THE DESIGN & HISTORY

of the

1924 W.W. KIMBALL MASONIC PIPE ORGAN KPO 6763

at

SCOTTISH RITE CATHEDRAL
SAINT LOUIS, MISSOURI

3633 Lindell Boulevard
Saint Louis, Missouri

The 1924 IV/53 W.W. Kimball pipe organ (KPO) Opus 6763 of 144 stops built for the Saint Louis Scottish Rite Cathedral and the individuals, groups, and events related to its story are detailed in this paper. The information it assembles was obtained from a number of reliable sources including Saint Louis Valley office records, Supreme Council archives, details recorded by past choir Librarian Ill. Bro. Arthur "Art" H. Weinzettal, surviving printed programs and choir lists from previous years, well-informed and experienced individuals, and literally thousands of hours spent with the instrument, performing at its keys and crawling through every part of it over a period of many decades. This is the only document in existence which researches firsthand and preserves the known true facts about the design and history of this little known, rare and unusual,

national treasure of a Masonic pipe organ, the choir it has led for nearly a century, and the 9 individuals who have officially presided at its keys. That story is as follows:

The Saint Louis Valley choir of the Ancient & Accepted Scottish Rite, southern jurisdiction, was formed in 1903 by 17 brethren under the leadership of Bro. and Col. John A. Laird (President of the St. Louis Police Board), Bro. William M. Porteous (junior Past Potentate of Moolah Shrine Temple 1902), and other professional singers of mixed quartettes who sang the ritual songs behind the curtain. As there is no record of this choir ever experiencing an inactive period since its formation, it is believed to have enjoyed a 116-year uninterrupted history through 2019. The first quartette of record was in 1898 with Mrs. Ora Pearson, soprano and organist, Miss Annunciata Sabina, alto, Bro. Robert J. T. White, tenor, and Edgar C. Lackland (basso). Bro. Charles Alfred Renard, who would go on to serve as President of the choir from 1922-1930, was the tenor in the mixed quartette of 1902 with Mrs. I.A. Epstein, soprano, Mrs. Gertrude Quarles, alto, whose husband later became Choir Director from 1906-1909, and Bro. William M. Porteous, basso.

After the formation of this choir in 1903 by Col. Laird, who was also a Past Potentate of Moolah Shrine Temple in St. Louis 1898, the group organized and elected its first officers. These were: Bro. and Col. John A. Laird, Primus President, Bro. Robert J.T. White, Primus Director, Bro. Otto G. Mueller, Primus Secretary, and Bro. Charles F. Hatfield (1903-1918), Primus Organist. Other members of this early choir were: Bro. Fred W. Drosten, jeweler, Bro. William B. Ittner, architect (the same man who designed the present building), Bro. F. Robert Boyd, Bro. Ernst C. Koken, barber supplies, Bro. Henry A. Grimm, Bro. Julius Langenback, hardware supplies, Bro. William A. Hall, Bro. William C. Pope, Bro. George L. Bassett, Bro. Claude B. Ricketts, Bro. James R. Harris, Bro. Paul C. Theegarten, and Bro. John J. Wuertenbaecher, Past Potentate of Moolah Shrine Temple 1915. Other prominent directors from those early years included Bro. Charles H. Galloway, Sr., who directed from 1904-1905 and again 1914-1917 (it was his son, Charles Jr., who in later years also served as Director). Brother James T. Quarles directed from 1909-1913. Some years later, after retiring as musical director of Missouri State University, he died at his home in San Fernando, California. The choir in those early days rehearsed and sang at the Scottish Rite Cathedral, then located on the N.W. corner of 17th and Locust St., under Illustrious Sirs A.C. Steward 33° and James Cochran 33°, both Sovereign Grand Inspectors General until the new Scottish Rite Cathedral on Lindell Boulevard was completed in 1924. What kind of

organ led the choir in this building back then cannot be known today, but the choir at the time had in its membership several professional singers and musical directors, some of whom attained civic prominence, and they gave much uplift to the choir's rendering spiritual singings for churches, Masonic lodges, and civic affairs in addition to their performance of ritual degree singing. Twice in early years the choir members were invited to go to Washington, D.C. to sing at the building and dedication of laying the cornerstone of the great House of the Temple; the first time in 1911 and four years later on October 15, 1915 when the House of the Temple was completed.

Over the years the Director of Music and Choir Director have come to mean the same thing, and there have been many changes of Directors since 1903. As far as can be known, Bro. Charles H. Hatfield continued as Primus Organist from 1903-1918 until he was succeeded by 1) Ill. Bro. O. (Otto) Wade Fallert (1918-1939), who held the office from 1918 through the Roaring Twenties and the Great Depression until his death in 1939. It is known that he (Fallert) also directed the choir for a portion, if not all, of these 21 years, and it was he who, as timing would have it, was granted the privilege of being the first to officially preside at the keys of the Kimball organ and participating on the program of this organ's third and final dedication recital in October, 1924. At that time the President of the choir was the aforementioned Bro. Charles Alfred Renard. Ill. Bro. Fallert was the first in a chain of 7 more Scottish Rite brethren officially placed in charge of this instrument. This was a paying position during the 4 decades of the Corte-Porkola interval (c.1961-2001), thus it's reasonable to conclude that the brethren who held this position prior to 1961 also were compensated. Back then it was also necessary to pass an audition to be appointed to this office, a requirement which is also likely to have been so from the beginning.

According to the 3-day printed programs of opening exercises and dedication of this organ in 1924, Belgian-American organ virtuoso Dr. Charles M. Courboin, who served as tonal consultant for this organ, performed 2 dedication recitals in the Auditorium on consecutive evenings, the first being for members of the Scottish Rite and their families on Wednesday evening, October 29, and the second on the following evening, Thursday, October 30, at which a completely different program was performed for a wider audience of Master Masons and their families. The very next evening on Friday, October 31, a wider musical program for a wider audience of the general public was performed which did not involve Dr. Courboin. That program consisted of a cantata for male voices, a violin solo, a baritone vocal solo, a tenor vocal solo,

and a string quartet, all separated by various speakers and framed by an organ prelude and postlude performed by Ill. Bro. Fallert.

As a fixture of the building this organ was less than 10 years old when the entire structure nearly slipped out of the hands of its owners. During the heart of the Great Depression in the early 1930's while Ill. Bro. Fallert was still serving as Principal Organist the Valley reached a place during those difficult years where it could not continue to operate financially. It was in fact facing sale of the building and all of its fixtures, which included the Auditorium's organ, to pay its expenses. The fact that the building was to remain open and financially solvent was due only to the generosity of one of the members of the choir. Ill. Bro. Arthur "Art" H. Weinzettal, 2nd tenor and choir Librarian, came to the Valley's rescue back then by contributing substantially from his own financial resources to keep the building operating and this Kimball organ in the hands of its original stewards. Without this help of his, it's quite probable that this wonderful instrument would have gone the way of so many other Kimball organs and no longer exist today.

