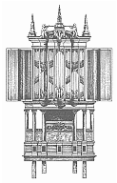
MANCHESTER TOWN HALL

ORGAN

CONSERVATION REPORT

OUR
TOWN
HALL
PROJECT

NICHOLSON & CO. LTD
MALVERN



FLENTROP ORGELBOUW B.V.
ZAANDAM

JUNE 2021

CONTENTS

FOREWORD

The aim of this document has been to try to set out in one place the history of this notable instrument, together with an accurate record of what Cavaillé-Coll material was found to remain in the Manchester organ after its careful dismantling in late 2020. During the dismantling, which was intentionally slow for this purpose, the organ itself taught us much about its history and original conception. These findings are presented here, along with some outcomes of early workshop investigation work. Much help was also obtained from earlier archival research, in particular that undertaken by William McVicker and Nicholas Thistlethwaite.

This document also lists those areas where research work is now necessary in order to formalise the design for those parts of the instrument that have been lost and are to be reconstructed.

A summary of the approach to the work that lies ahead concludes the document.

At the conclusion of the project, this document will be developed into a detailed restoration report, describing the research and work undertaken, and the rationale for decisions made.

Andrew M Caskie
Managing Director
Nicholson & Co. Ltd

Erik Winkel
Managing Director
Flentrop Orgelbouw B.V.

ACKNOWLEDGEMENTS

Helpful assistance in the preparation of this report from the following individuals and organisations is gratefully acknowledged:

- Association Cavaillé-Coll
- Lendlease Construction (Europe) Ltd
- Kurt Lueders
- Manchester City Council
- The Manchester Cavaillé-Coll Foundation
- William McVicker (consultant for the project)
- François Méssiner
- Gerald Sumner
- Nicholas Thistlethwaite

CONTEXT

Manchester Town Hall

The grandest of Britain's municipal buildings are all found in the industrial north of England, in cities like Liverpool, Leeds, Huddersfield, Rochdale and Bradford. The town hall of Manchester, however, is set apart from these by the grandeur of its scale, vision, and its architectural quality and cohesion.

Mark Andrew, Creative Commons licence

That was certainly the brief: Manchester Corporation stated in 1863 that its new town hall should be 'equal if not superior, to any similar building in the country at any cost which may be reasonably required.' Priorities were clear! Construction of the vast building, to a design by Alfred Waterhouse that is perhaps the world's finest interpretation of neo-gothic style, took from 1868 until 1877.

Alongside hundreds of offices on seven floors, the building contains a suite of civic reception rooms, an apartment for the Lord Mayor, a council chamber, and a grand hall dividing the central courtyard of the triangular building.

The organ is housed in a shallow chamber at the rear of the stage in the hall. The hall itself is not vast (100' x 50') but is sumptuously decorated. The ceiling is painted with the arms of countries and towns with which Manchester most commonly traded at the time of the hall's construction. The lower walls are home to *The Manchester Murals*, a sequence of 12 paintings by Ford Madox Brown that depict notable scenes in the history of the city.

Our Town Hall project

A major project commenced in 2018 to safeguard and repair the whole of the Grade 1-listed building. Known as *Our Town Hall*, the project is anticipated to take six years,

during which every part of the building will be renewed or restored. The work to restore the organ takes its place within this wider scheme.

Note on nomenclature

To aid clarity, the original Cavaillé-Coll nomenclature of all divisions and stops will be used throughout the report, unless reference to the alternative titles used in the 1913 Lewis & Co. rebuild and/or 1970 Jardine & Co. rebuilds is necessary for context. For example, the pedal division was known as Pédale from 1877 to 1913 and Pedal from 1913 onwards. It is generally referred to as Pédale throughout this report, regardless of the period under discussion. Similarly, the Soubasse 32′ / Bourdon 16′ rank added by Cavaillé-Coll in 1893 was altered to become Great Bass 16′ / Octave 8′ by Lewis & Co. in 1913. Further confusion was added by the creation of a new Soubasse 32′ at the same time! Again, the original Cavaillé-Coll titles are used unless necessary for context.

To distinguish between confusing references to left and right, the terms bass and treble are used, with reference to the bass and treble of the keyboards of the original Cavaillé-Coll reversed console. For the avoidance of doubt, this means that the bass side is on the right, viewed from the hall floor, and the treble is on the left. Where the terms C-side or C#-side are used, the C-side soundboards and pipework correspond with the 'bass' side of the organ, whereas the C#-side corresponds with the treble side.

Supporting archival research

This document considerably deepens the archival research commissioned by Manchester City Council, undertaken by William McVicker and Nicholas Thistlethwaite between 2005 and 2008, which includes

- a transcript of references to the organ in council minutes (Manchester City Library (Archives))
- a transcript of documentation from the British Organ Archive, now housed in the Cadbury Research Library at the University of Birmingham
- copies of the Waterhouse drawings for the Town Hall in the Victoria & Albert Museum, RIBA Collection.

This material is collated in McVicker, William and Thistlethwaite, Nicholas, *Options Appraisal for the Restoration of the Organ in Manchester Town Hall* (London: February 2007), 119 pages.

Additional research since then has included a more detailed search of contemporaneous newspaper and magazine reports, many of which duplicate officially published material contained in Axon, William E.A. (ed.), *Architectural and General Description of the Town Hall, Manchester* (Manchester:1877; reprinted 1977).

HISTORY OF THE ORGAN

1877 - Cavaillé-Coll: construction and inauguration

The Victorian tradition of large concert organs in municipal buildings is a peculiarly British one, which arguably started with the organ William Hill built for Birmingham Town Hall in 1834. Other early notable examples include the instruments built by Henry Willis for St George's Hall, Liverpool (1855), and by Gray & Davison for Glasgow City Hall (1852) and Leeds Town Hall (1858). Just like the buildings within which they were housed, these instruments came to be regarded as visual and aural symbols of the pride, dignity and new prosperity of the cities that had commissioned them.

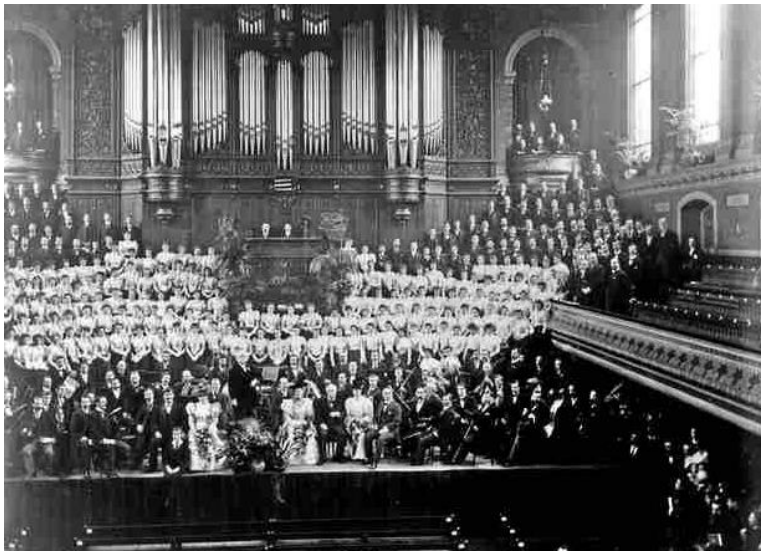
The Manchester instrument is particularly unusual in that the commission for the new organ was awarded not to one of the many fine British firms in business at the time, including some in Manchester, but instead to the Parisian firm of Aristide Cavaillé-Coll.

Aristide Cavaillé-Coll

Aristide Cavaillé-Coll (1811–1899) is generally regarded to have been one of the world's greatest organ builders of the nineteenth century. Throughout his career he pioneered many innovations in both the mechanical and tonal aspects of organs. His work had a huge influence on others in the industry, and particularly on composers and musicians; the evolution of the symphonic style of organ can be traced through his life's work. Most of his famous instruments were built in Paris, such as the churches of Saint-Denis (1841), La Madeleine (1859), Saint-Clotilde (1859), Saint-Sulpice (1862) and Notre-Dame Cathedral (1868), but many others were built across France and exported beyond. Nine were built for British customers, of which the Manchester organ was the last.

- St Simon Stock, Church, London (II/24, 1866, subsequently rebuilt and then destroyed in WWII)
- Private residence of JT Hopwood, London (II/16, 1867), subsequently rebuilt and in an RC church in Blackburn
- Albert Hall, Sheffield (IV/64, 1873), subsequently rebuilt and then destroyed by fire 1937
- Convent of the Good Shepherd, London (I/6, 1873), destroyed in WWII
- Blackburn Parish Church (III/32, 1875), subsequently rebuilt
- Bracewell Hall, Skipton (private residence of JT Hopwood) (III/45, 1875), now in Parr Hall, Warrington, action since electrified
- Bellahouston Parish Church, Glasgow (II/10, 1874), since rebuilt
- Paisley Abbey (II/24, 1874), since rebuilt
- Manchester Town Hall (III/43, 1877, enlarged to IV/51 by ACC 1893), subsequently rebuilt

The Manchester Corporation minutes record in September 1874 that it had been resolved to purchase an organ for the new town hall, by then some six years into construction. Is it coincidental that this was just a year after Manchester's rival city of Sheffield had taken delivery of a substantial Cavaillé-Coll organ for the city's concert hall? The council minutes also note that it was also known that Blackburn Parish Church was also discussing the possibility of acquiring a Cavaillé-Coll organ at that time.



1873 Cavaillé-Coll organ in Albert Hall, Sheffield, pictured in 1899[1]

On September 30 1875, it was recorded that

> *The Organ Sub-Committee reported that they had under their consideration the choice and selection of a builder whom they could recommend, whose reputation and skill would entitle him to receive the approval of the Committee. At the commencement of their inquiries they consulted with Mr Joule, formerly of Manchester, a gentleman*

[1] Picture Sheffield: s02183 © Sheffield Libraries

whose ability and experience as an organist entitles him to speak upon the subject. In company with him, your Sub-Committee visited the Music Hall in Sheffield, where an organ had been built by M. Cavaillé-Coll, of Paris. After having seen the interior construction, and heard the grand tone of the instrument when played upon by a gentleman of your town, the Sub-Committee deemed it advisable to take the opinion of Mr Best, the organist, of Liverpool, in conjunction with Mr Joule, and to ask them to select the names of two makers who in their judgement were equally capable of producing the best organs. In communicating with Mr Best on the subject, it was ascertained that he was then engaged upon an inquiry with Mr Henry Smart, of London, with the same view and purpose for the people of Glasgow, and that he would, in conference with Mr Joule, supply to your Committee the result of their deliberations.

Messrs. Best and Joule have recommended the names of two makers for the approval of the Committee – Messrs Lewis & Co., of London, and M. Cavaillé-Coll, of Paris, from whom tenders might be obtained. M. Cavaillé-Coll is now engaged upon the erection of an organ in the Parish Church of Blackburn; other specimens of his work are to be seen in England besides the one at Sheffield, but the Committee have not visited them. Mr Joule has been in touch with the Parisian maker, and has obtained from him an idea of the cost for an organ sufficient to fill the space provided in the New Town Hall, and he thinks the sum would be about £2,800.

Your Sub-Committee therefore recommend that they be authorised to obtain tenders from the two firms named, and that it be left to such firms to suggest their own arrangements as to construction in accordance with the space allocated for the purpose.

William Thomas Best (1826–1897) was regarded as the greatest organist of the Victorian age. He was organist to the corporation of Liverpool, and gave many hundreds of recitals in the city's St George's Hall. Benjamin St. John Baptist Joule[2] (1817–1895) was prominent in Manchester's musical life: he was organist of St Peter's Church in Manchester and music critic for *The Guardian* for many years.

Tenders were subsequently received and the decision minuted in late February 1876:

The following documents were submitted:

Tender from Mr. Cavaille Coll, of Paris, including cost of erection £2,300

Tender from Messrs Lewis & Co., of London, excluding cost of erection £2,250.

Also the following report from Mr Best, of Liverpool, and Mr Joule, of Southport.

29th January, 1876

Gentlemen, - We have very carefully examined the Organ Plans by Messrs Cavaillé-Coll (Paris) and Lewis & Co. (London), for a suitable instrument for the Town Hall, Manchester. Our preference is given to that by Mr Cavaillé-

[2] The joule unit of energy is named after his brother James, a physicist.

Coll, which appears to us more suitable for the purposes of a Concert Room Organ than that of Messrs. Lewis & Co.

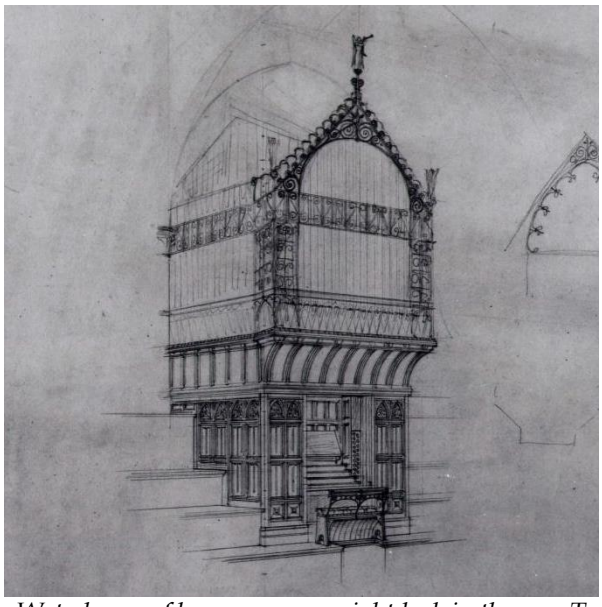
Whichever may be chosen by the Committee we should reserve to ourselves the right of suggesting a few amendments, principally in the mechanism, which, without materially altering the design would render the organ more effective for its destined purpose.

W.T. BEST
B.St.J JOULE

The council accepted this recommendation.

Some minor adjustments to the specification were subsequently proposed by Best and Joule, along with a request for the manual compasses to be extended from 56 to 61 notes[3]. These alterations led to an increase in the price to £2,700. The contract was duly signed on 9 May 1876 for 84,075 francs, excluding the casework which was to be supplied and fitted by the council.

Space for the organ was very tight. In the brief given to tendering architects in 1867 no mention was made of an organ for the grand hall that was 'to be used for public meetings, and also, when not required, as a concert or ball room.' In late 1868, reference to an organ finally appeared in Waterhouse's plan for the second floor, but the space allocated was tiny, around a third of that eventually occupied by the Cavaillé-Coll instrument.



Sketch by Waterhouse of how an organ might look in the new Town Hall[4]

[3] Cavaillé-Coll only ever built one other organ with 61-note manual compasses: for the Albert Hall, Sheffield (1873). It perhaps again indicates how determined Manchester was not to be outdone.
[4] PA 1925/WatA [106] 24, RIBA Collection in Victoria and Albert Museum, London

Cavaillé-Coll must have found the tight space allocated for the organ an immense challenge. The Victorian organ writer George Ashdown Audsley wrote in his treatise *The Art of Organ Building*[5] that

> *…the architect of the Town Hall of Manchester made a great mistake in not providing a suitable place for the Organ in the concert-room of that important building. When M. A. Cavaillé-Coll was called upon to construct the Organ, he was, he personally informed us, much disappointed at finding so badly constructed a place for its reception. He found himself at a loss to insert a Pedal Organ such as he knew to be necessary; and so great was the difficulty that it could only be met by a wholesale system of borrowing – a system he naturally condemned.*

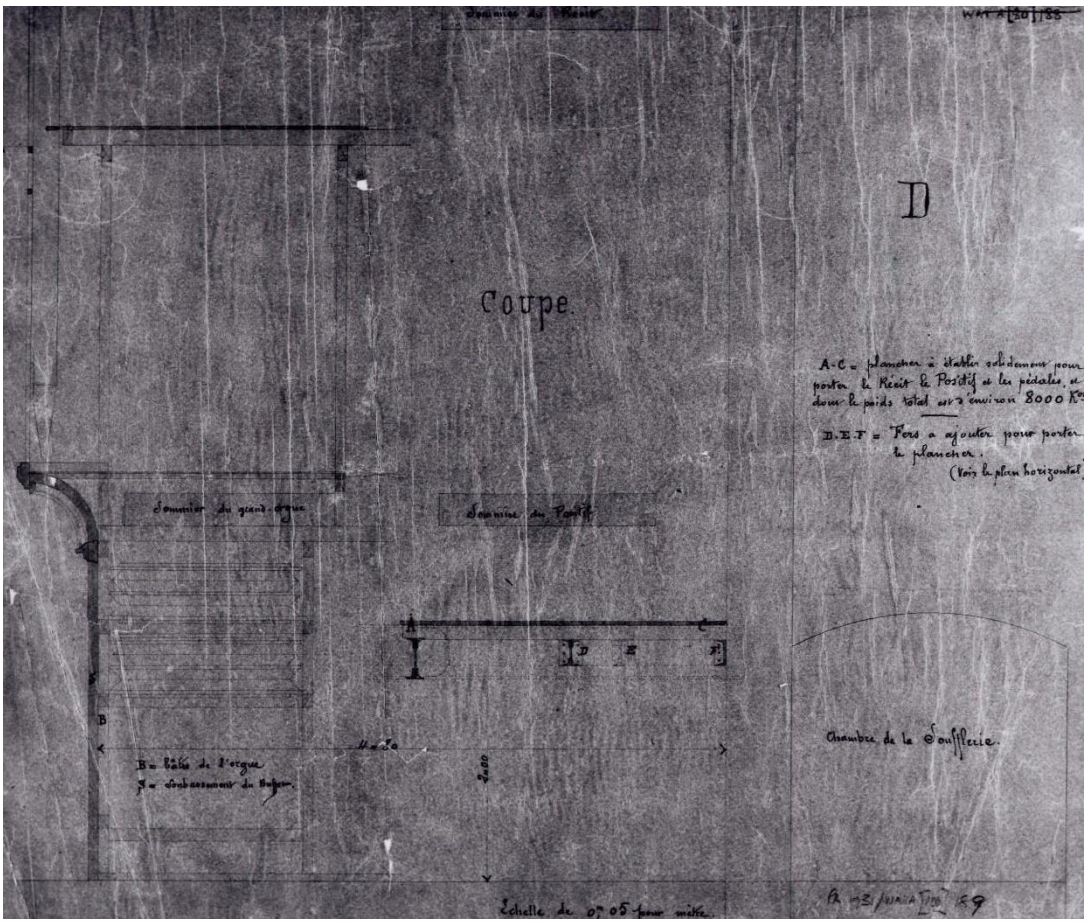
Towards the end of the organ's installation, the *Manchester Courier and Lancashire Advertiser* wrote

> *It is unfortunate that the council did not, when the architect designed his plans, contemplate having an organ, the consequence being that a platform and recess were prepared of very small dimensions, which Mr Joule at once reported as being in all respects inadequate for the reception of even a very small instrument. Mr Best and Mr Joule having been appointed to report on the whole matter, Mr Waterhouse met their requirements as far as was in his power, and the result is, that although it would have been very desirable that greater space should have been available, room for a very complete, if not very large, organ has been obtained. This, however, would not have been accomplished without great care in the selection of the stops, so that they should include the greatest amount of effect and variety from limited means.*[6]

The impact of this severe constraint on space on the tonal qualities of the instrument, and on its future augmentation, is discussed later in this report.

Such were the constraints on space that the wind-raising apparatus all had to be outside the chamber, in a tightly packed wooden mezzanine structure, known as the chambre de la soufflerie, built above head-height in a stone corridor behind the organ chamber.

[5] Audsley, GA, *The Art of Organ Building*, Constable & Co., 1905
[6] *Manchester Courier and Lancashire Advertiser*, 6 July 1877, p.6, col. 4



Cavaillé-Coll diagram sent to Waterhouse showing cross-section of chamber and chambre de la soufflerie, and where the steel beams in the chamber should be[7]

(top of image) Bass end of chambre de la soufflerie behind organ chamber

[7] PA 1931/WatA [106] 189, RIBA Collection in Victoria and Albert Museum, London

The front of the organ sits on the wooden stage floor, but the weight of the rear portion of the instrument is borne by steel beams let into the building stonework approximately six feet above the stage floor. The stage level of the chamber would originally have been taken up with the wind system, coupling machine, Barker machines and actions. The Positif division was mounted at the rear of the chamber above the steel beams. The Récit was mounted directly above the Positif. The Grand Orgue was in front of the Positif, and the Pédale was divided on either side of the Positif.

The console was in the detached reversed disposition typical of Cavaillé-Coll's work.

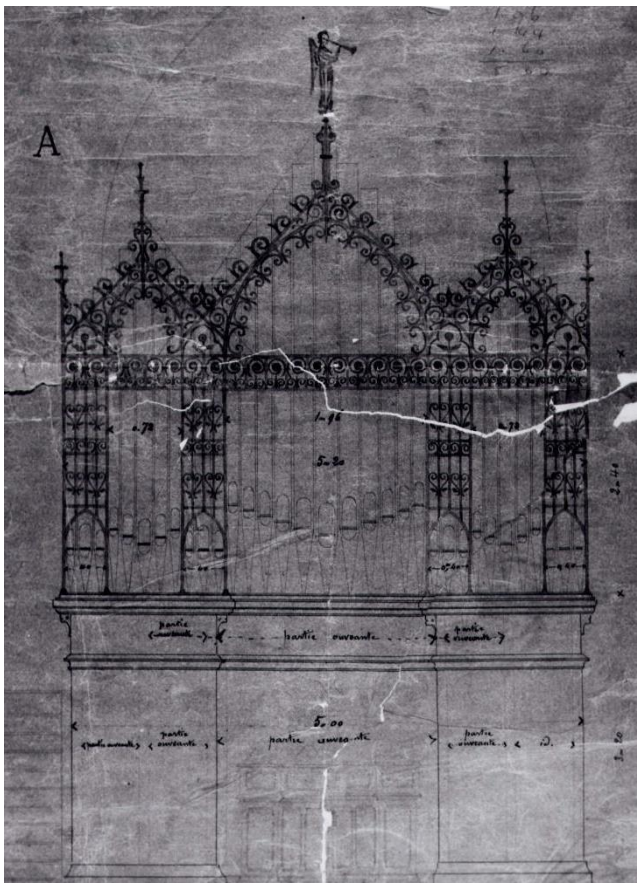
Despite his prodigious success across Europe, it was clear that this organ was not just another routine project for Cavaillé-Coll: in both the 1877 construction and in the later 1893 enlarging of the organ, Cavaillé-Coll went beyond his contractual remits and gifted enhancements to the organ at his own risk, though he did seek (and was sufficiently fortunate to receive) additional payment for the same on both occasions. In 1877, this included an additional Barker machine for the Récit division (the contract provided for such machines only to the Grand Orgue and Positif), five additional stops (involving some arithmetic sleight of hand regarding stops duplexed onto the Pédale from the Grand Orgue), and extra combination pedals.

The specification of the organ as completed in July 1877 is provided at the end of this report.

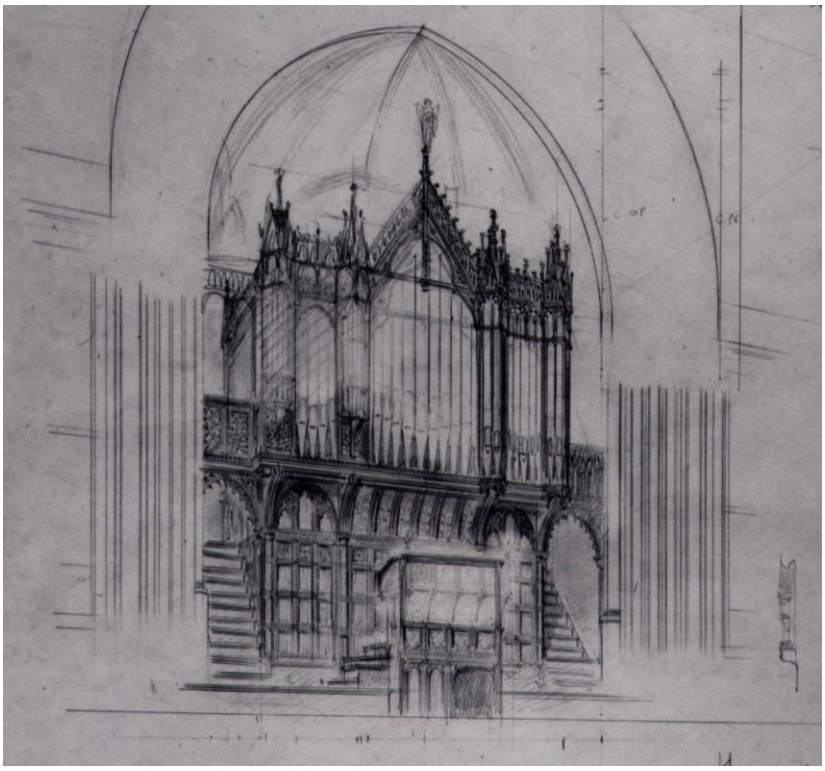
The installation team included Pierre Veerkamp[8], who later became Cavaillé-Coll's technical director. It is not known for certain whether Aristide Cavaillé-Coll ever actually set foot in Manchester. There is no specific reference to him doing so, and indeed he professed himself unable to be present at the organ's completion in 1877[9].

The casework design was a reworking by Waterhouse of a sketch (annotated in French) presumed to be by Cavaillé-Coll.

[8] Veerkamp, P, *L'Orgue à Tuyaux*, Association Cavaillé-Coll, Paris, 1984
[9] Letter from Cavaillé-Coll to Manchester Corporation, 17 July 1877 (in Manchester City Archive; McVicker/Thisthlewaite, op. cit.)



Suggested case design from a French hand, presumed Cavaillé-Coll[10]



Waterhouse re-working of Cavaillé-Coll's design, showing staircases on either side[11]

[10] PA 1931/WatA [106] 187, RIBA Collection in Victoria and Albert Museum, London
[11] PA 1931/WatA [106] 192, RIBA Collection in Victoria and Albert Museum, London

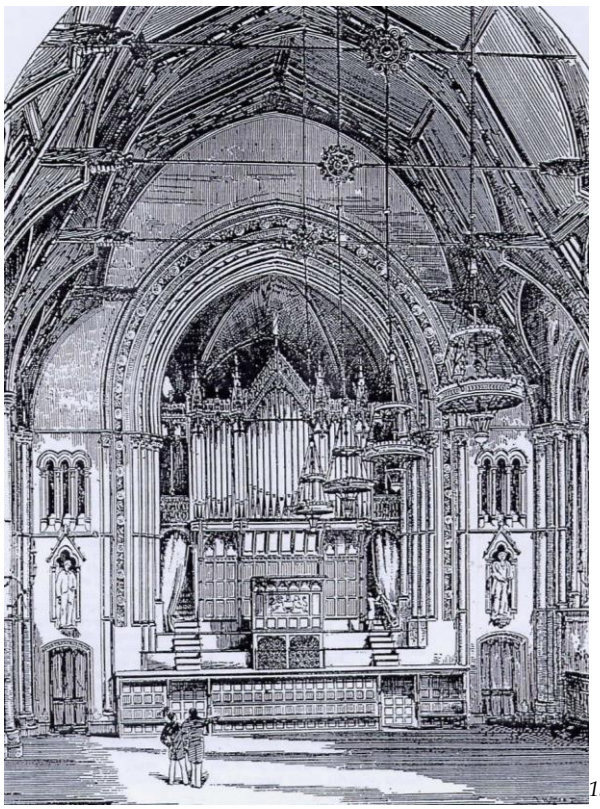
The casework was essentially free-standing within its apse, but was extended at the front with small open screens to fill the full width of the apse.

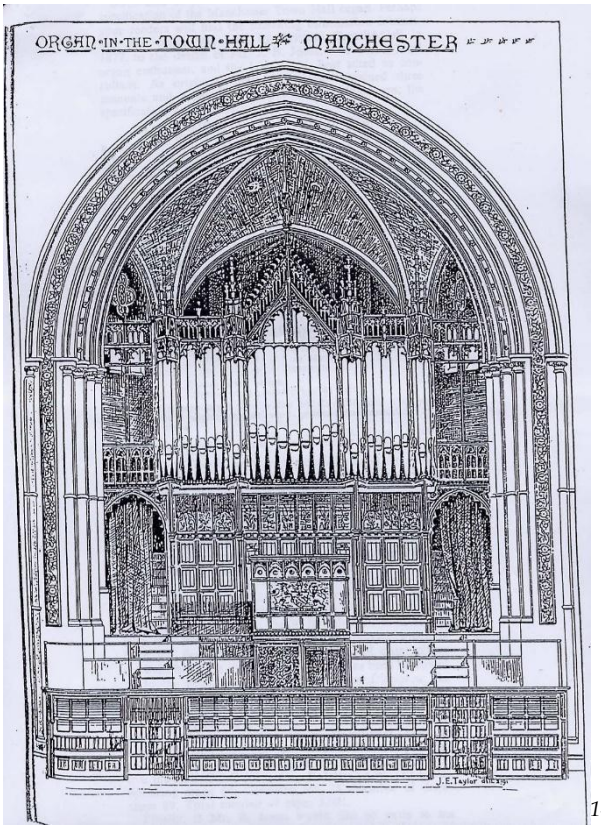
> *Originally Mr Waterhouse expected that the organ would require much less space than it actually takes, and he has, for the sake of appearance, been obliged to continue the front of the instrument right across the orchestra, the lateral wings being open screens, through which glimpses may be caught of what was at first intended to have been fully exposed to view. Through these screens performers from the upper floor will descend to the orchestra, while those from the retiring rooms under the organ will come up by the stairs in front of the manuals, which are detached from the instrument so that the organist may façe the audience.*[12]

Photograph of organ between 1877 and 1893

The two openings immediately below the console were staircases from the stage down to the lower retiring rooms. These openings have since been blanked off.

