

82FNW067 Galena Farm

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W.A. NO.

NAME *Ministry Refs.*

SUBJECT

PROPERTY FILE

REFERENCE: *Minister of Mines, B.C., Ann. Rept., 1968, p. 250.*

DESCRIPTION: Following a small amount of productive work around No. 5 level, the operation was closed indefinitely.

**WESTMONT** (No. 64, Fig. 41)

By P. E. Olson

LOCATION: Lat. 49° 50.0' Long. 117° 19.4' (82F/14W)

On the north side of Enterprise Creek, about 4 miles from the Slocan-New Denver highway.

CLAIMS: WESTMONT (Lot 8929) and eight other adjoining Crown-granted mineral claims.

ACCESS: Via mining-roads along the north side of Enterprise Creek.

OWNER: EASTMONT SILVER MINES LTD., 506, 905 West Pender Street, Vancouver 1.

METALS: Silver, lead, zinc (*see* Table 12 for production).

WORK DONE: Some drifting and stoping, mainly on No. 5 level of the Westmont mine. Hand-sorted ore was shipped to the Trail smelter.

REFERENCE: *Minister of Mines, B.C., Ann. Rept., 1968, p. 250.*

**SILVERTON**

**GALENA FARM** (No. 62, Fig. 41)

LOCATION: Lat. 49° 55.8' Long. 117° 21.5' (82F/14W)

Two and one-half miles south of Silverton.

CLAIMS: CURRIE (Lot 744), GROVER (Lot 1330), STEVENSON (Lot 1331), PEERLESS REVISED (Lot 1332), KATE (Lot 1333).

ACCESS: By road from Silverton.

OPERATOR: LARCH MINING LTD., Silverton (under lease from Red Deer Valley Coal Company, Limited).

METALS: Silver, lead, zinc.

WORK DONE: Three bulldozer trenches totalling 350 feet long and two diamond-drill holes totalling 265 feet.

**FREDDY** (No. 62, Fig. 41)

By P. E. Olson

LOCATION: Lat. 49° 56.1' Long. 117° 21.2' (82F/14W)

The Freddy mine is 1 mile south of Silverton, at an elevation of about 2,300 feet.

CLAIMS: The FREDDY Crown-granted mineral claim (Lot 4025).

ACCESS: Via mining-road from Silverton, a distance of 2 miles.

OWNER: V. HANSEN, New Denver.

METALS: Silver, lead, zinc (*see* Table 12 for production).

WORK DONE: Stoping and hand sorting. About 52 tons of ore was shipped to the Trail smelter.

REFERENCE: *Minister of Mines, B.C., Ann. Rept., 1968, p. 251.*

**HEWITT** (No. 61, Fig. 41)

By P. E. Olson

LOCATION: Lat. 49° 56.0' Long. 117° 18.0' (82F/14W)

The Hewitt mine is on the south side of Silverton Creek, about 3 miles east of Silverton, at an elevation of about 4,000 feet.

CLAIMS: HEWITT (Lot 4440), LORNA DOONE (Lot 1401) Crown-granted mineral claims.

ACCESS: Via 5 m  
OWNER: A. K. L  
OPERATOR: FRA  
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OPERATOR: LA

METALS: Silver

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*Silver-Lead-Zinc*

**Galena Farm** (49° 117° N.E.) Company office, 634 Sixth Avenue Southwest, Calgary, Alta.; mine office, Silverton. W. *Red Deer Valley Coal Company, Limited* MacLeod, mine manager. The property is 2½ miles south of Silverton, and is reached by a road that leaves the Slocan–New Denver highway at Silverton. The company owns a large group of claims including the Galena Farm group.

During January and February dump rock from the Galena Farm was trucked to the company concentrator, which is 1 mile south of Silverton. The mill treated 1,700 tons of this material and shipped 21 tons of lead concentrates and 105 tons of zinc concentrates to the Trail smelter.

During the summer and autumn the mine area was investigated by means of a geophysical survey and geochemical analyses. The mine and mill were idle at the end of the year.

*Silver-Lead-Zinc*

**Monarch** (49° 117° N.E.) A. Elsmore and M. Fryters leased on the Monarch, which is on the north side of Silverton Creek about 4 miles east of Silverton. Underhand stoping on an oreshoot below the Monarch adit produced about 74 tons of lead ore, which was shipped to the Trail smelter. The two men worked the property on week-ends from June to October.

## SANDON

*Silver-Lead-Zinc*

**Deadman** (49° 117° N.E.) The Deadman lode, part of the Noble Five property at Cody, is held under lease by L. Fried, of New Denver. Failure of the Carnegie mill to operate in Sandon forced Fried to limit his efforts to extracting shipping ore rather than milling ore. Fried hand-sorted 5 tons of lead ore, which he shipped to the Trail smelter.

*Silver-Lead-Zinc*

**Shady** (49° 117° N.E.) Company office, 320, 355 *Bralorne Pioneer Mines Limited* Burrard Street, Vancouver 1. The Shady and Shady Fractional mineral claims are on Carpenter Creek about 1 mile east of Cody. The property has been worked extensively as a source of high-grade galena, which is found as float in overburden on the north side of Carpenter Creek. The company did some trenching and put down a 300-foot diamond-drill hole on the Shady Fraction with a view of locating the source of the galena boulders, but did not intersect ore. Work was directed by J. P. Weeks.

*Silver-Lead-Zinc*

**Slocan Sovereign** (49° 117° N.E.) The Slocan Sovereign Crown-granted mineral claim is adjacent to the Reco mine about 1 mile northeast of Cody on the Cody–Reco mine road. P. Leontowicz and A. Maxinuk hold a lease on the property and did some mining and exploration in the vicinity of a discovery made during 1965. The property was worked on a part-time basis during the summer. Two small shipments of crude lead were made to the Trail smelter.

pendant in the Nelson Batholith. Pyrite, pyrrhotite, and chalcopyrite mineralization was encountered. The Consolidated company has carried out a mapping and drilling programme over the past two years, mainly on the Rockland and Willa Crown-granted mineral claims. Diamond drilling in 1965 amounted to 975 feet in four holes. Work was directed by A. B. Mawer.

#### *Silver-Lead-Zinc*

##### **Galena Farm (Red Deer Valley Coal Company, Limited)\***

(49° 117° N.E.) Company office, 634 Sixth Avenue Southwest, Calgary, Alta.; mine office, Silverton. L. N. Garland, mine manager; F. Mills, mine superintendent. The property is under lease and option to the Red Deer Valley Coal Company, Limited, from Galena Farm Mining and Milling Company of Spokane, Wash. Rehabilitation work was started on No. 1 and No. 2 levels during November, and dump rock was being shipped to the company concentrator at Silverton by late December. The mill treated 90 tons of dump rock, which graded about 1.0 per cent lead and 3.0 per cent zinc. Exploration on No. 2 level was started, but considerable timbering had to be done before blasting and mucking could start. The mine and mill employed about 35 men at the year-end.

#### ENTERPRISE CREEK

#### *Silver-Lead-Zinc*

##### **Enterprise\***

(49° 117° N.E.) The Enterprise mine consists of fairly extensive workings on the south side of Enterprise Creek, about 6 miles by road from the Slocan-New Denver highway. The property has been idle since 1952 except for occasional leases. R. T. Avison and J. Nesbitt, of Silverton, took out a lease from Western Exploration Company Limited and rehabilitated the area around No. 6 and No. 7 level adits. A new adit was driven between No. 6 and No. 7 levels, and about 20 tons of ore mined was shipped directly to the Trail smelter. Just before winter set in, a 35-foot raise was put in on No. 6 level. This made a section of ore available for stoping. The Enterprise vein is quite narrow but contains sections of massive ore with high silver values.

#### *Gold-Silver*

##### **Jumbo (Timberline Mines Limited)\***

(49° 117° N.E.) Company office, 23 Glade View Crescent Southwest, Calgary, Alta; field office, c/o S. Berisoff, Silverton. The Jumbo group of 10 recorded mineral claims is on the south side of Enterprise Creek, 8.3 miles from the Slocan-New Denver highway. Timberline Mines Limited was formed specifically to conduct exploration on the Jumbo. An adit was driven at an elevation of 5,000 feet where previous stripping had disclosed high gold values in a sheer which cuts granite of the Nelson batholith. The adit was driven 100 feet along the shearing before the project was abandoned. Samples taken at regular intervals along the drift gave disappointing results. Mr. Berisoff supervised the work, which employed three men for three months during the early part of the summer. The company dropped its option on the property late in 1965.

\* By P. E. Olson.

Stoping commenced in August. Heavy timbering and mechanical ventilation were necessary before stoping could be successfully carried out. The mill operated continuously after August on a one-shift-per-day basis and treated 3,033 tons of ore. Production: Silver, 36,908 ounces; lead, 156,969 pounds; zinc, 165,155 pounds.

Twenty-one men were employed during the latter half of 1964.

The company decided to purchase custom ore from small producers in the Silverton area and installed a crusher to permit sampling of small lots. Milling on a custom basis amounted to 1,506 tons.

*Hecla Mine Lease.*—A. Elsmore and M. Fryters leased the Hecla ore zone on the Mammoth No. 7 level and produced 8 tons of mill-feed and 5 tons of shipping ore. The mill feed was purchased by Johnsby Mines Limited. Total metal production amounted to: Silver, 1,407 ounces; lead, 6,177 pounds; zinc, 3,307 pounds. Fryters and Elsmore operated their lease on week-ends and holidays.

**Hewitt\*** (49° 117° N.E.) This property is under lease to Frank Pho and Jack Kelly, of Silverton. The mine is on the south side of Silverton Creek, about 3 miles east of Silverton. Early in 1964 Kelly and Pho deepened the internal shaft to No. 12 level and developed the Hewitt oreshoot from No. 12 to No. 11 level. They mined 1,372 tons of mill-feed from the ore zone and then allowed the workings below No. 10 level to flood. The ore was treated at the Standard mill at Silverton and the concentrates were shipped to the Trail smelter. Production: Silver, 35,374 ounces; lead, 105,100 pounds; zinc, 155,878 pounds.

**Galena Farm\*** (49° 117° N.E.) The Galena Farm is 2½ miles south of Silverton, and is reached by a road that leaves the Slocan-New Denver highway at Silverton. The Galena Farm is under lease to Frank Mills, of Silverton, who worked the mine with the help of Joe Hambly during 1964. Mining was limited to pillar recovery and stoping adjacent to previously mined sections on the footwall of the Noonday vein. Production of 126 tons was treated at the Standard mill at Silverton. Concentrates contained: Silver, 594 ounces; lead, 1,919 pounds; zinc, 26,379 pounds.

**Freddy\*** (49° 117° N.E.) The Freddy fractional mineral claim is about 3 miles south of Silverton, immediately north of the Galena Farm mine. V. C. Hansen, the owner, and H. Lyon worked the property during the summer months and hand-sorted 16 tons of ore which was shipped to the Trail smelter. An attempt was made to collar a shaft over the vein, but heavy overburden was encountered and the shaft was abandoned.

#### ENTERPRISE CREEK

##### *Silver-Gold*

**Jumbo (Vern Mines Limited)\*** (49° 117° N.E.) Company office, Nelson. E. F. Reuther, president; J. H. E. Ebert, secretary. This is a private company with a capitalization of 100,000 shares, no par value. The Jumbo group of 10 recorded mineral claims is on the south side of Enterprise Creek, 8.3 miles from the Slocan-New Denver highway. S. Berisoff, of Silverton, the original locator of these claims, sold the property to Vern Mines Limited early in 1964. A bulldozer was used to strip the vein at four

\* By P. E. Olson.

and the raise was driven from No. 10 level to the old Mammoth workings on No. 9 level. This provides access and ventilation to the area below No. 9 level. The main stoping area was between No. 10 level and No. 9 level. Development consisted of 270 feet of drifting and 460 feet of raising. The concentrator, operating on a one-shift basis, treated 3,401 tons of ore during 1961. The average number of men was fourteen, three of whom were employed in the mill.

**Hewitt (Kopan Developments Limited).**—(49° 117° N.E.) Company office, 906, 11 Adelaide Street West, Toronto. W. W. Dennis, president. This property was leased to F. Pho and J. Hichert for two years. The lessees mined on No. 10 level, and the ore was hauled to the Western Exploration concentrator. The total ore treated was 282 tons.

**Galena Farm.**—(49° 117° N.E.) F. Mills, of Silverton, holds a lease on this mine, 2 miles by road south of Silverton. The ore was hauled to the Western Exploration concentrator. The total ore treated was 374 tons.

#### SPRINGER CREEK\*

##### Silver

(49° 117° N.E.) This group of five claims is owned by **Anna (Silver King Mines Limited)** Silver King Mines Limited; mine office, Silverton. B. Marasek, president and manager. The property is on the northern side of Springer Creek, adjoining the Ottawa mine on the east. It is accessible by 5 miles of good road from Slocan City.

Development continued on No. 4 level: Drift extension, 650 feet; crosscutting, 35 feet; raising, 205 feet. One raise was driven 170 feet on the dip to connect with No. 3 level, but was not completed. An average crew of four men was employed for six months. No ore was shipped.

(49° 117° N.E.) Company office, 19 North Bernard Street, Spokane, Wash.; mine office, Silverton. T. C. Hughes, president; C. Thickett, mine manager. The option on this property to Skylane Mines Limited was bought back by **Ottawa (Ottawa Silver Mines Limited)** Ottawa Silver Mines Limited in the spring of 1961. In August the property was optioned to Silver Buckle Mining Company, of Wallace, Idaho. This option was dropped in November after geological examination.

The property is on the north side of Springer Creek, 5 miles by road from Slocan City. All work was done by Ottawa Silver Mines Limited. A small tonnage of ore mined on No. 8 level was shipped to the Trail smelter. A new drift was started, called No. 9 level, to be driven along the Ottawa shear to intersect the downward extension of the vein.

(49° 117° N.E.) Company office, 1600, 100 Adelaide Street West, Toronto 1; mine office, Slocan City. A. W. **Arlington (Aumaque Gold Mines Limited)** Johnson, president; R. C. Phillips, manager. Capital: 10,000,000 shares, \$1 par value. This property consists of five Crown-granted and ten recorded claims and is under option from B. I. Nesbitt, of Vancouver. The property is on the north side of Springer Creek, 6.7 miles by road from Slocan City.

\* By J. D. McDonald.

No. 9 level was started in the footwall of the lode. A station was cut at 170 feet, and the raise was 180 feet long when work ceased. Oxygen deficiency prevents access to the raise unless ventilation is provided.

While operating, twenty-one men were employed underground and seven were employed widening the road. There was no production. The 250-ton concentrator remained idle.

**Bosun (New Santiago Mines Limited)** (49° 117° N.E.) Company office, 511, 850 West Hastings Street, Vancouver 1. R. Crowe-Swords, president. Capital: 3,000,000 shares, 50 cents par value. The Bosun mine is on the east shore of Slocan Lake, 1½ miles south of New Denver on the Nelson-Nakusp Highway. The main haulage,

No. 6 adit, is driven beneath the highway from a site 40 feet above the lake. W. H. McLeod, of Silverton, with the aid of two partners, is sinking a winze on the main vein to a proposed depth of 100 feet.

**Galena Farm** (49° 117° N.E.) Frank Mills, of Silverton, holds a lease on this mine, 2 miles by road south of Silverton. Mining was done on a short vein east of the "Camels Hump" stope on the main vein. The ore is by-passed down to the main level and trammed to the ore-bin at the old mill-site. The ore was trucked to the Western Exploration concentrator, where it was stockpiled.

**Westmont (Silver King Mines Limited)** (49° 117° N.E.) This property is owned by J. A. Cullinane, of the Ellis Syndicate of Nelson. It consists of nine Crown-granted mineral claims and fractions on the north side of Enterprise Creek, opposite the Enterprise mine. Silver King Mines Limited had an option on this property but dropped it in the summer of 1959. Approximately 210 tons of ore was shipped.

#### NORTH LARDEAU\*

##### FERGUSON (50° 117° N.E.)

##### *Silver-Lead-Zinc*

**Black Warrior, Elsmere.**—This property, owned by J. Main, of Ferguson, is at the headwaters of Ferguson Creek, 10 miles by trail from Ferguson. Minor repairs were made on the trail.

##### HALL CREEK (50° 117° N.E.)

##### *Silver-Lead-Zinc*

**Bannockburn** J. Gallo, of Howser, owns the Bannockburn group of Crown-granted mineral claims. The Shelagh group of five adjoining mineral claims is owned by Sheep Creek Mines Limited. This property is on the south side of the headwaters of Hall Creek, a tributary of Duncan River, about 19 miles north of the head of Duncan Lake, on the northeast side of Mount Abbott. The property is reached by 17 miles of road from a point on the Lardeau-Gerrard Highway, about 3 miles south of Gerrard, up Healy Creek to the summit into Hall Creek basin. During the summer a new road, about 3 miles long, was built from the summit down to Bannockburn Creek.

##### **Wagner**

J. Gallo, of Howser, owns the Wagner group of Crown-granted mineral claims on the north side of the headwaters of Hall Creek, a tributary of Duncan River. The property

\* By J. D. McDonald.

The main development was the preparation for a new low-level drive. A new road 2.3 miles long was constructed from the old Hewitt mill-site on the Silverton Creek road to a portal site on the Tick claim at an elevation of 4,290 feet. It is proposed to drive 2,300 feet northeastward to reach a point 400 feet vertically below the No. 9 level of the Mammoth mine.

The Standard was idle, except for leasing operations. J. W. Kelly mined about 300 tons, which was milled at the company's mill.

The Enterprise mine remained closed, but the camp is intact and a watchman is employed.

The mill operated throughout 1957 treating company ore as well as Violamac ore on a custom basis. The number of men employed was increased from thirty-five to seventy in the latter half of 1957.

**Bosun (New  
Santiago Mines  
Limited)**

(49° 117° N.E.) Company office, 511, 850 West Hastings Street, Vancouver. R. Crowe-Swords, president. Capital: 3,000,000 shares, 50 cents par value. The Bosun mine is on the east shore of Slocan Lake, 1½ miles south of New Denver on the Nelson-Nakusp Highway. The main haulage, No. 6 adit, is driven beneath the highway from a site 40 feet above the lake. W. H. McLeod, with the aid of a partner, has operated a lease intermittently since 1956. Exploration, consisting of crosscutting and raising, was continued in the south central section of the mine to investigate the findings of diamond drilling done many years ago, but was unsuccessful. Ore remnants were mined on No. 6 level near the main winze, in the central section above the main drift, and in the east section near the portal. This ore was milled at the Carnegie mill at Sandon. Production: Ore milled, 76 tons. Gross content: Gold, 1 oz.; silver, 1,251 oz.; lead, 6,566 lb.; zinc, 12,049 lb.; cadmium, 63 lb.

