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ABSTRACT FROM "MINERAL RESOURCES OF THE UNITED STATES, CALENDAR YEARS 1883 AND 1884"—ALBERT WILLIAMS, JR., CHIEF OF DIVISION OF MINING STATISTICS

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Present status of the industry.—The quicksilver industry is in a depressed condition. The production has fallen off largely, but this has not had the effect of stimulating prices to a great extent, though just at the close of 1884 a slight improvement occurred. The leading causes of this depression are the sharp foreign competition in the markets of the world and the decrease in the demand for quicksilver in amalgamating mills. An important outlet for domestic quicksilver, the manufacture of vermilion in China, is apparently closed for the present, the Chinese having obtained their supply in 1884 from other sources. For several years the few California mines in operation have either been worked with a slender margin of profit or at a loss; and one by one the list of producers has dwindled, the survivors being of course the richest and best equipped establishments. The New Almaden was the only one which paid a dividend in 1884. It cannot be said that the outlook for the immediate future is especially cheering. With many metallic products a cheapening in price means an increase in consumption; as, for instance, in the case of copper, which finds a partial relief in the more extended field caused by the growing use of brass in the arts; or as with Bessemer steel, which is gradually supplanting other formerly cheaper materials of construction. The quicksilver consumption, on the contrary, is very inelastic. Important discoveries of gold and silver ores suitable for amalgamation would have a favorable effect on the quicksilver trade, but it is not likely that the amalgamation method will regain its former position in precious-metal metallurgy, as compared with smelting and leaching processes. New utilizations, such as those mentioned in a subsequent paragraph, may, however lighten the market.

Domestic sources.—In addition to the localities enumerated in the previous report a few doubtful occurrences, lacking confirmation, have been reported in the newspapers, but it is safe to say that nothing new of any importance has been found. The actual production is exclusively from the California mines, of which the New Almaden and Guadalupe, in Santa Clara county; the New Idria, in Fresno county; the Sulphur Bank, Redington, and Great Western, in Lake county, and the Napa and Ætna, in Napa county, have furnished nearly all of the recent supply. In the table of production the yield of a number of the less important mines in past years is stated individually. In 1876 about thirty mines were productive, but only eleven yielded any quicksilver in 1884, of which only six produced over 1,000 flasks, and the number

was still further reduced at the end of the year. Even the Guadalupe and the Sulphur Bank, mines well equipped with plant for mining and treating ores, have now practically ceased work. The active mines now number but six, with fifteen furnaces in operation. An improvement in the market, if it promised to be lasting, would lead to the reopening of a few of the best of the now idle mines, but for the majority of the abandoned claims there is little hope.

Production.—The statistics of production have been compiled by Mr. J. B. Randol, manager of the New Almaden mine, and present a full report of the American quicksilver output. Mr. Randol's work is a model of statistical completeness. It will be noticed that in 1883 there were 6,007 flasks less made than in 1882; while the decrease in 1884, as compared with the yield in 1883, was even greater, amounting to a difference of 14,812 flasks. The output in 1884 was less than in any year since 1874, and much less than half that of the most prosperous years. It was also below the average for the whole series of years from the inception of quicksilver mining in the United States, the average for the thirty-five years having been 39,695 flasks.

Product of quicksilver mines of California to the close of 1884.

