

THE JOHNSON & SON ORGAN
Opus 787
at

Christ Episcopal Church
Towanda, PA 18848

by
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Towanda, PA 18348 August 1995

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CHRIST EPISCOPAL CHURCH
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Introduction

In 1892 Christ Church contracted with Johnson & Son organ company of Westfield, Massachusetts to build an organ for the new church at Towanda, PA which had opened in 1891. The organ was built at the company's factory during 1892 and installed during 1893 at a cost of nearly \$3,000. A concert and dedication of the organ were held in the Fall of 1893.

The following is a detailed sketch of the building of that organ with reminiscences by Andrew S. Johnson of incidents regarding the organ as remembered by him. Some events were mentioned to him by Rowena Herrman, organist for 50 years, by Frank Bartlett, David Fortney and others who were familiar with the noble instrument.

The Johnsons: William A. (1816-1901) and his son William H. (1841-1922).

William A. Johnson was in the contracting business when he started to build organs in 1844. The first eight were parlor organs. The first church organ was Op. 9, 1848, a one manual and pedal organ built for Grace Episcopal Church in Chicopee, Massachusetts. "Apparently Mr. Johnson was endowed with a fine ear and developed a knowledge of good tonal balance and how to secure it; he did all his own voicing and tuning for some years. Moreover, he had a faculty for surrounding himself with the finest craftsmen, and these men through the years were equally responsible for the excellence of the Johnson organ. As he began to build his organization, he secured these craftsmen, gave them instruction and training, and imbued them with his ideas and ideals. They were of fine background, and many of them became prominent in the life of Westfield and contributed greatly to community life, some in public office. One of these men, who was associated with Johnson from about 1852 until the closing of the firm in 1898, was Edwin Hedges."

One child, William H., was born to William A. and Mary Ann Johnson on June 30, 1841. He attended the public schools and Westfield Academy, studied organ and eventually became a very good organist. In addition, he was a fine draftsman and a most capable voicer. He worked in his father's shop for some time, beginning when he was 16 years old.

Mr. and Mrs. William H. Johnson had no children, so this branch of the family died out. William A. Johnson died January 20, 1901 at the age of 84. His son William H. Johnson, died April 20, 1922. Thus came to a close the lives of Johnson & Son, but they left behind them many monuments of their artistry and craftsmanship and that of the men who were associated with them.

The Construction of the Organs

In 1871 William H. Johnson became a member of his father's distinguished firm. At this time a reorganization took place. The nameplates on the key desks of the organs produced during this period were diamond-shaped and made of ivory. After 1874 the nameplates always read "Johnson & Son, Westfield, Mass. Opus" 787, (as at Christ Church).

There are two major components in tracker action: windchests and key-action. The windchests are what is known as the slider type. In each chest there is channel or long narrow cavity for each note on the keyboard. Each of these channels has a pallet (valve) which is normally closed, keeping wind from entering the channel until the key corresponding with that particular note is depressed. The top of the windchest is covered by a board called the table, tightly glued to the top of the bars which separate each channel. On top of the table are the sliders and above each slider is an upper board (toeboard) into which the feet of the pipes are fitted. The slider is a long piece of good mahogany or similar wood, finely finished, and placed between the table and toeboard. The toeboard is shimmed on the bottom at each edge, with strips of wood called bearers or gibs. These bearers function to prevent the toeboard from binding the slider. When the chest is built, holes are drilled through the toeboard, slider, and table into the channel below. Using the drawknobs, the slider can be moved so that the holes in all three thicknesses of wood line up, or it can be moved so that the holes in the slider are no longer lined up with those in the table and toeboard. If, with the slider drawn the pallet is opened by depressing a key, wind flows into the channel and up through the table, slider, and the hole in the toeboard. into the pipe.