**Van Roi, Hewitt  
(Slocan Van Roi  
Mines Limited)**

(49° 117° N.E.) Company office, 532 Burrard Street, Vancouver. W. Tattrie, mine manager; T. Leask, mill superintendent. Capital: 5,000,000 shares, no par value. This company owns the Van Roi and Hewitt mines, 6½ miles by road southeast of Silverton. Transcontinental Resources Limited has directional control. In the Hewitt mine an orebody below No. 10 level was developed in 1956 by a winze to No. 11 level. This block of ore, 95 feet long, was leased to J. Heichert for removal. Eight men were engaged in this work, and the operation was completed in July. Another lease was given to M. Tarnowski, who mined ore remnants in the same area above No. 10 level. Another lease on this level was given in the latter part of 1957 to J. Harding and A. Cooper.

In the Van Roi mine the S.F. and M. Mining Company, which has leased the mine since 1953, operated on a reduced scale. Some development was done on No. 4 level in the "Brookes" stope area. Four men were engaged in this work.

The Van Roi mill is 1 mile south of Silverton on the Nelson-Nakusp Highway. It operated in 1956 after being shut down since 1952. In 1957 it operated intermittently until September, handling lessees' ore from the Hewitt and Van Roi. Custom milling was also done for the Westmont mine on Enterprise Creek.

**Galena Farm**

(49° 117° N.E.) This mine is 2 miles by road south of Silverton. For several years it has been operated intermittently on lease by Frank S. Mills, of Silverton. A mineralized fissure, discovered in 1955 east of the old shaft, was developed in 1956 by a short adit and shallow winze. In 1957 the old Galena Farm main adit was rehabilitated for 500 feet and a raise connection 100 feet long was made with the winze. A small orebody of milling grade was exposed in this work. No shipments were made in 1957, and the property was idle in the latter half of the year.

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\* By J. W. P.



The Van Roi camp, consisting of modern bunk-houses, change-house, and cook-house, was again put into use. It had been partly stripped in 1953. The number of men employed on company operations averaged twenty.

**Galena Farm**

(49° 117° N.E.) This mine is about 2 miles by road south of Silverton. For several years it has been leased intermittently by Frank S. Mills, of Silverton. A mineralized fissure, discovered in 1955 east of the old shaft, was developed by a short adit. A well-mineralized section, 50 feet long, was stoped to near surface. Sorted ore was shipped to the Trail smelter, and the lower grade was milled at the Van Roi concentrator. Production: Ore shipped, 30 tons. Gross content: Silver, 3,315 oz.; lead, 39,619 lb.; zinc, 3,166 lb. Ore milled, 238 tons. Gross content: Silver, 3,085 oz.; lead, 32,259 lb.; zinc, 43,034 lb.; cadmium, 278 lb.

**Noonday**

(49° 117° N.E.) The Noonday mine is just east of the Galena Farm mine. It was under lease to K. Millar and H. Lyon, of Silverton, who made a shipment to the Trail smelter. Production: Ore shipped, 5

**A.U.  
(Lucky Thought)**

(49° 117° N.E.) The A.U. No. 1 and A.U. No. 2 are recorded claims adjoining the Van Roi holdings to the south and cover ground at one time known as the Lucky Thought. The workings are reached by a road, 1 mile long, from a point on the Silverton Creek road 3 miles from Silverton. The property has been idle since 1950, but in 1956 operations resumed under the N.G.N. Partnership of J. Nesbitt, K. Gordon, and W. Nixon. A mineralized shear in argillite has been developed by four adits. A sublevel is established off a raise between the No. 4 and No. 3 adits. All previous ore has been obtained from the sublevel and above No. 3 level. In 1956 work was concentrated in No. 4 adit, which consists of a southerly crosscut for 650 feet long and 600 feet of drifting on the shear. No worth-while mineralization has been encountered on this level. Further exploration by a raise west of the main raise was without success. In the main raise a slash was started at a point half-way up the raise on the east side at what appeared to be the bottom of an oreshoot. The ore obtained was trucked to the Van Roi mill. Production: Ore milled, 90 tons. Gross content: Silver, 181 oz.; lead, 1,005 lb.; zinc, 11,149 lb.

**Fisher Maiden**

(49° 117° N.E.) The Fisher Maiden property consists of the Troy and St. Helena Crown-granted claims on the north side of Silverton Creek, 8 miles by road from Silverton. It is owned by Frank S. Mills and S. Dewis, both of Silverton. It was last active in 1953, when the lowest adit was rehabilitated for its full length of 1,330 feet. The main oreshoot in this adit is near the portal, where a fissure vein in granite has been partly stoped to the adit above. The ore thus obtained and stored many years ago in a cribbed structure at the portal was removed in 1956 and trucked to the Van Roi mill. Production: Ore milled, 75 tons. Gross content: Silver, 1,196 oz.; lead, 1,929 lb.; zinc, 11,097 lb.

**Westmont**

(49° 117° N.E.) This is a group of eight Crown-granted claims on the north side of Enterprise Creek, opposite the Enterprise mine. It is owned by J. A. Cullinane, of Nelson. A short access road leads to the lowest of four adits from a point on the Enterprise Creek road about 4½ miles from the Nelson-Nakusp Highway. The property has been idle since 1929, and most of the workings are inaccessible. In 1956 a lease was given to C. Thickett and H. Myers. The No. 4 dump, which is on the Eastmont claim, was mined and trucked to the Van Roi mill at Silverton. Production: Ore milled, 170 tons. Gross content: Silver, 2,453 oz.; lead, 3,986 lb.; zinc, 5,599 lb.

**Austin**

(49° 117° N.E.) The Austin group of three recorded claims is west of the Enterprise mine of Western Exploration Company Limited and covers the abandoned Mount Royal group of Dumac

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\* By J. V.  
† By J. V.  
‡ By G. I.

The mill operated throughout 1955, treating Violamac ore on a custom basis. In addition to that mentioned, custom milling was done for the Van Roi and Jackson mines. The number of men employed averaged thirty-four.

**Van Roi, Hewitt  
(Slocan Van Roi  
Mines Limited)**

(49° 117° N.E.) Company office, 532 Burrard Street, Vancouver; mine office, Silverton. G. W. West, mine manager. Capital: 5,000,000 shares, no par value. This company is a reorganization of Van Roi Consolidated Mines Ltd., which owned the Van Roi and Hewitt mines near Silverton. Transcontinental Resources Limited has directional control. The Hewitt mine, 6¼ miles by road southeast of Silverton, was reopened in the latter half of 1955. It had been idle since 1952, except for some work done by lessees in 1954. On the lowest or No. 10 level, an orebody about 2,000 feet from the portal has been stoped in the past above the level. To investigate this orebody at depth a drift 430 feet long was driven into the hangingwall and diamond-drilling stations established. The drift followed a mineralized brecciated quartz shear for 200 feet. Diamond drilling was in progress at the end of 1955. Air for drilling was supplied by a portable compressor at the portal. Other services were supplied from the Van Roi camp. As many as ten men were employed.

A shipment of 5 tons was made by E. Merrill and H. Lyon, who leased the Hewitt in 1954.

The Van Roi mine and camp are one-quarter mile by road east of the Hewitt No. 10 portal. Since 1953 the mine has been under lease to M. Slobodzian, J. W. Miller, and L. Fried. These lessees continued to obtain most of their ore from an underhand stope in the southwest end of the workings on No. 3 level. This stope was more than 100 feet deep on a 45-degree incline. The sorted ore was shipped to the Trail smelter and the remainder was stored in an old ore-pass which extends from No. 5 to No. 3 levels. The latter ore was trucked to the Western Exploration mill at Silverton whenever milling facilities became available. A total of 1,457 tons was milled in 1955.

The Van Roi mill is 1 mile south of Silverton on the Nelson-Nakusp Highway. Since its shut-down in 1952 the sink-float plant and the power units have been removed. Late in 1955 power units were again installed and the flotation circuit was improved by the addition of more cells. It is expected the mill should be able to treat custom and company ore early in 1956.

**Bosun (New  
Santiago Mines  
Limited)**

(49° 117° N.E.) Company office, 511, 850 West Hastings Street, Vancouver. Capital: 3,000,000 shares, 50 cents par value. The Bosun mine is on the east shore of Slocan Lake, 1½ miles south of New Denver on the Nelson-Nakusp Highway. The main haulage, No. 6 adit, is driven beneath the highway from a site 40 feet above the lake. At 2,730 feet from the portal an inclined winze extends to No. 7 and No. 8 levels. The mine has been idle since 1953. In 1955 a small crew was engaged to unwater the winze, but the project was abandoned after a few weeks. J. Zambon was in charge of this work.

**Galena Farm**

(49° 117° N.E.) This mine is about 2 miles by road south of Silverton. For several years it has been under intermittent lease to Frank S. Mills, of Silverton. Only surface work was done in 1955. An interesting discovery of a lead-silver fissure was made in the vicinity of bulldozer stripping done in 1954.

**Noonday**

(49° 117° N.E.) The Noonday mine is just east of the Galena Farm mine. It is owned by R. Wilson-Smith and the Bank of Montreal. M. Arishenkoff, of Shoreacres, who leased the property in 1954, made a 10-ton shipment to the Trail smelter in 1955.

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**Van Roi**

(49° 117° N.E.) The Van Roi mine and camp is 6½ miles by road southeast of Silverton. It is owned by Van Roi Consolidated Mines Ltd. (company office, 532 Burrard Street, Vancouver) but was under lease during 1954 to M. Slobodzian, J. W. Miller, and L. Fried. Most of the production came from the southwest end of the workings on No. 3 level where an underhand stope was started in 1953 below the 346 stope. This stope was enlarged and an incline track installed for handling ore and supplies. Ore was also obtained from "A" level. Most of the ore was lowered through raises to No. 5 level, where the track had to be reinstalled. Over 1,000 tons of ore was trucked to the Carnegie mill at Sandon for custom milling. Twenty-five tons of sorted ore was trucked to the Trail smelter.

**Hewitt**

(49° 117° N.E.) This mine is west of the Van Roi mine and is served by the same road from Silverton. It has been idle since 1952, when Van Roi Consolidated Mines Ltd. ceased operations, but was under lease, in the latter half of 1954, to E. Merrill and H. Lyon. A remnant of ore was mined in the 1046 stope about 40 feet above No. 10 level. This stope is about 2,300 feet from the portal, and some track had to be reinstalled to allow hand-tramming of the ore. Air for mining was supplied by a small compressor set up near No. 10 portal. Production: Ore shipped, 16 tons. Gross content: Silver, 1,405 oz.; lead, 7,836 lb.; zinc, 5,935 lb.

**Galena Farm**

(49° 117° N.E.) This mine is about 2 miles by road south of Silverton. It was again under lease to Frank S. Mills, of Silverton. Bulldozer stripping was done in an effort to locate a granite-sediment contact near the old shaft workings. Considerable high-grade float was uncovered in this work but the source was not located. No underground work was done except for a short exploratory adit driven near the stripping.

**Noonday**

(49° 117° N.E.) The Noonday workings are just east of the Galena Farm mine. A lease was obtained by H. Lyon and E. Merrill, of Silverton, who did some underhand mining about 200 feet from the portal of the main adit. A later lease was given to M. Arishenkoff, also of Silverton, who made a shipment to the Trail smelter of much lower-grade material.

Production: Ore shipped, Lyon and Merrill lease, 4 tons. Gross content: Silver, 628 oz.; lead, 2,925 lb.; zinc, 1,075 lb. Ore shipped, Arishenkoff lease, 16 tons. Gross content: Silver, 263 oz.; lead, 925 lb.; zinc, 858 lb.

## UPPER ARROW LAKE\*

**Uranium-Thorium****Sta-Tite**

(50° 117° S.W.) This is a group of seven located claims astride a small westerly flowing tributary of Arrowpark (Mosquito) Creek, 9 miles by road north of Arrow Park. The claims are owned by H. S. Murphy and F. D. Jordon, of Nakusp. A narrow seam in granite on the north bank of the tributary stream was found to activate a Geiger counter three to four times the background count. A small amount of stripping has been done and an access jeep-road built to the showing which is at 2,700 feet elevation. The strike of the showing appears to be north-south. Two samples were taken at the pit of material giving the strongest reaction. One grab sample was taken of pit material. The assay results are as follows:—

Location of Sample	Width of Sample	Uranium Oxide	Thorium Oxide
	In.	Per Cent	Per Cent
North end of pit .....	8	0.01	0.14
South end of pit (6 feet from above sample) .....	15	0.004	0.016
Grab .....	---	0.005	0.11

\* By J. W. Peck.

crosscut. Short crosscuts were driven every 200 feet to intersect the lode. About 1,000 feet from the main crosscut the lode turned from north 75 degrees west to south 70 degrees west. The lode was mineralized west of the turn but not east of it. Diamond drilling of the western section was in progress at the end of 1953.

*Standard.*—This mine was operated by lessees during 1953. J. Kelly and R. Welch mined and shipped 21 tons. W. Nelson and W. Brown obtained 4 tons from the 704 stope. Messrs. Nelson and Chmelar also mined 7 tons from the same area. C. E. Towgood and J. Nesbitt rehabilitated the No. 2 adit and found some zincy ore in the wall of an old stope about 100 feet inside the portal. A short access road was built to the No. 2 portal, and an ore-bin constructed. Air-lines were extended from the Western Exploration air-supply at the Standard camp. Several truckloads of ore were taken to the Western Exploration mill at Silverton and stored there for possible milling in 1954.

*Enterprise.*—O. Meurling and E. Meyers operated a lease from May, 1953. Twenty-seven tons of ore was mined and shipped to the Trail smelter; all but 4 tons came from the 701 stope.

*Standard Mill.*—The mill at Silverton operated throughout 1953, handling Violamac ore on a custom basis at a rate of over 2,000 tons per month. The number of men employed by the company averaged seven underground and twenty-five on the surface.

(49° 117° N.E.) The Fisher Maiden property consists of the  
**Fisher Maiden** Troy and St. Helena Crown-granted claims on the north side of Silverton Creek, 8 miles by road from Silverton. It is owned by F. S. Mills and S. Dewis, both of Silverton, but was optioned in the latter part of 1953 to Violamac Mines (B.C.) Limited. The lowest adit is 30 feet above Silverton Creek and was reported to be 800 feet long. In 1953 it was rehabilitated, and the face was reached at 1,330 feet from the portal. Considerable repair work was done on the last 3 miles of road. Two men were engaged in this work under F. S. Mills.

(49° 117° N. E.) The Van Roi mine and camp is 6½ miles by  
**Van Roi** road southeast of Silverton. It is owned by Van Roi Consolidated Mines Ltd. (company office, 532 Burrard Street, Vancouver) but was under lease in the latter half of 1953 to A. Day and M. Slobodzian. On No. 3 level, in the southwest end of the workings, underhand mining was done below the 346 stope, which was considered mined out in 1952. The best ore was sorted out and removed via the No. 3 adit, while the lower-grade ore was stored in the main ore-pass to No. 5 level to await economic milling facilities. Air for mining purposes was supplied by a portable compressor set up at the No. 3 portal.

At the mine camp all machinery, the main haulage track (No. 5 level), and plumbing, heating, and light fixtures have been removed and sold. The buildings are intact and in good condition.

Production: Ore shipped, 6 tons. Gross content: Silver, 256 oz.; lead, 6,765 lb.; zinc, 1,031 lb.

(49° 117° N.E.) This mine is about 2 miles by road south of  
**Galena Farm** Silverton. It was under option throughout most of 1953 to Hardex Mines Limited, of Noranda, Que. The main adit is the 150 level, but there is an inaccessible shaft which bottoms on the 200 level. Diamond drilling was done in the main adit at a location 165 feet past the Noonday lode, 720 feet from the portal. One hole, 389 feet long, was put down to explore ground ahead of the 200 level. Core recovery was poor, and the hole had to be cemented. Results were reported as negative.

Frank S. Mills and W. D. Pengelly, both of Silverton, made a small shipment under lease to the Trail smelter.

Production: Ore shipped, 3 tons. Gross content: Silver, 144 oz.; lead, 2,759 lb.; zinc, 917 lb.

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**Galena Farm** (49° 117° N.E.) Frank S. Mills, of Silverton, continued to operate this mine under lease. During most of 1952 ore was sold to the Western Exploration Company Limited at Silverton and a few tons was trucked to the Trail smelter. Production was as high as 100 tons per month. Mr. Mills was assisted by W. D. Pengelly, also of Silverton.

**Dumac Mines Limited** (49° 117° N.E.) Company office, 106, 413 Granville Street, Vancouver. G. A. McPherson, mine manager; H. D. Forman, consulting engineer. Capital: 3,000,000 shares, no par value. This company owns the Mount Royal and Royalite groups of three claims each, located on Enterprise Creek, to the west of the Enterprise mine of Western Exploration Company Limited. The company was formed in 1947 to develop this property, but work has been intermittent. A few open-cuts have been made on a strong shear zone on the east side of Bondholder Creek, a northeasterly flowing tributary of Enterprise Creek. There is also a short inaccessible adit. In 1952 a new adit was collared about 300 feet northeast of the open-cuts. It was driven southerly as a crosscut for 40 feet until the projected shear was intersected and then turned southwest as a drift on the shear. About 100 feet of drifting was done, but no ore was encountered. Another 200 feet of drifting would extend the adit to a point below the open-cuts. All work ceased in June. Two men were employed.

#### SPRINGER CREEK\*

##### *Silver*

**Ottawa (Harrison Drilling & Exploration Co. Ltd.)** (49° 117° N.E.) Company office, P.O. Box 230, Noranda, Que.; British Columbia office, 1408, 675 West Hastings Street, Vancouver; mine office, Slocan City; P. Harrison, Noranda, Que., president. Capital: 800 shares, \$50 par value. This company has under option the Ottawa mine, which is north of Springer Creek, about 5 miles by road from Slocan City. Intermittent operations were carried on during 1952. In the No. 6, or lowest, adit a raise was started from "B" stope at an angle of about 25 degrees toward the underhand Cameron stope on No. 5 level, the vertical distance between the two levels being 280 feet. A 1,100-foot drive on No. 6 level was started from the south end of the east part of the workings toward a point on the surface near the old Morris workings. This development work was stopped in June. About fifteen men were employed during the first half of 1952 under M. H. McLeod. Production: Ore shipped, 69 tons. Gross content: Silver, 15,535 oz.