Years.	New Almaden.	New Idria.	Redington.	Sulphur Bank.	Guadalupe.	Great Western.	Pope Valley.	Napa Consolidated. (a)	St. John.	Altoona.	Oceanic.	Oakland.	California.	Great Eastern.	Sunderland.	Cloverdale.	Abbott.	Manhattan.	Various mines. (b)	Total yearly production of California mines
	Flasks.	*Flasks.*	*Flasks.*	*Flasks.*	*Flasks.*	*Flasks.*	*Flasks.*	*Flasks.*	*Fl'ks.*	*Flasks.*	*Fl'ks.*	*Fl'ks.*	*Fl'ks.*	*Fl'ks.*	*Fl'ks.*	*Fl'ks.*	*Fl'ks.*	*Flasks.*	*Flasks.*	*Flasks.*
1850	7,723	Production from 1858 to 1866, 17,435 flasks—no yearly details obtainable—included in production of various mines.	.....	.....	Yearly production previous to 1875 not obtainable (estimated at 20,000 flasks), included in production of various mines.	.....	.....	.....	.....	Some was produced prior to 1875, but no record kept (estimated production previous to 1875, 1,000 flasks), included in production of various mines.	.....	.....	.....	.....	.....	.....	.....	Yearly production previous to 1876 not obtainable (estimated at 3,594 flasks), included in production of various mines.	.....	7,723
1851	27,779		.....	.....		.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....		.....	27,779
1852	15,901		.....	.....		.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....		4,099	20,000
1853	22,284		.....	.....		.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....		.....	22,284
1854	30,004		.....	.....		.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....		.....	30,004
1855	29,142		.....	.....		.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....		3,858	33,000
1856	27,138		.....	.....		.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....		2,862	30,000
1857	28,204		.....	.....		.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....		.....	28,204
1858	25,761		.....	.....		.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....		5,239	31,000
1859	1,294		.....	.....		.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....		11,706	13,000
1860	7,061		.....	.....		.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....		2,939	10,000
1861	34,429		.....	.....		.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....		571	35,000
1862	39,671		444	.....		.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....		1,885	42,000
1863	32,803		852	.....		.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....		6,876	40,531
1864	42,489		1,914	.....		.....	800	.....	.....		.....	.....	.....	.....	.....	.....	.....		2,286	47,489
1865	47,194		3,545	.....		.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....		2,261	53,000
1866	35,150	-6,525	2,254	.....		.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....		2,621	46,550
1867	24,461	11,493	7,862	.....		.....	.....	.....	.....		.....	.....	.....	.....	.....	.....	.....		3,184	47,000
1868	25,628	12,180	8,686	.....		.....	1,122	.....	.....		.....	.....	.....	.....	.....	.....	.....		112	47,728
1869	16,898	10,315	5,018	.....		.....	1,580	.....	.....		.....	.....	.....	.....	.....	.....	.....		.....	33,811
1870	14,423	9,888	4,546	.....		.....	1,220	.....	.....		.....	.....	.....	.....	.....	.....	.....		.....	30,077
1871	18,568	8,180	2,128	.....		.....	1,970	.....	.....		.....	.....	.....	.....	.....	.....	.....		840	31,686
1872	18,574	8,171	3,046	.....		.....	1,830	.....	.....		.....	.....	.....	.....	.....	.....	.....		.....	31,621
1873	11,042	7,735	3,294	.....		340	1,955	.....	.....		.....	.....	.....	.....	.....	.....	.....		3,276	27,642
1874	9,084	6,911	6,678	573		1,122	1,645	.....	1,743		.....	.....	.....	.....	.....	.....	.....		.....	27,756
1875	13,648	8,432	7,513	5,372	3,342	3,384	1,940	.....	1,927	533	.....	.....	.....	412	.....	.....	.....		3,747	50,250
1876	20,549	7,272	9,183	8,367	7,381	4,322	300	573	1,683	1,979	2,358	2,150	965	387	1,570	1,028	1,436	976	2,595	75,074
1877	23,996	6,316	9,399	10,993	6,241	5,856	1,060	2,229	1,463	1,317	2,575	1,395	1,516	505	735	1,291	836	439	1,234	79,396
1878	15,852	5,138	6,686	9,465	9,072	4,963	1,075	3,049	.....	1,534	1,679	1,615	1,640	1,366	472	116	.....	.....	158	63,880
1879	20,514	4,425	4,516	9,249	15,540	6,333	1,325	3,605	1,290	1,919	779	1,505	1,110	1,455	.....	18	.....	.....	101	73,684
1880	23,465	3,209	2,139	10,706	6,670	6,442	275	4,416	492	245	.....	166	422	1,279	.....	.....	.....	.....	.....	59,926
1881	26,060	2,775	2,194	11,152	5,228	6,241	.....	5,552	.....	.....	.....	.....	.....	1,065	.....	208	.....	.....	376	60,851
1882	28,070	1,953	2,171	5,014	1,138	5,179	.....	6,842	.....	.....	.....	.....	.....	2,124	.....	.....	.....	.....	241	52,732
1883	29,000	1,606	1,894	2,612	84	3,869	.....	5,890	.....	.....	.....	.....	.....	1,669	.....	.....	.....	.....	101	46,725
1884	20,000	1,025	881	890	1,179	3,292	.....	4,307	.....	.....	.....	.....	.....	332	.....	.....	.....	.....	7	31,913
Total	813,859	123,549	96,843	74,393	55,875	51,343	18,097	36,463	8,598	7,527	7,391	6,831	5,653	10,594	2,777	2,661	2,272	1,415	63,175	1,389,316

a Including Ætna. *b* The column of "various mines" includes the product of the Buckeye, Mt. Jackson, Bacon, Bella Union, American, Porter, Wall Street, Rattlesnake, Kentuck, and other mines. This column includes, in 1882, 50 flasks produced in Oregon.