Back in 1921 while the Valley was still meeting at the old Scottish Rite building located on the NW corner of 17th and Locust Streets, 2) Bro. Ernst P. Stamm (1939-1944), a professional organist and member of the Saint Louis Valley since 1913, demitted to the Orient of Oklahoma, Valley of Guthrie. After 2 years there he reaffiliated with the Valley of Saint Louis in 1923 as the present building was under construction, and presumably he assisted Ill. Bro. Fallert from time to time at the Kimball organ until the latter passed away in 1939. It's believed that Bro. Stamm then carried on himself as Principal Organist for another 5 years until his death in 1944.

This office was subsequently assumed, presumably at that time or shortly after WWII, by 3) Bro. Oscar H. Jost (1944-1961), a well-known local theatre organist who performed regularly at Saint Louis theatres and joined the Saint Louis Valley in 1939 only 2 months before Bro. Stamm passed away. Bro. Jost is believed to have replaced Bro. Stamm at that time and have worked with Director Charles H. Galloway Jr. until he [Jost] passed away in 1961. It's believed that 4) Ill. Bro. Phillip Emil E. Corte (1961-1986) succeeded Bro. Jost around that time. No record could be located regarding the latter's possible position or participation in the choir or whether he had been working with Bro. Jost as an organist prior to 1961, but it's likely that it was Ill. Bro. David W. Thornton, a local organist/composer/choir director, who began working with Jost when he [Thornton] followed Bro. Charles H. Galloway Jr. as Director in

1956. Ill. Bros. Thornton and Corte continued the excellent work of the choir through the next 2 decades, which was a time of tremendous growth and flourishing for the choir.

By 1973, for example, the choir had grown from 17 starter members in 1903 to over 60 members strong and were rehearsing at the Cathedral every Tuesday evening from 7:30-9:00 P.M. At that time the choir officers were Ill. Bro. George R. Spindler baritone, President, Bro. Cecil H. Hurt baritone, Vice-President, Bro. Hugo Heike, Secretary-Treasurer, Bro. Willmer G. Mayer basso, Registrar, Ill. Bro. Arthur H. Weinzettel second tenor, Librarian, Ill. Bro. David W. Thornton, Director, Ill. Bro. Robert M. Lang second tenor, Assistant Director, and Ill. Bro. Emil E. Corte, Principal Organist. The Thornton/Corte years were in many ways the "golden age" of the Saint Louis Scottish Rite choir; during that time the Kimball organ which led it, for its part, seemed to be chugging right along, showing the effects of use but still needing no major rebuilding.

NOTE: certain leathered components found in pipe organ winchests and reservoirs built with electro-pneumatic action usually average 40 or more years of useful life expectancy before rebuilding is necessary. In today's world, one would be hard-pressed to think of any other large cost item that gives a comparable life expectancy (motor vehicles, roofs, furnaces, and other major cost items will need replacement long before a major organ overhaul is needed). The fact that the Valley's dues-paying membership was so much higher back then, thus making adequate monies readily available to finance the Valley's budget year to year, and the fact that Kimball built longevity into all of their organs in the first place, the vision to develop a forward-looking plan for the ongoing maintenance/rebuilding of this instrument, even after half a century of use, still seemed afar off.

Ill. Bro. Thornton was a professional organist and composer who served as minister of music at several St. Louis churches and whose talent and musical accomplishments received acclaim during his lifetime. Besides holding the office of Director for 33 years (1956-1989), the longest of any Director, he was a prolific composer of religious music whose compositional output included, among other things, 2 hour-long cantatas for Easter and Christmas, respectively, plus a score of vocal compositions and anthem arrangements. His cantatas have been used by college and church groups the nation over, and many of his beautiful vocal pieces have remained in use to this day in the work of the Saint Louis Lodge of Perfection and Chapter Rose Croix. Upon his death

in January, 1989, his family donated much of his music to the Saint Louis Valley, and his assistant, Ill. Bro. Robert M. Lang second tenor, assumed the duties of Director with Ill. Bro. Harry O. Weber, 1st bass (baritone) and soloist, becoming Assistant Director.

Ill. Bro. Emil E. Corte also appears to have presided the longest at the Kimball organ, serving as Principal Organist for 25 years until late 1985/early 1986 when, sadly, he suffered a major stroke. Bro. Paul P. Wortman, a 1st bass (baritone) in the choir at the time, then filled in as temporary Organist for a few months until Ill. Bro. Corte was well enough to conduct auditions for the office. Bro. Wortman is an example of dedicated choir members who over the years have been part of the Organist staff and who from time to time undoubtedly came forward to assist the Principal Organist when needed in an emergency situation. Not all names of these brethren can be known today, but they are nonetheless to be credited for their industry, devotion, and willingness to serve.

In late 1986 5) Bro. Jack R. Jenkins (1986-1992, 2015-2018), a professional organist, having passed the audition with Ill. Bro. Corte, then assumed the office of Principal Organist, after which Ill. Bro. Corte was designated Principal Organist Emeritus and was listed as such in Reunion programs through 1991. Bro. Jenkins is thus the last known Principal Organist known to have auditioned for the job. In 1989 the choir officers were listed as follows: Bro. William B. Knittig, President, Bro. Charles G. Hurt, Vice-President, Bro. Wilmer G. Mayer, Secretary-Treasurer, Bro. Julius W. Heidbreder, Librarian, Bro. Charles A. Boyer, Assistant Librarian, Bro. James P. Reeder, Registrar, Ill. Bro. Robert M. Lang, Director, Ill. Bro. Harry O. Weber, Assistant Director, Bro. William B. Knittig in charge of Public Relations, with Bro. Jack R. Jenkins serving as Principal Organist.

In subsequent years Ill. Bro. Kevin E. Weaver joined the choir as a first tenor and soloist, first in 1991 and then serving as the choir's Secretary-Treasurer from 1992-2004, the last to do so. Ill. Bro. Steven C. Monrotus joined the choir as a 1st bass (baritone) in 1997 and assisted at the organ when requested for the next 8 years until 2005, after which he became Director and Organist for the Valley of Columbia, re-affiliating with the Saint Louis choir 10 years later in 2015.

In 1988 6) Ill. Bro. David A. Porkola (1992-2002), a professional organist, joined the choir as a 2nd tenor and became Assistant Organist to Bro. Jenkins the following year. He succeeded Bro. Jenkins as Principal Organist in 1992 and

held the office for another 10 years. Bro. Jenkins thus served 6 years on his first stretch as Principal Organist and continued to assist at the organ when requested all through the 1990's and beyond. Upon the departure of Ill. Bro. Porkola in 2002 7) Ill. Bro. Edward A. Plitt (2002-2015), another professional organist who joined the choir in 2000, was appointed as his replacement at a time when the organ was seriously unreliable and in dire need of a rebuild. When Ill. Bro. Robert M. Lang retired as Director in 2005 he selected someone to take over the Director's duties, however when this failed to materialize Ill. Bro. Plitt began serving in both capacities as Director and Principal Organist until he passed away in 2015. Ill. Bro. Fallert, Bro. Stamm, Bro. Jost, and Ill. Bro. Plitt are the only known individuals in the nine-man chain of those who have officially presided as Principal Organist known to have died in office.

