HILLTOP DISTRICT

The Hilltop district, also known as the Kimberly, is on the northwest slope of Shoshone Peak (altitude 9,760 feet) in the Shoshone Range 18 miles southeast of Battle Mountain. It adjoins the Bullion district on the northwest and the Lewis district on the southeast. This area was prospected in the early days of Austin; but no important discoveries were made until 1907, when Matt Scow, associated with Harry Anderson and Nels Duborg, discovered wire gold in the vicinity of some old workings. Other discoveries followed, and the following year there was a lively boom. Several companies were organized, and the ground was divided into lease blocks. A number of shipments of ore were made; one lease on the Independence claim owned by the Philadelphia Western Mining Co. is said to have produced $15,000 in shipping ore. About 1910 the Hilltop Milling & Reduction Co. erected a 10-stamp amalgamation-concentration mill, which was changed to an all-slime cyanidation plant in 1914. This company operated successfully for a number of years. In 1913 the Kimberly Consolidated Mining Co. took over the properties of the Philadelphia Western Mining Co. and was the principal producer for a number of years; its holdings were acquired eventually by the Hilltop Nevada Mining Co. This latter company erected a 100-ton flotation mill and power plant in 1922 and 1923, but it operated only a few months. In 1934 the Hilltop holdings were acquired by the Stone Cabin Consolidated Mines Co., and the flotation mill was dismantled and moved to a property near Dayton, Nev. In recent years most of the mining in the district has been done by lessees. In addition to the Hilltop properties, the Blue Dick, Kattenborn, and Red Top mines have been important producers. The last three mines are in the older portion of the Hilltop district.

The principal production in the district was made between 1912 and 1921. The total production from 1902 to 1936 (shown in table 5) was $701,855, chiefly gold and silver with small amounts of copper and lead.

Stone Cabin Consolidated Mines, Inc.

In the Hilltop district, the Stone Cabin Consolidated Mines Co. owns 1 patented railroad section, 16 patented claims, and the Golden Rule group of 7 unpatented claims. In recent years the only production has been from sporadic leasing operations. In 1937, Terry McGovern shipped 10 cars of ore averaging about 0.5 ounce in gold.

The property is developed by the main transportation adit, 1,800 feet in length, the Washington shaft, 365 feet in depth, the Burns and Independence adits, and other underground workings totaling about 7 miles. Equipment includes a 300-horsepower, Fairbanks-Morse, 6-cylinder, Diesel engine, a Chicago-Pneumatic compressor (9 x 14 inches), and a number of camp buildings.

TABLE 5. - Gold, silver, copper, and lead production from Hilltop District, Lander County, Nevada, 1902-1936, in terms of recovered metal

(Compiled by Charles White Merrill, Mineral Production and Economics Division, Bureau of Mines)