[12] *Manchester Weekly Times*, 21 July 1877, p.3, col. 5

 [13]



[14]

Sketches of the completed instrument

[13] Axon, W, *Architectural and General Description of the Town Hall, Manchester*, Manchester, 1878
[14] Taylor, JE, *The organ in the Town Hall, Manchester*, Musical Standard, Feb 1891

Upon the organ's completion, Best 'subjected the instrument to a severe trial, but it passed through the ordeal with every satisfaction, and Mr Best, we understand, is greatly delighted with the capabilities and the quality of the instrument.[15]'

In reviews of opening recitals, praise was lavished upon the instrument. One example of many will suffice:

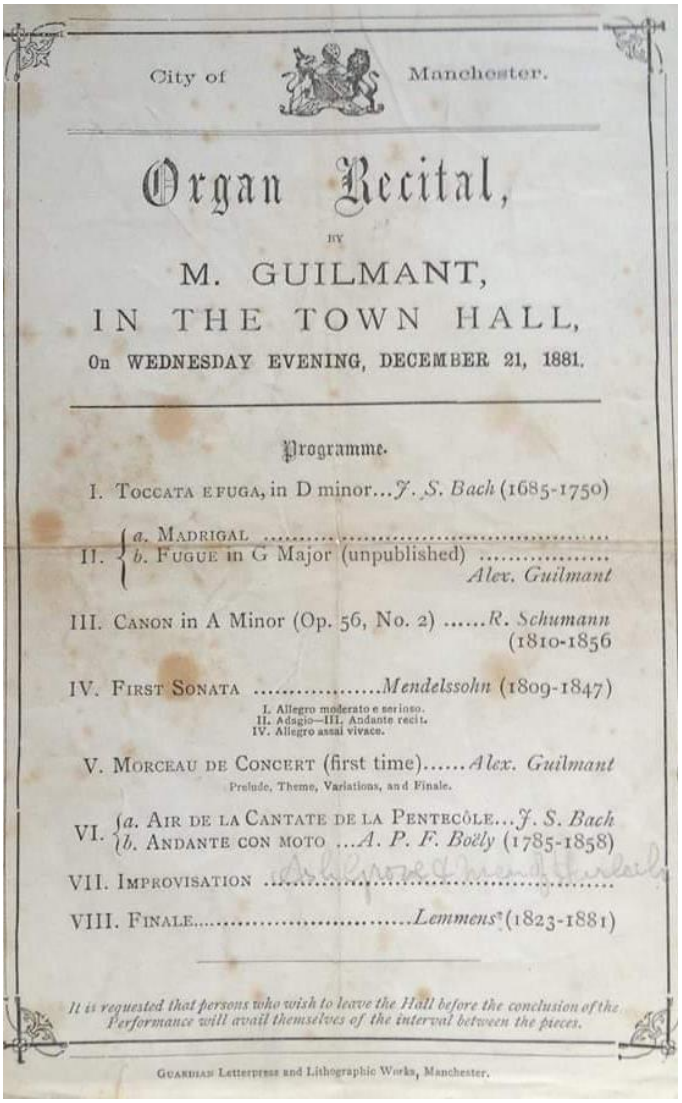
> *We believe there was but one opinion about the general merits and capabilities of M. Cavaillé-Coll's organ, and the city may be congratulated on the possession of so noble and magnificent an instrument. It will bear favourable comparison with any of like dimensions in the country, and by the introduction of several novel mechanical contrivances it is capable of producing finer effects than can be obtained from many larger instruments. Nothing was more striking than the unfailing promptness of speech, both in the reeds and in the heavier registers, and the most fastidious critic could find no fault with the voicing, which is surprisingly even throughout.*[16]

Although the organ's many qualities were recognised and praised, one failing was recognised at the outset. In a review of a recital given by J Kendrick Pyne on 25 September 1877, it was stated:

> *Of the organ we are able to speak in terms of almost unalloyed praise. The foundation stops are rich and mellow in tone, possessing a quality hitherto supposed to be attainable only by age; the mutation registers are of a timbre unusually bright; the solo stops are, with perhaps one exception, of more than ordinary purity, whilst the reeds, the crucial tests of an organ builder's skill, display an evenness of voicing and a promptitude of utterance which we have rarely heard equalled.* ***The only great fault we can find with the instrument is a want of balance of power to the full organ****. The pedal organ and the foundation work on the great organ, though most excellent in tone, are scarcely of sufficient weight to counterbalance the seven-rank mixture. The very admirable items fail to combine for grand effect.* ***Possibly the introduction of a 32 feet stop on the pedals might rectify this one serious defect****, and secure for Manchester an instrument of which her musical public might justly be proud, and which would compare favourably with many larger organs in this country.*[17]
>
> [emphases not in original]

[15] *Manchester Courier and Lancashire General Advertiser*, 18 July 1877, p. 5, col. 3
[16] *Manchester Weekly Times*, 21 July 1877, p.3, col. 5
[17] *Manchester Evening News*, 26 September 1877, p. 2

Various French luminaries were invited to play such as Camille Saint-Saëns in 1879[18] and Alexandre Guilmant in 1881:



City of Manchester.

Organ Recital,

BY

M. GUILMANT,

IN THE TOWN HALL,

On WEDNESDAY EVENING, DECEMBER 21, 1881.

Programme.

I. Toccata e fuga, in D minor...*J. S. Bach* (1685-1750)

II. { *a.* Madrigal ..... / *b.* Fugue in G Major (unpublished) ..... *Alex. Guilmant*

III. Canon in A Minor (Op. 56, No. 2) .....*R. Schumann* (1810-1856

IV. First Sonata .....*Mendelssohn* (1809-1847)

I. Allegro moderato e serioso.
II. Adagio—III. Andante recit.
IV. Allegro assai vivace.

V. Morceau de Concert (first time).....*Alex. Guilmant*

Prelude, Theme, Variations, and Finale.

VI. { *a.* Air de la Cantate de la Pentecôte...*J. S. Bach* / *b.* Andante con moto ...*A. P. F. Boëly* (1785-1858)

VII. Improvisation .....

VIII. Finale.....*Lemmens* (1823-1881)

It is requested that persons who wish to leave the Hall before the conclusion of the Performance will avail themselves of the interval between the pieces.

Guardian Letterpress and Lithographic Works, Manchester.

Programme of recital by Alexandre Guilmant, 21 December 1881

J Kendrick Pyne was appointed organist in October 1877[19]. Over the next 30 years or so, there are numerous references to large audiences in attendance at frequent Tuesday afternoon and Saturday evening recitals. It appears that the Tuesday afternoon recitals were considered to be more appropriate to a higher social strata, while the Saturday evening recitals were 'mainly intended for the working classes.[20]'

[18] *The Guardian*, 13 September 1879
[19] *The Guardian*, 19 October 1877
[20] *The Guardian*, 30 September 1882

1885 - Cavaillé-Coll: cleaning and repair

It was announced in September 1885[21] that

> *During the present week workmen have commenced a thorough cleaning and repair of the Town Hall organ, under the direction of the maker of the instrument, M. Cavaillé-Coll, of Paris. Under these circumstances, we are informed, there will be no organ recitals for the next six weeks or two months.*

No changes to the instrument are believed to have been carried out in this work.

1893 - Cavaillé-Coll: additions

- *Description of changes made*

The severe spatial constraints imposed on Cavaillé-Coll had clearly led to the original incarnation of the organ being bass-light, as was perceptively noted in the 1877 review quoted earlier. This must have been sufficient of a problem to warrant the significant changes made by the original builder in 1893. It is interesting to consider whether such perception of the organ being bass-light was in comparison to typical English town hall organs of the period, or compared with contemporary Cavaillé-Coll instruments. The present hall floor is believed to have been installed in the 1950s; any acoustical effect of the previous floor on the bass resonance of the room is not known.

A 42-note Soubasse 32′ / Bourdon 16′ rank was added to the Pédale. Without removing the entire 16-year-old instrument, the only place that could be found for the large pipes of this rank was by removing the staircases that ran up either side of the organ case, blanking their stage entrances off, and by dividing the 42 pipes and their chests on either side. These chests were on charge pneumatic action[22]. An unenclosed 6-stop Solo division was also added. This was located at the top of the organ in front of the Récit expression box. The key action for this division was charge pneumatic[23].

The console was modified to add the necessary additional manual and drawstops.

No less than the great Alexandre Guilmant visited the hall to inspect the work, and wrote:

[21] *The Guardian*, 10 September 1885
[22] Letter from Cavaillé-Coll to Manchester Corporation, 12 April 1893 (in Manchester City Archive; McVicker/Thisthlewaite, op. cit.)
[23] Ibid.

Dear M. Cavaillé-Coll,

> *At the time of my last visit to England, in the month of March, and according to the desire expressed by you, I went to Manchester to see the repairs and the addition of a 4th manual that you have made to the organ at the Town Hall. I report to you the result of my visit. I have found all that composed the instrument, before the alterations were made, perfectly repaired and improved (if it be possible), and working admirably.*
>
> *The most interesting part to me was to see and hear the stops of the Solo Manual and of the pedals which you have added to this organ; these new stops harmonise in a superior way with those already existing, the new foundation stops are of a good round tone, and complete the whole of this important part of an organ. As regards the reed stops, which you have had the excellent idea of placing horizontally, notwithstanding the expense it must have put you to, they are of a strength, clearness and tone really magnificent, and offer new and important combinations. All work with great precision and perfect neatness.*
>
> *I have particularly examined the Soubasse 32' stop and the 16' one, and I am quite pleased with them. I would even say that I am rather jealous of the Soubasse 32', which sounds louder than the one I have on my organ in La Trinité, and which you can hear very well in the full organ; this is so much the better, as a Soubasse 32' cannot have the volume of tone of an open Contrebasse, neither this stop the strength of a Bombarde.*
>
> *All this work is excellently fixed, notwithstanding the small amount of room at your disposal, and all precautions have been taken so that no part can get out of order, but remain always in good condition.*
>
> *I am certain that the really competent people who will see this work and hear these new stops will give you praise; as for me, I can but truly and sincerely congratulate you, because you have just executed a good and sound work, which does you credit.*
>
> *Accept, dear M. Cavaillé, the expression of my good wishes.*
>
> *ALEX GUILMANT*[24]

Cavaillé-Coll's well-known habit of going beyond a contracted scope of work, in the hope of it being paid for, was as evident as ever. The city organist J Kendrick Pyne wrote

> *…M. Cavaillé-Coll showed a disinterested desire to make the instrument in every way worthy of the Town Hall and the Manchester Corporation, for he not only gave an additional register Diapason, but he placed the 4ft and 8ft Tubas in*

[24] Letter from Alexandre Guilmant to Aristide Cavaillé-Coll, 15 April 1893 [translated] (in Manchester City Archive; McVicker/Thisthlewaite, op. cit.)

a horizontal position, "chamade". This entailed a great and additional expense – 1st, a second sound-board; 2nd, elaborate machinery to suspend the pipes and hold them in position.

The whole of the action in [the Solo] manual is on the most approved modern plan, namely, Tubular Pneumatic, and I must say I regard it as the most capable demonstration of this modern form of action that I have ever seen. It is far above anything of the kind that I have ever met with, being instantaneous, and elastic and prompt to a degree. I have recently given a performance on an entirely new and costly organ belonging to an influential Corporation constructed entirely in this plan, and I can confidently say there is no comparison to be made between the two instruments, so superior is M. Cavaillé-Coll's.

The additional two stops, 32' and 16' tone, added to the Pedal Organ have quite come up to my expectation….The 32' pipes are not intended to be heard alone, but only in combination, as the harmonies emitted from this depth of tone are very considerable. The effect in the room is very dignified, sonorous and profound.

Some notes are heard better in some parts of the room than in others. The best effect is heard near the entrance doors, where they are very perceptible, having almost the effect of open pipes. M. Guilmant paid me a visit some three weeks ago; we spent some hours in hearing the effect of the 'Bourdon' from all parts of the room. He was delighted with them, and expressed his opinion that they were finer than his own at La Trinité. I must here remark that they ought to be more effective, as they are a larger scale.

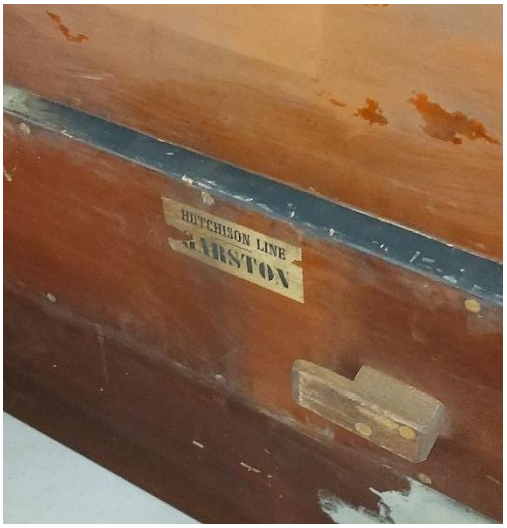
There can be no question that the pedal basses are reinforced more than one-third by this register…

Might I also venture to draw attention to the absolute devotion and care [Félix] Reinberg and [Fernand] Prince have evinced during the six months they have been at work. Nothing could have exceeded the desire they have both demonstrated to do their utmost for the carrying out of the improvements. I beg to congratulate the Corporation on the magnificent instrument they possess – absolutely second to none in the kingdom.[25]

Two points are noteworthy from these letters. The first is the presence of two of Cavaillé-Coll's men in Manchester for six months, which puts paid to a long-held but unfounded rumour in Mancunian organ circles that the 1893 work was sub-contracted to the Manchester firm of Wadsworth, at that time located very close to the town hall. As is discussed later in this report, the construction of the Soubasse chests, the Solo soundboard, the Solo pipework and the Soubasse

[25] Letter from J Kendrick Pyne to Manchester Corporation, 21 April 1893 (in Manchester City Archive; McVicker/Thisthlewaite, op. cit.)

pipework is entirely consistent with the 1877 material and can thus be concluded to have been manufactured in Paris, not Manchester.



Import label on 1893 Soubasse 32' pipe: the Hutchison Line was a Glasgow-based shipping firm specialising in trade with France

The second is the 'chamade' arrangement of the Tuba mirabilis 8' and Clairon 4' pipes, an aspect that was not contracted by Manchester Corporation but was included by Cavaillé-Coll. This is discussed in detail later in this report.

- *Summary of material lost*
  - 1877 staircases and adjacent stage boxes between staircases and chamber walls

- *Summary of material altered*
  - 1877 panelling between staircases and organ interior were partially removed and altered
  - floor hatch in front of Récit possibly altered to make room for Solo division
  - top part of the 1877 console either replaced or altered to facilitate the addition of a fourth manual

- *Summary of material added*
  - Casework filled in at sides where staircases had been
  - 42-note Soubasse 32' / Bourdon 16' rank on 2x 3-note and 2x 18-note pneumatic chests.
  - 6-stop Solo Organ with both Tuba ranks mounted in chamade formation. Key and stop action pneumatic.
  - Associated wind trunking for these additions, including reservoir for Solo.

1901 - Charles Mutin : cleaning and overhaul

Cavaillé-Coll's firm was taken over in 1898 by Charles Mutin; Cavaillé-Coll died the following year aged 88. The re-named firm cleaned and overhauled the organ in 1901. The work took two months, and was directed by M. Reinburg, 'son of the M. Reinburg who superintended the original erection.[26]' No changes were made to the organ in this work. In 1877, Cavaillé-Coll's two best voicers were the brothers Gabriel (1834–1891) and Félix (1837–1897) Reinburg. It is recorded elsewhere[27] that it was Félix who worked on the Manchester instrument.

1909 - Charles Mutin : blowing apparatus

The 1877 hydraulic engine, working feeders under a reservoir in the chambre de la soufflerie (mezzanine tunnel behind organ, discussed in detail later in this report), was removed. It was instead replaced with a new electric engine supplied by Charles Mutin[28]. This would not have been a high-speed alternating current motor driving a fan directly, as in modern blowing plant, but instead would have been a slow-speed direct current motor driving cranks to move feeders, just like a hydraulic engine except electrically powered. This plant was located in the chambre de la soufflerie.

Whether the associated reservoir was replaced at this time, or whether the reservoir associated with the 1877 hydraulic engine was retained, is not known and is discussed later in this report.

- *Summary of material lost*
  - 1877 hydraulic engine
  - (Possibly) a reservoir of 1877 with associated feeders

- *Summary of material added*
  - Slow-speed DC electric motor and associated cranks
  - (Possibly) a new reservoir with associated feeders

1910 - blowing apparatus

The 1909 electric motor proved to have been a disappointment, and steps were taken within months to procure its replacement. By this time, some consideration had been given to a possible rebuild of the instrument. An *Organists' Quarterly Record* of October 1916 describes the changes:

> *The hydraulic blowing plant [installed by Cavaillé-Coll in 1877], always noisy and often inadequate when the water pressure was low, led the City Organist [in 1909] to recommend that the original organ builders [by then known as Mutin] be authorised to deal with the blowing apparatus, with the result that the [1877] hydraulic plant was*

[26] *Manchester Courier*, 10 September 1901, p.8
[27] Veerkamp, P, *L'Orgue à Tuyaux*, Association Cavaillé-Coll, Paris, 1984
[28] Proceedings of the Manchester Corporation Town Hall Committee, 14 July 1909

removed and an electrical plant installed, much noisier and less efficient – in fact, it was a disastrous fiasco and had to be rejected. The City Architect's advice was then requisitioned, who mentioned one of his assistants as being competent to deal with the matter, and finally the City Architect was entrusted with the work.

A new bellows was designed, to be electrically operated, and a specification prepared for the electrical and mechanical gear, and advertised: with the result that the work was placed with Mr J.G. Booth, electrical engineer, Bury, to supply and fix the electrical and mechanical gear.

The bellows and power were designed to meet a possible larger wind consumption in a proposed rebuilding of the organ; and after two years' successful use of the blowing plant the City Architect's department was again authorised to prepare a scheme and specification (in which all details were enumerated) for the rebuilding of the organ, and after advertisement, in competition, the eminent firm of Lewis & Co. Ltd., of Brixton, S.W., was chosen to carry out the work, and the results have more than justified the confidence of the Committee in placing the order with them.
…
The main bellows are placed in a room adjoining the organ, and consist of a triple compound set (six feeders and two reservoirs) standing over a three-throw crank with 7 h.p. electric motor, operated by Booth's electrical apparatus through noiseless chain and helical spur gear, and regulated by Booth's Automatic Starter-Controller, the whole mechanism being built upon a steel girder framing, independent and complete[29].

[Square bracket annotations not in original]

This 'room adjoining the organ' was not the chambre de la soufflerie behind the instrument, where the 1877 hydraulic engine and 1909 electric motor had been housed, but the former organist's retiring room on the right-hand side (viewed from the hall) of the chamber. It was to remain the blowing room until dismantling of the organ in 2020.

It is not certain which firm carried out the alterations to the wind system in 1910. It is likely to have been either Wadsworth, who were certainly tuning the organ around that time, or Lewis & Co. as a first step towards their 1913 rebuild. Further archival research may unearth the answer.

[29] Organists' Quarterly Record, October 1916, Vol. 1, No. 4, p. xvii

Upper of two enormous reservoirs squeezed into organist's retiring room in 1910

- *Summary of material lost*
  - 1909 Mutin electric motor, feeders and cranks

- *Summary of material added*
  - 2x large reservoirs with associated feeders, cranks and electric motor, all within former organist's retiring room.
  - associated wind trunking.
  - associated wind controls in the chambre de la soufflerie

1912–3 - Lewis & Co.: rebuild

By 1911, the early enthusiasm for the innovations of Cavaillé-Coll's instruments had faded, and popular opinion erred towards a sense that the instrument was out-dated, being unhelpfully idiosyncratic and foreign in style[30]:

> *It was evident that Herr Kayser is unfamiliar with the construction of organs built on the Cavaillé-Coll model; and this, no doubt, accounted for the lack of variety which characterised the performance. The mechanical arrangements of the French organ are so peculiar that we are not surprised that this should have been so. Only those who are accustomed constantly to play upon them can do justice to them, and a stranger must find them most bewildering.*

and unhelpfully different[31]:

> *Sir,*
> *– Having watched the correspondence on this subject published in your columns during the past few days, and having had the privilege, while on a brief visit to this city, of hearing three [organ recitals in the Town Hall], I beg leave to offer one or two remarks. The gentleman who suggests that a mob of successive organists should give exhibitions on the superb and unequalled instrument in your Town Hall appears to be*

[30] *The Guardian*, 17 December 1884
[31] *Manchester Guardian*, 4 October 1893, p. 3

quite ignorant of the fact that this organ is not a big drum the tone of which can be effectively illustrated by anyone who happens to find a drumstick handy.

Having had considerable experience of organs, both in this and other countries, and having myself frequently given recitals on the organs in the Albert Hall, Crystal Palace, Alexandra Palace, and other large public buildings, generally with an hour or so of previous practice, I unhesitatingly declare that the Manchester Town Hall organ is an instrument upon which I would not attempt to play, to an audience, without at least a month's study of its resources. I agree with 'Musicus' when he mentions the names of five of the most distinguished organists in the world and suggests that from their incidental handling of this splendid Manchester organ 'we might learn something'.

But I go further, and state it as my conscientious belief that the 'something' to be learned, by those capable of discriminating, would be that the organist whom Manchester at present has the high privilege of possessing is a far greater artist than any of those named. I am, etc.

A CATHEDRAL, COLLEGE and CONCERT ORGANIST

Even important names stumbled at the Cavaillé-Coll console[32]:

For the last twenty years Sir Walter Parratt has been recognised as one of the foremost of English organists, and he still retains this proud position…But this all-round excellence requires for its display a complete understanding and command of the instrument played upon, and it is no disparagement of Sir Walter to say that this necessary knowledge he had not acquired…Throughout the recital it was evident that a want of familiarity with the instrument interfered with the effect of the renderings…The question presents itself: If we have a city organist who can, and does, offer varied and instructive programmes, thoroughly well and artistically executed, why introduce for the sake of a weak desire for novelty other players of undoubted excellence on English-built organs but who, owing to the complication of a French instrument, are unable to do themselves or their reputation full justice?

Some embarrassment appears to have arisen over the difficulty so many players encountered with the Manchester organ's foreign nomenclature, mechanism and accessories. The comprehensive rebuild of the organ in 1912–1913 by Lewis & Co. could be summed up as an 'anglicisation' of the instrument, an attempt in many ways to turn it into the archetypal English town hall organ of the Edwardian era. In reading documents from the time, one picks up no desire to protect the Cavaillé-Coll style or the holistic integrity of the organ. Instead, it was regarded simply as out-dated virgin material to be used largely at will for a new incarnation of the instrument. This was a time when organ building was introducing innovations in mechanisms and pipework at a sparkling pace. We may look aghast from the distance of 109 years at what took place, but it was little different to the comprehensive alterations many other instruments suffered at the time such as Leeds Town Hall (Gray & Davison 1858,

[32] *Manchester Guardian*, 8 January 1902

rebuilt Abbott & Smith 1899), or the Royal Albert Hall, London (Henry Willis & Sons, 1871, rebuilt Harrison & Harrison 1923), or St George's Hall, Liverpool (Henry Willis & Sons, 1855, rebuilt same firm 1933).

Significant elements of the original Manchester instrument were lost in this, the most significant rebuild of the organ's life. The Cavaillé-Coll console and key actions were the most grievous loss, but the pipework was also altered (it is likely that the pitch was lowered during this work) and the wind system altered. New pneumatic key action was fitted throughout and a new console was fitted, along with many significant tonal alterations and additions.

- *Description of changes made*
    - 1877 Cavaillé-Coll mechanical key actions to Pédale soundboards, Positif (including its own Barker machine), Grand Orgue (including its own Barker machine) and Récit (including its own Barker machine) removed and replaced with new charge pneumatic action.
    - 1893 Cavaillé-Coll pneumatic key action to Solo removed and replaced with new charge pneumatic action.
    - 1877 Cavaillé-Coll mechanical stop action to Pédale, Positif, Grand Orgue and Récit removed and replaced with new charge pneumatic slider machines.
    - 1893 Cavaillé-Coll pneumatic stop action to Solo removed and replaced with new charge pneumatic slider machines.
    - Jeux de combinaison ventils within Positif, Grand Orgue and Récit removed.
    - Pédale, Positif, Grand Orgue and Récit nomenclature anglicised to Pedal, Choir, Great and Swell. Some stop nomenclature also anglicised: see specification.
    - 1877 Cavaillé-Coll Principal 16′ on Great duplexed onto Pedal with new action relays interposed.
    - Stoppers removed from 1893 Cavaillé-Coll Soubasse 32′ / Bourdon 16′ rank and revoiced on higher wind pressure as Great Bass 16′ / Octave 8′. 1893 chests for notes C1–F6 of the rank replaced with new. 1893 chests for notes F#7–F42 altered with enlarged pallet slots, enlarged windways, and new pneumatic underaction. Depth of these chests reduced by replacing some internal conveyancing with external. These chests also relocated slightly on modified 1893 Cavaillé-Coll building frames.
    - New Sub-bass 32′ formed using Bourdon 16′ -8ve with 12x new independent quints for bottom octave, on new chest.
    - Notes C1–D#4 of both Diapason 8′ and Flute Harmonique 8′ on Solo Organ placed on new pneumatic off-note chest
    - Echo Organ installed within Swell expression box. 5 stops plus Glockenspiel percussion.
    - Enclosed Solo division added within Swell expression box: 3 stops. Box extended forwards (retaining original front) to fit.

  - Bombarde 16′ and Trompette 8′ rank removed from Pédale soundboards to new pneumatic unit chests at floor level next to Great Bass chests. Revoiced on higher wind pressure. Pédale soundboards altered by cutting them lengthways to remove former reed slides, to reduce their depth to make room for the 32′ reed chests (see below). Jeux de combinaison ventils for Pédale soundboards removed.
  - 12-note 32′ wooden extension of Bombarde added, divided onto 2x 6-note pneumatic chests located adjacent to Pédale soundboards.
  - Great off-note bass chests (Bourdon 16′ and Flute Harmonique 8′) positions altered slightly. Proportion of notes actioned off vs conveyed off altered, and action replaced with new. Most Great conveyancing new.
  - Tubas altered to remove them from 'chamade' arrangement and place in vertical formation on new 2-stop slider soundboard. Revoiced on higher pressure. Solo soundboard position possibly altered slightly.
  - Rohr Gedact 8′ added on one of the vacated Solo slides.
  - Extra wind trunking and reservoirs (Tubas, Enclosed Solo, Echo, Bombarde rank) added.

- *Summary of material lost*
  - Supports, framework, etc. and any possible off-note block, etc. for 'chamade' disposition of Solo Tubas.
  - 1877 mechanical key and stop action to Pédale soundboards, and to Positif, Grand Orgue and Récit.
  - 1877 Barker Lever machines x3 and associated wind trunking
  - 1877/1893 Cavaillé-Coll console (carcass remained in modified form)
  - 1893 pneumatic key and stop action to Solo soundboard and associated wind trunking
  - 1893 chests for notes C1–F6 of Soubasse 32′ / Bourdon 16′.
  - 1893 pneumatic action to chests for notes F#7–F42 of Soubasse 32′ / Bourdon 16′ chests and associated wind trunking.
  - 1877 pneumatic action to Great off-note basses
  - Stoppers to 1893 Soubasse 32′ / Bourdon 16′ rank
  - Some 1893 conveyancing to Solo off-note blocks
  - Some 1877 conveyancing for Great off-notes, and possibly for other divisions
  - 1877 Positif wind controls
  - Mechanism to the side shutters of the Récit expression box (if these were ever in operation)
  - Jeux de combinaison ventils within Positif, Grand Orgue and Récit soundboards
  - Tremulants to Positif and Récit

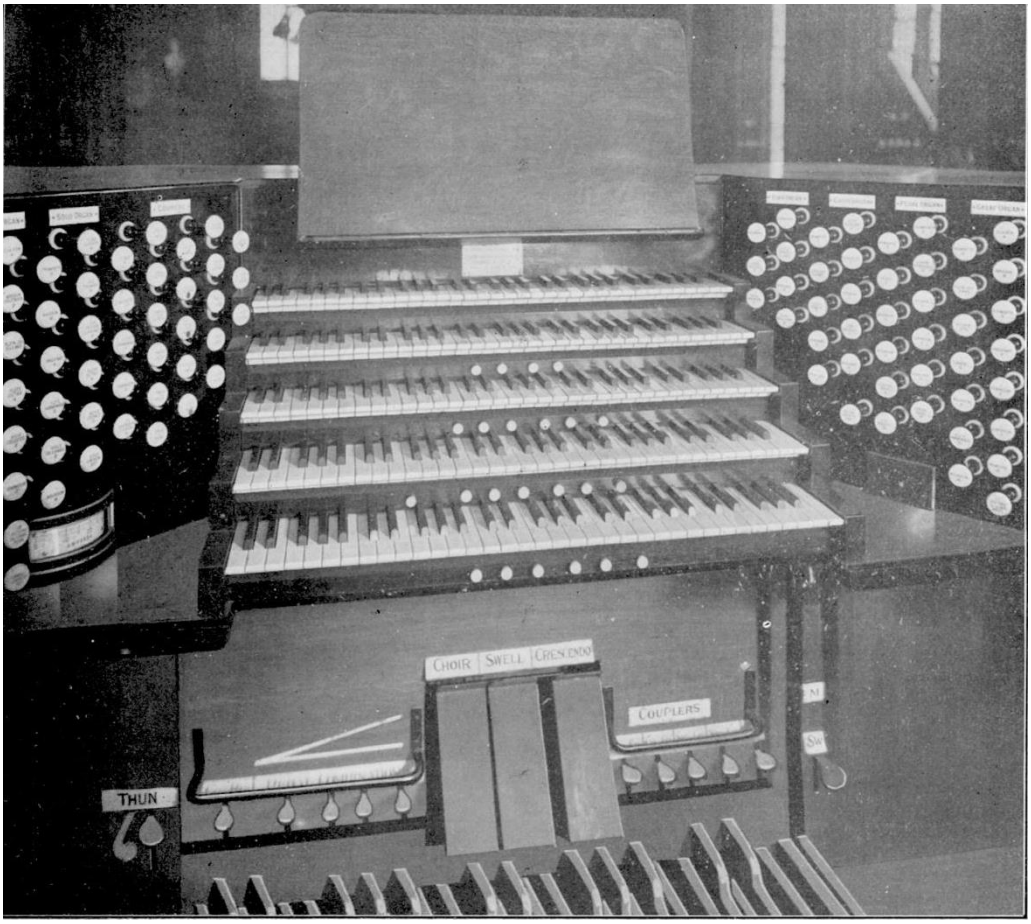
- *Summary of material remaining but altered*
  - 1893 chests for notes F#7–F42 of Soubasse 32′ / Bourdon 16′.

