State of Washington
ARTHUR B. LANGLIE, Governor

Department of Conservation and Development
ED DAVIS, Director

DIVISION OF GEOLOGY
HAROLD E. CULVER, Supervisor

Report of Investigations
No. 9

INVENTORY
OF
MINERAL PROPERTIES
IN
Chelan County, Washington

By
MARSHALL T. HUNTTING

OLYMPIA
STATE PRINTING PLANT
1943

For sale by Department of Conservation and Development, Olympia, Washington. Price, 25 cents.

CONTENTS

ILLUSTRATIONS

INTRODUCTION

Since late in the last century reports dealing with mineral resources and individual mineral properties in many parts of Chelan County have been written and many of these have been published in technical papers, mining journals, and in the publications of several State and Federal agencies. This summary report is a compilation of all such information available to this office, with additional data obtained from field investigations. Sources of information have not been indicated for individual properties, but reference is here made to the bibliography on page 57 for such sources. It should be noted, however, that the bibliography does not include references to articles in mining periodicals.

All metallic mineral properties with production records are here called mines; those without records of production are designated prospects regardless of the extent of their workings. The data for all mines and prospects mentioned in the literature available are recorded, as are the data for a number of mines and prospects hitherto unmentioned.

It is anticipated that omission of some properties and some information about other properties may be noted. The Division of Geology solicits both corrections and additions. Owing to the none-too-reliable character of some of the source material for this report some misstatements have probably been included despite every effort to weed them out. This is true in part because the greatest interest and activity in mining in the county was shown many years ago, while, although mineral deposits do not change with time, ownership, access, development, improvements, and production records do change rapidly, and these changes are by no means always recorded. In those instances where the latest date of information under a given heading in the descriptions of properties is known it is indicated in parentheses following that information. These dates in parentheses in the discussions of mines and prospects should not be confused either with the numbers in parentheses following the names of mines and prospects or with the dates in brackets in the district discussions which refer to the bibliography. Another class of errors comprises those relating to mineral property locations incorrectly or vaguely described, partly for lack of land surveys at the time the original reports were made. Assays reported are in many cases not to be relied upon as being accurate or representative for these reasons: change in market values of minerals, poor sampling methods, and deliberate misrepresentation.

Mineralization is sufficiently widely distributed to necessitate having the whole county covered by mining districts, although in some districts there are only a few mines and prospects. At one time or another at least twenty-one different district names have been used, and the mines in some of these have been described. However, almost without exception boundaries for the districts were not set forth. In addition, many of the districts have at separate times had several names applied to them, and most of them at some time have been included with others to form larger composite districts or have been broken down from such composites into smaller local districts. Such irregularities obviously are undesirable, so in this report these many districts have been reduced to nine and their boundaries have been specifically described. The districts as here set up are made to conform as nearly as possible with those older districts which are best known and most widely accepted, thus introducing as few changes as possible. Where changes have

been made the districts were set up partially on the basis of ore deposit types, but more especially each district was designed to include only that area which makes up a natural unit from the standpoint of practical mining operations. Actually in most cases these are the natural determinants which have set off given areas as mining districts in the past. On these bases many of the boundaries follow such natural features as rivers and mountain crest lines, and others follow arbitrarily selected land survey lines.

The mineral properties are discussed in three groups: lode mining properties arranged alphabetically by districts, placer mining properties arranged alphabetically, and nonmetallic mining properties arranged alphabetically by minerals. All properties whose locations are known are indicated on the map (pl. 1) by symbols with numbers corresponding to those following the property names in the report.

ACKNOWLEDGMENTS

Most of the data presented in this report have been gathered by others, and those which have been acquired first-hand are attributable in large part to the assistance of a number of Chelan County residents. Almost without exception examination of the properties visited by the writer was facilitated by more-than-willing aid tendered by property owners and managers and by interested parties, among whom especially should be mentioned Mr. John J. Curzon, General Manager at the Holden mine, and his entire engineering staff; Messrs. Kirby Billingsley and Frank De Vos of Wenatchee; Mr. E. L. Davis of Cashmere; Messrs. A. C. Campbell and S. J. Holden of Chelan; and Messrs. Robert B. Field and George A. Hauber of Leavenworth.

For the data obtained from previously published reports acknowledgment should be made to many contributors. The bibliography comprises reports of authors most freely consulted, and in addition to them the writer wishes to thank the authors of several unpublished reports. The unpublished field notes of several Division staff members furnished much of the information on individual properties as well as being the basis for many of the geologic interpretations here presented. Division geologists whose notes were most used are Harold E. Culver, W. A. G. Bennett, W. A. Broughton, Everett Hougland, and J. W. Melrose.

BLEWETT MINING DISTRICT

GENERAL FEATURES

Location: The Blewett mining district as mapped by Weaver [1911]* was limited to nine square miles on Peshastin and Nigger creeks. This included most of the areas originally called the Nigger Creek and Peshastin mining districts, but it did not include a number of nearby mines on Ingalls Creek, Nigger Creek, and upper Peshastin Creek and some of its smaller tributaries. In order to include these mines which naturally belong with those within Weaver's Blewett district, and in conformity with the rules set forth on page 5, the district is here extended to include approximately 160 square miles in south central Chelan County. It embraces all of the area drained by Peshastin Creek and its tributaries in addition to a small area east of this drainage. The district is separated from the Leavenworth mining district on the north and northwest by Wenatchee River and by the ridges immediately west and north of Peshastin and Ingalls creeks. It is bounded on the south along the Wenatchee Mountains by Kittitas County, and on the east by the Wenatchee mining district. The district is accessible by highway U. S. 97 up Peshastin Creek to Blewett Pass, and by short roads up some of the tributary creeks. The topography is moderately rugged with narrow valleys and steep mountain slopes.

Geologic section: The rock formations of this district naturally fall into two age groups: the pre-Tertiary metamorphic and igneous rocks, and the Cenozoic sedimentary rocks, granitic intrusives, and lavas.

Of the pre-Tertiary formations, the Peshastin rocks probably are the oldest. They are prevailingly very well indurated black slates and quartzites, with grit and conglomerate bands, and lenses of light-gray limestone. G. O. Smith, who originally described the formation [1903] was undecided whether it was older or younger than the closely associated Hawkins formation. However, in his columnar section [1904] he indicated it to be younger. Later work by Weaver [1911] indicates the Peshastin to be the older. Both Smith and Weaver provisionally assigned the formation to a Carboniferous or older age, and W. S. Smith [1916] concluded it to be Ordovician. A few of the gold deposits of the district are found in these rocks, as are some also in the possibly Carboniferous [Smith, 1904] Hawkins formation. The Hawkins rocks are greenstones comprising altered basalt flows and pyroclastics. Both of the above formations were intruded in Jurassic (?) time [Smith, 1904] by an ultrabasic magma which crystallized to a peridotite now largely altered to serpentine. A prominent feature of this formation is the abundance of so-called "nickel ledges" thought by Smith [1904] to be limestone lenses of the Peshastin formation which were surrounded and altered by the peridotite magma at the time of its intrusion. The "nickel ledges" make prominent reddish-brown outcrops which at one time were extensively prospected for gold and silver with little success. In some places they are nickel-bearing and in others they contain small amounts of mercury. The serpentinized peridotite with its associated "nickel ledges" forms a narrow, curved, east-west band extending across the central part of the district, and in this rock are the most important of the Blewett gold

*In the discussions under "General features" for each mining district dates enclosed in brackets refer to the bibliography on page 57.

deposits. The Mount Stuart granodiorite batholith which underlies and is in intrusive contact with all of these pre-Tertiary rocks crops out along Ingalls Creek and along the western border of the district. It was intruded probably in the Mesozoic era and is probably closely related to if not identical with the Chelan granodiorite of this county.

Oldest of the Cenozoic formations in the district is the Swauk with its moderately- to well-consolidated sandstones, shales, and conglomerates of continental origin. This formation is gently to strongly folded, and it unconformably overlies pre-Tertiary rocks in the southern and eastern portions of the district. Its age was regarded as Eocene by F. H. Knowlton [Russell, 1900], [Smith, 1904] on the basis of admittedly insecure fossil leaf evidence. Later paleo-stratigraphic developments among the formations with which the Swauk was tentatively correlated have made the Eocene age of the whole of the Swauk formation even less sure. Cutting the Swauk and pre-Tertiary rocks are swarms of generally northeastward-trending diabase dikes from a few inches to several hundred feet wide. Smith [1904] considered them to be feeders to the Eocene Teanaway basalt which overlies Swauk south of this district. Gabbro, outcropping as a narrow belt nearly in the middle of the peridotite area, is intrusive into the pre-Tertiary rocks but it is not cut by the diabase dikes. For this reason Smith [1904] considered the gabbro younger than the Teanaway basalt and its diabasic feeder dikes, but Weaver [1911] in his later report called the gabbro older than the dikes. Pleistocene glacial drift forms areally unimportant deposits along Ingalls Creek and lower Peshastin Creek. The terrace gravels occurring along Peshastin Creek and stream gravels covering most of the valleys have furnished the district's placer gold.

Ores and ore minerals: The ores most extensively mined have been of gold, both lode and placer. Silver, as an associate of the gold, has been of some importance as an ore. Other ores are of iron, copper, nickel, mercury, and chromium. Ore minerals present are native gold, pyrite, arsenopyrite, native copper, chalcopyrite, malachite, galena, stibnite, cinnabar, magnetite, hematite, and chromite. Tin and vanadium have been reported from the district, but reliable data concerning their occurrences are lacking.

Ore deposits: The gold-silver ores are in quartz-calcite veins cutting serpentine in most places and also cutting Hawkins and Peshastin formations but never Swauk or younger rocks. Where the veins cut Hawkins formation the gangue is chiefly quartz with less calcite, but where they cut serpentine the calcite-quartz ratio is increased. Some of the veins are large and well-defined, but most are small and although well-defined are irregularly shaped. In Culver Gulch, where the richest ore bodies in the district are found, the veins strike about N. 75° W. Most of the ore is low grade, but much of the production has been from very rich small ore shoots. Near the surface in the oxidized portions of the veins the gold occurs as free-milling native metal, and at depth it occurs in quartz-calcite veins carrying pyrite, arsenopyrite, in some places chalcopyrite, and more rarely other sulphides. The mineralizing solutions responsible for these ore deposits probably were derived from the Mount Stuart granodiorite magma [Weaver, 1911].

The nickel and mercury ores occur in the "nickel ledges" generally surrounded by serpentinized peridotite. The mode of origin of these deposits

is somewhat in doubt and the minerals in which the nickel occurs are not surely known, but the ore mineral may be the fairly abundant green nickel-bearing mineral tentatively identified as garnierite. The nickel may well have been derived from the peridotite (which is nickel-bearing) adjacent to the "nickel ledges" either when the peridotite was still molten or at a later stage [Smith, 1904].

Cinnabar occurs in some places in the "nickel ledges" in small quantities as stringers and disseminations. Its origin also is obscure.

Two kinds of chromium occurrences are known in the district. The first is float chromite, which undoubtedly came from a nearby lode in the serpentine. The second type is the chrome-nickel-bearing iron ore found stratigraphically above the serpentine and below the Swauk sandstones, shales, and conglomerates. This has been considered not only as a possible ore of chromium but also as an ore of nickel and as an ore to be used directly to make a chrome-nickel-steel. Preliminary studies by Division staff members indicate this iron ore to be in the form of sedimentary beds, which have been compacted, faulted, and folded. They outcrop as discontinuous bands between the Swauk and serpentine.

Timber and water: Sufficient timber and water for mining and milling purposes are available on most of the properties, and in the past a small amount of power has been generated from some of the streams.

MINES

Alta Vista (Pole Pick No. 2) Mine (56)

Location: SW¼ sec. 2, T. 22 N., R. 17 E., on south side of Culver Gulch. **Elevation:** 3,700 feet. **Access:** Road and trail. **Property:** 1 claim, the Pole Pick No. 2. **Owner:** Alta Vista Mining Co. (1911). **Ore:** Gold. **Ore minerals:** Arsenopyrite, pyrite. **Gangue:** Quartz, calcite, talc. **Deposit:** A quartz-calcite vein heavily impregnated with arsenopyrite and pyrite, and varying from a stringer to 4 feet in width cuts peridotite in an east-west direction. **Assays:** Ranged from 0.04 to 1.6 oz. gold per ton. Main vein ranged from $8 to $200 per ton in gold. **Development:** A total of about 1,190 feet of crosscuts and drifts. **Production:** Amount not known.

Apex Mine

Location: Blewett district. **Ore:** Gold. **Production:** Small amounts in 1939 and 1940.

B Queen Mine (47)

This claim is a part of the Lucky Queen mine property.

Black and White (Diamond Dick) Mine (34)

Location: SW¼ sec. 12, T. 22 N., R. 17 E., east of Peshastin Creek, several hundred yards south of Blewett. **Access:** 50 feet above highway U. S. 97. **Property:** 14 claims. **Owner:** H. Whitely and W. White. **Ore:** Gold. **Ore minerals:** Free gold, pyrite, chalcopyrite, arsenopyrite. **Gangue:** Quartz, calcite. **Deposit:** Shear zones in serpentine have small stringers of ore-bearing quartz and calcite. **Development:** A shaft and 3 tunnels with raises and stopes, totaling at least 850 feet of workings. **Improvements:** A 40-ton mill in good condition (1942). **Production:** Small amounts in 1934 and 1939.

Black Jack (La Rica) Mine (39)

Location: SW¼ sec. 1, T. 22 N., R. 17 E., near Peshastin Creek. **Elevation:** 2,340 feet. **Property:** 1 claim, the Black Jack. **Owner:** Washington Meteor Mining Co. (1911). **Ore:** Gold, mercury. **Ore minerals:** Arsenopyrite, pyrite, free gold, native mercury. **Gangue:** Quartz. **Deposit:** A quartz vein cuts serpentine, striking N. 75° W. and dipping steeply to the south. **Assays:** Ore averaged $10 per ton in gold. **Development:** A 1,300-foot tunnel, a shorter tunnel, and several winzes and raises. **Production:** 3,000 tons of ore which averaged $10 per ton in gold were stoped out in early days. J. B. Woodworth shipped $4,000 worth of ore in 1940.

Blewett Mine (51)

This is another name for the Peshastin mine.

Blinn Mine (74)

Location: NE¼ sec. 3, T. 22 N., R. 17 E. Claims extend from head of Culver Gulch westward to and across Nigger Creek. **Access:** Road up Nigger Creek. **Property:** 5 patented claims. **Owner:** Gold Bond Mining Co. (1937). **Ore:** Gold. **Ore minerals:** Pyrite, chalcopyrite. **Gangue:** Quartz, calcite. **Deposit:** A nearly vertical 1- to 5-foot quartz-calcite vein cuts serpentine and greenstone in a N. 75° W. direction. **Development:** 1 long tunnel and 1,000 feet of shorter tunnels. **Production:** In 1880 ore was milled in a two-stamp Huntington mill.

Blue Bell (I. X. L.) Mine (35)

Location: SW¼ sec. 1, T. 22 N., R. 17 E., a quarter of a mile north of Blewett on east side of Peshastin Creek. **Access:** Road. **Ore:** Gold. **Ore minerals:** Pyrite, free gold. **Gangue:** Quartz, calcite. **Deposit:** No well-defined veins, but seams in serpentine are filled with vein and ore minerals. **Development:** 450 feet of tunnel. **Production:** Some very small pockets yielded high values.

Culver Mine (59)

Location: SW¼ sec. 2, T. 22 N., R. 17 E., in upper Culver Gulch. **Elevation:** 3,250 to 4,100 feet. **Access:** Road and trail. **Property:** 1 claim. **Owner:** Washington Meteor Mining Co. (1911). **Ore:** Gold. **Ore minerals:** Gold, arsenopyrite, pyrite. **Gangue:** Quartz, calcite, talc. **Deposit:** A quartz-calcite vein trending N. 75° W. and dipping steeply to the south cuts serpentine. It varies in width from 2 to 16 feet. Ore occurred in lenses. **Development:** 14 tunnels aggregating more than 4,500 feet of length, and numerous raises and stopes. **Production:** About $300,000 by 1902. Since then production has been listed with that for Washington Meteor Mining Co.

Diamond Dick Mine (34)

This is another name for the Black and White mine.

Eureka (Golden Cherry) Mine (36)

Location: SW¼ sec. 1, T. 22 N., R. 17 E., on east side of Peshastin Creek, 2,000 feet south of Blewett. **Elevation:** 2,400 feet. **Access:** Road. **Property:** 1 claim. **Owner:** Tip Top Mining Co. (1910). **Ore:** Gold.

Deposit: A 12- to 18-inch vein in serpentine strikes east and dips south. **Assays:** Much of the ore assays as high as $30 per ton in gold. **Development:** 970 feet of underground work. **Production:** Amount not known.

Fraction Mine (37)

Location: SW¼ sec. 1, T. 22 N., R. 17 E. **Ore:** Gold. **Production:** Amount not known.

Golden Cherry Mine (36)

This is another name for the Eureka mine.

Golden Eagle Mine (77)

Location: SE¼ sec. 2, T. 22 N., R. 17 E., on north side of Culver Gulch half a mile above its junction with Peshastin Creek. **Property:** 5 claims. **Owner:** Golden Eagle Mining Co. (1915). **Ore:** Gold. **Ore minerals:** Pyrite, free gold. **Gangue:** Quartz, calcite, talc. **Deposit:** A vein composed of quartz, calcite, and talc is impregnated with pyrite. It varies from 1 to 3 feet in thickness and strikes N. 80° E., dipping 80° NW. **Development:** An upper crosscut and drift total 175 feet, and there is a raise to the surface. A lower crosscut totals 650 feet. **Production:** $2,000 reported.

Hummingbird Mine (96)

Location: SE¼ sec. 2, T. 22 N., R. 17 E., in Culver Gulch. **Elevation:** 2,900 feet. **Access:** Road and trail. **Property:** 1 claim. **Owner:** Washington Meteor Mining Co. (1911). **Ore:** Gold. **Ore minerals:** Free gold, arsenopyrite, pyrite. **Gangue:** Quartz, calcite, talc. **Deposit:** Quartz-calcite vein cutting serpentine. **Development:** 650-foot crosscut and drift with stopes. **Production:** Amount not known.

I. X. L. Mine (35)

This is another name for the Blue Bell mine.

Ivanhoe Mine (75)

This is part of the Wilder mine. The Ivanhoe is also known as White Elephant mine.

La Rica Mine (39, 51)

Consists of Peshastin, Keynote, and Black Jack claims.

Lucky Queen Mine (47)

Location: SW¼ sec. 1, T. 22 N., R. 17 E., a short distance north of Blewett on east side of Peshastin Creek. **Access:** On highway U. S. 97. **Property:** 2 claims. **Owner:** A. Naubaur, Blewett, Wash. (1938). **Ore:** Gold. **Ore minerals:** Free gold. **Gangue:** Talc, calcite, quartz. **Deposit:** A vertical shear zone, striking east in serpentine, varies in width from a mere stringer to 3 feet. No well-defined vein. **Development:** A 545-foot tunnel and a second tunnel 412 feet long, 40 feet above the first. **Production:** About $1,000 by 1901.

Manistee Mine (62)

Location: SW¼ sec. 2, T. 22 N., R. 17 E., in Culver Gulch. **Property:** 1 claim. **Ore:** Gold, silver. **Assays:** $16 per ton. **Development:** 140 feet of drift. **Production:** 80 tons of ore in 1890.

Marion Mine

Location: Blewett district. **Property:** 1 claim. **Owner:** Charles Donahue (1897). **Ore:** Gold, silver. **Deposit:** 3 veins, one of which is 8 feet wide. **Assays:** $6 to $9 per ton in gold and silver. **Development:** 375 feet of drifts and crosscuts. **Production:** Amount not known.

North Star Mine (53)

Location: SE¼ sec. 2, T. 22 N., R. 17 E., on the south side and near the upper end of Culver Gulch. **Owner:** Golden Eagle Mining Co. (1915). **Ore:** Gold. **Ore minerals:** Pyrite, arsenopyrite. **Gangue:** Quartz, calcite, talc. **Deposit:** A 1- to 8-foot fissure vein cutting serpentine and striking N. 70° W., standing vertical. **Assays:** Assays taken at various intervals across the vein range from $1 to $15 per ton. Average of 1,000 tons shipped was $20 per ton. **Development:** A main tunnel 125 feet long with stopes and raises, and 2 other tunnels totaling 320 feet of length. **Production:** 1,000 tons of ore before 1907.

Olden Mine (54)

Location: SE¼ sec. 2, T. 22 N., R. 17 E., west of the Black Jack mine and west of the Peshastin mine. **Owner:** John Olden (1902). **Ore:** Gold. **Deposit:** 2 veins varying in width from 1 to 6 feet, striking east and dipping north. **Development:** 350 feet of underground work. **Production:** About $12,500 by 1902.