##### *Silver-Lead-Zinc*

**Little Tim or L.T. (Bondholder)** (49° 117° N.E.) The Little Tim group at the head of Little Tim Creek, a tributary of Springer Creek, is a relocation of the cancelled Crown-granted claims of the Bondholder group. Eight claims held by D. B. O'Neil, of Slocan City, are under option to Harrison Drilling & Exploration Co. Ltd. (later known as Hardex Mines Limited). The claims are at elevations of about 6,600 feet and are reached by a steep road, completed in 1952, 2.7 miles from the Ottawa mine. Most of the workings are on the V Day and Victory V claims, corresponding to the cancelled Graphic and Rosebud claims respectively.

Two narrow fissure veins, dipping steeply in granite, have been developed in the past by four adits and a shaft. During 1952 the lower adit, No. 4, at 6,624 feet elevation, was extended 360 feet to a total length of 440 feet. Near the face a raise was put up to break through near the face of No. 3 adit, 75 feet vertically above. On No. 4 level the vein was only a few inches wide but contained high silver values. Two small stopes were started on this level. A new adit, No. 5, was started at 6,519 feet elevation, 400 feet southwest of No. 4 portal. This adit was 20 feet long when the property was visited at the end of

\* By J. W. Peck.

The mill was in operation at the end of September, and the sink-float plant started in December. Most of the ore milled in 1951 came from a stockpile of 7,000 tons accumulated over the past year from stoping operations at the Hewitt and development work at the Van Roi. To improve truck-haulage, the road was partly relocated and a connection made with the mill-site. The total crew employed had increased to ninety-five by the end of 1951.

**Galena Farm** This property was under option until December to Van Roi Consolidated Mines Ltd. This company carried out a geophysical survey followed up by bulldozer stripping, but no lode was discovered. Frank S. Mills, of Silverton, operated his lease during January and February and again in November and December. Ore obtained was sold to the Western Exploration Company at Silverton.

Production: Ore milled, 418 tons. Gross content: Silver, 625 oz.; lead, 15,039 lb.; zinc, 36,254 lb.

**White Hope** This property lies astride the Nelson-Nakusp Highway about 5 miles north of Slocan City. It is owned by Spokane Slocan Company. As in 1950, leasing operations were carried out by J. J. McDonell, of Slocan City.

#### Silver

#### SPRINGER CREEK (49° 117° N.E.)\*

**Ottawa (Harrison Drilling & Exploration Company Ltd.)** Company office, P.O. Box 230, Noranda, Que.; British Columbia office, 1408, 675 West Hastings Street, Vancouver; mine office, Slocan City. Capital: 800 shares, \$50 par value. This company has operating control of the Ottawa mine under an agreement with Violamac Mines (B.C.) Limited, which optioned the property from the Ottawa Silver Mining & Milling Company. The mine is north of Springer Creek, about 5 miles by road from Slocan City. Work was concentrated in the No. 6, or lowest, adit, in which leasing operations had been carried out previously. Compressed air was installed, and stoping commenced on a vein intersected by the adit crosscut 1,600 feet from the portal. This vein has a dip of 25 degrees and, where mined, is 5 feet wide. The vein matter is principally quartz with a few inches of high-grade silver-bearing minerals on the hangingwall. Cut-and-fill mining methods were employed, and careful sorting was required. To improve ventilation and provide a second exit, a raise was started on the vein to No. 5 level. Ore obtained was trucked to Slocan City for transshipment by rail to the Trail smelter. The mine was idle during the summer and fall, but mining and development work commenced again in December on No. 6 level. In the early part of the year fifteen men were employed under W. E. Leonard.

**Little Tim (L.T.)** This property is at the head of Little Tim Creek, a southerly flowing tributary of Springer Creek. It is owned by D. B. O'Neil, of Slocan, but was optioned in 1951 to Harrison Drilling & Exploration Co. Ltd. In the fall a 2-mile road was constructed to the property from the Ottawa mine. Four men were working underground by the end of 1951.

**Republic No. 2** This property, 3 miles by road north of Slocan City, is owned by C. B. Tipping, of Slocan City. In 1951 an option was granted to Harrison Drilling & Exploration Co. Ltd. A diamond-drilling programme was commenced late in the year.

**Speculator** This claim, owned by W. E. Parker, of New Westminster, was optioned in 1951 by Ottawa Silver Mining & Milling Company. It is north of the Arlington mine, about 7 miles by road from Slocan City. One small shipment was made from a dump near the road.

menced mining in a stope on the lowest or No. 10 level, approximately 2,400 feet in from the portal. From the No. 3 dump, west side, 807 tons was removed and trucked to the Whitewater mill at Retallack for a sink-float test.

Machinery for mining consisted of a Schramm UD-18 International diesel 315-cubic-foot-per-minute compressor set up at No. 10 portal of the Hewitt, and an Ingersoll-Rand G.M. diesel 365-cubic-foot-per-minute compressor set up at No. 3 portal of the Van Roi. Twelve men were employed in December.

Production: Ore milled, 1,466 tons; ore shipped, 5.7 tons. Gross content of ore and concentrates: Gold, 23 oz.; silver, 9,490 oz.; lead, 75,699 lb.; zinc, 103,464 lb.

**Galena Farm** Frank S. Mills, of Silverton, continued to operate his lease on this old property 1½ miles by road south of Silverton. Up to June one man was employed, but after that date a partnership of three men was formed. The bulk of the ore mined came from the lower adit level in the extreme west end of the Main lode. Some ore was also mined from the surface where the vein outcrops near the old compressor building. Ore obtained was crushed in a small jaw-crusher and then trucked to the Western Exploration Company's mill at Silverton. In November, Transcontinental Resources Limited obtained an option on the property, but Mr. Mills and his partners continued to work under lease. One shipment of 8 tons was trucked to Trail. Gross content: Silver, 516 oz.; lead, 7,472 lb.; zinc, 1,767 lb.

Production: Ore milled, for Mills, 180 tons; for Mills, Pengelly, and Cooper, 825 tons; total, 1,005 tons. Content: Silver, 2,960 oz.; lead, 15,332 lb.; zinc, 190,398 lb.

**Noonday** This Crown-granted claim, about 2 miles by road from Silverton, adjoins the Galena Farm mine to the east. It was subleased from A. Erickson by G. W. Lyon, A. Lyon, and H. Cleaver, who worked from August until November. A short road was built to the portal of the upper level, and about 50 tons of backfill was drawn from an old stope near the portal. A section of the adit, extending 30 feet from the portal, caved through to surface, and further operations were suspended for the winter. The 50 tons was stored in a bin and was not shipped in 1950.

**Metallic** This property is alongside the Silverton-Hewitt road, about 2 miles from Silverton. It was inactive most of the year but was under lease in the early part to J. Tarnowski, G. Tarnowski, and J. Heichert. These partners started two raises on the lower level approximately 45 feet each way from the main raise that connects with the upper level. From the raise nearest the portal, 70½ tons of ore was obtained, 65 tons being trucked to the Western Exploration mill at Silverton and 14 tons to the Trail smelter. The other raise was carried up 67 feet, but no ore was found.

Late in 1950 Van Roi Consolidated Mines Ltd. obtained an option on the property, but no further work was done.

Production: Lead ore shipped to Trail, 14 tons. Gross content: Silver, 719 oz.; lead, 2,993 lb.; zinc, 3,792 lb.

**A.U. (Lucky Thought)** The A.U. mine of five claims and fractions, owned by John O. Nesbitt and James J. McNow, of Silverton, covers ground formerly owned by The Consolidated Mining and Smelting Company and known at that time as the Lucky Thought group. The mine is on Silverton Creek, 4 miles by road from Silverton. It has not been worked since 1937. Shipments of surface material were made in November and December to the Trail smelter.

Production: Ore shipped, 26 tons. Gross content: Silver, 794 oz.; lead, 4,347 lb.; zinc, 13,458 lb.

drive encountered a short section of ore near the winze that was underhand-stoped on No. 7 level about two years before. During the summer the property was turned over to lessees, but late in the year the company again resumed operations with the intention of deepening the winze.

On the surface a new office building was erected, but mill construction, begun in 1948, was stopped after the foundation was poured. A small jig plant was used to sort the ore before it was trucked to the smelter at Trail. About 600 tons was also trucked to the Whitewater mill.

Production: Ore shipped, 1,208 tons. Gross contents: Gold, 10 oz.; silver, 40,792 oz.; lead, 416,246 lb.; zinc, 124,241 lb.

**Buck Fraction.** E. C. Wragge, of Nelson, owns six claims at Silverton, just below and west of the Standard mine of the Western Exploration Company, Limited. The claims are the Crescent, the Buck Fraction, Silverton Boy, Mohawk, Binks Fraction, and the Tram Fraction. All are Crown-granted, except the Tram Fraction and Binks Fraction. It is reported that when the road to the 7c adit of the Standard mine was put across the Buck Fraction in 1937, a lead-zinc outcrop was exposed. In February, 1949, Messrs. Norquist and Nesbitt obtained a lease on this property and did bulldozing stripping in this area. A lead containing galena and sphalerite was exposed, but as it dipped into the hillside with the flat argillite bedding, further stripping was difficult and the project was abandoned.

**Van Roi Mines (1947), Ltd.** Company office, 1720 Marine Building, Vancouver; mine office, Silverton. K. G. Nairn, president; N. F. Brookes, managing director. Capital: 2,000,000 shares, no par value. This company owns the Van Roi mine near Silverton. The oreshoot, developed in the southeast section of the mine by drifting in 1948, was mined.

It is reported that Van Roi ore amounting to 5,114 tons was milled, 521 tons at the Western Exploration Company mill and 4,593 tons at the Kenville Gold Mines mill, and that 1,340 tons remained stockpiled at the latter mill. Shipments to the smelter included 210 tons of lead concentrates, 29 tons of lead ore, and 295 tons of zinc concentrates.

Development: Drifting, 227 feet; crosscutting, 99 feet; diamond drilling, 852 feet.

Production: Gross contents of concentrates and ore shipped to smelter—Gold, 153 oz.; silver, 38,227 oz.; lead, 263,916 lb.; zinc, 367,847 lb.; cadmium, 2,742 lb.

**Galena Farm.** This old property is about 1½ miles south of Silverton. F. Mills continued to operate it under lease until May. Working with a crew of seven men, he mined ore from remnants in the Noonday Lode from a sublevel 60 feet above the main adit level. Ore obtained was crushed in a small jaw-crusher and then trucked to the Western Exploration Company's mill at Silverton. After May Mr. Mills continued exploration and made one shipment in October.

Production: Ore shipped, 1,881 tons. Gross contents: Silver, 23,090 oz.; lead, 90,114 lb.; zinc, 248,872 lb.

**Metallic.** This property is alongside the Silverton-Hewitt Road, about 2 miles south of Silverton. W. Crowe and A. K. Lotz hold an option from the owners, A. S. MacAulay, L. S. MacAulay, and R. S. White. During the first part of 1949 the property was operated under lease to four men—R. Hambly, A. Orr, E. Quail, and L. Porter. The main development done to date consists of two adits 90 feet apart. The partners worked chiefly in the lower adit, using a portable compressor, and connected the two levels. Ore obtained was trucked to Trail. The lease expired in October.

Later in the year the property was again under lease, this time to J. Tarnowski, G. Tarnowski, and J. Heichert. Shipments amounting to 19 tons were made to Trail, this ore being obtained from both levels.



In the west section of the mine, diamond-drilling was done on the No. 4 level. In December drifting was started on the No. 3 level to explore possible upward extension of these drill results. It is the management's intention to also extend this drift beyond the Van Roi fault to establish a drill station for exploratory drilling. The Humbolt claim, which adjoins the Van Roi holdings to the west and the Hewitt mine to the east, was obtained, as it lies to the west of the Van Roi fault.

Development: Drifting, 310 feet; crosscutting, 137 feet; open-cuts, 43 feet; diamond-drilling, 2,010 feet. The number of men employed averaged seven.

Production: Ore shipped to Whitewater mill, 711 tons. Gross return of concentrates shipped to Trail: Gold, 2.5 oz.; silver, 6,476 oz.; lead, 31,090 lb.; zinc, 78,660 lb.; cadmium, 616 lb.

**Galena Farm.** This property continued to be operated under lease by F. Mills, of Silverton. With two partners he completed the mining of the surface ore-remnant he was mining last year. New ore possibilities were then found in the Main Lode off the main crosscut level. With the crew increased to five, the bulk of the 1948 tonnage came from this area. In December the Noonday Lode was reopened and good ore-remnants were discovered in a sub-level about 60 feet above the main level. Work was concentrated here at the end of the year. Ore obtained was crushed in a small jaw-crusher and then trucked to the Western Exploration Company's mill at Silverton, but 23 tons of high-grade ore was trucked directly to the smelter at Trail. Ore shipped, 815 tons. Gross contents: silver, 6,792 oz.; lead, 52,245 lb.; zinc, 151,964 lb.

[Reference: *Geol. Surv., Canada*, Mem. 184, p. 43.]

**Metallic.** This property is situated alongside the Silverton-Hewitt Road about 2 miles south of Silverton. It is owned by A. S. MacAulay, L. S. MacAulay, and R. S. White and was optioned to W. Crowe and A. K. Lotz, who optioned the property to F. L. Kersey, of Spokane.

Mr. Kersey started a raise between the two levels on the property about 350 feet in from the portal of the lower level. This raise was on the shear, but apparently did not expose any ore. Mr. Kersey then ceased work, and the property remained idle until fall, when Messrs. Crowe and Lotz made a small shipment.

Production: Ore shipped, 6½ tons. Gross contents: Silver, 559 oz.; lead, 2,244 lb.; zinc, 1,441 lb.

**Buster.**—This group lies below the Metallic and consists of the Buster No. 1, Buster No. 2, and Buster No. 3. It is owned by R. J. White, of Nelson. Some stripping was done by bulldozer.

**Dumac Mines, Ltd.** Company office, 744 Hastings Street West, Vancouver. At the property of this company, situated down-stream from the Enterprise mine on Enterprise Creek, the proposed development-work outlined in the 1947 Minister of Mines Report was not done. Operations were suspended early in 1948 after a little additional surface-trenching was completed. A trial shipment of 6.27 tons shipped to Trail yielded: Gold, 0.16 oz.; silver, 208 oz.; lead, 652 lb.; zinc, 1,454 lb.

**Mabou, Ohio, and Svanhild (Terley Mining, Milling and Smelting Corporation).** Head office, 1946 Gregory Way, Bremerton, Wash.; British Columbia office, 507 Baker Street, Nelson. R. D. Austin, president. Very little work was done in 1948 on the Mabou, Ohio, and Svanhild claims, situated on the southern side of Enterprise Creek valley. In December, however, some surface diamond-drilling was begun on the Svanhild claim under the direction of W. S. Hamilton. A trial shipment of 4.21 tons to the smelter at Trail from the Svanhild contained: Silver, 10.53 oz.; zinc, 76 lb.

Whenever possible, sorting to shipping grade was done in the stopes. The plant was operated for 151 shifts; it permitted a more flexible operation, and recovery was greater than had been anticipated.

The average number of men employed was fifteen.

Shipments made to the Trail smelter, mostly in the latter half of 1947, amounted to 291 tons. Net contents: Silver, 26,820 oz.; lead, 173,800 lb.; zinc, 100,017 lb.

Company office, Vancouver. K. G. Nairn, president; N. Nairn, secretary-treasurer; N. F. Brookes, mine manager. Capital: 2,000,000 shares, no par value. This is a new British Columbia company formed to acquire the Van Roi mine from Van Roi Base Metals, Limited, which retains a share interest in the new company. Camp was established about October 1st, and work was started immediately to widen the upper part of the road and build a crossing across Vancouver (Prior) Creek to connect with the Hewitt road. This work on the crossing was suspended when winter weather set in.

A portable Schramm compressor was set up at the mine, and No. 3 level east was rehabilitated for several hundred feet. At 420 feet from the portal a crosscut was driven toward the south vein, where it was known to contain good ore. By the end of the year the crosscut had been advanced 50 feet of the estimated 75 feet. It is the intention to mine and transfer the ore from this vein to the No. 5 level by existing raises, thence via the east portal to a loading-bin. Mining will not commence, however, until the road can be put into proper condition in the spring. In the meantime it is proposed to do exploratory diamond-drilling.

Production, from cleaning up the old mill: Ore shipped, 9 tons. Net contents: Silver, 372 oz.; lead, 5,092 lb.; zinc, 2,190 lb.

**Hewitt.** A small crew of men under the supervision of Fred H. Crosby and, later, Earl Snyder, for the Granby Consolidated Mining, Smelting, and Power Company, Limited, completed essential timbering of an old stope 2,300 feet from the portal of No. 10 level and began to drive a ventilation raise through to No. 9 level. Later, some ore was slashed from the walls of No. 10 drift and shipped, and a start was made to stope above the drift. It was soon evident that the heavy ground would make this a costly operation on the scale planned, and this, coupled with the lack of assurance that the shoot was continuous to No. 9 level, caused the management to discontinue work and drop the option.

Before closing the mine, the road to the property was put in condition for heavy traffic. The road will be used for hauling ore from the Van Roi when a crossing is completed over Vancouver (Prior) Creek to connect with the Van Roi road.

Production: Ore mined, 292 tons. Net contents: Gold, 3 oz.; silver, 5,408 oz.; lead, 14,948 lb.; zinc, 42,948 lb.

**Galena Farm.** This property was leased by Frank Mills, of Silverton, who mined and shipped some 50 tons of zinc ore from a near-surface stope-remnant, close to the power-house. This ore was milled by the Western Exploration Company at Silverton. Production also included selected lead ore shipped directly to the Trail smelter, amounting to 3 tons. Net contents: Silver, 144 oz.; lead, 940 lb.; zinc, 695 lb.

**Western Exploration Co.**—Company office, Silverton. A. M. Ham, general manager; R. A. Avison, mine superintendent. Capital: 2,000,000 shares, 50 cents par value. This company owns the Mammoth and Standard mines near Silverton and the Enterprise mine on Enterprise Creek, about 12 miles to the south.

**Standard.**—With the exception of repair-work on No. 7 level, the Standard mine remained closed until the beginning of October. A total of 2,030 feet was reclaimed on this level. Development since October included 67 feet of drifting on the 640 level and 22 feet of advance in No. 506 raise. Stopping was resumed on the No. 5 and No. 6

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## AINSWORTH CAMP.

*Banker.*—Situated near Ainsworth; owned by H. Giegerich, of Kaslo, and operated by the Ainsworth Mines, Limited (head office, 101 Adelaide Street West, Toronto), with Carl M. Mohr as manager. The number of men employed varied between nineteen (ten underground) in March, and fifty-two (thirty-two underground) in September. Later this was again reduced to twenty-three (fourteen underground). The chief development-work done consisted in drifting from the shaft and extending the adit-crosscut driven when the Consolidated Mining and Smelting Company was operating the property. The total tonnage mined (including 161 tons shipped in the name of the owner) amounted to 3,305 tons, with metal contents amounting to 27,464 oz. silver and 1,557,552 lb. lead.

