

PREFACE

The origin of this book was the discovery of a collection of photographs illustrating the copper mines and railway of the Quebrada Railway, Land & Copper Company Limited in Venezuela, the railway part of which was known as the Bolivar Railway – Ferrocarril Bolívar. I came across them with the late Allen Civil, while researching a history of the Stafford based locomotive builders and railway engineers, W G Bagnall Limited. The photographs are in a Bagnall family photograph album which partly relates to a family member who worked for the company in Venezuela, during the latter part of the 19th century. Through the kindness of Jill Hutchinson-Smith, a granddaughter of William Gordon Bagnall, the founder of the Bagnall company, I was able delve into the family archive of which she was the custodian, when the photographs came to light. While not directly connected with my research at the time, I was intrigued by the photographs and once the Bagnall history was published, I made a mental note that investigating this Venezuelan enterprise would be an interesting exercise. I very soon discovered that very little appears to have been written, at least in the English language, about railways in Venezuela and this, coupled with the opportunity to make the photographs available to a wider audience, appeared to be too good an opportunity to miss. Jessie Bagnall (1864-1960), one of 13 children of Richard and Julia Bagnall and a sister of William Gordon Bagnall (1852-1907), in 1893, at Christchurch in New Zealand, married Reginald Brooks-King (1864-1938). At an earlier period Brooks-King had worked for the Quebrada Company in Venezuela as its Locomotive Superintendent & Traffic Manager and while some of the photographs in the album are dated 22 May 1888, they would all appear to have been taken around the same time.



Reginald Brooks-King, Locomotive Superintendent & Traffic Manager and his horse named Joe, at Pueblo Nuevo on 22 May 1888.

Born in Monmouth, between July 1881 and December 1883, Brooks-King had part of his training in mechanical engineering as a premium apprentice at Crewe, under the redoubtable Francis William Webb, Chief Mechanical Engineer

of the London & North Western Railway. However, at school at Marylebone in London, immediately prior to this, he was described as a student civil engineer. By 1891, after his return from Venezuela, he did practise as a civil engineer, boarding at 11 Wolverhampton Road in Stafford and it would have been around that time he would have met Jessie. In all probability, she would have been at Stafford visiting her brother, William Gordon and his wife, also Jessie (nee Gibson), as we know the two ladies were great friends and companions. In fact Jessie Bagnall was Jessie Gibson's bridesmaid when she married W G Bagnall in March 1883. What prompted the sweethearts to travel to the antipodes is more obscure, as it would have been somewhat unusual in those times for an unmarried couple to venture so far from home. In any event, they were back in this country by 1891, living in Chippenham, Reginald being described as a retired civil engineer. By 1911 he was practising in Monmouth as an estate agent; apparently a man of many talents.



Brooks-King's house at Pueblo Nuevo. Its position, well away from other residential properties, would have been in view of his seniority in the company's hierarchy.

Researching and compiling this book has taken far longer than I anticipated - in fact around twelve years on and off. When I started my research, I thought it would be a short and pleasant diversion from various other projects I had underway or planned. It has however, turned out to be a full-scale operation involving many hours of research in all number of depositories, as more and more information has come to light. As all the various companies involved with the railway and mines were British, a plethora of material is available for anybody with the time and inclination to search. I mention my sources and the various folk, old friends and new, who have helped me in my acknowledgements. Having said that, this book draws heavily on primary source material of one sort or another. As my research progressed, it soon became apparent that it would be difficult to separate the history of the Bolivar Railway from

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CHAPTER II

THE BOLIVAR MINING ASSOCIATION

THE AROA ESTATE

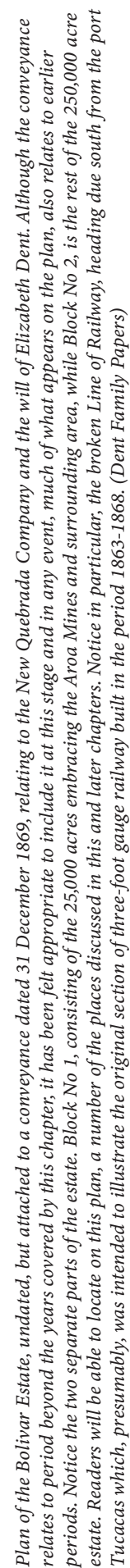
Copper was first discovered at and around Aroa, in the State of Yaracuy, which came to be known by the Spaniards as the Aroa-Cumaragua mining region. The discovery is thought to have been as long ago as 1605, by Don Alonso Daiz de Oviedo, a native of Barquisimeto. The mineral was first mined in 1632 under Don Francisco Nunez Melian, Governor of Venezuela, by the order of and permission from, the King of Spain. Mining was continued by the Governor's successor, Ruy Fernandez de Fuenmayor, until it was decided to place the mining operations open to tender. Don Francisco Marin de Narvaez was the successful bidder, under conditions of a Royal Warrant dated 21 August 1663, for the sum of 40,000 pesos, of which 30,000 were paid in Madrid and 10,000 in Carácas. The period of the lease was 18 years and the conditions such that after that time, Marin de Narvaez became the owner. On his death he left the property to his daughter Josefa, who married Don Pedro de Ponte y Andrade, who in 1716, became owner of the property¹⁸. The couple's only daughter married Don Juan de Bolívar y Villegas and their son, Juan Vincente Bolívar y Palacios, was Simón Bolívar's father and by this route, *El Libertador*, along with his two sisters¹⁹, acquired title to the property. This was in July 1811, when their father died on his way back from a trip to the United States. However, under Spanish law at the time, the sisters were not entitled to a share of the property and despite a petition to change this in 1813, the request was turned down by the King of Spain. Bolívar, as we have already seen, became the liberator of his country from Spanish rule, along with Bolivia, Columbia, Ecuador, Panama and Peru and it was from mining activities in these countries that the family is thought to have made much of their fortune. However, it would appear that Simón gave little attention to the mines in view of his other interests and in any event, little could be done during the War of Independence and it is known that the mines were not worked in the period 1813 to 1821, while his sisters were living abroad. In the days of Spanish rule, labour was by the indigenous population, albeit working as slaves²⁰. The object was to extract only one grade of copper ore, known as the Ruby, an oxide of copper so named in view of its reddish colour. It was much sought after by the Spaniards due to its relative ease of fusibility.