  - Soubasse 32′ / Bourdon 16′ pipework, converted to Great Bass 16′ / Octave 8′.
  - 1877 Récit wind controls
  - Wind trunking to Solo division
  - 1877 Pédale soundboards
  - 1877 Pédale building frames
  - 1893 building frames for Soubasse 32′ / Bourdon 16′ chests (most of the associated panelling on casework sides was removed).
  - Side shutters either side of the Récit expression box
  - Building frame and reed pipe stays of the Récit to accommodate new Echo division
  - 1877 off-note blocks of the Positif and Récit divisions raised up slightly to accommodate new slider machines
  - Position of hooks on wooden pipework of the Positif and Récit divisions altered as a consequence of raising the off-note blocks
  - 1877 Positif and Récit soundboards raised up slightly to accommodate new pneumatic underactions.
  - Hatch in floor on upper level in front of Récit possibly re-positioned

- *Summary of material added*
  - 12 independent quints for new Sub-Bass 32′, on a new chest
  - 2-stop slider soundboard for Tubas
  - Pneumatic slider machines for all soundboards
  - Pneumatic underactions for all chests and soundboards
  - 5-stop slider soundboard for Echo Organ
  - 3-stop slider soundboards for Enclosed Solo Organ (divided C-side/C#-side)
  - 12-note 32′ extension of Bombarde rank, on 2x 6-note chests
  - Reservoirs for Bombarde rank, Tubas soundboard, and Echo soundboard, and associated wind trunking. A further reservoir for the Enclosed Solo soundboard may possibly have been a Cavaillé-Coll reservoir (purpose unknown) re-constructed.
  - Two 4-note chests for notes C1–D#4 of both Diapason 8′ and Flute Harmonique 8′ of the Solo division
  - 49-note steel bar Glockenspiel[33]
  - New 5-manual console within Cavaillé-Coll console carcass
  - Lead tubing, coupling and derivation machines
  - 2x 15-note chests to facilitate duplexing of Great Principal 16′ onto Pedal.
  - Rohr Gedact 8′ on Solo Organ.
  - Some new conveyancing to Great
  - Concussion bellows for Great treble wind, possibly cannibalised from Cavaillé-Coll Barker machines.

[33] The Glockenspiel was noted as having been out of action as soon as 1927 (letter of A Eaglefield-Hull to *The Guardian*, 21 December 1927), and disconnected by 1930 (Clutton, C, 'The Organ at Manchester Town Hall', *The Organ*, October 1930)

- Casework infills to fill in staircase entry arches at stage level, and additional wooden bars in fretwork immediately above.
- Forward extension to Swell expression box structure to accommodate the Enclosed Solo.
- 2x 3-note chests for notes C1–F6 of Great Bass 16′ / Octave 8′ rank.
- New wind controls for Positif division
- 2x 21-note pneumatic unit chests for relocated Pédale Bombarde 16′ / Trompette 8′



1913 Lewis & Co. console

Sadly, it seems that realisation of the mistakes inherent in such work dawned almost immediately[34]:

> *Dr Pyne's organ recitals in the Town Hall were resumed on Saturday after a long interval, in which the rebuilding of the organ by Messrs. Lewis and Co. has been completed…The additions to the organ are, roughly, these:—A dozen or so new stops on the solo organ, chiefly of the reed or 'fancy' varieties; a dozen or so new couplers for elaborate combinations of stops on different manuals, a number of combination pedals, and a few extra pedal stops. At a first hearing our impression was that the additions are by no means a clear gain, and that as yet they do not all prove perfect in their working. They add very much, apparently, to the power of the full organ, and make many effects*

[34] *The Guardian*, 22 December 1913

possible that were not possible before. But the organ was never one for powerful combinations, but was rather remarkable for the individual beauty of the stops in separate use or in small groupings. The increase of power seems to be gained somewhat at the loss of clearness, and in the fuller combination the poise and focusing of the tone to the ear seems somewhat impaired in their beauty. Possibly a little further working will banish some of the apparent confusion of effect, but for the present we are not confident that the original clarity and beauty of the organ can be retained or will be equalled in the newer parts of the organ.

Others were pleased at the results, however[35]:

The reason…for the large expenditure [on the 1913 rebuild] is that, the action and keyboard of the organ being constructed on the French principle, it was somewhat difficult for English players to give recitals on the instrument. Now the instrument has been so thoroughly modernised that any eminent organist can readily give a recital thereon…

Overall, however, interest in the organ began to decline. A review of a recital by the famous French organist Louis Vierne in January 1924 began[36]

The great Town Hall organ has been too little used of recent years…

A familiar knowledge was required to conjure back the remaining veiled Cavaillé-Coll colours[37]:

When, a few years back, we heard a series of the leading British organists on this organ the net result of the recitals was a series of drab pictures in which the tone was set by the diapasons and not radically brightened by the excursions on other stops. Dr Pyne followed, and suddenly all become endowed with the hues of life. Dr. Pyne is after fifty years still in love with the Town Hall instrument, and told his colleagues that they might find fault with him but not with it.

Those who were discerning knew what had happened[38]:

Amid the greatest enthusiasm Dr J Kendrick Pyne yesterday celebrated the jubilee of the Town Hall and of his position as Manchester city organist…Dr Pyne loves the grand manner, the imperious gesture in music. He often gets such effects in his playing at the expense of technical cleanness, and he appears willing sometimes to sacrifice to a disconcerting extent clearness of form and outline in eagerness for colour schemes of an unusual kind.

A few years ago the beautiful Cavaillé-Coll organ underwent some changes that may have accentuated the danger just mentioned. We know that the view that the alteration

[35] *The Guardian*, 27 February 1915
[36] *The Guardian*, 9 January 1924
[37] *The Guardian*, 2 September 1926
[38] *The Guardian*, 14 September 1927

was not for the better is not generally held by local organ enthusiasts, yet it has always seemed to us that in bringing to it qualities that are foreign to its own individuality the additional stops, and especially the heavy-toned ones, do not improve the instrument. To our ears the additions, cleverly as they have been effected, take away something of the fine economy of tone that distinguishes a Cavaillé-Coll organ.

1928 – Ernest Wadsworth: rebuild

Further evidence of the prevailing mood for keeping instruments 'up-to-date' is found in a letter by the famous organist A. Eaglefield-Hull to the press in December 1927, just after he had given three broadcast recitals on the instrument.

> *Sir, – It seems worthwhile to call attention to the fact that, although the organ at the Town Hall contains some of the finest stops and sound-material ever made, the instrument itself, as regards its mechanical control and console arrangement, is terribly out of date. The pedal-board is of a type which (Manchester apart) became obsolete a quarter of a century ago. This imposes a serious and unnecessary handicap on the player throughout a recital. Again, several devices, notably the crescendo pedal and the carillon [*almost certainly an erroneously named reference to the Glockenspiel on the Echo division, not the Carillon I–III on the Choir division*], are altogether out of action. Moreover, for modern music, the organ does not possess enough mechanical controls. Indeed, some important musical pieces and transcriptions are altogether impracticable on it. The instrument needs only two or three thousand pounds spent on improvements to make it one of the finest in Europe.*[39]

Matters seem to have been taken into hand: the Manchester firm of Ernest Wadsworth was contracted to clean and overhaul the organ[40]. The work began in autumn 1928. Strangely, the most comprehensive contemporary account of this work was given to the readers, nearly 300 miles away, of the [Dundee] *Courier and Advertiser* (!)

> *During the overhauling of the Manchester Town Hall organ, the interior of the instrument yielded up 2 cwt. of dust, the accumulation of 22 years.*
>
> *The job was begun nine weeks ago, and will continue for at least another month.*
>
> *The slowness of the work is due to the limited number of men who are able to work at one time.*
>
> *In fact, the major portion is being done by one man, upon whom rests the responsibility of replacing the 5000 speaking pipes with which the instrument is equipped.*[41]

Alongside the routine cleaning and overhaul work, some alterations were made to the 1913 Lewis & Co. console[42]: the combination pedals, described as having been

[39] *The Guardian*, 21 December 1927, p.11
[40] Ernest Wadsworth A/C Bk, Vol. 4, p.544
[41] *Courier and Advertiser*, 15 November 1928, p.6
[42] Clutton, C, 'The Organ at Manchester Town Hall', *The Organ*, October 1930

adjustable, were replaced with toe pistons, and the 'old flat [pedal]board' was replaced with a Wesley-Willis [radiating / concave] pedal-board'. This is intriguing: 1913 would have been very late indeed for a new flat pedalboard to have been manufactured – had the 1913 Lewis & Co. console incorporated and re-used the original Cavaillé-Coll pedalboard of 1877?

1913 Lewis & Co. console after 1928 alterations

- *Summary of material lost*
  - straight / flat pedalboard (either Lewis & Co. new in 1913, or 1877 Cavaillé-Coll, re-used by Lewis & Co. in 1913 console)
  - 1913 Lewis & Co. combination pedals and kneeboard

- *Summary of material added*
  - radiating/concave pedalboard
  - toe pistons

The organ was re-opened by Joseph Bonnet of St Eustache, Paris, in two recitals in late October 1929[43]. Marcel Dupré followed in March 1930[44].

1953 - Jardine & Co.: electric blower

- *Description of changes made*

  The slow-speed DC motor and its associated worm gear, cranks and six feeders, all dating from 1910 and housed in the former organist's retiring room, were

[43] *The Guardian*, 29 October 1929
[44] *The Guardian*, 15 March 1930

removed and replaced with a modern electric blower driven by a high-speed AC motor[45]. This blower remained in use until 2020.

- *Summary of material lost*
  - low-speed DC motor drive, worm gear, cranks and six feeders within blowing room (the former organist's retiring room). All dating from 1910.

- *Summary of material added*
  - New electric blower and associated trunking.

1970 - Jardine & Co.: additions

An exhaustive search of old newspapers and periodicals has shown a dramatic disappearance of the instrument from public awareness after the Second World War: not a single mention of it has been found in the press between the late 1940s and the mid-1960s.

Consideration towards a scheme of work on the organ began in 1966[46]. Again, the emphasis was on the need to 'modernise' the instrument. Despite the fact that the instrument was 'recognised as one of the finest examples of the work of Aristide Cavaille-Coll [sic], the Paris organ builder…'[47], a mobile console and electrification of the action were seen as necessary improvements. Eric Chadwick, chorus master of the Hallé, emphasised the benefits of the better response a player would receive from the proposed electrification of the organ's mechanisms.

The work was entrusted to the long-standing Manchester firm of Jardine & Co., and was completed in 1970[48] at a cost of £22,700[49]. The organ remained essentially as rebuilt by Lewis & Co. in 1913, except for the electrification of the Lewis pneumatic actions and the replacement of the console.

[45] Jardine & Co. Ltd, job no. 2448
[46] *The Guardian*, 11 Jan 1966, p.3
[47] *The Guardian*, 30 Nov 1966, p.1
[48] *The Guardian*, 27 Oct 1970, p.20
[49] Jardine & Co. job no. 2969

1970 Jardine & Co. mobile console

1970 Jardine & Co. mobile console

- *Description of changes made*
  - five-manual 1913 Lewis & Co. console discarded, together with its Cavaillé-Coll casing of 1877/1893.
  - new five-manual console built in modern style and mounted on a mobile platform on the hall floor, and connected to the instrument via a thick umbilical cable. The console could be stowed away under the stage when not in use.
  - new Nazard $2^2/_3$′ added to a spare slide on the Solo soundboard, which had been vacant since Lewis & Co. removed the 1893 Cavaillé-Coll Tuba mirabilis 8′ to a new soundboard in 1913. The bass of the Nazard was mounted on a new direct-electric chest attached to the side of the Swell expression box.
  - All key and slider actions were converted from charge pneumatic to electro-pneumatic. No alterations were made to the pneumatic underactions themselves beneath the chests and soundboard, or to the slider machines; instead, new electro-pneumatic change-over machines were fitted to send action wind down the existing lead tubing into the unaltered and unrestored 1913 Lewis & Co. pneumatic actions, instead of this action wind coming from pneumatic touchboxes in the console.
  - Much of the metal conveyancing in the organ was replaced with flexible hose.
  - Almost every reachable wooden surface inside the organ was covered with light green gloss paint, except for the interior of the expression boxes.
  - pedal compass was extended from 30 to 32 notes by the addition of 2 extra pipes per rank, mounted on various small direct-electric off-note chests, all fed using flexible hose.
  - Two new whiffle-tree engines were installed to control the shutters on the Choir and Swell expression boxes, both being fed using flexible hose.
  - Plain casework panelling behind former console replaced with new, replicating the decorative casework panels that had always been visible.

- *Summary of material lost*
  - 1877/1893 Cavaillé-Coll console carcass
  - 1913 Lewis & Co. console
  - 1913 Lewis & Co. pneumatic touchboxes, coupling machines and derivation machines
  - Much of the metal conveyancing to off-note blocks (either 1877 Cavaillé-Coll, 1893 Cavaillé-Coll or 1913 Lewis & Co.)
  - Some of the 1877 mechanical linkages to the expression box shutters

The 1913 Lewis & Co. treble stop jamb, taken out of use in 1970 but still extant in 2021

- *Summary of material remaining but altered*
  - 1877/1893 Cavaillé-Coll finishes throughout organ painted over in gloss green
  - Insides of expression boxes painted white (possible that this may have been earlier)

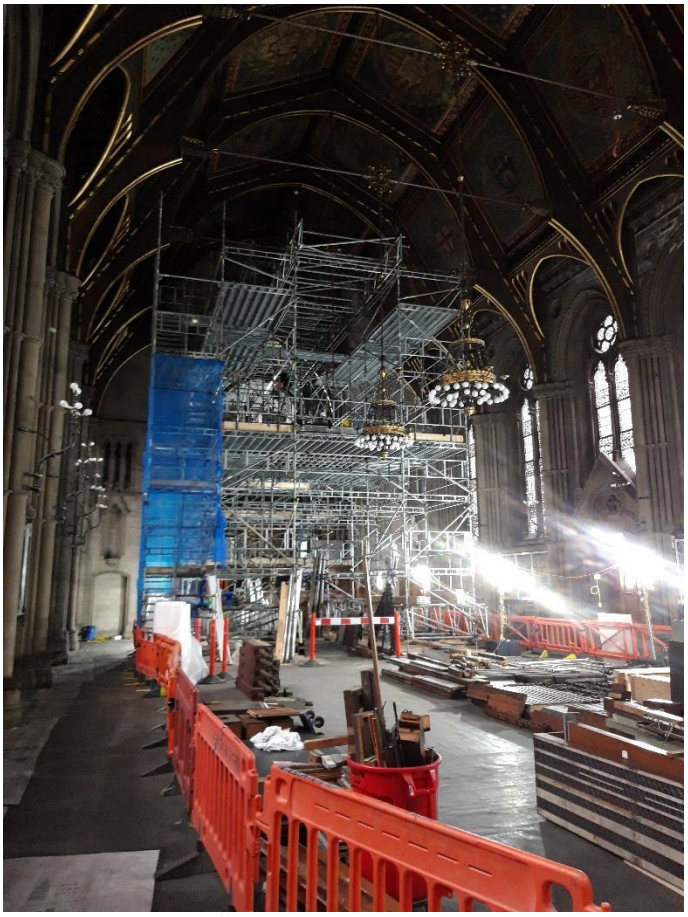
- *Summary of material added*
  - new Nazard $2^2/_3$′ pipework
  - direct-electric bass chest for Nazard $2^2/_3$′
  - various small direct-electric off-note chests to extend pedal compass from 30 notes to 32
  - flexible hose conveyancing and wind trunking
  - electro-pneumatic change-over machines for all the Lewis & Co. pneumatic slider machines and all the Lewis & Co. pneumatic key actions
  - low voltage transmission switchgear
  - new mobile console on hall floor

The only known commercial recordings of the organ were made after this work[50].

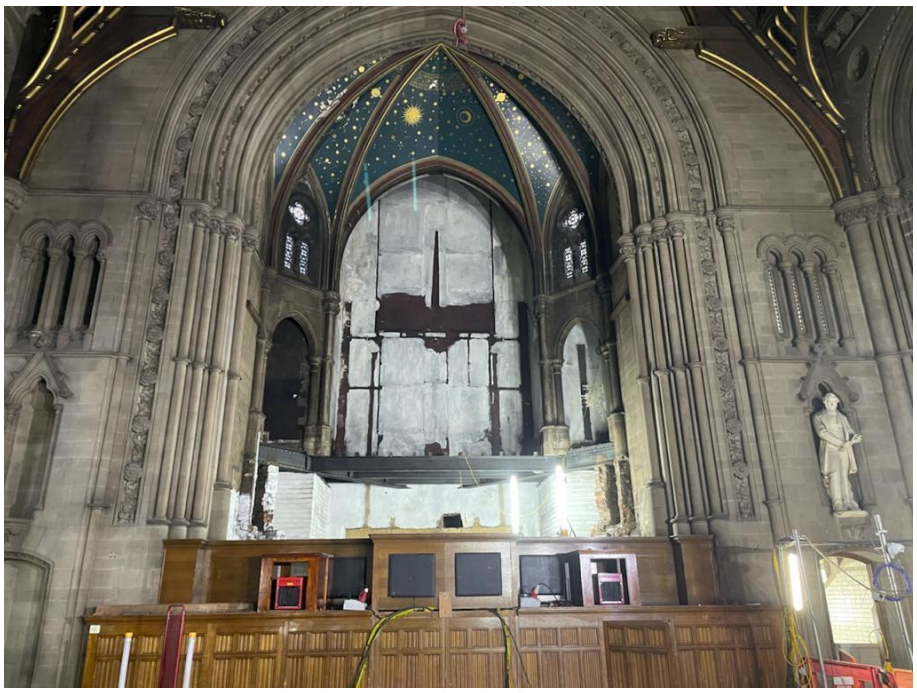
[50] i) *Robinson Cleaver plays the Organ Magnifique at Manchester Town Hall*, AK Records, 1973 (LP); and ii) *'In Classical Mood': Nigel Ogden at the organ of Manchester Town Hall*, OS207, 1994 (CD)

DISMANTLING

Dismantling of the organ for restoration commenced in August 2020 and was completed by November. Every last part of the organ, including all casework and all of the building frame, was removed from the building for the first time in the organ's life, and filled over six lorries. Nearly 4,000 digital photographs were taken during the process (full-resolution copies have been provided to the council with this report), and detailed measurements and surveys of the entire organ were made, to inform the understood history of the instrument, the eventual re-assembly, and the development of the detailed design for the mechanisms that are to be re-constructed. All material that was conclusively not by Cavaillé-Coll has been sustainably recycled; all other material is presently in secure storage while further research and design development continues. Restoration work will commence later in 2021.



Scaffolding during dismantling



Organ chamber empty for the first time since 1877

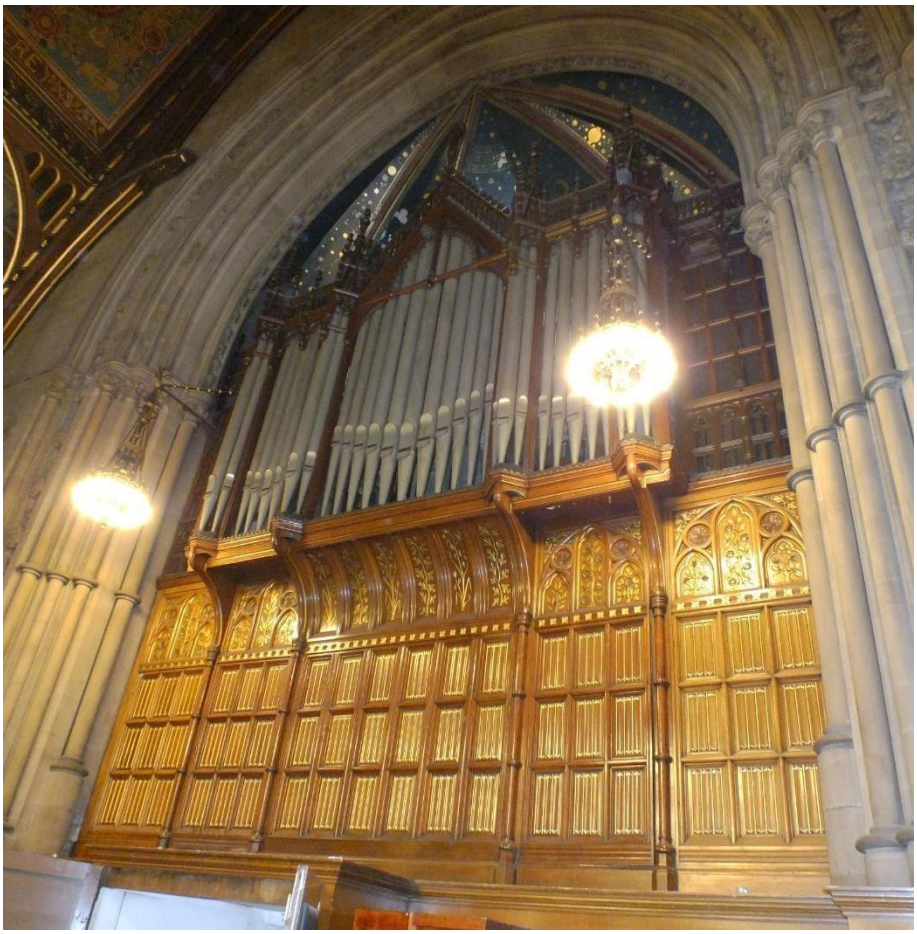
The photograph above of the empty chamber shows just how small the chamber is, and conveys just how tightly packed the instrument was after its various additions. It also illustrates the architectural detail (arches and windows) that would originally have been visible through the open screens on either side of the instrument, until these were closed in during the 1893 additions to the organ.

DESCRIPTION OF THE ORGAN

Casework

Description as found before dismantling

The casework was in good condition, with some alteration (described below) since new. It was evident (round-head nails of clearly newer origin than the cut nails used in the case construction) during dismantling that the casework had been removed before, most probably during the 1913 Lewis & Co. rebuild of the instrument.



Casework before dismantling

Surviving Cavaillé-Coll material

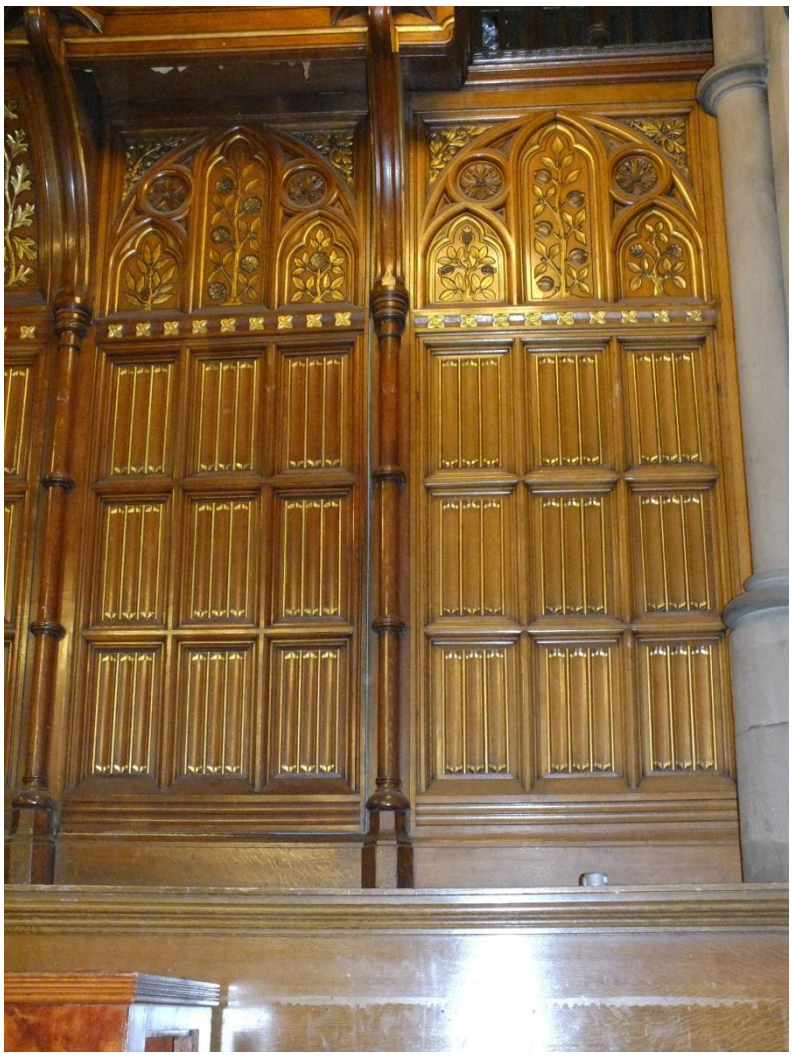
Very little, if any, of the casework is by Cavaillé-Coll. The casework in 1877 was supplied by Farmer & Brindley[51], London. F&B worked on more than 100 of Alfred Waterhouse's commissions, and at Manchester the firm also supplied 15 stone statues for the building exterior[52].

[51] *The Guardian*, 1 June 1877, p.6
[52] Hardy, E, 'Farmer and Brindley: Craftsmen Sculptors 1850–1930', *Victorian Society Annual*, 1993

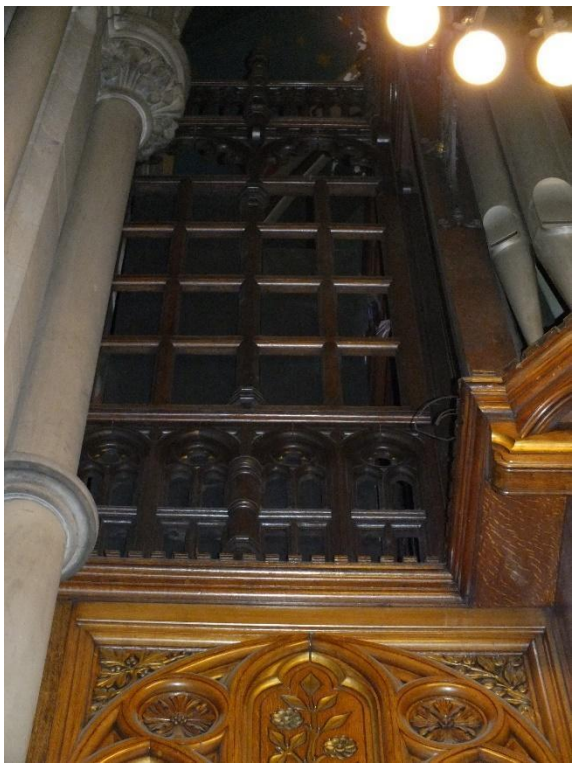
The staircases and their supporting structures were clearly added after the main building frame of the organ had already been installed. The supporting brackets attached to the side of the organ are distinctly different from the work of Cavaillé-Coll, and look to have been designed and constructed on site.

Part of the supporting structure of the staircase bracketed onto the Cavaillé-Coll building frame visible on the left

In 1893, the staircase entrances at stage level were filled in with panelling matching the rest of the lower casework, and some hatching infills were added above to give an impression of concealing the new Soubasse pipework. The staircases were removed and the associated side panelling was altered and partially removed. It is not known who undertook these alterations: it may have been the Cavaillé-Coll firm, or another contractor working alongside the organ builders. The side returns of the casework at upper level remain intact.