*Spokane-Trinket.*—Adjoining the *Banker* and held by the Maestro Silver Lead Mines, Limited, with Carl M. Mohr as manager. No work was done on this property in the course of the year, beyond erecting a compressor-house, an ore bin, and a blacksmith-shop.

*Jewel.*—Some work of an exploratory nature was done on this property by the Ainsworth Mines, Limited, under the direction of Carl M. Mohr, this consisting chiefly in the sinking of a small winze. Three men were employed for some time. Twenty-six and a half tons of ore shipped from the mine yielded 196 oz. silver and 14,353 lb. lead.

*Lady of the Lake.*—S. Romer and A. Prestmo shipped 3 tons of ore from this property, yielding 118 oz. silver and 1,580 lb. lead.

*Crow Fledgling.*—The owner, W. E. Lane, shipped 7 tons of ore from this property, which yielded a total of 35 oz. silver and 835 lb. lead.

*Crescent and Eden.*—Robert Sherraden, holding a lease on this mine, shipped 22 tons of ore, which yielded 205 oz. silver and 17,368 lb. lead.

*New Jerusalem.*—This property, owned by Mrs. Elizabeth Bishop, of Los Angeles, California, was operated under lease by R. Hughes and A. A. Vassar, of Ainsworth. Three men were employed. The chief development-work done consisted in the driving of a raise connecting the adit-level with the foot of a small shaft sunk higher on the hill-side.

## KASLO-RETAILLACK AREA.

*Lucky Boy.*—The Wayside Gold Mines, Limited, employed four men for some time on this property under the direction of B. N. Sharp, and 50 feet of drifting was done.

*Eureka.*—Nine tons of ore shipped from this property by lessees yielded 601 oz. silver and 10,332 lb. lead.

*Caledonia.*—Three tons of ore shipped from this property by George McCready, of Retaillack, yielded 1 oz. of gold, 1,217 oz. silver, and 9,047 lb. lead.

*Fourth of July.*—Lessees working on this claim shipped 3 tons of ore with total metal contents amounting to 136 oz. silver and 1,376 lb. lead.

## SANDON-THREE FORKS AREA.

*Slocan Monitor.*—This property, owned by the Slocan Monitor Silver Mines, Limited, is situated near Three Forks. Manager, Arthur Lakes. Operations were carried on successively by two different groups of lessees in the course of the year, the company, however, having some exploratory-work done at the same time, in the form of diamond-drilling and surface-stripping. A total of 71 tons shipped by the lessees yielded 6 oz. gold, 2,927 oz. silver, 50,840 lb. lead, and 15,059 lb. zinc. The development and exploratory work done consisted of 100 feet of raising, 28 feet of drifting, 822 feet of diamond-drilling, and 160 feet of cross-cutting.

*Black Colt and Palmita.*—Owned by the Cunningham Mines, Limited. Clarence Cunningham, of Alamo, employed a small crew on these properties, and shipped 39 tons of ore which yielded 2,831 oz. silver and 31,054 lb. lead.

*Queen Bess.*—A group of four lessees, headed by E. Betalli, of New Denver, shipped 38 tons of ore from this property yielding 1 oz. gold, 3,880 oz. silver, 48,781 lb. lead, and 2,729 lb. zinc.

## SLOCAN LAKE AREA.

*Galena Farm.*—This property, owned by the Galena Farm Mines, Limited, and situated a short distance south of Silverton, was under lease to a group of residents of that locality, headed by Warren Nelson, until late in the year, when operations were discontinued. Eight men were employed while the lease was in effect. A total of 234 tons shipped yielded 1 oz.

The workings are in difficult ground. Weak walls, with a large body of irregular structure and containing occasionally a considerable percentage of waste, are factors combining to render the utmost skill and care necessary in the planning and conduct of mining operations.

A crew of about ninety (fifty underground) was employed in normal circumstances. When the mine was closed down this number had been temporarily reduced to sixty-four. The development-work done totalled 300 feet; this comprising 50 feet of drifting and 250 feet of raising. The tonnage mined was 9,080 and 9,485 tons were milled, yielding 95,087 oz. silver, 615,600 lb. lead, and 776,561 lb. zinc.

*Standard.*—Owned by the Western Exploration Company, Limited. Lessees working on this property during the greater part of the year shipped 48 tons of ore, yielding 1 oz. gold, 1,651 oz. silver, 14,606 lb. lead, and 17,493 lb. zinc.

*Bosun.*—Situated on Slocan Lake, between New Denver and Silverton. Owned by C. J. Campbell and operated by Jos. Beber and Jos. Zamboni, holding separate leases, with a total of five men. On November 8th a crew of five, sent to the property by the newly-organized Bosun Mining Company (with headquarters at Vancouver), began the work of unwatering the winze, which continued until the end of December, when the compressed-air pipe-line was taken up and the place was abandoned again. During the year the lessees shipped 177 tons of ore with metal contents of 3 oz. gold, 12,740 oz. silver, 57,197 lb. lead, and 92,690 lb. zinc.

*Hewitt.*—Owned by the Galena Farm Consolidated Mines, Limited, and situated 6 miles by road from Silverton. Three groups of lessees, with a total of ten men and headed by Ed. Mathews, R. E. Burke, and E. Erickson, respectively, worked on the property during the second half of the year, undertaking a considerable amount of repair-work in order to reach the point at which they intended to start operations. The mine had been abandoned since the beginning of 1930 and many parts of it are in very poor condition, the timber having suffered from the inroads of dry-rot to an extraordinary extent. The development-work done was limited to 16 feet of sinking. Sixty-seven tons of ore mined and shipped yielded 7,670 oz. silver and 18,193 lb. lead.

*Galena Farm.*—Situated on Hasty Creek, south of Silverton, and operated by a group of eight lessees, headed by Warren Nelson, who started work at the mine at the beginning of July. Here, also, a large amount of repair-work had to be undertaken before active mining operations could begin. It has been found inadvisable, up to the present time, to attempt to operate the mill, owing to the poor condition of the flume. The tonnage mined and shipped was 202; this yielding 13,778 oz. silver and 121,368 lb. lead.

*Cliff.*—J. H. Dalzell, of Silverton, shipped 5 tons of ore from this property, the metal contents being 273 oz. silver, 1,314 lb. lead, and 1,794 lb. zinc.

*Molly Hughes.*—Situated on Slocan Lake, north of New Denver. The Molly Hughes Mining Company kept a crew of three at work on this property during the greater part of the year under the direction of O. C. Born. Four tons of ore shipped to the Trail smelter yielded 1 oz. gold, 455 oz. silver, 239 lb. lead, and 214 lb. zinc.

*Mountain Chief.*—This property, situated about 2 miles from New Denver and owned by H. Giegerich, of Kaslo, was operated throughout the year by John Cechelero and associates. The tonnage mined amounted to 40, but this was not shipped.

*Jo-Jo.*—Situated on Kane Creek. The trail from the lower terminal of the aerial tramway at the *McAllister* to this property was rebuilt, widened, and relocated in part, a bulldozer being brought in for this purpose, the living-quarters were repaired, and some development-work was done, in the course of the late summer, by the owner, John Teir, of New Denver.

*Slocan Monitor.*—Owned by the Slocan Monitor Silver Mines, Limited, and situated at Three Forks. C. I. Vandergrift and associates began work on the property in December, the total working force consisting of three men. The development-work done consisted of 30 feet of drifting. Seven tons of ore shipped yielded 1 oz. gold, 363 oz. silver, and 6,474 lb. lead.

#### THREE FORKS-SANDON AREA.

*Victor.*—Near Three Forks, owned by Mrs. Dacy Petty, of Nelson, and operated on lease by Ernest Doney & Son. During the year, 310 feet of drifting and 25 feet of raising were done. Twenty-nine tons of ore shipped yielded 2 oz. gold, 4,809 oz. silver, 34,988 lb. lead, and 4,111 lb. zinc.

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**Mary Ryan.\*** A small amount of underground work was done at this property, situated in the McGuigan basin, early in 1930 by the Mary Ryan Mines, Limited, under the direction of R. Wolthausen. A geological survey of the property was made during the summer by E. C. Annes, of Vancouver.

**Mountain Con.\*** This property, which was well described by the late W. F. Robertson in the 1904 Annual Report, has witnessed further prospecting-work during the past season. The claims are situated 9 miles south-east of Sandon, near the headwaters of Carpenter creek, and are easily reached by a very good trail from Cody.

The upper portion of the vein, a fissure of quartz which strikes N. 50° E. and dips to the north-west at 78° in the granite country-rock of this vicinity, has yielded a small tonnage of very rich silver ore in the earlier days of the Slocan camp. This year one of the original locators, C. A. McLeod, of Edmonton, Alberta, determined to give the property another trial and accordingly engaged a crew of two or three men and with the necessary supplies started work on the No. 4 level of the property.

This level, which starts approximately 300 feet below and 650 feet to the south-east of where ore occurred on the No. 3 level, was advanced a distance of 100 feet along the strike of the vein (here N. 45° to 50° E.). At a point 175 feet from the face of the No. 4 level a raise was driven along the vein for 105 feet, with disappointing results. From a study of a small map made of the property it would appear that, should the past ore-lens found on No. 3 level continue to rake to the north-east at 45° as shown by a sketch-map of the upper workings made by the late W. F. Robertson, the present face of the tunnel is about 500 feet from its objective. As the upper workings, which were stated to be caved, were not examined, information as to the ore occurrence here is not available. It would seem that this season's work was undertaken as a prospecting venture, looking for possible high-grade ore-shoots which might occur *en eschelon* along the vein, but which unfortunately were not discovered.

Other minor activities which occurred during 1930 in the area contingent to Sandon included the following: The driving by George Gormley and sons of a short prospecting-tunnel at a low level on the *Western* claim, situated near Three Forks; small leasing operations at the *Helenita (Rio)* property in Jackson basin by S. Marzoli and associates, of Sandon; continued mining operations on a small scale at the *Victor* property by the late George Petty, of Sandon; and Three Forks; surface prospecting by George Clark on claims above the *Leadsmith* property, situated near the head of Cody creek.

#### SILVERTON AREA.

**Galena Farm.\*** The property of the Galena Farm Consolidated Mines, Limited, is situated 1½ miles south of Silverton and extends east from Slocan lake to the *Van Roi* property, a distance of approximately 3 miles along a strong shear-zone at and close to the contact of the Slocan sediments and the Nelson granite batholith.

During the early portion of 1930, following the completion of the extensive programme of mill and tram construction outlined in the 1929 Annual Report, the mill was operated on development ore from the mine and also on material obtained from a dump of the former mill's jig tailings, the resultant lead-zinc bulk concentrate being shipped to Trail smelter. Low metal prices forced a shut-down of company operations, but a group of eight experienced Slocan miners and millmen obtained a development lease on the *Galena Farm* unit of the company's holdings and operated for about two months' time before closing out their lease, which gradually lost any attractiveness it may have had as the metal prices dropped lower and lower.

Following the close-down by the leasers in the summer, the property has been idle and future plans of the company have not been indicated. During the summer and fall some of the extra milling equipment owned by the company was used in the equipment of a concentrator for the *True Fissure* mine near Ferguson, and this provided work for a few of the company's men from Silverton.

**Van Roi.\*** This property, comprising fourteen claims adjacent to and east of the *Hewitt*, is situated 4 miles east of Silverton, on the south side of Silverton (4-Mile) creek. The exploration-work undertaken by the Van Roi Mines, Limited, and energetically carried on in the fall and winter of 1929, was halted temporarily in January, 1930, on account of a fire which destroyed the cook-house and "dry" buildings. Necessary repairs were made and a small crew of men kept at work around the mine until June 15th, when financial difficulties forced a shut-down on the development-work.

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dips at 40° to the south-east and has been traced along the surface for several hundred feet to a point near the summit of the ridge, where a shearing movement apparently has faulted the ground and destroyed the continuity of the vein. In past years a limited amount of leasing has been done at the property and early in 1929 two men were working around the camp. It has been reported recently that the new company has had a small crew of men doing exploration-work at the 6,880-foot level of the property throughout the fall and winter months.

**Native Silver Bell.\*** The late W. E. Zwicky, of Kaslo, employed a crew of four men throughout the summer months of 1929 in further exploration-work at his *Silver Bell* property, situated in McGuigan basin at an altitude of 7,100 feet. The men, who were working on contract, drove a crosscut tunnel into the hill to strike the downward projection of the *Silver Bell* vein at a point 100 feet below the depth attained by the No. 1 level at 7,250 feet elevation. The results of the summer's work have not been officially disclosed, and as the property was visited before the crosscut had advanced far enough to strike the vein it will be necessary to visit the property during the coming summer. The crew, who were working, have been withdrawn on account of the treacherous nature of the country in winter months due to snowslides.

**McAllister.\*** This property is situated on the east side of Kane creek, 3½ miles north-east of Three Forks, the nearest railway-station on the Kaslo-Nakusp Railway, and is connected to it by a fair road. The mine camp, at 5,700 feet elevation, is connected to the end of the road at the lower tram terminal by a 4-foot trail and a 2-bucket reversible aerial tramway 4,000 feet long. The mine is owned by the Slocan Silver Mines, Limited, the controlling interest being held by the Standard Silver-Lead Mining Company, of Silverton, of which W. H. North is manager.

The property has been described in previous Annual Reports, so that only a few notes as to development and mining activity for the past year will be given here. The fissure-vein, striking N. 50° to 60° E. and dipping to the south-east at 45°, occurs in quartzites that are underlain by soft beds of slate. Toward the north-east end of the underground workings the vein passes from the quartzites into the slates and changes from a well-defined quartz-filled fissure to a number of small scattered quartz veinlets. The mineralization is with tetrahedrite carrying silver values, and average values in the past mining operations are stated to have been 30 to 40 oz. in silver to the ton.

The mine has been developed by six levels, all of which are adit-levels with the exception of the fourth and fifth. During 1929 a crew of twenty-five men was employed on further exploratory work on the downward continuation of the vein between the No. 5 and No. 6 levels, and to mining and shipping to the smelter at Trail 5,511 tons of silver ore that is reported to have averaged between 25 and 30 oz. in silver to the ton. The stoping operations were confined to ground between the No. 3 and No. 5 levels and consisted in mining pillars and level sills, with some small blocks of ground stated to contain quite high silver values over comparatively narrow widths. The average width of the vein above the No. 5 level is 4 to 5 feet, but below this level the vein where encountered on a short raise from the No. 6 level is from 1 to 2 feet in width and contains very low silver values. The development was being confined to the driving of a drift north-east from a 76-foot raise up from No. 6 level and at the time of examination toward the latter part of September the drift had advanced 60 feet along the vein and had approximately 400 feet to go before reaching favourable ground on the downward projection of the stopes from No. 5 level. The values in this development-drift were considered too small to be of economic importance, though quite satisfactory in that they indicated similar conditions to what had existed on the No. 5 level.

The mining operations were curtailed toward the end of the year due to the falling price of silver, and the prospects are that the property will remain inactive until silver prices improve.

Among the minor operations that have been reported during the year are the following: The *Jo-Jo* near the *McAllister* has been developed in a small way by the owners; assessment-work of an exploratory nature was done at the *Miner Boy*.

#### SILVERTON.

This property, comprising the *Galena Farm*, *Hewitt*, *Hazard*, *Noonday*, and *Galena Farm.\* Lakeshore* groups, containing approximately thirty-five claims, is situated 1½ miles south of Silverton and extends east from Slocan lake to the *Van Roi* property, a distance of 3 miles along a strong shear-zone close to the contact of the sediments

of the Slocan series and the rocks of the Nelson granite batholith. In March, 1929, the above properties were amalgamated to form the Galena Farm Consolidated Mines, Limited, with H. H. Yuill as managing director and W. L. Sheeler as resident manager. The capitalization of the new company is 2,500,000 shares of no par value, of which 1,650,000 shares have been issued, including the issue of 600,000 shares underwritten by Vancouver brokers and placed on the market at \$2 a share.

The history of the various units of this company has been described in past Annual Reports, the years 1904, 1915, and 1928 dealing more particularly with the *Galena Farm* and *Hewitt* units, which are the most important in the company groups. The development progress for 1929 will constitute the bulk of this report.

At the *Galena Farm* a strong quartz-granite filled fissure-vein, striking S. 60° to 70° E. and dipping to the north at 45°, was in past years developed along a length of 1,100 feet and to a depth of 150 feet by a series of drifts and staggered raises and connected to the mill by an 850-foot crosscut. Above this level, known as the 150-foot level, mining operations have depleted about 850 feet of the developed length of the vein. This year extensive exploration-work has been done in an endeavour to find the downward continuation of the vein below the 150-foot level horizontal fault that heretofore has caused this level to be the lowest in the mine. A winze was sunk on what is called the *Noonday* vein, and which may be the continuation of the faulted *Galena Farm* vein, to a depth of 75 feet below the 150-foot level. Short drifts from the bottom of the winze have been driven along a quartz-filled fissure containing considerable amounts of mineralization in galena and silver values. The winze shows a width of 4 feet of fair milling-ore to a depth of 50 feet below the 150-foot level. The *Noonday* drift on the 150-foot level was advanced for several hundred feet to a point under the vein on the 100-foot level and a raise to the 100-foot level intersected the main horizontal fault some 25 feet above the drift. Above the fault to the 100-foot level the raise is in excellent milling-ore for a distance of 35 feet.

When the property was visited in November a drift was being driven east from this raise along the top of the horizontal fault and 35 feet below the 100-foot level. Further development-work at the property during the year consisted of holing through one or two raises from the 100-foot level stopes to the surface for ventilation. A considerable footage of long-hole drilling with a Waugh 34 drifter was done underground both at the *Galena Farm* and at the *Hewitt*, and the results of this prospecting have been said to have saved an appreciable amount of dead-work in drifting.

At the *Hewitt* the year's development programme was largely confined to the driving of the long haulage-tunnel through the mountain to the *Galena Farm* side. This tunnel, which will be over 6,000 feet in length and which still requires 1,400 feet of drifting to complete it, has been worked from two portals. Late in the year the East No. 10 Hewitt tunnel, the name given to the tunnel from the *Hewitt* side of the hill, was reported to have struck the downward continuation of what is called the Cunningham stope. This ore-body on the No. 9 level had a length of 90 feet and an average width of 11.3 feet, according to A. G. Langley. The development-work on the No. 10 level, however, has consisted of drifting in the hanging-wall and lateral development-work has not yet disclosed the width, length, or values that may be expected from this strike. At several points in the mine minor improvements, such as retimbering and a certain amount of development raising, has been done. The development-work from the west end of No. 10 level, called the West No. 10 Hewitt tunnel, is reported to have encountered a narrow band of mineralized quartz.