We do have a limited amount of information on the early mine outputs and in particular, exports of ore from the operations which apparently, recommenced in 1790, after a period of inactivity. On 21 September 1784, 229lb of ore was shipped out of the county by a company going by the name, Compañía del Carácas, aboard the barque SANTA TERESA. Between 1797 and 1800, according to a Frenchman named Dauxion-Lavaysse, 18,838lb of ore from the San Felipe mine was exported via the port of La Guairá, while in the years 1799, 1800 and 1801

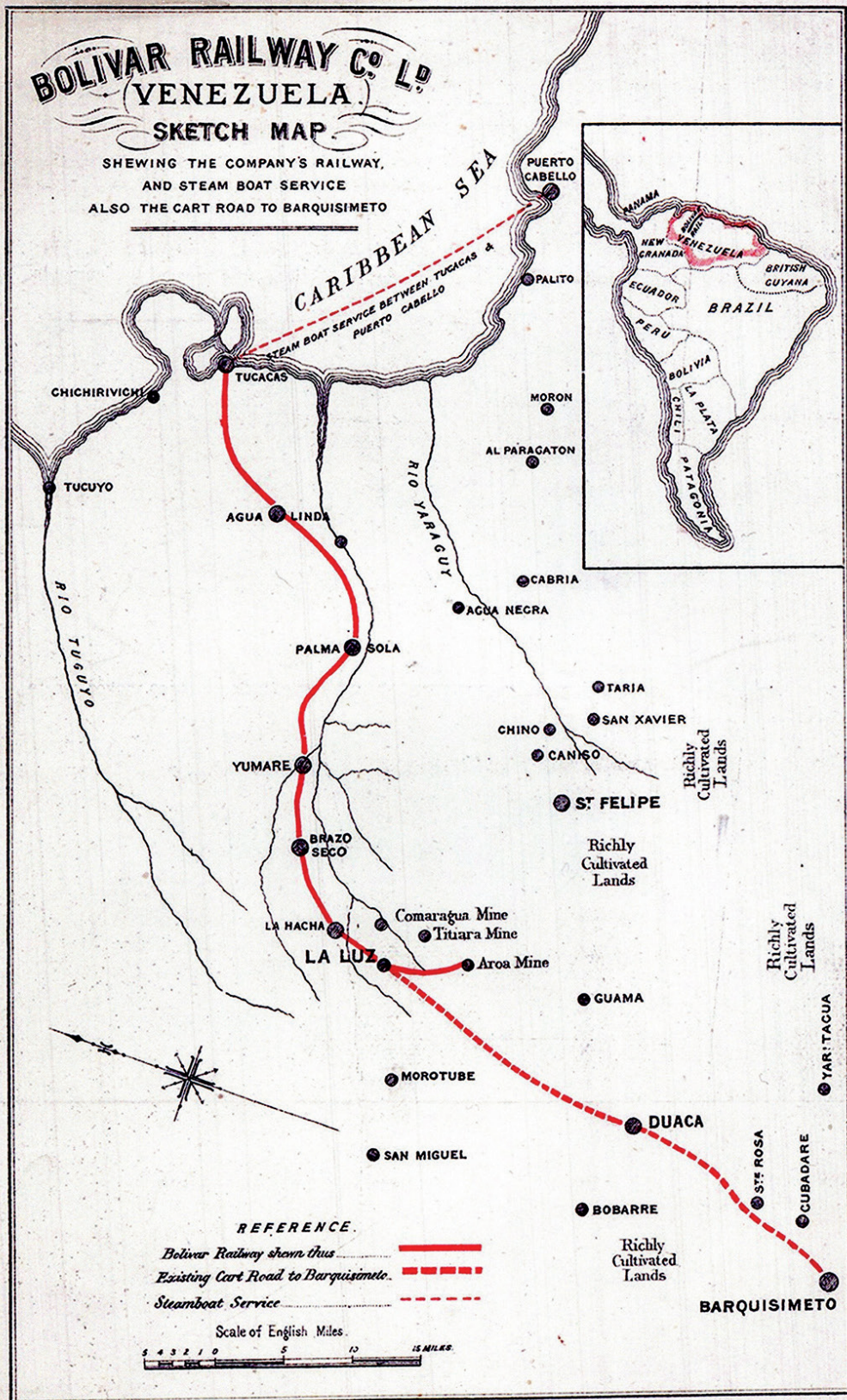
respectively, the following quantities were exported: 6,494lb, 12,114lb and 1,568lb. In these three cases shipment was via Puerto Cabello, some of this output also coming from the San Felipe mine. There is also evidence that some of what was described as *clandestine mining*, had taken place in these times which, undertaken indiscriminately and without experienced supervision, had left much of the workings in a poor state²¹!