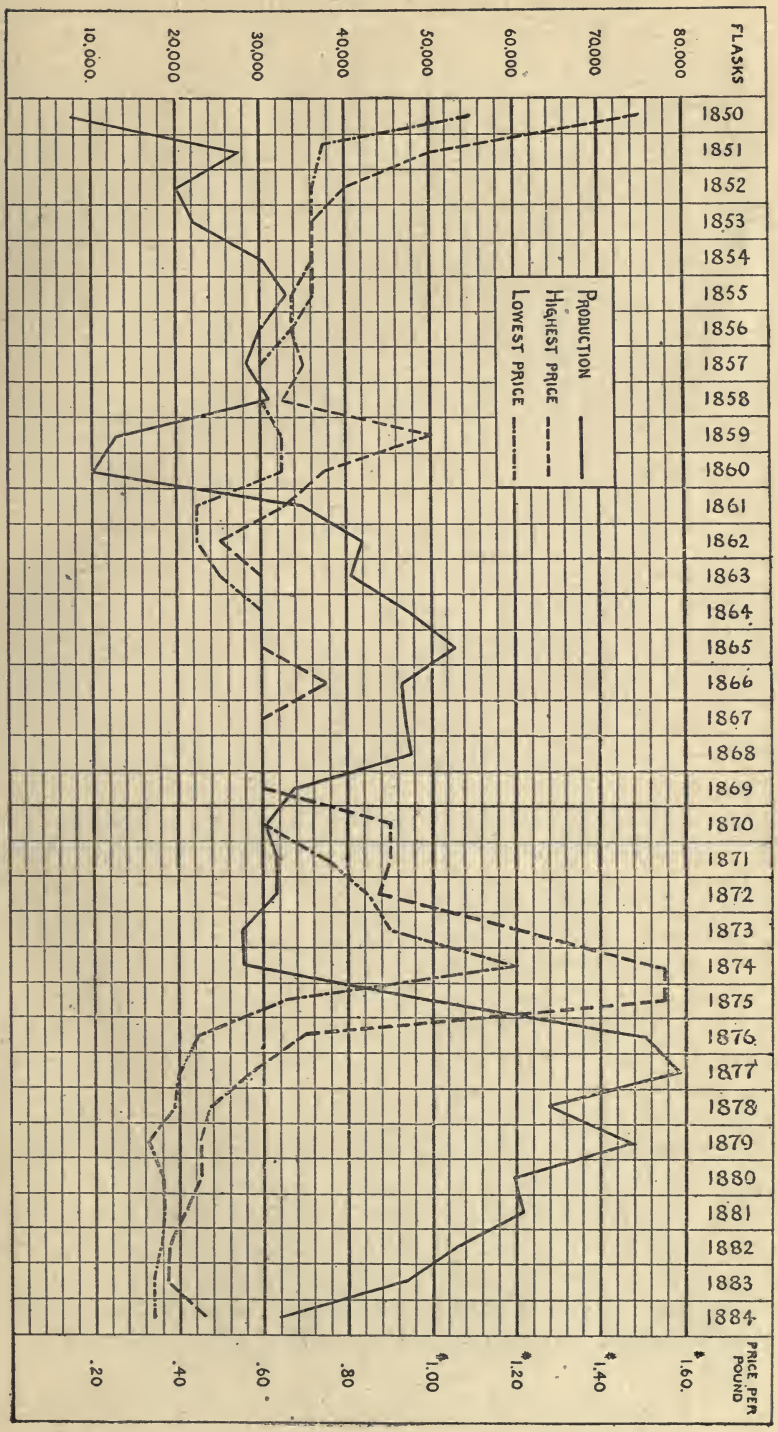

FIG. 6.—PRODUCTION AND PRICE OF QUICKSILVER IN THE UNITED STATES TO DECEMBER 31, 1884.

