Chilean steam locomotive list

Part 4

Sub-metric gauge locos

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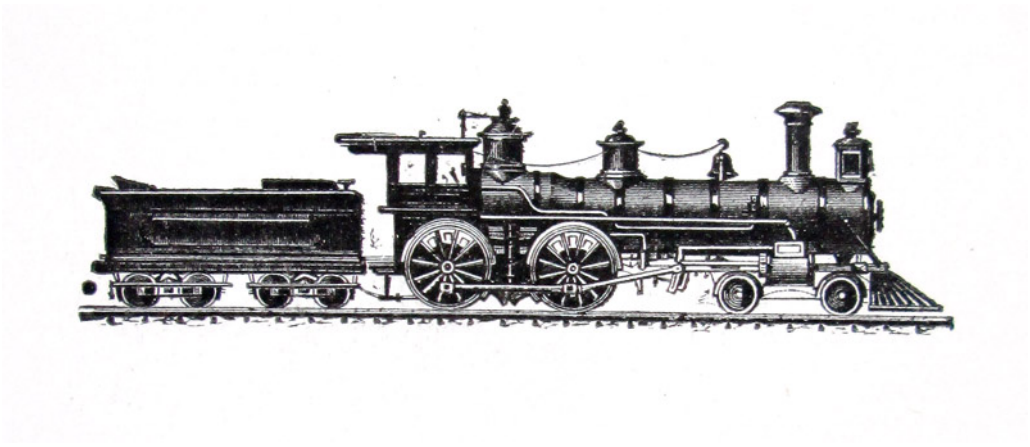
This file can be found, along with the other four parts in the Chilean series and files for a number of other South American countries, at http://www.railwaysofthefarsouth.co.uk/05x03chileansteamlocos.html



These lists, though benefitting from modern technology in both research and presentation, build upon those produced by many other investigators, from Wilfred Beckerlegge and Paul Dewhurst in the 1920s to John Kirchner and Allen Copeland eighty or ninety years later. As such, their content will, I hope, be helpful for researchers and authors in the future. Feel free to use this material, though an acknowledgement would be appreciated.

General introduction

These lists grew from the publication of the book *Railways at the End of the World* (The Araucaria Press, Casterton, Cumbria, UK ISBN 978-0-9928622-0-6), back in 2014. During the research undertaken when gathering information for that volume, it had sometimes been frustrating when locomotives in southern Chile could not be easily identified. Once the book had been published there was more time available, and it gradually became obvious that a list of the engines of the Chilean state railways (*EFE*) would have to cover the whole country to be of any use, and thus it expanded all the way up to Arica. Then, during the Covid pandemic, the first moves were made to extend these lists to some of the other smaller South American countries.

The foundations were built upon earlier lists created by others such as Allen Copeland, John Kirchner, and Reimar Holzinger. Additional information has been added bit by bit to their work. Photographs too have been inserted, though these have been kept small, partly to reduce the file sizes and partly to minimise the risk that copyright owners will object. The main purpose of the images is in any case to enable locos spotted in other photographs elsewhere to be identified. When high-resolution versions are likely to be available from museums and archives, this has been flagged up, to encourage interested readers to purchase what they need from those who care for historic drawings or photographs.

As news of this work has spread, assistance has come from other researchers, including in particular Chris West, Claus Gaertner and Martin Murray. Grateful thanks is due to their selfless willingness to share information and images.

Whilst many of the written sources consulted have been in Spanish, these lists are currently solely available in English. This partly results from my own lack of linguistic confidence, but is also a reflection of the fact that keeping a fast-changing document synchronised in two different tongues is very time-consuming. Nevertheless, quotes from historic documents have usually been left in Spanish and it is to be hoped that in the future a Spanish version of the whole work can be created.

Close examination of these pages is likely to remain strictly a minority interest, whilst even fewer are likely to print out all 5200+ pages! Thus the files have been designed to be read on screen, with hyper-links from the contents page to aid in finding each section. The density of information is likely to discourage browsing on a mobile phone, but hopefullyy the layout is suitablefor display on tablets as well as larger computers.

It will be obvious that this is a work still in progress, with updates being uploaded to the web roughly on a quarterly basis at present. Comments, additional items of information or images, and suggestions to improve the layout, would all be very much appreciated, and the author can be contacted at martincoombs11@gmail.com

This Chilean list

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Introducción general

Estas listas tienen su origen en la publicación del libro *Railways at the End of the World* (The Araucaria Press, 1 Fellview, Casterton, Cumbria, LA6 2SA, Reino Unido. ISBN 978-0-9928622-0-6), en 2014. Durante la investigación realizada para recopilar información para dicho volumen, a veces resultaba frustrante que las locomotoras del sur de Chile no se pudieran identificar fácilmente.

Tras la publicación del libro, se dispuso de más tiempo, y poco a poco se hizo evidente que una lista de las locomotoras de los Ferrocarriles Estatales de Chile (EFE) tendría que abarcar todo el país para ser útil, por lo que se amplió hasta Arica. Posteriormente, durante la pandemia de COVID-19, se dieron los primeros pasos para extender estas listas a algunos de los otros países sudamericanos más pequeños.

Las bases se construyeron sobre listas anteriores creadas por otros autores, como Allen Copeland, John Kirchner y Reimar Holzinger. Poco a poco, se ha ido añadiendo información adicional a su trabajo. También se han insertado fotografías, aunque de tamaño reducido, en parte para reducir el tamaño de los archivos y en parte para minimizar el riesgo de objeción de los titulares de los derechos de autor. El objetivo principal de las imágenes es, en cualquier caso, permitir la identificación de las locomotoras que aparecen en otras fotografías en otros lugares. Se ha informado sobre la disponibilidad de versiones en alta resolución en museos y archivos para animar a los lectores interesados a adquirir lo que necesiten de quienes se interesan por los dibujos o fotografías históricas.

A medida que se ha difundido la noticia de este trabajo, otros investigadores, como Chris West, Claus Gaertner y Martin Murray, han colaborado. Les agradezco enormemente su desinteresada disposición para compartir información e imágenes.

Si bien muchas de las fuentes consultadas están en español, estas listas actualmente solo están disponibles en inglés. Esto se debe en parte a mi falta de confianza en el idioma, pero también a que mantener sincronizado un documento en constante evolución en dos idiomas diferentes requiere mucho tiempo. No obstante, las citas de documentos históricos se han mantenido generalmente en español y es de esperar que en el futuro se pueda crear una versión en español de toda la obra.

Es probable que el análisis minucioso de estas páginas siga siendo un interés minoritario, y es probable que aún menos impriman las más de 5200 páginas. Por lo tanto, los archivos se han diseñado para su lectura en pantalla, con hipervínculos desde la página de contenido para facilitar la búsqueda de cada sección. La densidad de información probablemente desaconseje la navegación en un teléfono móvil, pero esperamos que el diseño sea adecuado para su visualización tanto en tabletas como en ordenadores de mayor tamaño.

Es evidente que este es un trabajo en curso, con actualizaciones que se suben a la web aproximadamente trimestralmente. Se agradecerán comentarios, información o imágenes adicionales, y sugerencias para mejorar el diseño. Se puede contactar con el autor en martincoombs11@gmail.com

Esta lista chileno

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Part 17	Cuban public railway locomotives
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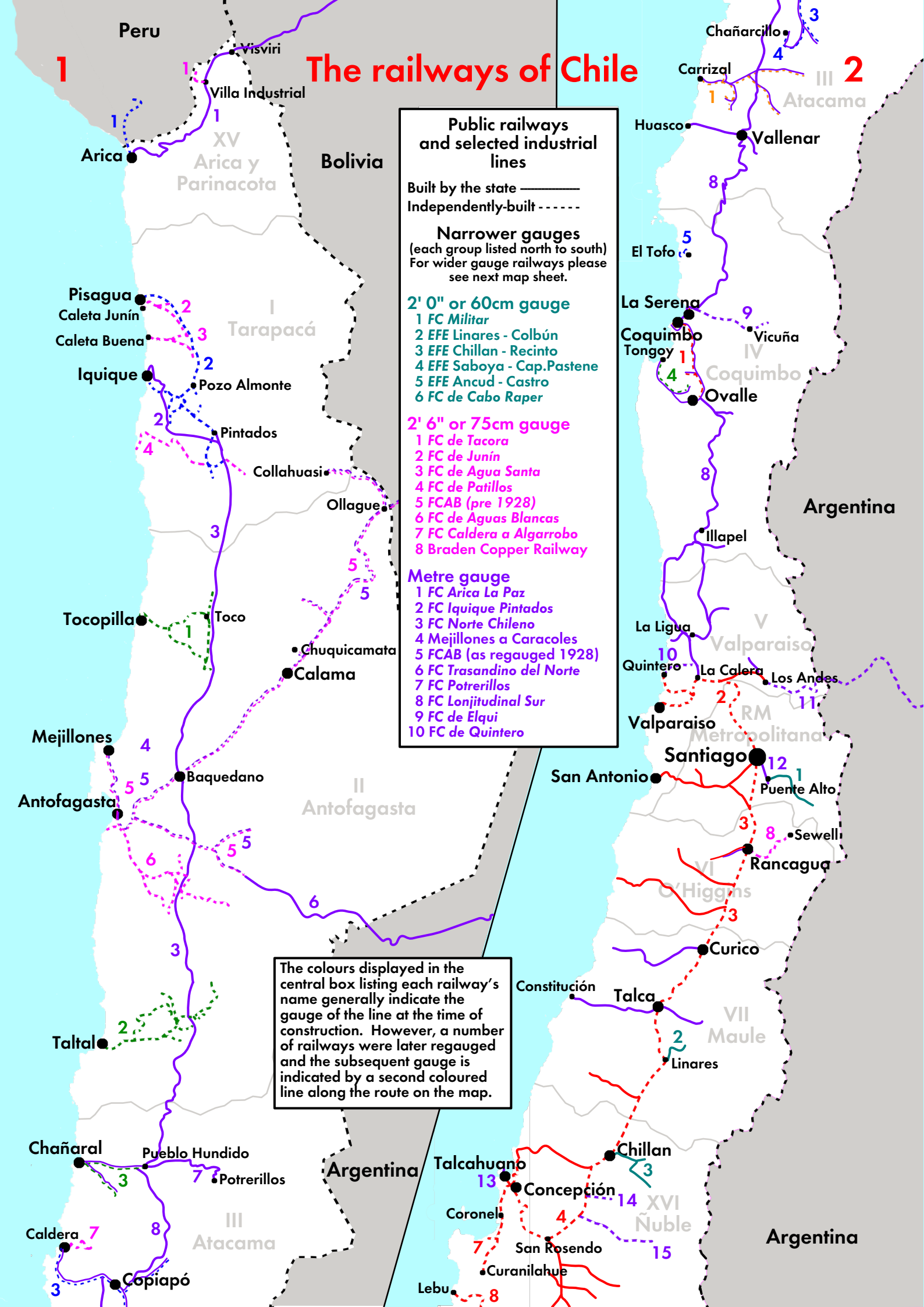

1
The railways of Chile
2
Peru
Bolivia
Argentina
Argentina
Argentina
Visviri
Villa Industrial
Arica
XV
Arica y
Parinacota
I
Tarapacá
Pisagua
Caleta Junín
Caleta Buena
Iquique
Pozo Almonte
Pintados
Collahuasi
Ollague
Tocopilla
Toco
Chuquicamata
Calama
Mejillones
Baquedano
Antofagasta
II
Antofagasta
Taltal
Chañaral
Pueblo Hundido
Potrerillos
Caldera
Copiapó
III
Atacama
Chañarcillo
Carrizal
III
Atacama
Huasco
Vallenar
El Tofo
La Serena
Coquimbo
Tongoy
Vicuña
IV
Coquimbo
Ovalle
Illapel
La Ligua
V
Valparaíso
Quintero
La Calera
Los Andes
Valparaíso
RM
Metropolitana
Santiago
San Antonio
Puente Alto
Sewell
Rancagua
VI
O'Higgins
Curico
Constitución
Talca
VII
Maule
Linares
Chillan
Talcahuano
Concepción
Coronel
XVI
Ñuble
San Rosendo
Curanilahue
Lebu
Public railways
and selected industrial
lines
Built by the state ————
Independently-built - - - - - -
Narrower gauges
(each group listed north to south)
For wider gauge railways please
see next map sheet.
2' 0" or 60cm gauge
1 FC Militar
2 EFE Linares - Colbún
3 EFE Chillan - Recinto
4 EFE Saboya - Cap.Pastene
5 EFE Ancud - Castro
6 FC de Cabo Raper
2' 6" or 75cm gauge
1 FC de Tacora
2 FC de Junín
3 FC de Agua Santa
4 FC de Patillos
5 FCAB (pre 1928)
6 FC de Aguas Blancas
7 FC Caldera a Algarrobo
8 Braden Copper Railway
Metre gauge
1 FC Arica La Paz
2 FC Iquique Pintados
3 FC Norte Chileno
4 Mejillones a Caracoles
5 FCAB (as regauged 1928)
6 FC Trasandino del Norte
7 FC Potrerillos
8 FC Lonjitudinal Sur
9 FC de Elqui
10 FC de Quintero
The colours displayed in the
central box listing each railway's
name generally indicate the
gauge of the line at the time of
construction. However, a number
of railways were later regauged
and the subsequent gauge is
indicated by a second coloured
line along the route on the map.



Notes and sources

The structure of this document is based upon the earlier ones for wider gauges. The *DOP* and *EFE* 60cm gauge section has been created from scratch using primary sources as listed below. Some other sections have used Turner & Ellis's book on the *FCAB*. Further sources are as listed. In general the very few locos ordered for gauges around 90cm or 3' have been covered first, then 75cm and 2' 6" gauge lines, and finally the 60cm and 2' gauge railways.

Sources

[1] Files from the *Archivo de la Administración* (*ArNAd*) in Santiago.

[2] Annual reports to Congress from the *EFE*, mostly found in the library of the *Ministerio de Transportes y Telecomunicaciones* in Santiago

[3] Annual reports to Congress from the *Dirección de Obras Públicas*, mostly found in the *Archivo Nacional* around the corner from the *Biblioteca Nacional*.

[4] Allen Copeland and John Kirchner's lists from around 1996.

[5] Turner & Ellis T*he Antofagasta (Chili) & Bolivia Railway*, new edition 1996, Trackside Publications.

[6] *Estudio sobre los FFCC Vecinales*, in *Anales del Istituto de Ingenieros de Chile*, 1892.

[7] *FFCC Particulares* part 6, 1909, in *Anales del Instituto de Injenieros de Chile*.

[8] *The Fairlie Locomotive*, R. A. S. Abbott, 1970, David & Charles, Newton Abbot, UK.

[9] *The Railways of Chile*, Wilfred Simms, five volumes, 1999-2000. Translated into Spanish and re-published as oner hardback volume by Libreria Editorial Ricaaventura EIRL, Santiago and Iquique, 2018.

[10] Donald Binns, *The Nitrate Railways Company Limited*, ? , Trackside Publications.

[11] *Album Zona Norte de Chile*, undated but probably from around 1926.

[12] Pablo Moraga Feliu, 2013, *Tiempo de Trenes*, Editorial RicaAventura, Santiago.

[13] Reg Carter's list in SLS library file L8655.

[14] SLS library file L8841 containing lists/notes by Mike Page, Reg Carter & Peter Mitchie.

[15] http://www.amigosdeltren.cl/ferrocarril-de-aguas-blancas

[16] *Andenes en Nuble Adentro*, Lionel Yáñez Merino, 1991, publisher?

[17] Summary list of *EFE* locos '*ingresos'* or '*bajos*' during 1957, supplied by PMF.

[18] http://www.steamlocomotive.com/

[19] http://www.internationalsteam.co.uk/

[20] *Jeneralidades de Chile i sus Ferrocarriles en 1910*, by José Olayo Lopez C. Santiago, 1910.

[21] *Actas de las Sesiones del Consejo Administrativo de los Ferrocarriles del Estado*, (those between May 1915 and December 1916, and January and Dece-mber 1920, so far seen via Hathi Trust website). Santiago.

[22] *La Industria Azufrera, el Andarivel y el Ferrocarril de Tacora*, Ian Thomson.
http://aricaacaballo.com/fcalp/thomson/ferrocarril_de_tacora.pdf

[23] Files of data about individual Bagnall locomotives, compiled by Alan Civil, at the Staffordshire Record Office in Stafford. Files D7309/1/1-12.

[24] *El Alto Comercio de Valparaiso y las Grandes Casas Extranjeras, 1880-1930. una Aproximación*. Juan Ricardo Couyoumdjian, 2000. http://www.scielo.cl/scielo.php?script=sci_arttext&pid=S0717-71942000003300002

[25] *Albúm de la Compañía de Salitres y Ferrocarril de Agua Santa 1896*, SoQuiMiCh, 2011.

[26] *Adiós to the San Bernardo locomotive works*, Ian Thomson, in *Locomotives International* issue 32, ????

[27] *The Patillos Railway*, Harold Middleton Nagel, in *Locomotives International* issue 69, 2004.

[28] *Documentos relativos al Ferrocarril de Patillos*, recopilado por Guillermo Billinghurst, 1905, Soc. Imprenta y litografia Universo.

[29] The records of the Braden Copper Company, including monthly railway and loco reports, appear to be in two locations. Reportedly those prior to 1926 were salvaged by Celia Baros (see next entry) possibly for the *Universidad Catolica* in Santiago. The current whereabouts of these items has not yet been ascertained. The remaining records, from 1926 onward though incomplete for the 1960s, were recovered from total abandonment by two private individu-

als in Coya, Señores Leonardo Fernandiz and Christhoper Sandoval Troncoso, and have since been sorted and conserved by them as the *Archivo Historico Coya*. They can be contacted at archivocoya@gmail.com
[30] *El Teniente – Los Hombres del Mineral 1905–1945*, María Celia Baros Mansilla, 1995, CODELCO, 2 volumes.
[31] *Narraciones Historicas de Antofagasta*, by Sr. Isaac Arce Ramírez, 1930. Available at http://librosmaravillosos.com/narracioneshistoricasdeantofagasta/index.html
[32] *The Railways of Central America and the West Indies*, W. Rodney Long, 1925, Bureau of Foreign & Domestic Commerce Trade Promotion Series no. 5, Washington DC, USA.
[33] *Estudio sobre los ferrocarriles vecinales o secundarios*, part 3, in *Anales del Instituto de Injenieros de Chile*, 1892.
[34] Letter from Wessel Duval & Co. to Braden Copper Company
[35] *Estudio de la zona carbonifera de Chile*, in *Boletin de la Sociedad Nacional de la Mineria*, Santiago : La Sociedad, 1883-1918. 34 volúmenes, año 24, volumen 19, número 127, (31 enero 1907), páginas 388-406, 458-490
[36] Chapters in *La industria del cobre en las provincias de Atacama y Coquimbo y los depósitos carboníferos de Lota y Coronel* / Francisco Aracena. Valparaíso : Imprenta del Nuevo Mercurio, 1884. 372 páginas.
[37] *Boletin de la Sociedad Nacional de la Mineria*, Santiago : La Sociedad, 1883-1918. 34 volúmenes, (serie 3, número 132, Feb 1908, página 88).
[38] *Estadística minera de Chile*, Sociedad Nacional de Minería, annually.
[39] *The coal-fields and collieries of the Republic of Chile*, by Archibald Russell, in *Transactions of the Institution of Mining Engineers*, Newcastle upon Tyne, v.38 (1909-10) p29-82.
[40] *The Locomotives built by Manning Wardle & Co. vols. 1 to 3*, Fred W. Harman, ????, Century Locoprints, Bridlington, Yorkshire.
[41] *Lebu: Minería del carbón y evolución urbana desde 1862 a la actualidad*, article by Leonel Pérez-Bustamante of the University of Concepción, 2010, on the ResearchGate website.
[42] *Coals of Chile*, 1948, Albert Toenges et al, United States Dept. of the Interior Bureau of Mines Bulletin 474. Accessible at https://digital.library.unt.edu/ark:/67531/metadc12634/m1/1/
[43] The 1930 US Dept. of Commerce report. Trade promotion series / Department of Commerce, ... no. 93.
[44] Report by don Guillermo Raby for the *Soc. Carb. del Carampangue* in 1906. Available online at https://babel.hathitrust.org/cgi/pt?id=uc1.a0000995605&view=1up&seq=3
[45] *Historia de los Puertos Guaneros del Litoral de Tarapacá (hasta 1879)*. Mario Zolezzi Velásquez, Centro de Investigación de la Realidad del Norte, Cuaderno de Investigación Social N°34, Iquique, Chile; 1993.
[46] *The Battle of the Gauges Renewed, Railways or no railways…* Robert F. Fairlie, 1872, London.
[47] *Fairlie Articulated Locomotives Vol 1 - On the American Continent*, Donald Binns, 2001, Trackside Publications, Skipton, England.
[48] *British Steam Locomotive Builders,* James Lowe, 1975, TEE Publishing, re-published 1989 by Guild Publishing, London.
[49] *Bagnalls of Stafford*, Allan C. Baker and T. D. Allen Civil, 2009?, The Phyllis Rampton Narrow Gauge Railway Trust.
[50] *Memorias de la ciudad de Gatico. Minería y sociedad (1832-1940)*, Damir Galaz-Mandakovic Fernández, University of Tarapacá, 2020.
[51] *Die Alpen-Locomotive der Zukunf*t, A. Brunner, 1876, in *Technische Mittheilungen 3*, Druck und Verlag von Orell Füssli & Co., Zurich. https://www.google.co.uk/books/edition/Technische_Mitteilungen/0v8zAQAAMAAJ?hl=en&gbpv=1

Dimensions

Imperial unit driving wheel and cylinder dimensions, ie. in inches, have been added if it seems likely that they were originally created in that system.

Photographs

Photos have been added here solely to aid in the identification of locos seen in other images elsewhere. They have been found from many different sources, and may still be in copyright. For those reasons, and to keep the file sizes down, they are of low resolution, the majority being only 600 pixels across. The names of photographers will be added as time permits. As these documents are likely to have a very limited readership and are not being produced commercially, it is hoped that copyright holders will understand and permit their presence here. If not, please contact the author and they can be removed.

4.1 Approximately 90cm or 3' gauge railway systems

4.1.1 *El FC de Coronel a Boca Maule i Puchoco*

Background

"In consequence of operations on the Puchoco Rojas area in 1859, Messrs. Schwäger and Delano bought from the Mora family the property of Boca de Coronel, lying immediately to the north of Rojas, and formed the *Compañia Carbonifera de Puchoco*. Mining operations were first carried on at what is now known as Puchoco Délano. The partnership was dissolved after a few years' work, when Mr. F. Schwäger opened up the Maule Mines on the northern portion of the property [NB That only ocurred several years later – MCC], whilst the Délano family worked the Puchoco Mines. The latter were inundated by the sea in 1881, and abandoned. In 1893, the two concerns were amalgamated into a company termed *La Compañia Carbonifera y de Fundicion de Schwager*, with a capital of £500,000, and operations were commenced on a large scale. The property is divided into two sections, Puchoco Délano and Maule, although in recent years the greater part of the coal-getting has been from the former." [39]

The railway accessing the whole Schwäger area was authorised in 1877, and opened in 1880. It was of 3 ' 0" gauge and roughly 8km long from mines Boca de Maule and Puchoco-Schwäger north-west of Coronel to the company's jetty. The original line from Boca Maule to the jetty (ie. without the branch south to Puchoco), was shown on an 1878 chart of the area, ie before the building of the Arauco railway. After the merger with the former Délano holdings to the south in 1893 a branch was built south along the coast from a triangle, a point known as Estación Arenas Blancas. At this time the Délano 4' 6" gauge railway may well have been regauged to 3' 0". The 'main line' ran east from Arenas Blancas to the Arauco railway trackbed and then turned south parallel to that line to a jetty west of the Arauco company's jetty. This is shown on the map of the railways of the Coronel and Lota area displayed in both the broad gauge and intermediate gauge loco lists.

An 1884 report

"*En todo el establecimiento existen varias máquinas a vapor, de las cuales seis son destimadas a la explotacion del carbon, dos en la interior y cuatro en los diversos piques y chiflones.* (NB This sentence is referring to the various stationary engines employed around the property, rather than to locomotives.)

El ferrocarril recorre una extension de 5,200 metros, desde el extremo norte del establecimiento hasta el muelle de embarque de Coronel, pasando por dos túneles de 70 y 20 metros de extension respectivamente.

La vía es de trocha angosta, de tres piés de riel a riel, y éste de dos pulgadas de diámetro. La locomotora es de unas 8 toneladas de peso con cilindro de 10 pulgadas.

Para su servicio cuenta con 36 carros carboneros, con capacidad para 6½ toneladas, dos carritos para pasajeros y algunos para materiales." [36] and "*numero de locomotoras, 1, con fuerza de 70 caballos.*"

A later page in the same document suggests that Buen Retiro coal was also shipped out this way, until the broad gauge Buen Retiro railway was completed in the late 1880s:

"*El embarque se verifica por el muelle del señor Schwager, en Coronel, y su conduccion se lleva a cabo por el ferrocarril del esestablecimiento de Maule, segun convenio hecho entre ambos establecimientos. Para esto, la linea ferrea de Maule ha sido unida con otra que parte de Buen Retiro, distante una media milla, como lo hemos dicho antes, y en cuyo trayecto existe un puente de 190 metros de largo por 2.50 centimetros, de ancho, que atraviesa un estero de la desembocadura del rio Maule.*" and "*máquinas a vapor, 2, con fuerza de 75 caballos*" "

Shipment is made via Mr. Schwager's dock in Coronel, and transport is carried out by the railway of the Maule establishment, according to an agreement made between both establishments. For this, the Maule railway line has been joined with another that departs from Buen Retiro, a half mile distant, as we have said before, and on whose way there is a bridge 190 meters long by 2.50 centimeters wide (sic), which crosses a channel at the mouth of the Maule river.

And 1907 descriptions

"*Ferrocarril a vapor. – El trasporte de la produccion del establecimiento, desde las minas al puerto de Coronel, para su embarque por tierra o por mar, se hace por medio de un ferrocarril a vapor de propiedad de !a Compañfa, que saliendo de sus mismas canchas en Boca de Maule i en Puchoco-Schwager, termina en un muelle de embarque que la misma Compañía posee en la bahía de Coronel.*
La lonjitud total del ferrocarril es de 6.800 metros; su trocha es de 0,91 metro. Pasa por dos túneles de 70 metros i 20 metros respectivamente. La linea está construida con rieles de 28 kilos de peso por metro, directamente fija, dos al durmiente por medio de escarpias. Hai tres locomotoras en servicio. Estas son de dos ejes acoplados con peso total adherente de 10 toneladas. Están provistas con cilindros de 0,30 metro de diámetro. Pueden arrastrar un peso total de ochenta toneladas. Para el acarreo del carbon hai 123 carros especiales en servicio, cada uno de los cuales tiene una capacidad de seis i media toneladas. Ademas existe un carro para pasajeros que va dos veces por semana de la mina a Coronel, para uso del personal del establecimiento.
Todos los carros carboneros en servicio lian sido fabricados en los talleres del mismo establecimiento." [35]
"*De las minas al muelle se hace el trasporte por un ferrocarril de la Compañía, servido por 5 locomotoras i 200 carros de 7 toneladas de capacidad cada uno.*" [38, in 1907]
The government *estadistica* report for1911 explains that the Schwager company's railway system is of mixed gauge: broad for *los trenes del Estado*, and *angosta para los de la Compañía*.

0-4-0ST, d/w 32", cyls. 8"x14", built by Manning Wardle in 1874

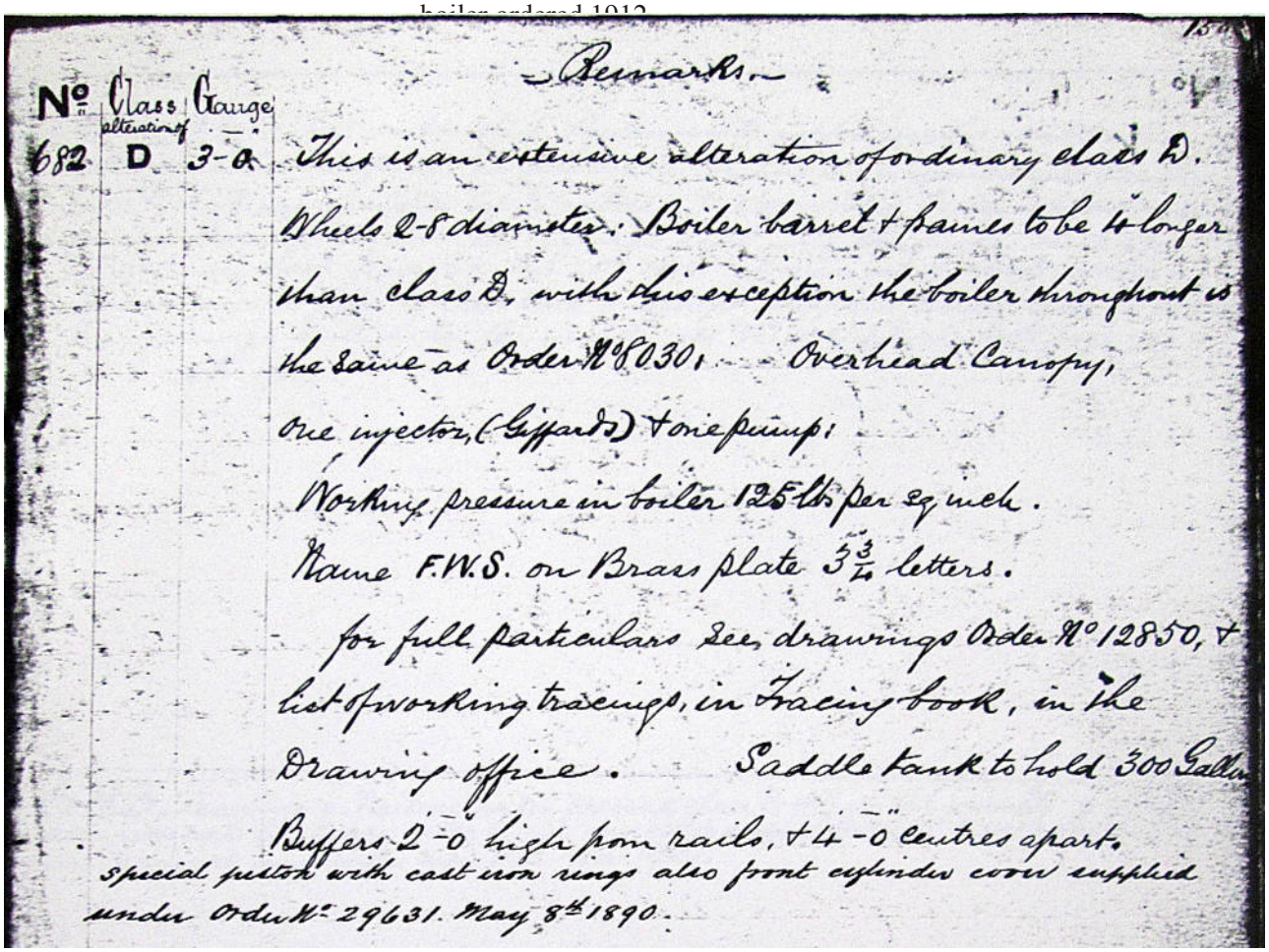
Supplied via A. M. Saunderson.

'PLAYA CHICA' w/n 507

0-4-0ST, d/w 32", cyls. 8"x14", built by Manning Wardle in 1877

Supplied via S. Bagnall & Sons to Puchoco.

'F. W. S.' w/n 682 Name represents the initials of both Frederick William Shwäger senior and Frederick William Shwäger junior, the coal entrepreneurs. Replacement boiler ordered 1912



Remarks.

No	Class alteration of	Gauge
682	D	3-0

This is an extensive alteration of ordinary class D. Wheels 2-8 diameter. Boiler barrel & frames to be 4" longer than class D, with this exception the boiler throughout is the same as Order No 8030. Overhead Canopy, one injector, (Giffards) & one pump.
Working pressure in boiler 125 lbs per sq inch.
Name F.W.S. on Brass plate 3¾ letters.
for full particulars see drawings Order No 12850, & list of working tracings, in Tracing book, in the Drawing office. Saddle tank to hold 300 Gallon
Buffers 2'-0" high from rails, & 4'-0" centres apart.
special piston with cast iron rings also front cylinder cover supplied under Order No 29631. May 8th 1890.

0-6-0T, d/w 33¾", cyls. 10"x16", built by Manning Wardle in 1881, 1887, and 1921?

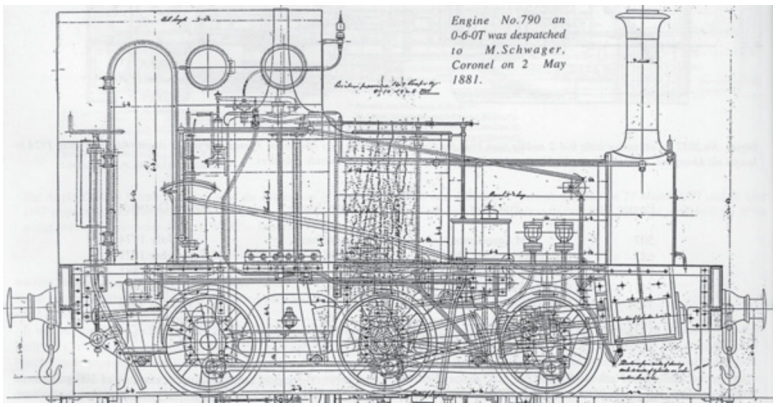
Ordered for M. Schwager of Coronel or merely for Coronel, both via Duncan Fox & Co. Cabs had round-topped doorway and two small porthole windows each side. NB The provisional identification of these engines as nos. **1** and **2** results solely from the photos which follow seemingly showing the second one bearing the running number '**2**'. This must remain uncertain until further evidence is discovered.

1? w/n 790

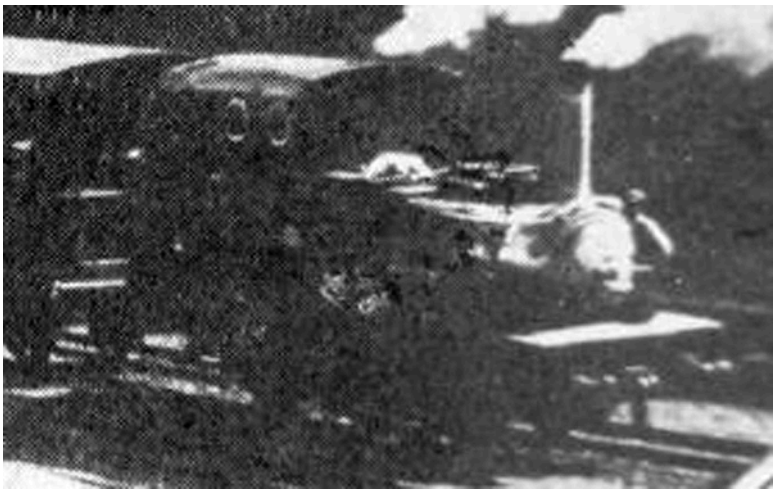
2? w/n 1011

Spares including replacement boilers ordered up to 1927. Incidentally a loco of this unique design and more-or-less identical to 790 was ordered by Duncan Fox & Co. in 1921 (MW no. 2012) from Callao in Peru. Whilst this may have gone to a Peruvian customer, it is not beyond the bounds of possibility that this was only ordered through Callao and in fact was for Coronel. This latter suggestion is supported by the fact that the loco does not appear in any list in Bob Whetham's *Railways of Peru* books. NB Whilst Fred Harman's list of MW locos [40] states that this was a copy of loco 790, his text contradicts this by saying it was a copy of 1458 (see following page). However, that must be an error as the dimensions differ significantly.

? w/n 2012?



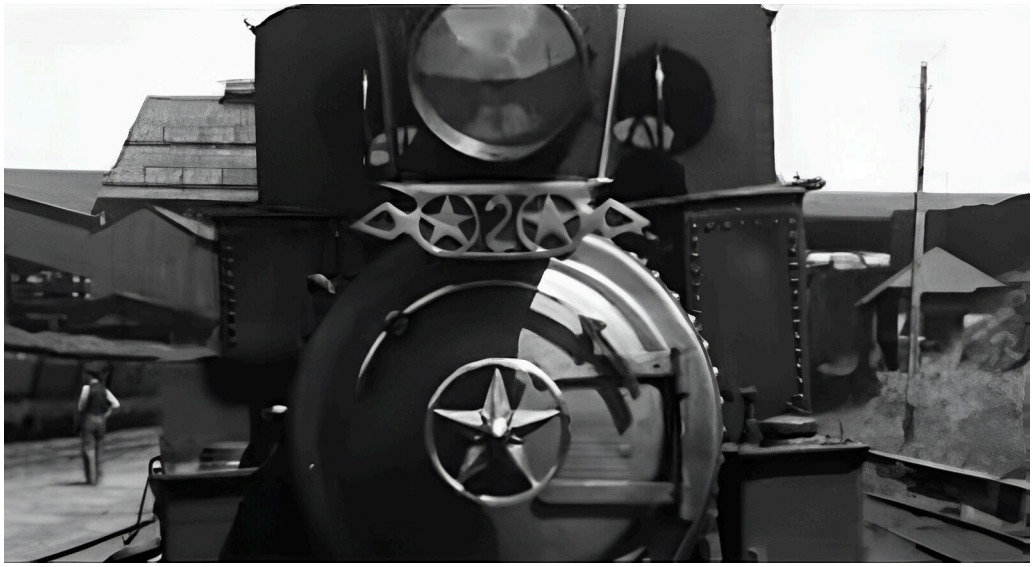
The unusual wrap-over cab roof with portholes is clearly visible in this GA drawing which was reproduced in Fred Harman's MW locos book.



A very poor photo, but nevertheless recogizable as one of these locos with twin porthole windows in the cabsides.



This might well have been the second of these two engines, MW no. 1011.
It has the double portholes in the cabside but appears to have a rear bunker
and the sandboxes are further forward than on no. 790.



This front view is probably of the same machine as that preceding it,
as it came from the same film clip and was probably taken on the same occasion.
The brasswork beneath the headlamp carries the running number '2'



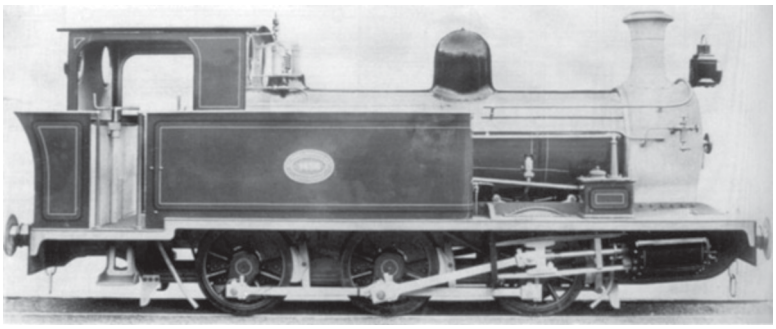
One of these MWs dressed up for the *Fiesta Patría* in 1928.

0-6-0T, d/w 36", cyls. 12"x18", built by Manning Wardle in 1899, 1902 and 1907

Supplied via Duncan Fox & Co., to Coronel. Fred Harman's MW books suggest that there were minor differences between these locos. Photos of the locos in use show that at least one had a taller chimney and cab than those shown on

MW 1458 below. The photos do not show any name or number plates other than the tank-side works plates visible here. One photo shows one of these locos carrying an ex-mainline electric headlight and with a turbo-generator mounted in front of the cab. A photo showing one of these engines on a workmen's passenger train was identified as being in Puchoco.

? w/n 1458
? w/n 1545
? w/n 1715



MW builder's pic, via Fred Harman's books.



One of these engines on a passenger train along the main street in Puchoco-Schwager. A turbo-generator has been added in front of the safety valves to power the large electric headlight.



One of these three locos in use, seemingly with a slightly taller chimney than in the photo above. The engine is standing on mixed gauge track and the sheer size of the bogie coal wagon behind it suggests that it may have been a broad gauge vehicle belonging either to the *EFE*

or to the *FC de Arauco*. This loco has a deeper buffer-beam and therefore a higher and stepped running plate when compared with those illustrated above. Whether this was as built or as modified later is currently unknown.

The fleet in 1910

Reports from 1909 and 1910 says this railway had five (Manning Wardle) [A. Titus S.] 0-6-0Ts [39]. It is therefore possible that the earliest pair listed above had been withdrawn by then, though **'F. W. S.'** received a new boiler in 1912. On the other hand, whilst all of these locos apart from the first were definitely ordered for delivery to the Coronel area, and for this gauge, there is no real confirmation that they were all for this company.

Later regauging

Photos taken seemingly in the 1950s or '60s show that this railway was largely mixed gauge by then; 3' 0" and 5' 6", presumably to minimise later transhipment. There is thus a section in the broad gauge file dealing with broad gauge Schwäger locomotives.

4.1.2 Other lines

La Soc. Carbónifera de Magallanes

Usually reported as being 3' gauge, but the Manning Wardle loco supplied here was for 3' 6". Therefore see entry in the Intermediate Gauges file. This was the fore-runner of the Mina Loreto metre gauge railway on the same alignment.

Celulosa Arauco y Constitución, ex *CORFO* plant in Constitución

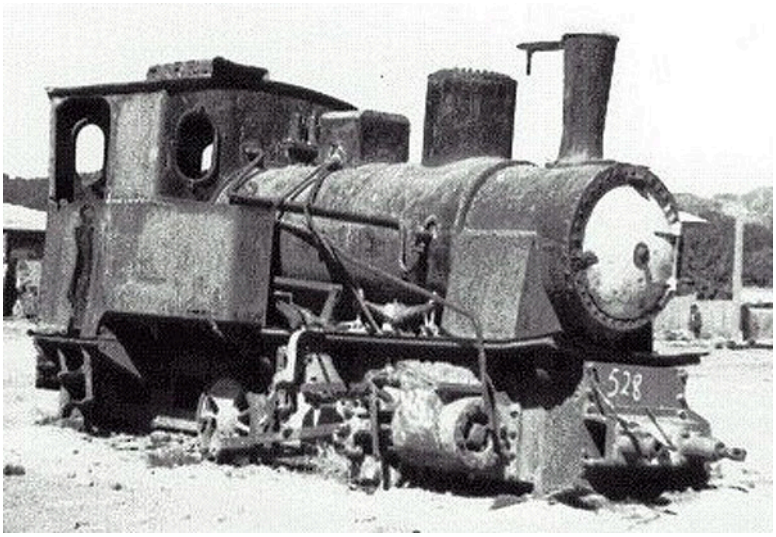
Gauge 900mm (?). One loco was found dumped in a yard next to branch from the Talca - Constitución metre gauge line to the above company [9].

0-4-0WT d/w ? cyls. ?, built by Jung in 1925

160hp 16.4T, delivered via agent Gutmann Maurer & Co, though not known if this location was the first user. These engines are clearly listed as for 900mm gauge in Jens Merte's Jung list.

? w/n 3354

? w/n 3355



NB This loco seems to be identical in all but its paint scheme to a 1m gauge 0-4-0WT that was photographed at Constitución port. It needs confirming that this was indeed a 900mm gauge engine.

La Compañía Salitrera H. B. Sloman

Since the following locos were all supplied for this relatively rare gauge, from the same supplier, in numerical order, and with the last of them definitely being for *Salpeterwerk Slomann & Co.*, I think it can be assumed that they all were for this customer.

Summary of *oficinas* owned:

• ***Brac,*** close to paradero Brac of NR, *Oficina Brac* was later rebuilt as *Oficina Victoria*.

In 1926 strangely only only petrol and electric locos were reported.

Possibly other oficinas were owned.

0-4-0T d/w ?, cyls. ?, built by Borsig in 1903 and 1906. Not necessarily all of the same design and size. The first five were all supplied via Griese of Hamburg.

1	w/n 5335
2	w/n 5336
3	w/n 5337
4	w/n 5338
5	w/n 5646
6	w/n 6148

It is possible that Borsig 0-4-0Ts nos. 6827-8 of 1908 were also for this customer, since they were for the same gauge and also supplied via Griese of Hamburg for Chile.

0-8-0T d/w ? cyls. ?, built by O&K in 1923

Delivered via H. B. Sloman & Co. 250hp.

?	w/n 10491
?	w/n 10492

Both locos lying derelict at *Oficina Brac/Victoria* in 1978. First one later preserved ? at *Excedindus Ltda*, Quilicura.

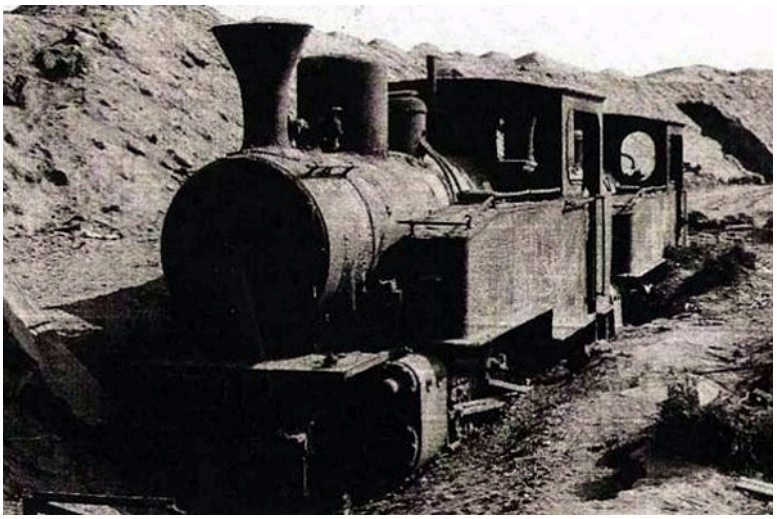


Photo of locos lying derelict at oficina Victoria (ex oficina Brac) in 1978, via Wilfred Simms book 3.

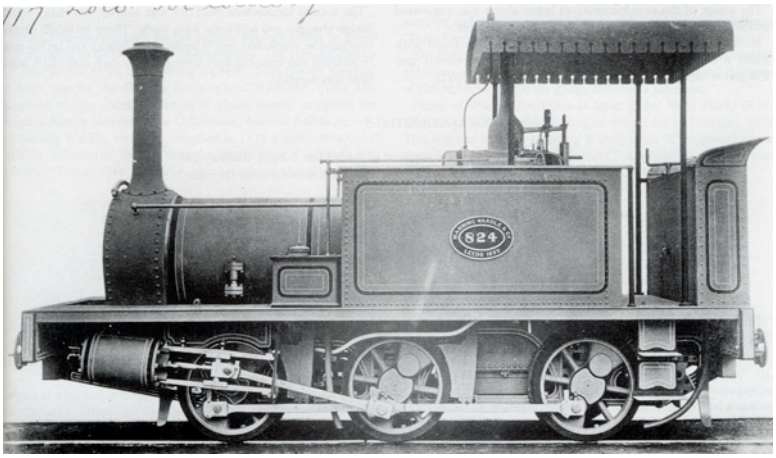
4.1.3 Unidentified locos of approx. 3' 0" gauge

Unidentified 3' 0½" gauge locos, roughly 927mm

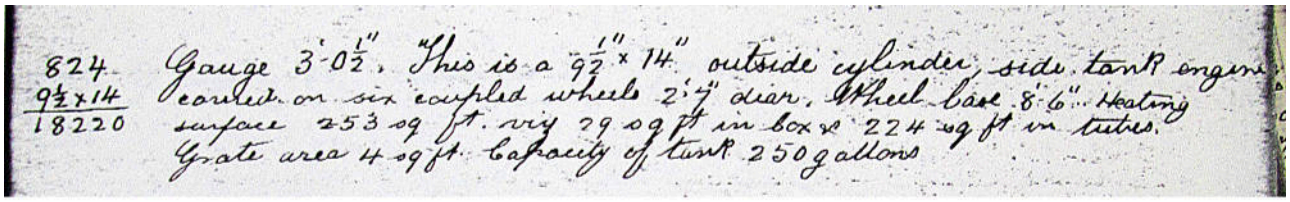
0-6-0T, d/w 31" and 30" for 2nd one, cyls 9½"x14", built by Manning Wardle in 1882 and 1890

The first went out to Chile via Lyon & Bowman of Valparaiso and the second via Errazuriz i Hijos also of Valparaiso.

?	w/n 824	MW order book page states: wheelbase 8' 6", heating surface 253 sq.ft. (29 sq.ft. in box and 224 sq.ft. in tubes, grate area 4 sq.ft., capacity of tank 250 gallons.
'TAMAYA'	w/n 1163	This loco was very similar to the previous engine, but with many minor modifications, such as cow-catchers at both ends, a water lifter, and altered smokebox and chimney. New springs were supplied in 1898, and a new boiler in 1913 (see MW notes illustrated below)

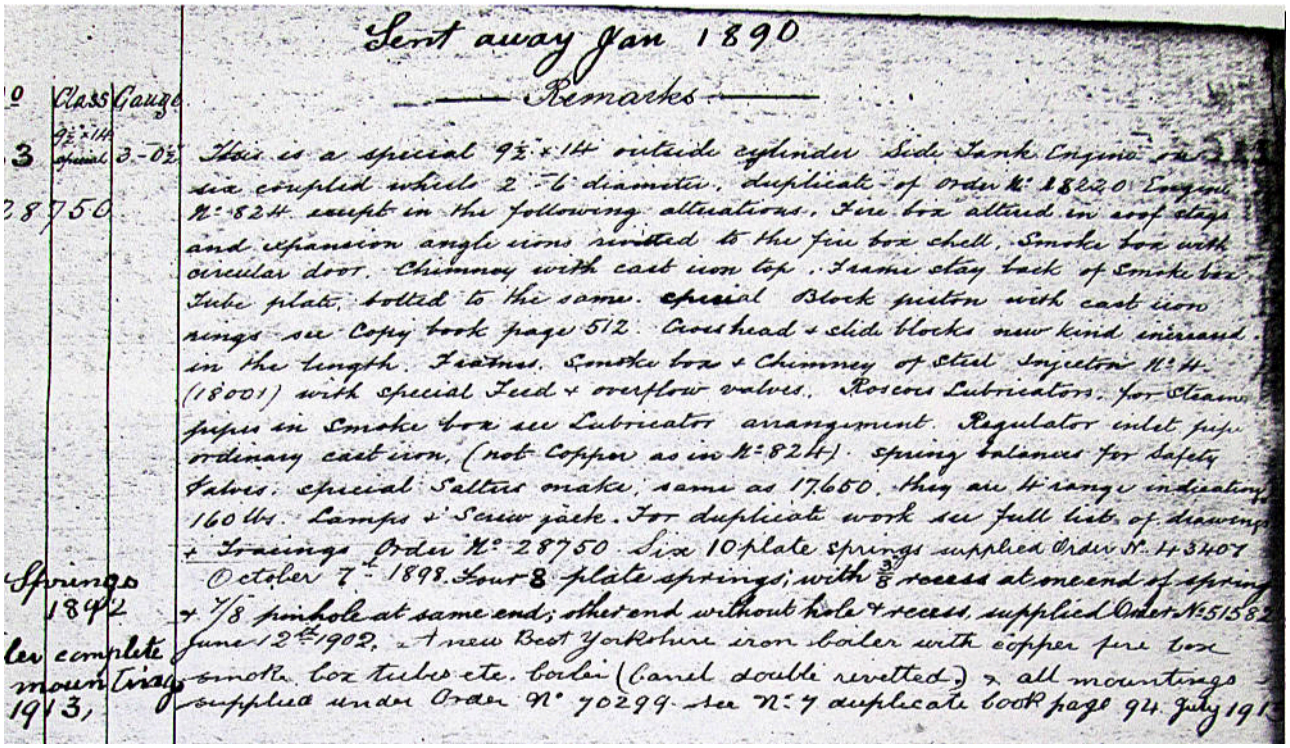


MW loco no. 824, as depicted in Fred Harman's MW locos book, vol. 1.



824
9½x14
18220

Gauge 3'-0½". This is a 9½" x 14" outside cylinder, side tank engine carried on six coupled wheels 2'-7" diar. Wheel base 8'-6". Heating surface 253 sq ft. viz 29 sq ft in box & 224 sq ft in tubes. Grate area 4 sq ft. Capacity of tank 250 gallons



Sent away Jan 1890

Remarks

Class	Gauge
9½"x14 special	3-0½

This is a special 9½"x14 outside cylinder Side Tank Engine on six coupled wheels 2'-6 diameter, duplicate of Order No 18220 Engine No 824 except in the following alterations. Fire box altered in roof stays and expansion angle irons rivetted to the fire box shell, Smoke box with circular door. Chimney with cast iron top. Frame stay back of Smoke box Tube plate, bolted to the same. special Block piston with cast iron rings see Copy book page 512. Crosshead & slide blocks new kind increased in the length. Frames. Smoke box & Chimney of Steel Injector No 4 (18001) with special Feed & overflow valves. Roscoes Lubricators for Steam pipes in Smoke box see Lubricator arrangement. Regulator inlet pipe ordinary cast iron, (not Copper as in No 824). spring balances for Safety Valves. special Salters make, same as 17650. they are 4 range indicating 160 lbs. Lamps & Screw jack. For duplicate work see full list of drawings & Tracings Order No 28750 Six 10 plate springs supplied Order No 43407 October 7th 1898. Four 8 plate springs; with 3/8 recess at one end of spring & 7/8 pinhole at same end; other end without hole & recess, supplied Order No 51582 June 12th 1902. A new Best Yorkshire iron boiler with copper fire box smoke box tubes etc. boiler (Canel double revetted) & all mountings supplied under Order No 70299 see No 7 duplicate book page 94 July 191

Springs 1892

ler complete mountings 1913,

Possible usage at the Cerro de Tamaya

Tamaya was the location of a number of mines at the top of the 3' 6" gauge Tongoy railway. Given the unusual gauge, and that the locos were similar in basic design, it seems likely that these two engines will have been for a single location, possibly at Tamaya. The Tamaya copper mines had been amongst the richest in Chile but from 1888 onwards flooding of the workings gradually brought that era to a close and by 1915 they were completely abandoned. [37, issues of Jan-Feb and Sept-Oct 1915].

Amongst the richest of the sixty or more separate mines were those entitled *'Pique', 'Rosario', 'Dichosa', 'Chaleco', 'San José', 'Arenillas', 'Murciélago', 'Campanil', 'Las Animas', 'San Lazaro', 'Almagro', 'Pizarro', 'Guías', 'Media Estaca'*, and *'Blanca'*. Others included the *minas 'La Menca', 'Amarilla', 'Mollaca', 'Quiroga', 'Santo Domingo', 'Santa Rosa', 'Perpetuo Socorro', 'Tórtolas Bajas', 'Tórtolas Altas', 'Coloradas', 'Bandurrias'*, and *'Potrero Grande'*. At this point the particular mine owner who owned these locomotives is not known.

Alternatively, they might have been used at a smelter processing the output from Tamaya, perhaps in a city further south. The supply of a new boiler in 1913, shortly before the total abandonment of the mines in 1915, tends to support this suggestion as the smelter might well have had a longer life.

Incorrect reporting

NB E. W. Mabbott's Manning Wardle list shows these two engines as being for 3' 9½" gauge, and the name of the second one being **'ZAMAYA'** rather than **'TAMAYA'**. These details are incorrect, as has been proven by checking in the original MW lists at Statfold Barn Farm, and can be seen from the MW notes illustrated above.

Unidentified 3' 0" gauge (914mm) locos

Borsig

w/n 5646 of 1905 3' gauge Bn2t Griese Hamburg for Chile '**5**'.

w/n 6827-8 of 1908, Bn2t 3' gauge, Griese Hamburg for Chile. See *Cia. Salitrera H. B. Sloman* entry on previous page.

w/n 7272 of 1911, Bn2t 3' gauge, Schumacher & Wulff, Santiago de Chile.

w/n 11602 of 1929 Bn2t 3' gauge, Dlaman & Co. Hamburg for Joyabahn Chile.

Jung

w/n 1804-5 of 1912, 35hp 5.56T, Bt 3' gauge, R. Dolberg for Chile.

O&K

w/n 10479 of 1923, 30hp Ct, Gildemeister & Co. for customers in Valparaiso.

Manning Wardle

The following 3' 0" locos went somewhere via Fawcett Preston & Co. who were engineers active in Chile.

MW 521 **'PIONEER'** of 1874, MW 558 **'THE LORD WALDEN'** of 1874. However Chris West has suggested that they were actually for a sugar plantation on St. Lucia in the Caribbean.

Baldwin

0-4-0T d/w 28", 7x12", built by Baldwin in 1879

Ordered via Munoz y Espriella for ? Might have been for Peru. BLW class 4-8C no. 3. Spec. is in vol. 9 p 71. Gauge 3' 0" or possibly 3' 6". Spec. page shows name was to have been **'Las MONJAS'**, but crossed out and replaced with **'ALBERTO'**. R&H stack. Cab roof to project back, like the **'ESPAÑA'**. Wood fuel.

‘ALBERTO’ w/n 4047

Unidentified 900mm gauge locos

Henschel

w/n 21127-31 of 1928, Bt 900mm gauge Ph. Holzmann for *Hafenbau Chile*, but for which port?

4.2 75cm or 2' 6" gauge railway systems

4.2.1 *FC Patillos – Lagunas*

1872-1877

Background

75cm gauge. The contract for construction between the Montero brothers and *Oficina Esperanza* is in [http://hdl.handle.net/2027/uc1.b2822516 p94].

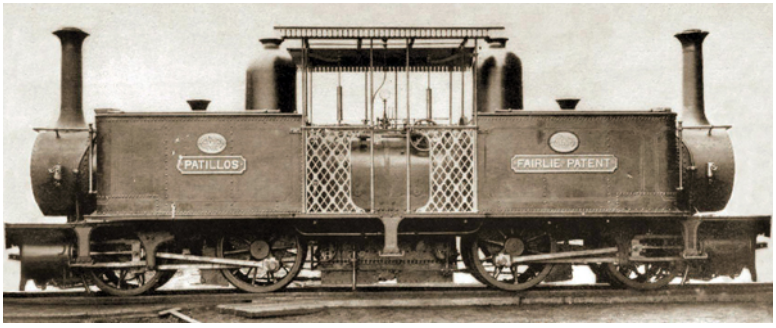
The railway operated 1872 to 1877, but reputedly closed after a tsunami swept over Patillos. (The Iquique earthquake of 9th May 1877) "*Este ferrocarril a la Caleta Patillos fue construido por Montero Hermanos (1872) por cuenta de la compañía Esperanza de Lagunas, y tiene unos 93 kilómetros de desarrollo; fue adquirido en 900.000 soles por Perú (1875) y después de la Guerra del Pacífico pasó al Gobierno de Chile, a quien siguen los antiguos concesionarios un juicio de reivindicación, que hasta ahora lo han perdido en 1ª y 2ª instancias, estando actualmente en casación.*" [S. Marin Vicuña]

On the other hand several sources say the line was taken over by Colonel North's Nitrate Railways, closed for a while from 1888 in favour of the standard gauge but then reopened until 1916. Other reports clearly disagree and say all was derelict in, say, 1908. Track uplifted around 1934-6 [but see note at end of this section]. Report in 1884 confirms that six locos were operational [or at least present] then. See [27] for history of this railway.

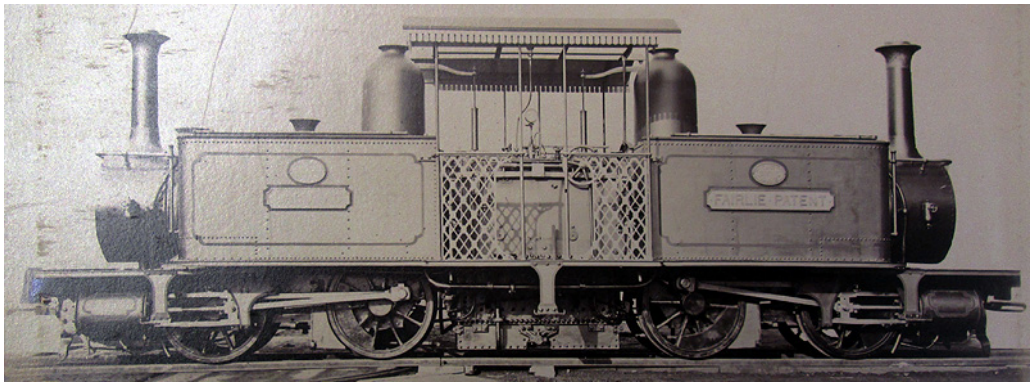
0-4-4-0T Double Fairlie d/w 39", cyls. 10"x18", built by Vulcan Foundry in 1872

1? **'PATILLOS'** w/n 638

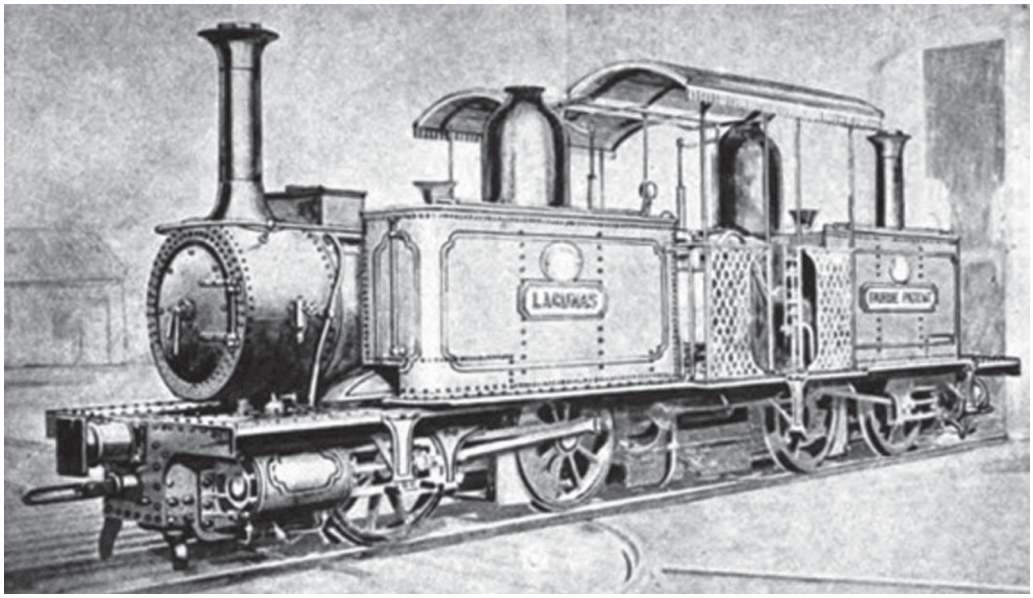
2? **'LAGUNAS'** w/n 639



Vulcan Foundry builder's photo of **'PATILLOS'**, available at the Merseyside Maritime Museum but published widely elsewhere.



VF builder's photo of the other original loco, '**LAGUNAS'**.



This engraving of double Fairlie **'LAGUNAS'** shows features not clearly visible in the side-on photos: the T-shape buffer beams, the rectangular sandboxes, and the shape of the twin 'South American' cab roofs. From source [46] Robert Fairlie's *Battle of the Gauges Renewed*...

MÁQUINA DE FAIRLIE
CONSTRUIDA PARA EL FERRO-CARRIL DE PATILLOS, PERU.
[2 p. 6 pp. de ancho.]

4 cilindros, 10 pp. de diámetro, 18 pp. de carrera; ruedas de 3 p. 3 pp. de diámetro, todas acopladas; superficie total de caldeo; 829 piés cuadrados; lleva 800 galones de agua, 17 quintales de carbon; peso en marcha, 26 toneladas; fuerza de traccion en los rails (presion media de 100 libras)=9,230 libras.

The text which accompanied the above engraving in the Spanish language edition of Robert Fairlie's paper.

Operations during the construction period

A quote from *Engineering*, date unknown, copied in Binns [47]:
From Mr John Roscoe, locomotive superintendent of the Patillos Railway, 2ft 6in gauge in the province of Tarapacá, Peru, dated 14th March 1873:
"I have taken 80 tons over our heaviest grade, which is about 3½ per cent. The average weight of each train is about 45 tons, which goes right up the bank with- a stop. We generally use about 16 cwt, of Chile coal and 1200 gallons of water for the trip, about 17 miles. The coals having been all picked for the use of the small steamer belonging to the company, I am now forced to use the refuse."
"It is not necessary for me to parade what the engines here can do; they speak for themselves. There has scarcely been a fitter's hands near them. The brasses have never been taken out."
"We are now making two trips a day, which makes 70 miles."

A paragraph in German from *Technische Mittheilungen* in 1876

A report in the Zurich-based journal of this name [551] gave an enthusiastic plug for Fairlie locomotives during 1876. The following paragraph was on the subject of the Patillos double engines, and is followed here by an English translation:
"II. Patillos-Bahn, Peru. Spurweite 0,762 Meter. Maxi-malsteigung 35%0. Minimal-Curvenradius 40 Meter.

Diese Bahn liegt in der Provinz Tarapaca, am südlichen Küstenende von Peru, und dient hauptsächlich dem Transport von Mineralien aus den Gebirgen nach der Hafenstadt Patillos. Die Schienen haben ein Gewicht von 17,5 Kg. pro Meter. Laut Bericht des Maschinen-meisters, Mr. J. Roscoe in Patillos, ist das durchschnittliche Gewicht eines Zuges (excl. Maschine) 45 Tonnen. (Die kleinen Lastwagen haben eine Tragkraft von 6 Tonnen bei einem Eigengewicht von 2,15 Tonnen.) Die Fairlie-Maschinen von 26 Tonnen Maximal-gewicht können indessen eine Zugbruttolast von 80 Tonnen auf der Rampe von 35%0 bewältigen. Für je eine Bergfahrt von 27,4 Kilometer Länge werden 800 Kg. Chili-Kohlen und 5450 Liter Speise-wasser consumirt. Die Fairlie-Locomotiven machen pro Tag 2 Doppel-fahrten, ents-prechend einer zurückgelegten Strecke von 110 Kilo-meter. Die Reparaturkosten dieser Maschinentype, wovon eine Anzahl für die Patillos-Bahn nachbestellt wurde, sind sehr mässig."

II. Patillos Railway, Peru. Track gauge 0.762 metres. Maximum gradient 3.5%. Minimum curve radius 40 metres.

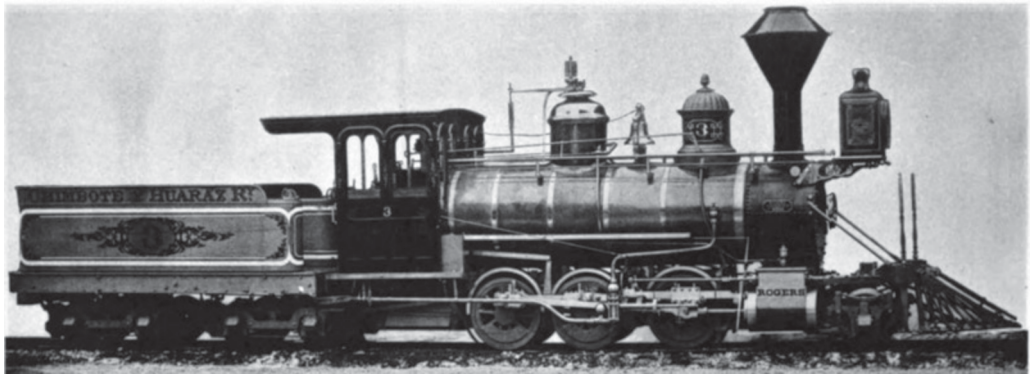
This railway is located in the province of Tarapaca, at the southern coast of Peru, and is mainly used to transport minerals from the mountains to the port town of Patillos. The rails weigh 17.5 kg per metre. According to the report of the master mechanic, Mr. J. Roscoe in Patillos, the average weight of a train (excluding the engine) is 45 tons. (The small trucks have a carrying capacity of 6 tons and a dead weight of 2.15 tons.) The Fairlie engines, with a maximum weight of 26 tons, can handle a gross train load of 80 tons on the ramp of 3.5%. For each uphill run of 27.4 kilometers, 800 kg of Chilean coal and 5,450 litres of feed water are consumed. The Fairlie locomotives make two double runs per day, corresponding to a distance of 110 kilometres. The repair costs of this type of engine, a number of which have been reordered for the Patillos Railway, are very reasonable.

2-6-0 d/w 36¾", cyls. 15x18", built by Rogers in 1873

Ordered through Walton W. Evans.

3 'El LEON' w/n 2354

4 'El TORO' w/n 2356



This Rogers 2-6-0 of the builders' class M-Ten was one of five supplied to the 3' 0" gauge *FC Chimbote y Huaray* in Peru in 1875. The dimensions of these engines were very close to those of the 1873 locos for Patillos and the overall appearance was probably similar. The illustration is from Rogers'1876 catalog.

A letter from the Rogers fitter entrusted with erecting these locos and getting them into service

Gregg Gillson, the Rogers fitter who came to Patillos in 1874 to prepare these engines for service, found himself drawn into the interminable Fairlie / Evans arguments. His incendiary letter published in *The Railroad Gazette* is re-produced in Appendix 6 at the end of this file.

0-4-4-0T Double Fairlies? d/w 39", cyls. 10"x18", built by Vulcan Foundry in 1873

Although the d/w, cyls, and water capacity (800 gals.) were identical to those of the first two Fairlies, the Vulcan Foundry specification book shows that the overall wheelbase of these later engines was 6" longer, and the overall weight 1.5 tons greater. The additional length was accounted for by longer fireboxes, and whilst the boiler barrels

were almost the same diameter, a number of other parts were made stronger. Ordered by Lemonius & Co. of Liverpool. No photos are available in the VF albums at the Merseyside Maritime Museum, but there might be images amongst the currently uncatalogued loose photographs.

5? **'IQUIQUE'** w/n 682

6? **'TARAPACÁ'** w/n 683

Reports after the *tsunami* of 1877

A report by the engineer Juan Quiroz [28] summed up the state of the locos in July 1878, after the *maremoto* which seems to have occurred in May 1877: "*Todos en mal estado. Limpias en aperiencia, pero requiren una revision jeneral. Sin entrar en detalles puedo consignar las cifras indispensables para colocarlas en condicion de ser utilizadas.*

'Patillos' Este es la unica que puede encendario pero solo con la mitad de su poder de traccion, pues el vapor se escape por todos las uniones y conexiones. Necesita para sus reparacion – $3,500.

'Iquique' – $3,500.

'Tarapacá' – $3,500.

'Toro' – Esta máquina fue estraida del mar en pesimo estada. – $3.000.

'Leon' – $1,000.

Also in [28] is an *Informe Jeneral respecto del material rodiante del ferrocarril de Patillos*, by J. Mayne Nicholls, dating from April 1883. This is more comprehensive:

'TARAPACÁ' VF683 *"Hai que sacar las ruedas motrices para volver a tornear las llantas, ajustar las cajas de las ejes, componer la palance y los tubos de enavenor, y ajustar los guarda-rieles al marco. Las cojas de fuego y el caldero están en buenas condiciones, algunas tubos tienen ascapes, y hai que arreglar los ceniceros."*

'IQUIQUE' VF682 "*Los brazos de conneccion y las bielas deben ser minuciosamente examinales; deben conectarse las llaves de relevo y los tubos de arena. Las cajas de fuego y el caldero en buena condicion,. excepto la parte inferior de las planchas del tabique divisorio."*

'PATILLOS' VF638 "*Las tapas de tres cilindros, deben componerse y deben ajustarse las valvulas de admission, refaccionarse los tirantes de suspensionm, un inyectos debe conectarse y ajustarse al estanque; deben arreglarse de relevo del cilindros, etc. los calderos y las lajas de fuego en buena condicion.*"

'LAGUNAS' VF639 "*ajustar los cazones de vapor, ajustar y arreglar los brazos de conneccion, los bronces, los tubos de arena, los llaves de relevo, etc*."

'LEON' Rogers, 6 ruedas con tender. "*Debe sacarse las ruedas motrices delanteras, y reemplzarlas con las ruedas motrices cantrales. La caja de fuego y el caldero en buenas condiciones.*"

'TORO' Rogers, 6 ruedas con tender. "*arreglar las ruedas motrices, los brazos laterales y de conveccion deben ajustarse, componer las valvulas, las bombas; las valvulas de induccion de arriba y abajo deben refaccionarse y examinarse, y axaminarse las ruedas y los brazos; la caja de fuego y el caldero en buenas condiciones.*"

Finally in the same volume, a message dating from 1884 states that: "*Certificado de Aduana sobre internacion de una locomotora. Por vapor britanico procedente de Liverpool en este puerto el 28 de febrero del presente año, llego para el ferrocarril de Patillos, bajo manifiesto 119, una locomotora completa...*" which probably applies to…

It should be noted that this *maremoto* also put paid to other double Fairlie locomotives a little further south. The *FC Mejillones a Caracoles* covered in section 2.4.3 of the Chilean Intermediate Gauges locomotives file was wiped out by the tsunami in the same way as this line.

0-6-0ST d/w 30½", cyls. 9x14", built by Robert Stephenson & Co. in December 1883?

HT's list also speculates that there was a seventh loco, from Sharp Stewart. [27] repeats this suggestion and attributes it to the *Diccionario Geográfico de la Provincia de Tarapacá 1890*, by a Señor Fransisco Riso Patrón. However, I can see no homeless 2' 6" gauge loco in the Sharp Stewart list, and only one which went to Chile, a 2-6-2T for the predecessors of the *FCAB*. P. C. Dewhurst clearly believed, however, that the additional loco was Robert Stephenson no. 2400 of 1882, for a list in his collection shows that loco as supplied to the Patillos Railway. Certainly RS no. 2400 was supplied via W. B. Hawkins & Co., presumably meaning Bailey Hawkins. SLS library file WL5599 also has the

word ‘Patello’ adjacent to this loco's details. This was a tank loco according to the RS book of engines delivered [Item ROB/2/3/3 in the NRM’s archives], and probably an 0-6-0T.

? w/n 2400

Survival for many years?

A report in the 1908 *MOP boletin* suggests that three or four locomotives survived derelict at Patillos at least until around that period. [27] states that the remnants of the railway, including four very derelict double locomotives, were not removed for scrap until 1942.

A proposal to reopen and extend in 1903

In October 1903 one Enrique Squire put forward a proposal to reopen this railway and to extend it far to the east, in fact to the Bolivia border. From the terminus of the original Patillos Lagunas railway a new route would have taken off north-eastward, to cross the NRC Lagunas branch at mile 87. From thence it would have headed ENE to El Salado, then up the Quebrada de Chacarilla to La Cumbre and to Carita on the Bolivian border. Branches were to head south to Copaquire and Collahuasi, and to the salinas of Empexa and Coposa. Back near the coast an additional branch would head north from mile 42 to Soronel.

Disposal of the assets

After decades of abandonment, surprisingly much remained as late as the 1930s. However, there was then a proposal to build a new railway north-east from Huara to the sulphur resources of Chusmiza, using the redundant equipment from the Agua Santa and Patillos railways. This scheme is covered in section 4.4.7 of this file. Whilst the scheme was eventually abandoned, ownership of the surviving Patillos railway assets had been transferred to the *Instituto de Fomento Minero e Industrial de Tarapacá in November 1941*. I assume that anything worth re-using was moved at that time.

The trackbed of the railway can be seen climbing the coastal escarpment by any traveller along the coast road, and a glance at Google Earth suggests that the remainder of the route is also generally visible.

4.2.2 The *FCAB* dynasty of operating companies



A) *La Cía. de Salitres y Ferrocarriles de Antofagasta*

Background

2' 6" gauge. concession granted for railway in 1872. Opened December 1873. 1876 to 1887. Taken over by the Huanchaca company, see below, in 1887, and then the combined railway interests were floated on the London Stock Exchange becoming the independent *FCAB*. Until 1903 the Huanchaca company leased the line and operated it itself. Data below largely from [5] but with additional names from [14].

From *Narraciones Historicas de Antofagasta*, by Isaac Arce, 1930, *Capítulo XIII. Ferrocarril del Antofagasta al Salar del Carmen - su prolongacion a la interior*:

"...Desde los primeros tiempos, y para el acarreo, por la quebrada, de las grandes piezas de maquinaria para la oficina del Salar del Carmen, se contaba con dos yuntas de bueyes que prestaron muy buenos servicios. Después, éstos eran utilizados en hacer los caminos y otros trabajos análogos; también arrastraban diariamente los carros de salitre hasta la cumbre de Portezuelo, donde ahora existe la estación del mismo nombre, y desde alli, como hemos dicho, bajaban solos, debido a la gradiente de la linea. En esta forma, verdaderamente práctica, empezó la Empresa Salitrera a aprovechar los únicos 20 carros que poseia en esa época. Este material lo recibió en un buque de vela inglés, el 26 de septiembre de 1873, junto con 750 toneladas de carbón y una partida de rieles.

Esta forma tan primitiva de acarreo no duró mucho tiempo y dos meses después, o sea el 25 de noviembre (1873), llegó la primera locomotora. La noticia la daba asi el periódico "El Caracolino", primera publicación que se editó en este puerto: (l) "El 25 trajo el vapor inglés, una locomotora para el Ferrocarril, la que se armó en cuatro dias y ayer, (el 29), se hizo el ensayo con unos carros, en el trayecto de cuatro cuadras". Pero la verdadera prueba, o sea el recorrido de toda la linea hasta el Salar, o más bien dicho, la inauguración, fue el 20 de diciembre de 1873, a las

10.45 de la mañana, como se verá por lo que decia "El Caracolino" de esa misma fecha: "Hoy se ha escuchado por primera vez en este suelo, el silbato de la locomotora. A las 11 menos cuarto partió para el Salar del Carmen, un tren de este Ferrocarril, compuesto de la máquina y tres carros de carga.
Otra locomotora (1) y una nueva partida de 40 carros que recibió la Empresa el 15 de mayo de 1874, vinieron a aumentar poderosamente los medios de acarreo con que ya contaba. Y asi el que fue en un principio un pequeño ferrocarril de sangre, poco a poco se desarrolló, a medida que la Empresa descubria y explotaba nuevas pampas salitreras.
*(1) A esta nueva locomotora, gemela a la anterior, se lo puso por nombre **"Salar"**. A la primera se le dio el nombre de **"Tomás Frías",** nombre del presidente de Bolivia, en ese entonces. Posteriormente llegaron otros dos de mayor potencia y de nuevo tipo, a las que se les denominó **"Chile"** y **"Bolivia"**, respectivamente. Y en ese mismo orden llegaron después la **"Cobija"**, la **"Antofagasta"**, la **"Caracoles"**, la **"Salinas"**, la **"Agustin Edwards"**, etc."*

The first locomotives?

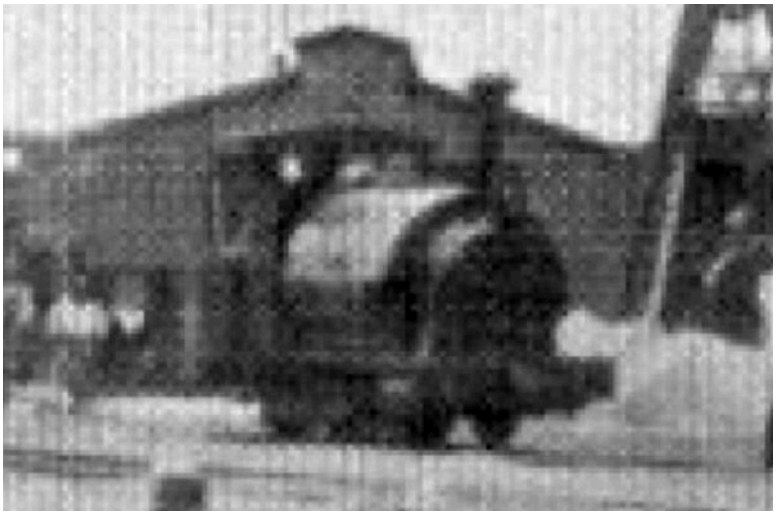
The only clues to the first engines to arrive are found in the paragraphs above. Sr. Arce explicitly writes of two engines arriving in November 1873 and May 1874, well before the Stephenson 4-6-0s which were not built until 1876. The other names mentioned in the final paragraph,were, on the other hand, applied to some of the 4-6-0s, and to an Avonside 0-6-2T.

Original nos.	**1908 nos.**

?-?-?T? d/w ?, cyls. built by ? in 1873?

Ordered for ?

'TOMÁS FRÍAS'	w/n **?**	But see below a Baldwin 2-4-2 built in 1890 and bearing this name.
'SALAR'	w/n ?	The loco **'SALAR'** suffered a boiler explosion in the middle of Antofagasta one afternoon early in its life, a partial cause of the subsequent rerouting of the line away from the town centre.



This photo in [31] supposedly shows an *FCAB* loco shed in 1875, possibly at Antofagasta. It includes this unknown British-style saddle tank loco, which might be one of these two unknown original locos.

4-6-0 d/w 36", cyls. 14"x20", built by Robert Stephenson in 1876

Locos each fitted with one donkey steam pump and one injector.

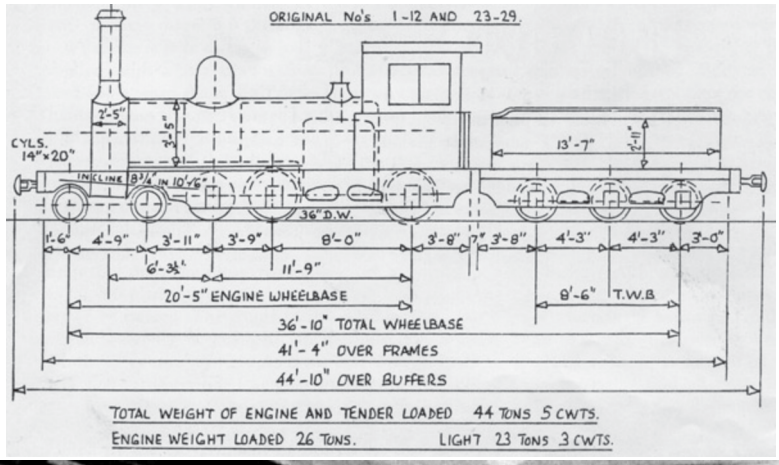
1 'BOLIVIA'	w/n 2291
2 'CHILE'	w/n 2292

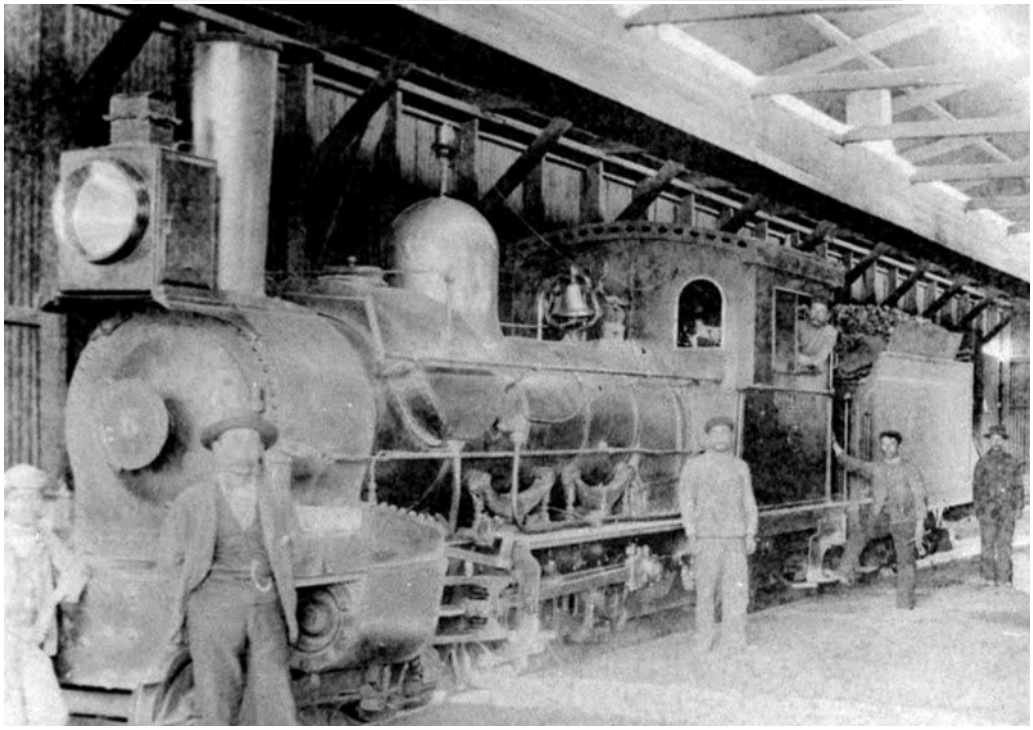
3 'A(DOLFO?) BALLIVIAN'		w/n 2293	Sr. Adolfo Ballivian was the 18th President of Bolivia in 1873-4.
4 'CARACOLES'		w/n 2294	
5 'SALINAS'		w/n 2295	This loco alone was to be fitted with a 'Le Chetter' (ie. Le Chatelier?) 'steam' (ie. counter-pressure?) brake, but all the others to have 'the necessary provision for fitting' such a brake. The word 'Lacupo' is written large adjacent to the details of modifications to this engine. Its significance is unknown unless it was the loco name.
6 'ANTOFAGASTA'	**51**	w/n 2296	
7 'COBIJA'		w/n 2297	
8 'La PAZ'		w/n 2298	
9 'SUCRE'	**52**	w/n 2299	
10 'COCHABAMBA'	**53**	w/n 2300	
11 'ORURO'		w/n 2301	
12 'POTOSÍ'		w/n 2302	

Isaac Arce's text quoted above, indeed suggests that the names **'CHILE'** and **'BOLIVIA'** were applied to the first pair of later locos of greater power and a new type.

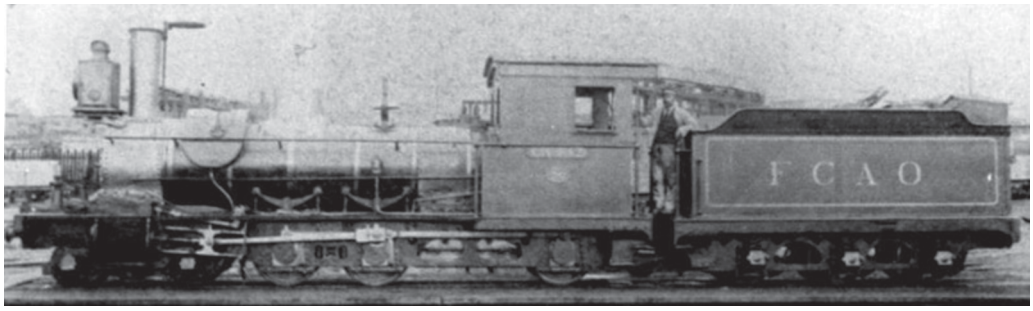
Three later became **51 'ANTOFAGASTA', 52 'SUCRE'**, and **53 'COCHABAMBA'**, whilst two more became **59 'VERGARA'** and **60 'ANICETO ARCO'** [14]. These names were probably as carried when built, though the numbers will have been allocated later.

In 1891 Robert Stephenson supplied five replacement boilers, presumably for these 4-6-0s or for the later batch.





This image of no. **5** differs from others showing locos of this class. The engine pictured has a stovepipe chimney, a Baldwin style saddle sand-box and arch-topped cab spectacles. Additionally the nameplate is on the cab-side rather than the boiler-side, the clacks are further forward, and there is no sign of the cab-side wheel which on other locos of the class presumably formed part of the donkey pump.



Superficially this RS 4-6-0 is very similar to that pictured above. However, there is only a single cabside window and the clacks are further back. Most intriguingly, the tender is lettered 'F C A O' = *FC Antofagasta Oruro*, an administrative/political title used in the late 1920s and into the '30s. The numberplate seems to bear a number in the 50s and the name on the plate above is relatively short.

The boiler explosion in an Antofagasta street

This was the accident to the loco **'SALAR'** that was mentioning in passing above. "*Desde un principio se vio que el tráfico de los trenes por las calles de la población tenia algunos inconvenientes y aunque se tomaron medidas para evitar accidentes desgraciados, sin embargo, no dejaron de producirse, y hasta hubo algunos principios de incendio ocasionados por las chispas que arrojaban las locomotoras.*

Recordamos que cada vez que salia un tren, se despachaba delante a un hombre montado que llevaba una bandera lacre para anunciar el peligro. De esta manera se evitaban las desgracias que antes habian ocurrido. Después, con el mismo fin, se colocó una campana en las locomotoras. También se les dotó de una rejilla de alambre en la chimenea para que las chispas no produjeran incendios.

Pero el accidente mas grande que hubo que lamentar fue el estallido del caldero de una locomotora en pleno centro de la población. Esto ocurrió en la calle "Nuevo Mundo" (hoy Manuel Antonio Matta), a1 salir de la curva que existia entre dicha calle y la de Prat.

*Sedan más o menos las dos de la tarde. La máquina **"Salar"** arrastraba un pesado convoy e inútilmente forcejeaba por salvar la pequeña gradiente que habia; sus ruedas daban vueltas vertiginosamente en los rieles sin que pudiera avanzar una pulgada. En estas circunstancias, y tal vez por imprevisión o descuido del maquinista, el caldero de la máquina estalló, volando a gran distancia la chimenea juntó con numerosos pedazos de hierro.*

El maquinista falleció en este accidente y el fogonero, un inglés de apellido Dunlop, quedó herido y con graves quemaduras; también resultaron quemados por el vapor 6 ó 7 niños que estaban prdximos al sitio del siniestro." [31, pp154-5] The precise year was not given, but it might well have been sometime during the late 1870s or early 1880s.

The survivor

The bottom half of one of these engines still survives, along with other engines at Pulacayo east of Uyuni in Bolivia. It carried the no. **12** and name **'POTOSÍ'** in 1955. It carries a replacement boiler, possibly off a Baldwin. Numbers found (by others) on the motion include 2633 (many parts), and 2292 and 2293 (on springs by Steel, Peach & Tozer of Sheffield), with the boiler backhead numbered A1891 [19]. There must be a suspicion that it therefore is 4-6-0 no. **12** rather than a rebuilt 4-2-4-2T, though apparently the frame has been "subjected to major surgery" at some point [19].



The surviving Stephenson 4-6-0 at Pulacayo, as seen by Sr. Mario Georgetta in 2010. The lower half of the engine is very similar to that pictured above, though with a heavy frame reinforcing plate rivetted on between the second and third driving axles. However, above the running plate it is a very different story. The boiler is a replacement one, with the dome much further back and with safety valves mounted on the dome. Many of the *FCAB*'s Baldwin locos had those features. There is a saddle sandbox (as also seen in the previous photo) which probably came from a Baldwin, though its internal diameter does not match the boiler diameter. The cab is rather different from those fitted originally, and may well date from the reboilering.

0-6-2T d/w 33", cyls. 11x18", built by Avonside in 1877

Original Avonside list says ordered for Knowle and Foster under order mark KF.

13 'VALPARAISO' w/n 1182

14 'AGUSTIN EDWARDS' 1 w/n 1183

0-6-2T d/w 33", cyls. 12x18", built by Avonside in 1877

Original Avonside list says ordered for Antofagasta under order mark AFA. Note that these two names were those that had been applied to the very first engines that had arrived in 1873-4. However, these two Avonside 0-6-2Ts are clearly seen in the sole surviving original Avonside list as being for Antofagasta and built in 1877. Did they replace the original pair, and if so why?

15 'SALAR' w/n 1195

16 'TOMÁS FRÍAS' w/n 1196 [13] gives this loco as the one which became *FCAB* **1** in 1908.

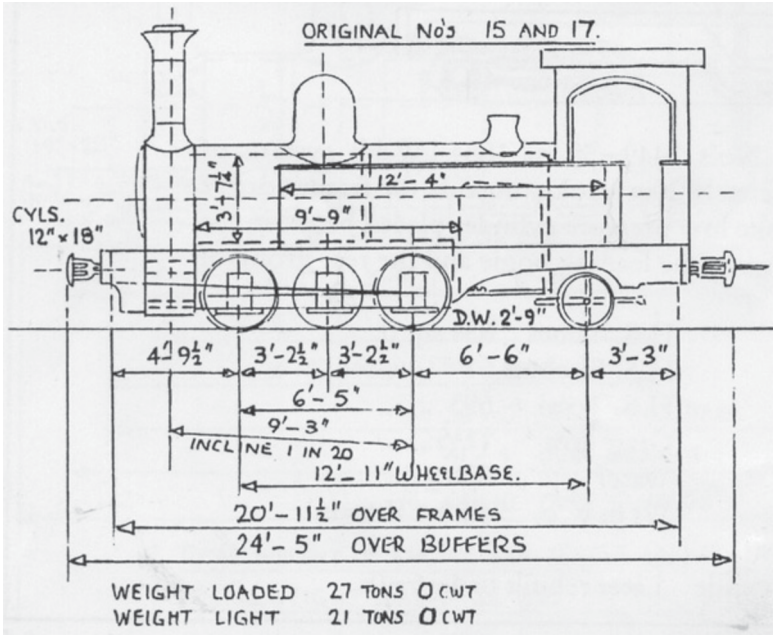
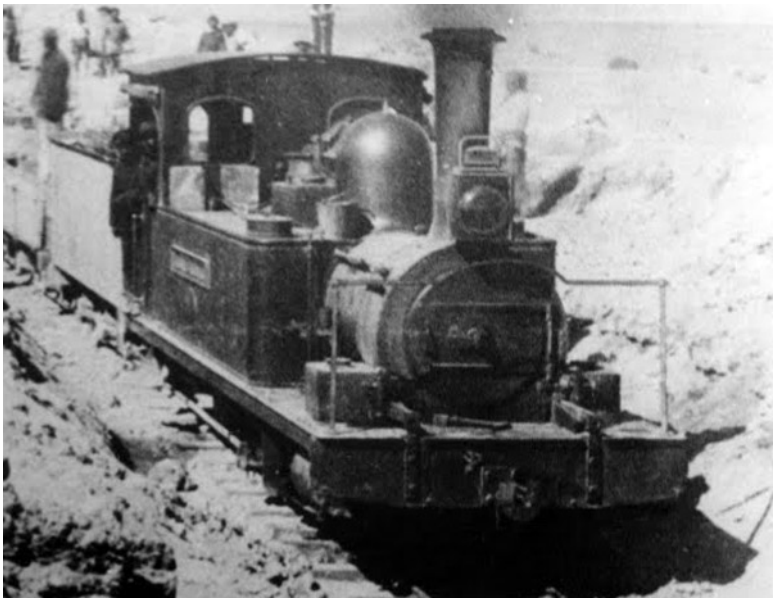


Diagram as reproduced in Turner & Ellis *FCAB* book, presumably from the railway's diagram book. Reference to locos **15** & **17** is puzzling as no. **17** was a Sharp Stewart 2-6-2T and even after rebuild to 0-6-2T is unlikely to have been identical to Avonside locos.



Whilst this standard Avonside 0-6-2T seen out on the nitrate pampa may not have been one of the four listed above, various clues make that a possibility. The two word name could certainly be **'AGUSTIN EDWARDS'**.

2-6-2T d/w 33", cyls. 12x18", built by Sharp Stewart in 1882

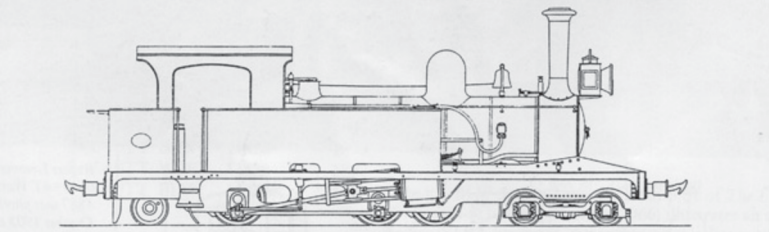
SS order no. E819. Name found in NBL docs in Mitchell Library.

17 'DON MIGUEL SALDÍAS' 2 w/n 3032 Rebuilt as 0-6-2T prior to 1912.

4-2-4-2T Webb Compound d/w 36", cyls. outside 10"x20" inside 20"x18", built by R. Stephenson in 1884 (or 1887 and 1888?)

A sketch diagram in the P. C. Dewhurst archive at the NRM labels these engines as "E. Woods compound", and gives the date of 1884. Both were rebuilt to 4-6-0s as some point. Whilst there have been tales that one survives at Pulacayo, these have been comprehensively debunked by Sr. Mario Giorgetta in an appendix to this file.

18 'JOSÉ F. VERGARA' 54 w/n 2449
19 'ANÍCETO ARCE' 55 w/n 2450
Source [14] gives the later 1908 numbers for this pair as **59** and **60**.



4–2–4–2T Robert Stephenson & Co. Ltd. Works No's 2449–50 of 1884. Webb system of compounding. Two high pressure cylinders 10in diameter × 20in stroke, outside the frames drove two coupled axles, whilst the 20in diameter × 18in stroke low pressure cylinder placed between the frames was connected to an uncoupled axle located between the leading bogie and the rear group of driving wheels.

Leading and trailing bogie wheels	2ft 0in diameter	H.S. Tubes	634 sq. ft.
All driving wheels	3ft 0in „	H.S. Firebox	61 „ „
Bogie wheelbase	4ft 9in	H.S. Total	695 „ „
Coupled wheelbase	8ft 0in	Grate area	11½„ „
Total wheelbase	26ft 1½in	Water	550 gall.
Boiler diameter	3ft 5in	Wt in w.o.	about 35 tons
Boiler length	10ft 10½in		
Firebox	4ft 6in long × 3ft 6in wide	Later rebuilt to 4–6–0s.	

Diagram from Turner & Ellis *FCAB* book.

The fleet in 1886

The railway's annual report to shareholders for the year from July 1885 to June 1886 included the following comments (NB translated by Sr. Felipe Radrigan before sending them to me), and then the list of locomotives below:
"Rolling stock – The respective tables demonstrate the service performed by the locomotives and which, summarized, represents 408,505 kilometers run.
The forced labour they have had and the use, in part, of Calama water, have meant that there have been heavy expenses in repairs and conservation of the locomotives. Soon there will be a need to change the boilers to machines No. **1, 2,** and **4**, No. **7** may still be able to serve for another year in ordinary work, Nos. **6, 10, 14** and **15** will then require a complete change of tubes and Nos. **18** and **19** (Compound engines) are currently being fitted with new parts that have just arrived from Europe, and with whose improvement, which consists of coupling the driving wheel of the low pressure cylinder with the front of the high pressure cylinders, good results are expected.
Inventario de lo aportado por la "Compañia de Salitres y Ferrocarril de Antofagasta" para la participación
14 large locomotives, each with its respective set of tools, as follows:
No. 1: "Bolivia"
No. 2: "Chile"
No. 3: "A. Ballivian"
No. 4: "Caracoles"
No. 5: "Salinas"
No. 6: "Antofagasta"
No. 7: "Cobija"
No. 8: "La Paz"
No. 9: "Sucre"
No. 10: "Cochabamba"
No. 11: "Oruro"
No. 12: "Potosí"
No. 18: new, unnamed (But see name listed in table below)
No. 19: new, unnamed (But see name listed in table below)
3 big *remolcadora* (shunting) locomotives:
No. 13: "Valparaiso"

No. 14: “A. Edwards”
No. 17: “Miguel Saldías”
3 (? 2?) small *remolcadora* shunting locomotives:
No. 15: “Salar”
No. 16: “Tomás Frias”

Distancia en Kilómetros que han recorrido las locomotoras del Ferrocarril de Antofagasta en el primer semestre de 1886.

Nums.	LOCOMOTORAS	Enero	Febrero	Marzo	Abril	Mayo	Junio	TOTALES
1	Bolivia	4457	3363	6473	5078	5824	5895	31090
2	Chile	.....	.....	3665	3372	5096	1285	13418
3	A. Ballivian	4376	240	.....	.....	.....	.....	4616
4	Caracoles	3868	4125	3768	3529	4264	5068	24622
5	Salinas	4903	3052	4047	1455	5480	4943	23880
6	Antofagasta	4582	4122	4653	3636	5281	4380	26644
7	Cobija	2861	4930	3157	3393	2680	523	17544
8	La Paz	4505	1051	.....	.....	2376	4771	12703
9	Sucre	3366	4222	3302	3308	5072	4122	23492
10	Cochabamba	2887	4278	4150	3971	4422	3566	23274
11	Oruro	142	4589	4669	3701	4190	5030	22321
12	Potosí	4135	4481	3454	3446	4927	4380	24823
18	J. F. Vergara	.....	1918	.....	.....	.....	.....	1918
19	A. Arce	.....	.....	.....	.....	142	4756	4898
		40082	40471	41338	34889	49744	48719	255243

Antofagasta, Junio 30 de 1886.—DAVID SIM J., Contador.

It can be seen that the fleet at this point included the twelve Stephenson 4-6-0s numbered **1-12**, and the two Stephenson 4-2-4-2T compounds. However, all of the shunters have been omitted, presumably because their distances run were not recorded.

B) *Cía. de Huanchaca de Bolivia*

2' 6" gauge extension of and collaborator with the *Cía de Salitres i Ferrocarriles de Antofagasta*, see above. This company built the mainline up to Ollague and on to Uyuni. Data below is largely from [5], with names from builders' lists. The latter may not always reflect what was carried on the locos in service.

Original nos. **1908 nos.**

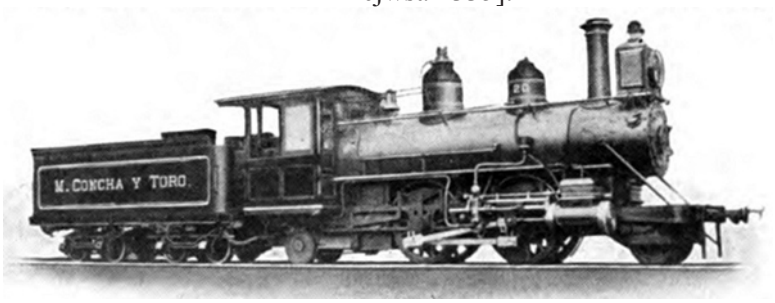
2-4-2 d/w 43", cyls. 13x20", built by Baldwin in 1886

BLW class 8-20¼C-2.

20 ‘MELCHOR CONCHA y TORO’ w/n 8215
32 / 33

Renamed by 1888? Renumbered **32** in 1907-8, then renumbered to **33**. Converted to metre gauge and renumbered **351**. In use on *FCB* in 1939. BLW spec sheet implies that name-plates may have read **‘M. CONCHA y TORO’** and photos shows the loco with that wording painted on the tender. The second photo below shows the same loco but with a taller sand-dome. NB the 1918 *FCB* diagram book

says this loco had been *FCAB* no. **34**. Photo showing loco in use at Uyuni in 1930s shows that sand-dome had reverted to shorter length by then [Rest. & Arch. Trust pic cjwsam335].



BLW builder's photo, source unknown.



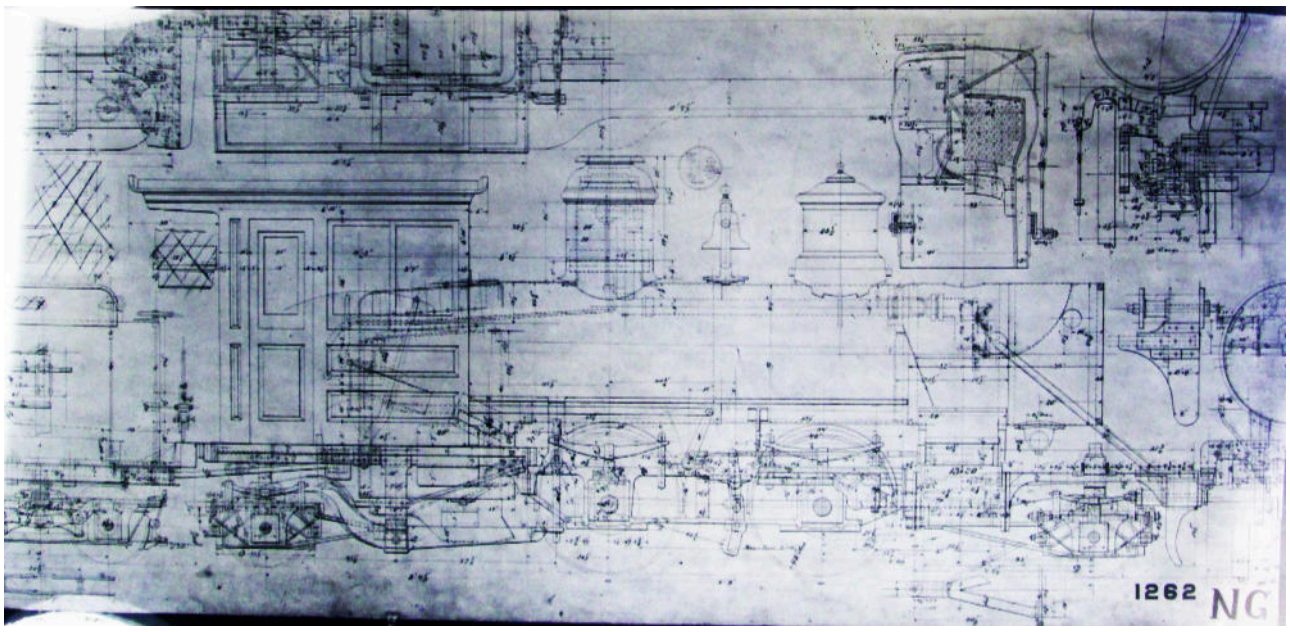
From the *DIBAM* photo archive at the *Biblioteca Nacional* in Santiago.

2-4-2 d/w 45", cyls. 13"x20", built by Rogers in 1887

[14] says d/w 55".

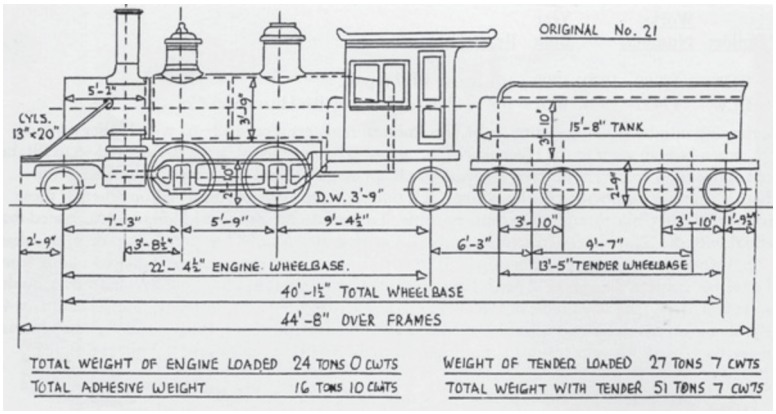
21 'HUANCHACA' 32 later **42** w/n 3713

Connelly's Rogers list suggests was to have been named **'M. CONCHA y TORO'**, but then renamed **'FEDERICO PUELMA'**, and finally was delivered as **'HUANCHACA'**.



A side elevation of this loco, taken from a Rogers copy blueprint in the

P. C. Dewhurst archive at the NRM in York, but tonally inverted for clarity.



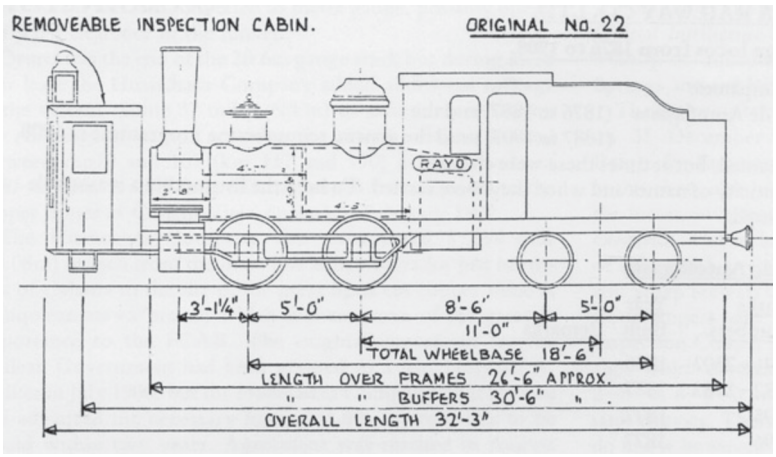
From railway's diagram book, via Turner & Ellis's *FCAB* book.



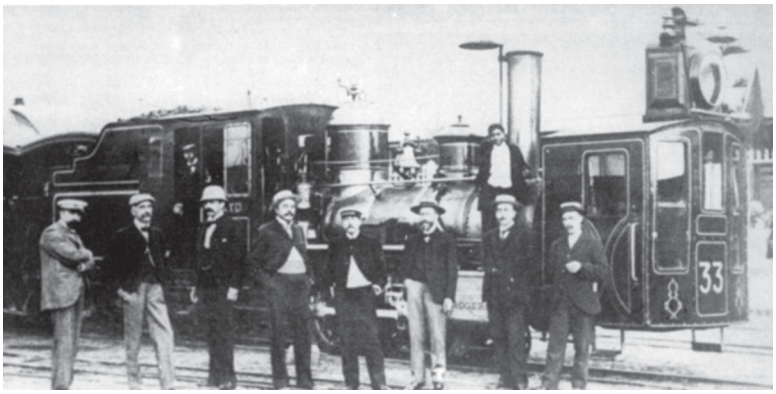
Photo supposedly taken at the Salar de Ascotán or Salar del Cebollar in 1890. From the *Tren Expreso a la Memoria* Facebook page. Note that the engine now has a short smokebox.

0-4-4T Inspection coupé d/w 36", cyls. 9½"x16", built by Rogers in 1887

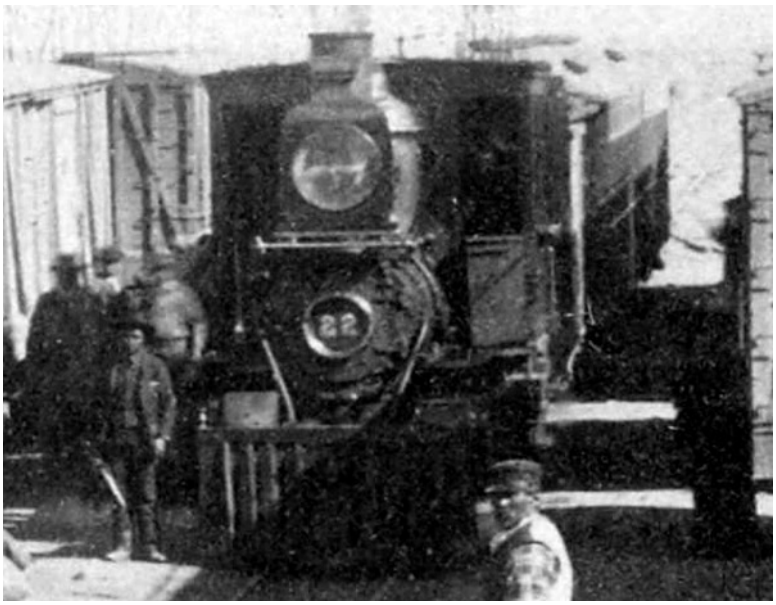
22 'RAYO' **33/31** w/n 3709 Photo shows it numbered **33** in 1903. Rebuilt to conventional tank loco by 1908, by then numbered **31**. Disposed of before 1912.



From railway's diagram book, via Turner & Ellis's *FCAB* book.



Ron Redman collection via Turner & Ellis's *FCAB* book.



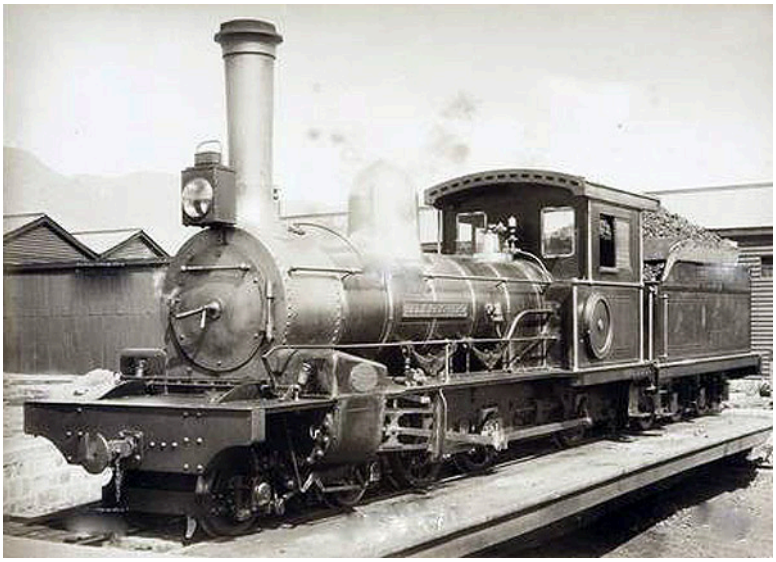
Rogers 0-4-4T no. **22 'RAYO'** without its removable front inspection compartment.

4-6-0 d/w 36", cyls. 14"x20", built by Robert Stephenson in 1887 (23-25) and 1888 (26-29)

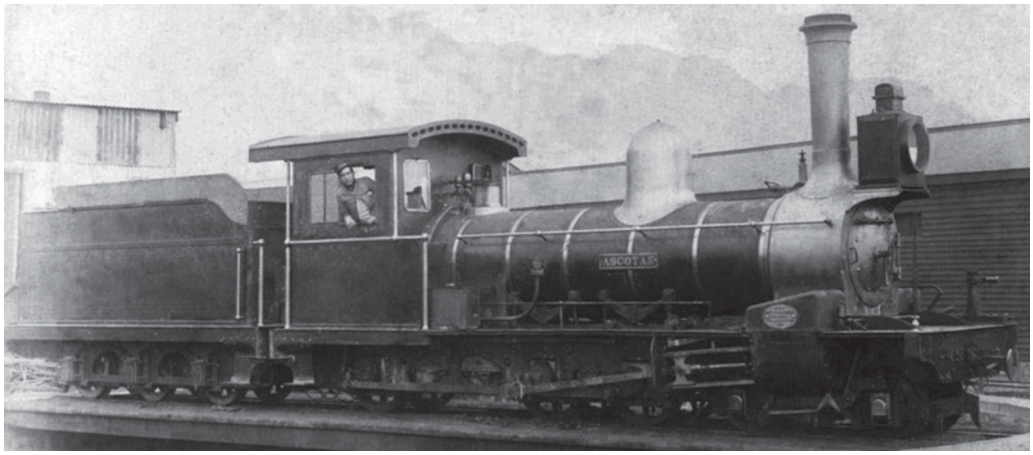
Names from source [14].

23 'PULACAYO'	**56**	w/n 2622	
24 'CERRILLOS'	**57**	w/n 2623	
25 'BELISARIO PERO'	**58**	w/n 2624	
26 'MARIANO RAMIREZ'	**54**	w/n 2633	
27 'ASCOTÁN'	**55**	w/n 2634	
28 'UJINA'	**61**	w/n 2635	Not 'UBINA' as one source showed. Ujina is on the Collahuasi branch. However, a table in the company's annual report for 1896 does definitely show the name as **'UBINA'**.
29 'CALAMA'	**62**	w/n 2636	

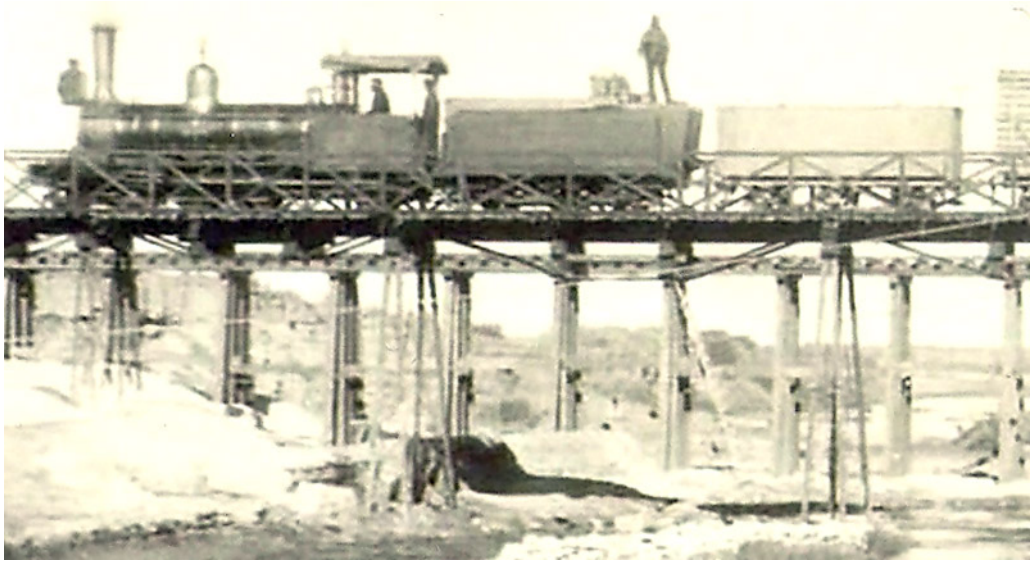
In 1891 Robert Stephenson supplied five replacement boilers, presumably for these 4-6-0s or more probably for the earlier batch.



25 'BELISARIO PERO', photo source unknown.



No. **27 'ASCOTAN'**. Note the raised sides of the bunker, presumably to increase the capacity substantially.



A picture provided by Pablo Moraga, showing one of these Stephenson 4-6-0s unusually with open cabsides. The image was taken at a site where a temporary timber trestle in the background was being replaced by a more permanent steel structure closer to the camera. Note that the tender is also rather lower than in other images, and seems to have some sort of addition at the rear. The vehicle behind the loco is probably an additional water cart on a six-wheeled chassis, though clearly with a steel channel frame rather than being a spare

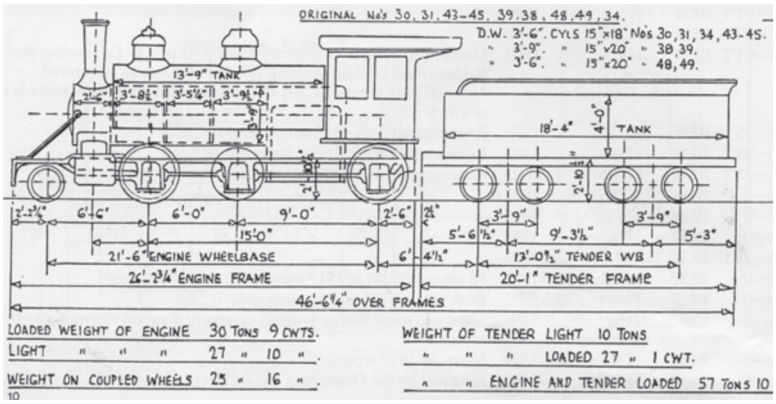
tender from another engine. The album was from 1890.

2-6-0STT d/w 42", cyls. 15x20", built by Baldwin in 1889

BLW specs in vol. 15 p25. Photos suggest that some members of this class ran in later years as straight tender engines, ie. without saddle tanks, but note that the *FCB* diagram book of 1918 shows the two members of the class that were converted to metre gauge (originally *FCAB* nos. **34** & **49**) as still having those tanks. BLW class 8-24D.

30 'OLLAGÜE'	**71**	w/n 9846	Scrapped by 1916. Diagram book says cyls. 15x18".
31 'SAN PEDRO'	**72**	w/n 9852	Diagram book says cyls. 15x18".
32 'SAN PABLO'	**82**	w/n 9855	
33 'LOA'	**83**	w/n 9864	
34 'RÍO GRANDE'	**84**	w/n 9859	Diagram book says cyls. 15x18". Converted to metre gauge 1917. However, *FCB* diagram book from 1918 (sic) says rebuilt at Uyuni works 1919 and became *FCB* no. **302**. OoS by 1925.

Four spare steel boilers with copper fireboxes ordered from Baldwin in April 1892, also 4 firebox tube plates, also 8 sets boiler tubes to be made but held at makers. Spare cast steel crossheads ordered from Baldwin in September 1892, also tyres. Parts ordered from Baldwin in May 1892: 8 smokebox fronts and doors, 8 Nathan no. 7 WF injectors, 4 Nathan no. 8 sight feed cylinder lubricators, 4 Crosby steam gauges, 8 Crosby safety valves, and 4 dry pipes. June 1892 spares ordered from Baldwin: 4 sets deflecting plates, 12 sets firebricks, 8 smokestack bases. One of the Baldwin extra order books for 1905 suggests that parts were to be ordered to change loco **30** from slide valves to piston valves [file mss0061_5_24_04_1905_opt.pdf p44]



From railway's diagram book, via Turner & Ellis's *FCAB* book.

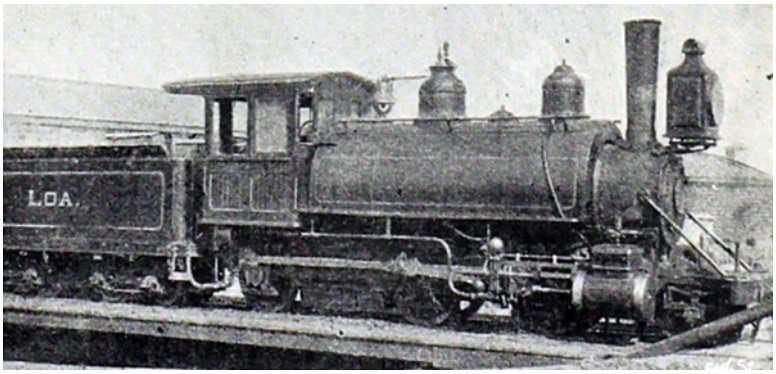


Photo was in *The Railway Magazine* in February 1898.

2-8-0TT d/w 37", cyls. 15"x20", built by Baldwin in 1889

35 ' SIERRA GORDA' 95		w/n 9773	Spare metallic packings and monitor injectors ordered from Baldwin March 1892. BLW class 10 24½E 70. Spec. is in vol 14 p247. 500 spare brass boiler tubes 2¼" x 176" ordered from Baldwin April 1892, also two copper firebox sheets 1" thick. One spare steel boiler with copper firebox ordered April 1892, with 2 sets brass tubes and 4

copper firebox sheets extra. Spares ordered June 1892 from Baldwin: 1 dry pipe, 2 Crosby safety valves, 2 smokebox fronts and doors, 2 stack bases, 3 sets fire bricks, 1 set deflecting plate. Spares ordered July 1892 from Baldwin: 2 Friemann no 7 WF injectors, 1 Nathan no. 8 sight feed cylinder lubricator. Spare crossheads and axle blanks ordered from Baldwin in Sept. 1892, also tyres. Scrapped by 1916. Side tanks removed pre 1908. BLW spec card says name was **'SIERRA GORDO'**, but see photo below.



BLW builder's pic, from H. L. Broadbelt collection via RR Museum of Pennsylvania.

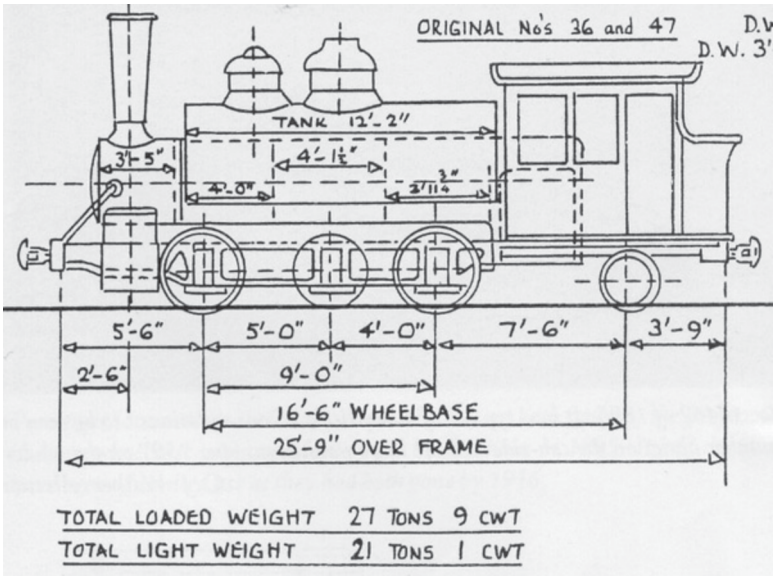
0-6-2ST d/w & cyls. see notes for each loco, built by Baldwin in 1889 (36), 1890 (46-47), 1892 (51-53) and 1895 (56-57)

BLW class 8-22⅓D.

36 'RELÁMPAGO'	**3**	w/n 9770	d/w 36" and cyls. 14"x18"
46 'HORMIGA'		w/n 10998	Transferred to *FC Uyuni a Pulacayo* around 1892. Survives at Pulacayo.
47 'ABEJA'	**4**	w/n 10995	d/w 36½" and cyls. 14"x18". BLW spec sheet gives names of **46** and **47** swopped over.
51 'ARDILLA'	**7**	w/n 12752	Renumbered **46** soon after arrival. d/w 36½" and cyls. 14"x18".
52 'ORUGA	**8**	w/n 12753	Renumbered **51** soon after arrival. d/w 36½" and cyls. 14"x18" Turner & Ellis say **52** was **'ARDILLA'**.
53 'VICUÑA'	**9**	w/n 12754	Renumbered **52** soon after arrival. d/w 36½" and cyls. 14"x18"
56 'ALPACA'	**10**	w/n 14220	Renumbered from **57** soon after arrival? d/w 37" and cyls. 15"x18" Possibly originally **'SEVARNYO'**
57 'VELOZ'	**11**	w/n 14221	Renumbered from **58** soon after arrival? d/w 37" and cyls. 15"x18"

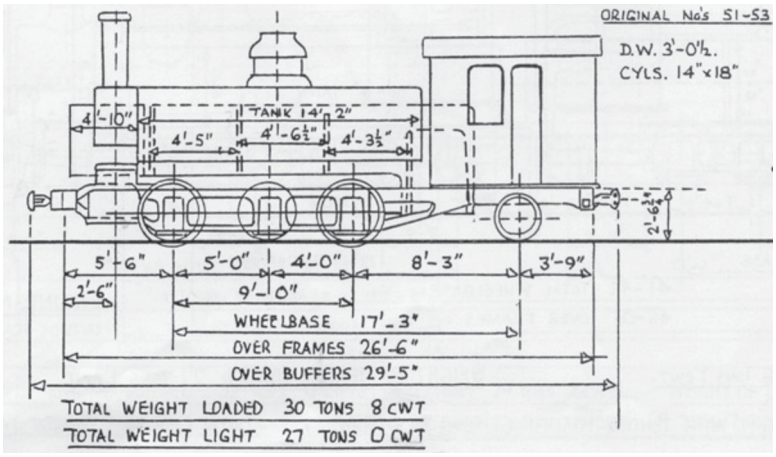
Spare monitor injectors ordered from Baldwin March 1892. 500 spare brass boiler tubes 2" x 147" ordered from Baldwin April 1892. One spare steel boiler with copper firebox and brass tubes ordered from Baldwin April 1892, also 2 sets tubes and 1 firebox tube plate. Spares ordered from Baldwin June 1892: 2 Crosby safety valves, 1 dry pipe, 2 smokebox fronts and doors, 1 Crosby steam gauge, 2 smokestack bases, 1 set deflecting plate. Spares ordered July 1892 from Baldwin: 2 Friedmann no. 7 WF injectors, 1 Nathan no 8 sight feed cylinder lubricator, 1 set of deflecting plates, also 3 sets of fire bricks. Spare crossheads ordered from Baldwin in September 1892, also tyres.

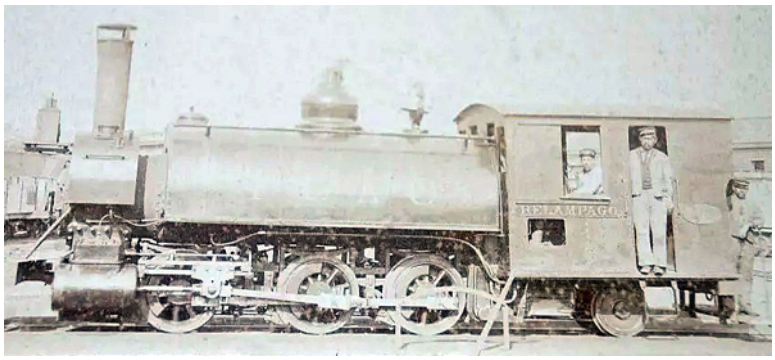
These seem to have originated from two distinct designs, both built by Baldwin, as shown in the diagrams below from Turner & Ellis's *FCAB* book. Nos. **36** and **47** had a 16' 6" wheelbase, whilst for nos. **51-53** and **56-7** the wheelbase was 17' 3". The second & third groups had their cylinders set much further apart, as well as other minor differences. The third image, showing nos. **56-57** seems to have twin cab windows and curved bottoms to the sandboxes, but again it is not known whether these were original features.





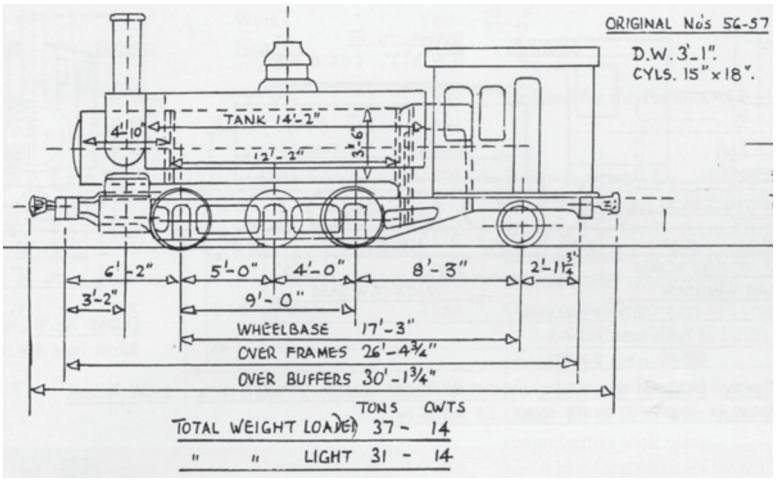
BLW builder's pic of **36 'RELAMPAGO'**, from H. L. Broadbelt collection via RR Museum of Pennsylvania.

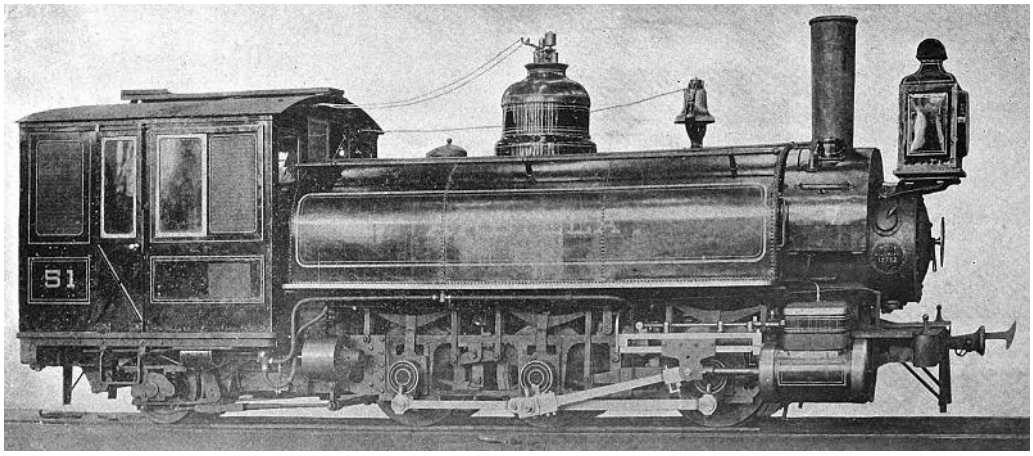




Shared on internet from source unknown. This loco clearly carries the **'RELÁMPAGO'** name on the cabside, and yet it has the extended

cab, shorter dome, and sand dome replaced by sandboxes either side of the smokebox of the later batches.





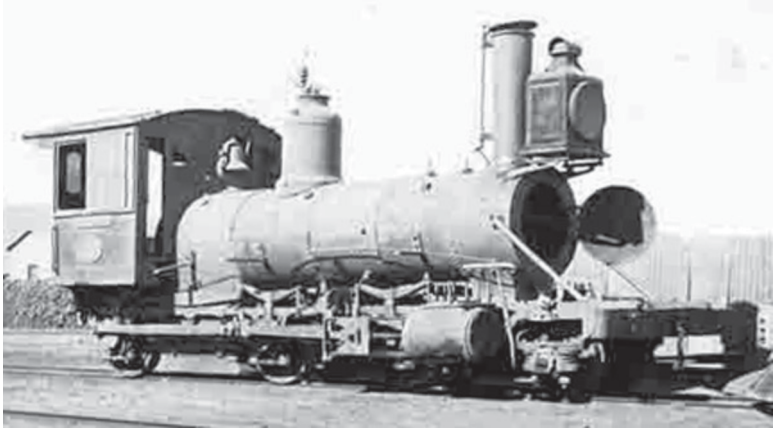
No. **51 'ARDILLA.**' (note full stop at end of name), presumably in a Baldwin builders' photo, and showing that the later engines were built new with the extended cab and smokebox-mounted sandboxes. Photo from a book or journal found and supplied by Pablo Moraga.

2-6-0STT d/w 42" (but 38-39 had 45"), cyls. 15"x18" (but 38-39 & 48-49 had 15"x20"), built by Baldwin in 1889 (37-39) and 1890 (43-45, 48-49)

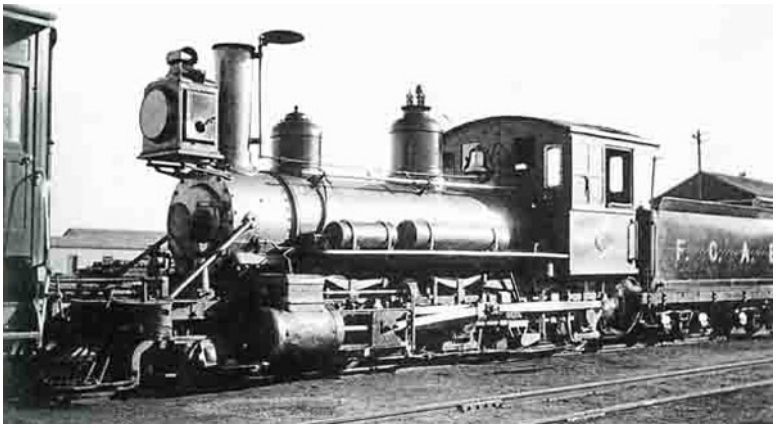
BLW class 8-24D. NB Connelly's Baldwin list gives conflicting road numbers for several locos in the groups above and below here. BLW specs in vol. 15 p25. Photos below suggest that some members of this class ran in later years as straight tender engines, ie. without saddle tanks, but note that the *FCB* diagram book of 1918 shows the two members of the class that were converted to metre gauge (originally *FCAB* nos. **34** & **49**) as still having those tanks.

37 'BOLIVAR'	**81**	w/n 10469	
38 'SAN MARTÍN'	**77**	w/n 10470	
39 'LINARES'	**76**	w/n 10464?	10471?
43 'TARIJA'	**73**	w/n 10984	Diagram book says cyls. 15x18". Derelict Uyuni 1928 and seeming to have been in operation without saddle tank, not converted to metre gauge [Rest. & Arch. Trust pic cjwsam298].
44 'TUPIZA'	**74**	w/n 10988	Diagram book says cyls. 15x18".
45 'BENI'	**75**	w/n 10997	Diagram book says cyls. 15x18". Scrapped around 1917.
48 'LÍPEZ'	**78**	w/n 11426	
49 'CHOROLQUE'	**79**	w/n 11436	Rebuilt to 1m gauge at Uyuni in 1917 and became *FCB* no. **301** [*FCB* diagram book 1918]. **'BOLIVAR'** in BLW lists?