A roller board. may become necessary, because in the wind chest only one pallet will be directly in line with a key, for the chest is much wider than the manual keyboard. Moreover, the pipes are seldom placed on the chest in chromatic order. The roller board serves to transmit action laterally. It consists of a series of rollers which are pivoted at each end so as to turn with as little friction as possible. An arm is mounted on the roller directly in line with a key, and another arm is placed on the roller directly in line with the corresponding pallet. Therefore, when the key is depressed., the tracker pulls one arm on the roller, the roller turns, and with it the second arm which pulls down the tracker which is connected to the proper pallet. When it is necessary to transmit motion around a corner, a square ("bell-crank") is used. This is simply a piece of wood or metal angled at 90 degrees and pivoted at its vertex. Mounted vertically (as in key-action), a square transforms the horizontal pull of a tracker to the vertical pull of a pull-down wire. Mounted horizontally (as in stop-action), a square converts the forward pull of a draw-knob to the sideways pull of a trace-rod.

The pipe work and Voicing of the Johnson Organs

All of the organs built during the Johnson & Son period possessed excellent balance, splendid dignity, and beautiful voicing, but the pattern of stops changed somewhat from that found in the William A. Johnson organs. "I have always felt that the old William A. examples were more colorful and had more registrational possibilities, in spite of the small pedal boards, the hitch-down Swell pedals and the arrangement of stops in vertical rows on both sides of the keydesk."

Around 1870, the keydesk style changed. The stop knobs were set in terraced jambs on both sides of the manuals and the coupler knobs were placed over the Swell manual. (This is true of Opus 787.) The knobs were oblique-faced with ivory inserts, which generally were engraved with old English lettering. The use of overhanging and undercut keys began about that time. The diamond-shaped nameplate was used until 1894, after which oblong ivory tablets were used. The pedal keyboards, even up to the last organ in 1898, were flat and non-radiating.

Organ pipes are made of wood or metal, depending on the tonal qualities desired. Metal pipes are made of various alloys of tin and lead, the thickness being graduated to suit the various sizes of pipes. Whatever the alloy, the process of casting it in sheets is peculiar to the organ business. It is done on a long casting bench which has a base of slate or soapstone covered with ticking overlaid with linen. The molten metal is poured into a box which has an adjustable gate in the bottom, the entire width of the box. The gate may be raised or lowered to adjust the thickness of the metal sheet. The box is then pushed from one end of the bench to the other, leaving behind it a sheet of pipe metal. When this has cooled, it is rolled up and stored. In the days of the Johnsons, "common" or "spotted" metal was planed by hand to graduated thickness, while in present-day work only one side is planed when the metal is what is known as "common" or "pipe metal". Pipe metal contains anywhere from 17 percent to 33 percent tin. Spotted metal is so named because of its mottled appearance.

Spots begin to appear when the portion of tin in the metal reaches about 35 percent. The best spotted metal contains 45 to 50 percent tin with the balance of lead. Pure tin pipes were used somewhat in the 17th and 18th centuries, especially for display pipes. Tin today is costly and scarce, so it is not used lavishly as it was in the olden times.

From the outset all Johnson metal pipes were made of either good common metal of 33 percent tin, or of spotted metal of 45 to 50 percent tin. Common metal was used mostly for large-scaled stops, such as diapasons. Spotted metal was used for dulcianans, strings and reed pipes. There are many instances where spotted metal was used for the diapasons, also. All metal pipes were highly polished in the Johnson organs and presented a very handsome appearance. Edwin Hedges always saw to it that all pipes were beautifully made in the finer details which the average person would never notice. Such care results in pipes that voice easily with excellent results. In the Johnson metal pipes the upper and lower lips were burnished to the proper shape, the languids were carefully soldered in place, and the flues were properly adjusted. Common and spotted metal pipes were carried down to either Tenor F or Tenor C; below this point they were made of zinc with lips and toes of pipe metal.

Wood pipes are generally made of white or sugar pine, with caps and block facings of cherry, walnut, or maple. The lumber used for pipes and, in fact, for any part of an organ, has to be well-seasoned, dry, and free from knots and shakes.

The scale of a pipe refers to its diameter in relation to its length. The system used in Johnson's day is the same as it is today, scales of metal flue pipes being designated by numbers. No. 1 on this scale represents a pipe 1 meter in diameter (39.37 inches). In Johnson organs, this became half of the diameter on the 16th step, or 17th pipe above, so that a scale of 16 would mean a pipe one-half meter, or about 20 inches in diameter, and a 32 scale pipe would be about 10 1/4 inches and so on. A 42 scale diapason 8' will be about 6

5/8" at the CC pipe. Some of the Johnson scales will be given in the section on Johnson stops.