Peshastin (Blewett) Mine (51)

Location: SE¼ sec. 2, T. 22 N., R. 17 E., in lower Culver Gulch. **Elevation:** 2,400 feet, 2,480 feet, and 2,520 feet. **Property:** 1 claim. **Owner:** Amalgamated Gold Mines Co. (1925). In 1942 the property was known as the Blewett mine and was under control of J. B. Woodworth, 3857 Point Gray Road, Vancouver, B. C., Canada. **Ore:** Gold. **Ore minerals:** Free gold, arsenopyrite, chalcopyrite, pyrite, galena. **Gangue:** Quartz, calcite. **Deposit:** Lenticular vein filling shear zone in serpentine, striking N. 65°-75° W. and dipping 60°-75° SW. **Assays:** 4,000 tons of ore averaged $15 per ton in gold. **Development:** 3 tunnels, the Meteor tunnel with 700 feet of drifts, the Peshastin tunnel 80 feet higher with 1,300 feet of crosscut and drifts, and the Draw tunnel 120 feet above the Meteor, with 480 feet of openings on the vein. A large number of stopes in these tunnels. **Production:** About $60,000 by 1902.

Phipps Mine (76)

Location: SW¼ sec. 2, T. 22 N., R. 17 E., on the Nigger Creek drainage just over the ridge from head of Culver Gulch. **Access:** Tractor road up Culver Gulch. **Owner:** Gold Bond Mining Co. (1938). **Ore:** Gold. **Ore minerals:** Free gold, chalcopyrite, arsenopyrite, pyrite. **Gangue:** Quartz. **Deposit:** Quartz vein varying from a thin seam to 5-foot width cuts serpentine. **Development:** Several hundred feet of crosscuts, drifts, and stopes. **Production:** Amount not known.

Phoenix Mine (94)

Location: Sec. 2, T. 22 N., R. 17 E., in Culver Gulch. **Ore:** Gold. **Gangue:** Quartz. **Assays:** Average of $20 in gold on a large tonnage. **Development:** 3 drifts with stopes. **Production:** 1,000 tons of ore before 1897.

Pole Pick No. 1 Mine (57)

Location: SW¼ sec. 2, T. 22 N., R. 17 E., on south side of Culver Gulch about half a mile west of Blewett. **Access:** Tractor road. **Property:** 1 patented claim. **Owner:** Charles Fackler has lease from Gold Bond Mining Co., H. H. Phipps, Sec., 301 Title Bldg., Spokane, Wash. (1942). **Ore:** Gold. **Ore minerals:** Free gold. **Gangue:** Quartz. **Deposit:** Main vein 1 to 4 feet wide strikes N. 80° W. and dips 80° NE, in serpentine. There are also 2 subsidiary veins. **Development:** 2 crosscuts with raises, drifts, and stopes total several hundred feet of length. **Assays:** Ore extracted before 1910 is said to have averaged from $10 to $132 per ton in free gold. **Production:** Estimated production by 1901 was 8,000 tons of ore valued at $70,000. Mine is shipping gold ore assaying $50 to $100 per ton to Tacoma (1942).

Pole Pick No. 2 Mine (56)

This is another name for the Alta Vista mine.

Prospect Mine (58)

Location: SW¼ sec. 2, T. 22 N., R. 17 E., on north slope of the ridge leading down to Culver Springs Gulch. **Property:** 5 claims. **Owner:** Prospect Mining and Milling Co. (1911). **Ore:** Gold, silver. **Gangue:** Quartz, calcite, talc. **Deposit:** Oxidized vein in serpentine. **Development:** Small openings on all of the claims. **Production:** Ore was treated in an arrastre in early days.

Sandell Mine (52)

Location: SE¼ sec. 2, T. 22 N., R. 17 E., in Culver Gulch. **Elevation:** 2,660 feet. **Property:** 1 claim. **Owner:** Washington Meteor Mining Co. (1911). **Ore:** Gold. **Ore minerals:** Free gold, arsenopyrite, pyrite. **Gangue:** Quartz, calcite, talc. **Deposit:** Quartz-calcite vein cutting serpentine. **Development:** 300 feet of crosscut and a large amount of drifting on the vein. **Production:** Amount not known.

Tip Top Mine (50)

Location: SE¼ sec. 1, T. 22 N., R. 17 E., east of the Eureka mine. **Property:** 1 claim. **Owner:** Tip Top Mining Co. (1911). **Ore:** Gold. **Ore minerals:** Free gold. **Gangue:** Quartz. **Deposit:** A quartz vein averaging 2½ feet in width strikes east and dips north. Wall rock is serpentine and Hawkins breccia. **Assays:** Oxidized ore near surface averaged $40 per ton. Deeper ore averaged $25 per ton. **Production:** About $10,000 by 1901. Small amount in 1940.

Union and Dominion Mine (65)

Location: Sec. 9, T. 22 N., R. 17 E., three-fourths of a mile up Bear Creek, a tributary to Nigger Creek. **Property:** 2 claims. **Ore:** Gold, silver.

Assays: A shipment averaged $11.30 per ton in gold and silver. Development: 100-foot tunnel. Production: 8 tons before 1897.

Warrior General Mine

Ore: Gold. Production: Amount not known.

Washington Meteor Mine (39, 51, 52, 59, 60, 96)

See Culver, Sandell, Hummingbird, Peshastin, and Black Jack mines, and Bobtail prospect, all of which are claims held by this company.

White Elephant Mine (75)

Also known as Ivanhoe mine. This is part of Wilder mine.

Wilder Mine (75)

Location: SW¼ sec. 2, T. 22 N., R. 17 E., on north side of Culver Gulch and south side of Nigger Creek. Property: 3 claims, including property formerly known as White Elephant or Ivanhoe. Owner: Gold Bond Mining Co. (1937). Ore: Gold, silver. Deposit: A 2- to 6-foot vein strikes east and stands nearly vertical. Assays: Range from trace to $72 in gold, with a very little copper and silver. Average value is $4.50 per ton. Development: Several crosscuts and drifts total about 500 feet of length. Production: About 150 tons of ore.

Wright Mine

Ore: Gold. Production: Unknown amount in 1934.

PROSPECTS

Amigo Prospect (64)

Location: Sec. 9, T. 22 N., R. 17 E., across Bear Creek from the Union and Dominion mine. Property: 1 claim. Ore: Gold, silver. Ore minerals: Sulphides. Deposit: 5-foot ledge trending northeast. Assays: $2.75 to $5.40 per ton in gold and silver.

Apple Queen Prospect (43)

Location: Sec. 1, T. 22 N., R. 17 E. Ore: Gold.

April Fool Prospect (41)

Location: Sec. 1, T. 22 N., R. 17 E. Ore: Gold, silver.

Bartlett Prospect (83)

Location: S½ sec. 29, T. 23 N., R. 17 E., on north side of Ingalls Creek. Access: 4½ miles of trail up Ingalls Creek from highway U. S. 97. Property: 4 claims. Owner: Harley Bartlett, Wenatchee, Wash. (1942). Ore: Mercury. Ore minerals: Cinnabar. Gangue: Quartz, carbonates. Deposit: "Nickel ledge." Development: 2 short tunnels. Improvements: A cabin.

Bobtail Prospect (60)

Location: SW¼ sec. 2, T. 22 N., R. 17 E., in Culver Gulch. Elevation: 3,100 feet. Access: Road and trail. Property: 1 claim. Owner: Washington Meteor Mining Co. (1911). Ore: Gold. Gangue: Quartz. Deposit: Lenticular quartz vein in serpentine. Development: 2 short tunnels.

Budge Prospect (31)

Location: SW¼ sec. 13, T. 22 N., R. 17 E., on south bank of Shaser Creek near its mouth. **Access:** Road. **Property:** 4 claims. **Owner:** Murray Budge and C. C. Golding, Leavenworth, Wash. (1942). **Ore:** Gold, silver. **Assays:** $3.50 to $12 gold and silver. **Development:** Over 200 feet of tunnel.

Byron Prospect (78)

Location: Sec. 2, T. 22 N., R. 17 E. **Ore:** Gold. **Owner:** Blewett Pass Mining Co. (1934).

Caledonia Prospect (46)

Location: Sec. 1, T. 22 N., R. 17 E. **Property:** 4 claims. **Ore:** Gold, silver, copper. **Ore minerals:** Pyrite, free gold, tetrahedrite. **Gangue:** Quartz. **Deposit:** 3 parallel veins. **Assays:** Some assays ran over $100 per ton. **Development:** 2 shafts and 2 tunnels total 185 feet of workings.

Chromite Prospect (67)

Location: SW¼ sec. 12, T. 22 N., R. 16 E., just east of the divide between Nigger and Stafford creeks. **Elevation:** About 5,800 feet. **Access:** About 4 miles of trail from end of Nigger Creek road. **Property:** No claim or lease on this property. **Ore:** Chromium. **Ore minerals:** Chromite. **Note:** No ore has been found in place but several pieces of nearly pure chromite float weighing about 3 pounds each were found in 1942.

Daisy Dean Prospect (79)

Location: NE¼ sec. 3, T. 22 N., R. 17 E., on Nigger Creek upstream from Eagle and Iowa prospect. **Access:** Road. **Property:** 1 claim. **Ore:** gold, silver, lead. **Deposit:** 2 veins cut serpentine and diorite. **Assays:** $32.30 in gold, $8 in silver, and 60% lead. **Development:** 2 short tunnels.

Davenport Prospect (66)

Location: Secs. 7 and 8, T. 22 N., R. 17 E., on north side of Nigger Creek. **Elevation:** 4,000 feet. **Access:** 4 miles of road and 2 miles of trail up Nigger Creek from its mouth. **Property:** 4 claims. **Owner:** H. R. Davenport, C. P. Davenport, R. D. Ogden, and G. Frew (1942). **Ore:** Iron. **Ore minerals:** Hematite, magnetite. **Gangue:** Shale. **Deposit:** Sedimentary beds, high in iron and carrying appreciable quantities of nickel and chromium, lying stratigraphically between the Eocene Swauk sandstone and conglomerate and the pre-Eocene serpentinized peridotite. **Development:** A short crosscut and several open cuts.

Donaldson Prospect (42)

Location: Sec. 1, T. 22 N., R. 17 E. **Ore:** Gold, silver.

Eagle and Iowa Prospect (80)

Location: NE¼ sec. 3, T. 22 N., R. 17 E., on north side of Nigger Creek. **Access:** Road. **Property:** 2 claims. **Owner:** Henry Blinn. Leavenworth, Wash. (1897). **Ore:** Gold, copper. **Ore minerals:** Pyrite, chalcopyrite. **Gangue:** Quartz. **Deposit:** Quartz vein 3½ feet wide. **Assays:** $7 per ton in gold. **Development:** A shaft.

Gem Prospect (55)

Location: Sec. 11, T. 22 N., R. 17 E. Ore: Gold, silver.

Golden Guinea Prospect (85)

Location: NE¼ sec. 3, T. 22 N., R. 17 E., on the north and south banks of Nigger Creek about 2 miles above its mouth. Access: Road up Nigger Creek. Property: 8 claims. Owner: R. F. Brown and F. W. Losecamp, Leavenworth, Wash. (1911). Ore: Gold. Gangue: Quartz. Deposit: The "vein" trends N. 70° W. through Hawkins formation. It is a belt 10 to 50 feet wide of iron-stained country rock containing discontinuous stringers of rusty, broken quartz in a zone about 2 feet wide. Assays: Several assays ran less than $1 per ton in gold, but much higher returns are claimed to have been obtained. Development: 2 tunnels totaling 283 feet, a 43-foot shaft, and numerous other short tunnels and open cuts.

Gordon Prospect (63)

Location: Sec. 9, T. 22 N., R. 17 E., on Bear Creek. Ore: Nickel, gold, silver. Development: 55-foot tunnel.

Grand View Prospect

Location: On east side of Fourth Creek about 3 miles southeast of Mount Stuart. Ore: Copper, gold. Ore minerals: Native copper, cuprite. Deposit: Irregular ore body in zone of sheared serpentine.

Hazel Prospect (44)

Location: Sec. 1, T. 22 N., R. 17 E. Ore: Gold. Owner: Blewett Pass Mining Co. (1934).

Homestake Prospect (38)

Location: Sec. 1, T. 22 N., R. 17 E., on west side of Peshastin Creek near mouth of Culver Springs Gulch. Property: 1 claim. Owner: John Olden of Blewett (1911). Ore: Gold. Gangue: Quartz. Deposit: Serpentine is cut by a quartz vein trending N. 75° W. and nearly vertical. Assays: General sample of vein from mouth to face of tunnel assayed 0.04 oz. gold and 0.2 oz. silver per ton. Development: 165 feet of tunnel.

Iron King Prospect (33)

This is an old name for some of the property now held by Washington Nickel Mining and Alloys, Inc.

Johnson Prospect (48)

Location: SE¼ sec. 1, T. 22 N., R. 17 E., three-fourths of a mile north of Blewett, and extending from Peshastin Creek eastward. Property: 3 claims. Ore: Gold. Gangue: Talc. Deposit: Much-broken, indistinct veins cut through serpentine, diabase, and Peshastin formation near their contact with Swauk formation. Assays: One sample assayed 0.02 oz. gold and no silver per ton. Development: 4 drifts and tunnels comprise 490 feet of workings.

Last Chance Prospect

Location: On Nigger Creek. Property: 4 quartz claims and 1 placer claim. Owner: Alpine Mining and Milling Co. (1924). Ore: Gold. Ore

minerals: Free gold. **Deposit:** Well-defined quartz vein 20 to 42 inches wide. **Assays:** $3.60 to $72.80 per ton. **Development:** 162-foot crosscut.

Lone Rock Prospect (49)

Location: SW¼ sec. 1, T. 22 N., R. 17 E., on east side of Peshastin Creek just back of Blewett. **Property:** 1 claim. **Owner:** John Olden, Blewett, Wash. (1911). **Ore:** Gold. **Deposit:** Narrow belt of iron-stained serpentine with stringers of calcite. **Assays:** General sample assayed 0.02 oz. gold and 0.2 oz. silver per ton. **Development:** 88-foot tunnel.

McCarthy Prospect (33)

This is an old name for some of the property now held by Washington Nickel Mining and Alloys, Inc.

Magnetite No. 1 Prospect (33)

This is an old name for some of the property now held by Washington Nickel Mining and Alloys, Inc.

Meridian Prospect (68)

Location: Sec. 4, T. 22 N., R. 17 E., on south side of Nigger Creek. **Ore:** Gold, silver, copper, nickel. **Gangue:** Quartz. **Deposit:** Quartz vein cutting serpentine. **Assays:** $10.50 in gold, $5 in silver, $2.50 in copper, 2% nickel.

Monarch Prospect (88)

Location: Sec. 36, T. 23 N., R. 17 E., on west side of Peshastin Creek. **Property:** 2 claims. **Ore:** Gold, nickel, cobalt. **Deposit:** "Nickel ledge." **Assays:** $4 to $5 in gold, 2½% nickel, 1½ to 2½% cobalt. **Development:** A 90-foot tunnel.

New York Prospect (84)

Location: Center sec. 35, T. 23 N., R. 17 E., on divide between Nigger and Ingalls creeks. **Property:** 13 claims. **Ore:** Gold, silver, copper. **Assays:** One sample assayed $4.60 in gold, 3½% copper, and a trace of silver; another sample gave $4 in gold, $30 in silver, and some nickel. **Development:** Open pits and short tunnels.

North Pole Prospect (73)

Location: Sec. 4, T. 22 N., R. 17 E., on Nigger Creek. **Property:** 10 claims. **Ore:** Gold, silver, copper, nickel, mercury. **Development:** A number of short tunnels.

Olympia Prospect (81)

Location: NW¼ sec. 2, T. 22 N., R. 17 E., about 600 feet below and due west of U. S. Mineral Monument at head of Culver Gulch. **Property:** 1 claim (part of Blinn property). **Ore:** Gold. **Ore minerals:** Pyrite, arsenopyrite, chalcopyrite. **Gangue:** Quartz. **Deposit:** Small quartz lenses in shear zone in serpentine. **Development:** 910 feet of crosscut and drifts.

Ontario Prospect (70)

Location: Sec. 4, T. 22 N., R. 17 E., north of Nigger Creek. **Ore:** Gold, nickel, copper. **Ore minerals:** Sulphides. **Deposit:** A wide mineralized

zone in serpentine. **Assays:** $7 to $8 in gold, 3% nickel, 3½% copper. **Development:** 2 short tunnels and a shaft.

P. P. Nickel Prospect (71)

Location: Sec. 4, T. 22 N., R. 17 E., on Nigger Creek. **Ore:** Gold, nickel. **Assays:** $4.50 in gold, and a good percentage of nickel. **Development:** A shaft.

Pickwick Prospect

Location: Blewett district. **Ore:** Gold, silver.

Rainbow No. 2 and No. 3 Prospect (97)

Location: Sec. 2, T. 22 N., R. 17 E. **Owner:** Blewett Pass Mining Co. (1934). **Ore:** Gold.

Rainier Prospect (72)

Location: Secs. 3 and 4, T. 22 N., R. 17 E., on Nigger Creek. **Access:** Road. **Property:** 13 claims. **Owner:** Negro Creek Nickel and Copper Mining Co. (1897). **Ore:** Gold, silver, copper, nickel. **Deposit:** Quartz veins and "nickel ledges". **Assays:** $5.20 to $8.20 in gold, and 2½ to 3½% nickel. **Development:** Several tunnels.

Red Butte Prospect (92)

Location: Sec. 36, T. 23 N., R. 17 E., on east side of Peshastin Creek. **Property:** 3 claims. **Ore:** Gold, nickel, cobalt. **Deposit:** "Nickel ledge." **Development:** A tunnel.

Rothert Prospect (33)

This is an old name for one of the claims now held by Washington Nickel Mining and Alloys, Inc.

Roy and Ray Prospect (95)

Location: Sec. 2, T. 22 N., R. 17 E. **Owner:** Blewett Pass Mining Co. (1934). **Ore:** Gold.

Shoshone Prospect (69)

Location: Sec. 4, T. 22 N., R. 17 E., on north side of Nigger Creek at end of road. **Elevation:** 3,500 feet. **Access:** 4 miles of road up Nigger Creek from its mouth. **Owner:** G. J. Niemeyer and Z. T. Parker, 409 S. Fiske St., Spokane, Wash.; and Roy Fontaine, Rt. 1, Spokane, Wash. (1942). **Ore:** Mercury, nickel. **Ore minerals:** Cinnabar, garnierite (?). **Gangue:** Quartz, carbonates. **Deposit:** "Nickel ledge." **Development:** 135 feet of tunnel and a small open cut.

Snowflake Prospect

Location: Blewett district. **Ore:** gold.

State Prospect

Location: 5 miles above the mouth of Ingalls Creek. **Property:** 6 claims. **Owner:** John and William Lynch.

Stoner Prospect (61)

Location: SW¼ sec. 2, T. 22 N., R. 17 E., near head of Culver Gulch. **Access:** Tractor road. **Owner:** Gold Bond Mining Co. (1936). **Development:** The Stoner tunnel was driven to be used to remove ore from the Phipps tunnel across the ridge to the west.

Sunset Prospect (40)

Location: Sec. 6, T. 22 N., R. 18 E. **Property:** 1 claim. **Ore:** Gold, copper. **Ore minerals:** Sulphides. **Deposit:** 6-foot mineralized zone. **Development:** 2 tunnels, 60 feet and 30 feet long.

Velma Prospect (82)

Location: N½ sec. 32, T. 23 N., R. 17 E., on south side of Ingalls Creek. **Access:** 4½ miles of trail up Ingalls Creek from highway U. S. 97. **Property:** 5 claims. **Owner:** L. G. Olds, Wenatchee, Wash. (1942). **Ore:** Mercury, nickel. **Ore minerals:** Cinnabar, garnierite (?) **Gangue:** Quartz, carbonates. **Deposit:** "Nickel ledge." Cinnabar pay streak is 1½ to 3 feet wide. **Assays:** As high as 0.5% mercury, and a selected sample ran 20% nickel. **Development:** Several open cuts. **Improvements:** A good cabin.

Venus Prospect (45)

Location: Sec. 1, T. 22 N., R. 17 E. **Ore:** Gold, silver.

War Eagle Prospect (86)

Location: NE¼ sec. 3, T. 22 N., R. 17 E., on both sides of Nigger Creek about a mile from its mouth. **Access:** Road. **Property:** 4 claims. **Ore:** Gold, nickel. **Gangue:** Quartz. **Deposit:** Quartz veins trending slightly east of north cut granite, slate, and serpentine. **Assays:** $4.60 to $60 in gold, with some nickel. **Development:** Several shafts and tunnels.

Washington Nickel Mining and Alloys Iron Prospect (33)

Location: Secs. 13 and 14, T. 22 N., R. 17 E., on a prominent ridge north of Shaser Creek at its junction with Peshastin Creek. **Elevation:** 2,900 feet to 4,080 feet. **Access:** East end of property is on highway U. S. 97. A short private road makes the west end accessible. **Property:** 11 claims. **Owner:** Washington Nickel Mining and Alloys, Inc., 909 American Bank Bldg., Seattle, Wash. Local representative is E. L. Davis, Cashmere, Wash. Leased to American Mineral Resources Co., 1003 Lafayette Bldg., Detroit, Mich. (1942) **Ore:** Iron, nickel, chromium. **Ore minerals:** Hematite, magnetite. **Gangue:** Shale. **Deposit:** Sedimentary beds, high in iron and carrying appreciable quantities of nickel and chromium, lying stratigraphically between the Eocene Swauk sandstone and conglomerate and the pre-Eocene serpentinized peridotite. **Assays:** The following is an average of several analyses printed in the prospectus distributed by the company: Iron 34.3%, manganese 0.34%, chromium 1.89%, nickel 1.17%. **Development:** Several caved adits, and numerous open pits. Deposit was mapped topographically and geologically, and a magnetic survey was made by the Division of Geology in 1942 and 1943. The U. S. Bureau of Mines has sampled the ore, and the Bailey Furnace Co. has made metallurgical tests.