Spare tyres ordered from Baldwin in Sept. 1892.



Loco **73 'TARIJA'** derelict at Uyuni 1928, and seeming to have operated without its original saddle-tank. High resolution image is available from the Restoration & Archiving Trust, their ref. cjwsam298.



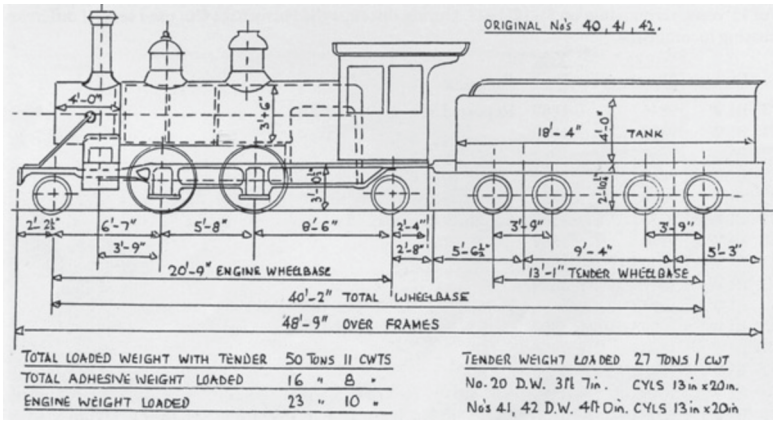
Another of this class at Uyuni in 1928, and also without a saddle-tank. High res. image available from Rest. & Arch. Trust image cjwsam331.

2-4-2 d/w 48", cyls. 13"x20", built by Baldwin in 1890

BLW class 8-20¼C 15-17.

40 'OLAÑETA' **33** w/n 10942 Scrapped 1908-1910.
41 'TOMÁS FRIAS' **34** w/n 10943
42 'SANTA CRUZ' **35** w/n 10944

Crossheads and axle blanks ordered from Baldwin in September 1892, also tyres.

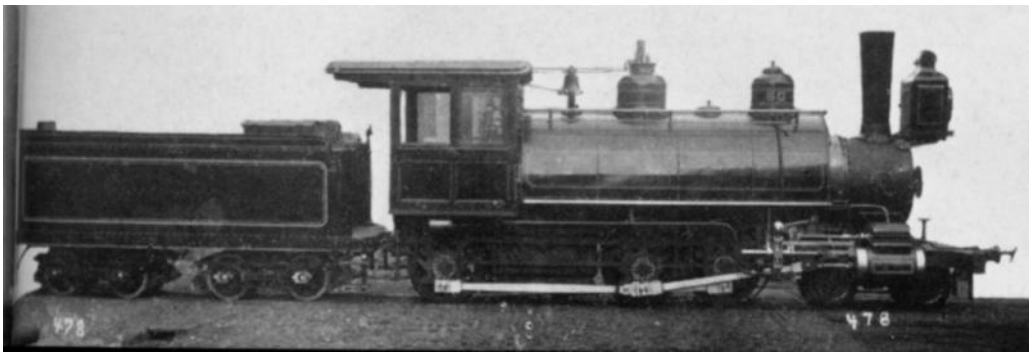


From railway's diagram book, via Turner & Ellis's *FCAB* book.

4-6-0STT d/w 42", cyls. 15"x20", built by Baldwin in 1890

BLW spec books vol 16 p151. BLW list gives this as a 2-6-0TT but spec sheet clearly shows a four-wheeled bogie. The spec sheet had an 1897 note added "Mr Haddow reports that this engine was rebuilt by cutting 15¼"out of ???? cyl. and front driver, ?? then put in regular ???? of mogul boiler. WLA" [14] suggests was rebuilt as 4-6-0 before 1912, which may be a misunderstanding. Baldwin class 10-24D-12.

50 'SAN VINCENTE' 80 w/n 11437 Or **'SAN VICENTE'**? Spare tyres ordered from Baldwin in Sept. 1892.



No. **50** as seen in a Baldwin photo reproduced in Fred Westing's 1966 volume *The Locomotives that Baldwin built*.

2-8-0 d/w 37½", cyls. 15"x20", built by Baldwin in 1892 (53-55), 1895 (58-60), and 1900 (64-65)

BLW specs in vol. 17 p241, and vol. 19 pp236-237. [18] reports that the railway were not entirely pleased with these locos owing to defects in the firebox design and construction.

53[2] 'COLQUECHACA' 96 w/n 12635 Renumbered from **54** soon after arrival?

54 'CHALLAPATA' 97 w/n 12633 Renumbered from **55** soon after arrival?

55 'SEVARUYO' 98 w/n 12667 Renumbered from **56** soon after arrival?

58 'VULCANO' 92 w/n 14461 Renumbered from **59** soon after arrival? Unservicable in 1917. Turner & Ellis say **58** was later **'JUPITER'**.

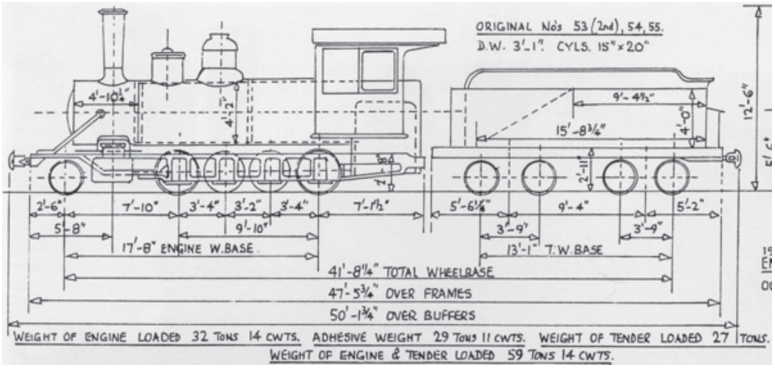
59 'VENUS' 93 w/n 14462 Renumbered from **60** soon after arrival? Turner & Ellis say **59** was later **'VOLCANO'**.

60 'APOLO' 94 w/n 14463 Renumbered from **61** soon after arrival? Turner & Ellis say **60** was later **'VENUS'**.

64 'ORURO' 99 w/n 17461 BLW spec sheet shows names of **64** and **65** as here, but crossed out and then exchanged. Photo shows this loco in steam at Uyuni in 1931 [Rest. & Arch. Trust pic cjwsam332]. Originally **'FRANSISCO ARGANDONA'**?

65 'FRANCISCO ARGANDOÑA' 100 w/n 17462 Originally **'ORURO'**?

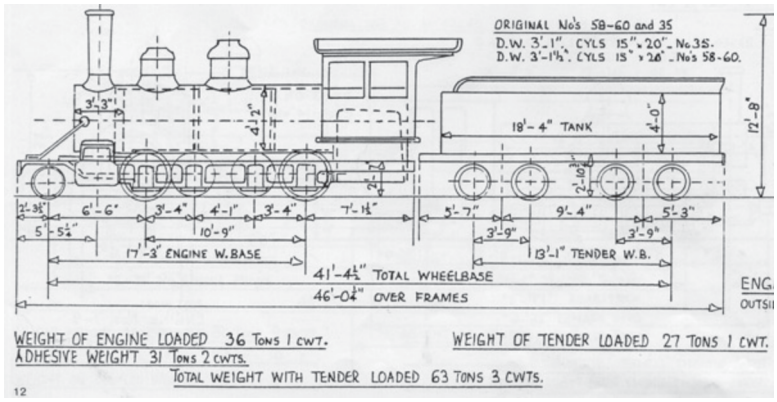
[14] shows **'JUPITER', 'VULCANO', 'VENUS'**, and **'APOLO'** as **58, 59, 60** and **61** respectively, which may reflect their original numbers but still doesn't quite fit other information sources.



From railway's diagram book, via Turner & Ellis's *FCAB* book. Nos. **51-53**.



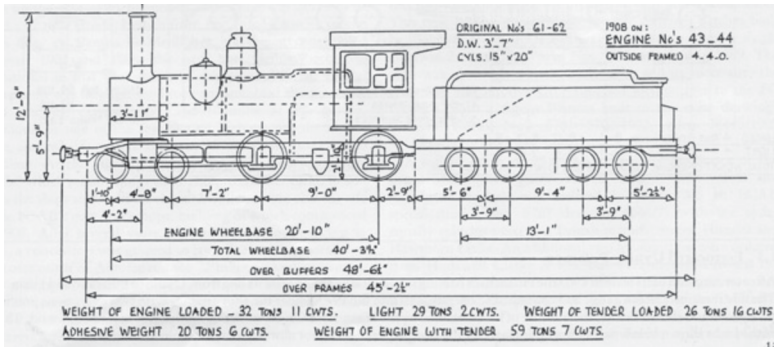
From the late Christopher Walker's collection.



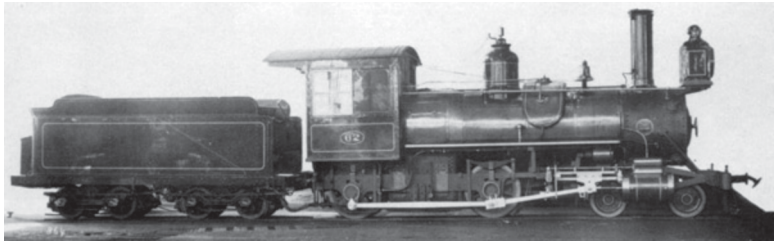
From railway's diagram book, via Turner & Ellis's *FCAB* book. Nos. **58-60**.

4-4-0 d/w 42", cyls. 15"x20", built by Baldwin in 1895

61 'MINERVA'	**43**	w/n 14464	Possibly also renumbered on arrival, from **62**? Later **'APOLO'**?
62 'JUPITER'	**44**	w/n 14465	Possibly also renumbered on arrival, from **63**? Turner & Ellis say **62** was later **'MINERVA'**.



From railway's diagram book, via Turner & Ellis's *FCAB* book. Nos. **61-62**.



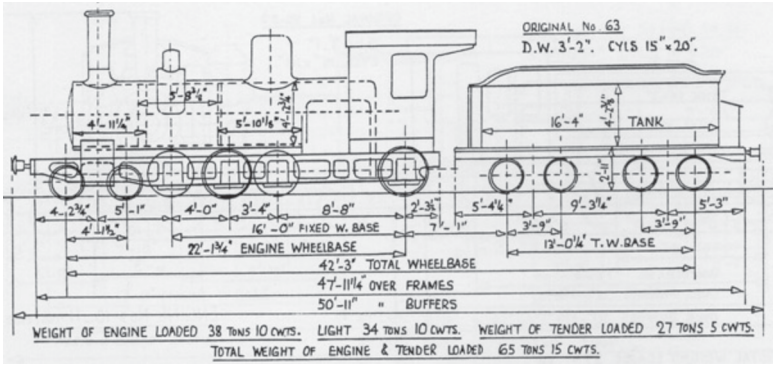
BLW builder's pic, from H. L. Broadbelt collection via Turner & Ellis's *FCAB* book.

BLW spec sheet shows locos **59-61**, named **'JUPITER', 'VULCANO', 'VENUS'**, as one batch of 2-8-0s. (Spec is in vol. 19, page 236). Another spec show **62** and **63**, as **'APOLO'** and **'MINERVA'** probably 4-4-0s. (Spec sheet is at vol. 19 page 237.).

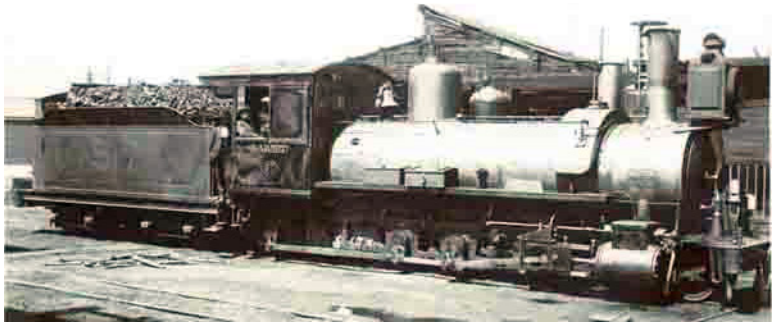
4-8-0 d/w 38", cyls. 15"x20", built by Cail in 1896

[14] says this was a 4-6-2 but rebuilt as 4-8-0. As a 4-8-0 it had very long rear coupling rods to a final axle behind the firebox. Also had Baldwin-style saddle sandbox.

63 'CARNOT' **91** w/n 2466



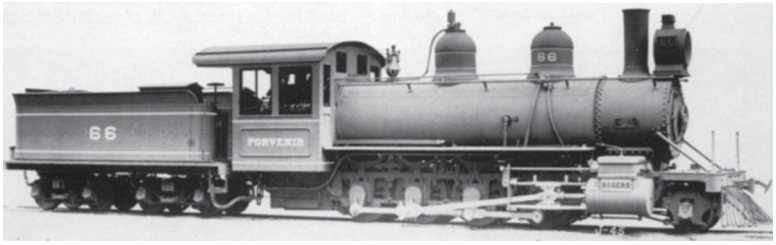
From railway's diagram book, via Turner & Ellis's *FCAB* book. No. **63**.



Chris Walker collection, hi-res image available from Restoration & Archiving Trust website.

2-8-0 d/w 37½", cyls.15x20", built by Rogers in 1900

66 'PORVENIR' w/n 5544 Retained by Huanchaca Co. in 1903. Survives at Pulacayo.

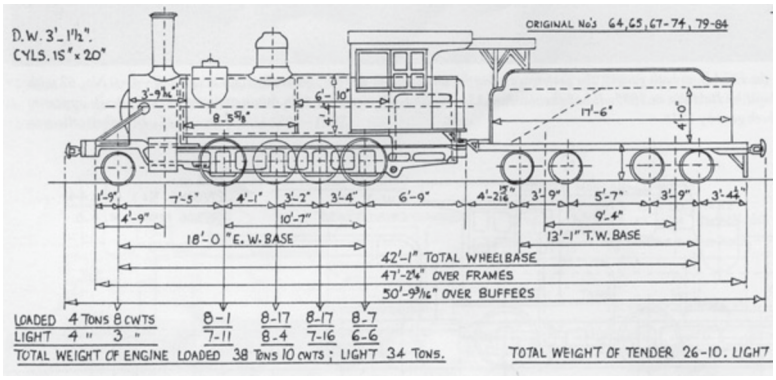


ALCo historic photos collection via Turner & Ellis's *FCAB* book.

2-8-0 d/w 37½", cyls.15x20", built by Baldwin in 1900 (67-70) and 1901 (71-74)

[14] gives the names of **67-69** as **'UNDERDOWN', 'A. de ARIOSTA'** and **'VICTORIA'** respectively. BLW spec for nos. **71-74** in vol. 24 pp236-237.

67 'VICTORIA'	**101**	w/n 18388	Later **'UNDERDOWN'**? Scrapped 1917?
68 'UNIÓN'	**102**	w/n 18389	Later **'A. de ARIOSTA'**?
69 'FUERZA'	**103**	w/n 18390	Later **'VICTORIA'**?
70 'TRABAJO'	**104**	w/n 18391	Later **'UNION'**?
71 'POLAPI'	**105**	w/n 19437	
72 'ADELANTE'	**106**	w/n 19438	
73 'EXITO'	**107**	w/n 19439	
74 'RESERVA'	**108**	w/n 19440	Last loco ordered by the Huanchaca Company.



From railway's diagram book, via Turner & Ellis's *FCAB* book. Nos. **64-65, 67-74, 79-84**.



Hi-res image available from Pennsylvania Railroad Museum.

The Huanchaca Company's Playa Blanca plant in Antofagasta

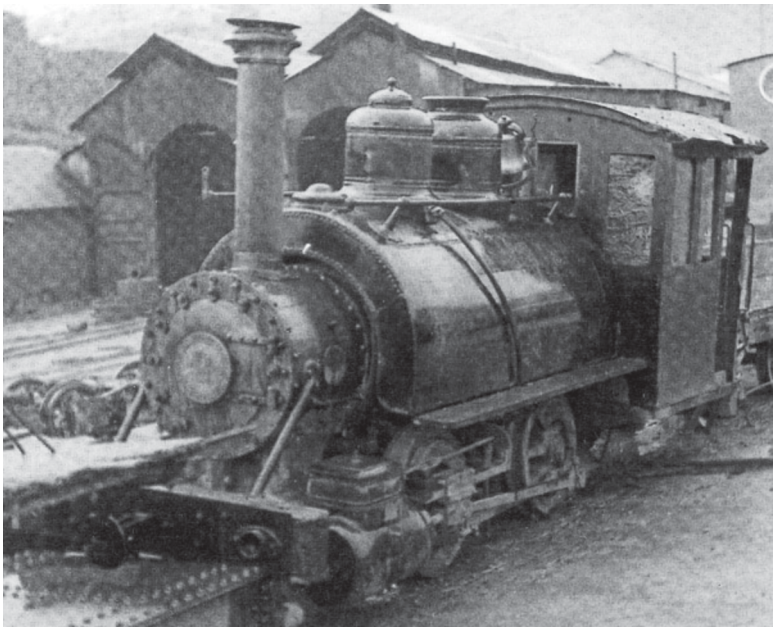
The Huanchaca Company also purchased small tank locos to work at their Playa Blanca silver refining establishment in Antofagasta. The plant opened in 1892 but closed in 1902.

0-4-0T d/w 33", cyls. 10x14", built by Baldwin in 1891-2 (2 and 3), 1894-5 (4)

BLW class 04-14C nos. 101-2. Spec. is in vol. 17 p182. Erecting card drawing numbered 671-14 2154 is in the De-Golyer Library collection.

'PLAYA BLANCA 2'	w/n 12404	To be supplied with oil burning equipment, but not yet installed.
'PLAYA BLANCA 3'	w/n 12405	To be supplied with oil burning equipment, but not yet installed.
'PLAYA BLANCA 4'	w/n 14301	Later was operating on the Huanchaca Company's line at Pulacayo in Bolivia bearing **'PLAYA BLANCA 1'** plates.

In December 1891 40 brass tubes (1½"x96¾") were ordered from Baldwin for loco no. **2** (BLW class 4-14C-101).



Cia. Huanchaca de Bolivia 0-4-0ST **'Playa Blanca no. 4',** built by Baldwin (14301/1895), stands in the yard at Pulacayo on

8/3/1955. Photo David Ibbotson - Chris Walker Collection . High-res versions of this image are available from the Restoration & Archiving Trust, their ref: cjwsam378 The precise identity of this loco has been confused by observers thinking that the **'PLAYA BLANCA 4'** plates were showing the name of this particular engine, rather than merely indicating the owning establishment of this whole group of machines.

0-4-0ST d/w 32", cyls. 10½x18", built by Baldwin in 1894-5

'PLAYA BLANCA 5' w/n 13997

A report on the Playa Blanca facility in the *Boletin de Geografia y Minera* for 1893 states that there were *"tres locomotoras para doce toneladas de carga cada uno.*" []

Interestingly the *FCAB* was the only Chilean railway to appear in the Baldwin extra order books at the start of the 1890s – originally as the 'Huanchaca Co.' but from 1892 referred to as the 'Antofagasta Rly.'.

C) The Antofagasta (Chili) and Bolivia Railway

1903 to date

Background

2' 6" gauge. At the end of 1903, the Huanchaca company's lease having expired, operation of the railway passed to the *FCAB*.

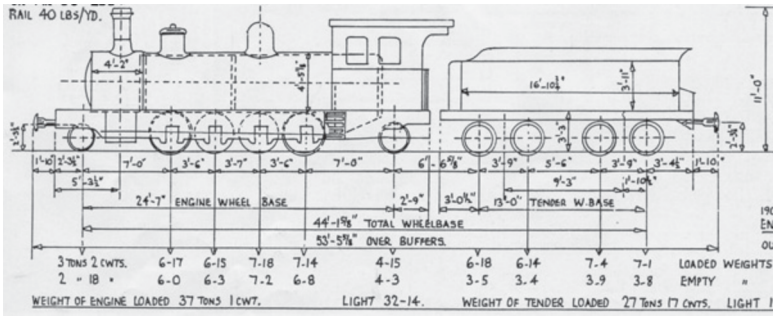
The data below is largely from [5], with names from builders' lists. The latter may not always reflect what was carried on the locos in service. A detailed report in [] in the issue of June-July 1907 stated that at January 1st 1904 the railway possessed 62 locos, on 25th September 1906 the number was 68, and by the 31st October of that year it had risen to 72. By the end of 1906 six more engines had arrived and by 30th September 1907 another 22.

Original nos.	**1908 nos.**		

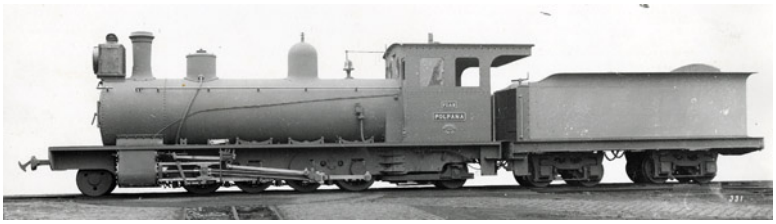
Locos purchased new between 1904 and 1908

2-8-2 d/w 37½", cyls. 15"x20", built by Hunslet in 1906

75 'BOQUETTE'	**109**	w/n 888	Sold to Boquete Nitrate Co. before 1912, and later still [14] to the Penon Nitrate Co. for use on branch to Aguas Blancas railway.
76 'POLPANA'	**110**	w/n 889	Unserviceable 1917.
77 'CONCHI'	**111**	w/n 890	Unserviceable 1917.
78 'UYUNI'	**112**	w/n 891	Sold to Boquete Nitrate Co. before 1912.



From railway's diagram book, via Turner & Ellis's *FCAB* book. No. 109-112.



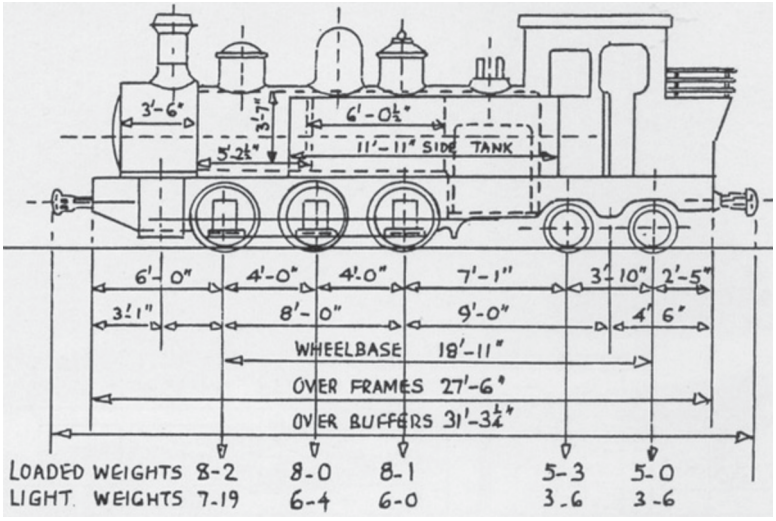
Hunslet builder's photo, via archive at Statfold Barn Farm.

0-6-4T d/w 36", cyls. 15½"x18", built by Hunslet in 1905 (1-3) and 1906 (remainder)

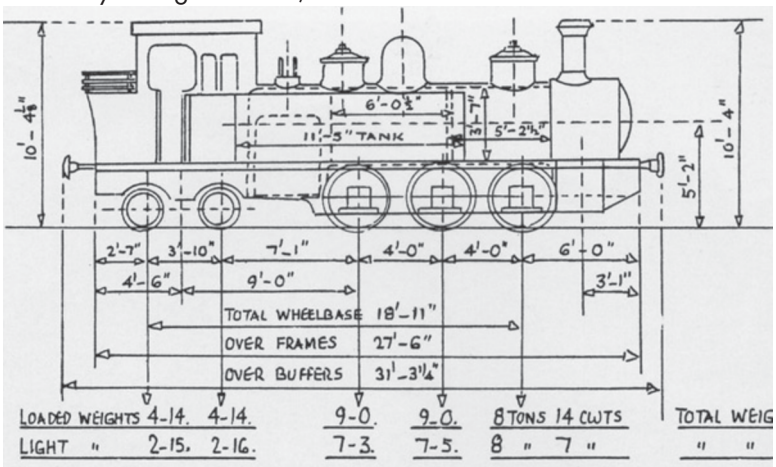
The first three had slightly shorter side tanks, but strangely were heavier overall than the later engines.

1 'CHILE'	**12**	w/n 878	
2 'VALDIVIA'	**13**	w/n 879	
3 'MEJILLONES'	**14**	w/n 880	
4 'CARMEN ALTO'	**15**	w/n 907	Name was in [13] but source not given.
5 'CARACOLES'	**16**	w/n 908	Transferred to *FC Aguas Blancas* as **506** after 1912.
7 'CHUQUICAMATA'	**17**	w/n 909	Transferred to *FC Aguas Blancas* as **507** after 1912.
8 'COLLAHUASI'	**18**	w/n 910	Transferred to *FC Aguas Blancas* as **508** after 1912.
10 'CHARCOTE'	**19**	w/n 911	[14] gives **'CARCOTE'** as **11** and **'CHIGUANA'** as **12**.
11 'CHIGUANA'	**20**	w/n 912	Transferred to *FC Aguas Blancas* as **509** after 1912.

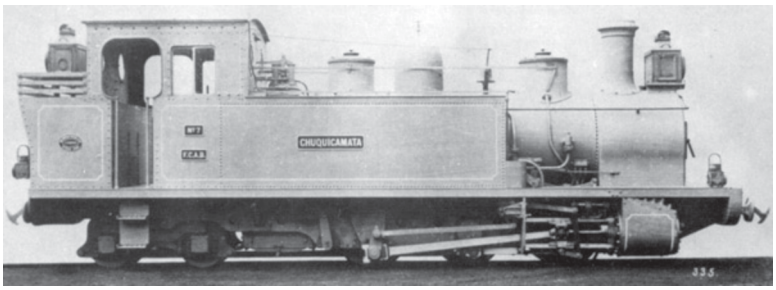
Reg Carter's list [13] gives these locos as numbers **1-9**, though with the 1908 numbers and the works numbers as above. He says works numbers 908, 910, 911 and 912 became *FC Aguas Blancas* numbers **506-509**.



From railway's diagram book, via Turner & Ellis's *FCAB* book. Nos. **12-14**.



From railway's diagram book, via Turner & Ellis's *FCAB* book. Nos. **15-20**.



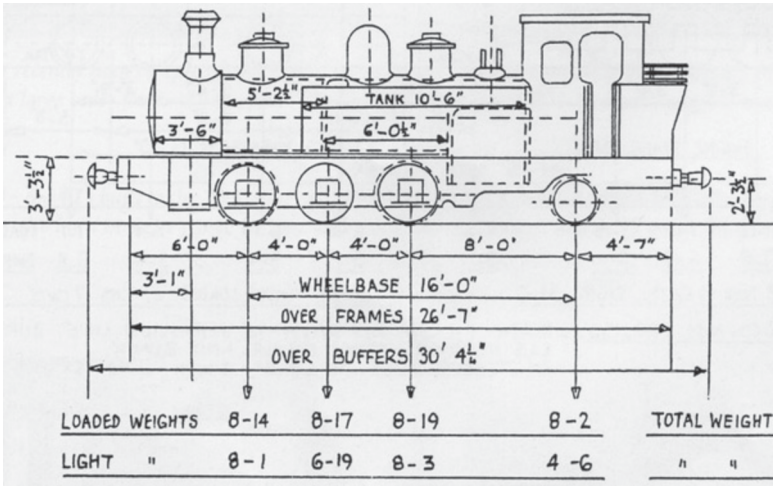
2-8-0 d/w 37½", cyls. 15x20", built by Baldwin in 1906

BLW spec in vol. 28 p289.

79 'PORTEZUELO'	**113**	w/n 27995
80 'CUEVITAS'	**114**	w/n 28029
81 'SALINAS'	**115**	w/n 28030
82 'CENTRAL'	**116**	w/n 28276
83 'CERE'	**117**	w/n 28277
84 'CEBOLLAR'	**118**	w/n 28282

0-6-2T d/w 36", cyls. 15½"x20", built by Hudswell Clarke in 1906

55 'LASTENIA'	**5**	w/n 782	One of these sold to *Cemento El Melón* in 1938?
56 'ANITA'	**6**	w/n 783	One of these sold to *Cemento El Melón* in 1938?



From railway's diagram book, via Turner & Ellis's *FCAB* book. Nos. **55-56**.



2-8-2 d/w 37½", cyls. 15"x20", built by Hawthorn Leslie in 1907

Ordered 9th June 1906 for the Antofagasta (Chili) & Bolivia Rly. Co. 2000 gallon tenders nos. 1020-1028. Delivery early Feb. to late May 1907. All rebuilt as 2-8-0s in 1919-22 [14]. Five were transferred to the *FC de Aguas Blancas* as their **525-9**, and the rest withdrawn, though another source suggested the five went to Bolivia.

119 'JULACA'	**119**	w/n 2674
120 'CHITA'	**120**	w/n 2675

121 ‘QUEHUA’ 121 w/n 2676
122 ‘HUARI’ 122 w/n 2677
123 ‘PAZNA’ 123 w/n 2678
124 ‘POOPÓ’ 124 w/n 2679
125 ‘MACHACAMARCA’ 125 w/n 2680
126 ‘POTOSI’ 126 w/n 2681
127 ‘LA PAZ’ 127 w/n 2682
128 ‘SANTIAGO’ 128 w/n 2683

2-8-2 d/w 37½", cyls. 15"x20", built by Hunslet in 1907

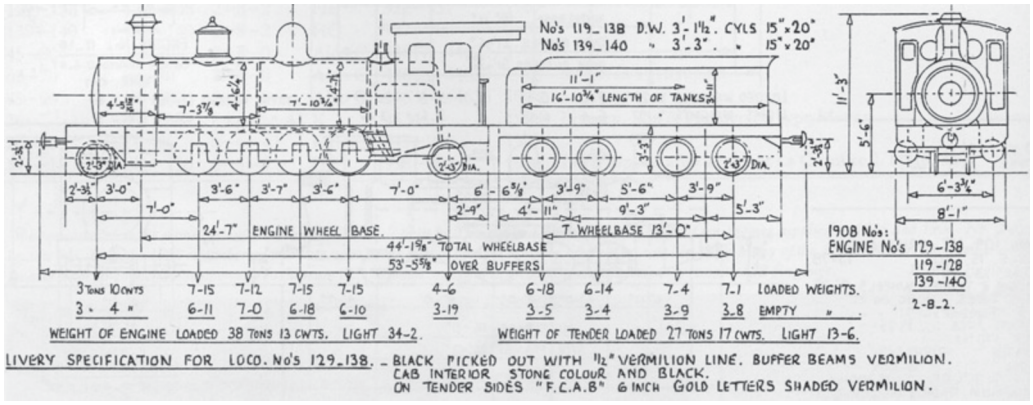
“All rebuilt as 2-8-0s in 1919-22 [14], five became Bolivian **525-9** and rest disposed of.” This comment may actually refer to the HC 2-8-2s immediately above rather than to these HE locos.

129 ‘AUSONIA’ 129 w/n 922
130 ‘RIVIERA’ 130 w/n 923
131 ‘FICOMENTA’ 131 w/n 924 [14] gives name as **‘FILOMENA’**.
132 ‘CARMEN’ 132 w/n 925
133 ‘LUISIS’ 133 w/n 926
134 ‘CANDELARIO’ 134 w/n 927 Or **‘CANDELARIA’**?
135 ‘FLORENCIA’ 135 w/n 928
136 ‘ACONCAGUA’ 136 w/n 929
137 ‘AURELIA’ 137 w/n 930
138 ‘CELIA’ 138 w/n 931

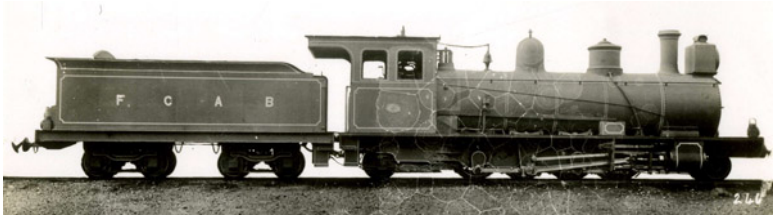
2-8-2 d/w 39", cyls. 15"x20", built by Hudswell Clarke in 1907

To same design as locos above but with slightly larger driving wheels. Both rebuilt as 2-8-0s in 1919-20?

139 ‘LEONOR’ 139 w/n 787
140 ‘MARÍA’ 140 w/n 788



From railway’s diagram book, via Turner & Ellis’s *FCAB* book. Nos. **129-140**.

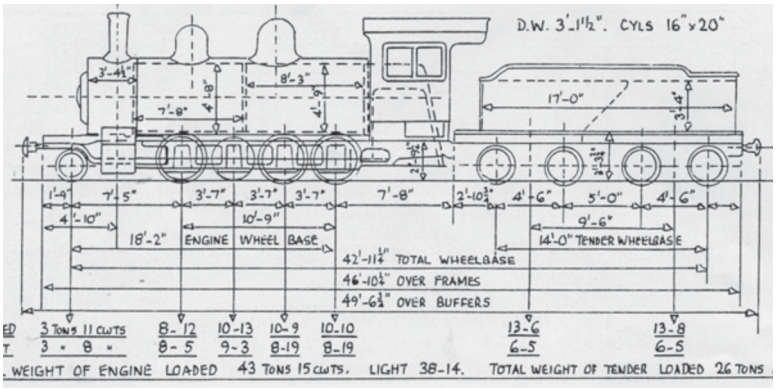


Hudswell Clarke builder's photo, from archive at Statfold Barn Farm.

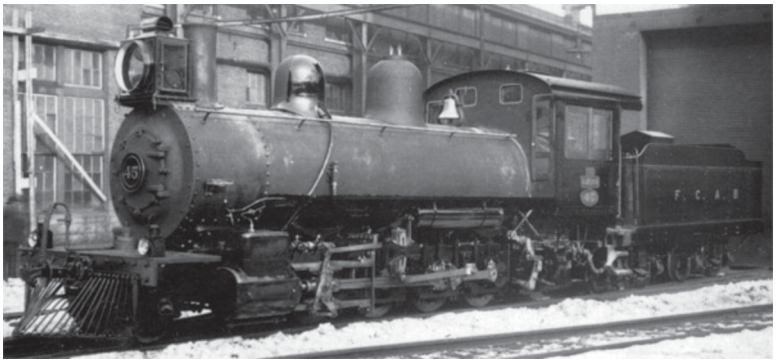
2-8-0 d/w 37½", cyls. 16"x20", built by ALCo Cooke in 1908

All disposed of by 1928, **70** and **87** hauling the last 2' 6" gauge train [14].

45 'CURICO'	**45**	w/n 44617	
46 'SAN CARLOS'	**46**	w/n 44618	
47 'MALLECO'	**47**	w/n 44619	
48 'TARAPACÁ'	**48**	w/n 44620	
49 'COLCHAGUA'	**49**	w/n 44621	
50 'ABRA'	**50**	w/n 44622	
63 'El BUITRE'	**63**	w/n 44623	
64 'TACNA'	**64**	w/n 44624	
65 'PAMPA'	**65**	w/n 44625	
66 'SAN SALVADOR'	**66**	w/n 44626	
67 'CONCEPCIÓN'	**67**	w/n 44627	
68 'La NORÍA'	**68**	w/n 44628	
69 'ATACAMA'	**69**	w/n 44629	Scrapped around 1916.
70 'CANTERAS'	**70**	w/n 44630	
85 'COQUIMBO'	**85**	w/n 44631	
86 'VALPARAISO'	**86**	w/n 44632	
87 'BAQUEDANO'	**87**	w/n 44633	
88 'RÍO MULATO'	**88**	w/n 44634	
89 'PODEROSA'	**89**	w/n 44635	
90 'SANTA ROSA'	**90**	w/n 44636	



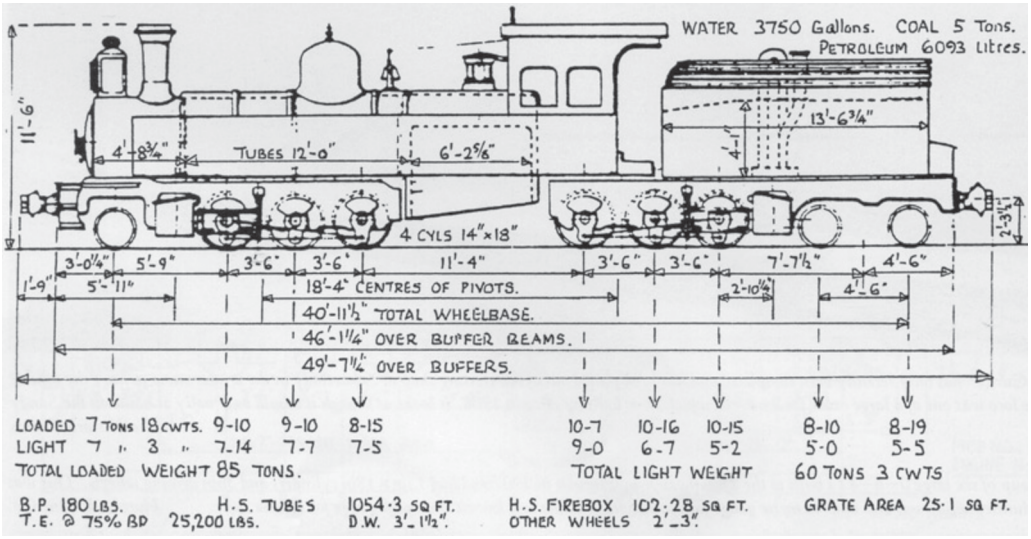
From railway's diagram book, via Turner & Ellis's *FCAB* book. Nos. **45-50, 63-70, 85-90**.





2-6+6-4T Kitson-Meyer d/w 37½", cyls. 14"x18", built by Kitson in 1908

36 'HERCULES' **36** w/n 4534 Renumbered **38** in 1914. OoS by 1928 [14].



From railway's diagram book, via Turner & Ellis's *FCAB* book.

0-6-4T d/w 36", cyls. 15"x18", built by Hunslet in 1907

21 'COCHRANE' **21** w/n 945 As a metre-gauged 0-6-2T, it survives in a scrapyard in Arica, see section 3.3.6.

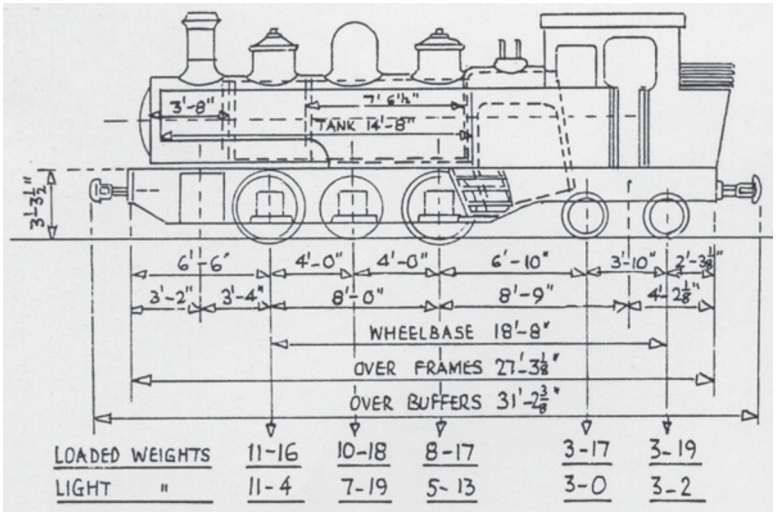
22 'COBIJA' **22** w/n 946 Survives plinthed at Mejillones.

23 'PEINETA' **23** w/n 947 Or **'PIENETA'**?

24 'PLACILLA' **24** w/n 948

25 'LATORRE' **25** w/n 949 As a metre-gauged 0-6-2T, it survives in a scrapyard in Arica, see section 3.3.6.

26 'URIBE' **26** w/n 950



From railway's diagram book, via Turner & Ellis's *FCAB* book. Nos. **21-26**.

2-8-0 d/w 37½", cyls. 16½"x20", built by Hunslet in 1908

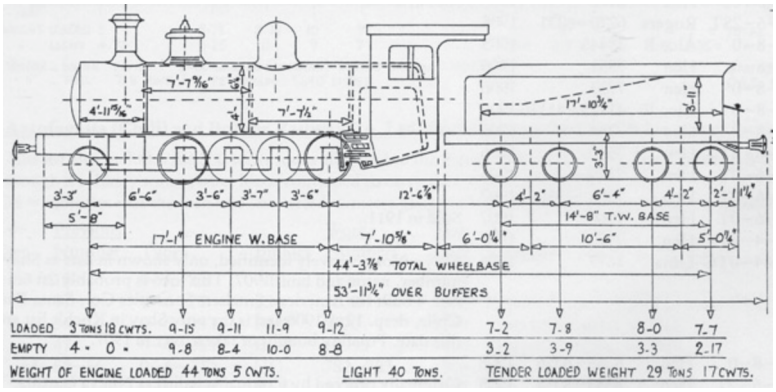
141 'REINA' **141** w/n 958

142 'PELACIA' **142** w/n 959 Or **'PELAGIA'**?

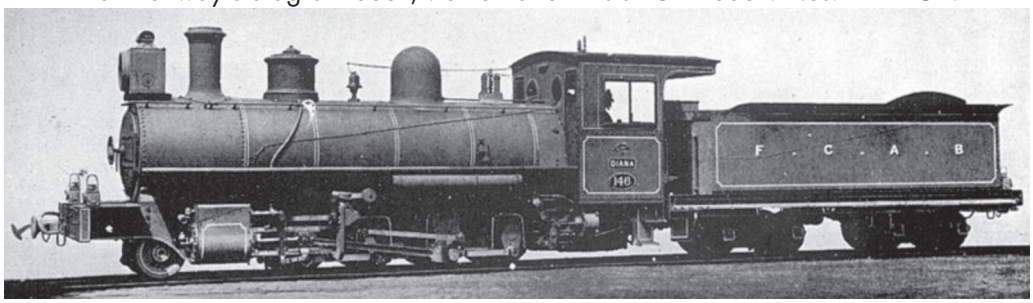
143 'CARLOTA' **143** w/n 960

144 'ALESA' **144** w/n 961

145 'MERCURIO'	**145**	w/n 962	
146 'DIANA'	**146**	w/n 963	
147 'FLORA'	**147**	w/n 964	
148 'NEPTUNO'	**148**	w/n 965	
149 'SATORNO'?	**149**	w/n 966	
150 'MAGALLANES'	**150**	w/n 967	This was the final named engine.

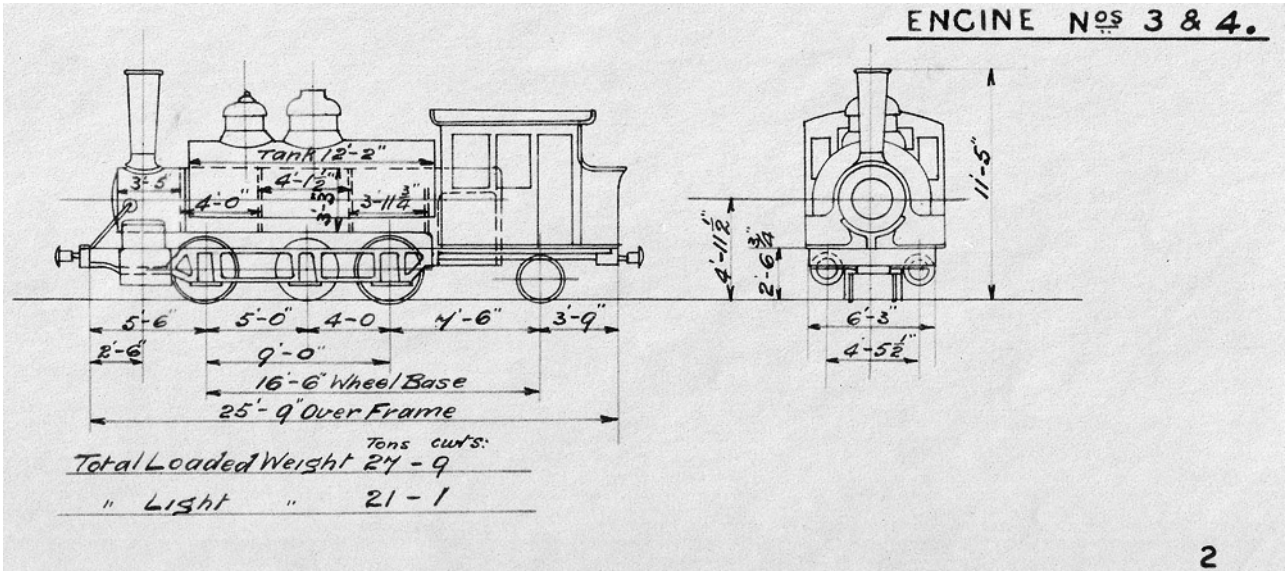


From railway's diagram book, via Turner & Ellis's *FCAB* book. Nos. **141-152**.



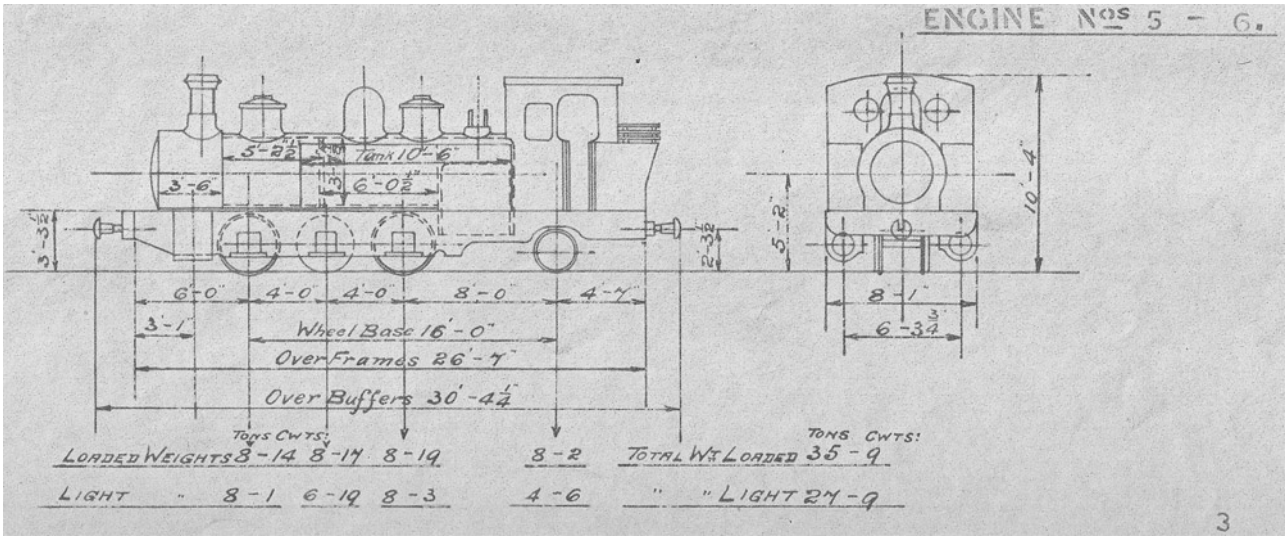
The full fleet after the 1908 renumbering

New nos.	**Pre 1908 nos.**		
0-6-2T d/w 33", cyls. 12x18", built by Avonside in 1877			
1	**15**	w/n 1195	Number re-used for a 2-8-2T rebuilt from a Hawthorn Leslie 2-8-2 in 1922. See nos. **161-170** for details.
2-6-2T d/w 33", cyls. 12x18", built by Sharp Stewart in 1882			
SS order no. E819.			
2	**17**	w/n 3032	Rebuilt from 2-6-2T prior to 1912.
0-6-2ST d/w & cyls. see notes for each loco, built by Baldwin in 1889 (3), 1890 (4), 1892 (7-9) and 1895 (10-11)			
3	**36**	w/n 9770	d/w 36" and cyls. 14"x18"
4	**47**	w/n 10995	d/w 36½" and cyls. 14"x18"
7	**51**	w/n 12752	d/w 36½" and cyls. 14"x18"
8	**52**	w/n 12753	d/w 36½" and cyls. 14"x18"
9	**53**	w/n 12754	d/w 36½" and cyls. 14"x18"
10	**56**	w/n 14220	d/w 37" and cyls. 15"x18"
11	**57**	w/n 14221	d/w 37" and cyls. 15"x18"



0-6-2T d/w 36", cyls. 15½"x20", built by Hudswell Clarke in 1906

5	**55**	w/n 782	Converted to metre gauge 1926-8.
6	**56**	w/n 783	Converted to metre gauge 1926-8.

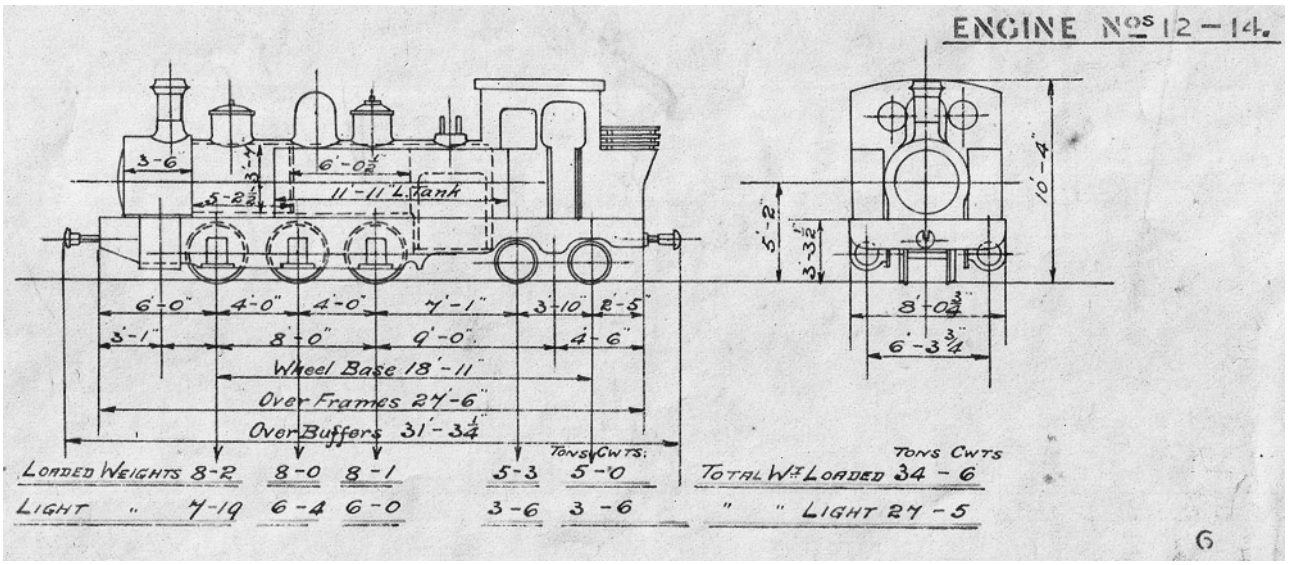


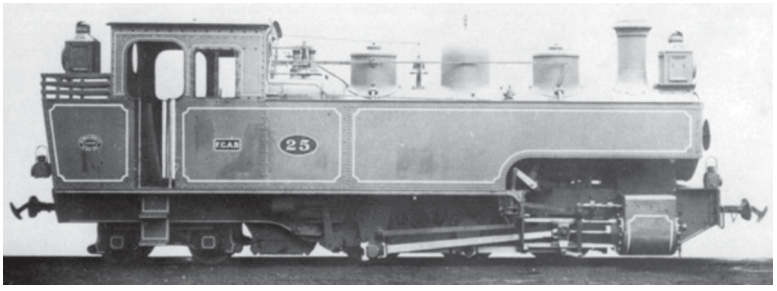
0-6-4T d/w 36", cyls. 15½"x18", built by Hunslet in 1905 (12-14), 1906 (15-20), and 1907 (21-26)

Some of these may well have been rebuilt as 0-6-2Ts before their conversion to metre gauge.

12	**1**	w/n 878	Converted to 0-6-0T. Converted to metre gauge 1926-8.
13	**2**	w/n 879	Converted to metre gauge 1926-8.
14	**3**	w/n 880	Converted to metre gauge 1926-8.
15	**4**	w/n 907	Converted to metre gauge 1926-8.
16	**5**	w/n 908	Transferred to *FC Aguas Blancas* as **506** after 1912.
17	**7**	w/n 909	Transferred to *FC Aguas Blancas* as **507** after 1912.
18	**8**	w/n 910	Transferred to *FC Aguas Blancas* as **508** after 1912.
19	**10**	w/n 911	
20	**11**	w/n 912	Transferred to *FC Aguas Blancas* as **509** after 1912. ??? Converted to metre gauge 1926-8.
21	**21**	w/n 945	Converted to metre gauge 1926-8. Sold to contractor in Arica 1962 and extant 1990 [16 & ?] and 1993 [20].
22	**22**	w/n 946	Converted to metre gauge 1926-8. Survives plinthed at Mejillones.
23	**23**	w/n 947	Converted to metre gauge 1926-8.

24	**24**	w/n 948	Converted to metre gauge 1926-8.
25	**25**	w/n 949	Converted to metre gauge 1926-8. Sold to contractor in Arica 1962 and extant 1990 [16 & ?] and 1993 [20].
26	**26**	w/n 950	Converted to metre gauge 1926-8.

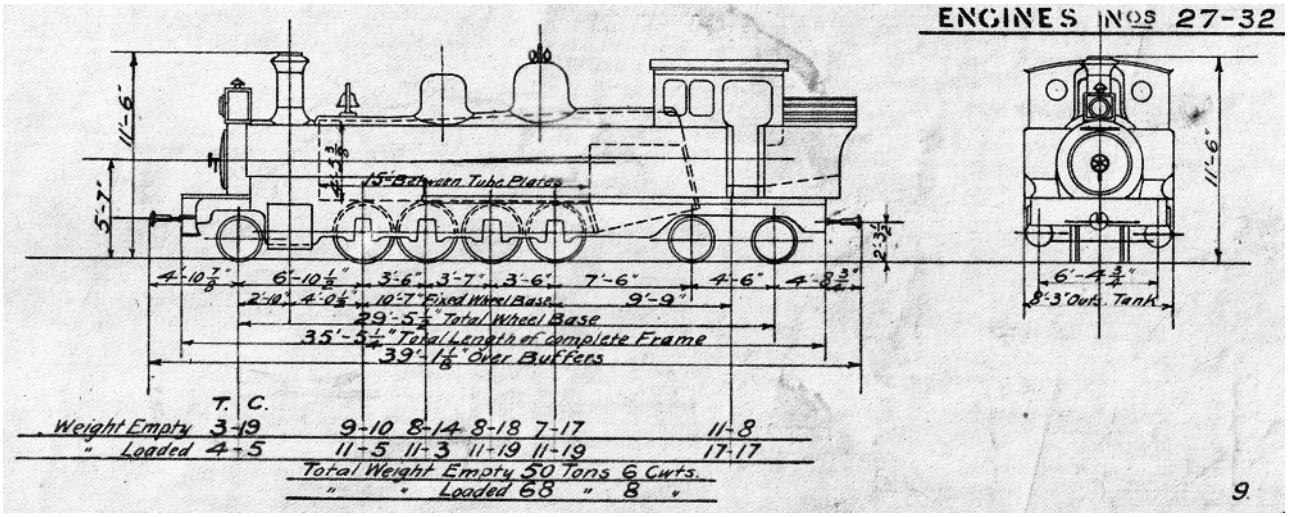




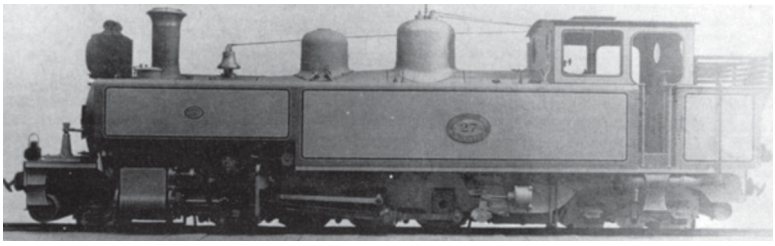
Hunslet builder's photo, via Turner & Ellis's *FCAB* book.

2-8-4T d/w 37½, cyls. 17"x22", built by Kitson in 1911

27	w/n 4843	Converted to metre gauge 1926-8. Became *ENFE* **553**.
28	w/n 4844	Converted to metre gauge 1926-8. Became *ENFE* **554**.
29	w/n 4845	Converted to metre gauge 1926-8. Later to *FC Taltal* 3' 6" gauge.
30	w/n 4846	Converted to metre gauge 1926-8. Later to *FC Taltal* 3' 6" gauge.
31	w/n 4847	Previous **31**, Rogers 0-4-4T, must have gone by 1911. Converted to metre gauge 1926-8.
32	w/n 4848	Converted to metre gauge 1926-8.



From railway's diagram book, nos. **27-32**.



Kitson builder's photo, via Turner & Ellis's *FCAB* book.

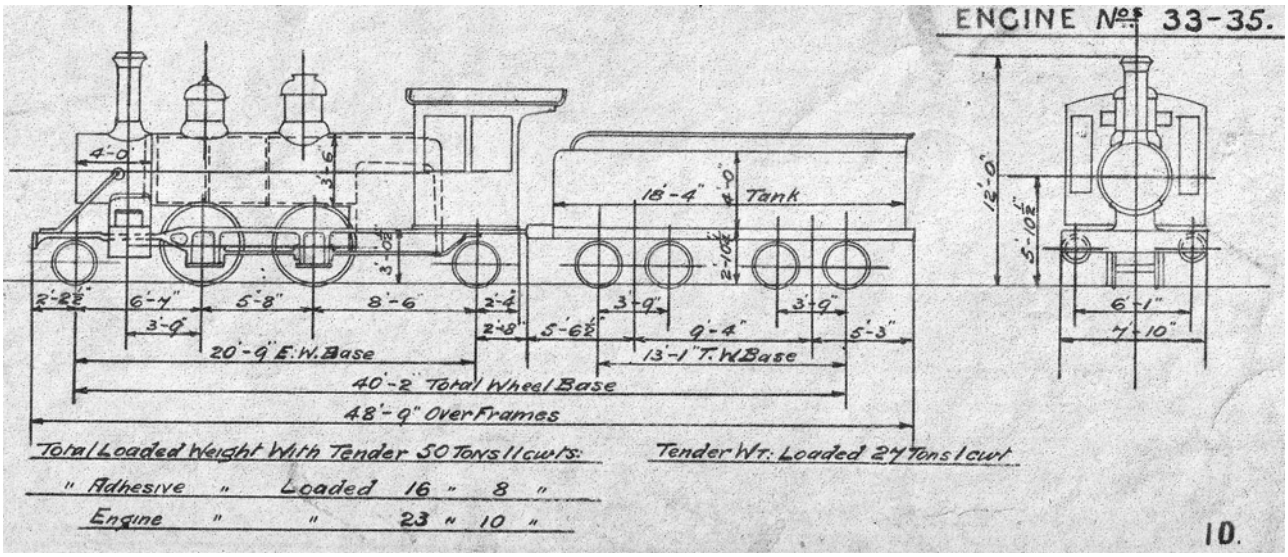
2-4-2 d/w 43", cyls. 13x20" built by Baldwin in 1886

33 w/n 8215 ex **32** renumbered to make way for Kitson 2-8-4Ts above, originally **20**. Converted to metre gauge 1909-1914. and later renumbered **351**. In use on *FCB* in 1939.

2-4-2 d/w 48", cyls. 13"x20", built by Baldwin in 1890

34 **41** w/n 10943 Disposed of by 1912.

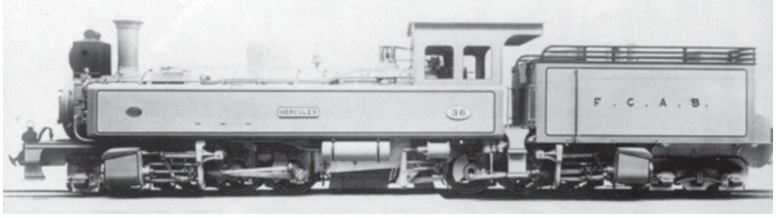
35 **42** w/n 10944 Disposed of by 1912.



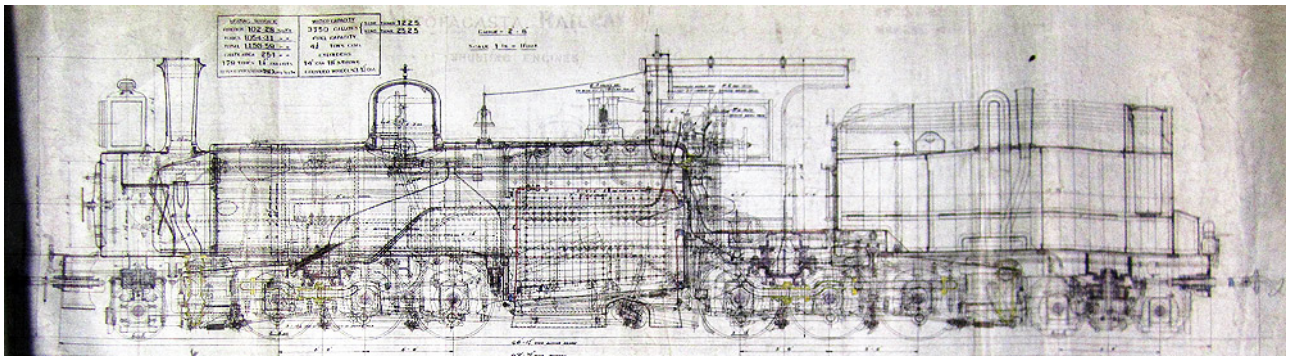
2-6+6-4T Kitson Meyer d/w 37½", cyls. 14"x18", bult by Kitson in 1908

Unusually, the tender on this loco was part of the trailing power bogie, rather than being mounted on an extension of the main boiler cradle.

36 w/n 4534 Renumbered **38** in 1914. Scrapped in 1929.



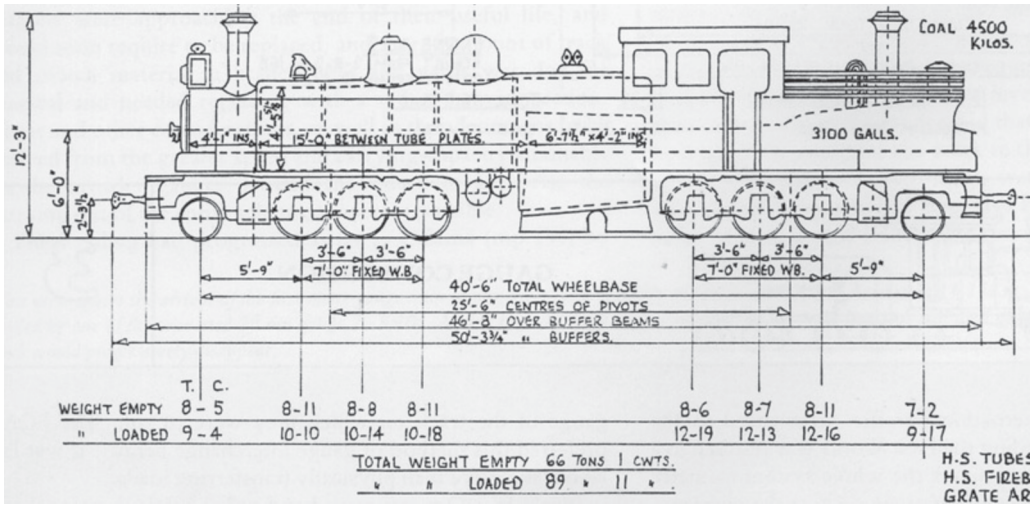
Kitson builder's photo, via Turner & Ellis's *FCAB* book.



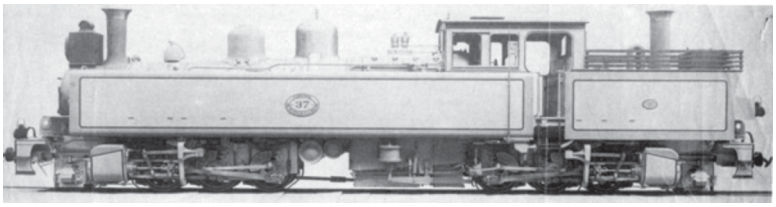
This drawing is roll 35 drg. 44 in the Kennedy Henderson collection at the NRM in York. Whilst this is merely taken from a digital photo and is thus slightly distorted, no doubt the museum would be able to provide high-resolution scans.

2-6+6-2T Kitson-Meyer d/w 37½", cyls. 14"x18", built by Kitson in 1912

37 w/n 4841 Out of service by 1928.



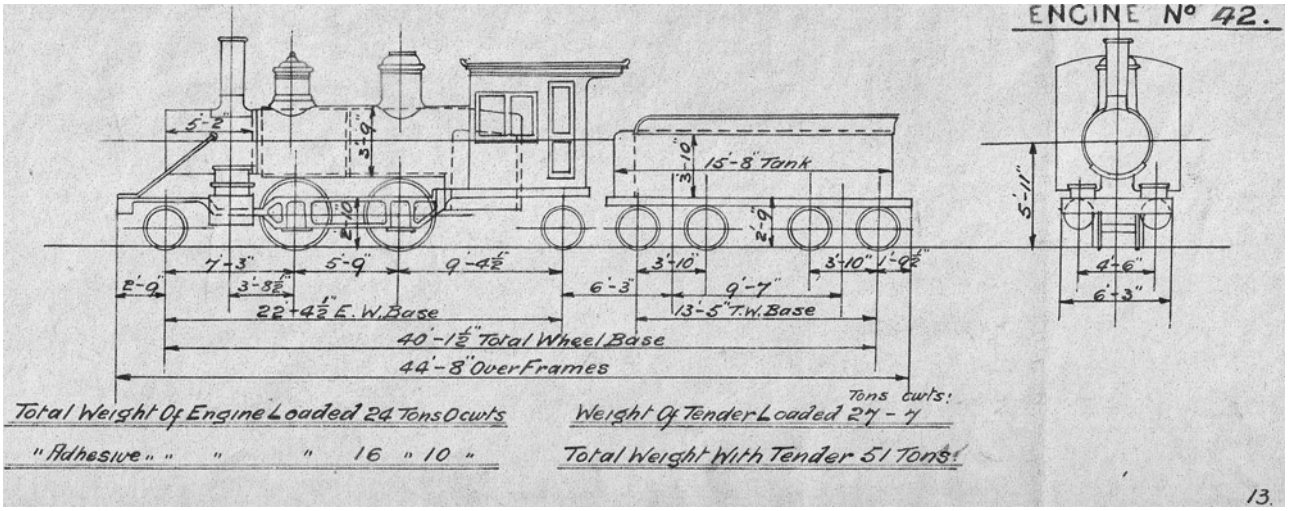
From railway's diagram book, via Turner & Ellis's *FCAB* book. No. **37**.
In addition a GA drawing is in the Kennedy Henderson collection at the NRM in York: roll 35 drawing number 39.



Kitson builder's photo, via Turner & Ellis's *FCAB* book.

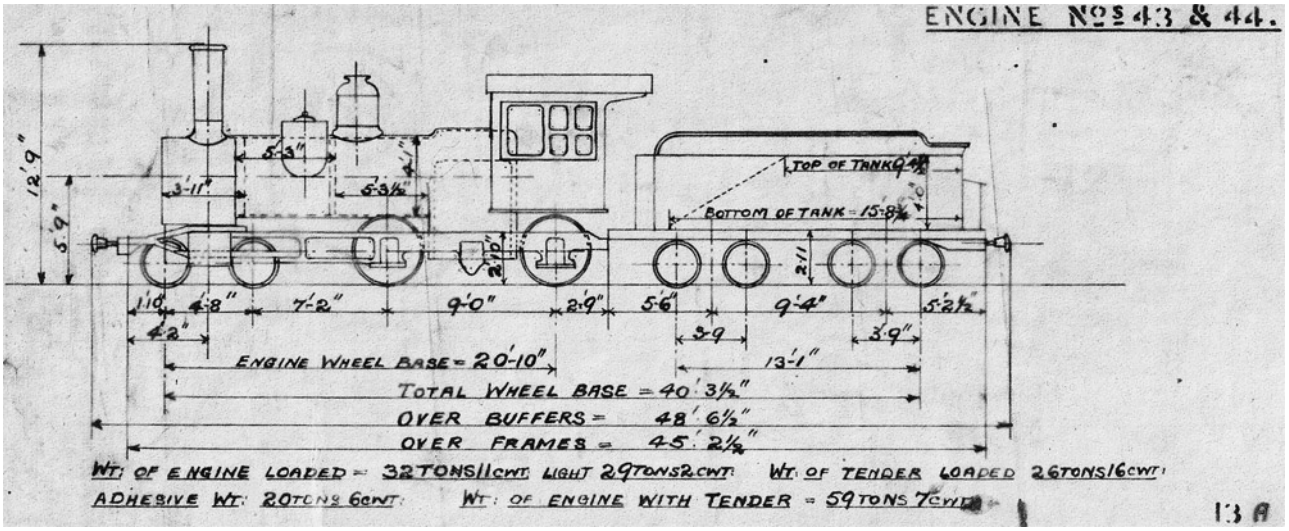
2-4-2 d/w 45", cyls. 13"x20", built by Rogers in 1887

42 **21** w/n 3713 Disposed of by 1912.



4-4-0 d/w 42", cyls. 15"x20", built by Baldwin in 1895

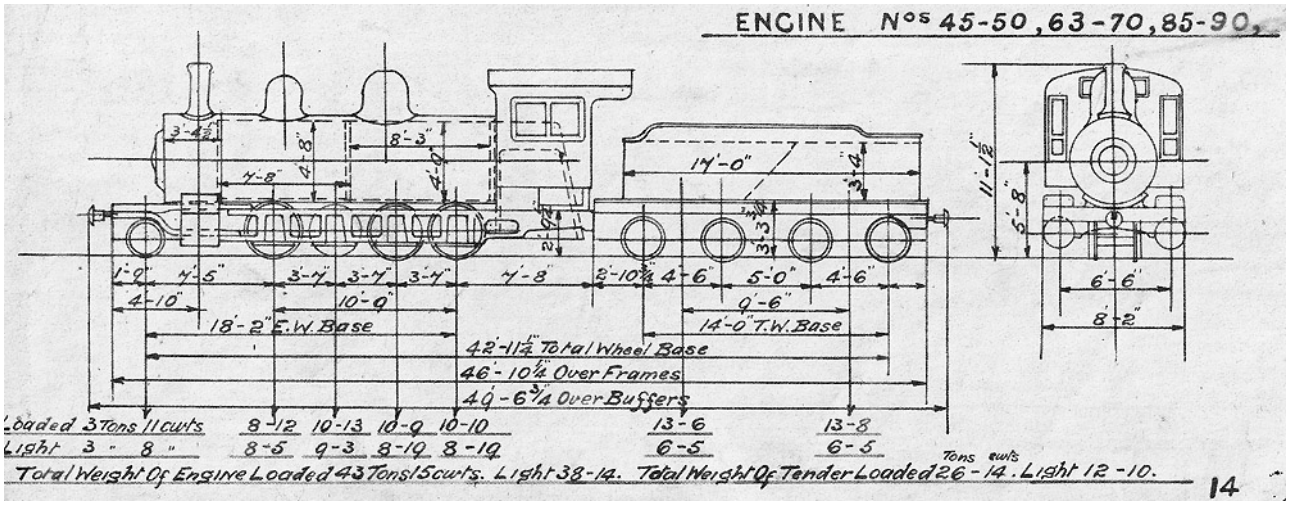
43	**61**	w/n 14464	Scrapped around 1916.
44	**62**	w/n 14465	Scrapped around 1916.



2-8-0 d/w 37½", cyls. 16"x20", built by ALCo Cooke in 1908

45	**45**	w/n 44617	
46	**46**	w/n 44618	
47	**47**	w/n 44619	
48	**48**	w/n 44620	
49	**49**	w/n 44621	
50	**50**	w/n 44622	
63	**63**	w/n 44623	
64	**64**	w/n 44624	
65	**65**	w/n 44625	
66	**66**	w/n 44626	
67	**67**	w/n 44627	
68	**68**	w/n 44628	
69	**69**	w/n 44629	Scrapped around 1916.
70	**70**	w/n 44630	
85	**85**	w/n 44631	
86	**86**	w/n 44632	
87	**87**	w/n 44633	

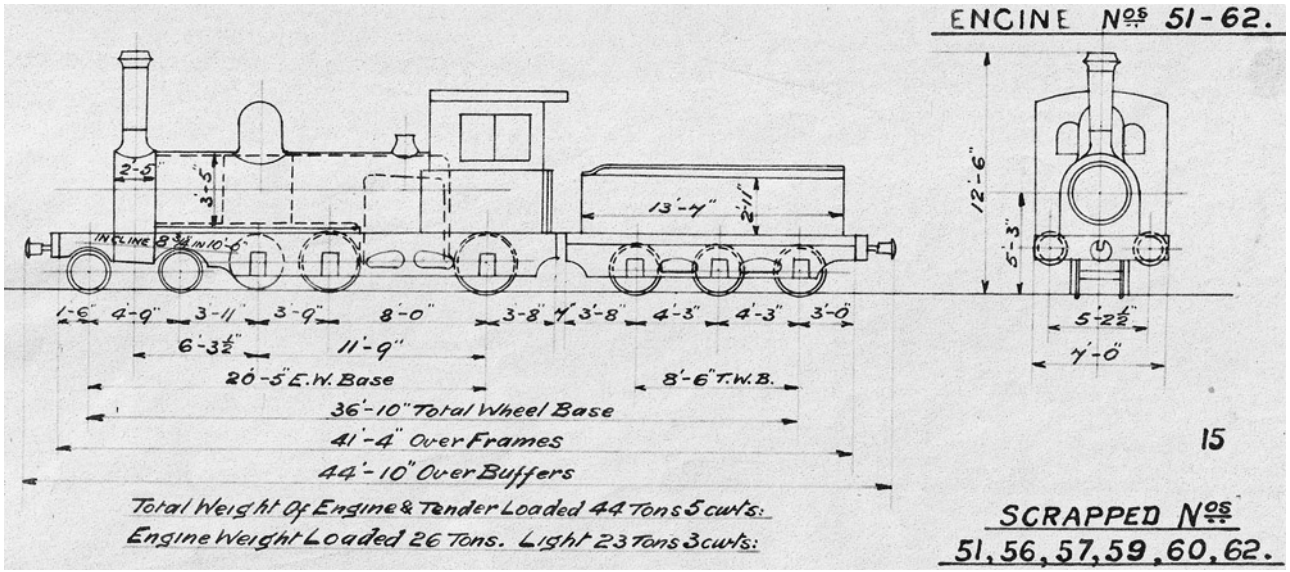
88	**88**	w/n 44634
89	**89**	w/n 44635
90	**90**	w/n 44636



4-6-0 d/w 36", cyls. 14"x20", built by Robert Stephenson in 1876, 1887, and 1888

Surviving locos were renumbered into this sequence at some point before 1908, hence the names shown [14]. Individual identities from the first batch are unknown unless someone finds an early list of numbers and names and can match the names below with original numbers. All disposed of by 1912.

51 'ANTOFAGASTA'	**6**	w/n 2296	Amongst the earlier ones to be scrapped.
52 'SUCRE'	**9**	w/n 2299	
53 'COCHABAMBA'	**10**	w/n 2300	
54 'MARIANO RAMIREZ'	**26**	w/n 2633	
55 'ASCOTAN'	**27**	w/n 2634	
56 'PULACAYO'	**23**	w/n 2622	Amongst the earlier ones to be scrapped.
57 'CERRILLOS'	**24**	w/n 2623	Amongst the earlier ones to be scrapped.
58 'BELISARIO PERO'	**25**	w/n 2624	
59 'JOSÉ F. VERGARA'	**18**	w/n 2449	Ex-4-2-4-2T. Amongst the earlier ones to be scrapped.
60 'ANICETO ARCO'	**19**	w/n 2450	Ex-4-2-4-2T. Amongst the earlier ones to be scrapped.
61 'UBINA'	**28**	w/n 2635	
62 'CALAMA'	**29**	w/n 2636	Amongst the earlier ones to be scrapped.



2-6-0STT d/w 42" (but 38-39 had 45"), cyls. 15"x18" (but 38-39 & 48-49 had 15"x20"), built by

Baldwin in 1889 (up to 39 originally) and 1890 (43-45, 48-49 originally)

71	**30**	w/n 9846	This was the loco possibly rebuilt with piston valves in 1905. Scrapped by 1916.
72	**31**	w/n 9852	
73 'TARIJA'	**43**	w/n 10984	Not converted to metre gauge.
74	**44**	w/n 10988	
75	**45**	w/n 10997	Scrapped around 1917.
76	**39**	w/n 10464	
77	**38**	w/n 10470	
78	**48**	w/n 11426	
79	**49**	w/n 11436	
81	**37**	w/n 10469	Scrapped around 1916.
82	**32**	w/n 9855	
83	**33**	w/n 9864	Scrapped around 1917.
84	**34**	w/n 9859	Converted to metre gauge 1917. OoS by 1925.

4-6-0STT d/w 42", cyls. 15"x20", built by Baldwin in 1890

80	**50**	w/n 11437	

4-8-0 d/w 38", cyls. 15"x20", built by Cail in 1898

91	**63**	w/n 2466	Scrapped around 1917. Photo shows it running with tender numbered **57** [R&AT website ref. cjwsam288].

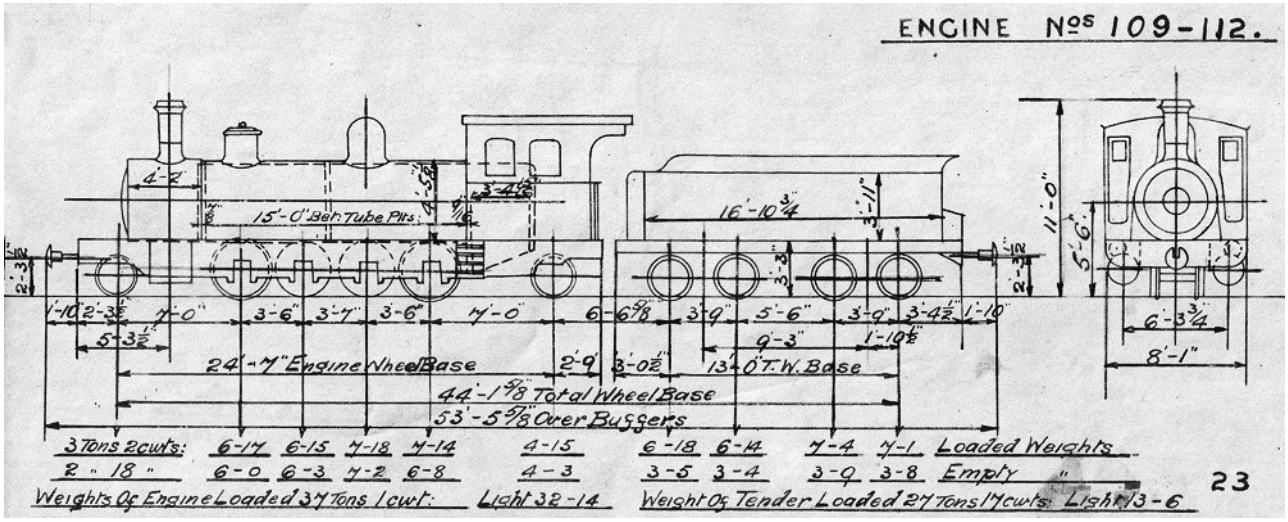
2-8-0 d/w 37", cyls. 15"x20", built by Baldwin in 1889 (95), 1892 (96-98), 1895 (92-94), 1900 (99-104), and 1901 (105-108)

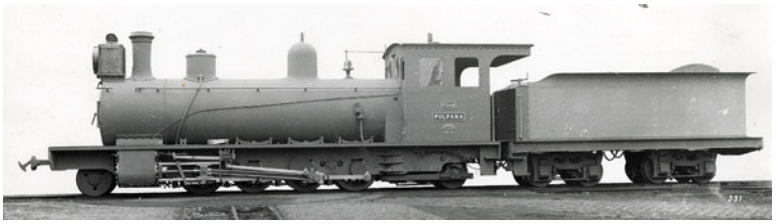
92	**58**	w/n 14461	Unservicable in 1917.
93	**59**	w/n 14462	
94	**60**	w/n 14463	
95	**35**	w/n 9773	Scrapped by 1916.
96	**53²**	w/n 12635	
97	**54**	w/n 12633	
98	**55**	w/n 12667	
99	**64**	w/n 17461	Scrapped around 1917 [13]. But photo in Chris Walker collection by I. A. Barratt shows it on a train at Uyuni in 1931 [R&AT photo website ref. cjwsam332].
101	**67**	w.n 18388	Scrapped around 1917.
102	**68**	w.n 18389	
103	**69**	w.n 18390	
104	**70**	w.n 18391	
105	**71**	w.n 19437	
106	**72**	w.n 19438	
107	**73**	w.n 19439	
108	**74**	w.n 19440	

2-8-2 d/w 37½", cyls. 15"x20", built by Hunslet in 1906

109	**75**	w/n 888	Sold to Boquete Nitrate Co. before 1912.
110	**76**	w/n 889	Unserviceable 1917.
111	**77**	w/n 890	Unserviceable 1917.

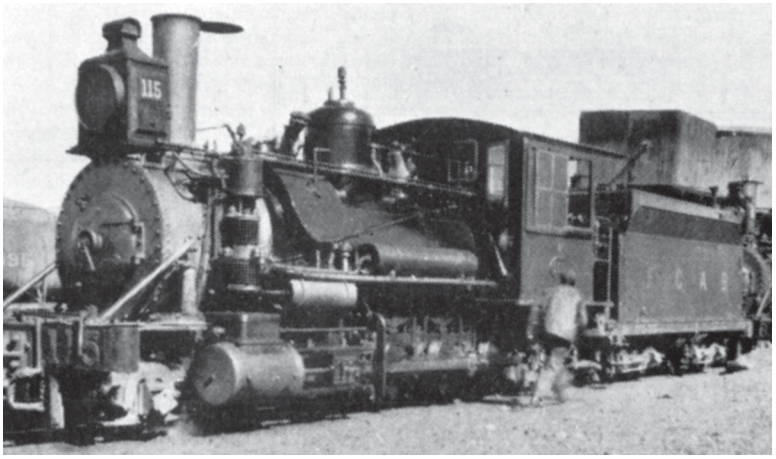
112	**78**	w/n 891	Sold to Boquete Nitrate Co. before 1912.





2-8-0 d/w 37½", cyls. 15x20", built by Baldwin in 1906

113	**79**	w/n 27995
114	**80**	w/n 28029
115	**81**	w/n 28030
116	**82**	w/n 28276
117	**83**	w/n 28277
118	**84**	w/n 28282

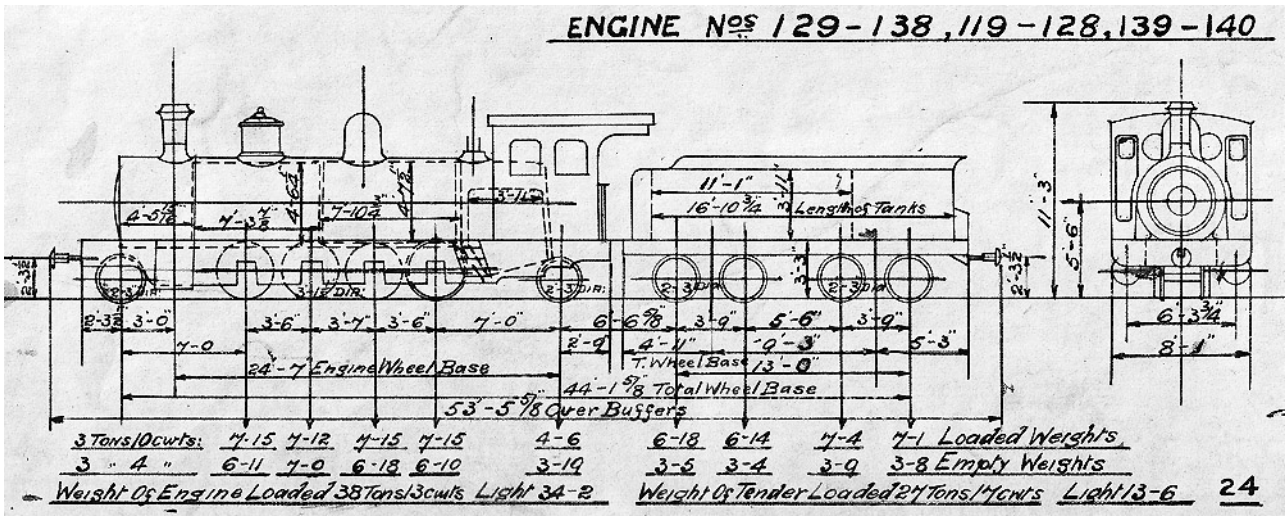


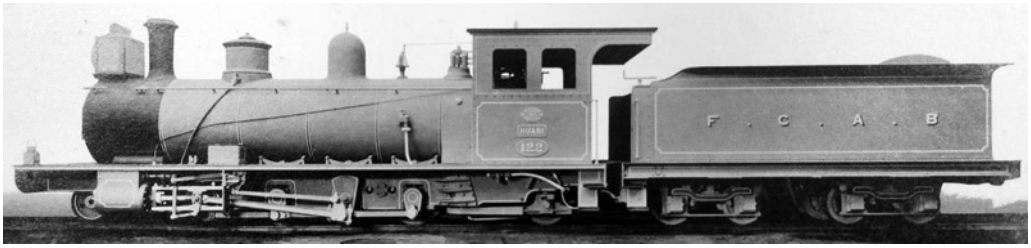
2-8-2 d/w 37½", cyls. 15"x20", built by Hawthorn Leslie in 1907

Rebuilt to 2-8-0s between 1918 and 1922. Five locos rebuilt and renumbered to **525-529** after 1928. remainder withdrawn by 1928.

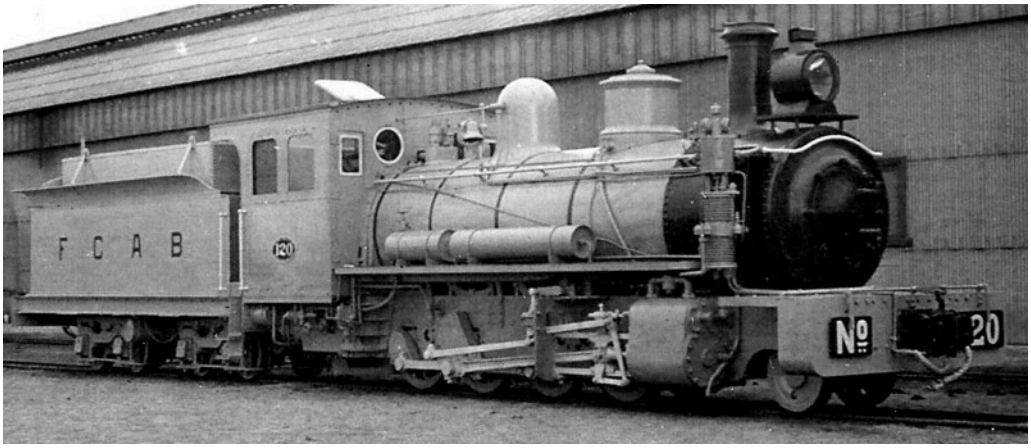
119	**119**	w/n 2674
120	**120**	w/n 2675
121	**121**	w/n 2676
122	**122**	w/n 2677
123	**123**	w/n 2678

124	**124**	w/n 2679
125	**125**	w/n 2680
126	**126**	w/n 2681
127	**127**	w/n 2682
128	**128**	w/n 2683





Hawthorn Leslie 2-8-2 no. **122** as built.



Hawthorn Leslie 2-8-2 no. **120** as later rebuilt to 2-8-0 configuration.
Note the raised running plate.

2-8-2 d/w 37½", cyls. 15"x20", built by Hunslet in 1907

Converted to 2-8-0s between 1918 and 1922. One loco rebuilt and renumbered **530** after 1928. Remainder withdrawn by 1928.

129	**129**	w/n 922
130	**130**	w/n 923
131	**131**	w/n 924
132	**132**	w/n 925
133	**133**	w/n 926
134	**134**	w/n 927

135	**135**	w/n 928	
136	**136**	w/n 929	
137	**137**	w/n 930	
138	**138**	w/n 931	

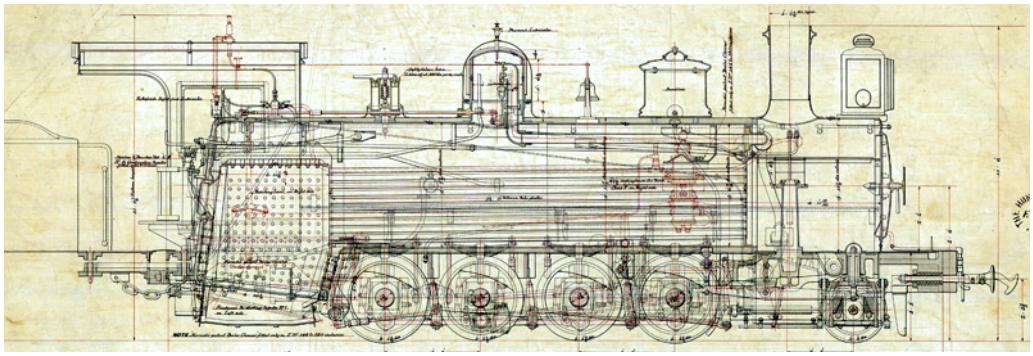
2-8-2 d/w 39", cyls. 15"x20", built by Hudswell Clarke in 1907

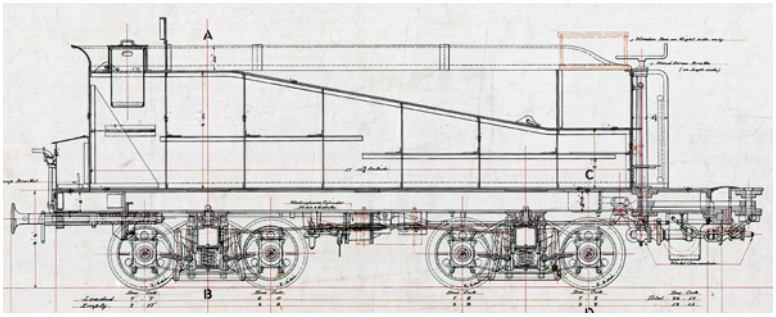
Rebuilt as 2-8-0s between 1918 and 1922.

139	**139**	w/n 787	Converted to metre gauge 1926-1928.
140	**140**	w/n 788	Converted to metre gauge 1926-1928.

2-8-0 d/w 37½", cyls. 16½"x20", built by Hunslet in 1908

141	**141**	w/n 958	Converted to metre gauge 1926-1928.
142	**142**	w/n 959	Converted to metre gauge 1926-1928.
143	**143**	w/n 960	Converted to metre gauge 1926-1928.
144	**144**	w/n 961	Converted to metre gauge 1926-1928.
145	**145**	w/n 962	Converted to metre gauge 1926-1928.
146	**146**	w/n 963	Converted to metre gauge 1926-1928.
147	**147**	w/n 964	Converted to metre gauge 1926-1928.
148	**148**	w/n 965	Converted to metre gauge 1926-1928.
149	**149**	w/n 966	Scrapped after accident on 4/11/1913.
150	**150**	w/n 967	Converted to metre gauge 1926-1928.





2-8-0 d/w 37½", cyls. 16½"x20", built by Hunslet in 1911

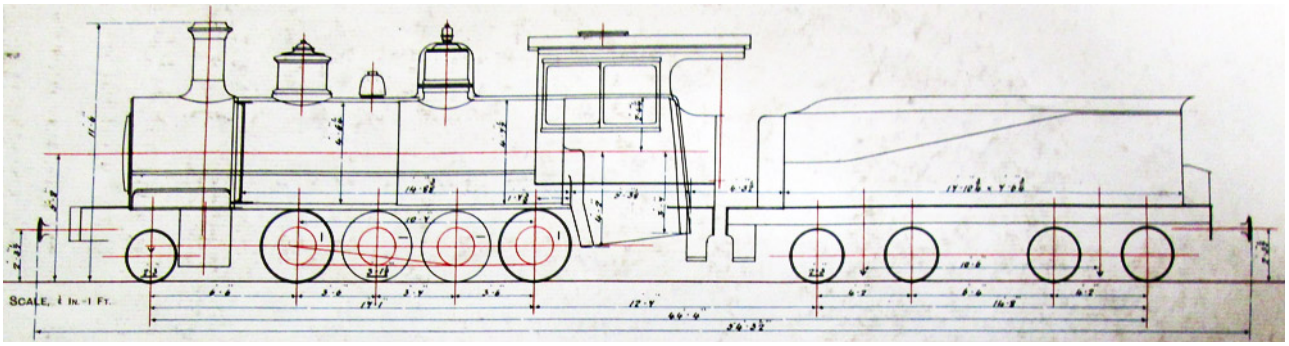
151		w/n 1066	Converted to metre gauge 1926-1928.
152		w/n 1067	Converted to metre gauge 1926-1928.

2-8-0 d/w 37½", cyls. 16½x20", built by North British in 1911

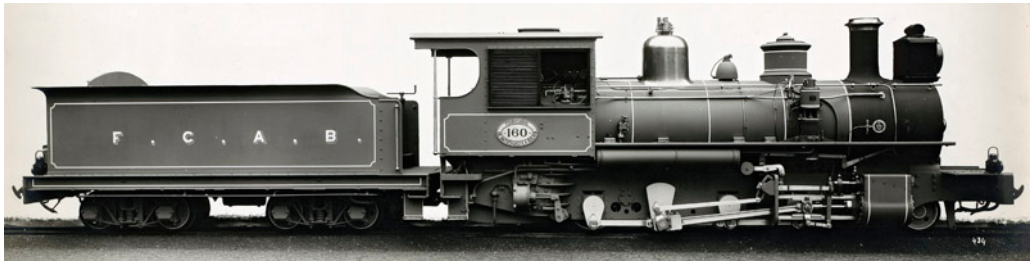
NBL order no. L434. Order books say order confirmed 1st November 1910, though they mention a cable dated 6th October, 'eight Goods Engines and Tenders'. Deliveries to be 2 by 7th February 1911, 2 by 14th February, 2 by 21st February and 2 by 28th February.

153		w/n 19428	Converted to metre gauge 1926-1928.

154	w/n 19429	Converted to metre gauge 1926-1928.
155	w/n 19430	Converted to metre gauge 1926-1928.
156	w/n 19431	Converted to metre gauge 1926-1928.
157	w/n 19432	Converted to metre gauge 1926-1928.
158	w/n 19433	Converted to metre gauge 1926-1928.
159	w/n 19434	Converted to metre gauge 1926-1928.
160	w/n 19435	Fitted with a variable blast pipe, according to GA drawing conserved at Univ. of Glasgow. Converted to metre gauge 1926-1928.



Sketch is from NBL speculative drawings book, in Mitchell Library,
so may have minor differences from locos as built.

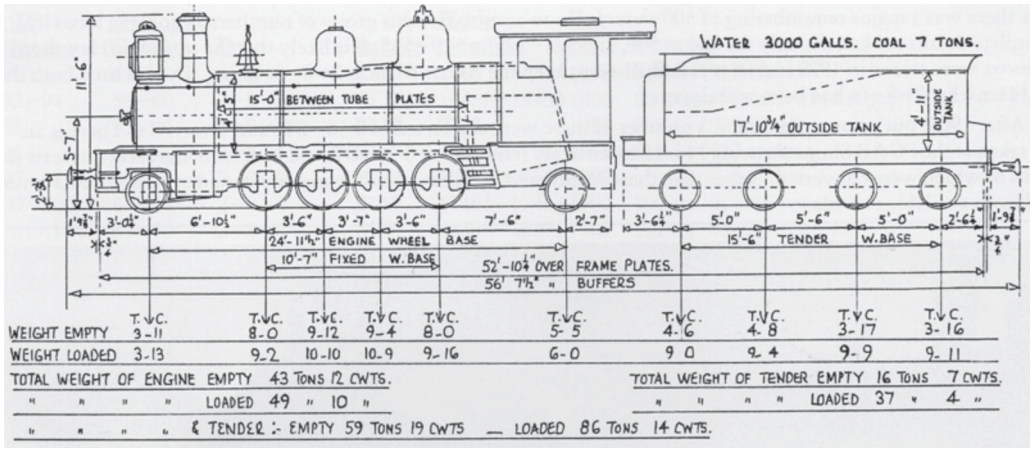


NBL builder's photo found in ETH Zurich archive.

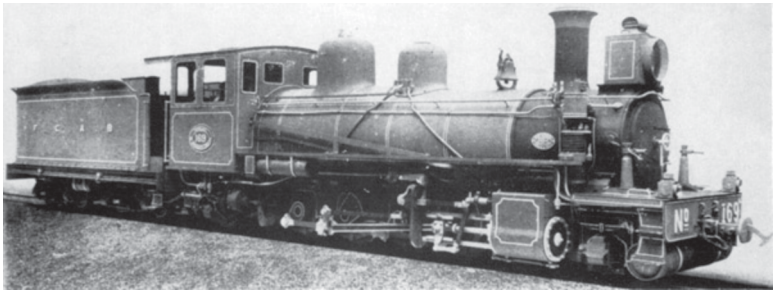
2-8-2 d/w 37½", cyls. 17"x22", built by Hawthorn Leslie in 1912

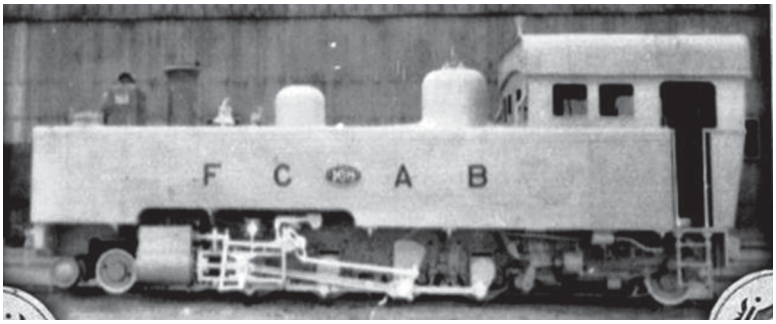
Ordered on 20th January 1912 for the Antofagasta (Chili) & Bolivia Rly. Co. Ltd. Delivered from mid November 1912 to late February 1913. 3000 gallon tenders numbered 1107-1116.

161	w/n 2943	Converted to metre gauge 1926-1928.
162	w/n 2944	Converted to metre gauge 1926-1928.
163	w/n 2945	Converted to metre gauge 1926-1928.
164	w/n 2946	Converted to metre gauge 1926-1928.
165	w/n 2947	Converted to metre gauge 1926-1928.
166	w/n 2948	Converted to metre gauge 1926-1928.
167	w/n 2949	Converted to metre gauge 1926-1928.
168	w/n 2950	Converted to 2-8-2T in 1922 and later renumbered **1**. Converted to metre gauge 1926-1928.
169	w/n 2951	Converted to metre gauge 1926-1928.
170	w/n 2952	Converted to metre gauge 1926-1928.

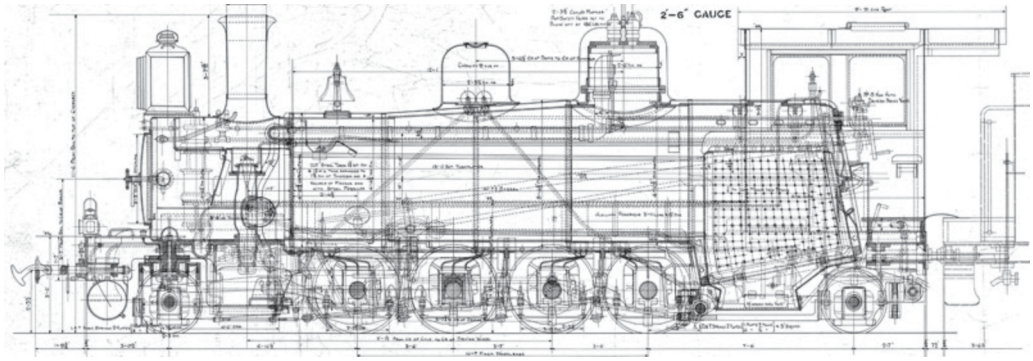


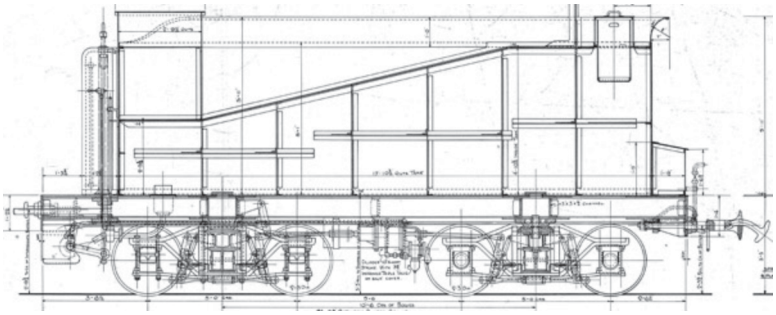
From railway's diagram book, via Turner & Ellis's *FCAB* book. Nos. **161-180**.





No. **168** as converted to a tank loco, and before it was renumbered as no. **1**.





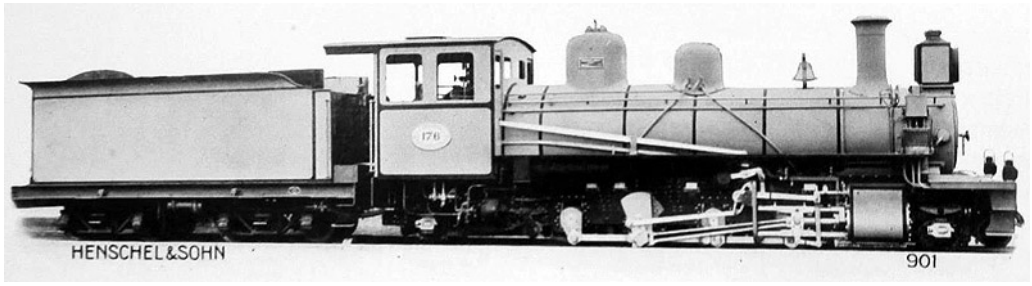
One of these HL 2-8-2s survives at Pulacayo in Bolivia, rebuilt back to 2' 6" gauge or possibly never regauged to 1m. This is usually assumed to be *FCAB* **165**, but apparently numbers on the frame and motion include HL 2944, 2945 and

2947, and *FCAB* **177, 178** and **180** with the last of those being most common including on part of the frames [19]. This is confusing as those numbers belonged to the Henschel locos listed below.

2-8-2 d/w 37½", cyls. 17"x22", built by Henschel in 1913

These would appear to have been built to the same design / drawings as the Hawthorn Leslie 2-8-2s immediately above.

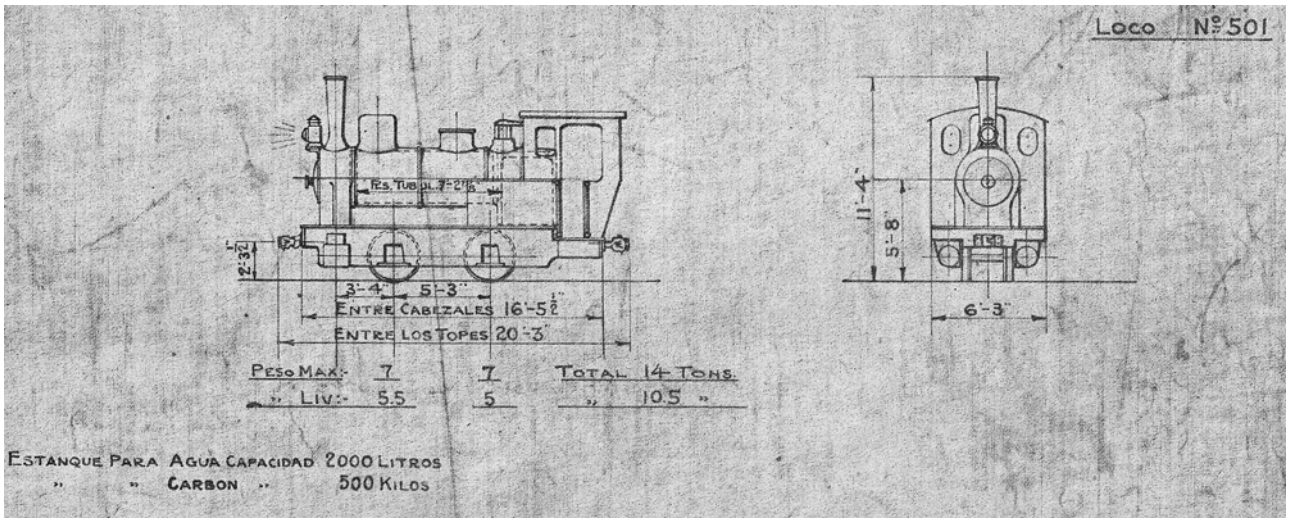
171	w/n 11891	Converted to metre gauge 1926-1928.
172	w/n 11892	Converted to metre gauge 1926-1928.
173	w/n 11893	Converted to metre gauge 1926-1928.
174	w/n 11894	Converted to metre gauge 1926-1928.
175	w/n 11895	Converted to metre gauge 1926-1928.
176	w/n 11896	Converted to metre gauge 1926-1928.
177	w/n 11897	Converted to metre gauge 1926-1928.
178	w/n 11898	Converted to metre gauge 1926-1928.
179	w/n 11899	Converted to metre gauge 1926-1928.
180	w/n 11900	Converted to metre gauge 1926-1928.



A Henschel builders' photo of 2-8-2 no. **176**.

0-4-0T d/w 31", cyls. 10.25x15.75", built by Henschel in 1907

501	**21**	w/n 7995



0-6-0T d/w 32", cyls. 11x15.75", built by Henschel in 1906 and 1907

502		Renumbered from **504** below.
503	**5**	w/n 6489
504	**6**	w/n 7491 Later renumbered **502**.

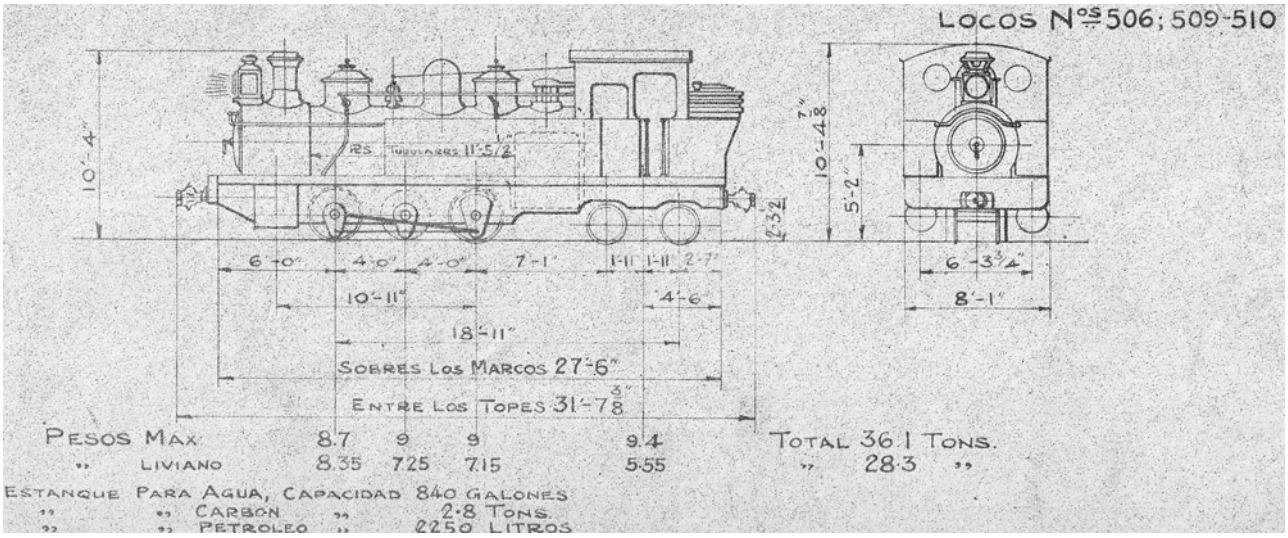
505 No details known.

0-6-4T d/w ?, cyls. ?, built by Hunslet in 1907

509? transferred to *FC Aguas Blancas* after 1912.

506	**16**	w/n 908
507	**17**	w/n 909
508	**18**	w/n 910
509	**19**	w/n 911

510 No details known.



FC de Aguas Blancas locos

The locos below were from the *FC de Aguas Blancas*, and may well have remained there after being renumbered into the **5xx** series.

0-6-2ST d/w 37", cyls. 14"x20", built by Rogers in 1905

511	**8**	w/n 6270
512	**9**	w/n 6271

0-6-2ST d/w 37", cyls. 15x18", FCAB rebuild, probably of a Baldwin [Turner & Ellis]

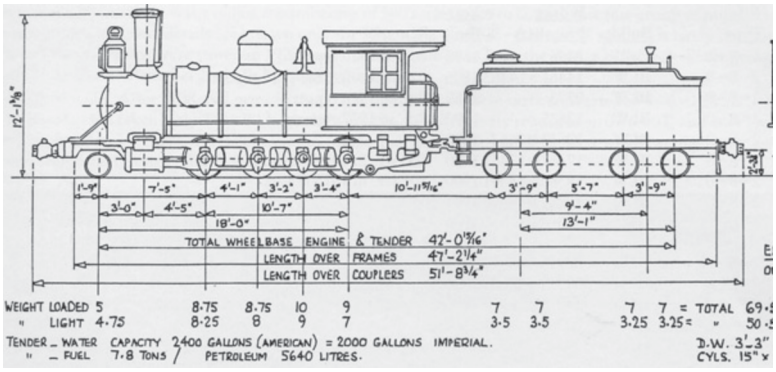
513	**1**	w/n ?

2-8-0 d/w 39", cyls. 15x20", built by Rogers in 1902

514	**2**	w/n 5701
515	**3**	w/n 5702

2-8-0 d/w 39", cyls. 15x20", built by AlCo Rogers in 1905 (10) and 1906 (13-14)

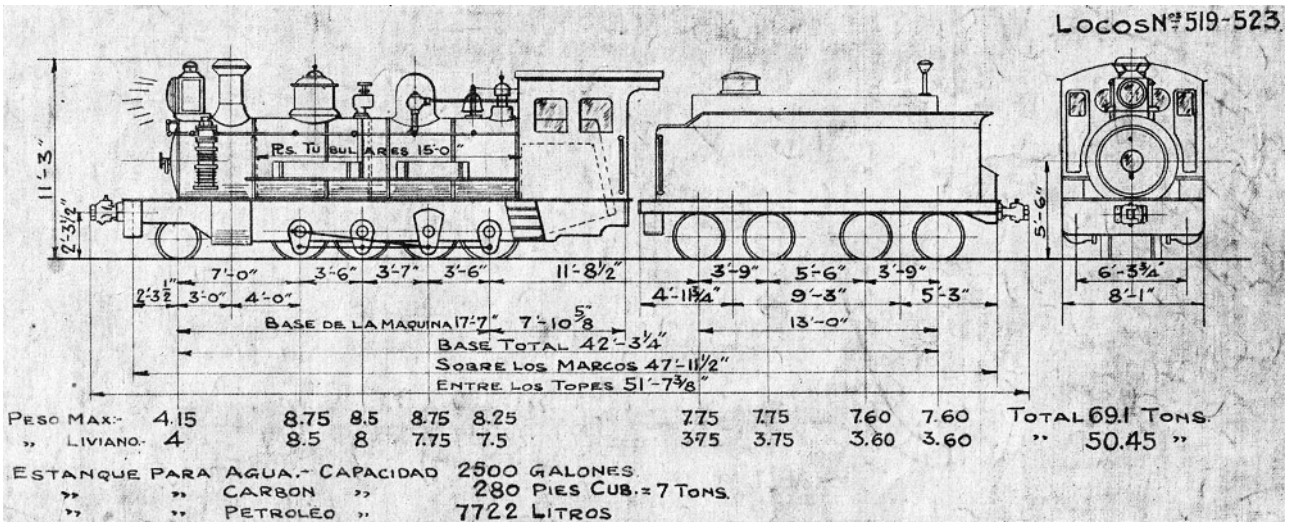
516	**10**	w/n 38445
517	**13**	w/n 41115
518	**14**	w/n 41116



From railway's diagram book, via Turner & Ellis's *FCAB* book. No. **514, 517, 518**. Given that only three of these locos were listed in this diagram book, presumably nos. **515** and **516** had been withdrawn rather earlier.

2-8-0 d/w 39.5", cyls. 15x20", built by Henschel in 1906 (11, 12, 15) and 1908 (23-24)

519	**11**	w/n 7551
520	**12**	w/n 7753
521	**15**	w/n 7754
522	**23**	w/n 8355
523	**24**	w/n 8356



2-8-0 d/w 37½", cyls. 15"x20", built by Baldwin in 1904

524	**4**	w/n 24444

2-8-0 d/w 37½", cyls. 15"x20", built by Hawthorn Leslie in 1907 as 2-8-2s

Five were rebuilt from the ten 2-8-2s numbered **119-128**, and the remainder were withdrawn. Original works numbers were 2674-2683.

525	w/n ?
526	w/n ?
527	w/n ?
528	w/n ?
529	w/n ?

2-8-2 d/w 37½", cyls. 15"x20", built by Hunslet in 1907

These were converted to 2-8-0s between 1918 and 1922. One loco was rebuilt and renumbered **530** after 1928.

530 w/n ?

Gauge conversion

The decision to regauge the *FCAB* mainline to 1 metre was taken in 1913, as reported in *The Railway Times* of June 14th 1913, p589. Thus no further 2' 6" gauge engines were ordered from this time on, though the actual regauging did not take place until 1928?

Baldwin drawings

The collection of Baldwin drawings at the deGolyer Library, Southern Methodist University, includes side elevation (SE) or cross section (CS) drawings for several designs built or proposed for the various incarnations of the *FCAB*.

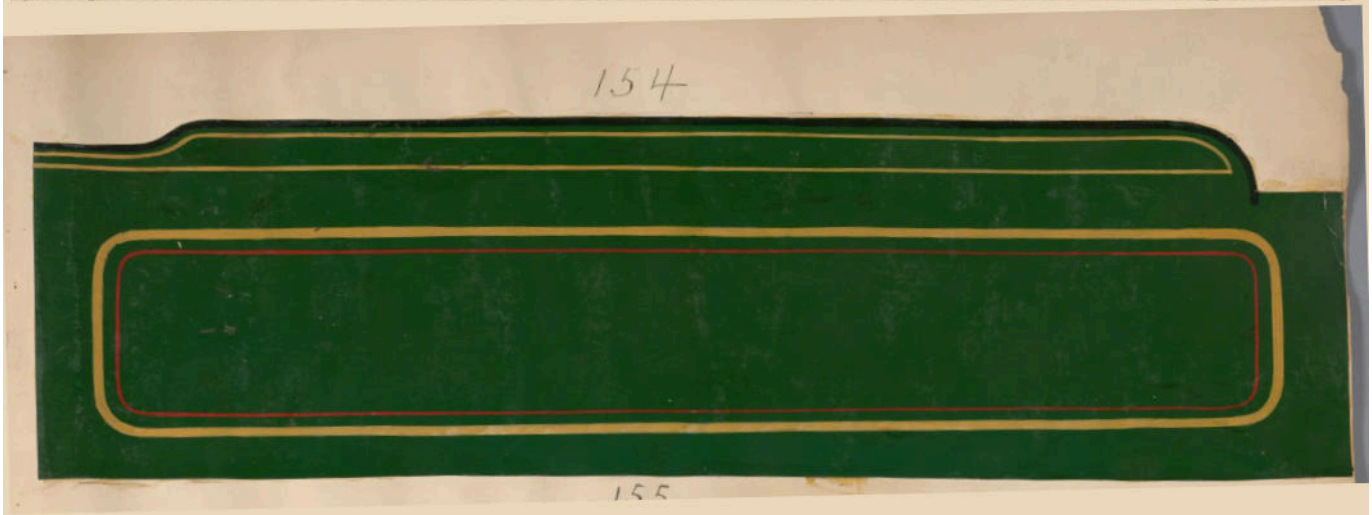
Index#	DWG#	Tracing#	Road name	Road#	Date	Baldwin class	Number	Wheel	Dwg typ	Size
729-12	1573	2063	Antofagasta	36, 46, 47	1889	08-22 1/3 D	1-3	0-6-2	SE/CS	3
171-10AX	-	4088	Antofagasta	(proposal)	1895			2-8-0	SE	29 X 66
171-10X	-	4088X	Antofagasta	(proposal)	1895			2-8-0	CS	
671-14	2154	-	Huanchaca	2-3	1891	04-14 C	101-102	0-4-0	SE/CS	3
675-14	3586	-	Huanchaca	64-65	1900	10-24 1/2 E	96-97	2-8-0	SE/CS	3

The list of drawings in which these details were found is at https://www.smu.edu/~/media/Site/Libraries/degolyer/pdfs/BLW-EDWG-RoadName.pdf whilst arrangements to purchase copies can be found at https://www.smu.edu/libraries/degolyer/Research/Permissions

Locomotive painting styles

The following images were gathered from the Baldwin style books conserved at Stanford University and available online at https://purl.stanford.edu/fb584yc9195 and https://purl.stanford.edu/jw230zc7560

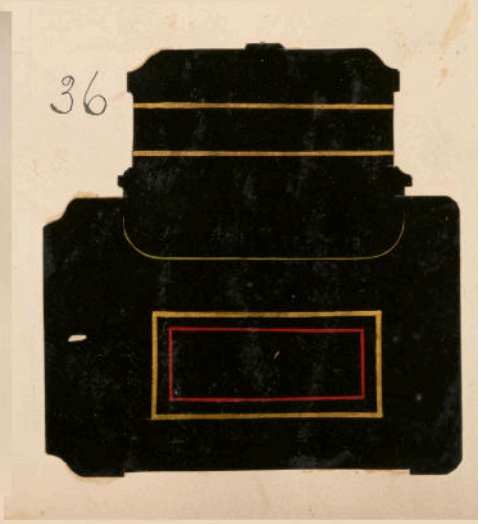
Style	Cab.	Cylinder.	Tank or Boiler.	Sand Box.	Driv.	Tender Tank	
293	53	36	—	38	34	154	ANTOFAGASTA RY.

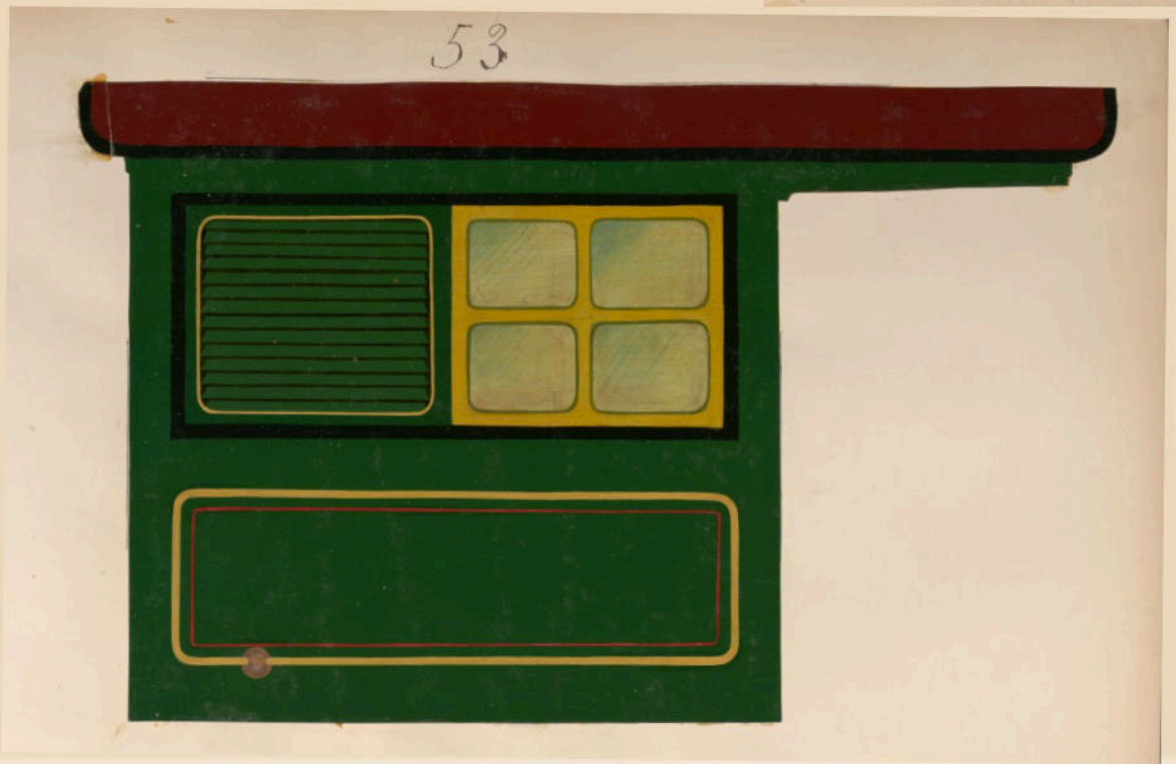


155









Map originally published in Arturo Titus S.,
Redrawn digitally 2018 by Martin Coombs.
Incidentally it is clear looking at Google Earth that a lot of work was put into improving the original alignment of this railway over the years, including the building of a 4 km. diversion west of Estacion del Carmen.





eta Buena á Agua Santa

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ARTURO TITUS S.
Injeniero Inspector
de Ferrocarriles Particulares.

4.2.3 *Compañía de Salitres y Ferrocarril de Agua Santa*

1890-1936?

Background

This railway, like the slightly later *FC de Junin*, was built to break the Nitrate Railways' virtual monopoly on exporting nitrate from the Tarapacá *oficinas*. There was a long fight by the NR to prevent its construction, as can be clearly seen by several volumes of UK Foreign Office papers in the National Archives, Kew, London [Refs: FO 16/286, 16/287, 16/288, 16/298 and 16/346]. Construction was authorised in March 1890, to be finished within six months! The mainline ran to the open roadstead port of Caleta Buena south of Pisagua, where rope-worked inclines dropped 738m (2400ft) to sea level.

Source [25] explains that ownership of the railway passed in 1915 to the state, which leased it to the *Compañìa de Ferrocarril del Alto Caleta a Negreiros*, probably the original owners under a new name. Closure came in 1936 as a result of the terminal decline of the nitrate industry.

"*To transport the caliche from the pampa it has 13 kilometers of railway lines, 2 steam engines of the Baldwin type of 21 tons, and 80 cars for caliche.*"

"*The Agua Santa Nitrate Plant located in the Northern Canton of Tarapacá and owned by Mrs. Francisca Hidalgo viuda de Osorio, started to process nitrate with the 'Paradas' system in the decade of 1850.*

In 1874 it became the property of the company Campbell Outram & Co. that reformed it to the Machine stage. Subsequently, as a result of the innovations made in Oficina San Antonio de Zapiga by the English engineer James Thomas Humberstone, he was hired to introduce his productive facilities, the Shanks system.

Towards 1878 it started to process nitrate with this new system becoming the Nitrate Plant with largest production in Tarapacá.

During the 'Nitrate or Pacific War' it had a strategic role, because of its availability of machines to obtain water and the control of the wells for supply of water in the midst of the Atacama Desert.

In 1889, after the Council of the State determined the inexistence of a railway transportation trust (between nitrate Oficinas and ports of shipment) on the part of The Nitrate Railways, the owners of Agua Santa requested the Government of Chile for a concession to construct a narrow-gauge railway in order to transport nitrate from this Oficina to Caleta Buena, promising to make all the branches that were required by the nitrate oficinas that were near the Canton of Negreiros and to charge a lower tariff for transportation that that of those railways.

In spite of the legal actions undertaken by the affected railway company, this concession was approved in March 1890, after which the company that had made the request became known as Compañía de Salitres y Ferrocarril de Agua Santa.

This new railway line was inaugurated in 1892 and was used by the Nitrate Oficinas Puntunchara, Rosario de Huara, Constancia, Abra, Irene, Progreso, Josefina, Tránsito, Aurora, Amelia, Slavia, Valparaíso and Primitiva (towards 1896), among others."

Oficina Agua Santa was shut down in the year 1936.

Summary of *oficinas* owned:

- ***Abra*** ex ***Napired,*** 10km from station Huara on NR, and also on *FC de Agua Santa*?
  1926 owned by *Cia. de Salitres y FC de Agua Santa,* One battery loco but no steam locos mentioned.
- ***Agua Santa***, in Tarapacá, 3km from pueblo de Negreiros and in station Agua Santa of the *FC de Caleta Buena*,
  In 1889 was owned by Campbell Outram & Co., no mention of locos at that time.
  In 1918 owned by *Cia de Salitres y FC de Agua Santa*.
  In 1926 owned by *Cia. de Salitres y FC de Agua Santa*, 2 Baldwins of 21T.
- ***Elena***, Tarapacá, worked by *Cia. de Salitres y Ferrocarril de Agua Santa*.
- ***Irene***, Tarapacá, 1 1/2km from pueblo of Negreiros on NR,
  1918 owned by *Cia de Salitres y FC de Agua Santa*.
  In 1926 owned by *Cia. de Salitres y FC de Agua Santa*, 3 Baldwins of 22T, and 1 Henschel of 20T.

• ***Primitiva***, in Tarapacá, 7km from station Huara on NR,

In 1882 was owned by John Thomas North.

Owned in 1889 by J. T. North via the Primitiva Nitrate Co. Ltd. Represented in Liverpool by J. Lockett.

Owned 4 locos at that time, and a photo in the album shows two identical narrow gauge 0-4-0STs by Fowler.

1918 owned by *Cia de Salitres y FC de Agua Santa*.

In 1926 owned by *Cia. de Salitres y FC de Agua Santa*, 3 Fowlers of 10T.

• ***Valparaiso***, Antofagasta Canton Aguas Blancas, 9km from Pueblo de Huara and 300m from *FC Caleta Buena a Huara*,

Still in operation 1921.

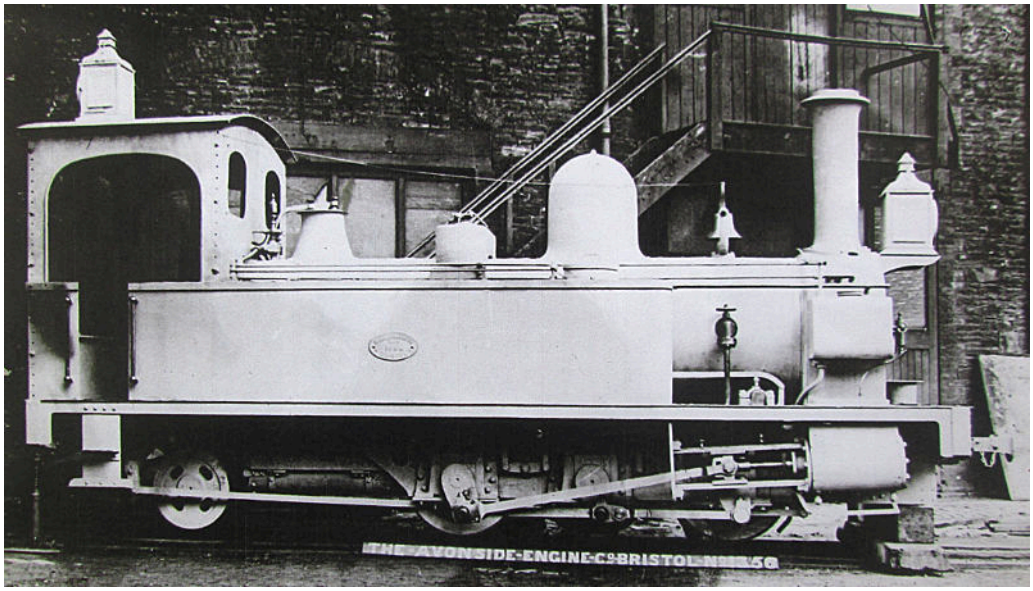
In 1926 owned by *Cia Salitrera y FC de Agua Santa*, 3 locos.

0-6-2T d/w 33". cyls. 12"x18, built by Avonside in 1894 (3-6) and 1895 (7-8)

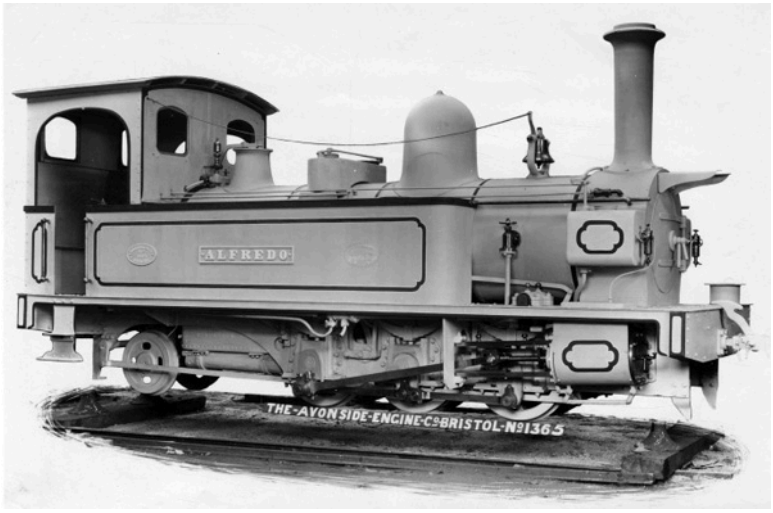
Ordered via G. J. Leslie.

3	w/n 1354	Spares ordered via BW in 1910, and 1911.
4	w/n 1355	
5	w/n 1356	
6	w/n 1359	
7 'ALFREDO'	w/n 1365	Spares ordered via BW in 1905.
8 'CLARITA'	w/n 1366	Spares ordered via BW in 1905.

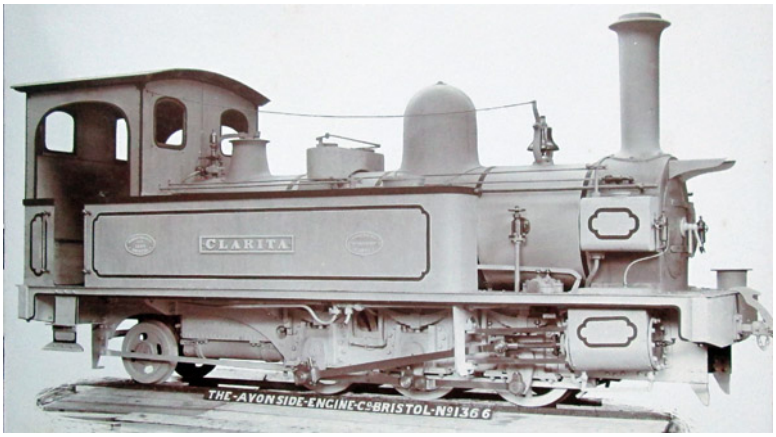
Other photos of engines of this type show the name-plates **'DELMIRA', 'MARÍA LUISA'** and **'JULIA'**.



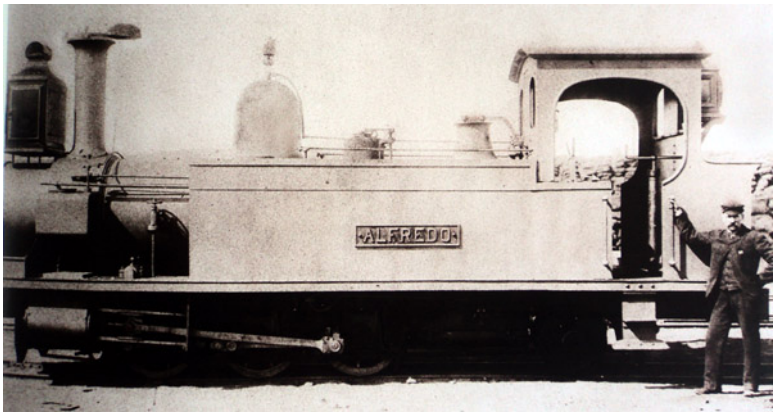
Avonside no. 1356 was one of the earlier locos supplied without a name, though it probably received one later. The photo was found in the Hunslet archive at Statfold Barn Farm, Staffordshire, England.



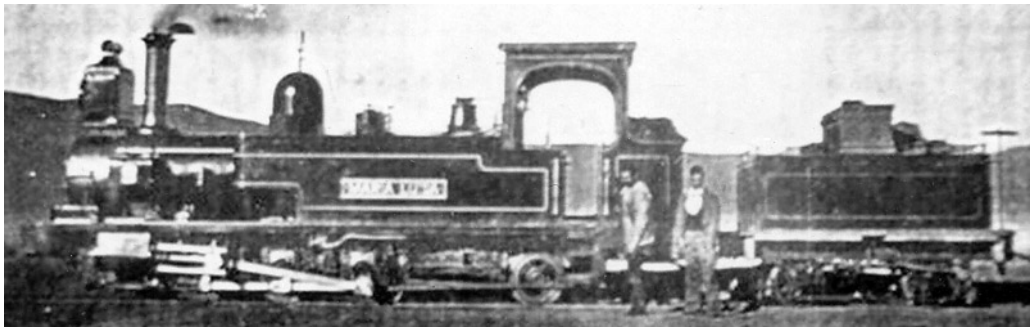
Avonside 1365, **7 'ALFREDO'**, photo from Bristol Museums website.



Avonside 1366, **8 'CLARITA'**, from the Hayward collection at the National Archives, Kew, London.



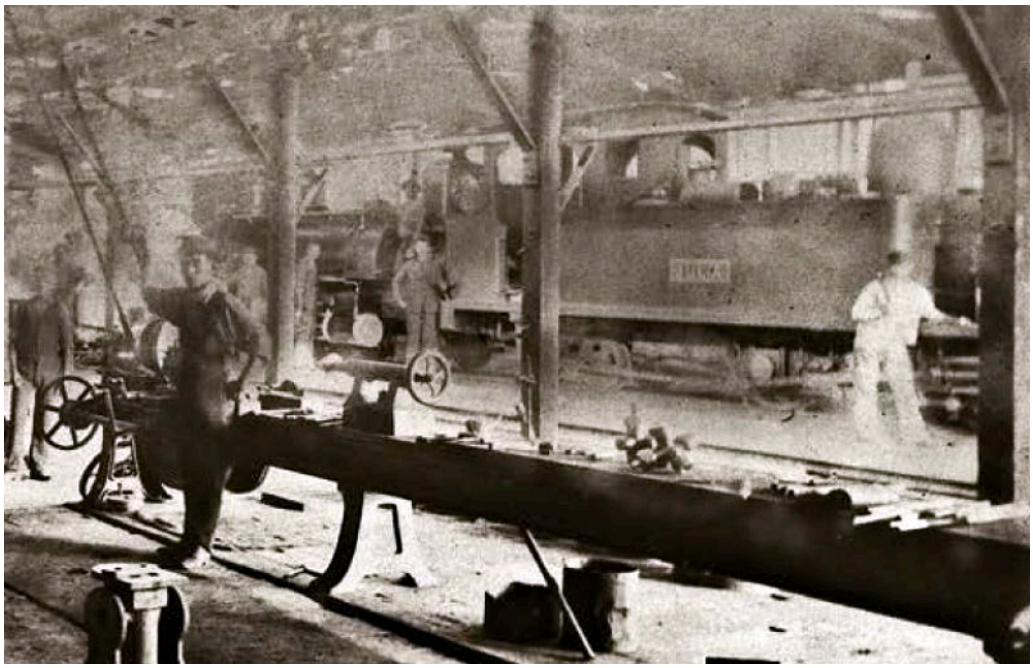
'ALFREDO' seen with enlarged tanks and bunker and a longer smoke-box later in its life [25]. The forward extension to the smokebox is slightly smaller in diameter than the original part, and would appear to be an improvised local modification perhaps inspired by those fitted to replacement Avonside boilers and to many of the railway's Baldwin 2-4-2STs. The nameplate is also of a different style than that seen in the Avonside works photo above. The bell has disappeared, and a chimney-top cowl has been fitted.