Production of quicksilver in California in 1883, *by months.*

Months.	New Almaden.	New Idria.	Redington.	Sulphur Bank.	Guadalupe.	Great Western.	Napa. (a)	Great Eastern.	Various.	Total.
	Flasks.	*Flasks.*	*Flasks.*	*Flasks.*	*Fl'ks.*	*Flasks.*	*Flasks.*	*Flasks.*	*Fl'ks.*	*Flasks.*
January	2,497	112	367	280	77	390	590	262	7	4,582
February	2,150	133	181	310	7	364	295	156	4	3,600
March	2,220	142	202	335	.....	305	485	162	14	3,875
April	1,756	76	243	310	.....	294	530	142	3	3,354
May	2,344	144	135	350	.....	293	325	164	13	3,768
June	2,214	137	165	91	.....	400	360	184	10	3,561
July	2,618	85	141	130	.....	446	452	150	2	4,024
August	3,000	139	94	112	.....	315	695	76	.....	4,431
September	3,010	164	45	265	.....	297	750	81	30	4,642
October	2,672	272	109	206	.....	215	521	134	.....	4,129
November	2,212	115	78	160	.....	208	613	102	.....	3,488
December	2,297	87	134	63	.....	342	274	56	18	3,271
Total	29,000	1,606	1,894	2,612	84	3,869	5,890	1,669	101	46,725

a Production of Ætna and Napa mines in 1883 under heading of Napa mine.

Production of quicksilver in California in 1884, *by months.*

Months.	New Almaden.	New Idria.	Redington.	Sulphur Bank.	Guadalupe.	Great Western.	Ætna.	Napa.	Great Eastern.	Various.	Total.
	Flasks.	*Flasks.*	*Fl'ks.*	*Fl'ks.*	*Flasks.*	*Flasks.*	*Fl'ks.*	*Fl'ks.*	*Fl'ks.*	*Fl'ks.*	*Flasks.*
January	1,440	103	127	263	.....	373	329	135	28	7	2,805
February	1,458	59	104	.....	.....	241	276	174	9	.....	2,321
March	1,606	36	123	68	.....	223	249	152	2	.....	2,459
April	1,785	75	50	76	.....	232	422	69	.....	.....	2,709
May	1,672	125	53	200	.....	169	245	6	.....	.....	2,470
June	1,859	44	118	.....	200	258	215	.....	.....	.....	2,694
July	1,543	29	71	52	200	258	374	101	.....	.....	2,628
August	1,804	63	47	20	306	334	228	110	.....	.....	2,912
September	1,448	67	52	35	58	354	136	169	58	.....	2,377
October	1,625	115	68	25	160	328	153	90	104	.....	2,668
November	1,900	157	32	53	150	230	132	240	91	.....	2,985
December	1,860	152	36	98	105	292	172	130	40	.....	2,885
Total	20,000	1,025	881	890	1,179	3,292	2,931	1,376	332	7	31,913

Foreign production.—The leading foreign quicksilver mines are the Almaden, in Spain, and the Idria, in Austria. Compared with these, the other foreign sources are insignificant. The Almaden has been worked for hundreds of years, and is still producing largely. Its output from 1564 to 1875 was 120,179 Spanish tons, or 3,482,758 flasks of 75 Spanish pounds (of 76.07 pounds avoirdupois). Up to the close of 1884 it had yielded 3,918,784 flasks, an average production of about 12,000 flasks yearly for 319 years. The Idria mine was discovered in 1490 or 1497, and next to the Almaden has furnished the greater part of the world's quicksilver supply for nearly four centuries. Since 1850, however, the California mines have contributed one-half of the total supply.

Production of the Almaden mine (Spain) and the Idria mine (Austria) from 1850 to close of 1884.

Years.	Almaden (in periods of five years).	Idria.	Years.	Almaden (in periods of five years).	Idria.
	Flasks.	*Flasks.*		*Flasks.*	*Flasks.*
1850		4,100	1870		10,745
1851		4,092	1871		10,904
1852	101,517	4,085	1872	165,608	11,116
1853		4,409	1873		10,939
1854		1,060	1874		10,789
1855		4,446	1875		10,717
1856		5,935	1876		10,794
1857	110,058	9,189	1877	208,200	11,020
1858		4,977	1878		10,403
1859		8,239	1879		11,153
1860		4,821	1880	a41,640	12,356
1861		6,493	1881	50,353	11,333
1862	122,117	4,712	1882	46,591	11,663
1863		5,878	1883	46,143	13,152
1864		7,263	1884	43,099	b13,000
1865		4,908			
1866		5,327	Total, thirty-five years..	1,088,550	288,982
1867	153,224	7,532			
1868		8,253			
1869		9,179			

a Yearly. b Estimated.