When the amalgamation of the properties took place in the spring, both the *Hewitt* and the *Galena Farm* were equipped with 50-ton flotation-mills. The *Galena Farm* mill was redesigned and altered to handle from 100 to 150 tons a day. The mill alterations were completed in October and the mill was operated October, November, and eighteen days in December on an accumulation of jig and table tailings that had been left from former milling operations at this property. The mill was closed on December 18th and has not been operated since, due to the low price of silver and zinc. The tailings-pile from which the mill-feed has been derived has been practically depleted. The concentrate was produced in the form of a bulk concentrate and shipped to the Trail smelter for further treatment.

In addition to the improvement to the *Galena Farm* mill, the company constructed an aerial tramway from the portal of the West No. 10 Hewitt tunnel to the mill at the *Galena Farm*. It is 8,800 feet long and has a grade of 14.3 per cent. in favour of the load. The 180-horse-power



Petter Diesel engine at the *Galena Farm* mill was replaced by one of the same make, but of 250 horse-power.

During the year a crew of as high as 100 men has been employed on construction and development work. The crew was gradually reduced until at the end of January the entire plant was closed indefinitely. The future plans of the company are not known at the time of writing, but it is expected that the resumption of development-work will depend on metal prices.

The production for the year was 9,808 tons, containing net recovered metals as follows: Gold, 10 oz.; silver, 41,758 oz.; lead, 242,563 lb.; zinc, 599,202 lb.

This property is located 2 miles south of Silverton on a short spur road from the old Silverton-Slocan road and is owned by R. McFarlane and associates, of Silverton. During the past summer some 200 feet of drifting and cross-cutting was done on the No. 2 level of the mine by the *Galena Farm Consolidated Mines, Limited*. Results of this work were disappointing and the company dropped its option. The development-work is being continued at the present time by R. McFarlane.

The vein, which is quite well defined, has an east-west strike and dips to the north at 55°. It consists of crushed country-rock, quartz with small lenses of galena and zinc-blende, and occasionally small pockets of tetrahedrite and silver. The country-rocks are sedimentaries of the Slocan series, principally slates and quartzites. To the south of the vein the contact of a batholith of granodiorite and the sedimentaries has been traced in an easterly direction from near the *Galena Farm* to country just to the south of the *Hewitt*. A few car-loads of shipping-ore have been mined from the lower level of the two with which the property has been developed. The shipments which were made several years ago were reported to run well in silver values.

This property, comprising fourteen claims adjacent to and east of the *Hewitt*, is situated on the south side of Silverton creek, 4 miles by road east of Silverton. The property for a number of years has been owned by the *Cunningham Mines, Limited*, Clarence Cunningham, of Alamo, being president of the company. In June, 1929, an agreement was entered into whereby the *Van Roi* was acquired by the *Van Roi Mines, Limited*, capitalized at 2,500,000 shares of 20 cents par value. The new company engaged a crew of twenty-five men and commenced development-work on the property, the past history of which has been fully described in the Annual Reports for 1911 and 1924.

The season's development-work has been largely confined to further exploratory work on what is called the South vein in the upper levels of the mine. The No. 3 level on the South vein has been extended to the east for 240 feet and still requires some distance to go before reaching ground regarded as having favourable possibilities for mineralization. A raise 255 feet long has been driven to connect the No. 3 level to the No. 1 level on the South vein, and the vein in the upper portion has carried very promising values in silver and zinc. The No. 1 level was driven 167 feet to the west along the vein and from a point 100 feet west of the 255-foot raise a raise 178 feet long has followed the vein to the new "A" level.

A total of 322 feet of drifting and crosscutting on the "A" level has been done to the west of the raise, and at the time of visiting the property in January, 1930, a drift was being started to the south-west to follow what appears to be the continuation of the South vein. The raise to the "A" level from the No. 1 level followed in well-mineralized ground for almost its entire length, losing the vein as the "A" level was reached. The work done to date has been promising and the intentions of the company are to continue development-work, together with surveys and sampling of the vein, until such time as sufficient tonnage is available for the economical operation of a selective flotation plant. The mine is equipped with a mill of ancient lineage, which will require remodelling after sufficient ore has been developed.

In January, 1930, it was necessary to suspend underground work for a few days, due to a fire destroying the mess-house and dry-house at the camp. However, a crew of seventeen men has been maintained at the property and will resume underground work early in February, 1930. W. Nelson is foreman in charge of the development-work.

This property is owned by the *Western Exploration Company*, with offices in Silverton. R. A. Grimes is manager of the company, which is largely financed by private interests in the Eastern States. The property has been described in considerable detail in the Annual Reports for 1926 and 1928 and will be but briefly referred to here.

In the spring of 1929 those in charge of the company had the property thoroughly examined and sampled by a consulting engineer, and on the basis of his findings the present fine milling



occurred in streaks, small lenses, and as disseminations through the quartz. Some 200 feet higher up the hill a short tunnel has been driven to prospect the downward continuation of a quartz vein carrying a high percentage of stibnite, but it was stated that not enough work had been done to arrive at any definite conclusion regarding its continuity. This working could not be examined on account of snow.

Following around the mountain to the north, several similar zones can be seen, in which stibnite and quartz have been found to occur, but further prospecting is necessary to determine the importance of these showings. A little prospecting was done by W. J. McMillan during the summer on a quartz vein which carried a little galena, but work was not far enough advanced to arrive at any definite conclusion as to possibilities.

According to information available, about 105 tons of antimony ore averaging 57.20 per cent. antimony has been shipped from the property. The shipments were made to Jersey City, Chicago, and Glasgow. Unfortunately there is no local market, as it is understood that the Consolidated Mining and Smelting Company does not at the present time accept antimony ore for treatment.

The possibilities for digging out pockets of ore from scattered workings are attractive, and possibly a considerable tonnage could be mined by this method, while the information gained in the process might reveal more important bodies than have so far been developed. However, the high cost of freight rates to marketing centres, added to the costs of transportation from the mine to the railway, leave little encouragement for profitable small-scale operations at present metal prices. Hence it would seem logical to assume that the objective to be aimed at is to develop sufficient ore to warrant an aerial tramway, the building of a road, and the equipment of the property with such plant as may be deemed advisable for the handling and treatment of the ore.

#### SILVERTON.

This well-known property was acquired from the Patrick Clarke Estate during the latter part of 1927 by W. L. Sheeler and associates. The mine has occupied an important place in the history of Slocan mining for a number of years and has a healthy record of production. The tonnage was derived from a strong vein which was cut off by a flat fault at about 150 feet below the surface; beyond this fault its downward continuation had not yet been established. At the time of acquisition by the present owners the property was being operated in a small way by leasers, who had been successful in opening up ore past a vertical fault in the westerly end of the workings, which gave promise for a fair tonnage. The strength of the mineralization and the fact that it occurs in a well-mineralized zone traceable to Silverton creek, in addition to attractive indications in the underground workings, were among the factors which pointed to favourable potentialities and resulted in the present deal being consummated.

Early in the year the old mill was dismantled and converted from the water-gravity system of concentration to straight oil-flotation, embodying sub-aerated Mineral Separation cells and other modern equipment. The plant was first operated on old mill tailings, dump material, and ore from the westerly part of the mine, while exploration was energetically carried on in the easterly section of the mine in order to pick up the extension of the vein past a vertical fault, which marked the end of the old workings in this direction. This work was initiated by drilling long holes with a Waugh prospecting-drill. The ore was picked up and followed by drifting. When visited in the fall, this ore had been followed for about 200 feet past the fault and stoping operations had been started. The ore was of good grade and showed a width of from 3 to 5 feet along the drift, swelling to 8 or 10 feet in the stopes.

No difficulty was being experienced in maintaining sufficient mill-feed of excellent grade from this section of the mine, the average values running about 18 to 20 oz. to the ton in silver, 8 to 12 per cent. lead, and about 12 per cent. zinc. In a vertical direction this ore-body had been explored by two raises; one 70 feet in length followed the ore for the entire distance and the other had been advanced 30 feet in ore.

The mill, which has a capacity of from 40 to 50 tons a day, was productive of very satisfactory results, as may be seen from the following: On a feed running—silver, 18 oz. to the ton; lead, 8 per cent.; zinc, 12 per cent.—the following recoveries were being made:—Lead concen-

trates: Lead, 68-70 per cent.; silver, 125 oz. to the ton; zinc, 6-7 per cent. Zinc concentrates: Zinc, 50 per cent.; lead, 2 per cent.; silver, 28-30 oz. to the ton. Tails: Silver, 1.5 oz. to the ton; lead, 0.2 per cent.; zinc, 0.3 per cent.

The equipment of the mill is similar to that in general use, and consists of a jaw-crusher, rolls, ball-mill in closed circuit, with a Dorr classifier and a 14-cell sub-aerated Mineral Separation machine, of which seven cells are employed as roughers and two as cleaners for the zinc concentrates. The remaining five cells are used for lead concentrates, four of which are roughers and one cleaner. From the Mineral Separation cells the concentrates are fed to two cone classifiers, which in turn supply an American filter. The overflow from the classifiers passes to Dorr thickeners, the thickened product being fed to the filters, the overflow going to waste. The object of introducing the cone classifiers is to eliminate colloidal material and hence obtain a dry filter cake, which apparently was being achieved, for a very nice shipping product resulted. The moisture content of the zinc concentrates was given as about 10 per cent. and that of the lead as 8 per cent.

Future plans call for more exploration and development at depth and the installation of a Diesel engine for auxiliary power during the dry season, when there is not sufficient water for present requirements. The year has witnessed profitable operation and it is reasonable to expect this property to hold its place among the important producers of the Slocan for some time.

**Hewitt.** This mine is owned and operated by the Victoria Syndicate. The deep development which was undertaken soon after the acquisition of the property in 1926 has been fully justified by the results now being obtained. The development of high-grade ore in the downward extension of the easterly ore-body has established definite possibilities for the continuation of this ore to much greater depths, and a low tunnel was started during the latter part of the year to explore its downward continuation.

On the No. 9 level this ore-body has a length of 90 feet and an average width of 11.3 feet. Values in silver, lead, and zinc occur in a broken quartz gangue. The principal silver values are in the form of ruby silver, which is characteristic of the ore in this mine. Work in other parts of the mine was progressing with favourable results and a considerable tonnage of milling-grade ore had been opened up.

As an example of the results being obtained by the mill, the following is given as being representative at the time of the writer's visit to the property:—Mill-feed: Silver, 35.5 oz. to the ton; lead, 5 per cent.; zinc, 6.6 per cent. Lead concentrates: Silver, 361.25 oz. to the ton; lead, 50.3 per cent.; zinc, 8.6 per cent. Zinc concentrates: Silver, 15 oz. to the ton; lead, *nil*; zinc, 54 per cent. Tails: Silver, 1.5 oz. to the ton; lead, *nil*; zinc, 0.7 per cent. The property is referred to in the Annual Report for 1927.

At the *Van Roi* leasers were busily engaged during part of the season. The property, which belongs to Clarence Cunningham, is extensively developed and has a good record of production. The claims cover the easterly extension of the *Hewitt* vein system and the ore is similar in character. It was reported at the end of the year that the property had been acquired by the Amalgamated Mines, Limited, of Vancouver.

**Mammoth.** This property, consisting of five claims, covers an area to the east of the *Standard*, which latter has one of the best records of production of any property in the Slocan. The original owners, H. W. Dewis and the late S. Wetterhuus, of Silvertón, bonded it to R. A. Grimes, who in turn gave an option to the Porcupine Goldfields Development and Finance Company, under the direction of which mining and development was continued until early in 1927. When the option was relinquished Mr. Grimes interested the Western Exploration Company and extensive plans have been completed to place the property on a permanent producing basis.

The vein, which strikes easterly and westerly, occupies a strong sheared fissure cutting the argillites and quartzites of the Slocan series. The vein-filling consists of crushed country-rock in which metallic sulphides, together with gangue-minerals of spathic iron, quartz, and calcite, occur. Post-mineral movements are in evidence which have crushed and disseminated the ore along streaks and bands in the vein-filling. The ground is loose and generally needs timbering. Structural conditions are typical of the Slocan vein systems.

The workings are situated on a steep and narrow ridge between two snowslide gulches at elevations ranging from 4,900 to 5,800 feet above sea-level. The first exploration was done on

The *Galena Farm* was worked continuously by Joe Johnson and partners and a substantial tonnage of milling-ore was shipped to Trail. At the end of the year W. L. Sheeler and associates, of San Francisco, acquired a controlling interest and intend to immediately proceed with the installation of a small flotation plant. The ore-body discovered by the leasers last year has yielded satisfactorily to development and it is considered that the possibilities of the property are far from exhausted.

At the *Van Roi*, which adjoins the *Hewitt* and is owned by Clarence Cunningham, a number of leasers put in a busy season, with results that are reported to have been highly satisfactory.

At the *Standard* leasing operations were undertaken and a considerable tonnage shipped to Trail.

At the *Fisher Maiden* George Long and partners were successful in winning some high-grade ore, of which several car-loads were shipped to Trail. The present workings, consisting of two short tunnels driven at a slight elevation above the creek, have no connection with the old workings, but resulted from prospecting in the fall of last year. The formation is syenite. These workings have so far disclosed a short length of vein in place, having a north-easterly strike and dip of 65°, to be faulted by a strong easterly and westerly shear, in which "drag" ore is found to occur in small lenses. The vein shows a width of about 14 inches of ore. The ore is high-grade silver-lead-zinc, the silver values being in pyrrargyrite and grey copper. A sample of sorted ore for shipment ran: Gold, 0.04 oz. to the ton; silver, 104.7 oz. to the ton; lead, 44.8 per cent.; zinc, 10.9 per cent.

W. Valentine put in a season at his claims at the head of Silverton creek and J. Harvey at his property on Granite creek. Ed. Shannon did further prospecting at the *Denver* group on Red mountain.

LIST OF PRODUCING MINES, SHOWING TONNAGE SHIPPED.

Mine.	Locality.	Tons.	Character of Shipment.
Antoine.....	Sandon.....	6	Silver-lead-zinc ore.
Bosun.....	New Denver.....	1,245	Silver-lead ore.
Canadian.....	Sandon.....	121	Silver-lead-zinc ore.
Colonial.....	Sandon.....	64	Silver-lead ore.
Dora.....	Sandon.....	2	Silver-lead ore.
Fisher Maiden.....	Silverton.....	81	Silver-lead ore.
Galena Farm.....	Silverton.....	1,049	Silver-lead-zinc ore.
* Hewitt.....	Silverton.....	1,046	Concentrates.
Hidden Treasure.....	Sandon.....	9	Silver-lead-zinc ore.
Idaho-Alamo.....	Alamo.....	59	Silver-lead-zinc ore.
Lucky Jim.....	Zincton.....	9,727	Silver-lead-zinc ore.
Mammoth.....	Silverton.....	341	Silver-lead-zinc ore.
Metallic.....	Sandon.....	12	Silver-zinc-lead ore.
Minniehaha.....	Sandon.....	99	Silver-lead-zinc ore.
Molly Hughes.....	New Denver.....	33	Silver ore.
Monitor.....	Three Forks.....	291	Silver-lead-zinc ore.
Mountain Chief.....	New Denver.....	223	Silver-lead-zinc ore.
Mountain Con.....	Sandon.....	10	Silver-lead-zinc ore.
Noble Five.....	Sandon.....	1,246	Silver-lead-zinc ore.
Oro.....	Sandon.....	8	Silver-lead-zinc ore.
Queen Bess.....	Three Forks.....	32	Silver-lead-zinc ore.
Rambler-Cariboo.....	Rambler.....	586	Silver-lead-zinc ore.
Ruth-Hope.....	Sandon.....	1,313	Silver-lead-zinc ore.
* Silversmith.....	Sandon.....	4,377	Silver-lead ore and concentrates.
Sovereign.....	Sandon.....	114	Silver-lead-zinc ore.
Standard.....	Silverton.....	990	Silver-lead-zinc ore.
Surprise.....	Sandon.....	24	Silver-lead-zinc ore.
Trade Dollar.....	Sandon.....	33	Silver-lead-zinc ore.
Van Roi.....	Silverton.....	311	Lead and zinc concentrates.
Victor.....	Sandon.....	79	Silver-lead-zinc ore.
Wonderful.....	Sandon.....	690	Silver-lead-zinc ore.

\* Large part of concentrates produced during year not shipped.

## NEW DENVER.

The *Bosun* was operated by the Rosebery-Surprise Mining Company during the year with a crew of about twenty-five men. From the main adit a 140-foot shaft has been sunk and another

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on the No. 6 level. At 25 feet above the level this opened out into an important ore-body, having a length of about 85 feet and a width of from 12 inches to 3 feet of massive galena carrying high silver values. The ore was tightly frozen between slate walls and occurred as a lens, which at 60 feet above the level began to show signs of diminishing in width and regularity. According to recent reports this ore-shoot is now worked out and the company has commenced shaft-sinking from the No. 6 level on ore exposed in the bottom of the drift.

Exploration-work during the year was principally confined to the advancement of the No. 5 level through the faulted zone at the easterly end of the workings. The old upper workings are being worked under a lease by about twelve men. The company made substantial shipments of crude ore and high-grade milling-ore; a typical analysis of the latter is as follows: Gold, 0.01 oz.; silver, 73.1 oz. to the ton; lead, 12.8 per cent.; zinc, 23.9 per cent.; iron, 6.8 per cent. The lead concentrates from this ore contained the following values: Gold, 0.04 oz.; silver, 215.8 oz. to the ton; lead, 54.4 per cent.; zinc, 17.6 per cent. The zinc concentrates averaged: Silver, 65.8 oz. to the ton; lead, 1.7 per cent.; zinc, 50.7 per cent. The tallings carried: Silver, 4.8 oz. to the ton; lead, 1.1 per cent.; zinc, 2.5 per cent.

*Molly Hughes.*—The *Molly Hughes* mine near New Denver was operated by a local syndicate, composed of practical miners, during the latter part of the year and a shipment was made to Trail.

At the *Mountain Chief*, which is situated on the New Denver-Three Forks road, *Mountain Chief*, four Italian miners put in a busy season at reclaiming the old stope fillings.