This photo from Señor Pablo Moraga appears to show a much rebuilt Avonside 0-6-2T named '**MARÍA LUISA'** attached to one of the standard tenders that this railway used with its Baldwin 2-4-2Ts. The modifications to the loco are similar to those seen in the image of **'ALFREDO'**, above, but the tanks have also changed shape, now being similar to those fitted to Manning Wardle locos such as 1764-5 supplied to the Colorado Nitrate Co., with a cut-out at the lower front. A pair of tanks very like these survive at oficina Humberstone. It also looks as though the fireman's side has been fitted with a means of accessing the tender whilst on the move, via steps and a low-level running board.



This photo from the Methodist Episcopal archives at http://catalog.gcah.org/publicdata/gcah831.htm#a-overview shows a similarly-modified loco **'DELMIRA'** on a loaded train of nitrate sacks.



In a view from source [25] taken looking along the machine shop at Alto de Caleta Buena, at the extreme right is a glimpse of two locomotives: in the

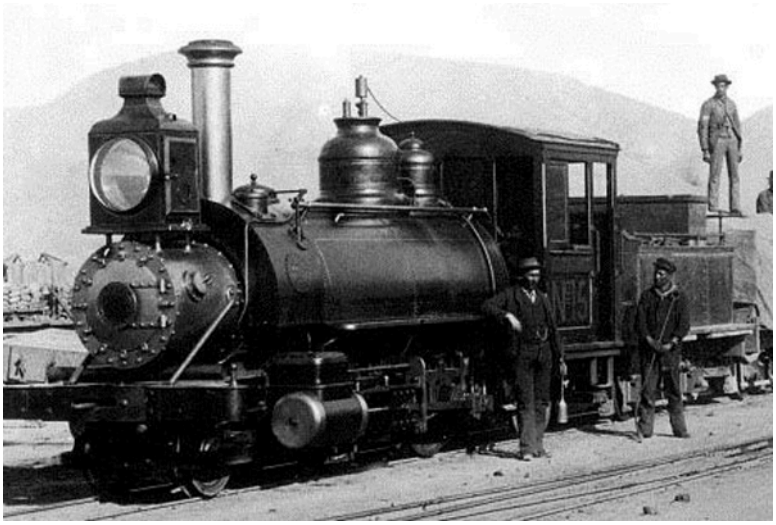
background is a Baldwin saddle tank, but in front of it is an Avonside 0-6-2T clearly named **'JULIA'**. Like the others, it has gained a bunker behind the cab.

2-4-2STT d/w 37", cyls. 11"x16", built by Baldwin in 1892 (1-2), 1894-5 (unnumbered locos), 1913 (21-23)

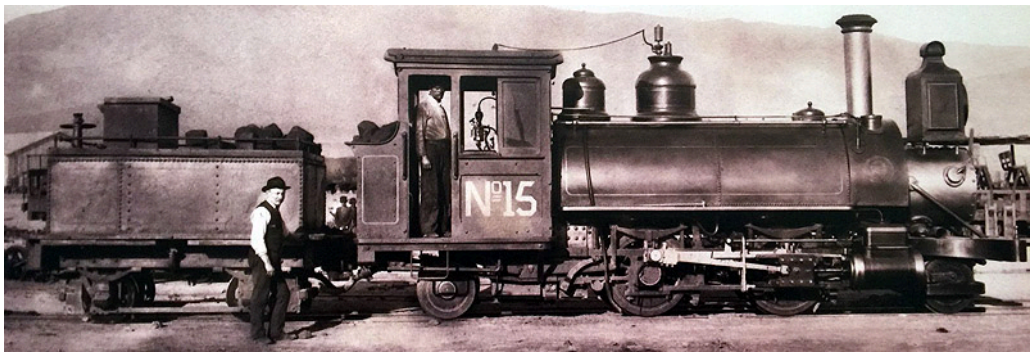
Almost all photos of these Baldwins show them hauling a tender, whilst unlike the Avonside and MW locos, none seem to have had names. BLW class 8-16¼C nos. 21-2, 27-8, 30-3, 34-6, 41-3. The spec. page has the following hand-written special comments: "To have suitable water conns. from the inje. to both ends of the engin. the coups. to conn. to the tender by a short piece of 1½" hose both at f. & b. of the eng. and the 1½" piping to finish just under the buffer beam and 8" on either side of the centres. All cocks to be placed convenient to the hands of Engr. & fireman on the footplate. Front sand box to be a small saddle tank to embrace the smokestack & rest on Smokebox & have the appearance of a continuation of the ordinary saddle tank, in this way a larger supply of sand can be carried & cen. of gravity is kept low. Erecting card drawings for nos. **21-23** are 198-18X and 198-18AX in DeGolyer Library collection. So far no photos have been found showing any of these engines with their tenders coupled to the smokebox end, so they may in practice have been turned at each end of their journeys. Certainly there was a triangle at the end of the yard at Alto de Caleta Buena, still visible on Google Earth.

1	w/n 12398		
2	w/n 12399		
?	w/n 13995		
?	w/n 13996		
?	w/n 14111	) Ordered via Balfour Williamson	) BLW spec page states
?	w/n 14112	) for un-named customer in Chile,	) that all of locos
?	w/n 14113	) probably for this railway.	) 8-16¼C nos. 30-3, and
?	w/n 14114	) [14] suggests they were for here.	) 34-6 were supplied via
?	w/n 14236		) Balfour Williamson for
?	w/n 14237		) the Agua Santa Railway
?	w/n 14238		) in Chile.
21	w/n 39067	Delivered via Balfour Williamson & Co.	
22	w/n 39068	Delivered via Balfour Williamson & Co.	
23	w/n 39069	Delivered via Balfour Williamson & Co.	

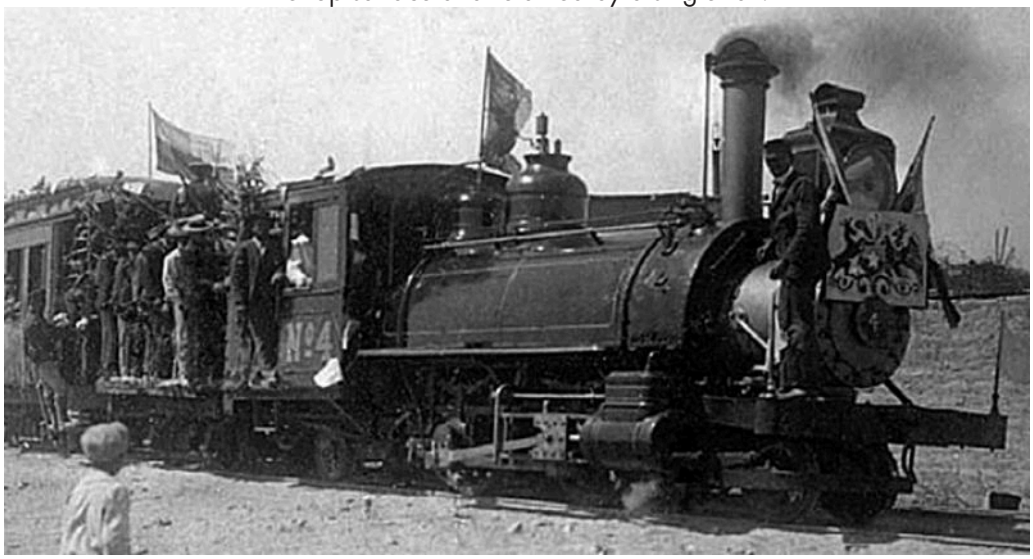
Photos suggest that locos numbered **4, 5, 11, 12, 14, 15** and **16** were all Baldwins, though that conflicts with nos. **4** and **5** being Avonsides as suggested above. That means that we are only missing two running numbers for these BLW locos.



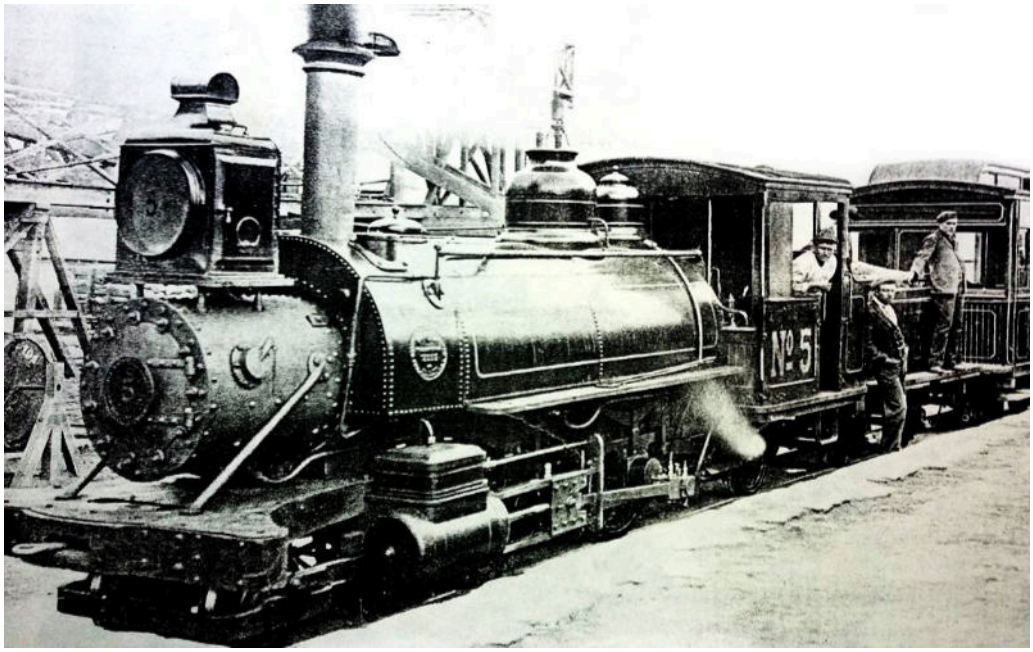
DIBAM photo archive, in Biblioteca Nacional in Santiago; loco is no. **15**. Of particular interest is the absence of a front sand-dome, sand being held in a forward extension of the saddle tank around the chimney.



A side view of the same engine and tender, more clearly demonstrating the extended smokebox, and the water transfer pipes from the tender which would appear to have been a simple rectangular tank with coal merely resting on the top surface and retained by a single rail.



No. **4** on a very crowded celebratory train, possibly for a *fiesta Patría*. The hand-poles on the buffer beam, the control rod for a chimney-top cowl, and the seriffed style of cabside lettering differ from the photos above.



No. **5**.



BLW archive pic; hi-res versions available from Railroad Museum of Pennsylvania. Note the shorter smokebox than those shown in the previous and following photos, the smaller dome, and the inside bearing front pony truck. Also note the prominent bell, which has not been spotted on the earlier locos illustrated above. Ditto, the rear headlamp.

Fourteen locos on shed at Alto de Caleta Buena

An undated photo, below, of the loco shed at Alto de Caleta Buena shows not only ten of the Baldwin 2-4-2STTs and one of the Avonside 0-6-2Ts, but also apparently at least three identical Manning Wardle 0-4-0STs, including explicitly **'BURNS'** which was MW no. 1296 built for the Anglo-Chilean Nitrate Co. **'HUMBERSTONE'**, MW 1297, is also pictured here in source [25]. It may therefore be that the majority if not all of these locos, four of which had been built for the ACNC, were bought second-hand for the *FC de Agua Santa*.

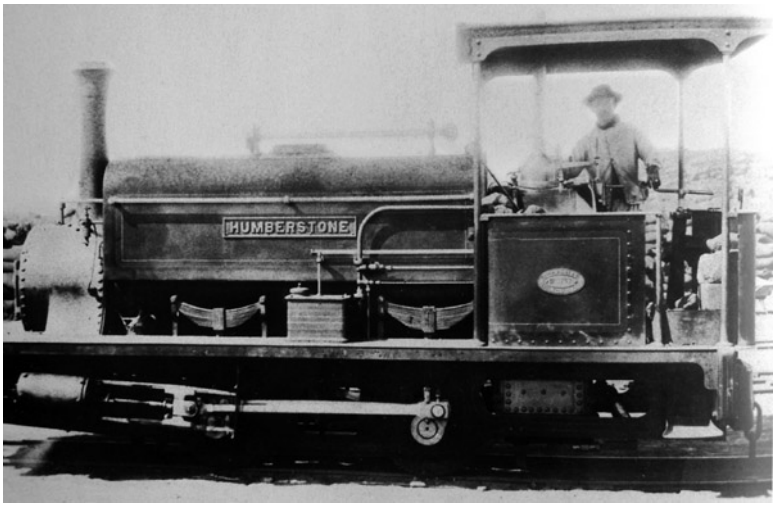


This spectacular image from source [25] shows the loco shed at Alto de Caleta Buena. This photo was taken from the raised winding-house platform at the head of one of the rope-worked inclines down toward the shore 2400 feet below. The bare platform still survived when visited in 2019 as did the inspection pits within the old running shed.

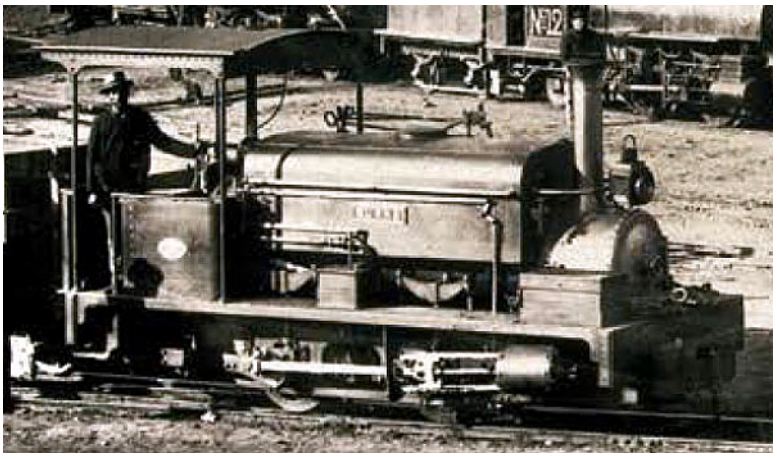
0-4-0ST, d/w 27", cyls. 8"x12", built by Manning Wardle in 1895 (first pair), and 1900 (second pair)

Supplied via Balfour Williamson & Co. to the Anglo-Chilean Nitrate Co. Number and date of arrival on this railway unknown, but if before 1912 then their new running numbers were possibly **18-20**, thus fitting in between Baldwins up to **16** and the last Baldwins which arrived in 1913 to become nos. **21-23**.

'BURNS'	w/n 1296	Confirmed here by photographic evidence.
'HUMBERSTONE'	w/n 1297	Confirmed here by photographic evidence.
'PRIMITIVA'	w/n 1505	Presence here not certain.
'VALPARAISO'	w/n 1506	Presence here not certain. Replacement boiler supplied in 1917, but to where



Two images showing examples of ex ACNR Manning Wardles at work on the *FC de Agua Santa*. Above is **'HUMBERSTONE'**, whilst below, in an enlargement from the picture on the previous page, is **'BURNS'**.



Extra parts from Baldwin

In August 1907 six fireboxes as if for Baldwin loco 14111, class 8-16¼C-30 of 1894, were ordered via Balfour Williamson & Co. [BLW extra order book for 1907 p78]

Fleet summary 1909-10

The locos listed above total 24 in number, whilst the highest running number known is **23**. The Avonsides and Baldwins acquired before 1909 add up to 17. Perhaps just three of the Manning Wardles were purchased from the ACNC, rather than four. That would give us the total of twenty that is mentioned below for the year 1909, and then Baldwins numbered **21-23** followed on in 1913.

Arturo Titus S. described most of Chile's railways individually in a series of articles published in the *Anales del Instituto de Injenieros de Chile* in 1909 and 1910. In part 2 he summarised the *FC de Agua Santa* loco fleet as:

> *Hai 20 locomotoras distribuidas en la forma siguiente:*
> *Para el servicio de la línea principal entre el Alto de Caleta Buena i el Canton de Negreiros – 6*
> *Para el servicio de los ramales i estaciones de esta línea – 2*
> *Para el servicio de la línea principal entre el Alto de Caleta Buena i el Canton de Huaras – 9*
> *Para el servicio de los ramales i estaciones de esa línea – 3*

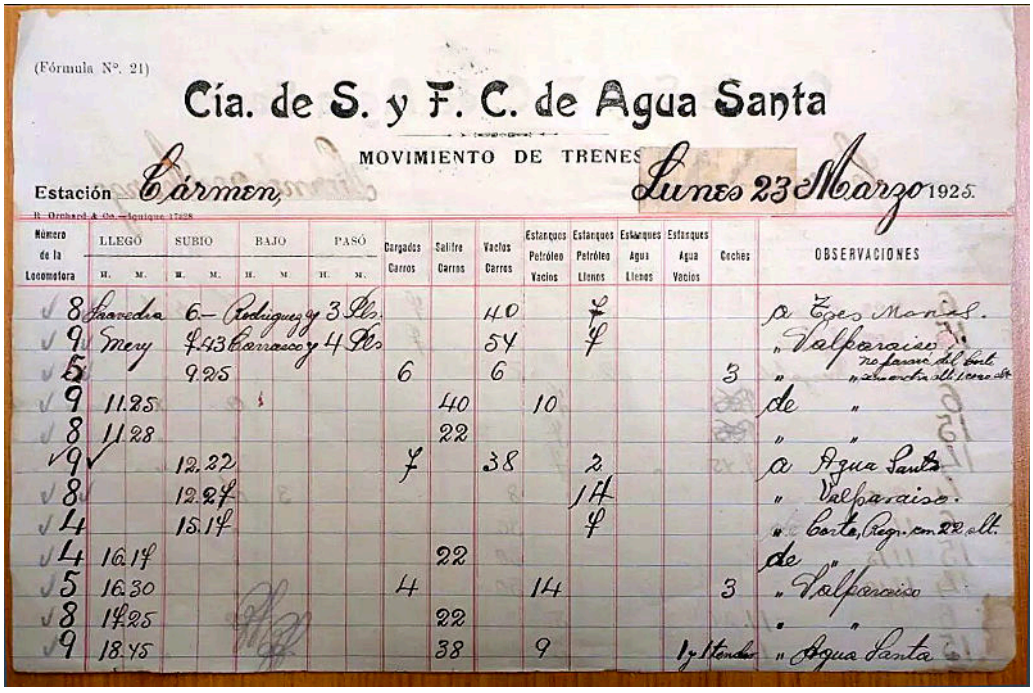
Total – 20

The government publications *Estadistica de los Ferrocarriles Particulares en Explotación* state that the railway had twenty locos in operation in 1909, though dropping to eighteen in 1911, fifteen being for goods use and five for shunting, and weighing on average 18.93 tonnes each.

During 1909 the railway used 4,775 tonnes of Australian coal.

A 1925 log

A record of train movements at Estacion del Carmen during 23rd March 1925, shows locos **4, 5, 8** and **9** in use. When this was first seen, it was assumed that all were Avonsides rather than Baldwins. However, this may not be correct; the photo above showing Baldwins numbered **4** and **5**. Nevertheless, the trains shown were all running east or south-east of that station, and clearly the Avonsides may have been operated together on the section they were best suited to.



(Fórmula N°. 21)

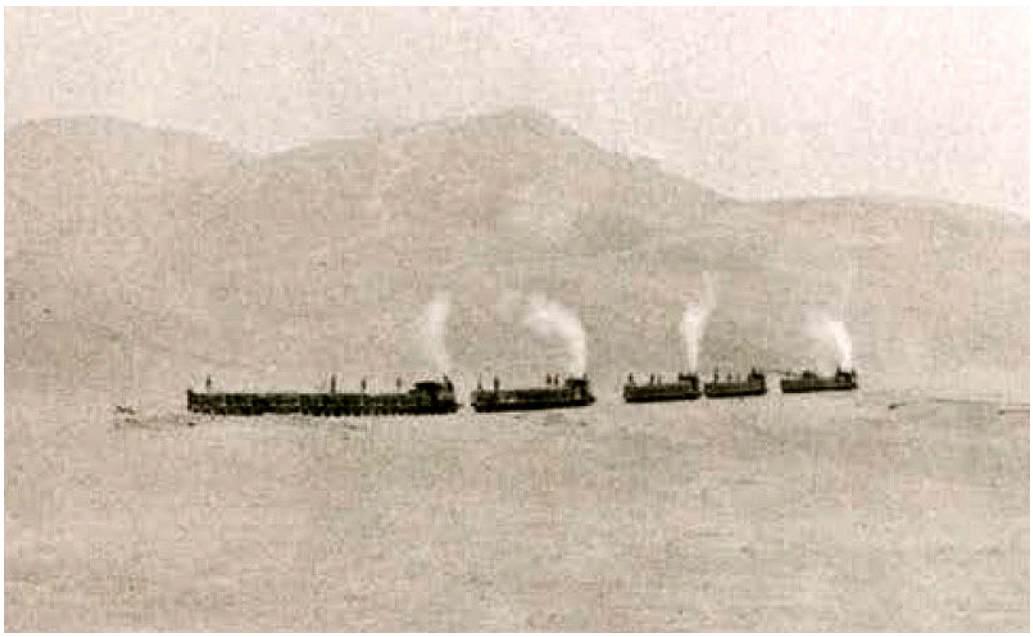
Cía. de S. y F. C. de Agua Santa

MOVIMIENTO DE TRENES

Estación Cármen, Lunes 23 Marzo 1925.

R. Orchard & Co.—Iquique 17428

Número de la Locomotora	LLEGÓ H.	M.	SUBIO H.	M.	BAJO H.	M.	PASÓ H.	M.	Cargados Carros	Salitre Carros	Vacíos Carros	Estanques Petróleo Vacíos	Estanques Petróleo Llenos	Estanques Agua Llenos	Estanques Agua Vacíos	Coches	OBSERVACIONES
8	Saavedra		6— Rodriguez y 3 Pls.								40		4				a Tres Montes.
9	Mery		4.43 Carrasco y 4 Pls.								54		4				" Valparaiso.
5			9.25						6		6					3	" no fueron del Cont. " Cuenta all 1000 st
9	11.25									40		10					de "
8	11.28									22							" "
9			12.22						4		38		2				a Agua Santa.
8			12.24										1H				" Valparaiso.
4			15.14										4				" Conte, Regr. con 22 alt.
4	16.14									22							de "
5	16.30								4			14				3	" Valparaiso
8	14.25									22							" "
9	18.45									38		9				1 y 1 Tender	" Agua Santa



The *FCAS* apparently ran trains in 'flights' or convoys, possibly a sensible precaution when crossing a desert. Here are five trains heading east from the coast at an unknown date.

Closure

The railway, like many others, succumbed to the decline in the nitrate industry, and closed in 193?. However, there was a proposal to build a new railway north-east from Huara to the sulphur resources of Chusmiza, using the redundant equipment from the Agua Santa and Patillos railways. This scheme is covered in section 4.4.7 of this file. Whilst the construction was eventually abandoned, a photo displayed in that section does strongly suggest that at least one of the *FCAS* Manning Wardle saddle tanks was used during the initial construction period.

Appendix 3, at the end of this file, contains photos of the wide range of steam loco tanks and cabs surviving at Oficina Humberstone which is now a national monument. One of the water tanks there, unfortunately not complete, would seem to have come from one of the *FCAS* Baldwin 2-4-2STTs.

4.2.4 Junín Railway
Cía. de Salitres y FC de Junín

1896-1934

Background

2' 6" gauge. opened 1896. Closed in 1934. The mainline ran down to the clifftop just south of Pisagua, from when a single rope-worked incline dropped the 670 metres (2200 feet) to the shore. As at many west coast ports, ships anchored in an open roadstead rather than in a sheltered harbour. The route included a notable climb across the face of an escarpment between estaciones Casa Puente and Tres Llaves which needed four big timber trestles and two tunnels.

Summary of *oficinas* owned:

• ***San Antonio*** (*Cia de Salitres y FC de Junin*) 4 1/2km from Zapiga on own branch from NR (?), 4 locos Ingleses of 20T.

• ***Victoria***.

Closed in 1921.

In 1926 owned by *Cía. Salitrera y FC de Junin*.

• ***Victoria, ex Brac***, Tarapacá

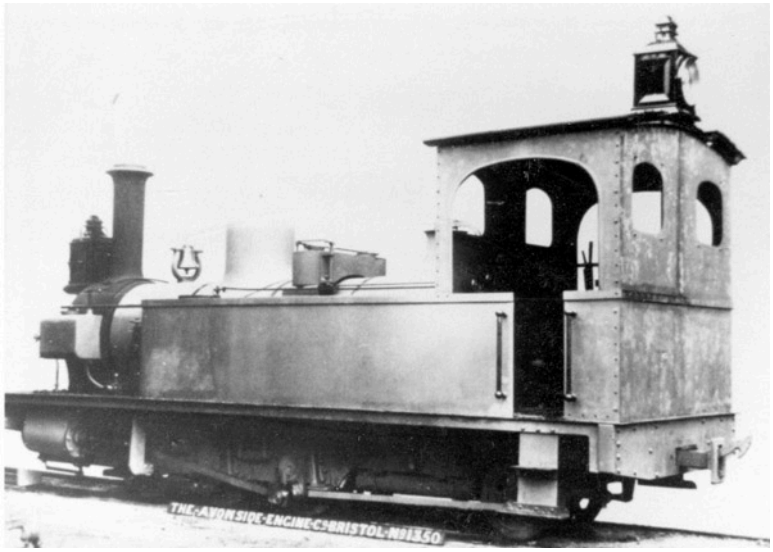
The line was first built to a terminus at *Oficina Carolina*, but branches were later built to *oficinas Compañía, Cruz de Zapiga, San Fransisco de Dolores, Reducto de Campo Negro, Aguada, Anjela* and *Bearnés de Santa Catalina*.

0-6-2T d/w 33", cyls. 12"x18", built by Avonside in 1893

Ordered via G. J. Leslie.

1? **'?'**	w/n 1350	Replacement boiler ordered 1906 via Strain & Robertson.
2? **'?'**	w/n 1351	

Spares for both ordered 1928.

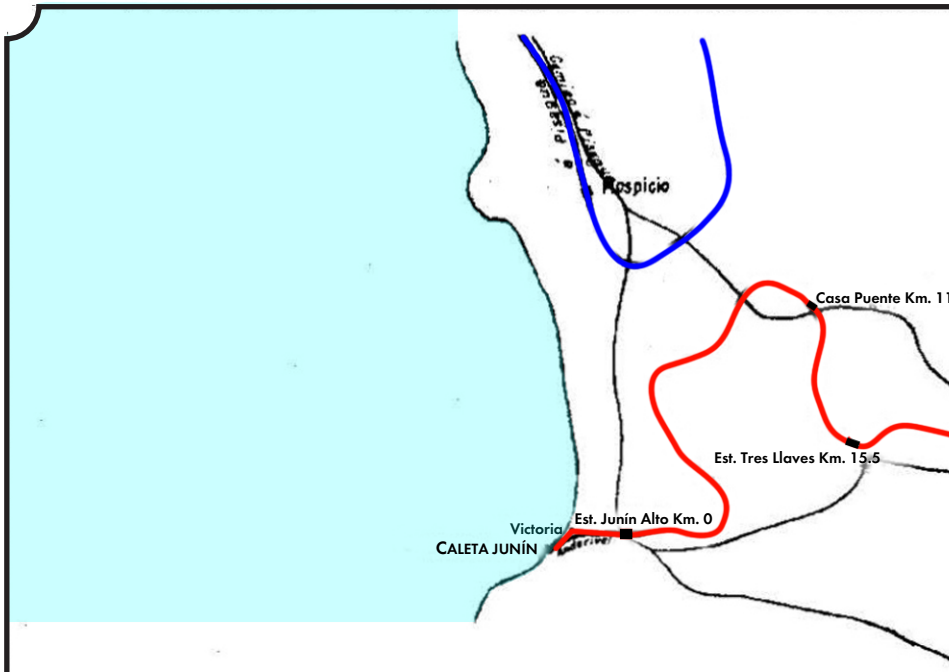


Avonside 1350, image from Bristol Museums website, but also in Hayward collection at National Archives, Kew, London.

2-6-4T d/w 36", cyls. (3 cyl. compound) 15" / 16"x20", built by Avonside in 1894 (first) and 1895 (last)

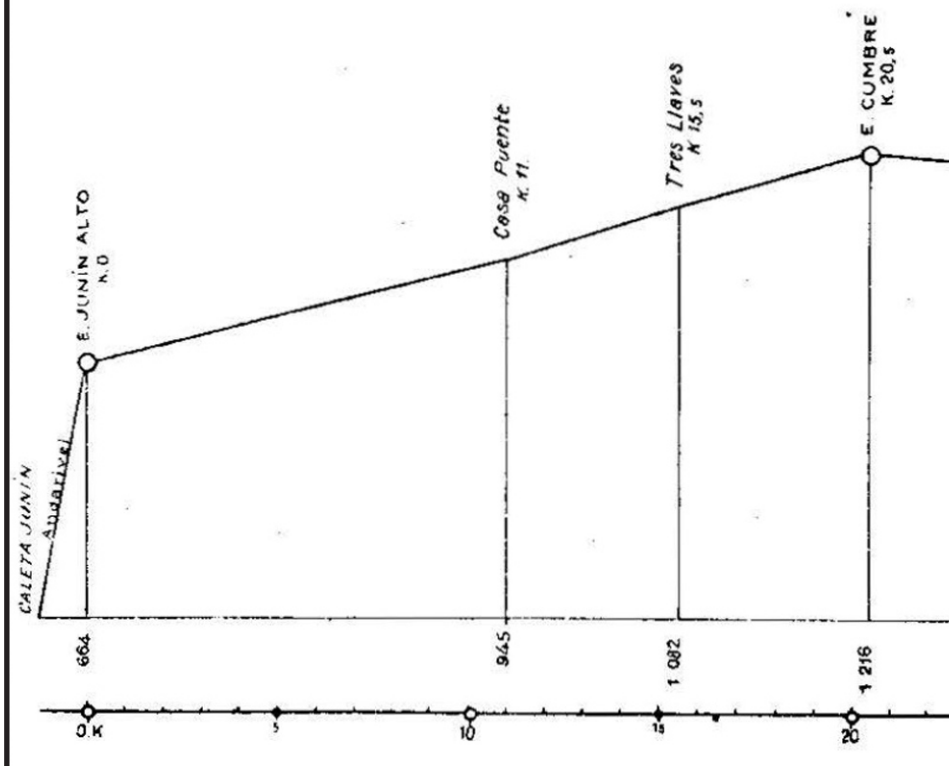
Avonside order nos. 785 and 830, ordered via G. J. Leslie.

3? **'JUNÍN'**	w/n 1357	The fact that the 1929 Hudswell Clarke 0-6-0 diesel loco for this railway was also named **'JUNÍN'** may suggest that this steam loco had been withdrawn by that date or at least had lost its name.



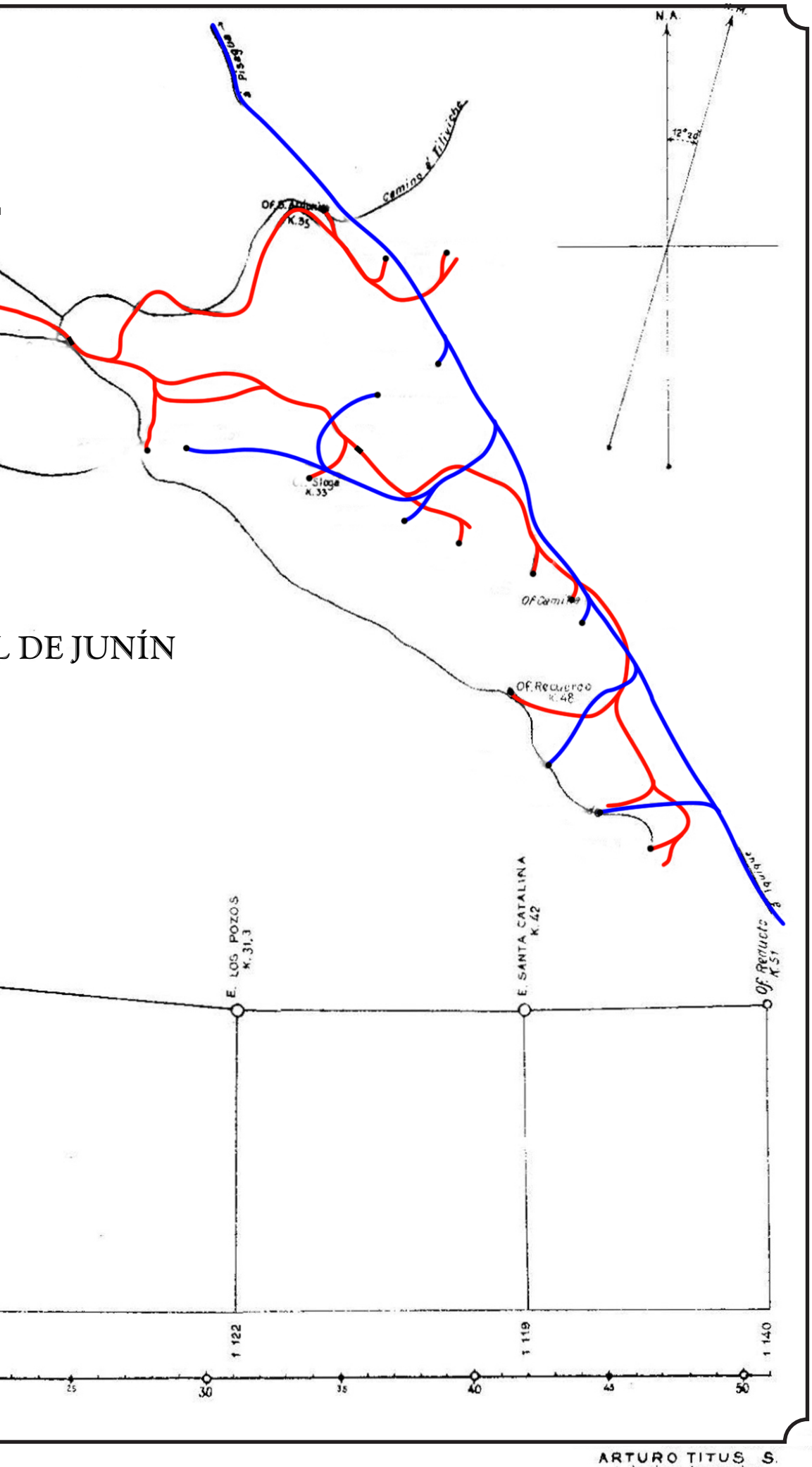
PLANO y PERFIL del FERROCARRIL

Escalas
Horizontal = 1: 250 000
Vertical = 1: 25 000



Juan Santa-Cruz A., delt.

T. PAYÁ



L DE JUNÍN

ARTURO TITUS S.
Ingeniero Inspector
de Ferrocarriles Particulares

4? **'CAROLINA'**	w/n 1358	See below for possible rebuild details.
5? **'?'**	w/n 1363	Replacement boiler ordered 1906 via Strain & Robertson. Spares ordered from Avonside for this loco on this railway in 1920.

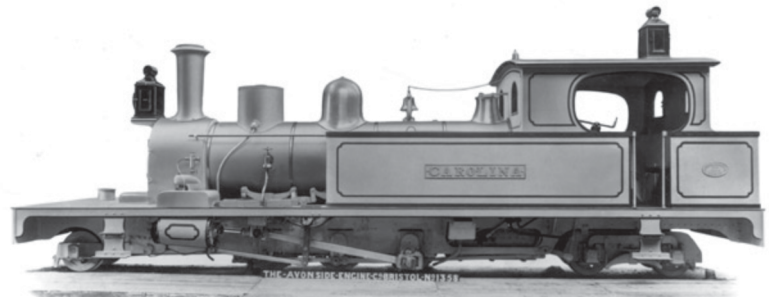


Image of **'CAROLINA'** from the M Shed Museum in Bristol.

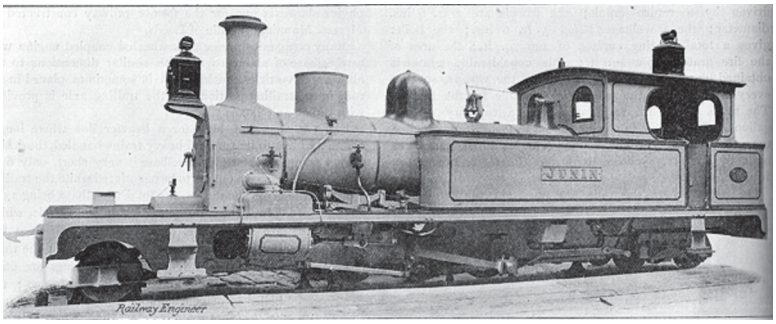
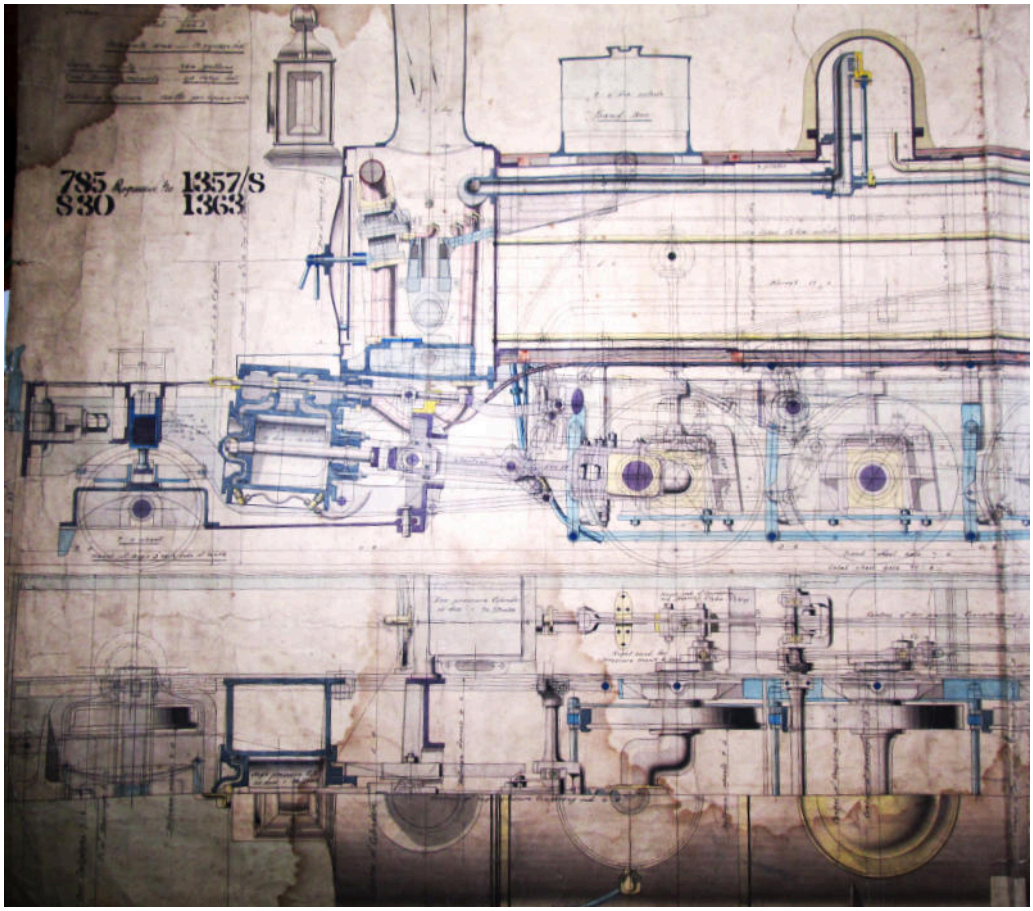


Image of **'JUNIN'** from *The Railway Engineer*, collection of Sr. Pablo Moraga.



Part of a drawing found in the Hunslet archive at Stafold Barn Farm in Staffordshire, UK. The Hunslet Engine Company took over the assets and goodwill of a number of defunct British loco builders over the decades. Note the central high pressure cylinder extending far forward ahead of the smokebox and driving onto the foremost pair of driving wheels.

Major rebuilding into much shorter tender locos

The photo below suggests that at least one (and almost certainly all three) of these extremely long 2-6-4Ts was rebuilt as a much shorter 0-6-2, with a tender taking the place of the tanks in order to reduce the axle loading. The loco carries the number **4** on its buffer beam. A 1909 list states that the railway had three tender engines, which were unidentified until this photo appeared. They were six-coupled, weighing 23T with a 4 tonne tender. Comparing this image with the drawing above, it will be obvious that the rebuilt engines must have dispensed with compounding and the forward-mounted central cylinder. Thanks to David Jennings, assiistant archivist at the Hunslet archive, for pointing this out.

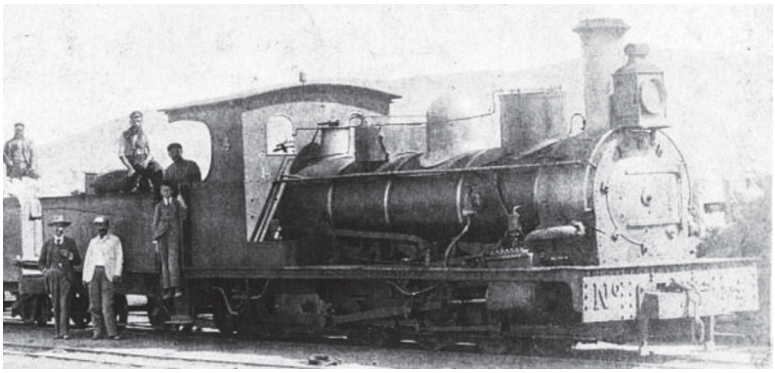
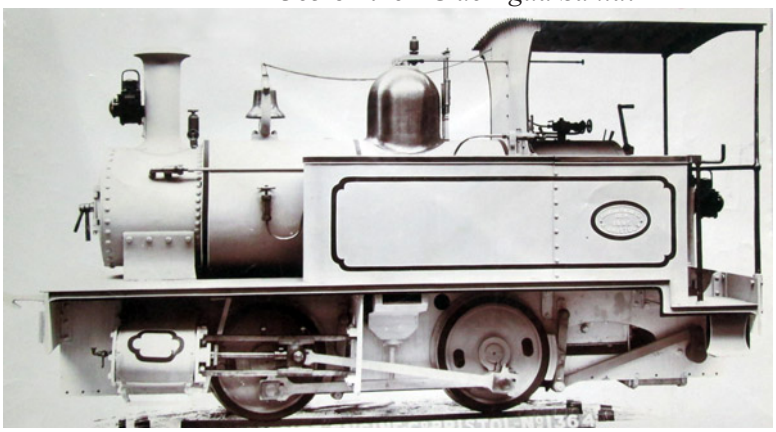


Photo taken at Alto Junín, found by Pablo Moraga on eBay. Whilst this engine superficially looks completely different from those immediately above, there are a large number of similar details, including: sand dome and chimney, boiler mountings and bands spacing, distinctive cab front spectacles and top curve of side opening, cylinder and valve chest, motion including the unusual tie bar from cylinders to motion plate, the long hole in the frames alongside firebox, the equalised suspension and its location, running plates detail adjacent to the buffer beam, smokebox door hinges, pipework, etc.

0-4-0T d/w 30¼"? cyls. 9x14", built by Avonside in 1895

Probably used mainly down at Caleta Junín yard.

6? **'?'** w/n 1364 Not named **'ALFREDO'** as one source says. That was the name of 1365 on the *FC de Agua Santa*.



Avonside image from the Hayward collection at the National Archives, Kew, London.

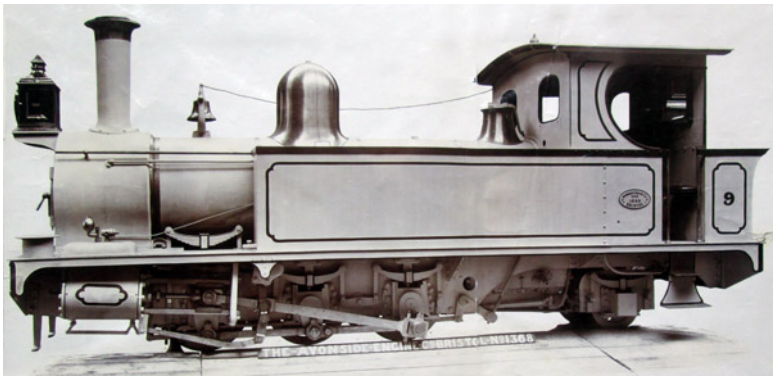
One more unidentified small shunting loco was in the fleet. This was not identical to the one above, they having weights of 10 and 12 tonnes according to the 1909 paper.

0-6-2T d/w 33", cyls. 13"x18", built by Avonside in 1895

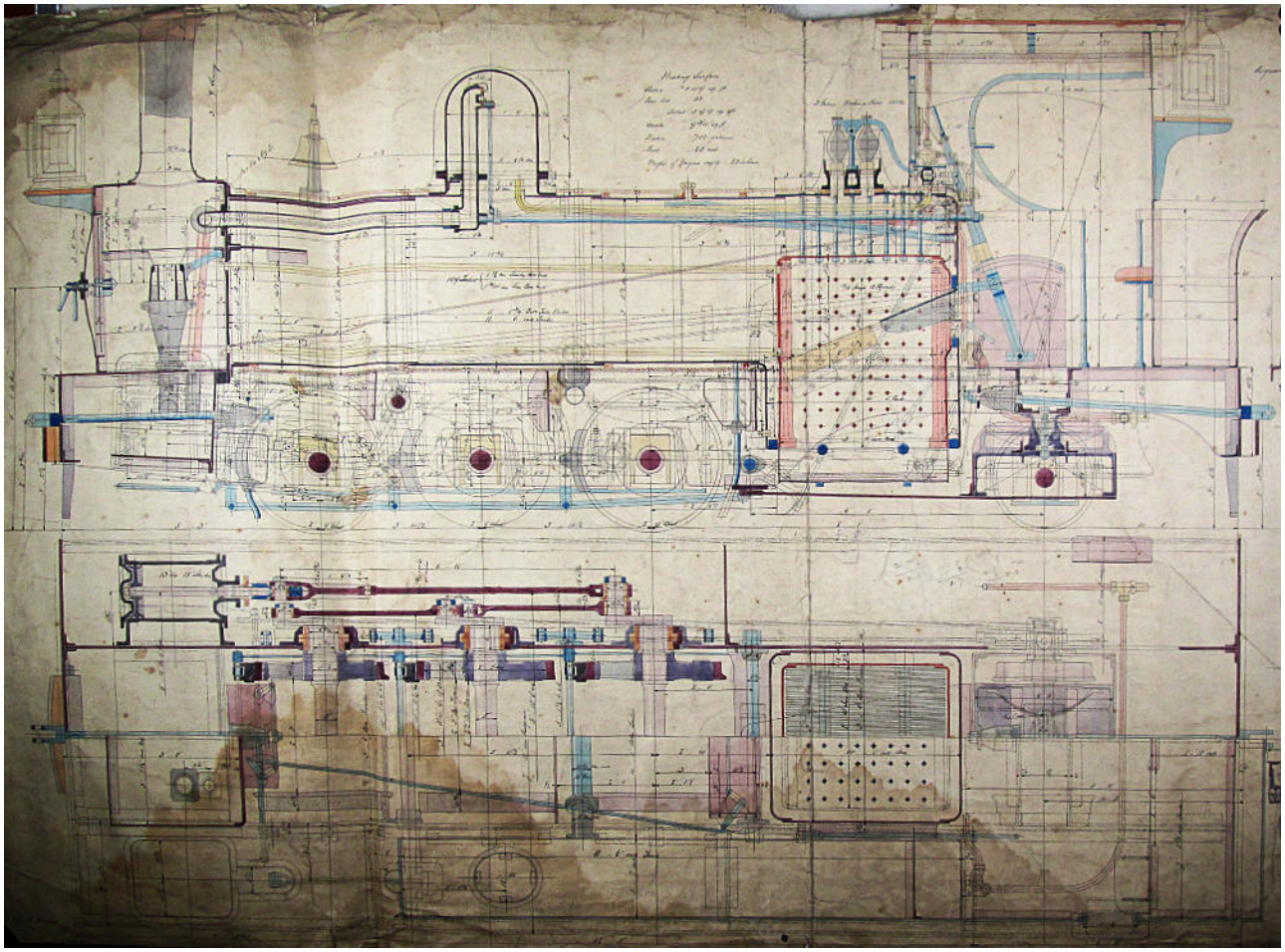
Avonside order no. 845, ordered via G. J. Leslie or maybe via Antony Gibbs & Sone..

8? **'?'** w/n 1367 Replacement boiler ordered 1906 via Strain & Robertson.
9 '?' w/n 1368 Number is visible on high-res version of the photo shown.

In late 1906 Reducto Nitrate were asking Avonside to quote for a new loco similar to those supplied to the Junín railway, and mentioned that one of those now had tanks enlarged to the full length of the loco.
Spares for both ordered 1928.



Avonside 1368, image from the Hayward collection at the National Archives, Kew, London.



Drawings found in the Hunslet archive at Statfold Barn Farm in Staffordshire, UK. The Hunslet Engine Company took over the assets and goodwill of a number of defunct British loco builders over the decades.

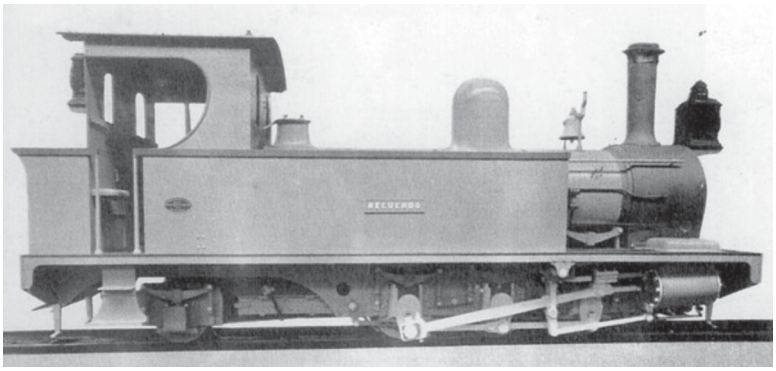
0-6-2T d/w 33", cyls. 13"x16", built by Yorkshire Engine in 1904

Comparison of the photos above and below makes it seem possible that these YE engines were built to the Avonside design. Supplied under order E132 via Alfred Ball Esq., and to be delivered to Birkenhead by Sept. 6th under pain of penalty.

? '?' w/n 791 Or possibly 793?

? 'RECUERDO' w/n 792

In April 1906 a number of spare parts were supplied by the YECo, including one full sets of wheels on axles, 2 sets of springs, 2 connecting rods, 4 crossheads and 2 sets of valve motion., also 4 Roscoe lubricators.

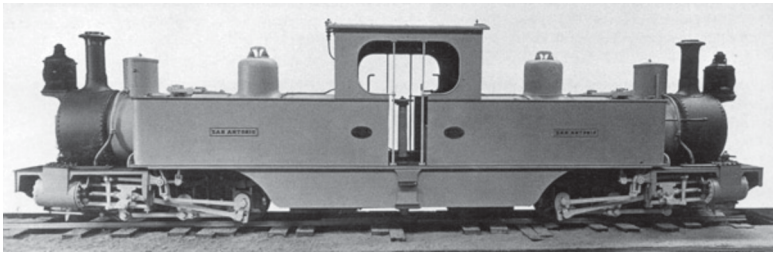


0-6-6-0T twin boiler Fairlies d/w 30", cyls. 12½"x16", built by Yorkshire Engine in 1905-6

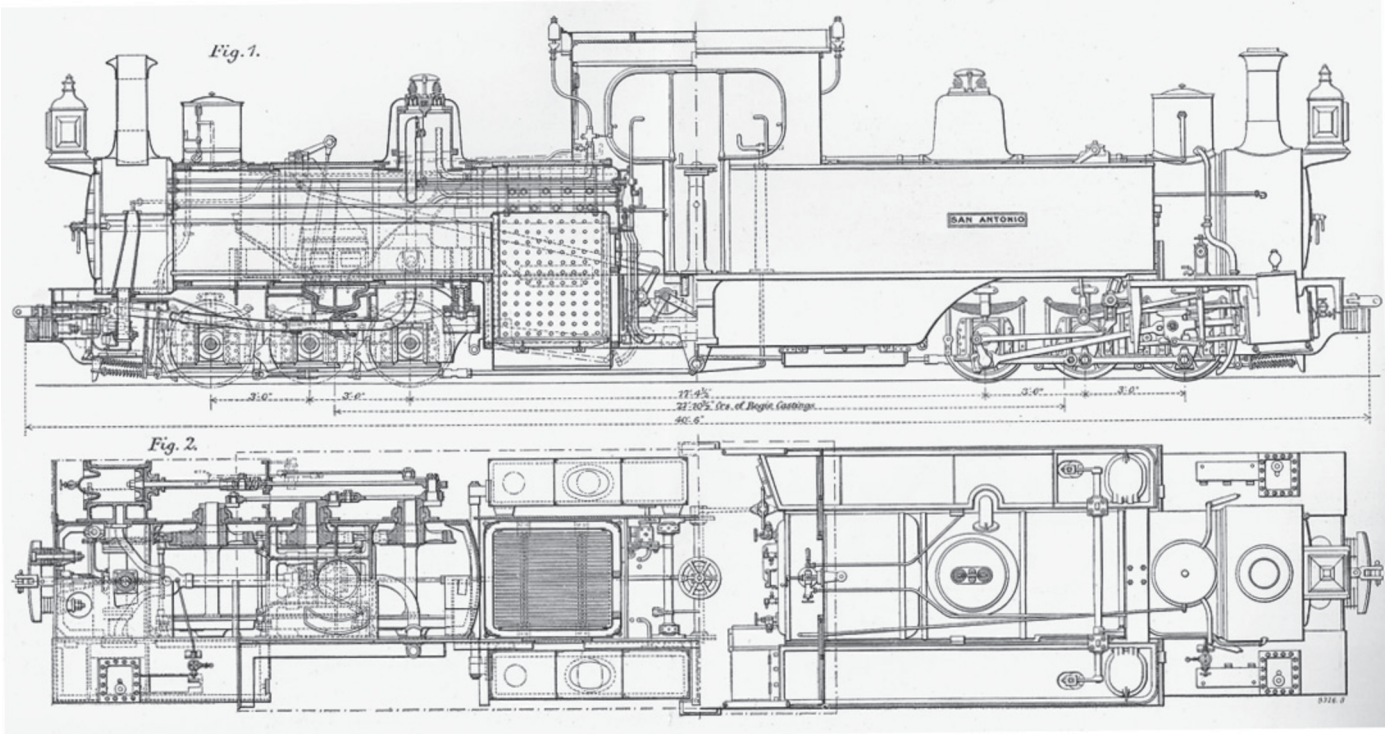
Note that these were twin Fairlies not double Fairlies, ie. they each had two separate boilers. Also supplied via A. Ball Esq.

? 'SAN ANTONIO' w/n 834

? 'COMPAÑÍA' w/n 835

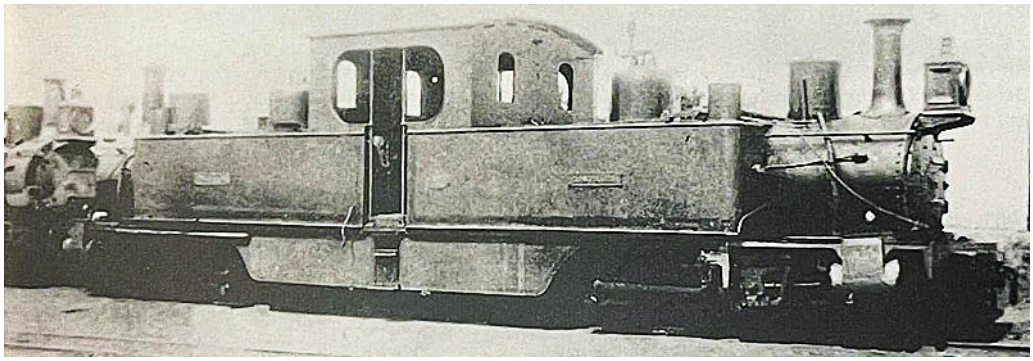


YECo. builder's photo.



These drawings were published in *Engineering*, June 8th 1906. Notable features include the main steam pipes which emerge from the boilers beneath the domes, dropping vertically almost to axle level and then running horizontally via ball joints

beneath the bogie pivots to reach the steam chests. This contrasts with the more usual route via the smokeboxes but is similar to that chosen by Hunslet for their Fairlie designs both realised (NWNGR **'GOWRIE'**) and unrealised (*FCAB* proposal 1913) Also noteworthy is the handbrake column in the centre of the cab, practicable in the case of oil-burners as these must have been, but not for coal-fired locos.



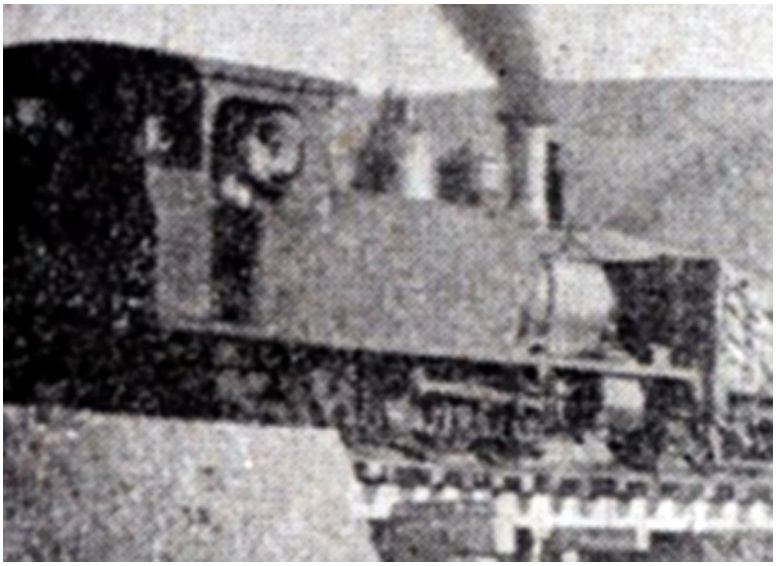
Not a particularly clear image, but one showing both twin Fairlies at Alto de Junín in 1930. The only apparent changes from the earlier drawing and photo are the taller tank fillers and some sort of pipe beneath the tank at the left hand end.

Locos in use in 1909

An *AIIdeChile* paper from 1909 says there were 15 locos. These were listed as follows:
3 locomotoras de 3 ejes acoplados, distanciados de 1,067m i peso de 23 toneladas, con tender de 4 toneladas. ie. the 2-6-4Ts rebuilt as 0-6-2s.
3 locomotoras-tender de 3 ejes acoplados, distanciados de 1,029m i peso de 24 toneladas;
5 locomotoras-tender de 3 ejes acoplados, distanciados de 0,978m i peso de 20 toneladas;
2 locomotoras chicas para estaciones con peso de 10 i 12 toneladas respectivamente; ie. Avonside 0-4-0T 1364 and one other as yet unknown.
2 locomotoras dobles, patente Fairlie, con peso de 44 toneladas i capacidad para 6,800 litros de agua i 2½ toneladas de carbon. ie. the twin boiler Fairlies listed immediately above.
The dimensions given as *distanciados* would match the necessary spacing between each driving axle given the known wheel diameters, and suggest that there will have been two additional six-coupled tank locos with driving wheels of a few inches less than 40½", and one additional small shunting loco. The identities of these are as yet unknown.

The fleet in 1909-1911

The government publications *Estadistica de los Ferrocarriles Particulares en Explotación* state that the railway had seventeen locos in operation, three being tender engines and fourteen being tank locos. Fifteen were for goods use and two were for shunting. They weighed on average 21.35 tonnes each.



An unknown type of loco at the head of a loaded train of nitrate crossing one of several big timber trestles between estaciones Casa Puente and Tres Llaves. At a guess this is an outside-framed six-coupled loco, possibly an 0-6-2T or 0-6-4T. It looks very like the engines of those wheel arrangements supplied by Hunslet and Hudswell Clarke to the *FCAB*, but has safety valves on top of the dome and a single large cab opening rather than a narrower doorway and a separate window.

Locos in use at the end of the 1920s

The 1930 American report [25] stated

"3 are Avonsides, 2 of which were built in 1894 and 1 in 1895, The wheel arrangement is six drivers coupled and a pair of trailers. The wheelbase is 7 feet and the diameter of driving wheels 36 inches. The weight of the locomotives is 32 [short?] tons each, having a tractive effort of 15,277 pounds, with a maximum load of 68 tons. Cylinders are 14 inches in diameter and 20-inch stroke. The water capacity is 800 gallons, and the fuel capacity is 1.3 tons.

Two are Avonside locomotives built in 1895 and two are Yorkshire locomotives built in 1904, and have the following characteristics : Wheel arrangement, six drivers coupled and a pair of trailers ; wheel-base 6 feet 9 inches; diameter of wheel, 33 inches ; weight , 30 tons in working order ; tractive effort, 11,766 pounds ; maximum load 52 tons ; cylinders, 13 inches in diameter and 16-inch stroke ; water capacity, 800 gallons ; fuel capacity, 1.25 tons.

Two are Fairlie patent double-ender locomotives built by the Yorkshire Engine Co. of Sheffield in 1906. Wheel arrangement, two 6-wheeled bogies ; wheel-base, 6 feet ; diameter of driving wheels, 30 inches ; weight, 44 tons in working order ; tractive effort, 23,607 pounds ; maximum load, 93 tons ; cylinders 12½ inches in diameter and 16-inch stroke ; water capacity, 1,600 gallons ; fuel capacity, 1.5 tons."

From this it would appear that there were eight locos in operating condition, the three 2-6-4Ts rebuilt as 0-6-2s, all of the four smaller Avonside and YECo 0-6-2Ts built between 1895 and 1904, and the final two were the twin Fairlies. From that we may conclude that the earliest two Avonsides, both of the 0-4-0T shunting engines, and the two unidentified six-coupled locos were out of use by then.

4.2.5 *FC Caleta Coloso a Aguas Blancas* later became the *FC de Aguas Blancas* under *FCAB* ownership

1902-1961

Background

2' 6" gauge. Opened 1902. Ran to Caleta Coloso just south of Antofagasta. Had 223km of track in total. Taken over by the *FCAB* in 1909, via a new subsidiary company known as the *Cía. FC de Aguas Blancas*. Data below is largely from source [5]. 27 locos confirmed by [7]. Through traffic diverted to Antofagasta in 1932, but major part of line remained open to serve remaining *oficinas* until 1961. Names from [14].

Original nos.	***FCdAB* nos.**		

0-6-2ST d/w 939mm, cyls. 381x457mm, an FCAB rebuild (in 1902?)

This was probably a rebuild of a Baldwin [Turner & Ellis] [14].

1 'B. DOMINGUEZ'	**513**	w/n 12753? or 12754?	Possibly ex *FCAB* 51 or 52.

2-8-0 d/w 990mm 39", cyls. 381x508mm 15x20", built by Rogers in 1902

2 'LAURITA'	**514**	w/n 5701	Purchased via W. R. Grace & Co.
3 'ZARINA'	**515**	w/n 5702	Purchased via W. R. Grace & Co.

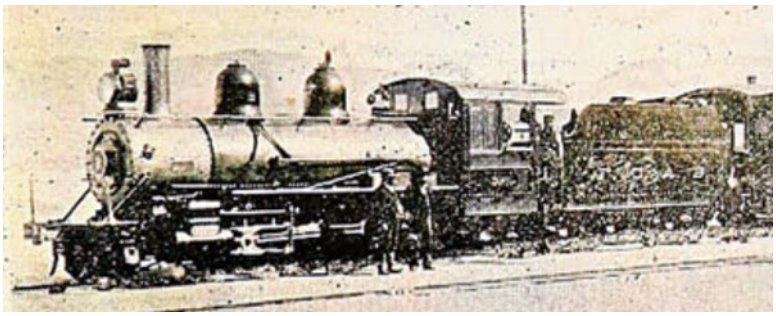


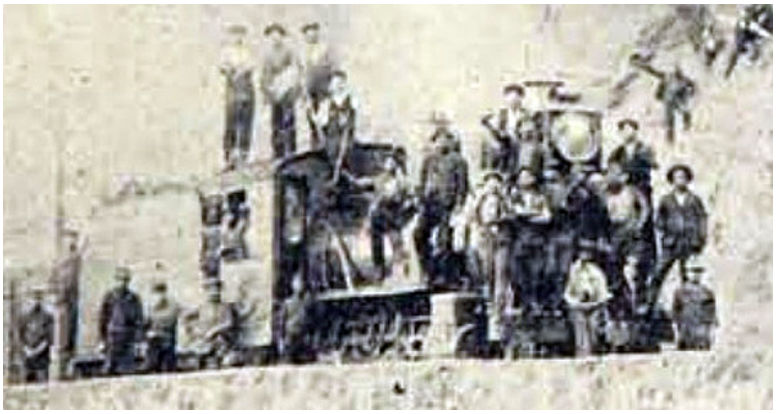
Photo published in magazine *Sucesos* issue 3. Loco is **2 'LAURITA'**.

2-8-0 d/w 37½", cyls. 15"x20", built by Baldwin in 1904

The BLW spec is in vol. 27 p77.

4 'MATIAS GRANJA'	**524**	w/n 24444	Renamed **'RESERVA'** [14].

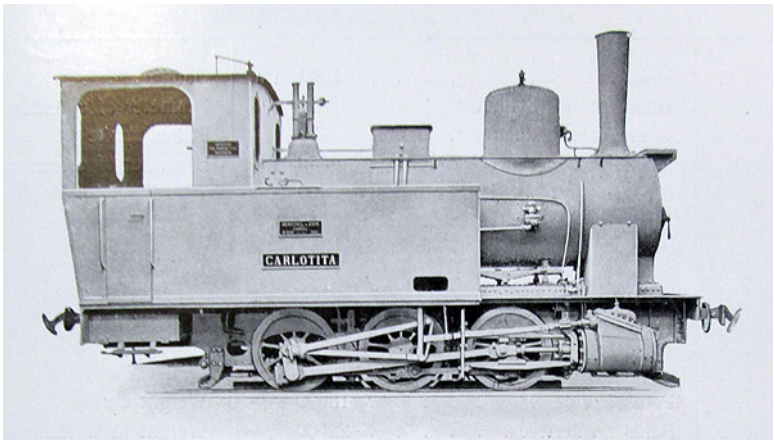
Baldwin supplied one spare boiler for this loco 10-24½E-115 in February 1906, via Wessel Duval & Co. An order for 'driving springs' in extra order book [file mss0061_5_23_16_1905_opt.pdf] p110, dated March 1906 would seem to be for the same engine. Extra order 1165 of 22nd Feb 1906 was for one replacement boiler with all fittings and seemingly some modifications.



Whilst this loco looks similar to that above, the different headlight suggests that it might be the Baldwin **4 'MATIAS GRANJA'** and that this engine may therefore have been built to match the earlier Rogers locos [Sucesos 588].

0-6-0T d/w 800mm, cyls. 275x400mm, built by Henschel in 1903 (5 & 7), 1906 (6 & 17), and 1907 (20)

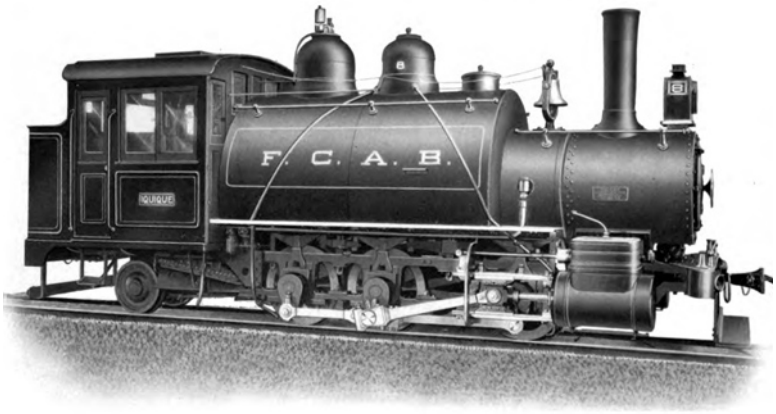
5 'TACNA'	**503**	w/n 6489	
7 'CARMON'		w/n 6490	Sold in 1911. **'CARMEN'**?
6 'CARLOTITA'	**504**	w/n 7491	
17 'TOCOPILLA'		w/n 7549	
20 'ANITA'		w/n 7960	Sold in 1911.



Henschel 0-6-0T **6 'CARLOTITA'** as seen in Henschel catalogue.

0-6-2ST d/w 37", cyls. 14"x20", built by Rogers in 1905

8 'VALPARAISO'	**511**	w/n 6271	Purchased via W. R. Grace & Co. Source [14] has this pair of numbers and names reversed.
9 'IQUIQUE'	**512**	w/n 6270	Purchased via W. R. Grace & Co.



2-8-0 d/w 990mm, cyls. 381x508mm, built by ALCo Rogers in 1905 (10) and 1906 (13-14)

10 'BARSOLONA'	**516**	w/n 38445
13 'TARRAGONA'	**517**	w/n 41115
14 'GERONA'	**518**	w/m 41116

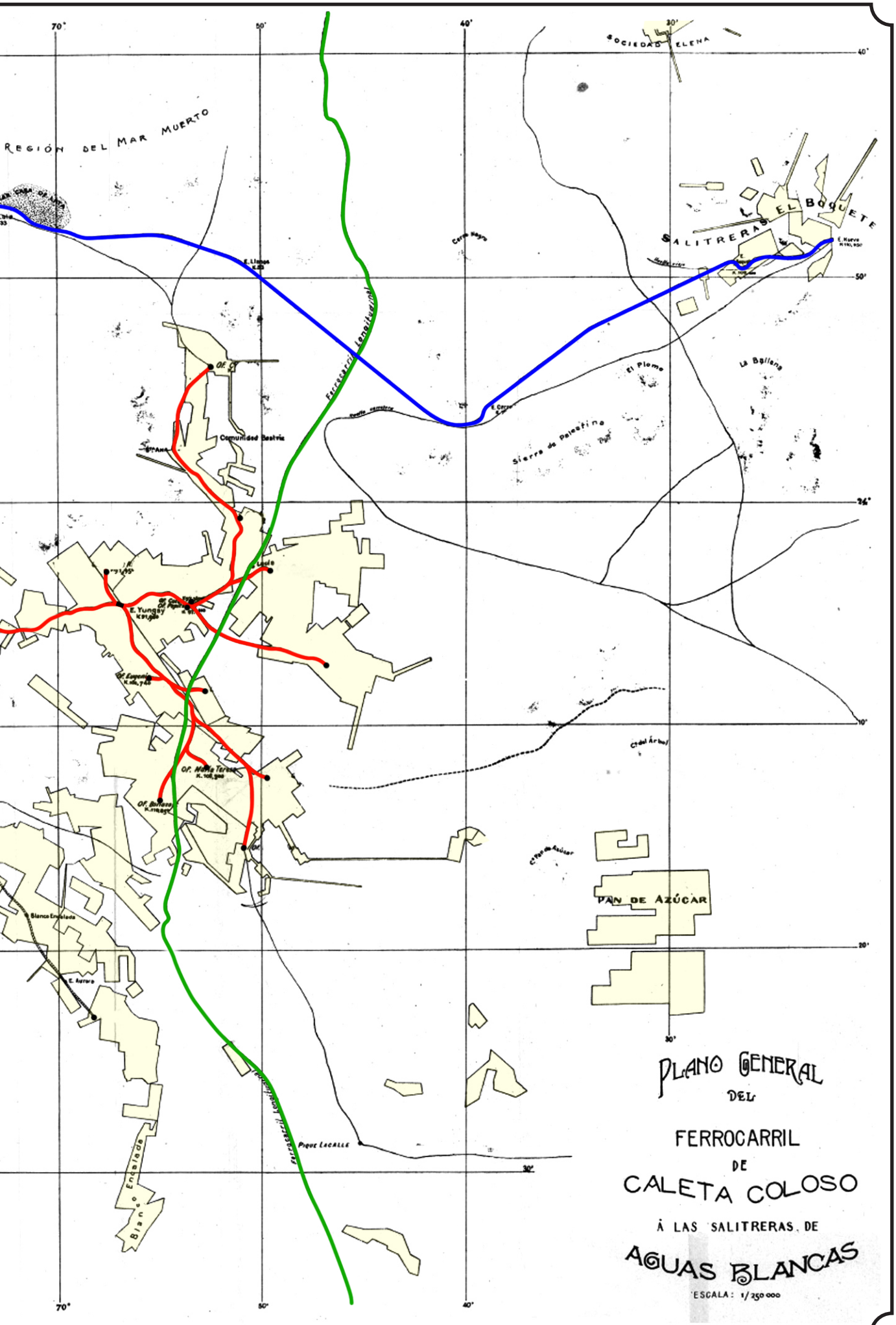
2-8-0 d/w 1000mm, cyls. 381x508mm, built by Henschel in 1906 (11, 12, 15) and 1908 (23-24)

Photo from Henschel 100 year history not confirmed as these locos but probable.

11 'BILBAO'	**519**	w/n 7551

Los Ferrocarriles Particulares de Chile





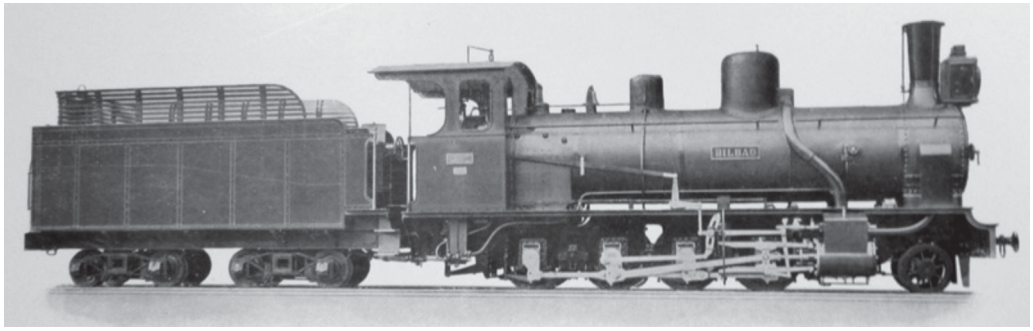
PLANO GENERAL DEL FERROCARRIL DE CALETA COLOSO Á LAS SALITRERAS DE AGUAS BLANCAS

ESCALA: 1/250 000

ALA 10 15 20 kilómetros

ARTURO TITUS S.
Ingeniero Inspector
de Ferrocarriles Particulares.

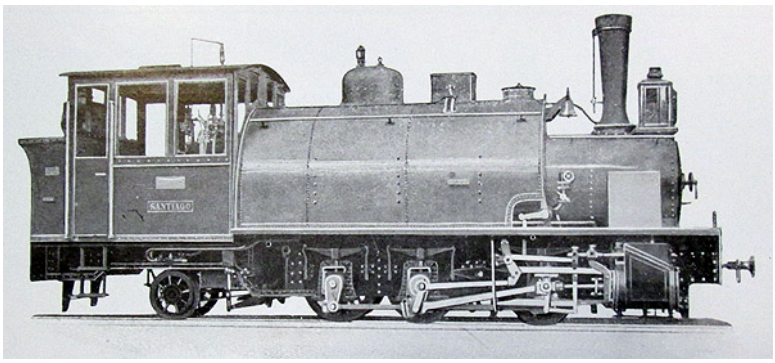
12 'LEVIDA'	**520**	w/n 7753
15 'GALICIA'	**521**	w/n 7754
23 'VALENCIA'	**522**	w/n 8355
24 'ANDALUCIA'	**523**	w/n 8356



0-6-2T d/w ?, cyls. ?, built by Henschel in 1906 (16), 1907 (18-19) and 1908 (25-26)

The photos show that the first three were saddle tanks (unusually for German-built engines), whilst the last two were probably both side tanks. The pictures clearly demonstrate that the boilers were different, rather than the engines being similar behind the differing tanks.

16 'SANTIAGO'	w/n 7550	
18 'H. de ASTORECA'	w/n 7958	
19 'ASTURIAS'	w/n 7959	
25 'ARAGON'	w/n 8353	
26 'BALEARES'	w/n 8354	Originally ordered by *Cía. Salitrera Nueva Castilla*.



No. **16 'SANTIAGO'** as seen in a Henschel catalogue.

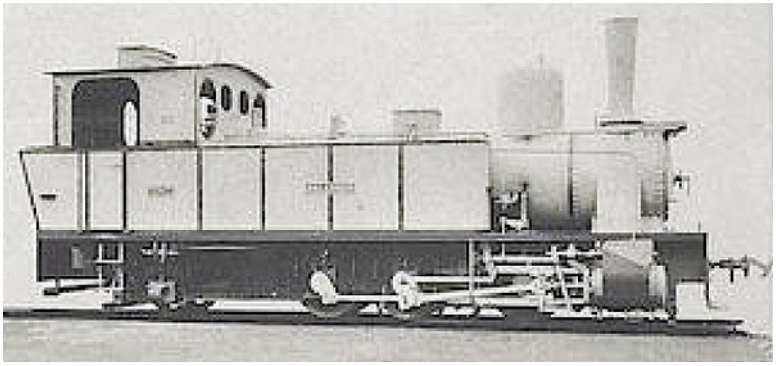
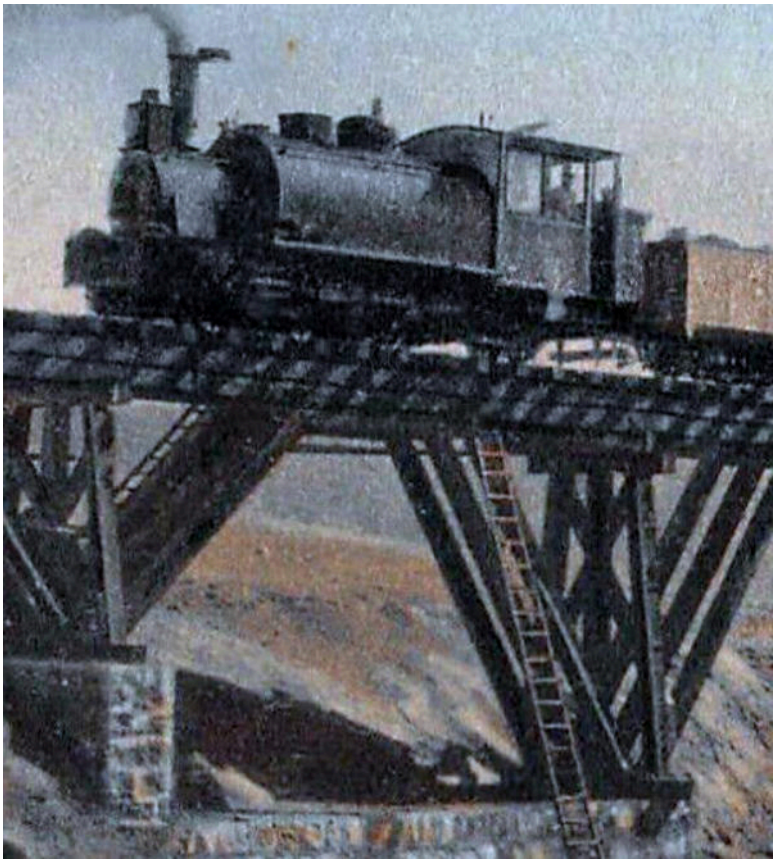


Photo of **26 'BALEARES'** from the Henschel 10,000 loco celebratory history published in 1910. See also section 4.2.8 under Lautaro Nitrate Co.



A tinted postcard from 1915 showing one of the saddle tank 0-6-2Ts at Caleta Coloso.

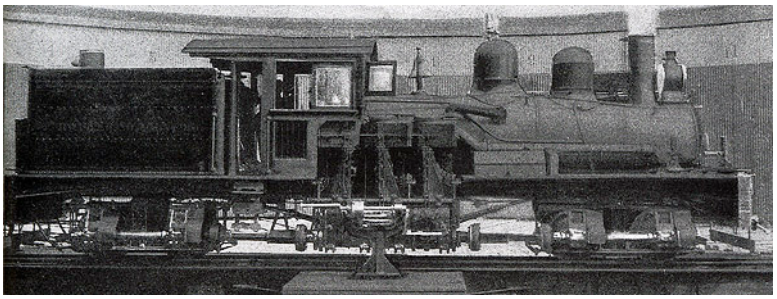
0-4-0T d/w ?, cyls. ?, built by Henschel in 1907

21 'YOLANDA' **501** w/n 7995

0-4-4-0T Shay d/w 26", cyls. 7"x12", built by Lima in 1906? (or 1908 [14])

2 truck 15 ton. Built for American Smelter Securities as their no. **4**, for Santa Barbara, Chile. ASC had links with Chilean Exploration Co. and Braden Copper Co. Santa Barbara is in VIII region de Bio-Bio. Not positively identified, though Chris Walker clearly assumed that the loco was here. The Shay website now seems to imply that this loco was for Mexico. Possibly purchased in 1907?

22 'R. SOTOMAYOR' w/n 1771



Postcard view taken at Caleta Coloso loco shed, via Christopher Walker's book *Railways of Latin America in Historic Postcards*.

0-4-2T? d/w ?, cyls. ?, built by ? in 1907?

Supplied via A. Krupp agency.

27 'NELLIE' w/n ?

The fleet in 1909-1911

In 1909, at the time of the sale, the railway was reported to have 11 2-8-0 locos in service, 4 saddle-tanks, 11 side

tanks, and 1 Shay [15]. The total is exactly as above, but these numbers suggests that loco **27 'NELLIE'** must have been a saddle-tank of some kind. [20] says that the railway had 14 locos for mixed trains and 13 for use at stations, in 1910.

The government publications *Estadistica de los Ferrocarriles Particulares en Explotación* state that the railway had twenty-seven locos in operation, twenty for goods trains and seven for shunting. By 1910 the total had fallen to twenty-five, of which five were for passenger trains, seven for goods trains and thirteen for hunting. They weighed on average 45.04 tonnes each.

during 1909 the railway used 8,304 tonnes of Cardiff coal.

Later transfers from the FCAB after 1912 [14]:

0-6-4T d/w 36", cyls. 15½"x18", built by Hunslet in 1905 (1-3) and 1906 (remainder)

506	w/n 908	Originally *FCAB* **5 'CARACOLES'** and later **16**.
507	w/n 909	Originally *FCAB* **7 'CHUQUICAMATA'** and later **17**.
508	w/n 910	Originally *FCAB* **8 'COLLAHUASI'** and later **18**.
	(w/n 911	Originally *FCAB* **10 'CHARCOTE'** and later **19**. See note below.)
509	w/n 912	Originally *FCAB* **11 'CHIGUANA'** and later **20**.

Reg Carter's list [13] says works numbers 908, 910, 911 and 912 became *FC Aguas Blancas* numbers **506-509**.

2-8-0 d/w 37½", cyls. 15"x20", built by Hawthorn Leslie in 1907 as 2-8-2s

Five were rebuilt from the *FCAB* 2-8-2s numbered **119-128**, and the remainder were withdrawn. Original works numbers were 2674-2683.

525	w/n ?
526	w/n ?
527	w/n ?
528	w/n ?
529	w/n ?

2-8-2 d/w 37½", cyls. 15"x20", built by Hunslet in 1907

Converted to 2-8-0s between 1918 and 1922. One loco rebuilt and renumbered **530** after 1928. Original batch were Hunslet nos. 922-931.

530	w/n ?

4.2.6 *Rancagua al Teniente*
Braden Copper Co. – *Soc. Minera El Teniente*

1907-1980

Background

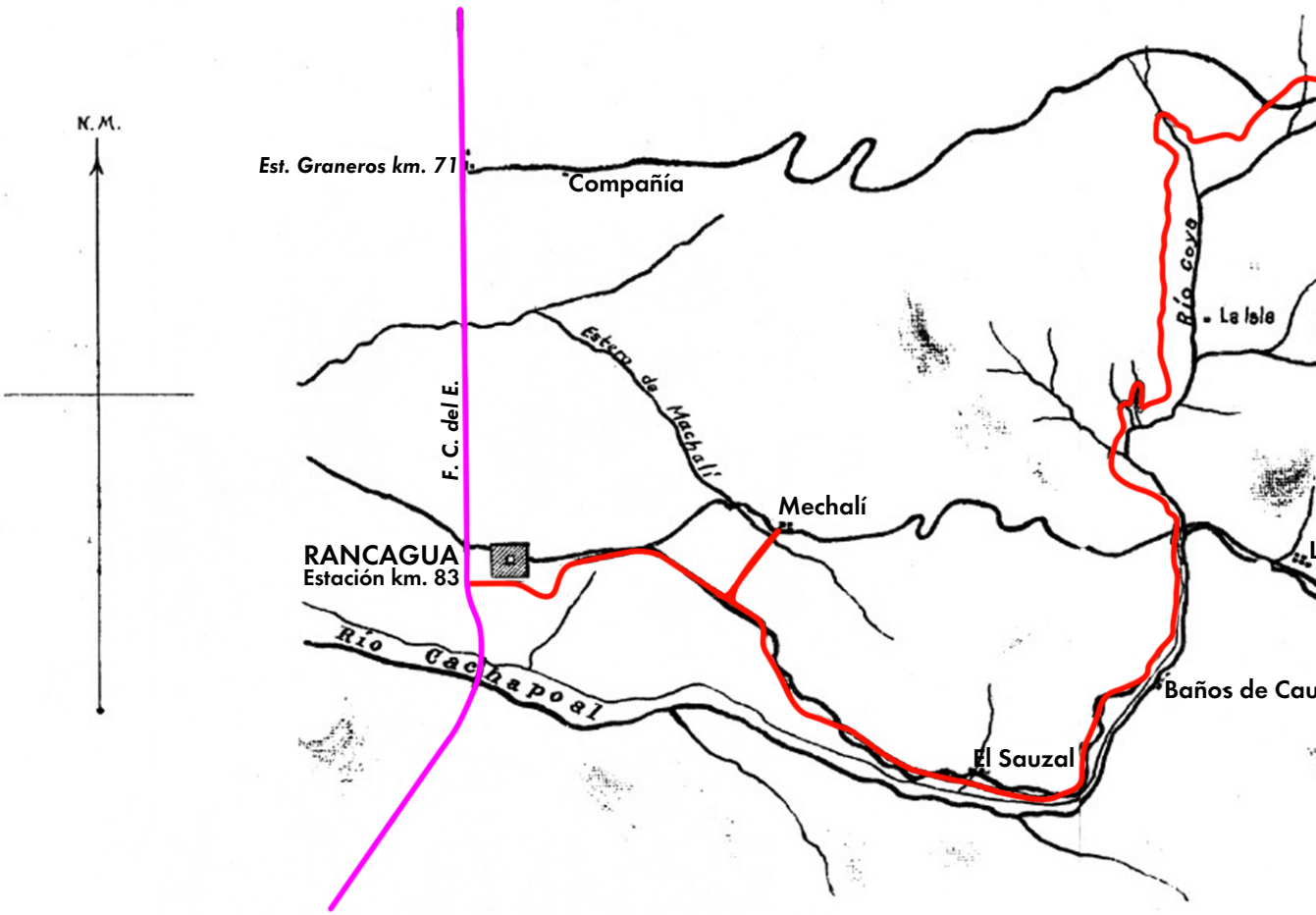
2' 6" Gauge. 69 km long, with a branch of 2.6 km from Colón down to the smelter at Caletones. Height gained from Rancagua up to Sewell is 1620m (5300ft). Gradients average 2% below Coya, and close to 4% above that point. The ruling grade is around 4¾%. Operations started 1907, and the line was substantially reconstructed around 1916 owing to the rapidly increasing traffic. The two truck Shays had a weight of 42T; three truck Shays 60T.
The Braden Copper Co. was nationalized in stages, completed under Salvador Allende's government in 1971, and renamed *Soc. Minera El Teniente*, later becoming part of the *Corporacion Nacional de Cobre del Chile (CODELCO)* Railway operations were suspended in 1974 and complete abandonment was in 1980 [9].



A variety of Braden Copper Co. tickets in an image found on the internet.
Photographer unknown.

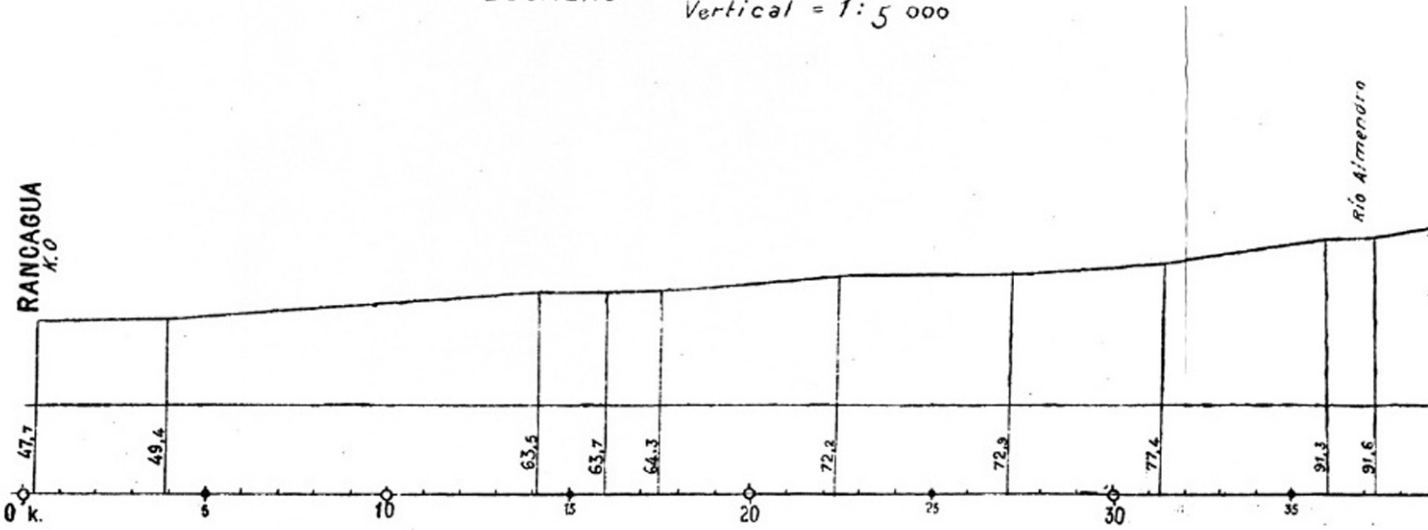
Two years' worth of operating and maintenance details

The details for each loco contained in the monthly railway reports for 1938 and 1939 have been transcribed here to illustrate the overall pattern of operations and repairs on such an intensively-worked narrow gauge line. The terminology in use is unsurprisingly mostly American, but intriguingly the common Chilean adaptation of the English 'bogies', ie. '*boggies*', is sometimes used even when describing such quintessentially US objects as the trucks of Shays.

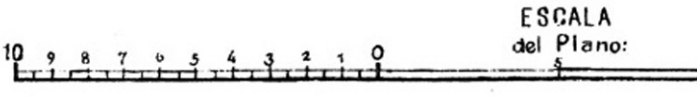


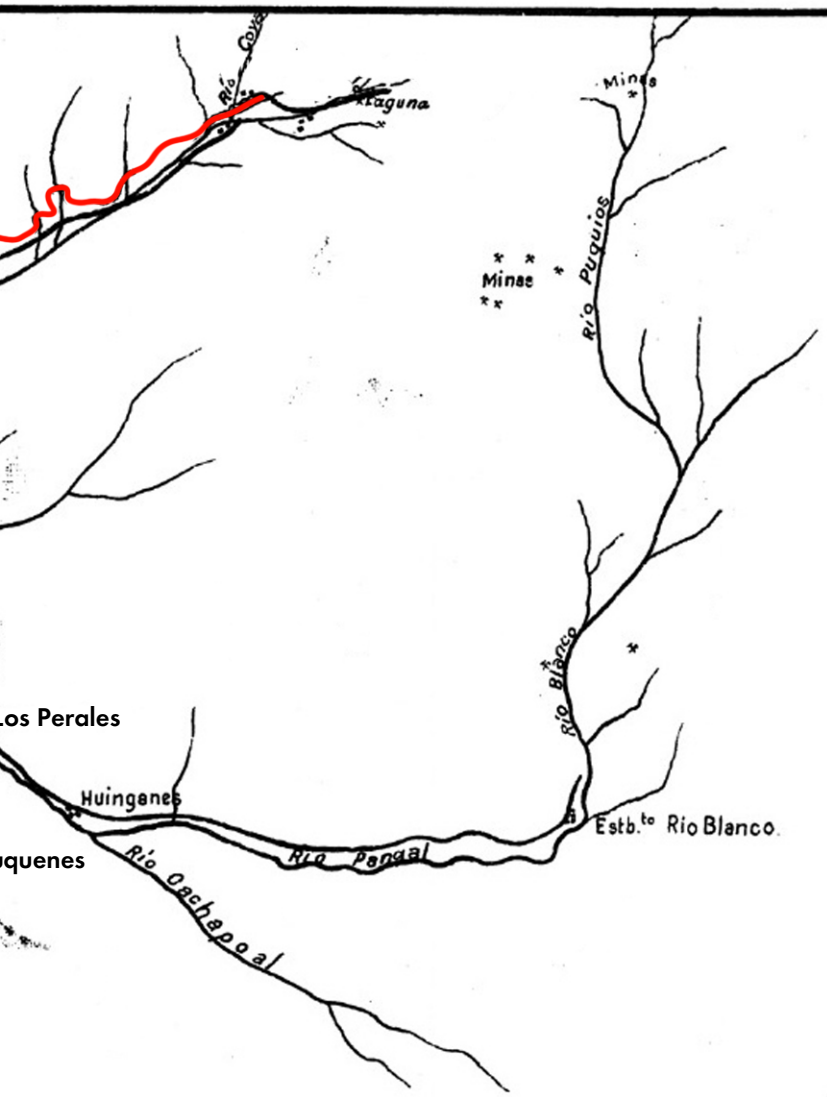
PLANO y PERFIL del FERROCARRIL de RANCAGUA al M

ESCALAS : Horizontal = 1 : 250 000
Vertical = 1 : 5 000

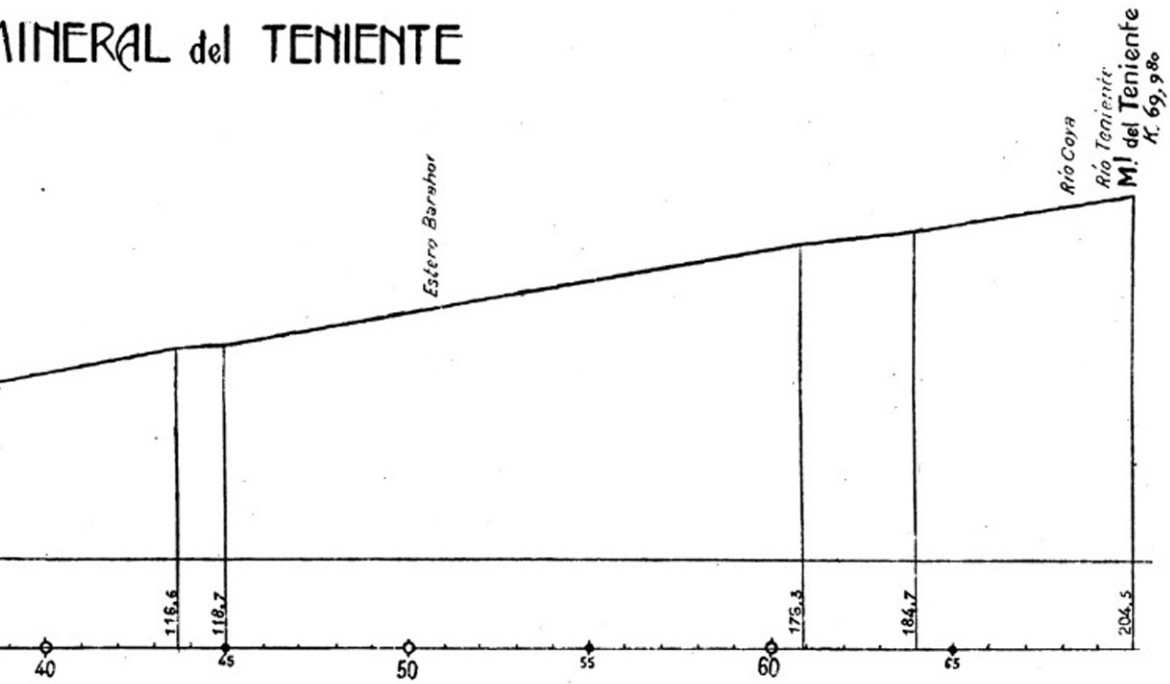


Juan Santa-Cruz Anguita, delt.





MINERAL del TENIENTE



10 15 20 kilómetros

ARTURO TITUS S.
Injeniero Inspector
de Ferrocarriles Particulares.

It is clear that the Braden Copper Co. had found that carrying 10,000 tons per month on a railway originally designed for 100 tons per month was a challenging undertaking. They used their Shays very intensively indeed, and needed to keep them in first class condition. In fact they upgraded them as necessary, replacing slide valves with piston valves on several locos, fitting thermic syphons in the fireboxes and adding a feedwater heater on at least one loco. The later engines were supplied with superheaters from new and certainly a number of the earlier ones (eg. nos. **4** and **5**) later gained them, presumably when replacement boilers were acquired.



Three Shays and a rod loco in the workshop at Rancagua. The Shay just right of centre is no. **12**, whilst the engine at the far left would appear to be no. **1**.

0-4-0ST? d/w ?, cyls. ?, built by ? in ?

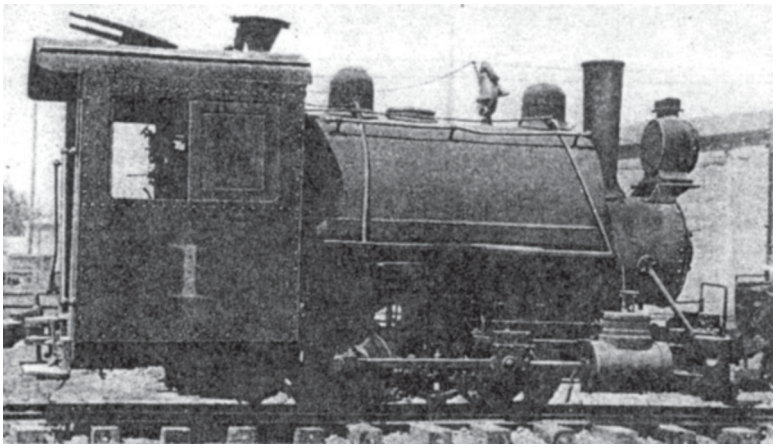
[30] suggests that the no. **1** was an 0-4-0ST but gives no further details. If this was indeed a Porter loco, then an obvious contender is Porter 5215 of 1912, an 0-4-0T with 10x16" cylinders and 30" driving wheels, exported via W. R. Grace & Co. to Chile in late 1912, the gauge being 30" and the weight 18 tons. It is however, rather later a loco than one would expect the railway's loco no. **1** to have been, a 1906 date would suit much better.

1 w/n ?

1938 monthly usage: Apr: available for use as a spare loco. May: no repairs required. Jun: serviced and light running repairs made. Jul: loco working or ready in reserve. Aug: in service, only needing running repairs. Sept: in service, needing only running repairs. Oct: presumably in service, running repairs only. Nov: in shop for boiler work, all tubes changed. Dec: was finished in shop and is now working in the Yard.

1939 monthly usage: Jan: small adjustments made. Feb: filled in with no. **21** on the Rancagua yard switching. Mar: worked half the month in switching service. Apr: as an extra in the yard. May: standing by but not used. Jun: worked 22 ays switching in Rancagua yard, rest of month in shop for repairs to journal brasses. Jul: 17 days switching in Rancagua, rod brasses changed. Aug: worked switching in Rancagua 15 days, no repairs needed Sep: worked only 5 days, no repairs necessary. Oct: not worked during month. Nov: idle all month. Dec: idle all month.

Jan 1940: worked 6 days switching Rancagua yard, remainder of month stood by as a spare.



This may well have been a Porter product.

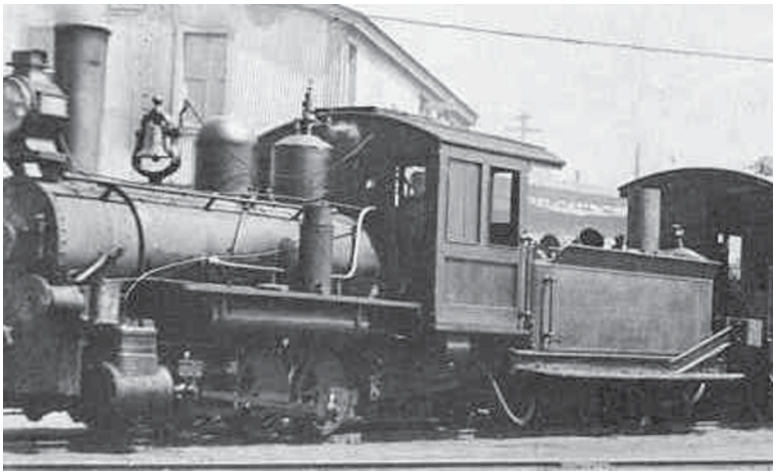
0-6-0 d/w 30?", cyls. 11"x14", built by Porter in 1906

The cylinder size corresponds to the Porter type identified by the builder's code-word 'Herpes', which perhaps did not have the connotations that it does now! Source [30] suggests nos. **2** and **3** were both 0-6-0 tender locos.

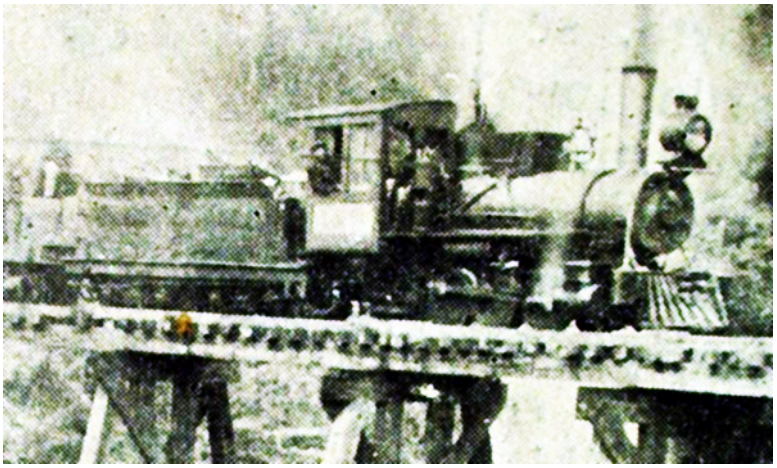
2 w/n 3714 Does not appear in late 1930s loco lists.

3? w/n ?

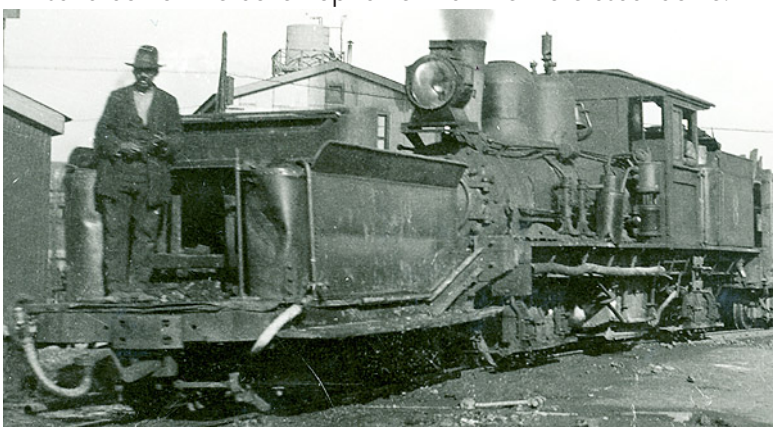




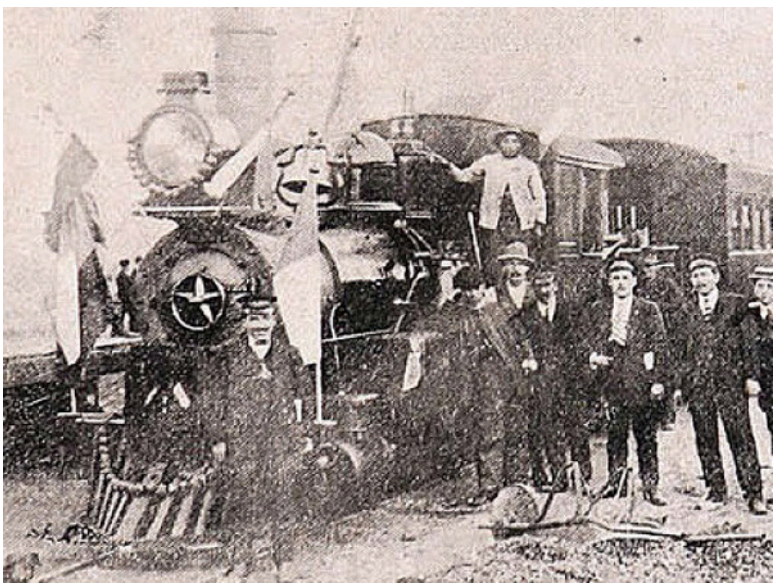
Source of photo unknown. Interestingly, the loco and tender appear to have been fitted with higher level broad gauge buffers to shunt *EFE* stock. That conversion also seems to have involved the addition of wide foot-boards along the sides of the tender.



An identical or similar 0-6-0 though appearing to have a rectangular sand box on the boiler top rather than the more usual dome.



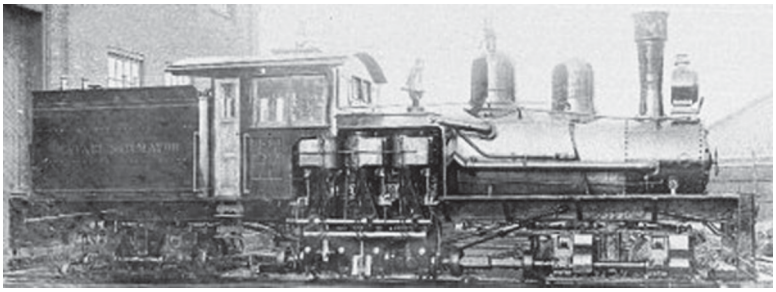
An old tender being pushed by Shay no. **8**. This is almost certainly the tender from the 0-6-0 above, as a close look reveals the same diagonal bracing at the rear which supports the full width bufferbeam that would have carried the European-style broad gauge buffers. There now seems to be some additional pipework.



Supposedly the first train to Coya in September 1911, from *Sucesos* magazine issue 473. Although probably an 0-6-0 this loco does seem slightly different from the other photos in this sequence. The domes for example have wider bases in Baldwin style, and the cab roof curves more tightly at the eaves.

0-4-4-0T Two truck Shay d/w 32", cyls. 11"x12", built by Lima in 1906. Shay website says delivered via W. R. Grace & Co. for Braden Copper Co. as No. **22 'RAFAEL SOTOMAYOR'**, and via Granja & Pompinia of Galetga(?), Chile. However, this does not fit with Braden Copper's number sequence or probable choice of name, and of course no others of their locos were named. The name was painted on the bunker in a Lima builders' photo, in the way that was usually done to indicate the purchaser rather than an actual loco name.

3? w/n 1771 Does not appear in late 1930s loco lists.



0-4-4-0T Two truck Shays d/w 29½", cyls. 10"x12", built by Lima 1909 (4-5), 1911 (6-7), 1912 (8-9)

Class 42-2, empty weights on construction 64,400lbs (no. 4), 67,200lbs (nos. 5 & 6), 64,800lbs (no. 7), 70.306lbs (no. 8), 76,474lbs (no. 9).

4 w/n 2256 1938 monthly usage: Apr: in switching service. May: no repairs required. Jun: serviced and light running repairs made. Jul: boiler tubes welded. Aug: in service, only needing running repairs. Sep: in service, needing only running repairs Oct: presumably in service, running repairs only. Nov: in service in Rancagua yard alternating with no. **5**, only running repairs needed. Dec: slight repairs to trucks and cylinders.

1939 monthly usage: Jan: air pump overhauled, tubes welded, and brake revised. Feb: Rancagua yard switching, only upkeep repairs Mar: switching in Rancagua yard for half a month, running repairs made. Apr: in Rancagua yard switching service, motion fitted up and air compressor overhauled. May: in Rancagua yard switching, but only worked 3 days before had to be shopped for repairs to running gear and engine parts. Jun: in Rancagua yard switching all month, working 22 days and in shop the remainder of days for welding boiler tubes and adjustments to moving parts. Jul: Rancagua yard switching service, only minor repairs. Aug: worked in Rancagua switching all month, boggies revised and motion adjusted. Sep: switching in Rancagua yard 20 days, tubes welded and boggies revised. Oct: worked in Rancagua yard switching all month, tubes welded and rear pinion shaft changed. Nov: in Rancagua yard part of month, tubes welded, and rear pinion shaft changed.Dec: worked 22 days in Rancagua yard switching, only small repairs required.

5 w/n 2257 Shay website says new firebox supplied for superheating in 1938, but no trace of this in maintenance record.

1938 monthly usage: Apr : in switching service. May: no repairs required. Jun: serviced and light running repairs made. Jul: boiler tubes welded. Aug: in service, only needing running repairs. Sep: Loco not mentioned in monthly report. Oct: presumably in service, running repairs only. Nov: in service in Rancagua yard alternating

with no. **4**, only running repairs needed. Dec: shopped for welding tubes and small repairs to motion.
1939 monthly usage: Jan 1939: tubes welded and cylinder base tightened up. Feb: Rancagua yard switching, only upkeep repairs. Mar: switching in Rancagua yard for half a month, running repairs made. Apr: in Rancagua yard switching service, crankshaft repaired and boiler tubes welded. May: switching in Rancagua yard for most of month after no. **4** went into shop. Jun: in Rancagua yard switching all month, no repairs needed. Jul: Rancagua yard switching service, needed valve adjustment and welding of tubes. Aug: not used but stood by as an extra. Sep: switching in Rancagua yard 10 days, tubes welded. Oct: stood by as an extra all month. Nov: in Rancagua yard part of month switching, boiler tubes welded. Dec: worked 8 days in Rancagua yard switching, no repairs required.
Jan 1940: switching Rancagua yard, in shop part of month to have tubes welded and machine parts adjusted.
On display at Colón Alto [22].



No. **5** late in its career when fitted with the double knuckle couplers for shunting broad gauge wagons. The rear tank and bunker in this photo is considerably taller than in the builder's image, implying a rebuild at some point. The large diameter pipe running from the smokebox back to the engine unit also implies that the loco was by now fitted with a superheated boiler.



No. **5**, again bearing the double couplers, and pictured as if heading a celebratory train when for the first time 500,000 tonnes had been carried on the railway in a year. Which year is, however, currently unknown.



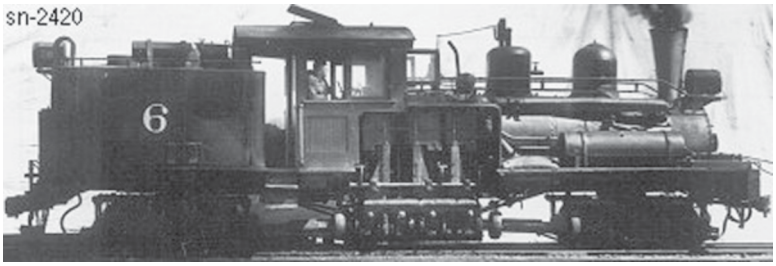
No. 5 as recently repainted and with new woodwork, at Alto Colón in 2019. The loco still carries its dual height couplers.

6 w/n 2420 Fitted with double couplers for shunting broad gauge wagons, but possibly not during the years recorded below, since it spent much of 1938-9 further up the line..

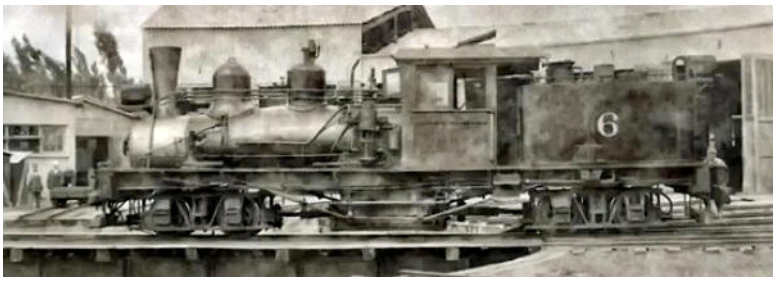
1938 monthly usage: Apr: in for general repair and practically rebuilding, about 50% complete. May: in shop for general overhaul, about 75% complete. Contract let to put new firebox in the spare boiler taken out of this loco. Jun: finished and tried out and in first class shape for working. Jul: in service or in reserve as an extra, not specified. Aug: not specified, work on boiler taken out of this loco completed, new firebox and syphon, new stay and crown bolts, and new tubes. Sep: in service or as an extra but work not specified. Oct: Loco not mentioned in monthly report. Nov: in Colón yard switching, running repairs only. Dec: worked all month in Colón and La Junta with only small running repairs.

1939 monthly usage: Jan: worked part of month in Colón, no repairs necessary. Feb: in Colón switching, worked most of the month. Mar: switching in Caletones yard for the month, running repairs made. Apr: in Colón–Caletones switching service, practically no repairs. May: switching in Colón, worked 16 days. Jun: at Colón in switching service, worked 6 days and was then shopped to change piston rings, eccentrics adjusted and fitted, no 3 valve stem was changed. Jul: in Colón – Caletones switching service, only small running repairs. Aug: worked switching in La Junta or Colón, small running repairs. Sep: worked in Colón yard switching, a total of 12 days in use. Oct: worked in Colón-Caletones switching, running repairs only. Nov: in service in Colón-Caletones yard alternating with no. **9**, only running repairs needed. Dec: stood by as an extra all month in Colón, only worked 4 days, tubes welded.

Jan 1940: worked one day in La Junta and nine days in Colón switching, only small repairs required.

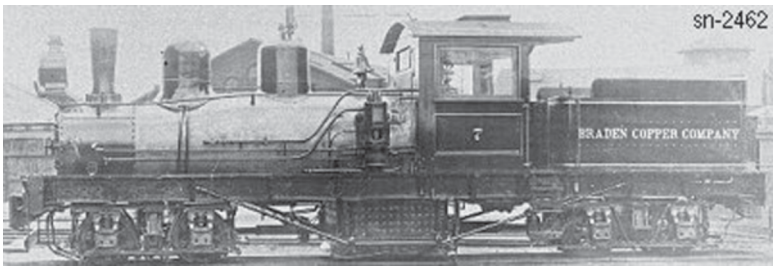




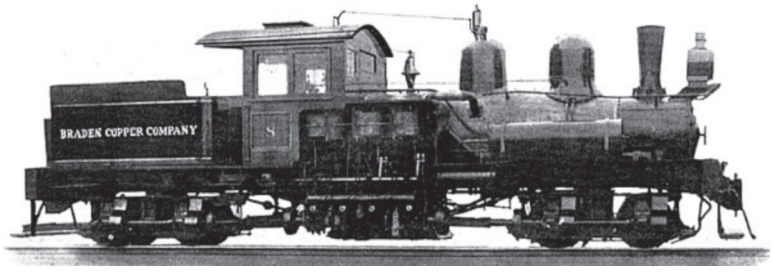


7 w/n 2462 Sept. 1936 ran away from Colón loco shed for 1 km. and met an uphill train. Badly damaged. In service late 1930s [29].
1938 monthly usage: Apr: available for use as a spare loco. May: given slight repair and now at Colón as an extra. Jun: in shop for 16 days for cylinder repairs, crank shft babbiting, welding tubes and repairs to oil and water tanks. Jul: loco working or ready in reserve. Aug: in service, only needing running repairs. Sept: in service, only needing running repairs. Oct: finished in shop after extensive repair job. Nov: broke no. 2 conn. rod on Oct. 5th, and damaged the cylinder which had to be replaced. Dec: worked all month in Colón or La Junta yards and needed only small running repairs.
1939 monthly usage: Jan: worked part of month in La Junta; tubes welded, motion fitted-up and ashpan repaired. Feb: was an extra in Rancagua. Mar: worked 10 days with crane between Copado and La Junta, also 4 round trips with passenger train, only small repairs made. Apr: in Rancagua as an extra. May: switching in Colón, worked 10 days and then stood by as a spare.Jun: at Colón in switching service, required only running repairs. Jul: in Colón – Caletones switching service, small running repairs. Aug: worked switching in La Junta or Colón, small running repairs. Sep: in La Junta yard switching all month though worked only 5 days, and was then shopped for welding tubes and general light repairs. Oct: stood by as an extra nearly all month, on trip with crane to Arroyo Hondo bridge the front headlight was broken and a new one had to be put on. Nov: in La Junta – Sewell yard switching, alternating with no. **8**, boiler tubes rewelded. Dec: stood by as an extra in Rancagua, some repair work done on water tank.

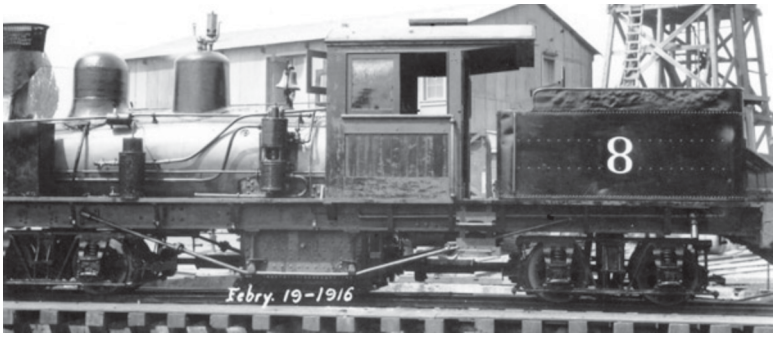
Jan 1940: worked 9 days in La Junta switching and 4 days in passenger service, only small repairs required.



8 w/n 2520 Shay website says new firebox and flue sheets (?) supplied 1925 and boiler now superheated, converted to burn oil.
Derailed and overturned at Km 46 on 17th February 1935.
1938 monthly usage: Apr: in switching service. May: in switching service at Colón. Jun: Loco not mentioned in monthly report. Jul: loco working or ready in reserve. Aug: in service, only needing running repairs. Sept: in service, only needing running repairs. Oct: presumably in service, running repairs only. Nov: working in La Junta, needed only running repairs. Dec: in shop for welding tubes and small repairs to cylinders and motion.
1939 monthly usage: Jan: worked part of month in La Junta; no re pairs were made. Feb: worked steadily in La Junta switching, Mar: worked in La Junta switching 7 days, rest of month in shop, 45 tubes renewed, motion refitted and firebox reviewed, new brickwork required. Apr: in La Junta – Sewell switching service, practically no repairs. May: in shop for welding of tubes and stays, no. 2 cylinder repaired and connecting rod, then worked 3 days switching in La Junta. Jun: at La Junta in switching service, worked 21 days, then piston rings changed, some stay bolts renewed and the firebox brickwork, boiler tubes rewelded. Jul: La Junta – Sewell switching service, only running repairs. Aug: worked switching in La Junta or Colón, broke no. 3 axle on 22nd, requiring it to be shopped for repairs. Sep: in La Junta yard switching all month, running repairs only.
Oct: in La Junta – Sewell yard switching, only running repairs needed. Nov: in La Junta – Sewell yard switching, alternating with no. **7**, boiler tubes rewelded. Dec: worked all month switching in La Junta, no repairs needed
Jan 1940: worked 16 days in La Junta – Sewell switching. Boiler tubes welded and trucks repaired.



A Lima builders' photo, from the Shay website.



On the turntable at the Rancagua shed in 1916.



No. **8** on its side. This was recorded as being in 1929 rather than the 1935 accident mentioned above.

9 w/n 2592

1938 monthly usage: Apr: in switching service. May: in switching service at La Junta. Jun: Loco not mentioned in monthly report. Jul: loco working or ready in reserve. Aug: in service, only needing running repairs. Sept: in service, only needing running repairs. Oct: presumably in service, running repairs only. Nov: in Colón as an extra. Dec: worked all month in Colón or La Junta yards and needed only small running repairs.
1939 monthly usage: Jan: worked part of month in Colón; tubes changed, firebox brickwork changed, all motion adjusted, boggies repaired, wheels filled and tuned, no. 4 crown gear changed, brakes revised. Feb: in La Junta switching but merely as an extra to no. 8. Mar: worked nearly all month in La Junta switching, only running repairs made. Apr: in Colón–Caletones switching service, practically no repairs. May: switching in La Junta until 26th when brought to Rancagua for repairs. Jun: at La Junta in switching service all month. Jul: La Junta – Sewell switching service, brought to Rancagua on 10th, piston rings revised, pinion shaft changed, tubes welded, valves adjusted and rod brasses changed. Aug: worked switching in La Junta or Colón, needed repairs to some stay bolts, also eccentrics and straps were fitted. Sep: in Colón yard switching all month and worked all days except the 12 that no. **6** worked. Running repairs only. Oct: in Colón - Caletones switching all month, only running repairs. Nov: in Colón – Caletones yard switching, alternating with no. **6**, running repairs only. Dec 1939: worked 9 days in Colón switching, on the 16th it was brought to Rancagua for small repairs. Jan 1940: in shop all month for change of tubes and for truck

repairs.

The Sauzal bridge accident

In early March 1911 a train was crossing the timber trestle bridge at Sauzal 19km east of Rancagua when it collapsed, depositing a Shay and the first wagons into the gorge beneath, with ten resulting deaths and around twenty-five injured. The loco concerned is reported to have been no. **5**. Photos in *Sucesos* magazine show that the loco was dismantled before rescue of the various parts.

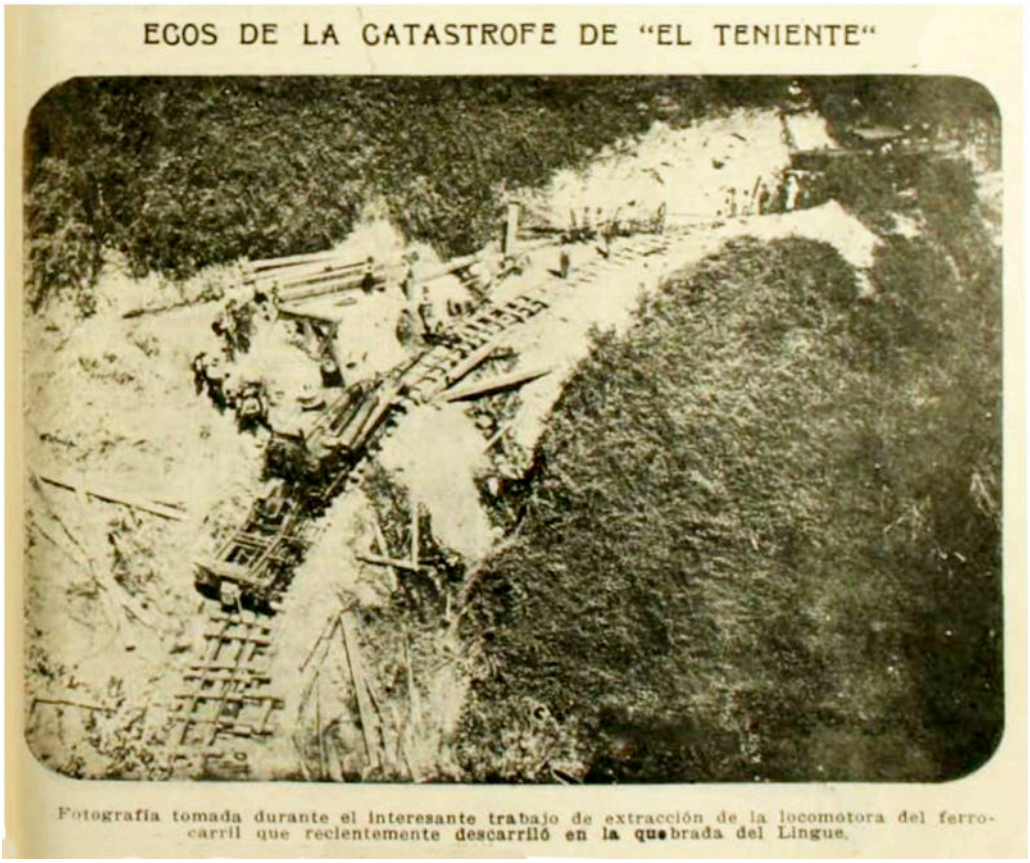


La catástrofe del Sauzal.

El día jueves de la semana anterior, es decir el mismo día que se había producido la norrorosa catástrofe del Sauzal, nos dirigimos á Rancagua para de ahí continuar viaje al sitio del suceso. Por desgracia, en esa ciudad tropezamos á nuestra llegada con el grave inconveniente de

VISTA QUE DA UNA IDEA DE LA MAGNITUD DEL SINIESTRO.

VISTAS DEL PUENTE DERRUMBADO Y DE LOS TRABAJOS DE SALVAMENTO.



The fleet in 1911

The government publication *Estadistica de los Ferrocarriles Particulares en Explotación* states that the railway had seven locos in operation, one for passenger trains, five for goods and one for shunting., and weighing on average 70.00 tonnes each. This last figure is clearly incorrect. The total of seven engines probably includes four Shays, numbers **4** to **7**, and three rod locos, numbers **1** to **3**. However, it is interesting that the latter are clearly of different types, one for passenger use, one for 'carga', and the last for switching.

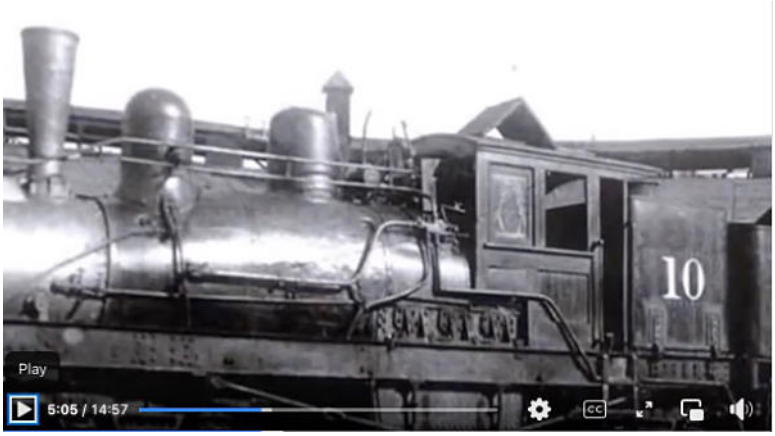
0-4-4-4-0T Three truck Shays d/w 32", cyls. 11"x12", built by Lima in 1914

Class 60-3, empty weight on construction 97,085lbs (no. 10), 94,620lbs (no. 12).

10 w/n 2753 1938 monthly usage: Apr: in freight service. May: in freight service. Jun: serviced and light running repairs made. Jul: boiler tubes re-welded, piston rings renewed on no. 2 and 3 cylinders. Aug: in service, only needing running repairs. Sep: in shop nearly all month with broken frame, two cylinders repaired, crankshaft babbited and numbers of broken staybolts replaced. Oct: in service all month, only running repairs needed. Nov: in freight service all month, needing only running repairs. Dec: in freight service all month, only small running repairs.

1939 monthly usage: Jan: in freight service all month, only minor repairs needed. Feb: worked all month in freight service. Mar: under repairs all month, tubes being changed, also cyl. 1, all motion being adjusted. Apr: repairs finished and in freight service all month. May: in freight service all month, only minor repairs needed. Jun: worked all month in freight service, only small repairs. Jul: worked on freight haulage all month, no. 4 crankshaft bearing re-babbited, tubes re welded and valve adjustments made. Aug: worked in freight service, only running repairs. Sep: worked all month in freight service, con-

siderable light repairs, eg. changing piston rings, revision of valve setting, changing 31 stay bolts and replacing three valve stems. Oct: made two trips only, needs extensive truck repairs, which will be made in near future. Nov: worked half of month in freight service, repairs made to boggies, water tank and machine parts. Dec: came out of shop on 30th, considerable repair work done to boggies, water tank and machine parts.
Jan 1940: worked 17 days in freight service, a tire broke on the 18th, boiler tubes were welded.



Not a good photo of no. **10**, from a video, but the best found so far.

12 w/n 2801

1938 monthly usage: Apr: in freight service. May: in freight service. Jun: serviced and light running repairs made. Jul: loco working or ready in reserve. Aug: in service, only needing running repairs. Sept: in freight service all month, needing only small repairs. Oct: in repairs all month changing stay bolts and crown bolts. Nov: shopped for general boiler repairs, all stay bolts and crown bolts being changed, also tubes. Dec: in shop for general overhaul, about 60% finished.
1939 monthly usage: Jan: in shed for general repairs which were finished, tried out and put back in steady service. Feb: worked all month in freight service. Mar: all month in freight service, only small repairs necessary. Apr: in service all month. May: in freight service 18 days, repairs made to dry pipe and to piston rings of cyls. 2 and 3. Jun: worked all month in freight service, only small repairs. Jul: worked on freight haulage all month, tubes rewelded, superheater revised, and floating bushing on no. 2 piston rod changed. Aug: worked in freight service, only running repairs. Sep: worked 15 days, one pinion shaft changed, superheater units revised and tested and other minor repairs. Oct: in freight service all month with practically no repairs. Nov: worked all month on freight haulage, front pinion shaft replaced, piston rings renewed in all cylinders, boiler tubes rewelded and superheater units tested. Dec: in freight service all month, and needed only running repairs.
Jan 1940: worked 12 days in freight service, on the 4th crankshaft b roke requiring a new one, whilst in shop small repairs were made.



A numbering puzzle

Shay no. **10**, built in March 1914, fits into the chronological arrivals sequence after nos. **4-9**. No. **12** was also built in 1914 (though later, in September), but in fleet number terms it is after Shay number **11** (see below) which was built in 1917 for a different customer and may only have arrived at Rancagua several years later. Then there is no known loco no. **13**, but numbers **14-18** were built in 1916. There must therefore be a suspicion that there was an earlier loco numbered **11**, which arrived in 1914 but which was withdrawn perhaps by the early 1920s, leaving a vacant space for the Shay listed below to take. Interestingly, this thesis is supported by the photo from *Sucesos* magazine on an earlier page, which shows a small 0-6-0 or similar as the railway's number **11**. A minor detail is that Shay no. **11** was Lima 2796, which should have logically been built in 1914 rather than 1917 anyway.

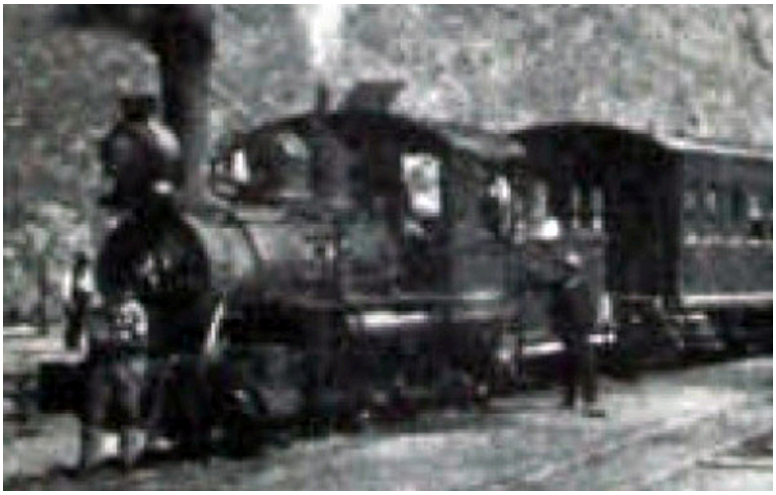
0-6-0? d/w 30", cyls. ?, built by Baldwin in 1912-3

Ordered via the American Smelting and Refining Co., which, like Braden Copper, had become part of the Guggenheim empire. Possibly they supplied smelting and refining machinery and locomotives too when required. Connelly's Baldwin list unfortunately gives no cylinder dimensions, and shows the wheel arrangement as 4-2-0 which is not plausible. The gauge is definitely shown as 2' 6", the running number as **1**, and the second owner as Braden Copper Co. Whilst the entry in the list for this loco cannot be relied upon, there is no other mention of Braden Copper in the Baldwin list and thus the presence of those words is likely to have some significance.

11 w/n 40037



Photo from *Sucesos* issue 654 in April 1915, captioned as showing loco no. **11**.



This would appear to be the same engine or a similar, as seen this time in *Zigzag* issue 386 of 1912.

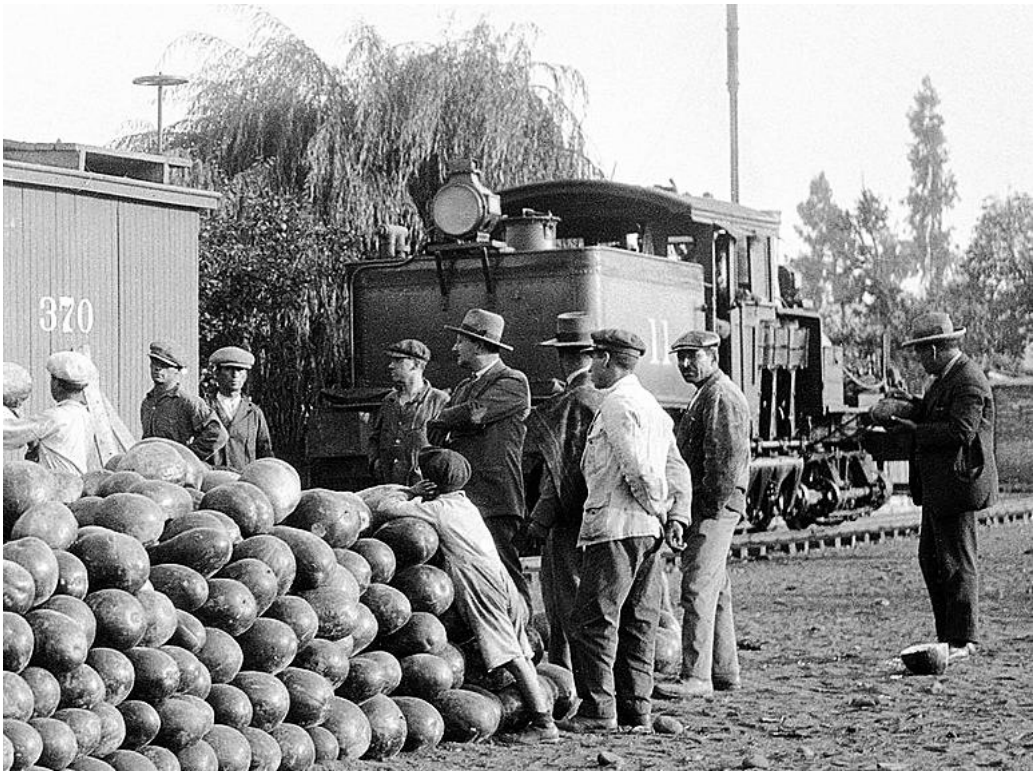
0-4-4-0T Two truck Shay

The Shay website has this as ordered in 1917 via W. R. Grace & Co., New York, NY, for the *FC Central Dominicano* as their no. **14**, Puerto Plata, Dominican Republic, and then again via W. R. Grace to Braden Copper at an unknown date. Class 42-2 empty weight on construction 87,900lbs, which was considerably heavier than the other two truck locos here. The *FCCD* did indeed replace a section of rack railway with two Shays (Lima 2796 and 2961 in 1917, running nos. **14** and **15**) but both moved on to Chile according to the Shay locomotives website at http://www.shaylocomotives.com ; one to a nitrate *oficina* in the north and the other to the BCC as explained here. However [32] categorically states that both were still working on the *FCCD* in 1923.