The world's production of quicksilver from 1850 to the close of 1884.

Localities.	Number of flasks.	Pounds avoirdupois to the flask.
California	1,389,316	76.50
Spain	1,088,550	76.07
Austria	288,982	76.07
Total	2,766,848	
Estimated present yearly production of Italy and other countries	2,000	

Prices.—Until recently it has been customary in this country to quote the price of quicksilver at so many cents per pound, while in the London market quotations have been in pounds sterling per flask. It is now becoming the rule in San Francisco to state prices by the flask, at the American standard of 76½ net pounds avoirdupois. For convenience in comparing the two systems a conversion table, prepared by Mr. Randol, is appended, which shows equivalent prices per flask and per pound, within the range of recent fluctuations:

Price of quicksilver per flask and per pound.

Per flask.	Equivalent in cents per pound.	Per flask.	Equivalent in cents per pound.	Per flask.	Equivalent in cents per pound.	Per flask.	Equivalent in cents per pound.
$26.00	33.98	$29.00	37.91	$32.00	41.83	$35.00	45.75
26.25	34.31	29.25	38.23	32.25	42.16	35.25	46.07
26.50	34.64	29.50	38.56	32.50	42.48	35.50	46.40
26.75	34.96	29.75	38.89	32.75	42.81	35.75	46.73
27.00	35.29	30.00	39.21	33.00	43.14	36.00	47.05
27.25	35.62	30.25	39.54	33.25	43.47	36.25	47.38
27.50	35.95	30.50	39.87	33.50	43.79	36.50	47.71
27.75	36.27	30.75	40.20	33.75	44.12	36.75	48.04
28.00	36.60	31.00	40.52	34.00	44.45	37.00	48.36
28.25	36.93	31.25	40.85	34.25	44.77	37.25	48.69
28.50	37.25	31.50	41.18	34.50	45.10	37.50	49.02
28.75	37.58	31.75	41.50	34.75	45.43	37.75	49.34

The following table shows the range in price since 1850 in the two great markets. The lowest price ($25.25 per flask) at San Francisco was touched in 1879, though the average for the year 1883 ($26.83 as computed by averaging monthly quotations) was the lowest yearly average. While prices were also very much depressed during the greater part of 1884, a sudden rise to $35 toward the close of the year brought the average of the monthly quotations up to $29.34 for the year. Computed at these averages, the total value of the product of 1883 was $1,253,632, and that of 1884 was $936,327. The highest price was reached in 1874 and 1875, when quicksilver sold up to $118.55 per flask, at which time the demand for amalgamation was great, and before the subsequent temporary expansion in production. Thus the minimum price was less than a quarter of the highest rate obtained, showing a remarkably wide range in values.

Highest and lowest prices of quicksilver during the past thirty-five years.

Years.	Price in San Francisco per flask.		Price in London per flask.					
	Highest.	Lowest.	Highest.			Lowest.		
			£.	s.	d.	£.	s.	d.
1850	$114.75	$84.15	15	0	0	13	2	6
1851	76.50	57.35	13	15	0	12	5	0
1852	61.20	55.45	11	10	0	9	7	6
1853	55.45	55.45	8	15	0	8	2	6
1854	55.45	55.45	7	15	0	7	5	0
1855	55.45	51.65	6	17	6	6	10	0
1856	51.65	51.65	6	10	0	6	10	0
1857	53.55	45.90	6	10	0	6	10	0
1858	49.75	45.90	7	10	0	7	5	0
1859	76.50	49.75	7	5	0	7	0	0
1860	57.35	49.75	7	0	0	7	0	0
1861	49.75	34.45	7	0	0	7	0	0
1862	38.25	34.45	7	0	0	7	0	0
1863	45.90	38.25	7	0	0	7	0	0
1864	45.90	45.90	9	0	0	7	10	0
1865	45.90	45.90	8	0	0	7	17	6
1866	57.35	45.90	8	0	0	6	17	6
1867	45.90	45.90	7	0	0	6	16	0
1868	45.90	45.90	6	17	0	6	16	0
1869	45.90	45.90	6	17	0	6	16	0
1870	68.85	45.90	10	0	0	6	16	0
1871	68.85	57.35	12	0	0	9	0	0
1872	66.95	65.00	13	0	0	10	0	0
1873	91.80	68.85	20	0	0	12	10	0
1874	118.55	91.80	26	0	0	19	0	0
1875	118.55	49.75	24	0	0	9	17	6
1876	53.55	34.45	12	0	0	7	17	6
1877	44.00	30.60	9	10	0	7	2	6
1878	35.95	29.85	7	5	0	6	7	6
1879	34.45	25.25	8	15	0	5	17	6
1880	34.45	27.55	7	15	0	6	7	6
1881	31.75	27.90	7	0	0	6	2	6
1882	29.10	27.35	6	5	0	5	15	0
1883	28.50	26.00	5	17	6	5	5	0
1884	35.00	26.00	6	15	0	5	2	6
Extreme range in thirty-five years	118.55	25.25	26	0	0	5	2	6