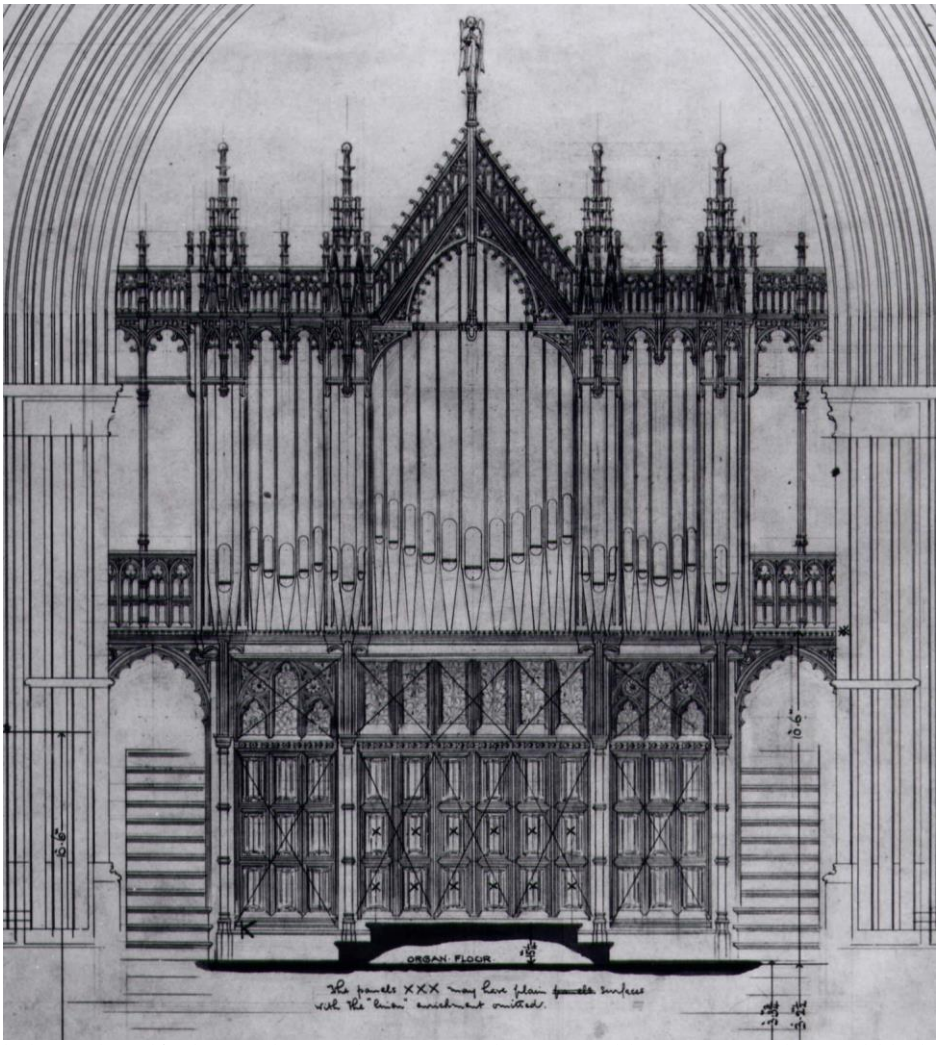
The panel on the left is original from 1877; that on the right is a copy from 1893, where there was once an open archway with staircase behind.



Hatching infill of 1893 at side of casework
Originally the only material between the lower and upper fretworks was the central column

Casework side return of 1877 (looking forwards at the treble end), showing how the Soubasse 32′ pipes (shown on right with stoppers removed in their Lewis & Co. incarnation as Great Bass 16′) were fitted outside the original casework. This side return has effectively been lost from sight since 1893.

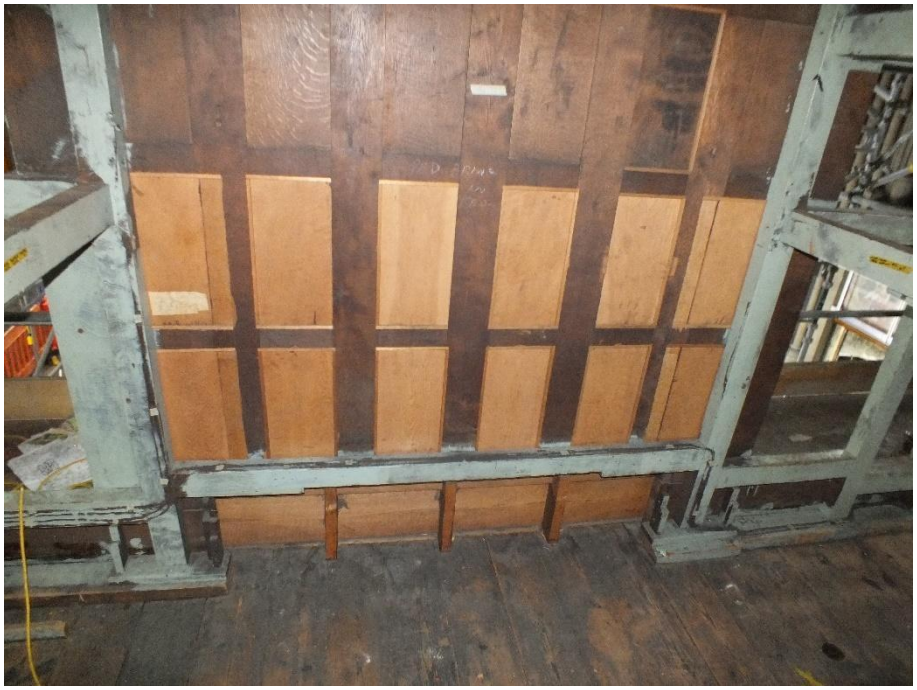
The casework panelling immediately behind the console on the stage was of plain construction originally, given that it was not visible from the hall floor; this is shown on the architectural drawing below. At some stage, possibly as recently as 1970 when the console was removed from the stage, this plain panelling has been replaced by new of matching style to the original adjacent decorative panels. Given that these have been done to a reasonable standard, it is proposed to leave them in place.



Casework design by Alfred Waterhouse, showing panels in central lower section that could be left plain[53]

[53] PA 1925/WatA [106] 139, RIBA Collection in Victoria and Albert Museum, London

Lowest 12 of the centre panels are non-original



View from behind, showing non-original panels

Carved angel from top of casework

Matters requiring further research

No construction drawings of the casework are believed to exist. Sufficient clues remain from tide marks on the chamber walls, a photograph, and remnants of the top steps, to be able to recreate the staircases and their side panelling.

Remnant of the top step of one of the original staircases

Remnants of frame for side panelling of staircase

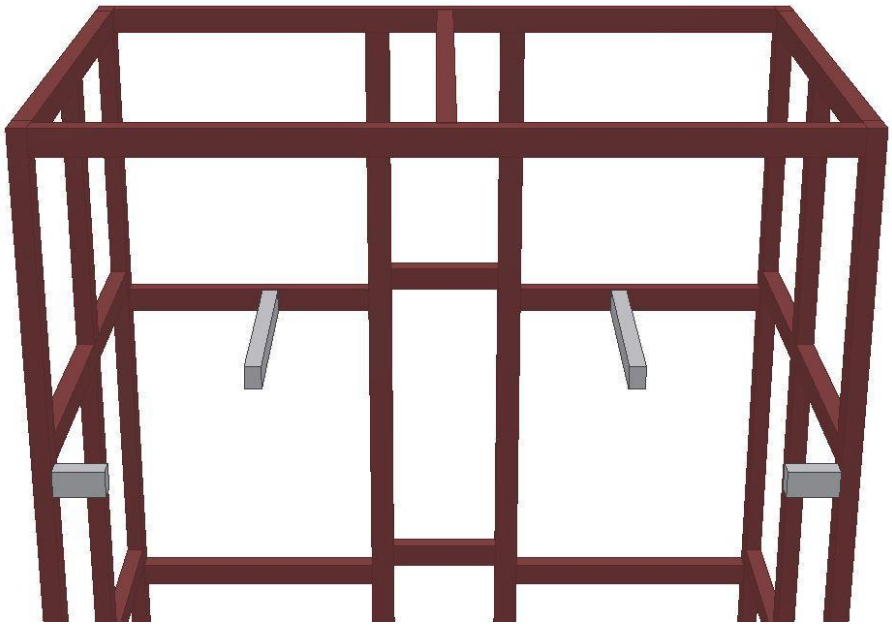
Tide mark and demolished brick support for bass side staircase

Building frame

Description as found before dismantling

The building frame of the organ is effectively a series of additions. The vast majority of the 1877 Cavaillé-Coll building frame survives unaltered, save for a few notches, holes, etc. The building frame is of unusual design: the front portion of the organ rests directly on bearing planks on the stage floor. The rear portion however, is supported by a framework of cast iron beams mounted approximately 2m above the stage floor.

There has been significant alteration made to the upper portion of the Récit building frame where a total of three beams were shortened around 1913 to accommodate the new Lewis Echo soundboard and its pipework. The total loss of material amounts to a little over 4 metres of 105 x 72mm pine timber.



Altered 1877 building frame of the Récit - modified timbers coloured grey

In the above 3D model, the two short sections shown left and right would originally have been one continuous beam. The other two beams shown would have been longer and tenoned into this, connecting the rear and front of the building frame with each other.

The 1913 modifications also resulted in some loss of the 1877 building frames for the Pédale division either side of the Positif expression box. As discussed later in this document, new chests for the Lewis 32' extension of the Bombarde were placed on either side of the Positif expression box, requiring the existing 1877 Pédale soundboards and their building frames to be severely altered to accommodate the 1913 additions. It is also clear that the vertical posts of what original building frame still remain, have been sawn and reduced in length by around 40 centimetres, bringing the Pédale soundboard closer to the ground and the top side of the soundboard roughly level with the top side of the 1913 chest.

Pédale C#-side building frame (left), Positif building frame (right) as photographed from above
The vertical post on the left (shortened by approx. 40cm) is let into a piece of ground frame which originally would have linked the Pédale ground frame to the Positif ground frame (a sawn-off piece can still be seen on the right)

Brick piers supporting the staircases were removed in 1893. The 1893 Cavaillé-Coll building frame additions for the Soubasse 32′ / Bourdon 16′ chests remain but were altered in 1913 to suit the revised position of these chests.

Altered 1893 Cavaillé-Coll building frame for the Soubasse 32' / Bourdon 16' C chest

The 1893 building frame for the Solo soundboard also remains.

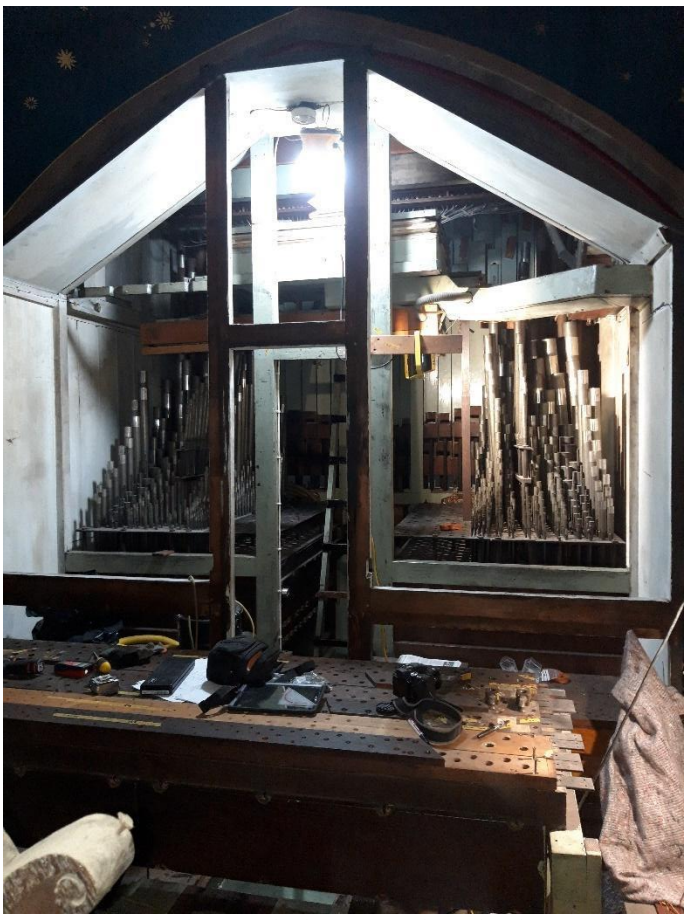
Additions to the building frame were made in 1913 for the Echo division, Enclosed Solo division, Tubas soundboard, Bombarde chests x4, and associated reservoirs, etc. Further additions still were made in 1970 to support the change-over machines introduced at that time. These building frame additions of 1913 and 1970 have now been discarded.

Some minor alteration to the vertical positions of the Positif and Récit soundboards, and to the positions of the Grand Orgue off-note blocks, appears to have been undertaken in 1913, perhaps to create more space between soundboard and reservoir for the new Lewis & Co. pneumatic underactions.

Some mysteries are evident on the upper floor of the organ, where the Solo and Récit divisions are found. The tallest basses of the Grand Orgue reeds protrude slightly through the floor, but the floor is pierced as if perhaps more of the reeds once protruded through. One possible explanation could be that the floor was also pierced above these pipes simply to allow better speech of the pipes directly below, which would otherwise be muted when the resonator ends too close to the underside of the floor. We do not have reason to believe that the Grand Orgue reeds have been altered physically, and the relative heights of the soundboard and floor do not appear to have been changed. In similar contexts, such as at St François-de-Sales, Lyon (1880), Cavaillé-Coll protected such protruding reeds with timber hoods. There is no evidence of their having been provided at Manchester.

Grand Orgue reed basses protruding through upper floor

V-shaped scratches in this floor suggest that the location and size of access hatches has changed over the years. It is possible that the Solo soundboard may once have been further back than its position at the point of dismantling, a situation that would certainly have been possible before the Récit expression box was extended forwards to accommodate the Enclosed Solo.



View towards the rear, looking over cleared Solo soundboard
Front elevation of Récit box has been removed, showing forward extension for Enclosed Solo, with the Récit behind, and (just visible above) the Echo

Maintenance access into the organ has changed over the years. In the organ's original 1877 state, the organ interior could be accessed from either a front-hinged door in the lower casework on the stage, which remains today, or via small doors from the top of the staircases. The building frame posts beyond the bass end stage-level door are chamfered as if this was intended to be the main access. Ladders could then be used to access higher levels of the organ. At some stage, possibly 1893 or 1913, the bass end 'staircase' door - still accessible from the organist's retiring room although the staircase had gone - was cut; part was sealed closed and part was removed.

Access to the chambre de la soufflerie (mezzanine tunnel behind organ) is made via ladder from the corridor below. The chambre appears to have been extended at some point on the bass end. Judging by markings in the floor from now-removed machinery, the most likely timing of this was 1909, when Mutin replaced the original hydraulic engine with a new electric motor.

Floor markings in chambre de la soufflerie, likely to be related to the 1877 hydraulic engine and/or the 1909 electric engine

Surviving Cavaillé-Coll material

Almost all of the 1877 Cavaillé-Coll building frame, with the exceptions discussed above, remains essentially intact, as does the 1893 Solo building frame. Unfortunately, most reachable surfaces were painted gloss green in 1970.

Matters requiring further research

The ideal of recreating the staircases has been discussed earlier in this report. However, recreation of the staircases **and** retention of the 1893 Soubasse 32' / Bourdon 16' rank are in conflict. To achieve both of these goals will require some compromise and / or alteration of the organ's position, building frame, and/or internal layout. Sufficient evidence exists within the instrument to copy the prevailing style for any new and/or altered sections of building frame required.

Detailed examination and analysis of the upper floor markings will be necessary to try to form conclusions about the timeline of various alterations to the accesses to this level, and possibly the original position of the Solo soundboard. This will need to be considered alongside the assessment of the nature of the 1893 'chamade' disposition of the Solo Tuba mirabilis 8' and Clarion 4'.

Wind system

Description as found before dismantling

The nature of the wind-raising apparatus when the organ was new is a source of mystery. The contract between Manchester Corporation and Cavaillé-Coll was executed on 9 May 1876; a copy survives, although it is without the technical appendix that described the instrument that was to be constructed. We do know, however, that a contract variation was instructed on 14 February 1877, for a hydraulic engine to be supplied together with a reservoir with three feeders.

> *Convention par correspondence pour l'exécution d'une machine soufflante pour l'orgue de Manchester.*
>
> *Lettre de M. Waterhouse, architecte, du 14 Fevrier 1877, commandant la machine soufflante dans les conditions pres-poseés dans un lettre du 5 Fevrier 1877, savoir:*
>
> *3 doubles pompes avec leur boites £60*
>
> *Un réservoir régulateur et son accessoires £20*
>
> *Frais d'installation £20*
>
> *Ensemble £100*[54]

The existence of such a variation, and the technology of the time, surely means that as contracted in May 1876 (before this variation) the organ was to have had hand pumping as the sole means of wind-raising.

[54] Manufacture de grandes orgues Cavaillé-Coll (Paris). Auteur du texte. [Marchés]. 1834–1878, Bibliothèque nationale de France

Inside the chambre de la soufflerie prior to dismantling

The original wind-raising apparatus was all located in a mezzanine corridor behind the organ chamber, known as the chambre de la soufflerie. Before dismantling, this corridor contained: i) a stack of two single-rise reservoirs, both reservoirs being linked to act as one, with hand-pumped feeders on the lower reservoir; a single-rise reservoir, of different construction, supported on steel beams; various wind trunks; and markings on the floor from long-removed wind-raising apparatus.

From comparison with surviving Cavaillé-Coll organs, it is evident that two pumping handles feeding two reservoirs would likely not have produced sufficient wind for the organ, even in its original 1877 incarnation. Much more likely would have been double this provision: two stacks of two reservoirs each, each stack being pumped by two people.

Even if the tunnel had been extended as early as 1877 in consequence of the hydraulic engine variation, there would have been no room for the above (conjectural) two stacks, **and** a hydraulic engine acting on three feeders on yet another reservoir.
We know that the hydraulic engine was installed in 1877 as instructed[55][56], so this makes it impossible for there to have been two twin stacks of reservoirs with pumping handles. This likely lack of capacity then raises the question as to whether it was ever possible, in practice, to pump the organ by hand. A further consideration is that the surviving stack is situated so hard up against one end of the tunnel that manipulation of one of the pumping handles would be impossible, and there is no evidence that this stack has been relocated within the tunnel.

[55] *English Mechanic and World of Science*, 13 July 1877
[56] *Musical Standard*, 21 July 1877

On the other hand, Cavaillé-Coll's report of July 1877 to Manchester Corporation, describing the completed instrument, contains the statement

> *… The bellows is constructed, agreeably with the Specification, according to our new system of construction, with divers pressures, and of a dimension in accord with the number and importance of the stops of the organ. It is arranged in such a manner as to be fed at will by men...* [This suggests that it was possible to pump the organ by hand when the organ was completed, but gives no indication of the number of men required, or the number of reservoirs provided.]
> *…Besides the ordinary bellows* [presumably by this he means those in the chambre de la soufflerie*] there has been added and applied, in accordance with the desire of the Committee of the New Town Hall, a blowing machine, put in motion by hydraulic power. …*

Furthermore, a description of the organ in the press that month noted

> *The wind is supplied by an hydraulic engine supplied by Joy, of Leeds, and is said to do its work very efficiently. The blowing apparatus can also be worked by hand, should the engine from any cause have to be stopped*[57].

A working theory might be that by the time Cavaillé-Coll received the hydraulic engine variation, manufacture had already been underway on the reservoir stacks, or they were stock items, as he was known to have produced, and so they were installed anyway, even though never used – or perhaps even possible to use – for hand pumping. Perhaps they did work, but could only meet limited demands. Further perspective is given by a press report in June 1893[58]:

> *Midsummer is now approaching, and there is still no sign of the reopening of the Town Hall organ, which has been closed since July last. The organ itself has been finished two or three weeks, and is now waiting for the engine, which was taken to pieces for repairs only when the organ itself was finished.*

This implies that by 1893 hand pumping of the organ was either no longer possible, or was no longer considered worthwhile, or perhaps had never been possible.

[57] *Manchester Courier and Lancashire General Advertiser*, 20 July 1877, p. 6, col. 5
[58] *Manchester Guardian*, 1 June 1893

The 'accessible' of the two pumping handles in the chambre de la soufflerie

The pedigree of the 'other' reservoir in the chambre de la soufflerie is also uncertain. It clearly once had three feeders attached to its underside, which is consistent with the variation instruction to Cavaillé-Coll for the hydraulic engine. However, the construction of this reservoir is quite different (no consistency in detailing or leathering) from the Cavaillé-Coll reservoirs in the organ. Since the organ was re-winded in 1910, this reservoir has served no useful function, so it must pre-date that stage. The 1893 work included repair work to the feeders[59], so the reservoir is unlikely to have been fitted new then. This suggests it was either: i) supplied by Cavaillé-Coll in 1877 but perhaps sub-contracted to another firm (Wadsworth in Manchester?); or ii) supplied by Mutin in connection with his ill-fated electric engine in 1909.

[59] Letter from Cavaillé-Coll to Manchester Corporation, 12 April 1893, collated in McVicker/Thistlethwaite, op. cit.

Underside of 'other' reservoir in chambre de la soufflerie, showing former location of 3x feeders

Wind produced in the chambre de la soufflerie (by whatever means!) was distributed within the chambre in zinc and wooden trunks, and conveyed through the rear wall of the organ chamber in wooden trunks and thence on to various reservoirs around the organ in wooden trunks. Wind trunking around the organ is mostly of timber, and for those sections dating from 1877 and 1893 appears to be largely original. There is a very generous provision of reservoirs for the manual divisions: the Grand Orgue has four reservoirs (bass C, bass C#, treble C, treble C#), the Positif and Récit have two each (C and C#) and the Solo has one. Most of these reservoirs are positioned directly below the soundboards they feed, the reservoir outlet being connected to the underside of the soundboard by concertina trunk.

Typical condition of concertina trunks prior to dismantling

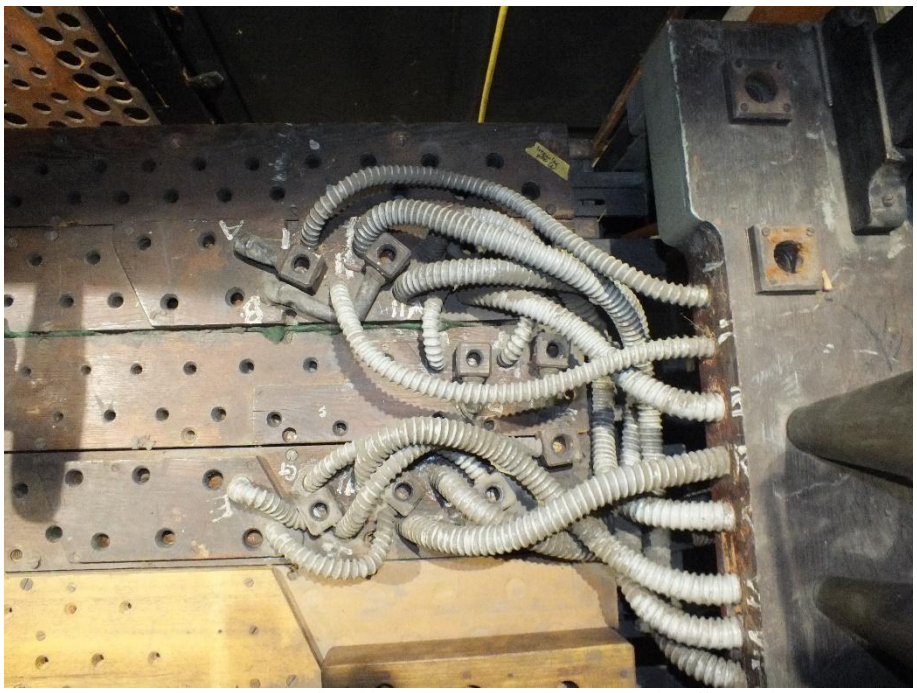
The wind system for the Pédale is less certain and gives the impression of more substantive alteration. Each soundboard has its own reservoir, which also fed the Soubasse 32′ / Bourdon 16′ chests. The 1913 Lewis & Co. Bombarde chests were fed at higher pressure from a new reservoir added in 1913 which has been discarded along with further additional reservoirs added at the same time for the Tubas soundboard and Echo soundboard. The reservoir for the Enclosed Solo, added in 1913, contained some elements characteristic of Cavaillé-Coll work so has been retained for further examination; it may have been re-worked from earlier material.

General view at stage level on C# side

C side trunking and reservoir

The re-winding of the organ in 1910 was significant, taking over the previous organist's retiring room to fit two enormous reservoirs, each with three feeders. This work effectively moved the wind-raising work from the chambre de la soufflerie to the former organist's retiring room. A metal wind trunk was fitted to convey the output from this new plant down to the chambre de la soufflerie, in the process converting the 'other' reservoir in that corridor to a purposeless straight pass-through. Further wind trunking was routed straight into the organ chamber. All of this 1910 material has now been discarded.

Wind trunking added in 1970 was all of flexible plastic hose. In addition, much of the metal conveyancing to off-note blocks was replaced with flexible plastic hose at the same time. A schematic diagram of the wind system in 2020 is appended. Such metal conveyancing that survives appears to be predominantly Lewis & Co. work of 1913, reflecting the slight re-positioning of the Positif and Récit soundboards and Grand Orgue off-note blocks believed to have taken place at that time.



1970 Jardine & Co. flexible hose conveyancing to Solo off-note block

The tremulants are by Lewis & Co.

1913 Lewis & Co. Solo tremulant

Surviving Cavaillé-Coll material

All reservoirs and associated concertina trunks retained from original divisions within the organ chamber are by Cavaillé-Coll. The reservoir used for the Enclosed Solo may include re-worked Cavaillé-Coll material and has been retained for further examination. Wind trunking retained from within the organ is predominantly by Cavaillé-Coll, though a proportion of it has been slightly re-worked (extended, shortened, etc.) to facilitate re-positioning of trunks and components. It is difficult to tell at this juncture whether blanked-off outlets in reservoirs are clues to either of the two Cavaillé-Coll configurations, or whether they relate to the pneumatic action fitted in 1913 and removed in 1970.

Some of the screws on the wind trunks had been sealed in wax, impressed with the seal of the Manchester City Architect's Office. The purpose of this wax remains unknown.

The reservoir stack in the chambre de la soufflerie is by Cavaillé-Coll. The provenance of the 'other' reservoir in this corridor remains uncertain so it has been retained for further examination. Almost all surviving wind trunking and reservoir woodwork was painted gloss green in 1970.

Matters requiring further research

Careful examination of the wind trunking will be required to try to form conclusions about the wind trunking geometry and schematic as it was in 1893. Concussions fitted to the Grand Orgue treble wind supplies are lined with old drawings relating to the Town Hall's construction, dating from 1876. They are of very similar appearance, however, to concussions typically fitted to Cavaillé-Coll's Barker Lever machines, and will be examined to assess whether they may have been re-purposed in 1913, particularly if the integral concussions on the underside of the Grand Orgue soundboard were indeed plated over at the same time.

The chambre de la soufflerie presents perhaps the most significant conundrum. A new blower is to be provided, housed in this room. Whether the 'other' reservoir from this room is to be retained, and if so, re-used, remains to be concluded.

Wind pressures taken immediately prior to the organ's dismantling are of very limited significance, given the very poor condition of the wind system at the time. The establishment of the original wind pressures will be informed by the assessment of the pipework.

Wind pressures measured prior to dismantling:

Pédale flues	130mm
Pédale reeds	249mm (known to be higher than original)
Grand Orgue bass	101mm
Grand Orgue treble	109mm
Positif	89mm
Récit	89mm
Solo (except Tubas)	133mm
Solo (Tubas)	249mm (known to be higher than original)

In 1930[60], the following wind pressures were noted as having been used prior to the 1912–1913 rebuild, though the accuracy of these figures is unknown:

Solo	146mm
Grand Orgue bass	95mm
Grand Orgue treble	120mm
Récit	114mm

Console

Description as found before dismantling

The only console was the five-manual drawstop mobile console built by Jardine & Co. in 1970, which was stored beneath the stage and could be wheeled out on the floor of the Great Hall.

Surviving Cavaillé-Coll material

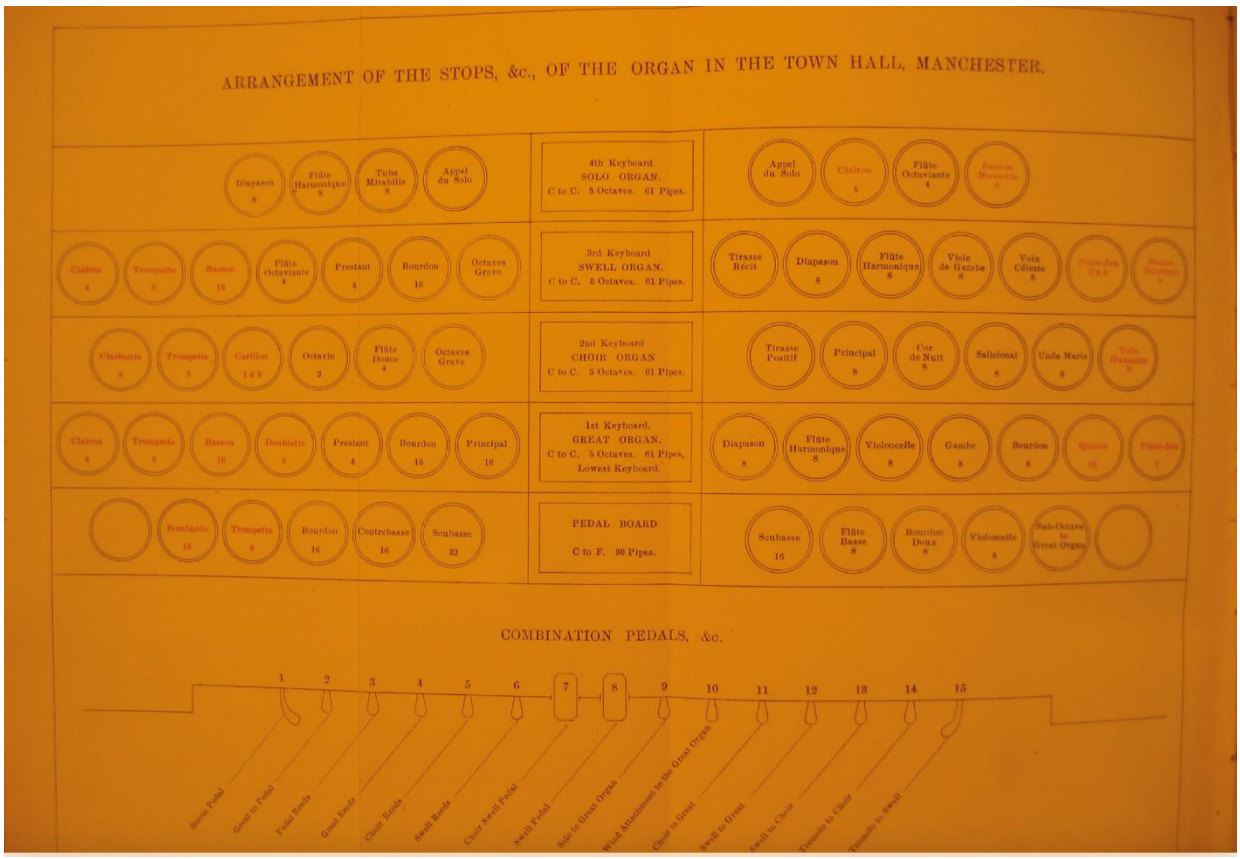
No trace of the original Cavaillé-Coll console (built 1877, enlarged 1893, removed 1913) or its carcass (built 1877, enlarged 1893, removed 1970) remained.