11 w/n 2796 Shay website says new copper firebox supplied 1922, which might be when this loco arrived in Chile from the Dominican Republic. [30] suggests this was a Shay but a very unfortunate one, which derailed or had other accidents every time it ventured up the line. It was also said to have been bought from the *FCAB* rather than directly from Lima, and to have weighed 60 tons on two trucks which sounds unlikely. It apparently was relegated to shunting at Rancagua yard and was dismantled around 1940. However, it certainly does not appear in loco lists in the late 1930s [29].



Three Shays together, including on the right no. **11** which can be seen to be more solidly built than no. **4** in the middle. No. **10** is on the left. All three engines retain the cast link and pin coupler blocks with which they were probably delivered.



Braden Copper Co. Shay no. **11** in the background, whilst melons are loaded for transport up to Sewell. This is the only other view discovered showing no. **11**, and whilst it does not give a good view of the loco, it does illustrate the great height of this engine in comparison with the box-car on the left.

No details known

This number may not have been used.

13 Does not appear in late 1930s monthly reports [29].

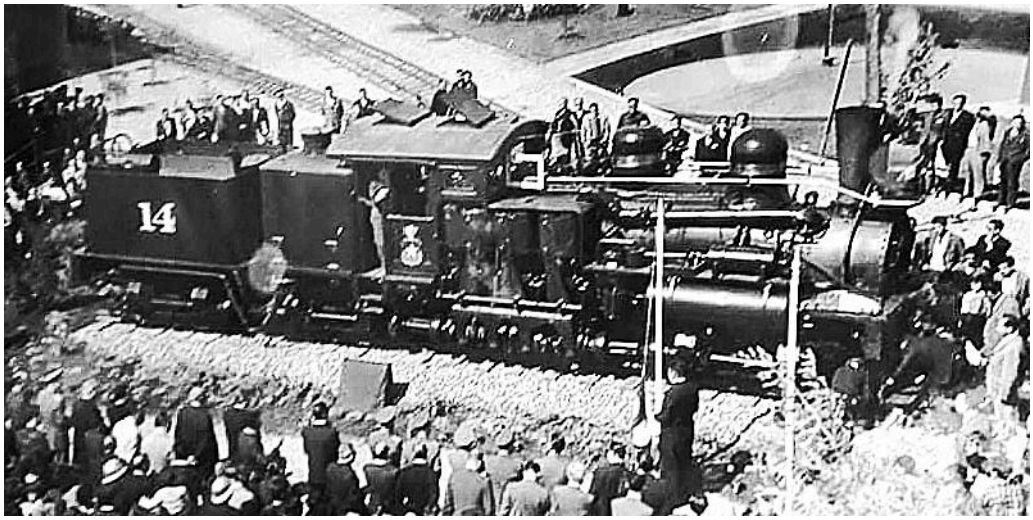
0-4-4-4-0T Three truck Shays d/w 32", cyls. 11"x12", built by Lima in 1916

Class 60-3, empty weights on construction 106,105lbs (no. 14), 103,352lbs (no. 15).

14 w/n 2876 1938 monthly usage: Apr: in for general overhaul, changing tubes and an all round fitting up, about 90% finished. May: repairs finished and now in freight service. Jun: serviced and light running repairs made. Jul: small running repairs made. Aug: in service, only needing running repairs. Sept: in freight service all month, needing only small repairs. Oct: in service all month, only running repairs needed. Nov: in freight service all month, needing only running repairs. Dec: in freight service all month, only small running repairs.

1939 monthly usage: Jan: worked all month, only small repairs. Feb: worked all month in freight service. Mar: all month in freight service, only small repairs necessary. Apr:shopped for boiler repairs, this will be a two to three month job. May: in shop for boiler repairs, stay and crown bolts being changed, and a new firebox tube-sheet. Jun: under general repairs, 75% completed. Jul: under general repairs, about 90% completed. Aug: under general repairs, about 95% done. Sep: still under general repair and is about completed. Oct: has been in shop for months and has now been completed, practically rebuilt and now ready for freight service. Nov: in freight service 17 days, after general repairs it gave lots of trouble. New Airoil burner was unsatis

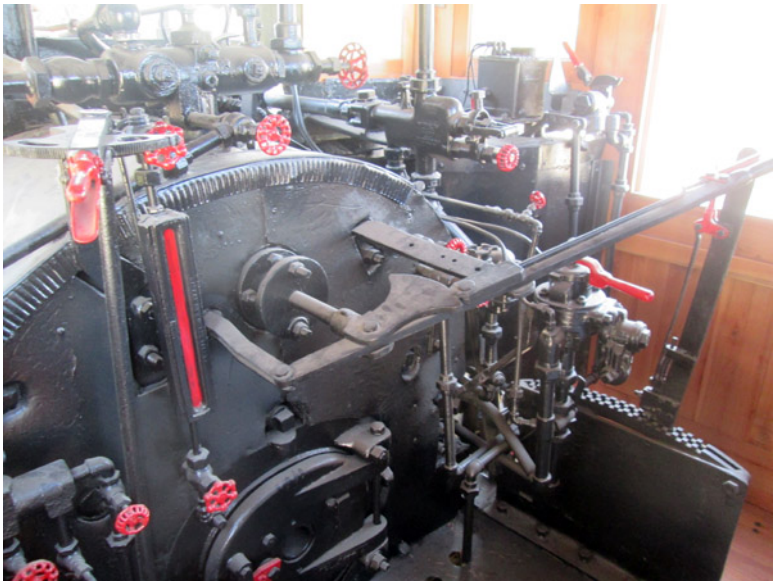
factory and was removed. Derailed on 25th in Rancagua yard owing to a loose tire Dec: in freight service all month, and needed only running repairs.
Jan 1940: worked 22 days in freight service, small running repairs made.
Withdrawn 1953 according to plaque displayed with locomotive. Preserved at front of CODELCO compound on Avenida Millan at Rancagua. All woodwork replaced and loco repainted 2019.



No. **14** newly plinthed in Rancagua and being ceremonially unveiled.



No. **14** as seen in April 2019, after repainting and the replacement of the woodwork including the cab, running boards, buffer beams and switchers' platforms. It can been that this loco is also superheated, as evidenced by the large diameter steampipe leading back from the smokebox to the engine unit.





The plaque displayed in front of Shay no. **14**.

15 w/n 2877

1938 monthly usage: Apr: available for use as a spare loco. May: at Rancagua awaiting repair work once no. 6 has been finished. Jun: tied up for complete repair including change of boiler. Jul: in shops for general overhaul, about 30% completed. Aug: under general repairs being practically rebuilt, 60% completed. Work started to change firebox of boiler removed from this loco. Sept: finished and tried out. Satisfactory and contract with mechanics was paid. Oct: in service all month, only running repairs needed. Nov: in freight service all month, needing only running repairs. Dec: in freight service all month, only small running repairs.

1939 monthly usage: Jan: worked nearly all month, steam distribution rectified, cylinder rings changed, no. 3 floating bushing changed, and studs in cylinder base no. 3 renewed. Feb: worked all month in freight service. Mar: all month in freight service, only small repairs necessary. Apr: in freight service all month, rear pinion shaft renewed, new piston rings in all cylinders, some truck repairs.

May: worked 11 days in freight service, later in month cyls. 2 and 3

rebored and new rings placed. Jun: worked all month in freight service, only small repairs. Jul: worked half of month on freight haulage, no. 3 cylinder required changing of valve stem, and other mechanisms. Pinion shaft changed in middle truck, tubes rewelded and steam distribution adjusted. Aug: worked in freight service, only running repairs. Sep: worked 9 days, running repairs as necessary. Oct: in freight service all month, with only small repairs. Nov: worked in freight service 12 days, running repairs made. Dec: in freight service 17 days, considerable light repairs needed.
Jan 1940: worked 15 days in freight service, small repairs made.

0-4-4-0T Two truck Shays d/w 29½", cyls. 10"x12", built by Lima in 1916

42 ton, class 42-2, empty weights on construction 73,204lbs (no. 16), 74,356lbs (no. 17), 72,940lbs (no. 18). Note that Shays 2873-2877 were probably ordered as one lot, but that the two highest numbered ones were the three truck locos which actually ended up with lower running numbers (**14-15**) than the others.

16 w/n 2873

1938 monthly usage: Apr: in passenger service. May: in passenger service all month, running repairs day-to-day Jun: serviced and light running repairs made. Jul: loco working or ready in reserve. Aug: in service, only needing running repairs. Sept: in service, needing only running repairs Oct: in passenger service all month, only running repairs needed. Nov: worked passenger trains all month alternating with 17 and 18, running repairs made. Dec: worked all month.
1938 monthly usage: Jan: worked most of month and required no repairs. Feb: worked all month in passenger service, only small repairs necessary. Mar: worked 11 days in passenger service, then broke crank shaft, new one put on. Other repairs kept loco in shop all month. Apr: in passenger service all month, no repairs required. May: with no. 18 did all passenger work, needing only running repairs. Jun: worked all month in passenger service, only running repairs needed. Jul: in shop all month, tubes in bad shape and are being changed, new oil burner being installed. Aug: did not work, considerable repairs made, new oil burner and new tank heater, new brickwork, piping arrangements, etc. Boggies were revised and other adjustments. Sep: worked on passenger trains 22 days, only small running repairs needed. Oct: in passenger service all month, only small running repairs. Nov: in passenger service all month, needing only minor repairs. Dec: worked all month.
Jan 1940: worked all month in passenger service, small repairs made.

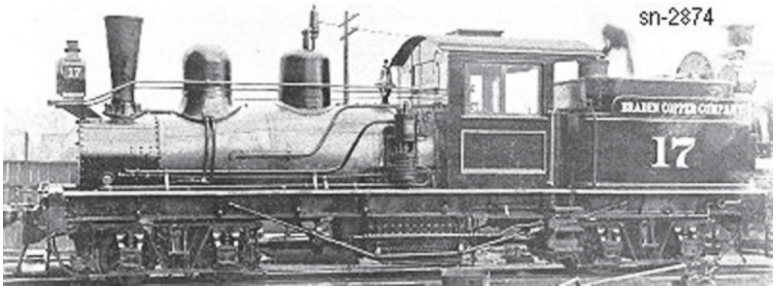


17 w/n 2874

1938 monthly usage: Apr: available for use as a spare loco. May: no

repairs required. Jun: serviced and light running repairs made. Jul: loco working or ready in reserve. Aug: in service, only needing running repairs. Sept: in service, needing only running repairS. Oct: in passenger service all month, only running repairs needed. Nov: in passenger service all month, needing only minor repairs. Dec: worked all month.

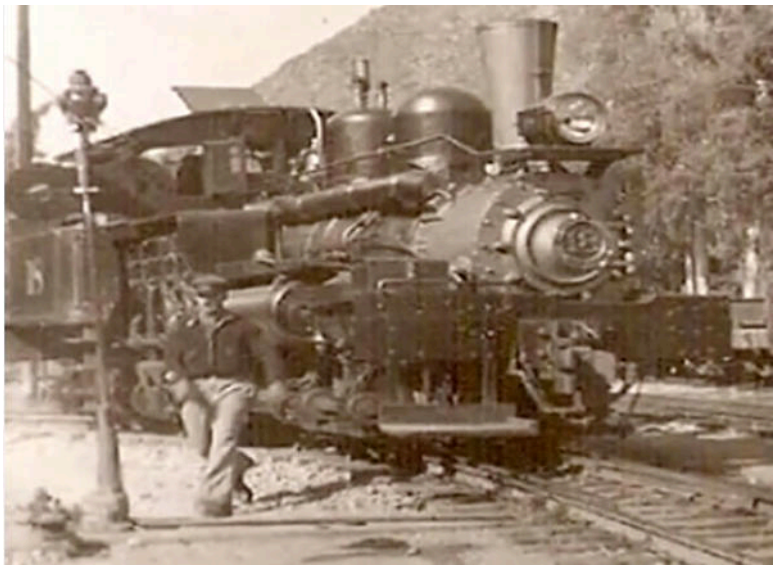
1939 monthly usage: Jan: worked most of month and required no repairs. Feb: in Colón switching, mostly as an extra. Mar: nearly all month in passenger service, no repairs necessary. Apr: in passenger service 5 days, in rest of month small repairs made and tubes welded. May: standing by as an extra. Jun: standing by as an extra all month. Jul: in passenger service all month, running repairs only. Aug: worked all month in passenger service, only running repairs needed. Sep: worked on passenger trains 13 days, only small running repairs needed. Oct: in passenger service all month, only small running repairs. Nov: worked passenger trains all month alternating with 16 and 18, running repairs made. Dec: worked in Colón part of month a made two trips on passenger train, only small running repairs needed. Jan 1940: worked half of month in Colón switching, no repairs required.



18 w/n 2875 1938 monthly usage: Apr: in passenger service. May: in passenger service all month, running repairs day-to-day Jun: tubes changed. Jul: boiler tubes changed, piston rings renewed, crank bearings re-babbited, all motion gone over. Aug: in service, only needing running repairs. Sept: in service, needing only running repairs Oct: presumably in service, running repairs only. Nov: received following repairs, reboring of all cyls., bronze ring replaced for all cyls., floating bushes placed on crank connecting rod bearings, general adjustment to all machine parts. Dec: worked all month.

1939 monthly usage: Jan: worked most of month and required no repairs. Feb: worked all month in passenger service, only small repairs necessary. Mar: nearly all month in passenger service, no repairs necessary. Apr: in passenger service most of month, boiler tubes rewelded. May: with no. **16** did all passenger work, needed only running repairs. Jun: worked all month in passenger service, some repairs needed, eg. new piston rings, change of front line shaft, adjustments to motion and steam distribution. Jul: in passenger service all month, running repairs only. Aug: worked all month in passenger service, only running repairs needed. Sep: worked on passenger trains 29 days, only small running repairs needed. Oct: under repairs all month, all tubes changed, 25 stay bolts replaced, all moving

parts refitted and adjusted, boggies repaired. Nov: worked passenger trains all month alternating with **16** and **17**, running repairs made
Dec: in passenger service all month.
Jan 1940: worked all month in passenger service, small repairs made.



No. **18**, as seen in a still from a video.

0-4-0ST d/w ?, cyls. 11"x16", built by ALCo Rogers in 1916

Running numbers are as given in the ALCo list. These locos probably arrived directly into the main railway fleet.

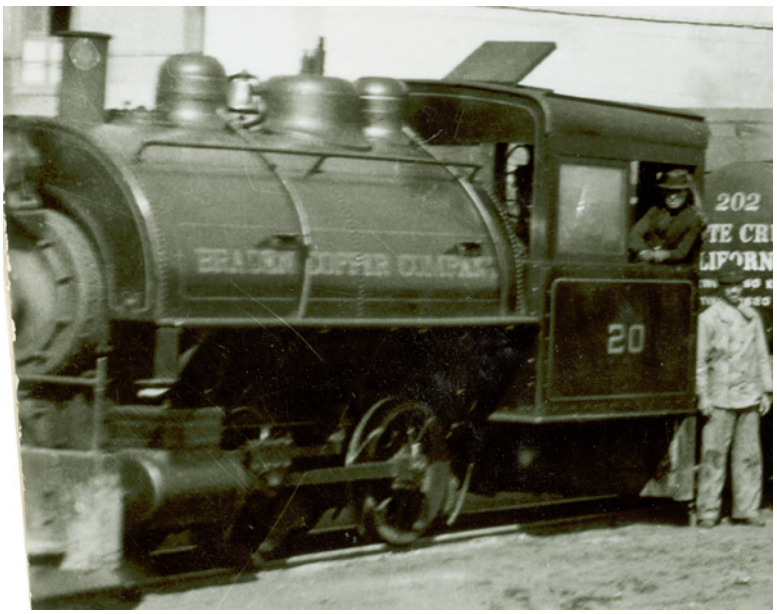
19	w/n 52612	Clearly not running with these numbers in late 1930s as locos numbered **19** & **20** were in freight service meaning that they were the Shays **19** & **20** mentioned below. Possibly renumbered **21** on the arrival of Shay no. **19** in 1919.
20	w/n 52613	Clearly not running with these numbers in late 1930s as locos numbered **19** & **20** were in freight service meaning that they were the Shays **19** & **20** mentioned below. Possibly renumbered **24** on the arrival of Shay no. **20** in 1929.

Switcher re-numberings

The last Shays purchased arrived in 1919 and 1929. If these ALCo tank locos were indeed renumbered to move them out of the way of the new Shays, as seems likely, then the renumberings may well have taken place separately as Shays **19** and **20** arrived. Therefore it is quite possible that ALCo no. **19** was renumbered as **21** in 1919, but that ALCo no. **20** did not need to be renumbered until 1929 when the very last Shay arrived. If another pair of switchers had gained numbers **22** and **23** in the meantime, as seems likely, then no. **20** would have had to take the number **24**. That might well explain why switchers **21** and **24** were in service at the end of the 1930s, whilst **22** and **23**, presumably of a less satisfactory design, were not.

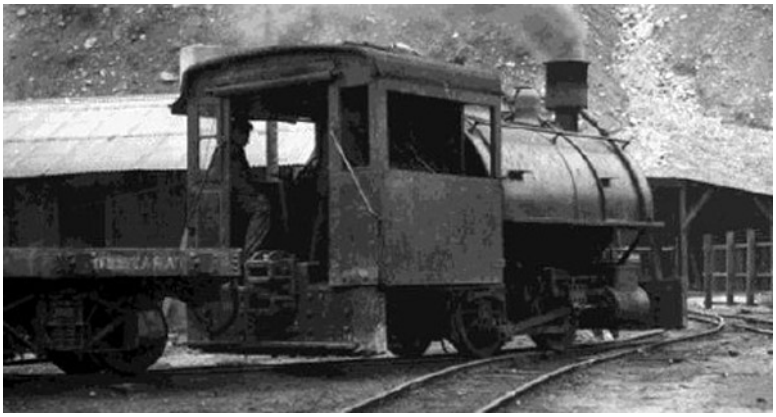


These photos both show loco no. **20**, suggesting that the ALCo pair did indeed carry the numbers **19** and **20**, until renumbered to make way for Shays **19** and **20**.





The photo above also shows no. **20**, one of the ALCo Rogers pair, originally nos. **19** and **20**, and that below almost certainly is also one of this pair. Note that three out of these four photos were taken up at La Junta rather than merely in Rancagua yard, and those three all on the same day.



0-4-0ST d/w 30½", cyls. 11"x16", built by Vulcan Iron Works in April 1918

These locos may well have been ordered for use on construction work at Barahona and Sitio K, only entering the main railway fleet after the arrival of Shay no. **19** and the consequent renumbering of ALCo no. **19** as **21**. A 1918 film includes clips showing saddle tanks at work in opencast areas of the mine, possibly up at Barahona where the big tailings dams now stand. https://www.youtube.com/watch?v=Lo_DV3E84PE

22?	w/n 2783	Connolly's VIW list gives the loco the owner's number P9901.
23?	w/n 2784	Connolly's VIW list gives the loco the owner's number P9902.

In 1939 there were two switchers numbered **22** and **23** out of use and awaiting scrapping. That is perfectly logical if they were no longer needed and seen as less satisfactory than the ALCos.



The domes on this loco suggest that it was a Vulcan Iron Works engine. The cabside number might well be **22**. The loco is fitted with knuckle couplers. The photo below would appear to show the same type of engine and probably on the very same occasion.



0-4-4-4-0T Three truck Shays d/w 32", cyls. 11"x12", built by Lima in 1918 (19) and 1929 (20)

Class 60-3, empty weights on construction 109,600lbs (no. 19), 99,600lbs (no. 20).

19 w/n 3013 Sept. 1935 collided with loco no. **20** at km. 32, and suffered bent frames [29].

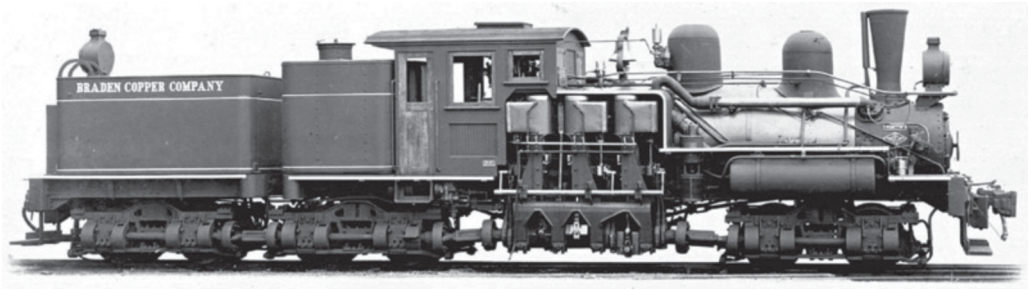
1938 monthly usage: Apr: in freight service. May: in freight service, tied up three times for different repairs. Jun: serviced and light ru-n ning repairs made. Jul: loco working or ready in reserve. Aug: in service, only needing running repairs. Sept: in freight service all month, needing only small repairs. Oct: to be shopped for chang-ing boiler and overhauling all motion etc. Work has started. Nov: shopped for general repairs, repaired boiler (ex no. 15) with new firebox and thermic syphon is being put on, and a general overhaul-ing of trucks, cylinders, motion and all other parts. Old boiler will receive new firebox when that arrives. Dec: in shop for general over-haul, about 60% finished.

1939 monthly usage: Jan: In shop for general repairs and about 90% completed. Feb: worked all month in freight service, after coming from shop after a general rebuilding. Mar: in freight service all month, practically no repairs. Apr: in freight service and required only running repairs. May: in freight service all month, only minor repairs needed. Jun: worked all month in freight service. Jul: on freight haulage all month, crankshaft broke and was replaced, other small repairs. Aug: worked all month in freight service, only running repairs needed. Sep: worked 22 days on freight work, running repairs only. Oct: in freight service all month, only small running repairs. Nov: worked freight haulage 20 days, crown gears 1 and 5 replaced, piston rings replaced on cylinder 3 and floating buahings replaced. Dec: worked 11 days in freight haulage, worked started to repair cylinders.

Jan 1940: in shop for first 18 days, considerable repairs to machine parts. On the 20th in was left in Coya and on the 29th it broke the crankshaft.

20 w/n 3341 Sept. 1935 collided with loco no. **19** at km. 32, and suffered

bent frames [29].
1938 monthly usage: Apr: in freight service. New firebox placed in boiler removed from this loco, 95% done, and only retubing still to be done. May: in freight service. Jun: tubes changed. Jul: loco working or ready in reserve. Aug: tubes changed, piston rings renewed, crankshaft babbited, motion overhauled and some boiler work done. Sept: in freight service all month, needing only small repairs. Oct: in service all month, only running repairs needed. Nov: in freight service all month, needing only running repairs. Dec: in freight service all month, only small running repairs.
1939 monthly usage: Jan: in shop for new tubes and a general fitting-up. Feb: worked all month in freight service. after being in shop 20 days for partial repair. Mar: broke the crankshaft and new one was placed, last half of month worked out of Coya. Apr: in freight service and required only running repairs. May: worked all month out of Coya, minor repairs made. Jun: in shop all month for repairs, boggies were changed and quite a lot of small repair work. Jul: on freight haulage all month, crankshaft broke and was replaced. Aug: worked all month in freight service, only running repairs needed. Sep: worked all month on freight work, no repairs to speak of. Oct: in freight service all month, only small running repairs. Nov: worked practically all month, piston rings changed on all cylinders Dec: worked all month in freight haulage between Coya and points above. Only running repairs needed.
Jan 1940: in Coya – Colón service for first 20 days, then brought to Rancagua to change boiler tubes and install feedwater heater.



0-4-0ST d/w 30.5" for VIW, ? for ALCo, cyls. 11x16", built by ALCo and VIW, see above

[30] suggests that all four locos **21-24** were 0-4-0STs weighing 20 tonnes and had been transferred to the railway department after use in the construction of *fundicion Caletones* and the *tranque* (dam) *de sitio K*.

21 ex **19**? ALCo w/n 52612? 1938 monthly usage: Apr: work completed, including turning drivers, changing journal brasses, piston rings, rod brasses, refitting all moving parts and changing steam and oil piping. May: no repairs re quired. Jun: serviced and light running repairs made. Jul: loco working or ready in reserve. Aug: in service, only needing running repairs. Sept: in service, only needing running repairs. Oct: presumably in service, running repairs only. Nov: worked in Rancagua yard in place of no. 1. Dec: ready to work.
1939 monthly usage: Jan: In Rancagua yard switching, and required no repairs. Feb: worked 24 days switching in Rancagua. Mar: not mentioned in monthly list. Apr: in Rancagua yard switching, practi-

		cally no repairs. May: "these two dinkeys (ie. **21** and **24**) were in Rancagua Yard Switching service, running repairs were made." June: worked 5 days in Rancagua switching service, the rest of the time both of these dinkies (ie **21** and **24**) were standing by. Jul: did not work, though was ready to do so. Aug: not used but stood by as an extra. Sep: ready to work and stood by as an extra. Oct: in Rancagua switching service all month. Nov: stood by as an extra. Dec: stood by as an extra switcher. Jan 1940: stood by as an extra all month.
22	VIW w/n 2783?	Apr 1938:out of service and stored in the patio. Nov. 1938: "These two Dinkeys will never be required. They are stored in one corner of our yard and permission is being requested to scrap them."
23	VIW w/n 2784?	Apr 1938:out of service and stored in the patio. Nov. 1938: "These two Dinkeys will never be required. They are stored in one corner of our yard and permission is being requested to scrap them."
24 ex **20**?	ALCo w/n 52613?	1938 monthly usage: Apr: in switching service. May: no repairs required. Jun: tubes changed. Jul: loco working or ready in reserve. Aug: in service, only needing running repairs. Sept: in service, only needing running repairs. Oct: presumably in service, running repairs only. Nov: worked in Rancagua yard in place of no. 1. Dec: ready to work. 1939 monthly usage: Jan: not mentioned in report. Feb: was not used. Mar: was not in service. Apr: in Rancagua yard switching, practically no repairs. May: "these two dinkeys (ie. **21** and **24**) were in Rancagua Yard Switching service, running repairs were made." June: "both of these dinkies (ie **21** and **24**) were standing by". Jul: worked 9 days in Rancagua yard, no repairs needed. Aug: worked switching at Rancagua about half the month, no repairs needed. Sep: worked 22 days in Rancagua yard switching, and needed only running repairs. Oct: in Rancagua switching service all month. Nov: worked in Rancagua yard switching all month. Dec: worked all month in Rancagua yard switching. Jan 1940: worked in Rancagua switching half of month, no repairs required.

The fleet in 1927

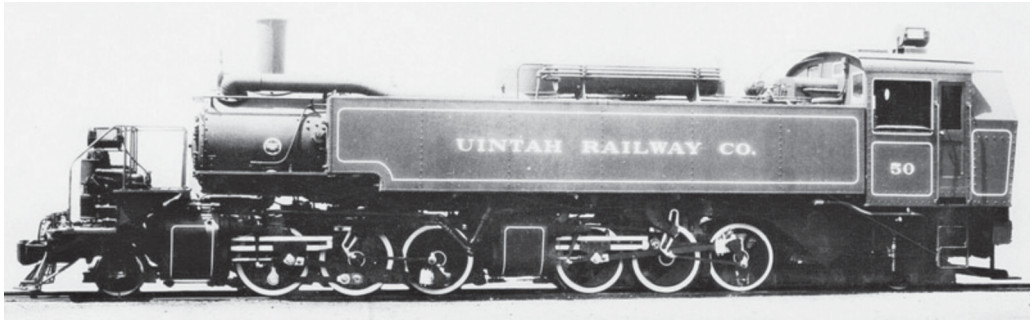
Wilfred Simms [9] states that in 1927 the railway had a fleet of nineteen steam locos: five small 0-6-0 saddle tanks for switching, nine 2-truck Shays, and five 3-truck Shays. Unfortunately he gives no source for this information. Whilst the total may be roughly correct, details are less so. The saddle tanks were 0-4-0STs, and there were probably ten 2-truck and only four 3-truck Shays as no. **11** may still have been in use whilst no. **20** had not yet arrived.

Proposed Baldwin Mallet

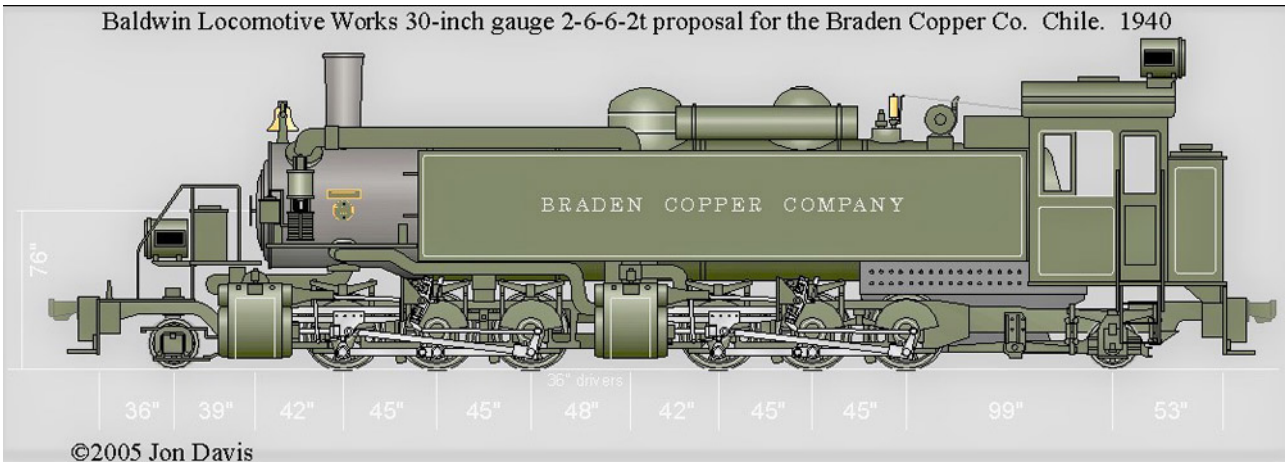
Around the late 1930s there was a proposal to purchase 2-6-6-2T Mallet tank locos from Baldwin, based on the Uintah Railway locos in Utah and Colorado [18]. These would have had d/w 36", and cyls. 15x20". However, no order seems to have been placed. Whilst Mr. J. W. Straney, the railway's superintendent certainly suggested this as a possi-

bility in 1937, clearly after reading an article about the Uintah locos in the *Baldwin Works Magazine*, it is not known how serious this proposal was or how far the idea was taken. If a first single Mallet had been purchased, the proposal was that it would work an early morning freight trip to Coya, returning with a freight, and then the 11.05 passenger train #28 also to Coya, and returning with passenger train #29. It is clear that the Shays would have continued to operate the steeper upper section of the railway.

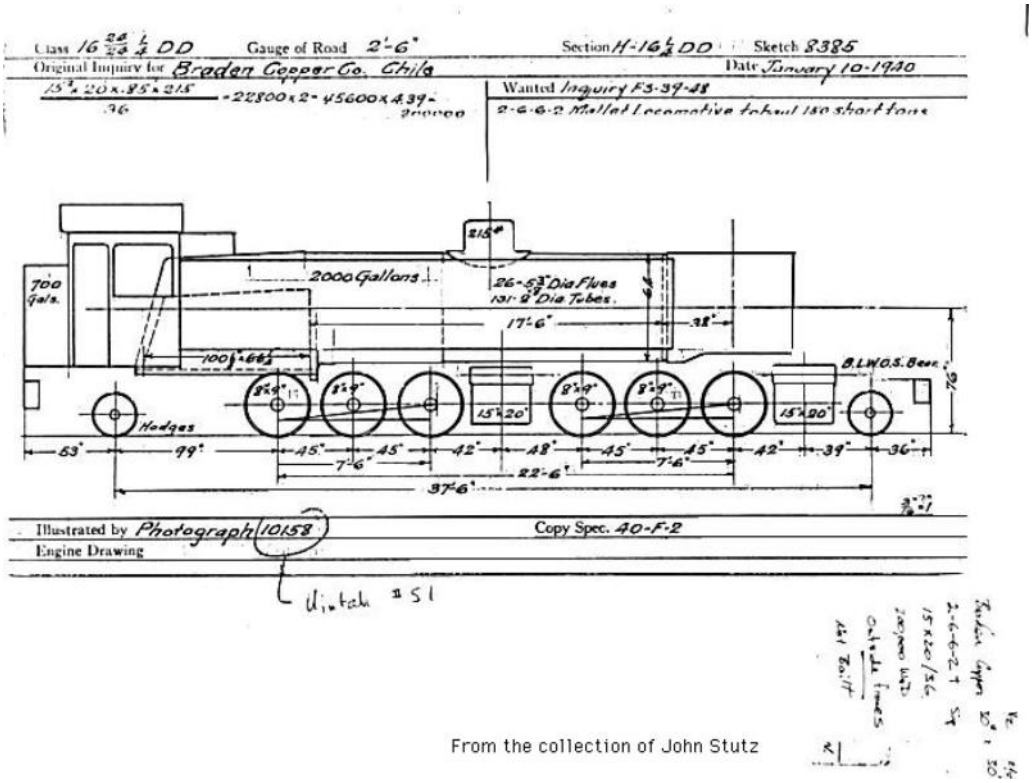
Interestingly, it has become clear that Wessel Duval & Co., agents in Chile for Baldwin, had suggested that Mallet locos might be of use to this railway as far back as 1909 [34].



One of the Uintah Railway Baldwin 2-6-6-2T Mallets with which the BCC railway's superintendent was so impressed.



A sketch by Jon Davis supposedly showing a 1940 Baldwin design for a Mallet for this railway. This suggests that Braden Copper did indeed take the idea as far as approaching Baldwin.



From the collection of John Stutz

A Baldwin concept sketch, seemingly from the collection of John Stutz.

WEIGHT ESTIMATE By R. F. Fuller Date Jan. 10-1940

ITEM	TRUCK	DRIVERS	TRAILERS	TOTAL	L.W.
16 22/24 1/4 DD2	15000	200400	29000	244400	195000
Gauge 2'-6", Outside Frames		56½" → 47"	C.S.		
Inst. 3'-0", Inside Frames				+ 4000	
Boiler 66" Dia. 25/32" Plate x 17'-6" lg.			Plate - 300		
Inst. 66" Dia. 5/8" Plate x 18'-0" lg.			Water - 350	- 650	
Firebox 100 5/8 x 66½"		C.S. Plate - 200	Stays - 100		
Inst. 106 5/16 x 66½"		I.S. " - 100			
		Water - 200	Mud Ring - 50	- 650	
Tubes 26-5¾" #9 & 131-2" #12 x 17'-6"					
Inst. 24-5¾" #9 & 146-2" #12 x 18'-0" lg.				- 600	
Superheater 26 Units in tubes 17'-6" lg.			Header + 200		
Inst. 24 Units in tubes 18'-0" lg.			Units - 200		
Grate area 46 Sq. Ft. Oil fuel					
Inst. 37.4 Sq. Ft. Coal fuel				- 700	
Omit Gaines Arch and Details		Brick - 1300	Support - 700	- 2000	
Worthington Feed Water Heater inst. Elesco Exhaust Stm. Inj.				+ 1000	
Frames - Back End				+ 600	
Cylinders 15"x20" Lower Saddle, Wider Centers			inst. 15"x22"		
Driving Wheels 36" Dia. Tires 2½" x 8"			Tires - 2900		
Inst. 42" Dia. 36" Ctrs. Tires 3"x5"			Centers - 6000	- 6900	
Driving Journals 8"x9"			Axles + 3300		
Inst. 7½"x8" and 7"x8"			Boxes + 1100	+ 4400	
Add Driving Axle Cranks				+ 9000	
Omit Franklin Fire Door				- 200	
Front Eng. Truck, B.L.W. Outside Journals 5"x9"					
Inst. Commonwealth Outside Journals 5"x8"				+ 700	
Back Truck Hodges 6"x12" Journals					
Inst. Delta 5"x10" Journals				- 2000	
Water Tank 2000 Gallons - Heavier Plate			Water - 6600		
Inst. 2800 Gallons			Plate + 1600	- 5000	
Oil Tank 700 Gallons			Fuel - 3400		
Inst. Coal Box - 4½ Tons Capacity			Plate + 500	- 2900	
					Lt.
			Result	241900	203050
Specify	15000	200000	27000	242000	
			Light	203000	

From the collection of John Stutz

A summary of the anticipated weights of this concept.

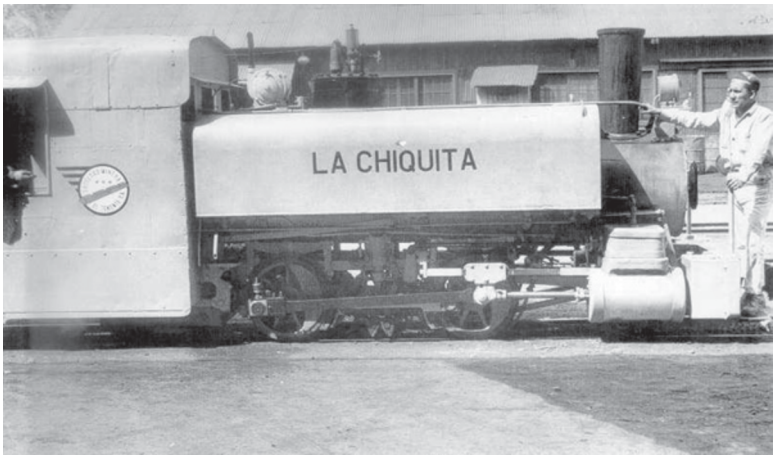
Locos for the Caletones processing plants

The principal copper processing plants were not at Sewell or La Junta, right at the top of the railway, but at Caletones a few miles downhill. It appears that the VIW saddle tanks, and possibly also the ALCos, may have been purchased for the construction work at these locations before being transferred to the railways department, but it also seems that other locos worked at the concentration and smelting plants, and at the various mine adits too.

0-4-0ST d/w 26", cyls. 7"x14", built by Porter in 1914 as mine locos for the 'B' mine

?	w/n 5534	These were certainly not in use in the railway's main fleet in the late 1930s [29].
?	w/n 5535	These were certainly not in use in the railway's main fleet in the late 1930s [29].
?	w/n ?	

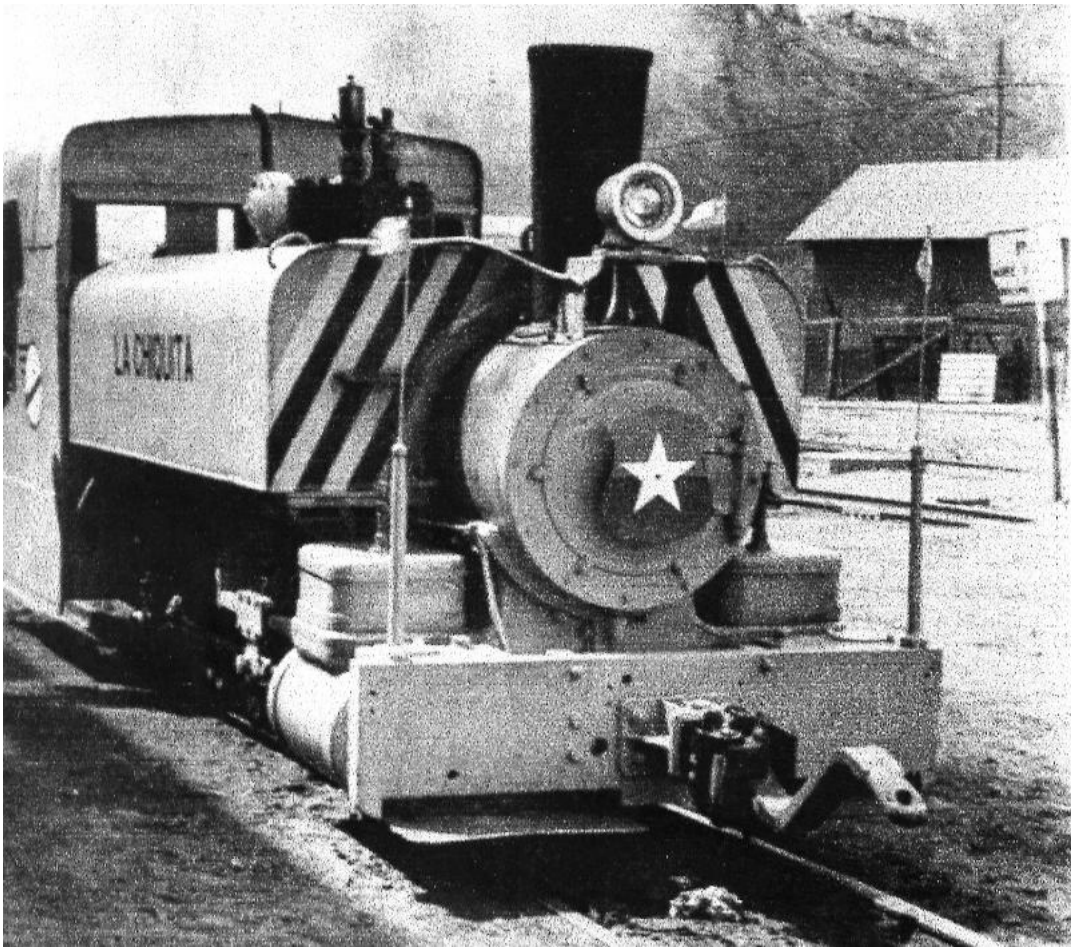
The following photos taken on the Braden Copper system show Porter mine locos with their distinctive square- shouldered saddle tanks. Many of these engines would have had cabs and chimneys little higher than the tank tops; however, as can be seen, these are taller – including the dome which is unlikely to have been modified later – perhaps because these particular locos did not work into low adits. One bore the name **'La CHIQUITA'** whilst another shows **'COPADO'** and the number **2** and had been supposedly photographed at Caletones. The third image, from Pablo Moraga's collection, shows a similar loco numbered **3** and bearing the name **'CRUCE'**.
No. **2 'COPADO'** survives, at the erstwhile Balneario Cachapoal on the riverbank of the Río Cachapoal south of Rancagua. Another of these mines locos stands in the *Patio alumnos basicos* of the Instituto Inglés on the Avenida Cachapoal in Rancagua. It is painted in a very bright livery for the benefit of the children, but is well cared for.



There are differences between the locos in these pictures, in particular the cabs differ in panelling and roof profile. This tends to support the proposition that the cabs were 'home-made' and fitted later in the engines' lives. The left side of the cab of survivors nos. **1 'La CHIQUITA'** and **2 'COPADO'** are each completely filled by an oil tank, thus explaining why there was no window on the left.

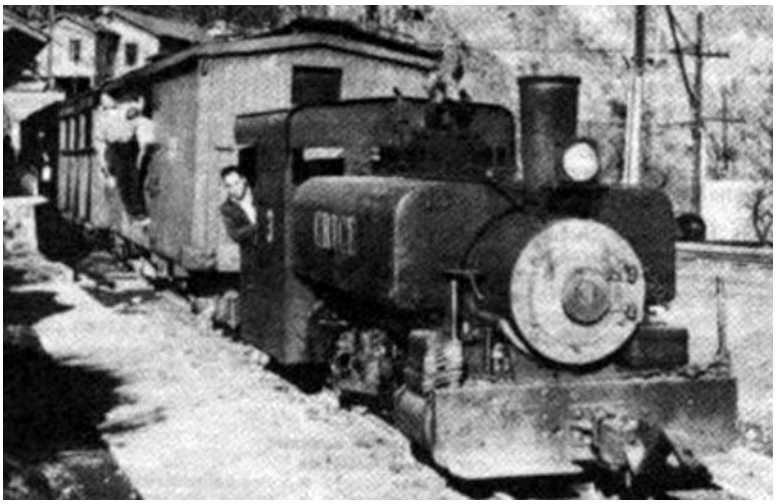


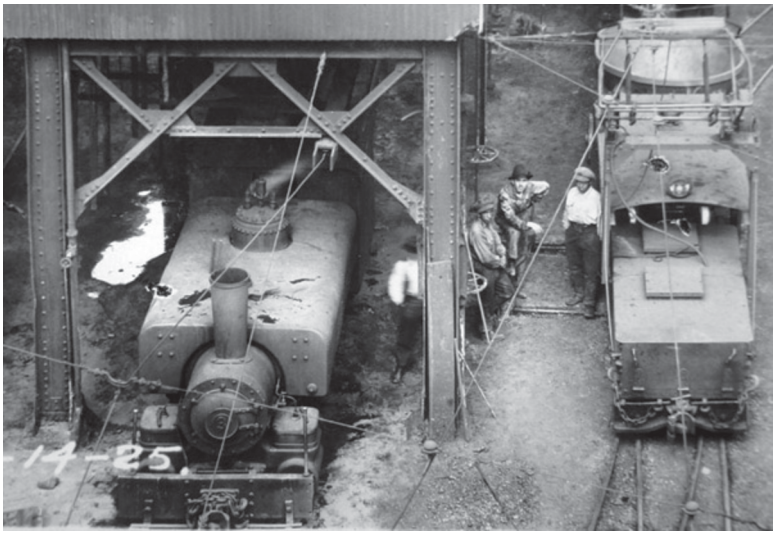
Two images of no. **1 'La CHIQUITA'.**



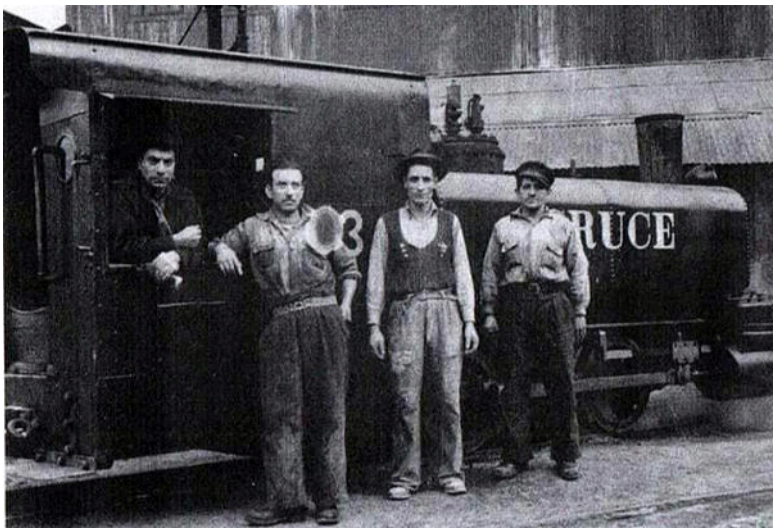


Above is no. **2 'COPADO'**, whilst that below is displaying **3 'CRUCE'**.





No. **3** at the Caletones smelter adjacent to an electric loco in 1925.



A side view of no. **3**, albeit partially obscured by a few of its users.



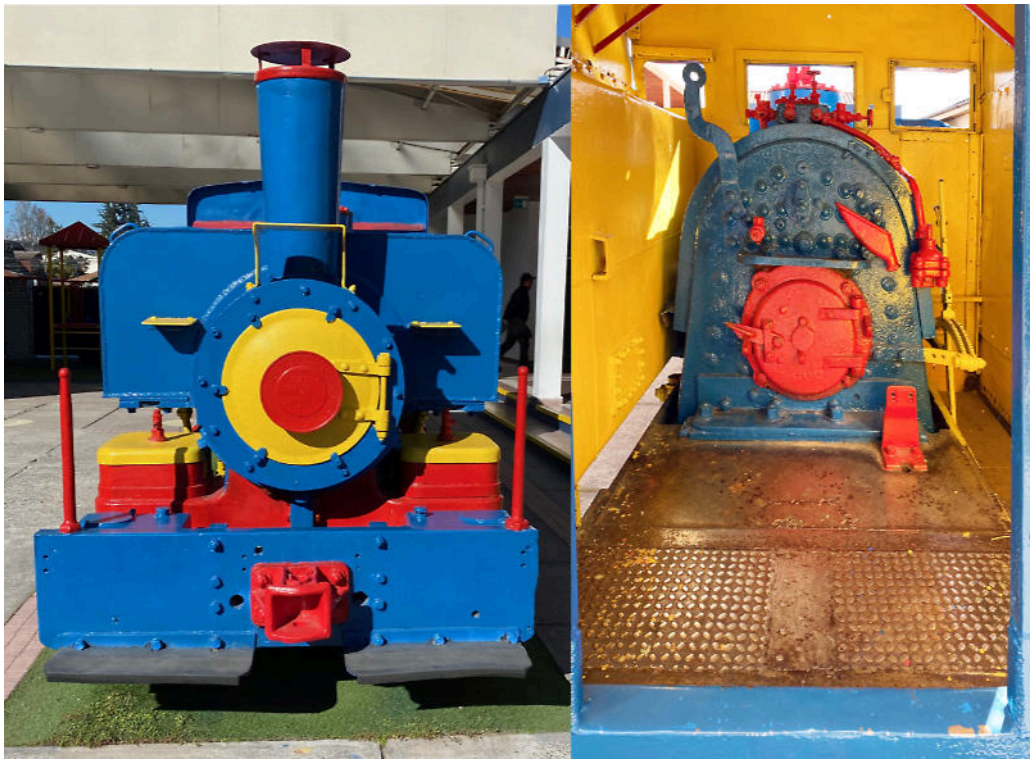
No. **2 'COPADO'**, one of the two survivors, as seen at the old Balneario Cachapoal in early 2019.



The cab of the surviving loco at Balneario Cachapoal. The oil tank filling the left side demonstrates why there are no windows on that side.



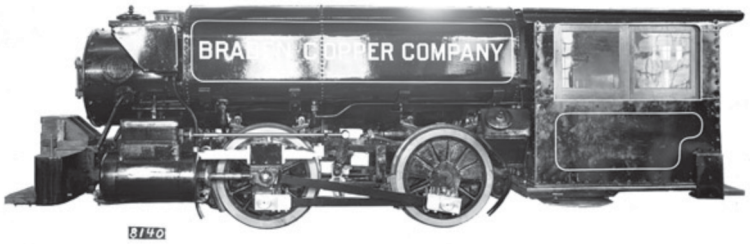
This is the other survivor – quite a contrast – at the *Instituto Ingles* on Avenida Cachapoal in Rancagua. My guess is that it is the erstwhile no. **1 'La CHIQUITA'**, as the cab panelling matches earlier photos of that engine, rather than the panelling on no. **3 'CRUCE'.**



Front and rear views of (probably) no. **1 'La CHIQUITA'** as now crewed by the children of the Instituto Ingles school in Rancagua.

0-4-0ST d/w 30½", cyls. 10x14", built by Vulcan Iron Works in 1918

? w/n 2877

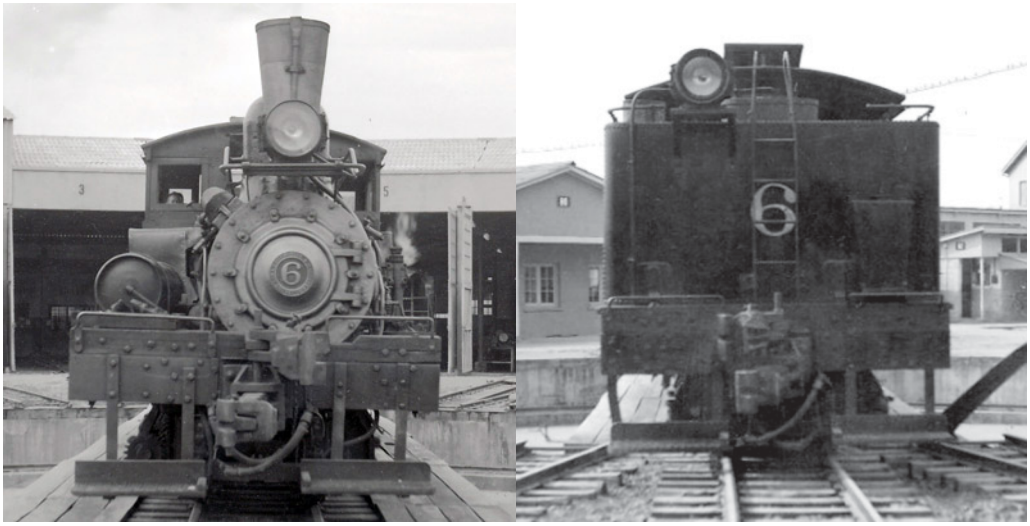


Hi-res version available from the Hagley Museum and Library, Wilmington, Delaware, USA.

A 1925 photo shows one of the Porter low profile machines working beneath the buildings of the smelter at Caletones, and it seems likely that this was their intended home.

Mixed gauge switching

At Rancagua the Braden Copper Company had an interchange with the *EFE* broad gauge. A number of sidings were of mixed gauge to permit broad gauge wagons to be shunted by 2' 6" gauge locos, with the system, unusually, using four rails so that the narrow gauge was in the centre of the broad. At least three and probably four NG locos were fitted at different times with high level couplers to haul *EFE* stock; including an early Porter 0-6-0 fitted with full buffer beams and the European-style side buffers used on the broad gauge at that time, and later Shays **5** and **6** with knuckle couplers mounted one directly above the other for broad and narrow gauges.



Shay no. **6** with twin Alliance couplers at both ends for working with narrow gauge (lower) and broad gauge (upper) stock. No. **5** later gained the additional couplings, and indeed still carries them in its now plinthed state.



This appears to be an earlier dual gauge shunter, taken in 1919, possibly a Porter or Baldwin 0-6-0 but with cruder side buffers than in the photo a few pages earlier and seemingly with some sort of square spark-arresting chimney depositing ash into a hopper on the left side of the smokebox. This would seem to bear some resemblance to the Ridgway 'bear trap' stack introduced on the Colorado & Southern Railroad around 1919-20, in that the cinders were held in a hopper and later released to drop to ground level.

Appendix on loco operation

In October 1937 a request was received from the O'Kiep Copper Company of South Africa asking for information about the locomotives of the Braden Copper Company. As this correspondence gives invaluable information about this railway and its locos, it is appended in full as Appendix 1 at the end of this document.

In general the 42 ton Shays were used for passenger trains and switching, whilst the bigger 60 ton machines hauled freight trains.

The retirement of steam power

The Braden Copper Company first considered electrification of the line in 1916. This was then revisited around 1936, at which time the Chilean government was thinkng of forcing locos to use local coal rather than imported oil, which it was concluded would hugely increase the maintenance and operating cost of the Shays. By the late 1930s the company had been approached by diesel loco manufacturers, but resisted as such locos on a 30" gauge mainline were considered unproven. However, the first such loco from VIW arrived by 1942-3, and steam was clearly on the way out by the early 1950s. Wilfred Simms [9] and Mike Page [SLS library file L8841, possibly pages from David Ibbotson] state that thirteen Whitcomb diesel electrics had arrived between 1947 and 1952, with an additional one for switching.

4.2.7 Other minor 2' 6" or 75cm gauge public railways

El FC Caldera a Algarrobo

1905-1930

Background

Gauge 2' 6". Authorised 1903 and opened 1905, eventually owned by the Cía. American Smelting & Refining. Linked iron mines at Algarrobo with the port of Caldera, and was 34 or 39 km. long. The 1905 report to shareholders of the *FC de Copiapó* said: "The proprietors of the Viuda mine at Algarrobo have undertaken the construction of a light narrow gauge railway for the service of that important copper mine. The work is considerably advanced, and they have a small locomotive at work." There was one loco in 1916 and two locos in 1927. The line was abandoned in 1930 after reorganisation of the methods of extraction. It was lifted in 1934, but Wilf Simms suggested that the trackbed was still easily visible. Certainly it can be identified on Google Earth. It ran from the foot of a cableway running from the iron mines (at a height of 1070m), dropping 760m over a length of 39km (34?) to the sea at Caldera, where it ran in parallel to and on the north side of the *FC de Copiapó*. The maximum grade was 3%.

One locomotive, or two?

Santiago Marin V. suggests the railway possessed only a single loco, though a 1927 source mentions two engines. No details are known.

A 1919 report states: "*Este ferrocarril ya construido del todo, tiene 34 kilómetros de largo i concluye para llegar a la misma mina con un plano inclinado de 1,300 metros de largo i 300 metros de diferencia de nivel. Dispone actualmente de una locomotora a vapor (hai otra por llegar) i de 13 carros que cargan 4.5 toneladas cada uno. La trocha es de 662mm.* (sic, but probably a mistake for 762mm)" [38, year 1919]

El FC Melipilla a Ibacache

Background

Gauge 75cm. Opened 1922. Built by Senores Roberto Torretti and Eduardo Valdivieso. 28 km mainline plus 1.6 km branch. Never reached intended terminus at Curacavi. In 1928 it had three locos: 2 x 10.5T, and 1 x 18T. Abandoned 1938. Other source says a Sr. Claudio Matte was involvbed in the promotion of this line.

Paragraphs by don Sergio Cabieses Ibaceta on the Facebook page of the *Museo Visual del Aconcagua*:

FERROCARRIL MELIPILLA | IBACACHE

Esta fotografía colorizada corresponde a la escurridiza locomotora que conectaba el ramal Melipilla con la comuna de María Pinto. Funcionó entre 1922 y 1940 siendo propiedad del académico, empresario y filántropo Claudio Matte. La hacienda Chorombo es adquirida por Domingo Matte en 1854, quien hereda estos terrenos a su hijo Claudio Matte, el cual hace que la hacienda procesos de industrialización agrícolas y pecuarias. Es del caso que hacia 1920 el ingeniero Eduardo Valdivieso y su empresa Sociedad de Ferrocarril de Melipilla a Curacaví se encarga de la construcción del ferrocarril con un tramo de 28 Km Melipilla-Ibacache, inaugurado en 1922. En 1925 Matte obtiene control sobre la sociedad, siguiendo Valdivieso como operador, teniendo oficinas en el edificio Díaz en Santiago centro. La obra contemplaba un subramal de 17 km hasta Curacaví, trabajo aún proyectado en 1929, pero debido a factores no se realizó. Desde 1922 hasta al menos 1936 operó un servicio de pasajeros, que movió durante la década de 1920 unos 22 000 pasajeros al año, que conectaba las bodegas de la hoy Hacienda Bollenar, teniendo su punta de rieles en Bollenar y Mallarquito.

El servicio salía desde Melipilla tardando 8 horas llegando hasta Bollenar. Asimismo por este ferrocarril se transportaban pertrechos militares. Dado que no era rentable debido a la competencia con la carretera, el ferrocarril se vio forzado a cerrar en 1940. Poseía una trocha de 750 mm y cubría una extensión de 28 km y 1,6 km de desvíos. Por las vías circulaban tres locomotoras a vapor y tres automotores americanos con motor gasolinero. Asimismo poseía

tres puentes: estero La Higuera, estero Los Sauces y otro sobre el río Puangue. En la actualidad quedan restos de las bodegas en frente del colegio Chorombo Alto, así como parte de las vías en el ingreso a la Hacienda Matte. En tanto en 1929, se reconocían solamente tres estaciones en este ramal: Melipilla, San José e Ibacache. También existían cuatro depósitos de agua y uno de carbón a lo largo de las vías; el taller de las locomotoras se hallaba en Melipilla. 10 personas se hallaban contratadas para operar el servicio.

Fuentes consultadas:

- *Municipalidad de María Pinto*
- *Literatura complementaria de Investigaciones del Patrimonio Territorial de Chile (1989).*
- *Valparaíso busca su destino. USACH (2018).*

0-6-0T d/w ?, cyls ?, built by O&K in ?

Ordred by ?

? w/n ?

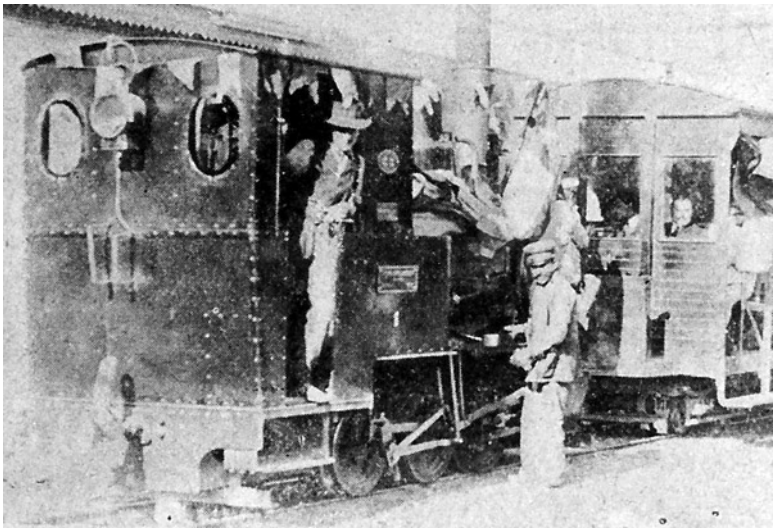


This O&K 0-6-0T was supposedly in the fleet of the FC *Melipilla á Ibacache*, but so far no details have been found. However, the photo has clear similarities to one near the tail end of section 4.6 showing an unidentified O&K supposedly for a nitrate oficina.

El FC de Yungay a las Barrancas y Pudahuel

Background

Gauge 0.75m. Western suburbs of Santiago. Opened 1903 by *FC de Santiago a Resbalon*, but extended and converted from horse tramway to a steam railway in 1911. Other sources say steam used from 1903. 17.2 km long. Converted from steam to railcars in 1922. First 4 km electrified and this part survived until 1951 [9]. More of a street tramway than a railway. The photo below, from the magazine *Sucesos* in 1913, shows a German-built 0-6-0WT with outside Stephenson's link motion.



El FC de Rosario a Guacarhue

Background

75cm gauge roadside tramway from Rosario broad gauge station to small farming town of Guacarhue to the west. 14 km long. Recorded in the 1920 *anuario*. Allen Morrison says it was steam-worked, but no details yet found.

El FC de Cerro Gordo a Challacollo, de la Cía. Minera de Challacollo

Background

Gauge 2' 6", 35 km long and almost entirely straight, with a 15km extension to connect to *FC de Salitreros* at La Granja, north east of Lagunas. Promoted by *Currasco, Sotomayor i Cia*. Opened 1897, abandoned in 1905 but only lifted in 1940 [9]. A photo in [12] shows an 0-6-0T of Germanic or French outline with outside Stephenson link motion. Arturo Titus S. says the railway had just two locos.

0-6-0T d/w ?, cyls ?, built by Jung in 1896

40hp. Delivered by Gildemeister via Iquique to '*Solbermine*'.

? w/n 273

? w/n 274



Photo cropped from an image in Sr. Pablo Moraga's book *Tiempo de Trenes*.

4.3 Nitrate refining companies and *oficinas*

4.3.1 Nitrate operations A-B

Oficina Adriatico
The Aguas Blancas Nitrate Co.
Oficina Alemania
The Alianza Company
Oficina Bellavista
The Amelia Nitrate Co. Ltd.
The Angela Nitrate Co.
The Anglo-Chilean Nitrate & Railway Co.
Antony Gibbs & Sons Ltd, agents & shippers
La Cía. de Salitreras de Antofagasta
Oficina Araucana
Sres. Astoreca y Urruticoechea
Oficina La Granja
Oficina Iris
Oficina Augusta Victoria
The El Boquete Nitrate Co.
Buchanan Jones & Co.

Organised in alphabetical order by by owning company, or by *oficina* name if owner not known.
See also summary list of names of *oficinas,* and their ownership of steam locos in 1926, in Appendix 1 at end of volume.

Oficina Adriatico

2' 6" gauge. South-east of Iquique,

0-4-0WT d/w ?, cyls. ?, built by O&K in 1913 and 1914

?	w/n 6730	30hp. Sent via Marinkovic Goich & Co.
?	w/n 7130	
?	w/n 7506	[14] says was for this customer but Merte's O&K list does not specify.

The Aguas Blancas Nitrate Co.

2' 6" gauge.

Summary of oficinas owned:

• ***Aurora ex Silencio***, and ***Amelia***, in Tarapacá, 48km from Caleta Buena to which it sends its output but also on the NR (3km from Negreiros),
In 1889 owned by the Watters brothers. No mention of locos at that time.
In 1918 owned by Amelia Nitrate Co.
In 1926 owned by Aguas Blancas Nitrate Co., 3 Koppels.

• ***Eugenia***, Antofagasta Canton Aguas Blancas, at station Yungay of *FCAB*,
1918 owned by Aguas Blancas Nitrate Co.

Operations suspended 1921.

In 1926 owned by Aguas Blancas Nitrate Co. Ltd., 9 locos.

This company therefore had operations in Tarapacá and also in Antofagasta province. The locos can be identified as working in the north or in the south, depending where they had initially been shipped to.

0-6-0T d/w 30" cyls. 11x15", built by Bagnall in 1906

Outside cyls., outside frames, cab. Both finished 16-2-1907. Cost £655 each. Customer charged £775 each. Mitrovitch plates fitted. Shipped via Liverpool to Caleta Coloso. Spares ordered via Mitrovich Bros. in 1924 together with items for 1872, 1951, 1958. Spares later ordered for 1823 in 1929 for Aguas Blancas Nitrate Co., including items for 1872 and 2263.

'ESMERALDA'?	w/n 1823	Name spelled in various ways by different sources, eg. 'EZMEALDA' or 'EMERALDA'
'NINULA'	w/n 1824	

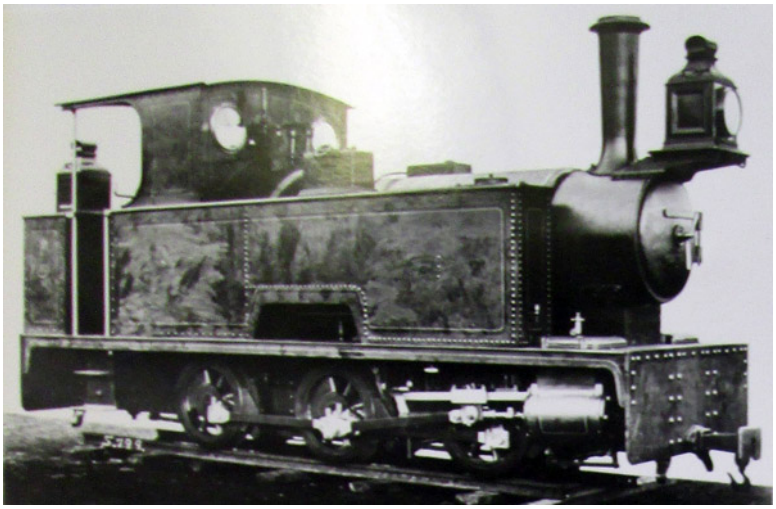


Photo from Bagnall archive, actually of similar but inside-framed loco 1825.

0-6-0T d/w 27½" cyls. 9¾x14", built by Bagnall in 1906 and 1912

Spec for 1871-2 says outside cyls., inside frames, spark-arresting chimney, open backed cab. Completed 18-08-1908 and 25-11-1908. Cost £617 each, customer charged £670. No names or numbers. 'Dust casing over motion'. 1871 shipped to Antofagasta, 1871 shipped to Caleta Coloso. Spares sent 1924 via Mitrovitch Bros. for 1872 **'PABLITO'** together with parts for 1823-4, 1951, 1958. New boiler for 1872 sent 1924 via Mitrovitch Bros. to Aguas Blancas Nitrate Co. Antofagasta. Spares sent in 1929 for 1872 **'GEORGINA'** (sic) together with parts for 1823, 2243, to Aguas Blancas Nitrate Co. Antofagasta.

Spec for 1951 similar but does not mention open-backed nature of cab. Completed 10-04-1912, customer charged £650. Despatched 27-04-1912. Spares sent 1924 together with items for 1823-4, 1872, 195, via Mitrovitch Bros. at Antofagasta.

Spec for 1960 similar, but with 'dust casing' mentioned. Completed 21-11-1912. Customer charged £650. Despatched 21-11-1912.

?	w/n 1871	
'PABLITO'	w/n 1872	May have carried the **'GEORGINA'** name for a while.
'GEORGINA'	w/n 1951	
'PROGRESO'	w/n 1960	

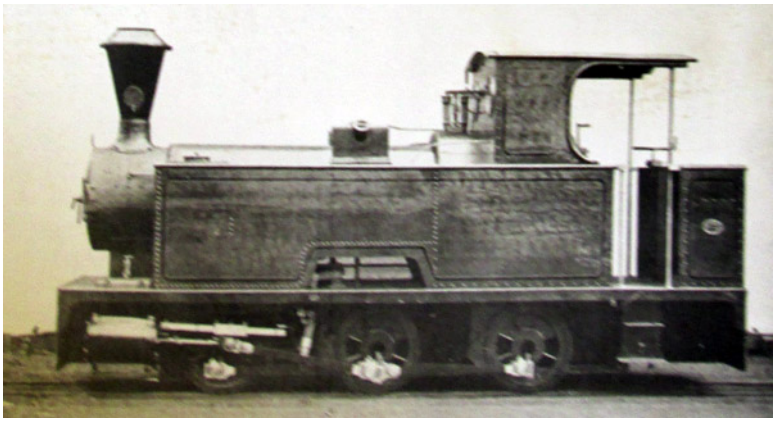


Photo from Bagnall archive in Staffordshire Record Office.

0-6-0T d/w 33¼" cyls. 13x18", built by Bagnall in 1912 and 1924

Spec for 1958 says outside cyls., outside frames, cab cut down? Completed 09-10-1912. Customer charged £1075. Name to be **'DALMACIA'** but changed to **'SLANO'** during construction period. Bagnall 'Togo' type loco. Despatched 09-10-1912. Spares ordered in 1914 together with items for 1852 via Mitrovitch Bros. and in 1924 with items for 1958, 1823-4, 1872, and 1951, via Antofagasta.
Spec for 2243-4 says similar. Oil burner from new. Completed 15-11-1924 and 04-12-1924. Customer charged £1925 each. Valve gear to 1958 drawings but with rear end modifications. Shipped from Liverpool to (oficina?) Eugenia via Antofagasta. Spares ordered 1929 with items for 1823 and 1972 via Mitrovitch Bros. for Aguas Blancas Nitrate Co.

'SLANO'	w/n 1958	
'EUGENIA'	w/n 2243	Aguas Blancas Nitrate Co.
'MORENO'	w/n 2244	Aguas Blancas Nitrate Co.

Oficina Alemania

Background

2' 6" gauge. Summary of operations:

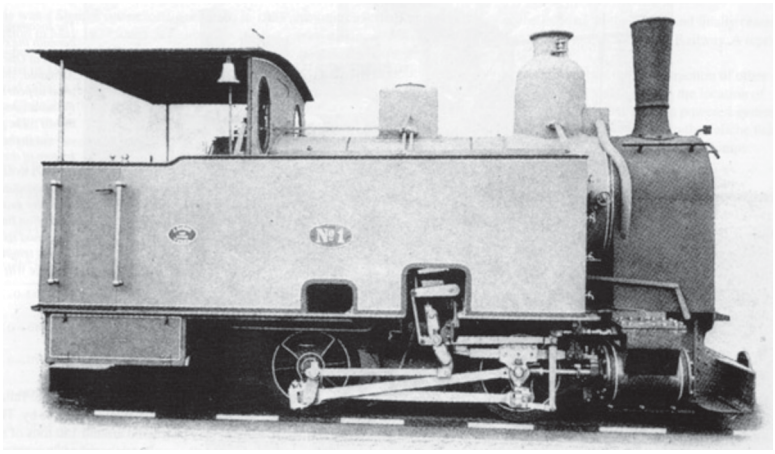
• ***Alemania,*** 80km inland from Taltal. Accessed from 4km branch of *FC de Taltal*.
Operating 1906.
In 1926 owned by *Cía. Salitrera de Taltal*, no locos listed.
Operated until 1976.

0-4-0T d/w ?, cyls. ?, built by Borsig in 1904 or thereabouts

NB Not by O&K as Wilf Simms had thought. Whilst these are thought to date from around 1904, the Borsig list shows no small 0-4-0Ts supplied to Chile for 762mm or 750mm gauge in 1904-5, though there were 3' 0" and metre gauge locos delivered. There are, however, four unidentified 750mm gauge Borsig 0-4-0Ts from 1907, 1909 and 1911, that went to Chile. These are listed in the Unidentified locos list at the end of the 2' 6" gauge section (page 127). They were Borsig nos. 6073, 6483, 7059 and 7740.

?	w/n ?
?	w/n ?
?	w/n ?
?	w/n ?

Locos all lying derelict in 1978 [16].



This builder's photo shows a typical Borsig type 51 0-4-0T rather than one specifically for the oficina Alemania.



A Borsig type 51 after a derailment, not necessarily at this particular oficina, though it was one of the principal users of the type.



Another photo showing a Borsig type 51 engine at an unknown oficina, this time hauling a long train of improvised workers'carriages! The loco

appears to have gained diagonal struts to render the spectacle plate and cab roof more rigid.

The Alianza Company

Summary of oficinas owned:

• ***Alianza***, Tarapacá, 1200m from paradero Alianza on NR. This was built in the late 1890s and thus the locos listed below are likely to hve been the first to have worked there. They are illustrated in several of the photos in the album: *The Oficina Alianza and Port of Iquique 1899*, whose images are available at http://coleccionfff.unav.es/bvunav/i18n/consulta/resultados_navegacion.cmd?posicion=1&forma=&id=107

In 1918 owned by Alianza Co. Ltd.

In 1926 owned by Alianza Company Ltd., 7 NBL tank locos of 18T.

• ***Bellavista*** 1km from station Bellavista on NR,

In 1926 owned by (Alianza Company Ltd.) 3 NBLs of 14T.

• ***Carrera*** ex ***Domeyko,*** in Departamento Antofagasta.

In 1926 owned by The Alianza Co., little detail given, and no locos listed.

• ***Pissis*** later ***Cochrane*** In departamento Antofagasta, Canton El Boquete.

Operations suspended 1921.

In 1926 owned by The Alianza Co., little detail given, and no locos listed.

• ***Slavonia,*** Estacion Buenaventura on NR line to Lagunas.

In 1926 owned by The Alianza Co.Ltd., no locos listed.

0-4-0T d/w 30", cyls. 12x16", built by Neilson in 1897 and 1901

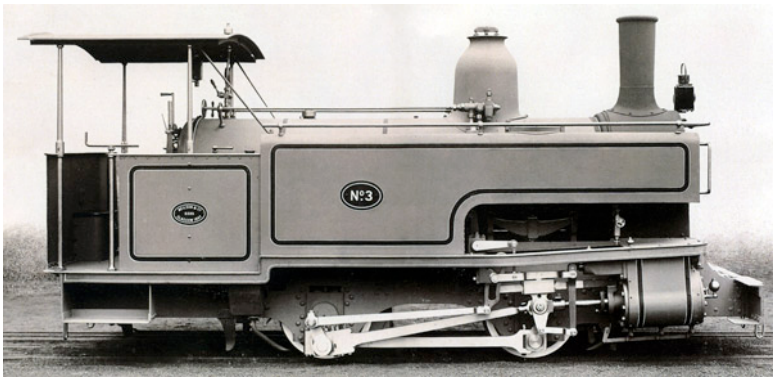
Neilson order nos. E784 and E859. Strain & Robertson contracts 23 and 115.

Order E784 of 7th December 1896. Oficina Alianza. Delivery by 3rd August 1897, under penalty.

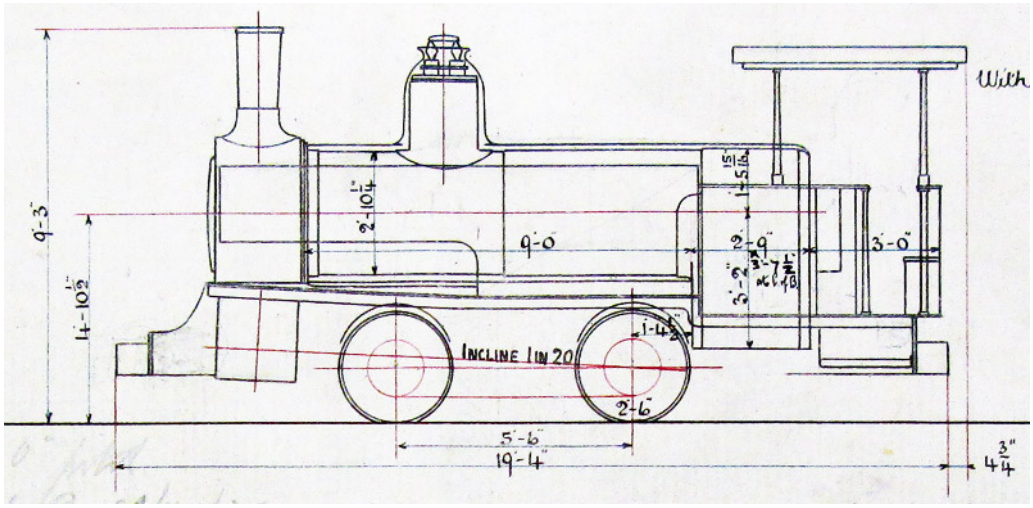
Order E859 of 28th June 1900. *Oficina Alianza*. Same as E784 except as regards those alteration mentioned in letter of 23rd May. Delivery (to be) in 8 months (Feby. 1901). A letter of July 16th 1900 had confirmed that the running no. was to be **4**.

Spares ordered in 1906.

1	w/n 5207
2	w/n 5208
3	w/n 5209
4	w/n 5903



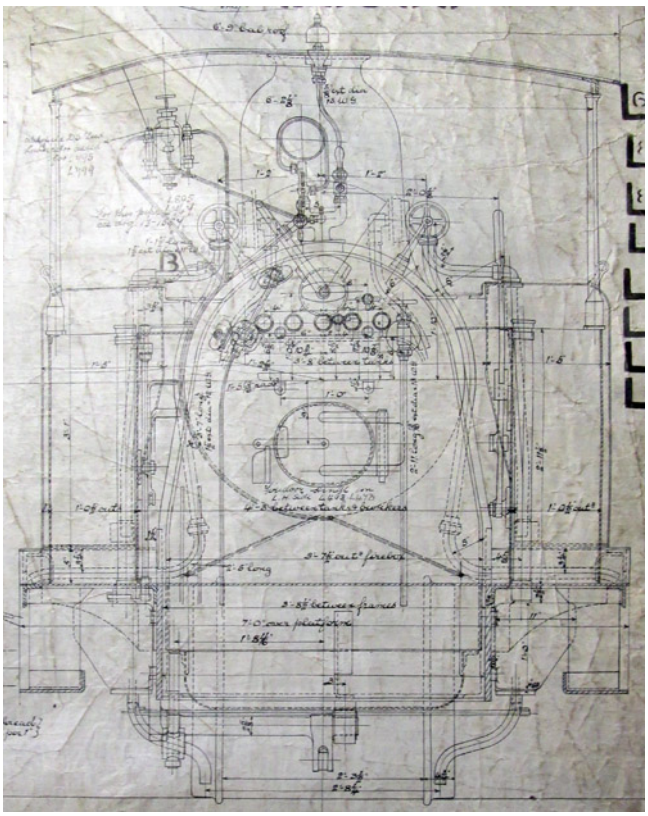
Hi-res versions of this photo are available from from the Mitchell Library, Glasgow.



0-4-0T d/w 30", cyls. 12x16", built by NBL in 1908

NBL order nos. L289 ('similar in every respect' to E859), being Strain & Robertson contract 294. NBL invited to quote for loco similar to that supplied in 1897 under contract 115. Quote accepted 2nd December 1907, to be ready May 1908, at price of £1300? To be painted same as contract 115 (E859). Shipped mid-May on SS 'Willow Branch'.

5 w/n 18403



A cross-sectional elevation through the cab of one of these NBL 0-4-0Ts that were used by a number of nitrate companies. The order numbers cropped off on the right include: E784 Of. Alianza nos. **1-3**, E859 Of. Alianza no. **4**, L73 Reducto Nitrate no. **1**, L125 via Inglis Lomax for Of. Anita no. **1**, L155 via Inglis Lomax no. **2** possibly also for Of. Anita, L202 via Inglis Lomax nos. **1-2**, L223 via Inglis Lomax for Of. Luisis no. **1**, L289 Of. Alianza no. **5**, L327 via Inglis Lomax nos. **1-2**, L328 via Inglis Lomax no. **3**?, L413 Of. Pan de Azucar nos. **1-2**, L415 Of. Luisis no. **3**, L430 Of. Maria, L473 Of. Esperanza, L474 Cía. Sal. El Loa for Of. Angamos, L544 via S&R four locos, L546 Alianza Co. nos. **1-2**, L629 unknown buyer, L767 via S&R for unknown buyer. Notably not for L243 via S&R no. **2** though.



An oficina Alianza NBL 0-4-0T on a train of caliche.

Conversion to oil-burning

Five sets of oil burning equipment were ordered from NBL in July 1914. A replacement copper firebox was sent out by NBL in October 1915, under S&R contract 657. One or more had also been sent under contract 654 at around that time.

0-4-0T d/w 30", cyls. 12x16", built by NBL in 1915

NBL order nos. L629 confirmed 28th May 1914, for *Oficina Alianza*. S&R contract 652. 'fitted with oil burning apparatus and similar in every respect to the two supplied under Bellavista Cont. no. 7 (L546). Delivery 31st December.' However, contract delayed by temporary closure of *oficina* after the outbreak of war in Europe. This was the case for many *oficinas* and contracts, but by mid 1915 work was re-starting. Painting same as L289, or as another S&R letter to NBL says, "painted the same as the one supplied under Contract 294 of 1908". Loco was shipped on SS *Lime Branch* in Sept. 1915.

6 w/n 21076

0-4-0T d/w 30", cyls. 12x16", built by Baldwin in 1917

Class 4-18C dwg 35 series 113, similar to the batch of three provided to *Salitrera El Loa* in 1915.

'ALIANZA' w/n 44797

A further similar NBL loco but weighing 25 tons was enquired about in 1920. 3 copper fireboxes enquired about to NBL in 1920, re locos supplied earlier. These were ordered in July 1920.

0-4-0T d/w 30", cyls. 12x16", built by NBL in 1922

NBL order no. L767 per Strain & Robertson contract 750. Dated 24?th January 1922 in NBL order book. 'fitted with oil burning apparatus and similar in all respects to that supplied under contract 652 (L629)'. Delivery to be end of May. Annotation at bottom of order book page says: 'Nos. 7 & 8 and painting done as L629'.

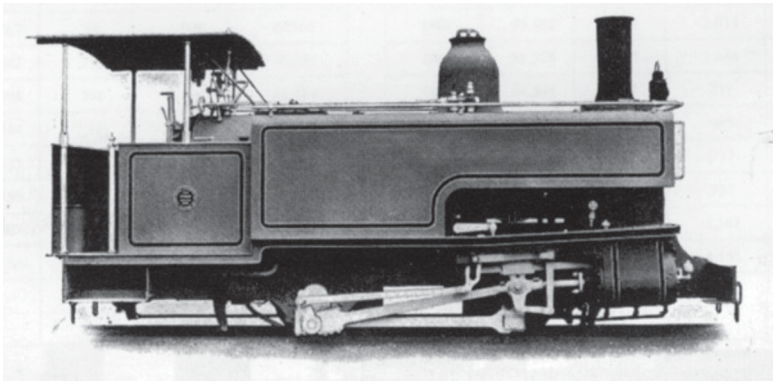
7 w/n 22941

8 w/n 22942

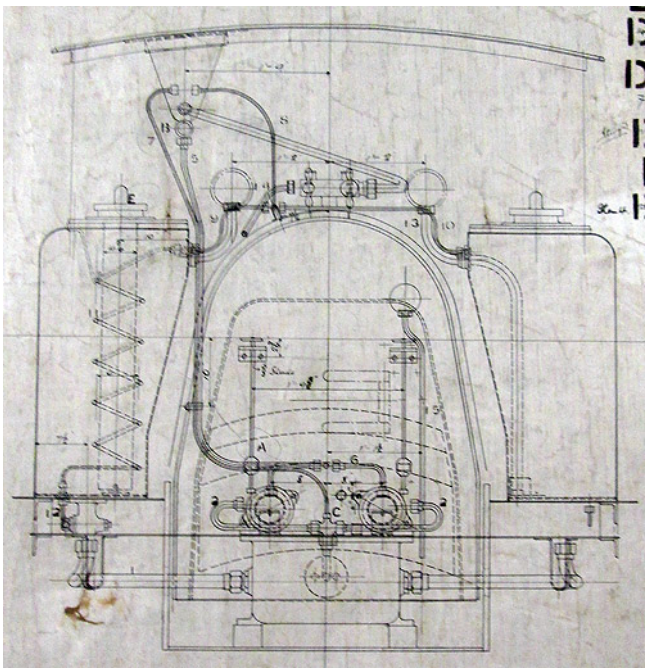
0-4-0ST d/w 30", cyls. 12x16", built by NBL in 1925

NBL order no. L805, to be similar to L767. Via Strain & Robertson Ltd. Oil burning.

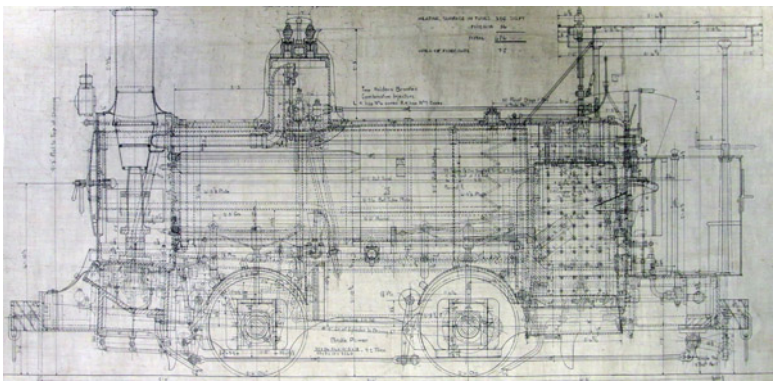
9? w/n 23290



The precise identity of the loco shown in this NBL publicity photo is not known. However it has larger tanks – higher and probably wider – than those fitted to most of these engines, and therefore probably dates from the 1920s.



Comparison of this oil firing drawing with the cab cross section a page or two earlier reveals that these later engines, of NBL contracts L544, L546, L629, L767, L805 and possibly others, did indeed have tanks that were wider and taller than those on earlier locos. They protruded by an extra 3 " inches either side and were roughly 2 " taller.



A side elevation GA drawing of one of these later NBL tank locos with larger tanks.

0-4-0ST d/w 30", cyls. 12x16", built by NBL in 1913 and 1926

Supplied via Strain & Robertson Ltd. The 1913 locos were probably those ordered from NBL under S&R contract 7 of December 1912. NBL order nos. L546 (Strain & Robertson contract no. 7) recorded in NBL order book as of 27th December 1912. 'Two (2) Tank Locomotives 0-4-0 type, gauge 2' 6". Cylinders outside 12"x16", Similar in all respects to that supplied under Cont. no. 294 (L289) except that they are to be fitted with apparatus to burn oil as well as coal.' Delivery to be by 27th June 1913. Total price £2550. To be painted dark green wherever the Alianza locos were painted chocolate.

NBL order L816, for Oficina Bellavista under S&R contract 295, similar to L546 but fitted with the Hammel Company oil burning arrangement. To be painted green with yellow lines. Delivery to be end of January 1926.

1	w/n 20287
2	w/n 20288
3	w/n 23372

Two fireboxes were ordered from NBL for this location in May 1915, specifically for the contract 7 locos mentioned above. It is to be hoped that the fireboxes were being ordered in anticipation of eventual need, rather than that they were needed for immediate use after the locos had been working less than a year. Spares were also ordered for these locos at another time, via Antony Gibbs & Sons and Strain & Robertson.

The Amelia Nitrate Co. Ltd.

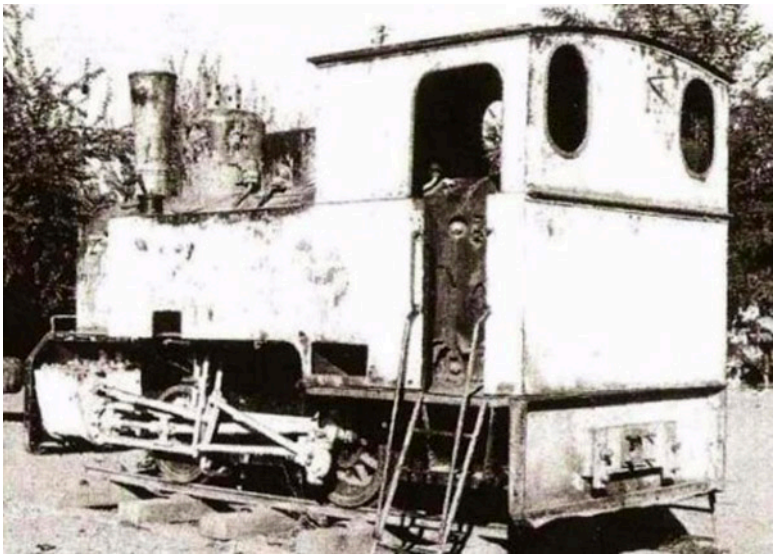
Background

2' 6" gauge. Summary of *oficina* owned:

• ***Aurora ex Silencio***, and ***Amelia***, in Tarapacá, 48km from Caleta Buena to which it sends its output but also on the NR (3km from Negreiros),
In 1889 owned by the Watters brothers. No mention of locos at that time.
In 1918 owned by Amelia Nitrate Co.
In 1926 owned by Aguas Blancas Nitrate Co., 3 Koppels.

0-4-0WT d/w ?, cyls. ?, built by O&K in 1911 (1st two), 1912 (next two), and 1913 (last two)

?	w/n 5084	80hp	
?	w/n 5085	80hp	Later sold to *Cemento Cerro Blanco de Polpaico SA*, see below. Preserved at Polpaico, Cerro Blanco.
'AMELIA'	w/n 5376	80hp	Sent via J. Matth. Gildemeister
'LONDON'	w/n 5377	80hp	Sent via J. Matth. Gildemeister
?	w/n 6525	80hp	Later sold to *Cemento Cerro Blanco de Polpaico SA*, see below. Preserved Quilicura?
?	w/n 6891		



O&K 6525 as preserved after later use at Cemento Polpaico.

Oficina Angamos

See the *Cía. Salitrera El Loa.*

The Angela Nitrate Co.

Background

2' 6" gauge. Summary of *oficina* owned:

• ***Angela/Anjela***, in Tarapacá, 3km from station Santa Catalina on NR,

In 1889 owned by Juan de Loayza and Pedro G. Pascal, no mention of locos at that time.

In 1926 owned by Angela Nitrate Co., 3 Fowlers of 15T.

0-4-2ST d/w ? cyls. 8x12", built by Fowler in 1894

Purchased second-hand from the Lagunas Syndicate, see below.

These had been two of a batch of five, Fowler nos. 6697-6700.

?	w.n 6699	Here by 1915, second-hand from Lagunas Syndicate.
?	w/n 6700	Here by 1915, second-hand from Lagunas Syndicate. Replacement boiler 15135 supplied to here via S&R for this loco by Fowler in November 1919.

0-4-2ST d/w ? cyls. 8x12", built by Fowler in 1916

Tenders invited from NBL, Avonside, Manning Wardle, Fowler and Peckett. Via Strain & Robertson contract 57 agreed late Sept. 1915. at a price of £852 for the loco. Rejection letters had been sent to NBL, Manning Wardle and Avonside, and clearly NBL had produced at least one drawing (S1215) in preparation for tendering for the contract. "The locomotive shall be similar to the locomotives Nos 6699 and 6700 supplied by you in 1894 but with the latest improvements and additions." To be completed by 25th March 1916. Shipping was being discussed in June 1916.

?	w/n 14668

In 1928 the Angela Nitrate Co. ordered Avonside spares for locos 1736 and 1739, implying that they had bought them from another company by then. Probably from San Sebastian / Santa Catalina. On the other hand the same year the San Sebastian N. Co ordered spares for AE 1737 at Of. Sacramento.

The Anglo-Chilean Nitrate & Railway Co.

Background

2' 6" gauge, but also ran a 3' 6' gauge system covered in the intermediate gauges file. Anglo-Chilean Consolidated later merged with Lautaro Nitrate Co. to form *Salitreria Anglo Lautaro*.

Summary of oficinas owned:

• ***Coya Norte***, Tocopilla, 10km from station Chacance of *FC Lonjitudinal*.
In 1926 owned by Anglo-Chilean Consolidated Nitrate Corp., no locos listed.

• ***Coya***, Tocopilla, later ***Maria Elena*** (probably same as one above or below)
In 1918 owned by Anglo-Chilean Nitrate & Railway Co.

• ***Coya Sur***, Tocopilla, 8km from station Chacances on *FC Longitudinal* and on *FCTT*,
In 1926 owned by Anglo-Chilean Consolidated Nitrate, 5 locos, 4x 0-4-2s of 25T, 1 2-6-2 of 42T. These locos were probably on 3' 6" gauge, and members of the main *FCTT* fleet owned by the ACNC.

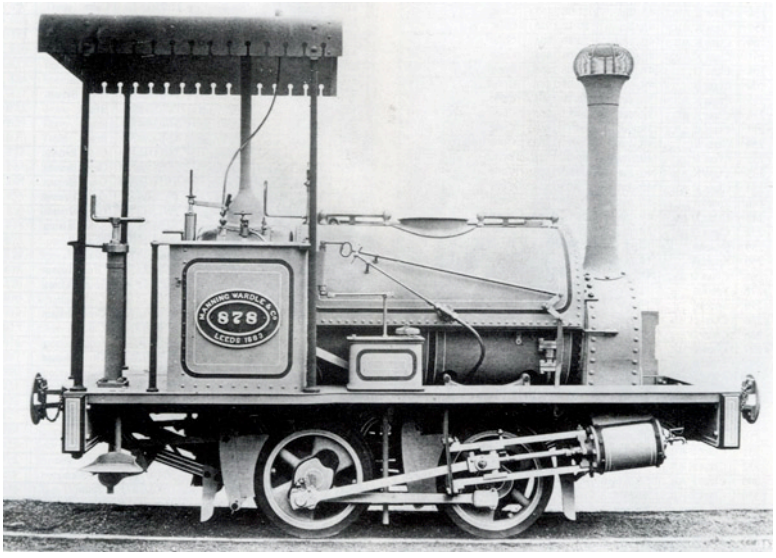
• ***Peregrina***, Tocopilla, 500m from station Toco of *FCTT*.
1918 owned by Anglo-Chilean Nitrate & Railway Co.
In 1926 owned by Anglo-Chilean Cons. Nitrate Co. Ltd., No locos listed. Not working in 1926.

• ***Santa Isabel***, 1km from station Toco on *FCTT*,
In 1926 owned by Anglo-Chilean Consolidated Nitrate, 3 locos Kitson, one of 25T and 4 wheels, two of 35T with six wheels. These Kitsons were probably on 3' 6" gauge, and members of the main *FCTT* fleet owned by the ACNC.

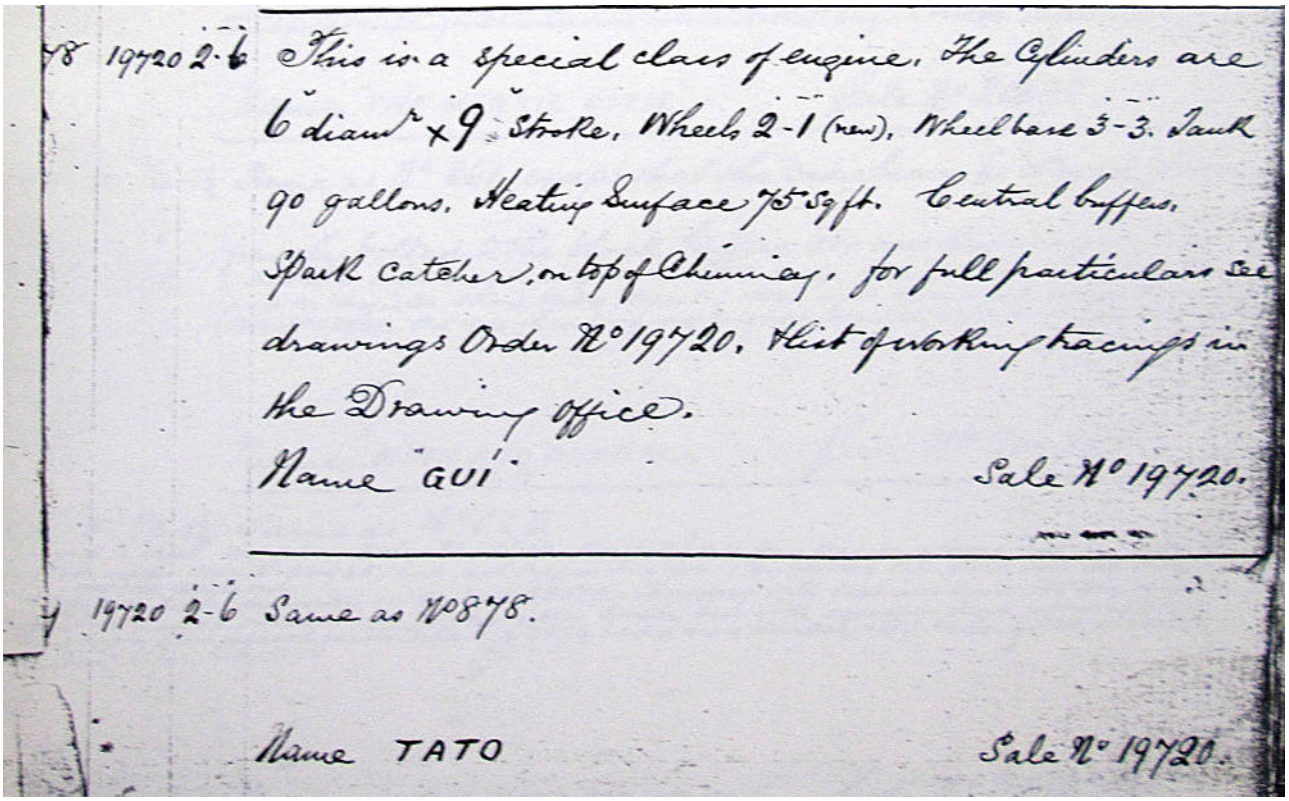
0-4-0ST, d/w 25", cyls. 6"x9", built by Manning Wardle in 1883

Purchased via via Fawcett Preston & Co. Identified as ACNC locos in [13], page 'Helmut 0003'.

'GUI' w/n 878
'TATO' w/n 879



Manning Wardle builder's pic, via Fred Harman's MW books.



878 19720 2-6 This is a special class of engine. The Cylinders are 6" diam^r x 9" Stroke. Wheels 2-1 (new). Wheelbase 3-3. Tank 90 gallons. Heating Surface 755 Sq ft. Central buffers. Spark Catcher on top of Chimney. For full particulars see drawings Order N°19720. List of working facings in the Drawing Office.

Name "GUI" Sale N° 19720.

879 19720 2-6 Same as N°878.

Name TATO Sale N° 19720.

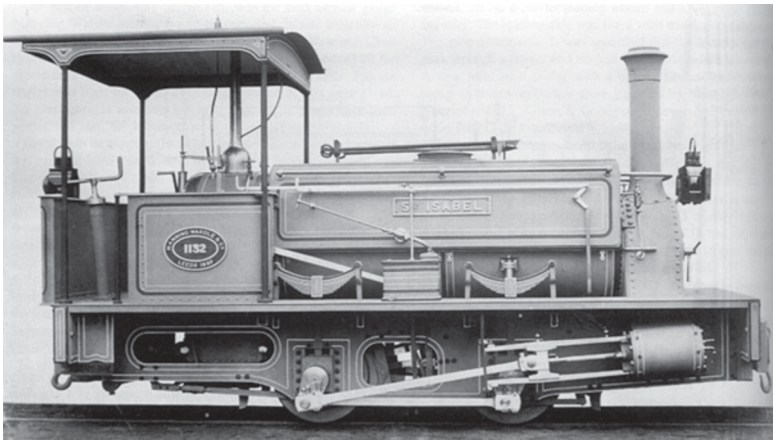
Manning Wardle notes for the locos **'GUI'** and **'TATO'**.

0-4-0ST, d/w 27", cyls. 8"x12", built by Manning Wardle in 1889

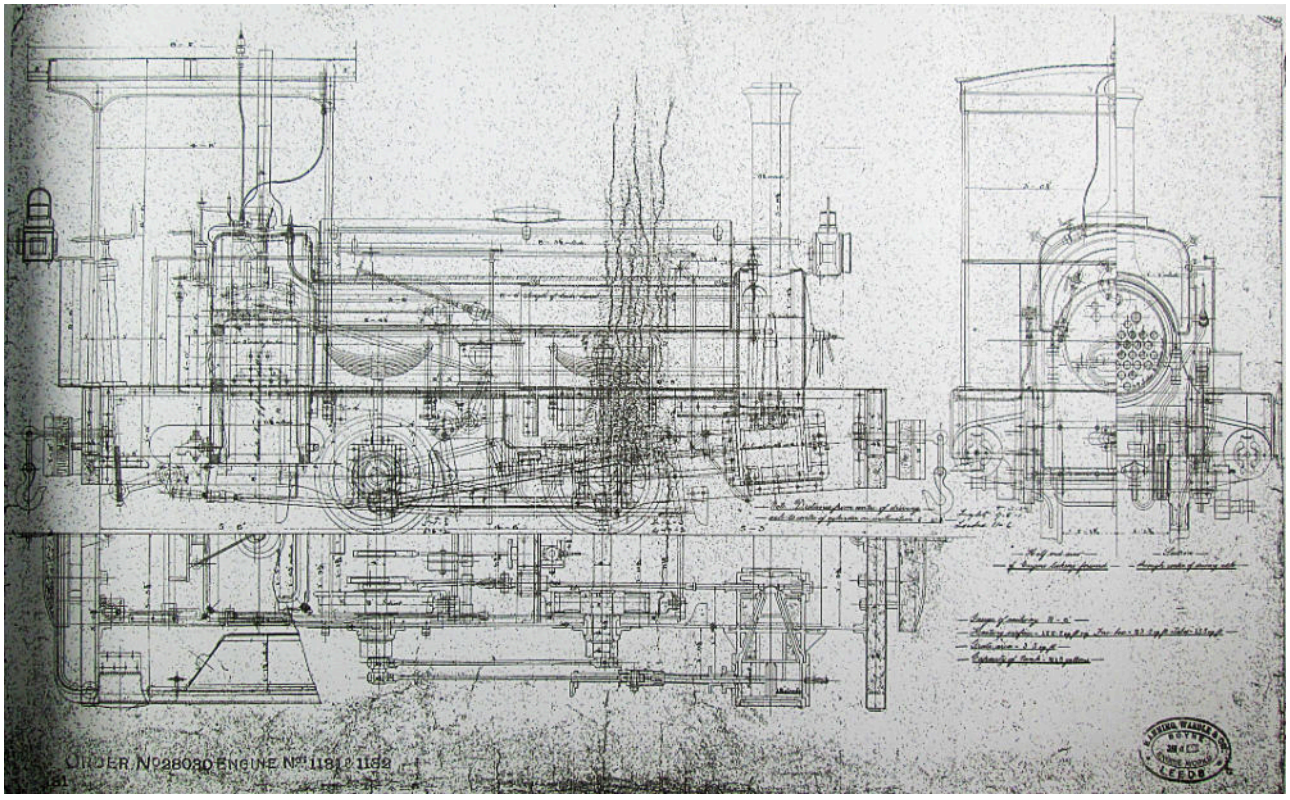
Purchased via Fawcett Preston & Co.

1 'TOCO' w/n 1131

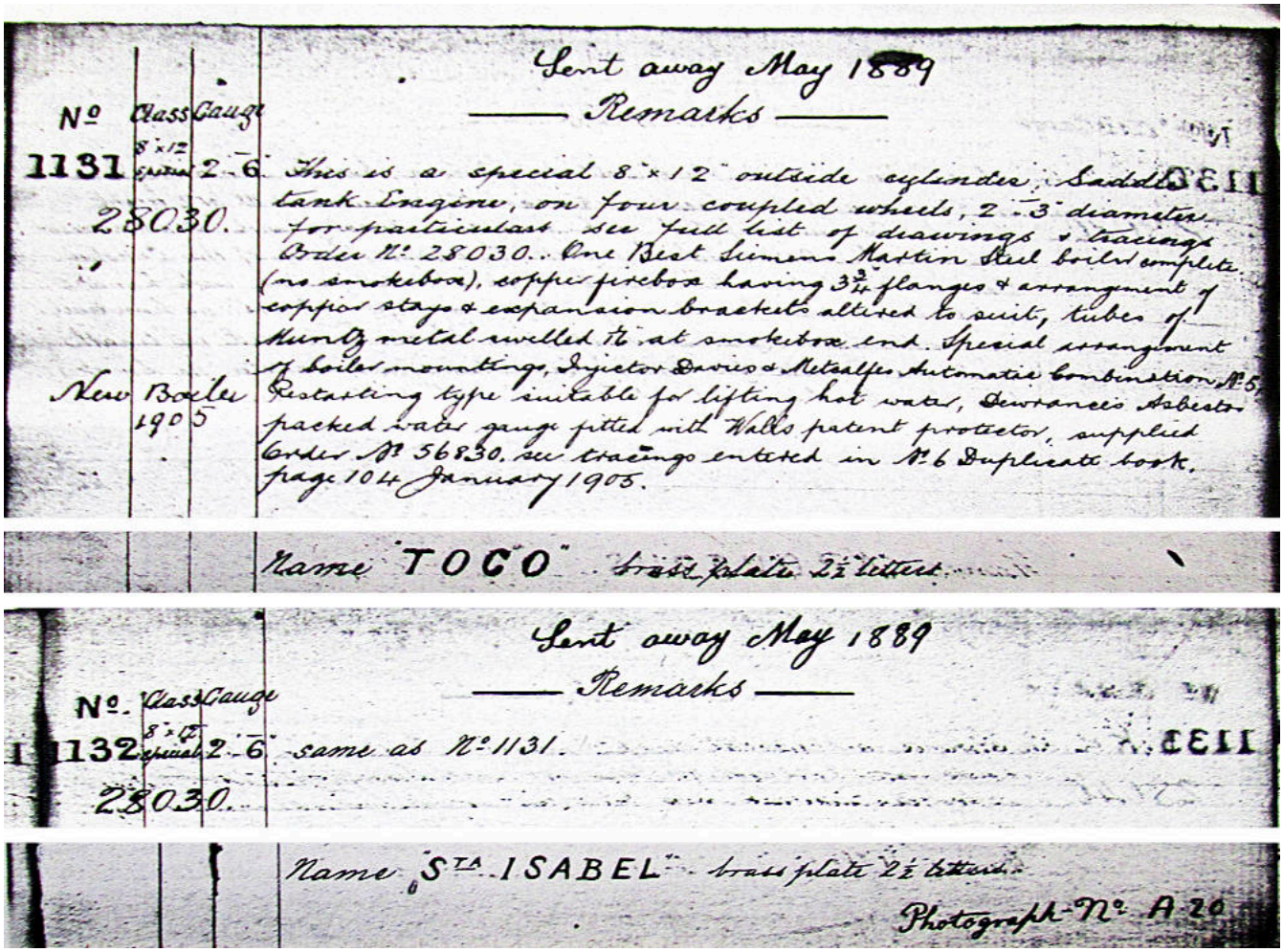
2? **'SANTA ISABEL'** w/n 1132



Manning Wardle builder's pic, via Fred Harman's MW books.



A GA drawing of this pair of engines, found in the Hunslet archive
at Statfold Barn Farm, Staffordshire, England.



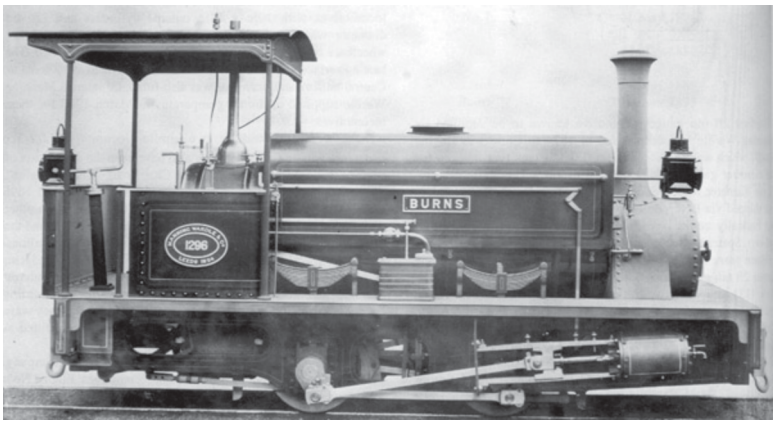
Notes on these engines, found on photocopies of MW registers at the NRM in York.

0-4-0ST, d/w 27", cyls. 8"x12", built by Manning Wardle in 1895 (first pair), and 1900 (second

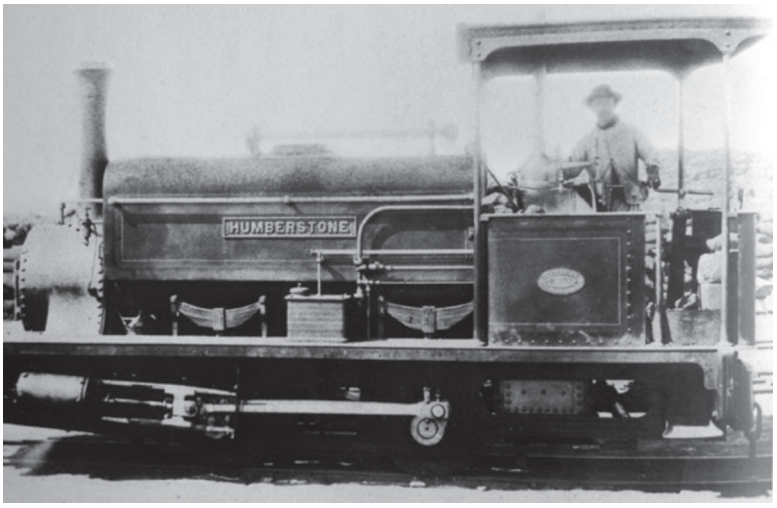
pair)

Supplied via Balfour Williamson & Co. **'BURNS'** and at least two similar locos are pictured in a photo at the *FC de Agua Santa*'s depot at Alto de Caleta Buena, so they may have been sold on to that railway later in their lives.

'BURNS'	w/n 1296	
'HUMBERSTONE'	w/n 1297	
'PRIMITIVA'	w/n 1505	
'VALPARAISO'	w/n 1506	Replacement boiler supplied in 1917.



Manning Wardle builder's pic of 1296, via Fred Harman's MW books.
Whilst the engine looks very similar to the earlierr pair delivered in 1889,
it can be seen to have an extended smokebox and a rather deeper saddle tank.



Manning Wardle 1297 **'HUMBERSTONE'**, probably during its later career
on the *FC de Agua Santa*.

0-4-0ST d/w 15¼" cyls. 5x7½", built by Bagnall in 1910

Spec for 1888 says outside cyls., inside frames, curved awning. Initially built for stock as part of batch 1875-1888. Completed with 1914 for this order on 25-04-1910. Cost £?. customer charged £295. Name **'CHILENITA'**. Bagnall's 'Mercedes' type.

Spec for 1914 similar but commenced for stock 25-02-1910, and finished 11-05-1910. Shipped 02-06-1910 for Iquique. It looks as though both may have been ordered for Anglo-Chilean Nitrate Co. Certainly Allan Baker in *The Narrow Gauge* no. 180 gives this as the customer for no. 1914.

'CHILENITA'	w/n 1888	See below under *Oficina Santa Laura*. Bagnall list says gauge was 2' 6". 1978 displayed outside Iquique Police Station. Later in municipal park near Pan-Am Highway.
'DIECIOCHO'	w/n 1914	Allan Baker in *The Narrow Gauge* no. 180 says was ordered for Anglo-Chilean Nitrate Co. Certainly 2' 6" gauge originally, but see Wilf Simms says last worked at *Oficina Franca* in 1927 and was by

then 2' 0" gauge. Later displayed at Oficina Victoria, and then at Pedro de Valdivia. In 2019 is displayed with a wagon next to the main road near Pozo Almonte.

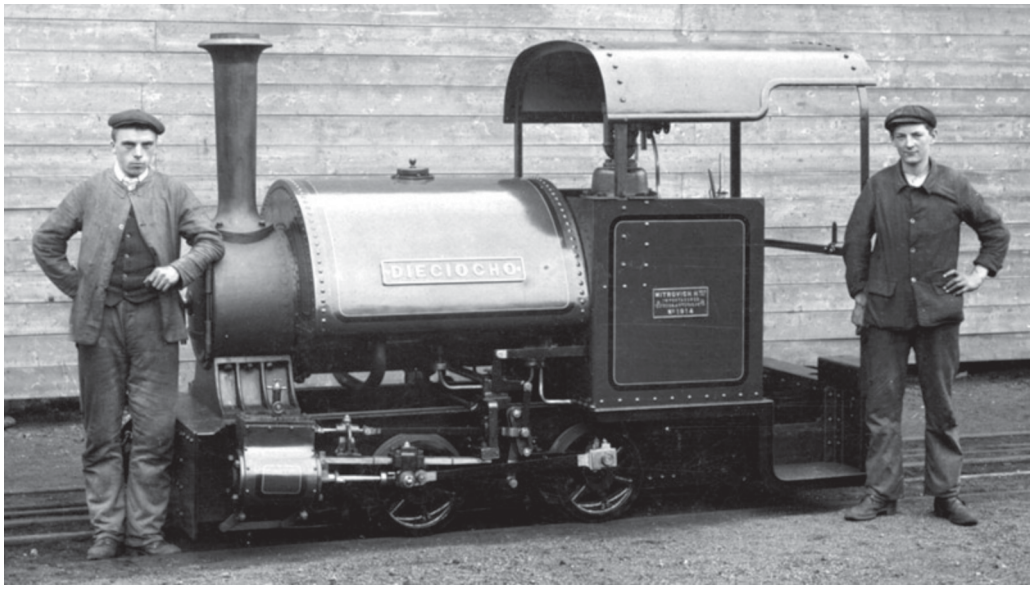


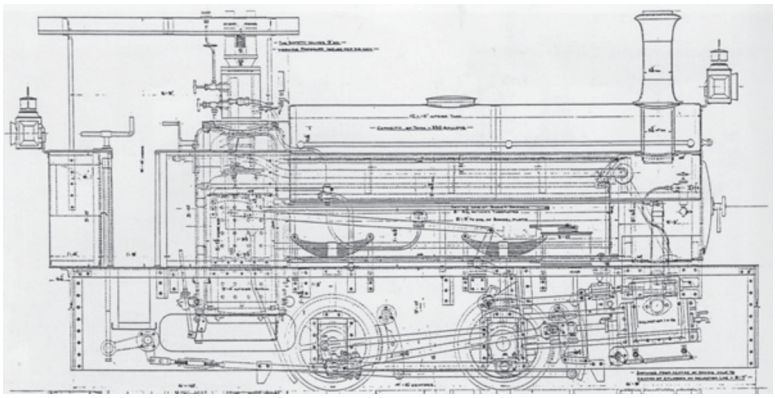
Photo from Bagnall archive at Staffordshire Record Office, Stafford.

0-4-0ST, d/w 29", cyls. 9"x14", built by Manning Wardle in 1917

Supplied direct to company at Tocopilla.

? w/n 1908

? w/n 1909



When compared with the earlier MW locos for this customer, the full length saddle tank and deep frames will be obvious from this GA drawing that was reproduced in Fred Harman's MW locos book.

0-4-0ST d/w ?, cyls. 8"x14", built by Kerr Stuart in 1900, or an 0-4-2T?

2 'LORD ROBERTS' w/n 684



A share certificate from the *Cía. Salitrera Anglo-Lautaro* which succeeded to the ACNC assets as the nitrate industry declined.

Oficina Anita

See *Cia. Salitrera El Loa.*

Antony Gibbs & Sons Ltd, agents & shippers

Background

The following locos were purchased through Strain & Robertson for Antony Gibbs & Sons Ltd for an unknown *oficina*. Anthony Gibbs y Cia. were agents for *oficinas*: Alianza, Bellavista, Buenaventura, Slavonia, San Antonio de Zapiga, Victoria, Argentina, Rosario de Huara, Cala-Cala, Pan de Azucar, California, Maroussia, Tres Marías. They were the representatives of the Alianza Co., Rosario Nitrate Co., *Cía de Salitres y FC de Junín*, Pan de Azucar Nitrate Co., *Cía Salitrera Pedro Perfetti*. Also, in Antofagasta, for *Cía. Salitrera El Peñon*.

Earlier, in September 1920, S&R invited tenders for the supply of a locomotive through this agent, this being their contract 49. Invitation letters were sent to NBL, Avonside, Kilmarnock Engineering, Andrew Barclay, Manning Wardle, Baldwin, Bagnall, and Kerr Stuart, but notably not to Fowler or Hunslet, who were usually circulated with such invitations.

0-4-0T d/w 30" cyls. 12x16" built by NBL in 1925

NBL order no. L794. For an unknown *oficina*, via Strain & Robertson contract 59, dated 23rd April 1924 in NBL order book. 'suitable for oil burning and generally in accordance with Specn. diagram and photograph L73.M; and as described in S&R specifications.' See also L767. Delivery to be end of July.

? w/n 23153

? w/n 23154

0-4-0T d/w 30" cyls. 12x16" built by NBL in 1925

Ordered through S&R for Antony Gibbs & Sons. for *oficina Cala Cala*. 'A. Gibbs and Sons contract 73 (possibly

means S&R contract 73 for A Gibbs), corrected from *oficina Alianza* contract no. 802' 'fitted with oil burning apparatus and similar in all respects to those under contract 750 (L767) and to comply with conditions in letter 25/2/25.' Delivery to be at end of June.

'CALA CALA No. 3' w/n 23290

La Cía. de Salitreras de Antofagasta

Background

2' 6" gauge. Summary of *oficinas* owned:

• ***Anibal Pinto***, Antofagasta, 1km from station Maipu of *FCAB*,
In 1918 owned by *Cia de Salitres Antofagasta*.
In 1926 owned by Lautaro Nitrate Co. Ltd., 10 locos Koppel, 2 of 32T, 6 of 16T, 1 of 18T, 1 of 12T.

• ***Arturo Prat***, Antofagasta, 1km from station Maipu on *FCAB*.
In 1918 owned by *Cia de Salitres Antofagasta*.
Operations suspended 1921.
In 1926 owned by Lautaro Nitrate Co.Ltd., no locos listed.

• ***Carlos Condell***, Antofagasta, near station Carmen Alto of the *FCAB*,
In 1918 owned by *Cia de Salitres Antofagasta*.
Operations suspended 1921.
In 1926 owned by Lautaro Nitrate Co. Ltd., 5 Bagnalls of 30T, 2 Avonside and Koppel of 18T.

• ***José Fransisco Vergara*** Antofagasta/Tocopilla, 10km from *FC Longitudinal*,
In 1918 owned by *Cia de Salitres de Antofagasta*. and under construction.
In 1926 owned by Lautaro Nitrate Co. Ltd., 5 locos, 4 Baldwins of 45T, 1 Koppel of 20T.

0-6-0T d/w ?, cyls. ?, built by O&K in the years listed below

?	w/n 2420	Built in 1907, 125hp.	
?	w/n 3170	Built in 1908, 80hp.	
?	w/n 3621	Built in 1909, 80hp.	
?	w/n 3622	Built in 1909, 80hp.	
?	w/n 3638	Built in 1909, 80hp.	
?	w/n 3639	Built in 1909, 80hp.	
?	w/n 3948	Built in 1910, 80hp.	Regauged to 1m. Preserved at *Universidad Catolica del Norte*, Antofagasta, which is on site of the old *Fundicion de Plata* where the loco may have worked.
?	w/n 3949	Built in 1910, 80hp.	
?	w/n 3950	Built in 1910, 80hp.	
?	w/n 4690	Built in 1911, 125hp.	
?	w/n 4711	Built in 1911, 80hp.	
?	w/n 4712	Built in 1911, 80hp.	
?	w/n 4713	Built in 1911, 80hp.	
?	w/n 4714	Built in 1911, 80hp.	
?	w/n 5057	Built in 1911, 80hp.	
?	w/n 5058	Built in 1911, 80hp.	
?	w/n 5059	Built in 1911, 80hp.	
?	w/n 5060	Built in 1911, 80hp.	
?	w/n 5070	Built in 1911, 125hp.	

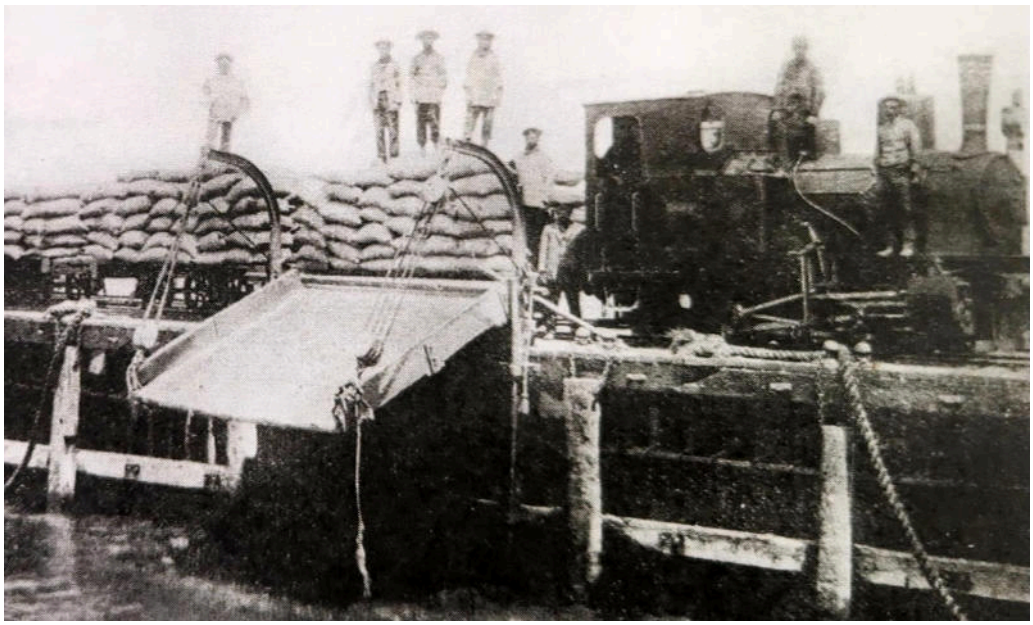
?	w/n 5261	Built in 1912, 80hp.
?	w/n 5262	Built in 1912, 80hp.
?	w/n 5263	Built in 1912, 80hp.
?	w/n 5264	Built in 1912, 80hp.
?	w/n 5265	Built in 1912, 80hp.
?	w/n 6072	Built in 1913, 125hp.
?	w/n 6073	Built in 1913, 125hp.
?	w/n 6074	Built in 1913, 125hp.
?	w/n 6720	Built in 1913, 125hp.
?	w/n 6721	Built in 1913, 125hp.
?	w/n 9402	Built in 1920.
?	w/n 10736	Built in 1924.
?	w/n 10737	Built in 1924.

0-4-0T d/w ?, cyls. ?, built by O&K in the years listed below

?	w/n 1608	Built in 1905, 40hp. [14] suggests this loco was for this customer
?	w/n 3073	Built in 1908, 50hp, via J. Math, Gildemeister.
?	w/n 3074	Built in 1908, 50hp, via J. Math, Gildemeister.
?	w/n 3075	Built in 1908, 50hp, via J. Math, Gildemeister.
?	w/n 4067	Built in 1910, 80hp.

0-6-2T d/w ?, cyls. ?, built by O&K in 1925

?	w/n 11047
?	w/n 11048



This pic was taken on the original Milbourne & Clark nitrate wharf at Antofagasta. Whilst the loco has not yet been identified, it probably belonged to the Cia. de Salitreras de Antofagasta which was a successor to M & C, and was therefore presumably one of their many O&K locos listed above.

Oficina Araucana

Background

30" gauge. Summary of operations:

• ***Araucana***, Antofagasta, 5km from station Union on *FCAB*,

In 1918 owned by *Cia Salitrera Lastenia*.

Operations suspended 1921.

In 1926 owned by Lautaro Nitrate Co. Ltd., 5 locos Henschel of 16T and 12T.

0-4-0T d/w ?, cyls. ?, built by Henschel in 1913

? w/n 11698

Oficina Argentina

See Rosario Nitrate Co., below.

Sres. Astoreca y Urruticoechea

30" gauge.

Summary of *oficinas* owned:

• ***La Granja***, Tarapacá, 11km from station La Cumbre of the NR,

In 1918 owned by *Granja y Astoreca*.

In 1926 owned by *Cia Salitrera La Granja*, 2 of 20T, 1 of 12T.

• ***Iris***, Tarapacá, 12km from station La Cumbre on NR,

In 1918 owned by *Astoreca y Quiroga*.

In 1926 owned by *Astoreca y Urruticoechea*, 4 locos of 23, 14 and 7T.

Oficina La Granja

This oficina used metre gauge locos, so its mention here may be a mistake.

0-6-0T, d/w 800mm, cyls. 90x430mm,, built by Henschel in 1927

Ordered via Gebr. Vorwerk & Co.

? w/n 20708

Oficina Iris

Gauge 2' 6".

0-4-2T? d/w ?, cyls. ?, built by German manufacturer, possibly O&K

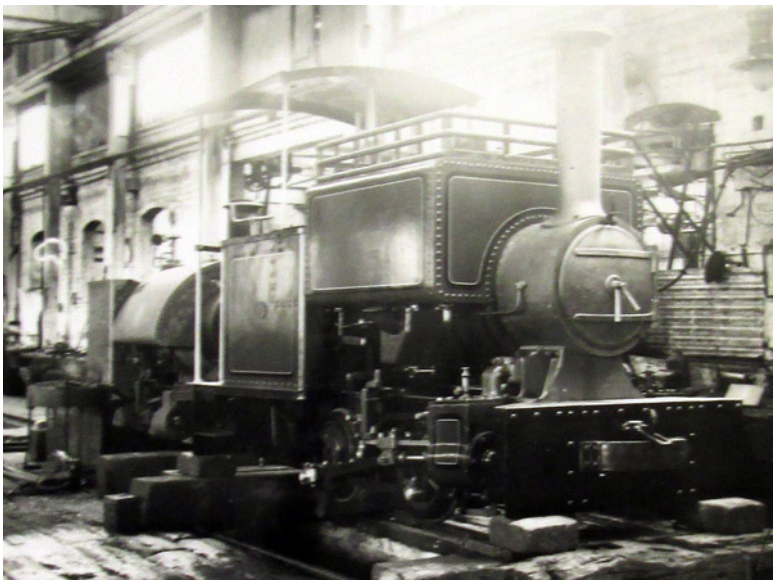
Evidence only from photo.

? w/n ?

0-4-0ST d/w 21", cyls. 6x9", built by Bagnall in 1911

Ordered via A. Trugeda & Co. Spec says outside cyls., inside frames, awning, square tank and woodrack. Building was commenced for stock as part of batch 1889-91. Completed 09-09-1911. Customer charged £356. Bagnall's 'Mercedes' type.

'PAMPINO' w/n 1890



'PAMPINO', Bagnall 1890, under construction.

4-6-0T d/w ?, cyls. ?, built by Hunslet 1918-9

Built for the 2' gauge War Department light railways of the Great War, but too late for use. Brought to South America along with several others by Beverley Peace & Sons.

WD 3257	w/n 1373	Seen and photographed at *Oficina Iris* during 1920s, but puzzlingly also supposed to have been in service on Mauritius in 1927.



This view shows three of the oficina Iris locos – an unknown German engine, the small Bagnall **'PAMPINO'**, and the ex-WD Hunslet 4-6-0T no. **3257**.

Oficina Augusta Victoria

Background

30" gauge. In Canton El Boquete. Summary of operations:

0-6-0T d/w ?, cyls. ?, built by O&K in 1913

?	w/n 6553	100hp
?	w/n 6554	100hp

Oficina Bellavista

See the Alianza Co. above.

The El Boquete Nitrate Co.

Background

2' 6" gauge. Location unknown. Summary of operations: No details known.

2-8-2 d/w 37½", cyls. 15"x20", built by Hunslet in 1906

Built for the FCAB. Bought by Boquete Nitrate by 1912.

?	w/n 888	Ex *FCAB* no. **75 'BOQUETTE'**, later their no. **109**
?	w/n 891	Ex *FCAB* no. **78 'UYUNGI'**, later their no. **112**

Spares for Mikado locomotives were ordered from Hunslet via S&R in 1920.

In 1920 El Boquete Nitrate invited a quote from NBL for a locomotive 'similar to those supplied to the *Cia. Salitrera El Loa*', either with or without oil-burning equipment. The quotes were £4730 and £4?15, without and with the extra equipment.

Buchanan Jones & Co.

Agents

Tenders invited in October 1915. To be similar in all respects to those built for *Oficina Maria* under S&R contract 215 completed in April 1914, which were Avonside 0-4-0Ts. However, in December 1915 rejection letters were sent to North British and Avonside.

4.3.2 Nitrate operations C-K

Cía. Salitrera Carmen

Oficina Carmen

Oficina Carolina

Cía. Salitrera Castilla*, and later the *Cía Salitrera Nueva Castilla

Oficina Castilla

The Colorado Nitrate Co.

La Cia. Salitrero Constancia

La Soc. Minera y Comercial Renacimiento

The DuPont Nitrate Co.

La Cía. Salitrera El Loa

Oficina Angamos

Oficina Anita

Oficina Candelaria

Oficina Cecilia

Oficina Curico

Oficina Luisis

Oficina María

***La Cía. Salitrera 'La Esperanza'*, or the Esperanza Nitrate Co.**

The Fortuna Nitrate Co.

La Cía. Salitrera Galicia

***Gildemeister y Ciá.*, agents and *oficina* owners**

Granja & Co.

Inglis Lomax y Cia.

La Cía. Salitrero Keryma

Oficina Candelaria

See the *Cia. Salitrera El Loa*.

Cía. Salitrera Carmen

Oficina Carmen

Cía. Salitrera Carmen.

Summary of operations:

• ***Carmen Bajo,*** location unknown.

Mentioned in 1908 list,

0-4-0ST d/w 30", cyls. 12x16", built by NBL in 1908

This was NBL order L327 of 15th October 1908. Specs sent by Strain & Robertson, their contract 65, to NBL, Avonside, Manning Wardle and maybe others. NBL given contract but there was delay and revised quotes were provided in September 1908. £2650 for two locos., with four months allowed for delivery. Locos to be identical to others supplied to Inglis Lomax & Co, 'same in all respects' to order L223. NBL order L327 dated 15th October 1908, and NBL order books say to be delivered by end of January 1909. One order book gives the running names.numbers and says this was as instructed in letter of 23 October 1908. Painting was to be same as L125, 202 and 223, but with some diffs. in lining.

CARMEN No. 1 w/n 18757
CARMEN No. 2 w/n 18758

Oficina Carolina

Background

Summary of operations:

• ***Carolina***, in Tarapacá, Between Dolores on the NR and Mejillones on the coast.
Owned in 1889 by J. Brooking, J. Child and C. Comber, trading as *Brooking, Child y Cía*. One loco owned at that time.

Linked to Junin railway, 2' 6" gauge. Report around 1888-1895 states that the intention was to purchase two large six-coupled locos and two smaller ones.

0-4-2T d/w ?, cyls. 8x12", built by Fowler in 1890

Ordered via W. & J. Lockett to Pisagua. Name suggests possibly for this location?
'CAROLINA' w/n 6341

Cía. Salitrera Castilla, and later the *Cía Salitrera Nueva Castilla*

Oficina Castilla

762mm gauge.

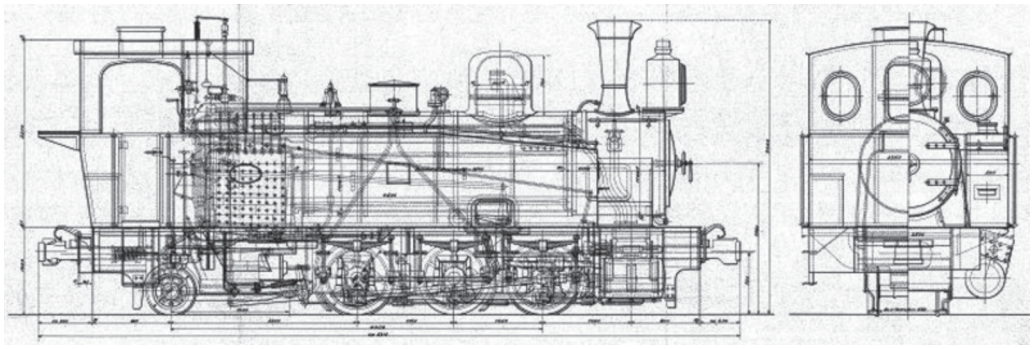
Summary of operations:

• ***Castilla***, Antofagasta Canton Aguas Blancas, 33km from station Yungay on *FCAB*, on Aguas Blancas branch of *FCAB*,
Operations suspended 1921.
In 1926 owned by *Cia. Salitrera Nueva Castilla*, 2 locos of 33T, 3 locos of 14T, 1 loco of 16T.

0-6-2T d/w 860mm, cyls. 340x430mm, built by Henschel in 1923?

Oil-fired ***in 1922.***
? w/n 19737
? w/n 19738

A further 762mm gauge 0-6-2T was built in 1924, no. 20277, and supplied via Gebr. Vorwerk & Co. to an unknown customer, also a metre gauge 0-6-2 no. 20302, ditto.



High resolution copies of this drawing are available from the Henschel Museum, at
https://www.henschel-museum.com/Lokomotiv-Archiv/Uebersichtszeichnungen/Dampflokomotive/
and then click on 'Schmalspur' to find the narrow gauge drawings.