Monthly quotations of quicksilver at San Francisco in 1883 *and* 1884 *per flask.*

Months.	1883.		1884.	
	Highest.	Lowest.	Highest.	Lowest.
January	$26.75	$26.00	$26.25	$26.00
February	27.25	26.00	29.00	26.00
March	28.00	26.75	29.00	28 00
April	27.00	26.75	29.00	28.00
May	27.00	26.75	29.00	29.00
June	28.50	26.75	29.00	29.00
July	28.50	27.50	29.00	28.75
August	27.50	26.25	30.00	28.75
September	26.75	26.25	31.00	30.00
October	26.50	26.50	30.50	29.00
November	26.50	26.00	34.00	29.00
December	26.25	26.00	35.00	32.00
Extreme range	28.50	26.00	35.00	26.00
Average	$26.83		$29.34	

Imports.—The largest importation of quicksilver was in the fiscal year 1883, when the amount rose to 1,500,000 pounds. In that year, however, the exports were also large, reaching 2,750,000 pounds. The imports during the last fiscal year fell to less than a tenth of the amount imported in the fiscal year 1883.

Quicksilver imported and entered for consumption in the United States, 1867 *to* 1884 *inclusive.*

Fiscal years ending June 30—	Quantity.	Value.	Fiscal years ending June 30—	Quantity.	Value.
	Pounds.			*Pounds.*	
1867	----------	$15,248	1876	78,902	$50,164
1868	152	68	1877	38,250	19,558
1869	----------	11	1878	204,207	135,178
1870	239,223	107,646	1879	519,125	217,770
1871	304,965	137,332	1880	116,700	48,463
1872	370,353	189,943	1881	138,517	57,733
1873	99,898	74,146	1882	597,898	233,057
1874	51,202	52,093	1883	1,552,738	593,367
1875	6,870	20,957	1884	136,615	44,035

Mercurial preparations imported and entered for consumption in the United States, 1867 *to* 1883 *inclusive.* (*a*)

Fiscal years ending June 30—	Blue-mass.		Calomel.		Mercurial preparations not otherwise specified.	Total value
	Quantity.	Value.	Quantity.	Value.		
	Pounds.		*Pounds.*			
1867				$4,242		$2,242
1868				4,440		4,440
1869				4,516		4,516
1870				6,306		6,306
1871				3,147		3,147
1872	1,009	$667	8,241	6,590	$629	7,886
1873	919	660	5,520	5,240	699	6,599
1874	259	192	6,138	6,676	4,334	11,202
1875	125	109	2,424	2,817	52	2,978
1876	489	365	5,433	5,820	92	6,277
1877	455	327	4,649	4,305	90	4,722
1878	397	252	4,133	3,576	363	4,191
1879	485	266	5,875	4,635	6,453	11,354
1880	533	202	4,780	3,330	30	3,622
1881	395	236	8,177	5,640	116	5,992
1882	207	124	5,215	3,411	58	3,593
1883	188	79	8,732	5,503	190	5,772

a Not specified in 1884.

Exports.—The maximum exportation was in the fiscal year 1877, when it reached nearly 4,000,000 pounds. In the fiscal year 1884 less than a third of that amount, and less than half of the amount for 1883, was exported. The yearly exports since 1854 are shown in the following table:

Quicksilver of domestic production exported from the United States.