Year	Placer						Lode			
	No. of mines	Gold		Silver		Total value	No. of mines	Ore	Gold	
		Fine ounces	Value	Fine ounces	Value			Short tons	Fine ounces	Value
1902-08	-	-	-	-	-	-	-	-	-	-
1909	-	-	-	-	-	-	2	53	613.25	$12,677
1910	-	-	-	-	-	-	3	52	210.57	4,353
1911	1	75.00	$1,550	20	$11	$1,561	2	180	218.08	4,508
1912	-	-	-	-	-	-	5	4,083	2,563.59	52,994
1913	-	-	-	-	-	-	3	10,065	2,894.94	59,844
1914	-	-	-	-	-	-	2	2,279	709.15	14,659
1915	2	8.20	170	2	1	171	2	1,170	712.63	14,731
1916	-	-	-	-	-	-	5	3,814	1,625.39	33,600
1917	-	-	-	-	-	-	7	3,151	1,045.82	21,619
1918	-	-	-	-	-	-	4	2,472	985.67	20,376
1919	-	-	-	-	-	-	5	938	1,077.70	22,278
1920	-	-	-	-	-	-	3	248	119.09	2,462
1921	-	-	-	-	-	-	3	292	800.12	16,540
1922	-	-	-	-	-	-	-	-	-	-
1923	-	-	-	-	-	-	2	149	143.00	2,956
1924	-	-	-	-	-	-	1	1	.04	1
1925	-	-	-	-	-	-	4	122	32.33	668
1926	-	-	-	-	-	-	3	70	44.66	923
1927	-	-	-	-	-	-	-	-	-	-
1928	-	-	-	-	-	-	1	52	17.81	368
1929	-	-	-	-	-	-	-	-	-	-
1930	-	-	-	-	-	-	2	300	252.00	5,209
1931	-	-	-	-	-	-	2	91	204.52	4,228
1932	-	-	-	-	-	-	2	115	124.86	2,581
1933	1	22.44	574	3	1	575	-	-	-	-
1934	1	4.28	150	1	1	151	3	533	668.07	23,349
1935	-	-	-	-	-	-	5	706	343.80	12,033
1936	1	8.75	306	2	1	307	4	1,622	515.90	18,057
Total	-	118.67	2,750	28	15	2,765	-	32,558	15,922.99	351,014

See footnote on page 49

TABLE 5. - Gold, silver, copper, and lead production from Hilltop District, Lander County, Nevada, 1902-1936, in terms of recovered metal (Continued)

(Compiled by Charles White Merrill, Mineral Production and Economics Division, Bureau of Mines)

Year	Lode								Total value (lode and placer)
	Silver		Copper		Lead		Total value	Average recoverable value of ore per ton 1/	
	Fine ounces	Value	Pounds	Value	Pounds	Value			
1902-08	-	-	-	-	-	-	-	-	-
1909	627	$326	-	-	3,395	$146	$13,149	$248.09	$13,149
1910	230	124	28	$4	188	8	4,489	86.33	4,489
1911	297	157	-	-	4,046	92	4,757	26.43	6,318
1912	2,832	1,742	5,174	854	2,046	92	55,682	13.64	55,682
1913	7,849	4,741	88	13	972	43	64,641	6.42	64,641
1914	29,989	16,584	2,793	372	37,638	1,468	33,083	14.52	33,083
1915	25,591	12,975	4,101	718	32,558	1,530	29,954	25.60	30,125
1916	50,136	32,990	6,215	1,529	68,729	4,742	72,861	19.10	72,861
1917	23,783	19,597	36,875	10,067	47,900	4,119	55,402	17.58	55,402
1918	26,639	26,639	257,479	63,597	1,234	88	110,700	44.78	110,700
1919	28,028	31,391	21,500	3,999	268,039	14,206	71,874	76.62	71,874
1920	13,113	14,293	923	170	13,199	1,056	17,981	72.50	17,981
1921	5,279	5,279	14,312	1,846	2,123	96	23,761	81.37	23,761
1922	-	-	-	-	-	-	-	-	-
1923	2,968	2,434	5,553	816	569	40	6,246	41.92	6,246
1924	1,650	1,105	298	39	489	39	1,184	1,184.00	1,184
1925	16,586	11,511	908	129	4,351	379	12,687	103.99	12,687
1926	4,203	2,623	738	103	4,049	324	3,973	56.76	3,973
1927	-	-	-	-	-	-	-	-	-
1928	1,202	703	567	81	-	-	1,152	22.15	1,152
1929	-	-	-	-	-	-	-	-	-
1930	692	266	4,017	522	-	-	5,997	19.99	5,997
1931	603	175	3,314	302	-	-	4,705	51.70	4,705
1932	383	108	1,900	120	-	-	2,809	24.43	2,809
1933	-	-	-	-	-	-	-	-	575
1934	3,286	2,124	4,513	361	-	-	25,834	48.47	25,985
1935	23,246	16,708	-	-	-	-	28,741	40.71	28,741
1936	36,734	28,450	8,886	818	2,233	103	47,428	29.24	47,735
Total	305,946	233,045	380,182	86,460	493,758	28,571	699,090	21.47	701,855

1/ Not to be confused with average assay value of ore.