Washington Nickel Mining and Alloys Nickel Prospect (91)

Location: Sec. 24, T. 23 N., R. 17 E., and sec. 19, T. 23 N., R. 18 E. **Access:** Highway U. S. 97 cuts the claims. **Property:** 9 claims. **Owner:** Washington Nickel Mining and Alloys, Inc. (1942). **Ore:** Nickel. **Ore minerals:** Garnierite (?) **Assays:** 3 assays gave 0.12% nickel, 0.79% nickel, and 2.02% nickel. **Development:** 65-foot crosscut and numerous open cuts and trenches.

CHELAN BUTTE MINING DISTRICT

GENERAL FEATURES

Location: The area comprising the Chelan Butte mining district of this report has at different times and by different authors been included within the vaguely defined and overlapping Lake Chelan and Lakeside districts. To avoid confusion the latter two names have been discarded in favor of the name of the district's most prominent topographic feature, Chelan Butte, on which are situated most of the district's prospects. As here set forth, the district includes 115 square miles in east central Chelan County. It is bounded on the south and east by Columbia River, on the north by Okanogan County, and on the west by Entiat mining district. The northern portion of the district is separated from the remainder by the southeastern end of Lake Chelan. The topography of the district is moderately rugged, but many slopes are quite gentle. Roads and trails make most of the district easily accessible.

Geologic section: Beneath the cover of glacial and alluvial material only the granodiorite and associated dikes of the Chelan batholith have been recorded throughout the district.

Ores and ore minerals: The only two reported mines have gold as their ore. Tin has been reported on Chelan Butte, but details of both the gold and tin deposits are lacking. **Ore deposits:** The paucity of metallic mineral deposits in this district in which very little but Chelan granodiorite is exposed suggests either that the intrusion of the granodiorite magma was not accompanied by ore mineralization or that erosion has advanced so far as to remove in this area the upper and outer portions of the batholith in which mineral deposits might be expected. Roof pendants along both sides of Lake Chelan indicate that here at least the batholith has not been deeply eroded and since no metallic mineral deposits have been reported there it seems likely that mineralization did not accompany the magma's intrusion in this district. If this is true, further search for ore deposits here should be guided by evidences of igneous activity later than that of the Chelan batholith.

Timber and water: Both timber and water for mining and milling purposes are scarce. The district's only permanent stream is Columbia River, which flows along its eastern and southern borders.

MINES

Butte Mine (120)

Location: Secs. 25 and 26, T. 27 N., R. 22 E. Owner: Chelan Butte Gold Mining Co. (1915). Ore: Gold. Production: Amount not known.

Cook Mine (121)

Location: Sec. 25, T. 27 N., R. 22 E. Ore: Gold. Production: Bullion was shipped in 1909 and 1919.

PROSPECTS

Jumbo Prospect

Location: On Chelan Butte. Owner: S. Fourtner. Ore: Gold.

Kingman and Pershall Prospect

Location: On Chelan Butte. Ore: Gold. Ore minerals: Free gold. Deposit: 4-foot vein.

CHIWAWA MINING DISTRICT

GENERAL FEATURES

Location: The Chiwawa mining district, including about 450 square miles, lies in the west central part of Chelan County. It includes the drainage of Little Wenatchee, White, and Chiwawa rivers. That portion which embraces the upper Chiwawa River drainage was once designated the Leavenworth mining district [1897]. The present enlarged and renamed district is bounded on the west by Snohomish County, on the east by the Entiat district, and on the north by the Railroad Creek district. The Cascade Range marks the west boundary, and the Entiat Mountains the east and north boundaries. The whole district lies in the 'Wenatchee National Forest. State, county, and Forest Service roads extend up the main river valleys, and areas of sharp high ridges and steep stream gradients are made accessible by a network of Forest Service trails.

Geologic section: As shown on the preliminary geologic map of the state [1936] the oldest rocks in the district are Carboniferous and other Paleozoic sedimentaries regionally metamorphosed to marbles, quartzites, and argillites. They outcrop in a narrow strip along the Entiat Mountains on the southeastern border of the district and in narrow anastomosing fingers along Little Wenatchee and White rivers. In most of the northern and much of the southern part of the district is exposed the Mesozoic [Waters, 1932] intrusive granodiorite of the Chelan batholith. In the southeastern corner of the district are the sandstones, shales, and conglomerates of the Swauk formation, this being the most northerly occurrence of those rocks in the state. Mapped with the Mesozoic intrusives on the state map [1936] are an older gneiss and a younger diorite as well as the Chelan granodiorite. At least part of the gneiss probably is part or a correlative of the pre-Ordovician Swakane gneiss of Waters [1932]. Division of Geology field studies indicate the younger diorite to be part of a group of similar rocks which outcrop extensively in the northern Cascades.

Ores and ore minerals: The ore minerals pyrrhotite, chalcopyrite, native copper, arsenopyrite, and sphalerite yield copper, gold, silver, and zinc. Of these, copper has had the largest production, closely followed by gold.

Ore deposits: Little is known about ore deposits in the district as a whole, but at the Royal Development mine the ore minerals occur with chlorite, quartz, and calcite as matrix in a wide breccia zone at the contact of granodiorite and an older gneiss. Pyrrhotite and chalcopyrite, the most abundant ore minerals, are found as disseminations and in sheets and veinlets. The zone of sulphide mineralization is not sharply defined; ore bodies therefore have assay walls. Accompanying the sulphides in the breccia matrix are astonishingly large quantities of chlorite. Probably the mineralizing solutions ascending over a long period deposited first pyrrhotite, and then chalcopyrite, quartz, arsenopyrite, chlorite, calcite, and marcasite in that order, with considerable overlapping deposition of all the minerals [Richarz, 1933].

Timber and water: An adequate supply of timber and water for mining and milling purposes is to be had on or in the near vicinity of most of the

properties. Considerable electric power for small operations could be generated from several of the streams.

MINES

Red Mountain Mine (131)

This is another name for the Royal Development mine.

Royal Development (Red Mountain) Mine (131)

Location: Secs. 15 and 22, T. 30 N., R. 16 E., at the south end of Phelps Ridge near the head of Chiwawa River. **Elevation:** Trinity tunnel at 2,950 feet, St. Francis tunnel at 3,800 feet. **Access:** Good road. **Property:** 114 claims, 22 of which are patented. **Owner:** Royal Development Co., F. M. Cameron, Sec.-Treas., Hornell, New York (1942). **Ore:** Copper, silver, gold. **Ore minerals:** Chalcopyrite, sphalerite, pyrrhotite, pyrite, arsenopyrite, and galena. **Note:** The discovery of scheelite (1943) by the Division in laboratory specimens indicates the need for a thorough examination of the mine for possible commercial bodies of tungsten. **Gangue:** Chlorite, quartz, calcite. **Deposit:** Ore occurs as part of matrix around fragments in a breccia zone several hundred feet wide at the contact between granodiorite and gneiss. Ore zone in St. Francis tunnel is 250 feet by 600 feet. **Assays:** Trace to 1.93% copper, 0.61 to 5.38 oz. silver, and a little gold per ton. **Development:** The 2-mile Trinity transportation tunnel cuts the ore body 850 feet lower than the St. Francis tunnel, which consists of 650 feet of crosscut and 350 feet of drift. **Improvements:** Large and completely equipped camp, 250- to 500-ton mill, water power development, sawmill, townsite, and 20,000,000 feet of timber available. **Production:** Mill was constructed and operated for a short time in 1930. Mine was reopened and ore was milled during the last quarter of 1935. More than 10,000 tons of copper ore in 1936 and 5,825 tons in 1937 were milled before the mine was closed March 1, 1937.

PROSPECTS

Big Elephant Prospect

Location: On Fall Creek, a tributary to Chiwawa River. **Property:** 6 claims. **Owner:** A. W. Purdy (1897). **Ore:** Gold, silver, copper. **Assays:** $3 to $9 gold, $4.75 silver per ton. **Development:** Open cut.

Bryan Prospect (133)

Location: Sec. 9, T. 30 N., R. 16 E., on Phelps Ridge. **Property:** 20 claims. Probably part of the property now held by the Royal Development Company. **Owner:** Una Mining and Milling Co. (1897). **Ore:** Gold, copper, silver. **Ore minerals:** Chalcopyrite, native copper.

Champion Prospect (130)

Location: Sec. 10, T. 29 N., R. 16 E., near mouth of Maple Creek. **Property:** 5 claims. **Owner:** Charles Allen (1897). **Ore:** Gold. **Ore minerals:** Pyrite. **Assays:** $4 to $7 per ton in gold. **Development:** 2 tunnels, each 300 feet long.

Chelan Consolidated Copper Prospect

Location: On Red Mountain, Chiwawa district. **Property:** 130 claims.

Probably part of the property now held by the Royal Development Company.

Drummer Boy Prospect (129)

Location: Sec. 9, T. 29 N., R. 16 E., on Maple Creek. Property: 2 claims. Owner: Philip Hatch (1897). Ore: Gold, silver. Assays: $5.80 per ton in gold and silver.

Emerald Prospect (131)

Now a part of the Royal Development property.

Esmeralda Prospect (131)

Now a part of the Royal Development property.

Georgie Smith Prospect (109)

Location: Sec. 17, T. 27 N., R. 18 E., at head of Deep Creek. Access: Road and trail. Property: 9 claims. Owner: Monterey Gold Mining and Milling Co. (1897). Ore: Gold. Development: 35-foot crosscut.

Hawk's Nest Prospect (110)

Location: Sec. 17, T. 27 N., R. 18 E., at head of Deep Creek. Access: Road and trail. Property: 2 claims. Ore: Gold.

Mother Lode Prospect (112)

Location: Sec. 17, T. 27 N., R. 18 E., at head of Deep Creek. Access: Road and trail. Property: 4 claims. Ore: Gold. Development: 16-foot tunnel.

P. I. Prospect (128)

Location: Sec. 36, T. 29 N., R. 16 E., on Rock Creek half a mile from its mouth. Property: 2 claims. Owner: Frank Schuenemann, Pasco, Wash. (1897). Ore: Gold, silver. Development: 60-foot tunnel.

Palmer Prospect (111)

Location: Sec. 17, T. 27 N., R. 18 E., at head of Deep Creek. Access: Road and trail. Property: 5 claims. Owner: Cable Mining Co., Seattle, Wash. (1897). Ore: Gold. Assays: $186 per ton in gold. Development: Open cuts and short tunnel.

Red Cap Prospect (134)

Location: Sec. 9, T. 30 N., R. 16 E., on Phelps Ridge. Property: 20 claims. Probably part of the property now held by the Royal Development Company. Owner: Una Mining and Milling Co. (1897). Ore: Gold, silver, copper. Ore minerals: Chalcopyrite, pyrite, arsenopyrite. Assays: $3.50 to $72 gold per ton. Development: 52-foot crosscut.

Red Hill Prospect (132)

Location: Sec. 15, T. 30 N., R. 16 E., on Phelps Ridge. Property: 10 claims. Probably part of the property now held by the Royal Development Company. Owner: Red Hill Mining Co. (1897). Ore: Gold, silver, copper. Ore minerals: Copper and iron sulphides, arsenopyrite. Assays: $2.50 to $29 in gold and silver per ton. Development: 2 short tunnels.

ENTIAT MINING DISTRICT

GENERAL FEATURES

Location: The Entiat mining district, the largest in the county in point of area, includes 790 square miles in the east central part of Chelan County. It is bounded on the west and south by the Entiat Mountains and the Chiwawa, Leavenworth, and Wenatchee districts, which lie on the other side of the mountains; on the east by Columbia River and Chelan Butte district; on the northeast by Sawtooth Ridge separating Chelan and Okanogan counties; and on the north by Meadow Creek and Railroad Creek districts, separated from this district by the Chelan Mountains and some lesser ridges. The district includes all the area drained by Entiat River and its tributaries. The central part of Lake Chelan lies within the district. Topography in the northern part is rugged but southward it becomes somewhat less rough. The district is accessible by a good county road and its laterals in the Entiat valley and by Highway U. S. 97 and a branch line of the Great Northern Railway which follow Columbia River along the southeastern border of the district.

Geologic section: The geology of the southern end of the district has been mapped in detail by Waters [1932], and the geology as here set forth for the whole district is based to a considerable degree on that work.

The oldest rocks in the district are grouped as Swakane gneiss, thought by Waters to be pre-Ordovician. A well-foliated biotite gneiss predominates, but included also are mica schist, marble, amphibolite, lime silicate rocks, and gneissoid rocks of intrusive origin. It is in these rocks and in the Chelan granodiorite which intrudes them that the gold deposits are found. Innumerable pegmatite and lamprophyre dikes of pre-Chelan granodiorite age cut the gneiss. In general, the Swakane gneiss occupies a wide northwestward-trending belt in the southwestern portion of the district, while the intrusive rock covers most of the remainder. However, in several very small areas along both sides of Lake Chelan there are metamorphosed Paleozoic sedimentary rocks. Other rocks of small areal extent and of little economic importance are remnants of Columbia River basalt, lake sediments intercalated with the basalt, and late Tertiary lavas. In the lower regions are glacial drift and alluvium, and in the latter small gold and platinum placer operations have been attempted.

Ores and ore minerals: Little mining activity has been reported from this district; likewise, little information concerning its mineral deposits is available. The only properties which have produced have been those with values in gold and silver, with free gold as the chief ore mineral.

Mercury in the form of cinnabar has been reported, as has also the titanium mineral ilmenite. Nickel prospects have nickeliferous pyrrhotite for their ore mineral, and at one property there possibly is enough of the sulphate morenosite present to be an ore of nickel.

Ore deposits: The gold ore occurs in quartz veins cutting Swakane gneiss. The veins may be related in origin to the intrusion of any or all of several magmatic bodies, among which are the pre-Chelan intrusion responsible for the dikes in the gneiss [Waters, 1932], the Chelan granodiorite, and the younger diorite which is seen in the Chiwawa, Railroad Creek, and Stehekin

mining districts. Neither the pre-Chelan intrusive body nor the younger diorite is known to outcrop in the Entiat district, but either may be buried at no great depth beneath surface rocks. The origin of the nickel, titanium, and mercury deposits is not known.

Timber and water: Timber and water for mining and milling purposes are not abundant in the southern portion of the district but are much more abundant toward the north.

MINES

Pangborn Mine (114)

Location: SW¼ sec. 25, T. 26 N., R. 20 E., 1½ miles east of Rex mine. **Access:** Good road to mine. **Owner:** P. C. Pangborn, Wenatchee, Wash. (1938). **Ore:** Gold. **Ore minerals:** Free gold. **Gangue:** Quartz. **Deposit:** Several quartz veins from 3 inches to 3 feet wide cut decomposed gneiss. **Assays:** Ore that was milled ran about ½ oz. gold per ton. **Production:** Amount not known.

Prairie Dog Mine

Location: Entiat district. **Ore:** Gold, silver. **Production:** Unknown amount in 1910.

Rex (Rogers) Mine (116)

Location: NW¼ sec. 24, T. 26 N., R. 20 E., in Crum Canyon, a tributary to Entiat River. **Access:** Good road to mine. **Property:** 80 acres. **Owner:** State land leased to J. Rogers, Entiat, Wash. **Ore:** Gold. **Ore minerals:** Pyrite. **Gangue:** Quartz. **Deposit:** 2 oxidized quartz veins 3 to 12 inches wide in decomposed gneiss. **Assays:** Most of the ore milled averaged about 1 oz. gold per ton. **Development:** 3 tunnels totaling about 500 feet of length. **Improvements:** A two-stamp mill (1938). **Production:** More than $170,000 by 1930. Small amounts in 1933, 1934, and 1940.

Rogers Mine (116)

This is another name for the Rex mine.

PROSPECTS

Cook-Galbraith Prospect

Location: T. 25 N., R. 20 E. **Ore:** Gold. **Ore minerals:** Free gold. **Gangue:** Quartz. **Deposit:** A nearly vertical 7- to 18-inch vein strikes N. 55° E. through granodiorite. **Assays:** 2 assays gave values of $23.80 and $68.60 per ton.

Dick Prospect (118)

Location: S½NE¼ sec. 9, T. 26 N., R. 21 E., on a northward-trending spur on the north side of Winesap (Oklahoma) canyon. **Elevation:** 1,600 feet. **Access:** Short trail and 0.9-mile truck road from highway U. S. 97. **Property:** 80 acres of deeded property. **Owner:** E. N. Patty of Alluvial Golds, Inc., 4556 University St., Seattle, Wash. has a lease from Hazel E. Growden and associates, 410 N. 2nd St., Yakima, Wash. (1943). **Ore:** Nickel, copper. **Ore minerals:** Pyrrhotite, chalcopyrite, pyrite. **Gangue:** Coarsely crystalline ultrabasic rock. **Deposit:** Ill-defined body of dissemi-

nated sulphides, in some places nearly solid small sulphide masses. **Assays:** 1.50% nickel, 0.68% copper. **Development:** 3 tunnels and several open cuts.

Goman Nickel Prospect (117)

Location: SW¼ sec. 6, T. 26 N., R. 21 E., on a ridge near head of Winesap (Oklahoma) Canyon. **Access:** About 4 miles of county road up Winesap Canyon from highway U. S. 97. **Owner:** George Goman, Winesap, Wash. (1942). **Deposit:** Dike or segregational mass of ultrabasic rock in Swakane gneiss. **Assays:** None, but qualitative tests gave moderately strong reactions for nickel. **Development:** None.

Leavenworth Prospect

Location: Near Orondo, in Chelan County. **Ore:** Mercury. **Ore minerals:** Cinnabar. **Gangue:** Siliceous altered rock, and quartz. **Development:** Small amount was done in 1911.

Robischaud (Safety Harbor Creek) Prospect (127)

Location: On headwaters of Safety Harbor Creek, which flows into Lake Chelan from the north about 25 miles above its lower end. Probably in T. 30 N., R. 20 E. **Ore:** Molybdenum, copper. **Ore minerals:** Molybdenite, chalcopyrite. **Deposit:** 2 systems of veins almost at right angles to each other in a highly altered rock. **Development:** A tunnel cuts 12 east-trending veins and 3 north-trending veins each less than 18 inches wide.

Safety Harbor Creek Prospect (127)

This is another name for the Robischaud prospect.

Savage Prospect

Location: T. 26 N., R. 20 E., 10 miles up Entiat River from town of Entiat. **Property:** 4 claims, and state land held under 30-year lease. **Owner:** G. S. Savage, Entiat (1918). **Ore:** Gold, silver. **Ore minerals:** Free gold. **Development:** 100-foot shaft, short tunnels.

Sunset Prospect (115)

Location: Sec. 30, T. 26 N., R. 21 E. **Ore:** Gold. **Owner:** Wenatchee Gold Mining Co. (1922).

Titanium Prospect (123)

Location: On First Creek ridge approximately a quarter of a mile west of highway and 2 miles west of Lake Chelan, probably in sec. 8, T. 27 N., R. 21 E. **Ore:** Titanium. **Ore minerals:** Ilmenite.

LEAVENWORTH MINING DISTRICT

GENERAL FEATURES

Location: The Leavenworth mining district includes roughly 515 square miles in southwestern Chelan County, embracing the area drained by Wenatchee River and all its tributaries above Leavenworth with the exception of Chiwawa River. It is bounded on the north by Nason Ridge, the south by Wenatchee Mountains and the Blewett district, and on the east by the Wenatchee and Entiat mining districts. The easternmost part of the district is less rugged than the rest and is better served by roads. Owing to its extreme ruggedness most of the district is not very accessible. Stevens Pass highway, paralleled most of its way by the main line of the Great Northern Railway, leads up the narrow valleys of Wenatchee River and Nason Creek, and a road extends about 25 miles up Icicle Creek from its mouth.

Geologic section: The northern part of the district is largely covered by Paleozoic argillite, quartzite, and marble. Along the southwestern side of the district serpentine of probable Mesozoic age occupies a narrow belt which is part of the larger belt extending across the Blewett district. The country rock of most of the southern part of the district is Mount Stuart granodiorite, which intrudes the Paleozoic and Mesozoic rocks. The Mount Stuart granodiorite magma may have furnished the mineralizing solutions which made the ore deposits of this area. Along the northeastern side of the district in its less rugged portion the Swauk formation blankets the older rocks. Alluvial terraces and valley fill cover small areas along the larger streams.

Ores and ore minerals: The principal ores of the district are of copper, gold, silver, and lead. There are also occurrences of molybdenum and antimony ores. The minerals in which these metals occur are chalcopyrite, tetrahedrite, pyrite, pyrrhotite, galena, molybdenite, and stibnite.