The voicing of organ pipes is an art acquired only by study and much experience. A good voicer is one of the most valuable assets an organ builder can have. William A. Johnson, his son, and their voicers knew what good balance was and exactly how to secure it. The result was that the tone of the Johnson organs was never hard or forced the pipers were "filled" or, to use another term, "voiced to scale."

The wind pressures on the William A. Johnson organs from about 1850-1870 were generally between 2 1/2" and 3". The later Johnson & Son organs were usually voiced on pressures of 3", sometimes 3 1/2". (It is marked on the bottom of the music rack 2 3/4" and was readjusted by A. Richard Strauss in 1993.)

The voicing of the flue pipes such as Diapasons, Dulcianans, and strings, consists of nicking the languid, cutting up the upper lips to the proper height, and adjusting the positions of the languid and the upper and lower lips. The amount of wind entering the pipe foot must be carefully adjusted by opening or closing the orifice in the pipe toe. The Johnson Diapasons had "full quarter mouths"; in other words, the mouth extended around the pipe for a quarter of the pipe's circumference. The upper lips were often cut up an amount equal to 2/7 of the width of the mouth. The Dulcianans and Dolces had 2/9-width mouths, and were cut up very low. After 1870 the Johnson strings were formed of cylindrical pipes of fairly broad scale, and they were voiced with a box beard. Such strings were warm and broad-toned and not in the least strident. The lower octaves were inclined to be of slow speech, and dust and dirt will throw them off speech.

The Johnson reed stops were always good, though in many examples dirt has so affected the tone and speech that little idea may be gained of their original quality. In the larger two-manual organs and in the three-manual organs, Trumpets were found on both the Swell and Great while the Oboe was always found in the Swell as the first reed to be included.

The Mixtures were based on the scale of the Fifteenth. William A. Johnson used Mixtures in which a third-sounding rank (the Seventeenth) was included. Many of his Great organ Mixtures were designated "Sequialtera", and these were composed of 17th, 19th and 22nd with two or three breaks.

When William H. Johnson joined his father as a partner in 1871, the use of the 17th either as a separate stop or as a Mixture rank was discontinued. All the Mixtures after this date were composed of fifth and octaves.

The excellent pipework which characterized every Johnson organ, and the exceptionally fine voicing, produced stops which possessed real character. The meaning of this can be fully understood and appreciated only by listening to and studying the tonal qualities of these instruments, and then comparing them with indifferently voiced organs.

The Johnson Stops used in Opus 787

Bassoon 8' - The bottom 12 notes of the Swell Oboe were generally labeled "Bassoon". They were small-scale Trumpet pipes voiced smoothly and more softly than a Trumpet. On some Organs, The Oboe and Bassoon drew on one knob, while on others they were separate so that the lower 12 notes could be made available in the Pedal through the use of the Swell to Pedal coupler.

Bourdon 16' - This stop is found in the Pedal of all of the organs except some of the William A. Johnson organs, where the only Pedal stop was a Double Open Diapason 16'. It was also placed in the Swell as a Double in the organs where a 16' voice was desired in that division. (ed. note: It is felt that the swell box was too small to house this rank, so it was placed on the Great where there was more room for the pipes.)

Diapason 8' - This stop was always labeled Open Diapason 8'. Its noble voice is one of the outstanding features of every Johnson organ. It was formed of large-scale metal pipes. In some instances zinc was used for the CC octave (12 pipes), while in others the zinc extended up to tenor E, 17 notes. The remainder of the stop was made of rich, highly polished common metal of 33 percent tin. Sometimes, spotted metal tin was used. The lower 12 to 17 pipes were often displayed in the case, and in many of the organs built after 1870, were elaborately decorated. (ed. note: These pipes are among the show-pipes above the organist's head at Christ Church and directly behind the organ bench. Originally there was another Open Diapason 8' on the Swell, but it was replaced by an Octave 4' during the 1964 renovation.)