[60] Clutton, C, *The Organ of Manchester Town Hall*, The Organ, October 1930

A poor photograph of the console confirms, along with a drawstop layout diagram in the council files, that it was of straight terraced type.

The only known image showing the drawstops and keys of the Cavaillé-Coll console, taken at some point 1893–1913[61]

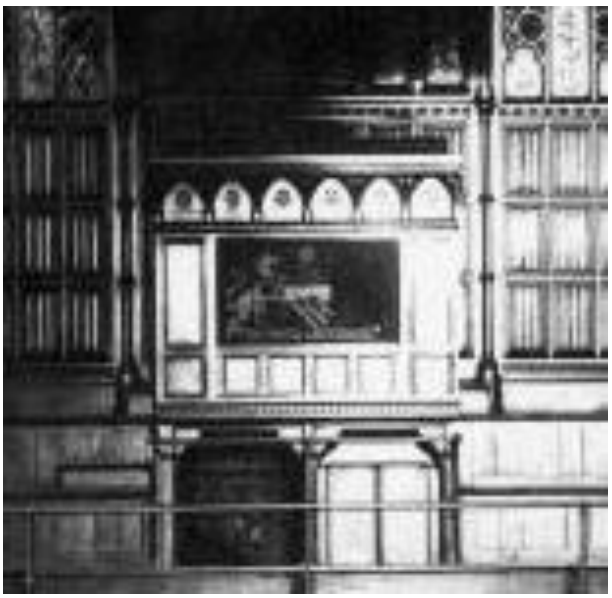
[61] Original source unknown: passed to us as a scan of a scrapbook



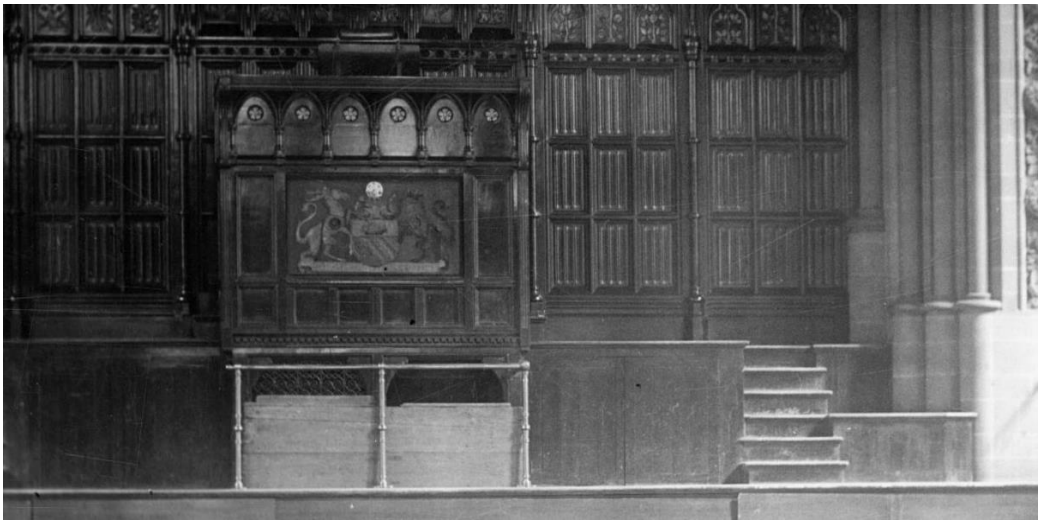
Drawstop and pedal layout from 1893–1913[62]

1877–1893: Cavaillé-Coll console in original three-manual form

[62] Manchester Corporation minutes, 21 June 1899



1909: Cavaillé-Coll console in post-1893 enlarged form



1925: *Cavaillé-Coll console carcass around 1913 Lewis & Co. console*

1953: Cavaillé-Coll console carcass around 1913 Lewis & Co. console

Location of console on stage

Cavaillé-Coll console of Albert Hall, Sheffield (1873) – the Manchester console is likely to have been very similar[63]

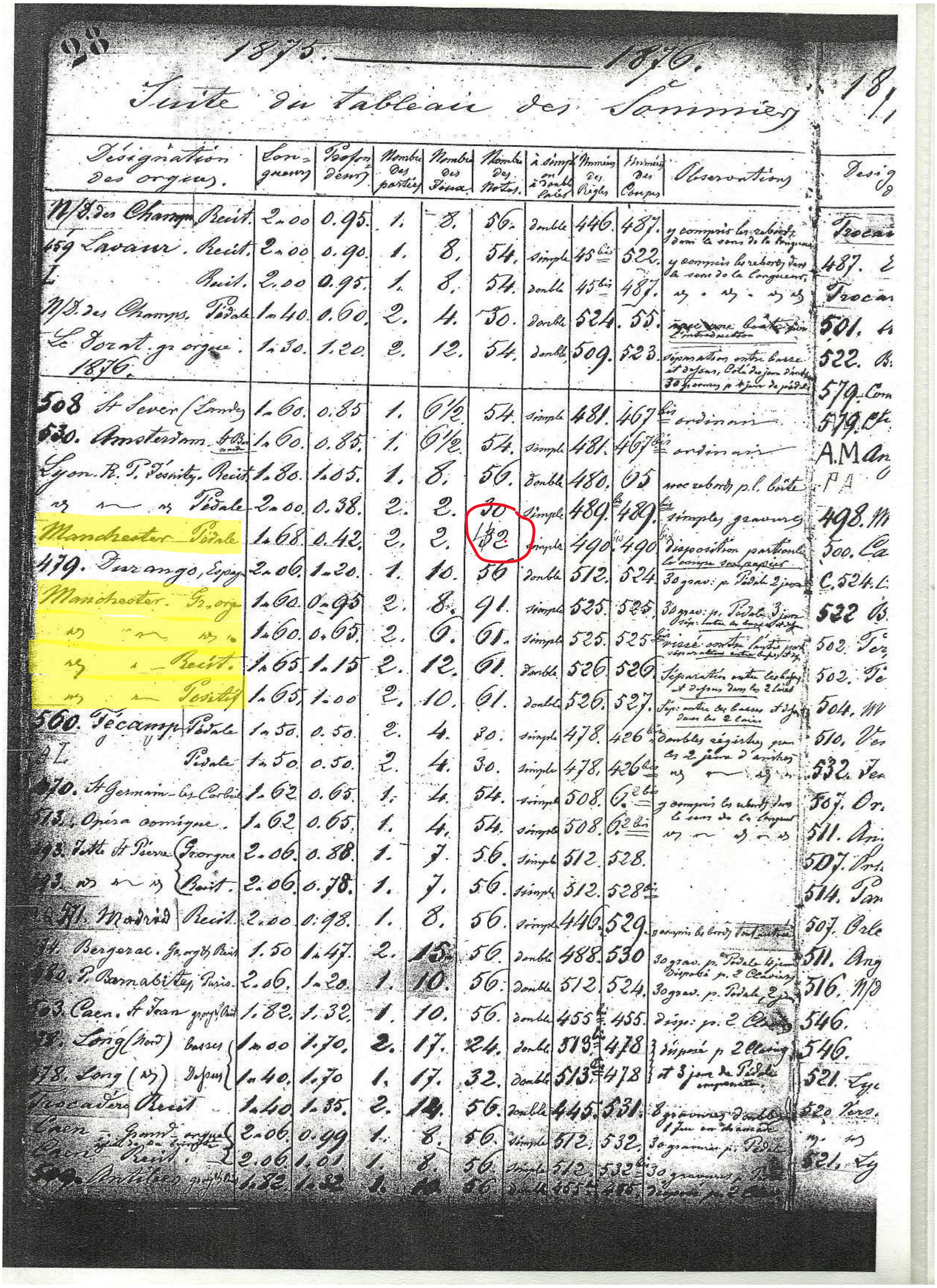
[63] *Rotunda*, Vol. 2, 1928

Soundboards

Description as found before dismantling

Pédale

The two Pédale soundboards are the most significantly altered. It appears that an error was made in construction: the soundboards have provision for two extended ranks of 44 notes i.e. a stop of 32-note compass plus another octave, but the original pedal compass was 30 notes, so only 42 were required in the soundboard. A possible source of confusion is found in the Cavaillé-Coll shop book (scan below). In the entry for the number of pipes, someone has written 32, which has then been corrected to 42. Perhaps the soundboard was made assuming that 32 referred to the number of notes on the pedalboard (which would give 44 pipes per rank, and is what was built), rather than what should have been an entry of 42 pipes, corresponding to a pedalboard of 30 notes.



98 1875. — 1876.

Suite du tableau des Sommiers

Désignation des orgues	Longueur	Profondeur	Nombre des parties	Nombre des Jeux	Nombre des Notes	à simple ou à double laies	Numéros des Règles	Numéros des Coupes	Observations
N/D des Champs Récit	2.00	0.95	1.	8.	56.	double	446.	487.	y compris les rebords dans le sens de la longueur
459 Lavaur. Récit	2.00	0.90	1.	8.	54.	simple	45 bis	522.	y compris les rebords dans le sens de la longueur
Récit	2.00	0.95	1.	8.	54.	double	45 bis	487.	" " "
N/D des Champs. Pédale	1.40	0.60	2.	4.	30.	double	524.	55.	avec une boite pour l'introduction
Le Dorat. gd orgue. 1876.	1.30	1.20	2.	12.	54.	double	509.	523.	Séparation entre basse et dessus, côté du jeu droit. 30 gravures p. 4 jeux de pédale
508 St Sever (Landes)	1.60	0.85	1.	6½	54.	simple	481.	467 bis	ordinaire
530. Amsterdam.	1.60	0.85	1.	6½	54.	simple	481.	467 bis	ordinaire
Lyon. R. P. Jésuites. Récit	1.80	1.05	1.	8.	56.	double	480.	05	avec rebords p.l. boite
" " " Pédale	2.00	0.38	2.	2.	30.	simple	489 bis	489 bis	simples gravures
Manchester Pédale	1.68	0.42	2.	2.	42 / 32	simple	490 bis	490 bis	disposition particulière, le compas sur papier
479. Durango, Espagne	2.06	1.20	1.	10.	56	double	512.	524	30 grav: p. Pédale 2 jeux
Manchester. Gd orgue	1.60	0.95	2.	8.	91.	simple	525.	525.	30 grav: p. Pédale 3 jeux
" " "	1.60	0.65	2.	6.	61.	simple	525.	525 bis	[illegible]
" " Récit	1.65	1.15	2.	12.	61.	double	526	526	Séparation entre les basses et dessus dans les 2 laies
" " Positif	1.65	1.00	2.	10.	61.	double	526.	527.	Sép. entre les basses et dessus dans les 2 laies
560. Fécamp. Pédale	1.50	0.50	2.	4.	30.	simple	478.	426 bis	doubles registres pour les 2 jeux d'anches
Pédale	1.50	0.50	2.	4.	30.	simple	478.	426 bis	" " "
510. St Germain-les-Corbeil	1.62	0.65	1.	4.	54.	simple	508.	62 bis	y compris les rebords dans le sens de la longueur
513. Opéra comique.	1.62	0.65	1.	4.	54.	simple	508.	62 bis	" " "
493. Ste St Pierre Gd orgue	2.06	0.88	1.	7.	56.	simple	512.	528.	
493. " " Récit	2.06	0.78	1.	7.	56.	simple	512.	528 bis	
511. Madrid Récit	2.00	0.98	1.	8.	56.	simple	446.	529.	y compris les bords tout autour
514. Bergerac. Gd orgue & Récit	1.50	1.47	2.	15.	56.	double	488.	530	30 grav. p. Pédale 4 jeux. Disposé p. 2 claviers
516. P. Barnabites, Paris	2.06	1.20	1.	10.	56.	double	512	524.	30 grav. p. Pédale 2 jeux
503. Caen. St Jean gd orgue & Récit	1.82	1.32	1.	10.	56.	double	455 bis	455.	Disposé p. 2 claviers
Long (Nord) basses	1.00	1.70	2.	17.	24.	double	513 bis	478	disposé p. 2 claviers
478. Long (") Dessus	1.40	1.70	1.	17.	32.	double	513 bis	478	et 3 jeux de Pédale composés
Trocadéro Récit	1.40	1.35.	2.	14.	56.	double	445.	531.	8 gravures doubles, 1 jeu en chamade
Caen. Grand orgue	2.06	0.99	1.	8.	56.	simple	512.	532.	30 gravures p. Pédale
Caen Récit	2.06	1.01	1.	8.	56.	simple	512.	532 bis	30 gravures p. [illegible]
509. Antilles gd orgue	1.82	1.32	1.	10	56	double	455	455	Disposé p. 2 claviers

Extract from Cavaillé-Coll shop book: the five Manchester soundboard entries (Pédale, Grand Orgue x2, Récit, Positif) are highlighted. The erroneous Pédale entry of 42, corrected to 32, has been circled.

The Pédale soundboards are divided C and C#, so each have 21 pipes per rank, with a superfluous / erroneous provision for 22 pipes per rank. Each soundboard would have had 15 tracker connections from the pedalboard (with superfluous provision for 16). Each of the 15 trackers would have opened 2 pallets, presumably connected via some sort of rollerboard. One pallet would be for the 16' pitch, and the other pallet for the 8' pitch. Those pipes shared between both pitches (i.e. pipes C13–F30 of the C1–F42 rank) thus have two pallets each, with either pallet being capable of feeding the pipe.

The mechanism above would likely have been duplicated for the jeux de combinaison with cross-trackering. Thus each of the 15 trackers might have pulled open 4 pallets each: Jeux de fonds 16', jeux de fonds 8', jeux de combinaison 16', and jeux de combinaison 8'. However, this possible arrangement requires confirmation and comparison against similar soundboards on surviving Cavaillé-Coll instruments, and more detailed examination of the interior of these Manchester soundboards.

When Lewis & Co. rebuilt the organ, the 42 Bombarde pipes (playable at 16’ and 8’ pitches) were removed to new chests on the lower floor. The 1877 Pédale soundboards were then cut lengthways and reduced in depth, removing the now-empty Bombarde 16' and 8' slides. This reduced depth made room for the new Bombarde 32' 6-note chests on each side of the Positif box. The cuts in the Pédale soundboards appear to have been made along the centre line of the Bombarde 16’ slides, leaving each soundboard as having only 2 slides, one for the Contrebasse 16' and one for its extension as Flûte basse 8'. The trackers and rollerboards were removed and replaced with new Lewis & Co. pneumatic underactions.

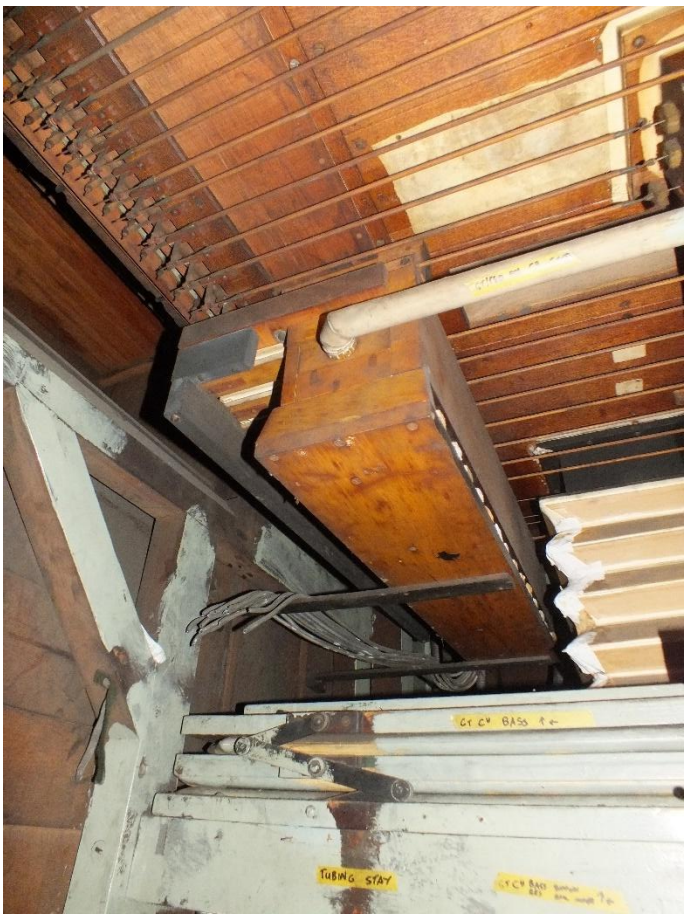
Pédale C# soundboard, showing Contrebasse 16’, Flûte basse 8’ and (sliced through) Bombarde 16’ slide locations

Grand Orgue

The four soundboards (C and C#, jeux de fonds and jeux de combinaison) appear to be unaltered since new other than removal of the jeux de combinaison ventils, and possible plating-over of concussions on the underside of the jeux de fonds soundboards. This would likely have been undertaken by Lewis & Co. in 1913, as the pneumatic underaction added at that time for those stops on the Grand Orgue that are duplexed onto the Pédale (Bourdon 16', Bourdon 8, Violincelle 8') was fitted directly beneath them.

Location of former Grand Orgue jeux de combinaison ventils

Underside of one of the Grand Orgue jeux de fonds soundboards, showing integral concussions plated over (one cover removed temporarily)



1913 Lewis & Co. pneumatic underaction for Pédale pallets in Grand Orgue soundboards

Positif

The two soundboards (C and C#) appear to be unaltered since new other than removal of the jeux de combinaison ventils and the possible plating-over of concussions on the underside. In this case, these plates may have been added at the same time that the square beams were mounted directly onto the underside of the soundboards.

Récit

The two soundboards (C and C#) appear to be unaltered since new other than removal of the jeux de combinaison ventils and the possible plating-over of concussions on the underside as described for the Positif.

Solo

The main soundboard appears to be unaltered since new other than the addition of veneers onto the former Tuba mirabilis 8′ and Clairon 4′ upperboards, to facilitate the 1970 Nazard $2^2/_3$′ and 1913 Rohr Gedact 8′ respectively. The upperboards for these two stops are of slightly shorter length than the others on the soundboard, for no obvious reason.

The possible nature of the 'chamade' arrangement for the above reeds is discussed later in this report. Since 1913, these reeds had been mounted vertically on a Lewis & Co. slider soundboard, which has now been discarded. The three-stop Enclosed Solo division added in 1913 was on two slider soundboards which have now been discarded.

Echo

The five-stop Echo division added in 1913 was on a single slider soundboard which has also been discarded.

Surviving Cavaillé-Coll material

- Pédale soundboards x2, albeit significantly cut along their length to reduce their depth
- Positif soundboards x2, appear intact other than removal of the jeux de combinaison ventils, and possibility of concussions having been plated over
- Grand Orgue soundboards x4, appear intact other than the removal of mechanism for jeux de combinaison ventil, and possibility of concussions having been plated over
- Récit soundboards x2, appear intact other than removal of mechanism for jeux de combinaison ventil, and possibility of concussions having been plated over
- Solo soundboard x1, appears intact

The tables of the Positif, Grand Orgue and Récit soundboards appear to be in reasonable condition. The Solo soundboard table is much less happy, doubtless because of its greater exposure to heat and humidity at the top and front of the instrument.

Previous repairs to split in Solo soundboard table

Matters requiring further research

The jeux de combinaison ventils will be based on surviving examples elsewhere. The purpose of the plated-over panels on the underside of the Grand Orgue, Positif, and Récit soundboards should hopefully become clear during workshop examination. The design for the missing part of the Pédale soundboards will be based, if possible, on surviving examples elsewhere, though this may have to be part conjectural. It may be difficult to deepen the soundboards again: careful examination and discussion will be necessary in the workshop to agree whether the soundboards can be re-made to their original depth or whether they should be stored and replaced with new replicas.

Slider actions

Description as found before dismantling

All soundboards were fitted with pneumatic slider machines made by Lewis & Co. in 1913, which have now been discarded.

1913 Lewis & Co. pneumatic slider machine at rear of Positif C# soundboard

Surviving Cavaillé-Coll material

Nothing of the original Cavaillé-Coll slider mechanisms survives.

Matters requiring further research

It is known that the slider action throughout the organ in 1877 was mechanical: some evidence in the organ was found with holes typical of mechanical stop action, and traces were also found of beams where we would expect to find mechanical stop action

pivots. Cavaillé-Coll also described the presence of such in his letter to Manchester Corporation[64].

The disposition of the soundboards is such that it is almost certain that the mechanical stop action for the Pédale was at the front of these soundboards; that for the Grand Orgue was situated centrally, between the C and C# sides; and that for both the Positif and Récit was at the rear of the soundboards.

Cut-outs in building frame at rear of Récit box, almost certainly for mechanical stop action

The design for these mechanical slider actions will be based on surviving examples elsewhere.

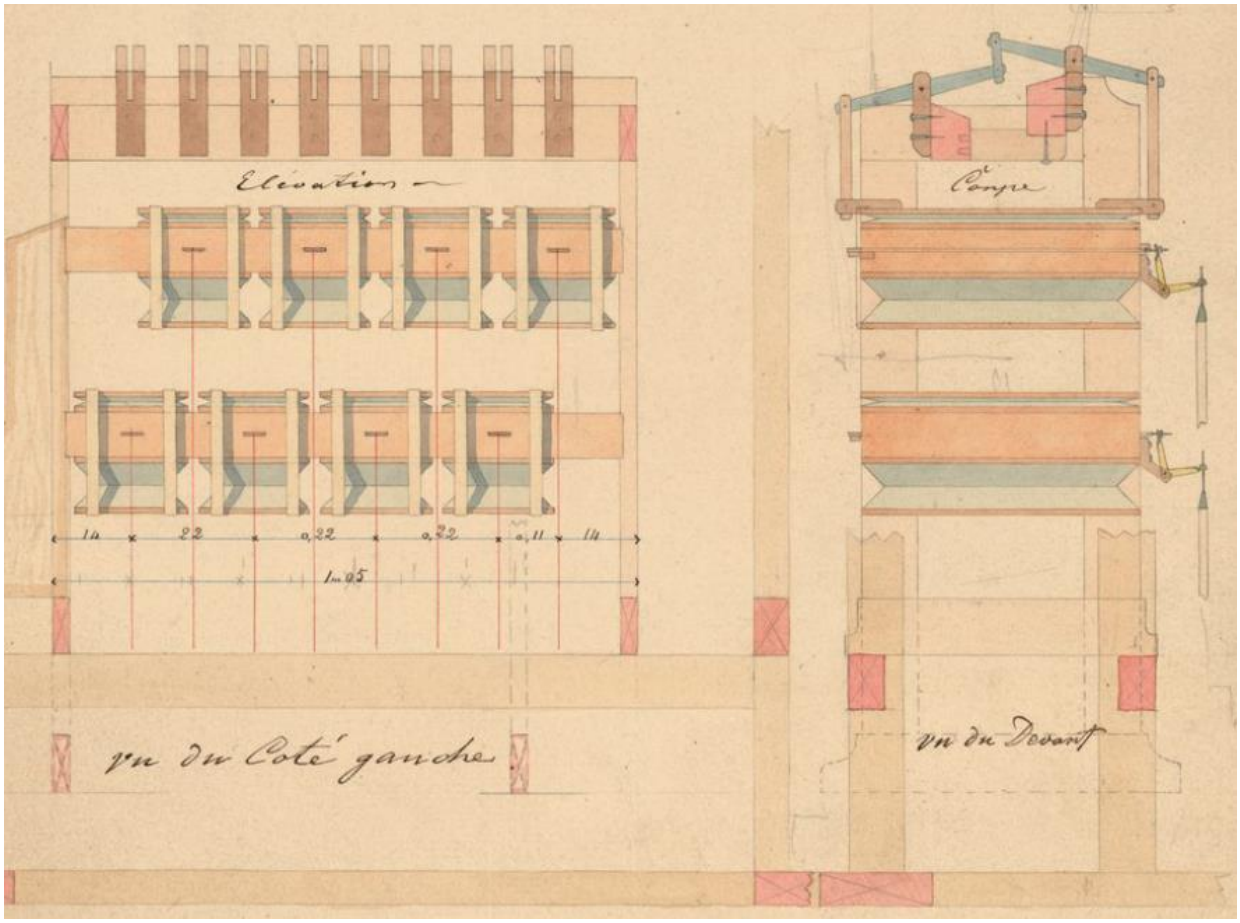
The slider action for the 1893 Solo was described by Cavaillé-Coll as pneumatic:

> *…There has been made for the mechanism of the registers on the Solo, pneumatic motors of double effects, their object being, notwithstanding the great distance, to facilitate the drawing of these registers, and which also allows the organist to make very useful combinations….*
>
> Letter from ACC to Manchester Corporation, 12 April 1893 [translation]

This is contradicted in a 1916 article in the *Organists' Quarterly Journal*[65], in which the stop action for the 1893 Solo was described as having been mechanical. A possible resolution of this discrepancy might be found by considering the pneumatic stop action Cavaillé-Coll is known to have used elsewhere (e.g. Saint-Sulpice, Paris, 1862),

[64] Letter from Cavaillé-Coll to Manchester Corporation, 17 July 1877, collated in McVicker/Thistlethwaite, op. cit.
[65] Organists' Quarterly Record, October 1916, Vol. 1, No. 4, p. xvii

where double-acting pneumatic motors move the sliders, but the primary valves are actuated not by a puff of air down a lead tube from the drawstop, as would be familiar to most British organ builders, but instead by a thin tracker attached to the drawstop. Some similarity may be drawn to a Barker Lever machine, where the pallet is pulled open by pneumatic power, but the pneumatic power is actuated by a small tracker movement from the key.



Example of Cavaillé-Coll pneumatic slider machine with mechanically actuated primary valves[66]

An arrangement such as this would certainly have occupied less space than mechanical drawstop action and would thus have been easier to retro-fit into an existing instrument as at Manchester in 1893.

Further weight to the likelihood of the Solo slider action having been pneumatic is given by the fact that although the Lewis & Co. slider machine was at one end, every other slider was bored at the opposite end, as if to facilitate a three-stop slider machine at either end of the soundboard. No other evidence has been found during dismantling of the organ for the nature of the original Solo slider action.

[66] Cavaillé-Coll, A, *Dessins de mécanismes d'orgues : coupe, plan et élévations*, Bibliothèque nationale de France

Chests and off-note blocks

Description as found before dismantling

Soubasse 32′ / Bourdon 16′: the two 3-note chests of 1893 (Cavaillé-Coll) for notes C1–F6 were replaced in 1913. The Lewis & Co. replacements have now been discarded.

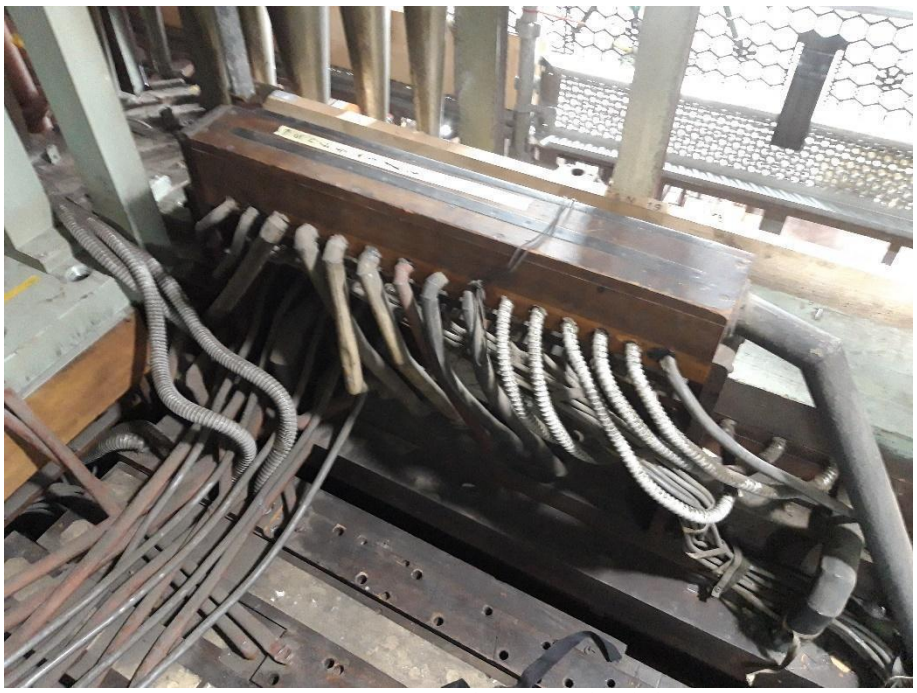
1913 Lewis & Co. chest for notes C1, D3 and E5 of the Soubasse 32′ / Bourdon 16′

The remaining two 18-note chests survived albeit altered. It is evident that Lewis & Co. was concerned that the 1893 slot and internal groove dimensions were too small, leading to possible starvation of the open pipes. Lewis & Co. enlarged the pallet slots and enlarged the internal groovings to the pipe holes. This entailed cutting through the veneer on the bottom of these chests, covering it with a second veneer, and replacing the pneumatic underaction. Further, the chests were re-positioned slightly in order to make room for the new chests for the Bombarde 16′ / Trompette 8′ rank newly displaced from the Pédale soundboards. The new position of the Soubasse 32′ / Bourdon 16′ chests was also slightly smaller, so the chests were reduced in size. Approx. 3″ of material was removed from one long length of the chest and approx. 1″ of material from the opposing side. This destroyed some of the internal grooving, whose function was replaced with external metal conveyancing.