Ore deposits: Although more than 50 mineral claim locations were made on Jack Creek alone in one year very little concerning these and others in the district has ever appeared in print, and since there has been little recent interest in mining in the district not much is known about the nature of the ore deposits there. It appears that the copper, gold, silver, and lead ores all belong in a single genetic group. They occur together in quartz veins cutting serpentine and possibly argillites and quartzites near their contacts with intrusive igneous rocks. In at least one property the ore minerals are disseminated throughout the host rock to give a large ore body with irregular boundaries.

Timber and water: Timber and water for mining and milling purposes are very abundant throughout the district. However, in the vicinity of the known prospects the streams are too small to furnish power for more than the smallest operations.

PROSPECTS

Bald Eagle and Gray Eagle Prospect

Location: On a fork of Jack Creek, a tributary of Icicle Creek. **Owner:** L. A. Parker and H. C. Castlebury (1897). **Ore:** Copper. **Ore minerals:** Tetrahedrite. **Development:** 16-foot drift.

Black Republican Prospect

Location: Leavenworth district. Ore: Nickel, cobalt, copper.

Blind Lead Prospect

Location: On left fork of Jack Creek, a tributary of Icicle Creek. Property: 3 claims. Owner: John Bjork, A. Van Epps, H. L. Farley, and Camille Massey (1897). Ore: Gold. Ore minerals: Arsenopyrite. Assays: $13.80 gold.

Clinton Prospect

Location: Leavenworth district. Owner: Louis Davis Laboratory Co. (1915).

Copper King Prospect (99)

This is another name for the Van Epps prospect.

Humbug Prospect

Location: T. 23 N., R. 15 E., near Silver Fiend prospect in Solomon Creek Gulch. Property: 1 claim. Owner: James Grieve, K. W. Dunlap, and August Sasse (1897). Ore: Lead, silver, gold, copper. Ore minerals: Galena, tetrahedrite. Gangue: Quartz. Deposit: Wide vein.

Jack Creek Prospect (98)

Location: On Jack Creek on north side of Mount Stuart. Ore: Molybdenum. Ore minerals: Molybdenite.

King Solomon Prospect (100)

Location: NW¼ sec. 10, T. 23 N., R. 15 E., on a trail at head of Van Epps Creek, a tributary to Jack Creek, which flows into Icicle Creek. Elevation: 5,500 feet. Access: From Leavenworth a road up Icicle Creek and a trail about 10 miles up Jack Creek to about 1,000 feet northwest of Van Epps prospect, or from Cle Elum a road up Cle Elum river and Fortune Creek and a trail about 3 miles over the Wenatchee Mountains. Ore: Copper, probably gold. Ore minerals: Pyrite, pyrrhotite, chalcopyrite. Deposit: Solid sulphide masses in serpentine. Development: Tunnel now caved but dump indicates about 1,000 feet of workings.

Last Chance Prospect (102)

Location: T. 23 N., R. 15 E., east of Silver Fiend prospect in Solomon Creek Gulch. Owner: James Grieve, August Sasse, and Mrs. Churchill (1897). Ore: Gold, lead. Development: 30-foot crosscut, and shaft 25 feet deep. Assays: $4.30 gold.

Nelson Prospect (99)

This is another name for the Van Epps prospect.

Nevada and Excelsior Prospect

Location: On left bank of the right fork of Jack Creek, a tributary to Icicle Creek. Owner: John Bjork, A. Van Epps (1897). Ore: Gold, silver, nickel. Deposit: Vein of dolomite and quartz slightly mineralized. Development: Tunnel 26 feet long.

Ontario Prospect

Location: Leavenworth district. **Ore:** Nickel, cobalt, copper.

Pickwick Prospect

Location: In basin at head of Phantom Creek, an affluent of Icicle Creek near its source. **Property:** 13 claims. **Owner:** Pickwick Mining and Development Co. (1897). **Ore:** Copper, gold, silver. **Ore minerals:** Bornite, copper carbonates, copper sulphides. **Gangue:** Decomposed quartz. **Deposit:** Very large ore body said to be at least 145 by 6,000 feet in cross section. **Assays:** A mill test showed 15% copper, $14 gold, $5.40 silver. **Development:** From an open cut 30 feet long a 40-foot shaft was sunk, and drifts at the bottom were driven 75 feet one way and 45 feet the other. These workings showed ore minerals disseminated throughout their lengths as did also another 100-foot tunnel with two 45-foot drifts.

Silver Fiend Prospect (101)

Location: NW¼ sec. 10, T. 23 N., R. 15 E., in Solomon Creek Gulch. **Access:** 10 miles of trail from mouth of Jack Creek at end of Icicle Creek road. **Property:** 1 claim. **Owner:** James Grieve (1897). **Ore:** Lead, silver, gold, copper. **Ore minerals:** Galena, tetrahedrite. **Gangue:** Quartz. **Deposit:** Wide vein. **Development:** 15-foot tunnel.

Van Epps Antimony Prospect

Location: On Icicle Creek. **Owner:** Mr. Van Epps, Leavenworth, Wash. (1921). **Ore:** Antimony.

Van Epps Copper (Nelson) (Copper King) Prospect (99)

Location: NW¼ sec. 10, T. 23 N., R. 15 E., on trail on north side of Van Epps Creek about 2 miles above its junction with Jack Creek, a tributary of Icicle Creek. **Elevation:** 5,300 feet. **Access:** From Leavenworth a road up Icicle Creek and a trail about 10 miles up Jack Creek, or from Cle Elum a road up Cle Elum River and Fortune Creek and a trail about 3 miles over the Wenatchee Mountains. **Owner:** Frank Sonntag and others, Wenatchee, Wash. (1942). **Ore:** Copper. **Ore minerals:** Chalcopyrite. **Deposit:** 2 very small, sparsely mineralized zones in serpentine show in a long crosscut which cut no ore. **Development:** A 2,200-foot crosscut and a shorter tunnel now caved. **Improvements:** A once complete camp has burned except for one small cabin.

White Star Prospect (103)

Location: T. 23 N., R. 15 E., near Silver Fiend prospect in Solomon Creek Gulch. **Property:** 1 claim. **Owner:** John Stewart (1897). **Ore:** Lead, silver, gold, copper. **Ore minerals:** Galena, tetrahedrite. **Gangue:** Quartz. **Development:** 20-foot tunnel.

MEADOW CREEK MINING DISTRICT

GENERAL FEATURES

Location: The Meadow Creek mining district, with about 105 square miles of area, is the second smallest district in the county. It lies just east of the Railroad Creek district, between Lake Chelan and Okanogan County. It is bounded on the north by the ridge just south of Little Boulder Creek, on the south by the ridge south of Prince Creek, and on the east by Sawtooth Ridge. The topography is very rugged, and no roads have been built within the district. However, passenger and freight boats make regular trips to and from Stehekin at the north end of Lake Chelan in the northwestern corner of the district.

Geologic section: The district is largely underlain by Mesozoic plutonic rocks, but it is known that the older gneiss occurring immediately to the west in the Railroad Creek district is present here, and it is probable that the younger intrusive rocks which appear in that district occur here also.

Ores and ore minerals: The ores of the Meadow Creek mining district are of copper, gold, silver, and lead. They occur in the minerals chalcopyrite, pyrrhotite, pyrite, tetrahedrite, native silver, pyrargyrite, and galena. Of these minerals, pyrite, chalcopyrite, and pyrrhotite are by far the most abundant, and their metals copper, gold, and silver are the district's most important ores.

Ore deposits: The deposits of the district are of two mineralogical types. The first discovered, but probably less important, are the silver-lead deposits found near the lake shore. These are quartz veins containing narrow high-grade seams of pyrargyrite, tetrahedrite, and galena. The second type, whose iron-stained outcrops are prominent features on the steep-sided mountains rising from the lake, occurs in gneiss as wide porphyritic dikes with well-defined seams and irregular masses of solid sulphides on each side. The sulphide seams in some places fill fractures across the whole width of the dikes and also extend out into the wall rock. These are the copper-gold-silver deposits, the minerals of which are pyrrhotite, chalcopyrite, and pyrite.

Timber and water: There is an adequate supply of timber and water for mining and milling purposes in the near vicinity of the mining properties, and the steep gradients of the streams afford abundant opportunity for developing water power on a small scale.

MINES

Sunday Morning Mine (143)

Location: SW¼ sec. 2, T. 31 N., R. 18 E., at shore of Lake Chelan at the foot of a granite cliff. **Property:** 1 claim. **Owner:** J. R. Moore (1897). **Ore:** Silver, lead, gold. **Ore minerals:** Pyrargyrite, galena. **Gangue:** Quartz. **Deposit:** A quartz vein 1 to 5 feet wide has a 2- to 4-inch pay streak of ore minerals. **Assays:** A shipment returned $250 per ton gross. **Development:** 70-foot tunnel. **Production:** 4,600 lbs. were shipped to a smelter.

PROSPECTS

Arizona Prospect (146)

Location: Sec. 11, T. 31 N., R. 18 E., between Cascade and Meadow creeks. **Ore:** Copper, gold, silver. **Ore minerals:** Chalcopyrite, pyrrhotite. **Assays:** 0.49 oz. gold, 1.4 oz. silver, 1.92% copper.

Bismark Prospect (147)

Location: Sec. 12, T. 31 N., R. 18 E., between Meadow and Cascade creeks. **Property:** 3 claims. **Owner:** W. P. Robinson and A. H. Murdock (1897). **Ore:** Copper. **Ore minerals:** Copper sulphides.

Blue Jay Prospect (145)

Location: NE¼ sec. 11, T. 31 N., R. 18 E., on east bank of Meadow Creek. **Elevation:** 2,100 feet. **Access:** 1 mile of trail from Lake Chelan at mouth of Meadow Creek. **Property:** 8 claims. **Owner:** H. F. Pearl and A. G. Mathers, Chelan, Wash. (1933). **Ore:** Copper, gold, silver. **Ore minerals:** Sulphides. **Gangue:** Quartz. **Deposits:** Quartz veins and seams containing the ore minerals cut through diorite. **Assays:** $8 to $16.80 gold, 12 to 16½% copper, and a little silver. **Development:** Several short tunnels and shafts.

Blue Jay Extension Prospect (151)

Location: Sec. 12, T. 31 N., R. 18 E. **Property:** 1 claim. **Owner:** O. Graham, Anacortes, Wash. (1897). **Ore:** Copper, gold, silver. **Assays:** $10 to $19 gold, $5 to $9.50 silver. **Development:** 30-foot open cut and tunnel.

Buster Prospect (162)

Location: Sec. 36, T. 32 N., R. 18 E., near head of Fish Creek. **Property:** 3 claims. **Owner:** H. H. Hunt and Ole Olsen (1897). **Ore:** Gold, silver. **Ore minerals:** Pyrite, native silver.

Canada Prospect (160)

Location: Sec. 1, T. 31 N., R. 18 E. **Property:** 1 claim. **Owner:** Wm. Bigger (1897). **Ore:** Copper, gold, silver.

Cascade Prospect (149)

Location: SW¼ sec. 12, T. 31 N., R. 18 E., on both sides of Cascade Creek. **Access:** Trail from mouth of creek at Lake Chelan. **Property:** 3 claims. **Owner:** J. R. Moore (1897). **Ore:** Gold, lead. **Ore minerals:** Galena and other sulphides. **Deposit:** Pay streak 2 feet wide. **Development:** Two 10-foot tunnels.

Chub Prospect (173)

Location: Sec. 2, T. 31 N., R. 18 E., on both sides of Meadow Creek. **Access:** About 1 mile of trail from mouth of Meadow Creek. **Property:** 1 claim. **Owner:** M. M. Kingman and R. N. Pershall (1897). **Ore:** Gold, silver. **Ore minerals:** Sulphides. **Assays:** $14 gold, $18 silver. **Development:** Shaft 30 feet long.

Elephant Prospect (152)

Location: NW¼ sec. 7, T. 31 N., R. 19 E., on south side of Cascade Creek. Property: 2 claims. Owner: J. M. Scheuyeaulle (1897). Ore: Silver. Assays: As high as 50 oz. silver per ton.

Emma Prospect (167)

Location: SW¼ sec. 1, T. 31 N., R. 18 E., between Meadow and Cascade creeks. Property: 3 claims. Owner: Spencer Boyd (1897). Ore: Gold. Ore minerals: Sulphides. Development: 2 open cuts, 10 and 20 feet long.

Emma Lee Prospect (168)

Location: SW¼ sec. 1, T. 31 N., R. 18 E., near Meadow Creek. Property: 1 claim. Owner: S. J. Gray and E. J. Wilder (1897). Ore: Gold, silver, copper. Deposit: Ore occurs as 3 feet of solid mineral in a porphyry dike. Assays: $14.35 gold, 6 oz. silver, 15% copper. Development: 50-foot open cut and tunnel.

Gem Prospect (157)

Location: NW¼ sec. 12, T. 31 N., R. 18 E., just east of Blue Jay claims. Property: 2 claims. Owner: Capt. Johnson (1897). Ore: Copper, gold, silver. Assays: 0.23 oz. gold, 2.0 oz. silver, 5.47% copper.

Gibson Prospect (170)

Location: SE¼ sec. 2, T. 31 N., R. 18 E., on north bank of Meadow Creek. Access: Trail from mouth of Meadow Creek. Property: 1 claim. Owner: E. F. Christy, A. H. Murdock, and Mr. Buckingham (1897).

Grace Prospect (153)

Location: NE¼ sec. 12, T. 31 N., R. 18 E., on Cascade Creek. Ore: Copper, gold, silver. Ore minerals: Pyrrhotite, chalcopyrite. Assays: 0.45 oz. gold, 7.3 oz. silver, 5.6% copper.

Granite Prospect (171)

Location: Center of sec. 2, T. 31 N., R. 19 E., east of Gibson prospect. Property: 1 claim. Owner: Frank Lightner (1897).

Happy Thought Prospect (172)

Location: SW¼ sec. 2, T. 31 N., R. 18 E., adjoining Sunday Morning claim on the southeast. Property: 1 claim. Owner: J. R. Moore (1897).

Hunter Prospect (148)

Location: SW¼ sec. 12, T. 31 N., R. 18 E., on Lake Chelan shore just north of mouth of Cascade Creek. Property: 2 claims. Owner: D. H. Lord and A. W. LaChapelle (1897). Ore: Silver, gold, copper. Ore minerals: Pyrargyrite, tetrahedrite. Deposit: 4-inch pay streak. Assays: 140 oz. silver, $16 gold. Development: A 15-foot tunnel.

Idaho Prospect (164)

Location: Sec. 1, T. 31 N., R. 18 E., on Meadow Creek. Elevation: 6,330 feet. Property: 2 claims. Owner: Seattle Gold Mining and Development Co. (1897). Ore: Copper, gold, silver. Ore minerals: Sulphides. Deposit: Ore is near porphyry dike in granite. Assays: 16% copper, 16 oz. silver, $8 to $16 gold. Development: 73-foot tunnel.

Iowa Prospect (154)

Location: Sec. 12, T. 31 N., R. 18 E., near Cascade Creek. Access: Trail from mouth of creek at Lake Chelan. Property: 1 claim. Owner: W. H. Phelps (1897). Ore: Gold, silver. Deposit: 12-inch pay streak. Assays: As high as $60 gold, 200 oz. silver. Development: Tunnel 40 feet long.

Iron Cap Prospect (169)

Location: SW¼ sec. 1, T. 31 N., R. 18 E. Property: 1 claim. Owner: S. J. Gray (1897).

Iron Cross Prospect (155)

Location: East of Blue Jay claim on Meadow Creek. Property: 2 claims. Owner: Messrs. Turner and Bull (1897).

King Solomon Prospect (158)

Location: Sec. 1, T. 31 N., R. 18 E., on Meadow Creek. Elevation: 5,100 feet. Access: Trail from mouth of Meadow Creek. Property: 3 claims. Ore: Copper, gold, silver. Ore minerals: Pyrrhotite, chalcopyrite, pyrite. Deposit: Porphyry dike 25 feet wide with 1½ to 2 feet of ore on each side. Assays: 0.31 oz. gold, 2.1 oz. silver, 5.68% copper. Development: A tunnel.

Little Jap Prospect (144)

Location: Sec. 2, T. 31 N., R. 18 E., adjoining the ends of Happy Thought and Sunday Morning claims. Elevation: 250 feet above Lake Chelan. Property: 4 claims. Ore: Silver, copper, gold. Ore minerals: Pyrargyrite, chalcopyrite, pyrite. Deposit: A porphyry dike has a 2- to 4-inch streak of pyrargyrite. Development: 2 tunnels, 35 and 55 feet long.

Mattie Jane Prospect (159)

Location: SW¼ sec. 1, T. 31 N., R. 18 E., east of Emma Lee prospect. Property: 1 claim. Owner: S. J. Gray and Wm. Rasnic (1897).

Meadow Creek Mines Prospect

Location: Meadow Creek district. Ore: Gold.

Moscow Prospect (163)

Location: Sec. 36, T. 32 N., R. 18 E. Property: 1 claim. Owner: Andrew Crumrine (1897). Ore: Copper, gold, silver. Ore minerals: Copper sulphides. Deposit: 3 feet of ore in a wide porphyry dike. Assays: 7 to 11% copper, 11 oz. silver, $8 gold. Development: 30-foot open cut.

Nebraska Prospect (166)

Location: NW¼ sec. 35, T. 32 N., R. 18 E. Property: 1 claim. Owner: L. H. Millard (1897). Ore: Copper, gold, silver, lead. Ore minerals: Copper sulphides, galena. Deposit: 4- to 8-inch pay streak in mineralized porphyry. Assays: $1.25 gold, 21 oz. silver per ton. Development: Tunnel 36 feet long.

Phyllis Prospect (165)

Location: NE¼ sec. 2, T. 31 N., R. 18 E., on Meadow Creek. Access: 1½ miles of trail from mouth of Meadow Creek. Property: 3 claims. Owner: Andrew Crumrine and S. J. Gray (1897). Ore: Copper, gold,

silver. **Ore minerals:** Copper sulphides. **Deposit:** Several pay streaks in a zone 30 feet wide. **Assays:** One pay streak gave 21% copper, $6.50 gold, 6 oz. silver. **Development:** A 112-foot tunnel.

Silver Bell Prospect (161)

Location: Sec. 36, T. 32 N., R. 18 E., just east of Moscow prospect. **Property:** 1 claim. **Owner:** Andrew Crumrine, J. W. Nicol, and N. B. Church (1897).

Silver King Prospect (150)

Location: SE¼ sec. 12, T. 31 N., R. 18 E., on Cascade Creek. **Access:** Trail from mouth of creek at Lake Chelan. **Property:** 2 claims. **Owner:** Seattle Gold Mining and Development Co. (1897). **Ore:** Copper, gold, lead. **Ore minerals:** Pyrite, chalcopyrite, galena. **Development:** 35-foot tunnel.

Winnipeg Prospect (156)

Location: Sec. 12, T. 31 N., R. 18 E., east of Blue Jay claims. **Property:** 1 claim. **Owner:** A. Crumrine (1897).

RAILROAD CREEK MINING DISTRICT

GENERAL FEATURES

Location: The Railroad Creek mining district, named for its most prominent stream, occupies about 97 square miles in northwestern Chelan County. It includes all of the area drained by streams emptying into the west side of Lake Chelan north of Bear Creek exclusive of the Stehekin River drainage. It is separated from the Stehekin mining district to the north by prominent ridges, and it is bounded on the west and southwest by the Cascade Range and Chelan Mountains. A ridge north of Bear Creek forms the southern boundary, and Lake Chelan the eastern boundary. The area is extremely rugged, and the only road serving it is a short private road connecting the Holden mine on Railroad Creek with Lucerne at Lake Chelan. Both Lucerne and Stehekin at the end of the lake receive freight and passengers by scheduled boats from Chelan.

Geologic section: The whole of the district with the exception of a small area southwest of Bonanza Peak is represented on the preliminary geologic map of Washington [1936] as being in Mesozoic intrusive rock. However, it is known that there are present also younger diorite and older metamorphosed sedimentary and igneous rocks now gneisses. A small area southwest of Bonanza Peak is covered by andesite.

Ores and ore minerals: The ores of this district are of copper, gold, silver, lead, zinc, and molybdenum. The ore minerals are chalcopyrite, pyrite, pyrrhotite, sphalerite, galena, pyrargyrite, and molybdenite.

Ore deposits: The copper-gold-silver ores are typified by the ore of the Holden deposit, where the sulphides, in some places accompanied by quartz, occur disseminated in biotite schist and quartzite in a large xenolith or roof pendant in diorite. Ore minerals are found in small quantities in the diorite

also. Some large solid masses of sulphides are to be found, but in general the ore minerals are present as small scattered grains. The molybdenum deposits are well-defined quartz veins cutting granitic rocks. The molybdenite occurs across the whole width of the veins but is concentrated near the edges. There has been little or no alteration of the host rocks at their contact with the veins.

Timber and water: The district is well timbered and precipitation is heavy, thus timber and water are easily obtainable for mining and milling purposes.

MINES

Aurelia Crown Mine (138)

This is another name for the Crown Point mine.