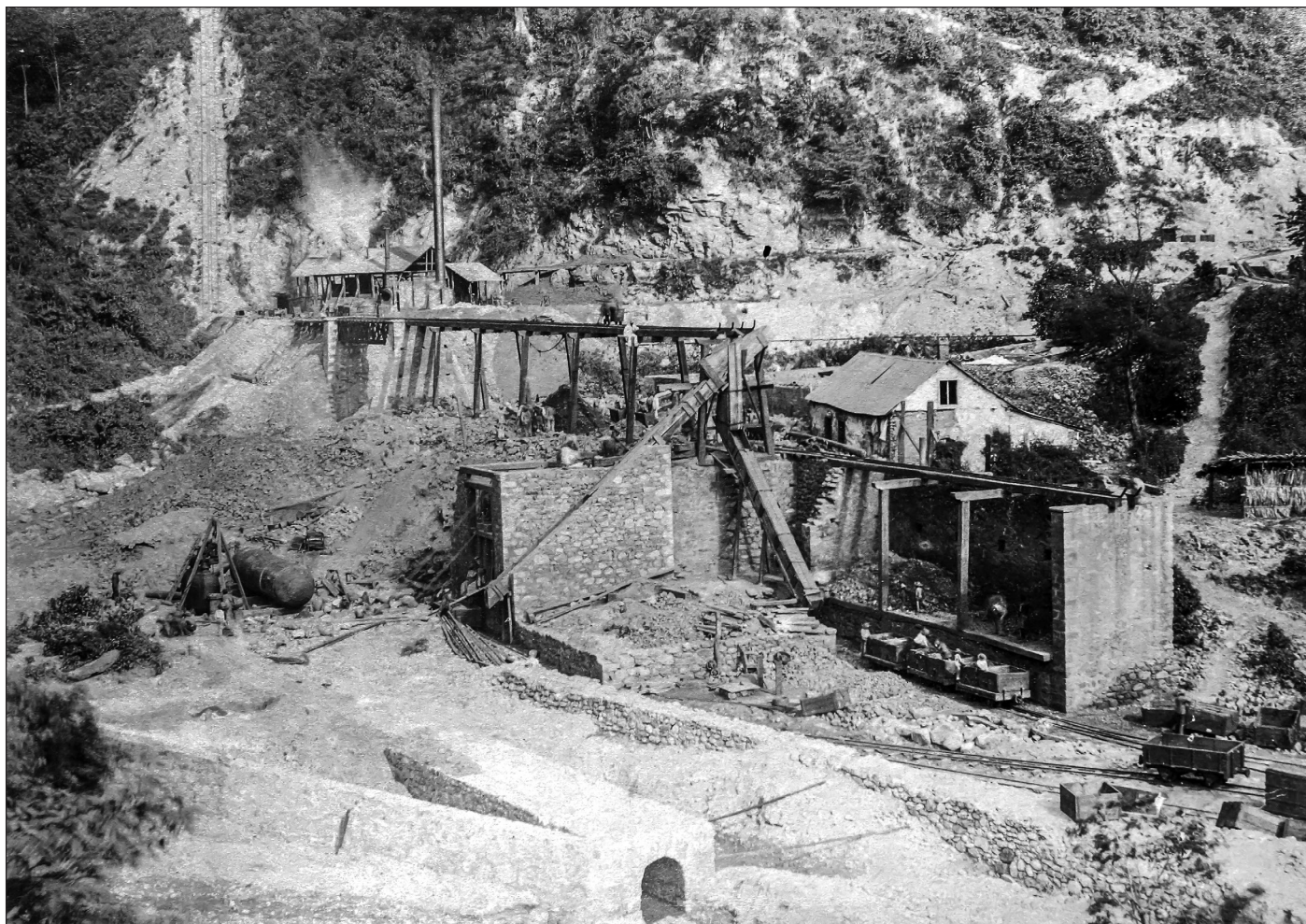
Prior to further discussing the mining operations, it is worth exploring a little of the local topography in relation to the location of the mines. The Coro Ranges of the Colombian Andes (Cordillera de Merida), at around 5,000ft above sea level in the north-west state of Falcón, extend south-east into the states of Lara and Yaracuy. Of these the Sierra Aroa, in which the Cumaragua and Aroa ore deposits lie, is a short range at about 4,000ft at the southern border. Two substantial rivers empty into the Gulf of Triste (Golfo Triste) of the Caribbean Sea, between Puerto Cabello and Tucacas, the Yaracuy and the Aroa. Puerto Cabello, about 72 miles north-west from the inland capital of Carácas, lies at the eastern extremity of the Gulf, which is about 30 miles wide between Puerto Cabello and Point Tucacas. About 20 miles further west from Tucacas, which is in the State of Falcón, the River Tocuyo also empties into the Caribbean. This river is over 400 miles long and twice the length of either the Yaracuy or the Aroa. It rises at over 9,000ft in the Venezuelan Andes, south-west of the City of Barquisimeto. The village of Aroa lies in a small lateral valley which itself runs into the valley of the River Aroa, about 45 miles from the sea, the river discharging into the Gulf of Triste at Boca de Aroa (mouth of the river). The river rises about 20 miles above the mines and the valley from which it originates is extremely narrow until it reaches the mines, where it widens out considerably. Some two miles to the south-west of the village, two other lateral valleys, which are perhaps, better described as ravines, enter the Aroa valley. Each one has a stream running through it, that on the south is the Quebrada and on the other side the Titiara²². During the winter months when the rainfall is heavy these two streams become torrents. In the high ground that forms a ridge between the two ravines at about 1,000ft above sea level, the Aroa mines are situated. The town of Aroa is adjacent to the more recent Yurubi National Park. The Andes mountain range is heavily mineralised and from a spur striking off the main range just below Panama, several ranges head eastwards, one of which runs down on the western side of Lake Maracaibo, while another heads further east, five miles into the Aroa mining company property at its inland end. It then continues towards the sea, dying out around 100 miles east of the capital of Carácas.

The Aroa mining estate was about 32 leagues long and 10



Another map prepared by the Bolivar Railway Company Limited, which is interesting as it also shows the existing cart road to Barquisimeto, along with the steamer service between Puerto Cabello and Tucacas. Notice too, reference to the richly cultivated lands near San Felipe. When a branch was built some years later to serve the San Felipe area, the prospect of developing the agricultural value of the neighbouring lands, was a key part of the lines justification.