The plant used was inexpensive and practical and might be profitably applied in other cases where water is available for power and washing purposes. The ore from the mine was dumped into a pocket on the dump, from which it passed over a small grizzly, where large pieces of waste were discarded and the fine stuff was fed into a launder, which delivered it into a small Blake crusher and then to two jigs. This miniature concentrator was operated by a 12-inch Pelton wheel at a head of about 400 feet. About twenty sacks of middlings were being made a day, said to average about: Silver, 64 oz. to the ton; lead, 25 per cent.; zinc, 35 per cent. This was shipped to the Trail concentrator for further treatment.

The Standard Silver-Lead Company's mill was destroyed by fire in July, soon after it had been restarted to treat an accumulation of tallings, and ore mined by a number of leasers. Leasing operations, however, are being continued and a few small shipments were made to Trail.

*Hewitt.* The *Hewitt* mine on 4-Mile creek was acquired under option by the Victoria Syndicate and a crew of men was put to work during the summer at further exploration and development under the direction of R. H. Stewart. It is understood that the work is being principally confined to the development of the vein from the lowest workings.

*Van Roi.* At the *Van Roi*, which adjoins the *Hewitt* to the east, Clarence Cunningham, who owns the property, had a small crew engaged at the development of the ore which outcrops at the surface and is considered to belong to the South vein. A short tunnel which had been run along the strike of the vein below this outcrop exposed a strong width of low-grade ore which was encountered near the end of the drift, but not sufficient work had been done at the time of examination to prove its extent. Conditions, however, appeared promising for the development of an important ore-body in this section of the mine-workings, which is connected by a raise with the No. 5 level at the head of the tramway.

*Galena Farm.* This well-known property, which has been operated intermittently for a number of years, is owned by the Patrick Clarke Estate, of Spokane. During the first three months of the year it was operated by the Porcupine Goldfields Development and Finance Company, which undertook a diamond-drill campaign to explore the downward continuation of the ore-bodies, and while this work was proceeding shipped 738 tons of milling-grade ore from the old stopes. Unfortunately the results obtained by the diamond-drill were not considered satisfactory and the option was relinquished.

During the latter part of the year Joe Johnson and Mathews, experienced Slocan miners, took a lease on the property and started work at the west end of the old stope. By following "drag ore" in a north-and-south fault which cuts off the westerly extension of the main ore-body a nice showing of ore was encountered at a height of about 10 feet above the top of the old stope and to the west of the fault. This ore was about 35 feet below the surface, but further prospecting at an additional depth of 40 feet had disclosed its downward continuation. Although

the work done had not been sufficient to determine the extent of this new discovery, the possibilities of deriving a considerable tonnage from this section of the mine-workings were decidedly encouraging.

The main ore-body of the mine, which is now stoped out, had a length of between 300 and 400 feet and an average width of from 8 to 10 feet. It strikes N. 70° W. and dips at an angle of 45° to the north. On account of topographical conditions the greatest depth obtainable by adit-tunnel without an exceptionally long drive is 150 feet below the outcrop.

The geology of the area is complex owing to the intrusive granite and dyke rocks. The *Galena Farm* vein occurs in an inclusion of Slocan sediments in a granite area and lies in a well-mineralized zone, which is traceable to 4-Mile creek in an easterly direction. The displacements by faulting movements which can be distinctly seen in the stope at the 100-foot level, and at a short distance below, have thrown the ore into the hanging-wall side, suggesting that its downward extension might be expected to the north. In the easterly end of the workings a layer of creek-gravel is exposed at a short distance below the 100-foot level, but this is not to be wondered at, for at this point the depth below the bottom of the present creek-channel cannot be many feet. For further reference see the Annual Report for 1915.

At the *Metallic* a few men were employed at mining and the further development of the property. A few cars of milling-ore were shipped to Trail. The property lies at a short distance to the east of the *Galena Farm*.

**Mammoth.** This group consists of five claims—the *Monarch*, *Mammoth*, *Moose*, *High Ore*, and *Hercules*. It is owned by H. W. Dewis and S. Wetterhuus, of Silverton, and is now being operated under option by the Porcupine Goldfields Development and Finance Company, Limited. The area occupied by this group is thought to cover the possible easterly extension of the *Standard* ore-zone, which was responsible for yielding one of the largest ore-shoots ever developed in the Slocan. Prospecting-work is being confined to two veins—namely, the *Buffalo* vein and the *Mammoth*. The former is a small well-defined quartz-filled fissure striking north and south and the *Mammoth* vein occupies a sheared zone in slate and limestone having a width in places of 20 feet, with a strike of about N. 75° E. The workings, consisting of four adit-tunnels, are situated on a steep timbered ridge between snowslide gulches.

The No. 1 tunnel had been driven at an elevation of 5,819 feet for a distance of 145 feet on the *Buffalo* vein, at which point the *Mammoth* vein was intersected. At the point of intersection of the two veins a short shoot of ore having a width of about 7 feet was encountered, which was apparently of milling grade.

The No. 2 level, driven on the *Mammoth* vein at an elevation of 5,656 feet, was in about 200 feet. In this distance the vein-filling, consisting of sheared and crushed country-rock, contained narrow bands and pockets of galena and zinc-blende of sufficient quantity in places to constitute a milling grade of ore. The vein had been stoped to a height of about 10 feet above the drift for a length of 50 feet and from this stope 900 sacks of ore had been hand-sorted for shipment. A sample across 6 feet of the vein here is said to have yielded the following returns: Silver, 33 oz. to the ton; lead, 2 per cent.; zinc, 16.8 per cent. A sample from 50 sacks of sorted ore assayed: Silver, 77 oz. to the ton; lead, 13 per cent.; zinc, 18 per cent.

The No. 3 tunnel, driven at an elevation of 5,552 feet, had been advanced about 200 feet on the *Mammoth* vein. Here the vein, dipping at an angle of 65° to the south, showed a width of about 20 feet. The drift was on the hanging-wall side and crosscuts had been run every 50 feet to the foot-wall. A little ore had been exposed and indications looked promising. Above the tunnel the vein had been exposed for a considerable distance by ground-slucing.

The No. 4 tunnel, driven at an elevation of 5,470 feet, had been advanced for 100 feet on the *Buffalo* vein, its objective being to explore the *Mammoth* vein from the point of intersection, which was estimated to be at a point about 350 feet from the portal. It is intended to make this the main adit-level.

During the summer a telephone was installed at the mine and extensive improvements were made to the trail. The mine crew consists of about twenty men.

**Echo.\*** The *Echo* group comprises the *Echo*, *Duke*, *Duchess*, *W.H.R.*, *Graphic*, and *Boston* claims and is owned by the Echo Silver Lead Mining Company. The property was taken under lease and bond last summer by G. Purt and associates, of Silverton. The property is described in the Annual Reports for 1915 and 1917, when the mine was being operated by the above company, which ceased work the following year.

*Queen Bess*.—This property is owned by Clarence Cunningham. Prospecting is reported to meet with satisfactory results and the outlook for next season is encouraging.

This group is owned by F. P. O'Neill and comprises the following claims: *Chicago No. 2, Chicago Fraction, and Pullman Fraction*. It is situated on Cody creek. Mr. O'Neill is one of the early pioneers of the camp, having worked the *Ruth* in 1892. After many years of absence in California he returned to the Slocan early part of the summer and started working on this property, having a "hunch" that he would strike it rich. At the time of examination a tunnel had been driven 35 feet to explore possible continuation of good-looking ledge-matter exposed by surface prospecting. This showed crushed slate and some slightly mineralized ledge-matter was making its appearance at the face. Soon after the tunnel had been started it was discovered that it was actually on top of an old tunnel the portal of which had been completely hidden by caving. A cabin had been built at a short distance from the workings.

Among the many minor operations, the following are some of the properties which were worked under lease: *Surprise*, by Bruce Kirk, C. Towgood, and V. Clelant; *Monitor*, by Gormley; *Queen Bess*, by Jack Jones, also Neil McMillan and Frank Delpretto; *Jack Senning* had a lease on the dump and D. McGillivray is reported to have had work of reopening the mine-workings for James Anderson, of Kaslo, who is agent for the *Richmond-Eureka*, belonging to the Consolidated Mining and Smelting Company, was worked under lease by Con. Stewart and partners; *Rambler-Cariboo* was worked under lease by late W. A. Cameron, a crew of eight or ten men being employed.

#### NEW DENVER.

This property is owned and operated by the Rosebery-Surprise Mining Company, of which J. P. McFadden is general superintendent. Exploration from the sixth level, beyond the faulted zone and farther in the hill than any other workings, encountered a new ore-body, the development of which is being undertaken. The production during the year was from company and leasing operations.

This property, situated on Slocan lake and owned by H. Clever, of New Denver, was taken under option by Vancouver interests and operated for a few months under the management of F. Flick. Improvements were made to the mine, but results obtained from underground work were evidently not very encouraging, so the mine was closed down during the summer. The values are confined to narrow widths; hence the expense of mining and a minimum of overhead charges are factors necessary for the possible success of this character.

Work at the *Mountain Chief, Mowich*, and a number of other small-scale operations were the season's activities.

#### SILVERTON.

Leasers were again busy at this well-known mine and are reported to have struck a good showing of ore on the eighth level after spending a considerable sum on development. The mill was operated with George Gordon in charge. *W. A. Harrison, Charlie Gill, George Gordon, and the Kelsall Bros.* are among those who are working at the property under the terms of a lease.

This property, which is owned by the Patrick Clarke Estate, of Spokane, was acquired by the Porcupine Goldfields Development and Finance Company under the terms of a lease and bond. Exploration by diamond-drilling and prospecting is being carried on under the supervision of R. H. McLoughlin. The property has a good record of production and, should the continuation of the ore-bodies be found past the faulted zone, should mean a lot to the Silverton camp.

This mine is owned and operated by Clarence Cunningham, of Alamo. The concentrator was closed down during the latter part of the season. However, recent prospecting has met with encouraging results and things look bright for next season.

*Witt*.—Work at this property was confined to leasing operations and a small tonnage was produced to Trail.

*Rocky Thought*.—This property was also worked by leasers and a considerable tonnage

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The adjoining claims of the *Reco* group were acquired by Jas. Dunsmuir, the owner of the *Noble Five*, and will be developed from the workings of this latter property.

It is reasonable to expect that, with the recent success which has attended *Silversmith*, the development, this property will again become a steady and important producer. The large ore-shoot which was developed on the 1,000-foot level during 1918 has now been drifted on at the 800-foot level, and the result of the work establishes the fact that the same ore-body is as strong on the eighth as on the tenth level. A considerable tonnage of silver-lead and zinc concentrates was produced during the year.

The adjoining claims, *Jennie* and *Last Chance No. 4*, were recently acquired, *Rambler-Cariboo*, which gives an additional 1,700 feet of undeveloped ground on the vein, and according to W. A. Cameron, the manager, it is the intention of the company to prosecute development on the different levels in the newly acquired territory next year. Owing to the unusual dryness of the season the shortage of water seriously interfered with mining and development work.

The development of ore at low horizons, both at the *Noble Five* and *Silversmith* mines, should be an incentive for the investment of capital for the purpose of carrying on exploratory work at lower levels than was ever seriously contemplated in the earlier days of the camp. In this connection it is of interest to note that the ore at the *Noble Five* was developed at approximately 3,000 feet below the apex of the vein, while at the *Silversmith* the 1,000-foot level, on which the large shoot of ore was encountered, is the lowest horizon on which ore has been developed in the Sandon camp.

*Ruth*.—The principal work being done on this mine is the driving of the long crosscut in order to gain depth on the vein. James Anderson, of Kaslo, has charge of the property, which belongs to the Alexander interests.

*Carnation*.—A small crew of men is engaged at development-work under the management of G. Clarke.

*McAllister*.—Situated on the North fork of Carpenter creek at a distance of about three miles from Three Forks. After lying idle for a number of years, the property was acquired by A. R. Grimes early in the year and a crew of eight or ten men put to work. The operating company is called the Slocan Silver Mines, Limited. The season's work is said to have been highly satisfactory. The ore is a "dry" ore, occurring in a strong, well-defined quartz vein. The values are in silver, mostly in the form of grey-copper. Exceptionally rich pockets are occasionally encountered.

*Silver Glance*.—Situated at a short distance from Bear lake, on the Kaslo-Nakusp Railway, J. W. Power, the owner, is reported to have bonded the property to G. Huston, of Mullan, Idaho. The ore is similar in character to that of the *McAllister*.

*Panama*.—This property is now being further developed by the owner, H. Giegerich, of Kaslo. It is situated on the same mountain as the last two mentioned properties and is within easy reach of the railway.

*Washington and Silver Reef Groups*.—Situated on Payne mountain. Work was continued this year by M. C. Monahan.

*Granville Group*.—This property, which was recently acquired by a syndicate, is being developed under the direction of George Gormley.

There are a number of other properties on which work is being done in this Division, but information regarding same is lacking at present.

#### SILVERTON CAMP.

This camp has had rather a quiet season, principally on account of the curtailment of the output from the *Standard* mine, although latterly shipments have been greatly increased.

*Van Roi and Hewitt*.—During the early part of the season these properties were operated by Clarence Cunningham and a considerable tonnage was mined and milled. Latterly the *Hewitt* closed down temporarily and mining operations at the *Van Roi* were confined to development.

*Galena Farm*.—This property, which belongs to the Patrick Clark Estate, of Spokane, was worked under lease by James Casey during the early part of the season, but latterly has been closed down.

*Echo*.—This property was worked under lease by A. L. McPhee and others. About 500 tons of ore was shipped to Trail.



In the lower workings the vein has been followed for a considerable distance and a little ore stoped at intervals. The vein, consisting of white brittle quartz, occurs in a crushed zone of black slate, which is characteristic of the Slocan series. The walls are not well defined, while the strike and dip are irregular, but lenses of quartz occurring at intervals, and having a maximum width varying from a few inches to about 2 feet, carry high silver values. The ore principally consists of argentite, tetrahedrite, and native silver in a highly siliceous gangue.

On account of the high cost of packing to Three Forks, the ore is carefully sorted and cobbled before shipping, with the result that the product is high grade. Two men who had the property under lease this year shipped 10 tons from the lower tunnel, which ran as follows: Silver, 324 oz.; lead, 4.7 per cent.; zinc, 5 per cent. The second-grade ore or reject from this shipment formed a dump of about 50 tons, a grab sample of which ran: Silver, 22.5 oz.; lead, nil.; zinc, 3.6 per cent.

Present development-work is being confined to continuing the lower drift, with the object of getting under the shoot of ore in the upper level. There is sufficient water in a near-by creek for camp requirements and possibly for a small mill, although if any quantity of ore is developed a mill-site could be obtained on the North fork of Carpenter creek. Although there is not much ore in sight at present, it is an attractive property on account of the high silver values, and on which more development-work might be done to advantage.

These claims adjoin the *Jo-Jo* higher up the hillside. The property belongs Milton Group. to R. McPherson and S. McGregor, of Kaslo. Only a cursory examination was made of the somewhat extensive workings. R. McPherson for many years has diligently worked at the development of the claims, and has accomplished a phenomenal amount of work single-handed. Altogether there is about 1,500 feet of tunnelling besides a considerable amount of surface work. The underground workings are in first-class condition, the tunnels have plenty of clearance, and the timbering is well done. There are several quartz veins exposed, one of which is similar in character to the *Jo-Jo* vein. The possibilities of the property can only be determined by a careful examination and sampling, which would have taken more time than the writer had at his disposal on this occasion, but another trip is contemplated.

*Black Grouse*.—Situated at a distance of two miles from Three Forks. Some work was done by G. Murhard, the owner, during the summer.

The ore from properties on this creek carry high silver values and are low in lead and zinc.

#### SILVERTON CAMP.

This camp has been a little quieter than usual on account of the temporary close-down of the *Standard* mine, which for many years has been the leading shipper of the Slocan. However, further development-work is being done, and it is to be hoped that before long it will again become one of the large shippers. In the meantime the mine is being partly worked under lease by L. McPhee and partner. Small shipments are now being made to Trail.

*Echo*.—This mine, situated above the *Standard* and on the same lead, promises to be an important shipper in the near future. Arrangements have been made to lease the *Standard* mill, and a tramway has been built from the mine to connect with the *Standard* tram. J. P. Bonner is mine superintendent.

*Galena Farm*.—This property was worked during the summer under the supervision of F. Clarke, of Spokane. After a short close-down the mine was leased to the foreman, J. Casey. A new shoot of ore was recently developed.

*Van-Roi* and *Hewitt*.—These properties are being systematically mined and developed under the management of C. Cuchin Moore. About 100 men are employed.

*Wakefield*.—This property was recently acquired by Clarence Cunningham and is now being developed under the supervision of Oscar White. About seven men are employed.

*Bosun*.—Besides the mining and development work being carried on in the upper levels of the mine, the lower or No. 6 tunnel is now being driven to tap the vein. This tunnel will gain a depth of nearly 800 feet on the vein at a point under the main workings. A 100-horse-power boiler and a 600-foot Ingersoll Rand compressor have been installed near the lake. S. R. Moore is mine superintendent. Sixty men are employed.



## SLOCAN MINING DIVISION.

REPORT BY ANGUS McINNES, MINING RECORDER.

I have the honour to submit herewith the annual report on the mining operations in the Slocan Mining Division for the year ending December 31st, 1916.

I am pleased to state that the year just closed was the most prosperous in the history of the Slocan, both as to the production of the mines and also development. There was also a great demand for properties, either developed or undeveloped; the principal buyers were Americans, many of whom are still in the market for promising properties. The indications are now that the year 1917 will be even more prosperous than the past year. At the present time the greatest drawback we have in this district is the scarcity of miners and of all classes of labour. There is not an idle man to be found in the district, and, if the price of the different metals that are produced here, stay anywhere near the present prices, there will be many more mines working before the year is out.

## SILVERTON CAMP.

Silverton camp is still in the lead in tonnage shipped, and the *Standard* is the biggest shipper. At the present they employ over 200 men and pay the regular dividend of \$50,000 monthly.

The Northland Mines, Limited, known here as the *Galena Farm* and operated by Patsy Clark, of Spokane, has been working steadily all the year and employed about sixty men.

The Silverton Mines property is situated on Four-mile creek, about four miles from Silverton. This company is represented by Monty Davys. The ore is silver-lead and zinc.

The *Echo* group is directly above the *Standard* on the same vein, and adjoining the *Standard* on the north, and is owned by J. H. Thompson, Martin Welch, and E. F. Burns. Since taking the property over about two years ago they have carried on development-work continuously, with the result that they opened up large bodies of ore; in fact, the face of the lower tunnel is all ore. There is no doubt now but they have a big mine.