One of the 1893 Soubasse chests with Lewis & Co. veneer removed in the workshop after dismantling, showing the enlarged and damaged original grooves

Pédale off-notes: various small direct electric chests were added, with new pipework, in 1970 to extend each rank by two notes to facilitate a 32-note pedalboard. These have now all been discarded.

Principal 16: the Grand Orgue Principal 16′ was originally only available on the Grand Orgue. The lowest 30 notes happened to be all conveyed or actioned off into the façade, so Lewis & Co. interposed two 15-note chests between the soundboards and façade pipe blocks, allowing these 34 pipes (the lowest 4′ are of stopped wood construction with open metal 8′ 'helpers') to be playable either as the Principal 16′ on the Grand Orgue, as before, but also as a new Principal 16′ on the Pédale. These two chests have now been discarded.



1913 Lewis & Co. C side Principal 16′ chest

Other Grand Orgue and Pédale off-notes: Other Grand Orgue pipes conveyed or actioned onto the façade pipe blocks are: Violoncelle 8′ C1–A10, Diapason 8′ C1–B12, Gambe 8′ C1–B12 (all Grand Orgue). Those pipes actioned off from the Grand Orgue are fed from four surviving Cavaillé-Coll façade pipe action relay boxes.

Further, notes F#19–C#26 of the Contrebasse 16′ (Pédale) were also conveyed into the façade (on the side returns, hidden from view since 1893). Notes C1–F18 of the Contrebasse 16′ were also conveyed onto blocks above the Pédale soundboards.

Notes C1–B24 of the Bourdon 16′, notes C1–B12 of the Bourdon 8′ and notes C1–D#16 of the Flûte Harmonique 8′ were also conveyed or actioned off onto two pipe blocks, mounted at each end of the Grand Orgue soundboards. While the arrangement of pipes on these blocks does not appear to have changed in 1913, the blocks were re-positioned slightly, the split of actioned vs. conveyed pipes was adjusted, and the pneumatic actions were replaced.

Bombarde 16′ / Trompette 8′: in 1913, these 42 pipes were moved off the Pédale soundboards onto two new 21-note unit chests at floor level on either side of the chamber. These chests have now been discarded.

Soubasse 32′ quints: with the loss of the 1893 Cavaillé-Coll Soubasse 32′ in 1913, when it was converted to a Great Bass 16′, the 32′ flue tone provision was provided by a ‘new’ Soubasse 32′. This was formed by playing the Grand Orgue Bourdon 16′ (duplexed onto the Pédale as a Soubasse 16′ to avoid naming confusion with the Bourdon 16′ extension of the 1893 Soubasse 32′!) -8ve from C13–F30, and by playing the same Bourdon 16′ at pitch with a dedicated quint pipe from C1–B12. These 12

stopped wood quint pipes were added in 1913 on a new chest. This chest and its pipes have now been discarded.

Positif off-notes: the following notes were all conveyed off onto pipe blocks at the rear and side of the soundboards: Cor de Nuit 8′ C1–B12; Salicional 8′ C1–A10; Principal 8′ C1–B12.

Récit off-notes: the following notes were all conveyed off onto pipe blocks at the rear and side of the soundboards: Bourdon 16′ C1–B24; Diapason 8′ C1–B12; Flûte Harmonique 8′ C1–B12.

Solo off-notes: the following notes were all conveyed off onto pipe blocks at the ends of the soundboard: Diapason 8′ E5–D#16 and Flûte Harmonique 8′ E5–B12. The conveyance blocks also have provision for the lowest four notes of these two stops, but prior to dismantling these eight pipes were on an separate 1913 off-note chest actioned off the soundboard.

1913 Lewis & Co. Solo off-note chest for lowest four notes of Diapason 8′ and Flûte Harmonique 8′

Surviving Cavaillé-Coll material

Pédale:

- off-note blocks for Contrebasse 16′
- chests for notes F#7–F42 of Soubasse 32′ / Bourdon 16′, though severely cut and altered

Positif:

- off-note blocks for Salicional 8′, Cor de Nuit 8′ and Principal 8′

Grand Orgue:

- off-note blocks for Bourdon 16′, Bourdon 8′ and Flûte Harmonique 8′, with modest alteration
- off-note blocks for Diapason 8′, Gambe 8′, Violoncelle 8′ and Principal 16′

Récit:

- off-note blocks for Bourdon 16′, Diapason 8′ and Flûte Harmonique 8′

Solo:

- off-note blocks for Diapason 8′ and Flûte Harmonique 8′, with modest alteration

Matters requiring further research

The alterations to the Grand Orgue and Solo off-note blocks need to be ascertained and reversed.

Key actions

Description as found before dismantling

It is known[67] that the original key action for the manuals in 1877 was mechanical with Barker Lever assistance. Indeed, Cavaillé-Coll had been commissioned to provide only the Positif and Grand Orgue divisions with Barker Lever machines, but elected – as was his frequent habit – to deliver beyond what was required and thus provided a further Barker Lever machine for the Récit.

More conjectural is the original key action for the Pédale, which is not described explicitly in any source material. In 1877 this can only have been either mechanical or charge pneumatic, given that these were the only forms of action in use for pedal divisions at that time.

In his memorandum to Manchester Corporation in July 1877[68], summing up the instrument that had been delivered, Cavaillé-Coll makes no mention of any pneumatic action, which – if he had used it for the Pédale – would be odd given the significant level of detail that is gone into on everything else. Further, he uses the term 'clavier' to describe both manuals and pedalboard, and later describes the mechanical action used for the 'claviers'. He also mentions the two Barker machines (for Positif and GO) that he was contracted to make, and describes how he decided to build a third for the Récit as well. While there is no explicit statement saying that the Pédale was mechanical in 1877, it seems clear from the nuance of this text that this was what was done: if the Pédale had been pneumatic it would surely have been worthy of mention. Further contextual clues are that the date was fairly early for pneumatic action, and we know

[67] [67] Letter from Aristide Cavaillé-Coll to Manchester Corporation, 17 July 1877 [translation], collated in McVicker/Thistlethwaite, op. cit.
[68] Ibid.

that Cavaillé-Coll was very conservative in adopting pneumatic key action[69]. No evidence was found during dismantling of the original key action for the 30 Pédale grooves within the Grand Orgue soundboards. If such evidence had survived, it might have helped confirm the nature of the 1877 Pédale action.

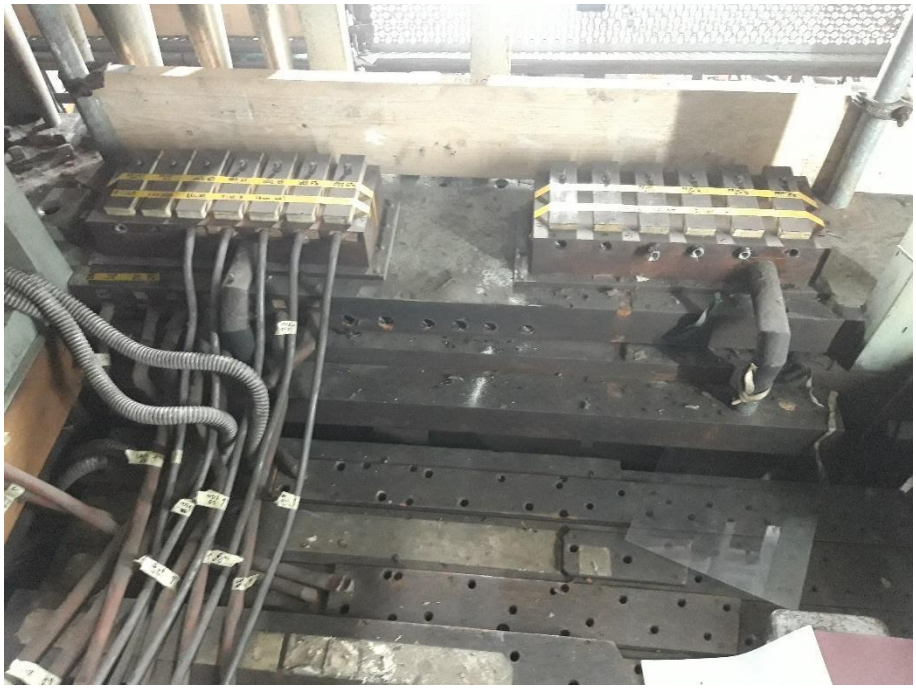
The key action for the Cavaillé-Coll additions in 1893 was charge pneumatic. Cavaillé-Coll stated that the 'new mechanism [for the Solo] has been arranged by means of the tubular pneumatic system.'[70] He further stated that the new Pédale additions are on a 'a special sound-board in two parts of 42 notes, provided with pneumatic motors' on a 'special tubular mechanism of modern and improved construction, which joins the new pedal with the old one[71].' This also makes it sound, by comparison, that the 1877 pedal action was mechanical.

The use of pneumatic key action seems to have been extremely rare in the output of the Cavaillé-Coll firm. In a tender of March 1897 for a new organ at the Conservatoire de Musique, Nancy[72], the proposed organ was to include 'actionnés par un système tubulaire déjà employé avec succès à l'Église St-Gervais de Rouen et dans l'orgue de la salle de concert de l'Hôtel de Ville de Manchester.[73]' The Manchester organ was obviously a prestigious example to cite, but the two-manual, 11-stop St-Gervais instrument of 1889[74] (not to be confused with Cavaillé-Coll's magnum opus in St Ouen, Rouen) was very modest. For such an instrument to be thus cited, alongside Manchester Town Hall, in a tender document eight years later suggests that these two instances were very rare exceptions from Cavaillé-Coll's normal aversion to pneumatic key action.

In Manchester, little of the original key action remains outside of the soundboards and chests. The cross-trackering and associated square beams linking the pallets for the jeux de fonds and jeux de combinaison in the Positif, Grand Orgue and Récit soundboards may include some original elements, but this must be examined further in the workshop. The original façade pipe action relay boxes appear to have survived intact.

[69] Veerkamp, P, *L'Orgue à Tuyaux*, Association Cavaillé-Coll, 1986
[70] Letter from Aristide Cavaillé-Coll to Manchester Corporation, 12 April 1893 [translation], collated in McVicker/Thistlethwaite, op. cit.
[71] Ibid.
[72] Completed in 1898, it was to be the final organ completed by the Cavaillé-Coll firm before the company was sold to Charles Mutin.
[73] Eschbach, J. *Aristide Cavaillé-Coll*, Vol. 1, Verlag Peter Ewers, 2012, pp. 583 and 526.
[74] Alas, all mechanism was replaced with new electro-pneumatic sliderless chests in 1948

Underside of Grand Orgue soundboard, showing 1913 Lewis & Co. underaction acting on the jeux de combinaison pallets, and cross-trackering linking these to the jeux de fonds pallets



At top of picture are visible two of the four façade pipe action relay boxes (Cavaillé-Coll, 1877) with covers removed

1913 Lewis & Co. pneumatic underaction beneath Récit C# soundboard
Visible at top of image is the cross-trackering to the jeux de fonds pallets

All other parts of the Cavaillé-Coll key actions outside of the soundboards and chests were removed in the Lewis & Co. rebuild of 1913. The touchboxes, coupling machine and derivation machine(s) of 1913 were removed in the electrification of 1970 and electro-pneumatic change-over machines fitted. All key actions at soundboards and chests prior to dismantling in 2020 were therefore Lewis & Co. charge pneumatic of 1913, fed via lead tubing from Jardine & Co. change-over machines of 1970. The only exceptions to this were the direct electric off-note chests added by Jardine & Co. to extend the pedal compass from 30 to 32 notes, and for the bass of the Nazard $2^2/_3'$.

1970 Jardine & Co. change-over machines in Positif expression box, feeding the 1913 Lewis & Co. pneumatic underactions for the Récit on the floor above

1970 Jardine & Co. low voltage switchgear

The pallets within the Great Bass 16′ / Octave 8′ chests for notes F#7–F42 have been replaced with new of larger size (see discussion in section on chests).

The pallets within some of the soundboards have been cut crudely to convert them to split pallets. This was presumably undertaken in 1913 to reduce the effort required for the new underactions to pull the pallets open.

Pallets inside Récit soundboard showing L-shaped cuts to convert them to split form

Off-note blocks for the Grand Orgue and Solo divisions have been altered in two ways in 1913. They were clearly originally a mixture of conveyed and actioned-off pipes; this remained post-1913, but the split of conveyed vs. actioned-off has been altered and all actions were replaced with new.

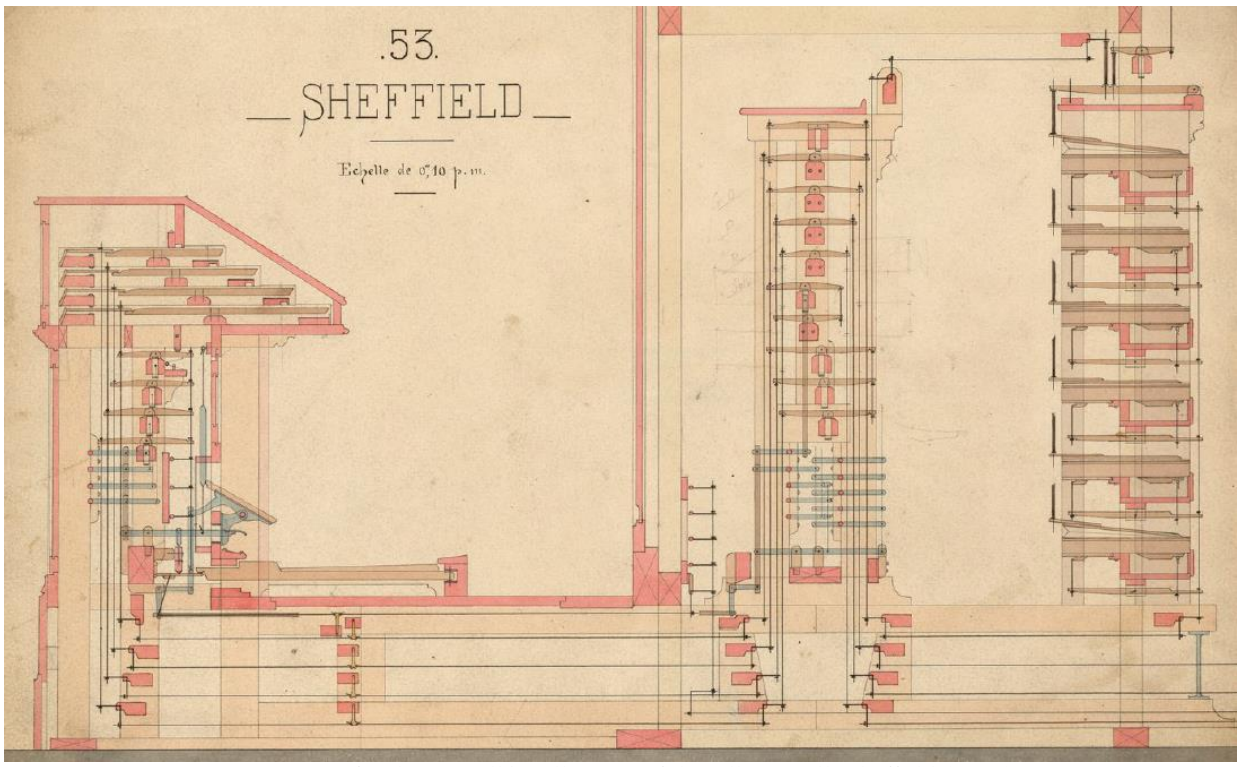
Surviving Cavaillé-Coll material

- All soundboard pallets, albeit some having been cut.
- Possibly some cross-trackering and associated square beams.
- Façade pipe relay action boxes

Matters requiring further research

A particular aspiration for the dismantling period was to try to ascertain the likely action runs for the Grand Orgue, Positif and Récit divisions. We know that the Grand Orgue had a Copula Grand Orgue pneumatic hitch-down pedal. This was a device that Cavaillé-Coll sometimes incorporated into his larger instruments that allowed the player to couple manuals together on the Grand Orgue manual, without the Grand Orgue sounding. The presence of such a facility means that the layout of the key action immediately inside the case is almost beyond doubt. The mechanism for the three manual-to-pedal couplers would have been housed within the lower part of the console. The mechanism for the intra-manual and inter-manual couplers would have been housed in a coupling stack immediately inside the case. In line with this stack would be, in turn, the Barker Lever machines for the Grand Orgue, Positif and Récit.

An example of this linkage can be seen in the drawing for the key action of the Cavaillé-Coll organ of the Albert Hall, Sheffield[75]:



Key action for the Cavaillé-Coll organ of the Albert Hall, Sheffield (1873)
From left to right:
- *Console, containing manual-to-pedal couplers*
- *(vertical pink line) Casework*
- *Coupling stack for inter- and intra-manual couplers*
- *Barker Lever machine for Grand Orgue (the linkage at the top back to the coupling stack is for the Copula Grand Orgue pneumatique)*

The inputs to each Barker Lever machine would come up from floor level, with the outputs from each machine being at the top. The arrangements at Manchester would likely have been very similar to the above, with the Barker Lever machines for the Positif and Récit following on to the right.

This likely layout is confirmed by traces of the original Cavaillé-Coll rollerboards found during dismantling of the Manchester organ. Rollerboards would be required to swap over every other note to facilitate the divided C and C# soundboards. Evidence for the Positif rollerboard was found on the external lower front face of the Positif expression box, confirming that the Positif key action came up from its Barker Lever machine approximately midway back through the organ. It would then have been connected to two square beams to send the action towards the rear wall beneath the two (C and C#) soundboards. A complicated arrangement with a further rollerboard beneath each soundboard (with a roller approximately beneath each soundboard channel) would likely then have been necessary to turn the action 90

[75] Cavaillé-Coll, A, *Coupes de claviers et mécanismes correspondants, tracées à l'échelle de 0,1 pour 1m*, Bibliothèque nationale de France

degrees and pull open (at the end of each roller) the jeux de combinaison pallets innermost either side of the central front-to-rear passageboard. These pallets would then be linked to the jeux de fonds pallets with cross-trackering and two square beams similar to the situation before dismantling.

A similar disposition can be found in other Cavaillé-Coll organs such as St-Louis d'Antin, Paris (1858), and the 1894 Cavaillé-Coll organ built for Baron de l'Espée in Paris, subsequently relocated to the Church of St-Antoine des Quinze-vingts, also in Paris, by Merklin in 1909.

Horizontal rollers beneath soundboard at St-Antoine des Quinze-vingts, Paris

Silhouette of Positif rollerboard

Evidence for the Récit rollerboard was found on the rear wall of the Positif expression box, confirming that the Récit key action came up from its Barker Lever machine near the back of the chamber. It would then have had a very similar arrangement to the Positif soundboards.

Silhouette of Récit rollerboard

Some evidence of the Grand Orgue rollerboard (positioning dowels and a series of screw holes) was found on the rear face of the building frame under the Grand Orgue soundboards.

Locating dowel likely to have been for Grand Orgue rollerboard

The approximate position of the output of a Grand Orgue Barker Lever machine such as in the Sheffield drawing would be consistent with the jeux de combinaison pallets, with a rollerboard between. These pallets would then be linked to the jeux de fonds pallets with cross-trackering and two square beams similar to the situation before dismantling.

The Grand Orgue soundboards contain an extra 30 channels for three stops (Bourdon 16', Bourdon 8' and Violincelle 8') which can be played via either the Grand Orgue or the Pédale. The pull-downs for the associated pallets are at the front of these soundboards, which again would be consistent with a layout similar to Sheffield, with vertical trackers running up the inside of the case from the actions below (not shown on the Sheffield diagram).

The key action for the Pédale soundboards would likely have been divided via a rollerboard just inside the case, before running on to the C and C# soundboards.

The key action for the Solo would clearly have required a pneumatic touchbox. It is not known whether this would have been incorporated into the console, or whether the initial linkage from the Solo keys would have been mechanical, leading to a touchbox somewhere inside the organ. This is not material and will be considered and decided during the process of detailed design. When the Solo was added, Cavaillé-Coll also added just one coupler, making it possible to play the Solo on the Grand Orgue. It is not known whether this was achieved pneumatically (by fitting a touchbox to the Grand Orgue action) or mechanically (by fitting an additional mechanical inter-manual coupler). This will again be considered and decided during the process of detailed design.

The key action for the Pédale additions would also have required a pneumatic touchbox. The location of this is not known; it could have been at floor level just inside the case, with lead tubing running off to the chests, or it could have been two

touchboxes of 15 notes each, fitted to the tracker runs going to each Pédale soundboard. This again is not material and will be considered and decided during the process of detailed design.

Identification of a suitable example to copy for the pneumatic key action for the Soubasse 32' / Bourdon 16' and the Solo division has proven difficult. As previously noted, Cavaillé-Coll's use of pneumatic key action was very rare, and the examples cited alongside Manchester in the Cavaillé-Coll firm's publicity material no longer exist: the 1898 organ in the Conservatoire de Musique, Nancy, was scrapped in 1971[76], and the 1889 organ in l'Église St-Gervais, Rouen, was converted to electro-pneumatic key action in 1948[77]. Research into possible surviving examples continues but has yet to bear fruit. If this continues to be the case, one possible way forward might instead be to copy a surviving contemporaneous example by another French organ builder e.g. Merklin. Another way forward might be to use the pneumatic action described in Veerkamp's *L'Orgue à Tuyaux* but there is no reference in his text to imply that this was the type used by his employer Cavaillé-Coll, and indeed the sketch in Veerkamp's book is taken from Töpfer. Yet another way forward might be to follow up the unsubstantiated Mancunian rumour that the key action for the Solo division was sub-contracted to the Manchester firm of Wadsworth.

Pneumatic key action for the Grand Orgue off-note blocks will be copied from a surviving example elsewhere.

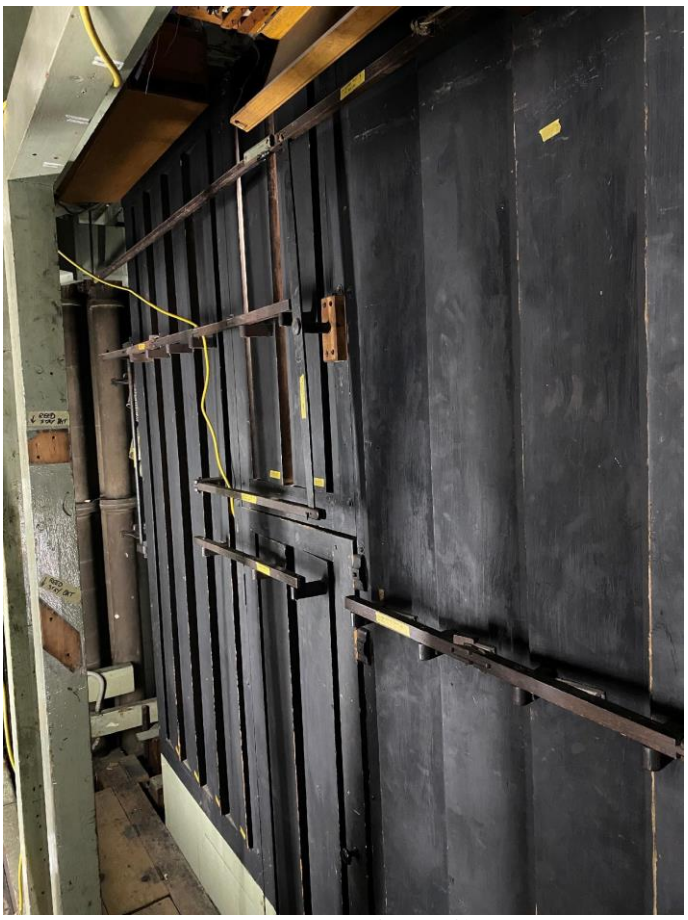
Expression boxes

Description as found before dismantling

The Positif expression box appears to have been little altered. The box has vertical shutters on three sides, all of which were operational. The shutter mechanism appeared to be original, albeit truncated at the lower part of the chamber to connect to the 1970 electro-pneumatic whiffle-tree engine.

[76] https://fr.wikipedia.org/wiki/Ensemble_Poirel, and http://www.droiteval.fr/NANCY.html, both accessed 15 February 2021

[77] Lechartier, J-J, *Les Organistes à Rouen dans les annees 1935–55*, L'Orgue Normand, No. 9, 1985, Le Havre



Front elevation of Positif box

The Récit box had been altered significantly. The Récit division is at the rear and top of the building frame. The box rises up behind a stone arch, to an astonishing internal height of 5m. In its original form, shutters on the front elevation, beneath the stone arch, were complemented by further shutters on the sides of the box at both the same height and higher up, behind the stone arch.

There would have been considerable space at upper levels of the box. The Cavaillé-Coll soundboards are set out with basses at the rear and trebles at the front. When Lewis & Co. rebuilt the instrument in 1913, the five-stop Echo division was added behind the stone arch, above the Cavaillé-Coll trebles, inside the box. The shuttered portion of the front elevation, beneath the stone arch, was removed and moved forward approx. 1m. The box was extended forwards under the arch and the original front shutters re-fixed. This extension of the box housed the 1913 Enclosed Solo division.

By 2020, all of the shutters on the side of the box had been fixed closed and boarded over. Marks are visible to show that some mechanism for the side shutters had once been installed. It is not clear, however, whether the side shutters were ever in use, or whether they had perhaps never been commissioned given their undeniably disadvantaged position.

Side (left) and front (right) of Positif expression box

Surviving Cavaillé-Coll material

The whole Positif box and mechanism appeared to be by Cavaillé-Coll with no loss of material other than the first part of the mechanism from the console to the 1970 whiffle-tree machine.

Almost all of the original Récit box survives: by removing the side panels and roof of the 1913 extension, the original form of the box will be recreated. The mechanism for the side shutters is missing, if indeed it was ever installed. The mechanism for the front shutters was original, albeit truncated at the lower part of the chamber to connect to the 1970 electro-pneumatic whiffle-tree engine.

Forwards extension of Récit box for Enclosed Solo (shutters removed)

Matters requiring further research

The design of the first part of the Positif mechanism (from the console to the remaining original mechanism) needs to be based on Cavaillé-Coll surviving examples elsewhere.

The design of the first part of the Récit mechanism (from the console to the remaining original mechanism) needs to be based on Cavaillé-Coll surviving examples elsewhere. A decision is necessary as to whether the side shutters are to be commissioned/re-commissioned. If they are to be, their mechanism can be copied from the Positif, with reference to the visible marks that remain on the Récit box.

Pipework

The earliest reference to the pitch of the pipework is at a meeting of the Organ Sub-Committee on 15 March 1876, where it was resolved that 'the pitch should be a little higher than the French Diapason Normal (the exact pitch to defined by Mr Best and Mr Joule).' French Diapason Normal had been set at A=435Hz in 1859.

Description as found before dismantling

Before dismantling, the pitch was measured at a temperature of 17.3°C. These measurements should be taken as nothing more than an indication, considering the condition of the organ: at the time of measuring, many notes of the electrical action were not functioning and the organ was suffering from severe wind-loss and a non-original wind supply. Two notes (A22 and A30) of the Principal 8' of the Positif and the Principal 16' of the Grand Orgue were measured. The results were (repeated to achieve a result close to the normal pitch) between 439.6 and 440.8 Hz. The pipework, however, shows clearly that the pitch has been lowered compared to the original pitch.

It is not clear when the pitch was lowered, nor by whom. For example, the Stentor Diapason 8' on the 1913 Lewis & Co. Enclosed Solo division had tuning slides with no tide mark, suggesting that the pitch of this pipework had not changed since 1913. That would imply that the pitch of the organ was altered either during the 1913 work or earlier. On the other hand, however, the tuning slides on the 1913 Lewis & Co. Echo division had tide marks showing that the pitch of these pipes had been flattened at some point. That would imply that the pitch change was subsequent to 1913, unless these pipes had been second-hand in 1913. Some of the pipework on the Grand Orgue e.g. Violoncelle 8' and metal basses of Flûte Harmonique 8' also exhibit tide marks beneath the slides.

It is important to note that there is no reference to changing the pitch of the organ in the suriving Lewis documentation from 1913.

Setting aside the question of which firm and at what date (or even dates) the pitch was changed, it is clear that the work involved fitting tuning slides to the fluework.

The following photos show how the lowering of the pitch has been achieved. The tuning rolls of larger pipes were simply unrolled slightly. The original position of the roll is still visible in the material. In this unrolled position, the tuning roll is not as stable as it should be, because it is not fixed to the pipe body at the sides anymore.

unrolled tuning roll

For shorter pipes, the tuning slot of the expression was cut away, and a tuning slide was added over the pipe.

tuning slides added to shorter pipes

In some instances, pipe bodies were cut, a tuning slot soldered and a tuning slide added to lengthen the entire pipe body (e.g. the lower pipes of the Flûte Harmonique).

pipe has been cut, tuning slot soldered closed, tuning slide fitted, but note also the tide mark beneath the slide, suggesting that it is in its second position

The capped pipes were lowered by positioning the cap slightly higher on the pipe body. The original position is still visible on the pipe bodies.

Mark of original cap position

On the reeds, the shallots and tongues were manipulated, and some new slotting was introduced into some resonators. Many had the original regulators closed up. A significant proportion of the reed shallots have been pulled slightly out of the blocks, and the blocks hammered to grasp the shallots tight again.