This is a fascinating photograph with much to be seen. It is described as: Holman's discovery, sidings, mines, shooting floors and shoots. Holman's discovery was part of the Aroa Mine, the mine itself being off the photograph to the right. Notice the incline to the discovery and the narrow-gauge railway with a man pushing one of the wagons over the elevated structure. The more substantial bridge beyond, carried the line over the River Quebrada. In the building at the bottom of the incline, there is a small boiler with its smokebox and chimney protruding and in view of the larger chimney, doubtless there was another installation of some description out of view. A further railway line can just be made out descending the hillside and running across the centre of the view, with a couple of wagons to the extreme right, while a branch from it, veers away to the extreme right, also apparently, crossing the river by a bridge. Those two lines would have connected with the main Aroa Mine. In the foreground there are the two sidings connected with the tipping arrangements, which allowed transfer of the ore into the mainline wagons. Notice that some of the small four-wheel wagons have what appear to be detachable tops, which are presumably, the ore boxes referred to in the company's annual returns. However, the wagon in front, is of more conventional construction. To the left is what appears to be an A frame lifting arrangement in the process of lowering a large drum into the ground, with another one alongside. The tunnel to the bottom middle of the view, may have something to do with this. This was also the site of the new dressing floors, as shown on the plan on page 66.

meet and discuss the mining operations with George Thomas, as well as overseeing the appointment of Thomas Richards, to the senior management position, vice Warren. During the year, £5,093 was expended on the new smelting furnaces and another £3,891 on other plant and equipment associated with them, plus £3,539 on the hydraulic pipe main from the reservoir to the new turbines. It is worth mentioning at this point that Aroa was reputed to be the first place in the country to have electricity and it was probably in connection with these turbines, that generators were installed, also hydraulically powered. Sometime later, Aroa is also recorded as being the first place in the country to have telephones, doubtless installed by the company. Mention was made that *Mr Bruce King* (actually Reginald Brooks-King, mentioned earlier and

in the Preface), as the Locomotive Superintendent and Traffic Manager, had among his initial responsibilities, the relocation of the workshops and locomotives sheds from Tucacas to Pueblo Nuevo. These additional responsibilities followed Warren's resignation. Along with Richards, Brooks-King lived in one of the recently built company houses in a new part of the village of Pueblo Nuevo.

Burch then discussed the mining operations mentioning their existence for over 300 years, originally having been worked by the Spaniards. The new incline within the Aroa mine - the one known as Holman's - was predicted to provide between 60,000 to 80,000 tons of ore per annum, with around 2,000 tons for each foot of depth. As well as the Aroa and Titiaira workings, reference was made to the other mines on

THE QUEBRADA RAILWAY, LAND & COPPER COMPANY

STATEMENT SHOWING TRAFFIC CARRIED FROM AND TO INTERIOR, VIA LA LUZ AND PALMA SOLA STATIONS DURING THE YEAR ENDING DECEMBER 31st, 1888.

NAME OF DISTRICT.	Up.								Down.										Total.	Per Cent. of Total.	Gross total, up and down, traffic combined.	Per cent.
	Pro-visions.	Hard-ware.	Mer-cha-dise.	Medi-cine.	Glass-ware.	Sun-dries.	Total.	% of gross total.	Coffee.	Cocoa.	Hides.	Beans.	New Sacks	Sun-dries.								
Aroa ...	Kilos. 669,956	Kilos. 23,255	Kilos. 26,610	Kilos. 4,380	Kilos. 8,731	Kilos. 20,425	Kilos. 753,357	8.71	Kilos. 3,848	Kilos. ...	Kilos. 20,796	Kilos. ...	Kilos. 7,916	Kilos. 32,960	Kilos. 38	Kilos. 785,917	9.09					
Duaca ...	22,560	269	163	...	328	4,698	28,018	.32	943,501	...	2,117	1,178	2,397	6,982	956,176	11.05	784,193	11.37				
Barquisimeto ...	1,056,644	87,212	198,401	17,276	34,939	130,157	1,524,629	17.62	1,310,501	...	29,338	43,400	47,645	22,759	1,453,708	10.80	2,978,332	34.42				
Tocuyo ...	353,095	20,588	84,363	4,011	11,243	35,638	517,938	5.90	1,118,962	...	34,069	5,253	4,623	5,171	1,171,073	13.54	1,689,016	19.53				
Yaritagua ...	191,088	10,864	25,556	2,268	6,279	8,900	244,955	2.83	627,588	...	6,416	2,918	...	...	637,365	7.97	687,320	10.20		
Quibor ...	75,599	1,373	33,535	603	5,191	8,066	124,367	1.44	106,674	...	4	9,270	21,497	4,552	141,907	1.64	266,364	3.08				
Carora ...	40,376	7,295	49,270	421	4,742	5,414	107,518	1.24	134,416	...	...	...	...	762	135,178	1.56	242,696	2.80
Cabudare ...	92,847	4,060	10,979	490	1,741	1,746	111,863	1.29	26,151	...	...	...	...	92	26,243	.30	138,106	1.59
Parupano ...	940	...	...	119	...	163	1,222	.01	46,404	...	...	...	...	...	46,404	.54	47,626	.55
Carariqua ...	4,969	307	2,933	...	763	815	9,287	.11	25,911	...	...	...	...	...	25,911	.30	35,198	.41
Caracho ...	2,448	...	1,733	45	58	112	4,396	.05	...	...	...	...	...	...	...	...	4,396	.05
Siquisique ...	...	...	...	...	...	...	306	...	...	...	...	...	...	...	...	...	306	...
Acariqua ...	55	...	4,059	...	...	...	4,114	.05	...	...	...	...	...	...	...	...	4,114	.05
Agua Salada ...	...	...	...	...	...	...	...	...	40,110	...	...	...	...	...	40,110	.46	40,110	.46
Urachiche ...	...	...	1,181	...	...	...	1,181	.01	137,659	...	...	...	...	...	137,854	1.59	139,056	1.60
Agua Fria ...	...	...	...	...	...	...	...	...	1,194	...	...	...	...	...	1,194	.01	1,194	.01
Mucaragua ...	...	...	...	...	...	...	...	...	4,587	...	...	...	...	...	4,587	.05	4,587	.05
Guanare ...	...	...	...	...	...	...	...	...	1,427	...	...	...	...	...	1,427	.02	1,427	.02
San Felipe ...	35,451	8,938	1,307	46	138	6,393	52,273	.61	195,333	34,650	3,734	...	...	1,143	234,860	2.72	287,133	3.33		
Palma Sola ...	1,704	...	...	...	77	20	1,801	.02	...	...	...	...	...	...	...	...	1,801	.02
Campo Eliseo ...	...	...	...	...	...	...	...	...	16,750	...	...	...	...	...	16,750	.19	16,750	.19
San Pablo ...	...	...	...	...	...	...	...	...	27,700	...	...	...	...	...	27,700	.32	27,700	.32
Cocorote ...	...	...	...	...	...	...	...	...	16,962	...	...	...	...	...	...	...	...	...
Araure ...	9	154	2,191	75	...	583	3,012	.04	43	17,005	.20	17,005	.20			
Agua Negra	2,071	53	2,124	.03	2,124	.03			
San Geronimo	14,471	2,249	16,720	.19	16,720	.19			
Guanama	4,758	4,758	.06	4,758	.06			
Chivacoa	28,986	28,986	.34	28,986	.34			
Total	2,547,741	173,315	442,587	29,734	74,230	222,630	3,490,237	40.34	4,835,901	36,952	96,819	62,019	76,162	52,863	5,160,719	59.66	8,650,956	100%				
Percentage of Gross Total	29.45	2.00	5.12	0.34	0.86	2.57	40.34		55.90	0.43	1.12	1.12	0.82	0.61	59.66	...	100 %					

