

make this work unduly extensive. At the same time, any of our readers who may feel a sufficient interest in the matter and who desire to obtain further information on the subject, will find it worth their while to study the "Atlas General Mexicano," compiled by the present writer; the reports by the same author which have been presented to the Department of Fomento and published in Vol. V. of the Annals of that Department; the "Riqueza Minera de México" by Don Santiago Ramírez, "El Minero Mexicano," the "Minas Históricas," by Charles S. Dahlgren, and the "Boletín de Agricultura é Industria," published by the Department of Fomento.

Besides the above mentioned productions, the territory of the Republic contains abundant veins of magistral, sulphur, particularly in the extensive beds of Popocatepetl, Pico de Orizaba and Tajimaroa; different kinds of salts, and especially chloride of sodium in the salt beds of Peñon Blanco, of San Luis Potosí, and in many places along the coast. There are also extensive beds of rock cristals, different kinds of marbles and jaspers, valuable beds of building stone, and the handsome onyx of Tecali. Amongst the precious metals we have the opal with its beautiful colors in the Hacienda de Esperanza (Querétaro), the garnet, the topaz, the emerald, the agate, and the amethyst.

Through the surveys made by order of the Department of Fomento and through the claims frequently presented, it is known that beds of cinnabar, of coal and a few of platinum, are to be found in many parts of the country.

The system of reduction generally employed throughout the country is that of amalgamation by the Patio process, which was discovered in 1557, in Pachuca, by the Mexican miner Bartolomé de Medina. This process, which is also called cold amalgamation, combines simplicity and economy with the advantage of treating large quantities of ore, and is the best adapted to the treatment of low grade ores. The system of amalgamation in barrels is also employed, being applied to the

treatment of tailings and ores that contain pyrites or manganese. Another process which is employed is that of vats or hot amalgamation, and is only employed in the treatment of chlorides, bromides and iodides of silver. Smelting is employed in the States of Sonora, Sinaloa and Chihuahua for the reduction of rich ores containing lead, and in certain determined cases, lixiviation is resorted to.

The most notable reduction works in the country, are those of Pachuca, Real del Monte, el Chico, Guanajuato, Zacatecas, Fresnillo, Sultepec, Temascaltepec, El Oro, Zacualpan, and a few more.

The following tables show the extraction of the precious metals in the different States of the Republic, during the financial year of 1890 and 1891, enabling the reader to form a very good idea of the respective importance of this industry in each State.

	Gold.	Silver.
<i>State of Aguascalientes.</i>		
Tepezalá..... \$	" "	1,044 02
<i>State of Coahuila.</i>		
Sierra mojada..... \$	" "	8,366 94
<i>State of Chiapas.</i>		
General..... \$	400 27	2 89
<i>State of Chihuahua.</i>		
Batopilas..... \$	6,626 24	1,013,623 57
Cerro Colorado.....	2,273 34	11 85
Dolores.....	" "	345 72
Galeana.....	1,164 83	594 22
Guadalupe y Calvo.....	84 61	1,304 05
Jesus Maria.....	45,980 16	93,883 10
Orpinedas.....	176 28	1,345 46
Parral.....	" "	289,307 58
Carried forward..... \$	56,705 73	\$ 1,409,829 40

	Gold.	Silver.
Brought forward.....	56,705 73	\$ 1,409,829 40
Urique.....	" "	143,087 47
Uruachic.....	" "	703,366 00
Uruapan.....	9,782 77	19,872 86
Zapuri.....	" "	24,642 46
Other Districts.....	1,696 34	12,248 31
	<hr/>	<hr/>
	\$ 68,184 84	\$ 2,313,246 50

State of Durango.