Diapason 8' - In the Pedal, the 16' Diapason was also styled Double Open Diapason 16'. The Pedal stops were large scale open pipes of wood. In the large organs of the William A. Johnson period, the scales of the Pedal 16' Diapason was as much as 16 inches in depth, outside measurement. Johnson & Son employed several different scales, such as 13, 14, and 15 inches. These pipes were not bearded, and the mouths were cut quite low..

Dulciana 8' - The Johnson Dulciana was what might be termed a miniature Diapason with a hint of string quality. It was one of the softest stops in the Johnson organ, being exceeded in this respect only the Aeoline and Dolcissimo. The scale was 56, about 2" at 4'C and the mouths were 2/9ths. It was lightly and finely nicked and the cut-up of the upper lip was a quarter or less. The pipes were made of spotted metal and were slotted as far as the 1'c. Examples may be found in any Johnson & Son organ and most of the William A. Johnsons. The tone of the Dulciana is of beautiful quality with a slight slowness of speech.

Fifteenth 2' - The Fifteenth is always found on the Great organ except in the smallest one-and two-manual Johnson & Son organs, and on the Great of every William A. Johnson organ. The scale was about two pipes smaller than the Principal 4', and it supplied silvery brilliance to the Diapason chorus and to all full combinations. The pipes were made with quarter mouths with upper lips cut up a quarter plus. Nicking was fine and the tone bright and signing.

Flautino 2'-The Flautino was generally placed in the Swell of medium and large-sized two-and three-manual Johnson & Son organs, where it was a member of the Swell chorus. Its name is not altogether accurate because it partook of more Diapason than flute character. The usual scale was 72, about 1 3/4" at the 2'C. The cut-up was just slightly higher than the Fifteenth.

Flute d'Amour 4'-This stop was formed of stopped wood pipes, much like the Stopped Diapason 8' and the top two octaves were of metal open pipes. The pipes had English mouths and sunken blocks, and the stoppers were bored. It will be found on the Great organ of most of the two-manual Johnson & Son organs.

Flute Harmonique 4' - As its name implies, this stop was formed of harmonic or double length pipes, from middle C up. The bottom two octaves were of normal length metal pipes. The harmonic portion had small holes drilled at the nodal point which made the pipes overblow and speak the octave. The tone was bright and pure and it was very useful in all colorful registration. Its usual place was in the Swell of Most Johnson & Son. instruments, and on rare occasions in the Great. The pipes of this stop in the Johnson & Son organs were without taper.

Fugara 4' -This was a stop of bright Geigen quality. It might be described as a four-foot string of mild and broad tone. Johnson & Son used it in the Swells of most of their two-manual instruments, and almost without exception, in the Choir of the three-manual organs. William A. Johnson used it occasionally, though he ordinarily used the principal 4' in its place. The usual scale was 64, with a 2/9ths mouth. The pipes were generally slotted, up as far as the 1' pipe. The slot was 1/3 the pipes' diameter and located the width of the pipe mouth down from the top of the pipe.

Melodia 8'-The Melodia was formed of open wood pipes with "inverted" or reversed mouths. The tone was round smooth and of beautiful quality. The bottom octave was almost always of stopped wooden pipes which sometimes were drawn on a separate knob. The scales were known as No.1 and No.2, the No.1 being the larger. The usual place for the Melodia was in the Great of all the two-manual Johnson & Son organs and in the Choir of the three-manual organs.

Mixture, II, III, IV and V Ranks - The Mixtures found in the instruments of William A. Johnson and Johnson & Son were always musical, well-scaled, well-regulated and well-voiced. These stops extended the upperwork of the Diapason chorus beyond the Twelfth and Fifteenth. Strictly speaking, a Mixture contains two or more ranks of pipes with one or more breaks where the various ranks drop or break back to a lower pitch. In this way a Mixture both brightens the bass and levels off the treble. (ed. note: There is one break in opus. 787 at Middle C.)

All of the Johnson Mixtures were made with quarter mouths, and the scaling was such that silvery brilliance and sparkle without screech or shrillness was the result.