Extract from the annual report of the Quebrada Railway, Land & Copper Company Limited, for the year ending 31 December 1888, giving details of the general traffic on both the Bolivar and South West Venzeuela Railways. The statistics however, exclude the copper ore traffic.

Extract from the annual report of the Quebrada, Railway, Land & Copper Company Limited, for the year ending 31 December 1890, which has details of the locomotives and rolling stock, along with the floating plant. As by this time the SWVR was being operated by the Quebrada Company, its locomotive and rolling stock are included in the details.

THE QUEBRADA RAILWAY, LAND AND COPPER COMPANY, LIMITED.

RAILWAY DEPARTMENT.

RETURN OF LOCOMOTIVE ENGINES AND ROLLING STOCK, 31st DECEMBER, 1890.

Year.	Loco-motives.	Passenger Coaches.	General Goods Wagons.	Open Wagons.	Flat Wagons.	Trucks.	Other Rolling Stock.
1889	9	6	143	60	611	38	10
1890	12	8	150	60	611	38	10
Increase	3	2	7	0	0	0	0
Decrease	...	...	...	...	...	...	...

SOUTH WESTERN OF VENEZUELA (BARQUISIMETO) ROLLING STOCK.

Locomotives.	Passenger Coaches.	General Goods Wagons.	Open Wagons.	Flat Wagons.	Trucks.	Other Rolling Stock.
1890	4	4	25	20	15	4

RETURN OF FLOATING PLANT.

Year.	STEAMERS.	WIND.	TON.	STOCK.	TOTAL.	BOATS.
1889	2	2	2	2	8	3
1890	2	2	2	2	8	3
Increase	...	...	...	...	...	...
Decrease	...	...	...	...	...	...

THOMAS RICHARDS, Agent. N. G. BURCH, Managing Director.

To the Directors of THE QUEBRADA RAILWAY, LAND AND COPPER COMPANY, LIMITED, LONDON.

GENTLEMEN,—I have the pleasure to certify that the Company's works, machinery, rolling stock, floating plant, and buildings have all been maintained in fairly good order and condition during the past year, 1890. Early in the year two new main-line locomotives were received from England and immediately put into service, and in August another locomotive was further supplemented by a new Pacific engine for working the mine section of the railway. These additions to the Company's rolling stock have been very opportunely provided for the recently suggested output of the mines and increase of traffic, due to the convenience of material for the construction of the South Western of Venezuela (Barquisimeto) Railway, as well as the permanent increase of traffic anticipated in connection with the opening of the new line to Barquisimeto, rendered it imperatively necessary that such provision should be made.

The steamer "Venezuela" has been replaced by a comparatively new steamer, of similar capacity, called the "Barquisimeto." Another hull upon the steamer "Venezuela" showed that the engine necessary to the hull was of too extensive a nature to be undertaken locally in, in Venezuela, and it is probable that it will be found profitable to utilize the steamer for further service. The "Galath" crane (supplied towards the end of 1889) was erected early in the year (1890), and has proved of immense advantage in facilitating the handling of locomotive boilers and other heavy articles. A new steam hammer, of larger size than the one already in use, has also been furnished, and is now in use at the mill, and will still further add to the efficiency of the works.

The delivery of slag ballast to the railway has been most vigorously pushed forward throughout the year, to the very marked improvement of the permanent way, and several of the bridges have been overhauled and put in thorough repair as well. In the mining department, the advantage of the full installation of the hydraulic machinery has been very manifest, since the engine shaft reached a sufficient depth for the bottom of the mine to be under its control, as required early in July last. Since that date a very important economy has resulted in the cost of the ore extraction, and the main Ave. Mine is now in a position—despite the increasing depth of the workings—to return on an cheap as in the past.

I am, GENTLEMEN, Your most obedient Servant, THOMAS RICHARDS, M.I.C.E., Chief Resident Agent.

Barquisimeto, 21st, 1890.

THE QUEBRADA RAILWAY, LAND AND COPPER COMPANY, LIMITED.

PROCEEDINGS AT THE NINTH ORDINARY GENERAL MEETING HELD AT THE CITY TERMINUS HOTEL, CANNON STREET, ON FRIDAY, 22nd MAY, 1891.

HUGH M. MATHESON, Esq. (Chairman), presiding.
The CHAIRMAN: Gentlemen, I shall ask the Secretary to read the notice convening the Meeting.

Mr. N. G. BURCH (Managing Director and Secretary) read the notice.
The CHAIRMAN: Then, gentlemen, may I take it that the Report and Accounts, which have been in your hands for some days, may be taken up? Is that your opinion? (Hear, hear).
The Report and Accounts were taken as read.