Amaculi.....	" "	2,290 18
Arzate.....	" "	33,487 36
Avino.....	" "	103,411 47
Birimoa.....	62 25	28,177 22
Candelaria.....	" "	352 06
Candelerio.....	" "	137 59
Canelas.....	532 26	25,838 79
Cantarranas.....	" "	105,796 07
Coneto.....	" "	8,953 46
Copalquin.....	2,834 02	33,324 77
Cuencamé.....	" "	21,157 30
Chacalá.....	" "	245 96
Gavilanes.....	" "	18,466 81
Guanaceví.....	" "	35,159 43
La Paz.....	" "	346 07
Mapimí.....	" "	411 19
Mezquital.....	" "	338 80
El Oro.....	" "	954 77
Parrilla.....	" "	537 12
Promontorio.....	" "	445 88
Pueblo Nuevo.....	20 97	1,355 39
San Andrés.....	" "	492,581 77
San Dimas.....	82 34	1,487 91
San Juan de Guadalupe.....	669 27	17,750 55
Santa Cruz.....	" "	2,936 07
Santiago Papasquiaro...	" "	19,245 58
	<hr/>	<hr/>
Carried forward.....	\$ 4,201 11	\$ 955,189 57

	Gold.	Silver.
Brought forward.....	\$ 4,201 11	\$ 955,189 57
Siánori.....	97 61	11,587 38
Tamazula.....	" "	7,654 38
Tejamén.....	" "	157,075 55
Topia.....	" "	165,833 77
Vacas.....	" "	90,700 11
Ventanas.....	" "	149,100 98
Zaporiis.....	360 35	25,723 77
Durango [City].....	" "	136,950 75
Sub Treasury.....	" "	5,900 07
Other districts.....	834 00	142,983 19
	<hr/>	<hr/>
	\$ 5,493 07	\$ 1,848,699 52

State of Guanajuato.

State in general.....	\$ 379,383 87	\$ 4,204,850 83
Banco Nacional.....	" "	6,575 67
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	\$ 379,383 87	\$ 4,211,426 50

State of Guerrero.

State in general.....	289 59	432,801 75
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State of Hidalgo.

Pachuca.....	\$ 27,616 40	\$ 6,166,106 73
Zimapan.....	583 04	90,893 57
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	\$ 28,199 44	\$ 6,257,000 30

State of Jalisco.

Ajijic.....	\$ " "	1,910 14
Analco.....	" "	52,993 17
La Bautista.....	" "	13,275 05
Bolaños.....	" "	38,968 44
Bramador.....	" "	17,167 28
Cacoma.....	" "	4,532 89
Cuale.....	" "	106,820 87
	<hr/>	<hr/>
Carried forward.....	\$ " "	\$ 235,667 84

	Gold.	Silver.
Brought forward.....	" "	\$ 235,667 84
Desmoronado.....	" "	34,998 77
Etzatlán.....	" "	151,973 31
Hostotipaquillo.....	" "	180,873 62
Parnaso.....	" "	778 31
Reyes.....	" "	19,157 47
San Sebastian.....	1,333 95	129,483 94
Santo Tomás.....	" "	6,662 29
Sayula.....	155 73	884 41
Tecalitlán.....	" "	5,387 78
Guadalajara.....	222 89	6,193 05
Sub Treasury.....	" "	8,927 35
Other Districts.....	5,242 19	28 87
	\$ 6,954 76	\$ 781,027 01

State of Mexico.

State in general.....	\$ 1,725 30	339,271 35
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State of Michoacan.

Trojes.....	" "	\$ 151,695 14
Other Districts.....	3,642 39	167,989 78
	\$ 3,652 39	319,684 92

State of Morelos.

Huautla.....	\$ " "	10,673 39
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State of Nuevo Leon.

State in general.....	\$ " "	10,347 65
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State of Oaxaca.

Cinco Señores.....	\$ " "	1,546 06
Ixtlán.....	3,119 81	9,804 20
Peras.....	5,878 85	115 87
Talea.....	" "	40,088 96
Carried forward.....	\$ 8,998 66	\$ 51,555 09

	Gold.	Silver.
Brought forward.....	\$ 8,998 66	\$ 51,555 09
Taviche.....	1,442 48	31,156 30
Teitipac.....	" "	7,422 45
Totolapa.....	" "	60,716 18
Totomochapa.....	" "	2,379 50
Yolox.....	" "	1,157 35
City of Oaxaca.....	" "	3,666 64
Old coin.....	" "	67,562 06
Other Districts.....	9,930 94	10,995 85
	\$ 20,371 58	\$ 236,611 52

State of Puebla.

State in general.....	\$ 14,310 14	17,507 73
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State of Querétaro.