The formation is chiefly quartzite with some interbedded siliceous shales and conglomerates. The sediments are irregular in strike and dip and are faulted and intruded by tongues of highly altered granodiorite porphyry. The ore is a brecciated quartzite cemented with quartz and carrying free gold and some silver. In the sulphide zone the associated ore minerals are pyrite, galena, and chalcopyrite. The ore bodies are irregular in width and strike but generally parallel the bedding of the sediments. In places the ore occurs in the quartzite with no apparent vein structure. The ore is said to contain a small amount of bismuth in places.

Red Top Mine

The Red Top mine, owned by the Pittsburg Red Top Mining Co., R. E. Rogers, president, of Los Angeles, Calif., comprises one patented section of land in the vicinity of the old camp of Maysville about 1 mile west of the Hilltop mine.

In the nineties, a Chilean mill and four amalgamating pans were placed in Krum Canyon below the mine to treat the ore, but no production statistics are available. In recent years the property has been under lease to Verdal C. Clark and R. G. Kirk, who have made sporadic shipments of high-grade ore to smelter.

Development consists of four adits, the longest of which is 1,400 feet, and subsidiary workings probably totaling about 5,000 feet. There is no equipment on the property other than tools for hand mining.

The prevailing formation is quartzite. The vein worked by lessees in recent years strikes N. 40° W., with a nearly vertical dip; it is rather small and is disturbed by numerous minor faults.

The ore occurrence is erratic, and numerous pannings are necessary to follow the material that is of high enough grade to constitute a shipping product. Free gold and some silver are associated with gray copper, arsenopyrite, sphalerite, galena, and other minerals in a gangue of quartz, calcite, a little fluorite, and brecciated quartzite. It is reported that the ore also contains gold tellurides and bismuth. The value of the ore is increased by screening through 1/2-mesh screen and shipping the undersize product. The smelter returns on a shipment of ore made on August 21, 1936, to the American Smelting & Refining Co. furnished the following data:

Metal quotations:	Gold	$34.9125 per ounce
	Silver	.77 per ounce
		Ounces per ton
Settlement assay:	Gold	3.62
	Silver	13.55
		Percent
	Copper	0.23
	Lead	.7
	Insoluble	81.84
	Zinc	.5
	Sulphur	2.3
	Iron	8.2
	Lime	.7

	Pounds		
Wet weight, gross	45,020		
Weight, 530 sacks	534		
Moisture, 1.5 percent	44,486		
Moisture, 1.5 percent	668		
Dry weight	43,818 or 21.909 tons		
Smelter payment:	Gold, 100 percent at $32.31825 per ounce		$116.99
	Silver, 95 percent at $0.77 per ounce		9.91
	Gross value per ton		126.90
Treatment charge:	Base charge	$3.50	
	10 percent of excess over $20 value, max.	2.00	
	Treatment charge per ton	5.50	5.50
	Net value per ton		121.40
Deductions:	Freight at $9.50 per ton	$213.85	
	Hauling at $3.50 per ton	78.79	
		292.64	
	21.909 tons at $121.40		2,659.75
	Deductions		292.64
	Net proceeds		2,367.11

Blue Dick Group

The Blue Dick group of eight unpatented claims, owned by R. G. Kirk, Verdal C. Clark, and the J. E. Street estate, is in the western part of the Hilltop district about 20 miles wouthеast of Battle Mountain. This property was discovered by George Dawson about 1900; it has been worked intermittently, principally by lessees for shipping ore. In 1917 and 1918 the property was operated by Earl Gilmore of the Gilmore Oil Co. of Los Angeles, who is reported to have mined 18 cars of shipping ore with a gross value of $20,000. In 1934 the property was leased to Harry C. Hauck and Andrew Kinneberg of Battle Mountain.