Crown Point (Aurelia Crown) Mine (138)

Location: NE¼ sec. 8, T. 31 N., R. 16 E., at head of cirque basin southwest of Hart Lake at head of Railroad Creek. **Elevation:** About 4,300 feet, which is about half way up the steep cliff above the valley. **Access:** Road to Holden and 6 miles of trail to mine. **Owner:** Chemical Products Association (1926). **Ore:** Molybdenum. **Ore minerals:** Molybdenite. **Gangue:** Quartz. **Deposit:** A flat-lying quartz vein has a maximum thickness of 3 feet, but it pinches to less than 3 inches. The vein carries only quartz and molybdenite, the latter frequently in large perfect crystals. The country rock is diorite. **Development:** 2 tunnels totaling more than 400 feet in length. Considerable ore has been stoped out. **Production:** Had some production during the years 1897 to 1902. Produced 10 tons of ore in 1901, and 12 tons in 1902 which was practically the entire United States production for that year.

Holden Mine (139)

Location: NW¼ sec. 18, T. 31 N., R. 17 E., on Railroad Creek. **Elevation:** 3,500 feet at haulage level. **Access:** Scheduled daily boats from Chelan to Lucerne and 12 miles of good road from there to mine. **Property:** 13 patented claims and 78 unpatented claims. **Owner:** Howe Sound Co., 730 Fifth Ave., New York, N. Y. Local office: Howe Sound Co., Chelan Division, Holden, Wash., John J. Curzon, Manager (1943). **Ore:** Copper, gold, silver, zinc. **Ore minerals:** Chalcopyrite, pyrite, pyrrhotite, sphalerite. **Gangue:** Silicified metamorphosed sediments. **Deposit:** Zone of sulphide disseminations with average strike N. 30° W. and dip 60°-70° SW. in schist and gneiss. The ore zone is 40 to 75 feet wide and has an exposed length of 1,400 feet and depth of 1,600 feet. **Assays:** 687,429 tons of ore milled in 1940 averaged 0.09 oz. gold, 0.344 oz. silver, 1.45% copper, and 1.02% zinc per ton. 715,726 tons milled in 1942 averaged 1.21% copper and 0.083 oz. gold per ton. Silver and zinc values were not calculated. **Development:** At the end of 1942 there were 136,430 feet of drifts, crosscuts, and raises, and 147,383 feet of diamond drill holes. **Improvements:** 2,000-ton mill; roads, docks, tug, barges, and all necessary transportation facilities; very complete modern camp for 450 men. **Production:** Yearly tonnage has increased from 371,800 in 1938 to 715,726 in 1942. Total for 1938 to 1942 inclusive is 3,059,262. Since the mine began production in 1938 it has been by far the largest producer of copper, gold, and silver in

the state. **Note:** The urgent demand for copper during war times has caused the company to increase the mill output 10 percent to 2,200 tons per day. Likewise, the demand for zinc was partially responsible for the addition of a zinc-recovery section to the mill in 1942. Zinc production was getting under way early in 1943. A cyanide plant was completed and ready to produce early in 1942, but owing to war conditions it was not put into operation.

Silver Trail Mine (137) Probably same as Crown Point (?)

Location: Sec. 8, T. 31 N., R. 16 E., on Railroad Creek. **Property:** 36 claims. **Owner:** Chemical Products Association (1926). **Ore:** Copper, gold, silver, lead, zinc. **Gangue:** Quartz. **Deposit:** 3 kinds of deposits on the property produce copper ore, silver-lead-zinc ore, and gold-bearing quartz. **Assays:** Copper ore went $7.40 to $68.20 per ton, a silver-lead-zinc pay streak gave $96.81 per ton, and the gold ore ran from $3 to $45 per ton. **Production:** Amount not known.

PROSPECTS

Irene Prospect (139)

This is the original name for a group of 3 claims now part of the Holden mine property.

Marcus Stein Prospect (140)

Location: NE¼ sec. 17, T. 31 N., R. 17 E., at mouth of Wilson Creek. **Access:** Road from Lucerne. **Property:** 2 claims. **Owner:** Marcus Stein (1897). **Ore:** Silver, gold. **Ore minerals:** Pyrargyrite, pyrite. **Gangue:** Quartz.

North Star Prospect (136)

Location: Sec. 18, T. 31 N., R. 16 E., on summit near Lyman Lake. **Property:** 8 claims. **Owner:** Cascade Range Mining Co. (1897). **Ore:** Silver, lead. **Deposit:** A 15- to 20-inch pay streak in granite trends northeast. **Assays:** As high as 33% lead and 140 oz. silver per ton. **Development:** 2 tunnels, 25 and 35 feet long.

Raymond Prospect (141)

Location: NE¼ sec. 17, T. 31 N., R. 17 E., on Wilson Creek, adjacent to Marcus Stein claims on the south. **Property:** 1 claim. **Owner:** Seattle Gold Mining and Development Co. (1897). **Ore:** Silver, gold. **Ore minerals:** Pyrargyrite, pyrite. **Gangue:** Quartz.

STEHEKIN MINING DISTRICT

GENERAL FEATURES

Location: The Stehekin mining district, including approximately 380 square miles, occupies the northern end of the county. As defined here it includes part or all of each of the following districts, which at one time or another were considered to be distinct and separate: Doubtful Lake, Stehekin, Horseshoe Basin, Bridge Creek, and Lake Chelan. The composite Stehekin district includes all of the drainage of Stehekin River and all its tributaries. It is bounded on the north and west by the Cascade Range, on the south by the Railroad Creek and Meadow Creek mining districts, and on the east by Sawtooth Ridge. Along the northern and western boundaries is probably the most rugged topography in the state. Elevations range from 1,080 feet at Lake Chelan to 9,080 feet on Buckner Mountain. Many of the peaks are higher than 8,000 feet and most of them are partially covered by glaciers. In spite of the difficulties imposed by topography a road has been built from Stehekin nearly to lower Horseshoe Basin and is nearing completion under the State Mine-to-Market road program. The road connects at Stehekin with boat transportation on the lake, and good Forest Service trails help to open up this naturally inaccessible region.

Geologic section: Outcropping in many places over the whole district, as in the district to the south, is an old gneiss including several types representing rocks of different origins and different ages. Quartz schists obviously of sedimentary origin are exposed along Maple Creek. Intruding the gneiss and schist are plutonics, some of which are of the younger diorite type found in the Cloudy Pass area to the south. A conspicuous feature of the diorites in this district is a banded phase which in places is to be distinguished with difficulty from the older gneisses of igneous origin. In the eastern part of the district are many wide orthoclase-quartz porphyry dikes similar to those with which the copper-gold-silver ores are associated in the Meadow Creek mining district. Over all of the district are many dikes ranging from acidic to basic types.

Ores and ore minerals: The ores of the Stehekin mining district are of copper, gold, silver, lead, and zinc. The ore minerals are pyrite, arsenopyrite, chalcopyrite, galena, and sphalerite.

Ore deposits: Wide, easily seen bands of iron-stained rock are common features on the precipitous slopes high in the mountains throughout the district. These "iron caps" have stimulated vigorous prospecting, and many claims have been staked on them. Under the surface of some of the "iron caps" are copper-gold-silver ores of low grade but possibly rich enough to be mined. These deposits comprise one of two general types which are found in the district. These deposits have chalcopyrite, pyrite, and pyrrhotite in solid masses and in sparse disseminations over wide zones. There are replacements and fillings along shear zones with some hydrothermal alteration of adjacent rock and some silicification along with the ore mineralization. A second kind of ore deposit commonly occurring is the silver-gold-lead-zinc-bearing type quartz veins in which galena, pyrite, and sphalerite are the ore minerals. In these ores galena and pyrite are commonly

the most abundant minerals, but in some places sphalerite is present in quantities sufficient to make zinc an important constituent of the ore. The quartz veins in which the sulphides occur are ordinarily of moderate size, and typically they have sharp, well-defined walls with no great amount of alteration in the rocks beside them. The veins in many places have unfilled cavities lined with quartz crystals and partly filled with ore minerals. In some veins the sulphides show pronounced banding, possibly suggesting recurring periods of ore deposition.

Timber and water: Some of the district is above timber line and much of that below is occupied by slopes too steep to support a stand of timber. However, the valley bottoms and less precipitous slopes are well forested, so that mine timber, although not available on the ground of some of the mineral properties, is nowhere far distant. Abundant water is available for power development as well as for mining and milling operations.

MINES

Davenport Mine (190)

Location: Sec. 29, T. 35 N., R. 15 E., in upper Horseshoe Basin. **Owner:** Cascade Gold and Copper Mining Co. (1908). **Ore:** Silver, lead, copper, gold. **Ore minerals:** Galena, chalcopyrite. **Assays:** $69 per ton. **Development:** More than 500 feet of tunnel. **Production:** 1 ton before 1901.

Isoletta Mine (178)

Location: Sec. 5, T. 34 N., R. 15 E. **Owner:** J. D. and R. N. Pershall, C. C. May, and Mrs. Hess (1897). **Ore:** Gold, silver. **Assays:** 300 to 700 oz. silver, $3 to $7 gold. **Development:** 215-foot tunnel. **Production:** 2,200 lbs. shipped returned $60 per ton.

PROSPECTS

Adolph Prospect

Location: Horseshoe Basin. **Owner:** Adolph Behring and Messrs. Speckler and Gates (1901).

Belcher Prospect (181)

Location: Sec. 36, T. 35 N., R. 14 E., southeast of the Marlin prospect and adjoining it. **Access:** About 3 miles of trail from Stehekin road. **Ore:** Lead, gold. **Ore minerals:** Galena, pyrite.

Big Chief Prospect

Location: Stehekin district. **Owner:** Campbell Hill Co. (1901). **Ore:** Silver, lead, gold. **Ore minerals:** Galena. **Deposit:** Vein 3 feet wide.

Billy Jack Prospect (198)

Location: SE¼ sec. 30, T. 35 N., R. 16 E., on southwest side of North Fork of Bridge Creek near its head. **Access:** About 12 miles of trail from road up Stehekin River. **Owner:** E. O. Blankenship, Stehekin, Wash. (1940). **Ore minerals:** Pyrite, pyrrhotite, galena, sphalerite. **Development:** 90 feet of tunnel.

Black Warrior Prospect (192)

Location: NE¼ sec. 32, T. 35 N., R. 15 E. **Access:** Road from Stehekin and short trail. **Property:** 1 claim. **Owner:** Horseshoe Basin Mining Co. (1942). **Ore:** Silver, lead, copper, zinc. **Ore minerals:** Galena, chalcopyrite, sphalerite. **Gangue:** Siliceous material. **Deposit:** Ore occurs as solid sulphides in pinches and swells in a silicified zone at the contact between an east-trending diabasic dike and gneiss. **Note:** See also Horseshoe Basin Mining Co. prospect.

Blankenship Prospect (174)

Location: Sec. 10, T. 33 N., R. 16 E., at the mouth of Agnes Creek. **Access:** About 12 miles of road from Stehekin. **Property:** 7 claims and a millsite. **Owner:** E. O. Blankenship, Stehekin, Wash. (1930). **Ore:** Copper.

Butte Prospect

Location: On Bridge Creek about 25 miles from the head of Lake Chelan. **Access:** Road and trail from Stehekin. **Owner:** Butte Gold, Silver, and Copper Mining Co. (1901). **Ore:** Copper, gold, silver. **Deposit:** 2 veins. **Development:** A 56-foot tunnel and a 36-foot tunnel.

Cascade Consolidated Prospect (185)

Location: Sec. 31, T. 35 N., R. 15 E. **Ore:** Silver, lead, zinc, gold. **Owner:** Cascade Consolidated Mining and Smelting Co. (1934).

Christy Prospect

Location: Near the Twin Falls prospect. **Owner:** Albert Pershall and M. M. Kingman (1897).

Clagstone Prospect (197)

Location: SW¼ sec. 30, T. 35 N., R. 16 E., on the west side of North Fork of Bridge Creek at its head. **Elevation:** 5,200 feet. **Access:** About 12 miles of trail from road at mouth of Bridge Creek. **Owner:** E. O. Blankenship and Guy Imas, Stehekin, Wash. (1940). **Ore:** Gold, silver, lead, zinc. **Ore minerals:** Arsenopyrite, pyrite, galena, sphalerite. **Gangue:** Quartz. **Deposit:** Narrow quartz veins cutting gneiss. **Development:** 3 short tunnels and an open cut.

Copper King Prospect

Location: On Agnes Creek.

Crown Prince and Free Coinage Prospect

Location: Stehekin district. **Owner:** Messrs. Cook, Clarke, and others, Spokane, Wash. (1897). **Ore:** Copper, gold, silver. **Ore minerals:** Copper sulphides. **Assays:** 31% copper, $4.85 gold, 3 oz. silver.

Defender Prospect (201)

Location: NE¼ sec. 28, T. 35 N., R. 16 E., on Grizzly Creek. **Property:** 3 claims. **Owner:** M. A. Allmandinger, Daniel Devore, and others (1897). **Ore:** Silver, copper, lead. **Ore minerals:** Galena, chalcopyrite, pyrite. **Development:** 20-foot open cut.

Doubtful Prospect (193)

Location: Sec. 31, T. 35 N., R. 15 E., south of the Quien Sabe prospect, and north of Falls prospect. **Ore:** Silver, lead, copper. **Ore minerals:** Galena, chalcopyrite. **Assays:** 87.5 to 100 oz. silver, 54 to 62% lead, trace of gold. **Development:** 2 tunnels, one 30 and the other 100 feet long.

Falls Prospect (194)

Location: Sec. 31, T. 35 N., R. 15 E., north of the Rouse prospect. **Access:** About 2 miles of trail from Stehekin road. **Ore:** Lead, silver, gold, copper. **Ore minerals:** Galena, chalcopyrite, pyrite. **Gangue:** Quartz. **Deposit:** Vein 2 feet wide. **Development:** Open cut.

Flamingo Prospect (176)

Location: Sec. 9, T. 34 N., R. 15 E. **Owner:** J. M. Scheuyeaulle, and others (1897). **Ore:** Copper, gold, silver. **Assays:** 8% copper, $3 gold, 20 oz. silver.

Franklin Prospect (186)

Location: Sec. 30, T. 35 N., R. 15 E., north of Quien Sabe prospect. **Owner:** Harry Frank of Tacoma, and Messrs. Rouse and Rouse of Sedro Woolley, Wash. (1901). **Ore:** Silver, lead. **Assays:** 89 to 100 oz. silver, 42 to 54% lead, trace of gold. **Development:** Small amount.

Galena Prospect (187)

Location: Sec. 29, T. 35 N., R. 15 E., adjacent to Quien Sabe claim. **Access:** Road from Stehekin and short trail. **Property:** 1 claim. **Owner:** Horseshoe Basin Mining Co. (1942). **Ore:** Silver, lead, zinc, gold. **Ore minerals:** Galena, sphalerite, pyrite. **Assays:** 72 to 90 oz. silver, 54 to 61% lead, trace of gold. **Note:** See also Horseshoe Basin Mining Co. prospect.

Gertie Prospect

Location: Stehekin district near Doubtful Lake. **Owner:** Genne and George Taylor (1897).

Goericke Prospect

Location: At head of Agnes Creek. **Property:** 13 claims. **Owner:** J. M. Scheuyeaulle, J. W. Horton, Gus Anderson, and J. E. Merritt (1897). **Ore:** Gold. **Ore minerals:** Pyrite. **Assays:** Average $7 gold.

Gray Eagle Prospect

Location: At head of Bridge Creek. **Owner:** Rogers and Howe of Waterville, Oscar Johnson, and Peter Dalberg (1897). **Ore:** Silver, gold. **Assays:** 140 oz. silver, $4 gold.

Great Republic Prospect

Location: Stehekin district. **Owner:** Campbell Hill Co. (1901). **Ore:** Silver, lead, gold. **Ore minerals:** Galena. **Deposit:** Vein 3 feet wide.

Homestake and Star Prospect (177)

Location: Sec. 5, T. 34 N., R. 15 E., across the canyon from the Isoletta mine. **Owner:** R. N. Pershall, M. M. Kingman, and Charles Johnson (1897). **Ore:** Silver, gold. **Deposit:** Ore body 4 feet wide. **Assays:** 112 to 400 oz. silver, $15 gold. **Development:** 30-foot open cut.

Horseshoe Basin Prospect

Location: In Stehekin district 25 miles from head of Lake Chelan. Owner: Horseshoe Basin Mining and Development Co. (1903). Ore: Gold, silver, lead.

Horseshoe Basin Mining Co. Prospect (189)

Location: Sec. 29, T. 35 N., R. 15 E., in upper Horseshoe Basin and at the head of the lower basin. Access: Road from Stehekin and short trail. Property: 4 claims, including the Galena and Black Warrior which are reported in detail. Owner: Keith and Kenneth Kingman of Chelan, and Marie Davis (1942).

Indiana Prospect

Location: Stehekin district. Owner: Campbell Hill Co. (1901). Ore: Silver, lead, gold. Ore minerals: Galena. Deposit: Vein 2½ feet wide.

Jefferson and Tennessee Prospect

Location: On Bridge Creek. Property: 2 claims. Owner: M. Bushman and W. I. Lyle (1897). Ore minerals: Galena.

Kingman and Pershall Prospect

Location: Horseshoe Basin. Property: 4 claims, the White Cap, Comet, Lady of the Lake, and Water Fall. Owner: Messrs. Kingman and Pershall (1897).

Lake and Flora Prospect

Location: In Doubtful Basin. Property: 2 claims. Owner: G. L. Rouse and J. C. Rouse (1897). Ore: Gold, silver. Assays: $28 in gold, 40 oz. silver per ton.

Lake Shyall Prospect (175)

Location: NW¼ sec. 16, T. 34 N., R. 15 E., on Trapper Lake. Owner: J. M. Scheuyeaulle (1897). Ore: Copper, gold, silver.

Logan Prospect (195)

Location: Sec. 26, T. 35 N., R. 15 E., 600 feet south of Park Creek Pass. Access: Trail from road up Stehekin River. Ore minerals: Pyrrhotite, galena, sphalerite, pyrite. Deposit: Ore minerals in siliceous gangue along a slip zone in gneiss. Development: 67 ~~foot~~ tunnel, and a shaft.

67 Yd.

Lottie S. Prospect

Location: Adjoining the Flamingo prospect. Owner: J. M. Scheuyeaulle and others (1897). Ore: Copper, silver. Assays: 9% copper, 2 oz. silver.

Lulu Prospect

Location: In Maple Creek Basin. Owner: Gilkey and Co. (1897). Ore: Gold, silver. Assays: $180 in gold and silver.

Marlin Prospect (183)

Location: Sec. 36, T. 35 N., R. 14 E., northeast of Quien Sabe prospect, on the ridge west of Doubtful Lake. Access: About 3 miles of trail from Stehekin road. Ore: Gold, lead, copper. Ore minerals: Pyrite, galena,

chalcopyrite. **Gangue:** Quartz. **Deposit:** Quartz vein with northwest strike. **Assays:** $8.00 in combined values.

Maryland Prospect

Location: Stehekin district. **Owner:** Campbell Hill Co. (1901). **Ore:** Silver, lead, gold. **Ore minerals:** Galena. **Deposit:** Vein 4 feet wide.

Mayflower and East Side Prospect

Location: On Bridge Creek. **Owner:** Wm. Keho and Henry Quinn (1897).

Minneapolis Prospect (200)

Location: Sec. 32, T. 35 N., R. 16 E. **Property:** 1 claim. **Owner:** Wm. Keho and Joseph Lathrop (1897). **Ore:** Gold, silver, copper. **Ore minerals:** Sulphides. **Assays:** $18 in gold, silver, copper. **Development:** 40-foot crosscut.

Mountain Sheik Prospect

Location: On Flat Creek near Sunset prospect. **Owner:** J. M. Scheuyeaulle and others (1897). **Ore:** Copper, silver. **Assays:** 15 oz. silver, 10% copper.

Ohio Prospect

Location: Stehekin district. **Owner:** Campbell Hill Co. (1901). **Ore:** Silver, lead, gold. **Ore minerals:** Galena. **Deposit:** Vein 3 feet wide.

Ombompo Prospect (180)

Location: Sec. 36, T. 35 N., R. 14 E., south of the Belcher prospect, high on the divide between Doubtful and Boston basins. **Access:** About 4 miles of trail from Stehekin road. **Ore:** Gold, silver, lead. **Deposit:** Vein 3 feet wide. **Assays:** $30 in gold, silver, and lead.

Panama No. 2 Prospect (191)

Location: In upper Horseshoe Basin. **Access:** Road from Stehekin and about 1½ miles of trail. **Ore:** Silver, gold, lead, zinc. **Ore minerals:** Galena, pyrite, sphalerite. **Gangue:** Quartz, fault gouge. **Deposit:** Ore occurs as post-fault mineralization in fault gouge. **Development:** Short tunnel, and open cut.

Peterson Prospect

Location: In the Stehekin district, along the north side of Bridge Creek. **Ore:** Manganese.

Prince of Wales Prospect

Location: In Maple Creek Basin. **Owner:** John Ferguson (1897). **Ore:** Silver.