Fiscal years ending June 30—	Quantity.	Value.	Fiscal years ending June 30—	Quantity.	Value.
	Pounds.			*Pounds.*	
1854		$94,335	1870	1,200,385	$511,918
1855		806,119	1871	994,005	732,845
1856		831,724	1872	862,094	691,637
1857		665,480	1873	714,783	626,021
1858		129,184	1874	501,389	580,521
1859			1875	986,469	1,075,796
1860		258,682	1876	2,711,584	1,740,293
1861		631,450	1877	3,894,311	1,767,266
1862		1,237,643	1878	2,552,388	1,230,003
1863		1,237,116	1879	3,624,827	1,418,331
1864	1,736,596	976,868	1880	3,574,412	1,360,176
1865		1,629,063	1881	2,955,948	1,124,955
1866	2,948,699	1,508,039	1882	2,485,551	959,128
1867	1,736,924	750,673	1883	2,762,554	1,020,827
1868	2,995,789	1,223,869	1884	1,242,080	427,219
1869	2,152,499	869,803			

Movement of quicksilver from San Francisco by sea and rail.

Years.	Flasks.	Years.	Flasks.
1850	6,467	1869	24,415
1851	10,791	1870	14,240
1852	21,458	1871	16,339
1853	18,800	1872	16,780
1854	20,963	1873	11,164
1855	27,165	1874	11,750
1856	23,740	1875	37,829
1857	27,262	1876	49,046
1858	24,412	1877	52,095
1859	3,399	1878	41,877
1860	9,488	1879	62,845
1861	35,995	1880	46,294
1862	23,747	1881	45,799
1863	26,014	1882	40,417
1864	36,927	1883	37,867
1865	42,469	1884	21,901
1866	30,287		
1867	28,833	Tota	994,001
1868	44,506		

The shipments shown in this and in the following table do not include supplies sent to local and Nevada precious-metal mines.

Movement of quicksilver from San Francisco in 1883 and 1884 in detail.

To—	1883.	1884.	Increase.	Decrease.
By sea:	*Flasks.*	*Flasks.*	*Flasks.*	*Flasks*
China	16,330	200		16,130
Japan	1,253	588		665
Mexico	10,764	5,404		5,360
South America	970	155		815
Australia	600	110		490
New Zealand	160	20		140
Central America	59	52		7
New York	3,100	8,350	5,250	
Various	11	22	11	
Total by sea	33,247	14,901		18,346
By rail:				
Central Pacific, Southern Pacific, and Northern Pacific railroads	4,620	*a*7,000	2,380	
Grand total	37,867	21,901		15,966

a Including about 3,500 flasks to Mexico by Southern Pacific railroad.

The following table shows the relation of the production to the outward movement, the difference being the balance available for consumption and stock on the Pacific coast:

Relation of production to shipments from San Francisco.

Years.	Production.	Shipments.	Balance.
	Flasks.	*Flasks.*	*Flasks.*
1880	59,926	46,294	13,632
1881	60,851	45,799	15,052
1882	52,732	40,417	12,315
1883	46,725	37,867	8,858
1884	31,913	21,901	10,012

Movement of quicksilver at London.—The imports during 1883 were 54,519 flasks, and the exports 48,997 flasks. In 1884 the imports were 56,969 flasks, and the exports 52,492 flasks. The stock at London December 31, 1884, was estimated at about 74,000 flasks.

Vermilion is an artificial sulphide of quicksilver. In the United States the manufacture centers around New York City, with two establishments in Philadelphia and one in Baltimore. The manufacturers of quicksilver vermilion are: D. F. Tiemann & Co., Sondheim, Alsberg & Co., and A. B. Ansbacher & Co., of New York City; C. T. Raynolds & Co., of New York City and Chicago; G. & N. Poppelin, jr., of Baltimore; J. T. Lewis & Co. and Glahn & Co., of Philadelphia. The production in the past three years is estimated as follows:

Production of quicksilver vermilion in the United States, 1882, 1883, *and* 1884.

Years.	Pounds.	Price per pound.	Total value.
1882	700,000	$0.45	$315,000
1883	650,000	45	292,500
1884	600,000	48	288,000

The falling off in production has been due partly to dullness of trade, and partly to the competition of other reds. The price was for some time stationary at 45 cents per pound, until November 22, 1884, when it was advanced to 55 cents, on account of the rise in price of quicksilver.