Gentlemen, the Report and Accounts having been for some days in your hands, I cannot doubt that you have examined them and have appreciated their importance, and, therefore, my task to-day, in drawing your attention to some of the principal features, need not be a heavy one, or occupy much of your time.
The Balance at credit of Revenue Account, along with £36,375 4s. 6d. brought forward from 1889, amounts to £136,375 4s. 6d. From this deduct Debenture and other interest ... £32,416 2s. 10d. And interest on the Preference Shares for 1889 ... £3,751 16s. 0d.

And we have a disposable balance of ... £100,207 6s. 3d.
But in order to bring the operations of the Company into a paying position, outlays on Capital Account had to be made over several years.
The outstanding balance of these amounts to ... £49,337 17s. 7d. which it is evidently desirable to write off.

We have also reserved a sum to cover any claim for royalties ... £3,000 0s. 0d.
And to provide the interest on Preference Shares for 1890 ... £3,751 16s. 0d.
These, together, amount to ... £56,089 13s. 7d.

Leaving a net disposable balance of ... £44,117 12s. 8d.
Out of this net balance I recommend a dividend of 5 per cent. on the Ordinary Shares, amounting to ... £36,296 11s. 0d.
Leaving to be carried forward ... £8,821 11s. 8d.

Your late lamented Chairman, Mr. Bruce, explained to fully in his address of last year the improvements made in all the departments of this large industrial undertaking, that I do not need to go over the ground again. That the persevering efforts of the Directors, under the able advice of Mr. George Thomson, in laying the lines of successful working, by the installation of the best modern machinery, the works are now in a thoroughly efficient state, and, although only in full operation for about half of the year 1890, they show an advance, in every particular—output of ore, produce in copper, reduction of cost, and earnings by railway traffic, to which your Directors confidently point as an earnest of the complete fulfillment of those expectations which were held out to you, when the important works that have been referred to were undertaken. I have mentioned reduction of cost. In 1888 the cost

mine and smelting works. With this work complete, or at least well advanced, he returned to England. His replacement with the new title of Resident Agent and General Manager, was William Brown. The replacement of the original 30lb per yard wrought iron rails on mainline of the railway was now complete, with only 15 miles requiring proper ballasting. The new railway to Barquisimeto had opened on 5 December 1890, resulting in some through traffic on the Bolivar line. The railway receipts for the first four months of 1891 showed an increase of 33 percent compared with the same period the previous year. Ore from the mines transported to the smelting works amounted to 45,561 tons from Aroa and 9,188 tons from Titiaira, while ore

for shipment via the railway to Tucacas amounted to 17,874 tons. The average copper content of the ore from the Aroa mine was 10.22 percent. With the improved smelting furnaces a greater quantity of ore, the majority in fact, was being smelted on site, resulting in a reduction in the amount transported to Tucacas for export. Three new locomotives at a total cost of £5,453 had been delivered in 1890, two of them, described in the annual report as for use on the mainline, having arrived early in the year. The third one followed in August, another of the articulated Double-Fairlie designs, quoted in the report as for use on the mines section of the railway. Two new first class carriages had also arrived at a cost of £775, along with



a *Goliath* crane for the locomotive workshops to reduce the labour involved in removing and refitting the engines' boilers. Also during the year the Chairman, Thomas Charles Bruce had died; he was replaced by Hugh Mackay Matheson, one of the partners of Matheson & Company.

The steamer VENEZUELA was written-off in 1889, replaced by the almost new SS BARQUISIMETO, which had already

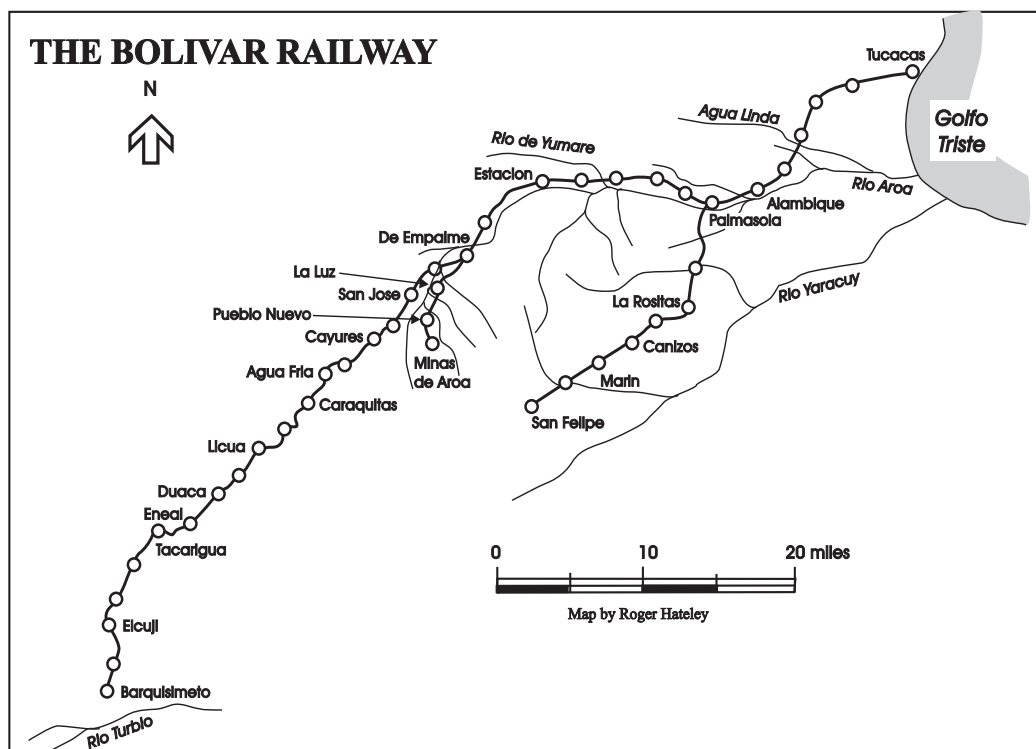
arrived. In anticipation of increased traffic following opening of the new line to Barquisimeto, a further steamer had been ordered and the SS TOCUYO was commissioned the following year. By November 1891 it was plying three times a week between Puerto Cabello and Tucacas. The steam ships and other vessels owned by the companies are discussed in greater detail in Chapter VII.