Quien Sabe Prospect (184)

Location: Sec. 31, T. 35 N., R. 15 E., in Doubtful Lake Basin. **Property:** 2 claims. **Owner:** M. M. Kingman and Albert Pershall (1897). **Ore:** Silver, lead, gold, copper. **Ore minerals:** Galena, arsenopyrite, chalcopyrite. **Gangue:** Quartz. **Assays:** Trace to 0.1 oz. gold, 103 to 204 oz. silver, 46 to 54% lead. **Development:** A drift 250 feet long.

Roscoe Conkling Prospect

Location: Stehekin district. **Owner:** Campbell Hill Co. (1901). **Ore:** Silver, lead, gold. **Ore minerals:** Galena. **Deposit:** Vein 2 feet wide.

Rouse Prospect (179)

Location: Sec. 31, T. 35 N., R. 15 E., on the small stream draining Doubtful Lake. **Access:** About 2 miles of trail from Stehekin road. **Ore:** Gold, lead, silver, copper. **Ore minerals:** Galena, chalcopyrite. **Gangue:** Quartz. **Deposit:** Quartz vein.

Sailor Boy Prospect

Location: Bridge Creek area. **Owner:** Gilkey and Co. (1897). **Ore:** Silver, gold. **Assays:** $25 gold, 18 oz. silver.

Silver Jack Prospect (196)

Location: NW1/4 sec. 30, T. 35 N., R. 16 E., at head of North Fork of Bridge Creek. **Access:** 13 miles of trail from road at mouth of Bridge Creek. **Owner:** E. O. Blankenship, Stehekin, Wash. (1940). **Ore:** Lead, zinc, gold. **Ore minerals:** Galena, sphalerite, pyrite. **Gangue:** Quartz. **Deposit:** A pinching and swelling quartz vein 2 to 8 inches wide is heavily mineralized with sulphides. The vein follows a fault which strikes N. 7° E. and dips 80° NW. in gneiss. **Development:** Small open cut.

Spokane Boy and Girl Prospect

Location: In upper Horseshoe Basin. **Access:** Road from Stehekin and about 1½ miles of trail. **Property:** 2 claims. **Owner:** W. E. White, Spokane, Wash. (1938). **Ore:** Copper, gold, silver, lead, zinc. **Ore minerals:** Chalcopyrite, pyrite, galena, sphalerite. **Gangue:** Quartz. **Deposit:** Heavily mineralized vein 1 to 5 inches wide strikes N. 55° E. and dips 82° NW. in gneiss. **Development:** 2 short tunnels.

Stehekin Mining Co. Prospect

Location: On both sides of Company Creek. **Property:** 7 claims. **Owner:** Stehekin Mining Co. (1897). **Ore:** Copper, gold. **Ore minerals:** Chalcopyrite, pyrite. **Gangue:** Quartz, schist. **Deposit:** Wide zone thoroughly impregnated with sulphides. **Assays:** $2 to $7 gold, 2 to 15% copper.

Stimson Prospect

Location: In the cliff at the head of upper Horseshoe Basin. **Access:** Road from Stehekin and about 1½ miles of trail. **Owner:** Mr. Stimson, Stehekin, Wash. (1940). **Ore:** Gold, copper, zinc. **Ore minerals:** Pyrite, chalcopyrite, sphalerite. **Deposit:** A 1,000-foot adit leads to an east-west drift which cuts veins of galena and sphalerite with minor amounts of chalcopyrite and pyrite. **Improvements:** A large cabin (1940).

Summit Prospect (182)

Location: Sec. 36, T. 35 N., R. 14 E., beside and parallel to Marlin prospect. **Access:** About 3 miles of trail from Stehekin road. **Ore:** Lead, gold. **Ore minerals:** Galena, pyrite. **Development:** Shaft 45 feet deep.

Sunnyside Prospect

Location: Stehekin district near Doubtful Lake. **Owner:** Britanus Stennis (1897).

Sunset Prospect

Location: On Flat Creek. **Property:** 3 claims. **Owner:** J. M. Scheuyeaulle and others (1897). **Ore:** Gold. **Assays:** As high as $60 gold.

Texas Jack Prospect (188)

Location: Sec. 29, T. 35 N., R. 15 E., in upper Horseshoe Basin. **Access:** Road from Stehekin and about 2 miles of trail. **Property:** 1 claim. **Owner:** Chelan Copper Co. (1901). **Ore:** Copper, silver. **Deposit:** A 20-inch pay streak in a northeast-trending vein which dips 75° NW.

Tiger Prospect (202)

Location: Sec. 4, T. 34 N., R. 16 E., on North Fork of Bridge Creek. **Access:** Road and trail from Stehekin. **Property:** 7 claims. **Owner:** E. S. Ingraham, H. O. Hollenbeck, Van Smith, Prof. Piper, Geo. Young, and H. W. Carr (1897). **Ore:** Copper, lead, gold, silver. **Ore minerals:** Sulphides. **Gangue:** Quartz. **Assays:** $6 to $24 gold, $8 silver. **Development:** Several open cuts and a shallow shaft.

Tommy Jack Prospect (199)

Location: SE¼ sec. 30, T. 35 N., R. 16 E., a few hundred feet south of North Fork of Bridge Creek. **Elevation:** 4,450 feet. **Access:** About 11 miles of trail from road at mouth of Bridge Creek. **Owner:** E. O. Blankenship, Stehekin, Wash. (1940). **Ore:** Gold. **Ore minerals:** Pyrite. **Development:** 85-foot tunnel.

Twin Falls Prospect

Location: Under the falls of Horseshoe Creek. **Owner:** R. N. Pershall, M. M. Kingman, and Charles Johnson (1897). **Ore:** Copper.

Viola Prospect

Location: Near the Twin Falls prospect. **Owner:** F. F. Keller (1897).

Well Known Prospect

Location: On Company Creek. **Owner:** Dennis McDonald and Wm. Stillwell (1897). **Ore:** Gold. **Deposit:** Wide zone mineralized with pyrite.

WENATCHEE MINING DISTRICT

GENERAL FEATURES

Location: The Wenatchee mining district embraces approximately 320 square miles in southeastern Chelan County. It is drained in its northern and western parts by Wenatchee River and Mission Creek. In the southern and central portions small, intermittent streams drain into Columbia River which lies along the district's eastern boundary. Kittitas County is on the southern boundary, Entiat Mountains the northern boundary, and the line between Ranges 18 and 19 East separates the Wenatchee district from the Leavenworth and Blewett districts on the west. Although this is one of the least rugged of the county's mining districts, there is a difference in elevation of more than 6,000 feet between Columbia River and some of the highest peaks. Roads have been built in nearly all the stream valleys, rendering the district easily accessible.

Geologic section: North of Wenatchee River is pre-Ordovician Swakane gneiss in which is a large northwestward-trending band of Swauk sandstone, shale, and conglomerate. The Swauk formation covers approximately three-quarters of the whole district, but south of Wenatchee River it is covered in part by nearly flat-lying Columbia River basalt. The Swauk is moderately folded, and in the heights just south of Wenatchee on a domal structure located by Lupton* an oil and gas test well is being drilled. Glaciofluvial gravel, in many places in large terraces, floors the valleys of Wenatchee and Columbia Rivers. The terraces are best known for their famous fruit orchards but are also valuable as sources of practically unlimited supplies of sand and gravel for commercial uses.

Ores and ore minerals: The only ores which have been mined are those of gold and silver and of antimony. Cinnabar, the ore mineral of mercury, was reported many years ago, but complete absence of any mention of that ore in the district since that time indicates that the early report was erroneous.

Ore deposits: Excepting the probably non-existent mercury deposit, and an antimony deposit reported to have produced in 1916 but about which nothing else has been recorded, all of the mineral locations reported are on a "dike," which is prominently exposed on the ridges south of Wenatchee from Squillchuck Creek northwestward across Dry Gulch to Squaw Saddle. The dike-like body is a nearly vertical mass 200 to 800 feet wide in Swauk sandstone cut by a network of small quartz stringers. This part of the Swauk appears to have been thoroughly impregnated with silica-bearing solutions, so that in places original textures have been almost completely destroyed, thus giving rise to the names "rhyolite dike" and "aplite dike" often applied to the body. The silicifying solutions circulating along a wide and much-fractured fault zone may have risen as thermal solutions from a magma which also furnished the small amount of gold and silver deposited probably during the time of the silica deposition.

Timber and water: Neither timber nor water is abundant in the district, but sufficient quantities of both have been available for mining and milling operations.

* From "Wenatchee Heights structure, Chelan County, Washington", a private report made in 1932 by C. T. Lupton to the Northwest Oil Research Corporation, through whose kindness the report was made available to this office.

MINES

Antimony Mine

Location: Wenatchee district. **Ore:** Antimony. **Production:** Small production reported in 1916.

Golden King (Wenatchee) (Squillchuck) Mine (10)

Location: Sec. 22, T. 22 N., R. 20 E., on west side of Squillchuck Creek. **Access:** Good road to property. **Property:** 2 claims. **Owner:** J. J. Keegan, Wenatchee, Wash. (1942). **Ore:** Gold, silver. **Gangue:** Quartz. **Deposit:** Quartz stringers form a network in a vertical 200- to 800-foot zone in Swauk sandstone. This zone has been variously called "rhyolite dike," "aplite dike," etc. **Assays:** 2 years' production averaged $2.51 gold and silver per ton. The ore was used at the Tacoma smelter primarily for its fluxing qualities. **Development:** A quarry. **Production:** 20,000 tons of ore in 1938 and 1939. Operating 1949 – 2 to 3 cars / day @ $100/ton

Squillchuck Mine (10)

This is another name for the Golden King mine.

Wenatchee Mine (10)

This is probably another name for the Golden King mine. **Location:** Sec. 22, T. 22 N., R. 20 E., 2½ miles from Wenatchee. **Ore:** Gold. **Ore minerals:** Free milling gold.

PROSPECTS

Bagley Prospect

Location: Near the Sunrise prospect. **Owner:** C. P. Converse, Seattle, Wash. (1897).

Charlotte Prospect (9)

Location: Sec. 22, T. 22 N., R. 20 E., adjoining the Golden King property on the south. **Property:** 1 claim. **Owner:** D. P. Bigelow, Thomas Groves, and F. M. Scheble (1897). **Ore:** Gold, silver. **Gangue:** Quartz. **Deposit:** Wide porphyritic dike veined with quartz. **Assays:** $6 to $8 in gold and silver.

Cinnabar Prospect (16)

Location: On Squaw Saddle Mountain, 3 miles from Wenatchee. **Ore:** Mercury. **Ore minerals:** Cinnabar.

Eureka Prospect (11)

Location: North of Golden King prospect, and extending into Dry Gulch. **Owner:** Angus Mackintosh (1897).

Gilman Prospect

Location: North of Golden King prospect on same "dike." **Owner:** D. H. Gilman, Seattle, Wash. (1897).

Last Chance Prospect

Location: West of and parallel to the Golden King property. **Owner:** J. M. Rae (1897). **Development:** Short tunnel.

Sunrise Prospect (15)

Location: Sec. 16, T. 22 N., R. 20 E., on north side of Dry Gulch. Owner: M. J. Carkeek (1897).

Tibbie Prospect

Location: Near the Sunrise prospect. Owner: P. P. Shelby (1897). Development: 40-foot open cut.

PLACER PROPERTIES IN CHELAN COUNTY

GENERAL FEATURES

Placer deposits may form anywhere erosion attacks ledge deposits containing gold or other high specific gravity minerals having strong resistance to weathering. Under favorable conditions the placer minerals may be separated from other ledge material and concentrated on or near bedrock. Shifting stream channels may leave placer deposits in benches high above present-day stream beds, but in many such instances the present-day stream beds also will contain placer deposits. Placer minerals concentrated near their source generally are rough and may have adhering to them particles of quartz or other gangue minerals, while those which have been transported farther from their source and possibly reconcentrated several times are commonly more rounded and free of foreign material. Generally speaking the larger nuggets are concentrated nearer their source, while grains and flakes, because they are more readily transported, tend to accumulate farther downstream. Gold, platinum, and tin are the metals most frequently found in ore deposits of placer origin, but only gold has been commercially produced in Chelan County. A little gold has been recovered from the sands and gravels of Deep Creek and Columbia, Wenatchee, Stehekin, Entiat, and Mad rivers, but the only production of any consequence has come from Peshastin, Nigger, and Shaser creeks in the Blewett district. The Blewett placer deposits were discussed in Weaver's report [1911] from which the following is extracted:

> "The richest and most extensive deposits occur north of Blewett on the Peshastin, near the mouth of Negro creek. These gravels were originally derived from the upward extension of the present quartz veins in this district, by the erosive action of the smaller gulches and creeks emptying into Peshastin and Negro creeks. These old channels occupy in a general way the trend of the present valleys but do not always conform to the present winding of these streams. * * * The placer gravels vary in thickness and character and may be divided into two groups, one representing the gravels as they were originally deposited, and the second those that have been worked over by the present streams. The former comprise the bench gravels and a part of those lying next to bed-rock; the latter, those gravels on a general level of the present creek beds. In general the older gravels contain the richest deposits of gold. Through these the gold is pretty evenly distributed, but is richest close to bed-rock. Where the bed-rock is composed of slate many crevices and water-worn pot holes contain exceptionally rich deposits of gold."

Platinum has been reported from Mad River and Nigger Creek (1895). In 1942 Division geologists found native platinum in the stream gravels some 6 miles above the mouth of Nigger Creek.

MINES

Bloom Placer (93)

Location: Sec. 1, T. 22 N., R. 17 E., a mile above Nigger Creek. Property: 3 claims. Owner: G. W. and J. M. Bloom and John Snider (1897). Mineral: Gold. Values: About 25¢ per yard. Production: About $100 by 1897.

Cook Placer

Location: Blewett district. Mineral: Gold. Production: Unknown amount in 1908.

Crawford Placer

Location: Blewett district. Mineral: Gold. Production: Unknown amount in 1908.

Deep Creek Placer (108)

Location: Sec. 19, T. 27 N., R. 18 E., at the mouth of Deep Creek. Property: 13 claims. Owner: Deep Creek Mining Co. (1897). Mineral: Gold. Values: About 26¢ per yard. Production: Unknown amount.

Ingalls Creek Placer (90)

Location: Sec. 25, T. 23 N., R. 17 E., on Peshastin Creek at the mouth of Ingalls Creek. Owner: Mr. Hensel (1897). Mineral: Gold. Production: Unknown amount.

Lakeside Placer (122)

Location: Secs. 14 and 15, T. 27 N., R. 22 E., near Lakeside. Mineral: Gold.

Leavenworth Placer (29)

Location: Secs. 10 and 11, T. 24 N., R. 17 E., near Leavenworth. Mineral: Gold.

Nigger Creek Placers (87)

Location: Secs. 2 and 3, T. 22 N., R. 17 E., from the mouth of Nigger Creek upstream for 2 miles. Property: Many claims worked by several owners. Mineral: Gold. Values: 10¢ to $1.20 per yard. Production: $1,100 before 1897.

Railroad Creek Placer (142)

Location: Secs. 16 and 17, T. 31 N., R. 18 E., on Railroad Creek. Mineral: Gold.

Ruby Creek Placer (89)

Location: Sec. 36, T. 23 N., R. 17 E., at the mouth of Ruby Creek. Property: 6 claims. Owner: James and Thomas Lynch, Riley Eisenhour, and Thomas Medhurst (1897). Mineral: Gold.

Shaser Creek Placer (32)

Location: SE¼ sec. 14, T. 22 N., R. 17 E., near mouth of Shaser Creek. Mineral: Gold. Production: Unknown amount.

Simbach Placer

Location: Blewett district. **Mineral:** Gold. **Production:** Unknown amount in 1908.

Solita Placer

Location: On Peshastin Creek. **Mineral:** Gold. **Production:** Unknown amount in 1931.

Wednesday Placer

Location: On Wenatchee River near Dryden. **Mineral:** Gold. **Production:** Unknown amount in 1931.

Wenatchee Placer (17)

Location: Sec. 3, T. 22 N., R. 20 E., at Wenatchee. **Mineral:** Gold.

Wenatchee River Placer (28)

Location: Sec. 22, T. 24 N., R. 18 E., on Wenatchee River 1½ miles below Peshastin. **Owner:** W. M. Keene and O. A. Benjamin, Seattle, Wash. (1897). **Mineral:** Gold. **Values:** Up to $1.00 per yard. **Production:** Unknown amount.

Wilson Placer

Location: Blewett district. **Mineral:** Gold. **Production:** Unknown amount in 1908.

NONMETALLIC MINERAL PROPERTIES IN CHELAN COUNTY

GENERAL FEATURES

Nonmetallic mineral resources reported from Chelan County are asbestos, basalt, clay, coal, granite, graphite, limestone, mica, mineral water, petroleum and natural gas, pumice, sand and gravel, silica, and talc. Of these, past production has been mostly of basalt, clay, limestone, mineral water, sand and gravel, and silica; and of these, sand and gravel have been the leaders from the standpoint of value. The recently constructed ferro-silicon plant at Rock Island has been the cause of renewed interest in prospecting for silica and has been responsible for the opening of at least one silica deposit. The possibility of establishing a steel smelting industry using Blewett iron ore has stimulated search for limestone deposits. Other war-time and new peace-time industries made possible by the abundant cheap electric power now available from Columbia River developments may be expected to locate in Chelan County, and with their expansion there will inevitably come an increased demand for nonmetallic minerals as well as metallic minerals. The bulky nature of most nonmetallic minerals combined with low prices paid per unit weight makes transportation costs high, thus emphasizing the need for developing local supplies.

ASBESTOS

Chumstick Mountain Deposit

Location: Sec. 27, T. 25 N., R. 19 E., on Chumstick Mountain. **Product:** Asbestos. **Deposit:** In biotite gneiss. **Development:** Shallow open pit.

Goose Creek Deposit

Location: East of Wenatchee Lake on Goose Creek. Product: Serpentine asbestos.

Icicle Creek Deposit

Location: On Icicle Creek near Leavenworth. Product: Asbestos.

Ingalls Creek Deposit

Location: On high ridge north of Ingalls Creek a few miles from its mouth. Product: Long-fiber asbestos.

Monitor Deposit

Location: West Slope of Burch Mountain, north of Monitor. Owner: Robert Bills, Monitor, Wash. (1931). Product: Asbestos.

Swakane Creek Deposit

Location: In Swakane Canyon. Property: Deposit is on property of Rafter and Bousquet Logging Co. (1941). Product: Short fiber, soft, anthophyllite asbestos.

Williams Creek Deposit

Location: On Williams (Raging) Creek, tributary to Chiwawa River, about 30 miles north of Leavenworth. Access: 9 miles of trail from Chiwawa River road. Product: Serpentine asbestos.

BASALT

Great Northern Quarry

Location: Chelan County. Owner: Great Northern Railway Co. (1935). Production: 237 short tons in 1935.

Redmon Quarry

Location: Leavenworth. Owner: Fred G. Redmon, Yakima, Wash. (1935). Product: Basalt. Production: 78,000 tons in 1934 and 1935.

Sampson Quarry

Location: Wenatchee. Owner: J. A. Sampson, Wenatchee, Wash. (1934). Product: Basalt.

CLAY

Brown Deposit (7)

Location: NW1/4 sec. 27, T. 22 N., R. 20 E. Access: Good road. Owner: N. W. L. Brown (1936). Product: Refractory shales for fire brick and buff colored facing brick. Analyses: 48.20% SiO_2, 34.79% Al_2O_3, 0.61% Fe_2O_3, 0.56% CaO, 0.12% MgO, 1.07% alkalies, 14.65% water. Deposit: Thick Swauk shale beds interstratified with sandstone have variable strike and low dip. The shales are nonplastic, dark gray-brown, low in sand, and very hard. Development: Several tunnels.

Dry Gulch Deposit (12)

Location: NE1/4 sec. 21, T. 22 N., R. 20 E., in Dry Gulch. Access: Within a quarter of a mile of road. Owner: J. J. Keegan, Wenatchee, Wash. (1942).

Product: Blue claystone. **Deposit:** 2 beds, one 20 feet thick and another 10 feet thick in Swauk formation which strikes N. 60° W. and dips 30° SW.

Keegan Clay Deposit (3)

Location: Sec. 4, T. 21 N., R. 20 E., in Squillchuck Canyon. **Owner:** J. J. Keegan, Wenatchee, Wash. (1942).

St. Luise Bros. Deposit

Location: 3 miles by road north of Chelan at an elevation of 800 or 1,000 feet above the town. **Owner:** St. Luise Bros. Brick Yard. **Product:** Clay for bricks. **Analyses:** 59.5% SiO_2, 18.8% Al_2O_3, 5.0% Fe_2O_3. **Deposit:** Thin-bedded lacustrine clay-silt 40 feet thick.

Squaw Saddle Deposit

Location: Sec. 16, T. 22 N., R. 20 E., on Squaw Saddle. **Owner:** Squaw Saddle Mining and Milling Co., Wenatchee, Wash. (1938). **Product:** Clay of doubtful economic value for refractory purposes. **Deposit:** Hydrothermally altered arkose.

Stemilt Creek Deposit (1)

Location: SE1/4 sec. 11, T. 21 N., R. 20 E., on slope west of Stemilt Creek road. **Access:** Road. **Owner:** J. J. Keegan, Wenatchee, Wash. (1942). **Deposit:** A bed of claystone in the Swauk formation which strikes N. 70° W. and dips 50° NE.