The *Lucky Thought* is owned and operated by the Consolidated Mining and Smelting Company of Canada, and is situated opposite to the *Standard* and *Echo*, across Four-mile creek. They have also struck large bodies of zinc and galena ore. Dan Tattie is superintendent, and they are shipping regularly. There are many small properties in the Silverton camp besides the above that have not yet reached the shipping stage, but are nevertheless doing active development-work, and a number of them will be heard from this coming year.

## SANDON CAMP.

The Sandon camp is the next largest producer, and the *Surprise* was the biggest shipper. They have just finished a fine concentrator on the site of the old *Ivanhoe* mill, which was destroyed by fire about eighteen months ago; the mill is doing good work. J. P. McFadden is superintendent.

The *Slocan Star* is one of the oldest properties in the camp, and it has been worked with great energy for the last year. They are shipping much ore and at the same time keeping development-work well ahead; they have large reserves of ore blocked out and enough milling-ore to keep the large mill going for a number of years. O. V. White is the manager.

The *Noble Five*, owned and operated by James Dunsmuir, of Victoria, has been developed for the last two years by a system of long crosscut tunnels. They have struck the vein at a great depth and are blocking out ore ready for shipment. The ore in this property is very high in silver and also carries lead and zinc. Paul Lincoln is superintendent.

The *Ruth and Hope* is situated near Sandon and is a steady shipper.

The *Wonderful* and *Sovereign*, both in the Sandon camp, are worked by Clarence Cunningham. These properties are not one group, being situated in different localities, and are two of the old mines that were worked years ago without much success; but Mr. Cunningham has made mines of them both.

The *Noonday* is also above Sandon and is operated by Bruce White, and is turning out to be a big property.

1915

## SLOCAN MINING DIVISION.

NOTES BY J. D. GALLOWAY, ASSISTANT MINERALOGIST.

At the close of the field season of 1915 the writer spent a week in the Silverton camp, noting mining conditions generally and examining some of the more important properties. This section of the Slocan district has experienced a very satisfactory mining development during the past few years and is now in a prosperous and healthy condition. The outstanding mine in this camp is the *Standard*, which has been and is a steady dividend-payer. This property was worked with indifferent success for many years, and its present condition is a testimonial to the hard work, ability, and progressive optimism of Geo. Aylard, the former owner, and now managing director of the Standard Silver Lead Company, which owns the property. Another important property in the district is the *Hewitt-Lorna Doone* group, owned by the Silverton Mines, Limited, M. S. Davys, managing director, and Geo. Stillwell, superintendent. The ore from this mine has always been difficult to mill, and it is only lately that complete success has been obtained. The introduction of oil-flotation in the mill has successfully solved the problem of treating the ore, but it took considerable time and experimentation to so adjust the oil-flotation process as to handle the ore. Mr. Davys and Mr. Stillwell are to be congratulated on their success after flotation experts of the Minerals Separation Company had failed. This mine now has a promising future.

The Van Roi Mining Company, which formerly was a large producer, has been closed down since war broke out. It is believed that the known developed ore reserves are practically worked out and further development will be required. This ore is also difficult to treat, and the present mill, designed only to use water-concentration, does not make a very high percentage extraction.

The *Galena Farm*, an old property previously worked twenty years ago, was bonded last year, work commenced, and a 100-ton a day concentrator erected. This property is now being operated by the Patsey Clark Estate.

Development-work was carried out during 1915 on the *Alpha* and *Echo* claims, above the *Standard*; on the *Lucky Thought*, near the Silverton Mines mill on Four-mile creek, by the Consolidated Company; and on the *L.H.*, south of Silverton. Small ore shipments were made from the *Buffalo*, *Comstock*, and *Wakefield* by leasers, but work was not continued on these properties.

The future of the camp now looks promising, and it is more than probable that the present high prices of lead and zinc will encourage the reopening-up of others of the old properties worked in former years.

The general geological and physical features of the Silverton camp are well known; references to the camp, sometimes short, sometimes extended, will be found in all the past Annual Reports of this Department since the commencement of mining in the district thirty years ago.

In 1909-10, O. E. Leroy, of the Geological Survey, studied the geology of the Slocan Map-area and prepared a topographic and geologic map of this section. Interim reports on this work appear in the summary reports of the Geological Survey of Canada for those years, but the final memoir has not been issued yet. The following excerpt from his 1910 Summary Report is appended:—

“The rock series underlying this district are the Shuswap, Selkirk, and Slocan, of which the former is Pre-Cambrian. The relative ages of the Selkirk and Slocan series have not yet been fixed with any degree of definiteness, owing to the apparently entire absence of fossils. The present contact relations between the three above series is to be accounted for by intense folding, accompanied by overthrust faulting during the later epochs of mountain-building. The biotite-schists of the Shuswap are in sharp contact with the softer green schists of the Selkirk, and those of the latter are similarly related to the black slates of the Slocan series.

“Near the border of the Selkirk small infolds of the Slocan series are occasionally to be found, while along the Blue Ridge summit there is a marked syncline, passing southwards into a monoclinial fold, the central portion of which is composed of rocks lithologically identical with those of the Slocan series.

“In Jurassic or Post-Jurassic time the above series were intruded by enormous batholiths of granitic rocks, and mountain-building processes continued long after this intrusion, as evidenced by the folded and faulted dykes and sills genetically connected with the batholith.

719  
**Echo.** The *Echo* group is situated above the *Alpha* and near the top of the mountain. It is owned by Grady, Briggs, *et al.*, and has been under lease and bond for some time to H. Thompson and Martin Welch. The group consists of two claims and a fraction above the *Alpha* and two below the *Standard*.

The lead on which the work is being done is supposed to be a continuation of the *Standard* vein on, through, and beyond the *Alpha* ground. The vein is, as usual, quite large, up to 100 feet in width, being largely filled with broken, crushed slate. The main tunnel, which is in about 500 feet, starts on *Alpha* ground. There are also some shorter tunnels and a few open cuts. Some small pockets of ore have been encountered, and Mr. Thompson is quite hopeful that further development will reveal some good-sized shoots of ore. Six men were at work at the time the property was visited, with Mr. Thompson in charge of the work, and it was intended to continue development all winter. The work being done was to drive ahead the drift-tunnels which follow the vein, and crosscuts to both walls are put in every 100 feet.

This mine is on the south side of Four-mile creek about four miles from **Lucky Thought.** Silverton. It is owned or controlled by T. J. Floyd, of New Denver, but has been under lease and bond to the Consolidated Mining and Smelting Company for the past three years. The property is developed by three tunnels and raises between. The Consolidated Company spent considerable money in development, having done 2,000 or 3,000 feet of working.

The vein is the usual type of large vein, filled for the most part with crushed slate. Very heavy flows of water were encountered in some of the drifts and caused considerable trouble. As yet the development has failed to show any large shoots of ore, only small streaks of ore having been found, consisting of galena, zinc-blende, grey-copper, and a little ruby-silver. During 1915, 100 tons of ore was shipped which contained 6,589 oz. silver and 32,074 lb. lead, corresponding to an assay value of 65.89 oz. silver to the ton and 16 per cent. lead.

Practically no ore could be seen in the mine at the time of examination, and it is not known whether or not further development-work will be carried out.

This group of five Crown-granted claims is situated on the hill back of **Galena Farm Group.** Silverton on a flat bench and distant about one mile and a half from the town. This property was operated some twenty years ago, when a shaft was sunk and a water-driven compressor and hoist were installed. Since then the property, which is owned by A. W. McCune, of Salt Lake City, has been idle until the beginning of 1915, when an option on it was acquired by the late Patsey Clark. Work was at once commenced and vigorously prosecuted, and is now being continued by the Clark Estate.

The vein is mainly in granite, but is very close to the contact, with an inclusion of slates in the granite. Apparently the granite here is intrusive with the slates in an irregular manner, and erosion has laid bare the granite in places, while in others there is still a capping of slate rock. The vein strikes north and south (mag.) and dips to the west at 45 to 65 degrees. It is from 6 to 12 feet wide and consists of quartz, siderite, and fragments of crushed granite and slate, carrying varying amounts of zinc-blende and galena. The old shaft is vertical and cuts the vein at about 100 feet, and from that level drifts were run on the vein. The shaft was sunk to 200 feet and a crosscut made to pick up the vein, but unsuccessfully. The main showing of ore is in the north drift on the 100-foot level, which shows a shoot 200 feet long, with an average width of 6 feet, well mineralized with zinc-blende and some galena. It is also claimed that the quartz carries low gold values.

The present company ran in a tunnel 850 feet, raised 50 feet to the 100-foot level of the old shaft, and is continuing a raise from this level to come out exactly under the old ore-dump, which is supposed to contain 2,500 tons of good milling-ore. This is the only development-work so far done by the company. As the vein dips out of the hill, it should have been encountered by this crosscut tunnel, but the only indication of a vein was a zone of somewhat crushed slate at a point 500 feet in, which at the time was not considered to be the main vein. This may, however, be the vein or it may be faulted some distance up the hill. There seems little doubt that intelligent prospecting will reveal the downward continuation of the vein, and perhaps the most direct way would be to start on the 100-foot level and follow the ore down. In the meantime the company intends to mine and mill the available ore, said to amount to some 15,000 tons, to recoup some of the outlay in erecting the mill and other work. A comprehensive development plan will probably be started and may now be under way. The vein is exposed for several

hundred feet on the surface and shows ore in many places. The property lay idle for many years owing to the fact that the ore was very zincky, but zinc is much more popular in the Slocan now than it used to be. Another old shaft on the vein, 50 feet deep and now caved in, is said to have disclosed a good shoot of ore.

The 100-ton concentrating-mill is built just below the portal of the crosscut tunnel, and ore is trammed out the tunnel along a trestle a few hundred feet long and into ore-bins at the upper end of the mill. The mine, mill, etc., are all on a comparatively flat bench, as can be seen by the fact that the tunnel in going 850 feet only gained 150 feet in depth. The mill building is on nearly level ground and the ore has to be elevated several times in its passage through the mill. At the time of visiting the property the mill was finished but not operating. Tuning up the machinery and bedding-down of the jigs was in progress. The actual flow-sheet of the ore through the mill could not be definitely stated, as certain changes in handling the ore might be made after finding out the eccentricities which are peculiar to every ore. The general scheme of milling was to be as follows: From the ore-bins the ore goes to a jaw-crusher and then to a conveyor-belt, where waste rock or crude ore could be picked out; then to ore-bins and fed to rolls; then to three trommels making five sizes; the coarse sizes go to four sets of 3-compartment jigs, and the fines to a classifier and thence to Wilfley tables. The jig tailings go to waste and the middlings are reground in rolls or two Huntingdon mills. There are ten Wilfley tables which will take pulp from classifiers and dewatering-tanks fed from regrinding-machines.

The mill is the ordinary type of lead-zinc concentrator, with no particular devices to ensure a high extraction; the recovery would probably be from 60 to 80 per cent. Provision has been made in the mill building for the erection of an oil-flotation plant to treat the tailings if later on this is found to be desirable.

Speaking generally, the Slocan district is some years behind in milling practice. Most of the mills are modelled after the Coeur d'Alene style of fifteen to twenty years ago, and more attention has been paid to putting through a large tonnage with a small number of men than to scientific milling. The result is that the percentage extraction is low, and zinc concentrates, if saved at all, are generally much lower grade than they should be. The introduction of oil-flotation processes in the Slocan mills should result in higher recoveries being made.

This group of seven Crown-granted mineral claims is situated about five L.H. Group. miles and a half from Silverton in an easterly direction and at an elevation of about 5,250 feet. The workings are on a rather steep bluff, being near the head of a small branch of Eight-mile creek. There is plenty of timber available for mining purposes, and a good water-power could be developed at the mouth of Eight-mile creek. A. R. Fingland and Charles Braud, of Silverton, are the owners. The British Columbia Copper Company held a lease and bond on the property for three years, during which time development-work was carried on, but in 1914 allowed the bond to lapse. Since then some work has been done by the owners working themselves. The wagon-road to the *Galena Farm* mine is used for two miles, and beyond that a trail extends to the property.

The formation here consists of an inclusion of slate entirely surrounded by granite. This slate is a mile wide and two or three miles long, and is considerably altered and silicified by the contact action of the granite. In the neighbourhood of the ore-body the slate is a hard, siliceous, very dark-coloured, dense, fine-grained rock. The ore is apparently developed along fractures in the slate which have an east-and-west strike and a variable dip. At first it was supposed that the ore-body dipped to the south, but certain work on the lower level would appear to show that it dips to the north at about 65 degrees.

In the upper tunnel there is a 2-foot porphyry dyke, soft and decomposed, which parallels the ore-body on the north side, and in the lower tunnel there is a granite (or pegmatite) dyke paralleling the ore-body to the south. In one place this dyke is mineralized with iron pyrites.

The ore-body is developed by two tunnels, together with crosscuts and raises. No. 1 tunnel (upper one) is 250 feet long and is 80 feet vertically above No. 2, to which it is connected by a raise coming through near the portal of No. 1. This tunnel has several crosscuts, as is shown on appended plan of the workings. The first 200 feet is all in ore, but beyond that the ore gradually fades away. A crosscut to the south picks up a little ore, however. There is no definiteness or regularity to the ore; it is developed along a crushed, sheared zone in the slate and has been formed by replacement. The slates have been altered, silicified, and pyritized, and all transitional stages, from pure quartz carrying pyrite to unaltered slate, can be seen.

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These values are not high, but taken in conjunction with the extent of the mineralised zone, make the property well worth serious investigation. During August of 1904 one man was employed.

The waters leaching out of this zone, and carrying sulphates of copper, had filtered down the creek through an old log-jam, the rotten wood of which had precipitated small nodules and sheets of metallic copper, also forming oxides and carbonates. To this source, and not to the lead, must be attributed the samples of this description which were being so freely exhibited throughout the district, but not by the management.

The *Hewitt Group* is about  $3\frac{1}{2}$  miles south-east of Silverton, and consists of the *Hewitt*, *Rincon Fraction*, *Tranquillity*, *Crow Fraction* and *Mole* mineral claims, the local agent and part owner of which is Mr. C. T. Cross, of Silverton. The company owning the property is not working it at present, but has leased a portion of the mine to Mr. M. S. Davys, of Nelson, who has kept a small force of about seven or eight men employed all summer, and has shipped this year over 400 tons of ore, running about 150 ounces of silver to the ton, 5 % lead, and 13 % zinc.

The deposit is in a contact between slate and granite, which has been opened up for a vertical distance of 830 feet, by four adit tunnels run in on the vein and two "blind" levels, Nos. 4 and 5, all connected by raises. No. 1 level is 260 feet vertically below the outcrop, and is 200 feet long with about 100 feet of raises, etc., and has been run to within 75 feet of the boundary line of the adjoining claim, the *Lorna Doone*. No. 2 tunnel is 1,090 feet long with 150 feet of raises, etc., and is 118 feet below No. 1. No. 3 is 1,590 feet long, and 104 feet below No. 2. No. 6 is 2,250 feet long, is some 350 feet below No. 3, and has been run out to the boundary mentioned. From the No. 3 level a cross-cut is driven into the hanging-wall 72 feet, at the end of which a connection is made down to the level of No. 4, where another cross-cut was made and a straight connection made with No. 6 tunnel. The levels Nos. 4 and 5 have only been started, No. 4 having been driven 60 feet and No. 5, 37 feet. From Nos. 2 and 3 levels, in addition to the contact deposit, there are a couple of north and south ore-chutes which cut into the granite foot-wall, and on these, on the No. 2 level, drifts to the extent of 100 feet have been driven, and on the No. 3 to the extent of about 405 feet.

These north and south ore-chutes are the portion of the mine which has been leased to Mr. Davys, and from which he has this year stoped out over 400 tons of first-class ore. Up to 1904, including the Davys shipments, there has been taken from the mine of sorted first-class shipping ore, 3,054 tons, and of second-class, now on dump, 3,878 tons; total, 6,932 tons. The sorted ore runs about 150 ounces silver to the ton, 4 to 5 % lead, and about 13 % zinc. The ore, as mined, will run from 30 to 40 oz. silver, 1.5 to 7 % lead, and 6 to 12 % zinc.

The ore-chute on the contact is, at the No. 2 level, about 270 feet long, or say an average of 150 feet. The ores of the upper levels were richer than those below, this being possibly due to secondary enrichment. In the lower levels comparatively little shipping ore was noted, but there is a large tonnage of second-class ore which would pay well to concentrate.

The mine is well equipped with bunk and mess-houses, and an office and quarters for the foreman. An aerial wire tramway connects the workings with the flat below, where at the lower terminal an ore-shed has been built. From this ore-shed a good waggon road connects with the dock at Silverton, and a zig-zag trail goes up to the mine, but timber and supplies are sent up on the tramway.

The *Galena Farm*, or, as it was formerly called, the *Currie Group*, Galena Farm, consisting of five Crown-granted claims, the *Currie*, *Grover*, *Stephenson*, *Katie*, and *Peerless*, is situated  $1\frac{1}{2}$  miles S. E. of Silverton, and is owned by the Galena Mines Co., Ltd., of London. This property has been idle for some time and the

workings were filled with water, so that nothing could be seen underground. The mine was formerly considered as having great promise, which the present surface showing would seem to justify, but if one may put any reliance on local reports, the property would seem to be another victim of over capitalisation and "across the sea" management.

There is showing on the surface, and cutting through a granite formation, a strong quartz vein, 9 feet wide, which can be distinctly traced on the surface in an east and west direction for a long distance, and which contains chutes of ore consisting of argentiferous galena, zinc blende and spathic iron. The lead dips to the north at an angle of about 50°, and it is locally reported that the workings showed, at about 150 feet down, a vertical east and west fault which cut off the vein, upthrowing it for some distance, as was afterwards shown when the vein was subsequently picked up by a cross-cut to the north. The property is essentially a concentrating proposition, and would run from 10 to 12% lead, with about 10% zinc and 15 oz. silver to the ton, making concentrates of about 60% lead and 100 oz. silver. The zinc blende would have to be separated and should, with the improving market for such mineral, prove an additional source of revenue, rather than as formerly, the reverse.

The plant is splendidly and expensively equipped with every appliance. There is a vertical 2-compartment shaft down 220 feet, equipped with hoisting plant, cage, etc., driven by a Pelton wheel under a water head of 300 feet, the water being brought from Gold creek, on which a dam is constructed, by a ditch, and a pipe-line 3,500 feet long and 30 inches at intake, reducing to 16 inches. There is also in place an old steam hoist and boiler, which are still serviceable. A separate Pelton is geared to the half of an 8-drill air compressor, formerly used for two drills and the pumps, of which there are three, a Northey, a Knowles and a Cameron. With the very complete equipment, and the really good showing, the property seems attractive for investigation, and under reasonable management should become a producer. The machinery and plant are kept in good repair by a caretaker who lives at the mine.