State in general.....	\$ 1,251 67	31,817 87
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State of San Luis.

Catorce.....	\$ " "	880,612 03
Charcas.....	" "	285,650 88
Guadalcázar.....	" "	12,686 21
Matehuala.....	" "	187,013 65
Old coin.....	" "	13,108 48
Other Districts.....	4,083 84	25,054 72
	\$ 4,083 84	\$ 1,404,125 97

State of Sinaloa.

Aldama.....	\$ 205 60	1 49
Bacubirito.....	2,705 21	2,465 37
Badiraguato.....	34 49	2,144 89
Cosalá.....	1,258 56	85,307 80
Cuates.....	148 93	44,878 36
Cumbres.....	133 07	15 02
Mazatlán.....	1,243 45	2,193 50
Carried forward.....	\$ 5,729 31	\$ 137,006 43

	Gold.	Silver.
Brought forward.....	\$ 5,729 31	\$ 137,006 43
Pánuco.....	1,100 89	19,798 77
La Rastra.....	" "	1,887 48
Sapuri.....	" "	337 51
San Dario.....	" "	1,208 28
San Ignacio.....	" "	477 87
San José de Gracia.....	440 43	224 02
San José de las Bocas..	" "	558 71
San Lorenzo.....	472 54	72,198 84
Santa Cruz.....	" "	13,479 89
Santiago.....	78 59	1,038 62
Sinaloa.....	259 85	6,405 51
Yedras.....	" "	172,430 98
Culiacan.....	" "	261 61
Old coin.....	" "	22,812 63
Other Districts.....	274 14	3 36
	<hr/>	<hr/>
	\$ 8,355 75	\$ 450,160 51

State of Sonora.

Aduana.....	\$ " "	58,622 91
Barranca.....	" "	221,975 72
Baucari.....	6,499 90	9,537 23
Cármén.....	" "	4,648 73
Guijas.....	" "	2,200 04
Haciendita.....	" "	4,161 39
Prietas.....	965 44	3,255 03
Promontorio.....	" "	118,076 16
San Javier.....	" "	13,702 46
Santa Elena.....	14,774 32	26,396 59
Soyopa.....	" "	2,492 22
Trinidad.....	10 23	169,113 79
Velera.....	" "	2,606 38
Yeso.....	" "	71,569 15
Zubiate.....	" "	1,965 19
City of Hermosillo.....	287 62	77,020 14
Old coin.....	" "	3,185 43
	<hr/>	<hr/>
	\$ 22,537 51	\$ 790,957 56

Lower California.

	Gold.	Silver.
Territory in general.....	\$ 332 70	1 21

Tepic.

Jora Viejo.....	\$ " "	2,575 25
Yasca.....	2,213 34	154,301 60
Zopilote.....	" "	207,205 70
	<hr/>	<hr/>
	\$ 2,213 34	\$ 364,082 55

State of Zacatecas.

Chalchihuites.....	\$ 8,918 01	135,379 95
Fresnillo.....	134 50	228,342 40
Jerez.....	" "	97,014 92
Juchipila.....	157,263 86	916 78
Mazapil.....	60,244 13	67,053 75
Mezquital del Oro.....	13,721 75	" "
Minillas.....	" "	3,137 93
Nieves.....	" "	7,259 90
Noria de Angeles.....	1,585 66	13,359 91
Ojo Caliente.....	" "	73,255 24
Pánuco.....	" "	43,495 62
Pinos.....	32,946 65	108,957 67
Sombrerete.....	597 20	71,980 18
Tlaltenango.....	" "	8,082 45
Veta Grande.....	" "	289,087 46
Villanueva.....	" "	5,493 10
Zacatecas.....	67,530 81	2,680,941 94
City of Zacatecas.....	5,864 47	185,578 71
Banco Nacional.....	" "	990 47
Other Districts.....	1,545 76	95,564 06
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	\$ 350,352 80	\$ 4,116,002 44

Total receipts of precious metals in the mints..... \$ 1,089,702 32 \$ 24,814,782 38

Summary, showing the receipts of precious metals in the mints during the year 1890 and 1891 from all sources.

