrack) (Danielsville)

Ravalli County, C-2

165. Curlew
166. Hughes Creek (Alta) (Overwich)
167. Mineral Point
168. Pleasant View
169. Slate Creek
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Sanders County, B-1

171. Blue Creek (Heron)
172. Camas Prairie (Perma)
173. Plains
174. Prospect Creek
175. Revals Creek (Dixon)
176. Sleepy Creek (Belknap)
177. Silver Butte (Vermillion) (Cabinet)
178. Spring Gulch
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180. Trout Creek
181. White Pine (Eagle)

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183. Butte (Summit Valley) (Lost Child)
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185. Fleecer Mountain
186. German Gulch (Siberla)
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188. Independence
189. Melrose (Camp Creek) (Soap Gulch)
190. Moose Creek

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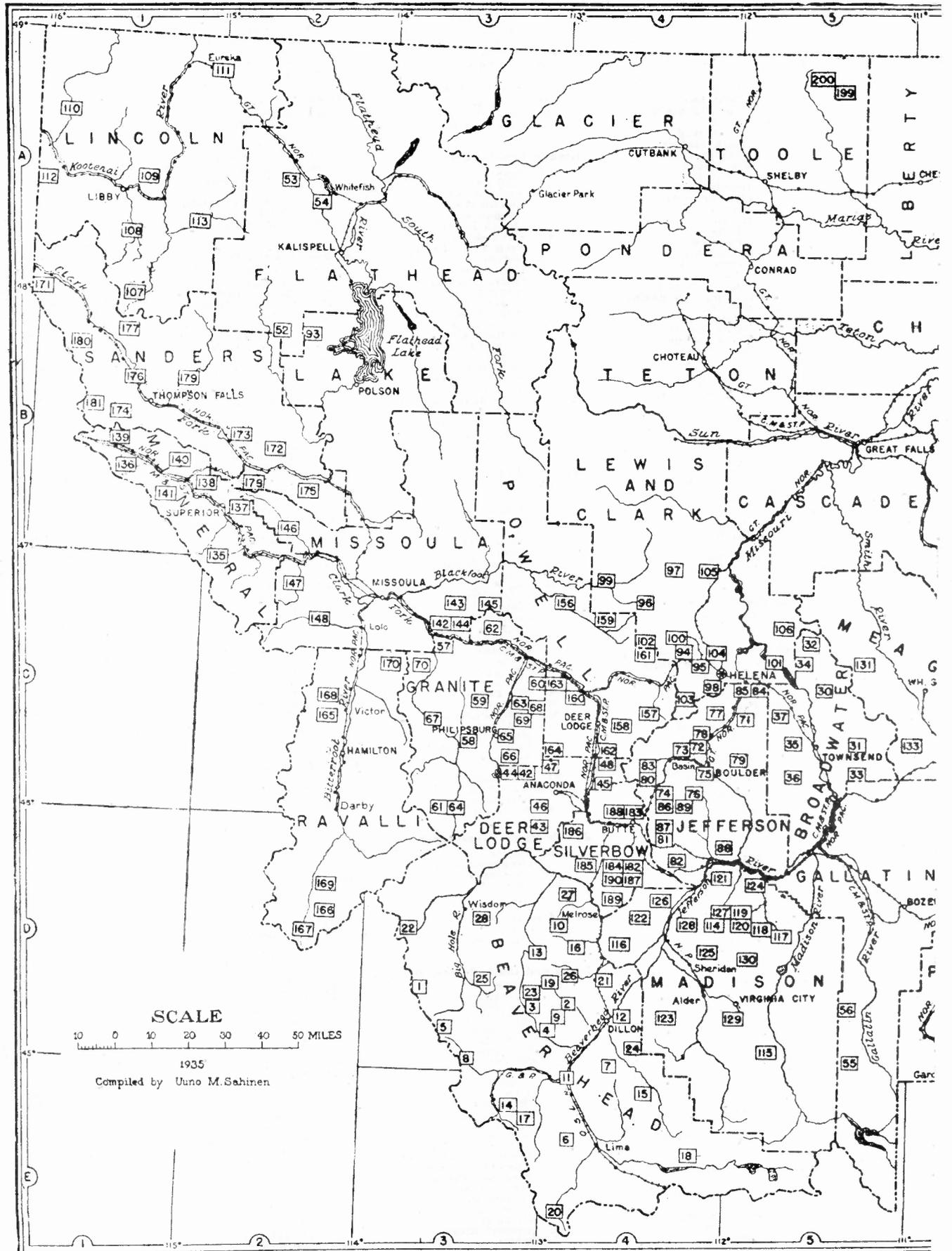
191. Nye
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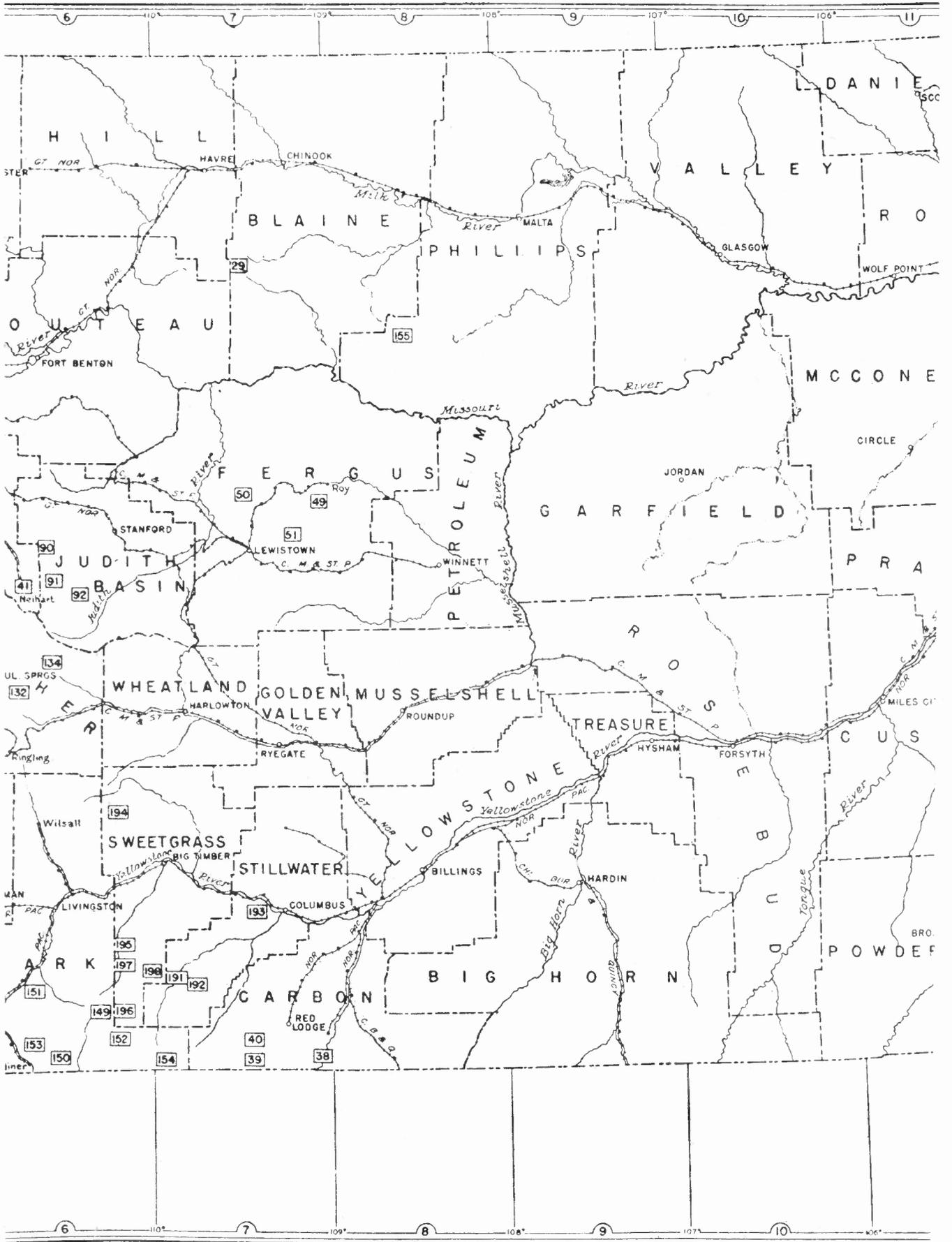
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196. Independence
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198. West Stillwater

Toole County, A-5

199. Gold Butte
200. West Butte



MAP SHOWING DISTRIBUTION OF



MINING DISTRICTS IN MONTANA

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