According to the shipping records, from November 1934 to October 1937 Hauck and Kinneberg shipped 2,492.42 tons of ore with a gross smelter value of $74,093, an average of $29.73 per ton. At the time of the writer's visit, two men were employed at the mine producing shipping ore.

Development consists of seven scattered adits, the longest about 250 feet, and subsidiary workings totaling about 2,000 feet. The deepest working is approximately 150 feet from the surface. Equipment includes a Worthington portable compressor (capacity, 210 cubic feet), a Sullivan tugger hoist, machine drills, blacksmith shop, and several camp buildings.

The principal vein, called the Blue Dick, is in quartzite; it strikes N. 45° W. and dips about 45° S.W. The width ranges from 1 to 5 feet The value is chiefly in silver with minor amounts of gold and a little copper in a gangue

of quartz and brecciated quartzite. The smelter returns on a carload shipment made by Hauck and Kinneberg to the American Smelting & Refining Co. on October 9, 1937, furnished the following data:

Metal quotations:	Gold	$34.9125 per ounce
	Silver	.77 per ounce
		Ounces per ton
Settlement assay:	Gold	0.0325
	Silver	31.1175
		Percent
	Copper	0.10
		Pounds
Wet weight		97,440
Moisture, 1.75 percent		1,706
Dry weight		95,734 or 47.867 tons

Treatment charge:	Base charge	$3.00	
	10 percent of excess over $20	.38	
	Labor increase 4/1/37	.59	
	Treatment charge per ton	3.97	
Smelter payment:	Gold, 100 percent at $31.81825 per ounce		$1.03
	Silver 95 percent at $0.77 per ounce		22.76
			23.79
	Treatment charge		3.97
	Net value per ton		19.82
	47.867 tons at $19.82		948.72
Deductions:	Freight advanced at $3.20 per ton	$155.90	
	Hauling at $3.50 per ton	170.52	
	Sampling	29.23	
	Assaying	6.00	
		361.65	
			361.65
	Net returns		587.07
	Royalty, 10 percent of net returns		58.71
	Net proceeds		528.36

Kattenhorn Mine

The Kattenhorn mine, owned by Mrs. Pearl Kattenhorn of Battle Mountain and Harry Burke of San Francisco, Calif., comprises a group of three unpatented claims near the Blue Dick property. It is reported to have produced about $200,000, mostly in the eighties, when it was equipped with two Huntington grinding units and four amalgamating pans. This mill closed in 1890. In recent years the property has been inactive.

The Kattenhorn vein is developed by six scattered adits and other lateral workings totaling several thousand feet. There is no equipment on the property.

The Kattenhorn vein has about the same strike and dip as the Blue Dick and was mined chiefly for silver.

Placer Deposits

Placer gold was found in Krum Canyon by John Nelson in 1914. From 1914 to 1916 lessees produced about $2,000 in placer gold by drift mining. Total production has been about $3,000.

The principal placer property, known as the First Riffle group, is owned by Charles Grue of Battle Mountain and comprises 160 acres at the upper end of Krum Canyon and part of Hilltop Gulch. The upper end of Krum Canyon is a small basin about 1/2 mile wide and 1 mile long.

The Grue property has been prospected by four shafts ranging from 27 to 72 feet in depth and a bedrock drift about 500 feet in length. Prospecting has been handicapped considerably because of caving ground and water along bedrock. The alluvium near the surface is largely sand and mud and near bedrock is composed chiefly of rounded medium-sized boulders. Virtually all the gold is found directly above bedrock, which is composed chiefly of a graphitic lime shale and quartzite. Gold is fairly coarse and is about 870 fine. A small amount of black sand and considerable barite is associated with the gold.