MORE RAILWAY ISSUES

From the following year, 1891, with the exception of the mineral traffic from the mines, the receipts for the two railways, the new South Western of Venezuela (Barquisimeto) Railway and the Bolivar Railway, were combined at £88,264, of which £21,075 was paid to the SWVR as part of the agreement for working the line. The total number of passengers carried on the two railways was 27,150, against 9,292 the previous year on the original line. While these are the first years for which we have any figures for passenger traffic, they show a healthy trend now that the two railways between them served the City of Barquisimeto, which had a population at that time of around 29,000. Output from the mines was increased by 35,185 tons over the previous year, with 26,275 tons handled at the smelting works. Two more water jacketed furnaces had been commissioned and a new calcining bank with a capacity of 10,000 tons had been built. At the Aroa mine the 40 fathom level had been deepened and the incline shaft sunk to 230ft. Some steam power plant had been introduced again, to supplement the water power as with the increased output, the latter had been unable to cope. The railway workshops at Pueblo Nuevo had been extended and a new locomotive running shed

commissioned – it was 110ft long and 70ft wide. Twenty new wagons had been added to the fleet. On the railway, several bridges had been reconstructed in anticipation of a heavier level of traffic.

In regard to the new locomotive running shed discussed in the previous paragraph, it is worth mentioning Alfred Henry Kells (1858-1919), a native of Woolwich in Kent. Kells had served his apprenticeship in mechanical engineering at the Royal Arsenal and on completion, was employed there as a millwright. In 1881 he was appointed as a locomotive fitter on the Bolivar Railway and in 1889, became foreman of the running sheds and subsequently, general foreman for all railway mechanical engineering issues. His work included assisting in moving the workshops and principal locomotive sheds from Tucacas to Pueblo Nuevo. On return to this country in 1899, he worked at the Royal Arsenal again, but seems to have enjoyed life in Venezuela as in 1901, he was appointed works foreman for the La Guairá Harbour Works and in 1911, mechanical engineer for the entire harbour which included, cranes, dredging vessels, tug boats and fixed plant, along with the railway system and locomotives. He died in Curacao on



Map of the Bolivar Railway. Although this map shows the complete railway, including the SWVR from De Empalme to Barquisimeto, along with the much later branch to San Felipe, it has been felt appropriate to include it here. The junction at De Empalme, with the original line to the mines, was more generally known as El Hacha, which was the name of the station; at least it was latterly.

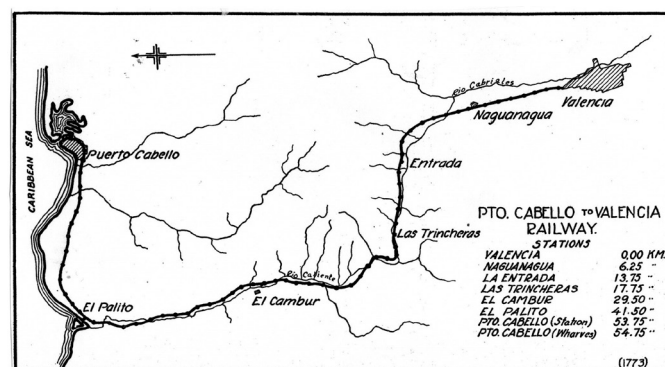
CHAPTER IX

THE PUERTO CABELLO & VALENCIA RAILWAY

(FERROCARRIL DE PUERTO CABELLO A VALENCIA)

I have considered it appropriate to include a relatively brief summary of the history of the Puerto Cabello & Valencia Railway (PC&VR) on three counts. In the first, in view of its relationship with the companies that operated the Bolivar Railway as, over the years, they had a number of common directors, eventually leading to the two railways joining forces. Secondly, in view of the connecting line, which dated from 1941, joining the two systems, albeit the track gauges were different. Thirdly, because of a possible link with some of the locomotives used by the earlier unsuccessful contractors of the Bolivar Railway. There is however, inevitably, some duplication with what has gone before, as well as in the next chapter, which covers the locomotives owned by both railways. The PC&VR dates from 26 September 1885, when the company was registered in England²⁶³. With a capital of £460,000, divided into 46,000 shares of £10 each, like the BRC, it had a concession from the Venezuelan Government, in its case dated 24 February 1885. The line was 34 miles long, from the Caribbean port of Puerto Cabello, almost directly south to Valencia, with a track-gauge of 3ft 6in²⁶⁴. Opening in part on 1 April 1888, the concession was for 99 years from completion, guaranteed for the entire period at seven percent annually, on a capital of £820,000. The concession was originally granted to the contractors building the railway, Cutbill, Son & De Lungo, but transferred on 29 September 1885, in agreement with the government, to the railway company²⁶⁵. Within its articles, the company had provision for a debenture issue of up to £360,000, at six percent interest, available if required, to cover any shortfall between the share capital and the construction and equipment costs. In the event, the share capital was fully subscribed, including £160,000 by the Venezuelan Government, which was very enthusiastic in wanting to improve inland communications. Among the original directors were Nathaniel Geach Burch and William Newbold, who we have already met a number of times. The line cost £782,216 to build and equip. Readers may recall from Chapter V, that in March 1896, the government owned shares were sold to the SWVR. The high cost of construction was partly due to the need for a rack assisted section where the line passed over the Las Trincheras mountain range. The rack section, on the Swiss Abt system, was 23 miles from Puerto Cabello, two miles long at a gradient of eight percent, to a height of 1,952ft above sea level. Las Trincheras is famous for its hot springs, a spa opening in 1889 and today, the site forms a popular holiday resort and recreational centre for the local

populace. Alexander von Humboldt, during his travels in South America, on a visit to the hot springs, is said to have boiled an egg in the waters in less than three minutes. See Appendixes VII and X for additional details of Humboldt's travels.