Ill. Bro. James R. Fiete, who started in the choir as 1st tenor back in the Thornton days, then assumed the duties of Director, and 7) Bro. Jack R. Jenkins was reappointed to the bench, thus becoming the only man to have been appointed to the office of Principal Organist more than once. Bro. Jenkins served another 3 years until 2018 at which time, for medical reasons, he could not continue and recommended that 8) Ill. Bro. Steven C. Monrotus (2018-2022) be appointed as his replacement. The most recent brethren to join the Saint Louis Valley choir and Organist staff have been Bros. Keith G. Tomazi in 2018 and David A. Doran in 2019. After Ill. Bro. Monrotus had to resign the position of Principal Organist in 2022 due to health reasons Brothers Tomazi and Doran began serving as co-organists.

The year 1924 saw the relocation of the choir to the newly completed Scottish Rite Cathedral. This impressive building due to its immense size, architectural design, and proportions renders it the largest Scottish Rite Cathedral in the world. Choir member and architect Bro. William B. Ittner was its designer. Built at a cost of $4M at the time, its multiplicity of rooms, spacious hallways, innumerable doors, and both well-traveled and off limits passageways scattered throughout 257,196 square feet of floor space on 6 floors reveals a structure of prodigious proportions. The frontage on Lindell Blvd. is 235 feet with an average depth of 175 feet and a height from street level to the upper roof parapet of 104 feet. There are 5 levels above the dining room or lower level. Its ambient Auditorium is 165 feet wide east to west, 130 feet long north to south, and 58 feet high permitting 2 mezzanine floors (4th floor Balcony, with 5th floor Gallery above) and a seating capacity of 3200. The original acoustical excellence of the Auditorium was acclaimed by a variety of nationally and locally recognized popular, symphonic, and choral musical organizations including the

United States Marine Band of Washington, D.C. Its 98-foot long stage on the north is one of the largest in the nation and 4 feet longer than the Hippodrome stage in New York City. It has room for 480 uniformed military personnel placed in formation, it's supplied with a 50-foot high red velvet curtain (called the Grand Traveler), and it's equipped with an extraordinary collection of 164 changes of priceless hand-painted canvas scenery. The Auditorium is employed today for a variety of uses besides the ritualistic work of the Rite, which includes meetings, installations, ceremonies, graduations, dance recitals, and even the showing of silent movies with organ accompaniment. The Auditorium's voice and crowning glory is a stupendous Kimball Masonic organ of 108 speaking stops plus 36 additional stops controlling tuned percussions/traps all fully enclosed from top to bottom, 4 manuals, 53 ranks, 9 divisions, and 3,863 pipes which speak from Main, Antiphonal, and Echo chambers. The Main chamber is divided into 3 sections: a) Solo, at 4th floor level, b) Great/Choir/Pedal, between 4th and 5th floor levels, and) Swell, at 5th floor level – with each section equipped with its own separate set of swell shades – thus the instrument is housed in either 3 or 5 chambers depending upon how the Main chamber is reckoned. With the weight of a pipe organ being in the range of 600 pounds per speaking stop, this instrument has an estimated weight of something just north of 31 tons.

NOTE: The magical sound of this instrument prompted and inspired Ill. Bro. Monrotus, over a span of several years, to compose to the glory of God 38 compositions for organ in various styles grouped into 6 collections. This recital-worthy art music spans 36 Opus numbers and has been published online for digital download with Noteflight Marketplace, Sheet Music Plus, and Sheet Music Direct through ArrangeMe, a Hal Leonard company. In these scores the span for the hands is kept to an octave or less, and hand division and suggested registration changes have been included. Live recordings and generated audio clips of these pieces may be viewed on YouTube and on slide shows posted on the web site at www.organbench.com. While this new music was written for instruction, the refreshment of the soul, and contributes to the contemporary organ repertoire, it also employs some bold, different, and (as far as can be known) previously untried compositional procedures with very favorable and listenable results.

This Kimball instrument has been described by some who have played it as "one in a million" -- a Masonic pipe organ which straddles the classic and theatre organ design and sound. Over the years it has been the subject of some good faith articles, specifications, and videos prepared by well-meaning and highly knowledgeable individuals. One finds in examining these materials

however that information reported by different sources with respect to the number of divisional stops, total number of stops, numerical rank count, which ranks FROM where are duplexed TO where, and which stops are unified has not always been in agreement or congruent with fact. Hopefully this paper will help clarify what has been at variance in previous reporting.

Information lifted from a pipe organ database which has nothing to say about how an instrument's ranks were reckoned is the source for some of this disagreement. In this Kimball organ the rank count depends upon 1) having an accurate spread sheet showing the ranks and pitches noted from crawling through the chambers and making a record of this information … 2) whether or not the 12 largest Tibia Clausa [Contra Bourdon] pipes in the Swell section are counted separately as an incomplete rank of 12 pipes (in this paper, these pipes ARE reckoned as a separate rank from the unit Tibia Clausa because they are playable only from the Pedal and not wired to play at all from the Swell manual) … and 3) whether or not the 5 largest Gedeckt pipes provided to the Swell section wired to play at 21-1/3 foot pitch with the 5 lowest pipes of the Tibia Clausa [Contra Bourdon] to generate the differential tone for the bottom 5 notes of the 64' Gravissima are counted separately as an incomplete rank of 5 pipes (in this paper, these pipes ARE reckoned as a separate rank, again, because they are only playable from the Pedal). By not counting these extensions as incomplete Pedal ranks one would arrive at a total rank count of two less, i.e. 51. Anything reported at variance with this, regardless of how reliable the source of the information would appear to be, is simply inaccurate. Excluding the possibility of Pedal to manual coupling, it seems more logical and justifiable to reckon as an incomplete Pedal rank any downward extension of pipes of a manual rank all sitting on the same wind channel, even though such pipes are few in number, when they are playable only from Pedal keys.

The 12 pipes of the 32' Contra Bourdon in the Swell section are therefore reckoned an incomplete Pedal rank formed by extending the Tibia Clausa pipes downward to be wired to play only in the Pedal. The other incomplete Pedal rank of 5 Lieblich Gedeckt pipes sounding 16' C down to 32' G are wired beginning on Pedal low C to sound at the interval of a perfect 5th above the pipes of the 32' Contra Bourdon [Tibia Clausa] to form the 64' Gravissima. This is called a differential or resultant tone because the combinational tone generated by the two sounding pipes, albeit weaker than that produced by an independent stop of equivalent pitch, results from the arithmetic difference of the two vibration frequencies. With the Gravissima, the low C pipe of the Tibia Claus (Contra Bourdon) vibrating at 16Hz wired to play with a nearby low G

pipe of the Lieblich Gedeckt vibrating at 24Hz sounding a perfect 5th higher generates a resultant tone which is the difference between the two frequencies (24Hz minus 16Hz = 8Hz), a whole octave lower at 64' C. This stop quints in its bottom octave only, doubling back to play the 32' Contra Bourdon [Tibia Clausa] rank above that. In the same way, the unit Concert Flute [Bourdon] rank in the Great division is wired to sound a perfect 5th above the nearby 16' English (metal) Diapason beginning at 16' G to form the 32' Acoustic Bass, a resultant stop which on Pedal low C generates the resultant tone of 16Hz (48Hz minus 32Hz). This stop is wired to quint throughout the compass of the pedalboard. This phenomenon of differential tones generated by pipes sounding a perfect 5th apart has been employed by builders for many centuries to provide gravity when space and cost restrictions work against the introduction of an independent full length stop.