Antimony Deposit

A deposit of antimony covered by two unpatented claims held by R. G. Kirk of Battle Mountain is in the western part of the Hilltop district. About 40 years ago 1,000 tons of antimony ore was treated locally for its silver in a mill originally erected to treat ore from the Red Top mine. This venture was unsuccessful. About 100 tons of sorted ore yielding 60 percent antimony was shipped from the property during the World War period. Since the World War the property has been inactive.

Development includes an adit 140 feet long and other surface workings comprising a total of several hundred feet. There is no equipment on the property.

The antimony occurs as stibnite in a contact vein between porphyry and gneiss.

Barite Deposits

A number of deposits of barite are in the north end of the Shoshone Range, and for convenience these deposits are mentioned under the Hilltop district. Barite was mined first in June 1930, when lessees shipped 1 carload from the deposit found by William Bretz and John Durkin between Krum and Slavin Canyons 14 miles southeast of Battle Mountain. This property was acquired by the Modesto Barium Products Co., and appreciable quantities of barium have been mined. It is reported that 4,500 tons of barite were shipped to the company plant at Modesto, Calif., during the summer of 1937.

Another deposit owned by the Chemical & Pigment Co. of Oakland, Calif., is near the crest of the range about 4 miles southeast of Argenta Siding on the main line of the Southern Pacific Railroad. The last 3 miles of the road to the deposit is fairly steep, the ascent being about 1,400 feet in that distance. At the Argenta deposit the barite shows a bedded structure, the beds striking N. 15° E. and dipping about 25° easterly. Locally the beds are crumpled and broken. The material is broken by blasting and mined with power shovel into trucks, which haul it to the railroad siding. An open-cut shows that the barite is at least 60 feet thick. About 6,000 tons of barite were shipped during the summer of 1937. From the surface showings, this deposit is probably one of the largest in Nevada.

Barite also is found in the vicinity of Lewis Canyon; one deposit, covered by two claims owned by C. B. Lancaster and W. J. Caudle, is about 1 mile below the Dean camp. The barite occurs in a vein in a shale formation and is traceable on the surface for several thousand feet, in places showing a width up to 20 feet.

In the Star Grove mine, also in Lewis Canyon, barite is associated with silver-lead ores. In places there is as much as 10 feet of nearly pure barite.

No doubt with further prospecting other deposits of barite will be found in the north end of the Shoshone Range.

IZENHOOD DISTRICT

The Izenhood tin-bearing district is in the Sheep Creek Range in northern Lander County, 22 miles by automobile road north of Battle Mountain, a town on the Southern Pacific Railroad. Nuggets of wood-tin were discovered near the Izenhood ranch in 1914 by Ben Long while working for the Russell Cattle Co. Not recognizing the nuggets as tin, Long brought them to Battle Mountain, where they were tentatively identified by M. G. Thurston, a mining engineer, who had prospected tin veins in Mexico. This identification was confirmed by the University of California in the same year. After the presence of tin became known, a small boom ensued, and at least 150 lode and placer claims were located, principally by Battle Mountain residents. Several shallow shafts were sunk to prospect for lode and placer deposits; but after a short time interest in the district dwindled, and many of the claims reverted to the public domain. Early in 1938 the principal claims were taken over by Tasker L. Oddie of Reno, who made arrangements to prospect the placer ground. This work was under way in May 1938.

The principal group of claims in the tin-bearing area is owned by Mrs. R. R. Gamble, of Battle Mountain, and associates.

The nearest water supply consists of springs flowing several hundred gallons per minute at Warm Springs 1 mile distant; this water is used to irrigate the Izenhood ranch owned by the Russell Cattle Co. The district is not served by a public utility power company. There is no equipment on the property.

A report on the tin deposits was made by Adolph Knopf in 1916[12/].

12/ Knopf, Adolph, Tin Ore in Northern Lander County, Nev: Geol. Survey Bull. 640-G, 1916, pp. 125-138.