Oboe 8'-This reed stop was nearly always placed in the Swell of the William A. Johnson organs and those of Johnson & Son. Its scale at the 4' pipe was generally about 2 1/2". The stems or narrower portion of the body of the pipe were surmounted by a bell which had a greater taper than the stem. The length of this bell in the 4' pipe was about 15". Spotted metal was used for the entire pipe above the Tenor F pipe, while below that the stems were made of zinc, with a spotted metal bell soldered on. The eschallots were similar to those of the Trumpet, but had narrower openings and the stop was voiced more closely.

Octave 4' - This 4' Diapason was always found on the Great of the organs of William A. Johnson and Johnson & Son. William A. Johnson usually placed another Octave on the Swell of his smallest two-manual instruments, though it was often called. Principal 4'; only in the large organs of Johnson & Son will the Octave 4' also be found in the Swell. (ed. note: Op. 787 has an Octave 4' on the Swell because during the rebuilding of the organ in the 1960's it replaced another Diapason stop, probably a Violin Diapason 8'. This will be described later on the stop list.) The Octave is one of the most important steps in the organ because it is the bridge between the unison or Open Diapason 8' and the

upperwork of the chorus. In Johnson organs it was made similar to the Diapason 8', with full quarter mouths, and with the languids rather finely nicked. The scale was generally two pipes smaller than the Diapason 8', and it was somewhat brighter than the unison stop. It is the Principle or Octave on which the bearings are laid when the organ is tuned.

Stopped Diapason 8'-The Stopped Diapason, while not a Diapason in the strict sense of the word, was perhaps the most common flute stop in the Johnson organs. It appeared in the Swell of every instrument, and occasionally in the Choir and Great of the William A. Johnson organs. In the Swell it was made of wood, while the Great stops were of metal from tenor or middle C up.

Trumpet 8' - The Trumpet was the principal 8' chorus reed found on the Great or Swell of the William A. Johnson organs, and was usually reserved for the Great in the Johnson & Son instruments. Except for the Oboe, the stop is the most common reed stop to be found in the Johnson organs. The scales used by William A. Johnson was 4" at low C for a medium scaled Trumpet and 5" for a large scale. Johnson & Son used 3 1/4" for a small Trumpet, 4 1/4" for a medium scale and 5" for the large Trumpet. The eschallots were of the open variety and had a taper of 5/8" per foot. The Trumpet was voiced free, and there were no harmonic pipes. Dust and dirt have thrown many of these stops off speech, but those that have been kept clean and in tune are brilliant and rather fiery; of excellent blend, these ranks add punch to the full organ.

Viola 8' - The name Viola was generally applied to a mild string of some body. while its tone was not so bold as a Geigen Principal, the tone quality was precisely that of a small Geigen. It was sometimes used as the foundation stop of the Swell in small two-manual Johnson & Son organs. Occasionally a stop labeled Viola may be found in the Swell of the William a Johnsons, and such instances it is practically an Aeoline.

Opus 787 Stop List

Great: 58 notes

Bourdon	16'	58
Open Diapason	8'	58
Dulciana	8'	58
Melodia	8'	58
Octave	4'	58
Flute d'Amour	4'	58
Twelfth	2 2/3'	58
Fifteenth	2'	58
Mixture	III	
Trumpet	8'	
Blower's Signal		

Swell: 58 notes enclosed

Stopped Diapason	8'	58
Viola	8'	58
Octave	4'	58
Fugara	4'	58
Flute Harmonique	4'	58
Flautino	2'	58
Oboe & Bassoon	8'	58
Tremelo		

Pedale: 30 notes

Double Open Diapason	16'	30
Bourdon	16'	30

Couplers

Great to Pedale
Swell to Pedale
Swell to Great

Combination Pedals

Great Piano
Great to Pedale Reversible
Great Forte

Conclusion

The period of the William A. Johnson organ (1844–1871) was a period of richness in tonal design and execution. The organs of the Johnson & Son period were also characterized by fine voicing and excellence of materials, but they began to reflect some of the changes that came about during the late Victorian era.