NOTE: In the years flanking the turn of the 19th to the 20th century Kimball built all of their organ Pedal departments with independent ranks. These consumed cubic feet and dollars, but Kimball's enormous quints [of 21-1/3' and 10-2/3' pitch] were in perfect tune and exceptionally effective because they were smack on pitch and could be regulated to serve a single purpose. The Pedal 64' Gravissima in this organ quints in its bottom octave only. Above that the 32' Contra Bourdon [Swell Tibia Clausa rank] is wired to break back, whereas the 32' Acoustic Bass is wired to quint throughout the entire compass of the pedalboard.

Much is involved in pipe organ sound. Any musical note has 3 basic qualities: a) pitch (frequency), b) timbre (harmonic content), and c) intensity (loudness). Pitch is easy to explain: today "middle C" on a piano is defined as 261.625 vibrations-per-second (Hertz or Hz). The lowest note on the organ at 32-foot C is about 16Hz and the highest at about 15,800Hz. This is the widest range of any musical instrument. Timbre describes the tone quality or color of a sound. An Oboe and a Flute may be playing exactly the same note (pitch), but one has no trouble distinguishing the two instruments because of their vastly different harmonic content. A harmonic is simply a multiple of a fundamental pitch. If, for example, the fundamental pitch is 100Hz, its 2nd harmonic (octave) is 200Hz, its 3rd harmonic (twelfth) is 300Hz, its 4th harmonic (superoctave) is 400Hz, and so on. Pure tones (fundamental only) do not exist in nature; anything vibrating – a piano string, organ pipe, or whatever – does so at multiple frequencies. The wondrous variety of different sounds in nature are due to the specific number and intensity of the harmonics associated with each fundamental tone. Intensity, or loudness, is also easy to explain. Sound travels

in pressure waves similar to waves in the ocean. There are BIG waves (high amplitude) and little waves (low amplitude). The human ear perceives these differences in amplitude as loudness or softness. Careful examination of organ pipes reveals a number of other factors which (although some are small) contribute to distinctive pipe organ sound. First, organ pipes do not start to speak instantly (attack), and different sizes and types of pipes have their own individual speech characteristics. These qualities are collectively called "envelope." When the valve snaps open under a pipe the pipe does not initially speak at exactly the proper pitch – it may overshoot by quite a bit – and this is called "chiff." In certain types of pipes (a Gedeckt, for example) this is an endearing quality and gives the stop its character. All pipes, even reeds, do this to some extent. As the pipe is quickly settling down to its proper pitch the harmonic content is changing slightly. These are called "transient harmonics." One other subtle factor is present in pipe organ sound. Wind-blown pipes produce a certain amount of wind noise. One may not be aware of it when listening, but without the wind noise the tone is lifeless and plastic. Different types of pipes exhibit differing amounts of noise content. So, the pipe organ is like a huge choir of singers – each pipe produces only one pitch, but it sings its one note in a most individual and sometimes eccentric manner.

The vast building housing this Kimball pipe organ faces geographical south, which means that when one enters the Auditorium through the chute one faces north to view the stage. From this vantage point the size and location of the instrument isn't readily apparent. None of the pipes are visible, and most of the instrument's tonal forces (43 of its 53 ranks) are located very close to, above, and to the left of the console behind large tone grilles covering the west wall situated at the 4th and 5th floor levels on stage right (audience left). A smaller but relatively strong Antiphonal organ of 5 ranks is located 160 feet from the console on the opposite end behind identical tone grilles covering the east wall at 5th floor level stage left (audience right). A separate Echo organ of magical effect, also of 5 ranks, is situated over the sound booth and speaks through its own tone grille in the ceiling 58 feet above the floor. All pipework, tuned percussions, traps, and effects in this organ speak from behind a system of 128 swell shades each of which is on its own pneumatic motor, rendering the entire instrument flexible and expressive from top to bottom. From the organist's viewpoint, this feature of complete enclosure of the instrument -- a Kimball standard -- greatly multiplies the utility of every speaking stop in the organ.

This instrument has one of the most unique and complex tonal designs ever created by any builder, and its pipework has remained in its original

condition and voicing – no additions, butchery, or re-specification. Sadly however, so many other Kimball organs have had radical changes inflicted upon them even to the point of being completely broken up for parts. Today very few Kimballs remain at all, let alone in their original state like this one. The organs built by this firm showcase an age where pipe organs were being constructed for more venues than at any other time in history, and they achieved excellence for their aesthetic nature and sonic exuberance. This one, with its blending of classical and theatre voices, tuned percussions, traps, and imitative orchestral stops, offers a full symphony orchestra of different tone qualities and pitches at the command of the organist. Its range exceeds the united forces of the grand symphony orchestra, and its tonal design imparts an expanded and unusual versatility which permits it to serve a wide variety of musical functions.

Theatre organ enthusiasts will note that this instrument is arranged in the room in a way similar to the unit cinema/theatre organs of the day. The latter typically had about half its pipework divided into a Main chamber on audience left and a Solo chamber on audience right. In this auditorium the organ's tonal forces are grouped in an oversized Main chamber on the left and an undersized Antiphonal chamber on the right (like an undersized Solo) with a third Echo chamber in the ceiling super-added. This Main chamber is home to all of this organ's pitched percussions save for the Echo chimes, all traps, and the lion's share (81 per cent) of the total pipe count. It has an elevated middle-section halfway between the 4th and 5th floor levels facing the swell shades which is home to the Choir windchest, the Great front and rear windchests, two offset chests for the bass of the Great Concert Flute (Pedal Bourdon) and Choir Tibia Minor, and, lined up along the rear wall, the windchests for the independent Pedal Bombarde. The large Swell division is high up in this chamber on the 5th floor level farthest south. The Solo division (front) and new Uniflex relay and original Spencer blower (both toward the rear) are situated directly underneath the Swell division but on 4th floor level. The Antiphonal chamber on audience far right is home to 10 per cent of the instrument's pipes, and the remaining 9 per cent of the pipes are in the Echo chamber located at attic level in the ceiling.