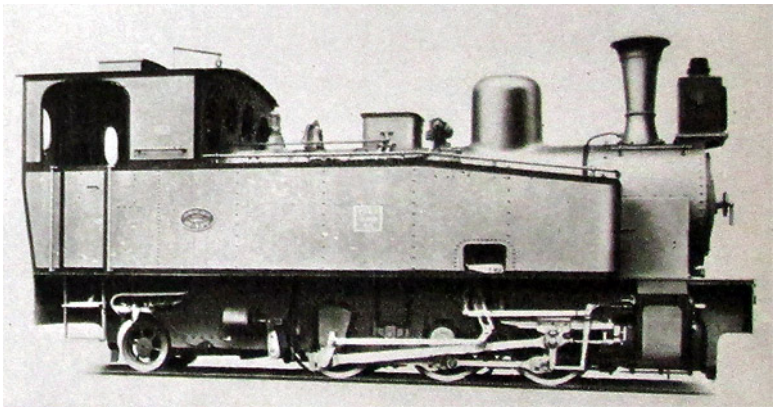


Photo from a Henschel catalogue and also used in a 1926 Vorwerk & Co. agency advert.

Oficina Cecilia

See *Cia. Saliterera El Loa*, below.

Oficina Chacabuco

See under Lautaro Nitrate Co.

The Colorado Nitrate Co.

Background

30" gauge. Formed by John Thomas North, in 1885 to work *oficinas Buen Retiro, Nueva Carolina, Pozo Almonte* and *Peruana*. Summary of oficinas owned:

• ***Buen Retiro***, in Tarapacá,

In 1882 was owned by John Thomas North.

In 1889 owned by the Colorado Nitrate Co. formed by J. T. North and R. Harvey. No mention of locos at that time.

Also in 1908 list.

• ***Jazpampa***, in Tarapacá, Close to station Jazpampa on NR.

In 1882 was owned by John Thomas North.

Owned in 1889 by *J. T. North y Cia*, with Liverpool agents being W. J. Lockett. No mention of locos at that time.

In 1926 owned by The New Paccha - Jazpampa Nitrate Co. Ltd., No locos listed, but not much detail of any kind given.

• ***Peruana*** location unknown.

In 1882 was owned by John Thomas North.

Mentioned in 1908 list,

• ***Primitiva***, in Tarapacá, 7km from station Huara on NR,

In 1882 was owned by John Thomas North.

Owned in 1889 by J. T. North via the Primitiva Nitrate Co. Ltd. Represented in Liverpool by J. Lockett. Owned 4 locos at that time, and a photo in the album shows two identical narrow gauge 0-4-0STs by Fowler.

1918 owned by *Cia de Salitres y FC de Agua Santa*.

In 1926 owned by *Cia. de Salitres y FC de Agua Santa*, 3 Fowlers of 10T.

• ***Ramirez***, in Tarapacá, Between stations Pozo Almonte and Huara on the NR.

In 1882 was owned by John Thomas North.

Owned in 1889 by the Liverpool Nitrate Co. formed by J. T. North and R. Harvey. 3 locos at that time. One shown in a photo in the album looks like a small narrow gauge Fowler 0-4-0ST or 0-4-2ST.

In 1926 owned by Liverpool Nitrate Co., No locos mentioned.

• ***Virjinia***, in Tarapacá, north-west of Pintados,

In 1882 was owned by John Thomas North.

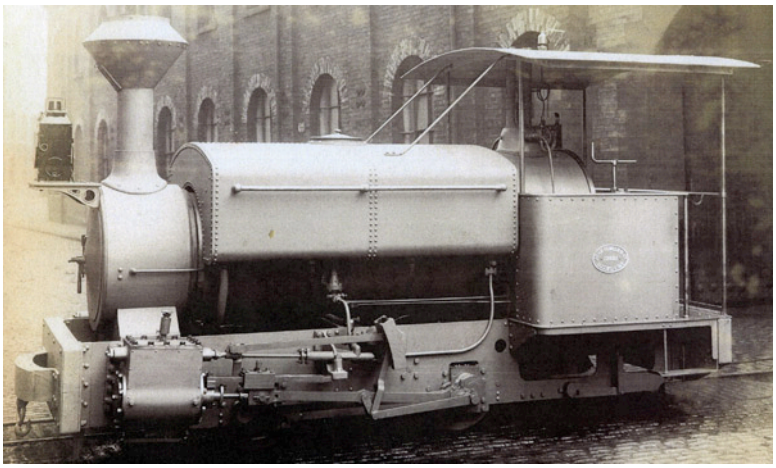
Owned in 1889 by Señores Folsch and Martin. No mention of locos at that time.

0-4-0ST d/w ? cyls. 9½x14", built by Fowler in 1909

Ordered via W. & J. Lockett.

? w/n 11759

? w/n 12081



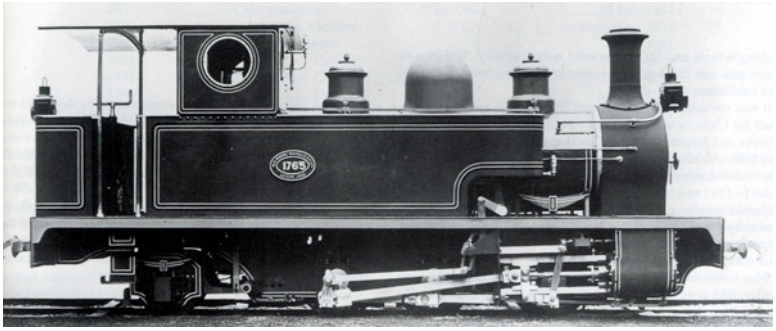
Fowler 12081. Photo available in Museum of English Rural Life, Reading.

0-6-2T d/w 31", cyls. 12"x16", built by Manning Wardle in 1910

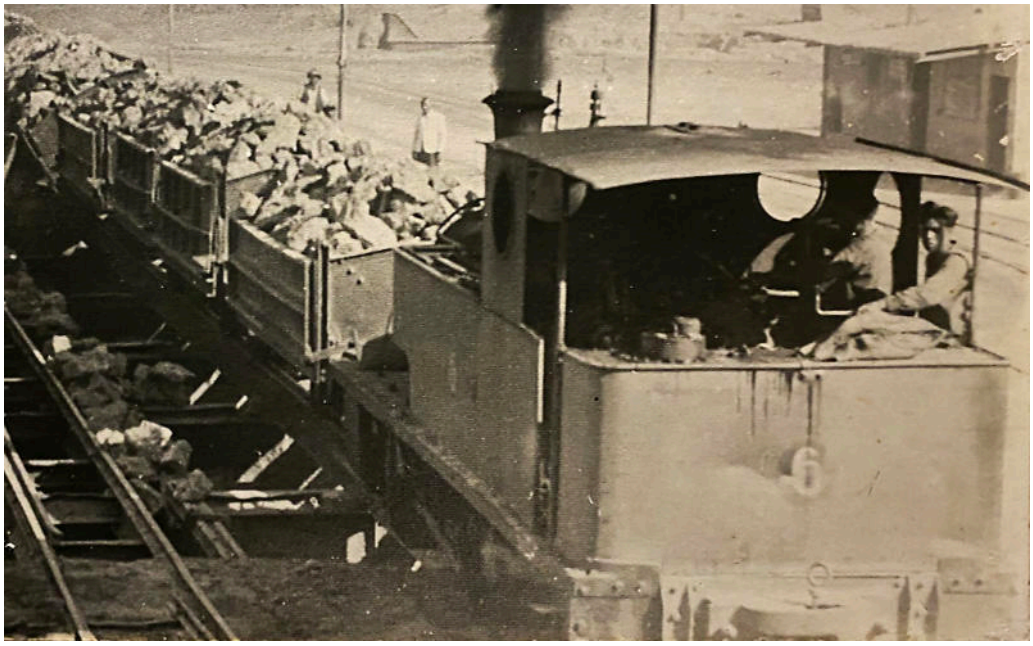
British enthusiasts may wish to note that these were very similar to MW 1877, no **1 'CHEVALLIER'** of the Lodge Hill & Upnor Railway, later sold to Bowaters at Sittingbourne, then to the Whipsnade & Umfolozi Railway, and currently in store at the Welshpool & Llanfair Light Railway. However, **'CHEVALLIER'** has Salter safety valves on the dome, whereas these seem to have had safety valves exhausting through the cab roof.

? w/n 1764

? w/n 1765



Manning Wardle builder's photo.



A Manning Wardle 0-6-2T with porthole cabside windows like the locos at Colorado Nitrate, and bearing the number **6**. Location as yet unknown.

La Cia. Salitrero Constancia

Owned the *Oficina Constancia*.

• ***Constancia***, in Tarapacá, 1 1/2km from Pueblo de Huara, at Km 63 on NR.
In 1889 had been owned by Jose Devescovi. No mention of locos at that time.
In 1926 owned by *Cia. Salitrero Constancia*, 1 English of 12T, and 3 of 8T. Later owned by *Cía. Salitres y FC de Agua Santa*.



This image seems to show a small Fowler 0-4-0ST or 0-4-2ST. It was captioned as showing the *Batería de Artillería de la Oficina Constancia*.

Oficina Curico

See the *Cía. Salitrera El Loa*.

La Soc. Minera y Comercial Renacimiento

Summary of *oficinas* owned*:*

• ***Dominador,*** On the pampa El Peñon in Canton Aguas Blancas,

In 1926 owned by *Soc. Minera y Comercial Renacimiento*, 4 locos, two Hunslets of 81T, 1 Henschel of 50T, 1 North British of 30T.

The locos of 81 tonnes each were ex mainline engines. They will have been Hunslet 888 and 891, 2-8-2s built for the *FCAB* (see above) and then sold to the El Boquete Nitrate Co. (also see above) before moving on to the Penon Nitrate Co.

The DuPont Nitrate Co.

Background

30" gauge. Locos shipped to Taltal, so presumably in that area. The huge Du Pont chemical company grew out of their initial nitrate trading with Chile. They purchased their own nitrate *oficinas* in 1909, and ran them until 1931.
Summary of oficinas owned:

• ***Delaware ex Carolina*** In departamento Taltal,
1918 owned by DuPont Nitrate Co.
In 1926 owned by DuPont Nitrate Co. Ltd., no locos listed.

• ***Peña Grande***, Tarapacá, between stations Pozo Almonte and Huara on the NR. (Fuerte Baquedano?)
In 1918 owned by DuPont Nitrate Co. and under construction.
In 1926 owned by DuPont Nitrate Co., No mention of locos.

2-4-2T d/w 30", cyls. 10"x16", built by Vulcan Iron Works in 1914

? w/n 2321

0-8-0T d/w 33", cyls. 13"x16", built by Porter in 1917

Delivered to Taltal.

? w/n 6029

0-6-0T d/w 26", cyls. 9"x14", built by Porter in 1918

? w/n 6144

? w/n 6145

La Cía. Salitrera El Loa

Background

30" gauge. Locos originally seem to have been numbered individually for each *oficina*, but from about 1914 new arrivals were numbered in a general sequence for all El Loa *oficinas*.
Summary of oficinas owned:

• ***Angamos***, location unknown,

• ***Anita***, Antofagasta, 1km from station Union on FCAB.
Operations suspended 1921.
In 1926 owned by *Cía. Salitrera El Loa*, no locos listed.

• ***Candelaria***, Antofagasta, later ***Constancia***?
Operations suspended 1921.

• ***Cecilia***, Antofagasta, 7km from station Peineta on *FCAB*,
Operations suspended 1921.
In 1926 owned by *Cia. Salitrera El Loa*, 7 locos, 4 North British of 20T, 1 Americana of 22T, 2 Koppel of

16T. Also locos Koppel of 12T '*para sacar los ripios por medio de carros volcadores*'.

• ***Curicó***, Antofagasta,

Operations suspended 1921.

• ***Luisis***, Antofagasta, 4km from station Union on *FCAB*,

In 1926 owned by *Cia. Salitrera El Loa*. 3 locos North British of 18T.

• ***Maria***, Antofagasta,

1918 owned by *Cia Salitrera El Loa*.

Oficina Angamos

0-4-0T d/w 30", cyls. 12x16", built by NBL in 1912

NBL order no. L474, of same design as L430. S&R contract 98 on behalf of Inglis Lomax & Co. To be similar in all respects to order L430 for Oficina Maria. Delivery to be in 5 months. To be painted similar to L430 but with different lining.

'ANGAMOS No. 1' w/n 19708

Spares ordered for this loco, at this location, via S&R in June 1914 and Dec. 1915.

Locos **17** and **18** were by Avonside. Details unknown. May have been S&R contract 211. Spare parts supplied through S&R in 1917.

0-4-0T d/w ?, cyls. 8½x12", built by Avonside in 1925

Ordered via Strain & Robertson for shipment via Buchanan Jones to Antofagasta. to be lettered in gilt "El Loa no. 27', lettered green with gold lining, Stephenson's motion, coal burning, price £980, extra perforated plate type spark arrestor at £7, one spare injector at £4, fitted with self acting injectors and Ramsbottom safety valves.

'El LOA no. 27' w/n 1967

Oficina Anita

0-4-0T d/w 30", cyls. 12x16", built by NBL in 1905

NBL order no. L125. This one seems to have been S&R contract 27. Order L125 of 19th April 1905 placed by Inglis Lomax & Co., one tank engine similar in all respects to order L73. Delivery by 30th June(?) 1905, under penalty. One copy of the NBL order book says that this loco was for oficina Luisis.

1 w/n 16898 At this location in 1914.

0-4-0T d/w 30", cyls. 12x16", built by NBL in 1905

NBL order no. L799. This seems to have been S&R contract 166. Delivered to Oficina Carmen bearing name **'CARMEN No. 1'**?

28 w/n 18757 This loco was certainly at this oficina in 1917.

Spares for one of the 1905-6 NBL locos supplied to *Oficina Luisis* ordered by *Oficina Anita* in 1908. Spares for both the above locos, at this location, ordered in Dec. 1915 through S&R.

Oficina Candelaria

0-4-0T d/w 30", cyls. 12x16", built by NBL in 1913

Ordered via Strain & Robertson Ltd. Initially ordered under S&R contract 44 for Inglis Lomax, presumably for 2' 6" gauge as locos to be same in all respects as those supplied to Oficina Angamos in 1911. To be completed by 16th June 1913. Locos to be equipped to burn oil as well as coal. Prices £1180 each for the locos + £95 each for the oil burners etc. NBL order no. L544.

Later discovered to be for this *oficina* so became Strain & Robertson contract no. 117 dated 19th December 1912 in NBL order books. 'Four (4) Tank Locomotives (0-4-0) gauge 2' 6", cyls. outside 12"x16", similar in all respects to that supplied under Cont. no. 98 (L474).' Delivery to be by 18th June 1913. Note tanks slightly larger (400gals.) than on most earlier locos of this type. Note dated 10th January 1913 saying "To be fitted with apparatus to burn oil as well as coal."

13 w/n 20282
14 w/n 20283
15 w/n 20284
16 w/n 20285

Spares ordered for the above locos, at this location, via S&R in Dec. 1915.

Also Strain & Robertson contract 216?

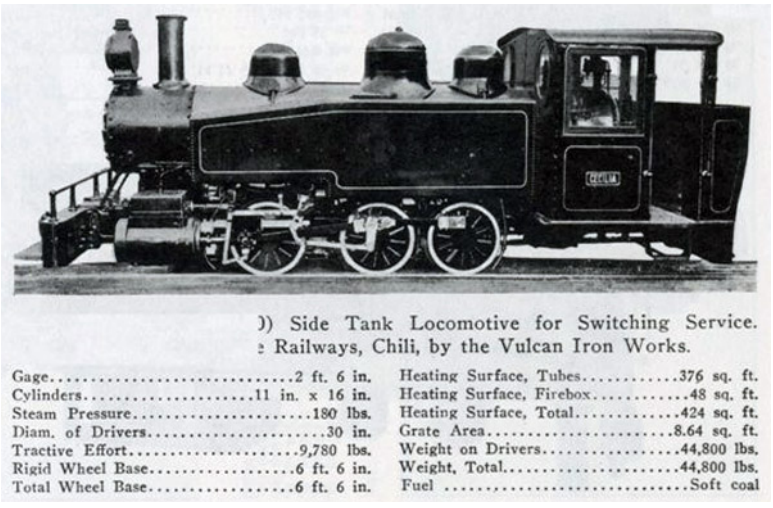
Oficina Cecilia

• ***Cecilia*** (*Cia. Salitrera El Loa*) 7km from station Peineta on *FCAB*, 7 locos, 4 North British of 20T, 1 Americana of 22T, 2 Koppel of 16T. Also locos Koppel of 12T '*para sacar los ripios por medio de carros volcadores*'.

0-6-0T d/w 30", cyls. 11x16", built by Vulcan Iron Works in 1920

VIW supplied two 30" gauge 0-6-0 side tanks to Chile, probably of identical design, no. 3063 via Gildemeister & Co., and no. 3108 for the *Societe Salitrero y Commercial,* both in 1920. The identification of one of them as working here derives from the name-plate 'CECILIA' on the cabside, the weight of 22 short tons given in the spec beneath the photo and matched by the '1 Americana of 22T' in the 1926 list above, and the suspicion that the other, no. 3108, will have worked directly for its purchaser somewhere.

? 'CECILIA' w/n 3063?



)) Side Tank Locomotive for Switching Service.
: Railways, Chili, by the Vulcan Iron Works.

Gage	2 ft. 6 in.	Heating Surface, Tubes	376 sq. ft.
Cylinders	11 in. x 16 in.	Heating Surface, Firebox	48 sq. ft.
Steam Pressure	180 lbs.	Heating Surface, Total	424 sq. ft.
Diam. of Drivers	30 in.	Grate Area	8.64 sq. ft.
Tractive Effort	9,780 lbs.	Weight on Drivers	44,800 lbs.
Rigid Wheel Base	6 ft. 6 in.	Weight, Total	44,800 lbs.
Total Wheel Base	6 ft. 6 in.	Fuel	Soft coal

0-4-0T d/w 30", cyls. 12x16", built by NBL in 1924

Ordered under NBL order L795. Dated in NBL order book at 27th August 1924. 'suitable for coal burning in accordance with specification and as shown on Diagram and Photograph. Ref. no. L73.' Ordered via Strain & Robertson Ltd. (contract no. 70) and Buchanan Jones & Co. Delivery to be by end of November. Annotation at bottom of order book page says: 'No. El Loa no. 26'.

'El LOA No. 26' w/n 23155

Notes from S&R archive:
Of. Cecilia now using NBL locos supplied to other *Cia Salitrera El Loa oficinas*, Also using an O&K loco no. **4**. There is also a mention of the purchase of Hunslet locos around 1920, and the suggestion that at least one O&K loco

bought for oficina Amelia had ended up at oficina Cecilia.

Oficina Curico

Owned by *Cía. Salitrera El Loa*.

0-4-0T d/w 30", cyls. 12x16", built by NBL in 1908-9

NBL order no. L328. Strain & Robertson contract 45 of 1909 being supplied via Inglis Lomax and Co. Quote invited 30th September 1908, and accepted at £1315 on 7th October 1908. NBL order books give date as 15th October. Four months allowed for delivery. Loco to be identical to others supplied via Inglis Lomax & Co., and 'same in all respects as order L327'. Like that order, NBL order books say to be delivered at end of January 1909. Loco to be painted green as L202.

CURICO No. 1 w/n 18759

Also NBL 18758 here, according to S&R letter of 4th June 1914 to NBL (see below).

0-4-0T d/w 30", cyls. 12x16", built by NBL in 1911

Ordered for *Oficinas María* and *Curico* via Inglis Lomax & Co. NBL order no. L430. Same design as order L328. Strain & Robertson contract 68.

3 w/n 19371 See entry for *Oficina María*, below.

CURICO No. 3 w/n 19372 At this oficina in 1914.

Spares ordered for these two locos, at this location, via S&R in late 1915.

Oficina Luisis

A S&R letter of Dec 1915 ordered spares for locos supplied by NBL under contracts 27 of 1905 (and others). ???

0-4-0T d/w 30", cyls. 12x16", built by NBL in 1906

NBL order no. L155 dated 21st September 1905. Ordered via Inglis Lomax & Co., who were general agents and dealers in Iquique, through Strain & Robertson contract 43. Enquiry initially to NBL in April 1905 for loco similar to that supplied for Reducto Nitrate. NBL tender accepted 18 April 1905 at price of £1255 with delivery to be by 31st August 1905. Loco to be similar in all respects to order L125. £20 bonus or penalty for each week early or late. To be painted green unless instructions to contrary received. Steam test was 4th July 1906?, and to be shipped 15th July 1906?. One copy of the NBL order book has a note saying that the running number was to be **2**, as confirmed by a letter of October 6th 1905. NB the two versions of the NBL order book seem to be in conflict here over dates.

1, or maybe **2** w/n 17262

0-4-0T d/w 30", cyls. 12x16", built by NBL in 1906

NBL order no. L223 placed 25th August 1906. Ordered via Inglis Lomax & Co., who were general agents and dealers in Iquique, through Strain & Robertson contract 3. Initial enquiry was for loco for Oficinas Domeyko and Pissis, but later corrected to Inglis Lomax & Co., and then admitted was for Oficina Luisis. To be exactly similar to previous locos for oficinas Maria and Luisis. Similar in all repects to NBL order L202. Originally to be painted green but no name or number, later changed to carry 'Oficina Luisis No. 1' on tanks. Delivery to be in January without fail.

No. 1 OFICINA LUISIS w/n 17852



Image found in ETH Zurich archive.

0-4-0T d/w 30", cyls. 12x16", built by NBL in 1907

NBL order no. L233. Strain & Robertson contract 43. NBL invited to tender 21 September 1905, for loco similar to Reducto Nitrate's latest loco. Tender offered 21 September and accepted 22 September. Loco to be identical to previous one for this customer. Price £1255 and delivery to be 22 February 1906. Livery to be green, as before, bearing no. **2** on cabsides in 'large letters' and on small round brass plate on front of smokebox.

2 w/n 17852

Spares for one of above ordered by Oficina Anita in 1908.

0-4-0T d/w 30", cyls. 12x16", built by NBL in 1911

NBL order no. L415, received 2nd July 1910, to be delivered 15th November. Same design 'in all respects' as order L155. Strain & Robertson contract 87.

3 w/n 19320

Also Strain & Robertson contract 237.

Oficina María

0-4-0T d/w 30", cyls. 12x16", built by NBL in 1906

NBL order no. L202. Strain & Robertson contract 18 of May 23rd 1906 for Inglis Lomax & Co. To be same as locos supplied to Oficina Luisis (NBL order L155), and in same green livery but with slight differences in lining out so as to make a distinction from the Luisis engines. Letter of 13th August 1906 from S&R then specifies locos to be lettered 'Maria No. 1' and 'Maria No. 2' but see photo below. Delivery to be in six months. Shipped October 1906, at least partly by SS 'Flamenco', but also reference to a loco shipped by SS 'Hazel Branch'. Other version of NBL order book says locos to be labelled OFICINA MARIA No. 1 and OFICINA MARIA No. 2, confirmed by letter of 20th June.

1 w/n 17667

2 w/n 17668



Image found in ETH Zurich archive.

0-4-0T d/w 30", cyls. 12x16", built by NBL in 1911

Ordered for *Oficinas María* and *Curico* via Inglis Lomax & Co. NBL order no. L430. Same design 'in every respect' as order L202 and L328. Strain & Robertson contracts 113 and 68. NBL order book says order received 11th October 1910, to be delivered 10th February 1911. Painting to be similar to L202 and L328 respectively.

OFICINA MARIA No. 3	w/n 19371	
OFICINA CURICO No. 3	w/n 19372	See entry for *Oficina Curico*, above.

Parts ordered for here from NBL for these 1906 and 1911 locos in late 1915.

Correspondence in the S&R archive suggests that *Oficina Maria* was also using an O&K loco, numbered **4**, but see also *Oficina Cecilia*, above.

0-4-0T d/w ?, cyls. 8½x12", built by Avonside in 1914

Via Buchanan Jones Co. of Valparaiso. Strain & Robertson contract 215. Tender accepted December 1913. To burn oil as well as coal. Height of buffer centre to be 1' 10¼", confirmed by S&R letter to Avonside. Locos were to be shipped by SS *Poplar Branch* and SS *Sorata* from liverpool in May 1914. At some later point these locos were working at *Oficina Angamos*. Avonside order book apparently says "Oil burning Holden type (& coal burning too), the water to be used is very bad, to be painted green with gold lining – 'EL LOA No. 17' and 'EL LOA no. 18' gilt letters on side tanks."

'El LOA No. 17'	w/n 1675	For *Oficina María*.
'El LOA No. 18'	w/n 1676	For *Oficina María*.

Spares ordered for these locos at this location in late 1915, in 1920, and in 1923.

0-4-0T d/w 30", cyls. 12"x16", built by Baldwin in 1915

BLW class 4-18C dwg 32 series 107-109. Spec. is in vol. 54 p361. Letters and numbers to be applied in gold leaf. Erecting card drawing numbered 1031-97 8650 is in the DeGolyer Library collection. "Hereafter. Grates to be of the fixed type instead of rocking type and the center of gravity of loco to be further forward to prevent the engines lifting in front. … Hereafter, tanks to be moved forward." also "smokebox front and door to be of cast iron, c/f weight distribution."

19	w/n 42696	
20	w/n 42697	BLW class 4-18C no. 108.
21	w/n 42699	

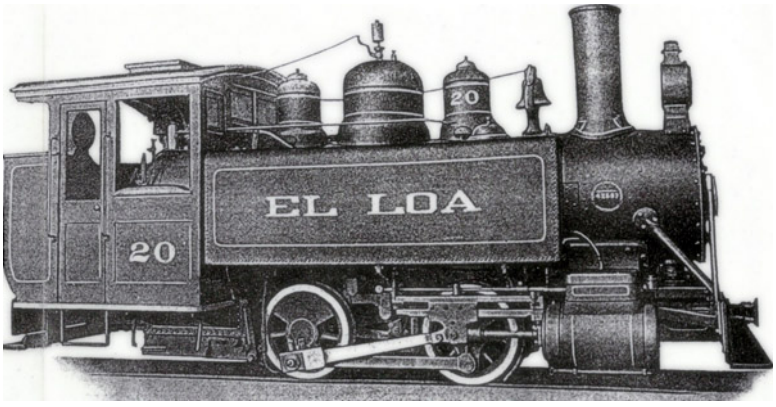


Photo from the collection of Andrew Batory.

0-4-0T d/w 30", cyls. 12x16", built by NBL in 1925

NBL order no. L799 of 27th November 1924, 'similar in all; respects that being built under *Oficina Cecilia* contract

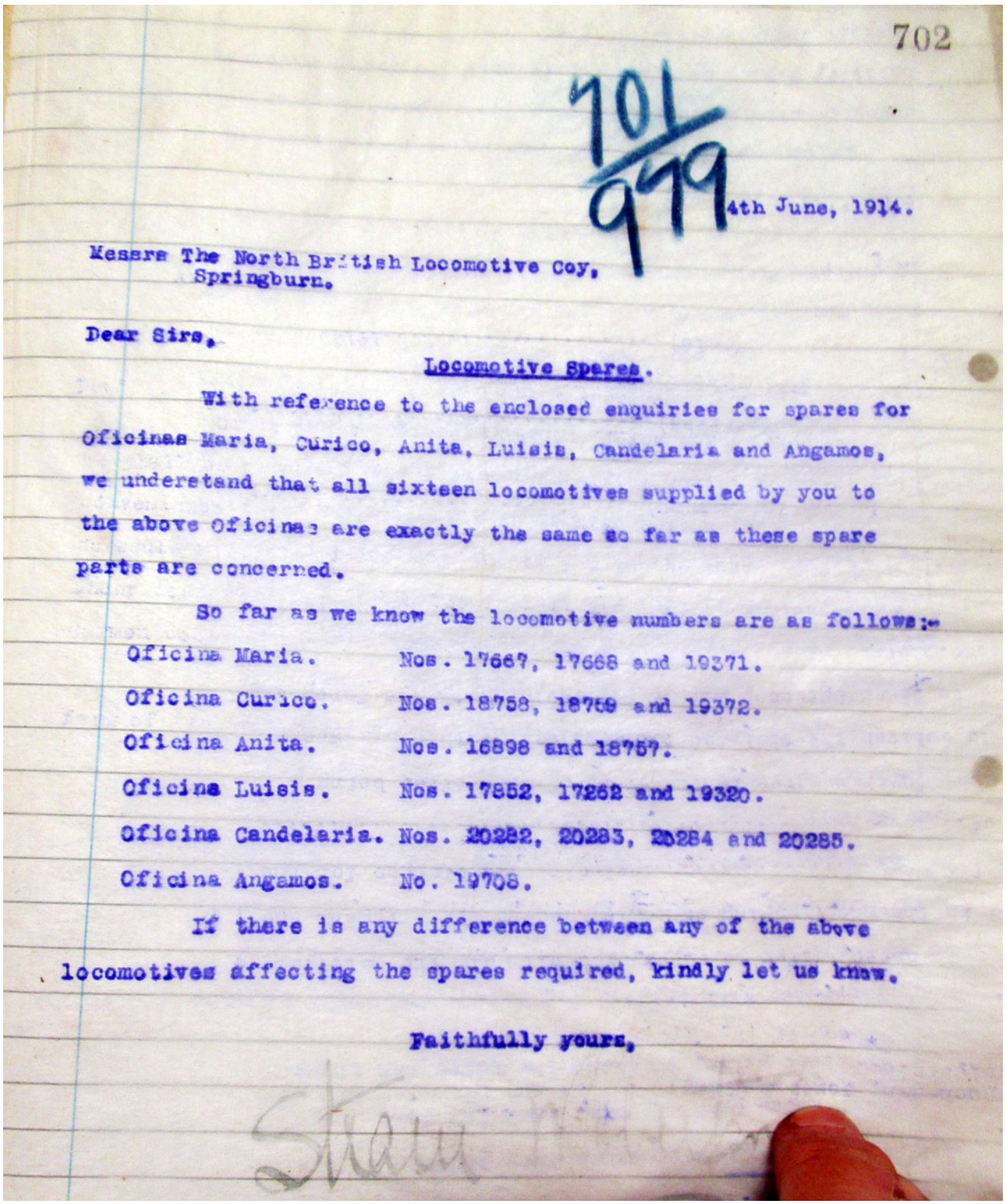
no. 70 (L795)'. This order was originally placed by Strain & Robertson as their contract 422 for *Oficina María*, but was later altered to be contract 261 for *Oficina Anita.* One of the later S&R loco contracts for *Oficina Maria* was S&R contract 340. This originated in an enquiry for an extra loco in 1919 similar to one in 1913. This was to be similar to enquiry for New Tamarugal except that the *Oficina Maria* loco would have an open cab. It may be that this order took until 1925 to come to fruition. A note on the NBL order book page suggests that the loco was delivered bearing the running number **28**.

28 w/n 23208

0-4-0T d/w ?, cyls. 8½x12", built by Avonside in 1925

Name implies owned by this company, but not confirmed.

'El LOA' w/n 1967 Spares sent to *Oficina Angamos* in 1924?



702

701/979

4th June, 1914.

Messrs The North British Locomotive Coy,
Springburn.

Dear Sirs,

Locomotive Spares.

With reference to the enclosed enquiries for spares for Oficinas Maria, Curico, Anita, Luisis, Candelaria and Angamos, we understand that all sixteen locomotives supplied by you to the above Oficinas are exactly the same so far as these spare parts are concerned.

So far as we know the locomotive numbers are as follows:-

Oficina Maria.	Nos. 17667, 17668 and 19371.
Oficina Curico.	Nos. 18758, 18759 and 19372.
Oficina Anita.	Nos. 16898 and 18757.
Oficina Luisis.	Nos. 17852, 17262 and 19320.
Oficina Candelaria.	Nos. 20282, 20283, 20284 and 20285.
Oficina Angamos.	No. 19708.

If there is any difference between any of the above locomotives affecting the spares required, kindly let us know.

Faithfully yours,

Strain

Image of a letter sent by Strain & Robertson of Glasgow to the North British Locomotive Company in June 1914.



La Cía. Salitrera 'La Esperanza', or the Esperanza Nitrate Co.

Background

2' 6" gauge, near Taltal and at Lagunas in Tarapacá. It was this company with which the Montero Brothers contracted in 1872 to build the Patillos railway. Thus the company was clearly already competent at railway construction and operation as early as the 1870s.

Summary of *oficinas* owned:

• ***Esperanza,*** Departamento de Taltal. Was earlier ***Julia***.

Operating 1906.

In 1926 owned by Andrade Nitrate Co. or Esperanza Nitrate Co., No details given or locos listed.

0-4-0 d/w ?, cyls. ?, built by Barr Morrison & Co. in Kilmarnock around 1883

This loco has not been confirmed as for this owner or indeed for Peru / Chile at all, but given that the company was operating at an early period when such a loco might have been constructed, it is worth mentioning it here. The gauge too is unknown, but 2' 6" is very likely. Barr Morrison was active only from 1881 to January 1884.

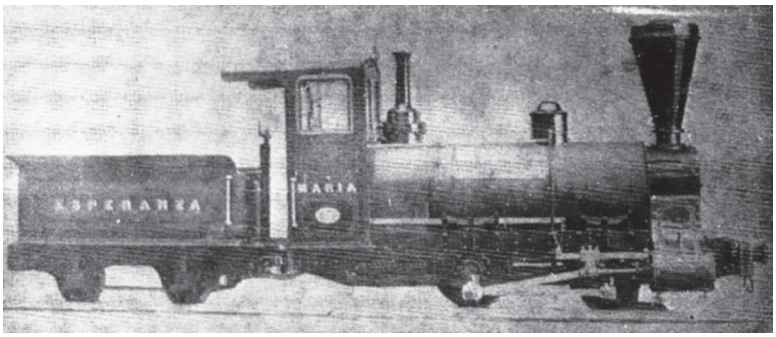


Photo as published in the *Industrial Railway Record* issue 69. The tender is lettered **'ESPERANZA'**, probably referring to the owner, and the cabside bears the name **'MARIA'**. By Courtesy of Chris West.

0-4-0ST d/w 28", cyls. 10½"x15", built by Manning Wardle in 1906

Ordered through Strain & Robertson, their contract 22, after initial enquiries about a 10 ton *calichera* loco. Later discussion about couplings, with S&R not liking link and pin couplers with a horizontal link, but preferring a vertical link and a horizontal pin. Locos to be painted any colour of MW's choice and to have 'Esperanza no. 1', and 'Esperanza no. 2' painted on both sides. Judging by a letter of 31st May 1906 MW had suggested name plates but S&R confirmed name and number to be painted on both sides of tank in bold type. Shipment was in August 1906, probably on SS '*Bellasco*'.

'ESPERANZA No. 1' w/n 1695
'ESPERANZA No. 2' w/n 1696 Spare parts ordered through S&R in 1919.

0-4-0T d/w 30", cyls. 12x16", built by NBL in 1912

NBL order no. L473, of same design ('to spec.n. and photos of') as order L413. Strain & Robertson's contract 59, confirmed in NBL order book on 31st July 1911. Delivery to be in 5 months. To be painted dark green.

'ESPERANZA No. 3' w/n 19707

A quote for a new copper firebox and a new copper tube plate for this loco was asked for in July 1914, postponed owing to the outbreak of war until November 1915, showing up the astonishing rate of attrition of such items in the conditions prevailing in the Atacama.

The Fortuna Nitrate Co.

Background

30" gauge. Summary of oficina owned:

• ***Celia***, Antofagasta,
1918 owned by Fortuna Nitrate Co.
Operations suspended 1921.

?T d/w ?, cyls. ?", built by Avonside in 19??

Holden oil burning equipment later supplied for this loco (in 1916). New firebox supplied to *Oficina Celia* in 1920 for this loco.

? w/n 1622

0-4-0T d/w ?, cyls. 12x16", built by Avonside in 1913

Tenders originally invited from NBL, Avonside, Andrew Barclay, Fowler, Manning Wardle, Baldwin, Hanomag, and also the agents Estler Bros. and Otto Gossell presumably acting for other German builders. Considerable correspondence whilst waiting for Baldwin quote. Ordered via Strain & Robertson of Glasgow, their contract 63. Oil burning equipment fitted. Capacities: water 400 gall tank, oil 1120 lbs., and coal 20 cu ft. Delivery required in 14 weeks, but Avonside replied that they could deliver in 18 weeks. Gildemeister also offered locos, so perhaps they were linked with one of the London agents listed above. Contract placed with Avonside, in early Nov. 1912, with compromise on delivery in 16 weeks but with penalty or premium of 1¼% for each week after or before that date. Total price £3627 5s. Locos to be shipped by different steamers. Rejection letters were then sent to NBL, Andrew Barclay, Manning Wardle, Estler Bros for Soc. Franco-Belge, Henschel, Hanomag and Gildemeister in Bremen. Avonside order book apparently says: "to haul 110 tone on level, 55 tons up 1 in 40, 35 lb rails, track will be rough & probably dry & dusty, side tanks to hold 400 gallons, bunker = 20 cu. ft. simple design ssuitable for rough usage, 2' 6" c/w (carrying wheels?) Wbase not to exceed 5' 6", to be about 13½ ton (empty) + circa 17 ton (full), TE about 8000lbs, to burn oil and coal fuel."

'FORTUNA NITRATE Co. No. 1' w/n 1651
'FORTUNA NITRATE Co. No. 2' w/n 1652
'FORTUNA NITRATE Co. No. 3' w/n 1653

Spares ordered for these three locos at this location from Avonside in 1920.

La Cía. Salitrera Galicia

Background

30" gauge. Summary of *oficinas* owned:

• ***Coruña,*** 1km from station Alto San Antonio on NR,

In 1926 owned by *Cia. Salitrera Galicia*, 4 Koppels of 6, 12, 14 and 18T.

• ***Pontevedra***. 10km from station Alto de San Antonio on NR route Iquique to Lagunas.

In 1926 owned by *Cía. Salitrera Galicia*, no locos mentioned and caliche brought in by lorry.

• ***Vigo,*** 1km from station Alto San Antonio on NR,

In 1926 owned by *Cia. Salitrera Galicia*, 4 locos of 20T, and 2 of 5T.

0-6-2T? (3/4T) d/w ?, cyls ? , built by O&K in 1925

140hp.

? w/n 11066

Gildemeister y Ciá., agents and *oficina* owners

Background

This is a difficult section to unravel. Gildemeister was not only a shipping and import agent but also an owner of *oficinas* in its own right. Some of the locos listed below may have been imported by the company for use by other customers, whilst a number may have been intended for use in their own plants.

Summary of *oficinas* owned at various times:

• ***Argentina,*** in Tarapacá, 2km from station Alto San Antonio on NR,

In 1889 had recently been bought from J. Gildemeister y Cía. by the Rosario Nitrate Co. Ltd. formed by Jorge Petrie and F. G. Clarke. No mention of locos at that time.

In 1918 owned by Rosario Nitrate Co.

In 1926 owned by The Nitrate Co.Ltd., 5 locos: 3 of 20T, and 2 of 15T.

• ***Paposo***, in Tarapacá, 2km from station Noria on NR, Owned until 1919 by Grace Nitrate Co. Ltd (Fuente: Silva Narro, 1919; and later by Gildemeister (Fuente: Album Gildemeister, 1922).

Owned in 1889 by Hernan Folsch and Federico Martin. No mention of locos at that time.

1918 owned by Grace Nitrate Co.

In 1926 owned by Nitrate Agencies & Co., locos owned but not listed.

• ***Peña Chica***, in Tarapacá, 10km from station Pozo Almonte on NR,

Owned in 1889 by the *Banco Mobiliario de Santiago*. No mention of locos at that time.

In 1926 owned by Gildemeister & Co., 4 locos: 2 of 19T, and 2 of 16T.

• ***San Fernando***, in Tarapacá,

Owned in 1889 by Carlos Gallagher who had purchased it from Señores Bulnes, Cuevas and Sanz (*Sanz i Cia.*) along with other *oficinas* owned by *J. Gildemeister i Cia.* No mention of locos at that time.

• ***San José***, in Tarapacá, 14km from station Pozo Almonte on NR,

Owned in 1889 by the *Banco Mobiliario de Santiago*. No mention of locos at that time.

In 1926 owned by Gildemeister & Co., 3 locos of 11, 16 and 8T.

• ***San Juan***, in Tarapacá, west of station Dolores on NR out of Pisagua.

Owned in 1889 by the Rosario Nitrate Co. Ltd formed by Jorge Petria and F. G. Clarke. Previously owned by J. Gildemeister y Cia. No mention of locos at that time.

• ***San Pedro*** ex ***San Antonio***, Tarapacá canton Cocina, 3km from station Alto San Antonio on NR, worked by Juan Gildemeister y Cia. / Salpeterwerke Gildemeister A.G. (1870-72-

In 1926 owned by Gildemeister & Co., 3 locos of 15T.

Note also that in 1889 Gildemeister *oficinas* had been transferred to Rosario Nitrate ownership. Gildemeister in fact controlled the Rosario Nitrate Company.

762mm gauge locos built by O&K and supplied via Gildemeister & Co. for Chile

'?'	w/n 2113	of 1907 50hp, Bt
'ALVINO'	w/n 5785	of 1912, 50hp, Bt, for 750mm gauge.
'?'	w/n 7524-5	of 1914, Ct (seized, and may never have reached Chile)
'?'	w/n 9405	of 1920, Ct
'?'	w/n 9448 & 9451	of 1920 Ct
'?'	w/n 9463	of 1921 Ct
'?'	w/n 9590	of 1924 Ct
'?'	w/n 10878	of 1924 Ct
'?'	w/n 10887	of 1924 Bt

762mm gauge locos built by Jung and supplied via Gildemeister & Co. for Chile

'?'	w/n 586	of 1902, Ct
'?'	w/n 606	of 1902, C+t
'?'	w/n 1709-10	of 1911, 80hp 12T, Ct

2' 6" gauge locos built by Vulcan IronWorks and supplied via Gildemeister & Co. for Chile

Possibly for the oficina Cecilia, see above.

'CECILIA'	w/n 3063	of 1920, 0-6-0T cyls. 11x16", d/w 30"

2' 6" gauge locos built by Andrew Barclay and supplied via Gildemeister & Co. for Chile

Ordered via Main & Co. of Glasgow for Gildemeister, Iquique

Later named **'HANSA'**	w/n 949	of 1902, 0-4-2T d/w 27", cyls. 7½x14"oc,

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Oficina La Granja

See under *Astoreca y Urruticoechea*, above.

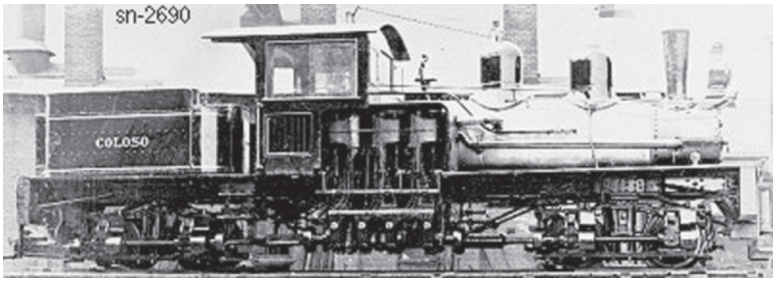
Granja & Co.

30" gauge. Possibly related to La Granja Nitrate, for which see *Astoreca y Urruticoechea*, above.

0-4-4-0T Two truck Shay, d/w 29", cyls. 8x12", built by Lima in 1913

Supplied via Spencer & Waters of Santiago to Caleta Coloso.

'COLOSO'	w/n 2690



Lima builder's photo, from the Shay website.

Inglis Lomax y Cia.

This company were general agents and dealers in Iquique, and presumably were ordering on behalf of some unknown *oficina*.

0-4-0T d/w 30", cyls. 12x16" built by NBL in 1909

Gauge uncertain. Order no. L327.

1 w/n 18757
2 w/n 18758
3 w/n 18759

0-4-0T d/w 30", cyls. 12x16" built by NBL in 1912

S&R contract 44, presumably for 2' 6" gauge as locos to be same in all respects as those supplied to *Oficina Angamos* in 1911. Order no. L??? To be completed by 16th June 1913. Locos to be equipped to burn oil as well as coal. Prices £1180 each for the locos + £95 each for the oil burners etc. These were for *Oficina Candelaria*, so these details are also set out under that heading, ie. for the Salitrera El Loa company.

? w/n ?
? w/n ?
? w/n ?
? w/n ?

Oficina Iris

See under *Astoreca y Urruticoechea*, above.

La Cía. Salitrero Keryma

Background

30" gauge. Summary of operations:

• ***Keryma,*** 10km from station Pozo Almonte on NR,
In 1926 owned by *Cia Salitrero Keryma*, 1 Baldwin of 18T, 1 Avonside of 14T.

0-6-0T d/w 28", cyls. 10x14", built by Baldwin in 1918

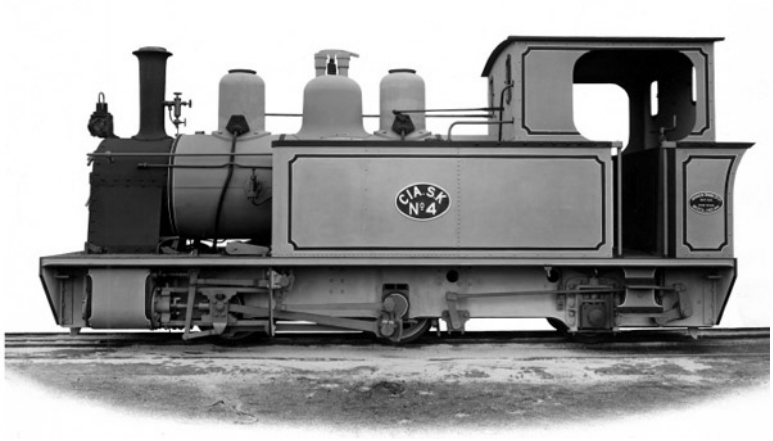
Supposedly built for Russia but order cancelled after revolution; resold via Balfour Williamson [needs confirmation]. Fitted with well tank as well as side tanks [18].

1 'KERYMA' w/n 50879

0-4-2T d/w ??", cyls. 10x16", built by Avonside in 1926 and 1934

Both were supplied via Balfour Williamson. Avonside order book entry for no. 1981 apparently says "(price £1575, Wt=18T (full), oil or coal fuel, painted dark blue & lined, rails are 36 lbs/yard on cross sleepers of Chile oak spread 28" centre to centre, line is 6 km long, all grades are in favour of loco except at 700m at 2½% gradient, loco to haul 25 wagons of 3½ tons gross, track will be rough and generally dry & dusty, fuel & water at one end only, loco of simple design for rough usage, outside frames, W. V. G. (Walschaerts valve gear), the buffers will be ??? a block of oak below the drawbar and curved to a suitable radius, and covered with ¾" steel plate, oval brass plates 'Cia. SK (over) No. 3." Copper firebox and stays but steel tubes, self-acting injectors, price including spares was £1685/12/-. Price for no. 2044 was £1611. Date given in order book is 16/11/1929 (ordered or completed then?).

'Cía. S. K. No. 3' w/n 1981
'Cía. S. K. No. 4' w/n 2044



Avonside 2044, photo from Bristol Museums website.

4.3.3 Nitrate operations L-M

La Cía. Comercial y Salitrera La Aguada

The Lagunas Syndicate

La Cía. Salitrera Lastenis/Lastenia

The Lautaro Nitrate Co. Ltd.

Oficina Chacabuco

Oficina Perseverancia

Oficina Santa Luisa

Oficina Sargento Aldea

The Liverpool Nitrate Co.

The London Nitrate Co.

La Cia. Salitrera Maria Teresa de Aguas Blancas

Mitrovich Bros. engineers, Chile and Liverpool

La Cía. Comercial y Salitrera La Aguada

Background

2' 6" gauge. Summary of *oficinas* owned:

• ***Aguada***, south west of station Dolores on the NR.

Owned by Juan Flores & Pedro Perfetti, then by the Compañía Salitrera Aguada, later to become the Cia. Comercial y Salitrera la Aguada.

2-4-2ST d/w 37" cyls. 10x16", built by Baldwin in 1905

Class 8 14 ¼ C 24-25, spec. is in vol 28 p215. **'AGUADA'** to be painted on tank of each loco. These probably looked very like the *FC de Agua Santa* Baldwins, though their cylinders were 1" smaller in diameter and they may not have gained the tenders that were necessary for the long haul from the coast through to the pampa. Erecting card drawing 670A-88 is in the DeGolyer Library collection.

1 w/n 27257

2 w/n 27258

Oficina La Palma, later became *Oficina Humberstone*

See under New Tamarugal Nitrate Co. below.

The Lagunas Syndicate

Background

2' 6" gauge. Summary of oficinas owned:

• ***Centro Lagunas,*** Close to station Lagunas of NR.

In 1926 owned by The Lagunas Nitrate Co.Ltd., No locos listed.

• ***North Lagunas*** 3km from station Lagunas on NR,

In 1926 owned by The Lagunas Syndicate, 1 Fowler of 8T, 1 Koppel of 11T.

• ***South Lagunas*** 2km from station Lagunas on NR,

In 1926 owned by The Lagunas Syndicate, 3 locos.

0-4-2ST d/w ? cyls. 8x12", built by Fowler in 1892 (1st pair) and 1894 (2nd pair)

Ordered via W. & J. Lockett.

?	w/n 6696	Despatched 13-12-1892.
?	w/n 6697	Despatched 13-12-1892?
?	w/n 6698	Despatched 30-4-1894?
?	w/n 6699	Despatched 24-9-1894?
?	w/n 6700	Despatched 24-9-1894? Later sold to Angela Nitrate Co. at *Oficina Angela*.

0-4-2ST d/w ? cyls. 8x12", built by Fowler in 1894

Ordered for *Oficina Lagunas North No 3* via W. & J. Lockett.

?	w/n 7295	Ordered August 24 1894. Fowler notes suggest this was to be similar to earlier locos for Primitiva Nitrate but was to have wrought iron motion covers. These were later deleted. Frames used from stock (same as made for loco 6525) to save time. Despatched 15-12-1894.

0-4-2ST d/w ? cyls. 8x12", built by Fowler in 1895

Ordered for *Oficina Lagunas South No 2*. Via W. & J. Lockett. Ordered September 11 1894.

?	w/n 7296	Despatched 16-2-1895. Possibly the loco identified as **'ADELA'** in 1925, see below.
'JOSÉ'?	w/n 7297	Despatched 16-2-1895. Replacement boilers 16600-1 supplied via Rabone Bros. for this loco with name **'JOSÉ'** and for un-numbered similar loco **'ADELA'** during August 1925, though location at that time not explicitly specified. Two sets of oil burning equipment ordered at the same time.
?	w/n 7299	Despatched 9-3-1895. Replacement boiler (15599) supplied here for this loco by Fowler in March 1920.

0-4-2ST d/w ? cyls. 8x12", built by Fowler in 1907

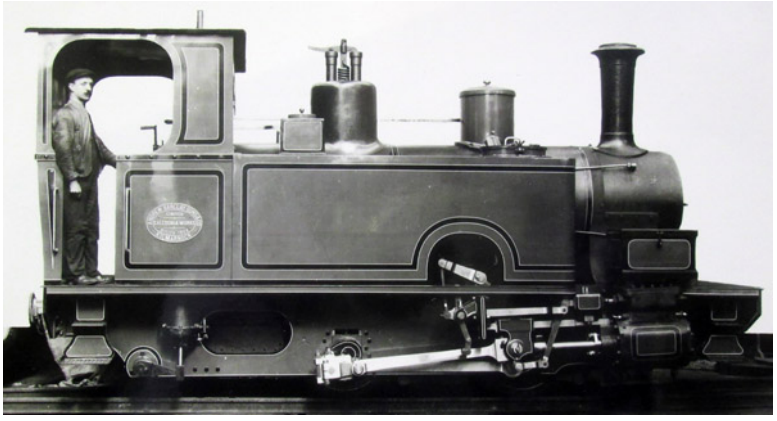
Ordered for *Oficina Central Lagunas*. Via E. F. Clarke.

?	w/n 11413	
?	w/n 11414	

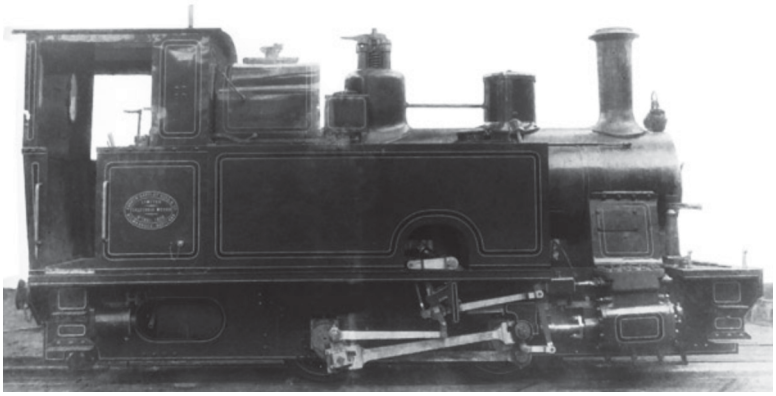
0-4-0T d/w 30" outside cyls. 11x14" built by Andrew Barclay in 1909 and 1925

Gauge not specified in works list but was probably 2' 6".

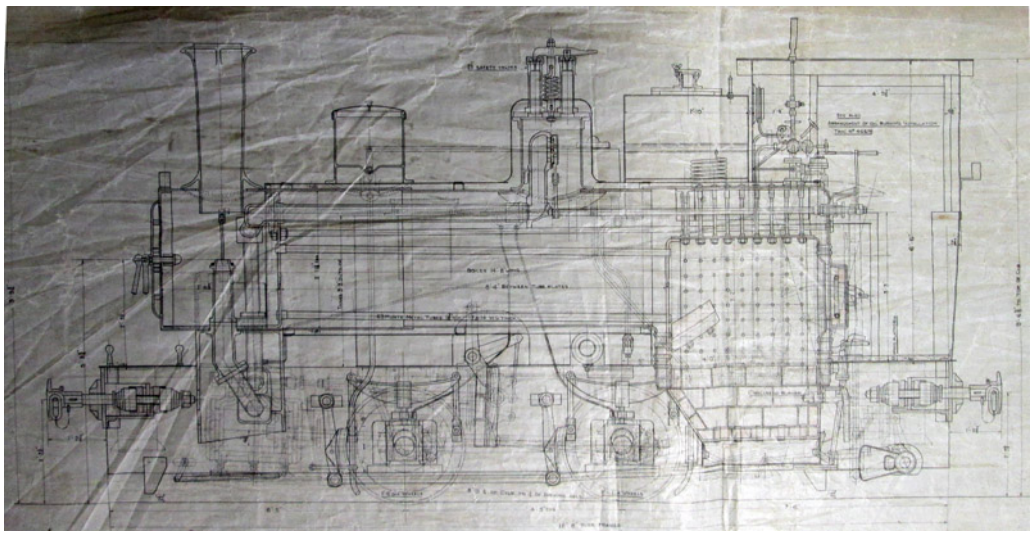
?	w/n 1170	In AB works list as if for 'Langunas Syndicate'
?	w/n 1851	In AB works list as if for 'Langunas Syndicate'



Andrew Barclay no. 1170 of 1909. The original of this image is held by the University of Glasgow Business Studies archives.



Andrew Barclay no. 1851 of 1925. Note the oil tank mounted on the boiler in front of the cab, and the dome consequently moved forward. The original of this image is held by the University of Glasgow Business Studies archives.



A GA drawing for the above loco is in the University of Glasgow Business Studies archives.

La Cía. Salitrera Lastenis/Lastenia

30" gauge.

0-6-0T d/w ?, cyls. ?, built by O&K in 1912

? w/n 4399 80hp

The Lautaro Nitrate Co. Ltd.

Background

Founded 1889. The majority of Lautaro Nitrate *oficinas* used the 2' 6" gauge. However, there was a substantial 3' 6"-gauged system linked to the *FC de Taltal* and serving *oficinas Lautaro, Alemania* and *Santa Luisa.* In addition *oficina Los Dones* used metre gauge as it was linked to the *FC Lonjitudinal*, and one or two *oficinas* in the Departamento de Antofagasta used 2' 0" gauge. See the appropriate files or sections for these other gauge. Incidentally, Binns and Middleton in their The Taltal Railway book [] suggest that the Lautaro company owned 87 locomotives, though they give no evidence for this. No more than half that number have been identified so far, on the 3' 6", 2' 6" and 60cm gauges.

Summary of *oficinas* owned:

• ***Aconcagua***, Antofagasta, close to station La Noría on *FCAB*,

Still in operation 1921.

In 1926 owned by Lautaro Nitrate Co.Ltd., 6 locos Bagnall and Koppel of 18, 15, and 12T.

• ***Agustin Edwards,*** at station Central of *FCAB*,

In 1926 owned by Lautaro Nitrate Co. Ltd., 4 locos.

• ***Anibal Pinto***, Antofagasta, 1km from station Maipu of *FCAB*,

In 1918 owned by *Cia de Salitres Antofagasta*.

In 1926 owned by Lautaro Nitrate Co. Ltd., 10 locos Koppel, 2 of 32T, 6 of 16T, 1 of 18T, 1 of 12T.

• ***Araucana***, Antofagasta, 5km from station Union on *FCAB*,

In 1918 owned by *Cia Salitrera Lastenia*.

Operations suspended 1921.

In 1926 owned by Lautaro Nitrate Co. Ltd., 5 locos Henschel of 16 and 12T.

• ***Arturo Prat***, Antofagasta, 1km from station Maipu on *FCAB*.

In 1918 owned by *Cia de Salitres Antofagasta*.

Operations suspended 1921.

In 1926 owned by Lautaro Nitrate Co.Ltd., no locos listed.

• ***Aurelia***, Antofagasta, 4km from station Salinas of *FCAB*,

Still operating 1921.

In 1926 owned by Lautaro Nitrate Co. Ltd., 2 Jungs of 10T, 2 of 12T.

• ***Ausonia***, Antofagasta, 3 1/3km from station Peinelas on *FCAB*,

Still operating 1921.

In 1926 owned by Lautaro Nitrate Co. Ltd. 5 locos 'Koppel Wagnal' (sic) of 24, 22, 20T, 2 locos of 16T.

• ***Avanzada***, Antofagasta, Canton Aguas Blancas, near Yungay station on branch off *FC de Aguas Blancas*,

Operations suspended 1921.

In 1926 owned by Lautaro Nitrate Co. Ltd., 5 locos, 1 Henschel of 8T, 2 Koppel of 10T, 2 Americana of 27T.

• ***Ballena,*** Taltal area, was earlier ***Oficina Germania***.

Operating 1906.

In 1926 owned by Lautaro Nitrate Co., but no details at all; thus no locos listed.

• ***Blanco Encalada***, Antofagasta, 7km from station Salinas of *FCAB*,

In 1918 owned by *Carrasco y Zanelli*. but not producing.

Operations suspended 1921.

In 1926 owned by Lautaro Nitrate Co. Ltd., 3 locos: 1 Henschel of 33T, 1 Koppel of 18T, 1 Avonside of 18T.

• ***Carlos Condell***, Antofagasta, near station Carmen Alto of the *FCAB*,

In 1918 owned by *Cia de Salitres Antofagasta*.

Operations suspended 1921.

In 1926 owned by Lautaro Nitrate Co. Ltd., 5 Bagnalls of 30T, 2 Avonside and Koppel of 18T.

• ***Carmela***, Antofagasta, 7km from station Salinas of *FCAB*,

Operations suspended 1921.

In 1926 owned by Lautaro Nitrate Co. Ltd., 4 locos Bagnall of 16T, 1 Avonside of 18T.

• ***Catalina del Norte*** Inland from Taltal.

Owned by Lautaro Nitrate Co., closed 1896.

• ***Catalina del Sur,*** inland from Taltal near ***Severin***.

Owned by Lautaro Nitrate Co. Closed when surveyed in 1896.

• ***Caupolican ex Alianza,*** location not given, May have later become *Oficina Alianza*?

Operating 1906.

In 1926 owned by Lautaro Nitrate Co., no details at all; thus no locos listed. Taltal area.

• ***Chacabuco,*** 1km from station Salinas on *FCAB*,

In 1926 owned by Lautaro Nitrate Co. Ltd., 7 locos, 5 Bagnalls of 30T, 1 Avonside and 1 Koppel both of 18T.

• ***Filomena***, Antofagasta, close to station Solitario on *FCAB*,

Still in operation 1921.

In 1926 owned by Lautaro Nitrate Co. Ltd., 9 locos, 3 Bagnall of 12T, 2 Americana of 24T, 4 Henschel (1 of 32T, 2 18T, 1 of 30T.) Gauge 0.75m.

• ***Francisco Puelma***, Antofagasta, 300m from station Carmen Alto on *FCAB*,

In 1926 owned by Lautaro Nitrate Co., 1 Bagnall of 7T, 2 Koppels of 16T, 1 Bagnall of 16T, 3 Baldwins of 28T, 1 Henschel of 30T.

• ***Guillermo Matta,*** Taltal area. Later combined with *Oficina Santa Luisa*.

In 1926 owned by Lautaro Nitrate Co.

• ***José Fransisco Vergara*** Antofagasta/Tocopilla, 10km from *FC Longitudinal*,

In 1918 owned by *Cia de Salitres de Antofagasta*. and under construction.

In 1926 owned by Lautaro Nitrate Co. Ltd., 5 locos, 4 Baldwins of 45T, 1 Koppel of 20T.

• ***José Santos Ossa***, at station Jose Santos Ossa on *FCAB*,

In 1926 owned by Lautaro Nitrate Co. Ltd., 5 locos.

• ***Lautaro,*** Taltal, later known as *Oficina* ***Rosario***?

In 1926 owned by Lautaro Nitrate Co., no details at all; thus no locos listed.

• ***Los Dones*** Antofagasta, 10km from Los Dones station on *FC Longitudinal*,

In 1926 owned by Lautaro Nitrate Co. Ltd., 10 locos, 3 of 30T, 1 of 36T, 1 of 8T, 1 of 16T, 2 of 14T, 2 of 10T.

• ***Perseverancia***, Antofagasta, 4km from station Solitario on *FCAB*,

In 1918 owned by *Cia Salitrera Perseverancia*.

In 1926 owned by Lautaro Nitrate Co. Ltd., 4 locos, 2 Henschels, 1 Koppel, and 1 Americana.

• ***Santa Luisa***, Taltal,

In 1884 owned by Leating Quest. Faslem.

In 1893 owned by L. Zeballos i Cía.

In 1909, 1913 and 1918 owned by Lautaro Nitrate Co.

In 1926 owned by Lautaro Nitrate Co., No details at all; thus no locos listed.

• ***Sargento Aldea***, Antofagasta, near station El Buitre of the *FCAB*,

In 1926 owned by Lautaro Nitrate Co. Ltd., 3 locos.

• ***Savona***, Antofagasta, Canton El Boquete. 2km from station Savona on branch to Boquete,

Operations suspended 1921.

In 1926 owned by Lautaro Nitrate Co. Ltd., 5 locos, one Henschel of 22T, 2 Arn Jung of 18T, 1 Baldwin of 18T, 1 'Americana' of 18T.

Henschel 0-4-0T d/w ?, cyls. ?x?mm, built by Henschel in 1913

Purchased for Oficina Araucana.

? w/n 11698

Oficina Chacabuco

• ***Chacabuco*** (Lautaro Nitrate Co. Ltd.) 1km from station Salinas on *FCAB*, 7 locos, 5 Bagnalls of 30T, 1 Avonside and 1 Koppel both of 18T. Owned later by *SoQuiMiCh*. Closed in 1940s and later used as a military prison camp.

2-6-2T d/w 33¼", cyls. 12x18", built by Bagnall in 1924

Constructed to same design as the metre gauge locos for *oficina Los Dones* and to be convertable to metre gauge later if necessary (presumably this was anticipated to be when the nearby *FCAB* was itself converted to metre gauge as hap-

pened in 1928, but whether these locos were actually converted is not known.). Spec says completed 31-10-1924 (first two) and 19-11-1924 (remaning three). Customer charged £1950 each. Numbers to be 7/1 to 7/5 in order of works numbers. Oil burning from new. First two shipped 31-10-1924 from Liverpool to (oficina?) Chacabuco via Antofagasta; remainder similarly 18-11-1924. Spares for 2238 ordered in 1930 through Mines Trading Co. for Lautaro Nitrate Antofagasta.

7/1	w/n 2238
7/2	w/n 2239
7/3	w/n 2240
7/4	w/n 2241
7/5	w/n 2242

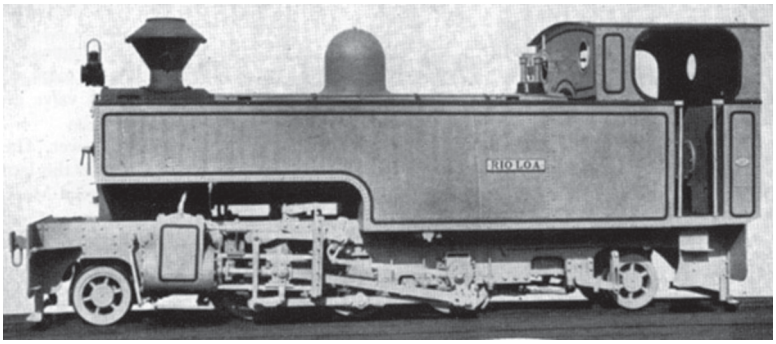
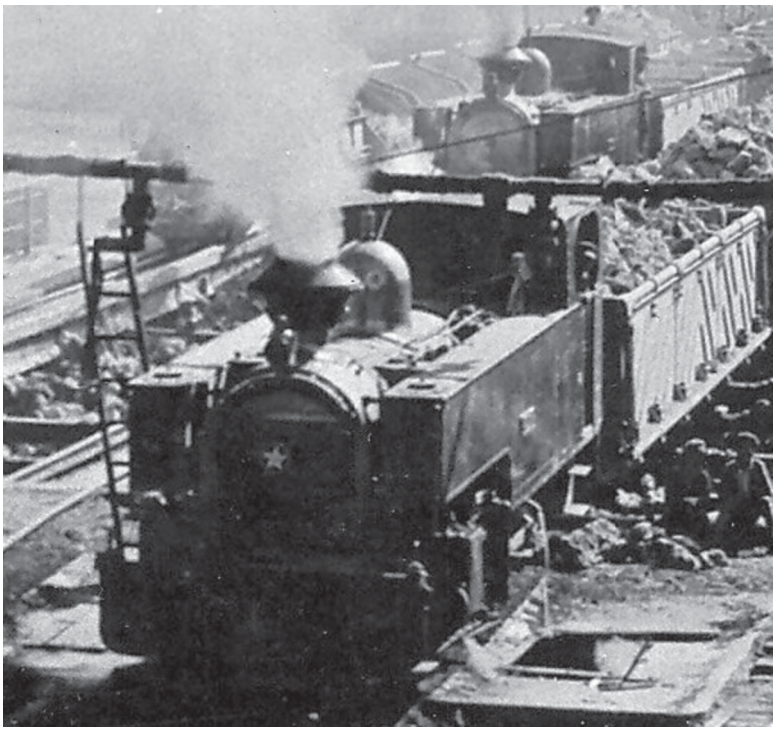
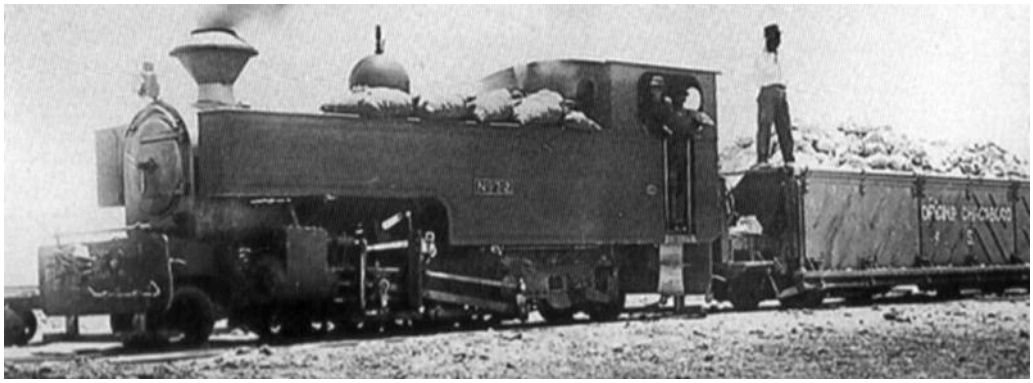


Photo shows one of the earlier metre gauge locos for oficina Los Dones, but Bagnall themselves used this image to show the design of these oficina Chacabuco engines.



The tankside plates of these two engines are much further forward than that on 'RÍO LOA' above. This suggests that they are from a different batch, probably the oficina Chacabuco locos.



This photo, kindly provided by Pablo Moraga shows one of the Oficina Chacabuco 2-6-2Ts, as confirmed by the 'OFICINA CHACABUCO' name emblazoned on the wagon. This confirms that these engines had number-plates much further forward than those on the metre gauge engines of this design. The original higher resolution image seem to show the plate bearing **'No. 7 2'**.

0-6-2T d/w ? cyls. ?, built by Avonside in ????

As listed in 1926 summarised above. The photo below at *Oficina Chacabuco* shows this loco to be almost identical to those supplied by Avonside to *Oficina Rosario de Huara* in 1908, 1911 and 1922. The extended smokebox is a singular identification feature. However, when compared to those locos, this engine has had a sand-dome added and the upper cabsides have been enclosed.

? w/n ?

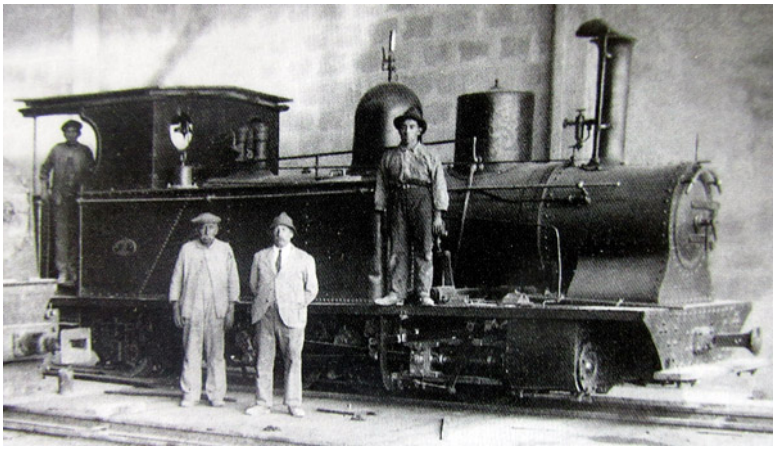


Photo kindly provided by Señor Pablo Moraga, as published in his book *Tiempo de Trenes*.

? d/w ?, cyls. ?, built by Orenstein & Koppel at an unknown date

This was presumably the Koppel loco listed in the 1926 handbook.

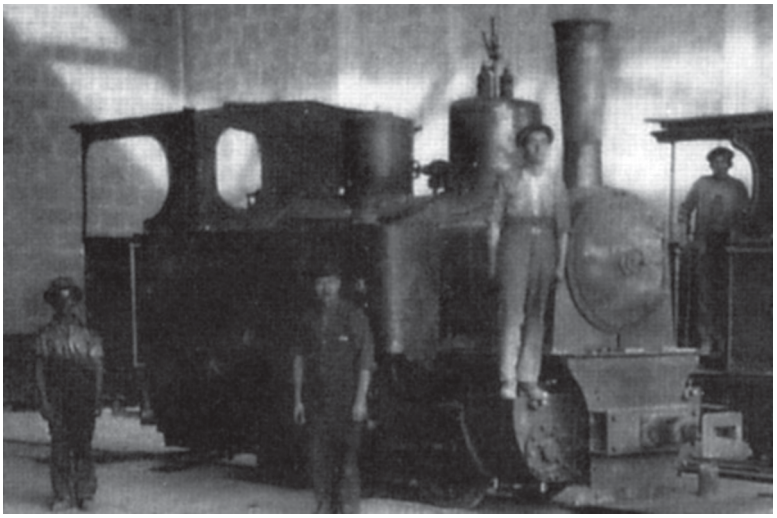


Photo from Pablo Moraga's book *Tiempo de Trenes*.

0-6-0ST d/w ?, cyls. ?, built by a British manufacturer?

Locos survived derelict in 1978, but scrapped by 1987 [9].

?	w/n ?
?	w/n ?
?	w/n ?

Photo in [12] also shows a German-built loco, probably an 0-6-0T.

Oficina Perseverancia

Henschel 0-4-0T d/w ?, cyls. ?x?mm, built by Henschel in 1913

This engine may well have been transferred from another *oficina*.

?	w/n 12511

Oficina Santa Luisa



A substantial German loco was captured here in this 1925 photo.

Oficina Sargento Aldea

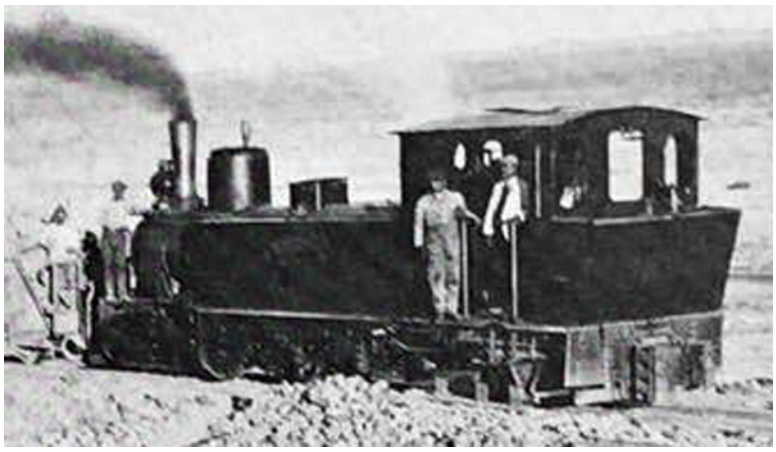
30" gauge. Owned by Lautaro Nitrate Co. Ltd.

0-4-4-0T Two truck Shay, d/w 29", cyls. 8x12", built by Lima in 1917

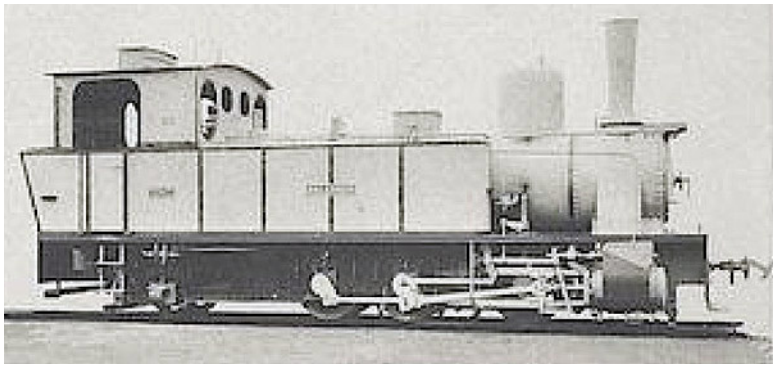
Supplied via Wessel Duval & Co..

'SARGENTO ALDEA No. 1'	w/n 2895	
'SARGENTO ALDEA No. 2'	w/n 2896	
'SARGENTO ALDEA No. 3'	w/n 2897	Shay website says originally named **'ARTURO PRAT'**.

Location unknown



The loco above appears to be a German-built 0-6-2T or similar, with LNC painted on a scroll on the tanks and a two-part number **?-39**. This may represent something similar to the **7/1** to **7/5** numbers of the locos listed above for Oficina Chacabuco. The first part of the number might be 1 or 4. The location is unknown.



This image from the Henschel 10,000 loco celebratory history published in 1910, shows a very similar loco to that illustrated above. The caption in the book implied that the engine had gone to Chile but gave no further details. See also section 4.2.5 under *FC de Caleta Coloso a Aguas Blancas*.

The Liverpool Nitrate Co.

Background

2' 6" gauge. This was 'Colonel' John Thomas North's company, formed in 1883.

Summary of oficinas owned:

• ***Mapocho***, Tarapacá, 12km from station Huara on NR,

In 1918 owned by Liverpool Nitrate Co.

In 1926 owned by Liverpool Nitrate Co., 4 Manning Wardles of 25T, 3 Fowlers of 12T.

• ***Ramirez***, in Tarapacá, Between stations Pozo Almonte and Huara on the NR.

In 1882 was owned by John Thomas North.

Owned in 1889 by the Liverpool Nitrate Co. formed by J. T. North and R. Harvey. 3 locos at that time. One shown in a photo in the album looks like a small narrow gauge Fowler 0-4-0ST or 0-4-2ST.

In 1926 owned by Liverpool Nitrate Co., No locos mentioned.

• ***San Donato***, in Tarapacá, between stations Huara and Pozo Almonte on NR,

Owned in 1889 by the San Donato Co.Ltd, formed by J. T. North. No mention of locos at that time.

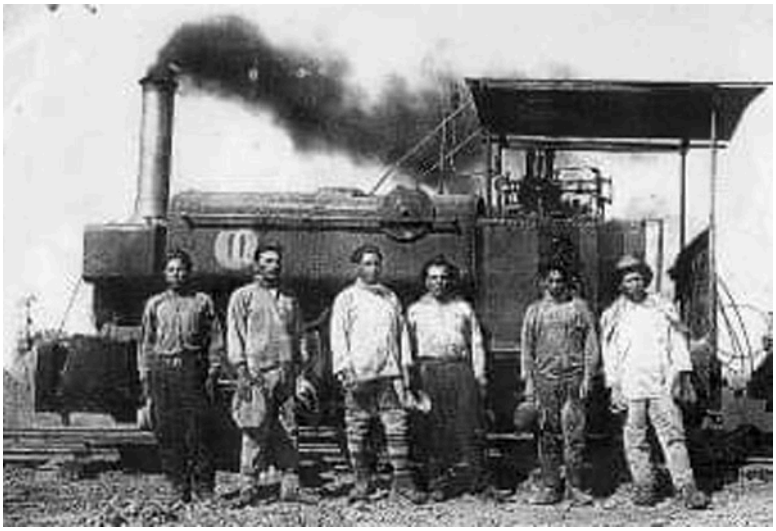
In 1926 owned by Liverpool Nitrate Co. Ltd., 2 Fowlers of 12T.

0-4-2T d/w ? cyls. 8x12" built by Fowler in 1912

Ordered via Balfour Williamson. Replacement boilers supplied by Fowler for both in 1913, according to Fowler list, but that seems very unlikely.

? w/n 13533

? w/n 13534



This photo supposedly taken at Oficina Mapocho seems to show one of the above Fowler locos. The white circle on the tankside seems to show the number **11**.

0-6-2T d/w 33", cyls. 12x16", built by Andrew Barclay in 1914-5

Shipped on *SS Potosi* of Pacific Steam Navigation Co. in July 1914.

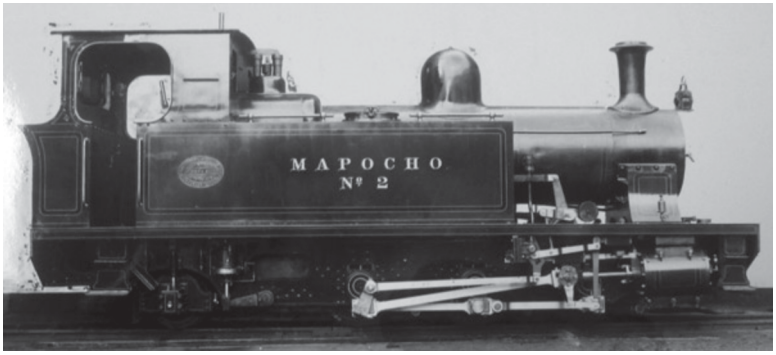
'MAPOCHO No. 1' w/n 1376 Wording on tanks implies that these locos were for *oficina Mapocho*.

'MAPOCHO No. 2' w/n 1377 Wording on tanks implies that these locos were for *oficina Mapocho*.

In 1944, when this oficina was owned by the CSTA, it had an engine **'CALEDONIA'** numbered **8** which was reported as requiring repairs (in a letter archived at the Archivo Regional de Tarapacá). The name suggests that it might have been one of these two Scottish-built locos.



Images of Andrew Barclay 1376 and 1377 by courtesy of the University of Glasgow Business Studies archives.



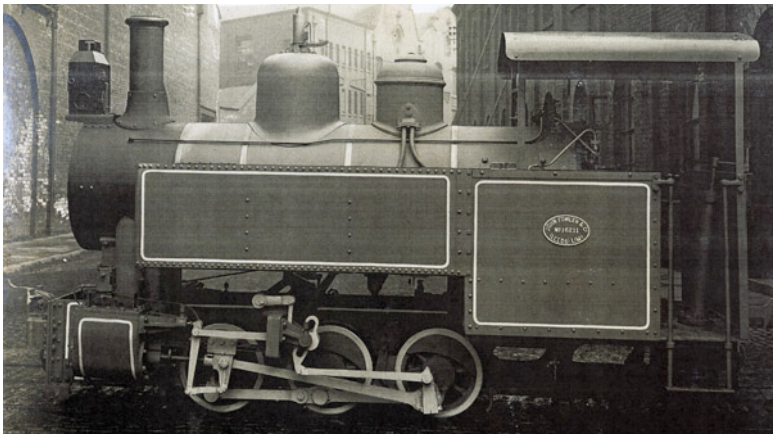
0-6-2T d/w 31", cyls. 12"x16", built by Manning Wardle in 1923 (1st one) and 1924 (remainder)

'CORONEL'	w/n 2029
?	w/n 2032
?	w/n 2033
?	w/n 2038

In 1944, when this oficina was owned by the CSTA, it had two Manning Wardles numbered **1** and **3** which were reported as requiring repairs (in letters archived at the Archivo Regional de Tarapacá).

0-6-0T d/w ? cyls. 9½x14", built by Fowler in 1924

?	w/n 16167	For *Oficina San Donato*.
?	w/n 16211	Via W. & J. Lockett.
?	w/n 16212	Via W. & J. Lockett.



Fowler 16211. Photo available in Museum of English Rural Life, Reading.

The London Nitrate Co.

Background

30" gauge. Summary of oficinas owned:

• ***Puntunchara***, in Tarapacá, 2km from station Negreiros on NR,

Owned in 1889 by the London Nitrate Co.Ltd. formed by James Inglis & Co. 2 locos owned at that time.

In 1926 owned by London Nitrate Co., 3 locos of 12T (one Hunslet and two Fowlers).

• ***Santa Laura***, 8km from station Pozo Almonte on NR,

Had been taken over by Tamarugal Nitrate Co. in 1902.

In 1926 owned by London Nitrate Co., 3 locos of 10T.

• ***Transito,*** 3km from station Negreiros, and on *FC de Agua Santa*.

In 1926 owned by London Nitrate Co., No locos listed.

0-4-2ST d/w ? cyls. 8x12", built by Fowler in 1889 and 1895

?	w/n 5947	
?	w/n 5948	
?	w/n 6525	Despatched 2-7-1895. Fowler order no. 17/68.

Replacement boilers (8748-9) for the first two were supplied by Fowler in April 1900 via Hainesworth Watson, and (9571) for the third in December 1902. Another Fowler replacement boiler (11715) supplied in September 1908 for loco 5948. In 1920 the *Oficina Puntunchara* purchased spares from Fowler for locos 5947-8, 13533, 6525.

0-6-2T d/w ?, cyls 10x16", built by Avonside in 1912

'L. N. C. 4'	w/n 1622	'2 ton crane attached?' 'For *Oficina Celia Central* (???)' Query in order book supposedly read "Whether we should have 2 ton ??? steam crane attached to engine behind cab?"

4-6-0T d/w 24", cyls. 9½x12", built by Hunslet for WD

In 1920 two locos were being inspected by Strain & Robertson on behalf of the company, having been purchased through Beverley Pease & Partners Ltd. Telegrams in the S&R archive report that the locos had not yet been received back by Hunslet from the Barnbow WD stockyard in March 1920. After discussion the buffing gear was to be altered on arrival at the (Chilean) coast.

?	w/n 1359?
?	w/n 1365?

Another correspondence in the S&R archive refers to spares being needed for a French locomotive. No further details are known.

4-6-0T d/w 24", cyls. 9½x12", built by Hunslet in 1924

A WD type loco, ordered through Strain & Robertson.

'FRANK TOBIN'	w/n 1453	Probably worked at *Oficina Puntunchara*, which was closed and stripped during WW2. Hunslet spec sheets include: fitted with Kermodes oil fuel apparatus, intermediate coupled wheels to be flangeless, steam and hand brakes, a forward sanddome and rear sandboxes built in to bunker, railguards at each end, to be painted all black with no varnishing,, boiler to be taken out of stock also some other parts.

At some point the London Nitrate Co. made an enquiry re purchasing an Avonside loco for *Oficina Transito* to burn paraffin.

Oficina Luisis

See the *Cia. Salitrera El Loa*.

Oficina María

See the *Cía. Salitrera El Loa*

La Cia. Salitrera Maria Teresa de Aguas Blancas

2' 6" gauge.

0-6-0WT d/w ?, cyls. ?, built by O&K in 1912, 1913, and 1914

?	w/n 5814	140hp.
'MARÍA TERESA'	w/n 6346	140hp.
?	w/n 6992	

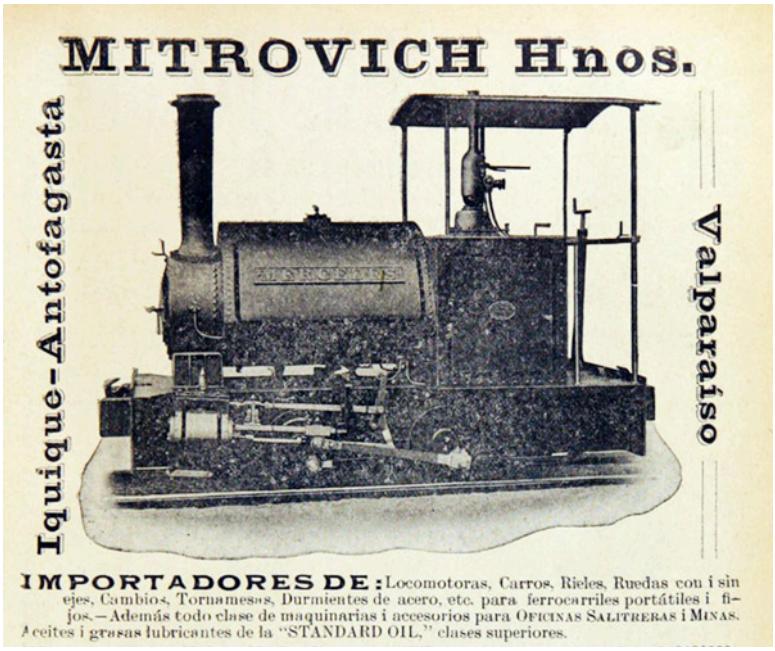
Mitrovich Bros. engineers, Chile and Liverpool

Background

2' 6" gauge locos ordered through this company for use in Chile. Mostly for nitrate *oficinas* (the construction of which was a Mitrovich Bros. speciality) but also listed here for completeness. Mitrovich clearly dealt frequently with Bagnalls, probably not least because Arthur Hewitt Gilling, their Chief Engineer 1900-1905, then moved to W. G. Bagnall as General Manager. NB The company name was spelt on the Pacific coast as 'Mitrovitch Hermanos' or 'Mitrovich Hermanos'.

The 1926 summary of *oficina* details lists the following *oficinas*, all owned by Lautaro Nitrate, with Bagnall engines:

Aconcagua	number unknown
Ausonia	not definite
Carlos Condell	5x 30 tonne locos
Carmela	4x 16 tonne locos
Chacabuco	5x 30 tonne locos
Filomena	3x 12 tonne locos
Fransisco Puelma	1x 7 tonne loco



This Mitrovich advert shows a Bagnall 'Mercedes' class 0-4-0ST.

0-4-0ST d/w 21½", cyls. 7x12", built by Bagnall in 1902 and 1905-6

Spec for 1758 says outside cyls., inside frames, cab. Construction commenced for stock, Completed 08-04-1905. Cost £361. Customer charged £430. Bagnall's 'Mercedes' type, fitted with Baguley-Price valve gear. Shipped from Liverpool to Iquique.

Spec for 1759 similar, finished 20-03-1906, shipped via Liverpool to Caleta Buena. Spares for 1759 sent in 1912 to Santiago Nitrate Co. together with items for 1675 and 1677.

Spec for 1778 similar but commenced for stock 28-02-1905, and completed 07-07-1906, cost £383, customer charged

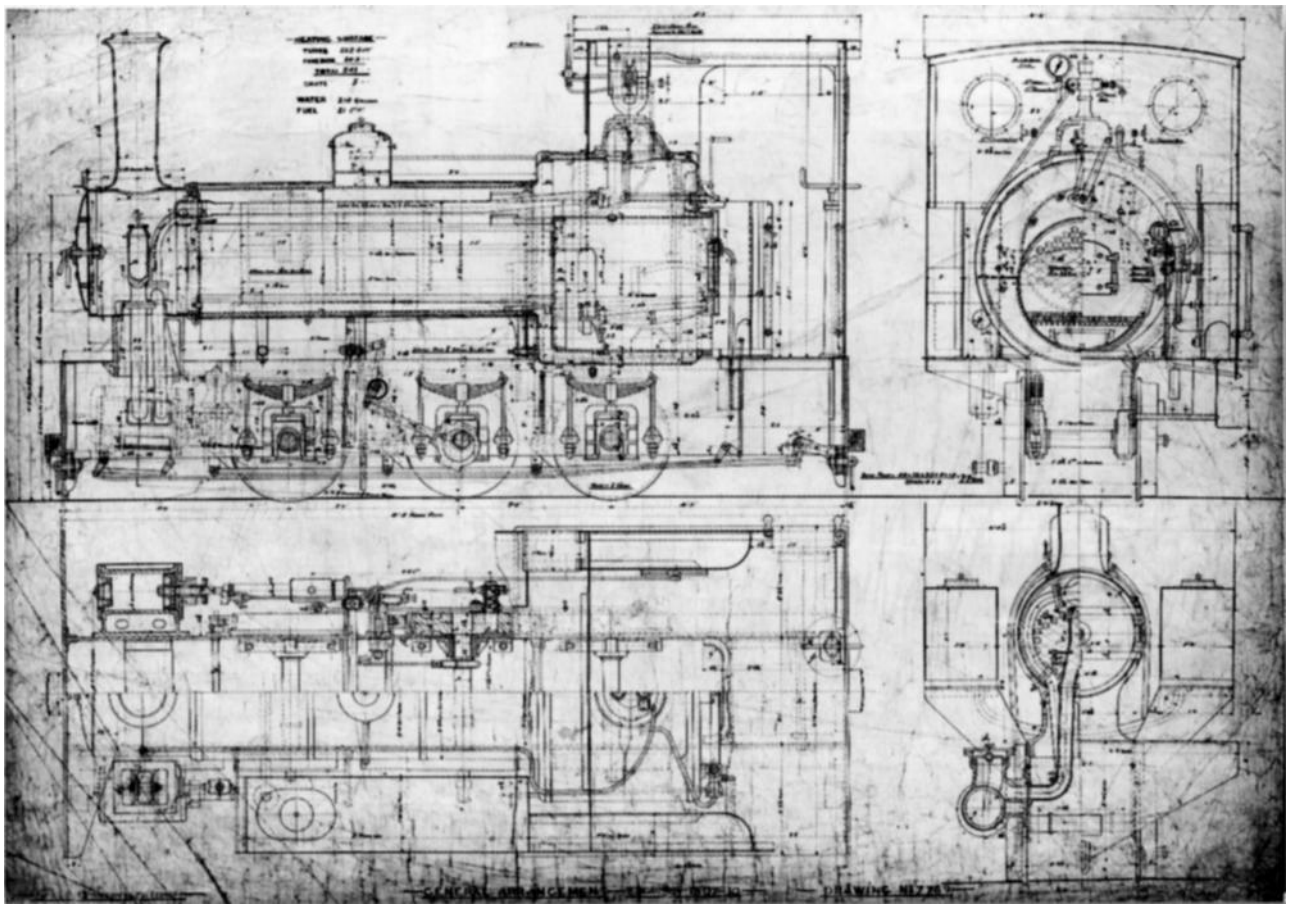
£430. Bagnall type 'Mercedes', but no mention this time of valve gear type. Shipped to Mitrovich Bros., but destination not mentioned. Cryptic note about set of wheels and axles ordered in 1928 for this loco, possibly for use on 600mm track in Buenos Aires?

?	w/n 1675	Probably for Santiago Nitrate Co.
?	w/n 1677	For Santiago Nitrate Co. See below.
?	w/n 1758	For Santiago Nitrate Co. See below.
?	w/n 1759	For Santiago Nitrate Co. See below.
?	w/n 1778	

0-6-0T d/w 27½" cyls. 9x14", built by Bagnall in 1906

Outside cyls., inside frames, cab. All completed 26-6-1906. Cost £454 each. Customer charged £515 each. No names. Shipped via Liverpool to Antofagasta. Spares ordered 1915 together with items for 1826 and 1837. Also spares ordered for 1808 in 1925 via Baburizza & Co.

?	w/n 1807
?	w/n 1808
?	w/n 1809
?	w/n 1810



A Bagnall elevation and plan of locos 1807-10, as reproduced in Baker & Civil's 2008 volume *Bagnalls of Stafford* [49].

0-6-0T d/w 30" cyls. 11x15", built by Bagnall in 1906

For Aguas Blancas Nitrate Co., see under that heading above for more detail.

'ESMERALDA'?	w/n 1823	Name spelled in various ways by different sources, eg. 'EZMEALDA' or 'EMERALDA'
'NINULA'	w/n 1824	

0-6-0T d/w 27½" cyls. 9x14", built by Bagnall in 1906

Outside cyls., inside frames, cab. Wheelbase 6' 6". First three finished 22-12-1906. Cost £466 each. Customer charged £560 each. No names. Shipped from Liverpool to Antofagasta. Spares for 1826, and 1807, 1809, 1837 sent in 1915 via Mitrovitch Bros. Spares sent 1920 for 1827 via Baburizza & Co., Antofagasta.

?	w/n 1826
?	w/n 1827
?	w/n 1828

0-6-0T d/w 27½" cyls. 9¾x14", built by Bagnall in 1906

Outside cyls., inside frames, cab, 'dust casing'. Also 'louvers in cab'. Wheelbase 8' 0". 1836 was completed 28-02-1907, and the other two 10-09-1907. Cost £617 each. Customer charged £650 each. No names. Shipped via Liverpool to Caleta Coloso, Antofagasta. Spares for 1837, and for 1807, 1809, and 1826 ordered via Mitrovitch Bros. during 1915.

?	w/n 1836
?	w/n 1837
?	w/n 1838

0-4-0ST d/w 21½" cyls. 7x12", built by Bagnall in 1907

Outside cyls., inside frames, cab. Built for stock along with 1853-7. Completed 7-10-1907. Cost £400, customer charged £430. Shipped via Liverpool to Iquique. No name when built, but spares ordered 1914 for 1852 'FORTUJA', along with items for 1958, via Mitrovitch Bros.

'FORTUJA'	w/n 1852

0-4-2ST d/w 24½" cyls. 8x12", built by Bagnall in 1907

Outside cyls., inside frames, awning. Completed 10-09-1907. Cost £583, customer charged £595. Shipped via Liverpool to Caleta Colsa (? Coloso?).

'LASTENIA'	w/n 1862

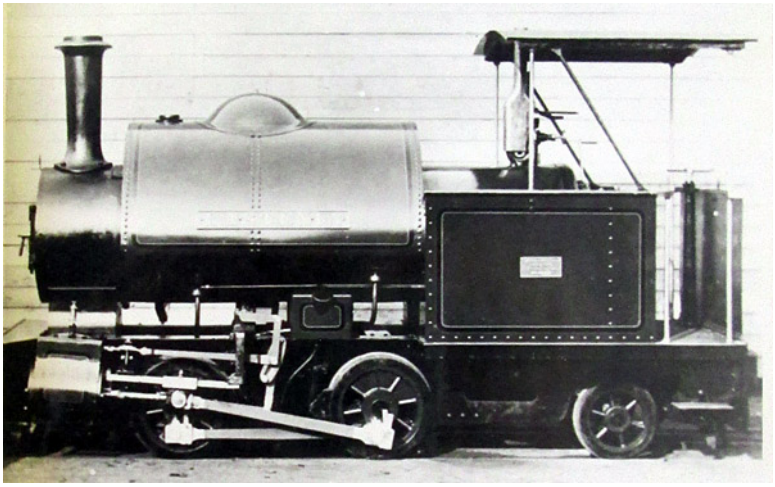


Photo from Bagnall archive in Staffordshire Record Office.

0-6-0T d/w 27½" cyls. 9¾x14", built by Bagnall in 1906 and 1912

For Aguas Blancas Nitrate Co., see under that heading above for more detail.

?	w/n 1871	
'PABLITO'	w/n 1872	May have carried the **'GEORGINA'** name for a while.
'GEORGINA'	w/n 1951	
'PROGRESO'	w/n 1960	

0-4-0ST d/w 15¼" cyls. 5x7½", built by Bagnall in 1910

Spec for 1888 says outside cyls., inside frames, curved awning. Initially built for stock as part of batch 1875-1888. Completed with 1914 for this order on 25-04-1910. Cost £?. customer charged £295. Name **'CHILENITA'**. Bagnall's 'Mercedes' type.

Spec for 1914 similar but commenced for stock 25-02-1910, and finished 11-05-1910. Shipped 02-06-1910 for Iquique.

'CHILENITA'	w/n 1888	See below under *Oficina Santa Laura*. Bagnall list says gauge was 2' 6". 1978 displayed outside Iquique Police Station. Later in municipal park near Pan-Am Highway.
'DIECIOCHO'	w/n 1914	Allan Baker in *The Narrow Gauge* no. 180 says was ordered for Anglo-Chilean Nitrate Co. Certainly 2' 6" gauge originally, but see Wilf Simms says last worked at *Oficina Franca* in 1927 and was by then 2' 0" gauge. Later displayed at Oficina Victoria, and then at Pedro de Valdivia. In 2019 is displayed with a wagon next to the main road near Pozo Almonte.

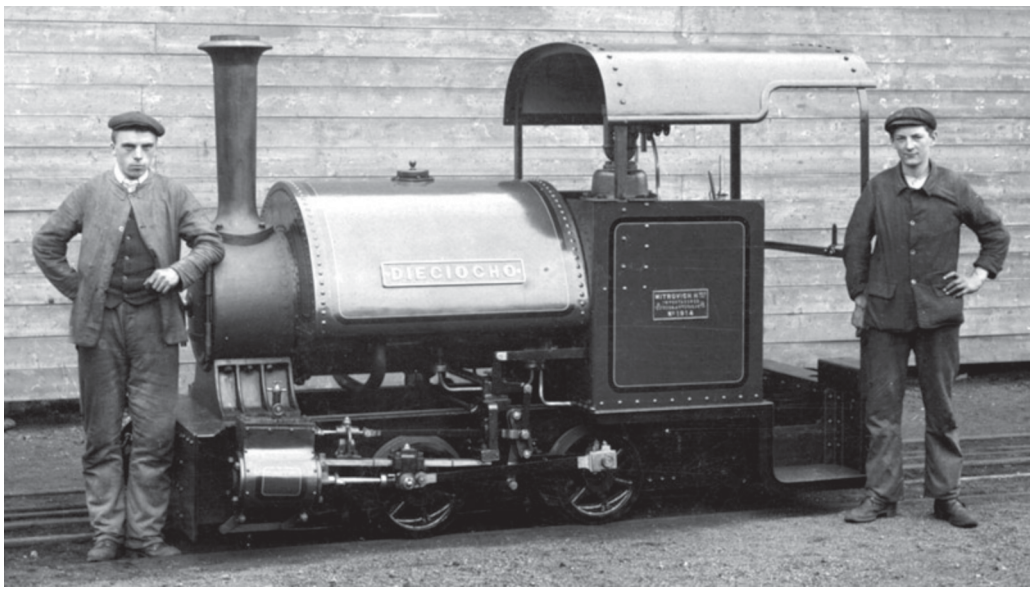


Photo from Bagnall archive at Staffordshire Record Office, Stafford.

0-6-0T d/w 33¼" cyls. 13x18", built by Bagnall in 1912 and 1924.

For Aguas Blancas Nitrate Co., see under that heading above for more detail.

'SLANO'	w/n 1958	
'EUGENIA'	w/n 2243	Aguas Blancas Nitrate Co.
'MORENO'	w/n 2244	Aguas Blancas Nitrate Co.

4.3.4 Nitrate operations N-V

Oficina Oriente

The New Paccha & Jazpampa Nitrate Co.

***Oficina Pan de Azucar*, the Pan de Azucar Nitrate Co.**

Paposo

Oficina Peña Chica

Oficina Pepita

Oficina Perseverancia

Primitiva Nitrate Co. Ltd.

Cía. Salitrera Poderosa

Cia Salitrera Progrese

Cía. Salitrera Progreso de Antofagasta

Reducto Nitrate Co.

Oficina Rica Aventura

Rosario Nitrate Co.

• Oficina Argentina

• Oficina Rosario de Huara

• Oficina Puntilla de Huara

Santiago Sabioncello & Co. Ltd.

Salar de Carmen Nitrate Syndicate

San Sebastian Nitrate Co.

Santa Catalina Nitrate Co.

Oficina Santa Laura

Santiago Nitrate Co.

***Cía. Salitrera de Taltal* – Taltal Nitrate Co.**

• Oficina Salinitas

• Oficina Chile

New Tamarugal Nitrate Co.

• *Oficina La Palma*, later became *Oficina Humberstone*

• Oficina La Patria

La Compañía Salitrera de Tarapacá y Antofagasta

• Grupo Nebraska

Oficina Tricolor

Oficina Valparaiso

Oficina Oriente

30" gauge.

0-8-0T d/w 720mm, cyls. 270x340mm, built by Hanomag in 1905

Sent via Arthur Koppel for Chile. Possibly for this location?

'ORIENTE' w/n 4344

0-8-0T d/w ?, cyls. ?, built by O&K in 1906 and 1911

?	w/n 2032	80hp	Customer identified by [14] though not by Merte's O&K list, which only specifies Roepke & Luer, Valparaiso.
?	w/n 4993	100hp	

The New Paccha & Jazpampa Nitrate Co.

Background

30" gauge. The original Paccha & Jazpampa Nitrate Co. was formed in 1889.

Summary of oficinas owned:

• ***Jazpampa***, in Tarapacá, Close to station Jazpampa on NR.

In 1882 was owned by John Thomas North.

Owned in 1889 by *J. T. North y Cia*, with Liverpool agents being W. J. Lockett. No mention of locos at that time.

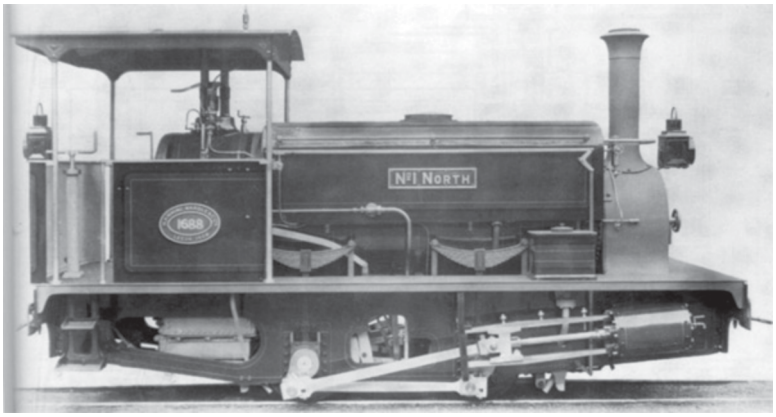
• ***Paccha (?)***, in Tarapacá, acquited by North and Harvey from Chilean government in 1886.

Owned in 1889 by J. T. North and Carlos Comber. Agents in Liverpool W. & J.Lockett. One loco owned at that point.

NBL may well have tendered to build the locos listed below, as the NBL speculative drawings list includes a reference to drawing S456 for a 2' 6" gauge 0-4-0 for the N. P. J. Nitrate Co. This was dated 24th Nov. 1905.

0-4-0ST, d/w 28", cyls. 10"x15", built by Manning Wardle in 1906 (first two), and 1917 (last)

'No. 1 NORTH'	w/n 1688
'No. 2 BURCH'	w/n 1689
?	w/n 1855



Manning Wardle builder's pic, via Fred Harman's MW books.

Cía. Salitrera Nueva Castilla

76cm gauge, See *Cía. Salitrera Castilla* in previous section.

Oficina Pan de Azucar, the Pan de Azucar Nitrate Co.

Summary of operations:

• ***Pan de Azucar,*** 6km from station Pan de Azucar of NR,

In 1926 owned by Pan de Azucar Nitrate Co. Ltd., 2 NBLs of 12T.

0-4-0T d/w 30", cyls. 12x16", built by NBL in 1911

NBL order no. L413 from Strain & Robertson, their contract 184. Similar in all respects to NBL order L289. NBL order book dates order as 27th May 1910, with delivery to be by 12th October. To be painted dark green similar to

L289. Quote invited for new fireboxes from NBL in March 1914. Pair of injectors ordered in late 1912, and spares ordered for this location in 1917.

1 w/n 19315

2 w/n 19316



Photo published in the Argentine magazine *Caras y Caretas* during 1917, and identifiable as *Oficina Pan de Azucar*.

Paposo

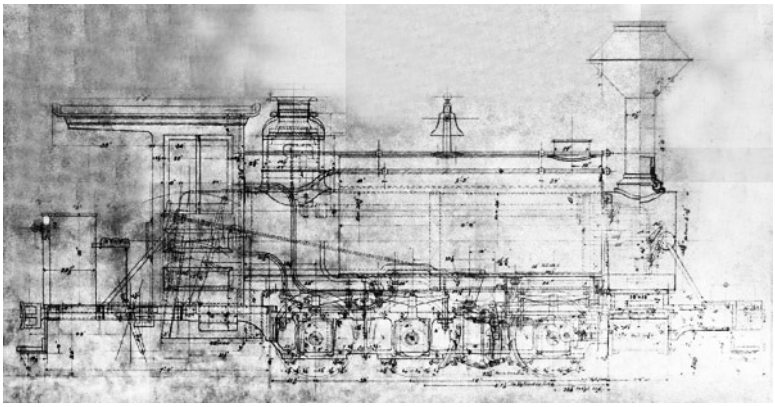
Background

Paposo was a small port north of Taltal. The topography did not permit a railway directly through to the nitrate pampa, but with the aid of inclines and an aerial ropeway nitrate was brought out to the coast.

0-6-0ST d/w 30", cyls. 10"x16", built by Rogers in 1886

Purchased for the 'Paposo Railroad'. Ordered through Barazarte & Castro.

'ANSELMO MORAGA' w/n 3689



The GA drawing came from a photostat of a Rogers blueprint in the Dewhurst archive at the NRM in York.



Oficina Peña Chica

Background

2' 6" gauge. Summary of operations:

• ***Peña Chica***, in Tarapacá, 10km from station Pozo Almonte on NR,

Owned in 1889 by the *Banco Mobiliario de Santiago*. No mention of locos at that time.

In 1926 owned by Gildemeister & Co., 4 locos: 2 of 19T, and 2 of 16T.

0-4-0T d/w ?, cyls. ?, Built by O&K in 1907

?	w/n 2549	60hp. Customer identified by [14] though not by Merte's O&K list.

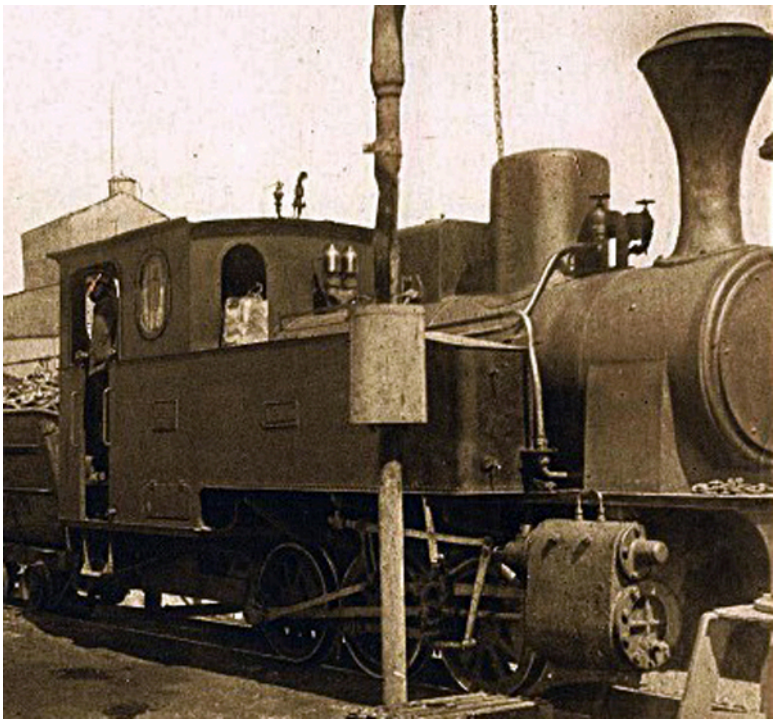
0-4-2T? d/w ?, cyls. ?, built by O&K in 1906, 1907, 1912 and 1913

For the first three the customer is identified by [14] though not by Merte's O&K list.

?	w/n 1964	150hp, 2/3T
?	w/n 2336-7	50hp, 2/3T
?	w/n 2505	150hp, 2/3T
?	w/n 5868	80hp
?	w/n 6526	80hp, wheel arrangement shows in list as 1Bt.

0-6-0T d/w ?, cyls. ?, built by O&K in 1921

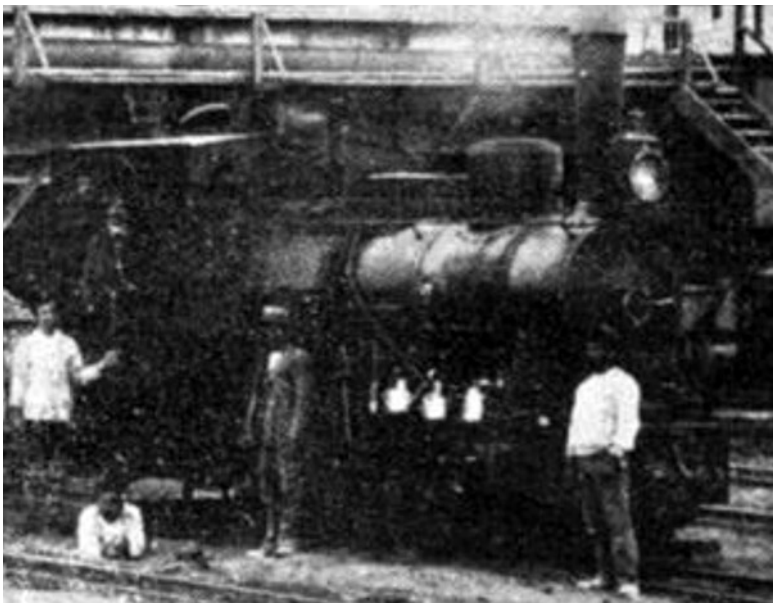
?	w/n 9550
?	w/n 9551



An O&K 0-6-0T at the Oficina Peña Chica. The loco is of modern design, with piston valves and top feed.

Oficina Pepita

In Aguas Blancas area, gauge uncertain.



The above image comes from the *Guía administrativa, industrial y comercial de las provincias de Tacna, Tarapacá y Antofagasta*, 1913. Nothing is known about the loco.

Oficina Perseverancia

Background

30" gauge. Summary of operations:

• ***Perseverancia***, Antofagasta, 4km from station Solitario on *FCAB*,

In 1918 owned by *Cia Salitrera Perseverancia*.

In 1926 owned by Lautaro Nitrate Co. Ltd., 4 locos, 2 Henschels, 1 Koppel, and 1 Americana.

0-4-0T d/w ?, cyls ?, bult by Henschel in 1913

? w/n 12511

Primitiva Nitrate Co. Ltd.

Background

2' 6" gauge. Formed in 1886 with John Thomas North as chairman, to work the *oficinas Primitiva* and *Abra de Quiroga*,

Summary of operations:

• ***Primitiva***, in Tarapacá, 7km from station Huara on NR,

In 1882 was owned by John Thomas North.

Owned in 1889 by J. T. North via the Primitiva Nitrate Co. Ltd. Represented in Liverpool by J. Lockett. Owned 4 locos at that time, and a photo in the album shows two identical narrow gauge 0-4-0STs by Fowler.

1918 owned by *Cia de Salitres y FC de Agua Santa*.

In 1926 owned by *Cia. de Salitres y FC de Agua Santa*, 3 Fowlers of 10T.

0-4-2ST d/w ?, cyls. 8x12", built by Fowler in 1887 (1st pair), 1888 (2nd pair) and 1889 (last)

Sent via W. & J. Lockett.

? w/n 5342 Despatched 15-2-1887 via W. & J.Lockett.

?	w/n 5343	Despatched 18-2-1887 via W. & J.Lockett.
'BLUELER' ?	w/n 5344	Fowler archive lists suggest this loco might have gone to Colombia?
?	w/n 5565	Engine sent separately from boiler. Special firebox for wood fuel supplied to Primitiva Nitrate, though one Fowler document is ambiguous about whether loco went to Colombia.
?	w/n 5841	Despatched 15-3-1889.

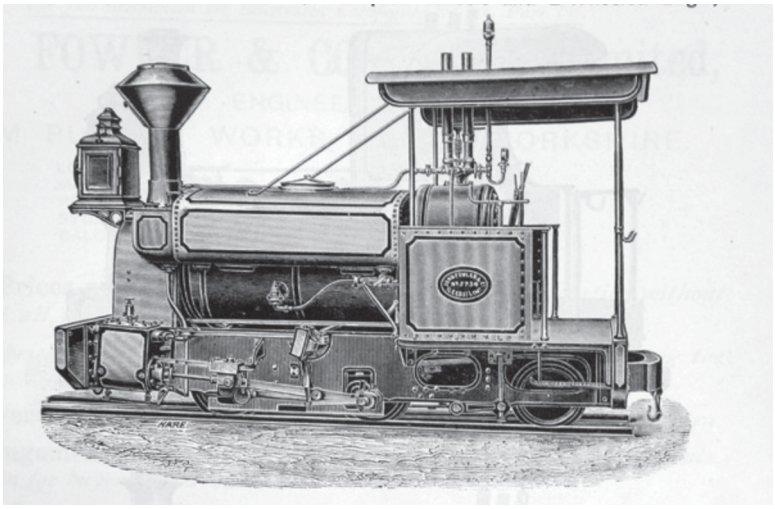


Image of typical 0-4-2ST as displayed in a number of Fowler catalogues.

Oficina Puntilla de Huara

See Rosario Nitrate Co., below.

Cía. Salitrera Poderosa

Background

30" gauge. Summary of operations:

• ***Savona***, Antofagasta, Canton El Boquete. 2km from station Savona on branch to Boquete, worked successively by Cia. Salitrera Poderosa de El Boquete y The Lautaro Nitrate Co. Ltd.
Operations suspended 1921.
In 1926 owned by Lautaro Nitrate Co. Ltd., 5 locos, one Henschel of 22T, 2 Arn Jung of 18T, 1 Baldwin of 18T, 1 'Americana' of 18T.

0-6-0T d/w ? cyls. ?, built by Henschel in 1912

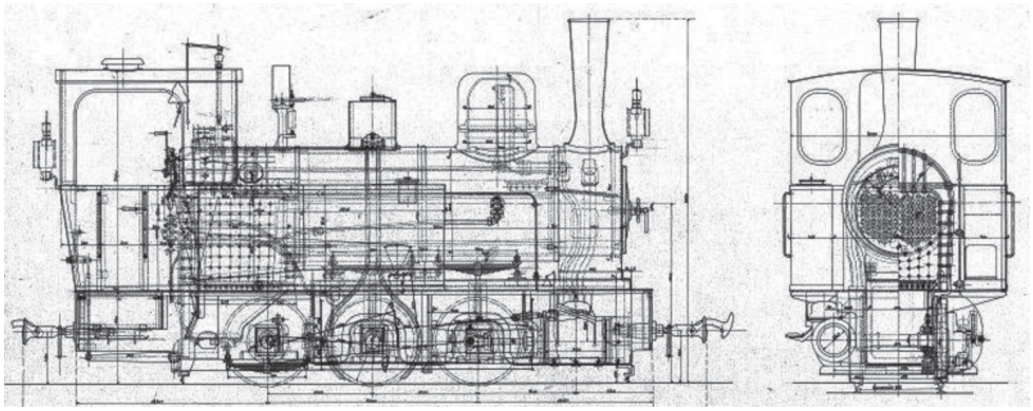
Delivered via Gebr. Vorwerk & Co., through Antofagasta, supposedly to *Cia. Salitrera Poderosa Savena* but probably to this location.

?	w/n 11405

Cia Salitrera Progrese

0-6-0T d/w ?, cyls. ?, built by Henschel in 1913

?	w/n 12230
?	w/n 12231



High resolution copies of this drawing are available from the Henschel Museum, at
https://www.henschel-museum.com/Lokomotiv-Archiv/Uebersichtszeichnungen/Dampflokomotive/
and then click on 'Schmalspur' to find the narrow gauge drawings.

Cía. Salitrera Progreso de Antofagasta

2' 6" gauge.

0-6-0T d/w ?, cyls. ?, built by Henschel in 1913

? w/n 12230
? w/n 12231

Reducto Nitrate Co.

Background

30" gauge. Summary of operations:

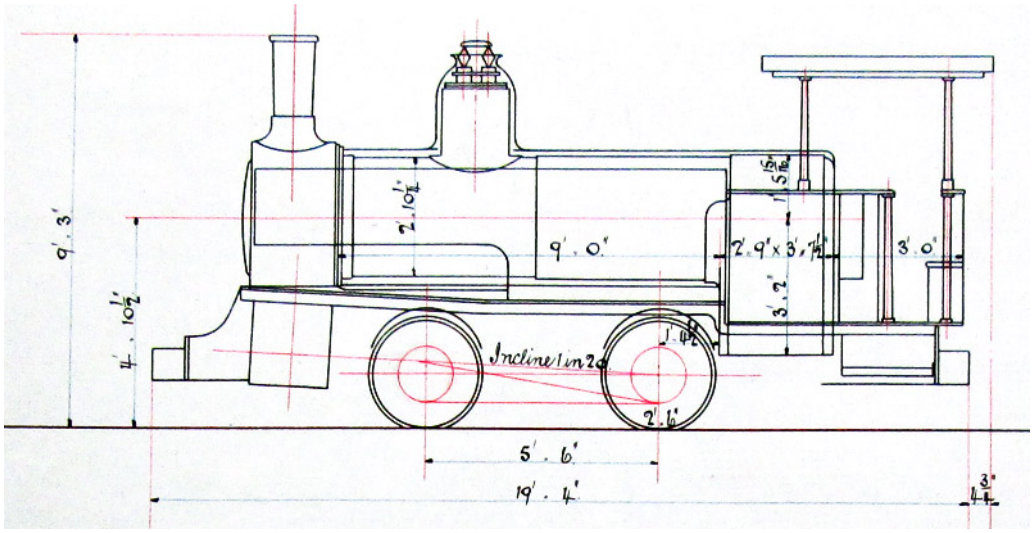
• ***Reducto***, in Tarapacá, at the inland terminus of the *FC de Junín*. Presumably related to this company, but dates and relationship yet to be determined.

Owned in 1889 by Galté y Cia. No mention of locos at that time.

0-4-0T d/w 30", cyls. 12x16", built by NBL in 1904

Order L73 same as earlier orders E754 and E859. Via Strain & Robertson, their contract no. 1. Specs. originally sent to NBL, Avonside, Kitson & Fowler. NBL tender accepted on 29 June 1904 at price of £1125. To be same 'in all respects' as latest Alianza locos, and to be ready by 29 October 1904. Livery to be 'dark chocolate' with vermilion buffer beams. Shipped on Pacific SN Co.s '*SS Corcovado*' in late October 1904.

'REDUCTO No. 1' w/n 16509



Basic dimensions as shown in an NBL specification book.

0-4-0T d/w 30", cyls. 12x16", built by NBL in 1906?

To be ordered via Strain & Robertson, their contract no. 9. Tender invited 17 October 1905, to be duplicate of last loco, but water capacity to be larger and cab to be added. Objection to low (valve) gear as likely to result in damage from hitting stones. It seems that (sketch?) drawings were prepared, as a list of speculative drawings in the NBL archive includes nos. S453 and S454 produced in Oct. and Nov. 1905 for an 0-4-2ST and an 0-4-0ST for Reducto Nitrate. The actual drawings have probably not survived. NBL replied that it was difficult to increase the water capacity. Seems likely that loco was not ordered and that instead the company turned to Avonside as below.

0-6-2T d/w ?, cyls. 12x18", built by Avonside in 1906

Ordered via Strain & Robertson of Glasgow, Nov. 1905 S&R wrote that client was asking for loco similar to those supplied to Junin railway, but later said a Junin loco now had tanks extended to full length of loco and could that be done for this tender? Amended price was quoted 5th January 1906, and again 13th January 1906. One loco ordered 31st January 1906, price £1305 and to be ready by 26th April 1906. Draw gear and buffers later confirmed to be same as for Junín locos. Later agreed that driving wheels bearing surfaces would be enlarged. To be painted 'dark chocolate', and with name and number painted on both tanks. To be inspected 25th May 1906, ie. one month late.
No. 2 'HUASCAR' w/n 1515 Type 'Special'.

It seems that the company were looking for a similar loco to Avonside 1515 via the agent Anthony Gibbs & Co. in 1920, but no order was placed owing to the long lead time that would have been involved. See S&R records.

Oficina Rica Aventura

Background

Rail system linked Rica Aventura with *Oficina Prosperidad*, and *Oficina Empresa*. Info from [9]. *Empresa Salitrera Prosperidad*? Owned by *Salitrera Sloman* based in Hamburg (though Sloman was English). In 1926 passed to the *Cia Salitrera de Tocopilla*. By the 1940s these three oficinas formed the CSTA's Grupo Toco.
Summary of oficinas owned:
• ***Rica Aventura,*** 10km from station Toco on *FCTT,*
In 1926 owned by Señor Franz Meyer, 2 locos, one of 14T and one of 19T.

2-8-0 d/w 37½"?, cyls. 16½"x20"?, built by Hunslet in 1924

1480 and 1481 seem to have been built more-or-less to the design of the *FCAB*'s **141-150** which had been delivered in 1908. The dimensions given here are those that were applicable to that batch of engines. Hunslet spec sheets give:

copper fireboxes, brass tubes, firedoor suitable for oil burning, ashpan complete with dampers, Sharon couplers, 2nd & 3rd pairs of driving wheels to be flangeless, Westinghouse automatic airbrake to work on loco and train, balanced slide valves, Detroit double feed sight feed lubricator, one number 8 combination Bress injector on backhead and one no. 8 Friedman injector under the footplate, two Kermodes patent 'Cuchan' oil burners, painted in lead colour for shipment and with paint and varnish for finishing in Caledonian Railway blue and in CR style to be sent out

1 'RITA'	w/n 1480	Ordered via Anthony Gibbs & Sons
11 'WLADIMIRO'	w/n 1481	Ordered for Penan Nitrate Co.
10	w/n ?	
12	w/n ?	

Hunslet supplied other 2-8-0s to Chile, but solely for the *FCAB*. This may have been the source for the additional two listed above. Alternatively, these may have been the pair of 2-8-2s the *FCAB* sold to the Boquete Nitrate Co. before 1912 (*FCAB* nos. **109** and **112** in the 1908 renumbering).



Hunslet 1481, photo in Hunslet archive at Statfold Barn Farm.



Hunslet 1480 no. **1 'RITA'**, seen on a train of caliche hoppers at oficina María Elena, supposedly in the 1950s. Note the added bell, and the turbo-generator in front of the chimney.

Parts of various other steam locos were present in 1978.

Rosario Nitrate Co.

Background

30" gauge. Probably connected to Agua Santa Railway. Locos mostly for *Oficina Rosario de Huara*. In 1889 the Gildemeister *oficinas* had been transferred to Rosario Nitrate ownership. Gildemeister in fact controlled the Rosario Nitrate Company.

Summary of oficinas owned:

• ***Argentina,*** in Tarapacá, 2km from station Alto San Antonio on NR,

In 1889 had recently been bought from J. Gildemeister y Cía. by the Rosario Nitrate Co. Ltd. formed by Jorge Petrie and F. G. Clarke. No mention of locos at that time.

In 1918 owned by Rosario Nitrate Co.

In 1926 owned by The Nitrate Co.Ltd., 5 locos: 3 of 20T, and 2 of 15T.

• ***Puntilla de Huara*** location unknown, but presumably around Huara.

Mentioned in 1908 list,

• ***Rosario de Huara***, in Tarapacá,

In 1889 had been recently sold along with *Oficinas Argentina* and *San Juan* to to a London company formed by Jorge Petrie and F. G. Clarke, the Rosario Nitrate Co.Ltd. No mention of locos at that time.

In 1926 owned by Rosario Nitrate Co. Ltd., 4km of *linea ferrea* and 1500m of *linea Decauville*. 3 Avonsides of 16T, and 1 loco 'Baby' for transporting workers.

• ***San Juan***, in Tarapacá, west of station Dolores on NR out of Pisagua.

Owned in 1889 by the Rosario Nitrate Co. Ltd formed by Jorge Petria and F. G. Clarke. Previously owned by J. Gildemeister y Cia. No mention of locos at that time.

Oficina Argentina

30" gauge. Rosario Nitrate Co.

0-4-2T d/w ? cyls. 9½x14", built by Avonside in 1914

Ordered via Strain & Robertson of Glasgow; their contract 298. Invitations to tender sent to NBL, Andrew Barclay and Manning Wardle. One list says 0-6-4. Type 'Special.' *Oficina Rosario* locos were painted pearl grey with **'R. N. C. No. 1'** etc. on side tanks. *Of. Argentina* locos were to be a similar colour and general painting layout but with **'ARGENTINA No. 1'** etc. on side tanks. Avonside order book apparently says " to haul 16 wagons of 3½ tons up 1½% gradient, length of each trip = 4 miles, W v/gear, central spring buffers."

'ARGENTINA No. 1'	w/n 1673
'ARGENTINA No. 2'	w/n 1674

Oficina Rosario de Huara

0-6-2T d/w 30", cyls. 10x16", built by Avonside in 1908 (first two), 1911 (no. 3), and 1922 (last one)

Spec. originally sent by S&R to NBL, MW, AB, Dick Kerr and AE, to be capable of pulling 70 tons up a 1.5% gradient with a 75 foot radius curve. S&R made further enquiries to AE on 3rd August 1907, and on 8th August asked for tanks to be enlarged to 500 gallons. Contract awarded 14th August 1907, on condition that frames thickened to 3/4", centre drivers to be flangeless, jack & ramp to be supplied, tanks to hold 500 gallons, and all to be ready for shipping by 14th March 1908. Invitations to tender sent mid-1913 to NBL, Manning Wardle, Avonside and Andrew Barclay, for locomotives, S&R contract 298. Ordered via Strain & Robertson of Glasgow (their contracts 140, 238, and ?). Locos to be painted pearl grey with black lining and lettering. Three sets of Kermodes oil-burning equipment supplied by Avonside specifically for these locos, at *Oficina Rosario de Huara,* in 1920.

'R. N. C. No. 1'	w/n 1545	
'R. N. C. No. 2'	w/n 1546	
'R. N. C. No. 3'	w/n 1607	"To pull 20 trucks (70 tons) up 1½% grade over rough track. Sharpest curve 75' radius, 25lb rails. Must be able to push 10 trucks (35 tons) up 3% grades of 450'. Max round trip for this loco 3½-4 miles. To be of simple design and suitable for rough usage. Walschaerts v/g. 160WP, copper f/b and b/t. Ramsbottom s/v." Spares ordered for this loco at Rosario Nitrate in Jan 1928.
?	w/n 1702	



Avonside 1545, photo from Bristol Museums website

Oficina Puntilla de Huara

0-6-2T d/w ?, cyls. 10x16", built by Avonside in 1920

In September 1920 S&R invited tenders for the supply of a locomotive to this customer, this being their contract 354, open cab preferred according to S&R notes. Invitation letters were sent to NBL, Avonside, Kilmarnock Engineering, Andrew Barclay, Fowler, Hunslet, Manning Wardle, Baldwin, Bagnall, and Kerr Stuart. Tender received from MW for Matary type locos. Rejection letters were definitely sent in December 1920 to Manning Wardle, Baldwin, Hunslet, Bagnall, Andrew Barclay and Kilmarnock Engineering, and presumably others. Ordered from Avonside 13/12/1920. To be painted pearl grey with black lining and lettering. AE order book entry for nos. 1903-4 says locos at £7500 + oil burning apparatus at £320 + 2 spare injectors at £20 = £7840" Similar to AE 1545-6 except for the addition of Kermode's oil burner apparatus.

'R. N. C. No. 4'	w/n 1903	For *Oficina Puntilla de Huara*
'R. N. C. No. 5'	w/n 1904	For *Oficina Puntilla de Huara*
'R. N. C. No. 6'	w/n 1966	Ordered as duplicate of 1903-4. Cost £1966, Kermode oil burninmg apparatus plus firebars for coal burning, oil burning apparatus to be arranged with burner to enter through the ashpan. Copper firebox. **'R. N. C. no. 6'** to be painted in black on tanks. Spares ordered for '1926' (sic) **'RNC no. 6'** at Rosario Nitrate in June 1926.

Santiago Sabioncello & Co. Ltd.

Background

Santiago Sabioncello or members of his family owned the following *oficinas*:

• ***Brac*** close to paradero Brac of NR,
In 1926 owned by Santiago Sabioncello, only petrol and electric locos at that time.

• ***Diez de Septiembre,*** 6 km from paradero Pan de Azucar of NR,
In 1926 owned by Santiago Sabioncello, 2 ALCos of 20T.

• ***Lina***, Antofagasta, 7km from station Sierra Gorda on *FCAB*,
In 1926 owned by Jorge Sabioncello, 6 locos, 4 Hanomag of 18T, 1 Baldwin of 30T, 1 Henschel of 36T.

0-6-0T d/w ?, cyls. ?, built by Henschel in 1929

?	w/n 21324	
?	w/n 21325	
?	w/n 21326	
?	w/n 21327	At least one side tank with works plate survives at *oficina Humberstone*.

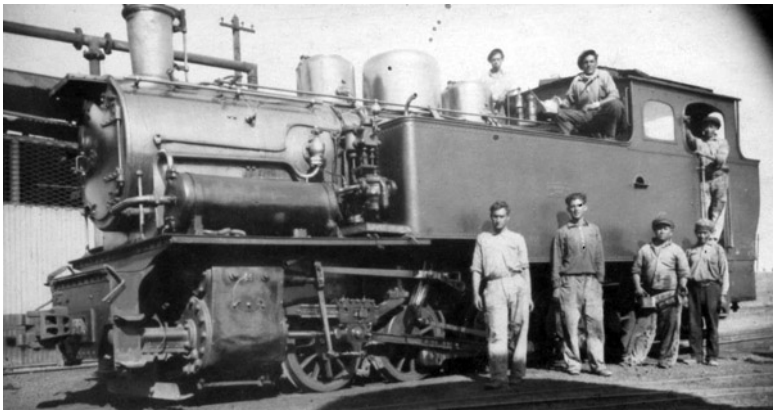
? w/n 21328

0-10-0T Lüttermollers, d/w ?, cyls. ?, built by O&K in 1929

? w/n 11861

? w/n 11862

These may well have ended up with the *CSTA* at *oficina Humberstone*, as tank sets 5 and 13 surviving there seem to match this design, as do the cabs of sets 1 and 2. One of the set 5 tanks carries the *CSTA* running number **4**. See appendix at end of this file for details and photos of surviving loco parts at Humberstone.



The image below arrived under the name 'Bellavista 7' which might imply that it worked at oficina Bellavista. This was an Alianza Co. *oficina* just 1km from station Buenaventura on the Nitrate Railways southern line to Lagunas. The *oficina* was recorded as having just three small NBL 0-4-0Ts on the 2' 6" gauge in 1926.



Salar de Carmen Nitrate Syndicate

Background

30" gauge. Summary of operations:

• ***Santa Lucia,*** 26km from station Alto de San Antonio of the NR,
In 1926 owned by Salar de Carmen Nitrate Syndicate Ltd., 3 locos of 18T.

0-6-0T d/w ? cyls. 9¼x14", built by Avonside in 1921

In September 1920 S&R invited tenders for the supply of a locomotive to this customer, this being their contract 127. Invitation letters were sent to NBL, Avonside, Kilmarnock Engineering, Andrew Barclay, Fowler, Hunslet, Manning Wardle, Baldwin, Bagnall, and Kerr Stuart. Rejection letters were definitely sent in December 1920 to Manning Wardle, Baldwin, Hunslet, Bagnall, Andrew Barclay and Kilmarnock Engineering, and presumably others. The ordered loco was to be similar to Avonside 1649 for New Tamarugal in 1913. Contract agreed Dec 1920. Oil burning equip-

ment to be supplied. Early query re water capacity reduced from 350gals. to 300? AE order book apparently says for *Oficina Santa María*. Cost £3310. Steel firebox, steel tubes, Kermodes oil burner. AE invoice book gives date of 13/9/1921 at price of £3310.

'SCNS Ltd. No. 2' w/n 1885

0-6-2T d/w 30", cyls. 11x15", built by Bagnall in 1925

Via Strain & Robertson. Spec for 2257 says outside cyls., outside frames, Walschaerts valve gear, open cab, oil burner. Completed 20-07-1925. Customer charged £1565. Shipped 20-07-1925 via Liverpool to Iquique.
Spec for 2276-7 similar. Completed 06-11-1925 and 12-11-1925. Customer charged £1565. Shipped to Iquique.

'SCNS Ltd. No. 3' w/n 2257

'SCNS Ltd. No. 4' w/n 2276

'SCNS Ltd. No. 5' w/n 2277 Survives derelict at *Oficina Humberstone*. Wilf Simms says was latterly known as *CSTA* no. **11**.

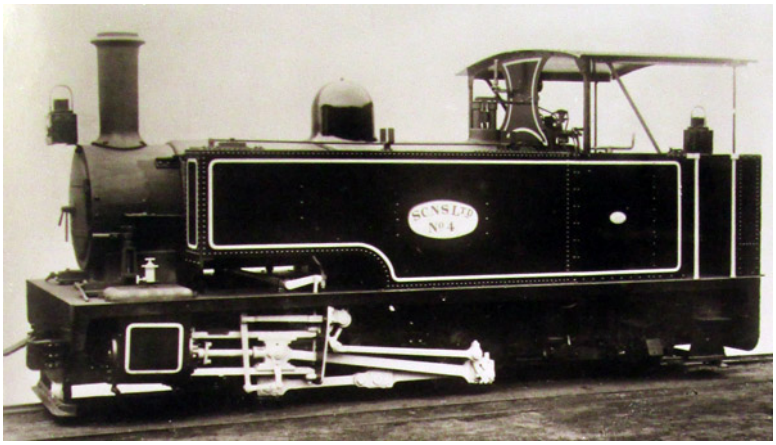


Image of 2276 from Bagnall archive at Staffordshire Record Office.



Bagnall 2277 as surviving at oficina Humberstone in April 2019.

San Sebastian Nitrate Co.