Shallot pulled out from original position in block and packed

It is important to note the impact of the pitch change on the timbre of the pipe speech. Slightly lengthening a pipe changes the proportion (scaling) of this pipe. Of course, small changes here have a relatively small effect on the stopped pipes. With most of the open pipes, however, the tuning roll is part of the tuning slot. This means that the pipe is cut into part-way down the body, and not from the upper rim of the pipe. This has a quite different effect than if the roll began at the top edge of the pipe, since a

tuning slot, and particularly the length of the slot in relation to the diameter of the pipe, plays a very important role in influencing the sound. Lowering the pitch through extending the tuning rolls therefore alters the relation between pipe diameter and length of slot, resulting in a sound – less string-like – which was not as Cavaillé-Coll intended.

Reeds are tuned at their tuning wire, but the quality of the tone of reeds is more affected by changes in pitch than the quality of tone of flue pipes. The quality of tone of the reeds has been adapted to the new pitch by closing the voicing regulators on the pipes. This does not, however, neutralise the effect of the lower pitch completely, since the general effect of an open resonator top is different from an almost closed resonator top.

reed with closed voicing regulator

What might the original pitch have been?

The work on the flue pipes, while regrettable, was done well, the original tuning scrolls being either folded closed or cut off neatly, approximately at their original tuning point. This is useful as it gives us a point where the pitch could not have been any sharper – we thus have some sort of limit as to how sharp the organ could once have been.

When the tuning slots were provisionally restored in their original position, the result was 442.4, 444.8 and even 448 Hz.

We conducted some further tests using C25 of the 4′ Prestant and of the 16′ Principal from the Grande Orgue. The reason for choosing these were because the 4′ Prestant would always be the natural starting point, and the 16′ Principal because it still has its tuning scroll intact with clear evidence that the pitch has been flattened from its original position.

By manipulating this tuning scroll and sharpening the tuning slide of the Prestant we were able to test how sharp we were able to push both pipes before we reached the point where the tuning scroll had been cut off the Prestant and the point where the 16′ would have needed pressure to take the tuning scroll to a point sharper than it would have been. From these experiments we have been able to ascertain that the original pitch could not have been higher than approximately A=449Hz @ 64°F.

The pitch of the organ before dismantling was around 442.2 Hz at 68°F). A judgement as to the original pitch will be made when we have the pipes in our workshop, but at present it would appear to a reasonable working theory that it was somewhere between 444.4 Hz and 446.8 Hz at 20°C, correlating to Broadwood's medium piano pitch.

However, the influence of Best and Joule should not be discounted. In 1860, a copy of Broadwood's 'medium' tuning fork – around 445.5Hz (or 445.9) – was made for the Society of Arts, who, in turn, produced their own sharper tuning fork in the same year at 448.4Hz. The 444Hz medium pitch is sometimes known as 'Old Royal Society of Arts Pitch', or 'RSA Pitch', even though it was not a Royal institution at that time. Despite attempts in the 1860s to establish an absolute, by 1878, Society of Arts pitch was revised fractionally upwards to 445.1Hz. Confusion may well have been exacerbated by the production of a poor quality fork made by J.H. Griesbach for the Society to represent its pitch standard of c2=528Hz (a1=444.0Hz). This was lent to Ellis who measured it at 449.4Hz describing it as 'a poor fork … quite unfit to be a standard' and illustrates the problems associated with their manufacture.

At Glasgow Public Halls (1877), 450.6Hz was adopted by Lewis, who lent the tuning fork to Ellis for examination. Although it cannot now be confirmed, the resulting pitch appears to have been something of an error, and had been 'settled' (agreed?) by W.T. Best and Henry Smart, using a tuning fork which 'was apparently a rather sharp Society of Arts fork, and is nearly up to concert pitch.'

Given all of the above, and that the Council minutes state 'the exact pitch to be defined by Mr Best and Mr Joule', it might be assumed that the pitch was a little sharper than Broadwood's Medium. [78]

[78] McVicker, W, 'Prevarication over pitch', unpublished; see also Ellis, AJ 'On the Measurement & Settlement of Musical Pitch', *Journal of the Society of Arts* (London: May, 1877); 'On the History of Musical

Cavaillé-Coll's practice of working to strict principles may also help us. We are aware of one curious process about the pipe-making process in his workshop. In particular, the proportions of the tuning slots were determined according to an ingenious method. The metal sheets from which the pipes were made were measured out according to the exact wavelength which corresponds to the frequency of the chosen pitch. The actual pipe length (always shorter than the calculated wavelength) was then marked off on the sheet with a compass (wavelength minus the pipe diameter). He would then use a divider compass set to 3/5 to mark off the position where the tuning roll begins, and other dividers to mark out the exact width and length of the tuning slot. This practice is found in his organs in Lisieux and Haarlem, and it will be very interesting to see if this can be found on the pipes in Manchester. Such evidence could provide additional information about the exact original pitch. Research in Cavaillé-Coll's workshop books may also shed some further light.

Pédale:

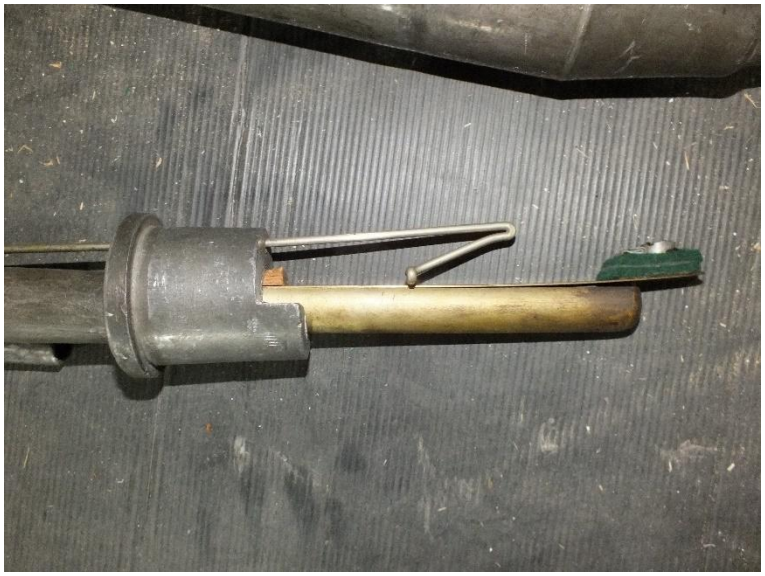
With the loss of the 1893 Cavaillé-Coll Soubasse 32′ in 1913, when it was converted to a Great Bass 16′, the 32′ flue tone provision was provided by a 'new' Soubasse 32′. This was formed by playing the Grand Orgue Bourdon 16′ (duplexed onto the Pédale as a Soubasse 16′ to avoid naming confusion with the Bourdon 16′ extension of the 1893 Soubasse 32′!) -8ve from C13–F30, and by playing the same Bourdon 16′ at pitch with a dedicated quint pipe from C1–B12. These 12 stopped wood quint pipes were added in 1913 on a new chest.

The original Soubasse 32′ / Bourdon 16′ pipes were converted to a Great Bass 16′ / Octave 8′ by removing their stoppers and re-forming the ends of the pipes. The pipes were revoiced on higher wind pressure, and were later partly painted in 1970.

Pitch', *Journal of the Society of Arts* (London: March, 1880), pp. 293–336, reprinted as Ellis, *On the History of Musical Pitch* (USA: Nabu, on-demand Public Domain Reprints, undated).

1893 Cavaillé-Coll Soubasse 32′ / Bourdon 16′ C# side pipes, re-made as Great Bass 16′ / Octave 8′ 1913 by Lewis & Co., part-painted gloss green 1970 by Jardine & Co.

The 1877 Bombarde 16′ / Trompette 8′ rank was also revoiced on higher wind pressure in 1913 when it was extended down to 32′. The wooden 32′ basses did not match the tonality of the 1877 material.



Non-original load applied to Pédale reed tongue

Collapsing Bombarde resonators

The 1877 Contrebasse 16′ / Flûte basse 8′ rank remained on its original 1877 soundboards, albeit with some pipes conveyed off to the side façade returns. The voicing of this rank appears to have been unaltered other than the pitch change. The pipes were painted in 1970.

When the Pédale compass was extended to 32 notes in 1970, each rank was extended by two notes on new off-note chests.

1970 Jardine & Co. off-note chest to extend Pédale compass

All pipework and associated chests added in 1913 and 1970 has now been recycled.

Positif:

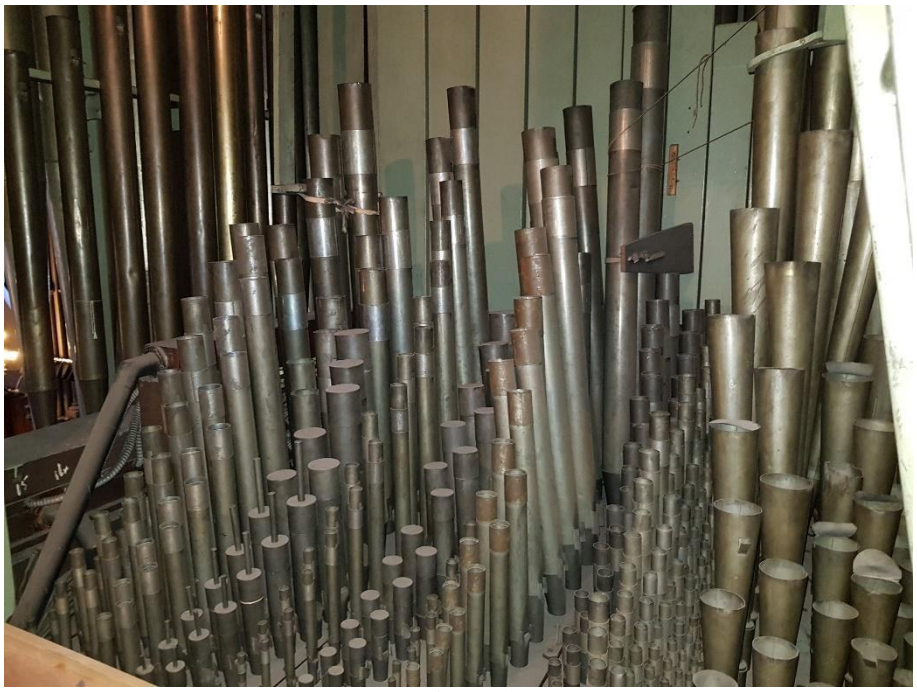
C# Positif soundboard

The pipework of the Positif division is all original to 1877. Other than the fitting of tuning slides, and the 1970 painting of the wooden pipes, it appears to be unaltered in construction. The voicing appears to have been unaltered except for the pitch change, and other aspects as noted below.

One surprising aspect is that the Unda Maris 8' is slightly louder than the Salicional 8'; this balance is to be checked in other Cavaillé-Coll instruments.

The Clarinette 8' was '[made] more characteristic' by Lewis & Co. in 1913[79]. Although the 1913 Lewis & Co. work on the Voix Humaine 8' was described as 'carefully clean and regulate', Clutton later wrote regarding both stops that 'The clarinette and vox humana were both unsatisfactory in the original organ, and were entirely recast to their great advantage, as they are now quite good examples of their species.'[80] The means of restoring these stops is to be concluded after more detailed examination of these pipes and unaltered examples elsewhere.

Grand Orgue:



C# side of Grand Orgue

[79] BOA, Lewis & Co., shop book 4: pp. 83–85, register J (microfilm 84), also collated in McVicker/Thistlethwaite, op. cit.

[80] Clutton, C, *The Organ of Manchester Town Hall*, The Organ, October 1930

Grand Orgue C# off-note block for Bourdon 16', Bourdon 8' and Flûte Harmonique 8', every surface coated with 1970 green gloss paint

The pipework of the Grand Orgue division is all original to 1877. Other than the fitting of tuning slides, and the 1970 painting of the wooden pipes, it appears to be unaltered in construction. The voicing appears to have been unaltered except for the pitch change, and other aspects as noted below.

The principal chorus on the Grand Orgue has perhaps been the most altered tonality in the instrument, due to work carried out in the Lewis & Co. rebuild of 1913. The Lewis firm proposed only modest change – 'revoice' the Violoncelle 8' and 'improve tone and regulation' of the three reeds[81]. Elsewhere, however, the work was described as being more interventionist, intended 'to eliminate the gamba sonority[82]'. Referring to the work on the Diapason 8' in 1913, Clutton wrote in 1930 'I understand that the power was considerably increased…[83]'.

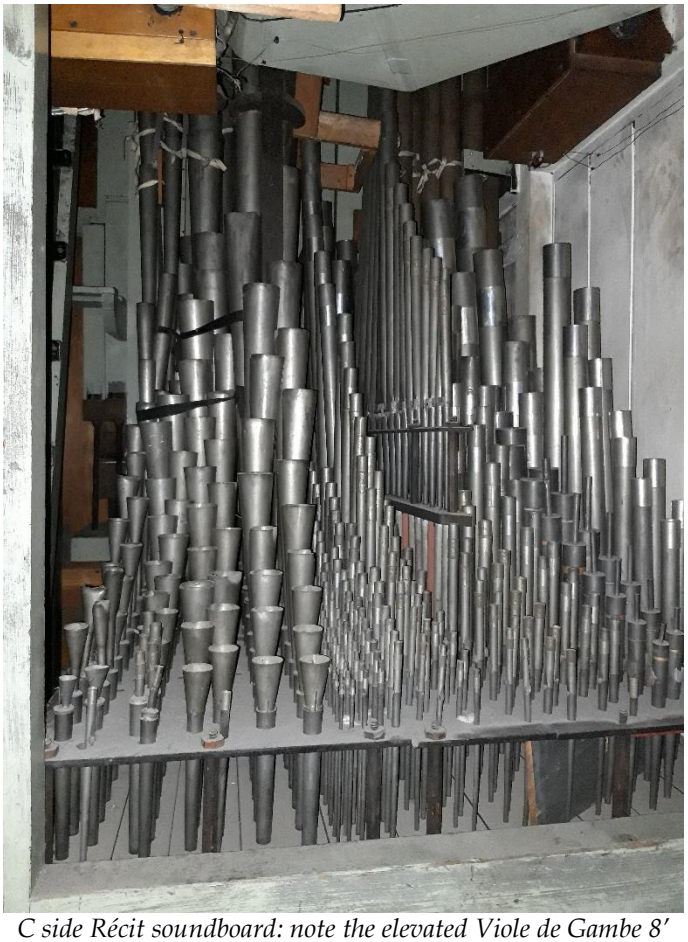
The balance of the principal chorus, particularly the strength of the Diapason 8' and Violoncelle 8', is likely to have been distorted; these stops certainly seem too loud. The means of restoring the relative balance of the whole Grand Orgue flue chorus is to be

[81] Lewis & Co. letter book, Nov 1910 to April 1911, pp. 192–194
[82] Organists' Quarterly Record, July 1916, pp. xvi–xviii
[83] Clutton, C, *The Organ of Manchester Town Hall*, The Organ, October 1930

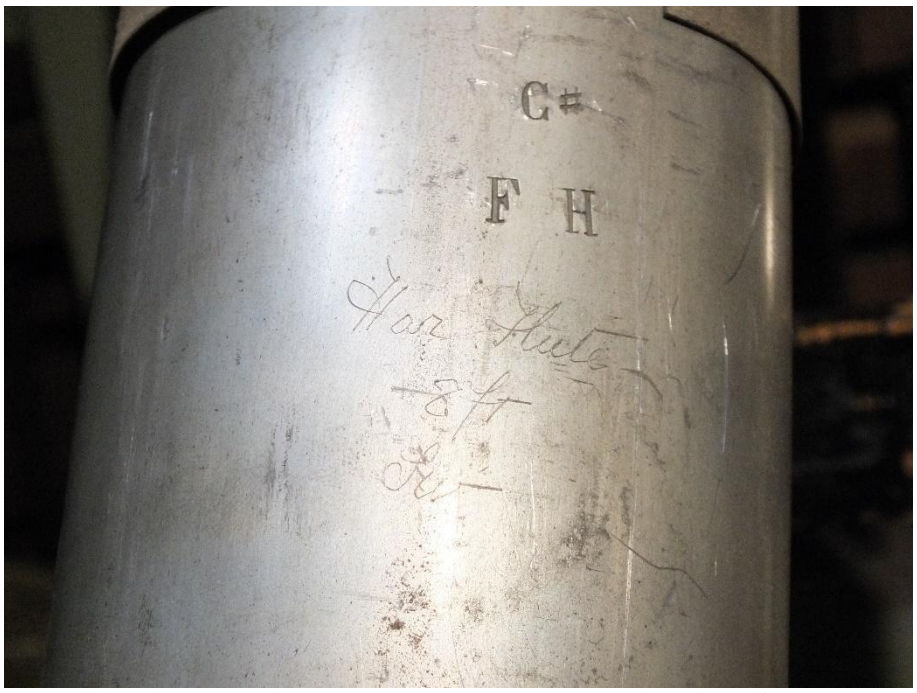
concluded after more detailed examination of these pipes and unaltered examples elsewhere.

The reeds have all been fitted with loads. The means of restoring these pipes is to be concluded after more detailed examination of these pipes and unaltered examples elsewhere.

Récit:



C side Récit soundboard: note the elevated Viole de Gambe 8′



1877 Cavaillé-Coll stamp and 1913 Lewis & Co. engraving on the Récit Flûte Harmonique 8'

The pipework of the Récit division is all original to 1877. Other than the fitting of tuning slides, and the 1970 painting of the wooden pipes, it appears to be unaltered in construction. The voicing appears to have been unaltered except for the pitch change, and other aspects as noted below.

Lewis & Co. proposed the following adjustments:

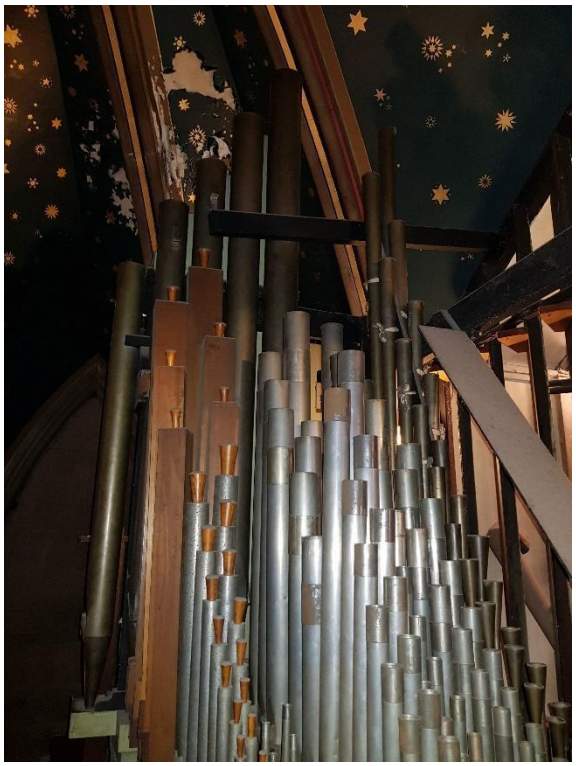
- Viole de Gambe 8' – 'make more fiery'
- Voix Celeste 8' – 'make more fiery'
- Trompette 8' – 'to be fuller and more horn like'
- Basson Hautbois 8' – 'to be altered as little as possible'

The means of restoring these stops, and the other reeds which have been loaded, is to be concluded after more detailed examination of these pipes and unaltered examples elsewhere.

Solo:

1970 Nazard 2⅔′ basses on off-note chest at treble side of Récit box

1893 Cavaillé-Coll Tuba mirabilis 8′ and Clairon 4′ on 1913 Lewis & Co. soundboard immediately behind façade



Solo pipework

The pipework of the Solo division dated from a mixture of 1893, 1913 and 1970.

The six-stop Solo division added by Cavaillé-Coll in 1893 was as follows:

Diapason 8′
Flûte harmonique 8′
Flûte octaviante 4′
Tuba mirabilis 8′
Basson musette 8′
Clairon 4′

In 1913, Lewis & Co. removed the Tuba mirabilis 8′ and Clairon 4′ to a new two-stop slider soundboard, and revoiced them on higher pressure as a Tuba 8′ and Tuba Clarion 4′. A new Rohr Gedact 8′ was added on one of the two newly spare slides on the Solo soundboard; the other slide remained spare.

In 1970, a new Nazard $2^2/_3$′ was added by Jardine & Co. to the other spare slide; the basses were placed on a new direct-electric chest.

The Diapason 8′, Flûte harmonique 8′, Flûte octaviante 4′ and Basson musette 8′ all appear to be unaltered in construction other than the fitting of tuning slides to the open flues, and the 1970 painting of the wooden pipes. The voicing appears to have been unaltered except for the pitch change.

The means of restoring these stops is to be concluded after more detailed examination of these pipes and unaltered examples elsewhere.

Untangling the history of the Tuba mirabilis 8′ and Clairon 4′ will be a challenge. We know that Cavaillé-Coll reported[84] on completion of the work that he had taken the decision to place these two stops en chamade.

Other than remarking that ‘the fixing of these stops en chamade is very difficult, and considerably increases the work’ he does not go into detail about how these two stops were winded or planted. He later describes that ‘there has been made a sound-board, …, prepared to receive the stops of this new manual’. The absence of any mention of other mechanisms might be taken to imply the absence of the same.

Further detail (or confusion!) is afforded by a review by Kendrick Pyne of the 1893 additions.

> *In making this improvement on the original scheme, M. Cavaillé-Coll showed a disinterested desire to make the instrument in every way worthy of the Town Hall and the Manchester Corporation, for he not only gave an additional register Diapason, but he placed the 4ft and 8ft Tubas in a horizontal position, "chamade". This entailed a*

[84] Letter from Cavaillé-Coll to Manchester Corporation, 12 April 1893

great and additional expense – 1st, a second sound-board; 2nd, elaborate machinery to suspend the pipes and hold them in position[85].

Kendrick Pyne's technical knowledge is not known: did he really mean a second sound-board or chest (actioned from the main Solo soundboard), or perhaps simply a conveyance block?

These two stops must presumably have been either:

- Fed from and mounted on the slider soundboard; or
- Fed from the slider soundboard but the wind conveyed to a conveyance block; or
- Mounted on a separate chest, actioned from the slider soundboard or the Solo underaction; or
- Mounted on a separate slider soundboard, actioned from either the slider soundboard or the Solo underaction

Soundboard positions for Clairon 4′ (lower) and Tuba mirabilis 8′ (upper) on Solo soundboard, showing veneers of 1970 and 1913 on these two upperboards.

In subsequent workshop investigation, we have found that the 1913 (Rohr Gedact 8′ on former Clairon 4′ upperboard) and 1970 (Nazard $2^2/_3$′ on former Tuba mirabilis 8′ upperboard) veneers had been glued to the original upperboards below. We cut the veneers off using a bandsaw to remove the majority of the veneers in one piece. A plane was then used to thin the remaining portion, before use of a slightly damp hot rag to loosen the animal glue before a chisel could be used to lift off the last remnants.

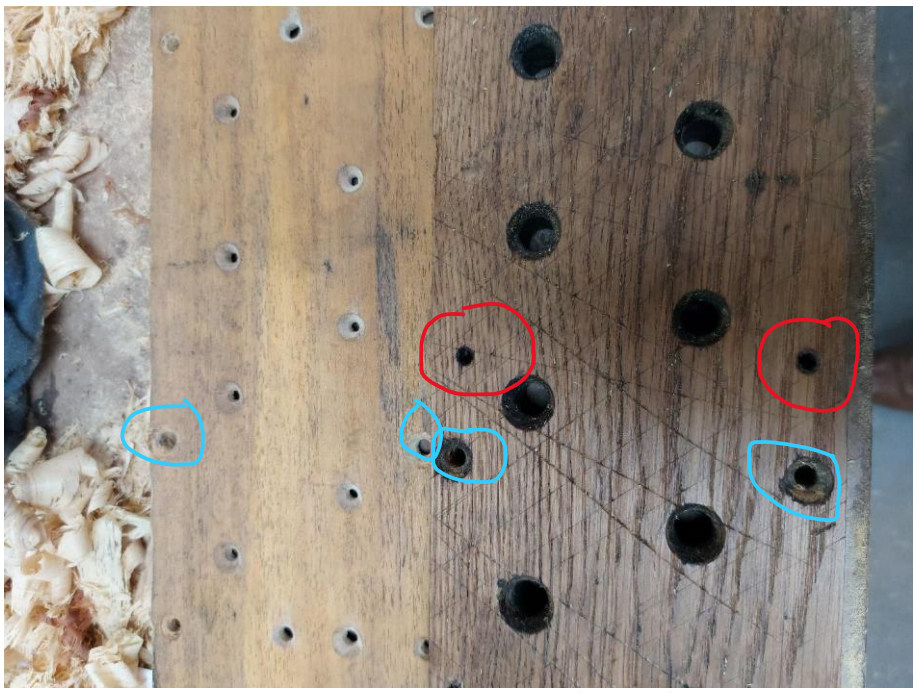
[85] Letter from Kendrick Pyne to Manchester Corporation, 21 April 1893

Using a hot damp rag and chisel to remove the remnant veneer after cutting and planing

The original upper face of the upperboards were then revealed. This was marked by light scoring, presumably undertaken to help the glue obtain a key when the veneers were added. Two important features were identified:

- all of the wind holes were chamfered for pipe feet, rather than prepared for conveyancing.
- numerous veneer screw holes that did not correspond with the removed veneers, which suggests that another veneer had previously been attached to each upperboard. NB no screws were used for the most recent veneers.

Scoring evident for glue keying
Also clear that all holes chamfered for pipe feet



Evidence of previous veneer: the two non-pipe holes in the veneer (left) were for upperboard screws and are matched by the chamfered screw holes in the original upperboard top face (right) – both sets marked in blue. However, note the pair of non-pipe holes above these in the upperboard (marked in red) which are not matched in the veneer: we believe these to be screw holes from a previous veneer.

The width and set-out of both upperboards is very narrow, but not – just – too narrow for vertical planting. However, we know from the 'chamade' description that the pipes were never planted vertically.

The reference of Kendrick Pyne to 'a second soundboard' suggests therefore that the pipes may have been wholly horizontal, such as at the Sacré-Cœur, Paris.

Sacré-Cœur, Paris

A further pointer towards this form is that Kendrick Pyne referred to 'elaborate machinery to suspend the pipes and hold them in position'.

Assuming that the pipes were indeed wholly horizontal in something like the 'Sacré-Cœur' form, how did the wind get from the soundboard to the pipes? The chamfered pipe holes on the upperboards are equally unsuited to the fixing of lead tubing (for an actioned-off chest) or lead conveyancing, which is perhaps why there is evidence of a previous veneer. The use of earlier veneers points towards either this soundboard being a re-purposed stock item – as Cavaillé-Coll was known to have done – or to the upperboards having been made one way and then a decision made to change. We know that it was Cavaillé-Coll's decision to mount these pipes en chamade, but that decision might have been made after construction of the soundboards.

Further investigation of the pipework and building frame will be made to come to a conclusion on this matter.

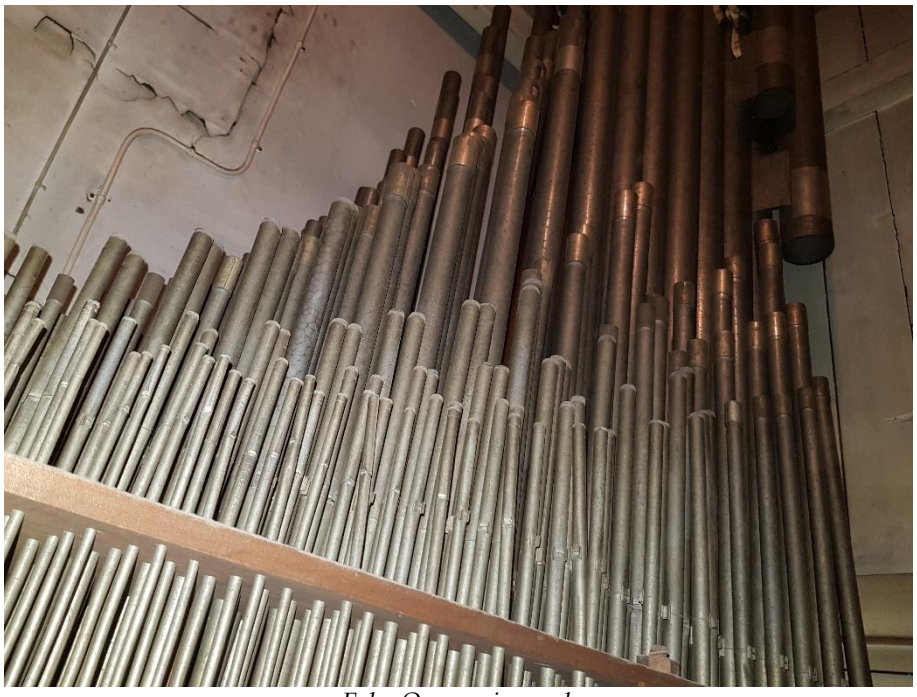
Enclosed Solo:

The pipework of the three-stop Enclosed Solo division was made new in 1913 by Lewis & Co. and has been recycled.

Leathered upper lip of 1913 Lewis & Co. Diapason Stentor 8'

Echo:

The pipework of the five-stop Echo division was made new in 1913 by Lewis & Co. and has been recycled.



Echo Organ pipework

Surviving Cavaillé-Coll material

All Cavaillé-Coll pipework, from both 1877 and 1893 survives today with minimal to modest alteration that can be reversed.

Matters requiring further research

Reinstatement of the original balances and voicing of the pipework will be undertaken by comparison with surviving examples elsewhere. Aside from the careful cleaning and structural repair that all of the pipework will be given as necessary (including recreation of the original tuning scrolls), reconstruction work will be required to convert the Great Bass 16′ / Octave 8′ back to their original form of Soubasse 32′ / Bourdon 16′, and to return the resonators of the Tuba mirabilis 8′ and Clairon 4′ to their original form, whatever that is concluded to be, in due course.