The Kimball Company's Organ Department used only the finest woods and metals available to constuct its products, employed some one of the finest pipemakers, windchest builders, technicians, and voicers in the world, and, rank for rank, was therefore the most expensive builder in the world. Kimball Company records have been most difficult to document however, their total output of organs remains unconfirmed, and it appears that Kimball's method of assigning Opus numbers cannot be known. By the time its organ shop closed for

the most part in 1930 it's believed that over 4K had been built with Opus numbers stretching well into the 7K range. It's possible that for every new contract proposal drawn up for another organ another Opus number would be affixed to it and discarded with the contract proposal if it failed to be signed – which might explain the difference between the firm's total output of organs and its significantly larger number of Opus numberings, but this is just a guess. Kimball turned out instruments of the highest quality and of all sizes and descriptions for parish churches, chapels, cathedrals, homes, schools, colleges, theatres, and auditoriums all across this vast country and elsewhere in the world, and it was particularly adept at placement of pipework into just about any available space at any venue and making it work. As active as this Company was in the industry, no history of the pipe organ in America would be anywhere near complete without a major study of Kimball.

The fact that this organ has two somewhat powerful divisions located at a distance from the console which pull the sound into the room makes the instrument sound larger than it really is. Even so, this is a very substantial and important instrument. The Main chamber is barely big enough for half the organ it contains, and being fully enclosed behind 128 swell shades it can raise a crescendo that few audiences have ever heard. This organ is the ONLY Kimball quite like it of this size and disposition left in the entire world which still exists in its original location, remains tonally unaltered, and is fully playable.

While Kimball turned out more unit theatre pipe organs than anything else it only built 2 other symphonic orchestral organs comparable to this one, both of which were built around 4 years later. One of these, Kimball's Op. 7030, its so-called "Magnum Opus", was built for the Minneapolis Municipal Auditorium / Memorial Hall in 1928 and was over twice as large. Dubbed "the Voice of Minneapolis," this was a ginormous V/123 concert instrument (OHS Citation No. 43) of 157 speaking stops which was given a substantial theatrical side and was controlled by 2 consoles: 1) a IV/24 unit theatre organ horseshoe console which controlled only its theatre-style voices, Kinura, 7 tuned percussions, traps, and effects, and 2) a V/122 drawknob concert console which controlled everything save for the Kinura rank. The concert console was altered slightly in 1957 and repaired by the M.P. Moeller Company which added 2 Mixture stops. The cost to build this instrument was $100K, a tremendous sum back in the day and more than double what was spent at Saint Louis 4 years earlier, but Minneapolis defaulted financially on the contract, and Kimball was never fully paid for it. Before this venue was demolished in 1987 plans called for this titanic Kimball organ to be removed to the new Minneapolis Convention

Center, but this project, once started, also failed financially and was never finished. Today both its consoles and all pipework, chests, and mechanism are in storage awaiting a major rebuild, a hugely expensive and ambitious project due to its size which, without a major benefactor to finance it, isn't expected to be carried out any time soon.

The other one, KPO 7025, was built for and installed in the Memphis Cook Convention Center/Municipal Auditorium beginning in 1928 and was completed in the spring of 1929. The building was a double auditorium separated into north and south halls with the organ uniquely divided between both halls, therefore Kimball built a double-organ for it – what amounted to a 115 rank church/concert organ playable from 2 separate consoles of 45 and 70 ranks, respectively. The smaller IV/45 drawknob console was placed in the south hall and was schemed like most organs found in large churches or cathedrals. The larger V/70 drawknob console was placed in the north hall and was schemed as a concert organ with certain imitative orchestral voices included, but with only 3 independent Pedal ranks. Four chambers were provided for each organ facing north/south, respectively. An Echo chamber having pipes playable from the north console also was placed at the far end of the north hall. Curiously, no municipal organist was ever appointed to play this massive divided instrument on a regular basis, no recital series was ever implemented, and thus for a large part of its history this fine double-organ sat silent. By the 1990's this venue's future was in question, and both organs had become unplayable by then and needed rebuilding. Both instrument were dismantled, placed in storage, and offered for sale. The smaller south hall organ was sold in 2002 to Bartlett United Methodist Church in Bartlett, Tennessee and was subsequently rebuilt and expanded by the Milnar Organ Company. The larger north hall organ remained in storage until 2020 at which time St. Mark the Evangelist Roman Catholic Church in Norman, Oklahoma announced a campaign to renovate and install the majority of it there, with renovation to be carried out by the Schantz Organ Company at an estimated cost of $1.8 million. This project is expected to begin in 2022 and be completed before the end of the year and will involve around 60/61 stops and 69/70 ranks speaking on their original heroic wind pressures. All pipework including 6 manual diapasons, 14 total celesting ranks, a Vox Humana (or two), and all the color stops that defined the heart and soul of this magnificent instrument as it was from the beginning is expected to remain original save for the addition of a new 8-foot Pedal Principal in the façade, a new 4-foot Choir Principal, and some new flute mutations in the Swell. The only full length 32-foot in this instrument is the Bombarde, the Diapason being resultant, but insufficient room is available for it in the

chamber. The plan is to retain the original Kimball console shell and manuals and supply it with new "guts" in the interest of preserving this organ's historical significance. Some judicious choices will enable the organ to fit in its new environment where expansion of the existing chambers is not feasible architecturally or fiscally. The Great will reduce from four 8-foot diapasons to three and from two 4-foot Octaves to one; a couple of stops will be unitized (16'-8') versus independent ranks, and a few of the basses, of necessity, will be supplied by Walker digital. The renovators are working carefully however to preserve the integrity of the Kimball sound and all of the color stops as closely as possible.

The St. Louis Scottish Rite Kimball is thus the only member of this group of three playable from a single console. Because 21 of its ranks which make up 43 per cent of its total pipework are formed of theatre-style voices a duplicate horseshoe console controlling a unit theatre organ of 21 ranks operable on just these voices and the instrument's tuned percussions, traps, and effects easily could have been provided on or near the Auditorium's huge stage. The instrument was certainly large enough to warrant it, but why exactly this wasn't carried out remains unexplained, especially when one considers that Saint Louis came in under budget. What CAN be said with a fairly high degree of certainty is that, with a man of vision like Richard Pier Elliot heading Kimball's Organ Department at the time, the possibility of dual console control was undoubtedly entertained.

To appreciate why this historic national treasure of a pipe organ was designed in its own unique and complex way it's necessary to understand some of the developments in the organ world which led up to its creation. After 1890 some new and highly imitative, orchestral colors were developed by Anglo-American organ-builders, most notably the revolutionary builder and inventor Ernest M. Skinner in Boston, and the equally revolutionary builder, inventor, and eccentric British genius Robert Hope-Jones in England. With Mr. Skinner, the Great division had become a source of foundation tone on top of which was to be gathered the rest of the instrument. This demoting of the Great as the division of primary importance was a concept of revolutionary proportions, but electric action freed him to redistribute the voices throughout the organ in a fresh way, and the ease of electric-action coupling made the distinction practically meaningless in the final result. In retrospect therefore, Mr. Skinner is considered the predominate force in American organ building from 1900-1930, but, at the time, the situation was hardly so clear. The ground-breaking novelties of Mr. Hope-Jones about how an organ should be built were absorbed

at the time with a mixture of wonder and horror, but nevertheless he and Mr. Skinner both had the most compelling vision of orchestral pipe voicing. This proliferation of orchestral voices from organ pipes voiced on higher pressures along with the application of electricity to organ building and large-scale unification of pipe ranks was a development which evolved from the smaller classic-styled tracker organs of the 19th century, then through a brief journey with tubular-pneumatic action around the turn of the last century, and ending finally with the sophisticated electro-pneumatic windchest and console action of the 20th century organ.