After the turn of the century came a serious decline in tonal design prevalent during the 1860's and 1870's. However, in all too many modern organs there is a tendency to attempt to produce too much from each rank, which results in a hard and forced tone.

It is important to note two consistent factors which contributed greatly toward making these instruments such fine organs.

1. Good tonal design and the excellent durability of the Johnson instruments. The fine tonal design was the result of the use of the finest materials coupled with superior workmanship.
2. The execution of the tonal design, by which is meant the voicing and treatment of each stop. A good stop list or specification means very little unless it is properly treated and executed..

One of the first requisites is that each rank shall be voiced to scale. This means the tone must not be forced and on the other hand it must not be subdued to the point where the character and timbre are lost. The voicer terms voicing to scale as "filling the pipes." A central point should be aimed for, and quality should come before quantity.

Such was the Johnson organ. It was the product of craftsmen who took great pride in their work. The period, during which Johnson organs were built was not one of high production and high pressure living, and the instrument reflect this. It is difficult to describe the tone and effect of these organs; visit one and listen to the glorious tone in all of its many colorful combinations. Then join in helping to preserve the remaining Johnson instruments, not because they are old, but because they are examples of truly fine organ building.

Recollections

The organ at Christ Church still has a blower's signal which was to alert a person in the pipe chamber to being hand-pumping the bellows. Rowena Herrman mentioned that there was a "water motor" which replaced the hand-pumped bellows in the early 1900's. It was located in the church basement, but was replaced because the water supply froze in winter and was invaded by schools of fish throughout the summer. When electricity was brought through town, Christ Church was one of the first buildings in town to be electrified, not for electric lights, but to pump the organ.

Paul R. Harden, now deceased, tells of being a member of the paid men's and boy's choir in the early 1900's. He said they all received 10¢ per Sunday for singing, but the boy who pumped the organ received 25¢. Apparently that was done on a rotating basis so that all the boys got a chance to pump the organ.

The first organist on the new Johnson organ in 1893 was George Boyle who came to Towanda to be the organist. (He also operated a variety store downtown.) Mr. Boyle directed a number of choirs at the church as well as composing some of his own music. He regularly played a number of concerts for the public before a full house.

In 1964 the organ was restored and rebuilt by John L. Matthews of East Smithfield with guidance from Frank Bartlett, who followed Rowena Herrman as organist. Many changes took place in the organ voices. The Great Bourdon 16' was removed and replaced with a Celeste 8'. The Great Trumpet 8' was removed and replaced with the Flautino 2' from the Swell which Frank then moved up an octave to create a 1' stop.

The Swell stops were changed too. In place of the Flautino 2' another Fifteenth 2' was installed. The Violin Diapason 8' was replaced with an Octave 4' (The Trumpet 8' and Bourdon 16' were stored in the bell tower.)

In the early 1980's John Schweiger from Corning, New York became the organist. He had experience in rebuilding organs and was interested in putting the original voices back in the organ. He found the two ranks that had been removed in the tower and proceeded to replace the Great Bourdon 16', a pipe at a time, until it was entirely back in the organ. It took him several months to do this.

At the same time A. Richard Strauss, Organ builder of Ithaca, N. Y. was employed to tune and repair the organ. He took the Trumpet 8' to his factory to be revoiced and found little wrong with it - it was not even out of tune. He cleaned and polished the pipes and returned them to their rightful place on the Great. The Flautino 2' was put back on the Swell at the same time. Fr. Strauss removed the Swell Fifteenth 2'. After this work all the stops are the Johnson originals except the Swell Octave 4' which Fr. Strauss thought should remain in place of the original Open Diapason 8'.

In 1993 Fr. Strauss did extensive repair work on the trackers, replacing many worn-out parts. Consequently the organ has been made much easier to play. He says it should now last "another hundred years." (After doing considerable research on the Johnson organs, it seems that Opus 787 is one of few Johnson & Son organs in almost original condition.)

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Organ
History
By
Andy Johnson

REVERSE-CONSOLE
TRACKER PIPE ORGAN
BY
JOHNSON
built 1893