Stemilt Creek Deposit (2)

Location: NE1/4 sec. 11, T. 21 N., R. 20 E., in a dry gully trending southwestward away from Stemilt Creek. **Access:** Road. **Owner:** J. J. Keegan, Wenatchee, Wash. (1942). **Deposit:** A bed of claystone in Swauk formation which strikes N. 25° W. and dips 40° SW.

Wenatchee Brick and Tile Deposit (19)

Location: Beside Columbia River at 9th and Walla Walla Ave., Wenatchee. **Access:** City streets. **Owner:** Wenatchee Brick and Tile Co. **Product:** Sandy, calcareous clay used for brick and tile. **Analysis:** 50.3% SiO_2, 23.0% Al_2O_3, 5.49% Fe_2O_3. **Deposit:** Soft alluvial clay in a bench about 25 feet above the river. **Development:** A pit 275 feet by 125 feet is about 20 feet deep. A great quantity of reserve clay exists. **Improvements:** Steam shovel to load cable-hauled cars. **Production:** Large.

COAL

Dry Gulch Mine (13)

Location: NE1/4 sec. 21, T. 22 N., R. 20 E., in Dry Gulch. **Access:** Good road from Wenatchee. **Deposit:** A 4-foot bed of coal in beds of carbonaceous shale and massive sandstone striking N. 37° W. and dipping 29° SW. **Production:** Small amount prior to 1934.

Johnson Coal Deposit (20)

Location: NE1/4 sec. 29, T. 23 N., R. 20 E. **Access:** Good road, less than half a mile to railroad. **Owner:** R. F. Johnson, Wenatchee (1942). **Product:** Coal probably of subbituminous rank. **Deposit:** A coal bed nearly free of bone has a maximum thickness of 1 foot. The bed is part of the Swauk

formation, which here dips about 45° S. **Development:** About 100 feet of crosscut and winze. **Production:** Small amount in 1908.

Wenatchee Heights Deposit (5)

Location: At the Northwest Oil Research Corporation's oil and gas test well on Wenatchee Heights south of Wenatchee. Sec. 26, T. 22 N., R. 20 E. **Access:** Good road. **Product:** Excellent grade, between bituminous and subbituminous rank. **Deposit:** 2 coal beds in Swauk formation, each indicated by drilling to be 6 feet thick. At about 2,000 feet depth.

DIATOMITE

Norris Deposit

Location: About 4 miles north of Fish Lake in T. 28 N., R. 17 E. **Owner:** W. R. Norris, Rt. 2, Wenatchee, Wash. (1938). **Product:** Rather pure diatomite.

GRANITE

Chelan Quarry

Location: At town of Chelan. **Owner:** Cole and Strong, Chelan, Wash. **Product:** Granite for road metal.

Entiat Quarry

Location: Entiat. **Owner:** Great Northern Railway Co. **Product:** Granite for rubble and riprap.

GRAPHITE

Maverick Peak Deposit

Location: T. 27 N., R. 18 E., about 6 miles east of Wenatchee Lake. **Access:** On road leading to Maverick Peak. **Deposit:** Graphitic schist.

Nason Creek Deposit

Location: Near confluence of Nason and White Pine Creeks. **Deposit:** Graphite in lenses in a graphitic schist. **Assays:** Trace to 32% graphite.

LIMESTONE

Alaska Marble Deposit

Location: 10 miles north of Lake Wenatchee. **Owner:** Alaska Marble Co.

Entiat Deposit (113)

Location: NW¼ sec. 3, and NE¼ sec. 4, T. 25 N., R. 20 E., on south side of Entiat River. **Access:** About 7 miles of road up Entiat River from Entiat. **Property:** 1 placer claim. **Owner:** J. J. Keegan, Wenatchee, Wash. (1942). **Product:** Limestone. **Analysis:** 2.20% SiO_2, 1.48% Fe_2O_3, 0.77% MgO, 53.25% CaO, 0.185% P_2O_5. **Deposit:** A lens 250 feet thick of schist and white and greenish limestone with nearly a third of this thickness consisting of schist bands from 1 to 30 feet thick. The limestone beds strike N. 60° W. and dip 50° NE., nearly parallel to the cliff in which they crop out. **Development:** A quarry. **Production:** Has been steady producer for past 10 years. **Reserves:** 1,000,000 tons limestone estimated.

Lake Chelan "13" Deposit (126)

Location: Sec. 13, T. 29 N., R. 20 E., on north shore of Lake Chelan. **Product:** Limestone suitable for lime. **Analysis:** 2.40% SiO_2, trace Al_2O_3 and Fe_2O_3, 53.28% CaO, 0.65% MgO, 43.26% ignition loss. **Deposit:** Bluish-gray to white limestone bed. **Development:** The bed is exposed for 350 feet along the slope length and in a face 30 feet high by 50 feet wide.

Lake Chelan "14" Deposit (125)

Location: Sec. 14, T. 29 N., R. 20 E., on south shore of Lake Chelan. **Product:** Limestone suitable for lime. **Deposit:** White, finely crystalline marble stratum cut by green dikes dips 60° W. **Development:** Stripping has exposed a body 120 by 40 feet.

Lake Chelan "29" Deposit (124)

Location: Sec. 29, T. 29 N., R. 21 E., on the south shore of Lake Chelan. **Product:** Limestone suitable for lime. **Deposit:** White, finely crystalline marble of a Paleozoic series crops out at a height of 900 feet above the lake.

Marble Creek Deposit

Location: Sec. 10, T. 28 N., R. 17 E., on Marble Creek. **Property:** Staked claims. **Product:** White limestone with minor impurities. **Reserves:** At least 100,000 tons estimated.

Rainy Creek Deposit (105)

Location: Half a mile up Rainy Creek from its confluence with Little Wenatchee River. **Access:** Less than 1 mile of trail from good road. **Property:** 2 claims. **Owner:** E. L. Davis, Cashmere, Wash. (1942). **Product:** limestone. **Analysis:** 98.01% $CaCO_3$ 1.99% SiO_2. **Deposit:** A limestone bed, part of a Paleozoic series of rocks, is exposed for a 300-foot length and 60-foot width.

Wenatchee Deposit (23)

Location: NE¼SW¼ sec. 10, T. 23 N., R. 20 E. **Product:** Limestone used to make lime. **Analysis:** 0.38% SiO_2, 0.21% Al_2O_3 and Fe_2O_3, 55.26% CaO, no MgO, 43.98% loss on ignition. **Deposit:** Fine-grained white marble in metamorphosed strata. Probably not very large deposit. **Production:** A kiln was operated for a number of years.

MICA

Chelan Falls Deposit

Location: 1½ miles from Chelan Falls. **Product:** "Gold mica", probably phlogopite, in sheets about 2 by 3 inches. **Deposit:** Traceable for 3,000 feet, outcropping from ¾ to 1½ miles from Columbia River. **Production:** 700 pounds prior to 1897.

Goman Deposit (119)

Location: SW¼NW¼ sec. 5, T. 26 N., R. 21 E., in Winesap (Oklahoma) Canyon. **Access:** About 5 miles of road up Winesap Canyon from highway U. S. 97. **Owner:** George Goman, Winesap, Wash. (1942). **Product:** Muscovite mica sheets as large as 3 inches and averaging 2 by 2 inches. **Deposit:** Pegmatite deposit, probably of considerable extent. **Development:** One open cut 4 by 6 feet.

Mad River Deposit

Location: On Mad River, north of Leavenworth.

Tumwater Canyon Deposit

Location: Near Wild Flower picnic ground about 5 miles northwest of Leavenworth. Probably in sec. 21, T. 25 N., R. 17 E. Access: Near highway. Deposit: Large mass of muscovite schist, easily disintegrated, carrying about 90% mica.

MINERAL WATER

Soda Spring (107)

Location: W½ sec. 13, T. 28 N., R. 13 E., at water's edge by trail crossing Little Wenatchee River at Ford Camp. Product: Moderate flow of clear, sparkling, "rusty-tasting" water.

Soda Springs (106)

Location: NW¼ sec. 10, T. 27 N., R. 15 E., near Soda Springs Guard Station about 8 miles west of Lake Wenatchee. Access: Good road. Product: Small flow of cold water, well charged with carbon dioxide, has a not unpleasant strong iron taste.

PETROLEUM AND NATURAL GAS TEST WELL

Wenatchee Heights Well (6)

Location: Sec. 26, T. 22 N., R. 20 E. Owner: Northwest Oil Research Corp. (1942). Rocks penetrated: Swauk formation. Depth of well: 4,903 feet (August 1942). Results: Some oil showings, and small amount of gas.

PUMICE

Buck Creek Deposit (135)

Location: Secs. 25 and 36, T. 31 N., R. 15 E., and sec. 6, T. 30 N., R. 16 E., near the juncture of Buck Creek and Chiwawa River. Access: 5 miles of trail from road up Chiwawa River. Product: Pumice lumps up to 1½ inches in diameter in a finer aggregate of the same material. Deposit: Nearly flat-lying beds 3 or 4 feet thick with a slight soil overburden.

Scholze Deposit

Location: Secs. 27 and 34, T. 30 N., R. 16 E. Access: Near Chiwawa River road. Owner: Joe Scholze (1941). Product: Building and insulating blocks.

SAND AND GRAVEL

Cashmere Deposit (27)

Location: NW¼ sec. 3, T. 23 N., R. 19 E. Product: Sand and clay for secondary road surfacing.

Columbia Deposit (18)

Location: In Wenatchee. Owner: Columbia Concrete Pipe Co. (1940). Product: Sand and gravel for concrete. Production: 8,670 short tons in 1939, and 9,660 short tons in 1940.

Larsen Deposit (21)

Location: T. 23 N., R. 20 E., 2½ miles northwest of Wenatchee. Owner: Mr. Larsen (1918). Development: A pit.

Nelson Deposit

Location: Chelan County. Owner: M. E. Nelson Construction Co. Product: Structural and paving sand and gravel. Production: 12,600 short tons in 1940.

Quality Deposit

Location: Chelan County. Owner: Quality Sand and Gravel Co. (1938). Product: Sand and gravel for concrete construction. Production: 885 short tons in 1938.

Redmon Deposit

Location: Chelan County. Owner: F. R. Redmon (1937). Product: Gravel for paving. Production: 24,661 short tons in 1937.

Sampson Deposit

Location: Chelan County. Product: Sand for concrete construction. Production: 2,700 short tons in 1939, and 649 short tons in 1940.

Swakane Deposit (26)

Location: T. 24 N., R. 20 E., at mouth of Swakane Creek, 9½ miles north of Wenatchee. Product: Sand and gravel, the constituents being granite, schist, and quartzite, ranging in size from 1½ inch down, with about 50% passing a ¼-inch screen. Development: Small pit.

Taylor Deposit

Location: On flood-plain of Wenatchee River, half a mile east of Monitor. Owner: W. E. Taylor (1918). Product: Sand and gravel for concrete paving. Deposit: Pebbles of gneiss, granite, basalt, quartzite, and diorite.

Wenatchee Deposit (22)

Location: T. 23 N., R. 20 E., on a gravel terrace on north side of Wenatchee River 3¼ miles north of Wenatchee. Product: Gravel, dominantly less than 2 inches in size, with scarcely any fine sand. Development: Pit 100 feet long and 75 feet high.

SILICA

Burch Mountain Deposit (24)

Location: NE¼ sec. 9, T. 23 N., R. 20 E., on west side and top of northward trending ridge on Burch Mountain. Access: Fair county road. Owner: Ray Boyles, Monitor, Wash. (1942). Product: Quartz, probably 96% silica or more. Deposit: Several small lenses or veins of quartz cutting Swakane gneiss. Development: Several small pits failed to show silica in commercial quantities.

Dry Gulch Deposit (14)

Location: NW¼ sec. 21, T. 22 N., R. 20 E., in Dry Gulch. Owner: J. J. Keegan, Wenatchee, Wash. (1942). Product: High-silica sandstone

which is a little coarser-grained than that in Squillchuck Canyon. **Deposit:** Swauk sandstone. **Development:** Small open pits and stripped areas.

Keegan Burch Mountain Deposit (25)

Location: NW¼ sec. 4, T. 23 N., R. 20 E., on west side of northward-trending ridge. **Access:** Fair county road. **Owner:** J. J. Keegan, Wenatchee, Wash. (1942). **Product:** Solid quartz with small amount of mica as impurity. **Deposit:** A 3- to 15-foot quartz lens dipping at a low angle in Swakane gneiss. **Development:** An area 30 by 70 feet has been stripped on the lens.

Leavenworth Deposit (30)

Location: Center sec. 10, T. 24 N., R. 17 E., across Wenatchee River from mouth of Power Creek, about 900 feet up the steep slope northeast of Stevens Pass highway about 2 miles from Leavenworth. **Owner:** H. G. Seanor, Seattle, Wash., and Ray Boyles, Monitor, Wash. (1942). **Product:** Quartz, probably 96% silica or more. **Deposit:** A body of white pegmatitic quartz is exposed in a sloping area 40 by 50 feet for a height of 35 feet. It is surrounded by diorite. **Development:** Small open cut.

Merritt Deposit (104)

Location: SE¼ sec. 6, T. 26 N., R. 16 E., between Blewett Pass highway and Nason Creek 2 miles west of Merritt. **Access:** 0.2 mile of private road connects property with Blewett Pass highway. **Owner:** R. C. Smith of Merritt has leased the property to Skagit Mineral Products Co., 303 Coleman Building, Seattle, Wash. (1942). **Product:** High purity silica for glass manufacture and for smelter flux. **Assays:** Shipments ran above 98% silica. **Deposit:** A lens of pure white quartz with maximum exposed thickness of 15 feet dips at a low angle to the east. The enclosing rock is a quartz-biotite gneiss. **Development:** A working pit 40 by 70 feet with a 25-foot face. (Aug. 1942). **Improvements:** Steam shovel, track and ore car, crushing plant, ore bin. (Aug. 1942). **Production:** Small amount over a number of years, and in 1942 had shipped about 2,000 tons of high grade silica to Tacoma smelter and to Northwest Glass Co. in Seattle by August.

Squillchuck Canyon Deposit (8)

Location: SW¼ sec. 22, T. 22 N., R. 20 E., on west side of canyon. **Access:** Good road from Wenatchee about 3 miles away. **Owner:** N. W. L. Brown, Wenatchee, Wash. (1942). **Product:** Soft, high-silica sandstone which after sorting and washing has a silica content of 98 to 99% and 0.3% or less of iron. **Deposit:** Swauk sandstone bed 100 feet thick. **Development:** Large open pit. **Improvements:** The necessary equipment for quarrying and loading trucks. **Production:** A car or two a week in 1942 was shipped to a portland cement plant.

Stemilt Canyon Deposit (4)

Location: NW¼ sec. 36, T. 22 N., R. 20 E. **Owner:** J. J. Keegan, Wenatchee, Wash. (1942). **Product:** High-silica sandstone which could be crushed and washed to produce nearly pure quartz sand. **Deposit:** High cliffs of Swauk sandstone.

TALC AND SOAPSTONE

Tumwater Canyon Deposit

Location: On hillside close to highway, about 5 miles northwest of Leavenworth. Probably in sec. 21, T. 25 N., R. 17 E. **Product:** Soapstone of fair quality. **Deposit:** Steeply-dipping thick tabular body in contact with biotite schist.

White River Deposit

Location: On White River northwest of Lake Wenatchee. **Product:** Soapstone of fair quality.

Williams Creek Deposit

Location: On Williams (Raging) Creek, tributary to Chiwawa River, about 30 miles north of Leavenworth. **Access:** 9 miles of trail from Chiwawa River road. **Product:** Soapstone. **Deposit:** Associated with the asbestos occurrence at the same locality.

BIBLIOGRAPHY

1892. Bethune, G. A., Mines and minerals of Washington: Second Ann. Rept. of First State Geologist, Part First.

1893. Russell, I. C., A geological reconnaissance in central Washington: U. S. Geol. Survey Bull. 108.

1897. Hodges, L. K., Mining in the Pacific Northwest: Seattle Post-Intelligencer.

1900. Russell, I. C., Preliminary paper on the geology of the Cascade Mountains in northern Washington: U. S. Geol. Survey 20th Ann. Rept., pt. 2.

1902. Landes, Henry, The metalliferous resources of Washington, except iron: Washington Geol. Survey Ann. Rept. for 1901, Part Two.

1903. Smith, G. O., Geology and physiography of central Washington: U. S. Geol. Survey Prof. Paper 19.

1904. Smith, G. O., U. S. Geol. Survey Geol. Atlas, Mount Stuart folio (no. 106).

1911. Weaver, C. E., Geology and ore deposits of the Blewett mining district: Washington Geol. Survey Bull. 6.

1913. Shedd, Solon, Cement materials and industry in the State of Washington: Washington Geol. Survey Bull. 4.

1916. Smith, W. S., Stratigraphy of the Skykomish Basin, Washington: Jour. Geology, vol. 24, pp. 559-584.

1921. Patty, E. N., and Glover, Sheldon L., The mineral resources of Washington, with statistics for 1919: Washington Geol. Survey Bull. 21.

1921. Patty, E. N., The metal mines of Washington: Washington Geol. Survey Bull. 23.

1922. Shedd, Solon; Jenkins, O. P.; and Cooper, H. H., Iron ores, fuels, and fluxes of Washington: Washington Div. Geology Bull. 27.

1924. Shedd, Solon, The mineral resources of Washington, with statistics for 1922: Washington Div. Geology Bull. 30.

1932. Waters, A. C., A petrologic and structural study of the Swakane gneiss, Entiat Mountains, Washington: Jour. Geology, vol. 40, pp. 604-633.

1933. Richarz, Stephen, Peculiar gneisses and ore formations in the eastern Cascades, Washington: Jour. Geology, vol. 41, pp. 757-768.

1935. Index of mineral occurrences in the State of Washington: Washington State Planning Council Research Pub. 3.

1936. Culver, Harold E., The geology of Washington, pt. 1, General features of Washington geology—with accompanying preliminary geologic map of the state: Washington Div. Geology Bull. 32.

1936. Glover, Sheldon L., Nonmetallic mineral resources of Washington, with statistics for 1933: Washington Div. Geology Bull. 33.

1938. Hodge, E. T., Market for Columbia River hydroelectric power using Northwest minerals: War Department, Corps of Engineers, U. S. Army.

1941. Glover, Sheldon L., Clays and shales of Washington: Washington Div. Geology Bull. 24.

1941. Hill, Thomas B., and Melrose, J. W., Directory of Washington metallic mining properties: Washington Div. Mines and Mining Inf. Circ. 7.