It would be erroneous and misleading to maintain even to an uninitiated public that pipe organs separate themselves into basically 2 distinct types, viz., cinema/theatre organs and "classical" organs, the latter being a vague and oversimplified term. Twentieth century builders recognized a far greater range of offices their instruments could fill than that, and their products showed far greater flexibility and were too varied to line up with this "either-or" definition. The very earliest organs supplied to American theatres in the decade from 1895-1905 were constructed, and sounded, very much like church organs, but in the years which followed (c. 1910-1930) a very distinct style of building solidified meant to specially fill the office of silent motion picture accompaniment and entertainment of audiences. It should be noted however that with the advent of the true cinema/theatre organ no less than 7 other styles or species of building had emerged by then. These were: 1) church organs, or so-called "liturgical" organs built along traditional lines primarily to lead congregational hymn singing, accompany vocal solos, and perform choral anthems and the voluntaries of the church, 2) diminutive, single manual, generally portable continuo organs without pedals typically supplied with one or perhaps two gently-voiced ranks which served in place of a harpsichord to provide harmonic support to smaller instrumental ensembles and baroque-styled orchestras or to rehearse singers in a private choir room, 3) symphonic concert organs, which reflected that same orchestral paradigm destined to reach ultimate size, tonal spread, and absolute power, 4) so-called "residence organs" which were built orchestrally with small scaling and voicing designed to supply a warm, polite, and non-aggressive tone which could stand alone or blend with a vocal or instrumental soloist in a salon setting, 5) automatic player pipe organs which ran on a perforated roll made to be operated by non-organists at any hour desired, 6) unit mortuary organs, compact gently-voiced instruments typically of 3-5 unified ranks having a very soft and refined "churchly" tone which met the needs of funeral homes and cemetery chapels, and 7) the Masonic pipe organ – which in its true form was a tri-hybrid instrument of complex tonal design

combining elements of the church, cinema/theatre, and symphonic concert organ categories. The subject of this paper is, technically speaking, a Masonic pipe organ of this last tri-hybrid species.

Some of the instruments built for Masonic lodges of this period were virtually indistinguishable from small church organs, but the larger examples differed markedly from other types of pipe organs. This category experienced its "golden age" of building during the 1920's at a time when pipe organs were being turned out in large numbers in this country, and not just for cathedrals, churches, concert halls, and theatres but also civic auditoriums and municipal halls, schools, private residences, soldiers' homes, hotels, hospitals, and even yachts. The scope of this building, as stated, reached its zenith in the second decade of the last century, and the larger examples typically employed a mix of refined windchest design and console innovations along with a fairly complex and sophisticated electrical switching system which allowed the same rank to be made available as stops of multiple pitches all of the same quality and strength of tone and playable from more than one keyboard. These new trade methods were very commonly employed by British and American organ builders of this era and worked to make their products by far the most technologically unique, if not advanced, for the time. Even in smaller unit organs it was not unusual for the number of speaking stops to be triple or quadruple the number of ranks the instrument had in it. It was also common for Pedal divisions to have just one or at the most 2 independent ranks available at multiple pitches with every other Pedal stop being borrowed from manual divisions. Some instruments well supplied with Pedal stops had no independent Pedal ranks at all. The biggest reeds which needed higher wind pressures to achieve their characteristic tonalities and power typically were placed on separate windchests. Vox Humanas were often placed within their own enclosures ("Vox in a box") to help refine and muffle the sound to enhance their blending qualities. Each manual was supplied with its own divisional tremolo, and certain individual stops or stop groups such as Tibias, Strings, Tubas, and Voxes ran on their own tremolos. Total enclosure of the entire instrument was typical, and duplicate consoles were common. The Masonic organ had to be built to play the marches, patriotic music, and orchestral, operatic, and song transcriptions used in the ritual work and ceremonies as well as accompany the singing voice and perform the popular song arrangements of the day when the venue was used for entertainment. This complex tonal mix of stops reflected the fact that the concept of "organ music" was broadly defined back in the 1920's. With the development and introduction of the theatre organ traditional distinctions in organ sound tended to blur, and the concomitant introduction of wide scale diapasons and flutes, narrow scale

pencil-width strings, high pressure reeds, and few if any mixtures and mutations in the tonal palette of many church organs being built back then tended to blur that distinction even further.

The so-called Unit Orchestra cinema/theatre pipe organ promoted by Wurlitzer after 1910 soon became the concept and state-of-the-art surround sound concept of the silent motion picture industry. Beginning around 1895 the very earliest pipe organs planted in cinemas and theatres operated and sounded very much like conventional church organs. There was in fact no real difference between church and cinema/theatre organs during the next decade, but certain achievements in organ building developed quickly after the turn of the century, and these were the innovations of many persons besides Mr. Hope-Jones. It was the builder Frederick W. Smith, for example, another friend and collaborator of his, who in 1905 first conceived the idea of the "horseshoe sweep" arrangement of engraved stop tongues of various colors mounted on curved bolsters for improved vision and efficiency when working in dim light and for speed of operation when making hand registrations. Mr. Hope-Jones also derived much inspiration from his longtime friend and member of the British Parliament, Mr. J. Martin White, an outsider who had devoted much thought about organ playing and improvement and whose artistic discernment and encouragement, through Mr. Hope-Jones, was to have significant influence on orchestral organ building of that time. It was actually Martin White who first argued that the Swell division should be full of Violin tone and be like the strings of the grand orchestra which enter into all major ensembles. The subject of this paper is a prime example in which this very concept – through Kimball's Organ Department manager Richard Pier Elliot and on back to Hope-Jones and Martin White – was carried into execution.

While Mr. Hope-Jones, one of the most ingenious and most sorely misunderstood contributors of the art of organ-building, is commonly credited as the Father of the Theatre Organ he did not build cinema organs and did not conceive them. His instruments were never intended for photoplay and were not designed as such – that was Wurlitzer's adaptation of his principles. He simply set out like Mr. Skinner to develop organ pipes which would reproduce the sounds of actual orchestral instruments as closely as possible to improve the organ in general. Before his death and after he had started working for Wurlitzer he did see adaptations of his schemes installed in motion picture houses, at least those installed between 1910 and September, 1914. A strong argument can be made that the cinema/theatre organ is probably closer to what he originally envisioned – an organ architecture based completely on the

orchestral playing field and not based on the ancient concept of principal choruses – and has fulfilled his dream more than any other of creating the ultimate orchestral organ.