Background

30" gauge. Summary of oficinas owned:

• ***Sacramento*** or ***Sacramento de Zapiga***, in Tarapacá, 2km from station Zapiga on NR,

Owned in 1889 by the San Sebastian Nitrate Co. Ltd. along with *Oficina Tegethoff* which previously were owned by Señores Blair, Sillen and Harrington. No mention of locos at that time.

In 1926 owned by San Sebastian Nitrate Co., 1 loco of 11½T.

• ***Tegethoff***, in Tarapacá,

Owned in 1889 by the San Sebastian Nitrate Co., along with ***Oficina Sacramento de Zapiga***, having

previously been owned by Señores Blair, Sillen and Harrington. No mention of locos at that time.

0-4-2T d/w ? cyls. 9¼x14", built by Avonside in 1916

Ordered via Strain & Robertson of Glasgow (their contract 63). Tender accepted 12th Nov. 1915 at price of £1140 for loco and an extra £345 for the Kermode oil burning equipment. There had been correspondence about price including "there will be orders for three more engines from same group as ourselves…" , Loco to be similar to those for Santa Catalina. Loco to burn coal and/or Californian residuum fuel oil. The locomotive to be painted dark blue with suitable lines, brass nameplates with raised lettering to be fitted on both sides of water tanks and lettered as follows: (SSN Co. around top of ellipse, and No. 1 in middle). Shipping being discussed during July 1916. This loco (oil tank 80 gals and coal 7cwt.) was apparently very similar to contract 127 for Of Santa Lucia [S&R notes], and to the locos immediately below for Santa Catalina Nitrate Co.

'SSN Co. No. 1' w/n 1739

A note in an Avonside spares order book dating from 1928, suggests that Avonside 1736 built for the Santa Catalina Nitrate Co. (see immediately below) had moved to this company at *Oficina Sacramento* by that date. Possibly Avonside 1737 will also have moved but there is no firm evidence for this. Another note from 1918 suggests that all three were definitely at Of. Sacramento by that year. Spares ordered for 1736 and 1739 at Of. Santa Catalina in 1925, contract 59. Also spares for 1737 and 1739 at San Sebastian Nitrate oficina Sacramento in Jan/Feb 1926.

Santa Catalina Nitrate Co.

Summary of operations:

• ***Santa Catalina,*** at Santa Catalina station on NR,

In 1926 owned by Santa Catalina Nitrate Co., 2 Avonsides of 15T.

0-4-2T d/w ? cyls. 9¼x14", built by Avonside in 1916

Ordered via Strain & Robertson (their contract 32) of Glasgow. Invitations to tender sent to Dick Kerr, Andrew Barclay, BP, NBL, MW, Avonside and Fowler. Fowlers asked if a standard design was acceptable (rather than a bespoke one), and the reply was encouraging, citing the current difficult circumstances. Rejection letters were then sent to NBL, Fowler, Manning Wardle and Dick Kerr & Co, and clearly NBL had produced at least one drawing (S1213) in preparation for their tender. Acceptance for one loco from Avonside in Nov. 1915 at basic price of £1115 for the loco. Spares later delivered to *Oficina Sacramento* (See San Sebastian Nitrate Co. above) suggesting the two operations had been combined. Locos equipped to burn coal and/or oil using Kermode system. Buffers to be exactly similar to those supplied to *Oficina La Patria* (S&R contract 140). Locos to be painted dark blue with suitable lines, brass nameplates with raised letters showing **'S. S. N. Co. Ltd.'** over **'No. 1'** or **'2'** all in an ellipse. One to be shipped via Liverpool on the SS *Elder Branch* and the other via Swansea on the SS *Myrtle Branch* during June 1916, both being labelled for unloading at Pisagua. Second loco did not make that ship at Swansea, but was eventually shipped on board the SS *Almond Branch* from Liverpool during July of that year, the destination now being Iquique. These locos (oil tank 80 gals and coal 7cwt.) were apparently very similar to contract 127 for Of Santa Lucia [S&R notes], and to the loco immediately above for San Sebastian Nitrate Co..

'S. S. N. Co. Ltd. No. 1'	w/n 1736	Spares ordered for this loco in 1928 via the San Sebastian Nitrate Co. at Oficina Sacramento, see immediately above.
'S. S. N. Co. Ltd. No. 2'	w/n 1737	This loco may also have moved to Of. Sacramento by 1928.

S&R contract 72 around September 1915 with Avonside was headed 'Locomotives' and discusses oil fuel equipment, but it is not yet clear whether the contrsct was merely for oil burning equipment for the locos supplied as above or was for additional whole engines.

Oficina Santa Laura

2' 6" gauge. At Humberstone. Extensive rail system linked to *Oficina Peña Chica* and *Oficina Humberstone*. Closed in 1950s. Site not cleared until after 1987.

0-4-0ST d/w ? cyls. ?, built by Bagnall in 1910

Ordered via Mitrovitch Brothers.

'CHILENITA'	w/n 1888	Now displayed in park outside Iquique.

0-6-2T d/w ? cyls. ?, built by Bagnall in 1925

CSTA 11	w/n 2277

Oficina Santa Lucia

See Salar de Carmen Nitrate Syndicate, above.

Santiago Nitrate Co.

Background

Gauge 2' 6", tended to buy locos through Mitrovich Bros.

1926 summary: ***Santiago***. (Santiago Nitrate Co.) Close to station Huara on the NR. No locos mentioned.

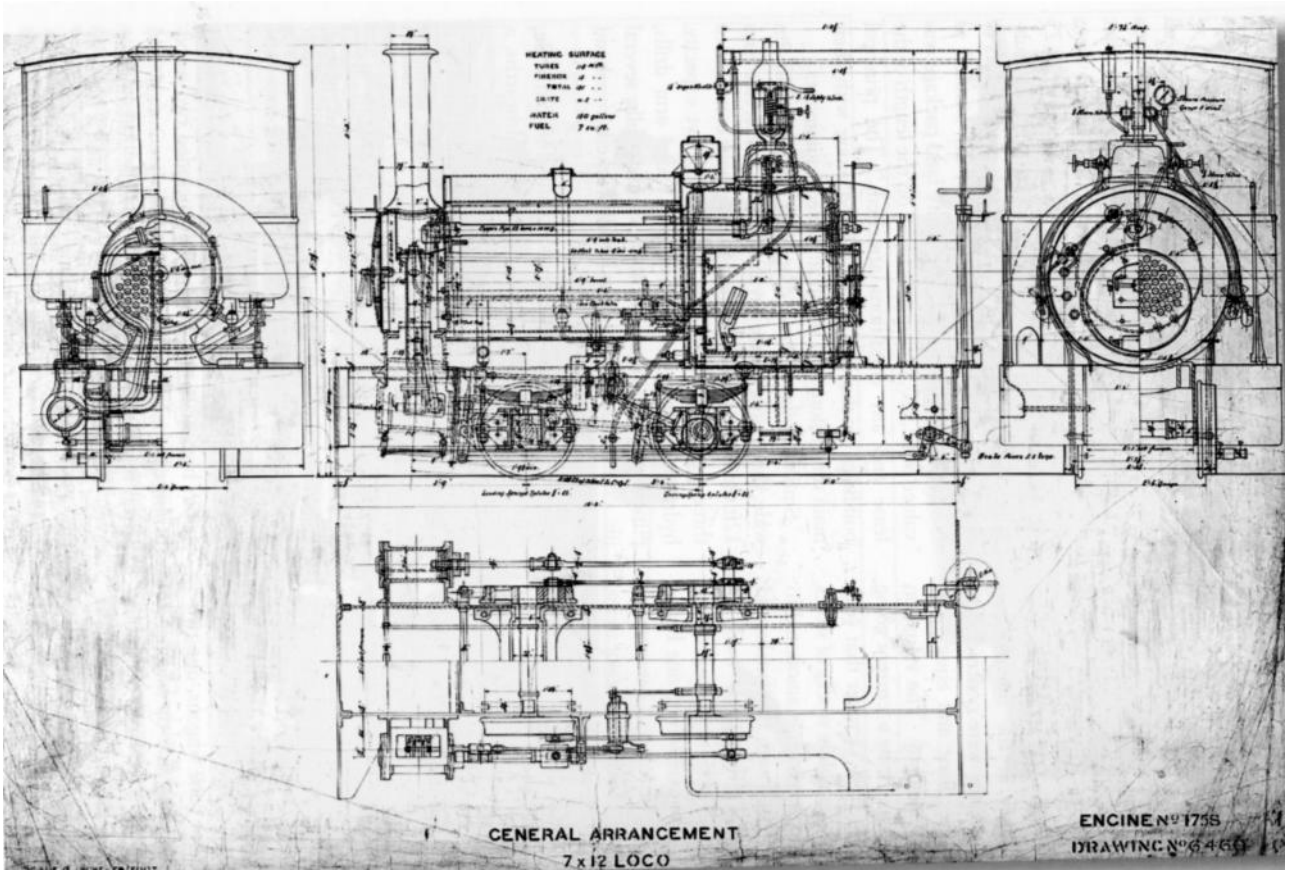
0-4-0ST d/w 21½", cyls. 7x12", built by Bagnall in 1902 and 1905-6

Spec for 1758 says outside cyls., inside frames, cab. Construction commenced for stock, Completed 08-04-1905. Cost £361. Customer charged £430. Bagnall's 'Mercedes' type, fitted with Baguley-Price valve gear. Shipped from Liverpool to Iquique.

Spec for 1759 similar, finished 20-03-1906, shipped via Liverpool to Caleta Buena. Spares for 1759 sent in 1912 to Santiago Nitrate Co. together with items for 1675 and 1677.

Spec for 1778 similar but commenced for stock 28-02-1905, and completed 07-07-1906, cost £383, customer charged £430. Bagnall type 'Mercedes', but no mention this time of valve gear type. Shipped to Mitrovich Bros., but destination not mentioned. Cryptic note about set of wheels and axles ordered in 1928 for this loco, possibly for use on 600mm track in Buenos Aires?

?	w/n 1675	Probably for Santiago Nitrate Co.
?	w/n 1677	For Santiago Nitrate Co.
?	w/n 1758	For Santiago Nitrate Co.
?	w/n 1759	For Santiago Nitrate Co.
?	w/n 1778	Not confirmed for Santiago Nitrate but likely.



A Bagnall elevation and plan of loco 1758, as reproduced in Baker & Civil's 2008 volume *Bagnalls of Stafford* [49].

Oficina Sargento Aldea

See Lautaro Nitrate Co., above.

Oficina Solferino

•In Tarapacá, close to Est. San Antonio on NR. In 1883 owned by Goichis Zayas. In 1885 owned by Massardo Argentina, when the oficina had two engines named **'MARIA'** and **'CARMEN'.** Owned in 1889 by a company formed by Jorge Inglis. No mention of locos at that time.

?-?-? d/w ? cyls. ?, built by ? in ?

Ordered via ?

'MARIA '	w/n 18??
'CARMEN'	w/n 18??

Cía. Salitrera de Taltal – Taltal Nitrate Co.

Background

2' 6" gauge. Summary of oficinas owned:

• ***Alemania,*** 80km inland from Taltal.

Operating 1906.

In 1926 owned by *Cía. Salitrera de Taltal*, no locos listed.

• ***Chile***, Taltal, 80km inland from Taltal.

Operating 1906.

In 1918 owned by *Cia. Salitrera Alemana*. but not in production.

In 1926 owned by *Cía. Salitrera de Taltal* or *Cia. Salitrera Alemania*, no locos listed.

• ***José Antonio Moreno ex Lagunas de Taltal,*** 90km inland from Taltal.

In 1926 owned by *Cía. Salitrera de Taltal*, No locos listed.

• ***Salinitas,*** Taltal area.

In 1926 owned by *Taltal Nitrate Co.?*

Oficina Salinitas

0-4-4-0T Two truck Shays, d/w 27½", cyls. 7x12", built by Lima in 1910

Supplied via Spencer & Waters of Santiago, and Wessel Duval & Co. NY. For *Oficina Salinitas*? Lima class A 18-2.

1?	w/n 2380
2?	w/n 2381

Oficina Chile

Gauge possibly 2' 6" but unconfirmed.

Whilst no details of locos at the location are known, the very poor photo below shows a Borsig type 51 0-4-0T amidst the *oficina* plant. This may well be one of the four locos of this type listed earlier in this section under *oficina Alemania*. *Oficinas Alemani*a and *Chile* were adjacent to one another, with their processing plants being less than five kilometres apart. They were also owned by the same companies, successively *Fölsch y Martin*, then in 1909 the *Cía. Salitrera Alemania*, and by 1926 the *Cía. Salitrera de Taltal*.



Another photo taken at this oficina shows an unidentified well tank loco.



New Tamarugal Nitrate Co.

Background

30" gauge. Summary of oficinas owned:

• ***La Palma*** later ***Oficina Santiago Humberstone***, in Tarapacá, 7km from station Pozo Almonte on NR,

In 1889 had been recently sold by Gibbs y Cia. to the Tamarugal Nitrate Co. formed by Jorge M. Inglis in London. No mention of locos at that time.

In 1926 owned by New Tamarugal Nitrate Co., 3 NBLs of 20T, 1 Hunslet of 15T.

• ***La Patría***, in Tarapacá, 4km from station Santa Catalina on NR,

In 1889 had been recently sold by Gibbs y Cia. to the Tamarugal Nitrate Co. formed by Jorge M. Inglis in London. No mention of locos at that time.

In 1926 owned by New Tamarugal Nitrate Co., 3 locos of 12T.

Oficina La Palma, later became *Oficina Humberstone*

NBL locos had been supplied under S&R contracts 32 in Jan 1906. Specs initially sent by Strain & Robertson to Avonside, Beyer Peacock, Robert Stephenson, A Reichwald presumably for a German builder, and later to Yorkshire Engine Co. Letter from S&R to Andrew Barclay specifically invites tendering for the supply of any suitable existing design that would meet the spec.

0-4-0T d/w 30", cyls. 12x16", built by NBL in 1906-7

This was NBL order L174. Same design as order E155**.** NBL locos for *Oficina La Palma* were supplied under S&R contracts 32 agreed Jan 1906, and 43 agreed March 1907. First one was to be identical to locos for *Oficina Luisis* (L155) but with an enclosed cab. Price £1350 to be ready for shipment in June 1906. Second one was to be identical, at a price of £1580 (perhaps including extra spares) and to be ready for shipment 9th September 1907. To be painted green and numbered '**2**'. Actually shipped in August?

1 w/n 17368 Replacement injectors ordered from NBL in late 1913 for this loco.



Image found in ETH Zurich archive.

0-4-0T, d/w 30", cyls. 12x16", built by NBL in 1907

This was NBL order L243 of 11th March 1907. Ordered by Strain & Robertson contract 43, of 11th March 1907. Loco to be identical to that supplied under contract 32 (NBL order L174). Price £1580, and to be ready by end of July 1907 (NBL order books) or 9th September 1907 (S&R correspondence?). To be painted green.

2 w/n 18047

0-4-0T d/w 30", cyls. 12x16", built by NBL in 1925

Via Buchanan Jones & Co. Buchanan Jones were agents for *oficinas* Puntunchara, Transito, Santa Laura, La Palma, La Patria, El Loa, and the New Tamarugal Nitrate Co. 'Not through S&R' NBL order no. L804 recorded as 3rd February 1925. 'same as supplied to La Palma August/September 1907 (L243) but fitted with oil burning apparatus as in L794. See also L795 & 9 and out specn. d/d 12-1-25.' Delivery to be 3rd week in May.

La PALMA No. 3 w/n 23289

There was an enquiry to NBL via S&R in 1918 re one more locomotive, but it was not proceded with owing to the war situation causing delays.

Oficina La Patria

0-4-2T d/w ? cyls. 9¼x14", built by Avonside in 1913

Invitations to tender sent to NBL, Avonside and Manning Wardle. Ordered via Strain & Robertson of Glasgow, their contract 140. For *Oficina La Patria*. Tender accepted 28 Oct. 1912 at a price of £1971 18s, and to be completed by Feb. 1913. Rejection letters sent to NBL and MW. Spring buffers requested, of same type as supplied on Rosario locos. Holden oil burners to be supplied. AE order book apparently states "coal burning, to haul 25 wagons (3½ tons loaded) up 2% gradient, 30 lbs rail, track will be rough and generally dry & dusty, radius of sharpest curve = 150ft., length of line = 1 mile, coal & water & coal bunkers can only be got at one end & locos must be provided with side-tanks for water & coal bunkers of ample capacity to do the double journey + shunting etc. Tubes of simple design suitable for rough usage. W.v gear. To be about 12 tons empty, painted dark green and lined. Brass plates (oval) N T N Co Ltd (over) no 1."

'NTN 1' w/n 1649

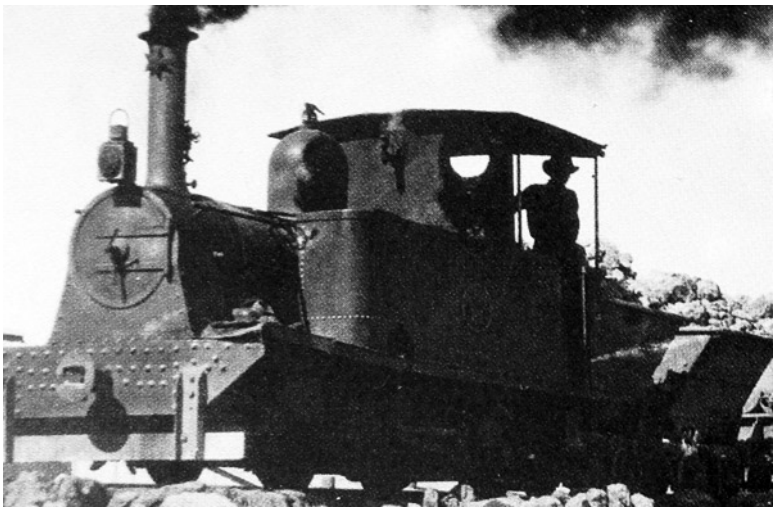
'NTN 2' w/n 1650

Spares ordered from Avonside for these two at this location in 1918 and 1919.

0-4-2T d/w 27" cyls. 9¼(or 9½?)x14", built by Avonside in 1925

Ordered 9/4/1925 at price of £1675. Delivered June 1925 via Buchanan Jones & Co., Iquique, to burn oil, painted dark green with red lines. Brass plates with 3" letters. Copper firebox and tubes. Delivered 25/8/1925.

'LA PATRÍA No. 3' w/n 1970



One of the New Tamarugal Nitrate Co. Avonside 0-4-2Ts, supposedly at *Oficina La Palma* though they may well have spent most of their lives further north at *Oficina La Patría*.



CSTA Grupo Nebraska

on the Pampa Nebraska

Background

This company, also known as *CoSaTÁn* but abbreviated to *CSTA* on locomotives, seems to have been a late gathering of surviving *oficinas,* formed in 1934 but eventually ceasing operations in the late 1950s. Its assets were organised into groups based upon particular areas of nitrate pampa, eg. also the *Grupo Pissis* which will have been south-west of Pozo Almonte. A *Grupo Nebraska* loco list dated 1st July 1956 and currently displayed in the preserved *oficina Humberstone* includes the following engines:

1	Manning Wardle	22 tonnes	
3	North British	18 tonnes	
4	O&K	?	Probably one of the 1929-built O&K Lüttermoller 0-10-0Ts built for Santiago Sabioncello, as one of the surviving tanks from those two machines bears the number **4**. Both of the cabs from those locos survive at Humberstone, as do all four tanks.
5	Manning Wardle	22 tonnes	Probably a side tank loco.

6	Koppel	20 tonnes	
7	Henschel	22 tonnes	
8	Henschel	22 tonnes	
9	Henschel	22 tonnes	
10	Bagnall	20 tonnes	
11	Bagnall	20 tonnes	Wilfred Simms believed that this was Bagnall 2277 originally supplied to the Salar de Carmen Nitrate Syndicate as their **'SCNS Ltd. No. 5'**, and which still survives at *oficina Humberstone*.
12	Bagnall	20 tonnes	
13	Henschel	30 tonnes	Probably one of the locos with a sloping top front to the tanks.
14	Henschel	22 tonnes	
15	Henschel	30 tonnes	
16	Henschel	22 tonnes	
18	Manning Wardle	22 tonnes	
19	Henschel	22 tonnes	
21	Avonside	30 tonnes	
22	Baldwin	20 tonnes	
23	Baldwin	14 tonnes	
28	Henschel	22 tonnes	
29	Avonside	30 tonnes	
35	NBL	?	Single tank survives at Humberstone.)

Whilst the identities of these locos are not known, they presumably include many of those whose tanks and cabs survive in the store at Humberstone.

Other *CSTA* locations and locomotives

Whilst the *CSTA*, having taken over the majority of the surviving *oficinas* as the industry declined, will have had other *grupos* in other parts of the nitrate pampa, their location and structure has not yet been ascertained. The *Grupo Pissis* has been mentioned already.

However, odd snippets of information keep coming to light and will be added here as they begin to make sense.

The CSTA *Grupo Toco* was made up of the three rail-linked oficinas Prosperidad, Rica Aventura and Empresa.

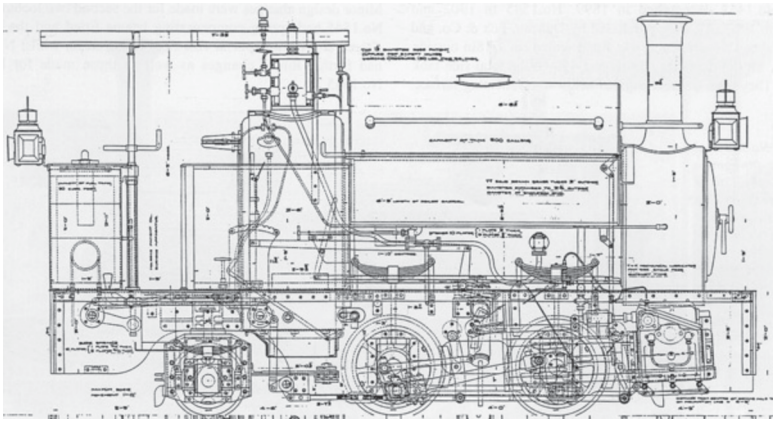
0-4-2Ts d/w 28", cyls. 10x14", built by Manning Wardle in 1924-5

Supplied via Grace Bros. and the British & Foreign Machine Co. respectively to an unknown nitrate company. The photo below shows one of these two locos carrying a name-plate **'WEMBLEY'**.

?	w/n 2037
?	w/n 2041



Photo from the Roberto Montandón archive, showing one of the above pair in later life under the ownership of the CSTA. The nameplate bears the word **'WEMBLEY'**, suggesting that the original owner had been a British-owned company.



An MW GA drawing, as reproduced in Fred Harman's MW locos book, vol. 1

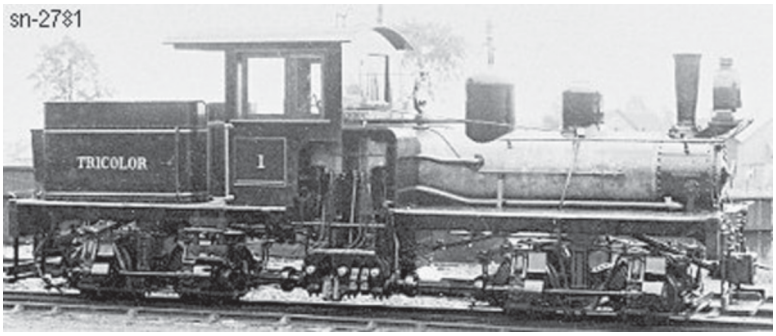
Oficina Tricolor

30" gauge. Taltal area. Owned by Perfetti Jeffery & Co.

0-4-4-0T Two truck Shay, d/w 27½", cyls. 7x12", built by Lima in 1914

Supplied via Spencer & Waters of Santiago, and Bruna Sampaio & Co. of Antofagasta. Class A 18-2, with two cylinders.

'TRICOLOR No. 1' w/n 2781
'TRICOLOR No. 2' w/n 2782



Lima builder's photo, from the Shay website.

Oficina Valparaiso

There were two *oficina Valparaiso*s, one in Canton Aguas Blancas south of Antofagasta and the other one near Huara in Tarapacá. The latter may have been the customer for the loco listed here, given the name of the loco.

0-4-0 d/w 24½", cyls. 7x12" OC, built by Black Hawthorn in 1896

Delivered via Torrome, Sons & Co. of London to Iquique.

? w/n ?

+ Strain & Robertson

Sept. 1913 enquiry to Avonside, Andrew Barclay and Manning Wardle re a 7 - 9 ton loco, for 2' 6" gauge.

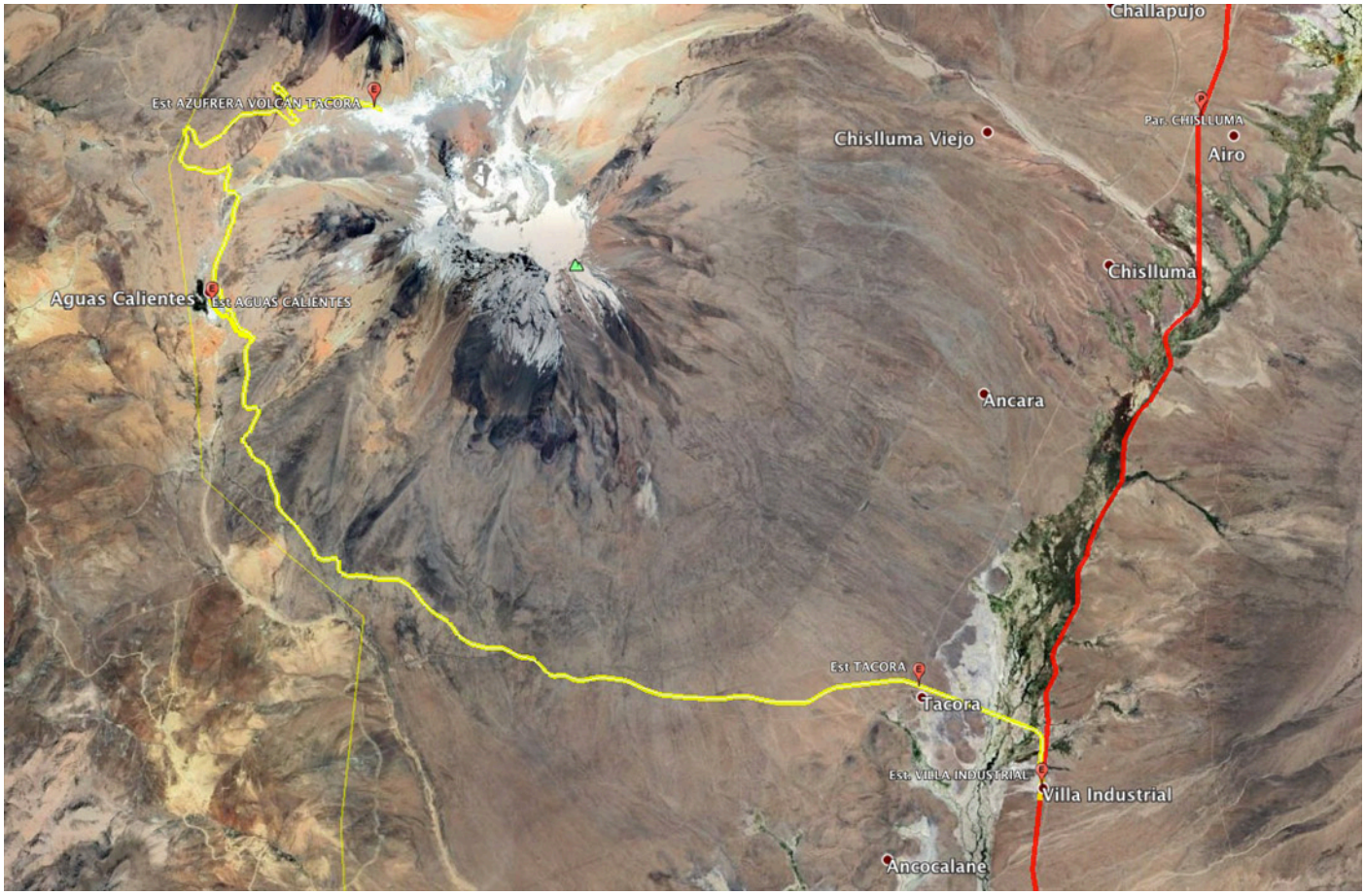
4.4 Other mining operations

4.4.1 *El FC de Tacora*

Background

Gauge 750mm? From Villa Industrial on *FCALP* route, to sulphur mines. Was at one time the highest railway in the world. Operated 1925 to 1966. Reported to have had five locos in the 1940s, and three were still in situ around 2005-7 when Ian Thomson explored the line, but were removed to an unknown destination in 2012 [22]. The names and numbers differ from source to source. The surviving remnants of the plant and railway, including a number of wagons and the loco shed at Villa Industrial, are now a *Monumento Nacional*, but it is clear that the keepers of that monument do not know where the locos are to be found

Comments on the *Ese Arica de Antes* Facebook page suggest that the locos had been sold by auction as early as 1981 but that it was only in 2012 that the buyer Sr. Rodrigo Saavedra moved them south to Chillán for rebuilding.



A Google Earth image showing the *FCALP* in red, and the *FC de Tacora* in yellow.

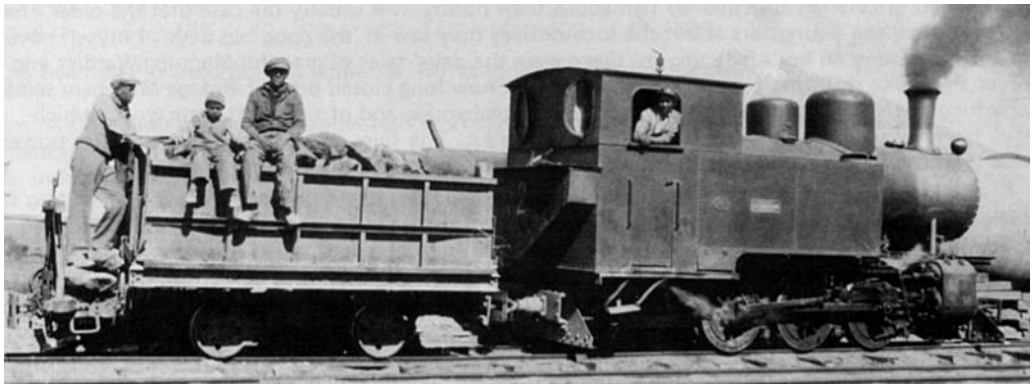
0-4-0T d/w ? cyls. ?, built by O&K

No further details known.

?	w/n ?	Passed to *EmPorChi Puerto Arica*, and thence to municipality for preservation but was later scrapped [16].

0-6-0T d/w ?, cyls. ?, built by Rheinmetall of Düsseldorf in 1925

1 or **3 'TACORA'**	w/n 1001	No. 1002 may also have been here as boiler bears that number [16]. Both were built for Chile. Still on site in derelict condition when ITN explored the line, but has disappeared since, possibly for preservation.



This 1935 photo of one of the Rheinmetall 0-6-0Ts was published in the *Industrial Railway Record* no. 116 in 1989. 1935. The caption on the original had apparently been "Private Railroad – Tacora. Ready to take Freeland and Walsh up to mine 3rd December."



Photo by Cristian Lagos, showing all of the Tacora locos stored somewhere further south. The Rheinmetall 0-6-0T is in the centre, and Hanomag 0-8-0Ts **2** and **1** are to the left and right.



The Rheinmetall 0-6-0T on a low loader in Arica whilst on its way south around 2012. Close examination reveals a very clear number '1' on t he upper cabside where a metal digit had been removed. Note also the added rear bunker cantilevered out from the cab.

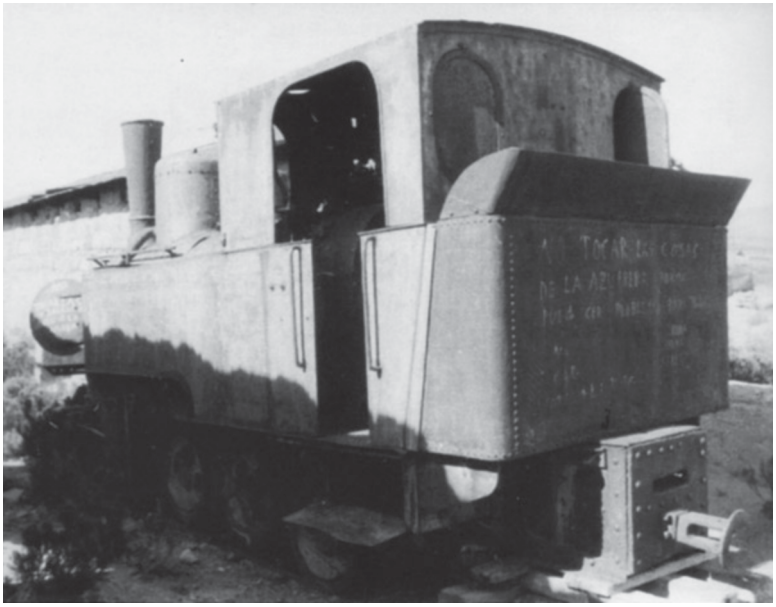
0-8-0T d/w ?, cyls. ?, built by Hanomag in 1926 and 1927

[16] says built 1925 and 1924.

1 'MARIA' or **'DON JORGE'** w/n 10376 Delivered via Sabioncello y Sarge, Iquique.

2 'CHUPIQUIÑA' or **'ELENA'** w/n 10486

Both were still on site in derelict condition when ITN explored the line, but have disappeared since, possibly for preservation.



This photo, taken by the late Wilfred Simms in 1978 or 1987, shows that no. **2** had been modified by the addition of a substantial rear extension frame supporting a new external bunker.



Some years later, its condition was deteriorating, and the cab roof, dome cover, and possibly even that bunker, had disppeared.

The remains of another loco were supposedly seen at Aguas Calientes in 2001, and possibly in 2009.



Photos from webpage at http://www.amigosdeltren.cl/fotos-ferrocarril-del-tacora



The three surviving locos were transported south to Santiago several years ago, and were spotted by accident by Derek Hyland in a yard in the north of the city at the beginning of 2022.

4.4.2 *La Cia. de Minas de Cobre de Gatico*



Background

2' 6" gauge. The port of Cobija was 60 km south of Tocopilla. It had been an important port in Bolivian days, but after the War of the Pacific it lost out to Antofagasta. It seems to have had a railway system linking the copper smelter to the port 1.5 km away, but longer distance routes used *andarivels* or aerial ropeways, eg to the mine El Toldo in Gatico 5km further north and to Huanillo further inland. However, a 1912 Chilean large-scale coastal chart showing Gatico and Cobija illustrates merely local rail tracks around the plant at Gatico, and an *andarivel* arriving from the north. No tracks are shown at Cobija.

Supposedly there were two locomotives in 1907, "*una de las que generalmente está en reserva*." [38, in 1907]. An undated monthly summary of expenses incurred by the *maestranza*, reproduced in source [50], mentions *locomotoras* nos. **1** and **2**.

Owned by Gibbs & Co. Closed 1940 after serious flooding.

.

0-4-0ST d/w 20", cyls. 7x10" OC, built by Avonside in 1904

Shipped via Alexander Young & Co., London, to "JRB Gatico". No further details known.

? w/n 1443

0-6-0 d/w ?, cyls. 8x14", built by Lima in 1907

Shipped April 17 1907.

? w/n 1054

0-4-0T d/w 26½", cyls. 8"x14", built by Vulcan Iron Works in 1908

'GATICA 2' w/n 1078



Whilst this view of Cobija port is not of particularly high quality, it is not beyond the bounds of possibilty that it shows a small saddle tank engine just behind the jib of the steam crane.

4.4.3 The Chile Exploration Co.

30-inch gauge (Smelter and Refining Plant Locomotives), but see also the *FC Mineral de Chuquicamata* on standard gauge in the appropriate file.

0-4-0CA compressed air locos d/w ?, cyls. 5"&10"x10", built by Porter in 1914

? w/n 5586
? w/n 5587
? w/n 5598

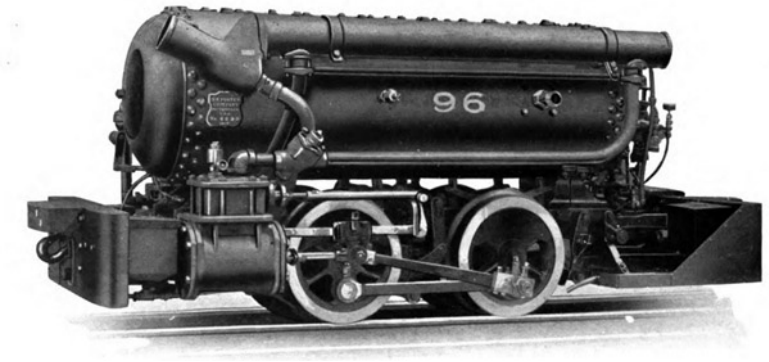


Illustration from a Porter Catalogue, showing a B-P-O type compressed air loco. There were four main variants of this type, and no doubt many minor alterations for individual customers, so the loco shown may not precisely match those supplied to Chuquicamata.

0-4-0ST d/w ?, cyls. 6"x10", built by Porter in 1917

? w/n 5970
? w/n 5971

0-4-0T d/w 22", cyls. 5"x10", built by Vulcan Iron Works in 1917

? w/n 2703
? w/n 2704
? w/n 2807

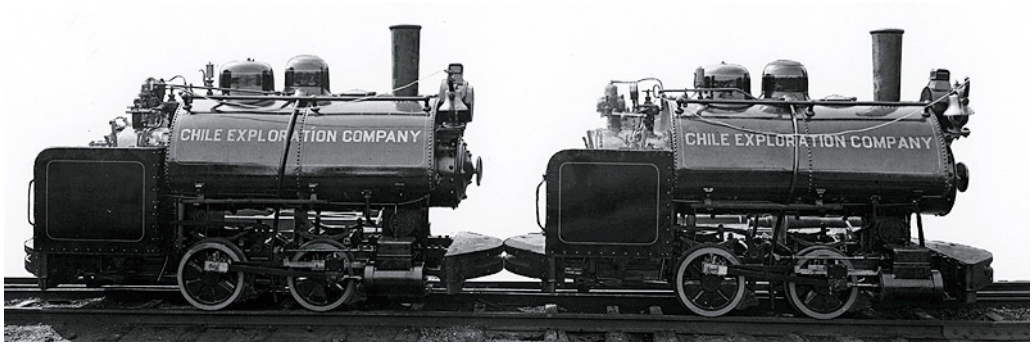


Hi-res image available from the Hagley Museum and Library, Wilmington, Delaware, USA.

0-4-0ST d/w 20", cyls. 6"x10", built by Vulcan Iron Works in 1918

L376 w/n 2836

L377 w/n 2837



VIW builders' photo. Hi-res versions are available from the Hagley Museum and Library, Wilmington, Delaware, USA.

4.4.4 Borax Consolidated Co.

Background

2' 6" gauge, which of course was originally the gauge of the nearby *FCAB*. At Cebollar, to work the Salar de Ascotán. The mainline was around 40km /25 miles long, but there were no doubt many more kilometres of temporary lines to access whichever bits of the salar were being worked. Source [11] suggests that there were six steam locos in use in the early 1920s. The derelict works and locos survived until the late 1960s or later.

'CEBOLLAR', 'LONDRES', 'LA ESTRELLA' and **'LA LUNA'** were each supplied with a four-wheeled tender containing a water tank (300 gallons first two, 430 gallons third one, and 900 gallons last one), and a high railed fuel bunker. This would not be suitable for coal, but there is no wood up on the *altiplano*, so where did they get it from? Presumably **'AURORA'** may have had a similar tender but that page of the order book has not been seen. Spark arresting screens were fitted.

0-4-0ST d/w? cyls. ?, built by Dick Kerr of Kilmarnock in 1903

The sole, though fairly persuasive, evidence that this loco worked here is the name on the saddle tank. The chimney suggests that this engine too ran on wood fuel, perhaps with a locally-built tender to carry it all.

'ASCOTAN' w/n ?

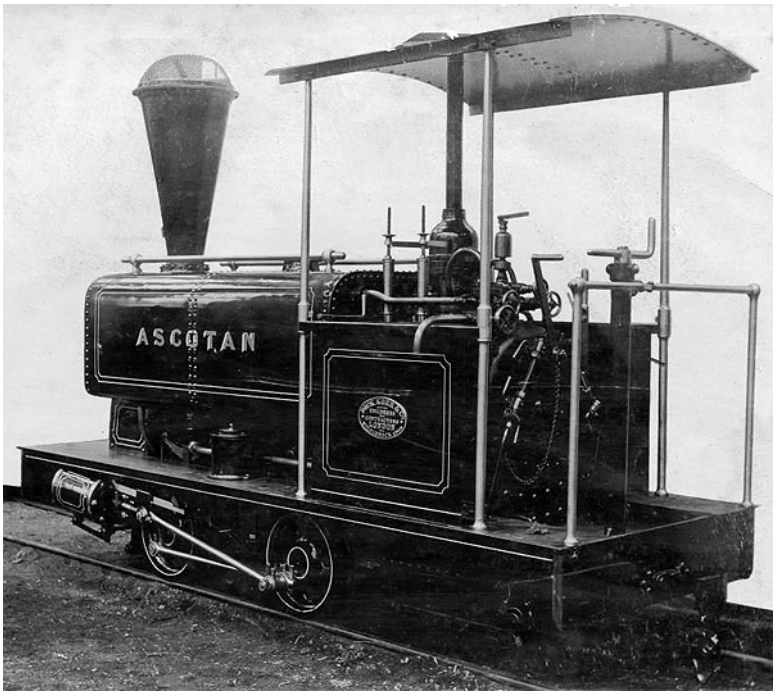


Photo from the Industrial Railway Society collection, courtesy of Chris West.

0-4-2TT d/w ?, cyls 7x12", built by Kerr Stuart in 1905 and 1907

Their 'Triana' class. However, KS order book says that 881 was to be a Tattoo loco, exactly similar to special tender loco 879', and to be able to couple up to the original tender. Notes stated that no steam heating pipe was to be fitted, implying that one had been fitted to the earlier engine. Order 2971A then stated that a tender similar to that supplied woith 879 was required.

'AURORA' w/n 879

'CEBOLLAR' w/n 881

There were clearly complaints received about aspects of the construction of locos 879 and 881.

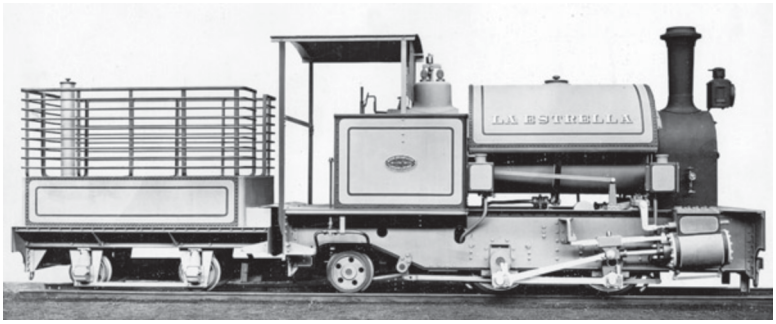
0-4-2TT d/w ?, cyls. 9x15", built by Kerr Stuart in 1908 and 1911

'Brazil' class locos. Tender appears to be designed for wood fuel.

'LONDRÉS' w/n 1048 Wrought iron firebars requested, and mica gauge glass protectors "as

glass fails under the sudden changes in temperature". Order book states: "Special points where loco no. 1048 differs from standard "Brazil' type (F.B.H.'s list). (1) Coupled wheels to be made with cast iron centres & ordinary Siemens steel tyres. (2) Crankpins to be made of Brymbo steel & casehardened. (3) Slide valves to be made of bronze (or gun metal). (4) Valve spindle connecting links to rock shafts to be made solid with double jaws. (5) Special attention is to be paid to properly shrinking on & keying the lifting levers on the weighbar shaft. (6) Rail guards are to be fitted to the engine (only) front & back, as low as possible to clear lumps off the rails. (7) Blower tips in smokebox to be made of wrought iron (½" steam pipe). (8) Roscoe's lubricators to be provided in place of the steam chest oil cups usually supplied. (9) The internal firebox is to be riveted with Low Moor iron rivets. (10) To have two sandboxes in front, & two in rear of coupled wheels. (This is as usual on later Brazil engines). (11) Smokebox door to be of steel plate dished & not cast iron. (12) An 1¼" plug cock is to be placed on the saddle tank feed connecting pipe to prevent emptying tank when pipes are uncoupled. Drainage cock to be put on pipes for emptying. (13) Water gauge column is to be fitted with a protector, with sides of mica instead of glass. (14) One 8 ton bottle screw jack to be supplied; also the oil cans are to have spring feed arrangements. (15) A tender to be attached similar to those for locos nos. 879 & 881, but with 430 gallons capacity of water tank. (Engines 879 & 881, tank was 300 gallons.

'La ESTRELLA' w/n 1174 Order books states: 9" x 15" "Brazil" tender locomotive, 30" gauge, exactly similar to loco no. 1048, but with a steel box & tubes. Painting, buffers & drawgear as before. Name to follow. Chilled cast iron wheels to be fitted to the tender & to the engine bissel truck. You will remember there were a number of complaints with regard to loco 1048, such as loose crank pins, trycocks, tube trouble &c. Our clients would also like to have forged rectangular rods, not machined, instead of round, with adjustable brasses; as cheap a form as possible. … Gauge glass protectors not required. Roscoe's lubricators & wrot. iron firebars are to be supplied. A number of other points made in the agents' letters are summarised.

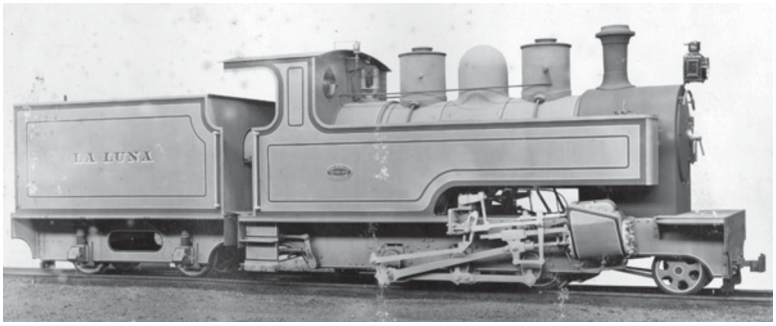


KS builder's photo, from Hunslet archive at Statfold Barn Farm.

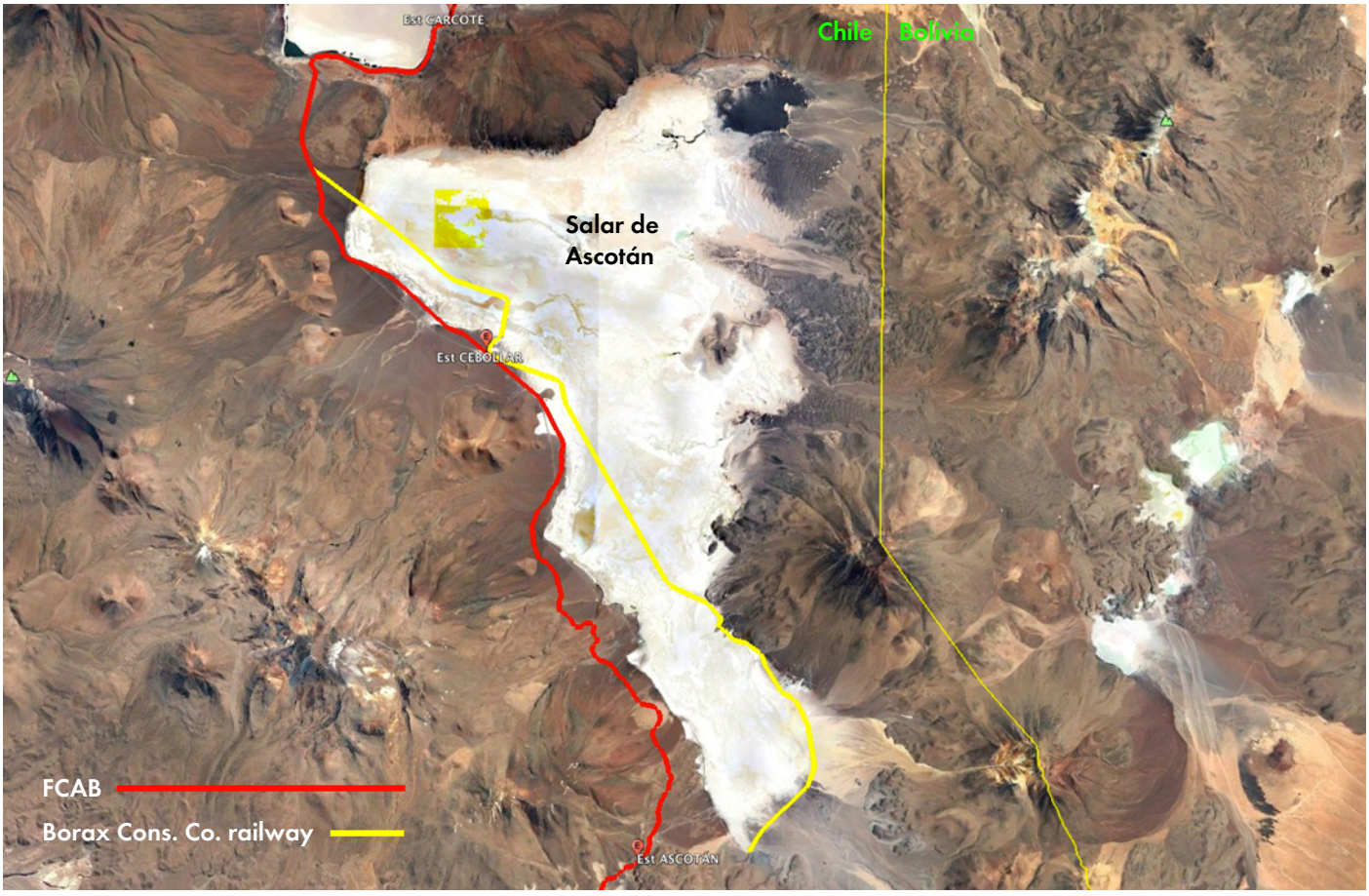
2-6-0TT d/w ?, cyls. 11x15", built by Kerr Stuart in 1912

Not an 0-6-2TT as some sources say. This loco was required to haul 140 tons at 15mph up 1 in 100, and to negotiate 100m radius cuves on the *FCAB*. In contra-distinction to the previous locos, this tender seems more suited to carrying coal.

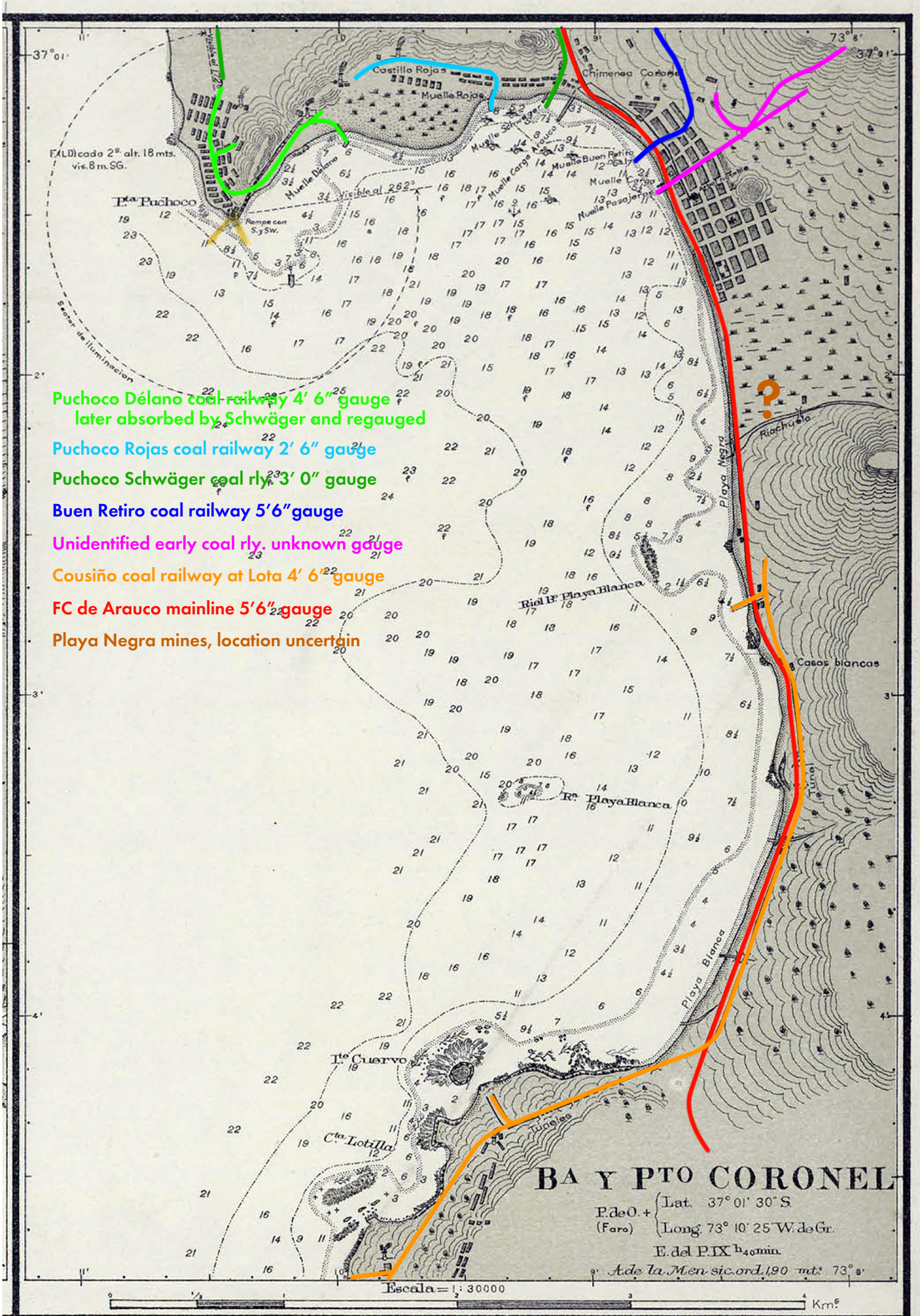
'La LUNA' w/n 1273



KS builder's photo, from the Hunslet archive at Statfold Barn Farm.



Borax Consolidated Ltd. apparently also worked the yacimiento Chilcaya, as did other independent companies. Nothing is known of any rail operations there.


Puchoco Délano coal railway 4′ 6″ gauge
later absorbed by Schwäger and regauged
Puchoco Rojas coal railway 2′ 6″ gauge
Puchoco Schwäger coal rly. 3′ 0″ gauge
Buen Retiro coal railway 5′6″gauge
Unidentified early coal rly. unknown gauge
Cousiño coal railway at Lota 4′ 6″ gauge
FC de Arauco mainline 5′6″ gauge
Playa Negra mines, location uncertain
Castillo Rojas
Muelle Rojas
Chimenea Corona
Muelle Schwäger
Muelle Carga Arauco
Muelle Buen Retiro
Muelle Carga
Muelle Pasajeros
Muelle Délano
Visible al 262°
Pta Puchoco
Rompe con S.y SW.
F.(LD) cada 2s. alt. 18 mts. vis. 8 m. SG.
Sector de iluminacion
Riachuelo
Playa Negra
Riel Bª Playa Blanca
Casas blancas
Rª Playa Blanca
Tunel
Playa Blanca
Ite Cuervo
Cta Lotilla
Tuneles
BA Y PTO CORONEL
P. de O. + (Faro)
Lat. 37° 01′ 30″ S.
Long. 73° 10′ 25″ W. de Gr.
E. del P. IX h 40 min.
A. de la M. en sic. ord. 1,90 mts. 73° 8′
Escala = 1 : 30000
Kms.

4.4.5 *Las Minas de Puchoco, de la sucesion Jorje Rojas Miranda*



Background

This location was developed in the 1840s by Sr. Jorge Rojas who was the manager of the copper smelter at Lirquen.
"*El acarreo del carbon se hace por un ferrocarril a vapor de 0,76 metros de trocha, que, saliendo de la estremidad oeste de sus pertenencias mineras, termina en la estremidad del muelle. Su largo total es aproximadamente de mil cien metros.*
Hai dos locomotoras en servicio con cuarenta carros carboneros, con capacidad para 2 1/2 toneladas de carbon cada uno.
Las locomotoras son de la fábrica John Fowler & Cía. de Leeds, de dos ejes acoplados i boggie delantero; arrastran ocho carros de carbon." [35]
This is slightly puzzling, for the only known small Fowler locos with a leading pony truck which may have come to Chile were two 1883-built 2-4-0Ts for 2' 0" gauge, nos. 4666-7. These both had the Greig & Beadon jackshaft drive, The principal period of construction of narrow gauge 2-4-0Ts by Fowler was in 1881-1883, but whilst the list from that period is not totally complete there are no such locos shown as unequivocally for 2' 6" gauge and with their purchasers possibly in Chile.
"Puchoco Rojas. – This property lies immediately to the north of Coronel Town, and is bounded on the north and west by the Schwager property, on the south by Coronel Bay, and on the east by various small properties. The total area is 2,965 acres (1,200 hectares), and the colliery was the first opened in the Coronel district. The ground belonged to Francisco Mora, who bought it from Indian chiefs in 1825. Up till the time of his death in 1892, Miranda developed mines and pits in various parts, and afterwards the concern was carried on by his family until 1901, since when it has been worked on behalf of creditors… The coal is discharged from the mine-boxes into cars containing 12 tons, and taken by a small locomotive on a 30-inch gauge railway to the pier, where the mineral is delivered into barges." [39]
There are puzzles here, for the reports above, whilst concurring on the use of the 2' 6" gauge, disagree wildly on the size of the wagons.

4.4.6 *El FC de Maquegua a Laraquete*

Background

Gauge 2' 0"or 2' 6"? Mines at Maquegua developed by Van der Heyde and Prado from 1874, employing 800 men. 40 km or so in length from Maquagua via Quilachanquin to a jetty at Laraquete, or possibly 34 km [source 37, in issue of Sept. 1907]. No information on the locos used, but see one of the quotes below. Replaced later by the Arauco railway. Source [23] says 20 km long. [16] says built 1873 for coal carrying.

Por último, menciona remos el ferrocarril de Laraquete, que por su extensión es bastante más importante que todos los otros. Esta línea parte del muelle de Laraquete, que mide como 150 metros de largo y se dirige hacia el sur pasando por la villa de Carampangue, para torcer después un tanto al oriente y dirigirse al establecimiento de :Maquehua, situado en las márjenes del río Elías, afluente del Carampangue. La línea tiene 40 kilómetros y su servicio se hace con locomotoras ténder que arrastran entre 20 y 30 carros en las gradientes de 2% que tiene la línea: su trocha es de 0.m61. Esta línea, á más de ser industrial, es la que hacía el servicio de pasajeros para el sur y todo el interior de Arauco, pero á la fecha y con la construcción de la gran línea de Concepción á Curanilahue, que corre casi paralelamente con ella, sus servicios se encuentran anulados y es probable que tenga que suspender su tráfico. [33]

"Finally, the Laraquete railway must be mentioned, which by its length is much more important than all the others. This line starts at the Laraquete pier, which measures about 150 metres long, and heads south past the village of Carampangue, to twist afterwards somewhat to the east and head to the establishment of Maquehua, located on the banks of the Elías river, tributary of the Carampangue. The line is 40 kilometers long and its service is provided by tank locomotives that drag between 20 and 30 cars on the 2% gradients that the line has. Its gauge is 0.m61. This line, besides being industrial, is that which provides the passenger service for the south and all the interior of Arauco, but now with the construction of the great line from Concepción to Curanilahue, which runs almost parallel with it, its services are terminated and it is likely that it will have to suspend its operations."

"*El carbon era llevado al puerto de Laraquete por un ferrocarril de 20 kilómetros de largo; su trocha era de 0,77 m.; sus rieles de acero con peso de 14 kilogramos por metro. Era servido por seis locomotoras cuya potencia variaba entro 10 i 20 C. V. de fuerza. Arrastraban de 100 a 150 toneladas de carbon.*

Contaba con treinta carros carboneros para el trasporte. En el puerto de Laraquete habla un muelle para el embarque.

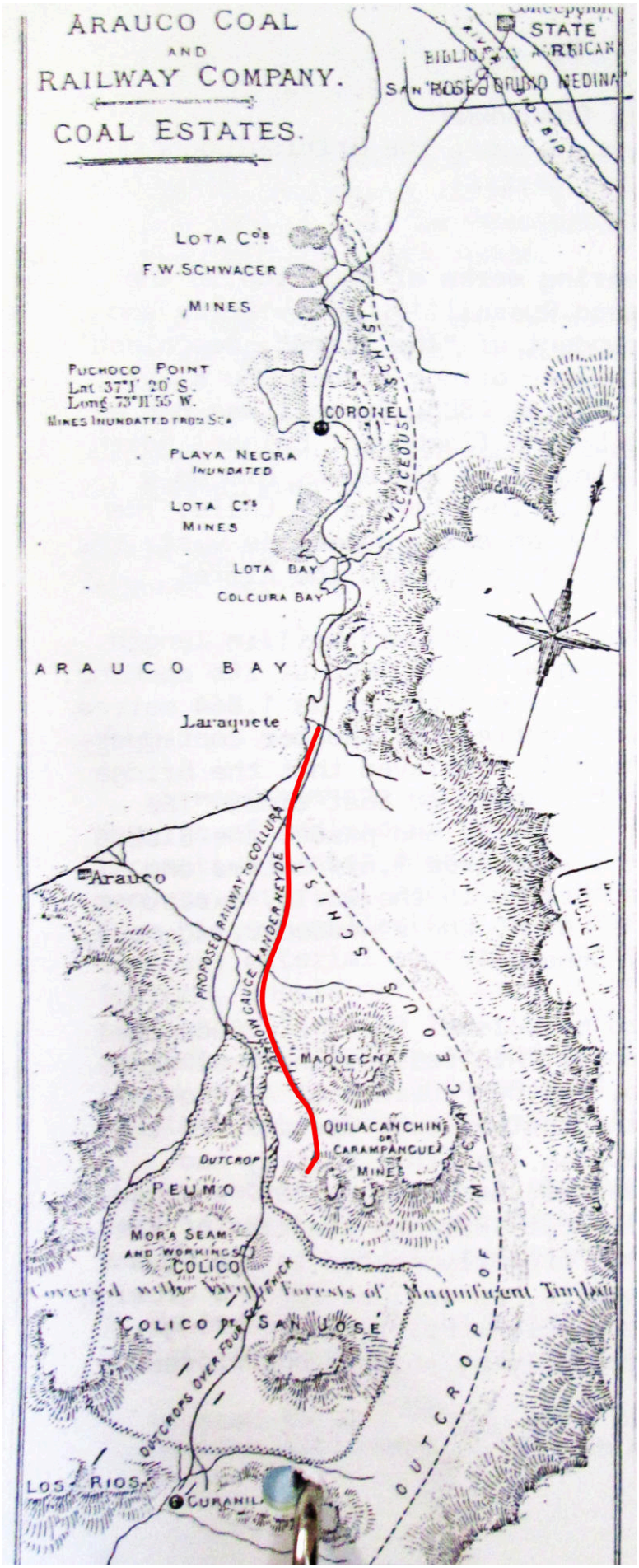
En 1888 la Compañía Arauco Ld. dueña de las minas de Peumo, San José de Colico i Curanilahue, compraba las minas de Maquehua i al poco tiempo abandonó completamente su esplotacion, dejó derrumbar los piques i labores, miéntras que retiraba los rieles del ferrocarril a Laraquete.

Desde aquella época este mineral ha quedado completamente abandonado." [37, issue of Oct-Nov 1907] Note the reference to the gauge of 0.77m, which conflicts with the usual asssumption that this was a 2' 0" or 60cm gauge railway. The rio Elias would seem to be one of the tributaries of the Río Carampangue which joins that river south of Ramadillas.

Another reference to this railway, [also in source 37, issue of Sept 1907] states that there were 34 km. of track. It was suggested that the mines were abandoned by 1889.

"The Maquegua and Quilachanquin fields, the estates and properties of the Carampangue Company, consisting of 31,000 acres freehold and 23,000 acres under coal lease, were purchased by the (Arauco) company for £175,000, including the narrow gauge railway rollings, &c., to Laraquete. For a good many years a narrow gauge mineral line had been employed for the conveyance from the Carampangue properties of coal to Laraquete, where there is a good pier," [*A visit to Chile and the nitrate fields of Tarapaca, etc.*, by ... Russell, William Howard, Sir, 1820-1907]

"*Para evitar verse envuelta en cuestiones judiciales, largas i engorrosas, la Compañía Arauco se resolvió a comprar la propiedad carbonifera i territorial que formaba las minas de Maquehua, con sus maquinarias, su ferrocarril a Laraquete i todos sus anexos, en la crecida suma de 175.000 libras eslerlinas.*" [?? May 1908]



The red line on this 1889 map shows the Quilachanquin and Macuegua to Laraquete narrow gauge coal railway.

4.4.7 *El FC de Arauco*

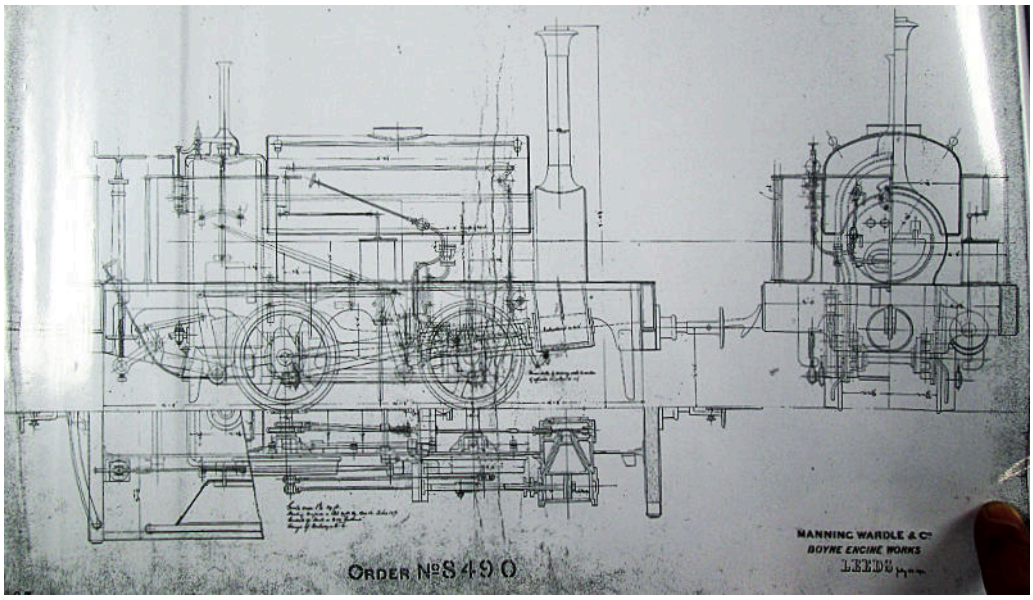
Although the Arauco railway was of 5' 6" gauge, the three 2' 6" gauge locos listed below ended up in the fleet during the years between 1900 and 1908, judging by their positions in the railway's loco numbering.
It is possible that they originated with a mining railway later absorbed by the Arauco company. The Maquegua, Carampangue, Laraquete railway mentioned above is a possibility, as is the Peumo to Quilachanquin line. Alternatively, in 1893 there were reported to be three locomotives working for a coal company with ten kilometres of sidings (route?) at Playa Negra north of Lota. There is nothing to definitely link these three to that location, but it is certainly an option [37]. A third possibility would be the Rojas mines on the northern edge of Coronel town, which had a rail system of 2' 6" gauge.

0-4-0ST d/w built as 30 or 31", cyls. 7x12", built by Manning Wardle in 1874 (21), 1883 (15), and 1885 (23)

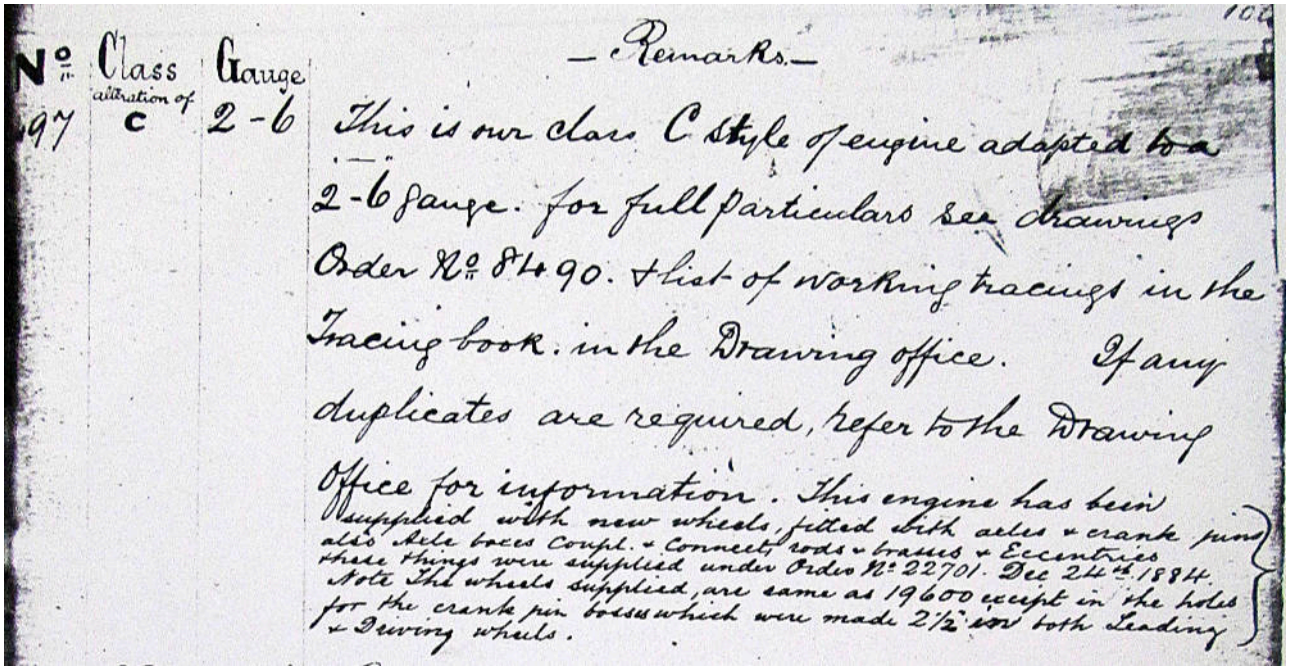
All three works numbers listed below were built as 2' 6" gauge. They all seem to have gone to Chile. The identification of these locos relies on the fact that both **'ROSITA'** and **'ELVIRA'** were constructed with those names, though the MW list only states that they were built for Chas. Cowan and Rose Innes of Birkenhead respectively. The latter was certainly an agent working in Chile. 497 on the other hand had definitely been delivered via Bates Stokes & Co. of Valparaiso. The driving wheels were recorded as 0.92m or approx. 36" in 1910.

'ROSITA'	w/n 877	"Nearly the same as no. 497." Later joined *FC de Arauco* fleet and was numbered **15** after 1900. New steel firebox and iron roof stays supplied in December 1907.
'MARÍTA'	w/n 497	Had been ordered as no. **1** for unknown customer. Later joined *FC de Arauco* fleet and was numbered **21** around 1908.
'ELVIRA'	w/n 954	Same as no. 877 apart from a special canopy, cokeboxes and footplating. Later joined *FC de Arauco* fleet and was numbered **23** after 1908. Last spares specifically for this loco ordered in 1920.

They must have joined the Arauco fleet by about 1900, and then might have been rebuilt to broad gauge, though it is equally possible that the *FC de Arauco* had a narrow gauge network maybe at a mine and nevertheless numbered the locos within the main broad gauge sequence. They retained their names under Arauco ownership, but also gained the numbers mentioned.



The Hunslet archive at Statfold Barn Farm, Staffordshire, England, has a range of Manning Wardle drawings. This one shows MW 497, the first-built of these three narrow gauge engines that were later inherited by the Arauco railway.

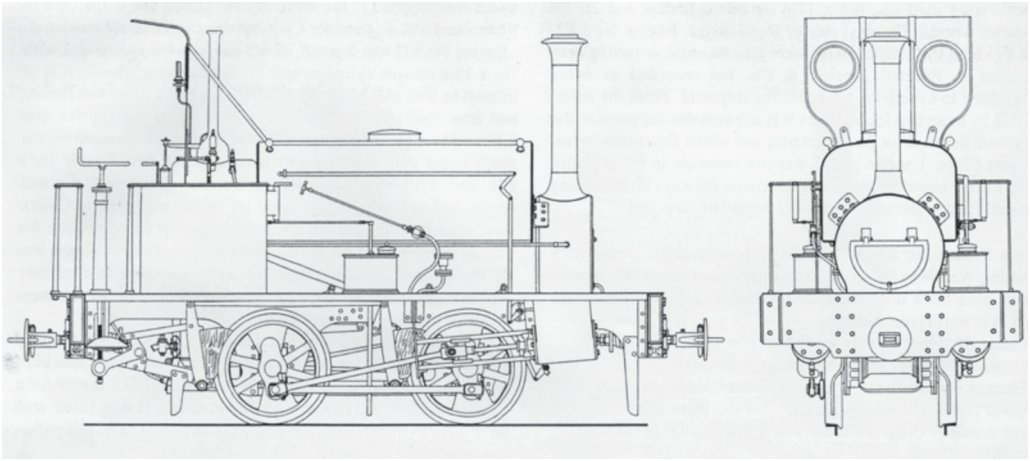


No.	Class	Gauge
497	C (alteration of)	2-6

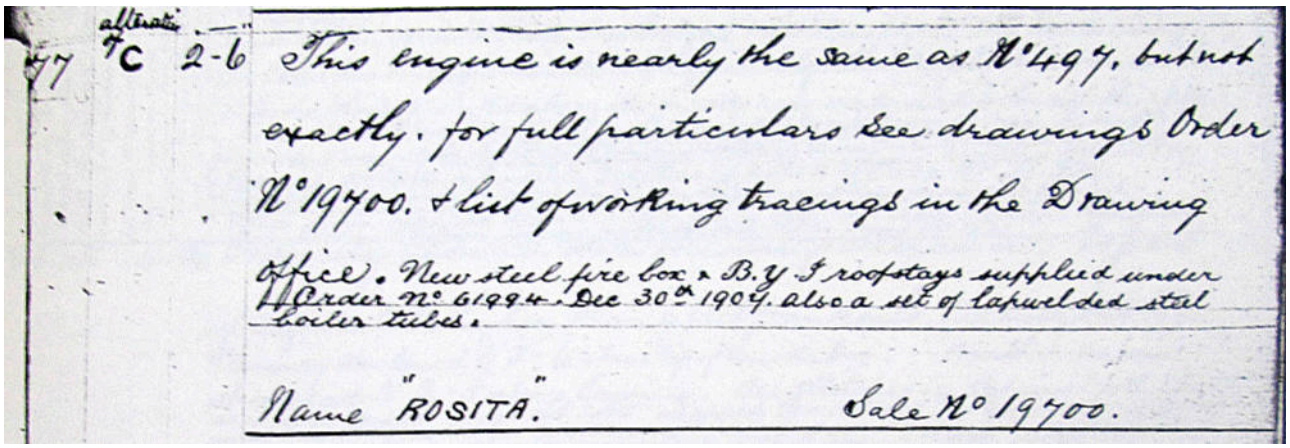
— Remarks —

This is our class C style of engine adapted to a 2-6 gauge. For full particulars see drawings Order No. 8490. & list of working tracings in the Tracing book. in the Drawing office. If any duplicates are required, refer to the Drawing Office for information. This engine has been supplied with new wheels, fitted with axles & crank pins also Axle boxes Coupl. & Connect. rods & brasses & Eccentrics these things were supplied under Order No. 22701. Dec 24th 1894. Note The wheels supplied, are same as 19600 except in the holes for the crank pin bosses which were made 2½" out both Leading & Driving wheels.

The Manning Wardle notes re loco 497.



MW 877. Note the addition of a cab spectacle plate, slightly different sandboxes and link-and-pin couplings instead of choppers. This drawing is from Fred Harman's book *The Locomotives built by Manning Wardle and Company, volume 1*, Century Locoprints.

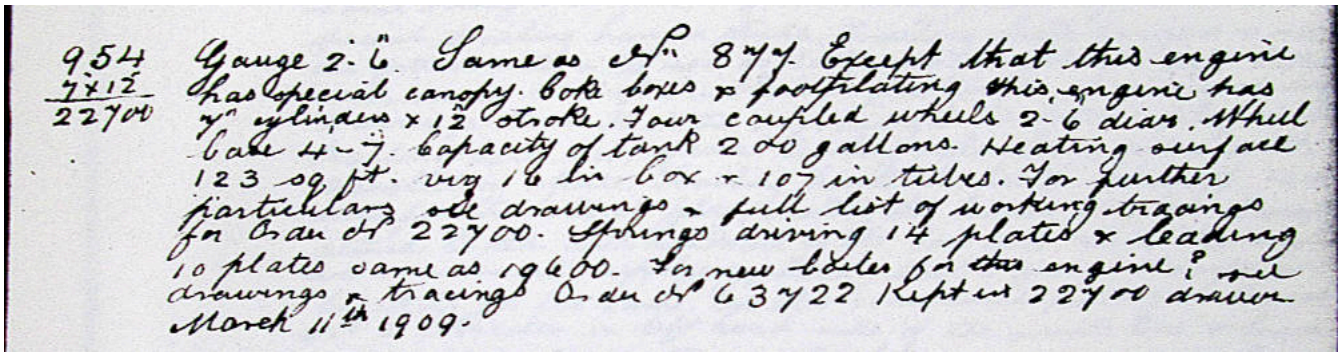


No.	Class	Gauge
877	alteration of C	2-6

This engine is nearly the same as No. 497, but not exactly. for full particulars see drawings Order No. 19700. & list of working tracings in the Drawing Office. New steel fire box & B.Y. & roofstays supplied under Order No. 61994. Dec 30th 1904. also a set of lapwelded steel boiler tubes.

Name "ROSITA". Sale No. 19700.

The Manning Wardle notes for loco 877.



954
7×12
22700

Gauge 2-6. Same as No. 877. Except that this engine has special canopy. Coke boxes & footplating this engine has 7" cylinders × 12" stroke. Four coupled wheels 2-6 diam. Wheel base 4-7. Capacity of tank 200 gallons. Heating surface 123 sq. ft. very 16 in box & 107 in tubes. For further particulars see drawings & full list of working tracings for Order No. 22700. Springs driving 14 plates & leading 10 plates same as 19600. For new boiler for this engine? see drawings & tracings Order No. 63722 Kept in 22700 drawer March 11th 1909.

The Manning Wardle notes for loco 954.

4.4.8 Various less well-known mines

La Cía. Carbonífera de Carampangue – El FC de Peumo a Quilachanquin

Background

2' 6" gauge. The 1903 *Estadistica Minera* states that the mines were owned by Castellon y Martinez, were based on the pique Adela and had 4 km of railway to *estacion Peumo* on the *FC de Arauco*.

"*Para el trasporte del carbon desde las canchas hasta la orilla del rio Carampangue, frente a la estacion Peumo del ferrocarril de la Compañía de Arauco Limitada, hai un ferrocarril a vapor de 0,75m. de trocha.*
La traccion se hace con una locomotora de 50 C. V. de fuerza , cuyo peso adherente es de 9 toneladas.
Arrastra de 6 a 8 carros carboneros con capacidad de 4 1/3 tonelada cada uno," [Source 37, February 1908]

Another source suggests that this railway was 6 km long, and was owned by the *Cía. de los Ríos de Curanilahue*. Confirmation is needed that this was distinct from the Laraquete to Maquegua railway mentioned a couple of pages earlier.

A 1905 report on these mines by don Guillermo Raby [44] made no mention of any existing railway (though there was an *andarivel*) but estimated the costs of building a 5 km broad gauge branch needing two locomotives.

The 1913 *Boletin Minero* implies that the mines of Peumo were no longer working.

Les Mines de cuivre de Magallanes – Cutter Cove

75cm gauge. At western end of Brunswick peninsula.

0-4-0WT d/w ?, cyls. ?, built by O&K in 1904

50hp locos. Notes in [13] give the names **'MOSTRODIRASA'** and **'ABREZZO'** for these, which seem highly unlikely.

?	w/n 1187
?	w/n 1188

Proposed railway Caleta Pan de Azucar to La Exploradora

Background

2' 6" gauge. In 1904 Ing. Jorge Heuisler surveyed a route from the Caleta Pan de Azucar north of Chañaral, eastward for 145 km. to a terminus at the copper mine site of La Exploradora. The line would have closely paralleled the Carrizalillo to Las Bombas horse-drawn line at one point. A 56km extension to Los Infieles had also been suggested, but this had not been surveyed in any detail. [Report found in Antony Gibbs & Sons records at London Metropolitan Archives].

Sr. Heuisler considered that three 'Consolidation' locos, ie. 2-8-0s, would be necessary for the initial working of the railway, along with 110 wagons and one passenger coach.

The backers of this proposal are not known, and nor is any detail about how far the scheme progressed.

The Huara to Chusmiza sulphur railway

Background

In the mid-1930s a 2' 6" gauge railway was planned from Huara on the NRC north-eastward for 70 km. to Chusmiza where there are hot springs and therefore sulphur deposits.

Sr. Juan Vásquez posted an explanation of this scheme on the Facebook page *Memoria Visual de Iquique y la Pampa* in May 2020. The following is a translated synopsis:

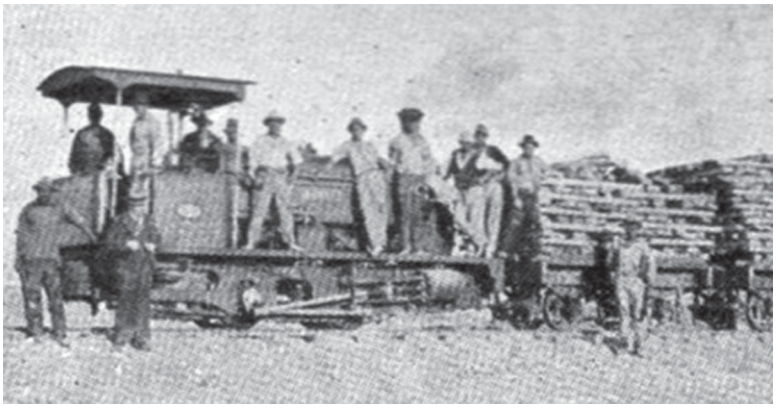
The ambitious proposal, called the "*Tren Minero - Agricola - Industrial*", was presented by Don Luis Advis Lobos, Director of the *Instituto de Fomento Minero e Industrial de Tarapacá*. The *Instituto*, created in the third government of Arturo Alessandri Palma, tried to strengthen the province financially, during the decline of the nitrate industry. At its foundation it had the triple aims of encouraging the large-scale exploitation of sulphur, gold, silver and copper deposits in Tarapacá; developing industrially the agriculture of the area; and strengthening in the short term "*...el acercamiento a la frontera y un paso seguro hacia el anhelado ferrocarril a Bolivia, pues el sector recorrido hasta Chusmiza salva una de las partes más difíciles de este trazado*".

For this purpose, the *Instituto* requested that all the railway equipment that had worked between Huara and Caleta Buena and between Patillos and Lagunas, be entrusted to the engineer Luis Báez, who had worked on the Iquique - Pintados railway. The initiative was supported by Finance Minister Gustavo Ross. The works began at a cost of $4 million (pesos) of the time, moving the material to Huara, where a two-storey building was built that would serve as a station. The new line was advanced 30 km., to the height of the *pueblo* of Tarapacá. Despite the important advances, the works were paralysed at the change of government and the assumption of the Popular Front in 1938.

This project had its first setback owing to the climate. That year the evil called the *Invierno Boliviano* was particularly strong. In this regard, the newspaper *El Tarapacá* in its March 5, 1938 edition reported "*...las aguas que arrastran esta quebrada (Tarapacá) han llegado hasta las cercanías del poblado de Tarapacá, después de destruir casi por completo los terraplenes del F C. Azufrero de Huara a Chuzmiza...*".

In view of the halting of the works, the government announced on July 31st 1941 that it cancelled Decree 348 as it related to the delivery of the equipment of the Agua Santa Railway to the *Instituto*. By way of compensation, the government issued a Supreme Decree dated November 11, in which it finally handed over to the *Instituto* the equipment of the Patillos railway. Thus, on November 23, these assets went to strengthen the *Instituto*'s assets.

Eventually the project ended up being completely abandoned.



This loco looks very like one of the MW 0-4-0STs supplied to the Anglo-Chilean Nitrate & Railway Co. in 1895, and later used on the *FC de Agua Santa*. The name-plate on the tank is short enough to be that of MW 1296 **'BURNS'**, though the cabside plate is smaller than that originally supplied with the loco.

El FC Challacollo á Cerro Gordo

Background

Gauge 2' 6". Sotomayor, Carrasco y Cía. exploited the silver veins in the Cerro Gordo and Challacollo hills south-east of Lagunas from 1887. In 1896 they were awarded a concession to build and operate a railway and an aerial ropeway to improve access to the area. The rail line was initially 20.6 km. long, and almost entirely straight, but was then extended to the Oficina La Granga which was on a Nitrate Railways branch. The extension was around 15 km. long. Within a year the owning company had been taken over by the Gildemeister trading house. The mines closed around

1906. The locos were probably transferred to Gildemeister nitrate oficinas in the region.

0-6-0T d/w ?, cyls. ?, built by Jung in ?

Ordered via Gildemeister y Cía.

?	w/n 273
?	w/n 274

4.5 Industrial locations

4.5.1 *Les Hauts Forneaux et Acieries du Chile,* Corral iron and steel works

Background

750mm gauge. This was the first ironworks in South America. It was promoted by French owners, with the intention of using wood from the surrounding forests in the furnaces, under the Prudhomme process. As the wood proved to have a much higher water content than had been expected, eventually the plan changed to burning charcoal that had been first processed up in the woods before being brought down to the plant. The Corral plant closed around 1958 and was seriously damaged by the tsunami during the Valdivia earthquake of 1960.

0-4-0T? d/w ?, cyls. ?, built by La Meuse in 1909

? w/n 2178

? w/n 2179

0-4-0T d/w ?, cyls. ?, built by O&K in 1910

For the *Société des Hauts Fourneaux et Acieries de Chili.* 60hp for 750mm gauge.

? w/n 4243

0-6-0T d/w ?, cyls. ?, built by O&K in 1911

O&K list says metre gauge. Delivered via August Gaultier of Paris for Chile. 125hp. Not yet confirmed for this customer, but very likely.

? w/n 5196

? w/n 5197

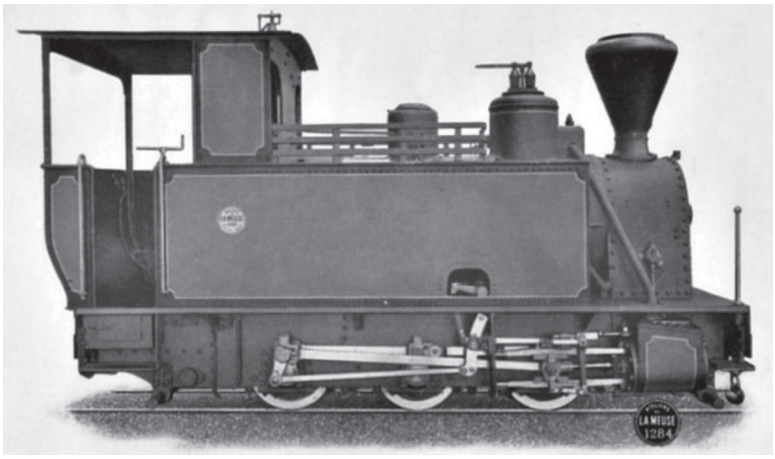
? w/n 5198



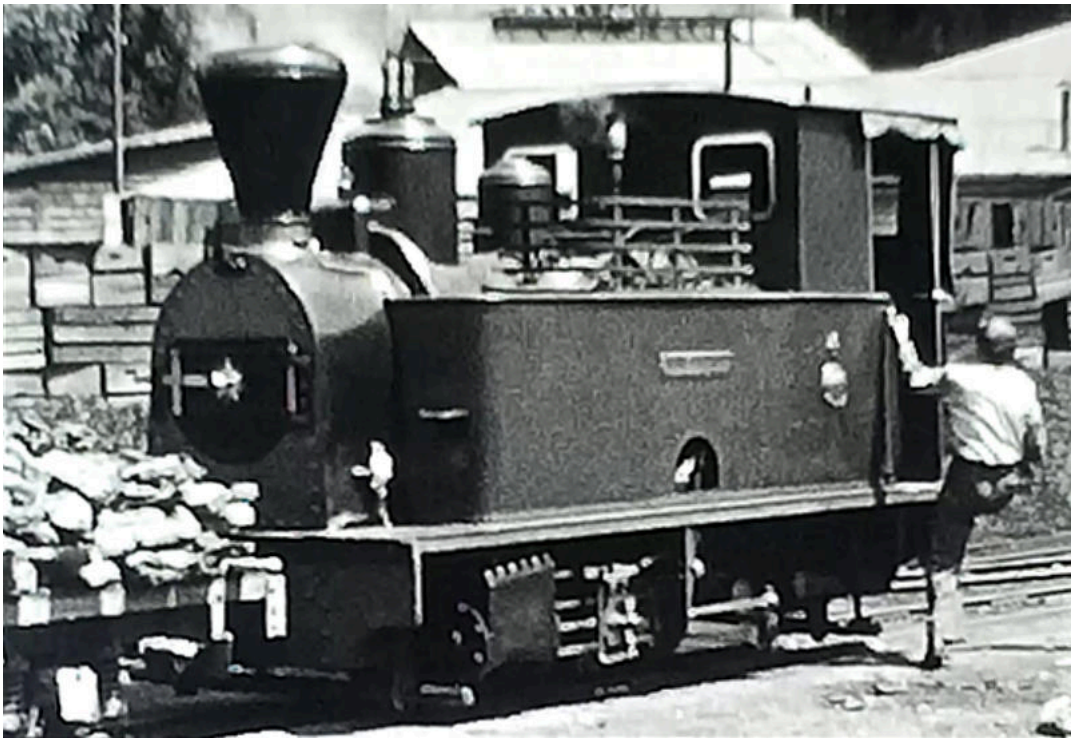
Enlargement from a photo showing the compound full of scrap within Corral fort in the late 1950s after closure. On the left is one of the O&K locos, still largely intact, whilst behind it lies a La Meuse with its cab roof lying loosely on top.



One of the La Meuse locos is seen silhouetted in this poor photo,
which nevertheless enables comparison with other engines by that builder.



This catalogue image shows a La Meuse 0-6-0T which, whilst rather earlier than
those supplied to Corral, is likely to have looked rather similar.



This photo appeared unexpectedly on Facebook in late 2024, posted

by Marco Barrientos Reyes to the Caleta Amargos page. Supposedly it shows one of La Meuse locos in service at Corral around 1940. It rather looks as though the locomotives might have borne names. Note also differences from the 'silhouette' photo above: notably a different shaped dome and chimney, seemingly a different smokebox, and the exposed regulator and steampipes similar to those seen in the catalogue photo but not in the Corral image above it..



This 1936 sketch map shows the Corral low level rail system at more-or-less its full extent.

The high level rail system

A double acting incline, often referred to as an *andarivel* or cableway, led up the hillside behind the plant to give access to a rail system across the hilltops to the south. This served to bring in the cut wood and later the pre-processed charcoal, for use in the furnaces. Some sources imply that locomotives were used up on the high level tracks.

The photo shows the incline leading up from Aguada to Quitaluto



Locos at El Tofo?

This company originally owned the big iron deposits at El Tofo north of La Serena, before leasing them to the Bethlehem Chile Iron Mines Company (see section 2.1.6 in the Intermediate Gauges file). Whilst under French ownership there were "Decauville" lines on the terraces in the mine, and an *andarivel* to transport the ore to the coast [37, issue of Jan-Feb 1915]. It is possible that this railway network was of 750mm gauge rather than 600mm, and even may be that some of the locos listed above were purchased for use originally at El Tofo rather than at Corral.

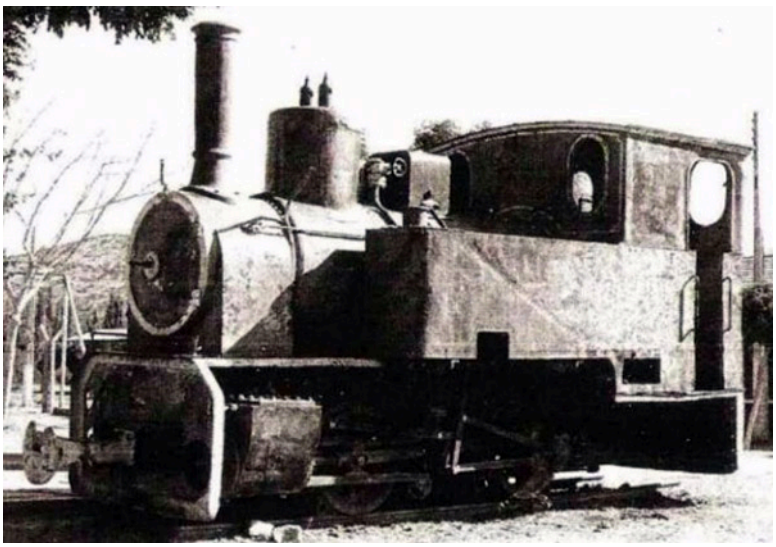
4.5.2 *El Cemento Cerro Blanco de Polpaico SA*

At Polpaico north of Santiago. 762mm tracks linked quarry to factory.

0-4-0T d/w ? cyls. ?, built by O&K in 1911 and 1913

Ordered for the Amelia Nitrate company, and second-hand to this location [9].

?	w/n 5085	Plinthed in school playground at Polpaico in 1987.
?	w/n 6525	Plinthed in playground at Villa Gildemeister at Quilicura in 1987 [9].



4.5.3 Industrial oddments

EmPorChi Puerto Arica

0-4-0T d/w ? cyls. ?, built by O&K

No further details known.

?	w/n ?	Came from *FC de Tacora*. Eventually to municipality for preservation but later scrapped [16].

0-6-0WT d/w ? cyls. ?, built by O&K

Arrived circa 1950 from an *oficina* in Lagunas area.

?	w/n ?	

Wellman Iron and Steel

2' 6" gauge. Company was principally located in Pennsylvania. Possibly not active in Chile, though certainly one loco came to Chile for a while.

0-4-0T d/w 26", cyls. 7x12", built by Baldwin in 1892 and 1893

BLW class 04 08 C 32 and 34. The second of these was exhibited in Santiago at a mining exhibition in 1894 before delivery.

6	w/n 13009	Connolly's list says sold on to Tidewater Steel Co., and then to the Southern Iron & Equipment agency, then to Lauren Turnene Co., and finally to Cuba. The loco may therefore not have actually worked in Chile.
'CHILE'	w/n 13352	Connolly's list says sold on to Hemenway & Browne (who were agents). It is possible that the loco was re-exported elsewhere after the exhibition.

A metre gauge Baldwin loco delivered via a Tomas Stillman in Talcahuano in 1895, and possibly for the line carrying rock to the new naval dry dock there, was specified as to be similar to class 04 08 C 34 that had been exhibited in Santiago. See section 3.5.4 in the metre gauge file.



This seems to be an illustration from an advertisement, probably showing the second of the two Wellman Iron & Steel engines listed above.

South American Steamship Co., Valparaiso

Location of rail system unknown. 2' 6" gauge.

The following loco went to Chile via Rose Innes & Co. Customer and destination unknown. However, in November 1894 a new replacement boiler 7346 for this loco was ordered from Fowler by Thos. Dewsbury on behalf of the South American Steamship Co. in Valparaiso. The boiler seems to have been ready for inspection on Feb. 22 1895.
The South American Steamship Co. was a Chilean company which may well have had interests in Chilean coal mines.

0-4-2ST d/w ?, cyls. 8x12", built by Fowler in 1886

Despatched 20-6-1886.

? w/n 5231

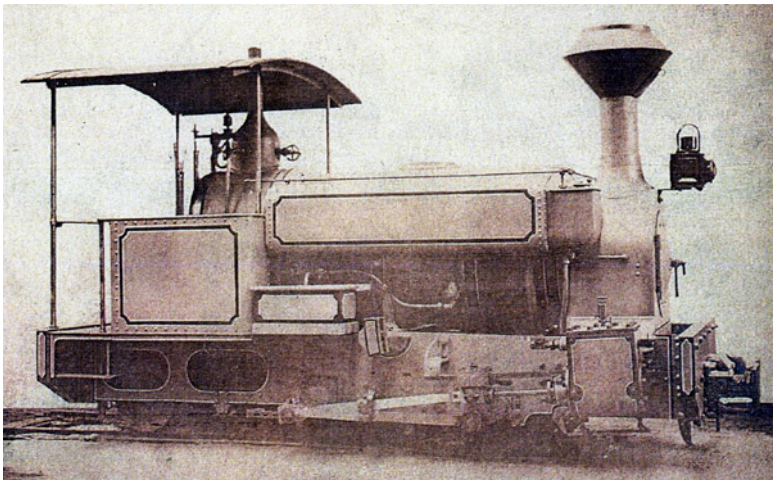


Photo from the Fowler archive at the Museum of English Rural Life at the University of Reading.

The Huanchaca Company

For the Huanchaca Company's silver smelter at Playa Blanca in Antofagasta please see page 29 in the *FCAB* section 4.2.2.

4.5.4 Agents for unknown or foreign customers

Beverley Peace & Partners, Antofagasta

This company, the local office of a sales agent back in the UK, imported several Hunslet WD-type 4-6-0Ts around 1920 for Antofagasta or Iquique. Info from Ian Hughes of the War Office Locomotive Society.

4-6-0T d/w ?, cyls. ?, built by Hunslet during and after WW1

These were some of the many built for the 2' gauge War Department light railways of the Great War, but too late for use. Some were only assembled after hostilities had ended, including these and others for 2' 6" gauge.

WD 3241	w/n 1357	Sold on to Huanchaca company in Bolivia for the *FC Uyuni a Pulacayo*.
WD 3243	w/n 1359	Sold on to Huanchaca company in Bolivia for the *FC Uyuni a Pulacayo*.
WD 3251	w/n 1367	Sold on to Huanchaca company in Bolivia for the *FC Uyuni a Pulacayo*. In 1943 when there was shortage of motive power on the *EFE* 60cm gauge lines, acquired by *EFE* via Señor Juan Barcelo and re-gauged at MSB. See *EFE* 60cm gauge section for later history.
WD 3252	w/n 1368	Sold on to Huanchaca company in Bolivia for the *FC Uyuni a Pulacayo*.
WD 3257	w/n 1373	Seen and photographed at *Oficina Iris* during 1920s, but puzzlingly also supposed to have been in service on Mauritius in 1927.
WD 3258	w/n 1374	Sold on to Huanchaca company in Bolivia for the *FC Uyuni a Pulacayo*. In 1943 when there was shortage of motive power on the *EFE* 60cm gauge lines, acquired by *EFE* via Señor Juan Barcelo and re-gauged at MSB. See *EFE* 60cm gauge section for later history.

The London Nitrate Co. (see above), purchased two Hunslet 4-6-0Ts from the Barnbow WD dump in 1920, also via Beverley Peace & Partners. The locos were to be inspected by Strain & Robertson, and then the buffing gear was to be altered on arrival in Chile. Telegrams state that they had not yet been received by Hunslet from Barnbow in March 1920. Identities of these locos are not known.

W. & J. Lockett, agents and ship-owners

The many locos ordered through this agent for known customers have not been listed here.

0-4-2ST d/w ?, cyls. 8x12", built by Fowler in 1889 and 1890

To Chile, or maybe Peru?

?	w/n 5949	Despatched 1-6-1889.
?	w/n 5950	Despatched 1-6-1889.
?	w/n 5951	Order no. 5/175:5. Despatched 15-2-1890.

Fowler 0-4-2T no. 6341 of 1890, went via W. & J. Lockett to Pisagua. Named **'CAROLINA'**, cyls. 8x12". Possibly for *Oficina Carolina*?

Rose Innes, shipping agents in Valparaiso

This nineteenth century agent imported two locos by Robey of Lincoln, probably at some point in the 1880s. The final customer is at present unknown. These locos are considered in more detail in section 4.6 following this one.

4.6 Unidentified 2' 6" or 762mm locos, followed by 750mm gauge engines

2'6" or 762mm

Andrew Barclay

The Andrew Barclay records, in the University of Glasgow Business Studies archives, contain detailed specifications prepared for Baburizza & Co. in December 1925. The designs, all for 2' 6" gauge, include 0-6-2T, 2-6-0, and 0-6-4T engines. However, there is as yet no sign that AB actually built those locos.

Avonside Engine Co.

w/n 1966 of 1925, 0-6-2T, d/w ?, cyls. ?, via Strain & Robertson.
w/n 1443 of 1904, 0-4-0T, 2' 6" gauge. via/for Alex Young & Co., destination unknown possibly Chile.

Bagnall

0-4-0 d/w ?, cyls. 4½x7½", built by Bagnall in 1884

2' 6" gauge. Ordered via Bates Stokes & Co. via Straits of Magellan. Spares sent with 1748, see below, in 1904.

? w/n 418

0-4-0ST d/w 13 3/8", cyls. 4½x7½" built by Bagnall in 1904

2' 6" gauge. Ordered via Hainsworth Watson & Co. In The Morning Post for 5 August 1887 Edwin Hainsworth was a director of London Nitrate and then in *The Morning Post* for 8 December 1888 I found William Newall Watson was a director of San Jorge Nitrate. Hainsworth Watson also purcchased Fowler boilers for London Nitrate.

? w/n 1748

Baldwin

2-4-2ST d/w 37", cyls. 11"x16", built by Baldwin in 1894

Ordered via Balfour Williamson for Chile.

'MASCOTA' w/n 14115 Shown in Connolly's BLW list as 2-4-2 for *Ingenio Ceiba*. However, 'Ingenio' is not a usual Chilean industrial designation.

Black Hawthorn

0-4-0+t d/w 24.5", cyls. 7x12" oc, of 1896

Ordered via Torrome Sons & Co. London, for Iquique. Possibly for *oficina La Valparaiso* near Huara.

'VALPARAISO' w/n 1135

Borsig

w/n 5686 of 1905 762mm gauge Bn2t Schlubach & Co of Hamburg for Chile **'CHORILLOS'**, then to Bolivia? or possibly to Peru, as there is a district of Lima known as Chorillos. Borsig list implies preserved at Cochabamba.

Fowler

0-4-2T d/w ? cyls. 8x12", built in 1908

Via Balfour Williamson for Chile.

? w/n 11574-5

Glover Machine Works, Marietta, Georgia

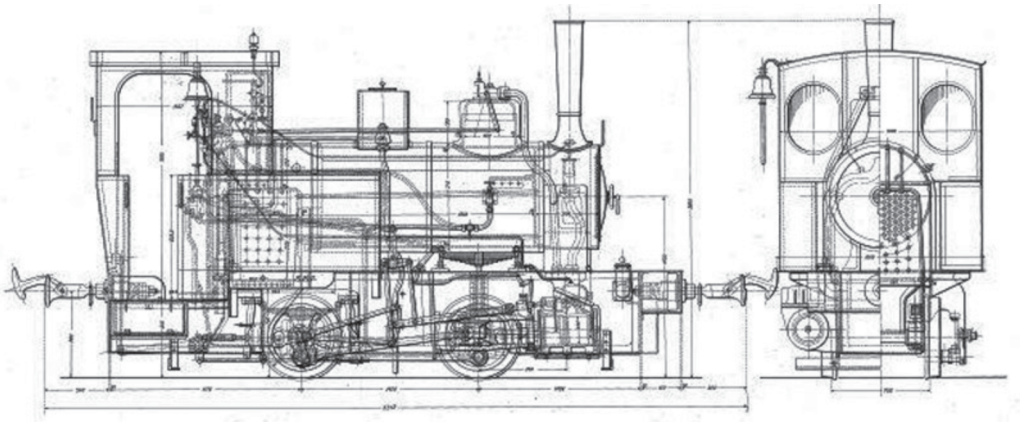
0-4-2T w/n 121636, of 1918, cyls. 12x16" for B. J. Antofagasta & Co., their no. **1**, at Mejillones, Chile.

Hanomag

w/n 4344 of 1905 Dt 762mm gauge, Arthur Koppel for Chile **'ORIENTE'**. Possibly for *Oficina Oriente*?
w/n 4673 Ct 750mm gauge for Saavedra Benard, 1906
w/n 10432 of 1925, Cn2t 762mm gauge, for Chile.

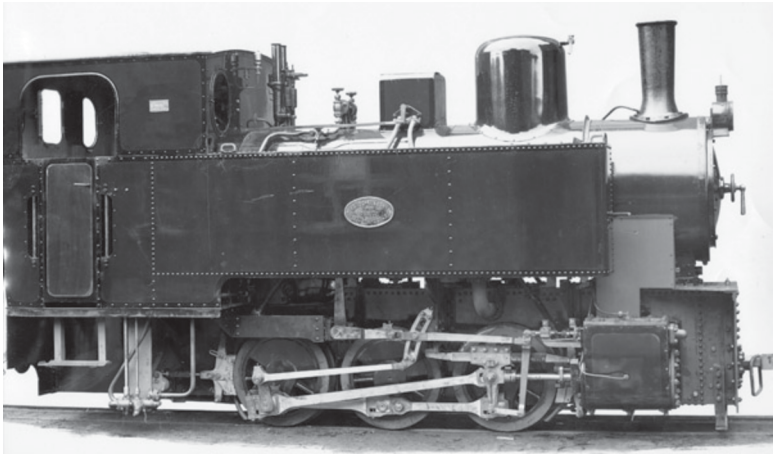
Henschel

w/n 6710-12 Bt 762mm gauge, 1904, via Gebr, Vorwerk & Co.
w/n 7065 of 1905, Bt 762mm gauge, Gebr, Vorwerk & Co. Hamburg for Chile.
w/n 8842 Bt 762mm gauge, 1908, via Gebr, Vorwerk & Co.
w/n 11358 of 1912, Ct 762mm gauge, Gebr, Vorwerk & Co Hamburg for Chile.
w/n 11188-91 Bt 762mm gauge, 1912, via Gebr, Vorwerk & Co. for Antofagasta.



High resolution copies of this drawing are available from the Henschel Museum, at https://www.henschel-museum.com/Lokomotiv-Archiv/Uebersichtszeichnungen/Dampflokomotive/ and then click on 'Schmalspur' to find the narrow gauge drawings.

w/n 11358 Ct 762mm gauge, 1912, via Gebr, Vorwerk & Co.
w/n 11406-8 Ct 762mm gauge, 1912, via Gebr, Vorwerk & Co.
w/n 12192 of 191?, Bt 762mm gauge, Gebr, Vorwerk & Co. Hamburg for Chile.
w/n 19143-4 of 1922, Bn2t 762mm gauge, Vefaspoor for Chile, or possibly for Vefaspor and Shahabad Cement Co.in India.
w/n 19284 Ct 1922, 762mm gauge, via Gebr. Vorwerk & Co.
w/n 20343 of 1924, Ct 762mm gauge, Gebr. Vorwerk for Iquique. One or more of these 0-6-0Ts had d/w 720, cyls. 280x360mm and oil firing, whilst another had d/w 800mm, cyls 330x430mm and coal firing.



Henschel 20343. Photo from Señor Pablo Moraga's collection.

Henschel 20351-4 of 1924, Ct 762mm gauge, Gebr. Vorwerk for Iquique. It is possible that these will have been

similar to 20343 in the photo above, and for the same customer.
Henschel 20422-3 of 1924, Ct 762mm gauge, Gebr. Vorwerk for Iquique.
Henschel 20639 of 1924, Ct 762mm gauge, Gebr. Vorwerk for Iquique.
Henschel 20652 of 1924, Ct 762mm gauge, Gebr. Vorwerk for Valparaiso.
Henschel 20671 of 1926, Ct 762mm gauge Gebr, Vorwerk & Co for Chile.
Henschel 20277 762mm, 0-6-2T, Gebr. Vorwerk, Santiago
Henschel 21202 of 1928, Ct 762mm gauge, Gebr. Vorwerk.

Jung

w/n 1079-80 of 1907, Ct 762mm, Arthur Koppel of Berlin for Chile.
w/n 1199-1200 of 1907, 50hp 7.6T, Ct 762mm, Arthur Koppel for Chile.

Kerr Stuart

w/n 853 2' 6" Maurice class, 0-4-2T cyls 7"x12" in 1904, Grace Brothers & Co. Ltd. **'TRINIDAD'** for Iquique.
w/n 884 2' 6" Brazil class, cyls. 9"x15" 0-4-2ST in 1905, for Grace Brothers **'JUAN'** Chile. Same customer as above loco.

Krauss

w/n 5005 of 1904, Cn2t 762mm, Arthur Koppel for Chile.

Lima

w/n 2961 1918 Shay 10 12 29 5/8" After service on *FC Central Dominicano* as no. **15**, then to unknown owner possibly at a nitrate oficina. 30" gauge 2 truck

Maffei

w/n 2897 of 1908, Ct 760mm, Arthur Koppel for Chile.

Manning Wardle

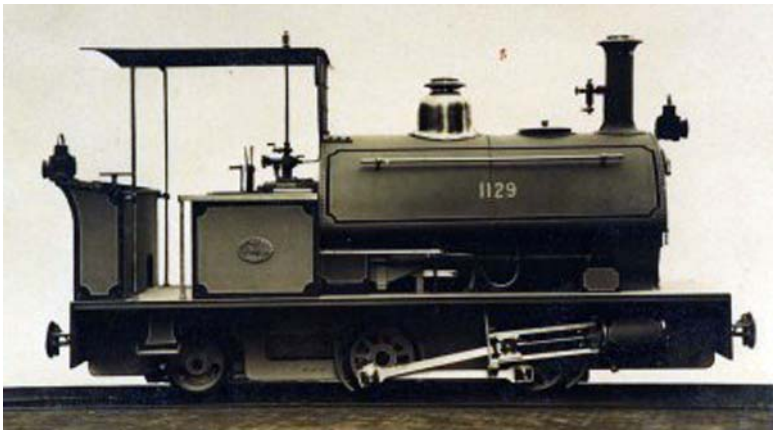
w/n 2037 of 1924, 0-4-2ST, d/w 28", cyls. 10"x14", via Grace Bros & Co. at Iquique.
w/n 2041 of 1925, 0-4-2ST, d/w 28", cyls. 10"x14", via British & Foreign Machine Co. at Iquique.

O&K

w/n 1598 of 1905, 60hp, Bt 762mm, Alex Joung Chile
w/n 1773-4 of 1906, 60hp, Ct 762mm, A Joung of Chile via Arthur Koppel.
w/n 1931-3 of 1906, 60hp, Ct 762mm, A Joung of Chile.
w/n 2004 of 1906, 60hp, Ct 762mm, Alexander Young of Chile.
w/n 10929 of 1925. Ct 762mm gauge. Lager Iquique.
w/n 5285 1912, 762mm, 0-4-0T 10hp, Paschonen.
w/n 5492 1912 90 PS Ct 762 .06.1912 Brüna & Co. [14] suggests these were for Chile.
w/n 5493 1912 90 PS Ct 762 .06.1912 Brüna & Co.
w/n 10736-7 of 1924 Ct 762mm Cia. Salitrera, possibly Cía. de Salitreras de Antofagasta see above..
w/n 7768 of 1914, 0-8-0T 762mm, 70hp, *Soc. Ind. de Atacama*, Valparaiso. That company seems to have been based in Copiapó.

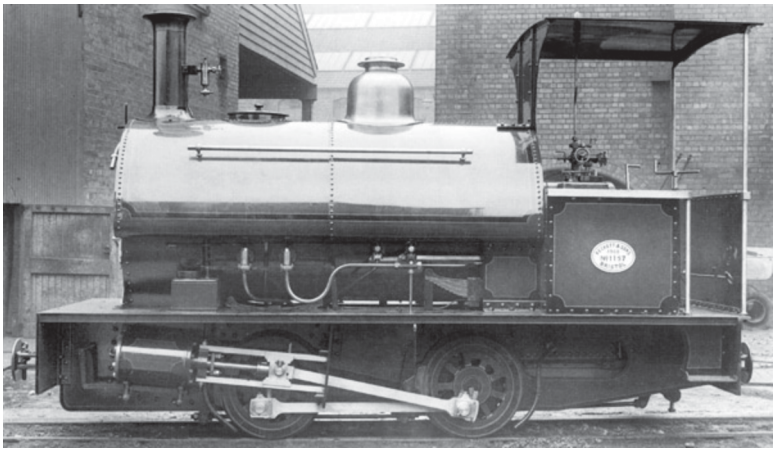
Peckett & Sons

w/n 0-4-2ST oc, no. 1129 of 1907, d/w ? cyls. 8x12", for Iquique via E. F. Clarke.



Peckett 1129, photo from the Bristol Museums website.

w/n 0-4-0ST oc, nos. 1157-1158 of 1908, d/w ? cyls. 8x?", for Iquique via E. F. Clarke.



Porter

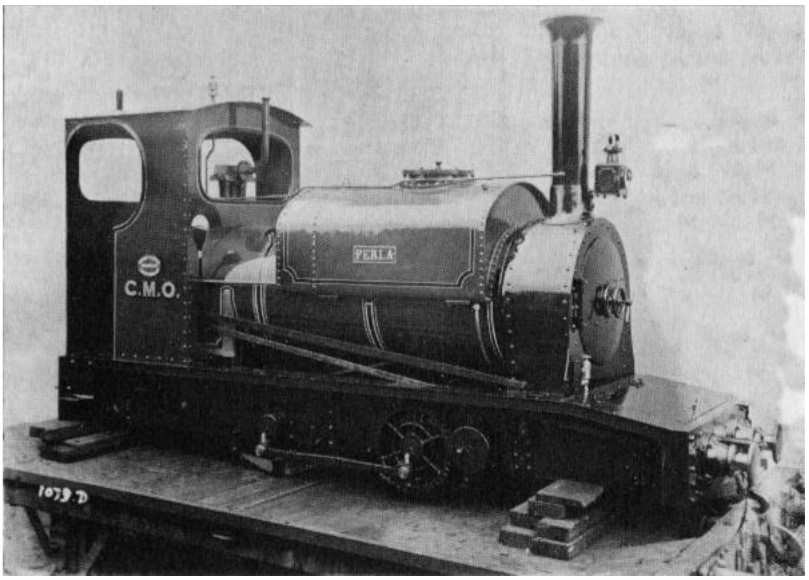
w/n 2897 1903	0-6-0, cyls. 10x14", d/w 30"				Guggenheim Exploration Co. no. **3 'TECULOTES'** at Tocopilla.
w/n 5215 1912	0-4-0T	10	16	30	via W. R. Grace & Co. 30" gauge, 18 tons.
w/n 3176 1905	0-6-2T	9	14	?	via W. R. Grace & Co. 30" gauge, to NY NY then ?

Robey

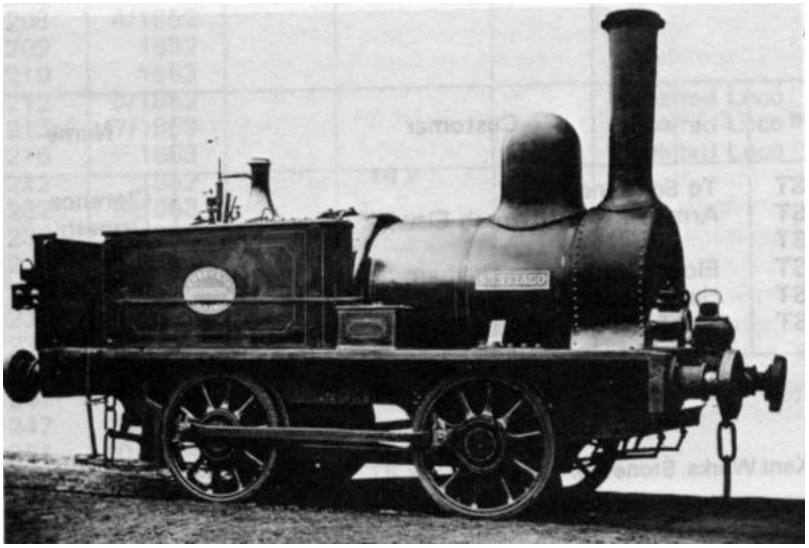
David Jennings has pointed out a quote on the Robey & Co.Wikipedia page, taken from *Lincolnshire Engines Worldwide* by Richard Brooks (Undated, but 1988, published by the Lincolnshire Life Museum, Lincolnshire County Council. ISBN 086-1111362). Apparently "Between 1876-84 six steam railway engines were produced (by Robey & Co.). From 1889 to 1924 (possibly disposed of by 1902. MCC) two narrow gauge engines *Joubert* and *Kruger* were used on the Oriental & Sheba valley railway in Transvaal. Similar engines went via the agent Rose Innes to Chile."
Further info about the Transvaal locos can be found in Bulletin 118 of the Railway History Group of Southern Africa, July 2013, in article by Frank Jux and John Middleton entitled *Forgotten Railways – The Sheba Railway – The First Railway in the Transvaal*. This includes the following paragraph: "The order for the first two locomotives fell to Robey & Co. of Lincoln, England who produced a new design of geared locomotive to cope with the gradients. They were 0-4-0 saddle tanks with inside frames and 6" x 9" inside cylinders. The internal machinery was far from conventional, with the cylinders placed at the leading end of the frames, and driving via a crankshaft and 3:1 reduction gears onto the leading axle. According to a Robey catalogue the engines weighed 6 tons 12 cwt and everything was claimed to be designed for "foolproof handling in the Colonies". The driving wheels were of 30" diameter. The locomotives were delivered early in 1887 but due to the delays in construction did not start work until the following year. The locomotives were named KRUGER (after President Paul Kruger of the South African Republic) and JOUBERT (after General Petrus Joubert, Vice President of the South African Republic from 1896). However, all was not well with the locomotives, a new buffer beam and other parts were ordered as early as July 1889 whilst in January 1891, Robey supplied a complete new set of wheels and axles for KRUGER." The Robey locos for the Transvaal are listed at the end

of the above article as Robey 9642-3 of 1887, so the Chilean locos may also have dated from around that time. The entry for Robey & Co. in James Lowe's book *British Steam Locomotive Builders* [48] gives further useful hints. Two of Robey's locomotives seem to be relevant. One was an 0-4-0T named **'SANTIAGO'** which was built in 1876, though notably not the Robey works loco which was also named **'SANTIAGO'**! The other was an 0-4-0ST named **'PERLA'** which was an 1895-built geared loco for South America. It was this latter loco which seems to have been similar to the engines built for the Transvaal. However, clearly a loco named **'SANTIAGO'** might also have been destined for Chile.





On the left is one of the pair of Robey geared locos sent to the Transvaal. The photo is from Barberton Museum via Jux and Middleton's article, see above. The right hand picture from [48] shows **'PERLA'**, built for South America but for precisely where is not known. The letters C. M O. painted on the cabside do not ring any bells.



Whilst this Robey-built loco named **'SANTIAGO'** was the works shunter in Lincoln, the other **'SANTIAGO'** supposedly looked vaguely similar though with side tanks and a full cab. Whilst this is illustrated here along with the narrow gauge Robey locos, clearly it is likely to have been for a wider gauge and possibly even for the Chilean broad gauge.

Rogers

w/n 6270-1 (last two Rogers locos) 0-6-0T in 1905 via W. R. Grace & Co., **'IQUIQUE'** and **'8'**. d/w 37", cyls. 14x20".

VIW

w/n 815 1906 0-4-0T 8 10 24 Elmenhorst & Co. 30" gauge, via Iquique, second owner supposedly 'M M Iquique'

w/n 3108 1920 0-6-0T 10 14 30.5 *Societe Salitrero y Commercial* 30" gauge, via Valparaiso.

750mm gauge

Borsig

w/n 6073 of 1907, 750mm gauge, Bn2t M. Gleisner of Hamburg for Chile.

w/n 6483 of 1907, 750mm gauge, Bn2t Schlubach & Co. Hamburg for Chile.

w/n 7059 of 1909 Bn2t 750mm gauge M. Gleisner Hamburg for Chile.

w/n 7740 of 1911, Bn2t 750mm gauge, Barnett & Co. Antofagasta, cyls. 210x300mm, d/w 650mm.

Hanomag

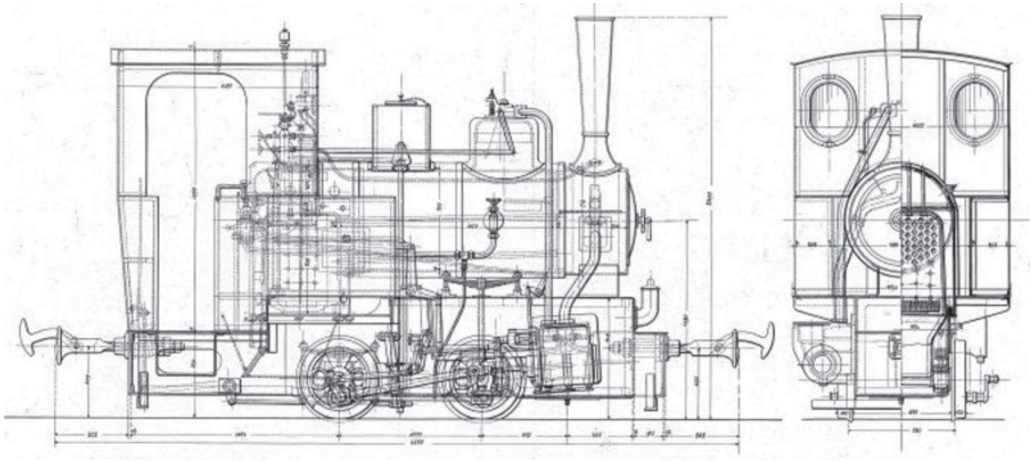
w/n 4629 of 1906, Ct 750mm gauge, Saavedra Benard & Co. Chile.

Henschel

w/n 11131 of 1912, Bt 750mm gauge, Gebr, Vorwerk & Co. Hamburg for Chile.

w/n 11406-8 of 1912, Ct 750mm gauge, Gebr, Vorwerk & Co. Hamburg for Chile.

w/n 12294 of 1913, Bt 750mm gauge, Gebr, Vorwerk & Co. Hamburg for Chile.



w/n 12335-6 of 1913, C1'n2t 750mm gauge, Gebr, Vorwerk & Co. Hamburg for Eugenio Sibie **'5'** and **'?'**, Chile.

Jung

w/n 1773 of 1912, 10hp 3.68T, Bt 750mm, Bahnindustrie AG of Hanover for Chile.

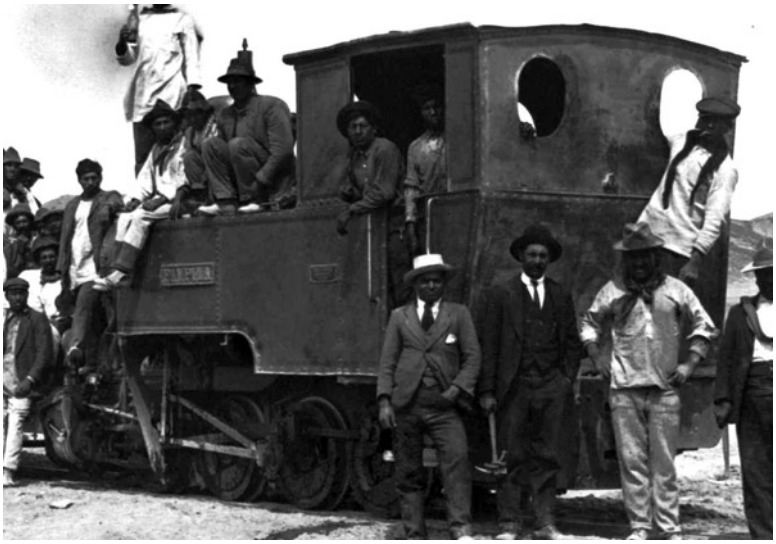
Maffei

w/n 4347 of 1929, Bt 750mm, F. Bade for Chile.

O&K

w/n 5285 of 1912, 10hp, Bt 750mm, Paschonen of Chile, lief auf Holzschienen.

Unidentified photos



A German-built 0-8-0T engine, named **'PAMPERA'**, and presumably on a nitrate oficina line.

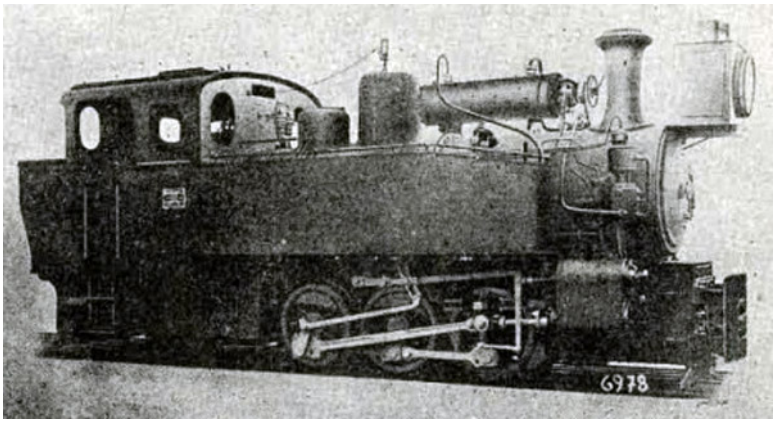


Photo from a 1926 Gildemeister & Co. agency advert. Loco is 250HP, 35 tonne 30" gauge, by O&K, probably as supplied to nitrate oficinas.

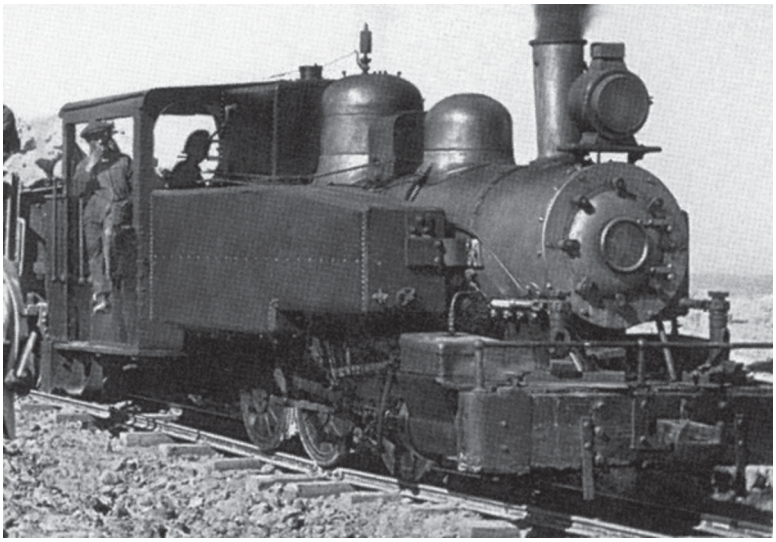
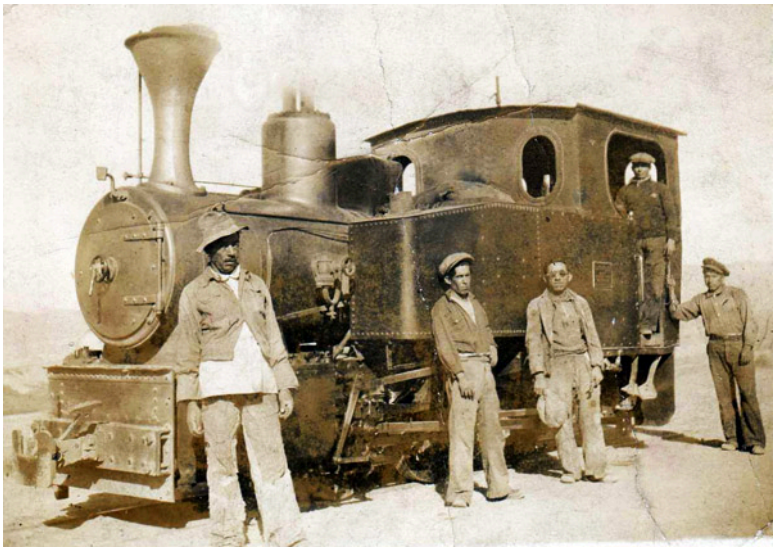


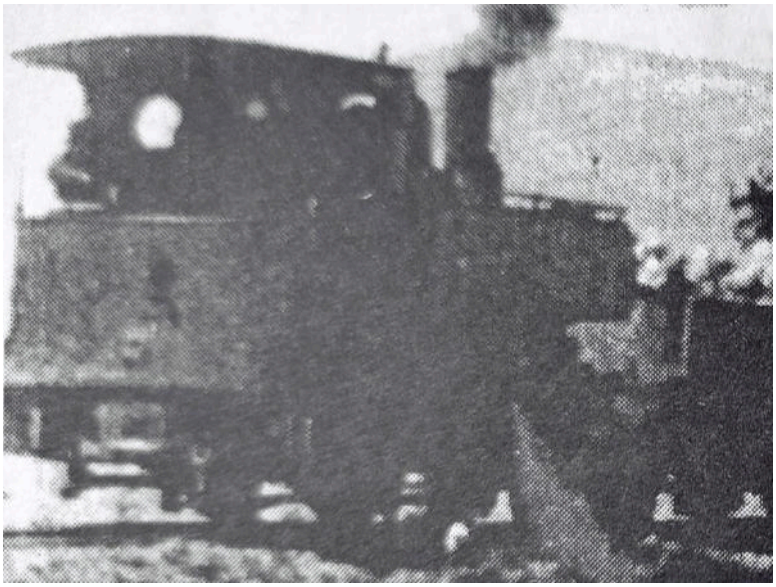
Photo from Pablo Moraga's book *Tiempo de Trenes*. The loco is by the Vulcan Ironworks, who supplied just two 0-6-0Ts to Chilean customers, other than those for Germain & Sierra which were all saddle tanks. These were both 2' 6" gauge locos, the first being no. 3063 for Gildemeister & Co. in 1920, and the second no. 3108 for the *Societe Salitrero y Commercial* the same year. One of them, probably no. 3063, went to the oficina Cecilia, which see above.



An unidentified loco, probably German-built, at a nitrate oficina.



An unidentified O&K 0-6-0T at an unknown oficina around 1930.



This 0-4-0T supposedly was at one of the Oficina Victorias, but which one is uncertain. The engine has the shallow front end of the side tank characteristic of the NBL standard locos, and the chimney, dome and handrails support that hypothesis. However, the cab has a full front spectacle plate but none at the back, thus falling between the common open cab style and the fully-enclosed type supplied to New Tamarugal Nitrate for Oficina La Palma.

4.7 2' 1" gauge railway

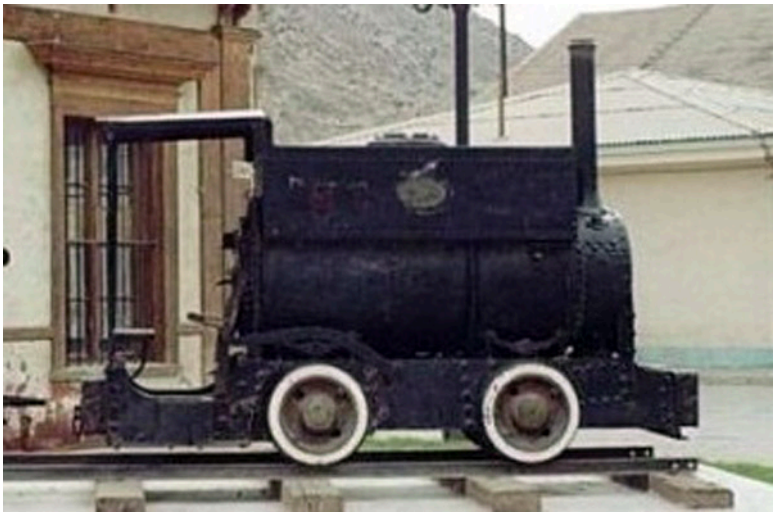
4.7.1 The Copiapó Mining Co.

Background

This company owned and operated a number of mines within the province of Copiapó, including sites at Puquios, Checo, Ojancos, and Hornito. One of the largest, the *mina Dulcinea*, was 12 km from Puquios but later found itself only 1 km from the new *FC Lonjitudinal* northward from Chulo to Inca. The 1907 *Estadistica minera* suggests that there was a 3km line of 76cm gauge which used mules and a loco for haulage, but gives no further details. It is not know which mine used the locos listed below. In use to 1935 [9].

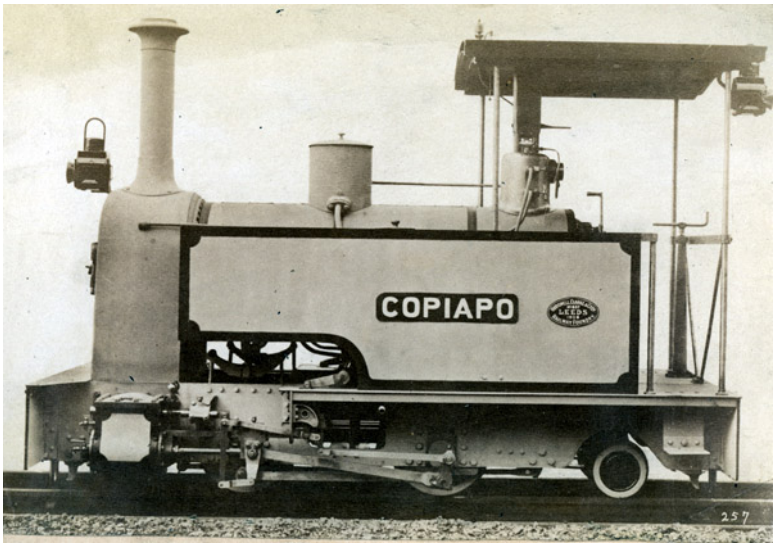
0-2-2ST d/w 20½" cyls. 4½x6", built by Black Hawthorn in 1887

? w/n 895 Displayed on plinth at Plaza de Armas in Copiapó, and more recently outside the old railway station there.



0-4-2T d/w 20" cyls. 6x10", built by Hudswell Clarke in 1909

'C.M.C. No. 2' w/n 837



HC builder's photo, via Hunslet archive at Statfold Barn Farm.

4.8 2' or 60cm gauge railways

4.8.1 *DOP* and *EFE* 60cm gauge lines

Background

The *DOP* investigated the prospects for around seventeen or more 60cm. gauge branches from the *Red Sur* during the first decade of the 20th century.