1943. Carithers, Ward, Directory of Washington mining operations: Washington Div. Mines and Mining Inf. Circ. 8.

INDEX OF METALLIC MINERAL PROPERTIES

PROPERTY NAME	Page	SUBSTANCE																
		Antimony	Chromium	Cobalt	Copper	Gold	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Platinum	Silver	Tin	Titanium	Tungsten	Vanadium	Zinc
Adolph prospect	38																		
Alta Vista (Pole Pick No. 2) mine (56)	9					X													
Amigo prospect (64)	14					X								X					
Antimony mine	46	X																	
Apex mine	9					X													
Apple Queen prospect (43)	14					X													
April Fool prospect (41)	14					X								X					
Arizona prospect (146)	31				X	X								X					
Aurelia Crown mine (138) (See Crown Point)	35																		
B Queen mine (47) (See Lucky Queen)	9																		
Bagley prospect	46																		
Bald Eagle and Gray Eagle prospect	27				X														
Bartlett prospect (83)	14									X									
Belcher prospect (181)	38					X		X											
Big Chief prospect	38					X		X						X					
Big Elephant prospect	22				X	X								X					
Billy Jack prospect (198)	38																		
Bismark prospect (147)	31				X														
Black and White (Diamond Dick) mine (34)	9					X													
Black Jack (La Rica) mine (39)	10					X				X									
Black Republican prospect	28			X	X							X							
Black Warrior prospect (192)	39				X			X						X					X
Blankenship prospect (174)	39				X														
Blewett mine (51) (See Peshastin)	10																		
Blind Lead prospect	28					X													
Blinn mine (74)	10					X													
Blue Bell (I. X. L.) mine (35)	10					X													
Blue Jay prospect (145)	31				X	X								X					
Blue Jay Extension prospect (151)	31				X	X								X					
Bobtail prospect (60)	14					X													
Bryan prospect (133)	22				X	X								X					
Budge prospect (31)	15					X								X					
Buster prospect (162)	31					X								X					
Butte mine (120)	20					X													
Butte prospect	39				X	X								X					
Byron prospect (78)	15					X													
Caledonia prospect (46)	15				X	X													
Canada prospect (160)	31				X	X								X					
Cascade prospect (149)	31					X		X											
Cascade Consolidated prospect (185)	39					X		X						X					X
Champion prospect (130)	22					X													
Charlotte prospect (9)	46					X								X					
Chelan Consolidated Copper prospect	22																		
Christy prospect	39																		
Chromite prospect (67)	15		X																
Chub prospect (173)	31					X								X					
Cinnabar prospect (16)	46									X									
Clagstone prospect (197)	39					X		X						X					X
Clinton prospect	28																		
Cook mine (121)	20					X													
Cook-Galbraith prospect	25					X													
Copper King prospect (99) (See Van Epps copper)	28																		
Copper King prospect (Stehekin dist.)	39																		
Crown Point (Aurelia Crown) mine (138)	35										X								
Crown Prince and Free Coinage prospect	39				X	X								X					
Culver mine (59)	10					X													
Daisy Dean prospect (79)	15					X		X						X					
Davenport mine (190)	38				X	X		X						X					
Davenport prospect (66)	15						X												
Defender prospect (201)	39				X			X						X					
Diamond Dick mine (34) (See Black and White)	10																		
Dick prospect (118)	25				X							X							
Donaldson prospect (42)	15					X								X					
Doubtful prospect (193)	40				X			X						X					
Drummer Boy prospect (129)	23					X								X					
Eagle and Iowa prospect (80)	15				X	X													
Elephant prospect (152)	32													X					

INDEX OF METALLIC MINERAL PROPERTIES—*Continued*

PROPERTY NAME	Page	SUBSTANCE																
		Antimony	Chromium	Cobalt	Copper	Gold	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Platinum	Silver	Tin	Titanium	Tungsten	Vanadium	Zinc
Emerald prospect (131) (See Royal Development)	23																		
Emma prospect (167)	32					X													
Emma Lee prospect (168)	32				X	X								X					
Esmeralda prospect (131) (See Royal Development)	23																		
Eureka (Golden Cherry) mine (36)	10					X													
Eureka prospect (11)	46																		
Falls prospect (194)	40				X	X		X						X					
Flamingo prospect (176)	40				X	X								X					
Fraction mine (37)	11					X													
Franklin prospect (186)	40							X						X					
Galena prospect (187)	40					X		X						X					X
Gem prospect (55) (Blewett dist.)	16					X								X					
Gem prospect (157) (Meadow Creek dist.)	32				X	X								X					
Georgie Smith prospect (109)	23					X													
Gertie prospect	40																		
Gibson prospect (170)	32																		
Gilman prospect	46																		
Goericke prospect	40					X													
Golden Cherry mine (36) (See Eureka)	11																		
Golden Eagle mine (77)	11					X													
Golden Guinea prospect (85)	16					X													
Golden King (Squilchuck) (Wenatchee) mine (10)	46					X								X					
Goman nickel prospect (117)	26											X							
Gordon prospect (63)	16					X						X		X					
Grace prospect (153)	32				X	X								X					
Grand View prospect	16				X	X													
Granite prospect (171)	32																		
Gray Eagle prospect	40					X								X					
Great Republic prospect	40					X		X						X					
Happy Thought prospect (172)	32																		
Hawk's Nest prospect (110)	23					X													
Hazel prospect (44)	16					X													
Holden mine (139)	35				X	X								X					X
Homestake prospect (38)	16					X													
Homestake and Star prospect (177)	40					X								X					
Horseshoe Basin prospect	41					X		X						X					
Horseshoe Basin Mining Co. prospect (189)	41																		
Humbug prospect	28				X	X		X						X					
Hummingbird mine (96)	11					X													
Hunter prospect (148)	32				X	X								X					
I. X. L. mine (35) (See Blue Bell)	11																		
Idaho prospect (164)	32				X	X								X					
Indiana prospect	41					X		X						X					
Iowa prospect (154)	33					X								X					
Irene prospect (139)	36																		
Iron Cap prospect (169)	33																		
Iron Cross prospect (155)	33																		
Iron King prospect (33)	16																		
Isoletta mine (178)	38					X								X					
Ivanhoe mine (75) (See Wilder)	11																		
Jack Creek prospect (98)	28										X								
Jefferson and Tennessee prospect	41							X											
Johnson prospect (48)	16					X													
Jumbo prospect	20					X													
King Solomon prospect (100) (Leavenworth dist.)	28				X														
King Solomon prospect (158) (Meadow Creek dist.)	33				X	X								X					
Kingman and Pershall prospect (Chelan Butte dist.)	20					X													
Kingman and Pershall prospect (Stehekin dist.)	41																		
La Rica mine (39) (See Black Jack)	11																		
Lake and Flora prospect	41					X								X					
Lake Shyall prospect (175)	41				X	X								X					
Last Chance prospect (Blewett dist.)	16					X													
Last Chance prospect (102) (Leavenworth dist.)	28					X		X											
Last Chance prospect (Wenatchee dist.)	46																		
Leavenworth prospect	26									X									
Little Jap prospect (144)	33				X	X								X					
Logan prospect (195)	41					X		X						X					X

INDEX OF METALLIC MINERAL PROPERTIES—*Continued*

PROPERTY NAME	Page	SUBSTANCE																	
		Antimony	Chromium	Cobalt	Copper	Gold	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Platinum	Silver	Tin	Titanium	Tungsten	Vanadium	Zinc
Lone Rock prospect (49)	17					X													
Lottie S. prospect	41			X										X					
Lucky Queen (B Queen) mine (47)	11				X														
Lulu prospect	41				X									X					
McCarthy prospect (33)	17																		
Magnetite No. 1 prospect (33)	17																		
Manistee mine (62)	12				X									X					
Marcus Stein prospect (140)	36				X									X					
Marion mine	12				X									X					
Marlin prospect (183)	41			X	X		X												
Maryland prospect	42				X		X							X					
Mattie Jane prospect (159)	33																		
Mayflower and East Side prospect	42																		
Meadow Creek Mines prospect	33				X														
Meridian prospect (68)	17			X	X							X		X					
Minneapolis prospect (200)	42			X	X									X					
Monarch prospect (88)	17		X		X							X							
Moscow prospect (163)	33			X	X									X					
Mother Lode prospect (112)	23				X														
Mountain Sheik prospect	42			X										X					
Nebraska prospect (166)	33			X	X		X							X					
Nelson prospect (99) (See Van Epps copper)	28																		
Nevada and Excelsior prospect	28				X							X		X					
New York prospect (84)	17			X	X									X					
North Pole prospect (73)	17			X	X				X		X			X					
North Star mine (53)	12				X														
North Star prospect (136)	36						X							X					
Ohio prospect	42				X		X							X					
Olden mine (54)	12				X														
Olympia prospect (81)	17				X														
Ombompo prospect (180)	42				X		X							X					
Ontario prospect (70) (Blewett dist.)	17			X	X							X							
Ontario prospect (Leavenworth dist.)	29		X	X								X							
P. L. prospect (128)	23				X									X					
P. P. nickel prospect (71)	18				X							X							
Palmer prospect (111)	23				X														
Panama No. 2 prospect (191)	42				X		X							X					X
Pangborn mine (114)	25				X														
Peshastin (Blewett) mine (51)	12				X														
Peterson prospect	42								X										
Phipps mine (76)	12				X														
Phoenix mine (94)	13				X														
Phyllis prospect (165)	33			X	X									X					
Pickwick prospect (Blewett dist.)	18				X									X					
Pickwick prospect (Leavenworth dist.)	29			X	X									X					
Pole Pick No. 1 mine (57)	13				X														
Pole Pick No. 2 mine (56) (See Alta Vista)	13																		
Prairie Dog mine	25				X									X					
Prince of Wales prospect	42													X					
Prospect mine (58)	13				X									X					
Quien Sabe prospect (184)	42			X	X		X							X					
Rainbow No. 2 and No. 3 prospect (97)	18				X														
Rainier prospect (72)	18			X	X							X		X					
Raymond prospect (141)	36				X									X					
Red Butte prospect (92)	18		X		X							X							
Red Cap prospect (134)	23			X	X									X					
Red Hill prospect (132)	23			X	X									X					
Red Mountain mine (131) (See Royal Development)	22																		
Rex (Rogers) mine (116)	25				X														
Robischaud (Safety Harbor Creek) prospect (127)	26			X							X								
Rogers mine (116) (See Rex)	25																		
Roscoe Conkling prospect	43				X		X							X					
Rothert prospect (33)	18																		
Rouse prospect (179)	43			X	X		X							X					
Roy and Ray prospect (95)	18				X														
Royal Development mine (131)	22			X	X									X			X		
Safety Harbor Creek prospect (127) (See Robischaud)	26																		
Sailor Boy prospect	43				X									X					

INDEX OF METALLIC MINERAL PROPERTIES—*Continued*

PROPERTY NAME	Page	SUBSTANCE																
		Antimony	Chromium	Cobalt	Copper	Gold	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Platinum	Silver	Tin	Titanium	Tungsten	Vanadium	Zinc
Sandell mine (52)	13					X													
Savage prospect	26					X								X					
Shoshone prospect (69)	18									X		X							
Silver Bell prospect (161)	34																		
Silver Fiend prospect (101)	29				X	X		X						X					
Silver Jack prospect (196)	43					X		X											X
Silver King prospect (150)	34				X	X		X											
Silver Trail mine (137)	36				X	X		X						X					X
Snowflake prospect	18					X													
Spokane Boy and Girl prospect	43				X	X		X						X					X
Squillchuck mine (10) (See Golden King)	46																		
State prospect	18																		
Stehekin Mining Co. prospect	43				X	X													
Stimson prospect	43				X	X													X
Stoner prospect (61)	18																		
Summit prospect (182)	43					X		X											
Sunday Morning mine (143)	30					X		X						X					
Sunnyside prospect	43																		
Sunrise prospect (15)	47																		
Sunset prospect (40) (Blewett dist.)	19				X	X													
Sunset prospect (115) (Entiat dist.)	26					X													
Sunset prospect (Stehekin dist.)	44					X													
Texas Jack prospect (188)	44				X									X					
Tibbie prospect	47																		
Tiger prospect (202)	44				X	X		X						X					
Tip Top mine (50)	13					X													
Titanium prospect (123)	26															X			
Tommy Jack prospect (199)	44					X													
Twin Falls prospect	44				X														
Union and Dominion mine (65)	13					X								X					
Van Epps antimony prospect	29	X																	
Van Epps copper prospect (99)	20				X														
Velma prospect (82)	19									X		X							
Venus prospect (45)	19					X								X					
Viola prospect	44																		
War Eagle prospect (86)	19					X						X							
Warrior General mine	14					X													
Washington Meteor mine (39, 51, 52, 59, 60, 96)	14																		
Washington Nickel Mining and Alloys iron prospect (33)	19		X				X					X							
Washington Nickel Mining and Alloys nickel prospect (91)	19											X							
Well Known prospect	44					X													
Wenatchee mine (10) (See Golden King)	46																		
White Elephant mine (75) (See Wilder)	14																		
White Star prospect (103)	29				X	X		X						X					
Wilder mine (75)	14					X								X					
Winnipeg prospect (156)	34																		
Wright mine	14					X													

INDEX OF GOLD PLACER PROPERTIES

PROPERTY NAME	Page	PROPERTY NAME	Page
Bloom placer (93)	48	Railroad Creek placer (142)	48
Cook placer	48	Ruby Creek placer (89)	48
Crawford placer	48	Shaser Creek placer (32)	48
Deep Creek placer (108)	48	Slubach placer	49
Ingalls Creek placer (90)	48	Solita placer	49
Lakeside placer (122)	48	Wednesday placer	49
Leavenworth placer (29)	48	Wenatchee placer (17)	49
Nigger Creek placers (87)	48	Wenatchee River placer (28)	49
		Wilson placer	49

INDEX OF NONMETALLIC MINERAL PROPERTIES

PROPERTY NAME	Page	SUBSTANCE														
		Asbestos	Basalt	Clay	Coal	Diatomite	Granite	Graphite	Limestone	Mica	Mineral Water	Petroleum and Natural Gas	Pumice	Sand and Gravel	Silica	Talc and Soapstone
Alaska Marble deposit	52								X							
Brown deposit (7)	50			X												
Buck Creek deposit (135)	54												X			
Burch Mountain deposit (24)	55														X	
Cashmere deposit (27)	54													X		
Chelan Falls deposit	53									X						
Chelan quarry	52							X								
Chumstick Mountain deposit	49	X														
Columbia deposit (18)	54													X		
Dry Gulch deposit (12)	50			X											X	
Dry Gulch deposit (14)	55														X	
Dry Gulch mine (13)	51				X											
Entiat deposit (113)	52								X							
Entiat quarry	52							X								
Goman deposit (119)	53									X						
Goose Creek deposit	50	X														
Great Northern quarry	50		X													
Icicle Creek deposit	50	X														
Ingalls Creek deposit	50	X														
Johnson coal deposit (20)	51				X											
Keegan Burch Mountain deposit (25)	56														X	
Keegan clay deposit (3)	51			X												
Lake Chelan "13" deposit (126)	53								X							
Lake Chelan "14" deposit (125)	53								X							
Lake Chelan "29" deposit (124)	53								X							
Larsen deposit (21)	55													X		
Leavenworth deposit (30)	56														X	
Mad River deposit	54									X						
Marble Creek deposit	53								X							
Maverick Peak deposit	52							X								
Merritt deposit (104)	56														X	
Monitor deposit	50	X														
Nason Creek deposit	52							X								
Nelson deposit	55													X		
Norris deposit	52					X										
Quality deposit	55													X		
Rainy Creek deposit (105)	53								X							
Redmon deposit	55													X		
Redmon quarry	50		X													
St. Luise Bros. deposit	51			X												
Sampson deposit	55													X		
Sampson quarry	50		X													
Scholze deposit	54												X			
Soda spring (107)	54										X					
Soda springs (106)	54										X					
Squaw Saddle deposit	51			X												
Squilchuck Canyon deposit (8)	56														X	
Stemilt Canyon deposit (4)	56														X	
Stemilt Creek deposit (1)	51			X												
Stemilt Creek deposit (2)	51			X												
Swakane Creek deposit	50	X														
Swakane deposit (26)	55													X		
Taylor deposit	55													X		
Tumwater Canyon deposit	57															X
Tumwater Canyon deposit	54									X						
Wenatchee Brick and Tile deposit (19)	51			X												
Wenatchee deposit (22)	55													X		
Wenatchee deposit (23)	53								X							
Wenatchee Heights deposit (5)	52				X											
Wenatchee Heights well (6)	54											X				
White River deposit	57															X
Williams Creek deposit	50	X														
Williams Creek deposit	57															X

LIST OF MINERAL PROPERTIES MAPPED

1. Stemilt Creek clay
2. Stemilt Creek clay
3. Keegan clay
4. Stemilt Canyon silica
5. Wenatchee Heights coal
6. Wenatchee Heights well
7. Brown clay
8. Squillchuck Canyon silica
9. Charlotte prospect
10. Golden King (Squillchuck) (Wenatchee) mine
11. Eureka prospect
12. Dry Gulch clay
13. Dry Gulch coal
14. Dry Gulch silica
15. Sunrise prospect
16. Cinnabar prospect
17. Wenatchee placer
18. Columbia sand and gravel
19. Wenatchee Brick and Tile clay
20. Johnson coal
21. Larsen sand and gravel
22. Wenatchee sand and gravel
23. Wenatchee limestone
24. Burch Mountain silica
25. Keegan Burch Mountain silica
26. Swakane sand and gravel
27. Cashmere sand and gravel
28. Wenatchee River placer
29. Leavenworth placer
30. Leavenworth silica
31. Budge prospect
32. Shaser Creek placer
33. Washington Nickel Mining and Alloys iron prospect
34. Black and White (Diamond Dick) mine
35. Blue Bell (I. X. L.) mine
36. Eureka (Golden Cherry) mine
37. Fraction mine
38. Homestake prospect
39. Black Jack (La Rica) mine
40. Sunset prospect
41. April Fool prospect
42. Donaldson prospect
43. Apple Queen prospect
44. Hazel prospect
45. Venus prospect
46. Caledonia prospect
47. Lucky Queen mine
48. Johnson prospect
49. Lone Rock prospect
50. Tip Top mine
51. Peshastin (Blewett) mine
52. Sandell mine
53. North Star mine
54. Olden mine
55. Gem prospect
56. Alta Vista (Pole Pick No. 2) mine
57. Pole Pick No. 1 mine
58. Prospect mine
59. Culver mine
60. Bobtail prospect
61. Stoner prospect
62. Manistee mine
63. Gordon prospect
64. Amigo prospect
65. Union and Dominion mine
66. Davenport prospect
67. Chromite prospect
68. Meridian prospect
69. Shoshone prospect
70. Ontario prospect
71. P. P. nickel prospect
72. Rainier prospect
73. North Pole prospect
74. Blinn mine
75. Wilder (Ivanhoe) (White Elephant) mine
76. Phipps mine
77. Golden Eagle mine
78. Byron prospect
79. Daisy Dean prospect
80. Eagle and Iowa prospect
81. Olympia prospect
82. Velma prospect
83. Bartlett prospect
84. New York prospect
85. Golden Guinea prospect
86. War Eagle prospect
87. Nigger Creek placers
88. Monarch prospect
89. Ruby Creek placer
90. Ingalls Creek placer
91. Washington Nickel Mining and Alloys nickel prospect
92. Red Butte prospect
93. Bloom placer
94. Phoenix mine
95. Roy and Ray prospect
96. Hummingbird mine
97. Rainbow No. 2 and No. 3 prospect
98. Jack Creek prospect
99. Van Epps copper (Nelson) (Copper King) prospect
100. King Solomon prospect
101. Silver Fiend prospect
102. Last Chance prospect
103. White Star prospect
104. Merritt silica
105. Rainy Creek limestone
106. Soda Springs mineral water
107. Soda Spring mineral water
108. Deep Creek placer
109. Georgie Smith prospect
110. Hawk's Nest prospect
111. Palmer prospect
112. Mother Lode prospect
113. Entiat limestone
114. Pangborn mine
115. Sunset prospect
116. Rex (Rogers) mine
117. Goman nickel prospect
118. Dick prospect
119. Goman mica
120. Butte mine
121. Cook mine
122. Lakeside placer
123. Titanium prospect
124. Lake Chelan "29" limestone
125. Lake Chelan "14" limestone
126. Lake Chelan "13" limestone
127. Robischaud prospect
128. P. I. prospect
129. Drummer Boy prospect
130. Champion prospect
131. Royal Development (Red Mountain) mine
132. Red Hill prospect
133. Bryan prospect
134. Red Cap prospect
135. Buck Creek pumice
136. North Star prospect
137. Silver Trail mine
138. Crown Point (Aurelia Crown) mine
139. Holden mine
140. Marcus Stein prospect
141. Raymond prospect
142. Railroad Creek placer
143. Sunday Morning mine
144. Little Jap prospect
145. Blue Jay prospect
146. Arizona prospect
147. Bismark prospect
148. Hunter prospect
149. Cascade prospect
150. Silver King prospect
151. Blue Jay Extension prospect
152. Elephant prospect
153. Grace prospect
154. Iowa prospect
155. Iron Cross prospect
156. Winnipeg prospect
157. Gem prospect
158. King Solomon prospect
159. Mattie Jane prospect
160. Canada prospect
161. Silver Bell prospect
162. Buster prospect
163. Moscow prospect
164. Idaho prospect
165. Phyllis prospect
166. Nebraska prospect
167. Emma prospect
168. Emma Lee prospect
169. Iron Cap prospect
170. Gibson prospect
171. Granite prospect
172. Happy Thought prospect
173. Chub prospect
174. Blankenship prospect
175. Lake Shyall prospect
176. Flamingo prospect
177. Homestake and Star prospect
178. Isoletta mine
179. Rouse prospect
180. Ombompo prospect
181. Belcher prospect
182. Summit prospect
183. Marlin prospect
184. Quien Sabe prospect
185. Cascade Consolidated prospect
186. Franklin prospect
187. Galena prospect
188. Texas Jack prospect
189. Horseshoe Basin Mining Co. prospect
190. Davenport mine
191. Panama No. 2 prospect
192. Black Warrior prospect
193. Doubtful prospect
194. Falls prospect
195. Logan prospect
196. Silver Jack prospect
197. Clagstone prospect
198. Billy Jack prospect
199. Tommy Jack prospect
200. Minneapolis prospect
201. Defender prospect
202. Tiger prospect

STATE OF WASHINGTON
DEPARTMENT OF CONSERVATION AND DEVELOPMENT
DIVISION OF GEOLOGY
HAROLD E. CULVER, SUPERVISOR

REPORT OF INVESTIGATIONS
NUMBER 9 PLATE 1

MINERAL PROPERTIES OF CHELAN COUNTY

LEGEND

- MINE
- PROSPECT
- PLACER
- NONMETALLIC
- DISTRICT BOUNDARY

BASE MAP FROM
WENATCHEE AND CHELAN
NATIONAL FOREST MAPS

Scale 1 0 1 2 3 4 5 Miles

LEGEND

- National Forest Boundary
- Adjacent National Forest Boundary
- Good motor road
- Poor motor road
- Trail
- Railroad
- Telephone line
- Supervisor's Headquarters
- R.S. Ranger station
- G.S. Guard station
- Permanent lookout station
- Triangulation station
- House, cabin, or other building
- Camp ground
- National Forest land
- Area which may be exchanged under Act approved Sept. 22, 1922

Compiled at Washington Office, from U. S. G. S., G. L. O., Forest Service, and other surveys, 1935. Revised April, 1936

Polyconic projection
North American datum