The genuine quicksilver vermilion is known as "quicksilver," "California," or "English" vermilion. It is claimed to be of better quality than the imported, though the latter sells at 10 to 15 cents higher per pound. While there is probably little intrinsic difference, the home manufacturers are in better position to understand the taste of local consumers. The domestic vermilion is made from California quicksilver or from the foreign metal, indifferently, but more commonly from the former. The process is reported by Mr. Marcus Benjamin to consist in bringing quicksilver, sulphur, potassium hydroxide, and water together in a revolving drum. The mixture is gently heated until 115° Fahr.

is reached; the temperature is then kept constant, and the reddening action proceeds. The composition of the vermilion is approximately mercury, 86.3 parts; sulphur, 13.7 parts.

A number of pigments known as vermilion, but not made from quicksilver, are on the market, under the names of "American vermilion," a chromate of lead, also known as "Persian red," "Persian scarlet," "chrome red," "scarlet vermilion," etc. About 1,000,000 pounds of this material were made in 1883, and 750,000 pounds in 1884. "Imitation vermilion" is an aniline color thrown on a lead body (oxide or carbonate), and is said to be fugitive. There are numberless names for it; "Columbian red," "zubia," "ruboide," "Roman red," "Swiss red," etc. These colors have largely superseded true vermilion, as they are of a brilliant red, stand exposure fairly well, changing to a lighter color instead of a darker, as is the case with genuine vermilion, and are very much lower in price. The production of aniline vermilions was about 750,000 pounds in 1883, and 600,000 pounds in 1884. The chromate of lead vermilions sold at about 11½ cents per pound in 1883, and following the gradual decline in white lead (carbonate) fell to 10½ cents in 1884. The various grades of aniline vermilion brought from 10 to 35 cents per pound in 1883, and declined to 8½ to 25 cents in 1884, owing to the removal of the duty on aniline and eosine. Quicksilver vermilion is considered to be superior in body, permanency, and richness, but the question of price affects the sale. The scarlet chromates of lead, while possessing enduring qualities, lack body and are not so rich in color. Between the two, of late years, the eosine reds have appeared. Their color is exceedingly brilliant, and the body good; but their comparatively fugitive character is a drawback.

In 1883 there were 16,330 flasks of quicksilver sent from the United States to China, all of which is supposed to have been made into vermilion in the latter country; but in 1884 the Chinese market was supplied with Spanish quicksilver sent from London, though a little American quicksilver may have reached China indirectly and thus escaped record.

The imports of vermilion, with their declared foreign valuations, have been as follows:

Vermilion imported and entered for consumption in the United States, 1867 to 1884 inclusive.

Fiscal years ending June 30—	Quantity.	Value.	Fiscal years ending June 30—	Quantity.	Value.
	Pounds.			*Pounds.*	
1867	----------	$123,506	1876	18,98[illegible]	$17,680
1868	----------	90,648	1877	23,315	14,660
1869	247,382	145,665	1878	9,843	5,772
1870	104,523	57,262	1879	11,382	6,105
1871	79,195	43,935	1880	11,952	5,997
1872	120,067	49,237	1881	14,243	7,392
1873	87,008	65,796	1882	12,496	6,215
1874	42,324	39,443	1883	19,549	8,796
1875	9,460	10,831	1884	(*a*)	10,473

a Not specified.

New uses for quicksilver.—Mr. J. A. Bauer has called attention to the use of quicksilver as a preventive and cure for phylloxera. Corrosive sublimate was first tried by Mr. Bauer, but was not found to answer, as the mercuric chloride was speedily decomposed by the earths of the soils to which it was applied. The quicksilver is used in mixture with fine powdered clay, equal weights of each, and is so finely divided that separate globules of the metal cannot be distinguished under an ordinary microscope. This mixture of quicksilver and clay is added to the soil of the hole in which the vine is planted. Half an ounce of quicksilver to each vine is said to be about the proper quantity. The clay used must be free from grittiness; the mixture with the quicksilver is done in revolving barrels. A number of experiments, said to have resulted satisfactorily, have been made. Another use has been suggested, namely, the use of a weak solution of corrosive sublimate (bichloride of mercury) as a disinfectant and germicide in case of epidemic cholera. These applications, if adopted on a large scale, would do much to relieve the quicksilver market.