- Casablanca to Valparaiso, 58 km.
- **Puente Alto to El Cañelo, El Melocotón, and El Volcán. totalling 73 km.**
- Extensions to the above, from Puente Alto to San Bernardo, and El Volcán to the Argentine frontier, 65 km.
- Melipilla to Las Cabras, 86 km.
- Peralillo to Paronal, 89 km.
- Cauquénes to Chanco and Curanipe, 80 km.
- **Linares to Colbún, 33 km.**
- Cauquénes to Quirihue and Coelemu, 118 km.
- San Carlos to San Fabián, 60 km.
- **Chillán to Pinto** on the way to Las Termas**, 35 km., and**
- **Pinto to El Recinto** (extension of Chillán to Las Termas line) **30 km.**
- San Ignacio to Recinto 38 km.
- Bulnes to San Ignacio 27 km.
- **Saboya to Lumaco and Capitán Pastene, total 35 km.**
- Nueva Aldea to Quillón, 11.3 km.
- La Unión to Río Bueno 13 km.
- **On the Isla Grande de Chiloé, Ancud to Castro, with branch from Ancud to Lechagua, total 98 km.**

Five were constructed (**shown in bold**): four of which were passed to the *EFE*, and the fifth became the *FC Militar* to be run as a long-term training exercise by the Chilean army. As there were no *EFE* 60cm gauge locos prior to the construction of these lines, all of the original locos were sourced by the *DOP*, either direct from their builders or purchased second-hand from contractors.

Early 60cm gauge numbering systems

The 1921 *EFE* '*tipo*' designations are shown for ease of description, but obviously these were not in use during the first years of construction and operation. The Jung 0-6-2Ts (later *tipo* a) were originally numbered individually on each line, ie. **1** & **2** at Puente Alto, and **1, 2** & **3** at Chillán. The Henschel and Jung 0-6-0Ts (later *tipo* b) and the Jung 0-4-0Ts (later *tipo* c) seem to have been in a single *DOP* sequence as numbers **1-3, 17-23**, and **24-27**. O&K 0-6-2T no. 6518 of 1914 running at Puente Alto was no. **29** in this sequence. However, even then, the pair of 0-6-0Ts at Chillán were known locally as nos. **4** & **5**, following on from 0-6-2Ts **1-3**.

The *Red Sur* metre gauge and 60cm gauge numbering system

By the late 1910s the *EFE* locos seem to have been renumbered into a single metre gauge and 60cm gauge sequence, with the 60cm gauge locos being between **25** and **54**, in a logical order from *tipo* a down to *tipo* h. This may indeed have come about as early as late 1912 or early 1913, given that the O&K 0-6-2T that arrived in 1913 was designated *tipo* h at the tail end of the sequence.

As the suggestion that there was a single *Red Sur* list covering both metre gauge and 60cm gauge has not been met elsewhere, it seems sensible to set out the thought that has gone into this conclusion:

1 In 1921 the *Red Norte* metre gauge loco fleet had 3000 added to each number, whilst the *Red Sur* metre gauge locos were numbered from 4000 upwards and the *Red Sur* 60cm gauge locos were in the 5000 series. Did they too start with smaller numbers before 4000 and 5000 were added to them? Certainly it looks that way for the 60cm gauge

locos, as a number of them had numbers around the year 1914 which look very similar to the tens and digits of their later 5000 series numbers.

2 Why would the 60cm gauge locos be numbered **5025** and then **5038** through to **5054**? Did they fit into a bigger scheme involve other locos on a different gauge?

3 Putting these two questions together, led to the surmise that the *Red Sur* might have had a combined narrow gauge numbering system before 4000 or 5000 were added to each number in 1921. The following list shows known *Red Sur* metre gauge numbers minus 4000 in black, and known 60cm gauge numbers minus 5000 in red. Additional metre gauge numbers known to have been added through the purchase of second-hand locos between 1917 and 1920 have been added in blue.

7, 8, 9, 18, 25, 27, 28, 29, 30, 31, 32, 33, 33, 34, 35, 36, 37, 38, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61.

As will be clear, the fit is almost perfect. There are only two duplicates, at **33** and **38**, and one of them may result from a mistake. It will also be noted that all of the vacant numbers, such as **1-6, 10-17, 19-24**, and **26**, are at the lower end of the range, thus possibly belonging to older locos which might well have been withdrawn before being recorded in surviving lists, or alternatively to Calera - Cabildo railway locos which were transferred to the new *Red Norte* in 1916.

4 A further guess is that higher number locos were added to the list in chronological order as they arrived, after all the 60cm gauge locos had been added at one time and in a logical order from *tipo* a to *tipo* h. This suggests that an original loco **25** had been withdrawn by that date but that other metre gauge locos up to **37** were in the fleet at that point in time

It can therefore be stated with some confidence that the *Red Sur* created a joint metre and 60cm gauge numbering scheme at some point during the 1910s, with locos being numbered between **1** and eventually **61** or higher.

The 5000 series numbers after 1921

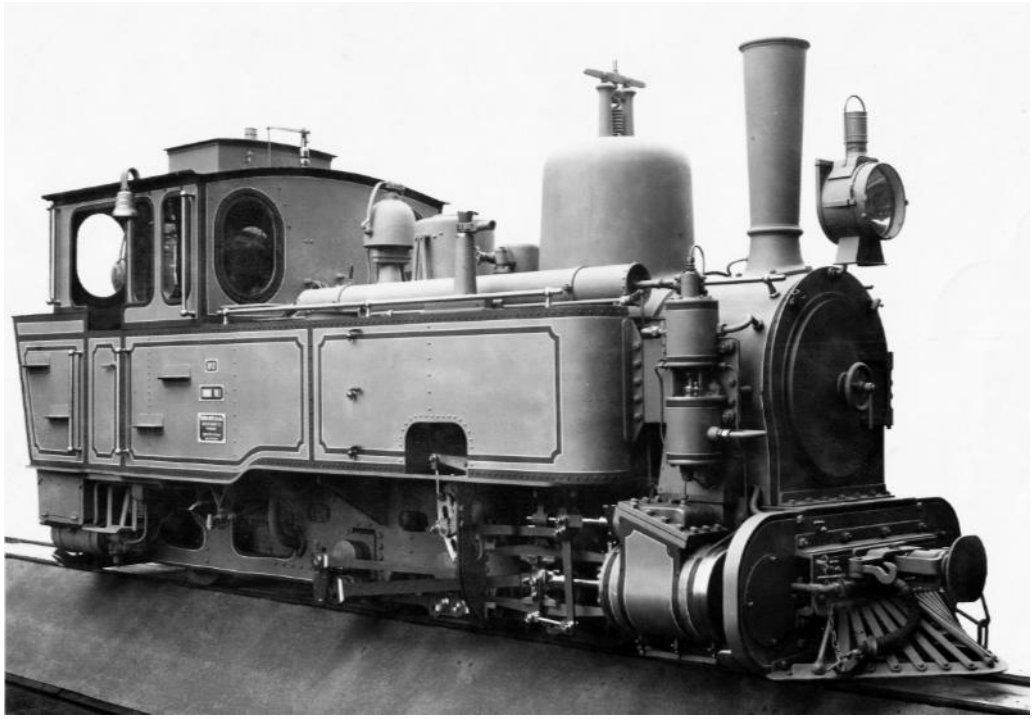
In 1921 the metre gauge numbers had 4000 added to them, and the 60cm gauge numbers had 5000 added. Later 60cm gauge purchases or transfers from the *DOP* list were added to the end of the list, from **5055** upward, solely in chronological order. Because it has so far not been possible to match the majority of the early names and numbers with the later *EFE* 5000 series numbers, for each of *tipos a, b* & *c* two separate lists have been shown.

Tipo a
0-6-2T d/w 700mm, cyls. 300x350mm, built by Jung in 1909 (1306-7, 1350-1), 1913 (2034), and 1929 (4639-41).

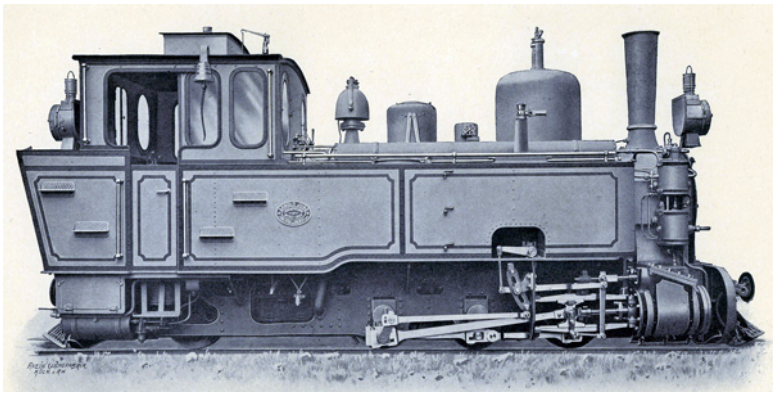
First batch ordered 10 Oct 1908 for Puente Alto, and therefore transferred direct from *DOP* to *FC Militar* stock, never in *EFE* fleet. Arrived Puente Alto 11th and 19th March 1909 [MOBR2223]. One survives.

1 'PRESIDENTE PEDRO MONTT' w/n 1306 To *FC Militar* stock 1914?

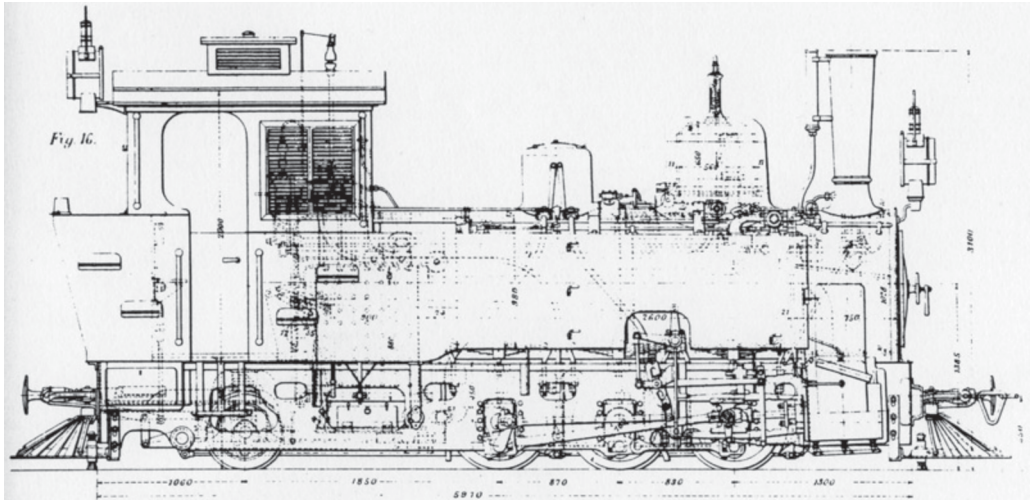
2 'ALBERTO MACKENNA' w/n 1307 Possibly originally named **'ENRIQUE DOLL'**; see illustration below. To *FC Militar* stock 1914?



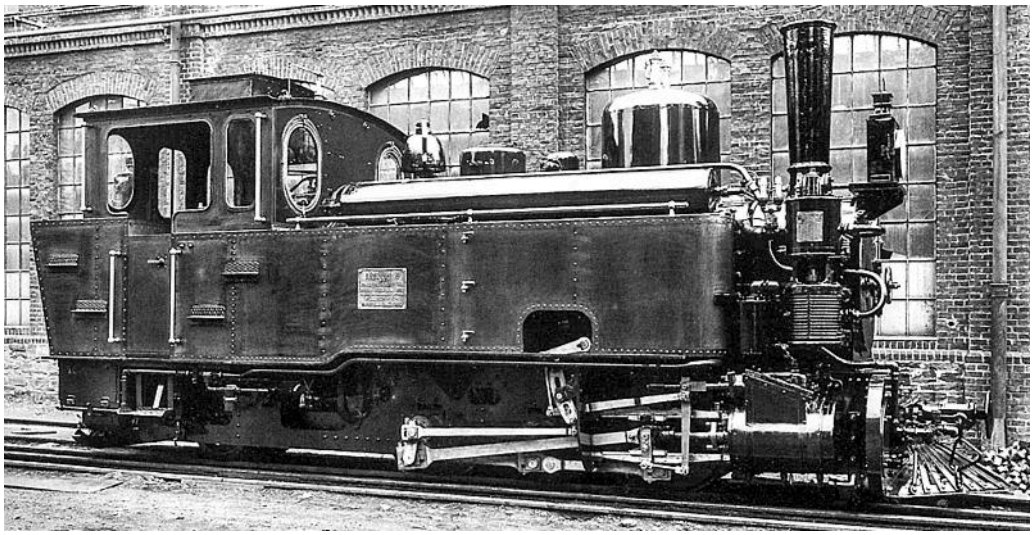
This builders' view shows no. **2 'ENRIQUE DOLL'**. The image below was probably created at the same time but shows the loco in a more generic guise with solely a Jung works-plate on the tankside, as opposed to the numberplate, nameplate and Saavedra Benard agent's plate seen above.



Jung catalogue photo.



This Arnold Jung side elevation drawing shows the Otavi railway locos from which the Chilean *tipo a* was developed. The changes were relatively small: the cab window layout and the addition of an air pump.



Here is another of the *tipo a* 0-6-2Ts, probably at the Jung factory on completion. There are subtle differences from the earlier pictures, so this is probably from either the 1909 or 1912 batches described below. For example, a 9 " air pump is fitted (the EFE standard and rather larger than that seen earlier) , the air reservoir is correspondingly larger, there is no hand-bell on the cabside, and the headlamp is different.

Second batch ordered 16 May 1909 for Chillán and erected there. Tenders had also been received from Davenport, ALCo, Baldwin (for class 8-16⅓D locos), and Henschel.

1 'PRESIDENTE PEDRO MONTT' w/n 1350 At Chillán in late 1912. Became one of *EFE* **25, 38** and **39**, later **5025, 5038, 5039**.

2 'VICENTE MENDÉZ URREJOLA' w/n 1351 Note that this may have been the engine seen in the photo on the previous page carrying **'ENRIQUE DOLL'** nameplates. The reason for the change is unknown. Sr. Doll was an engineer involved in railway surveying and construction at the time, whilst Sr. Mendéz was a Chillán-based politician who promoted the building of the line to Recinto. The loco was at Chillán in late 1912. It became one of *EFE* **25, 38** and **39**, later **5025, 5038, 5039**.

Third order 30 Dec 1912 for Chillán (Jung, as listed here) and Puente Alto (O&K loco see below under *tipo* h) (only other tender was by Couillet) [MOBR2488]:

3 w/n 2034 Became one of *EFE* **25, 38** and **39**, later **5025, 5038, 5039**.

[MFER44] confirms that the *tipo* a locos at Chillán in January 1914 were numbered **1, 2**, and the newest one as **3**.

Original nos.	**Intermed. nos.**	**5000 series nos.**		
?	**25**	**5025**	w/n ?	Listed under *Zona* III (MC) in 1941 & 1951. Also confirmed in *EFE* service in 1952, 1955 & 1957. Was at Saboya around 1954, in poor condition, but ran 14,295 km in 1954. After withdrawal believed stored at army base in Peñalolen for preservation, during which time its front number-plate got borrowed for a small Maffei 0-6-0T now at Parque Quinta Normal, see below. This has caused huge confusion in recent years. Then sent for restoration to a factory in Talcahuano but was cut up by metal thieves around the time of the 2010 earthquake

[Harold Middleton].

?	**38**	**5038**	w/n ?	Listed under *Zona* III (MC) in 1941 & 1951. Also confirmed in *EFE* service in 1952, 1955 & 1957. At Saboya in 1954, average condition, and ran 19,809 km that year.
?	**39**	**5039**	w/n ?	Listed under *Zona* III (MC) in 1941 & 1951. Also confirmed in *EFE* service in 1952, 1955 & 1957.

A later order for three locos by the *EFE* in 1929 became numbers **5058-5060**. These had a 10cm longer wheelbase, and the front faces of the side tanks were flat rather than rounded.

5058	w/n 4639	Listed under supervision of Maestranza Concepción in 1941 & 1951. Also confirmed in *EFE* service in 1952, 1955 & 1957. Reportedly at Chillán in 1949 [16]. Was at Saboya in 1968 [DTR].
5059	w/n 4640	Listed under supervision of Maestranza Concepción in 1941 & 1951. Also confirmed in *EFE* service in 1952, 1955 & 1957. Reportedly at Chillán in 1949 [16]. Seen at MSB in 1974 [Tommy Farr].
5060	w/n 4641	Listed under supervision of Maestranza Concepción in 1941 & 1951. Also confirmed in *EFE* service in 1952, 1955 & 1957. Reportedly at Chillán in 1949 [16].

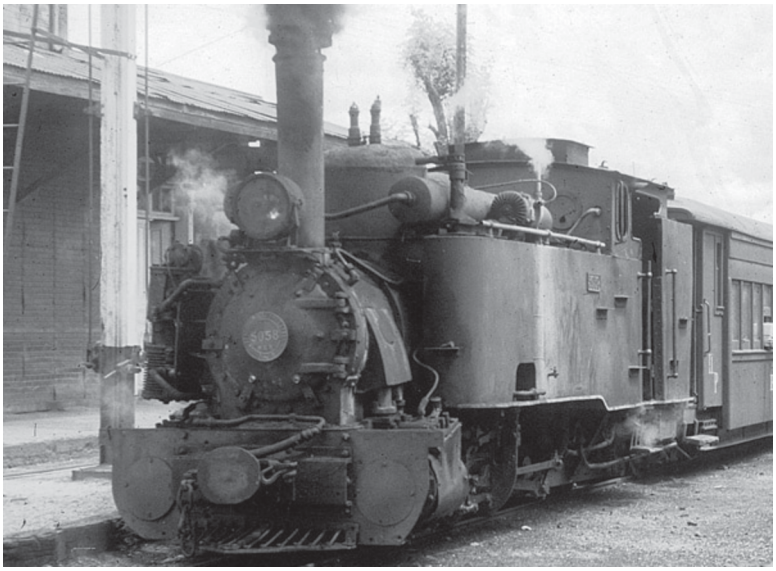
All 6 *EFE* locos were listed as under Concepcion works supervision in 1941 & 1951. All *EFE* locos in service 1952. **5025** and **5038** were at Saboya around 1954. All 6 listed in *EFE* list of 1955. All six *EFE* locos were in service in 1957 [*EFE memoria anual*]. Latterly these *EFE* locos had been heavily rebuilt, with higher welded tanks and bunkers. There were subtle differences, enabling individual engines to be identified, as the photos below illustrate.



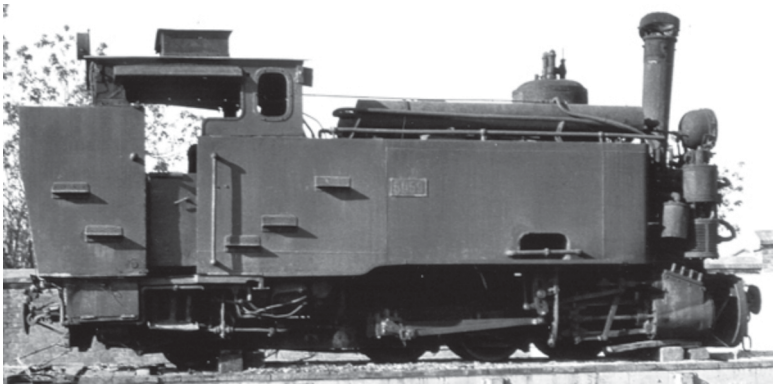
5025. With an extremely tall and wide bunker, seen before it went to Maestranza Arval in Talcahuano for external restoration, and where it was unfortunately cut up by metal thieves.



The **5025** smokebox numberplate that now rather confusingly adorns the minute Maffei 0-6-0T at the Quinta Normal museum in Santiago.



5058, seen at Saboya in 1968 by Trevor Rowe. The bunker top level is half-way up the cabside window, and the high welded tanks have the rounded fronts as originally fitted to the earlier locos, though this engine would originally have carried square-fronted tanks. The bunker sides are flush with the cabsides.



5059. Photo by Tommy Farr 1974, at MSB, via the Restoration & Archiving Trust. The bunker top is lower, almost level with the bottom of the cabside window. In addition the tank fronts would appear to be flat rather than rounded.

Tipo b

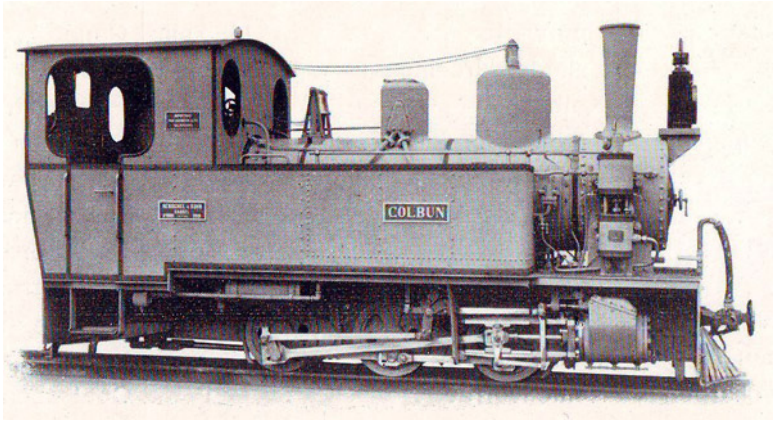
0-6-0T d/w 630mm, cyls. 235x300mm, built by Henschel in 1909 (1-3), and Jung in 1912 (17-23)

First batch ordered 21 Aug. 1909 for Saboya and Linares:

1 'TRABAJADORA' w/n 9851 At Saboya in 1910 and 1914. In February 1913 or March/April 1916 arrived at Linares from Saboya [Reports conflict over the date]. In 1917 and 1919 listed as no. **43**, probably in the combined *EFE* narrower gauges list, and therefore will have become no. **5043** in the final list.

2 'SABOYA' w/n 9852 At Saboya in 1910 and 1914.

3? **'COLBÚN'** w/n 9853 Actually delivered to Puente Alto, and entered *FCMilitar* stock. Still in use in 1920. NB There was also a loco named **'COLBÚN'** delivered to Linares in 1910, but whether this was the same one before transfer to Puente Alto, or a different machine of some kind, is not known.



Henschel catalogue photo.

Second batch ordered 15 May 1912 for Linares (1), Chillán (2), Saboya (2) and Ancud (2), but probably none delivered to the last location as locos had by then been bought from the contractor. Original tenders had been received from Borsig, Henschel, Berliner M-Bau, ALCo and O&K as well as Jung who won the order. A photo in *Zigzag* issue 265 suggests that at least one *tipo b* loco, and probably two, were erected at Linares for use on that line.

17 'ENRIQUE DÖLL' w/n 1852 Hired to Linares contractor in Feb 1913. There in 1914.

18 'VICTOR KLEIN' w/n 1853 At Chillán in 1914 and 1916.

19 'ALEJANDRO BERTRAND' w/n 1854 Arrived at Chillán April 1913. *Tipo* b locos at Chillán in January 1914 were numbered **4** and **5** [MFER44].

20 'MATILDA', later **'ACEVEDA'**? w/n 1855 Arrived at Chillán April 1913. A Señor Luis Acevedo was a pioneer Chilean aviator round 1912.

21 'MARÍA LUISA' w/n 1856 At Saboya in 1914.

22 'VITALIA' w/n 1857 Assembled at Saboya during 1912 and remained there until 1918, by which time it was no. **45**. In 1915 it fell into turntable pit at Saboya, suffering some damage [MOBR2775]. In 1919 was numbered **45** at Linares, probably having just arrived from Saboya. Entered *EFE* stock late and became **5057**? This is a puzzle as it should have become **5045**. Was plinthed at MSB for some years but then moved to Castro where it is displayed on the waterfront. It was overturned by a runaway road vehicle at some point but later replaced on its plinth.

23 '?' w/n 1858

A photo exists, showing construction work on the Puente Alto to El Volcán railway, and including one of these 0-6-0Ts carrying the name **'CORONEL HINOJOSA'**. It is possible that this was the hitherto anonymous no. **23**, and that this

loco worked at Puente Alto during the construction period. However, a more likely scenario is that the photo was taken after the army had taken responsibility for the line but whilst buildings and other facilities were still under construction. No. **3 'COLBÚN'** had presumably been renamed by the army with an appropriate military title.

Tipo b locos as numbered later in *EFE* fleet

Four *tipo* b locos were in *EFE* stock by 1920, and six by 1921 when they were numbered **5040-5045**. Two more entered *EFE* stock later and were numbered **5056-5057**. That means that only one out of the nine could have reamined in the *FC Militar*'s long-term fleet.

?	**40**	**5040**	w/n ?	Under Maestranza Concepción supervision in 1941 and 1951. In *EFE* fleet in 1953 & 1955.
?	**41**	**5041**	w/n ?	Under Maestranza Concepción supervision in 1941 and 1951. In *EFE* fleet in 1953, and confirmed as at Saboya around 1954, poor condition, ran 7,775 km that year. In fleet in 1955, but withdrawn in 1957.
?	**42**	**5042**	w/n ?	Under Maestranza Concepción supervision in 1941 and 1951. In *EFE* fleet in 1953 & 1955.
?	**43**	**5043**	w/n ?	Under Maestranza Concepción supervision in 1941 and 1951. In *EFE* fleet in 1953 & 1955. At Saboya in 1954, and ran 6,234 km in 1954.
?	**44**	**5044**	w/n ?	On loan to 'vías y obras' in 1929 [2] and in 1930. Under Maestranza Concepción supervision in 1941 and 1951. In *EFE* fleet in 1953, and confirmed as at Saboya around 1954, average condition, and ran 153 km in 1954. In fleet in 1955.
?	**45**	**5045**	w/n ?	On loan in 1929 [2] and in 1930-1, to *Depto de Via y Obras*. Under Maestranza Concepción supervision in 1941 and 1951. In *EFE* fleet in 1953, and confirmed as at Saboya around 1954, average condition. In fleet in 1955, but withdrawn in 1957.
?	**?**	**5056**	w/n ?	Entered *EFE* stock after 1921? Under Maestranza Concepción supervision in 1941 and 1951. In *EFE* fleet in 1953, and confirmed as at Saboya around 1954, poor condition. Ran 11,712 km in 1954. In fleet in 1955, but withdrawn in 1957.
?	**?**	**5057**	w/n ?	Entered *EFE* stock after 1921? Under Maestranza Concepción supervision in 1941 and 1951. In *EFE* fleet in 1953 & 1955. Later preserved at MSB until mid-1980s, and then moved to Castro for display down on the water-front near the old station.

All eight listed as under Concepcion works supervision in 1941, and 1951. All eight were in the *EFE* fleet in 1953 [*EFE memoria*]. **5041, 5044, 5045** and **5056** were at Saboya around 1954. Two tipo b excluded in 1957 [*EFE memoria*] and none listed as in fleet at that time, though two still listed again in 1960. 1942 and '51 lists explicitly label **5040-5045** as by Jung, and **5056-5057** as by Henschel. 1955 list shows **5040, 41, 42, 43, 44, 45, 56, 57**. Locos withdrawn 1957 were **5041, 5044, 5045**, and **5056** [38].

Tipo c
0-4-0T d/w 580mm, cyls. 210x300mm, built by Jung in 1912

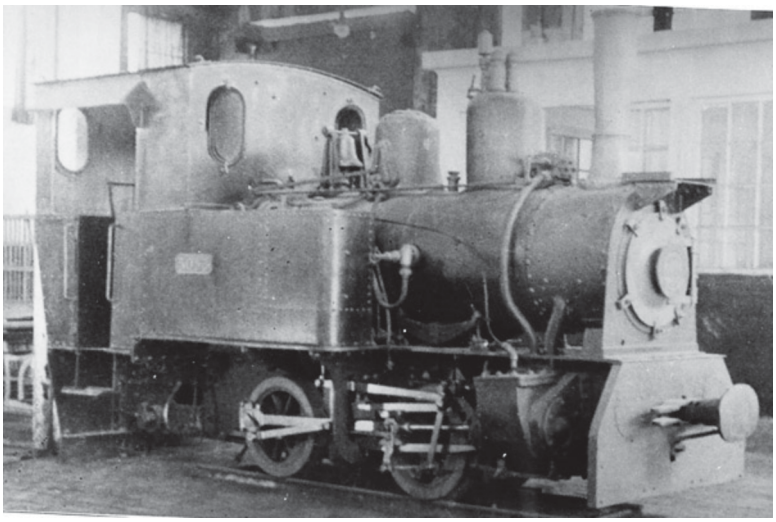
Ordered 15 May 1912 for Linares (2) and Saboya (2). Original tenders had been received from Borsig, Henschel, Berliner M-Bau, ALCo and O&K as well as Jung who won the order.

24 'FRESIA'	w/n 1859	Arrived Linares in January 1913.
25 'GUACOLDA'	w/n 1860	Arrived Linares in January 1913.
26 'TEGUALDA'	w/n 1861	At Saboya in 1914.
27 'GLAURA'	w/n 1862	At Saboya in 1914.

Two of these joined *EFE* stock early on and gained the numbers **5046** and **5047** in the 1921 renumbering. A third joined later on and became **5055**. The 1930 US report says four were in service around 1928. Three *EFE* locos were in service in 1939, 1941 (**5046, 5047**, & **5055**) and 1952. A 1941-2 blue-print list (list no. 1665) shows **5048** and **5051** as tipo c, albeit as '*despachada*', whilst in 1929 a loco numbered **5048** had been sold out of service. The reference to **5051** as a *tipo* c was probably a mistake. A 60cm gauge 0-4-0 no. **48** was in *DOP* service for some years and was shown in an *EFE* 1941-2 list (list no. 1665) as '*despachada*'. This list showed **5048** as a separate loco, ie. not confusion between **48** and **5048**. A 1951 list contains **5046, 5047** & **5055**, all under Concepcion supervision, but said that **5046** and **5047** were engaged on work reinforcing bridges, presumably along the *Red Sur* broad gauge lines. Only one *tipo c* loco remained in the fleet in 1953 [*EFE memoria*].

?	**46**	**5046**	w/n ?	Under *Zona* III (MC) in 1941, also in 1951, but engaged on bridge reinforcement work from Oct. 1942 and in 1951.
?	**47**	**5047**	w/n ?	Under *Zona* III (MC) in 1941, also in 1951, but engaged on bridge reinforcement work from Oct. 1942 and in 1951.
?	**48**	**5048**	w/n ?	Sold out of service in 1929, to *Srs. Barriga, Wachholtz, Alessandri & Cia.* (contractors). In fleet list in 1941, but '*despachada*'
?		**5051**	w/n ?	In one fleet list for 1941, but '*despachada*'. Probably not tipo c.
?		**5055**	w/n ?	Under *Zona* III (MC) in 1941.
?		**48**	w/n ?	Not confirmed as *tipo* c. In one fleet list for 1941, but '*despachada*'

One of these locos seems to have been sold eventually to the Mina Pilpilco coal mine, as evidenced by a photo displayed further on in section 4.9.1.



This photo from Pablo Moraga's collection shows one of the tipo c 0-4-0WTs. Whilst the number-plates are not very clear, the side numberplate shows 50 and then possibly another 5 before an indecipherable digit. The guess must be that it was therefore **5055**.

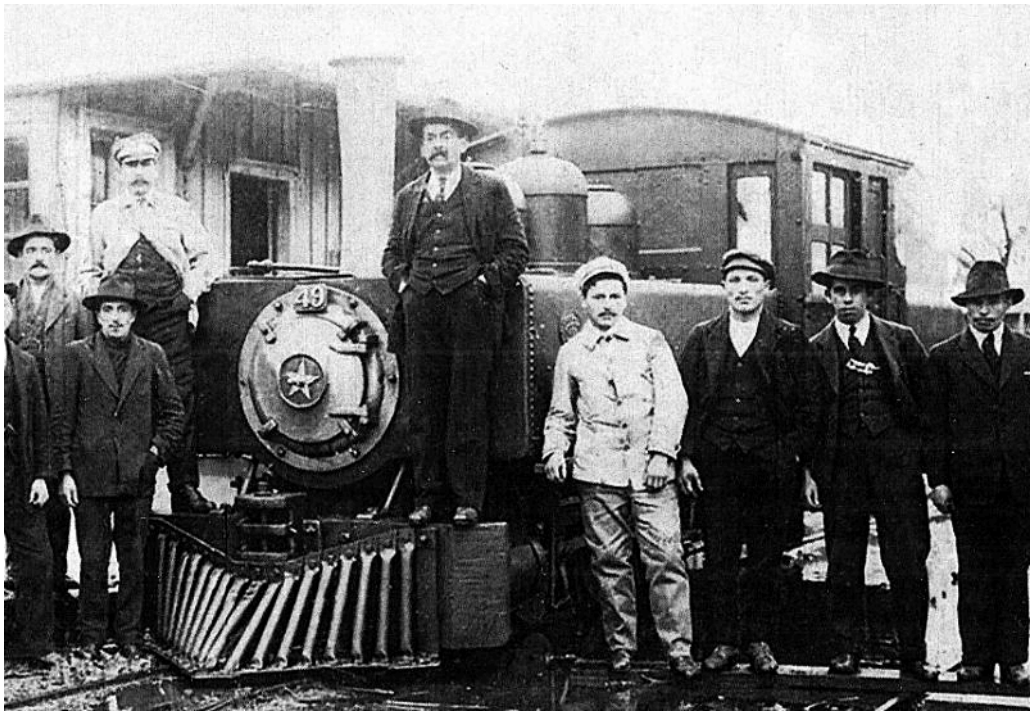


This image taken at the MSB school of apprentices around 1935-6 shows *tipo* c no. **5046**? mounted on a broad gauge wagon for transfer elsewhere.

Tipo d
0-6-2T d/w 710mm 28" or 24", cyls 227x300mm 9"x12", built by Davenport in 1909

Ordered for *Lezaeta i Duran Hermanos* contractors for the construction of the Ancud to Castro line. Purchased by *DOP* on completion, used on service trains on that route, transferred to *EFE* and numbered **5049-50**. They may well have been known as nos. **1** & **2** during their early *DOP* days on the Chiloé railway. See builders' photo in section 4.9.5 under *Lezaeta Duran y Hermanos*.

7 (contractors' no.) **49** **5049** w/n 894 In fleet in 1928.
8? " **50** **5050** w/n 895 In fleet in 1928. *Excluídas* 1929 [2].
Both out of service by end of 1920s, though listed in 1941-2, albeit as '*despachada*'.



Davenport 0-6-2T no. **49**, supposedly at Ancud station. Occasion and date unknown. Photo provided by courtesy of Sr. Pablo Moraga.

Tipo e
0-6-0T d/w 550mm, cyls. 185x265mm, built by O&K

Ordered for *Lezaeta i Duran Hermanos* contractors, as above. Purchased by *DOP* on completion, used on service trains on that route, transferred to *EFE* and probably numbered **5051**. US report 1930 gives d/w as 470mm, and cyls. as 178x229mm. In 1913 an accident report on the Chiloé line mentions loco no. **4**, which might have been this one, or either of the next two. MFER13 refers to these two locos as weighing 12T and 6T.

?	**51**	**5051**?	w/n 5815?	Listed in the 1930 US report, but out of service soon after? '*Excluida*' in in 1929 and 1930 [2]. Shown in a 1941-2 blue-print list (list no. 1665) as *tipo* c, probably mistakenly, albeit as '*despachada*'. However, was at Saboya in 1954, and ran 6,837 km that year.

Tipo f
0-4-2T? d/w 490mm, cyls. 150x230mm, built by O&K? in 1910?

Purchased by the *DOP* from *Lezaeta i Duran Hermanos* contractors, and eventually passed on to the *EFE*. It may have been O&K 3992, though this is in Jens Merte's list as an 0-6-0T. Became *EFE* **5052**. US report 1930 gives d/w as 470mm, and cyls. as 178x229mm. MFER13 refers to these two locos as weighing 12T and 6T.

?	**52**	**5052**	w/n 3992?	On loan in 1929 [2] and 1930, to *Depto de Via y Obras*. Listed in fleet, under Maestranza Concepción supervision, in 1941. Sold out of service in 1941.

Tipo g
0-4-0T d/w 540mm, cyls. 16?x240mm, built by Henschel in 1906?

On Chiloé in *DOP* stock in 1910, 1911 and 1914. Later went to *EFE* and became no. **5053**. US report 1930 gives d/w as 390mm, and cyls. as 178x229mm.

?	**53**	**5053**	w/n 7493?	On loan in in 1929 to 'Vías y obras' [2] and in 1930. In *EFE* fleet in 1939, 1941 & 1951 (both years under *Zona* III (MC)), and 1952.

Tipo h
0-6-2T d/w 700mm, cyls. 275x310mm, built by O&K

Built as O&K's equivalent of the *tipo a* spec. First one ordered 30 Dec. 1912 for Puente Alto and presumably remained there [MOBR2488], second delivered to Chiloé, third purchased direct by the *EFE* in 1931. The first looked very much like the *tipo* a Jung locos, albeit with sloping tops to the front of the tanks and a flat top to the steam chests. On the other hand the later locos appear to have had higher tanks, making them look heavier. The first of those was ordered at same time as a *tipo* a Jung loco for Chillán, see above. It later became *EFE* no. **5054**. The final one was built 1931 and was numbered **5061** from new.

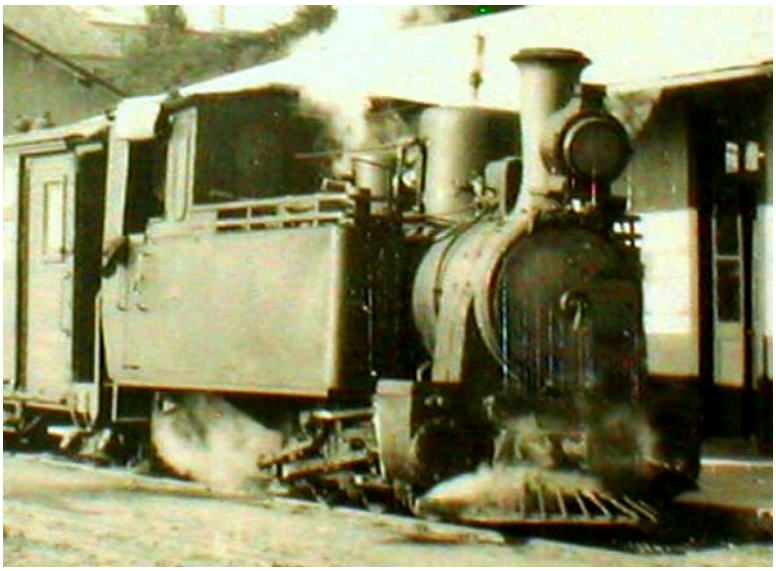
29 '?'			w/n 6518	To *FC Militar* 1914. Photo shows name & number plates, but former is not decipherable.
?	**54**	**5054**	w/n 7120	In *EFE* fleet in 1928, 1939, 1941, 1951, 1952 & 1955 (in 1941, 1951 & 1955 under Maestranza Concepción supervision). On loan in 1931, to *Depto de Via y Obras* (but this may be a mistake for **5044** as it seems unlikely that one of the larger locos would be spared for such a task).
		5061	w/n 12372	In *EFE* fleet in 1939, 1941, 1951, 1952 & 1955 (in 1941, 1951 & 1955 under Maestranza Concepción supervision).



The first of the O&K 0-6-2Ts, no. **29** in the *DOP* series, on the *FC Militar*.



One of the later *EFE* pair, at Ancud on Chiloé.



A *tipo h* O&K 0-6-2T at Castro station in 1936.

0-4-0T d/w ?, cyls. ?, built by Hanomag in 1907 and 1908

These locos may have remained in *DOP* service rather than being transferred to the *EFE*. They were known as **'PEDRO GARCÍA de la HUERTA', 'CENTENARIO', 3 'LUMACO', 3 'O'HIGGINS'**, as well as **'GRACIELA'**,

but in what order is not known.

?	w/n 4849
?	w/n 4850
'GRACIELA'	w/n 5158
2	w/n 5376
3	w/n 5377

One of these was on Chiloé early in the life of that railway, whilst the names **'CENTENARIO'** and **'LUMACO'** represent places on the Capitán Pastene line. **'CENTENARIO'** was at Saboya in 1910 and 1911. **'PEDRO GARCÍA de la HUERTA'** was at Chillán in 1910. **'O'HIGGINS'** was at Chillán in 1911 and 1914. An 0-4-0 no. **3** was on *DOP* work for the canal from Laja to Los Anjeles in 1929. The name **'PEDRO GARCÍA de la HUERTA'** has sometimes been written as **'PEDRO GARCÍA de IVERNA'**.

There was a locomotive **44 'LUMACO'** at Saboya in 1914 [MOBR2775]. It is not yet clear if that was the same loco as no. **3 'LUMACO'** listed here.

0-4-0T d/w 580mm, cyls. 210x300mm, built by O&K in 1910

8.7 tonnes in working order. Decree no. 70 dated 21st January 1910 confirmed the purchase of these locos from the import agent Walter Bade [MOBR2703]. However, those works numbers listed below, whilst completed that month and of 50hp as specified in the contract, were delivered to Chile via Saavedra Benard & Co. Walter Bade and Saavedra Benard were competitors in many tender processes, but may have collaborated in others. An invoice for the unloading of two 'Koppel' locos destined to railways under construction was presented to the *DOP* in August 1910 by the Kosmos maritime agency.

?	w/n 3962
?	w/n 3963

The *DOP* had a small O&K at Iquique water works in 1910 and also in 1914; one at Puente Alto in 1910, two there in 1911, and one there in 1914 which was returned to the *DOP* by the contractor in Sept. 1914. They hired a small O&K to the Linares - Colbún line contractor in November 1912, which was returned to Santiago owing to its poor condition in April 1914. A small 7.5T loco at Chillán on construction work in 1917 was to be handed over to the *Señor Intendente del Ñuble* as part of a financial settlement.

0-4-0T d/w ?, cyls. ?, built by ? in ?

8 tonnes in working order. This was offered for sale by *Corte i Cía*., contractors for the El Cañelo to Melocotón section of the Puente Alto to El Volcán line, in May 1911 together with a couple of wagons. After the price for the loco had been negotiated down from $10,000 (Chilean pesos) to $4,900 the *DOP* recommended purchase [MOBR2703].

?	w/n ?



This photo, from Pablo Moraga's collection, shows a Hanomag or Henschel tank loco at San José de Maipo during construction of the section of the *FCM* up to El Melocotón. This might be the loco mentioned above as having been offered for sale by Corte y Cía. in 1911, or might even be one of the *DOP* Hanomags listed on the previous page.

Tipo b1
4-6-0T d/w 610mm 24", cyls. 240x305mm 9½"x12", built by Hunslet in 1919

WD type locos completed to 2' 6" gauge, with WD running numbers **3251** and **3258**. Stored and later sold to Beverley Peace & Partners of Antofagasta for the *FC Uyuni-Pulacayo* in Bolivia. Purchased by the *EFE* in 1943 to relieve a war-time shortage of power, and regauged at MSB. Given *EFE* numbers **5062** and **5063**, probably in the order shown below.

3251	**5062**	w/n 1367	Under supervision of Maestranza Concepción in 1951, and also in *EFE* fleet in 1953 & 1955. At Saboya around 1954, in average condition, and ran 4,915 km that year.
3258	**5063**	w/n 1374	Under supervision of Maestranza Concepción in 1951, and also in *EFE* fleet in 1953 & 1955.

Both in *EFE* list and under Maestranza Concepcion supervision in 1951. Both in *EFE* service in 1953 & 1955.



Photo shows similar locos in WD service during WW1.

5000 series numbers in numerical order

It is worth giving the locos' post 1921 *EFE* numbers in numerical order, so that the pattern, and any gaps, can be seen.

Probable earlier number	1921 Number		
25	**5025**	Tipo a	At Saboya in 1954, poor condition. Ran 14,295 km in 1954.
38	**5038**	Tipo a	At Saboya in 1954, average condition. Ran 19,809 km in 1954.
39	**5039**	Tipo a	
40	**5040**	Tipo b	
41	**5041**	Tipo b	At Saboya in 1954, poor condition. Ran 7,775 km in 1954.
42	**5042**	Tipo b	
43	**5043**	Tipo b	At Saboya in 1954. Ran 6,234 km in 1954.
44	**5044**	Tipo b	On loan in 1930. At Saboya in 1955, average condition. Ran 153 km in 1954.
45	**5045**	Tipo b	On loan in 1930-1, to *Depto de Via y Obras*. At Saboya in 1955, average condition.
46	**5046**	Tipo c	On bridge reinforcement duties from Oct. 1942.
47	**5047**	Tipo c	On bridge reinforcement duties from Oct. 1942.
48	**5048**	?	0-4-0T Sold out of service 1929, but may have been returned to the fleet later.
49	**5049**?	Tipo d?	Out of service by 1929.
50	**5050**?	Tipo d?	Out of service by 1929.
51	**5051**	Tipo e	'*Excluida*' in 1930. At Saboya in 1954. Ran 6,837 km in 1954.
52	**5052**	Tipo f	On loan in 1930, to *Depto de Via y Obras*. Sold out of service in 1941.
53	**5053**	Tipo g	On loan in 1930. Still in service 1951-2.
54	**5054**	Tipo h	O&K 7120. On loan in 1931, to *Depto de Via y Obras* (may be mistake for **5044**).
Locos below this point will have joined the *EFE* later and thus gained numbers above **5054** in order of arrival.			
	5055	Tipo c	
	5056	Tipo b	At Saboya in 1954, poor condition. Ran 11,712 km in 1954.
DOP **45**?	**5057**	Tipo b	
	5058	Tipo a	Built 1929, Jung 4639. Reportedly at Chillán in 1949 [16]. At Saboya in 1968.
	5059	Tipo a	Built 1929, Jung 4640. Reportedly at Chillán in 1949 [16]. At MSB in 1974.
	5060	Tipo a	Built 1929, Jung 4641. Reportedly at Chillán in 1949 [16].
	5061	Tipo h	Built 1931, O&K 12372
	5062	Tipo b-1	Hunslet 4-6-0T bought from *FC Uyuni-Pulacayo*, Bolivia, in 1943 and regauged at MSB. HE no. 1367, WD no. 3251. At Saboya in 1954 average condition. Ran 4,915 km in 1954.
	5063	Tipo b-1	Hunslet 4-6-0T bought from *FC Uyuni-Pulacayo*, Bolivia, in 1943 and regauged at MSB. HE no. 1374, WD no. 3258.

Other locos commonly rumoured to have been associated with the *DOP* or *EFE* but which may never have been operated by either.

0-4-0WT d/w ?, cyls. ?, built by Maffei in 1928

The locos now preserved at the *EFE* offices in Santiago and at the Temuco Railway Museum have been said to have been bought for the Las Raices tunnel contract, but they do not appear on inventories for that task. Their original

owner is unknown, though they had been ordered through *Ferrostaal GMBH*.

? w/n 4336

? w/n 4337 The 'Helmut' notes in [13] have a mention that this loco was later '**CMV2**'.



One of the pair of Maffei 0-4-0WTs, as seen outside the *EFE* offices in Santiago in April 2019.



The second loco. MCC's own photo, taken at Temuco railway museum. The chimney seems to be shorter than that in the previous photo.

0-6-0WT d/w ?, cyls. ?, built by Maffei in 1929

Their original owner is unknown, though they too had been ordered through *Ferrostaal GMBH*. One of them is preserved at the Quinta Normal Museum in Santiago, falsely bearing the *EFE tipo a* **5025** smokebox number-plate and looking somewhat different from its working state. It is sometimes inaccurately said to have been built by Smoschewer of Breslau. The close similarity in a number of motion and other parts between this loco and those immediately above tends to bely this.

? w/n 4341

? w/n 4342

? w/n 4343

? w/n 4344



MCC's own photo, taken at Quinta Normal museum. The child-sized cab, the dome and chimney, the bunker and the toylike cow-catcher, all suggest that this engine was resurrected to please youthful museum visitors rather than to recreate its original appearance.

O&K 2-8-0s?

As an aside: in 1910 Walter Bade offered the *DOP* the opportunity to buy 16 Koppel bogie ballast wagons and two Koppel 2-8-0 tender locos for 60cm gauge, presumably from a cancelled contract. The wagons were discussed in detail and may well have been purchased, but the locomotives were declined. Which locos were these? The documents need looking at more carefully to see whether they were already in Chile. Also, there are no obvious 2-8-0 locos in the O&K list, though such a design is illustrated in O&K Spanish language catalogue 870.

4.8.2 *El FC Militar* – Puente Alto to El Volcán

Background

Gauge 60cm. Constructed by the *DOP* around 1908, but handed over to the Chilean army as a long-term training exercise, rather than to the *EFE* as were the other four 60cm gauge lines. Originally was to have extended west to San Bernardo, and extension south-east to the Argentine border was also investigated.

1) Locos transferred from *DOP* ownership along with the railway:

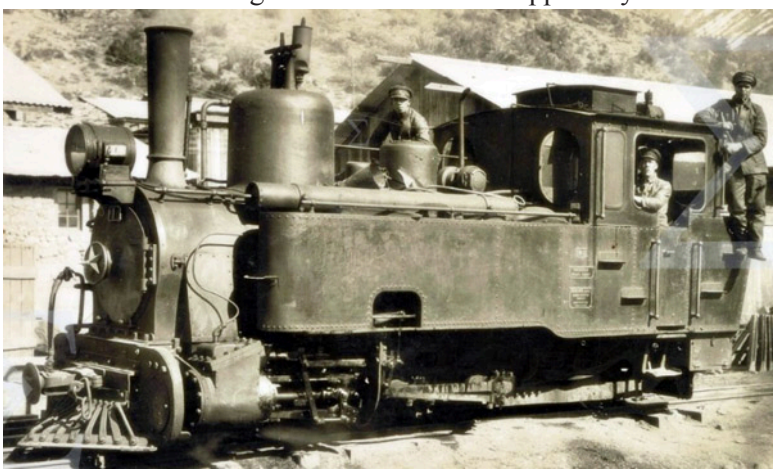
0-6-2T d/w 700mm, cyls. 300x350mm, built by Jung in 1909

First batch ordered 10 Oct 1908 for Puente Alto. One of these survives, currently at El Melocotón, under the *Avé Fenix* project. This is probably the second of those below, judging by the works numbers found on motion parts.

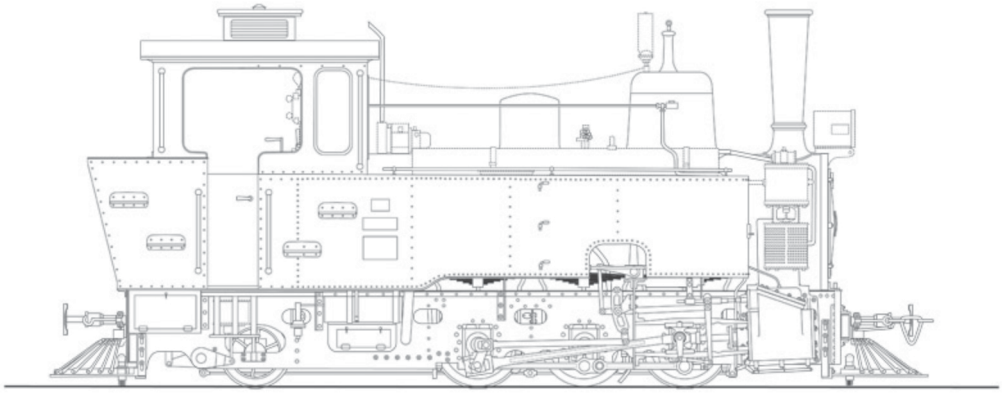
1 'PRESIDENTE PEDRO MONTT' w/n 1306 This loco hauled the train conveying the eponymous State President on the occasion of the opening of the section of line to El Cañelo [*Zigzag* issue 262, February 1910]. Though the name in *DOP* reports was generally recorded as just **'PRESIDENTE MONTT'**, the plate on the tankside in the photo below clearly includes a third word – presumably the Christian name and to make the distinction from the earlier Presidente Manuel Montt.

2 'ALBERTO MACKENNA' w/n 1307 Later probably became no. **4**, and currently known as **'PANCHITA'**.

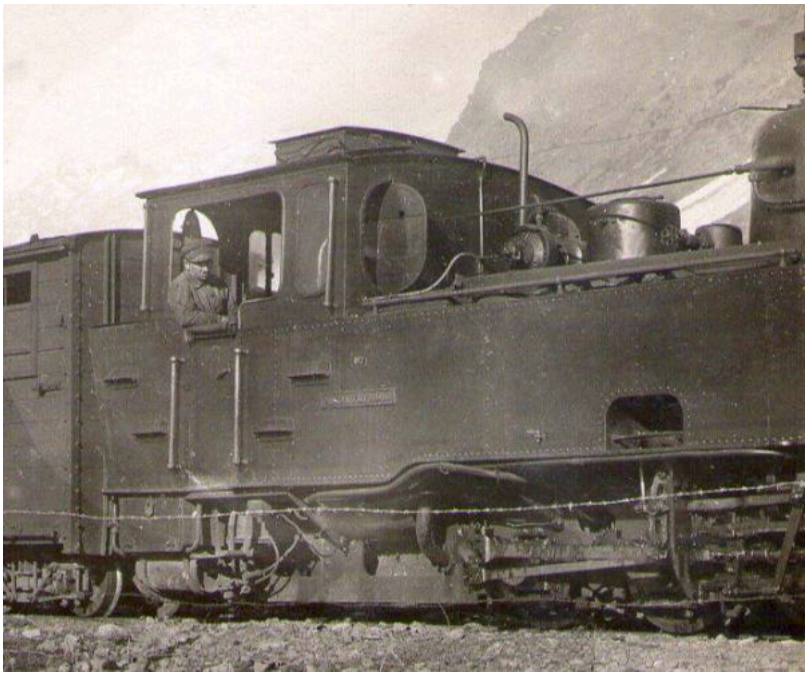
A photo in [12] shows one of these locos hauling a train at El Volcán supposedly in 1950.



FC Militar no. **1 'PRESIDENTE PEDRO MONTT'**.



This modern drawing shows the Chilean O&K 0-6-2Ts in their original condition.



The photo above shows one of the Arnold Jung 0-6-2Ts on the FCM bearing the number **7** and the name **'PRESIDENTE ALESSANDRI'**. Sr. Arturo Alessandri was President of Chile from 1920 until he was deposed in a *coup d'etat* in 1924. Thus this must have been a renaming of one of these two engines, and probably not a very long-lived one at that.

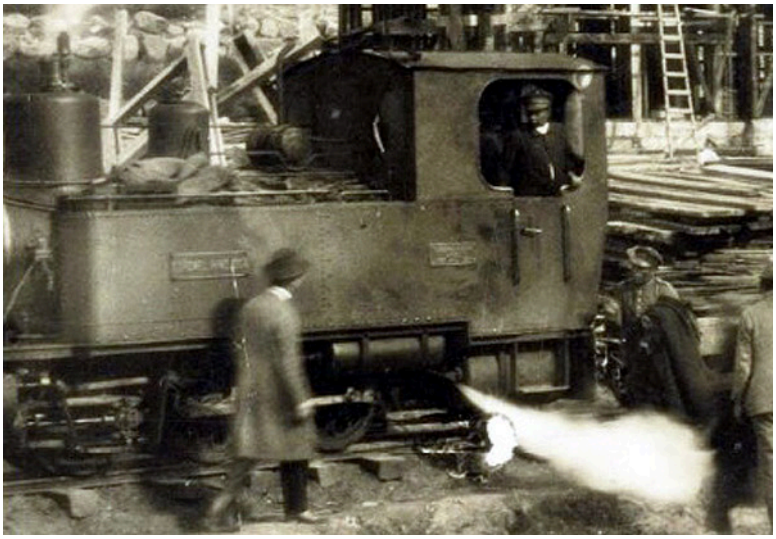


No. **4 'PANCHITA'** as plinthed in the barracks at Puente Alto in 2001. The coal bunker has been lengthened and raised.

0-6-0T d/w 630mm, cyls. 235x300mm, built by Henschel in 1909

From the first batch (*DOP* nos. **1-3**) ordered 21 Aug. 1909 for Saboya and Linares, but this one was delivered to Puente Alto.

3? **'COLBÚN'**	w/n 9853	Probably renamed **'CORONEL HINOJOSA'** by the army. Still in use in 1920.



The photo from which this was cropped clearly showed construction work under way. The name-plate on the tank reads **'CORONEL HINOJOSA'**, so whilst this might have been Jung no. 1858, *DOP* no. **23**, whose name was hitherto unknown, it is much more likely to be a renamed no. **3** having been given a suitably military title.

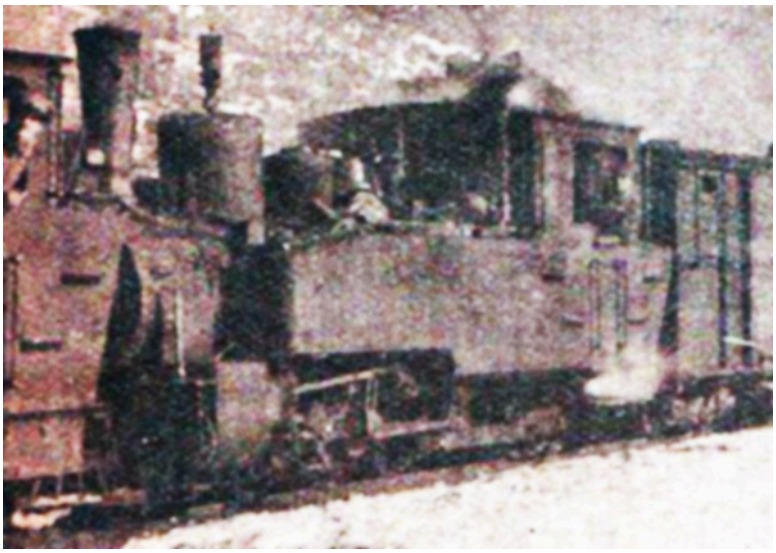


Another view, almost certainly of the same loco, cropped from a postcard showing a passenger train at San José de Maipo. There are minor detail differences from the previous photo, including a rear headlamp mounted on the cab roof, the seeming removal of an air reservoir beneath the fireman's side tank/bunker, and possibly the addition of a small square number plate above the name plate on the tank side.

0-6-2T d/w 700mm, cyls. 275x310mm, built by O&K

This was O&K's equivalent to the *tipo a* specification. First one ordered 19 Dec. 1912 for Puente Alto and presumably remained there [MOBR2488]. A photo of a double-headed excursion passenger train at San Gabriel, published in *Zig-zag* in 1926(?) shows this loco and one of the two Jungs. It is identifiable by the tank tops sloping down from their mid-points to the front, and by the steam-chest covers being horizontal rather than sloping forward.

29 '?'	w/n 6518	A photo shows nameplates, but not decipherable. The number **29** was certainly in use on the *FCM* in 1920. The *FC Militar memoria anual* for that year reported work having been undertaken on locos **1** and **29**.



It will be obvious that this loco is very similar to the tipo a engines by Jung.
However, significant differences include the sloping tops to the side tanks
at the front, and the level rather than forward-sloping tops to the steam chests.

2) Loco already in army ownership:

0-8-0T d/w ?, cyls. ?, built by O&K in 1907 for the Chilean army

This was supposedly previously used on a short army line near Santiago, but is likely to have been transferred to the main *FC Militar* after it opened. It may well have looked like the 1914 batch listed below.

? w/n 2580

3) Locos bought new for the *FC Militar*:

0-8-0WT d/w ?, cyls. ?, built by O&K in 1914

These were ordered specifically for this railway. Well tanks, with their axles spaced unevenly in pairs with a long gap between second and third axles. Identifiable by the short bunkers forward of the cab.

1 w/n 6186
2 w/n 6187
3 w/n 6188
4 w/n 6189
5 w/n 6190
6 w/n 6191

These locomotives were sometimes used elsewhere when military manoeuvres involved practice at constructing field railways. For example, an article in *Sucesos* issue 657, published in April 1915, reports on army exercises held at Panguilemu north of Talca, and is illustrated using a photo showing one of these locos crossing the Rio Lircai on a temporary bridge. Similarly *Sucesos* issue 709 from April 1916 reported that the State President had reviewed the army's *batallón de ferrocarrileros* at El Bosque which is on the southern outskirts of Santiago and just east of the southern mainline. A photo showed what appeared to be one of these O&K 0-8-0Ts hauling a single bogie wagon with a canvas awning.

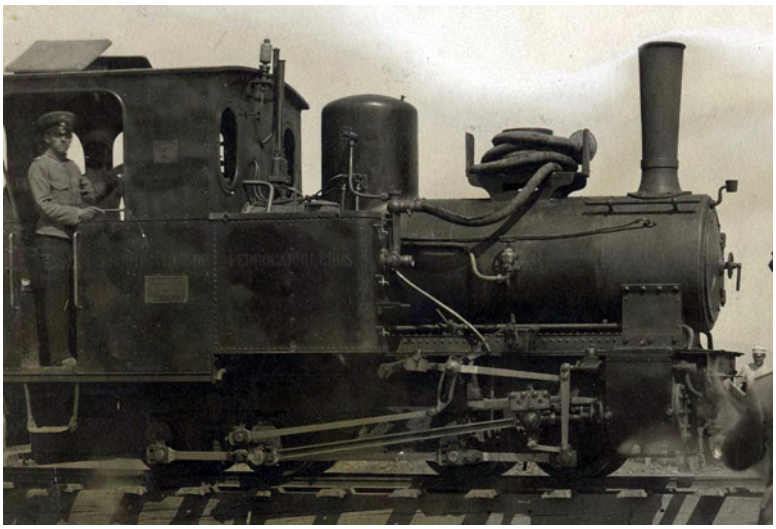


Photo source unknown.

It has been suggested that the smaller locos on the *FCM* were known for many years as *las violetas*, but whether this name was used mainly for these O&Ks or originally for the *tipo* b 0-6-0T is not known.

0-6-6-0T Meyer d/w 700mm, cyls. 270x350mm, built by O&K in 1927 (7), and 1944 (others)

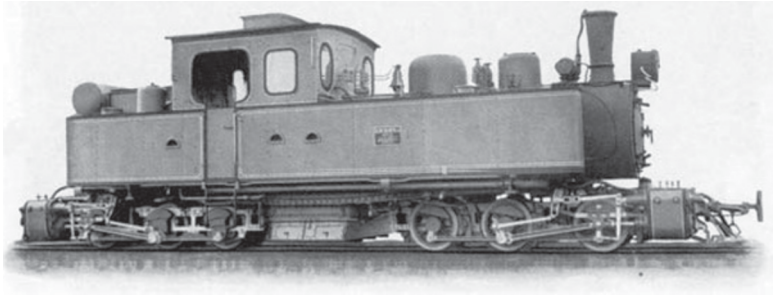
Correspondence on the purchase of the second batch is in ArNAd file [MGUE6314]. There were detail differences between the first and second batches, such as the wrap-over cab roofs of the later engines.

7 'PRESIDENTE GRAL. IBÁÑEZ' w/n 11350 Scrapped in late 1950s?

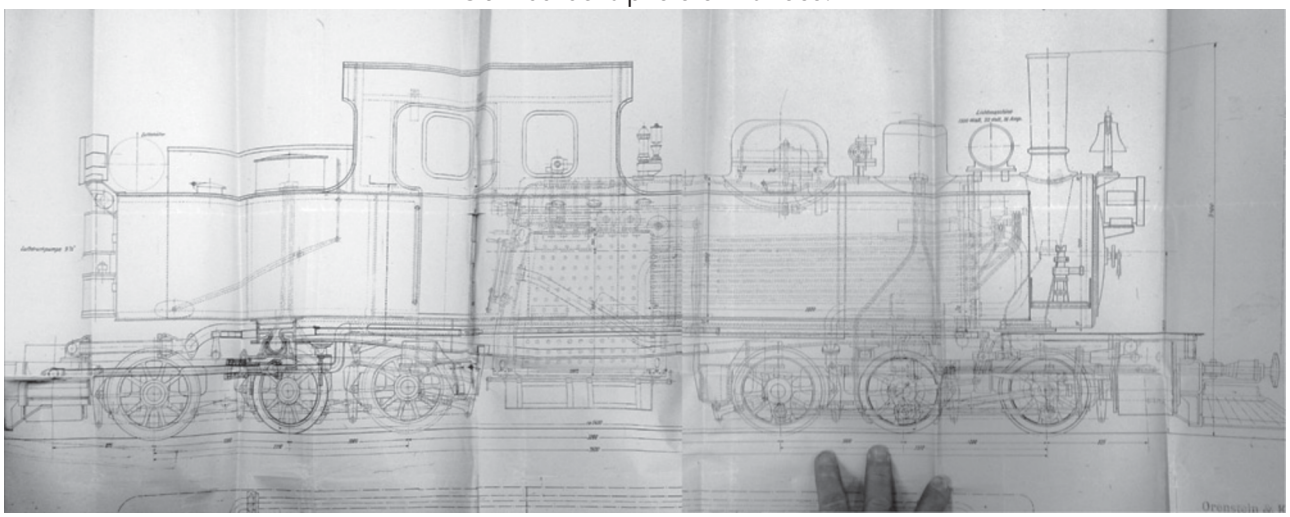
– w/n 13306 Not delivered owing to war. Used in Poland as *PKP* **Tyy 9-691**.

– w/n 13307 Not delivered owing to war. Used in Poland as *PKP* **Tyy 9-692**.

– w/n 13308 Not delivered owing to war. Used in Poland as *PKP* **Tyy 9-693**.

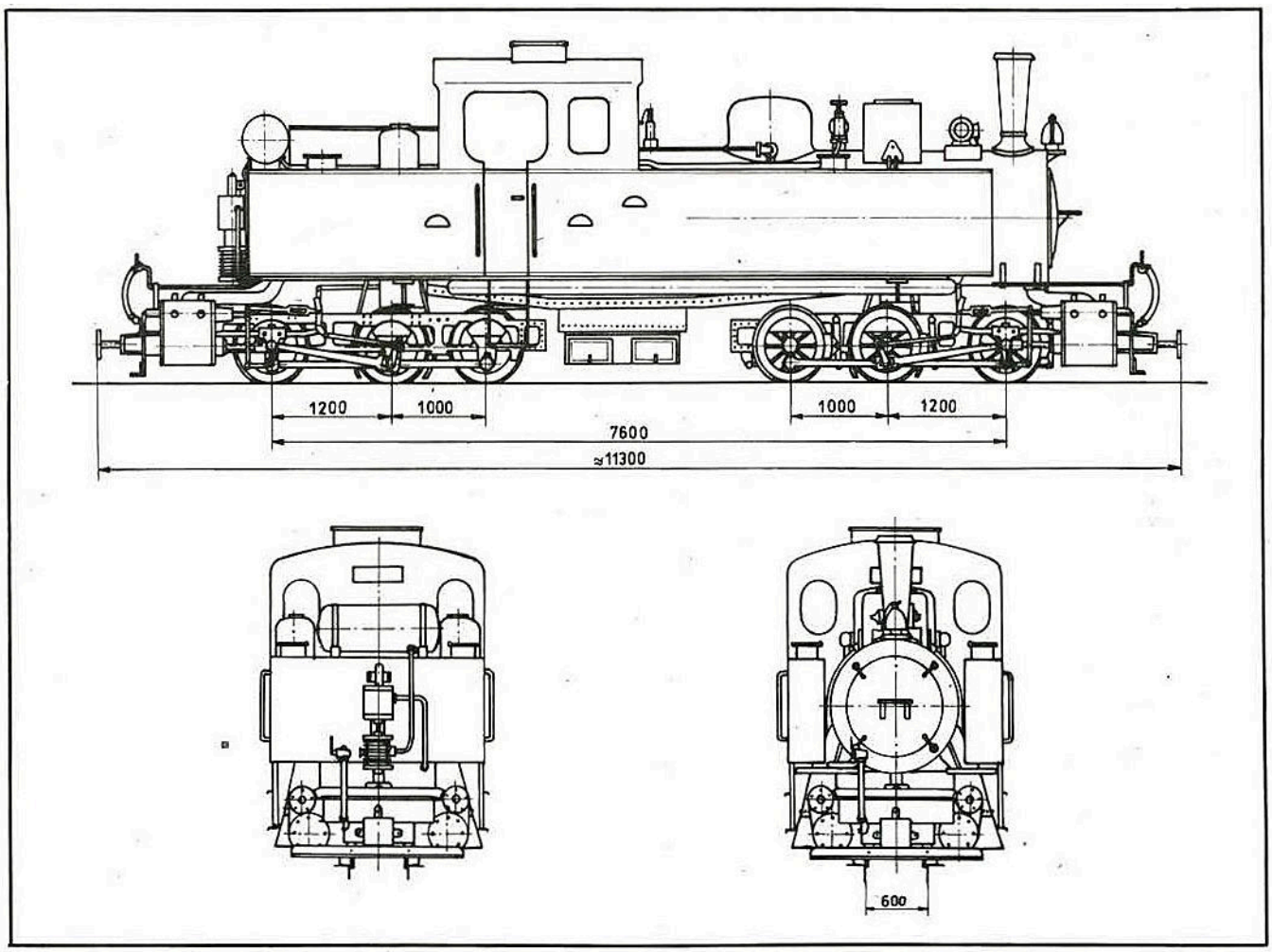


O&K builder's photo of first loco.



A side elevation of the second batch of O&K Meyers which never

actually reached the *FCM* owing to the outbreak of the Second World War, ending up in Poland instead. Source [MGUE6314].



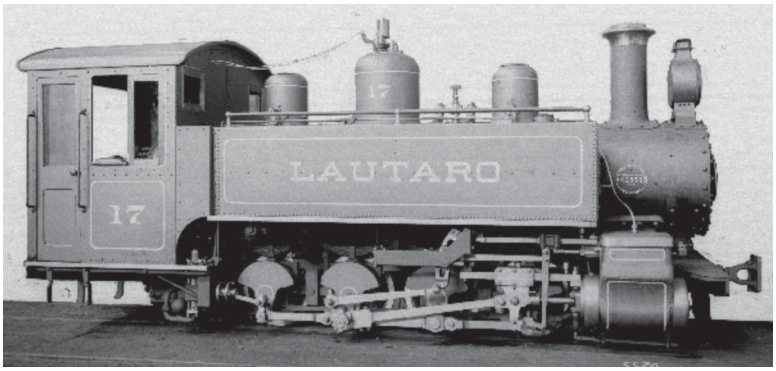
A simpler but much clearer sketch drawing of the second batch of O&K Meyers as running on the PKP. This was published in a German rail magazine, probably from an original Polish source.

4) Locos bought second-hand to fill a pressing motive power shortage during WW2:

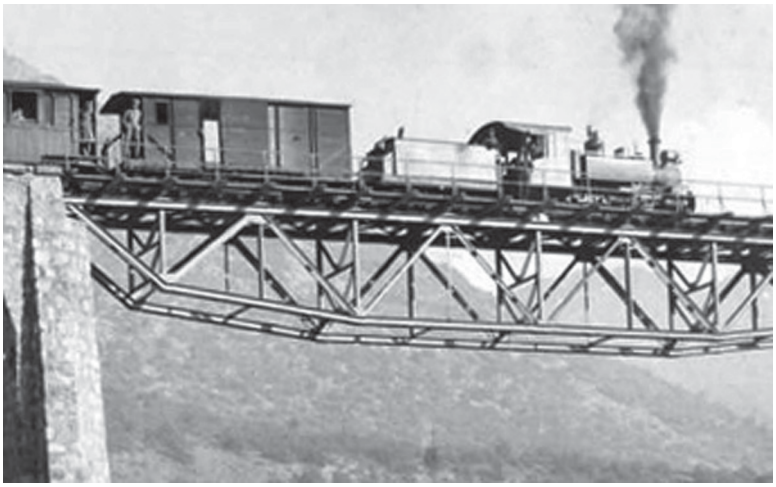
0-8-0TT d/w 25½", cyls. 11"x14", built by Baldwin in 1915 and 1916

Ordered originally for the Lautaro Nitrate Co. Almost certainly bought by *FC Militar* in 1943. A good deal of correspondence on the purchase is in ArNAd file [MGUE6792]. The purchase was actually funded by the *Cía. Industrial 'El Volcán'* who were desperate for additional motive power to carry out their gypsum products. The railway's budget for 1945 shows that as a consequence the *FCM* were repaying the company $100,000 (Pesos) per year for five years [MGUE6870].

?	w/n 42559	ex Lautaro no. **17**.
?	w/n 44229	ex Lautaro no. **18**.



Baldwin builders' photo of Lautaro Nitrate no. **17**. High res versions are available from the Railroad Museum of Pennsylvania.



Cropped from a well known photo of an *FCM* train on the Río Colorado bridge. It was this picture which first led to suspicions that a Baldwin loco of some kind had run on the *FC Militar*. Clearly, if this is one of the ex-Lautaro locos, then the cab has been opened up and and a tender added. The fairing between tank and cab has also disappeared, though that might have happened earlier.

0-8-0T d/w 650mm, cyls. 250x350mm, built by 'Koppel' with Klien-Lindner articulation

Weight 17T. May have been purchased with the Baldwins from Lautaro Nitrate but not confirmed. Were these *brigade-lokomotiven*? A photo below showing a substantial O&K-looking tank loco at San José de Maipo station tends to support the theory that these locos were indeed bought for the *FCM* but were not *brigade-loks*. However, the 1945 repayments to the *Cía. Industrial 'El Volcán'* were only for two locomotives, so who paid for these two?

? w/n 2579?

? w/n 2580?



4.8.3 *Parque Quinta Normal*

Background

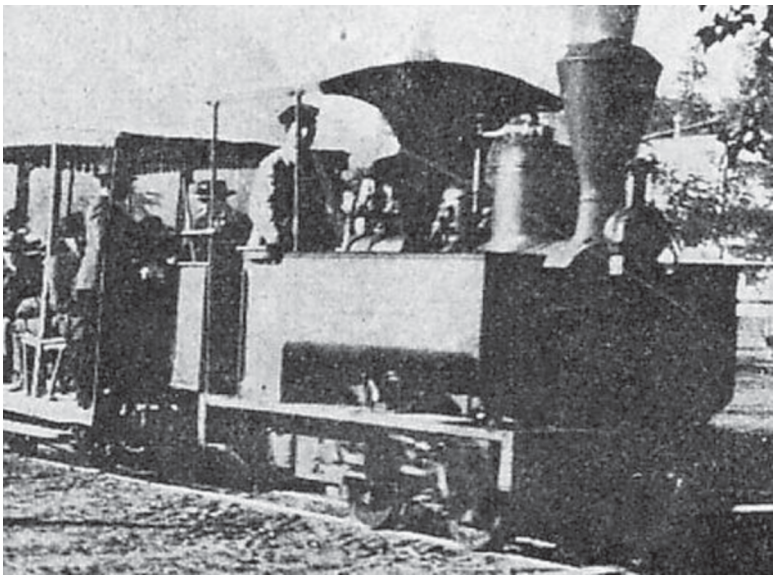
“Santiago's first park railway was inaugurated in 1894. A small Decauville steam locomotive and coaches transported visitors on a 3 km circuit at the *Exposición de Minería y Metalurgia* in the Quinta Normal Park. [The origin of the locomotive is uncertain. Roger Bailly's book, *Decauville* (Le Mée-sur-Seine, 1986), notes an order, p118, for the "*Ecole d'Agriculture au Chili*," which was the principal tenant of the Quinta Normal Park. But Alfonso Calderón's *Memorial del Viejo Santiago* (S, 1984) states, p176, that the locomotive, coaches and rails came second-hand from the *Exposition Universelle de 1889* in Paris. The little 600 mm gauge railway remained in operation after the (Santiago) exposition closed, until at least the First War.” from Allen Morrison's *Tramways of Chile*. The railway was constructed by don José Luis Coo, who later had much bigger railway construction contracts.

0-4-0T d/w ?, cyls. ?, built by Decauville Ainé in 1889-90

Ordered for Valentin Lambert, *École d'Agriculture*, Chile.

‘JOSÉ MANUEL BALMACEDA’ w/n 81

For this loco to have been purchased by Chilean interests, this must have taken place before September 18th 1891, for on that day Presidente Balmaceda, having clearly lost the civil war, shot himself in the Argentine Legation in Santiago.



4.8.4 *El FC o tranvía Tilcoco a Rosario*

Background

"*Era trocha Decauville (600), el patio Rosario estaba en el sector norponiente de la estación de Rosario, luego de su levante se habilitó rejas para carga y descarga de animales en el desvío de trocha ancha que servía al patio del ramal (o ferrocarril). En Quinta de Tilcoco llegaba hasta la quinta de caiyoma (en las afueras del pueblo de Quinta), en un sector donde hoy hay un servicentro. Desconozco cuanto equipo rodante hubo, pero al parecer no superaba las dos locomotoras. El servicio de mantenimiento se realizaba en Rosario y solo las reparaciones mayores se hacían en San Bernardo. Alguna vez estuvo planeado extenderlo hacia Guacargüe, pero la pérdida de importancia de aquella localidad en función del aumento de importancia de Rengo, evitaron su extensión. Luego la mejora de caminos y las posibilidades de desplazamiento carretero redujeron su importancia y servicio. Fue levantado en los 50's como varios otros ffcc secundarios de ancho 600*."

It was Decauville gauge (600mm), Rosario yard was in the north-west sector of the station of Rosario; after track-lifting it was used for the loading and unloading of animals on the broad gauge siding that had served the narrow gauge yard. In Quinta de Tilcoco (it ran) to the quinta de caiyoma (on the outskirts of Quinta village), in an area where there is today a servicentro. I don't know how much rolling stock there was, but apparently no more than two locomotives. The maintenance service was in Rosario and only the major repairs were done in San Bernardo. At one time there were plans to to extend it to Guacargüe, but the loss of importance of that location, relative to the increasing importance of Rengo, prevented its extension. Then the improvement of roads and the potential for moving traffic onto lorries reduced its importance and service. It was lifted in the ’50s, as with several other secondary 600mm gauge railways.

4.9 Minor 2' or 60cm gauge industrial or other railways

4.9.1 Coal mining lines

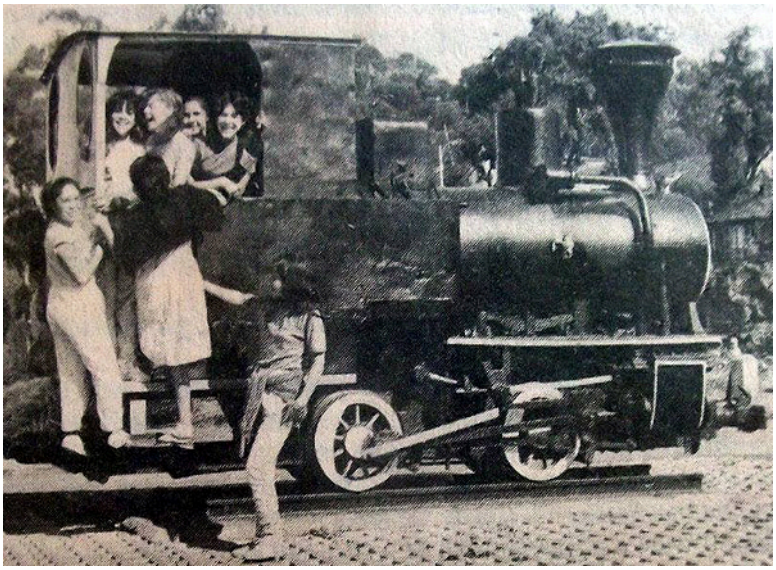
La Mina Lota

60cm gauge coal mine system.

0-4-0WT d/w ? cyls. ? built by O&K in 1936

Ordered for *Dep de Riego*, Valenzuela, Santiago.

?	w/n 12855	Was on display in Parc Lota Alto, preserved by Carlos Cousiño,Lota. More recently (2014 and 2019) a small O&K has been displayed opposite the Teatro Lota. This may well be the same loco.



La Cía. Nacional Carbonifera – Lebu

0-6-0T d/w ?, cyls. ?, built by Henschel in 1905 and 1910

?	w/n 7218
?	w/n 9963

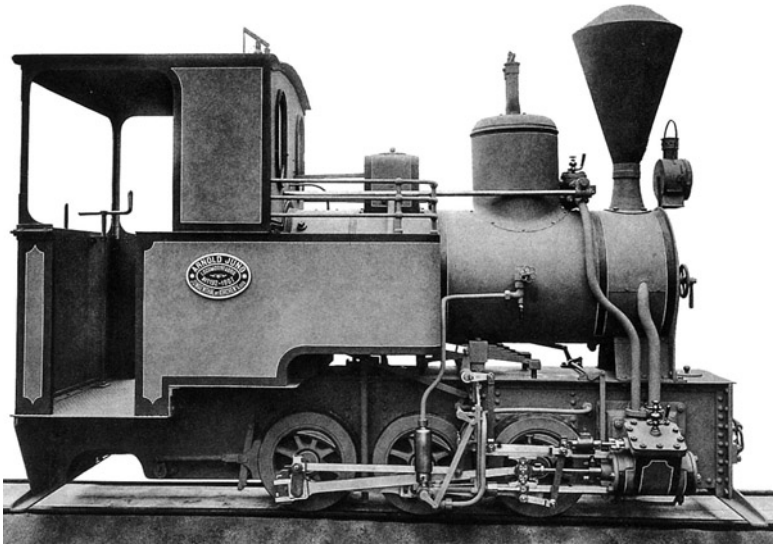
La Mina Pilpilco

60cm gauge coal mine system. South of Curanilahue.

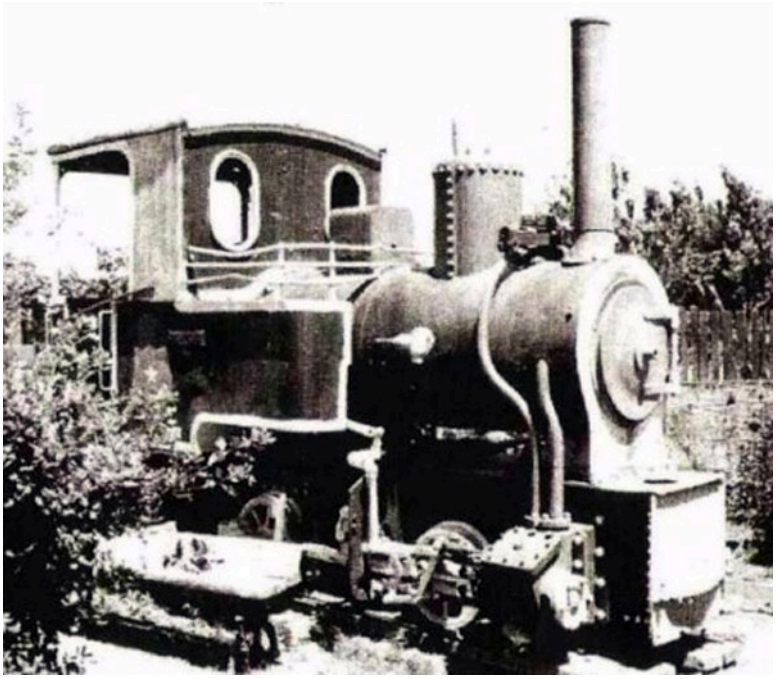
0-6-0WT d/w ? cyls. ? built by Jung in 1907

Batch Jung 1191-3 of 1907, 20hp 5.2T, Ct 600mm, were all delivered via Arthur Koppel for Chile. There is a puzzle here. The Jung list and details in the previous sentence, as well as the first photo below, show no. 1192 as an 0-6-0T. However, both later photos seem to show an 0-4-0T.

7 'FRESIA'	w/n 1192	Was on display in playground at Escuela Cerro Alto in Pilpilco.



A Jung builders' photo of no. 1192.





The Jung as it is today, alongside the main road in Cerro Alto.

0-4-0T d/w 580mm, cyls. 210x300mm, built by Jung in 1912

One of the *EFE*'s *tipo c* 0-4-0Ts seems to have had a later career here, as evidenced by the photo below. Its precise identity is unknown.



This photo, supposedly showing a loco at the Pilpilco coal mine south of Curanilahue, illustrates another tipo c 0-4-0WT, a number of small details being different from **5055** seen in an earlier photo. This suggests that one of the tipo c engines had a later career on the coalfield.

Other locomotives

Sr. Joaquin Olate has stated that the mine also operated two other engines, named **'GUACOLDA'** and **'MILLARAI'**, but but no dertails are known. One of them might have been the O&K listed below.

0-6-0T d/w ?, cyls. ? built by O&K at an unknown date



This image from the *Patrimonio de Los Alamos* website, shows a small O&K at the Pilpilco mine.

El FC de Maquegua a Laraquete

This railway has been covered in the 2' 6" gauge section of this file. However, the gauge is in doubt, for whilst more than one source affirms that it was indeed 2' 6" or 75cm gauge, there are others which assert that it was of 60cm gauge.

El FC Los Alamos a Trihueco

– *La Cía. Carbonifera de Los Alamos,* later *La Cía. Carbonifera Trihueco*

Gauge 60cm. Southward from Los Alamos station on the Lebu to Los Sauces railway. 6.5 km long. Closed around 1928, at which time it had one 'Koppel 30hp loco' and 14 open wooden cars each of 8 tons capacity [43].

La Cía. Carbonifera Victoria at Lebu

60cm gauge.

La Sociedad Carbonífera de Mafil

Background

This was the best known of the small coal mines in the Valdivia - Osorno region.
It was the same operation as the Cia. Carb. Millahuillin, that was described in 1915 and 1919 as "*El ferrocarril de las minas arranca de la estación de Mafil y atraviesa la plataforma formada por las estratas del corte en que pasa el ferrocarril del Estado, antes de llegar a la estación. Estas estratas horizontales aparecen por debajo de la tierra vegetal, y son formadas de arena, arenisca suelta, arenisca gris algo dura (cancagua de las resinas), grosera, huevillo y arcillas mezcladas con arena gris claro y en allas el rio Rucapichui ha roido su cauce.*
El ramal a Millahuillín - Minas (de trocha angosta) cruza este rio y sigue entre los desfiladores y valles pantanosos de la region hasta la planta central proyectada."
"The mine railway starts from the Mafil station and crosses the platform formed by the strata of the cutting in which the state railway passes before reaching the station. These horizontal strata appear below the topsoil, and are formed of sand, loose sandstone, somewhat hard gray sandstone (*cancagua de resinas*), coarse, egg and mixed clays with light gray sand and in them the Rucapichui river has cut its channel.
The branch to Millahuillín - Minas (narrow gauge) crosses this river and continues through the gorges and swampy valleys of the region to the projected central plant."

A single photo, seen below, seems to show a 60cm gauge railway with a Germanic tank loco. This appears to be fairly long, and might be Borsig 7889 of 1911, an unknown gauge Mallet B'Bn4vt despatched to Chile via Schumacher & Wulff, Santiago. Unfortunately the gentleman standing in front of the loco obscures the point where the high pressure cylinders would be.

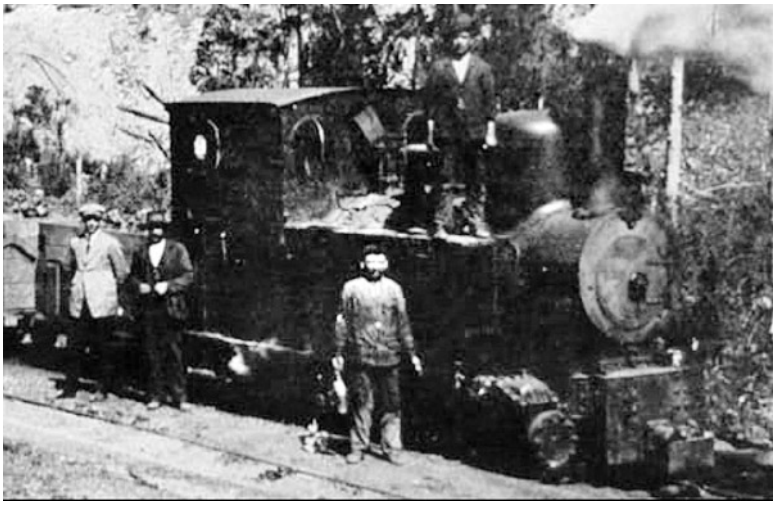
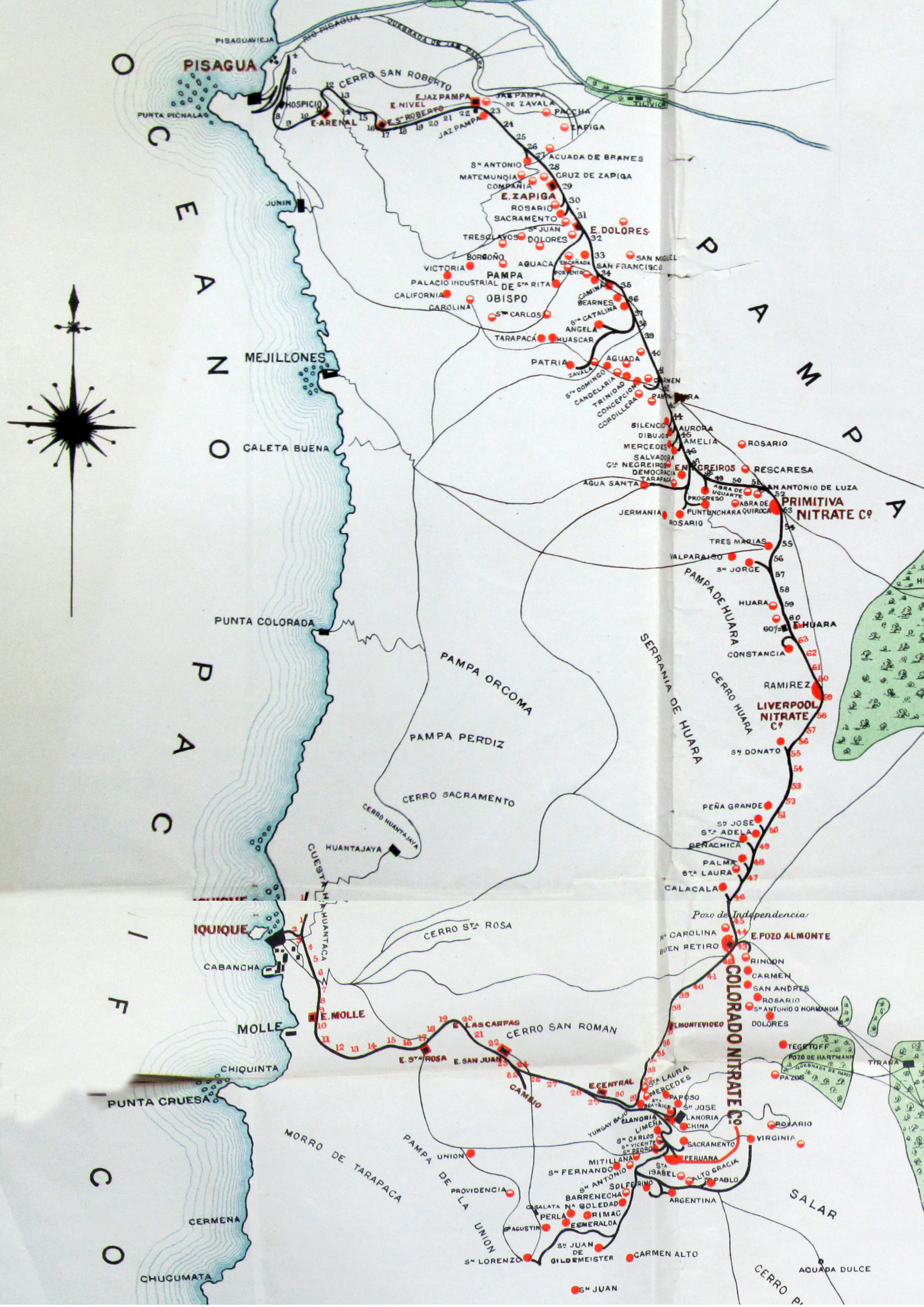


Photo from Pablo Moraga's collection.


OCEANO PACIFICO
PAMPA
PISAGUA
PISAGUAVIEJA
RIO PISAGUA
PUNTA PICHALO
HOSPICIO
E. ARENAL
E. NIVEL
E. Sta ROBERTO
CERRO SAN ROBERTO
JAZ PAMPA
E. JAZ PAMPA
JAZ PAMPA DE ZAVALA
PACCHA
ZAPIGA
ACUADA DE BRANES
Sn ANTONIO
MATEMUNGIA
COMPAÑIA
CRUZ DE ZAPIGA
E. ZAPIGA
ROSARIO
SACRAMENTO
Sn JUAN
TRES CLAVOS
DOLORES
E. DOLORES
JUNIN
BORGOÑO
VICTORIA
AGUADA
ENCAÑADA PORTEZUELO
SAN MIGUEL
SAN FRANCISCO
PALACIO INDUSTRIAL
PAMPA DE Sta RITA
CAMINA
CALIFORNIA
OBISPO
BEARNES
CAROLINA
Sta CATALINA
Sta CARLOS
ANGELA
TARAPACA
HUASCAR
PATRIA
AGUADA
ZAVALA
Sto DOMINGO
CANDELARIA
TRINIDAD
CONCEPCION
CORDILLERA
CARMEN
PAMPA
SILENCIO
AURORA
DIBUJO
AMELIA
ROSARIO
MERCEDES
SALVADORA
Cia NEGREIROS
DEMOCRACIA
TARAPACA
E. NEGREIROS
RESCARESA
AGUA SANTA
ABRA DE UQUARTE
PROGRESO
SAN ANTONIO DE LUZA
ABRA DE QUIROCA
PRIMITIVA NITRATE Co
JERMANIA
PUNTUNCHARA
ROSARIO
TRES MARIAS
VALPARAISO
Sn JORGE
PAMPA DE HUARA
HUARA
E. HUARA
CONSTANCIA
RAMIREZ
LIVERPOOL NITRATE Co
Sn DONATO
SERRANIA DE HUARA
CERRO HUARA
PEÑA GRANDE
Sn JOSE
Sta ADELA
PEÑACHICA
PALMA
Sta LAURA
CALACALA
MEJILLONES
CALETA BUENA
PUNTA COLORADA
PAMPA ORCOMA
PAMPA PERDIZ
CERRO SACRAMENTO
CERRO HUANTAJAYA
HUANTAJAYA
CUESTA DE HUANTAJAYA
IQUIQUE
CABANCHA
E. MOLLE
MOLLE
CHIQUINTA
PUNTA CRUESA
CERRO Sta ROSA
CERRO SAN ROMAN
E. LAS CARPAS
E. Sta ROSA
E. SAN JUAN
CAMBIO
E. CENTRAL
Pozo de Independencia
Nª CAROLINA
BUEN RETIRO
E. POZO ALMONTE
COLORADO NITRATE Co
RINCON
CARMEN
SAN ANDRES
ROSARIO
Sn ANTONIO O NORMANDIA
DOLORES
MONTEVIDEO
TEGETOFF
POZO DE HARTMANN
QUEBRADA DE RAPOS
TIRANA
PAZOS
Sta LAURA
MERCEDES
PAPOSO
Sta BEATRICE
Sn JOSE
LANORIA
CHINA
ROSARIO
VIRGINIA
SACRAMENTO
PERUANA
Sta ISABEL
ALTO GRACIA
Sn PABLO
ARGENTINA
SALAR
YUNGAY BAJO
LIMEÑA
Sn CARLOS
Sn VICENTE
Sn PEDRO
MITILLANA
Sn FERNANDO
Sn ANTONIO
SOLFERINO
BARRENECHA
CASALATA
Nª SOLEDAD
PERLA
RIMAC
Sn AGUSTIN
ESMERALDA
Sn JUAN DE GILDEMEISTER
Sn LORENZO
CARMEN ALTO
Sn JUAN
AGUADA DULCE
CERRO P
MORRO DE TARAPACA
PAMPA UNION
PAMPA DE LA UNION
PROVIDENCIA
CERMENA
CHUCUMATA

4.9.2 Nitrate extraction

La Cia de Salitreras de Antofagasta

60cm gauge. Also had many 2' 6" gauge locos, see above.

0-6-0T d/w ?, cyls. ?, built by O&K in 1913

? w/n 6147 20hp

Oficina Franca

2' 0" gauge. Info from [9].

0-4-0ST d/w ? cyls. ?, built by Bagnall in 1910

(18) 'DIECIOCHO' w/n 1914 Displayed at *Oficina Victoria* but later moved to *SoQuiMiCh* at Pedro de Valdivia.

Mitrovich Bros.

This company were engineers who designed and built nitrate *oficinas*. 60cm and other gauge locos were imported, principally for nitrate *oficinas*.

0-4-0ST d/w 21½" cyls. 7x12", built by Bagnall in 1901

Gauge 1' 11 5/8" according to IRS Bagnall list. Outside cyls., inside frames, awning, spark arresting chimney. First of pair initially built for stock, second for this order. Both finished 19-3-01. Cost £377 each, customer charged £437 each. Mitrovich plates to be fitted: 'IMPORTADORES MITROVITCH HNOS IQUIQUE'. Woodburners. Delivered to Antofagasta.

? w/n 1644

? w/n 1645

0-4-0ST d/w 21½" cyls. 7x12", built by Bagnall in 1902

Outside cyls., inside frames, cab, spark arresting chimney.

? w/n 1675 For Santiago Nitrate Co. Clearly identical to 1677 below.

? w/n 1677 For Santiago Nitrate Co. Finished 7-10-1902. Cost £360, customer charged £430. No name but 'Mitrovitch Hnos Importadores Iquique' plates fitted. Spares ordered 1912 by Santiago Nitrate Co. Ltd. and for nos. 1675 and 1759.

? w/n 1758 of 1905 for Santiago Nitrate Co.

? w/n 1759 of 1906 for Santiago Nitrate Co.

? w/n 1778 of 1906

0-6-0T d/w 27½" cyls. 9¼x14", built by Bagnall in 1906

? w/n 1826

? w/n 1827

? w/n 1828

Lautaro Nitrate Co.

2' gauge. This company also had 3' 6" gauge and 2' 6" gauge locos. See appropriate files.

0-8-0T d/w 650mm, cyls. 250x350mm, built by 'Koppel' with Klien-Lindner articulation

These may have been 'O&K 2579-80, nos. **10-11**, 0-8-0T, 110hp, A. Koppel for Chile in 1907.' as listed in one O&K list. No other O&K 0-8-0Ts are known to have arrived in Chile. Weight 17T.

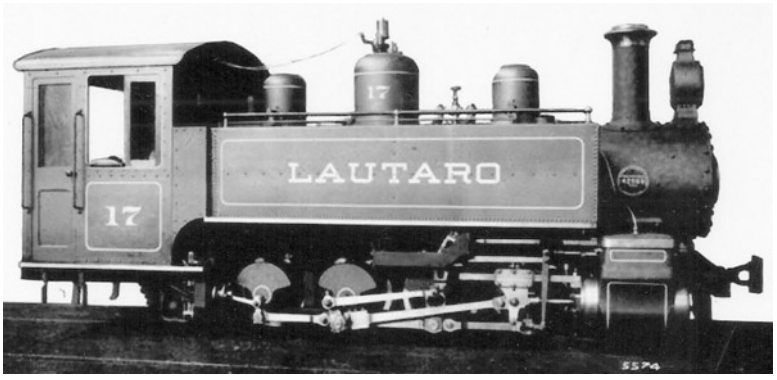
10	w/n 2579	May have been sold to *FC Militar* in 1943.
11	w/n 2580	May have been sold to *FC Militar* in 1943.



This unidentified engine on the FC *Militar* may well have been one of this pair of ex-Lautaro Nitrate locos.

0-8-0T d/w 25½", cyls. 11"x14", built by Baldwin in 1915 and 1916

17	w/n 42559	Almost certainly sold to *FC Militar* in 1943.
18	w/n 44229	Assembled at *oficina Ballena* [caption in *Sucesos* issue 762 of May 1917]. Almost certainly sold to *FC Militar* in 1943.



BLW archive pic; hi-res versions available from Railroad Museum of Pennsylvania.

Lautaro Nitrate *oficinas*

List of Lautaro Nitrate Co.Ltd. *oficinas*, with the locos listed in the 1927 *Album Zona Norte de Chile*. Many of these will have used gauges other than 60cm. In 1908 Lautaro Nitrate were granted a concession to build a 15 km. railway

of 60cm gauge, from *oficina Ballena* to another of their *oficinas*. This matches with the statement above about one of these locos being erected at *Oficina Ballena*.

• ***Aconcagua*** close to station La Noría on *FCAB*, 6 locos Bagnall and Koppel of 18, 15, and 12T.

• ***Agustin Edwards*** at station Central of *FCAB*, 4 locos.

• ***Anibal Pinto*** 1km from station Maipu of *FCAB*, 10 locos Koppel, 2 of 32T, 6 of 16T, 1 of 18T, 1 of 12T.

• ***Araucana*** 5km from station Union on *FCAB*, 5 locos Henschel of 16 and 12T.

• ***Aurelia*** 4km from station Salinas of *FCAB*, 2 Jungs of 10T, 2 of 12T.

• ***Ausonia*** 3 1/3km from station Peinelas on *FCAB*, 5 locos 'Koppel Wagnal' of 24, 22, 20T, 2 locos of 16T.

• ***Avanzada*** near Yungay station on branch off *FC de Aguas Blancas*, 5 locos, 1 Henschel of 8T, 2 Koppel of 10T, 2 Americana of 27T.

• ***Ballena,*** Taltal area, was earlier ***Oficina Germania***.

Operating 1906. In 1908 was granted concession for a 15 km line of 60cm gauge to another Lautaro oficina.

In 1926 owned by Lautaro Nitrate Co., but no details at all; thus no locos listed.

• ***Blanco Encalada*** 7km from station Salinas of *FCAB*, 3 locos: 1 Henschel of 33T, 1 Koppel of 18T, 1 Avonside of 18T.

• ***Carlos Condell*** near station Carmen Alto of the *FCAB*, 5 Bagnalls of 30T, 2 Avonside and Koppel of 18T.

• ***Carmela*** 7km from station Salinas of *FCAB*, 4 locos Bagnall of 16T, 1 Avonside of 18T.

• ***Chacabuco*** 1km from station Salinas on *FCAB*, 7 locos, 5 Bagnalls of 30T, 1 Avonside and 1 Koppel both of 18T.

• ***Filomena*** close to station Solitario on *FCAB*, 9 locos, 3 Bagnall of 12T, 2 Americana of 24T, 4 Henschel (1 of 32T, 2 18T, 1 of 30T.) Gauge 0.75m.

• ***Francisco Puelma*** 300m from station Carmen Alto on *FCAB*, 1 Bagnall of 7T, 2 Koppels of 16T, 1 Bagnall of 16T, 3 Baldwins of 28T, 1 Henschel of 30T.

• ***José Fransisco Vergara*** 10km from *FC Longitudinal*, 5 locos, 4 Baldwins of 45T, 1 Koppel of 20T.

• ***José Santos Ossa*** at station Jose Santos Ossa on *FCAB*, 5 locos.

• ***Los Dones*** 10km from Los Dones station on *FC Longitudinal*, 10 locos, 3 of 30T, 1 of 36T, 1 of 8T, 1 of 16T, 2 of 14T, 2 of 10T.

• ***Perseverancia*** 4km from station Solitario on *FCAB*, 4 locos, 2 Henschels, 1 Koppel, and 1 Americana.

• ***Sargento Aldea*** near station El Buitre of the *FCAB*, 3 locos.

• ***Savona*** 2km from station Savona on branch to Boquete, 5 locos, one Henschel of 22T, 2 Arn Jung of 18T, 1 Baldwin of 18T, 1 'Americana' of 18T.

Liverpool Nitrate Co. Ltd.

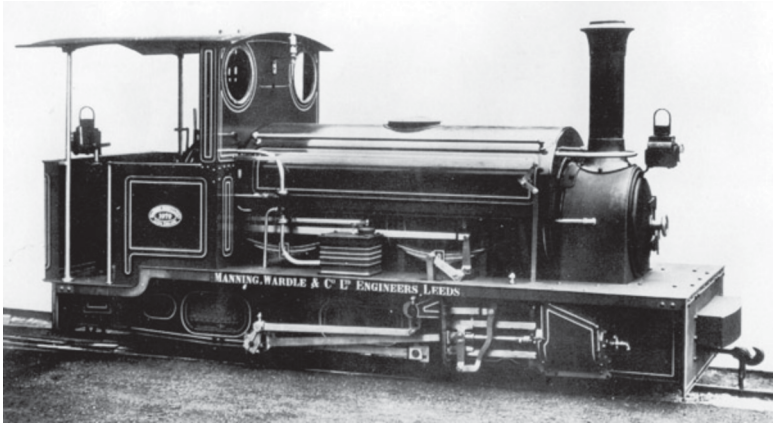
2' 0"? gauge. Fowler list is in some doubt about gauge of first locos. This company definitely also had 2' 6" gauge locos.

0-4-2ST d/w ? cyls. 6x10, built by Fowler in 1888 (first), 1889 (next two), 1892, and 1895

?	w/n 5686	Despatched 27-11-1888. Fowler order no. 5/30-46.
?	w/n 5936	Despatched 30-3-1889. Replacement boiler supplied in late 1909; two numbers given in Fowler list (12080 and 12152).
?	w/n 5937	Despatched 30-3-1889. Replacement boiler supplied in 1904.
?	w/n 6689	Via W. & J. Lockett. Despatched 29-3-1892.
?	w/n 6953	Despatched ??-3-1898.

0-4-0ST d/w27", cyls 7x12", built by Manning Wardle in 1919

?	w/n 1979	



Liverpool Nitrate *oficinas*, with the locos listed in the 1927 *Album Zona Norte de Chile*.
• ***Mapocho*** 12km from station Huara on NR, 4 Manning Wardles of 25T, 3 Fowlers of 12T.
• ***San Donato*** between stations Huara and Pozo Almonte on NR, 2 Fowlers of 12T.

The Paposo railway

Background

60cm gauge. At Paposo between Taltal and Antofagasta. This supposedly used both 2' and 2' 6" gauges, and also balanced inclines with a stationary steam engine. It ran between the port of Paposo and the *fundicion Delfina* mine. See the 2' 6" gauge section for the only loco known to have operated here. Paposo was an obvious coastal outlet for nitrate from the more northerly of the Taltal oficinas, but suffered from the lack of an easy railway alignment downhill to the shore.

"*Ferrocarril de Paposo. - Este ferrocarril fué construído por el señor Rafael Barazarte para unir con el puerto de Paposo su establecimiento de fundición Delfina. En una línea meramente local, tiene 0.610 á 0.762 de trocha y es de doble vía: recorre un extensión de 5 kilómetros más ó menos desde el muelle de embarque y termina más allá de la ceja de la montaña, en donde, por medio de un aparato sencillo, continúa por vía angosta y que por ahora es de sangre, hasta el establecimiento de fundición Delfina, distante de ahí cuatro kilómetros más ó menos.*

Este ferrocarril está dividido en tres secciones, una desde el muelle hasta la base de la montaña de 8 kilómetros, la otra de la base de la montaña hasta la cima y la tercera de la cima al establecimiento. La parte de la línea entre la base y la cima de la montaña es la más sinuosa y la más importante por su atrevida construcción y la facilidad con que se salva la altura de 1,220 metros en tan corta distancia. La inclinación del cerro en ese punto pasa de 45°, se ha abierto una línea recta con algunos cortes de importancia para dar paso a la doble vía del ferrocarril, con diversas ondulaciones que se salvan con rodillos colocados convenientemente. Los convoyes se mueven por medio de una máquina á vapor de 30 caballos de fuerza que está fija en la base y enrolla en un gran tambor un cable de acero de 0.m0254 de grueso y que da vuelta una polea colocada en la cima.

Mientras un carro sube otro baja y de este modo no se necesita gran fuerza motriz para el acarreo porque se aprovecha como tal el peso mismo del carro que desciende. Este ferrocarril no tiene más vida que la del establecimiento y aún puede considerarse como parte anexa de él, puesto que toda su razón de ser se la debe al beneficio de los metales y el establecimiento Delfina, no habría beneficiado con provecho sin las facilidades de acarreo que se obtienen con el transporte por este ferrocarril de planos inclinados." [33]

"Paposo railway. - This railroad was built by Mr. Rafael Barazarte to unite the port of Paposo with his Delfina smelter site. It is a line merely local, having 0.610m and 0.762m gauge, and is double track: It runs 5 kilometers or so from the loading pier, ending beyond the brow of the mountain, where, by means of a simple device, it continues by a narrow way which for now is animal powered, to the location of Delfina smelter, distant from there four kilometers or so. This railway is divided into three sections, one from the pier to the base of the 8-kilometre mountain, another

from the base of the mountain to the top and the third from the top to the establishment. The part of the line between the base and the top of the mountain is the most sinuous and the most important for its bold construction and the ease with which the height of 1,220 meters is gained in such a short distance. The slope of the hill at that point passes 45 °, a straight line has been opened with some important cuts to give way to the double track of the railroad, with various undulations that are saved with rollers conveniently placed. The convoys move through of a 30 horsepower steam engine that is fixed at the base and coils a steel cable from a large drum 0.m0254 thick and turning a pulley placed on top.
While a car goes up another falls and thus it needs no great driving force for hauling because it takes advantage of the weight of the car that descends. This railway has no life beyond the needs of the establishment and can be considered as an offsite part of it, since its sole purpose is for the benefit of the establishment Delfina, which would not have benefited profitably without the facilities of transport that are obtained with the transport by this railroad of inclined planes."

An *Oficino Paposo* further north (presumably connected to the Nitrate Railways) also had standard gauge tracks and locos (see appropriate file)., and source [9] suggests there was a standard gauge 'Paposa' railway from the Paposa mine to Limenita station near San Antonio, horse-worked until 1920 when a loco was obtained. Length 4.5 km. There may well be some confusion between these various locations.

An *Oficina Paposo* used metre gauge locos by ALCo, but this seems unlikely in Tarapacá, so there may have been a second *oficina* of this name.

4.9.3 Other mines and quarries

La Compañía de Minas de Cobre de Catemu (Llay-Llay)

60cm gauge.

No info. about locos discovered, though a photo of an 0-4-0T exists at http://datoshistoricosdechile.blogspot.co.uk/2013/12/la-compania-de-minas-de-cobre-de-catemu.html There is some doubt about whether this unidentified loco is in Chile, or possibly in Peru.

Le Societe des Mines de Cuivre de Naltagua (SMCN)

Background

60cm gauge. French-owned, operated 1908 or slightly earlier to 1945. The Naltagua copper mines are south east of Talagante, near Melipilla. There was an *andarivel* or aerial ropeway south from El Monte broad gauge station across the Río Maipo as well as a 60cm gauge railway system. From the southern terminus of the ropeway 2.5km of line ran east to the smelter at the foot of the incline, and continued (probably further to the east) to a mine at El Buitre (6km). From the top of the incline there was a second higher level mine access branch along the ridge eastward and then following the contours along the northern slopes to Las Vacas and San Ramón (5.5km). This section included a 360m tunnel. One 1909 source says the system owned three Koppel locos, each of 7.7 tonnes in working order. One loco was used to the ropeway terminus, and the remaining two on the two mines branches. [Source 37 issue 150, August 1909]

"*La red ferroviaria del mineral funcionaba en dos niveles. El primero y más alto; podía transitar desde la mina La Carpa, en El Rosario; a su similar de San Ramón, en San Antonio de Naltagua; pasando por un túnel de más de cien metros. El segundo nivel, iba desde El Buitre hasta la Fundición, prolongándose a la vez hasta El Andarivel. El pique El Buitre era el punto en el cual se recibían de la red superior, los carros cargados de material, por medio sistema de piolas dispuesto en tal forma, que permitía subir los carros vacíos y bajar los cargados, en una interminable sucesión. Ese vital punto, por unir todas las líneas del tren minero, se llamaba "Trinidad*"." From http://datoshistoricosdechile.blogspot.com/2013/12/minas-de-cobre-de-naltagua-talagante-el.html

"*Material rodante: Tres locomotoras, Arturo Koppel, Berlin; 1 para la seccion de San Antonio a Naltagua, i 2 para las minas. Peso 6,6 toneladas; con carga de agua i carbon, 7,7 toneladas. Potencia 22,5 kilowatts. Carros-tolvas con capacidad de 2 o 3 toneladas; del mineral calizo de Vacas, 2 toneladas; de San Ramon, 2,5 toneladas; de Buitres, 3 toneladas.*

Cada locomotora puede arrastrar hasta 12 carros, siempre que éstos lleven frenos de detencion, i hacer seis viajes diariamente." [38, in an issue of 1907].

Three photos have been seen showing a small Teutonic 0-4-0WT, probably by Krauss.

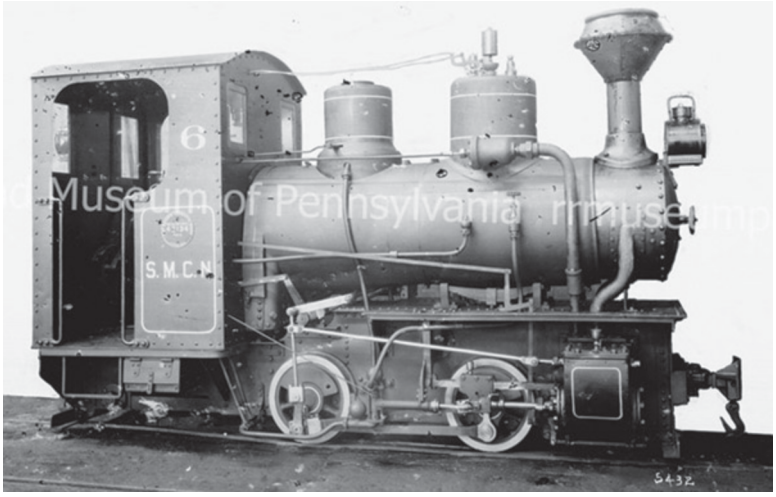


Image from a postcard.

0-4-0WT d/w 23", cyls. 8"x12", built by Baldwin in 1915

Ordered by Max Lyon, according to spec. card. BLW class 4-10 C no. 31. *'S. M. C. N.'* on cabsides. As this was numbred '6', there may well have been a total of five earlier locos by that date, the three Koppels, one by Krauss and one other.

6 w/n 42134



BLW archive pic; hi-res versions available from Railroad Museum of Pennsylvania.

According to the Railroad Museum of Pennsylvania archive, Baldwin also supplied an 0-6-0 with a balloon stack to *SMCN* via Max Lyon in 1915. However, this cannot be found in Connelly's Baldwin lists or in the indexes of Baldwin spec books, so may be an error.



BLW archive pic; hi-res versions available from Railroad Museum of Pennsylvania.

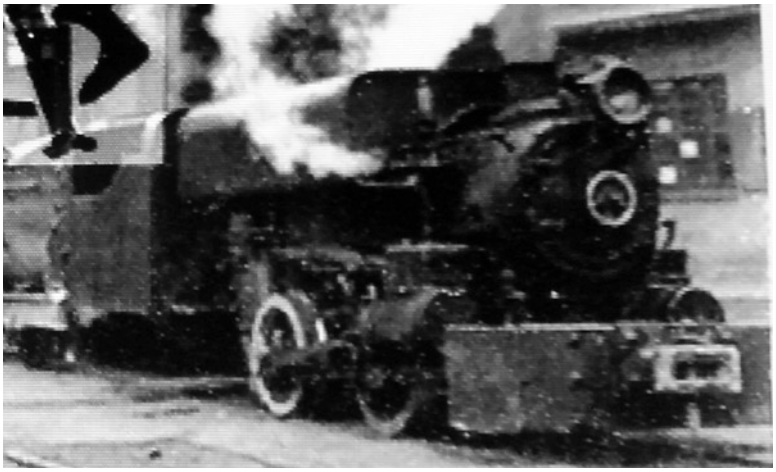
La Fabrica de cemento 'El Melón'

Mainly metre gauge, but this loco reportedly 60cm gauge [6] for the passenger-carrying line linking the company village of El Melón with the mine/quarry. Located north of La Calera.

0-4-0ST d/w 20", cyls. 6x10", built by Porter in 1917

Low profile mine loco, ordered by W. R. Grace and Co. for export.

? w/n 5991 Plinthed in company's housing estate at La Calera 1987 [9].

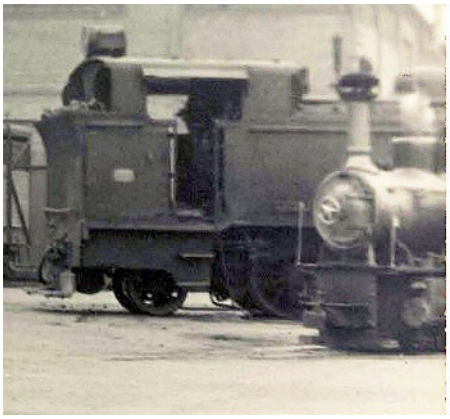




The Porter mines loco as now plinthed.

0-4-0WT d/w ?, cyls. ?, built by O&K

? w/n ?





The larger metre gauge loco has been considered in part 3, section 3.5.5. The smaller loco was almost certainly on the 60 cm gauge. It was an O&K 0-4-0WT, though with a very short dome, so may

have originally been built for limited clearances.

Quarry at Niebla near Valdivia

This quarry was where the Niebla to Corral ferry now departs from. The only evidence of past railway activity is the following photo.

0-4-0ST d/w ?, cyls. ?, built by Porter?

Possibly their no. 4995 delivered via Hagerman Trading Co. on 2' 0" gauge in 1911.



Photo from collection of Señor Enrique Rivera.

4.9.4 Manufacturing

Quellón distillery

60cm gauge. This was an industrial wood alcohol distillery on the Isla Grande de Chiloé that operated under a number of different names.

0-6-0WT d/w ?, cyls. ?, built by O&K in 1920 (first two) and 1935 (last one)

All delivered to *Comunidad Quellón*. One survives, plinthed on the waterfront in Quellón, and with a child-sized cab and unrealistic cow-catcher added.

?	w/n 7489	
?	w/n 7490	
?	w/n 12686	Plinthed in Quellón town, with added child-sized cab and cow-catcher.



Photo by Nelson Beseler. Martin Murray comments: "I'm pretty certain this is O&K 12686. The wheel diameter to wheelbase ratio looks right for a 50HP loco, whereas 7489 and 7490, both 30HP, had a shorter wheelbase. Furthermore, I think the date 1935 is painted on the cab.'

Stumpfoll Hermanos – Osorno

60cm gauge. Timber mill and furniture manufacturer on the south bank of the Río Rahue, on the northern edge of town.

0-4-0WT d/w ?, cyls. ?, 20hp, built by O&K in 1910

?	w/n 4248.

La Cía. Manufacturera de Papeles y Cartones SA, Puente Alto

60cm line connected to *FC Militar*, from whence came gypsum fillers from El Volcán.

0-6-0WT d/w ? cyls ?, built by O&K in 1921, ex metre gauge

?	w/n 9394

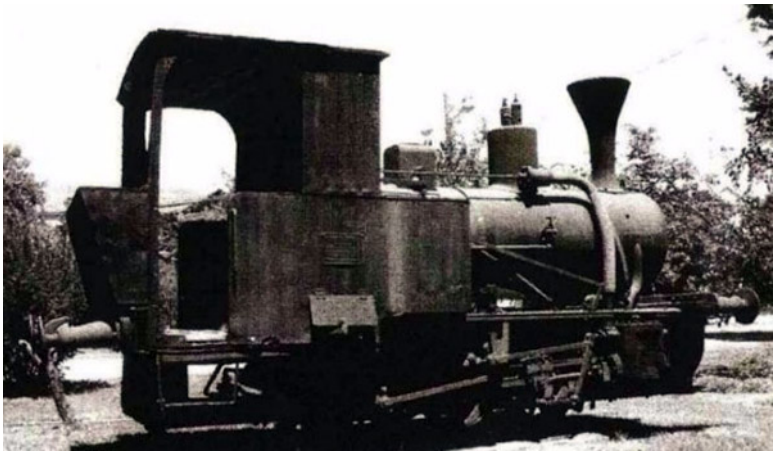


Photo from the online Spanish language version of Wilf Simms' booklets,
at https://issuu.com/rbp714/docs/los_ferrocarriles_de_chile_4

La Fabrica de agua mineral 'Vichy Quilipin' – Putagan

60cm gauge. Permission granted for line to enter station yard at Putagan [21, Jan 1920], but no knowledge of whether it was loco worked.

4.9.5 Oddments

The Cabo Raper lighthouse railway

Background

This was a most unusual line. It originated because the lighthouse site on Cabo Raper, at the end of the Taitao peninsula, could not be accessed directly from below the cliffs but only via the Estero Slight to the east and then by several miles of land transport. A 60cm gauge railway was constructed to facilitate this, much of it built just above the high tide line on a viaduct with mass concrete piers linked by timber spans.

0-4-0WT d/w ?, cyls. ?, built by O&K in 1911?

? w/n 4975? Tunnel type, with lowered cab floor. This loco was delivered to the *Dirección del Territorio Maritimo* at Punta Arenas.



Aillon, Aramayo & Co.

60 cm. gauge. Locos delivered via Antofagasta but almost certainly destined for the Aillón Aramayo silver mining complex at Colquechaca north-west of Sucre in Bolivia. See Bolivian locos file for more detail.

0-4-0ST d/w 18", cyls. 4x8", built by Kerr Stuart in 1893

'AUTLAGAS' w/n 73
'COLQUECHACA' w/n 74
'CONSUELO' w/n 75

0-4-0T d/w ? cyls. 4½x8", built by Kerr Stuart in 1894 and probably 1895

'?' w/n 86
'La UNIFICADE' w/n 87

La Soc. Agricola y Madera Neltume

60cm gauge. Sawmill operator in the forests south-east of Panguipulli.

0-4-2T d/w ?, cyls. ?, built by Jung in 1899

The previous owner is unknown, as it only arrived at Neltume in 1953. It was originally delivered via Arthur Koppel of Bochum.

'GUACOLDA' w/n 397. Survives plinthed in village street.



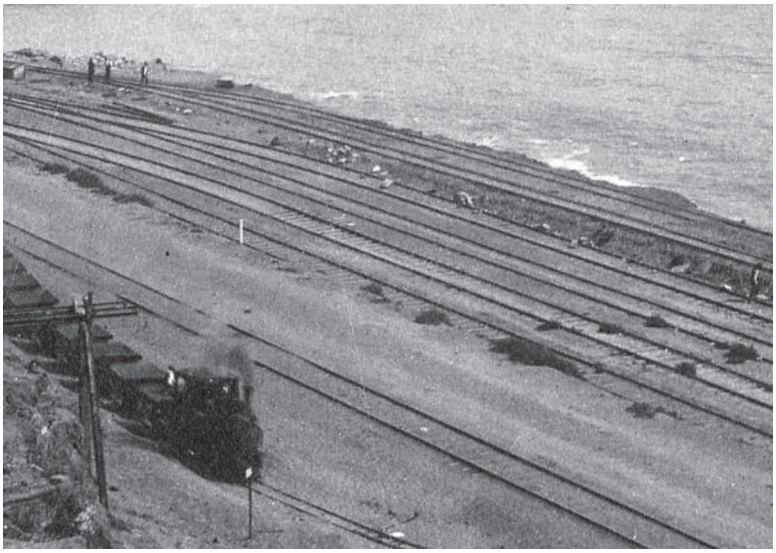
Photo by Cristian Lagos.

Port of San Antonio

60cm gauge. These locos were ordered by the *Entreprise de Port de San Antonio*, Pablo Moraga suggests for the construction of a *muelle*.

0-4-0WT d/w ?, cyls. ?, built by O&K in 1912 and 1913

?	w/n 5711	30hp
?	w/n 5712	30hp
?	w/n 6628	50hp
?	w/n 6629	50hp
?	w/n 6632	50hp
?	w/n 6633	50hp



Whilst the photo above gives little away about the 60cm gauge loco in the foreground, it does clearly show the parallel broad gauge and then metre gauge tracks closer to the shoreline.

See also metre and broad gauge files.

Sres. Germain y Sierra, contractors

2' 0" gauge. See also broad and metre gauge locos.

0-4-0T d/w 20", cyls. 5x10", built by Porter in 1912

G&S's broad gauge locos were eventually sold to the *EFE*. The same may have happened to their metre and 60cm gauge engines.

'LAURITA' w/n 5032

Lezaeta y Duran Hermanos, contractors

60cm gauge. This contractor built the *DOP/EFE* Chiloé island railway. Most of their locos were then sold to the *DOP* for continued use on the public railway.

0-6-2T d/w 710mm 28" or 24", cyls 227x300mm 9"x12", built by Davenport in 1909

These were for *Lezaeta i Duran Hermanos*, contractors for the construction of the Ancud to Castro line. Purchased by *DOP* on completion, used on service trains on that route, transferred to *EFE* and numbered **49-50**, becoming **5049-5050** after the 1921 renumbering.

7 w/n 894

8? w/n 895



Davenport builder's pic, used in catalogue, from collection of John Stutz.

0-6-0T d/w 550mm, cyls. 185x265mm, built by O&K

Ordered for *Lezaeta i Duran Hermanos* contractors, as above. Purchased by *DOP* on completion, used on service trains on that route, transferred to *EFE* and probably numbered **51** and later **5051** as *tipo e*. US report 1930 gives d/w as 470mm, and cyls. as 178x229mm. [MFER13] refers to these two locos as weighing 12T and 6T.

? w/n 5815?

0-4-2T? d/w 490mm, cyls. 150x230mm, built by O&K? in 1910?

It may have been O&K 3992, though this is in Jens Merte's list as an 0-6-0T. Purchased by the *DOP* from *Lezaeta i Duran Hermanos* contractors, and eventually passed on to the *EFE*. [MFER13] refers to these two locos as weighing 12T and 6T.

? w/n 3992? (but this was an 0-6-0T.) Became *EFE* **52** and after 1921 **5052**.

A well-known photo shows a Jung tank loco on a new wooden viaduct near Castro, together with various dignitaries.

This engine was probably owned by this company but has not yet been identified and unlike the locos above does not seem to have been sold to the *DOP*.



Photo provided by Sr. Ronald Holmes, a descendent of Señor Lezaeta.

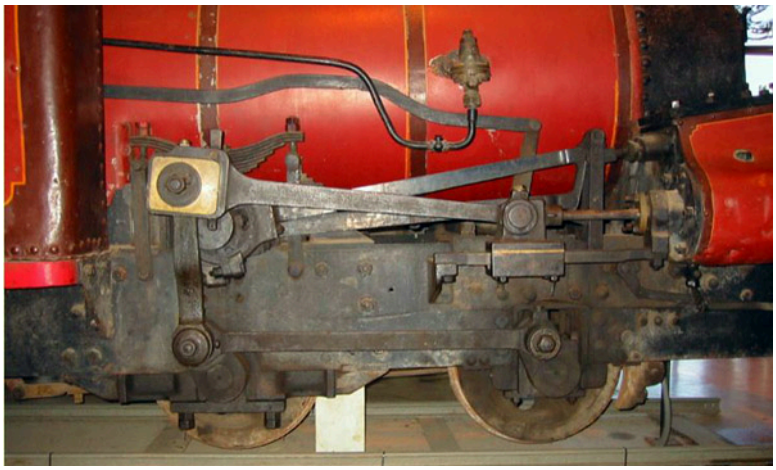
W. & J. Lockett, agents and ship-owners

Background

Fowler patent locos 4666-7 of 1883 were supplied via W. & J. Lockett who were active agents and ship-owners in Chile, though also in Peru. These were supposedly 2-4-0Ts probably using the Greig & Beadon jackshaft drive patented by Fowler in order to raise the cylinders and motion clear of ground level obstructions and dust. Cyls. 6x9". Despatched 31-8-1883. Given that 4668 delivered to Mourilyan sugar mill in Queensland and now preserved at the Australian Sugar Heritage Centre carries a number of parts stamped 4667, it seems likely that they were of similar design and dimensions, though 4666-7 were 2-4-0Ts whilst 4668 is an 0-4-2T. The photo below shows the Mourilyan loco.

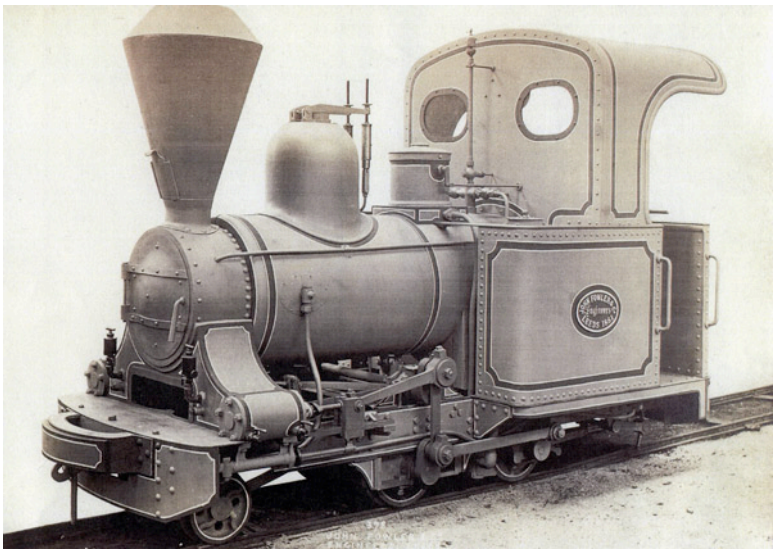


Photos were found at http://www.australiansteam.com/fowler4668.htm



The connecting rod drives a jackshaft which is mounted directly above, and rigidly affixed to, the driving axle bearings. It thus moves up and down with that axle. A supplementary vertical connecting rod transfers the motion down to the driving axle crank, and thus to the connecting rod to the other axle.

A reference to a pair of Fowler 2-4-0 locos at Coronel raises the possibility that they were the engines listed above, as no other Fowler 2-4-0s for Chile are known. The mention in source [] mentions the gauge as being 2' 6" but this may well be a mistake.



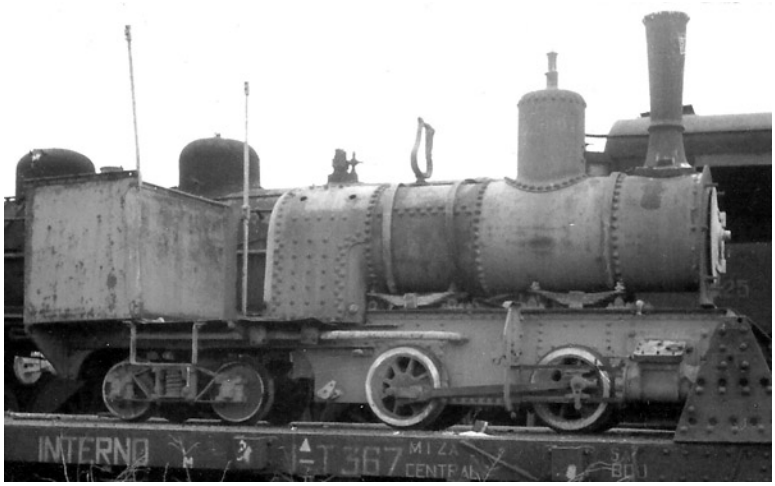
Fowler patent 2-4-0T. Photo available in Museum of English Rural Life, Reading.

El FC de la Hacienda Panquehue

60cm gauge. 3.5 km. linking Panquehue station on Llay-Llay to Los Andes broad gauge branch with the Hacienda Panquehue. Probably built in early 1900s [22].

O&K or Krauss 0-4-4WT rebuilt as an 0-4-4T

This loco survives in the care of Señor José Zagal in the Cajón del Maipo south-east of Santiago. It must clearly have been a conventional well tank, probably of 20 or 30hp, but has been rebuilt at some time into an 0-4-4T with an additional back tank. The loco was reconstructed by apprentices at MSB as an exercise, around 1960 [26]. It was displayed at MSB until 1995, but now belongs to Señor José Zagal at his home in the Cajón del Maipo.



Miniature railway in the Quinta Normal park

Background

A miniature railway was for many years in the Quinta Normal park in Santiago. The gauge might well have been 19" or 15". It had a Cagney 4-4-0. There was also at least one streamlined ic-engined loco modelled on an American-style cab unit, and another with more of a box-cab or 'crocodile' style.

From the Facebook page of Jaime Albornoz Godoy: *"RECUERDO PATRIMONIAL: EL TRENCITO DE LA QUINTA NORMAL El tren de la Quinta Normal, era un paseo tradicional de la época. Era un clásico de esos años y paseo obligado para los fines de semana para las familias. Era lindo, bonito, entretenido y especial: la quinta siempre recibiendo a todas las familias para disfrutar de su mayor atractivo: un pequeño tren con su locomotora y sus 3 carros ,en que transportaba a sus pasajeros recorriendo por el interior de toda la Quinta Normal .*

Claro que esa locomotora con sus carros , ya no está. Sólo en algunos lugares aún quedan algunos rieles cómo mudos testigos de lo que fue un entretenido viaje en ese pequeño tren urbano. del cual tuve la suerte de viajar en el junto a mis padres y hermano."

4-4-0 d/w ?, cycls. ?, built by or for Cagney in ????

Ordered for ?

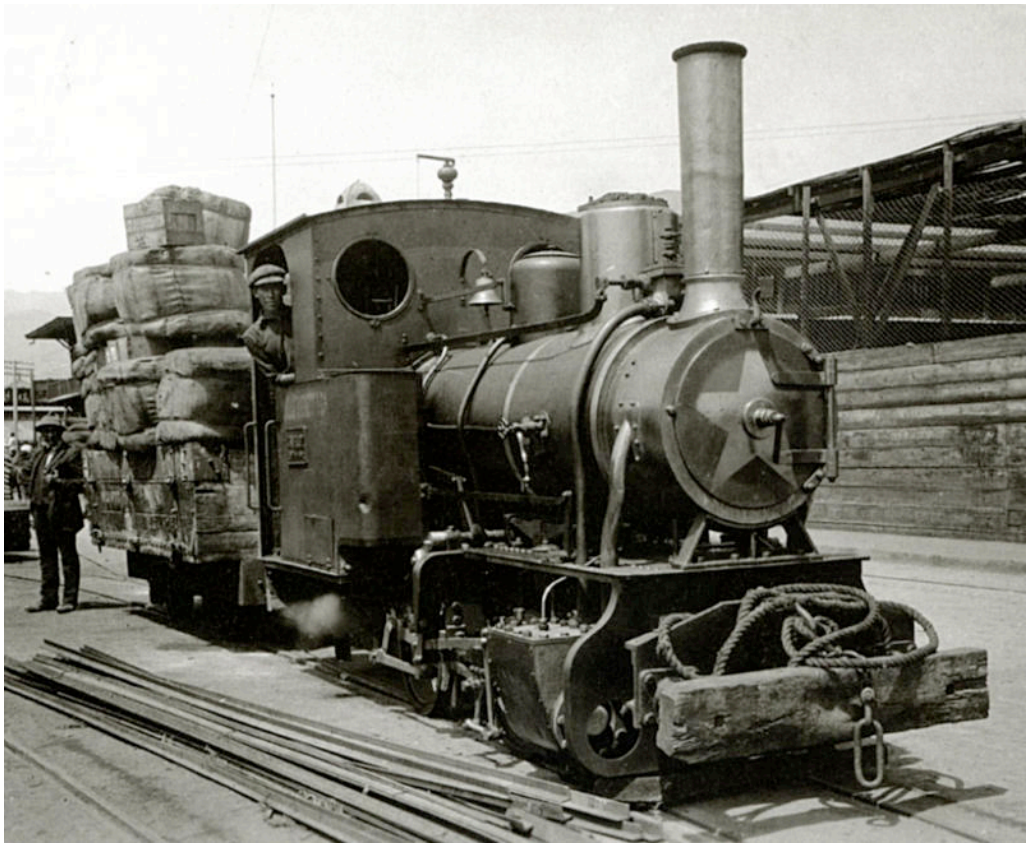
? w/n ?