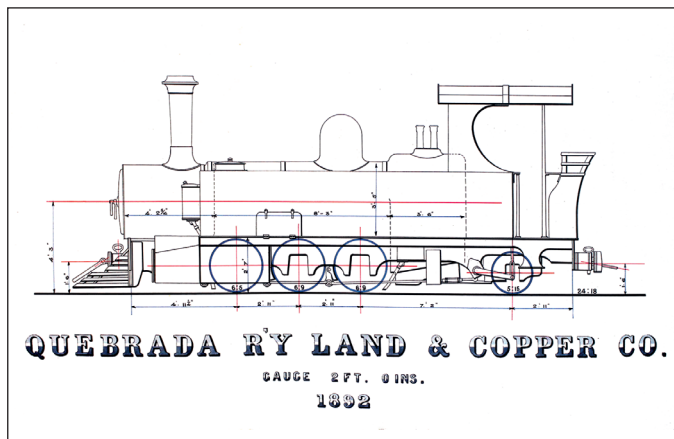
Map of the Puerto Cabello & Valencia Railway. Converted to miles, the total length was 34.2 miles.

The contractors appointed John Carruthers (1836-1914), who we met in Chapter V, in connection with the SWVR, as its consulting engineer for the works. Carruthers, in a paper to the Institution of Civil Engineers which described the railway, pointed out that he happened to be in the country at the time the line was being planned and was asked by the President, Guzmán Blanco, to examine and report on the proposed route²⁶⁶. A scheme for the railway had been developed by a local army officer, General J C de Castro, who proposed a route with as uniform a gradient as possible which, in view of the terrain the line had to cross, would have been both costly to build and expensive in maintenance. Carruthers, having conducted his own surveys, suggested a route over gentler country with a grade not exceeding three and a half percent, albeit with the two mile rack section and this was the route selected. Born in Inverness, Carruthers served his pupillage between 1854 and 1856, under William Benedict, the Chief Engineer of the Great Western Railway of Canada. This was followed by a further two years with Benedict on the Canadian Amboy, Lansing & Traverse Railway²⁶⁷. Subsequently, he was involved with railways in America, Russia, Mauritius and Egypt, followed by canal works in India. In 1871 he was appointed Chief Engineer of the New Zealand Public Works Department and between that year



In 1892 the company went to yet another builder for its next two locomotives, probably with a view of some standardisation, as they were similar to the four that had recently been supplied to SWVR. Fleet Nos 16 and 17 came from the well-established Leeds firm of Kitson & Company, maker's numbers 3502 and 3503. These 0-6-2 side tank engines were designed to predominantly run smokebox first, as they were not fitted with cow catchers at the rear end and only had a small rear lamp. Notice the Haycock firebox and the Walschaerts valve gear, with a cover over the sidebars, complete with an access door. This arrangement was designed to prevent the ingress of dirt on some of the motion parts and one is left wondering why something similar was not employed on all the locomotives. (Stephenson Locomotive Society Library)

partly supported by the rolling stock returns in the company's annual reports, which do not always show increases when new locomotives joined the fleet, just the total fleet numbers. This suggests that older ones had been withdrawn around the same time that new ones were received. The returns just give the fleet total, at any one time. In the report for the year ending 30 June 1907, locomotives 2 and 10 were quoted as having been unserviceable for between six and three years respectively, being withdrawn as they were *considered to be of no use*. No 2 would have been one the original Canada Works locomotives and No 10, one of the 1877 pair from Black, Hawthorn, although



Another page from the Kitson Locomotive Engines Album No 2, in the collection of the Stephenson Locomotive Society Library, illustrating in diagrammatic form, Bolivar Railway locomotives Nos 16 and 17.

Cylinders.		
DIAMETER	STROKE	CENTRES
13"	18"	5' 3½"
Diams. of Wheels.		
LEADING	DRIVING	TRAILING
2' 6"	2' 6"	2' 6" 2' 0"
Tubes.		
NUMBER	DIAMETER	
105	1½"	
Heating Surface.		
FIRE BOX	48.8	
TUBES	440.0	
TOTAL	488.8	sq'
GRATE AREA	9	sq'
Order Numbers.		
3502-3		2 OFF

This is a page from the Kitson Locomotive Engines Album No 2, held in the collection of the Stephenson Locomotive Society Library, giving some of the main dimensions of maker's numbers 3502 and 3503, Bolivar Railway Nos 16 and 17.

THE
**La Guaira and
Caracas Railway.**

The most beautiful views of sea and land are to be obtained by a trip on this remarkable Mountain Railway, which runs from

**La Guaira
to Caracas** "The Paris
of South
America."

LA GUAIRA is a port on the Caribbean Sea, and CARACAS, the capital of Venezuela, is situated 23 miles distant at an altitude of 3,000 ft. above the sea level. To attain this elevation the line has had to be built with a ruling gradient of 1 in 25, rising to a height of 3,200 ft. shortly before reaching Caracas, and then falling 200 ft. to the terminus. At some parts of the line the tourist may look (from the carriage) down into a great abyss 1,250 ft. below.

London Office:

FINSBURY PAVEMENT HOUSE, E.C.

Secretary:

Mr. T. LEE C. PILDITCH.

This advert for the railway appeared in a special Jubilee issue of The Railway News, celebrating the journal's publication between 1864 and 1914.

This is one of the first six 0-6-4 side tank locomotives built for the railway by Nasmyth, Wilson & Company of Patricroft, Manchester. The maker's numbers were 224 to 229 of 1882 and the fleet Nos 1 to 6. Notice the engine has Joy valve gear and as was the case with the Puerto Cabello & Valencia Railway, this line too, used the Heberlein cable braking system. The cable guiding wheels are prominent on the cab roof and the chimney.