OVERALL SUMMARY OF SURVIVING CAVAILLÉ-COLL MATERIAL

- Casework (original to 1877 albeit not by Cavaillé-Coll), with slight alteration and addition
- Almost all of the 1877 and 1893 Cavaillé-Coll building frames, with minor alterations and losses.
- Reservoirs and concertina trunks from 1877 and 1893. Possible re-used material in Enclosed Solo reservoir.
- Wind trunking, slightly altered.
- Pédale soundboards x2, albeit significantly cut along their length to reduce their depth
- Positif soundboards x2, appear intact other than removal of the jeux de combinaison ventils, and possibility of concussions having been plated over
- Grand Orgue soundboards x4, appear intact other than the removal of mechanism for jeux de combinaison ventil, and possibility of concussions having been plated over
- Récit soundboards x2, appear intact other than removal of mechanism for jeux de combinaison ventil, and possibility of concussions having been plated over
- Solo soundboard x1, appears intact
- off-note blocks for Contrebasse 16′
- chests for notes F#7–F42 of Soubasse 32′ / Bourdon 16′, though severely cut and altered
- off-note blocks for Salicional 8′, Cor de Nuit 8′ and Principal 8′
- off-note blocks for Bourdon 16′, Bourdon 8′ and Flûte Harmonique 8′, with modest alteration
- off-note blocks for Diapason 8′, Gambe 8′, Violoncelle 8′ and Principal 16′
- off-note blocks for Bourdon 16′, Diapason 8′ and Flûte Harmonique 8′
- off-note blocks for Diapason 8′ and Flûte Harmonique 8′, with modest alteration
- All soundboard pallets, albeit some having been cut.
- Possibly some cross-trackering and associated square beams.
- Façade pipe relay action boxes
- Positif box and mechanism appeared to be by Cavaillé-Coll other than the first part of the mechanism.
- Récit box and mechanism, with some minor alteration and losses.
- All Cavaillé-Coll pipework, from both 1877 and 1893, with minimal to modest alteration that can be reversed.

SUMMARY OF AREAS REQUIRING RESEARCH

- Casework staircases and side panelling
- Location of access hatch(es) to top level of organ
- Original position of Solo soundboard
- Wind trunking geometry and schematic as it was in 1893.
- Tremulants
- Provenance of concussions fitted to the Grand Orgue treble.
- Provenance and future purpose of 'other' reservoir in the chambre de la soufflerie.
- Design of console.
- Jeux de combinaison ventils
- Plated-over panels on underside of soundboards
- Design of mechanical stop action
- Design of pneumatic stop action
- Alterations to off-note blocks need to be ascertained and reversed
- Detail of mechanical key action: Barker machines, squares, trackers, rollerboards
- Pneumatic key action
- First stages of expression box mechanisms
- Side shutters of Récit box
- Reinstatement of the original balances and voicing of the pipework, including reconstruction work to convert the Great Bass 16' / Octave 8' back to their original form of Soubasse 32' / Bourdon 16', and to return the resonators of the Tuba mirabilis 8' and Clairon 4' to their original form, whatever that is eventually concluded to be.

HISTORICAL RECONSTRUCTION

Brief

The brief given by Manchester City Council for the present work is to return the organ as closely as possible to its 1893 condition tonally and mechanically. This will involve the restoration to original condition of the Cavaillé-Coll material that has survived (e.g. soundboards, pipework, reservoirs, among much else), and the new construction in replica style of those parts that have not (e.g. Barker machines, mechanical key action, console, among much else).

The brief includes three exceptions to the 'return to 1893' philosophy:

- Taking the opportunity presented by the complete dismantling of the organ (which Cavaillé-Coll did not have in 1893) to relocate the Soubasse 32' / Bourdon 16' rank such that the original staircases either side of the case (lost in 1877) can be re-constructed.
- Extending slightly, if possible, the distance between the detached console and the casework, to facilitate improved teaching / demonstration access to the console area.
- The wind-raising apparatus will be a new electric blower, rather than a hydraulic engine.

Design development

- *What design is needed?*

  Detailed manufacturing drawings will be necessary for all components to be made new.

  Detailed technique documents will be drawn up for the restoration of all surviving Cavaillé-Coll material.

  The extension of the chambre de la soufflerie is no longer needed, and is to be removed as part of the *Our Town Hall* project. Although occasional access through the end doors of the chambre de la soufflerie will still be possible, with some dismantling of ventilation ductwork, it is intended that the main access for maintenance will be via a new personnel hatch created from the floor above.

- *How will the design be developed?*

  The design will be developed using the evidence from the organ as a starting point. For example, we are confident that we now understand (from dismantling evidence) the layout of the mechanical action runs, but detail is needed on the precise dimensions and construction of square beams,

rollerboards, trackers. Where such further detail is required, it will be obtained from the following sources:

- surviving Cavaillé-Coll documentation regarding the Manchester instrument.

Nothing is thought to exist beyond: i) Cavaillé-Coll's copies of the contracts for the original 1877 construction; ii) details and dimensions of the soundboards from the Cavaillé-Coll shop book; and iii) correspondence (from Cavaillé-Coll, WT Best, B St Joule, K Pyne and A Guilmant) that was recorded in the minutes of Manchester Corporation for both the 1877 and 1893 work[86].

- surviving Cavaillé-Coll instruments of commensurate date and size

There are, thankfully, many of Cavaillé-Coll's instruments that survive in original or near-original condition, so there is ample choice for research visits. In consultation with local expertise, a short-list will be drawn up based on the research needs.

- surviving instruments by similar builders of commensurate date and size

In the event that no surviving example of Cavaillé-Coll pneumatic key action can be found, consideration will be given to modelling this on the work of other French firms operating during the period, such as Merklin. This aspect of the instrument is likely to be the only part for which there may not be any suitable surviving Cavaillé-Coll documentation or examples.

Workshop restoration, reconstruction and installation

After completion of the design development, the restoration and reconstruction of the organ will be undertaken in the workshops of Nicholson & Co. and Flentrop, leading to an eventual trial assembly of the reconstructed instrument before eventual installation and commissioning in the organ's original home in Manchester.

[86] Collated in McVicker/Thistlethwaite, op. cit.

APPENDIX A – SPECIFICATIONS

1877

Aristide Cavaillé-Coll, Paris, 1877

PÉDALE (C to f¹)		Feet	Pipes	Remarks
	Jeux de Fond			
1.	Contrebasse	16	30	
2.	Soubasse *from 9*	16	-	
3.	Flûte basse *ext from 1*	8	12	
4.	Violoncelle *from 12*	8	-	
5.	Bourdon doux *from 14*	8	-	
	Jeux de Combinaison			
6.	Bombarde	16	30	
7.	Trompette *ext from 6*	8	12	

Tirasse du Grand Orgue *Tirasse du Positif* *Tirasse du Récit*

GRAND ORGUE (C to c⁴)		Feet	Pipes	Remarks
	Jeux de Fond			
8.	Principal	16	66	C1–E5 have two pipes each: Bourdon 16′ and Principal 8′;
9.	Bourdon	16	61	
10.	Diapason	8	61	
11.	Flûte harmonique	8	61	
12.	Violoncelle	8	61	
13.	Gambe	8	61	
14.	Bourdon	8	61	
15.	Prestant	4	61	
	Jeux de Combinaison			
16.	Quint	$2^2/_3$	61	
17.	Doublette	2	61	
18.	Plein-jeu *15.19.22.26.29.33.36*	VII	427	
19.	Basson	16	61	
20.	Trompette	8	61	
21.	Clairon	4	61	

Octaves graves

Copula du Positif au Grand Orgue *Copula du Récit au Grand Orgue*

POSITIF EXPRESSIF (C to c⁴)		Feet	Pipes	Remarks
	Jeux de Fond			
22.	Principal	8	61	
23.	Cor de nuit	8	61	
24.	Salicional	8	61	
25.	Unda maris	8	49	from C13
26.	Flûte douce	4	61	
27.	Octavin	2	61	
	Jeux de Combinaison			
28.	Carillon *12.17.22*	I–III	145	
29.	Trompette	8	61	
30.	Clarinette	8	61	
31.	Voix-humaine	8	61	

Tremolo

Octaves graves

Copula du Récit au Positif

RÉCIT EXPRESSIF (C to c⁴)		Feet	Pipes	Remarks
	Jeux de Fond			
32.	Bourdon	16	61	
33.	Diapason	8	61	
34.	Flûte harmonique	8	61	
35.	Viole de gambe	8	61	
36.	Voix céleste	8	61	
37.	Prestant	4	61	
38.	Flûte octaviante	4	61	
	Jeux de Combinaison			
39.	Plein-Jeu	III–V	c.280	
40.	Basson	16	61	
41.	Trompette	8	61	
42.	Basson hautbois	8	61	
43.	Clairon	4	61	

Tremolo

Octaves graves

Actions

Positif Expressif, Grand Orgue and Récit Expressif :
mechanical, each with Barker Lever assistance
Pédale: mechanical
Couplers: mechanical
Sliders: mechanical

Accessories

Balanced expression pedals to Positif Expressif and Récit Expressif

Pédales de Combinaison (left to right)

Effects d'Orage
Tirasse du Grand Orgue
Octaves graves Grand Orgue
Anches Pédale
Combinaison du Grand Orgue
Combinaison du Positif
Combinaison du Récit
Copula Grand Orgue pneumatique
Copula du Positif au Grand Orgue
Copula du Récit au Grand Orgue
Copula du Récit au Positif
Tremolo du Positif Expressif
Tremolo de Récit Expressif

1893

Aristide Cavaillé-Coll, Paris, 1877 and 1893

[alterations from previous spec highlighted in red]

PÉDALE (C to f¹)		Feet	Pipes	Remarks
	Jeux de Fond			
1.	Soubasse	32	30	
2.	Contrebasse	16	30	
3.	Soubasse *from 9*	16	-	
4.	Bourdon *ext from 1*	16	12	
5.	Flûte basse *ext from 2*	8	12	
6.	Violoncelle *from 14*	8	-	
7.	Bourdon doux *from 16*	8	-	
	Jeux de Combinaison			
8.	Bombarde	16	30	
9.	Trompette *ext from 8*	8	12	

Tirasse du Grand Orgue *Tirasse du Positif* *Tirasse du Récit*

GRAND ORGUE (C to c⁴)		Feet	Pipes	Remarks
	Jeux de Fond			
10.	Principal	16	66	C1–E5 have two pipes each: Bourdon 16′ and Principal 8′;
11.	Bourdon	16	61	
12.	Diapason	8	61	
13.	Flûte harmonique	8	61	
14.	Violoncelle	8	61	
15.	Gambe	8	61	
16.	Bourdon	8	61	
17.	Prestant	4	61	
	Jeux de Combinaison			
18.	Quint	$2^2/_3$	61	
19.	Doublette	2	61	
20.	Plein-jeu *15.19.22.26.29.33.36*	VII	427	
21.	Basson	16	61	
22.	Trompette	8	61	
23.	Clairon	4	61	

Octaves graves

Copula du Positif au Grand Orgue *Copula du Récit au Grand Orgue*
Copula du Solo au Grand Orgue

POSITIF EXPRESSIF (C to c⁴)		Feet	Pipes	Remarks
	Jeux de Fond			
24.	Principal	8	61	
25.	Cor de nuit	8	61	
26.	Salicional	8	61	
27.	Unda maris	8	49	from C13
28.	Flûte douce	4	61	
29.	Octavin	2	61	
	Jeux de Combinaison			
30.	Carillon *12.17.22*	I–III	145	
31.	Trompette	8	61	
32.	Clarinette	8	61	
33.	Voix-humaine	8	61	

Tremolo

Octaves graves

Copula du Récit au Positif

RÉCIT EXPRESSIF (C to c⁴)		Feet	Pipes	Remarks
	Jeux de Fond			
34.	Bourdon	16	61	
35.	Diapason	8	61	
36.	Flûte harmonique	8	61	
37.	Viole de gambe	8	61	
38.	Voix céleste	8	61	
39.	Prestant	4	61	
40.	Flûte octaviante	4	61	
	Jeux de Combinaison			
41.	Plein-Jeu	III–V	c.280	
42.	Basson	16	61	
43.	Trompette	8	61	
44.	Basson hautbois	8	61	
45.	Clairon	4	61	

Tremolo

Octaves graves

SOLO (C to c⁴)		Feet	Pipes	Remarks
46.	Diapason	8	61	
47.	Flûte harmonique	8	61	
48.	Flûte octaviante	4	61	
49.	Tuba mirabilis	8	61	
50.	Basson musette	8	61	
51.	Clairon	4	61	

Actions

Positif Expressif, Grand Orgue and Récit Expressif :
mechanical, each with Barker Lever assistance
Solo: charge pneumatic
Pédale: mechanical, except Soubasse 32′ / Bourdon 16′ rank, which was charge pneumatic
Couplers: mechanical
Sliders: mechanical, except Solo, which was charge pneumatic

Accessories

Balanced expression pedals to Positif Expressif and Récit Expressif

Appel du Solo (two drawstops acting on same combination)

Pédales de Combinaison (left to right)

Effects d'Orage
Tirasse du Grand Orgue
Anches Pédale
Combinaison du Grand Orgue
Combinaison du Positif
Combinaison du Récit
Copula du Solo au Grand Orgue
Copula Grand Orgue pneumatique
Copula du Positif au Grand Orgue
Copula du Récit au Grand Orgue
Copula du Récit au Positif
Tremolo du Positif Expressif
Tremolo de Récit Expressif

1912

Aristide Cavaillé-Coll, Paris, 1877 and 1893
Lewis & Co., London, 1913

[alterations from previous spec highlighted in red; changes in nomenclature only are not highlighted]

PEDAL (C to f[1])		Feet	Pipes	Remarks
1.	Sub-Bass *ext from 5*	32	12	C1–B12 play 5 at pitch with dedicated quint pipe; C13+ play 5 -8ve
2.	Great Bass	16	30	1893 Soubasse 32′ with stoppers removed, revoiced on higher pressure
3.	Contra Bass	16	30	
4.	Principal *from 23*	16	-	newly made available on Pedal
5.	Bourdon *from 24*	16	-	
6.	Octave *ext from 2*	8	12	1893 Bourdon 16′ extension of Soubasse 32′, with stoppers removed, revoiced on higher pressure
7.	Diapason *from 26*	8	-	
8.	Flute bass *ext from 3*	8	12	
9.	Bourdon *from 28*	8	-	
10.	Contre Bombarde *ext from 11*	32	12	new
11.	Bombarde	16	30	
12.	Trompette *ext from 11*	8	12	

Choir to Pedal *Great to Pedal* *Swell to Pedal* *Solo to Pedal* *Echo to Pedal*

CHOIR (C to c[4])		Feet	Pipes	Remarks
13.	Principal	8	61	
14.	Cor de nuit	8	61	
15.	Salicional	8	61	
16.	Unda Maris	8	49	from C13
17.	Flûte douce	4	61	
18.	Octavin	2	61	
19.	Carillon *12.17.22*	I–III	145	
20.	Trompette	8	61	
21.	Clarinette	8	61	
22.	Voix-humaine	8	61	

Tremulant

Sub Octave *Unison Off* *Octave*

Swell to Choir

GREAT (C to c^4)		Feet	Pipes	Remarks
23.	Principal	16	66	C1–E5 have two pipes each: Bourdon 16′ and Principal 8′;
24.	Bourdon	16	61	
25.	Diapason No. 1	8	61	
26.	Diapason No. 2	8	61	
27.	Flûte Harmonique	8	61	
28.	Bourdon	8	61	
29.	Gambe	8	61	
30.	Prestant	4	61	
31.	Quint	$2^2/_3$	61	
32.	Doublette	2	61	
33.	Plein-jeu *15.19.22.26.29.33.36*	VII	427	
34.	Basson	16	61	
35.	Trompette	8	61	
36.	Clairon	4	61	

Choir to Great *Swell to Great*

SWELL (C to c^4)		Feet	Pipes	Remarks
37.	Bourdon	16	61	
38.	Diapason	8	61	
39.	Flûte Harmonique	8	61	
40.	Viole de Gambe	8	61	
41.	Voix céleste	8	61	
42.	Prestant	4	61	
43.	Flûte octaviante	4	61	
44.	Plein-Jeu	III–V	c.280	
45.	Basson	16	61	
46.	Trompette	8	61	
47.	Basson hautbois	8	61	
48.	Clairon	4	61	

Tremulant

Sub Octave *Unison Off* *Octave*

Solo to Swell *Solo extension to Swell* *Echo to Swell*

SOLO (C to c⁴)		Feet	Pipes	Remarks
49.	Diapason stentor*	8	61	new
50.	Diapason	8	61	
51.	Flûte harmonique	8	61	
52.	Rohr Gedact	8	61	new
53.	Flûte harmonique	4	61	
54.	Tuba	8	61	
55.	Tromba*	8	61	new
56.	Musette	8	61	
57.	Grosse Clarinette*	8	61	new
56.	Tuba Clairon	4	61	

Stops marked * enclosed in Swell box

Sub Octave *Octave*

ECHO (C to c⁴)		Feet	Pipes	Remarks
57.	Viole d'Orchestre	8	61	new
58.	Echo Dulciana	8	61	new
59.	Violes Célestes	8	49	from C13; new
60.	Philomel	8	61	new
61.	Viole Cornet	V	c.250	new
62.	Glockenspiel	-	-	new; 49 notes, steel bars with resonators

Sub Octave *Octave*

Actions

Charge pneumatic throughout, except for mechanical manual-to-pedal coupling

Accessories (as recorded in 1930 after 1928 changes)

Balanced expression pedals to Choir and Swell Organs
General crescendo pedal (excludes stops 16, 21, 22, 41, 59 and 62).
6 thumb pistons to Choir Organ
6 thumb pistons to Great Organ
6 thumb pistons to Swell Organ
4 thumb pistons to Solo Organ
4 toe levers to Pedal Organ
Reversible thumb piston: *Great to Pedal*
Reversible toe levers: *Swell to Choir, Choir to Great, Swell to Great*
Combination couplers: *Great pistons to pedal combinations, Swell pistons to pedal combinations*
Other toe levers: Thunder pedal, Glockenspiel sostenuto, Solo to Great sforzando, Tremulant to Choir, Tremulant to Swell
Ammeter

1970

Aristide Cavaillé-Coll, Paris, 1877 and 1893
Lewis & Co., London, 1913
Jardine & Co., Manchester, 1970

[alterations from previous spec highlighted in red; changes in nomenclature only are not highlighted]

PEDAL (C to g¹)		**Feet**	**Pipes**	**Remarks**
1.	Soubasse *ext from 5*	32	12	C1–B12 play 5 at pitch with dedicated quint pipe; C13+ play 5 -8ve
2.	Great Bass	16	30	
3.	Contra Bass	16	30	
4.	Principal *from 23*	16	2	compass extended by 2 notes
5.	Bourdon *from 24*	16	2	compass extended by 2 notes
6.	Octave *ext from 2*	8	14	compass extended by 2 notes
7.	Diapason *from 26*	8	2	compass extended by 2 notes
8.	Flute *ext from 3*	8	14	compass extended by 2 notes
9.	Bourdon *from 28*	8	2	compass extended by 2 notes
10.	Contra Bombarde *ext from 11*	32	12	
11.	Bombarde	16	30	
12.	Trompette *ext from 11*	8	14	compass extended by 2 notes

Choir to Pedal *Great to Pedal* *Swell to Pedal* *Solo to Pedal* *Echo to Pedal*

CHOIR (C to c⁴)		**Feet**	**Pipes**	**Remarks**
13.	Principal	8	61	
14.	Cor de Nuit	8	61	
15.	Salicional	8	61	
16.	Unda Maris	8	49	from C13
17.	Flûte Douce	4	61	
18.	Octavin	2	61	
19.	Carillon *12.17.22*	I–III	145	
20.	Trompette	8	61	
21.	Clarinette	8	61	
22.	Voix Humaine	8	61	

Tremulant

Sub Octave *Unison Off* *Octave*

Swell to Choir

GREAT (C to c^4)		Feet	Pipes	Remarks
23.	Principal	16	66	C1–E5 have two pipes each: Bourdon 16′ and Principal 8′;
24.	Bourdon	16	61	
25.	Diapason I	8	61	
26.	Diapason II	8	61	
27.	Flûte Harmonique	8	61	
28.	Bourdon	8	61	
29.	Gambe	8	61	
30.	Prestant	4	61	
31.	Quinte	$2^2/_3$	61	
32.	Doublette	2	61	
33.	Plein Jeu *15.19.22.26.29.33.36*	VII	427	
34.	Basson	16	61	
35.	Trompette	8	61	
36.	Clairon	4	61	

Choir to Great *Swell to Great*

SWELL (C to c^4)		Feet	Pipes	Remarks
37.	Bourdon	16	61	
38.	Diapason	8	61	
39.	Flûte Harmonique	8	61	
40.	Viole de Gambe	8	61	
41.	Voix Céleste	8	61	
42.	Prestant	4	61	
43.	Flûte Octav	4	61	
44.	Plein Jeu	III–V	c.280	
45.	Basson	16	61	
46.	Trompette	8	61	
47.	Basson Hautbois	8	61	
48.	Clairon	4	61	

Tremulant

Sub Octave *Unison Off* *Octave*

Solo to Swell *Solo Expressive to Swell* *Echo to Swell*

SOLO (C to c⁴)		Feet	Pipes	Remarks
49.	Diapason stentor*	8	61	
50.	Diapason	8	61	
51.	Flûte harmonique	8	61	
52.	Rohr Gedact	8	61	
53.	Flûte harmonique	4	61	
54.	Nazard	$2^2/_3$	61	new
55.	Tuba	8	61	
56.	Tromba*	8	61	
57.	Musette	8	61	
58.	Grosse Clarinette*	8	61	
59.	Tuba Clarion	4	61	

Stops marked * enclosed in Swell box

Sub Octave *Unison Off* *Octave*

ECHO (C to c⁴)		Feet	Pipes	Remarks
60.	Viole d'Orchestre	8	61	
61.	Echo Dulciana	8	61	
62.	Viole Céleste	8	49	from C13
63.	Philomel	8	61	
64.	Viole Cornet	V	c.250	

Sub Octave *Unison Off* *Octave*

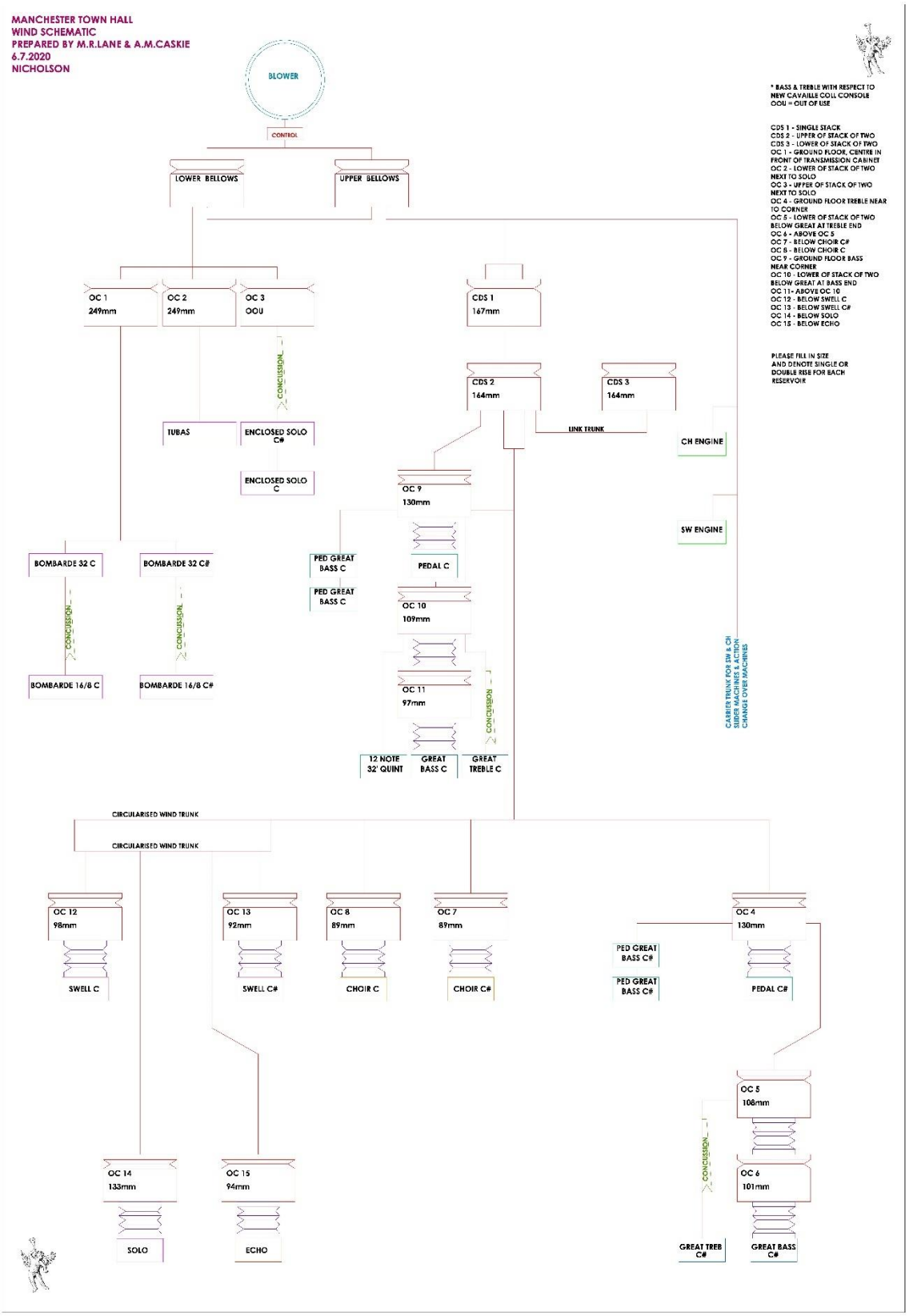
Actions

Electro-pneumatic throughout

Accessories

Balanced expression pedals to Choir and Swell Organs
General crescendo pedal
8 toe pistons to Pedal Organ
8 toe and thumb pistons to Swell Organ
8 thumb pistons to Choir Organ
8 thumb pistons to Great Organ
8 thumb pistons to Swell Organ
8 thumb pistons to Solo Organ
6 thumb pistons to Echo Organ
Setter boards for pistons
Reversible toe pistons: *Great to Pedal, Swell to Great*, Contra Bombarde
Reversible thumb pistons: *Choir to Pedal, Great to Pedal, Swell to Pedal, Solo to Pedal, Echo to Pedal, Swell to Choir, Choir to Great, Swell to Great, Solo to Great, Solo Extension to Swell*
Thumb pistons: Tubas, Reeds Off, Mixtures and Mutations Off
General cancel thumb piston
Voltmeter

Appendix B - Wind schematic in 2020



Appendix C - Bibliography

1877 [no author], *Guide to the New Town Hall (Manchester)* [brief account of the Town Hall, including the stop-list and Waterhouse's description of the organ]

1878 Axon, William E.A. (ed.), *Architectural and General Description of the Town Hall, Manchester* (Manchester:1877; reprinted 1977): see pp. 11–13.

1891 J.E.T.[aylor], 'The organ in the Town Hall, Manchester', *Musical Standard* (London), February 1891, supplement: 183-4

1893 Musical Times (London), vol. 34, 1 October 1893: p. 604 [short paragraph reporting the re-opening of the organ by J. Kendrick Pyne]

1905 Audsley, GA, *The Art of Organ Building* (London, 1905)

1914 Musical Times (London), vol. 55, 1 May 1914: p. 318 [specification and brief remarks on Lewis & Co.'s work]

1929 Cavaillé-Coll, Cécile and Emmanuel, *Aristide Cavaillé-Coll: ses origins, sa vie, ses oeuvres* (Paris, 1929)

1930 Clutton, Cecil, 'The organ at Manchester Town Hall', *The Organ* (London), Vol. 10: pp. 92–9.

1960 Coleman, Henry, 'James Kendrick Pyne', *The Organ* (London), Vol. 40: pp. 8–15, 92-8.

1977 De Motte, Margaret, *A municipal palace: a select bibliography on the construction and opening of the new Town Hall, Manchester, 1877* (Manchester): passim.

1983 Huybens, G., 'Liste des travaux executés par Aristide Cavaillé-Coll', *ISO Information* (Belgium), Vol. 23: pp. 43–55.

1984 Veerkamp, P, *L'Orgue à Tuyaux* (Paris, 1984)

1990 Thistlethwaite, Nicholas, *The making of the Victorian organ* (Cambridge): pp. 270–4, 377, 525.

1992 Cunningham, Colin and Waterhouse, Prudence, *Alfred Waterhouse 1830-1905* (Oxford): pp. 51–62.

2005 Eschbach, Jesse, *Aristide Cavaillé-Coll: a compendium of know stop lists* (Paderborn: Verlag Peter Ewers): pp. 407–409.

2005 McVicker, William, *Manchester Town Hall: A report on the Organ* (London, 2005) [commissioned by Manchester City Council]

2006 Manchester City Council, *Manchester Town Hall complex conservation plan* (Manchester), Vol. 3: 7-9, pp. 80–1 [commissioned by Manchester City Council]

2007 McVicker, William and Thistlethwaite, Nicholas, *Options Appraisal for the Restoration of the Organ in Manchester Town Hall* (London: February 2007), 119 pages [commissioned by Manchester City Council]

2008 McVicker, William and Thistlethwaite, Nicholas, *Manchester Town Hall: Restoration Options Research* (London: January 2008), 119 pages [commissioned by Manchester City Council]

Newspapers consulted:

Courier and Advertiser [Dundee]
Manchester Courier and Lancashire Advertiser
Manchester Evening News
Manchester Guardian (later known as Guardian)
Manchester Weekly Times