A jetty in Antofagasta

Background

The following image, kindly forwarded by Pablo Moraga, supposedly shows a loco at a muelle in Antofagasta. It has many features of a fairly standard O&K 0-4-0WT though unusually with round cab spectacles rather than oval, and with some Jung characteristics. The gauge might well have been 60 cm.



4.10 Unidentified 600mm gauge or narrower gauge locos delivered to Chilean customers

Avonside

w/n 1434, 1901, 0-4-0T, 2’ 0” gauge. via/for Alex Young & Co., destination unknown possibly Chile

Couillet

w/n 899, 1887 500/600 Bn2t Société Anonyme Decauville, Corbeil (FNr. 53), für l'Hippodrome de Paris **‘L'AVENIR’** /1xxx Schuchard - Denis Papin, Chile **‘AZUNCIÓN’**, d/w 500mm.

Fowler

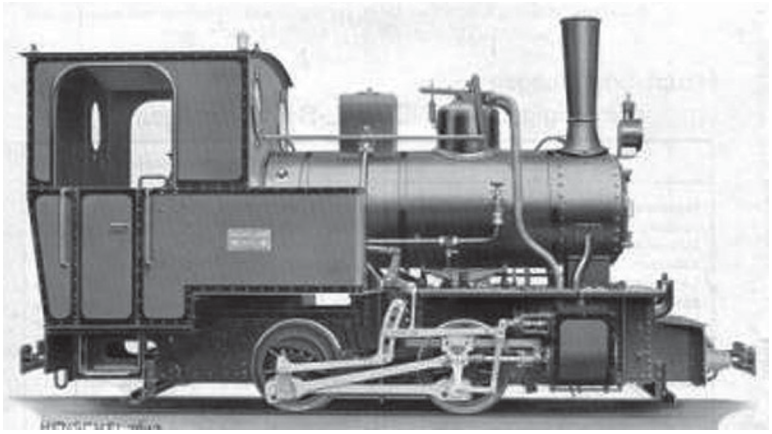
w/n 2-4-0Ts? locos nos. 4666-7 were ordered via W. & J. Lockett in 1883 for an unknown destination. cyls. 6x9".

HanoMAG

w/n 4567, 1910, Bn2t 600mm gauge (?) Alexander & Co., Paris, for Punta Arenas, Chile. [13] says **‘MARÍA’**
w/n 4849-50, 1907, Bn2t 600mm gauge, Arthur Koppel for Chile. d/w 600mm cyls. 165x300mm.
w/n 5376-7, 1908, Bt 600mm gauge, FCP Chile, nos. ‘**2**’ and ‘**3**’. Possibly Paposo railway?
w/n 9231-2, 1920, Bt 600mm gauge, Sloman & Co. Hamburg for Chile. d/w 600mm, cyls. 190x300mm.

Henschel

w/n 7493, 1906, 600mm gauge, 0-4-0T, 40hp, Gebr. Vorwerk, Santiago. For *DOP*? see above.
w/n 13077-8, 1914. Bn2t 600mm gauge, L. Lagarrigue, Santiago. Type ‘Fabia’.



A Henschel 0-4-0WT of the ‘Fabia’ type, as seen in a Henschel catalogue.



The above photo surfaced on a webpage devoted to the Los Lagos area. The loco appears to be a Henschel, either an 0-4-0T or 0-6-0T and probably on 60cm gauge. The location is unknown.

Jung

w/n 1188, 1907, Bt 600mm, Arthur Koppel for Chile. 30hp/40hp?
w/n 1191-3, 600mm gauge, 1907, 0-6-0T, A. Koppel for Chile.
w/n 1215, 1907, 30hp 5.36T, Bt 600mm, Arthur Koppel for Chile.
w/n 1296, 1910, 30hp, Bt 600mm, O&K for Chile.
w/n 1517, 1910, 20hp, Bt 600mm, O&K for Chile.
w/n 1518, 1910, 70hp, Ct 600mm, M. Gildemeister for Chile. Gildemeister y Cia. owned oficinas and were agents for oficinas Peña Chica, San Jose, San Pedro.
w/n 3501, 1925, 30hp 7.16T, Ct 600mm, H. Folsch of Hamburg for nitrate works in northern Chile, Sagewerk Long-Long, preserved as **'LA CAROLINA'** at Fundo Santa Luisa.
w/n 8051, 1937. Bn2t 600mm R.Peterson & Co. Hamburg for Chile. Helikon?

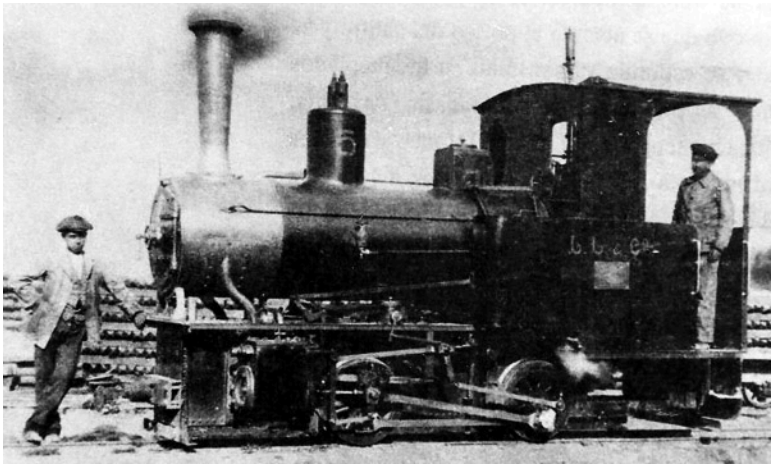
Krauss

w/n 4685 of 1901, Cn2t 600mm, Arthur Koppel for Chile.
w/n 4840 of 1903, Bn2t 600mm, Arthur Koppel for Chile.

O&K

w/n 806, 1901, 600mm gauge, 0-4-0T, 20hp, to Gossler.
w/n 1754 of 1906, 30hp, Ct 600mm, Poepke & Luer of Chile
w/n 2000, 1906, 600mm gauge, 0-4-0T, 40hp, Roepke & Luer, Valparaiso.
w/n 2836-7, of 1908, 30hp, 600mm, Moro Lukinovic Iquique.
w/n 4916 of 1911, 20hp, Ct 600mm, Moro & Lukinovic of Iquique
w/n 5144 of 1911, 600mm gauge, 0-4-0T, 20hp?, Eduardo Charone, Santiago.
w/n 5815 of 1912, 90hp, Ct 600mm, Saavedra Benard & Co., Chile.
w/n 6286 of 1913, 50hp, Ct 600mm, Ramon J. Nieto, Chile **'PONTEVEDRA'**, oil-fired.
w/n 6292 of 1912, 20hp, Bt 600mm, Saavedra Benard & co. Valparaiso for Coronel?
w/n 6648-50 of 1913, 30hp, Bt 600mm, Louis Lagarrigue & Co, Santiago.
w/n 6728 of 1913, 30hp, Ct 600mm, to Enrique Döll.

w/n 6819 of 1914, Bt 600mm, Louis Lagarrigue & Co. Santiago.
w/n 6831 of 1913, Bt 600mm, Louis Lagarrigue & Co. Santiago.
w/n 6988-9 of 1914, Ct 600mm, Gildemeister & Co, Valparaiso for Tocopilla?
w/n 9317, of 1920, 600mm, Gildemeister, Valparaiso.
w/n 9436 of 1920 Ct 600mm Gildemeister & Co. Valparaiso.
w/n 10858 of 1924 Ct 600 O&K lager Valparaiso, 50hp.
w/n 10191 of 1923, 50hp, Bt 600mm, Louis Lagarrigue & Co, Santiago.
w/n 7627 of 1914, Ct 600mm, Gildemeister & Co, Valparaiso, oil-fired 60hp.
w/n 11483 of 1927, 50hp, Bt 600mm, H. Moller of Hamburg, Chilehaus, agent.



The letters on the cabside of this unidentified O&K 0-4-0WT read 'L L & Co.'
This was possibly Louis Lagarrigue i Cía.

Porter

w/n 4995, 1911 5 10 ? Hageman Trading Co. 2' gauge. 0-4-0T . Possibly the loco that worked at the Niebla Quarry near Valdivia.
w/n 5033, 1912 5 10 20 Hagemayer Trading Co. 2' gauge.

570mm gauge loco

O&K

w/n 4902, 1911, 10hp, Bt 570mm, Saavedra Benard & Co of Valparaiso.

1' 10" gauge loco (approx. 559mm)

Fowler

patent 2-4-0T no. 4709, 1884. went to Chile via Rose Innes & Co. cyls. 6x9". See Fowlers 4666-7 mentioned on previous page. Depatched 31-1-1884.

500mm gauge loco

O&K

w/n 10679, 1923, 10hp, Bt 500mm, Gildemeister & Co of Valparaiso.

4.11 Railways and locos of unknown gauge

El FC de Las Bombas a Carrizalillo

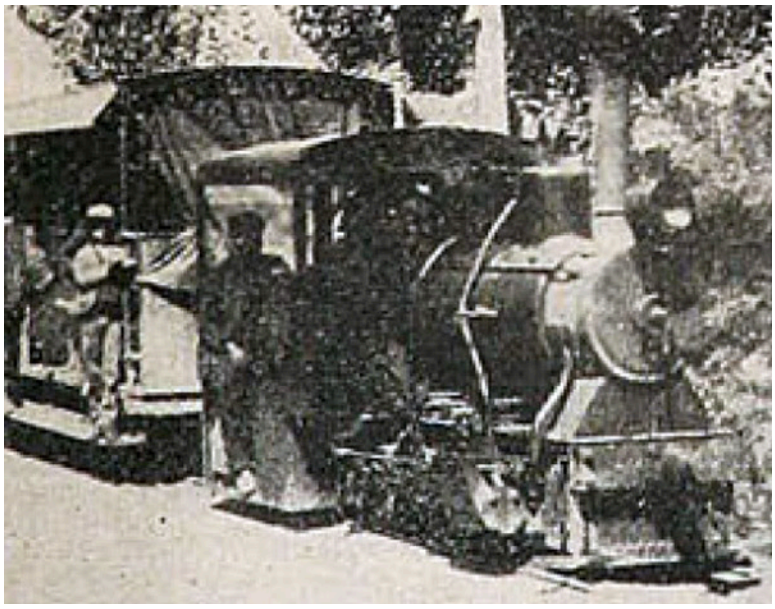
14.5km of probably solely animal-powered railway linking mines at Carrizalillo to the town of Las Bombas on the main pack horse route to Chañaral. It was closed by the 1920s. The area was searched by Wilfred Simms in 1987 but without finding anything.

Jetty lines in Iquique

The Salar de Mosquitos operated by D. Lucic, between stations Gallinazos and Pintados on the NR, had a narrow gauge line in Iquique from their refinery to their jetty. Other operations may have had similar facilities as there were many private jetties there (see plan and list at beginning of section 2.1.4). However, no evidence has yet been found of loco use. The loads, especially of nitrate, may have been substantial, so more powerful traction than merely '*sangre*' might have been required.

Narrow gauge passenger tramway from Peñaflor to Malloco

The following image was provided by Señor Pablo Moraga from his collection. It was published in *Sucesos* magazine issue 495 around 1911-12. No details of the railway or loco are known. The gauge would seem to be 2' 6" at a minimum, or possibly one metre.



Calichera Railway

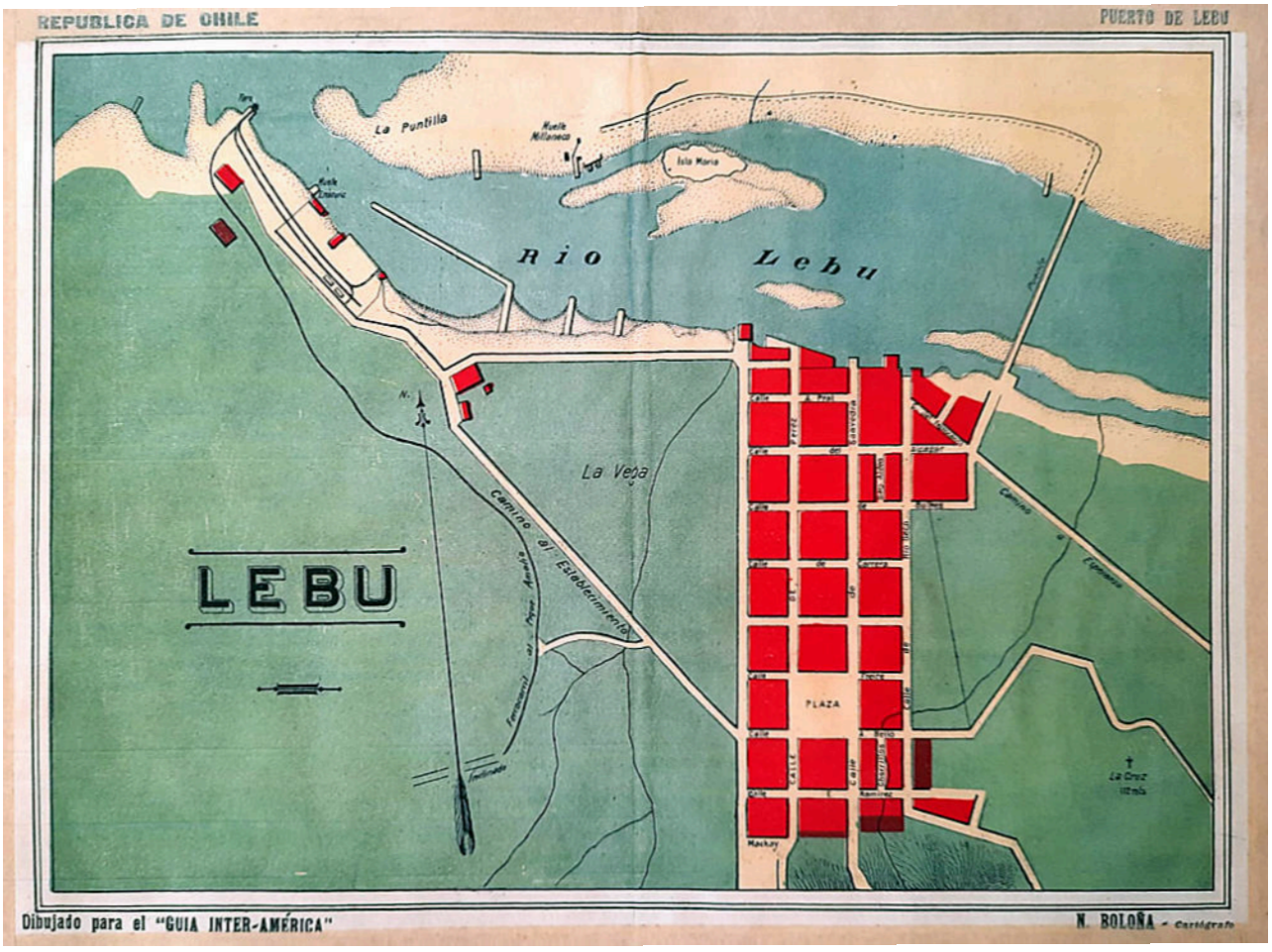
There is an entry in Gene Connolly's ALCo locos list referring to the above railway title. There is no evidence that this railway was in Chile, other than that the word Calichera is close to 'caliche' ie. the raw material from which nitrate is extracted. The only references to the word emanating from an internet search are connected to Chile, including references to a Calichera company and to a Pampa Calichera. Of course this may not be a named railway, but rather a reference to any *oficina*'s caliche-gathering network.

0-4-0T d/w 33", cyls. 11x16", built by ALCo Rogers in 1906 and ordered via W. R. Grace & Co for Calichera Railway.

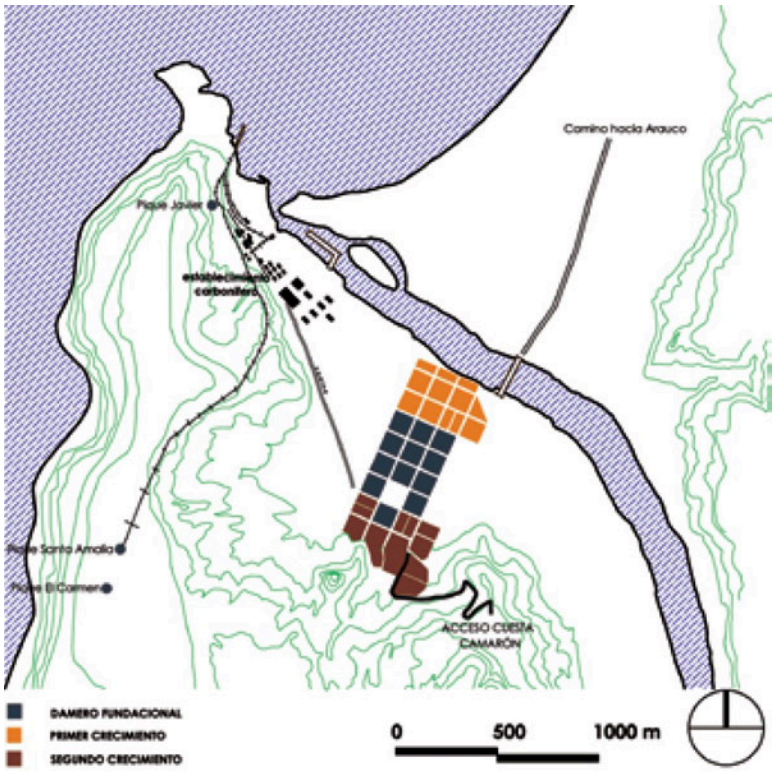
? w/n 41212

Compañía Carbonífera de Lebu
Boca Lebu a pique Santa Amalia

During the 1860s the first exploitation of coal at Lebu seems to have involved the construction of a railway to link a jetty at Boca Lebu (*el muelle Errázuriz*) – on the east side of the headland which sticks out beyond the mouth of the river – with shafts on the coastal ridge which stretched southward from that point. The line – of unknown gauge – supposedly climbed southward along the east side of the ridge, and served Pique Javier, the *poblaciones mineras* of Boca-Lebu, Nueva Amalia and Amalia, and the Pique Santa Amalia beyond which there was also the Pique El Carmen. There was also a pique Rosario. This route is shown on sketch maps in source [41] which suggest that it operated at least until the 1940s. The length was about 2.5 km and the height gained about 115 metres or 380'.
This was presumably owned and operated by the *Compañía Carbonífera de Lebu* of Sr. Juan Mackay.
However, in 1911 the government's annual *estadistica* report says the mina Amalia was operated by *La Sociedad Chilena de Fundiciones*, and in 1917 it was listed under the *Cía. Carbonífera de Los Ríos de Curanilahue*.



This map shows the railway from the Pique Amalia high on the ridge south of Lebu port.



The railway is the cross-hatched thin line running south from a jetty at Boca Lebu to the pique Santa Amalia on the top of the ridge. A map from the 1920s, however, suggests that the penultimate straight stretch along the route was in fact a rope-worked incline, an hypothesis supported by examination of Google Earth.



On the other hand, this vertical air photo from an unknown date seems to show not only a clear rail incline crossing the headland about half-way up the image but also other alignments with cuttings and/or embankments rather further south.

Carbonifera 'Los Copihues' de Pupunahue S. A.

This company in 1934 opened a coal mine at Pupunahue south-east of Mulpun. This is north of Antilhue near Valdivia.

2' 0" gauge was used within the mine, but the gauge on the surface is unknown. "After the coal is screened, the merchantable product is hauled by steam locomotives to the east bank of the Calle-Calle River, approximately 2.5 miles (4 kilometers) distant, over a company-owned railroad." [42] The loading point is still visible on the north bank of the river, 3.5 km east of the big *EFE* bridge, but it has not been visited by the present author.

The *guanero* ports

Prior to the development of the nitrate industry, Tarapacá's principal export was guano. The guano ports included Pabellon de Pica, Punta de Lobos, Huanillos and Chanabaya. Several of these were destroyed by the same 1877 earthquake and *maremoto* that did so much damage to the railways at Patillos, Mejillones and Arica.

Certainly the port of Patache had a railway of a mile and a half in length, to bring the guano to the *muelle* [45], but there is no evidence so far of any locos having been used there or elsewhere. Chanabaya supposedly had 600m. of double track.

Narrow gauge estate railway near Cunco in IX Región Araucanía

David Sinclair has aslerted me to an internet page with the title *Aca está la gran historia de la estación Cunco y del inicio del ramal Freire a Cunco*
This includes sentences, which translated read: "Likewise, at the private initiative of the Lamoliatte family, a narrow gauge railway network was built in the Los Aromos sector which extended over a vast area south of the Allipen River from the *Laureles* sector, in order to be able to transport the wood to the riverside opposite Fresia station.
The engine called *La Carolina* is still preserved in the area where the former owner's house of *don* Agustín Lamoliatte was located and which today is called *Fundo Santa Luisa*."
At this stage nothing further is known.

Locos of unknown gauge

Borsig

w/n 7889 of 1911, Mallet B'Bn4vt via Schumacher & Wulff, Santiago. Gauge unknown. This may well have been the loco seen in a photo at a coal mine at Mafil north-east of Valdivia, gauge possibly 60cm. See entry above for *Soc. Carbonifera de Mafil*.

Fowler

0-4-2STs w/n 5949-5951 of 1889 went somewhere via W. & J. Lockett. Cyls. 8x12". Claus Gaertner suggests these may have gone to India.

Barclays & Co., Kilmarnock.

(NB Not Andrew Barclay) A tank loco of some description, works no. 268, was supplied to Peru in 1880 through W. & J. Lockett. 9" cylinders, gauge unknown. Another was supplied in 1883 with the works number 302 and the name **'QUISQUE'**. Shipping was to Lima so this one, or both, may not be relevant to our area, but transhipment south to a Tarapacá port is not beyond the bounds of possibility. This latter loco may have gone to the *FC Samanco a Hacienda San Jacinto* in Peru [CG].
The Industrial Locomotive Society's page listing locos built by Barclay & Co. of Kilmarnock, http://www.industrial-loco.org.uk/works_listBarclays.htm reports that "*The Kilmarnock Standard* for 31.7.1880 mentions that four locos had been built for Chile "the first three having been taken prisoner by the Chileans" (a war being in progress) and a fourth was awaiting despatch. New boiler supplied 3.1906." It seems likely that the first use of the word Chile should read Peru. Whether any of those three engines remained in Chilean hands after the end of the War of the Pacific is unknown, as is the gauge. The locos would probably have been 0-4-0STs.

Hanomag

w/n 10374 of 1924, Ct for Valparaiso.

National / Dawson & Bailey

Matt Mihalo who is researching the history of this lesser-known US manufacturer, has forwarded a reference from *The American Standard* newspaper of Uniontown, Pennsylvania, dated December 19th 1872. It reads: "Messers Dawson &

Bailey shipped an engine from their works in New Haven, about two weeks ago, to Chilli, S.A." So far this has not been identified within Chile. At the early date of 1872, there were not many railways in existence other than the principal broad gauge systems.

4.12 Appendices

4.12.1 Appendix 1: List of nitrate *oficinas*, with location, ownership when known, and a summary of the locos present if known

So far around 300 *oficinas* have been identified and listed here, though there may be some duplication owing to changes of name. Much of the following information is from the *Album Zona Norte de Chile*, date 1926. Unfortunately the gauge of track was not normally given. The first word on each line is the name of the *oficina*, and then a summary of the location if known. They have been re-organised here into alphabetical order.
Additional data was found in the *Album de las Salitreros de Tarapacá* by L. Boudat y Cía. published in Iquique in 1889. Only a couple of *oficinas* were recorded at that time as having their own locos, though photographs in the album show that most had rail systems of some kind.
The 1913 data came from the *Guía administrativa, industrial y comercial de las provincias de Tacna, Tarapacá y Antofagasta* of that year. Only a few *oficinas* had details of their locomotives given in this publication.
Extra names have been added from https://en.wikipedia.org/wiki/List_of_saltpeter_works_in_Tarapacá_and_Antofagasta and from a variety of other sources, such as the *Boletin de la Sociedad Nacional de la Minería*.
Further extra names were found in *Narraciones Historicos de Antofagasta*, by Isaac Arce Ramirez, 1930.

• ***10 de septiembre***, west of Est. Pan de Azucar on NR. Owned by Santiago Sabioncello in 1928 and had a 3' gauge system.
• ***Abra de Uguarte*** ex ***Napired,*** 10km from station Huara on NR at Mile 51, and also on *FC de Agua Santa*? Worked in succession by *Ugarte Ceballos y Cia.* / *Sargo y Cia.* / *Cia. de Salitres de Londres* / *Moro, Stjepovic y Cia.* / *Moro, Lukinovic y Cia.* / *Luis Moro* (1903) (Abra) / *Cia de Salitres y Ferrocarril de Agua Santa*.
1913 and 1926 owned by *Cia. de Salitres y FC de Agua Santa,* One battery loco but no steam locos mentioned.
• ***Abra de Quiroca*** south of Est. Negreiros on NR.
• ***Aconcagua***, Antofagasta, close to station La Noría on *FCAB*,
In 1913 owned by the Cía. Salitrera Progreso de Antofagasta.
Still in operation 1921.
In 1926 owned by *Lautaro Nitrate Co.Ltd.*, 6 locos Bagnall and Koppel of 18, 15, and 12T.
• ***Adriático*** ex ***Nueva Palmira***, south east of Iquique near Alto de San Antonio.
In 1913 owned by Marinkovic y Goich.
• ***Aguaca*** (seemingly not the same as ***Aguada). Aguada*** was south of Est. Santa Catalina on NR out of Pisagua, whilst ***Aguaca*** was further north.
• ***Aguada***, south west of station Dolores on the NR. This may have been ***Aguada de Branes*** north of station Zapiga on the NR out of Pisagua.
In 1889 owned by Pedro Perfetti, no mention of locos at that time.
Owned by *Juan Flores & Pedro Perfetti*, then by the *Compañía Salitrera Aguada*, later (before 1913) to become the *Cia. Comercial y Salitrera la Aguada*.
• ***Agua Santa***, in Tarapacá, 3km from pueblo de Negreiros and in station Agua Santa of the *FC de Agua Santa*,
In 1883 owned by Campbell Jones.
In 1889 was owned by *Campbell Outram & Co.,* no mention of locos at that time.
In 1893 owned by the *Cía. de Salitres i FC de Agua Santa.*
In 1913 and 1918 owned by *Cia de Salitres y FC de Agua Santa*.
In 1926 owned by *Cia. de Salitres y FC de Agua Santa*, 2 Baldwins of 21T.

• ***Agustín Edwards,*** at station Central of *FCAB*,

In 1913 owned by the *Cía. de Salitres de Antofagasta*, with five locos of various types.

In 1926 owned by Lautaro Nitrate Co. Ltd., 4 locos.

• ***Alberto Bascuñan*** ex ***Delaware***, in Taltal. Owned by Lautaro Nitrate Co. Ltd.

• ***Alemania,*** 80km inland from Taltal.

Operating 1906.

In 1909 and 1913 owned by *Cía. Salitrera Alemania*, successors to *Fölsch y Martin*.

In 1926 owned by *Cía. Salitrera de Taltal*, no locos listed.

• ***Algorta ex Higinio Astoreca,*** Antofagasta

Previously owned by *Astoreca & Cia*. and later by *Cia. Salitrera Luis de Urruticoechea*. Algorta Norte is still worked for iodine by the Urruticoechea company.

• ***Alianza***, Tarapacá, 1200m from paradero Alianza on NR,

In 1884 owned by Perez Cena i Cía. (or might be the other Alianza)

In 1913 owned by Alianza Co. Ltd.

In 1918 owned by Alianza Co. Ltd.

In 1926 owned by Alianza Company Ltd., 7 NBL tank locos of 18T.

• ***Alianza***, Taltal

In 1884 owned by Perez Cena i Cía. (or might be the other Alianza)

In 1909 and 1913 owned by the *Soc. Salitrero Alianza de Taltal Consolidada*.

• ***Alianza*** At Pan de Azucar north of the *FC Patillos a Lagunas*.

• ***Alto Gracia*** close to Est. San Antonio on NR.

• ***Amelia*** ex ***Dibujo,*** see below under ***Aurora,*** in Tarapacá, North of Est. Negreiros on NR at Mile 44.

In 1889 owned by Walterio Retzlaff and Eduardo Charme, no mention of locos at that time.

In 1893 owned by E. Charme.

In 1913 owned by Amelia Nitrate Co.

• ***Americana,*** about 70km south-east of Antofagasta

• ***Ancetes***, in Tarapacá, Lagunas area.

• ***Andres***, south of Lagunas?

• ***Angamos ex Carmen***, in Antofagasta province, owned by *Cía. Salitrera El Loa*.

• ***Angela/Anjela***, in Tarapacá, 3km from station Santa Catalina on NR, One source labels site as ***Anjela Vieja*** or ***Candelaria***.

In 1883, 1889 and 1893 owned by Juan de Loayza (Laiza?) and Pedro G. Pascal, no mention of locos at that time.

Taken over in 1900 by Angela Nitrate Co.

In 1913, and 1926 owned by Angela Nitrate Co., 3 Fowlers of 15T.

• ***Anjela Vieja***, in Tarapacá. See immediately above.

• ***Aníbal Pinto***, Antofagasta, 1km from station Maipu of *FCAB*,

In 1913 and 1918 owned by *Cia de Salitres de Antofagasta*. In 1913 it had six locos of 12 tonnes weight and 80hp.

In 1926 owned by Lautaro Nitrate Co. Ltd., 10 locos Koppel, 2 of 32T, 6 of 16T, 1 of 18T, 1 of 12T.

• ***Anita***, aka ***Anita Pintados?*** 2km from station Mosquitos on NR.

In 1926 owned by Señor Juan Goich, no locos listed. Later (?) owned by *Cía. Industrial y Salitrera Anita*.

• ***Anita***, Antofagasta, 1km from station Union on *FCAB*.

In 1913 there were two locos, one in service and the other in reserve.

Operations suspended 1921.

In 1913 and 1926 owned by *Cía. Salitrera El Loa*, no locos listed.

• ***Anita Pintados***, west of Est. Mosquitos on the NR north of Pintados.

• ***Angamos***, Antofagasta,

Operations suspended 1921.

• ***Antofagasta***,

In 1893 owned by the *Cía. de Salitres de Antofagasta*.

• ***Aragón,*** Tarapacá, east of Pisagua.

Mentioned in 1908 list,

In 1913 owned by Granja y Cía in liquidation.

• ***Araucana***, Antofagasta, 5km from station Union on *FCAB*,

In 1913 and 1918 owned by *Cia Salitrera Lastenia*.

Operations suspended 1921.

In 1926 owned by Lautaro Nitrate Co. Ltd., 5 locos Henschel of 16 and 12T.

• ***Arjentina/Argentina,*** in Tarapacá, La Noria area. 2km from station Alto San Antonio on NR,

Operating in 1860 under Barenechea ownership, sold to Gildemeister around 1870-2, then sold to Peruvian government but re-acquired after the war.

In 1883 owned by J. Gildemeister y Cía.

In 1889 had recently been bought from J. Gildemeister y Cía. by the Rosario Nitrate Co. Ltd. formed by Jorge Petrie and F. G. Clarke. No mention of locos at that time.

In 1893, 1913 and 1918 owned by Rosario Nitrate Co.

In 1926 owned by The Nitrate Co.Ltd., 5 locos: 3 of 20T, and 2 of 15T.

• ***Arturo Prat***, Antofagasta, 1km from station Maipu on *FCAB*.

In 1913 and 1918 owned by *Cia de Salitres de Antofagasta*.

Operations suspended 1921.

In 1926 owned by Lautaro Nitrate Co.Ltd., no locos listed.

• ***Astoreca***, Antofagasta, see ***Higinio Astoreca***.

• ***Asturias ex Pelayo y Covadonga ex Reducto y Huascar*** 10km from stations Negreiros and Santa Catalina on NR,

In 1926 owned by *Cia. Salitrera Asturias*, locos, 2 *locos Ingleses* of 22 and 25T,. also transport of *ripio* with 1 steam loco of 8T.

• ***Atacama,*** in Taltal area.

In 1884 owned by Marambio y Cía.

Operating 1906.

In 1909 and 1913 owned by *Cía. Alemania*, successors to *Fölsch y Martin*.

In 1926 owned by *Cia. Salitrera Alemania*

• ***Augusta Victoria***, Canton El Boquete,

In 1913 owned by the *Cía. Salitrera Augusta Victoria*.

• ***Aurelia***, Antofagasta, 4km from station Salinas of *FCAB*,

In 1913 owned by the Pacific Nitrate Co. Ltd.

Still operating 1921.

In 1926 owned by Lautaro Nitrate Co. Ltd., 2 Jungs of 10T, 2 of 12T.

• ***Aurerá,*** south-east of Pintados.

• ***Aurora ex Silencio***, and ***Amelia***, in Tarapacá, 48km from Caleta Buena to which it sends its output but also on the NR (3km from Negreiros),

In 1889 and 1893 owned by the Watters brothers. No mention of locos at that time.

In 1913, and 1918 owned by Amelia Nitrate Co.

In 1926 owned by Aguas Blancas Nitrate Co., 3 Koppels.

• ***Aurrerá***, south of Est. Pintados on NR.

In 1913 owned by *Cía. Salitrera Aurrerá*.

• ***Ausonia***, Antofagasta, 3 1/3km from station Peinelas on *FCAB*,

In 1913 owned by the *Cía. Salitrera Progreso de Antofagasta*, with three locos for caliche trains.

Still operating 1921.

In 1926 owned by Lautaro Nitrate Co. Ltd. 5 locos 'Koppel Wagnal' (sic) of 24, 22, 20T, 2 locos of 16T.

• ***Avanzada***, Antofagasta, Canton Aguas Blancas, near Yungay station on branch off *FC de Aguas Blancas*,

In 1913 owned by the Sociedad Avanzada. Two locos of 12 tonnes each.

Operations suspended 1921.

In 1926 owned by Lautaro Nitrate Co. Ltd., 5 locos, 1 Henschel of 8T, 2 Koppel of 10T, 2 Americana of 27T.

• ***Ballena,*** Taltal area, was earlier ***Oficina Germania***.

Operating 1906.

In 1908 permission was granted for 15km link on 60cm gauge to another Lautaro *oficina*.

In 1909, 1913 and 1926 owned by Lautaro Nitrate Co., but no details at all; thus no locos listed.

• ***Baquedano*** South of Huara.

• ***Barcelona***, in Tarapacá.

In 1913 owned by Sres. Pirretas y Vallebona.

• ***Barrenecha*** close to Est. San Antonio on NR.

• ***Bascuñan*** later *Oficina Carolina*? Taltal area.

• ***Bearnes***, in Tarapacá, on NR line south of Dolores.

In 1883 owned by Deves Freres.

Owned in 1889 and 1893 by Guillermo Campbell and Enrique Declosets. No mention of locos at that time.

• ***Bellavista*** Taltal area,

Closed 1882 for good.

In 1884 owned by D. Oliva i Cía. (or might be the other Bellavista)

• ***Bellavista*** 1km from station Buenaventura on NR line south to Lagunas,

In 1884 owned by D. Oliva i Cía. (or might be the other Bellavista)

In 1913, and 1926 owned by Alianza Company Ltd., 3 NBLs of 14T.

• ***Blanca Rosa***, in Aguas Blancas area. Owned by Antonio Dubvravcic.

• ***Blanco Encalada***, Antofagasta, 7km from station Salinas of *FCAB*,

In 1918 owned by *Carrasco y Zanelli*. but not producing.

Operations suspended 1921.

In 1926 owned by Lautaro Nitrate Co. Ltd., 3 locos: 1 Henschel of 33T, 1 Koppel of 18T, 1 Avonside of 18T.

• ***Bonasort***, Antofagasta Canton Aguas Blancas, on Aguas Blancas branch of *FCAB*,

In 1913 owned by Granja y Cía. in liquidation.

Operations suspended 1921.

In 1926 owned by *Cia. Salitrera Cota y Bonasort*, 3 locos of 30T, 1 loco Koppel of 18T, one loco Henschel of 14T.

• ***Borgoño*** West of station Dolores on NR out of Pisagua.

• ***Brac*** (later ***Victoria***) close to paradero Brac of NR,

In 1926 owned by *Santiago Sabioncello*, only petrol and electric locos at that time.

• ***Britannia*** Taltal area

In 1909 and 1913 owned by the Britannia Nitrate Ltd.

• ***Buena Esperanza***, 4km from station Toco of *FCTT*.

In 1913 owned by the *Cía. Salitrera H. B. Sloman*.

In 1926, 9km of railway for transporting caliche, but no locos mentioned.

Owned by *Cía. Salitrera de Tocopilla*.

• ***Buenaventura***, in Tarapacá, Lagunas area.

In 1913 owned by ???

In 1918 owned by *BuenaVentura Nitrate Co.* Later owned by the *Alianza Company Ltd.*

In 1926 loco shed and tank mentioned but no locos listed.

• ***Buen Retiro***, in Tarapacá, close to Km 43, Est. Pozo Almonte, of NR.

In 1882 was owned by John Thomas North.

In 1883 owned by Cia. Coldo. North.

In 1889 and 1893 owned by the Colorado Nitrate Co. formed by J. T. North and R. Harvey. No mention of locos at that time.

Also in 1908 list.

In 1913 owned by the Colorado Nitrate Co. Ltd.

• ***C. A. Severin*** Taltal area,

Closed for good in 1882.

• ***Cala Cala***, in Tarapacá, ex ***Independencia*** and ***Colombia*** 4km from station Pozo Almonte on NR, at Mile 46S.

In 1883 owned by Banco Mobiliario.

In 1889 owned by Juan Vernal y Castro. No mention of locos at that time.

In 1893 owned by Zoila M. Hidalgo.

In 1913, and 1926 owned by Pablo S.Mimbela, 3 locos of 6, 8 and 10T.

• ***California,*** ex ***Concepcion***, ex ***Palacio Industrial***, Tarapacá, out west of station Dolores on the NR out from Pisagua. One map shows this as separate from ***Palacio Industrial***.

Worked in succession by Jorge Gárate Hugeat y Caplong (as *Palacio Industrial*) / Galté y Fournies (as *Concepción*), and the *Cia. Salitrera California.*

Mentioned in 1908 list,

In 1913 owned by Perfetti Jeffrey y Cía.

• ***Callo*** on Salar del Soronal north of the *FC Patillos a Lagunas*.

• ***Camiña ex Saca si Puedes,*** 500m from station Santa Catalina on NR, Accessed by *FC de Junin*, south east of Pisagua.

In 1883 owned by P. Perfetti.

In 1913 owned by Ezequiel Ossio.

In 1926 owned by *Comunidad Salitrera Ossie Hermanos*, 1 loco of 12T.

• ***Candelaria***, Antofagasta,

In 1913 owned by *Cía. Salitrera El Loa*.

Operations suspended 1921. Owned by *Cía. Salitrera El Loa*.

• ***Candelaria***, Tarapaca, west of NR south of Est.Santa Catalina.

• ***Canada***, renamed ***Coya Norte*** in 1925 and then later became ***María Elena***.

• ***Carlos B. Severin***

In 1884 owned by Severin i Cía.

• ***Carlos Condell***, Antofagasta, near station Carmen Alto of the *FCAB*,

In 1918 owned by *Cia de Salitres Antofagasta*.

Operations suspended 1921.

In 1926 owned by Lautaro Nitrate Co. Ltd., 5 Bagnalls of 30T, 2 Avonside and Koppel of 18T.

• ***Carmela***, (or ***Carmelo***?) Antofagasta, 7km from station Salinas of *FCAB*,

In 1913 owned by the Fortuna Nitrate Co. Ltd.

Operations suspended 1921.

In 1926 owned by Lautaro Nitrate Co. Ltd., 4 locos Bagnall of 16T, 1 Avonside of 18T.

• ***Carmen***, Tarapaca, won NR south of Est.Santa Catalina, at Km 42N.

• ***Carmen***, Tarapacá on NR at Km 41S south of Est. Pozo Almonte.

• ***Carmen Alto*** south of Est. San Antonio on NR.

• ***Carmen Bajo***. In Tarapacá, and owned by Liverpool Nitrate Co. Branch of 0.690km from NR at 71.870km..

Mentioned in 1908 list, and in 1913 owned by Colorado Nitrate Co. Ltd. with 2 locos of 12 tonnes and 2 of 23 tonnes.

• ***Carrera*** ex ***Domeyko,*** in Departamento Antofagasta.

In 1926 owned by The Alianza Co., little detail given, and no locos listed.

• ***Carolina***, in Tarapacá, Between Dolores on the NR and Mejillones on the coast.

Owned in 1889 and 1893 by J. Brooking, J. Child and C. Comber, trading as *Brooking, Child y Cía*. One loco owned at that time.

• ***Carolina***, in Taltal.

In 1909 owned by the *Cía. Agrupación Carolina de Taltal*.

• ***Carpas ex Nueva Noria***

• ***Castilla***, Antofagasta Canton Aguas Blancas, 33km from station Yungay on *FCAB*, on Aguas Blancas branch of *FCAB*,

In 1913 owned by the *Cía. Salitrera Castilla de Antofagasta*.

Operations suspended 1921.

In 1926 owned by *Cia. Salitrera Nueva Castilla*, 2 locos of 33T, 3 locos of 14T, 1 loco of 16T.

• ***Catalina***, Taltal,

In 1918 under construction.

• ***Catalina del Norte*** Inland from Taltal.

Owned by Lautaro Nitrate Co., closed 1896.

• ***Catalina del Sur,*** inland from Taltal near ***Severin***.

In 1884 owned by Arias i Ferrera.

Owned by Lautaro Nitrate Co. Closed when surveyed in 1896.

• ***Cataluña*** later ***Galicia,*** location unknown, near Alto de San Antonio..

Mentioned in 1908 list,

• ***Caupolicán ex Alianza,*** location not given, May have later become *Oficina Alianza*?

Operating 1906.

In 1926 owned by Lautaro Nitrate Co., no details at all; thus no locos listed. Taltal area.

• ***Cecilia***, Antofagasta, 7km from station Peineta on *FCAB*,

In 1913 owned by the Amelia Nitrate Co. Ltd.

Operations suspended 1921.

In 1926 owned by *Cia. Salitrera El Loa*, 7 locos, 4 North British of 20T, 1 Americana of 22T, 2 Koppel of 16T. Also locos Koppel of 12T '*para sacar los ripios por medio de carros volcadores*'.

• ***Celia***, Antofagasta,

In 1913 owned by the Pacific Nitrate Co. Ltd.

1918 owned by Fortuna Nitrate Co.

Operations suspended 1921.

• ***Centro Lagunas,*** Close to station Lagunas of NR.

In 1926 owned by The Lagunas Nitrate Co.Ltd., No locos listed.

• ***Cerro de Dolores***, Tarapacá

• ***Cerro San Fransisco***, Tamarugal,

• ***Chacabuco*** ex ***Lastenia,*** 1km from station Salinas on *FCAB*,

In 1926 owned by Lautaro Nitrate Co. Ltd., 7 locos, 5 Bagnalls of 30T, 1 Avonside and 1 Koppel both of 18T.

• ***Challacollo?***

• ***Chile***, Taltal, 80km inland from Taltal.

Operating 1906.

In 1909 and 1913 owned by the *Cía. Salitrera Alemania*, successors to *Folsch y Martin*.

In 1918 owned by *Cia. Salitrera Alemana*. but not in production.

In 1926 owned by *Cía. Salitrera de Taltal* or *Cia. Salitrera Alemania*, no locos listed.

• ***Chileno-Espanola*** Taltal area,

In 1884 owned by Martinez Paiva i Cía.

Closed early. Out of action in 1906.

• ***China*** at Est. La Noría on NR.

• ***Chinquiquiray***, Tarapacá, SW of Santa Catalina.

• ***Cholita y Yungay Bajo,*** Tarapaca, La Noría..

Mentioned in 1908 list, in 1913 owned by Tarapacá and Tocopilla Nitrate Co.

• ***Chuculaquima***

• ***Cobija***

• ***Cochrane*** ex ***Pissis***, In departamento Antofagasta.

In 1926 owned by The Alianza Co., little detail given, and no locos listed.

• ***Compañia***, in Tarapacá, West of station Zapiga on NR out of Pisagua.

Owned in 1889 and 1893 by Juan de Loayza and Pedro G. Pascal. No mention of locos at that time.

In 1913 owned by *Cía de Salitreras y Ferrocarril de Junín*.

• ***Concepción***, see ***California*** above.

• ***Concepcion***, Tarapaca, west of NR south of Est.Santa Catalina.

In 1883 owned by Labernada.

• ***Condell, Carlos***, see ***Carlos Condell***, above.

• ***Cóndor*** 10km south from station Huemul on NR. Branch 5.830km long from NR.

In 1913, and 1926 owned by Barronechea Nitrate Co. Ltd., no locos mentioned. Owned at one time by Benito Rojo López.

• ***Constancia***, in Tarapacá, 1 1/2km from Pueblo de Huara, at Km 63 on NR.

In 1883, 1889 and 1893 had been owned by Jose Devescovi (Devescoir?). No mention of locos at that time.

In 1913, and 1926 owned by *Cia. Salitrero Constancia*, 1 English of 12T, and 3 of 8T. Later owned by *Cía. Salitres y FC de Agua Santa*.

• ***Cordillera***, Tarapaca, west of NR south of Est.Santa Catalina.

• ***Coruña*** ex ***Galicia,*** 1km from station Alto San Antonio on NR,

In 1926 owned by *Cia. Salitrera Galicia*, 4 Koppels of 6, 12, 14 and 18T.

• ***Cota***, Antofagasta Canton Aguas Blancas,

In 1913 andb 1918 owned by *Granja y Cia. en liquidacion.*

Still in operation 1921.

• ***Coya Norte***, Tocopilla, 10km from station Chacance of *FC Lonjitudinal*.

Originally named ***Canada***. In 1926 owned by Anglo-Chilean Consolidated Nitrate Corp., no locos listed.

• ***Coya***, Tocopilla, later ***Maria Elena*** (may be same as one above or below)

In 1913 and 1918 owned by Anglo-Chilean Nitrate & Railway Co.

• ***Coya Sur***, Tocopilla, 8km from station Chacances on *FC Longitudinal* and on *FCTT*,

In 1926 owned by Anglo-Chilean Consolidated Nitrate, 5 locos, 4x 0-4-2s of 25T, 1 2-6-2 of 42T.

• ***Cristina***, Aguas Blancas,

In 1918 under construction.

• ***Cruz de Zapiga***, in Tarapacá, North of station Zapiga on NR out of Pisagua.

Owned in 1889 and 1893 by Matias Granja, Baltazar Dominguez and Antonio Lacalle. No mention of locos at that time.

• ***Curicó***, Antofagasta,

In 1913 owned by *Cía. Salitrera El Loa*. Locos mentioned but no details given.

Operations suspended 1921. Owned by *Cía. Salitrera El Loa*.

• ***Dalmacia***, Ex ***Matillana***, Tarapacá canton La Noria. Worked in succession by Morales y Cia. / Baltierra y Bustos y Mitrovic Hnos. (Pablo y Luis Mitrovic), Name changed 1894.

Mentioned in 1908 list

• ***Delaware ex Carolina*** In departamento Taltal,

In 1913 owned by E. I. du Pont Nemours Powder Co.

1918 owned by DuPont Nitrate Co.

In 1926 owned by DuPont Nitrate Co. Ltd., no locos listed.

• ***Democracia***, in Tarapacá, west of Est. Negreiros on NR, at Km. 47.

Owned in 1889 and 1893 by Matias Granja, Baltazar Dominguez and Antonio Lacalle, no mention of locos at that time.

In 1913 0wned by *Cía. Salitre y Ferrocarril de Agua Santa*.

• ***Diana*** South-east of Iquique, at Gallinazos.

In 1913 ownred by *Abel Trugeda y Cía*.

• ***Dibujos*** On NR north of Est. Negreiros at Mile 44.

• ***Diez de Septiembre,*** 6 km from paradero Pan de Azucar of NR,

In 1926 owned by Santiago Sabioncello, 2 ALCos of 20T.

• ***Dolores*** West of station Dolores on NR out of Pisagua.

• ***Dolores*** in Tarapacá, eat of NR line at Mile 38S, south of Est. Pozo Almonte.

• ***Domeyko*** later/ex ***Carrera,*** in Departamento Antofagasta, Canton El Boquete.

In 1913 owned by *Cía. Salitrera El Boquete*. Locos of 18 tonnes each mentioned.

Operations suspended 1921.

In 1926 owned by The Alianza Co., little detail given, and no locos listed.

• ***Dominador,*** On the pampa El Peñon in Canton Aguas Blancas,

In 1926 owned by *Soc. Minera y Comercial Renacimiento*, 4 locos, two Hunslets of 81T, 1 Henschel of 50T, 1 North British of 30T.

• ***Don Guillermo***, Tarapacá, north of Pozo Almonte.

• ***Edwards***, Antofagasta,

Operations suspended 1921.

• ***Elena ex Rosario de Negreiros***, Tarapacá,

In 1913 worked by *Cia. de Salitres y Ferrocarril de Agua Santa*.

• ***Empresa***, 2km from station Toco on *FCTT,*

In 1913 owned by H. B. Sloman y Cía.

In 1926 had 2 locos of 19T.

Owned by *Cía. Salitrera de Tocopilla*.

• ***Encanada*** south of Est. Dolores on NR.

• ***Enriqueta*** ex ***Santa Rosa de Zapiga,*** Tarapacá

Mentioned in 1908 list,

In 1913 owned by the Zapiga Nitrate Co. Ltd.

• ***Ercilla***, near station La Rioja on *FC Longitudinal*,

In 1913 owned by *Cía. Salitrera Astoreca.*

In 1926 owned by *Cia. Salitrera Cerrillos*, 2 locos, or 13T and 20T.

• ***Eslavonia***, North of Lagunas.

• ***Esmeralda***, in Tarapacá, 11km from station Alto de San Antonio on NR.

In 1883 owned by Eick Frew.

Owned in 1889 by *Mauricio Jewell y Cia*. No mention of locos at that time.

In 1913 owned by Andres E. Bustos.

In1926 owned by *Suc. Andres E. Bustos*, No locos mentioned.

• ***Esperanza,*** Departamento de Taltal. Was earlier *Oficina* ***Julia***.

Operating 1906.

In 1909 and 1913 owned by the Esperanza Nitrate Co.

In 1926 owned by Andrade Nitrate Co. or Esperanza Nitrate Co., No details given or locos listed.

• ***Esperanza de Lagunas***, in Lagunas area of Tarapacá. Owned by *Cía. Salitrera La Esperanza*.

• ***Eugenia***, Antofagasta Canton Aguas Blancas, at station Yungay of *FCAB*,

In 1913 and 1918 owned by Aguas Blancas Nitrate Co.

Operations suspended 1921.

In 1926 owned by Aguas Blancas Nitrate Co. Ltd., 9 locos. 2' 6" gauge.

• ***F. A. Moreno***

In 1884 owned by R. Barazarte.

• ***Felisa,*** 3 1/2 km from station Gallinazos of NR,

In 1913, and 1926 owned by *Cia. Salitrera Aurrerá*, 2 Koppels of 20T.

• ***Filomena***, Antofagasta, close to station Solitario on *FCAB*,

In 1913 owned by Cía. Salitrera Progreso de Antofagasta. 12 km of track worked by steam, but no details. Still in operation 1921.

In 1926 owned by Lautaro Nitrate Co. Ltd, 9 locos, 3 Bagnall of 12T, 2 Americana of 24T, 4 Henschel (1 of 32T, 2 18T, 1 of 30T.) Gauge 0.75m.

• ***Flor de Chile*** Departamento de Taltal.

In 1884 owned by Peters i Cía.

Operating 1906.

In 1909 owned by *Pedro Perfetti*

In 1913 owned by *Perfetti Jeffery y Cía.*

In 1926 owned by *Cía. Salitrero Pedro Perfetti*, No details given or locos listed. '*Paralizado 1926*'.

• ***Florencia***, Antofagasta

In 1913 owned by the Florencia Nitrate Co. Ltd.

• ***Fortuna***, in Tarapacá, Lagunas area.

• ***Franca***, Tarapacá, South of Pintados. Owned by Santiago Sabioncello.

• ***Francisco Puelma***, Antofagasta, 300m from station Carmen Alto on *FCAB*,

In 1913 owned by the *Cía. de Salitres de Antofagasta*.

In 1926 owned by Lautaro Nitrate Co., 1 Bagnall of 7T, 2 Koppels of 16T, 1 Bagnall of 16T, 3 Baldwins of 28T, 1 Henschel of 30T.

• ***Galicia*** ex ***Cataluña***, near Alto de San Antonio.

In 1913 owned by Sres. Nieto y Miguez.

• ***General Baquedano***, ex ***Peña Grande***. Owned by Lautaro Nitrate Co. Ltd. In Tarapacá.

• ***Ghizela,*** Departamento de Taltal.

In 1909 and 1913 owned by the Ghizela Nitrate Ltd. Possibly spelt 'Ghyzela'.

In 1926 owned by Nitrate Agencies Ltd., No details given or locos listed. '*Paralizado desde 1914*'.

• ***Gloria,*** 31km from station San Antonio of the NR,

In 1913 owned by Moro y Lukinovic, 2 locos.

In 1926 owned by Señor Luis J. Moro, 2 locos of 18 1/2 and 14T, also 2 for *ripio* of 8T.

• ***Gloria Victoria***, about the latitude of Est. San Antonio on the NR.

• ***Grutas***, 14km from station Toco on *FCTT*,

In 1913 owned by *Cía. Salitrera H. B. Sloman*.

In 1926 had 3 locos, 2 of 29T and one of 19T.

Owned by *Cía. Salitrera de Tocopilla*.

• ***Guillermo Matta,*** Taltal area. Later combined with *Oficina Santa Luisa*.

In 1884 owned by Keating Quest. Faslem.

In 1926 owned by Lautaro Nitrate Co.

• ***Hanza,*** location unknown.

Mentioned in 1908 list,

• ***Hervatska,*** at Dolores, possibly the oficina sometime named Hervastica.

Mentioned in 1908 list,

In 1913 owned by Sr. Juan Petricic., though another list says owned by Luis Moro.

• ***Higinio Astoreca*** Antofagasta, near station Deseada on *FC Longitudinal*, later ***oficina Algorta***

Still in operation 1921.

In 1913, and 1926 owned by *Astoreca y Cia.*, 3 Henschel locos one of 30T and 2 of 20T,

• ***Huará***, in Tarapacá, on NR at Km. 59 north of Est. Huará.

• ***Huascar,*** south-west of Est. Santa Catalina on NR out of Pisagua.. "v. Reducto"

Mentioned in 1908 list,

In 1913 owned by *Cía. Salitrera Reducto*.

• ***Humberstone*** ex ***La Palma,*** 7km from station Pozo Almonte on NR,

In 1889 had been recently sold by Gibbs y Cia. to the Tamarugal Nitrate Co. formed by Jorge M. Inglis in London. No mention of locos at that time.

In 1926 owned by New Tamarugal Nitrate Co., 3 NBLs of 20T, 1 Hunslet of 15T.

• ***Iberia***, Toco,

In 1913, and 1926 owned by *Cía. Salitrera Iberia*, 6 locos of different weights.

• ***Iquique***, Tarapacá, near Alto de San Antonio.

In 1913 owned by Bokenham y Cia.

• ***Irene***, Tarapacá, 1 1/2km from pueblo of Negreiros on NR,

In 1913 and 1918 owned by *Cia de Salitres y FC de Agua Santa*.

In 1926 owned by *Cia. de Salitres y FC de Agua Santa*, 3 Baldwins of 22T, and 1 Henschel of 20T.

• ***Iris***, Tarapacá, 12km from station La Cumbre on NR, worked in succession by Cía Astoreca y Quiroga, Astoreca y Urruticoechea, Cía. de Luis de Urruticoechea. Explotada entre 1914 - 1955.

In 1918 owned by *Astoreca y Quiroga*.

In 1926 owned by *Astoreca y Urruticoechea*, 4 locos of 23, 14 and 7T.

• ***Jazpampa y Paccha***, in Tarapacá, Close to station Jazpampa on NR.

In 1882 was owned by John Thomas North.

In 1883 owned by Gibbs i North.

Owned in 1889 by *J. T. North y Cia*, with Liverpool agents being W. J. Lockett. No mention of locos at that time.

In 1893 owned by the Paccha & Jazpampa Nitrate Co. Ltd.

In 1913, and 1926 owned by The New Paccha & Jazpampa Nitrate Co. Ltd., No locos listed, but not much detail of any kind given.

• ***Jazpampa de Zaval***a East of station Jazpampa on NR out of Pisagua.

• ***Jermania***

In 1884 owned by Sta. Marie i Lappé.

• ***Joaquin Pérez***

• ***Josefina*** at Negreiros, provincia de Tarapacá, on *FC de Agua Santa*.

In 1913, and 1926 owned by *Señores Gregorio Quiroga y Luis Lema*, 2 locos.

• ***José Antonio Moreno ex Lagunas de Taltal,*** 90km inland from Taltal.

In 1926 owned by *Cía. Salitrera de Taltal*, No locos listed.

• ***José Fransisco Vergara*** Antofagasta/Tocopilla, 10km from *FC Longitudinal*,

In 1918 owned by *Cia de Salitres de Antofagasta*. and under construction.

In 1926 owned by Lautaro Nitrate Co. Ltd., 5 locos, 4 Baldwins of 45T, 1 Koppel of 20T.

• ***José Santos Ossa***, Antofagasta, at station Jose Santos Ossa on *FCAB*,

In 1913 owned by Cía. de Salitres de Antofagasta, with three 12-ton locos for caliche trains.

In 1926 owned by Lautaro Nitrate Co. Ltd., 5 locos.

• ***Joya***, Toco?

• ***Julia***, later renamed ***Esperanza,***

In 1884 owned by Vitriarius i Klemchit.

• ***Keryma,*** 10km from station Pozo Almonte on NR,

In 1913, and 1926 owned by *Cia Salitrero Keryma*, 1 Baldwin of 18T, 1 Avonside of 14T.

• ***La Americana***, Aguas Blancas.

In 1913 owned by *Cía. de Salitres La Americana*.

• ***La Canada,***

• ***La Coruña***, ex ***Galicia***, ex ***Catalunya.*** Tarapacá, canton de Soledad. Worked in succession by *Granja y Dominguez / Granja y Cia. / Cia. Salitrera Galicia / Nieto y Miquez* (Valentin Miquez (1910)

• ***La Granja***, Tarapacá, 11km from station La Cumbre of the NR, at Alto de Buenaventura.

In 1913, and 1918 owned by *Granja y Astoreca*.

In 1926 owned by *Cia Salitrera La Granja*, 2 of 20T, 1 of 12T.

• ***Lagunas Norte***,

In 1913 owned by the Lagunas Syndicate Ltd.

• ***Centro Lagunas*** J. T. North purchased *Lagunas Salitreras* in 1887.

Mentioned in 1908 list,

In 1913 owned by the Lagunas Nitrate Co. Ltd.

• ***Lagunas Sur*** 2 18ton locos in use in 1917.

[a] ***La Noría***? at Est. La Noría on NR.

• ***La Palma*** later ***Oficina Santiago Humberstone***, in Tarapacá, 7km from station Pozo Almonte on NR,

In 1883 owned by Gibbs y Cia., and then in 1889 had been recently sold by Gibbs y Cia. to the Tamarugal Nitrate Co. formed by Jorge M. Inglis in London. No mention of locos at that time.

In 1893 owned by the Tamarugal Nitrate Co.

In 1913, and 1926 owned by New Tamarugal Nitrate Co., 3 NBLs of 20T, 1 Hunslet of 15T.

• ***La Patría***, in Tarapacá, 4km from station Santa Catalina on NR,

In 1884 owned by Gibbs i Cía.

In 1889 had been recently sold by Gibbs y Cia. to the Tamarugal Nitrate Co. formed by Jorge M. Inglis in London. No mention of locos at that time.

In 1893 owned by the Tamarugal Nitrate Co.

In 1913, and 1926 owned by New Tamarugal Nitrate Co., 3 locos of 12T.

• ***La Perla,*** Tarapacá, south west of Est. San Antonio on NR.

Mentioned in 1908 list,

In 1913 owned by *Soc. Salitrera La Perla*.

• ***La Serena***, in Tarapacá,

Owned in 1889 by Eduardo Canningham y Cia., and managed by *James Inglis y Cia*. No mention of locos at that time.

• ***La Tirana***, Tarapacá, near town of La Tirana

• ***La Union***, Tarapacá, worked in succession by Flora L. de Diaz (1875) / Glavic & Stiepovic (1882) / Compañía Nacional de Salitres La Unión (1889-~1916) / Marcos Cicarelli (1933) / Cosach (1933)

• ***La Valparaiso***, in Aguas Blancas canton. Owned by *Soc. Salitrera Vuscovic*.

• ***Las Carpas***, Tarapacá, south of Pozo Almonte

• ***Lastenia***, Antofagasta,

In 1913 owned by *Cía. Salitrera Lastenia*.

• ***Las Tres Marias***, in Tarapacá.

• ***Lautaro,*** Taltal, later known as ***Oficina Rosario***?

In 1884 owned by Lamarca Ossa Hnos.

In 1893, 1909, 1913 and 1926 owned by the Lautaro Nitrate Co., no details at all; thus no locos listed.

• ***Leonor***, Antofagasta,

In 1913 owned by the Leonor Nitrate Co. Ltd.

• ***Lilita*** inland from Taltal.

In 1909 listed but owner's name not given.

In 1913 owned by the Lilita Nitrate Co. Ltd.

• ***Limeña ex La Noria***, Tarapacá, close to Est. La Noría on NR.

In 1883 owned by Gibbs i Cia.

• ***Limón***, in Tarapacá.

• ***Lina***, Antofagasta, 7km from station Sierra Gorda on *FCAB*,

In 1926 owned by Jorge Sabioncello, 6 locos, 4 Hanomag of 18T, 1 Baldwin of 30T, 1 Henschel of 36T.

• ***Los Amigos*** Taltal area.

In 1884 owned by Sociedad anónima.

Dismantled by 1906.

• ***Los Dones*** Antofagasta, 10km from Los Dones station on *FC Longitudinal*,

In 1926 owned by Lautaro Nitrate Co. Ltd., 10 locos, 3 of 30T, 1 of 36T, 1 of 8T, 1 of 16T, 2 of 14T, 2 of 10T.

• ***Los Pirineos*** 15km from station Huemul on NR. "v. Providencia".

In 1913 owned by Señor Gil Galté, (Spelling?)

In 1926 owned by Señor Gil Halte, Closed since 1914.

• ***Los Pozos***, in Tarapacá?

• ***Luisis***, Antofagasta, 4km from station Union on *FCAB*,

In 1913, and 1926 owned by *Cia. Salitrera El Loa*. 3 locos recorded in 1913, and three North British of 18T in 1926.

• ***Mapocho***, Tarapacá, 12km from station Huara on NR,

In 1913 and 1918 owned by Liverpool Nitrate Co.

In 1926 owned by Liverpool Nitrate Co., 4 Manning Wardles of 25T, 3 Fowlers of 12T.

• ***Maria***, Antofagasta,

In 1913 and 1918 owned by *Cia Salitrera El Loa*.

• ***Maria Elena***, Toco?

• ***Maria Elena***, ex ***Coya Norte***, ex ***Canada***. Tocopilla.

Owned by Anglo-Chilean Consolidated Nitrate Corp.

• ***María Teresa***, Antofagasta Canton Aguas Blancas,

In 1913 owned by Cía. Maria Teresa.

Operations suspended 1921.

• ***Maroussia,*** Tarapacá, near Huara.

Mentioned in 1908 list,

In 1913 owned by *Perfetti Jeffery y Cia*.

• ***Marta***, Antofagasta,

• ***Matemunquia*** (?) West of station Zapiga on NR out of Pisagua.

• ***Matillana***, later ***Dalmacia***. In Tarapacá canton La Noría.

• ***Matta*** (?) Inland from Taltal.

• ***Mena Vilana***

• ***Mena*** At Pan de Azucar north of the *FC Patillos a Lagunas*.

• ***Mercedes***, in Tarapacá, Close to station Negreiros on NR at Mile 45N.

In 1883 owned by Kralginie Hnos.

Owned in 1889 and 1893 by Santiago Drew. No mention of locos at that time.

In 1913 and 1918 owned by *Abelardo Robledo y Cia*.

In 1926 owned by Señor Abelardo Robledo, No locos listed.

• ***Mercedes*** east of Est. Central on NR at Mile 30S. Owned by Abelardo Robledo.

• ***Miraflores***, Taltal area.

In 1909 and 1913 owned by the *Cía.Salitrera de Miraflores*.

• ***Mirasol***, south of Pintados.

• ***Mitillana*** close to Est. San Antonio on NR.

• ***J. A. Moreno***, see ***José Antonio Moreno***. Taltal.

Owned in 1909 and 1913 by the *Cía. Salitrera Alemana*, successors to *Fölsch y Martin*.

Owned in 1926 by *Cía. Salitrera de Taltal*.

• ***Mosquitos*** North-west of Pintados.

• ***Nueva Carolina***, in Tarapacá close to Est. Pozo Almonte.

• ***Nueva Soledad*** close to Est. San Antonio on NR.

• ***Napired*** later renamed ***Abra*** (which see above), 10km from station Huara on NR, and also on *FC de Agua Santa*?

Mentioned in 1908 list,

• ***Nebraska***, near Pozo Almonte in Tarapacá.

• ***Negreiros***, west of Est. Negreiros on NR, Mile 47N.

• ***Nena Vilana,*** North-west of Pintados. worked by *Cia. Salitrera Aurrera*.

• ***Normandia***, in Tarapacá,

Owned in 1889 by *los Hermanos Chinchilla*. No mention of locos at that time.

• ***North Lagunas*** 3km from station Lagunas on NR,

In 1913, and 1926 owned by The Lagunas Syndicate, 1 Fowler of 8T, 1 Koppel of 11T.

• ***Nueva Victoria***, south of Lagunas

• ***O'Higgins***

• ***Oficina*** close to Salar del Soronal north of the *FC Patillos a Lagunas*.

• ***Oriente,*** about 70km south-east of Antofagasta, in Aguas Blancas area.

In 1913 owned by the *Cía. Salitrera Oriente*.

• ***J. Santos Ossa***, Antofagasta, see ***José Santos Ossa*** above.

• ***Paccha y Jazpampa***, in Tarapacá, acquired by North and Harvey from Chilean government in 1886. Probably originally two separate oficinas.

Owned in 1889 by J. T. North and Carlos Comber. Agents in Liverpool W. & J.Lockett. One loco owned at that point.

In 1893 ***Paccha*** was owned by the Paccha, Jazpampa Nitrate Co. Ltd.

In 1913 owned by New Paccha & Jazpampa Nitrate Co. Ltd.

• ***Palacio Industrial***, see ***California*** above. Accessed by *FC de Junin*, south east of Pisagua.

• ***Palma***, in Tarapacá at Km. 49S on NR, north of Est. Pozo Almonte.

• ***Palmira*** location unknown.

Mentioned in 1908 list,

• ***Pampa Negra?***, Tarapaca, west of NR south of Est.Santa Catalina, at Mile 43N.

• ***Pampa Rica***, Aguas Blancas.

In 1913 owned by *Cía. Salitrera Pampa Rica de Antofagasta*.

• ***Pampa Union***, Antofagasta, on ruta 25 to north east.

• ***Pan de Azúcar,*** 6km from station Pan de Azucar of NR,

In 1913, and 1926 owned by Pan de Azucar Nitrate Co. Ltd., 2 NBLs of 12T.

• ***Paposo y Limenita***, in Tarapacá, 2km from station Noria on NR, Owned until 1919 by Grace Nitrate Co. Ltd (Fuente: Silva Narro, 1919; and later by Gildemeister (Fuente: Album Gildemeister, 1922).

Owned in 1883, 1889 and 1893 by Hernan Folsch and Federico Martin. No mention of locos at that time.

In 1913 owned by Tarapacá y Tocopilla Nitrate Co. Ltd.

1918 owned by Grace Nitrate Co.

In 1926 owned by Nitrate Agencies & Co., locos owned but not listed.

An *Oficina Paposo* used metre gauge locos by ALCo, but this seems unlikely in Tarapacá,so there may have been a second *oficina* of this name.

• ***Patria*** at end of branch south of Est. Santa Catalina on NR out of Pisagua.

• ***Pazos***, out east of NR near Est. Central at Km. 35S.

• ***Pedro de Valdivia*** Antofagasta

• ***Peña Chica***, in Tarapacá, 10km from station Pozo Almonte on NR, at Mile 49S on NR.

In 1883 owned by Folsch i Martin.

Owned in 1889 and 1893 by the *Banco Mobiliario de Santiago*. No mention of locos at that time.

In 1913, and 1926 owned by Salpeterwerke Gildemeister & Co., 4 locos: 2 of 19T, and 2 of 16T.

At one stage owned by *Cía. Commercial y Salitrera de Tarapacá*.

• ***Peña Grande***, Tarapacá, between stations Pozo Almonte and Huara on the NR. (Fuerte Baquedano?) at Km51S on NR.

In 1918 owned by DuPont Nitrate Co. and under construction.

In 1926 owned by DuPont Nitrate Co., No mention of locos.

• ***Pepita***, Antofagasta Canton Aguas Blancas,

In 1913 owned by *Granja y Cía*. in liquidation.

Operations suspended 1921.

• ***Peregrina***, Tocopilla, 500m from station Toco of *FCTT*.

In 1913 and 1918 owned by Anglo-Chilean Nitrate & Railway Co.

In 1926 owned by Anglo-Chilean Cons. Nitrate Co. Ltd., No locos listed. Not working in 1926.

• ***Perla*** close to Est. San Antonio on NR.

• ***Perseverancia***, Antofagasta, 4km from station Solitario on *FCAB*,

In 1913 and 1918 owned by *Cia Salitrera Perseverancia*.

In 1926 owned by Lautaro Nitrate Co. Ltd., 4 locos, 2 Henschels, 1 Koppel, and 1 Americana.

• ***Peruana*** south of Est. La Noria on NR.

In 1882 was owned by John Thomas North.

In 1883 owned by Cia. Coldo. North i Harry.

In 1893 owned by the Colorado Nitrate Co. Ltd.

Mentioned in 1908 list,

In 1913 was owned by the Colorado Nitrate Co.

• ***Petronila***, Antofagasta Canton Aguas Blancas,

In 1913 owned by the *Cía. María Teresa*.

Operations suspended 1921.

• ***Anibal Pinto***, Antofagasta,

• ***Pirineos*** South-south-east of Iquique. Branch of 0.880km from NR.

• ***Pissis*** later ***Cochrane*** In departamento Antofagasta, Canton El Boquete.

In 1913 owned by the *Cía. Salitrera El Boquete*. Locos mentioned but no details.

Operations suspended 1921.

In 1926 owned by The Alianza Co., Little detail given, and no locos listed.

• ***Planta de Potasa***, Tarapacá

• ***Pontevedra (ex Santa Clara)***. 10km from station Alto de San Antonio on NR route Iquique to Lagunas.

In 1926 owned by *Cía. Salitrera Galicia*, no locos mentioned and caliche brought in by lorry.

• ***Portezuelo*** Inland from Taltal.

Owned in 1909 by *Cia. Salitrera Portezuelo*, but never opened?

• ***Porvenir,*** 2km from Santa Catalina station on NR,

In 1913 owned by the *Cía. Nacional de Salitres La Unión*.

In 1926 owned by Señor Marcos Cicarelli, 2 Koppels of 12T.

• ***Pozo Granja***, Tarapacá down towards Lagunas

• ***Primitiva***, in Tarapacá, 7km from station Huara on NR,

In 1882 was owned by John Thomas North.

Owned in 1889 by J. T. North via the Primitiva Nitrate Co. Ltd. Represented in Liverpool by J. Lockett.

Owned 4 locos at that time, and a photo in the album shows two identical narrow gauge 0-4-0STs by Fowler.

In 1893 owned by the Primitiva Nitrate Co. Ltd.

1913 and 1918 owned by *Cia de Salitres y FC de Agua Santa*.

In 1926 owned by *Cia. de Salitres y FC de Agua Santa*, 3 Fowlers of 10T.

• ***Progreso***, in Tarapacá, at Negreiros in provincia de Tarapacá, on *FC de Agua Santa*.

In 1883 owned by H. B. James i Cia.

Owned in 1889 and 1893 by Evarista Quiroga y Hermanos. No mention of locos at that time.

In 1913 owned by Evaristo Quiroga y Hermano.

In 1926 owned by *Gregorio Quiroga y Cia*., 2 locos.

• ***Prosperidad***, 11km from station Toco on *FCTT*,

In 1913 owned by Cía. Salitrera H. B. Sloman.

In 1926 had 4 locos of 19T each, of various types.

Owned by *Cía. Salitrera de Tocopilla*.

• ***Providencia y Los Pirineos,*** 14.6km along branch south from station Huemul on NR, at Santa Rosa.

In 1913 and 1926 owned by Señor Gil Halte/Galte, Closed since 1914.

• ***Puelma***

• ***Puntilla de Huara*** around Huara.

Mentioned in 1908 list,

In 1913 owned by the Rosario Nitrate Co.

• ***Puntunchara***, in Tarapacá, 2km from station Negreiros on NR,

In 1883 owned by James e Inglis.

Owned in 1889 and 1893 by the London Nitrate Co.Ltd. formed by James Inglis & Co. 2 locos owned at that time.

In 1913, and 1926 owned by London Nitrate Co., 3 locos of 12T (one Hunslet and two Fowlers). Later owned by *Cía. Salitrera Nueva Tamarugal Ltda*.

• ***Ramírez***, in Tarapacá, Between stations Pozo Almonte and Huara on the NR.

In 1882 was owned by John Thomas North.

In 1884 owned by Sporl. Nik i Cía.

Owned in 1889 and 1893 by the Liverpool Nitrate Co. formed by J. T. North and R. Harvey. 3 locos at that time. One shown in a photo in the album looks like a small narrow gauge Fowler 0-4-0ST or 0-4-2ST.

In 1913, and 1926 owned by Liverpool Nitrate Co., No locos mentioned.

• ***Recuerdo***, Tarapacá at Santa Catalina.

In 1913 owned by the *Cía. Salitres y Ferrocarril de Junín*.

• ***Reducto y Huascar***, in Tarapacá, at Santa Catalina,

Owned in 1889 and 1893 by Galté y Cia. No mention of locos at that time.

In 1913 owned by the *Cía. Salitrera Reducto*.

• ***Renacimiento*** ex ***San Gregorio***. Owned by *Soc. Minera y Comercial Renacimiento*.

• ***República***, in Taltal. Owned by Alfredo Quaet Fazlen.

• ***Rescaresa*** On NR east of Est. Negreiros at Mile 50N.

• ***Restauración***, at Alto de San Antonio.

In 1913 owned by the *Soc. Salitrera Restauración*.

• ***Resurrección*** ex ***Iquique,*** 11km from station Alto de San Antonio on NR.

In 1926 owned by *Suc. Andres E. Bustos*, No locos mentioned.Later owned by Cía. Salitrera Pablo Marinkovic.

• ***Rica Aventura,*** 10km from station Toco on *FCTT,*

In 1913 owned by *Cía. Salitrera H. B. Sloman*.

In 1926 owned by Señor Franz Meyer, 2 locos, one of 14T and one of 19T.

Owned at one stage by *Cía. Salitrera de Tocopilla*.

• ***Rimac*** close to Est. San Antonio on NR.

• ***Rincon***, in Tarapacá at Mile 42S of NR.

• ***Riviera***, Antofagasta

In 1913 owned by *Cía. Salitrera Riviera*.

• ***Rosario***, out east of Est. La Noría on NR.

In 1884 owned by Baron i Cía. (Might be one of other Rosario oficinas).

• ***Rosario de Aguas Blancas***, Antofagasta Canton Aguas Blancas, on Aguas Blancas branch of *FCAB*,

In 1913 owned by *Cía. Chilena de Salitres*.

Operations suspended 1921.

In 1926 owned by *Cia. Chilena de Salitres*, 5 Koppel locos, 2 of 14T, 1 of 16T, 1 of 19T, 1 of 10T. plus one Henschel of 2T.

• ***Rosario de Huara***, in Tarapacá, probably the oficina of this name south of Est. Pozo Almonte at Km 39S.

In 1889 had been recently sold along with *Oficinas Argentina* and *San Juan* to to a London company formed by Jorge Petrie and F. G. Clarke, the Rosario Nitrate Co.Ltd. No mention of locos at that time.

In 1893, 1913, and 1926 owned by Rosario Nitrate Co. Ltd., 4km of linea ferrea and 1500m of *linea Decauville*. 3 Avonsides of 16T, and 1 loco 'Baby' for transporting workers.

• ***Rosario de Negreiros***, in Tarapacá, on NR north-east of Negreiros station.

Owned in 1889 and 1893 by Senores Juan Vernal y Castro. No mention of locos at that time.

• ***Rosario de Zapiga?*** South of Zapiga station on the NR out of Pisagua.

• ***Sacramento***, close to Est. San Antonio on NR.

• ***Sacramento*** or ***Sacramento de Zapiga***, in Tarapacá, 2km from station Zapiga on NR,

Owned in 1889 and 1893 by the San Sebastian Nitrate Co. Ltd. along with *Oficina Tegethoff* which previously were owned by Señores Blair, Sillen and Harrington. No mention of locos at that time.

In 1913, and 1926 owned by San Sebastian Nitrate Co., 1 loco of 11 1/2 T.

• ***Sal del Obispo***

• ***Salvadora***, Tarapacá, north-west of Est. Negreiros on NR, Mile 46N.

• ***Salinitas,*** Taltal area.

Owned in 1909 and 1913 by the *Cía. Alemana*, successors to *Folsch y Martin*.

In 1926 owned by *Taltal Nitrate Co.?*

• ***San Agustin*** close to Est. San Antonio on NR.

• ***San Alejandro*** Tarapacá, east of Pisagua

• ***San Andrés*** Tarapacá, South of Est. Pozo Almonte at Mile 40S. Owned by Tarapacá y Tocopilla Nitrate Co. Ltd.

• ***San Antonio*** close to Est. San Antonio on NR.

In 1893 owned by Morris and Watters?

Owned in 1913 by *Cía. Salitrera y FC de Junín (??)*.

• ***San Antonio de Luza***, east of Est. Negreiros on NR at Mile 51N.

• ***San Antonio de Zapiga***, Tarapacá, 4 1/2km from Zapiga on own branch from NR, worked in succession by Juan Syers Jones (1870-72) / San Antonio Nitrate Co. (1890) / *Cia. De Salitres y Yodo de San Antonio* / Campbell Outram & Cia (John D. Campbell & John Syers Jones) (1872) J. D. Campbell (1875) / *Cia. de Salitres y Ferrocarril de Junin* (1889-~1916) Whitehall

In 1913 and 1918 owned by *Cia de Salitres y FC de Junin*.

In 1926 owned by *Cia de Salitres y FC de Junin*, 4 *locos Ingleses* of 20T.

• ***San Antonio de Normandia***, in Tarapacá south of Est. Pozo Almonte at Mile 38S.

• ***San Agustin***, Tarapacá, Tamarugal area. West of Est. San Antonio on NR.

Mentioned in 1908 list

• ***San Carlos*** south of Est. La Noría on NR.

• ***San Carlos*** out west of Santa Catalina station on NR, and probably also on *FC de Junin*.

• ***San Donato***, in Tarapacá, between stations Huara and Pozo Almonte on NR, at Mile 55S on NR.

In 1883 owned by Marincovich.

Owned in 1889 and 1893 by the San Donato Co.Ltd, formed by J. T. North. No mention of locos at that

time.

In 1913, and 1926 owned by Liverpool Nitrate Co. Ltd., 2 Fowlers of 12T.

- ***San Enrique,*** 3km from station La Noria on NR.

  In 1913 owned by Sucesión de Lorenzo Ceballos.

  In 1926 owned by Señor Pablo Marinkovic (*Marinkovic Hermanos y Cía.*), No locos mentioned, and caliche brought in by lorry.

- ***San Estéban***, Tarapacá, south of Pozo Almonte, later ***Sara***..

  Mentioned in 1908 list,

- ***San Fernando***, in Tarapacá, close to Est. San Antonio on NR.

  In 1883 owned by G. Canelo.

  Owned in 1889 by Carlos Gallagher who had purchased it from Señores Bulnes, Cuevas and Sanz (*Sanz i Cia.*) along with other *oficinas* owned by *J. Gildemeister i Cia.* No mention of locos at that time.

- ***San Fransisco***, ex ***Encañada***, in Tarapacá, 2km from station Dolores and 3km from station Catalina. Nitrate out via *FC de Junin*.

  Owned in 1889 and 1893 by *Lorenzo Ceballos i Cia*. No mention of locos at that time.

  Later worked by *Granja y Compañía* / don Juan Vodnizza (1912 and 1913).

  In 1926 owned by Señores Uldarico Ossio & Walterio J. Ritche.

- ***San Gregorio***, Antofagasta Canton Aguas Blancas,

  In 1913 owned by the *Cía. de Salitres La Americana*.

  Operations suspended 1921.

- ***San Jacinto*** Taltal area.

  Dismantled 1886.

- ***San Jorge***, in Tarapacá, 8km from Pueblo de Huara on NR and Agua Santa routes, at Mile 57 on NR.

  In 1884 owned by Loaiza i Pascal.

  Owned in 1889 and 1893 by the San Jorge Nitrate Co.:Ltd, along with *Oficina Solferino*. This company formed by *James Inglis y Cia*. No mention of locos at that time.

  In 1913, and 1926 owned by *Moldes, Gajo y Cia*., 2 O&Ks of 8T.

- ***San José***, in Tarapacá, 14km from station Pozo Almonte on NR, at Mile 50S on NR.

  Owned in 1889 and 1893 by the *Banco Mobiliario de Santiago*. No mention of locos at that time.

  In 1913, and 1926 owned by Gildemeister & Co., 3 locos of 11, 16 and 8T. Owned at one stage by *Cía. Commercial y Salitrera de Tarapacá*.

- ***San José*** at Est. La Noría on NR.

- ***San Juan*** beyond end of branch south from Est. San Antonio on NR.

- ***San Juan***, in Tarapacá, west of station Dolores on NR out of Pisagua.

  In 1883 owned by Gildemeister.

  Owned in 1889 and 1893 by the Rosario Nitrate Co. Ltd formed by Jorge Petria and F. G. Clarke. No mention of locos at that time.

- ***San Juan de Gildemeister*** at end of branch south of Est. San Antonio on NR.

- ***San Lorenzo*** Tarapacá. at end of branch south of Est. San Antonio on NR. Owned by liverpool Nitrate Co. Ltd.

  In 1883 owned by Ugarte i Zaballos.

  Mentioned in 1908 list,

  In 1913 owned by the San Lorenzo Nitrate Co. Ltd.

- ***San Manuel,*** Tarapacá.

  Mentioned in 1908 list,

  In 1913 owned by *Rojo y Cía*.

- ***San Martin ex Valparaiso***

- ***San Miguel*** South-east of station Dolores on NR out of Pisagua.

- ***San Pablo***, in Tarapacá, In the canton de Alto de San Antonio. on NR branch to Of. Virginia.

In 1883 owned by Beneda i Schroder.

In 1889 had been recently sold to the San Pablo Nitrate Co. Ltd. formed by *James Inglis y Cia*. No men tion of locos at that time.

In 1893 owned by the San Pablo Nitrate Co. Ltd.

In 1913 owned by Don Jorge Jeffery.

In 1926 owned by *Suc. George Jeffery*, No locos mentioned. .

• ***San Patricio***, in Tarapacá,

Owned in 1889 and 1893 by A. W. Whitelegg and L. W. Rawson. No mention of locos at that time.

In 1913 owned by the San Patricio Nitrate Co. Ltd.

• ***San Pedro*** ex ***San Antonio***, Tarapacá canton Cocina, 3km from station Alto San Antonio on NR, worked by Juan Gildemeister y Cia. / Salpeterwerke Gildemeister A.G. (1870-72-

In 1883 owned by Gildemeister i Cia.

In 1913, and 1926 owned by Gildemeister & Co., 3 locos of 15T.

Owned at one stage by *Cía. Commercial y Salitrera de Tarapacá*.

• ***San Remigio,*** 3km from station Gallinazos on NR line from Iquique to Lagunas.

In 1913 owned by Sres. Marinkovic y Goich.

In 1926 owned by *Cía. Salitrera Aurrera*, No locos listed.

• ***San Vicente***, close to Est. La Noría on NR.

• ***Santa Adela***, in Tarapacá, on NR at Km 50S a few km. north of Est. Pozo Almonte.

• ***Santa Ana*** south-west of Est. San Antonio on NR.

Mentioned in 1908 list,

• ***Santa Ana***, Toco

In 1913 owned by the Tarapacá & Tocopilla Co. Ltd.

• ***Santa Beatrice*** close to Est. La Noría on NR.

• ***Santa Carlos***? (?) South of station Dolores on the NR.

• ***Santa Catalina,*** at Santa Catalina station on NR,

In 1884 'Santa Catalina del Norte' owned by D. Oliva i Cía.

Owned in 1893 and 1909 by the Lautaro Nitrate Co.

In 1913, and 1926 owned by Santa Catalina Nitrate Co., 2 Avonsides of 15T.

• ***Santa Catalina***, Taltal.

In 1913 owned by the Lautaro Nitrate Co.

• ***Santa Clara***, later ***Pontevedra***, west of Est. San Antonio on NR.

In 1913 owned by the Salpeterwerke Gildemeister AG.

• ***Santa Domingo*** west of NR south of Est. Santa Catalina.

• ***Santa Elena***, in Tarapacá, 5km from station Gallinazos in Canton Sur.

Owned in 1889 and 1893 by the Santa Elena Nitrate Co. formed by *James Inglis y Cia.*, having been purchased from Federico and Guillermo Brandt. No mention of locos at that time.

In 1913 owned by Andres E. Bustos.

In 1926 owned by *Suc. Andres E. Bustos*, Koppel wagons for caliche but no locos mentioned.

• ***Santa Fé***, Tocopilla, 5km from station Santa Fe on *FCTT*,

In 1913 and 1918 owned by Tarapacá & Tocopilla Nitrate Co.

In 1926 owned by Tarapacá & Tocopilla Nitrate Co. Ltd., 2 locos 'Americanas' of 12T.

• ***Santa Isabel*** close to Est. San Antonio on NR.

• ***Santa Isabel***, 1km from station Toco on *FCTT*,

In 1893 and 1913 owned by the Anglo-Chilean Nitrate and Railway Co. Ltd.

In 1926 owned by Anglo-Chilean Consolidated Nitrate, 3 locos Kitson, one of 25T and 4 wheels, two of 35T with six wheels.

• ***Santa Laura***, 8km from station Pozo Almonte on NR, at Km. 47S.

Had been taken over by Tamarugal Nitrate Co. in 1902.

In 1926 owned by London Nitrate Co., 3 locos of 10T.

At one stage owned by *Nueva Cía. Salitrera Tamarugal Ltda*.

• ***Santa Laura***, east of Est. Central at Mile 32S on NR.

• ***Santa Lucia,*** 26km from station Alto de San Antonio of the NR,

In 1913, and 1926 owned by Salar de Carmen Nitrate Syndicate Ltd., 3 locos of 18T.

• ***Santa Luisa***, Taltal,

In 1884 owned by Leating Quest. Faslem.

In 1893 owned by L. Zeballos i Cía.

In 1909, 1913 and 1918 owned by Lautaro Nitrate Co.

In 1926 owned by Lautaro Nitrate Co., No details at all; thus no locos listed.

• ***Santa Rita y Carolina***, in Tarapacá, 6km from station Dolores on NR, at end of branch.

In 1871 owned by González Vélez, with John Thomas North as an employee at this time.

In 1883 owned by J. C. Brweking.

Owned in 1889 and 1893 by the Santa Rita Nitrate Co. Ltd. formed in London. No mention of locos at that time.

In 1913 owned by the Santa Rita Nitrate Co. Ltd., with 2 locos.

In 1926 owned by The Nitrate Co. Ltd., No locos listed.

• ***Santa Rosa de Huara***, in Tarapacá, 800m from station Huara on NR,

Owned in 1889 and 1893 by Vernal Hermanos. No mention of locos at that time.

In 1913, and 1926 owned by Señor Jorge Jeffery, 2 locos: 1 German of 15T, and 1 English of 20T.

• ***Santa Rosa de Zapiga***, in Tarapacá

• ***Santa Rosita***, Tarapacá,

• ***Santiago***, Close to station Huara on the NR.

In 1913, and 1926 owned by Santiago Nitrate Co., No locos mentioned in 1926, but in 1913 four locos owned.

• ***Sara*** ex ***San Esteban*** South of Pozo Almonte. Branch of 8.790km from NR.

In 1884 owned by Santos Cienfuegos.

In 1913 owned by Rojo y Cía.

• ***Sargento Aldea***, Antofagasta, near station El Buitre of the *FCAB*,

In 1926 owned by Lautaro Nitrate Co. Ltd., 3 locos.

• ***Savona***, Antofagasta, Canton El Boquete. 2km from station Savona on branch to Boquete, worked successively by *Cia. Salitrera Poderosa de El Boquete* and The Lautaro Nitrate Co. Ltd.

In 1913 owned by the *Comunidad Salitrera Poderosa del Boquete*. Three locos of 80hp each.

Operations suspended 1921.

In 1926 owned by Lautaro Nitrate Co. Ltd., 5 locos, one Henschel of 22T, 2 Arn Jung of 18T, 1 Baldwin of 18T, 1 'Americana' of 18T.

• ***Sebastopol***, in Tarapacá, In the canton of La Noria 2km from station Central of the NR. Branch of 1.590km from NR.

Owned in 1889 and 1893 by *Hidalgo y Cia*. Very close to the coast. No mention of locos at that time.

In 1913 and 1926 owned by *Hidalgo i Cia.*, No locos mentioned.

• ***Serena/La Serena,*** South of Pozo Almonte.

Mentioned in 1908 list,

In 1913 owned by Buchanan Jones & Co.

• ***Severin*** (?) Inland from Taltal near Catalina Sur.

• ***Silencio*** On NR north of Est. Negreiros at Mile 44N.

• ***Slavia ex Rosario de Negreiros,*** in canton Negreiros and linked to *FC de Agua Santa*,

In 1926 owned by *Baburizza Cicarelli y Cia.*, 2 Koppels of 14T.

• ***Slavonia,*** Estacion Buenaventura on NR line to Lagunas.
In 1913, and 1926 owned by The Alianza Co.Ltd., No locos listed.
• ***Sloga,*** location unknown.
Mentioned in 1908 list,
• ***Solferino***, in Tarapacá, close to Est. San Antonio on NR.
In 1883 owned by Goichis Zayas.
In 1885 owned by Massardo Argentina, when the oficina had two engines named **'MARIA'** and **'CARMEN'.**
Owned in 1889 by a company formed by Jorge Inglis. No mention of locos at that time.
• ***South Lagunas*** 2km from station Lagunas on NR, worked in succession by The Lagunas Syndicate Ltd., and *Cía de Luis de Urruticoechea*., 2 locos of 18 inches, of 30 inch gauge.
In 1913 owned by the Lagunas Syndicate
In 1926 owned by The Lagunas Syndicate, 3 locos.
• ***Sud Americana*** Taltal area.
In 1884 owned by Berger i Cía.
Dismantled by 1906.
• ***Tarapacá***, south of the Pampa Obispo west of the NR line from Pisagua, near Est. Negreiros at Mile 47N.
In 1913 owned by don Jorge Jeffery.
• ***Tegethoff***, in Tarapacá, east of Est. Central near to Mile 38S on NR.
Owned in 1889 and 1893 by the San Sebastian Nitrate Co., along with ***Oficina Sacramento de Zapiga***, having previously been owned by Señores Blair, Sillen and Harrington. No mention of locos at that time.
• ***Toco***, at Toco?
• ***Tocopilla***
• ***Tranque Sloman,*** maybe not an *oficina* but a power station for the Sloman company.
• ***Tránsito,*** 3km from station Negreiros, and on *FC de Agua Santa*.
In 1913, and 1926 owned by London Nitrate Co., No locos listed.
Owned at one stage by *Nueva Cía. Salitrera Tamarugal Ltda.*
• ***Tresclavos*** West of station Dolores on NR out of Pisagua.
• ***Tres Marias***, in Tarapacá, on NR at Km. 55 north of Est. Huará.
In 1883 owned by Humberstone i James.
Owned in 1889 and 1893 by Pedro Perfetti. No mention of locos at that time.
In 1913 owned by Perfetti Jeffery y Cía.
Owned at one stage by *Cía. de Salitres y FC de Agua Santa*.
• ***Tricolor*** ex ***Oficina Sara,*** Departamento de Taltal
Operating 1906.
Owned in 1909 by the *Tricolor Nitrate Co.*
In 1913 owned by Perfetti Jeffery y Cía.
'*Paralizado 1914*'.
In 1926 owned by *Cía.Salitrero Pedro Perfetti* or *Tricolor Nitrate Co.*, No details given or locos listed.
• ***Trinidad,*** Tarapacá, east of Pisagua.
Mentioned in 1908 list,
In 1913 owned by the Lagunas Nitrate Co. Ltd.
• ***Unión***, in Tarapacá, 3km from station Dolores on Junin railway,
Owned in 1889 and 1893 by *Señores Glavich, Stiepovich y Cavallero*. No mention of locos at that time.
In 1913 owned by the *Cía. Nacional de Salitres La Unión*.
In 1926 owned by Señor M. Cicarelli, 2 locos of 12T.
• ***Union*** Taltal area. Owned by Marcos Cicarelli.
In 1884 owned by Sta. Marie i Lappé

• ***Valparaiso***, Tarapacá, on NR at Mile 56N north of Est. Huará. 9km from Pueblo de Huara and 300m from *FC Caleta Buena a Huara*,

In 1894 owned Federico Varela,

In 1910 possibly owned by the Cía. Salitrera La Valparaiso.

In 1913, and 1926 owned by *Cia Salitrera y FC de Agua Santa*, 3 locos.

In 1933 owned by Cosach.

• ***Valparaiso***, Antofagasta Canton Aguas Blancas,

In 1913 owned by the *Cía. Salitrera Valparaiso*.

Still in operation 1921.

• ***Veranees***, Tarapacá

• ***Vergara, J. F.,*** see ***José Fransisco Vergara,*** Antofagasta

• ***Victoria ex Sloga,*** One of the Victoria oficinas was north of the *FC de Junin* line south-east of Pisagua.

Closed in 1921.

In 1913 and 1926 owned by *Cía. Salitrera y FC de Junin*.

• ***Victoria, ex Brac***, Dolores, Tarapacá, worked in succession by *Sargo y Sabioncello* (Santiago Sabioncello) / *Compañía Salitrera de Tarapacá y Antofagasta* /*Sociedad Química y Minera de Chile* (1960) , other sources suggest worked by Salitrera H. B. Sloman and had 3' 0" gauge system.

In 1913 owned by the *Cía. de Salitres y FC de Junín*.

• ***Victoria***, there may have been two more oficinas both named Victoria near Pintados

• ***Vic,*** south-south-east of Iquique

• ***Viga*** Near station Alto San Antonio on NR.

• ***Vigo***, ex ***Adriático*** 1km from station Alto San Antonio on NR,

In 1926 owned by *Cia. Salitrera Galicia*, 4 locos of 20T, and 2 of 5T.

• ***Virjinia***, (or ***Virginia***?) in Tarapacá, north-west of Pintados, east of Est. La Noría on NR. Near Gallinazos?

In 1882 was owned by John Thomas North.

Owned in 1883, 1889 and 1893 by Señores Folsch and Martin. No mention of locos at that time.

In 1913 owned by the Tarapacá & Tocopilla Nitrate Co. Ltd.

• ***Vis,*** Tarapacá.

Mentioned in 1908 list,

• ***Yugoslavia ex Cristiana***, Antofagasta Canton Aguas Blancas, 11km from station Yungay on *FCAB*.

Operations suspended 1921.

In 1926 owned by *Cía. Salitrera Yugoslavia*, No locos listed.

• ***Yungai Bajo***, ex ***Maurossia***, in Tarapacá,

Owned in 1889 by Señor E. G. Lecaros. No mention of locos at that time.

In 1893 owned by Idelfonso (sic) Albarracin.

Owned at one stage by *Cía. de Salitres y FC de Agua Santa*.

• ***Zapiga*** (?) East of station Jazpampa on NR out of Pisagua.

• ***Zavala*** on branch south of Est. Santa Catalina on NR out of Pisagua.

4.12.2 Appendix 2: Various intermediaries mentioned in these files

The international trading houses of Valparaiso and other Chilean ports

The majority of international trade to and from Chile was arranged through a number of big companies, mostly based in Valparaiso. These each tended to be linked to one overseas country, and commonly had an equivalent overseas headquarters, eg in New York, Liverpool, Hamburg or wherever. Each of these companies had agency agreements with major businesses both in Chile and in their respective overseas home. For example, in the field of railway locomotives, Gebr. Vorwerk y Cia. were agents for Henschel, whilst the Hemenway & Browne, Browne Beéche, and Wessel Duval dynasty acted for Baldwin. [24]

A number of the main trading houses operating in Chile are listed below, together with their overseas bases and the locomotive builders with which they had sales agreements.

Hemenway & Browne, Browne Beéche until 1897, **Beéche y Cia**. until 1902, **Beéche Duval** until 1906, and **Wessel Duval** which still exists.	New York	Baldwin
Williamson Balfour, associated with Balfour Williamson of Liverpool	Liverpool	
Duncan, Fox & Co.	UK	
Gebr. Vorwerk y Cia.	Hamburg	Henschel
Gildemeister y Cia.	Germany	
Walter Bade	Germany?	
Saavedra Benard y Cia.	Hamburg	O&K
W. R. Grace & Co.	USA	ALCo
Antony Gibbs y Cia.	UK	
Rose Innes, Cox y Cia. and **Rose Innes, Kay y Cía.**	Birkenhead	MW
Baburizza y Cía.	London?	
W. & J. Lockett	UK	
Allardice	?	

Typically, when the *EFE*, say, invited tenders for the supply of equipment, it was the Valparaiso traders who would submit bids after consulting with their associated overseas manufacturer. Thus, in *DOP* correspondence it might be stated that bids had been received from Vorwerk, W. R. Grace, and Saavedra Benard, with the last having been awarded the contract. What this really meant was that tenders had been received from Henschel, ALCo and O&K, with the last having offered the lowest price.

The names of these houses tended to change over time, as unlimited partnerships which these initially were, were required by law to use the names of their current partners.

In the opposite direction, many of these houses acted as agents for nitrate *oficinas*. There would seem to have been scope for conflicts of interest here, but it is not known how these were avoided.

Antony Gibbs y Cía. Agents for *oficinas*: Alianza, Bellavista, Buenaventura, Slavonia, San Antonio de Zapiga, Victoria, Argentina, Rosario de Huara, Cala-Cala, Pan de Azucar, California, Maroussia, Tres Marías. Representatives of Alianza Co., Rosario Nitrate Co., *Cía de Salitres y FC de Junin*, Pan de Azucar Nitrate Co., *Cía Salitrera Pedro Perfetti*. Also, in Antofagasta for *Cía. Salitrera El Peñon*.

Lockett Bros. & Co. Agents for *oficinas*: Carmen Bajo, San Donato, San Lorenzo, Ramirez, Mapocho, North Lagunas, South Lagunas, Peña Grande, Amelia, Aurora. Representatives of Liverpool Nitrate Co., Lagunas Syndicate Ltd.

Nitrate Agencies Ltd. Agents for *oficinas*: Condor, Paposo, Centro Lagunas, Santiago, San Patricio, Santa Rita, Virginia. Representatives of Barrenechea Nitrate Co., Grace Nitrate Co., Lagunas Syndicate, Santiago Nitrate, San Patricio Nitrate, Santa Rita Nitrate, Tarapacá-Tocopilla Nitrate.

Buchanan Jones & Cía. Agents for *oficinas*: Puntunchara, Transito, Santa Laura, La Palma, La Patria. Representatives of London Nitrate Co., *Nueva Cía. Salitrera Tamarugal*, *Cía. Salitrera El Loa*.

Soc. Com. Harrington Morrison & Co. Agents for *oficinas*: Angela, Keryma, Sacramento, Santa Catalina, Santa

Lucia. Representatives of Angela Nitrate, Cía. Salitrera Keryma, San Sebastian Nitrate, Santa Catalina Nitrate, Salar de Carmen Nitrate Syndicate.

Cía. de salitres y FC Agua Santa Agents for *oficinas*: Abra, Agua Santa, Irene, Primitiva, Valparaiso.

Soc. Anon. Com. y Sali. Bruna Sampaio i Cía. Agents for *oficinas*: San Pablo, Santa Rosa de Huara.

José de la Fuente Agents for *oficinas*: Asturias, San Jorge, Mercedes.

Gildemeister i Cía. Agents for *oficinas*: Peña Chica, San José, San Pedro. Importers of O&K equipment.

Marcos Cicarrelli Agents for *oficinas*: Porvenir, Unión, Slavia.

Cía. Salitrera Galicia Agents for *oficinas*: Coruña, Pontevedra, Vigo.

Pinedo Hermanos Agents for *oficinas*: Aurrerá, Felisa, San Remigio, Nena Vilana, Constancia.

Santiago Sabioncello Agents for *oficinas*: Brac, Franka, Diez de Septiembre.

Astoreca y Urruticoechea Agents for *oficinas*: La Granja, Iris.

Quiroga y Lema Agents for *oficinas*: Progreso, Josefina.

Pablo Marinkovic Agents for *oficinas*: San Enrique.

Gil Galte Agents for *oficinas*: Los Pirineos, Providencia.

Fransisco Watson y Cía. Agents for *oficinas*: Barcelona.

Luis J. Moro Agents for *oficinas*: Gloria.

Uldaricio Ossio Agents for *oficinas*: Camiña.

Ossio y Ricthet Agents for *oficinas*: San Fransisco.

Arturo Hidalgo Agents for *oficinas*: Sebastopol.

Juan Golch Agents for *oficinas*: Anita.

David Olcay Agents for *oficinas*: Esmeralda, Resurrección, Santa Elena.

North Brothers Agents for *oficinas*: Jazpampa, Paccha - Sara.

Baburizza, Lukinovic & Co. Agents for Lautaro Nitrate Co.'s 24 *oficinas*.

Consulting engineers

Finally, several firms of consulting engineers were involved in locomotive purchases. **Strain & Robertson** of Glasgow, **Fawcett Preston** of Birkenhead, and **Mitrovich Bros.**, each had sizable businesses in, for example, the construction of the nitrate *oficinas*. They would be asked by customers to assist in choosing and ordering locos and other items, and in some cases appeared in the loco builders' order books as the purchaser.

Note in case of confusion that Strain & Robertson's order numbers were specific to each customer, and therefore were often seemingly repeated but for another customer.

4.12.3 Appendix 3: Narrow gauge loco tanks, cabs and bunkers surviving at *oficina Humberstone*

Photos and measurements taken on 1st April 2019.

Group 1, outside




Side tanks: 122cm height, 393cm length overall, 75 x 46cm bottom cutout, 46cm thickness of tank

Bunker 224cm side to side, 121cm top to bottom, 68cm front to back

Cab 215cm front to back, 235cm side to side. The cab is from one of the 1929-built O&K Lüttermoller 0-10-0Ts built for Santiago Sabioncello & Co.

Group 2, inside, first set on right




Side tanks: 110cm top to bottom, 50cm thickness of tanks, 270cm length of flat top +190cm length of sloping section +59cm in the cab. The tanks are from a Henschel, with sloping tops at front, and one bears the no. **13**.

Cab: The cab is from one of the 1929-built O&K Lüttermoller 0-10-0Ts built for Santiago Sabioncello & Co.

Saddle tank: 194cm long, 153cm across, 60cm top to bottom. This saddle tank is from a small Fowler 0-4-0ST or 0-4-2ST.

Chimney: This may well be from an NBL 0-4-0T.

Bunker: 72cm length + 21cm in cab, 123 top to bottom, 230cm wide. This too appears to be from one of the

Lüttermoller 0-10-0Ts.

Sandbox: German style.

Group 3, behind group 2 in line fore and aft





Side tanks 120cm langth under cabside + 268cm length further forward, 100cm top to bottom, 72 x 42cm bottom cutout, 43cm thick

Bunker 216cm wide, 60cm front to back, 100cm top to bottom

Cab 219cm wide, 190cm front to back, 78cm height to eaves

The bunker and tanks are probably all from the same loco, numbered **5**.

Group 4, the first set of side by side tanks in the shed



Tanks 98cm top to bottom, 39cm thick, 339cm long, Notch at bottom 47 x 26cm, begins 63cm from front.

Group 5, second set of side by side tanks

Tanks 522cm length, 49cm thick, 126cm tall, front cutout 168 x 22cm, also an oval hole and two steps inset

into tanks, "**C S T A 4**". These are probably from one of the 1929-built O&K Lüttermoller 0-10-0Ts built for Santiago Sabioncello & Co.

Bunker 223cm wide, 117cm tall, 39cm and 48cm front to back, at different heights, handrails in recesses.

Cab 238cm wide, 94cm height to eaves, 196cm front to back




Group 6, a damaged pair of tanks




Tanks 313cm length, 107cm height, 144 x 29cm cutout, 42cm thick, No. **12**

Group 7, a set of tanks, bunker and cab opposite group 2, numbered 9




Tanks	301cm length + 94cm inside cab, 120cm height, 262 x 24cm very long cutout, 45cm thickness RH tank had been named
Bunker	218cm wide, 120cm height, 37 and 45cm length at different heights
Cab	220cm wide, 189cm length, 79cm height to eaves

Group 8, tanks only, Nos. 5 & 18 visible on both, and worksplates had been centred on tanks.




Tanks	264cm length + 125cm in cab, 102cm height, 44cm thick, 75 x 40cm cutout

---

Group 9, tanks with Henschel plate & bunker & cab, tanks similar to group 7





Tanks 395cm length, 120cm height, 45cm thick, 262 x 24cm very long cutout
Henschel plate 21327 of 1929 on LH tank

Bunker 213.5cm wide, 25cm length, 107cm height

Cab 220cm wide, 98cm remaining length, 90cm height to eaves, NB second curve beginning, presumably for doorway, NB Cab unlikely to be German. It has not yet been identified, though a number of Hunslet locos for Chile had such a pattern of side window and larger doorway.

Group 10, unmatched tanks only, similar but of different heights

RH tank 312cm length + 71cm behind 'step' in top line, 50cm thick, 116cm tall

LH tank 312cm length + 71cm behind 'step' in top line, 50cm think, 122cm tall, 70 x 43cm cutout
No. **29** painted on tank





Group 11, a single NBL tank labelled CSTA no. 35





LH Tank 340cm length, 100cm height, 50-54cm thick, inside face curves to follow boiler, 182 x 37cm cutout

---

Group 12, single tank




RH Tank 402cm length, 46cm thick, 96cm tall, No cutout
It bears the no. **21**, and had carried a big nameplate with a worksplate above it.

Group 13, German style tanks outside shed, same as group 5?




Tanks 501cm length, 122cm height, 47cm thick, 98 x 22cm cutout + a hole and two inset steps
These are probably from one of the 1929-built O&K Lüttermoller 0-10-0Ts built for Santiago Sabioncello & Co.

Group 14, by the side of group 13





RH tank 352cm length, 121cm height, 45cm thick, 298 x 23cm very long cutout. Bears no. **8**.
LH tank 420cm length, 114cm height, 52cm thick, 285? x 24cm very long cutout.

Group 15-16, single tanks

LH tank This tank is the further from the camera in each of the above photos. 200cm length + 132cm length in cab, 101cm height, long cutout but not measured.
Possibly by Henschel?

LH tank This tank is the nearer to the camera in each of the photos immediately above.
396cm length, 120cm height, 45cm thick, 2934 x 24cm very long cutout
Had carried a big rectangular plate near the cab





Group 17-18, single tanks




LH Tank 351cm length, 117cm height, 45cm thick,.
RH tank Similar to group 16 but with a different filler, see group 16 for dimensions

---

Group 19, US style saddle tank, cut in half




Saddle tank 320cm length, 128cm distance of dome c/l from one end, 98cm top to bottom.
This might be from one of the *FC de Agua Santa* 2-4-2STTs by Baldwin.

Group 20, cab with porthole in one side




Cab 222cm length of roof, 102cm length of side panel, 89cm height to eaves, 47cm diameter of porthole. Safety valves came up though roof. Possibly by Manning Wardle? MW 0-6-2Ts 1764-5 supplied to Colorado Nitrate had side portholes like this one.

Group 21, eight more random tanks, mostly missing panels, plus one bunker




Group 22, last isolated set outside

RH tank 420cm length, 120cm height, 52cm thick, 284 x 28cm cutout

LH tank (also actually a RH tank) 397cm length, 120cm height, 45cm thick, 303 x 23cm cutout
Carries remains of a nameplate and two worksplate locations

Bunker 230cm width, 117cm height, 77cm length

Cab (German) 190cm length, 77cm height to eaves, 76cm length of side panel, 220cm width




4.12.4 Appendix 4: Loco operation on the Braden Copper Company railroad in 1937

In October 1937 a request was received from the O'Kiep Copper Company of South Africa asking for information about the Shay locomotives of the Braden Copper Company. As this correspondence gives invaluable information about this railway and its locos, it is appended in full. This is followed by the Motive Power section of the Railway Superintendent's report to management in late 1939 Source [29] copy letters in the *Archivo Historico Coya*.

Original enquiry from Mr. E. T. Stannard, President of the Braden Copper Company in New York to Mr. W. J. Turner, the General Manager in Coya:

October 21, 1937.

Dear Mr. Turner:

Henry Smith, President of the O'Kiep Copper Company near Capetown, South Africa, telephoned me this afternoon to enquire regarding your experience with Shay locomotives at Braden.

I told Mr. Smith that insofar as I knew your experience had been very satisfactory, and especially so with your new, heavier Shay locomotives, which I believe were purchased about 1929. The O'Kiep Company is planning on a 30" gauge line having curvatures of about 40 metres and a maximum 5% grade.

Will you please let me have a letter from you by return airmail giving any information which you think might be of interest to Mr. Smith in the development of his O'Kiep Copper Company property.

Very truly yours,

(sgd.) E. T. Stannard

Letter from Mr. J. W. Straney, Railroad Superintendent, at the Superintendent's office, Rancagua, dated October 29th 1937 and addressed to Mr. W. J. Turner at Sewell:

Rancagua, October 29th, 1937.

Dear Sir:

SUBJ: Letter from Mr. E. T. Stannard to General Manager Braden Copper Company regarding "Shay" locomotives at Braden.

To give Mr. Henry Smith a general idea of what work we are doing with "Shay' locomotives, I believe a general description of our Railroad will be helpful for him to form an opinion about the conditions we have here at Braden.

Our Railroad starts at Rancagua, which is a station on the Chilean State Railroad, which is a 5 ft. 6 in. gauge line. Here cargo is transferred to our own private equipment for movement to Sewell and intermediate points. From Rancagua to Coya – a distance of 19 miles – we follow the general course up the Cachapoal river, with an average grade of slightly under 2% and maximum grades of 3–3/10%. The curvature on this part of the line is not excessive; however, we do have an 80 feet radius curve, two 100 feet radius curves and quite a number of 125 to 140 feet radius curves. At Coya, the line takes the general course of a smaller mountain stream and runs 25 miles to the upper terminal, which is Sewell. The average grade for these 25 miles is slightly under 4%. We have long stretches, up to half a mile or more, on 4–3/4%. Our curves on all new work and line changes have been compensated to some extent for

curvature, but, in a good many places, it has been impossible to properly reduce the grade on the sharp curves sufficiently to balance the extra resistance due to curvature. Originally, these 25 miles were practically all curves with very few straight pieces of track, there being about 20 curves of 60 ft. radius and more than double that number of 80 ft. However, several hundred curves have been reduced during the past 20 years and our sharpest curves now are nearly all about 80 ft. radius.

Our track proper is laid with 60 lb. ?SCE section rail. Our cross ties are 6" x 5[?]" x 6 feet, there being on average 17 to a 33 feet rail. The ballast is crushed rock obtained from our own crushing plant, and we have on the average about 9 inches of ballast under the cross ties. We are crushing the ballast as fine as we can with jaw crushers we have and it will all practically pass through 1" mesh screen.

Our gauge is 30 inches and is widened to 30–3/4" on our sharpest curves. The super elevation of the curves is 3" for curves between 80 ft. and 250 ft. radius where the track is fairly level so that trains move in both directions at least 15 miles per hour. On our steep grades, where up going trains barely move, we have found that with more than 2 inches of super elevation, there is danger of pulling over the cars next to the locomotive.

We have fifteen "Shay' locomotives made by the Lima Locomotive Works, at Lima, Ohio. Nine of these are of the two truck type and weight 42 tons in working condition; the other 6 are three truck type and weigh 60 tons in working condition. On both types all trucks are driving so that the entire weight of the engine is utilised for adhesion. Both the 42 and 60 ton types have three vertical cylinders which drive a crankshaft connecting to a line shaft by universal couplings which, in turn, drives the wheels through bevelled gears and pinions. All locomotives are oil fired. The fuel oil is heated in the tender before passing to the burner and is atomised by a jet of live steam. Our burning arrangement is practically the same as shown in the Lima catalog. The burner is in the front end of the firebox and points towards the firebox door, and the flash hole is in the bottom of the back end of the firebox. We have no brick arch and the water leg of the boiler is bricked up about 2 feet high and about 6 inches wide, thus leaving a channel 3 feet wide which becomes extremely hot, permitting the oil to atomise and burn. All locomoives are equipped with 10 Schmidt superheater units, which give us quite a high degree of superheat. Four of the 15 locomotives have been equipped with piston valve cylinders replacing the old slide valves with balance plate. These cylinders are easier to keep up and require less repairs on the valves. The lubrication of the cylinders and especially the valves, is a difficult one, due to to the fact that when our engines are travelling at 25 miles per hour, which they do on some parts of our line, the piston speeds are about the same as on a modern rod locomotive travelling at 100 miles per hour, and this, combined with a very short valve travel, has given us considerable trouble during past years and requires the use of the finest grade of superheater oil that we can purchase.

For braking, we have the Westinghouse standard automatic air brake, with the straight air control feature. Also, on most of our cars bnringing down copper, smelter flux and other heavy loads, we have added the load brake feature. On these cars, the empty braking ratio is 66% of the tare weight of the car and when the car is handled down the grade loaded, the load brake feature is cut in, giving a braking ratio of approximately 40% of the entire weight of the car and its load. Previous to adding the straight air control, we had trouble controlling down coming trains and had to resort to hand braking to help out, which cost a lot of flat wheels. After getting straight air control, we eliminated all hand braking by limiting our down coming trains to 5 cars loaded with copper and 7 to 10 empties. Now with the load brake feature, we experience no trouble in safely handling 10 to 12 loaded cars of copper down our steepest grades even though we have no empties behind them.

On the up going trips, the 60 ton "Shay' locomotives can handle 10 cars, or a gross train tonnage of 320 tons, and the 42 ton type, 200 tons, over the first 19 miles. On the upper section, which has heavier grades, the 60 ton locomotives will handle 5 to 6 cars with a gross train tonnage of 150 tons and the 42 ton type 110 to 120 tons. When the trains are longer, i.e. when they have more cars, it is necessary to reduce the gross tonnage accordingly. We have handled as much as 23,000 tons of up going freight and 15,000 tons of down coming freight during a busy month.

The "Shay' locomotive has handled our work well and is a wonder for pulling. It will slow down with a heavy train to

4 or 5 miles per hour and it would seem that it was going to stall any minute, but they will hang on and and pull after a fashion that is really marvellous. The best service is obtained from them under slow speed operation, and if they could be operated at all times between 5 and 8 miles per hour, the upkeep on them would be much less. However, this is almost impossible coming down heavy grades, as the enginemen will leave them run. Above speeds of 10 to 15 miles per hour, the vertical cylinders set up severe vibrations which wear the engine out. Also the high piston and valve speeds wear out the moving parts. The gears and pinions are costly and require continual replacing. I believe I can safely say that the cost of upkeep of Shay locomotives is more than double that of rod locomotives. Also the burning of fuel oil in the small fireboxes requires continual attention and everything must be kept in absolutely first class order, or the engine will smoke, thereby using up an excess of fuel.

For any new railroad about to be constructed, I would strongly recommend a minimum of 36 inch gauge and, if curvature would permit, I believe a 1 meter gauge better and safer. As for the motive power, if a 3 ft. or 1 meter gauge were possible then I believe that rod locomotives of the Mallet articulated type would prove far more economical than Shay locomotives. There was an article in the Baldwin Locomotive Works' magazine of January 1927 describing in detail the Uintah Railroad which, I believe, is in Colorado, and also giving their reasons for scrapping 10 or 12 Shay locomotives similar to ours and replacing them with Baldwin Mallets.

If the road in study is to have anything like the traffic that the Braden Railroad has and is as long or longer, then the best advice we could give Mr. Smith is to adopt Shay locomotives only in the last case. It would be better to spend more on a better line with a wider gauge and start off with good locomotives. Our railroad started out with the idea of about 200 tons per week and from there just grew up to reach 10,000 tons per week. Now to change our gauge and all our equipment would cost tremendous sums which, though desirable for economical reasons, is out of the question. To change the power alone is a very difficult problem due to the narrow gauge. This gauge question is our handicap; it is always our stumbling block for every betterment.

I hope I have covered all the points that will interest Mr. Smith. However, if he desires anything else, we can no doubt help him out better if we had a better idea of his problem.

Yours truly,

(original signed by J. W. STRANEY)
J. W. Straney
Railroad superintendent

Letter from Mr. W. J. Turner, General Manager in Coya, to Mr. E. T. Stannard, President of the Braden Copper Company in New York:

Coya, October 30 1937

Dear Mr. Stannard;

I acknowledge receipt of your letter P. No. 568 of October 21st, requesting some information regarding our experience with Shay locomotives at Braden, for the benefit of Mr. Henry Smith, President of the O'Kiep Copper Company.

Attached hereto I enclose copy of a letter dated Oct. 29th from Mr. J. W. Straney, Superintendent of our railroad, containing a description of our railroad and equipment, and some recommendations for a new railroad to be constructed. The more important of Mr. Straney's suggestions is that the gauge of the railroad be a minimum of 36 inches and

preferably one meter, and that Shay locomotives be adopted only in the event that it is impossible to use some type of rod locomotive such as the Baldwin Mallet, and with these ideas I am most heartily in accord. I feel certain that a wider gauge would permit of more economical operation, and also the upkeep on our Shays is quite high. In this connection, our snow conditions during the winter months render operation and maintenance somewhat more difficult and expensive than would presumably be the case in Africa. I would strongly recommend that a minimum weight of 50 pounds for the rails be adopted.

Trusting that this is the information desired for Mr. Smith, and with kind regards, I am,

Very truly yours,

W. J. TURNER

General Manager.

Summary report by W. J. Straney, Railway Superintendent, to the company's management, dated September 25th 1939

(sub-heading) **MOTIVE POWER**

Our motive power consists of 15 Shays, 9 of which are 42 tons and the other 6 are 60 tons. Six of the 42 ton locomotives are 30 years old, the other three are 22 years old. Of the 60 ton machines, two are 24 years old, two are 22 years old, and the other two about 15 years. The repair cost per 10,000 horse power miles is approximately $8.30 U.S.Cy as compared with $1.80 U.S.Cy that a direct locomotive is actually costing on the American railroads today.

The lower section of our line (Rancagua to Coya) is the hardest on our power due to the lower grade and the fact that the locomotives vibrate excessively when run at the speed we run them at. Our switchers and the Coya locomotive go about twice as long between general repairs as the locomotives working out of Rancagua.

Our passenger traffic was so heavy all last Summer that a 42 ton Shay could not handle the upgoing train and it had to be pulled out of Coya with th 60 ton locomotive located there. It is impossible to place two 60 ton Shays in passenger service as that would leave 4 for freight. These four would be all required every day and in that way, it would be impossible to repair them. It is not economical to handle our freight with the 42 ton locomotives.

I would like to suggest that a mallet locomotive, something after the design of those used on the Uintah Railway be investigated. By the purchase of a locomotive of this type and its successful operation, we could line up the folowing program:-

The morning local freight out of Rancagua to be hauled by the mallet to Coya, where it would proceed to Sewell by 60 ton Shay. The mallet would turn in Coya and take what freight was there to Rancagua. At 11.05 it would pull train #28 with passengers to Coya and turn there to bring train #29 to Rancagua. If a third train was required, it could repeat to Coya and return.

A 60 ton Shay would be kept in La Junta, where it would make the daily run to Coya with the down passenger train and return to Sewell with the upgoing train. This locomotive could repeat to Colón when there was freight.

At Coya, we would locate two 60 ton Shays to move the freight left there by the mallet to its destination above.

With this line-up, we would have one mallet and three 60 ton Shays in road service. Of course, the mallet could not work every day and the days that it was in for running repairs or boiler washing, a 60 ton Shay would have to take its place.

This method would place the Shay locomotives in that part of our service where they are best adapted and eliminate them from the lower section where they are certainly undesirable and costly to operate.

I honestly feel that in locomotive repairs nd fuel economy, a mallet locomotive would prove its superiority over the Shays to such an extent that after one was proven out it would immediately induce us to acquire a second one. With two mallets, we would be able to eliminate four Shays from our list; i. e.: run them until they required a costly general overhauling and set them aside.

I would like to suggest a complete change, such as was made by the Uintah Railway, but realize that we would never get it, so I have taken the present path to recommend a gradual change over as the economy obtained permits.

A general idea of a Locomotive is given in an attached letter.

Yours truly,

(original signed by J. W. STRANEY)
J. W. Straney
Superintendent Railroad

4.12.5 Appendix 5: Chile's principal coal producers in 1917

The following producers and mines excavated the bulk of Chile's coal. The majority of them will have used rail transport in some form or other, and probably with the aid of steam locomotives.
Source: mainly from a table in the *Boletin de la Sociedad Nacional de la Minería* in 1917. Note that a single mine may have had a number of separate *piques* (vertical shafts) or *chiflones* (inclined adits) within the local area.

Owner	Mine	Location	Gross output in tonnes	No. of workers	Known rail usage
Anibal 2a. Zañartu	Monte Cristo	Tomé	250	10	?
Cía. Carb. de Lirquen	Lirquen	Penco	50,000	400	?
Cía. Minera de El Rosal	El Rosal	Penco	12,447	125	?
Cía. de Lota i Coronel	Lota	Lota	291,898	2065	4' 6" gauge, see section 2.2.1
	Buen Retiro	Coronel	46,218	328	Broad gauge, *FC de Coronel a Buen Retiro*, see section 1.4.2
	Playa Negra	Coronel	8437	61	? as 4' 6" gauge extension to this mine never completed.
	Coronel	Coronel	13,641	91	?
Cía. Carb. i de Fund. Schwager	Schwager	Coronel	303,378	1960	*FC de Coronel a Boca Maule i Puchoco*, 3' 0" gauge, see section 4.1.1
Suc. Rojas Miranda	Puchoco	Coronel	?	?	2' 6" or perhaps 2' 0" gauge, see section 4.2.9
Cía. Carb. de Los Ríos de Curanilahue	Carampangue	Peumo	13,366	162	Broad gauge, section 1.4.2
	Chiflon i Nivel	Curanilahue	149,570	1015	
	Amalia	Lebu	32,633	384	?
Cía. Carb. Victoria de Lebu	Victoria	Lebu	7000	130	Rumoured to have used 60cm gauge?
La Cía. de Arauco Ltda.	Colico	Peumo	28,311	340	Broad gauge, section 1.4.2
	Curanilahue	Curanilahue	112,697	899	
Cía. Carb. Millahuillin	Ebner at Mafil	Valdivia	1600	25	The sole photo of operations at Mafil shows what is probably a 60cm gauge loco.
Com. Minas de Carb. Porvenir	Porvenir	Lebu	5500	110	?
Menendez Behety i Cía.	Loreto	Punta Arenas		10,000	? 1m. gauge, see section 3.3.5

4.12.6 Appendix 6: An inflammatory letter from Patillos

Background

The argument between Robert Fairlie and Walton W. Evans, as to whether British or American locomotives were better, and in particular as to whether Double Fairlies could do what Fairlie claimed, raged with increasing heat throughout the 1870s. By modern standards some of the letters were definitely libellous, and their respective acolytes were little more restrained. This particular missive, published in the American journal *The Railroad Gazette* on October 3rd 1874, had been provoked by one in *Engineering* a few months earlier from John Cleminson, the Loco Superintendent of the Iquique and Pisagua Railways, and was written by one Gregg Gilson, Rogers' representative charged with getting two 2-6-0s into good working order on the Patillos railway just to the south.

Even the protagonists' own countrymen jibbed a little. The Master Mechanics Association concluded that Evans' paper presented to its annual conference in September 1870 should not be published in the proceedings because of its personal attacks.

I therefore suggest that any reader take the various claims with a pinch of salt, but nevertheless there are some interesting insights to be gained.

Contributions.

American and Fairlie Engines in Peru.

To THE EDITOR OF THE RAILROAD GAZETTE:

Either intentionally or through a mistake, some one has sent me from Iquique a copy of *Engineering*, I think, dated January the 26th, 1874, in which I find a letter under the head of "Railway Construction," from one Mr. Cleminson, Locomotive Superintendent of the Iquique Railway. If you will favor me with space in your most valuable paper to reply to him, I think you will only do justice to one of America's most eminent engineers.

Mr. Cleminson, in the first place attacks Mr. W. W. Evans in a pretty harsh manner, and intimates that he boastingly asserts that he wants to get at the truth as to which engines, the *Fairlie* or American engines, can do the most work, etc., at the least expense. when in reality be sends men down here and pays them to write things to him which are not true, after arriving here. Now, I can speak for one of these very men Mr. Evans has sent here, and say that I have been instructed by Mr. Evans to be very careful and not write anything home which is not exact and true concerning the performance of engines. In the next place, Mr. Cleminson says there was an American driver on his road who tried to make two *Fairlie* engines pass one another on a single track ; in reply I wish to say that the aforesaid Cleminson says what he knows to to an untruth in making such an assertion and intimating that the driver was employed by Mr. Evans, for he never was contracted for or by or came out for Mr. Evans, and when Mr. Cleminson picked him up he was a poor, miserable drunkard, who had been discharged by many American master mechanics on this coast before. This is the sort of American Mr. Cleminson, Roscoe, and Fairlie have always employed, and when a good American mechanic or driver did get employment on their route, it very soon became too hot for his northern blood, and to express it in Mr. Roscoe's words, "they had to get." Again, Mr. Cleminson quotes the Americans by naming an engine called the Disengano – a poorly constructed engine for the road and country, which really could not be expected to do anything like good service by one who know the road well ; at the same time he omits saying anything about the two American engines called respectively Carmen and Moro, except to say that their boilers were worn completely out with about eighteen mouths' work ; he fails to state that they had to run with salt sea water, and that both boilers were burned by drivers whom he employed to run them ; he also forgets that they did more and better work and gave the then Superintendent better satisfaction than any other engines on the road. He goes on to say that he has sent to the States for new boilers and is anxiously waiting for them, but forgets to tell why they were not in Iquique and running more than a year ago. If he will write or come and ask me, I think I can tell him why they do not come ; that will most likely suit him and his interests better than it would to see it in print. He says the aforesaid " Carmen " and " Moro " arc all good in other respects, and if they are as he says he ought to have great praise for having kept th. m so, for they stood out within one hundred yards or less of the ocean, exposed to a constant salt sea breeze, without any covering whatever, and if they are good in their working parts I think Mr. Cleminson should have the credit for keeping thorn so.

Mr. Cleminson says he has a Fairlie engine which consumes only about half a pound of coal and one-third of a gallon of water per ton of cargo per mile. In regard to that I think it beneath the dignity of a railroad man to reply. If I were in Mr. Cleminson's place and I ever became a boy again, I would go to the States, where they claim to have free public schools tor all. I think there must be some great mistake in his figures. He omits saying that his road is about forty miles long, and the freight or cargo, all nitrate of soda, manufactured 3,000 feet above Iquique, has all to come down hill, and that there is nothing to go up except water, provisions, &c. I will now close this by saying that the aforesaid John Cleminson is a man who is not believed in anything he says in or about Iquique regarding the performance of engines. When I came here I was introduced to him ; he very reluctantly gave his consent for me to walk through his shops, and took the first opportunity to run away and leave me before I had seen the American engines. I suppose he was justly ashamed of the state they are in. I think if he had been an American he would have stayed and shown up the animals of which he is boss to their best advantage.

I will now undertake to give some comparisons between the engines of Rogers' make which I brought out and the Fairlie engines here, as truthfully and correctly as it is possible for me to do, as I have the beet chances to know, being in charge of the American part of the mechanical department. I very recently had a chance to see more or less how the Fairlie engines worked in comparison with mine. I was the first train out, and took, as near as I can get at it, 48 tons of freight on three English-built American bogie cars and two Fairlie cars. " four rigid-wheel boxes." I also took 2,400 lbs. of coals on starting. The train behind me was drawn by their best Fairlie engine. " The Patillos," taking three English-built American bogie water tanks, with about 30 tons of water. It also took 1,400 lbs. of coals in Patillos on starting, 700 more at the first station, 700 more at the third station, and at the fourth station she turned around and went back, he having water for that place which is on or about the forty-second kilometer post. I went to the end of the line, which is on the 85th killometer post, with the whole of my train, and took no coals from the time I left Patillos until I got back. I think that nothing more than a fair average of the way the two engines run. I should like very much to get the amount of water the Fairlie engines use, but it is simply impossible, as Mr. Roscoe, the Fairlie man here, will not let anyone have a chance to do so. I think the water comparison would be much more in our favor than the coals. The whole amount of water I used was 2,890 gallons. Out of that deduct 314 gallons which I used with the steam brake coming down again. (In the length of the road, about 53 miles, the rise is about 4,000 feet and we have one place of half a mile in length where the gradient is 4.78 in one hundred, and many places 2½ and 3 per cent. with many 18 degree curves). The engines here are all 26 ton engines, 2 ft. 6 in. gauge, the Fairlie engines carrying two tons of fuel and water, more or less, on their drivers in addition, while the American engines have to draw the fuel and water behind them in the usual tender. I mention about the exact figures, but it is impossible for even one of the Fairlie drivers to get them correct, such is the care of Mr. Roscoe to prevent their being taken, etc.

As Mr Cleminson tries to make out that a poor drunken American driver tried to use dishonorable means in connection with the Fairlie engines, I will, for the benefit of Americans who may be sent out to a similar situation to mine, state how I have been used by the Fairlie employes. I give only two or three instances out of many.

After getting my first engine set up and tried on March 20, 1874, I was asked to take a small coach and the Superintendent up the road. Mr. Roscoe would not let me be drawn out to take water the evening before, so I had to get up early in the morning and take water, " the siding where we take water being on a grade of 1 to 2 per cent." While taking water Mr. Roscoe ordered a laborer to start towards me a large 2,500 gallon iron water-tank car which he knew had no brakes on. As a matter of course the American engine come out of the wreck with the best part of her pilot, etc., gone. Still I took the coach up the line as though nothing had happened. But a few days had passed when my engine came down with spring hanger gone for the want of a key which had been taken out in the shop, some time between two days. In a few days more both my forward motion eccentrics slipped soon after starting from the shop, and upon examination I found the two set-screws in both cases gone to look for the spring-hanger key. A few more days, and one morning the reversing lever was thrown back, the throttle valve opened and the El Lion started on a pleasure trip, pushing another American engine behind her through the end of the shop, and within a few feet of going down a bank some six or eight feet. I think more is not necessary to show up the Fairlie men, but I will state this man Roscoe can neither read nor write his own name, and never worked in any shop as a mechanic.

GREGG D. GILSON,

In charge of American engines on P. & L. R. R.
Patillos, Peru, S. A., 28th July, 1874.
P. S.– I am not an American; I was born under the same flag that Messrs. Cleminson, Roscoe and Fairlie were; but when I see such men holding such positions and trying to make themselves notorious by writing letters for public perusal in which there is not the semblance of truth, I always regret I was not born in America.
G. D. G.

4.12.7 Appendix 7: The surviving R. Stephenson 4-6-0 at Pulacayo

Background

Robert Stephenson & Co., of Newcastle upon Tyne, supplied two batches of 4-6-0s to the *FCAB* (actually to its owners/operators the *Cía. de Salitres y Ferrocarriles de Antofagasta* or later the *Cía. Huanchaca de Bolivia*) in 1876 (twelve engines) and in 1887-8 (seven engines). However they also built a pair of Webb compound 4-2-4-2Ts for the railway in the mid-1880s.

One of the 4-6-0s survives at Pulacayo on the never-regauged branch from Uyuni to the mines of the Huanchaca Company. Some sources have speculated that the survivor is actually one of the compounds, albeit after rebuilding as simple 4-6-0 and a reboilering, possibly because the frames do exhibit signs of past reconstruction.

"Several comments have been made to the effect that our 4-6-0 Stephenson in Pulacayo could be one of the converted 4-2-4-2Ts. The scale comparison of an original 4-6-0 locomotive with the 4-2-4-2T helps to judge this, in which especially the difference in the frames of both locomotives should be noted. The frame of the 4-2-4-2T is a full 6 feet (1.8 m) longer than that of the 4-6-0. It is also noticeable that the distance apart of the two uncoupled driven axles d and c on the 4-2-4-2T is shortened to the absolute minimum, presumably to reduce the damaging slip (and to fit in the low pressure cylinder and connecting rod. MCC). The two large openings on the frame for access to the ash pan are different, but were covered over on our rebuilt 4-6-0 anyway (see above about modification of that frame) as seen on the further comparative img13 (with increased resolution), also to scale, of the 4-2-4-2T diagram with our 4-6-0 from Pulacayo. The two engines on img13 are oriented so that the two coupled axes d and e (with the same distance of 8 inches on both models) are exactly on top of each other.

The conversion of the 4-2-4-2T easiest was done with minimal effort by coupling the wheels of the three axles c, d, and e, removing the three high- and low-pressure cylinders and installing two conventional 14" x 20" cylinders on the outside. However, these had to be moved either further forward or further out, because the newly coupled axle c was (aligned to) the old high-pressure cylinder and its wheels now required more space for the coupling mechanism. There is actually no obvious reason for removing the rearmost axle f, especially as the entire chassis would then also have had to be shortened, otherwise the stability of the locomotive under traction would no longer have been guaranteed.

The rebuilt 4-2-4-2T locomotive was therefore a 4-6-2T or (maybe a) 4-6-2 if the external tanks were removed. That our rebuilt 4-6-0 (at Pulacayo) has an original 4-6-0 Stephenson frame can be seen from the larger axle spacing (c - d) and especially from the three openings on the frame in between, which are not present on the 4-2-4-2T (as this space is covered by the high-pressure cylinder), see img13.

Finally, I would conclude from all the above that the 4-6-0 Stephenson locomotive in Pulacayo most likely is the 4-6-0 engine 26 (54) from 1888, named Mariano Ramirez, Stephenson Works' number 2633, in which the original boiler was replaced with a larger one supposedly from a Baldwin locomotive to increase power, which entailed a change in the driver's cab and in the frame for access to the ash pan."

Appendix currently incomplete.