	Gold.	Silver.	
Mint of Alamos.....	\$ 22,919 14	492,893 35	
" Culiacan.....	15,389 16	812,522 20	
" Chihuahua.....	45,980 16	2,034,432 28	
" Durango.....	381 32	1,303,027 43	
" Guadalajara.....	24,824 92	1,694,151 22	
" Guanajuato.....	379,783 87	4,209,509 02	
" Hermosillo.....	16,027 38	577,246 45	
" Mexico.....	245,378 43	8,066,544 73	
" Oaxaca.....	10,440 64	225,615 67	
" San Luis Potosí.....	" "	1,379,899 77	
" Zacatecas.....	328,577 30	4,018,940 29	
	\$ 1,089,702 32	24,814,782 38	

COINAGE.

Mexico Mint, established by Royal Decree on the 11 of May, 1535, fourteen years after the conquest of the country by the Spaniards. Inaugurated in 1537.

CLASSES OF COIN.	Gold.	Silver.	Total.
Macuquina [1537-1731].....	\$ 8,497,950	752,067,457	760,565,407
Pillar coin [1732-1771].....	19,889,014	441,629,211	461,518,225
Bust coin [1772-1821].....	40,829,866	869,216,943	909,546,809
Total of colonial period *	\$ 68,716,830	2,062,913,611	2,131,630,441

Independence [1822-1891].

CLASSES OF COIN.	Gold.	Silver.	Total.
Imperial Iturbide [1822-1823]	505,536	8,605,601	9,111,137
Eagle [Republican] [1824-91]	15,620,286	152,102,098	267,722,384
Total of Mexico Mint.....	\$ 84,904,233	2,342,968,356	2,427,872,581

* Including \$ 10,699,308 silver recoined from 1754 to 1821.

Zacatecas Mint.

Commenced work 14th. November 1810.

CLASSES OF COIN.	Gold.	Silver.	Total.
Colonial period [1810-1821].	"	16,919,521	16,919,521
Independence [1822-1823]...	"	6,497,609	6,497,609
Republic [1824-1891].....	1,541,259	306,482,067	308,023,326
Total of Zacatecas Mint.....	\$ 1,541,259	329,899,197	331,440,456

Guanajuato Mint.

Established in 1812 and closed in 1813, reopened in 1821 to provide the Insurgent Army with the necessary funds.

CLASSES OF COIN.	Gold.	Silver.	Total.
Colonial period, 1812, 1813 and 1821.....	"	602,575	602,575
Independence [1822-1823]...	"	892,586	892,586
Republic [1824-1891].....	20,834,385	267,201,936	289,531,482
Total of Guanajuato Mint.	20,834,385	268,697,097	288,036,321

San Luis Potosí Mint.

Established in 1827.

CLASSES OF COIN.	Gold.	Silver.	Total.
Independence [1827-1891]...	"	108,233,675	108,233,675

Guadalajara Mint.

Established in 1812.

CLASSES OF COIN.	Gold.	Silver.	Total.
Colonial period [1812-1821]..	61,581	2,058,388	2,119,969
Independence [1822-1823]...	51,856	1,614,144	1,666,000
Do [1824-1891]...	788,642	54,996,467	55,785,109
Total of Guadalajara Mint. \$	902,079	58,668,999	59,571,078

Chihuahua Mint.

Established in 1811.

CLASSES OF COIN.	Gold.	Silver.	Total.
Colonial period [1811-1814]..	"	3,603,660	3,603,660
Independence [1815-1891]...	1,685,312	45,701,699	47,387,011
Total of Chihuahua Mint.. \$	1,685,312	49,305,359	50,990,671

Durango Mint.

Established in 1811.

CLASSES OF COIN.	Gold.	Silver.	Total.
Colonial period [1811-1821]..	,,	5,310,960	5,310,960
Independence [1822-1823]...	,,	965,629	965,629
Do [1825-1891]...	3,595,462	56,517,236	60,112,788
Total of Durango Mint..... \$	3,595,462	62,793,915	66,389,377

Culiacan Mint.

Commenced work in 1846.

CLASSES OF COIN.	Gold.	Silver.	Total.
Independence [1846-1891]... \$	5,832,288	35,033,921	40,866,209

Hermosillo Mint.