After 1910 when the Rudolph Wurlitzer Company acquired the Hope-Jones firm and its machinery, tools, fixtures, furniture, and patents, the product was officially known as the "Wurlitzer Hope-Jones Unit Orchestra," but in the eye of the public it quickly became "the Mighty Wurlitzer." The Unit Orchestra had no divisions as such; a minimum of 2 Hope-Jones units, named Main and Solo, would each be placed in their own chamber on opposite sides of the cimena/theatre, the Main chamber on audience left and Solo chamber on audience right, into which all the available ranks would be divided roughly equally and placed. In a 2-manual instrument the upper (Solo) manual functioned to carry the foreground melodic material, and the lower (Accompaniment) manual and Pedal provided what would be considered normal orchestral support. High wind pressures (around 10") had to be employed even in smaller instruments, and certain stops in larger instruments such as the Tuba Sonora, Tuba Mirabilis, Harmonic Trumpet, English Post Horn, Bombarde, Wood Diaphone, and Solo String demanded pressures in the range of 15-30" to attain their characteristic tones. In the Wurlitzer system when a 3rd manual was inserted it was between the Solo and Accompaniment and called the Great, and it took over the function of carrying the foreground melodic material with certain special voices and percussions transferred to the top (Solo) manual; if a 4th manual was inserted it was between the Great and Solo, it was called the Bombarde, and it controlled the biggest brass reeds and certain color voices. The very rare 5th manual, if inserted at all, was called the Orchestral and typically sat between the Bombarde and Solo. Kimball, on the other hand, did not always follow the same system of nomenclature or placement of manuals in its theatre pipe organs; the addition of the 3rd manual could be placed above the Solo and called the Bombarde (no relation to the reed stop) – and the 4th manual could be placed above the Bombarde and called the Orchestral. As the number of manuals increased the Main and Solo units would be paired with a high pressure partner situated immediately above it; in the Wurlitzer system the high pressure partner for the Main was the Foundation, and the high pressure partner for the Solo was the Orchestral. All 4 of these chambers were enclosed, and it was not uncommon for the instrument's tuned percussions and traps (struck percussions), Diaphone pipes, and Piano to be placed within their own separate unenclosed chambers which were named Percussion, Diaphone, and Piano, respectively (in some instruments the expression to the Percussion and Piano chambers has been disconnected and the

swell shades left fully open). Wurlitzer deemed these 4 chambers (Main, Foundation, Solo, Orchestral) sufficient even for the largest IV/36 model in its regular production line. The first one was built in 1926 for the New York Times Square Paramount, with chief organist Jesse Crawford specifying certain string and diapason ranks, 3 Tibias, and 4 Vox Humanas to be included. In 1928 Fox Studios ordered 4 identical models for its Fox theatres in Brooklyn, Detroit, Saint Louis, and San Francisco. The largest Wood Diaphone pipes in these organs typically were placed in their own separate unenclosed chambers, went all the way down to 32' C, and were the only rank of this grave pitch in the whole instrument. Pipe ranks were set on unit chests and available at multiple pitches throughout the same rank, but they were unified for specific purposes, and some sound colors were only available on the Accompaniment or Bombarde manuals where they would be most often used. In a 4-manual instrument the Great and Bombarde were considered 16-foot manuals, with the Accompaniment and Solo being 8-foot manuals. In a 3-manual instrument the Solo manual, in addition to its usual function, was often apportioned much like the missing Bombarde manual.

Of course, a pipe organ as thus described was still an organ and didn't sound like an orchestra, but it certainly was far more orchestral than any built upon vertical ensembles of stops at 8-foot, 4-foot, 2-foot pitch and up. Mr. Hope-Jones' horizontal concept of using color rather than high pitches to attain brightness was definitely revolutionary, and it was definitely orchestral in the sense that orchestral instruments virtually all play at 8-foot pitch, the only exceptions being the flute which plays at 4-foot pitch, the piccolo at 2-foot, and the strings at all pitches (16-8-4-2). There are no mixtures in an orchestra. The same is true with mutation (off-unison) pitches even though some composers like Ravel, Hindemith, and a few others (who have probably gotten the idea from the organ) have used orchestral instruments that play mutation pitches in their compositions.

History has given credit to William Wallace Kimball, Chicago organ builder, for being to the symphonic concert organ what Mr. Hope-Jones was to the Unit Orchestra. Of the 8 major American manufacturers of cinema/theatre pipe organs during the 1920's, Kimball was third in production with about 650 instruments. Wurlitzer, which bought out the Hope-Jones firm and hired the inventor himself, as might be expected was first with 2,000, over twice its nearest competitor, the Robert Morton firm, which built almost 900. Moeller was fourth with about 560, Barton was fifth with just over 300, Marr & Colton was sixth with about 300, Wicks came in seventh with about 240, and Kilgen was

eighth with just over 200. These 8 firms produced over 5,100 cinema/theatre pipe organs altogether, as opposed to about 80 other firms which also were involved in the same enterprise.

The blower system in this Kimball differs from the big Wurlitzer in the Saint Louis Fox Theatre, and it is instructive to compare the two. The blower in the basement of the Fox is 50 hp. For an organ of only 36 ranks, this size blower is extraordinary. It's also dual – a second 50 hp blower was also provided for it, but the second one is redundant as only one blower at a time can be used. Wurlitzer built only 7 instruments like this with 2 blowers each, and the reason was that there would always be a blower available for a show in the event of a single point failure – a bit ironic in a way because the Spencer blower is probably the most reliable part of the whole machine. The blower itself is a large electric motor encased in a steel housing inside of which are centrifugal fans which create the volume of pressurized air needed for the pipework. The "Spencer Steel Orgoblo" made by Spencer Turbine Company of Hartford, Connecticut, and the "Kinetic Blower" built by the Kinetic Engineering Company of Philadelphia, Pennsylvania, were the blowers of choice back in the day, with Spencer having a slight edge in the market, and Wurlitzer and Kimball were just two of many builders who used Spencer blowers. In the case of this Kimball a single 30 hp Spencer blower was deemed sufficient for the entire instrument including its 4 big high pressure reeds. Why an equally reliable Kinetic blower was not inserted in this organ considering that Mr. Elliot who managed Kimball's Organ Department also had such a close business connection with the Kinetic Company at the time is unclear.

These innovations in building were indeed a revolutionary and stunning departure considering that the pipe organ, for centuries, had been treated by composers as a polyphonic instrument in which all moving voice lines were independent and equally important for carrying the foreground musical material. Builders constructed their instruments around this same idea with each keyboard controlling its own separate division of pipes independent of other divisions which could stand on its own. The innovator Hope-Jones grouped his pipe ranks into a number of separate chambers instead which he called "units," and he wired the keyboards to control a varied assortment of colors and pitches taken from pipes located in any of the various units. Being an electrical engineer by training he extensively promoted the concept of unification and duplexing made possible by electricity to spread the ranks and speaking stops of his units over several keyboards and at different pitches all at the same time.

The term "unit action" in its broadest sense refers to any of several different applications in which a single rank can be controlled by more than one stop or a single pipe by more than one key. Simply put, it's a sharing process of pipes. Duplexing refers to the use of a single rank of pipes on more than one keyboard, and extension involves the use of one rank at several pitches within the same division. These trade methods were widely adopted at the time solely for the sake of saving space and cost and to make an instrument of fewer pipes look larger on paper even though the scale and voicing of a stop meant for one division isn't always a good fit with another; the use of duplexed stops also can compromise the independence of separate ranks. For example, when a chord is held on a duplexed stop on one manual and the melody line on another manual duplicates the stop being sustained in the chord, the duplexed stop will not sound in the melody which tends to distort the melodic line.