The *Wakefield Group* includes the *Wakefield, Cazabazhua, Beaven, Wakefield, Robertson, Jennie Lind, Dalkeith, Kelso* and *Ben* mineral claims, situated on Four-Mile creek about two or three miles north-west of Silverton, at an altitude of 5,900 feet. The lead is a fissured zone from 15 to 20 feet wide, occurring in black slate, dipping to the south at an angle of about 20° to 25°, with a lime band on the foot-wall from 2 to 8 feet wide, which carries galena, although the ore is sometimes found also on the hanging-wall side. The property is opened up by a series of tunnels, of which No. 1 is in 700 feet, and above which the ore is pretty well stoped out, though one man was working there getting out ore. No. 2 is in about 1,100 feet and is largely stoped up to No. 1. Nos. 3, 5 and 6 are each in from 500 to 600 feet on the vein, but do not appear, as yet, to have struck pay ore.

The property has been under lease for the past two years to the Anglo-Slocan Syndicate, Ltd., of which the manager is Mr. J. T. Lane, who employed this past summer 10 miners, 10 muckers and trammers, with 2 or 3 men on tram-lines, extracting about 40 tons of ore a day, which was concentrated in the company's mill at the foot of the hill on Four-Mile creek. The ore concentrated in the ratio of 12 to 15 into 1, producing a lead concentrate running 64% lead and 50 ounces of silver to the ton, and at the same time a zinc concentrate running about 45% zinc and 20 ounces of silver. The present company's lease has about expired, so it is perhaps not to be wondered at that the development has been neglected and little ore blocked out ahead.

In the upper levels the ores were higher grade, carrying gray copper, but more zinc blende is coming in with depth. Of the latter mineral there is a large quantity which is not mined more than is necessary, as a market for the zinc has not been obtained, the concentrates

1900  
1901

Two large concentrating mills have been built this year, both capable of handling over 100 tons per day. One of these, on the property of the Ivanhoe Mining Co., of Sandon, has been running at its full capacity for some time. The other mill was built at the *Wakefield* mine, but, owing to some disagreement between the owners, this property has been closed down for the last 6 months.

*Standard* There is a prospect of two more big mills being built in the coming summer; indeed, preparations have already begun. One will be on the well-known and extensively operated property known as the *Emily Edith Group*, on *Four-Mile* creek, managed by Mr. Rammelmeyer. The other will be erected on the *Galena Farm* to treat the ores of the *Currie* mines, now owned by the Payne Mining Co.

The Bosun Mines, Limited, is a consolidation of the North-West Bosun Mines. Mining Syndicate and the Fidelity Mining Co. The property owned by this Syndicate consists of the *Bosun Group* and the *Fidelity Group*, both situated near New Denver, at the foot of Silver mountain. Under the management of W. H. Sandiford about 90 tons per month of high-grade ore are being shipped all the year round.

There are in this Division now about 30 shipping properties, and if no trouble arises to impede progress, the year 1901 will be a "record breaker" in ore shipments.

The *Ivanhoe* is likely to be one of the heaviest shippers in the Division. Large quantities of ore have been blocked out for some time awaiting the completion of the mill and tramway, which are now running.

The *American Boy* is another new mine that is coming to the front rapidly. It is now a regular shipper.

The *Ruth* has been working very extensively, the recent strike in Ruth Mine. No. 5 tunnel, one of the lowest workings in the camp, having proved that the mine has a great wealth of ore still untouched. It has been decided to start a sixth tunnel, still lower down the hill; this will require to be a length of 1,500 feet in order to tap the ore body.

The *Slocan Star* has been putting in new machinery. The recent strike in the shaft, between tunnels 5 and 6, is likely to result in a large increase in shipments.

The Payne. This well-known mine is working 100 men constantly and is keeping up its usual regular shipments and dividends, as is also the *Last Chance*, situate on the same slope of Payne mountain.

Idaho and Queen Bess. The *Idaho* and *Queen Bess* mines, both situate in the Idaho basin, are connected by a waggon road and tramway with the C. P. R. at Alamo, where the Idaho and Alamo concentrator is built. The ore from these properties is taken down in bulk to the concentrator, where it is treated and shipped via the C. P. R.

The Gold Commissioner of Nelson District reports as follows on the *Queen Bess* mine:—

"At the *Queen Bess* mine, operated by the Queen Bess Proprietary Company, Limited, the following work has been done:—Tunnels driven, 1,856 feet; raises, 692 feet; shafts sunk, 152 feet; total, 2,700 feet. About 1,234 tons of silver-lead ore were shipped to the Hall Mines Smelter, consisting of galena and carbonates, the former netting \$65 per ton and the latter \$25.

"About 45 men were employed, the chief work carried out during the year being the driving of a deep tunnel to cut the lode 400 feet below the lowest tunnel of the present work-

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Situate about 4 miles from Three Forks. It is worked by means of *Queen Bess*, tunnels, three in number, well timbered. Very little stoping has been done as yet, but the character of the ledge is such that great care will have to be taken as the work progresses. So far, it is in a safe condition.

There are 65 men employed, and their quarters are only temporary. The mine is under the management of Mr. R. W. Rathbone.

Situated on Four-Mile Creek, 6 miles by waggon road from the town of *Vancouver*, *Silverton*. This mine is under development. There are two tunnels, well timbered where necessary, very little stoping done, but all the work is being conducted in a safe and workmanlike manner. There are 25 men employed, under the foremanship of Wm. Lewis.

Situate 2 miles from the town of *Silverton*. This mine is being worked by means of two perpendicular shafts, one being 50 feet in depth, and the other 212 feet. The latter is the working shaft, in two compartments, well timbered, one being a man-way with ladders from top to bottom, and the other the working compartment. The hoist is worked by water-power, and the cage is equipped with the proper "safeties," all in accordance with the requirements of the Act. Connections have been made between the two shafts, affording ample ventilation. Cross-cuts and drifts have been driven from the 100-foot and 200-foot levels, and the rock is of such a hard character that very little timbering is necessary.

The quarters provided for the employees are very commodious and excellent. There are employed about 25 men, under the management of Mr. G. R. Fraser.

The above comprise the principal mines inspected by me in the Nelson and Slocan Divisions. A few of the smaller ones were likewise visited, but, as very little work had been done, nothing definite can be said as yet. Several of the other large mines should have been visited, such as the *Reco*, *Last Chance*, *Goodenough*, *Cariboo-Rambler*, and many others, but the snow and condition of the weather was such as to make it actually dangerous to get to them at the time of my visit to the locality.

#### REPORT OF JAS. MCGREGOR, INSPECTOR.

I have the honour to submit my first report as Inspector of Mines for the Province of British Columbia. I was appointed on the 8th of July last, and, pursuant to instructions, proceeded to Rossland on the 12th day of July following. Subsequently, I paid official visits to a number of mines in the Kootenay District, Texada Island and Alberni.

The first mine visited was the *Iron Mask* at Rossland, on the 20th of July. Here I found 22 men at work. The main tunnel is 100 feet in depth and connected with the *War Eagle* mine, and by winze with the *Centre Star*. From the main tunnel, a shaft 176 feet has been sunk. From the lower levels there is a tunnel to the east of 35 feet, and to the west 150 feet. The output of this mine is about 300 tons per month. The ladder-ways and shafts I found without landings in contravention of the Act. This defect the manager promised to remedy without delay. The motive power of this mine is furnished by the *War Eagle* Company.

I visited this mine on July 22nd, and found 30 men at work. The *Centre Star* output is about 1,500 tons per month. The mine is connected with the surface by three shafts and two tunnels, and is also connected with the *Le Roi* mine. I found the ventilation in the mine about 6,780 cubic feet per minute. I also

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irregular masses of concentrating ore and stringers of solid galena. A tunnel had been driven 150 feet in a direction diagonally across the ledge, but in it as yet no ore in quantity has been found. In 1895, 30 tons of galena was shipped, and on the dump was piled mixed ore or calcite, galena and blende.

*The Robertson*, lying south of the Reed and Jenny Lind, is owned by Wm. Robertson *et al*, Silverton. The vein is here covered mostly by wash, but a 40-foot tunnel had been run in where the ledge showed 8 to 10 feet of calcite, with little galena. No work was being done.

*The Wakefield, Ottawa and Cazabazhua*, owned by Geo. Fairburn and Wm. Smith, Silverton, and located on the southern extension of the vein, had on the Wakefield a tunnel running N. E. 125 feet, in which, at 80 feet, were 16 to 20 inches of solid fine-grained galena, beyond which was the coarse calcite lying on a dip of only 12° to 20° from the horizontal, and on the Ottawa further down the slope, the ledge is said to be lying even flatter. No work but assessment has been done during this year.

#### FISHER MAIDEN GROUP.

At the time of visit to those claims no work was being done, but they belong to Jno. Poppen and Albert Webb, Silverton, and lie along a small creek flowing into Four-Mile Creek, seven miles east by trail from Silverton.

This vein was discovered in a narrow gulch in syenitic granite, with a strike N. E. by S. W., and a dip 75° N. W. It shows on both sides of the gulch, where in two tunnels were stopes 1-3 feet wide up to the surface. Below these workings have been run two other tunnels, one on the south of the gulch being in 100 feet with cross-cuts, but showing no ore. On the north side over 400 feet of work had been done, in which four drifts had been run along smooth fissure planes that proved to carry no ore. At one part where two drifts branched off at an angle of 45°, was a winze full of water, close by which were lying several large blocks of galena ore in a quartz gangue. On the dump were pieces of ore, consisting of zinc blende in a quartz and spathic iron (?) gangue, also some galena ore, but the percentage of lead was very low. Native silver was found along the seams, and of about 50 tons shipped in the fall of 1894, the silver value is reported to have been 180 ounces per ton, while one lot of 9½ tons carried about 40% lead, the remainder 10%.

**OTHER CLAIMS.**—South of Four-Mile Creek are many locations on silver-lead veins, and work is being done on a number of important groups. *The Thompson* group, about six miles east of Silverton, on the Fennel Creek, has been bonded to Dr. H. Bell-Irving, of Vancouver, for \$40,000, who is engaged developing a galena vein from which a considerable amount of ore has already been taken, and has contracted for the shipment of 100 tons of ore on the dump, while 300-500 tons are believed to be in sight that will yield about \$100 to the ton on the average.

Farther west of this group, on Granite Creek, is the *Vancouver* group, embracing the Vancouver, Mountain Boomer, Le Roi, Iowa, and Doone, owned by the Moynahan Bros. *The Hewitt*, owned by Capt. R. G. Tatlow, C. F. Yates, *et al*, Vancouver, was being opened by Major Reed, with ten men, who was running a tunnel on a vein believed by him to be the extension of the vein on the Galena Farm, to be described, and the breast of the tunnel was reported to be all mixed ore or zinc blende and spathic iron, with 5 feet of mixed ore in a 75-foot shaft.

#### GALENA FARM.

This property, otherwise known as the "Currie Group," obtained its name by the finding of ore scattered over a plateau east of the Slocan Lake, and the subsequent discovery of the large ledge that now bids well to rank among the largest producers in this district. Great importance may be attached to this vein in that, while resembling in many details the large Slocan Star lead that runs through the slates and limestones, this is evidently in the granite, although pieces of slate occur in the quartz gangue, a small, but very probably shallow, area of slates occurring close by, but bosses of granite protrude from the wash all over these claims, from which the slate formation has been eroded, and this lead not only demonstrates the importance of the granite area, but also points to the persistence of the veins in the different geological horizons.

The first to work this property were discouraged rather by the presence of much zinc blende and the small amount of galena scattered through the ledge matter, but in the prospecting done during the last season by the present owners, fine solid galena ore with high silver values had been uncovered. The group of claims comprising the *Currie, Grover, Stephenson, Katie* and *Peerless*, Crown Grants applied for, one and a half miles south of Silverton, and one

mile east of the lake, was secured by Mr. C. W. Callahan, M. E., for English investors who have recently formed the Galena Mines Company, Ltd., London, England, with a capital of £550,000, in 550,000 £1 shares.

On the Currie claim this vein was seen to have a strike east and west (mag.) and a north dip of 50° to 65°, and on the surface, and an outcrop now traced for 1,600 feet, with, in places 12 to 14 feet wide, of milk-white quartz, spathic iron, fragments of slate and granite, and some zinc blende and galena. In an old shaft, at a depth of 50 feet, a short cross-cut entered the vein at 12 feet, and there a drift was run 60 feet east and 70 feet west, exposing a large body of concentrating ore for all this distance, and along the smooth hanging wall a good body of solid high grade galena. In the west drift, 35 feet from the cross-cut, a winze was being started, since sunk 45 feet, in four feet of solid, fine-grained galena. In an open working 500 feet west of the shaft, were 16 inches of solid galena along a smooth foot wall with considerable concentrating material.

Since the time of visit a 2-compartment working shaft, now down 65 feet, has been sunk west of the old shaft and 140 feet north of the outcrop, with the expectation of striking the lead at 130 feet, but at 41 feet what is believed to be a cross-ledge running north and south was entered, dip 60° west, and down to 51 feet the shaft was in concentrating ore, that by tests made by Mr. Callahan, concentrating 5 to 1, yielded 123 ounces of silver per ton and 62% lead. This cross-lead is now thought to be traceable for 800 feet. The shaft, equipped with requisite steam hoisting plant and pumps, will be now sunk 500 feet, with cross-cuts to the vein at every 100-foot station, and when sufficient development justifies it, a 150-ton concentrating plant will be built, for which the water from Eight-Mile and Gold Creeks is expected to supply 600 inches under a 500-foot head. The ore is essentially a milling ore, but a test shipment of assorted assayed 98 ounces of silver per ton and 57% lead. A good waggon road, 1½ miles long, has been constructed from the mine to Silverton, whence the concentrated ore will be shipped to the smelters, and suitable bunk-houses, etc., have been erected. D. J. McDonald, a Californian, a mining man of long experience, is in charge of the work as superintendent, and was employing 20 men in the proper exploitation of this valuable property.

OTHER CLAIMS.—Many claims have since been located about the Currie group and many are being prospected. To the east the *Noonday* is thought to have the extension of the Currie vein, but here the formation is the small area of highly altered slates. The *Baby Ruth*, *Los Vegas*, *Mountain View*, *Granite Mountain*, and *Daisy*, on Eight-Mile Creek, occurring, according to Mr. McConnell, in an inlier of hard, rusty slate several miles in extent and enclosed, the granite, reached by trail from Silverton *via* the Galena Farm, were not visited, but assessment work was being done. The *L. H.*, also one of this group, is situated high up on a very steep ridge, and Mr. McConnell (Summary Report, 1895, p. 26) says: "The slates are fissured along an east and west line, and the schistose rock adjoining the line of fracture on the south, has been altered, silicified, and impregnated in places with ore, along a zone varying in width from 20 to 40 feet. The ore appears to consist mostly of native arsenic, mispickel, pyrite, and pyrrhotite, distributed through the vein in an irregular manner." Four hundred feet up the steep face of the bluff a tunnel had been driven in 22 feet into this zone, but very little mineralization was apparent there. Mr. J. M. M. Benedum, one of the owners, has obtained several assays high in silver and gold from samples taken from this vein, on which only assessment work has been done.

#### TEN-MILE CREEK.

An excellent waggon road has been built from the landing eight miles up this creek, through a valley of fine timber, to the Enterprise mine, and thence trails pass over to Springer and Lemon Creeks and back to Slocan City, and also farther east to the head waters of Kokanee or Yuill Creek and the south fork of Kaslo Creek, where a great deal of prospecting has been done during the past season, with good results.

#### THE ENTERPRISE.

The success attending the development of this vein, has, to a great degree, demonstrated the possibilities and the value of this granite area. The *Enterprise* and *Slocan Queen*, situated on the slope south of the creek, were located in 1894 by R. Kirkwood and Jno. McKinnon, then bonded to Jno. A. Finch, who recently sold these to David M. Hyman, *et al.*, Colorado, for \$300,000, on the advice of D. W. Brunton, of Aspen, Colo., one of most eminent Mining Engineers in the West.

1895

*Roulette.*

Development work was done on this claim during the past summer. No. 1 Tunnel, 80 feet long, No. 2 Tunnel, 50 feet, and No. 3 Tunnel, 30 feet, giving a depth of 80 feet.

*Lucky Jim.*

The Company expect to work all winter. This claim is situated alongside the Kalso & Slocan Railway. About 40 tons of ore have been shipped, and a tunnel extended 80 feet.

*Ivanhoe.*

Owners have let contract to drive a tunnel 400 feet, at a depth of 350 feet below other tunnels, for the purpose of development. Five hundred feet of tunnelling were done during last summer, and about 150 tons of ore were shipped. Two hundred tons are expected to be shipped by the middle of January, 1896. Eighteen men are at work.

*Ruth.*

This company have run tunnels about 400 feet, and are now upraising to the surface. Twelve men have been principally engaged in stoping ore from the level. The carbonates from this claim run very high in silver. One hundred tons of ore have been shipped this summer, and 100 tons are now ready for transportation; they expect to ship 200 tons in addition by March next. The ore is taken to Pilot Bay Smelter. A contract was let for a lower tunnel, 200 feet, which is now completed; this gives a depth of 400 feet from the surface, and in the face of this tunnel there is a little galena.

*Carnation.*

There is a good showing of ore on this claim. The owners have lately started to work, and will rawhide ore to Sandon. Five men are employed. The ledge has been crosscut 22 feet, without reaching either of the walls.

*Eureka.*

Three hundred feet of tunnelling have been run on this claim. Work will soon be commenced. The ledge is supposed to be the same as the Slocan Star.

*Richmond.*

The Eureka lies between this claim and the Slocan Star. A tunnel has been run on the Richmond for 40 feet, and there is now in sight one foot of ore. One carload has been shipped, and it is expected shipments will be made through the winter.

*Currie.*

This claim contains a very large quantity of concentrating ore.

A shaft has been sunk 50 feet and a drift run for development purposes from the bottom of the shaft to strike the ledge which at the point of connection contained 7 feet of concentrating ore.

*Alpha.*

Four men have a contract to drive a development tunnel at a depth of 225 feet from the surface. This property, which has shipped 1,400 tons of ore, requires development before it can again be a producer.

*Adams.*

Work for development has been done as follows:—1 tunnel, 45 feet; 1 crosscut, 20 feet; another crosscut, 15 feet.

*Brandon.*

Two tunnels, 40 feet and 20 feet.

*Britomarte.*

One tunnel, 200 feet, and about 18 inches of ore in sight.

The above three claims have been idle this year.