Commenced work in 1867.

CLASSES OF COIN.	Gold.	Silver.	Total.
Independence [1867-1891]... \$	508,394	13,388,615	13,897,009

Alamos Mint.

Commenced work in 1868.

CLASSES OF COIN.	Gold.	Silver.	Total.
Independence [1868-1891]... \$	562,199	19,078,386	19,640,585

Oaxaca Mint.

Commenced work in 1859.

CLASSES OF COIN.	Gold.	Silver.	Total.
Independence [1859-1891]... \$	739,101	4,741,794	5,480,895

Sombrerete Mint.

Commenced work in 1810, closed in 1811, reopened in 1812 and finally closed within the same year.

CLASSES OF COIN.	Gold.	Silver.	Total.
Colonial period [1810-1812]... \$,,	1,551,249	1,551,249

Guadalupe y Calvo Mint.

Established in 1840 by decree of Congress. Commenced work in 1844, and closed in 1850.

CLASSES OF COIN.	Gold.	Silver.	Total.
Independence [1844-1850]... \$	2,311,104	2,063,958	4,375,062

Tlalpam Mint.

Established by decree of the Legislature of the State of Mexico in 1827; commenced work in 1828 and closed in 1830.

CLASSES OF COIN.	Gold.	Silver.	Total.
Independence [1828-1830]... \$	203,544	959,116	1,162,660

Catorce Mint.

In the report presented by the Secretary of Fomento for the year 1866, it appears that this mint coined during the year 1865, in silver. \$ 1,321,545.

GENERAL SUMMARY.

CLASSES OF COIN.	Gold.	Silver.	Total.
Colonial period [1537-1821].. \$	68,778,411	2,092,959,964	2,161,738,375
Independence [1822-1891]...	54,779,368	1,186,448,172	1,241,227,540
Total..... \$	123,557,779	3,279,408,136	3,402,965,915

SUMMARY BY CLASSES OF COIN.

CLASSES OF COIN.	Gold.	Silver.	Total.
1537-1731. Macaquina coin. \$	8,497,950	732,067,457	760,565,407
1732-1771. Pillar coin.....	19,889,014	441,629,211	461,518,225
1772-1821. Spanish Bust coin	40,391,447	899,263,296	939,654,743
1822-1821. Iturbide coin.....	557,392	18,575,569	19,132,961
1824-1891. Republican Eagle coin.....	54,221,976	1,167,872,603	1,222,094,579
\$	123,557,779	3,279,408,136	3,402,965,915

The last period includes the coinage during the Government of Maximilian.

The coinage of copper money amounts to \$ 6,749,405 as follows:

In the colonial period.....	\$ 542,893
Independence.....	6,206,512
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	\$ 6,749,405

The exportation of precious metals during the financial year of 1890-91, was as follows.

Silver ores.....	\$ 8,874,457 24
Foreign gold coin.....	20,594 00
Mexican gold coin.....	134,219 00
Gold bullion.....	612,619 12
Foreign silver coin.....	229,806 85
Mexican silver coin.....	17,622,171 10
Silver mixed with gold.....	729,134 81
Silver bullion.....	6,751,219 07
Sulphurets of silver.....	1,280,768 97
Slag.....	1,382 00
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	\$ 36,256,372 16

XII

RAILROADS.

From data furnished by the Department of Communications and Public Works.

Amongst the important improvements which have been carried out in the Mexican Republic, Railroads have been considered as occupying the first place. Their initiation dates from the year 1837, when a concession was granted to Don Francisco Arrillaga for the construction of a road which was to unite the Port of Veracruz with the Capital. The natural difficulties of this important work and the disturbed state of the country, prevented the immediate realization of this great undertaking, which was not finished until the first of January, 1873, when it was solemnly and officially opened to traffic.

MEXICAN RAILROAD.

[Standard gauge, Steam traction].

This road is of the greatest importance, not only on account of the engineering works that have been constructed, but also because it is the road that connects the capital with the first Port of the Country. The configuration of the country through which this railroad runs, presented very serious difficulties against its construction, but once that these were overcome, a line was located that offers to the traveller an opportunity of contemplating the most beautiful scenery of the country, and