Mr. Hope-Jones also was a big promoter of keyboards with Double Touch, a.k.a. Second Touch, a device consisting of a second set of electrical contacts in the keyboard situated below the first set. Extra pressure on the keys caused the fingers to fall an additional 1/8th inch through a spring giving way which brought additional stops into play. This feature which was first invented in France in 1875 by Mssr. Victor Mustel and afterwards applied to pipe organ keyboards in 1886 by Mr. Hope-Jones permitted chord accents, counter melodies, melody substitution and sustain, and even soloing a fugue subject any time it occurs in any voice, all from the same manual without having to lift the hands from the keys. At least one of these Double Touch keyboards, typically the Accompaniment, was provided for theatre organs, but in larger instruments the Great, Bombarde, and Pedal also could be supplied with this feature. In the Saint Louis Kimball this device is entirely lacking.

It's important to understand that the systems just described for constructing a Unit Orchestra on the one hand and this Kimball organ on the other hand are similar but not the same. Like all organs built by the Kimball firm prior to 1927, this one was wired very much like a unit cinema/theatre organ, but in its scheme, design, and operation it is anything but a "theatre organ with drawknobs." Some who have never heard it played any other way however have supposed this to be true. It also was not supplied with "obsolete drawknobs" as one Saint Louis area theatre organ aficionado, now deceased, went about proclaiming. Fiction like this can be very misleading (not to mention disrespecting Kimball engineers), and it would be a rather serious mistake to think of this organ merely in these terms. Its pipework is not divided

into separate Main and Solo units but into separate divisions each of which, save for the floating Echo organ, is assigned to and controllable from its own keyboard. About 40 per cent of the pipework is on unit windchests which permit the same rank to be available at multiple pitches, such as the Great Concert Flute at 16'-8'-4'-2-2/3'-2'. The remaining 60 per cent is on pitman windchests which do not permit this. The 5 ranks in the Echo have been made playable from any manual or pair of manuals at a time through electrical coupling which is controlled by means of Echo Add/Release buttons built into the right side key cheeks of each manual. The left key cheeks of each manual are equipped with identical Unison On/Off buttons operating on its division.

This instrument was specially provided with certain features which served as aids for performing transcriptions and orchestral scores – aids which are lacking in cinema/theatre organs – such as 1) sliders to assign expression capability of any of its 5 expressive sections (Antiphonal, Solo, Great/Choir, Echo, Swell) to any shoe, 2) a Pedal [Treble] Separation tilting tablet which gave the 13 lowest pedal notes to any drawn Pedal stop, the rest of the pedalboard above center C sounding any optional manual coupling, and 3) Crescendo Separation tilting tablets (Strings to Crescendo, Flutes to Crescendo, Diapasons to Crescendo, Reeds to Crescendo) controlling which of the 4 families of tone would enter into a crescendo buildup. This organ also was not provided with certain all-important features found in theatre organs of comparable size, such as 1) Second Touch manuals, 2) a Great Octave to Second Touch coupler for the bottom manual, a control considered an absolute "must have" in any modern theatre organ specification, 3) a Solo to Great pizzicato coupler, which when Solo stops were registered provided a "blip" of momentary sounding on top of any Great registration, and 4) that mysterious "look ma, no hands" device called the sostenuto – sometimes a knee lever and sometimes a kick switch on one of the swell shoes – which held the notes as long as that extra switch was engaged, permitting the organist to play a chord on one manual and, with the sustain stop tab on, press the sustain switch and then move on to play with both hands on another manual, the sustained notes being held until the switch was released. These and other characteristics make this Kimball an entirely different animal altogether than a theatre organ. At the same time, when the stops, couplers, and tremulants of this organ are set up in theatre mode, one discovers at one's command the tonal equivalent of a 21-rank unit cinema/theatre organ along with most of the usual tuned percussions and traps. Thus, in terms of its playable voices, it definitely has a theatrical side rendering it suitable for performing popular music and/or accompaniment of silent motion pictures, a function it has retained right up through and including the present day. It was

also schemed to accompany the Valley's choir and vocal soloists, excel at performing hymns, anthems, and patriotic music, fill every need for the Valley's Masonic degree work and ceremonies, do justice to the standard repertoire in an acceptable if not stylistic way, perform orchestral transcriptions or arrangements of music not originally written for the organ in a convincing way, and to provide full ensembles which complement rather than compete with the entire tonal forces of the grand symphony orchestra.

One of the very first things a guest organist notices when sitting at this instrument for the first time and contemplating playing a piece from the repertoire is … there is NO principal chorus with mixture anywhere in it. This organ was supplied with NO independent upperwork save for a handful of small pipes of refined flute tone and only one true mixture stop composed of 3-ranks of very soft Dulce pipes. To get something suggestive of a chorus when performing repertoire this deficiency must be overcome by drawing those same small pipes of refined flute tone and the soft mixture, strings, and octave couplers along with one or more stops of diapason tone. The Swell Soft Mixture is remarkable for being very well-regulated and almost inaudible from the console in its top octave. All 3 of its ranks go right up to the top C of the manual without breaking back, and one almost has to be up in the Main chamber standing next to its windchest to hear these very highest of notes. Additionally, in order to compensate for the lack of a principal chorus with mixture, higher wind pressures were used in voicing for the production of a greater number of harmonic upper partial tones in certain color stops, particularly the strings, a practice widely adopted by the generation of Anglo-American builders of that time. In a day when some of the finest diapasons in the world were speaking on 3-5 inches of wind, the 6 diapasons in this organ were voiced on 10 inches. And, save for the 10 ranks involving the 1) Great Harmonic Trumpet (15 inches), 2) both Solo Tubas (20 inches), 3) Pedal Bombarde (25 inches), and 4) Swell Vox Humana and all Echo stops (7 inches), all of the rest of the organ was also voiced for 10 inches.

Multiple tremulants of differing depths and speeds were supplied to these instruments by their builders. Most of the sound colors were tremmed at fast speeds save for the Vox Humanas and Tibias which were typically given separate trems which beat at different speeds with somewhat heavier pitch excursions. In larger instruments the biggest Tubas or Post Horns were often supplied with their own trems which could be left retired for passages where a tremmed full organ with untremmed brass chord accent or final held pedal note was desired. Choruses in a theatre organ were built up in different ways from

that of a church organ, certain colors were available which typically were not found in church organs, but in its organization it was very consistent with British church organ building of that era. The Wood Diaphone, sometimes called "Diaphonic Diapason," another invention of Mr. Hope-Jones, was typically the largest scale diapason found in the theatre organ which contrasted with the smaller scale Horn Diapason which also was very frequently included in the scheme. In larger instruments a 3rd Open Diapason of medium-scale also could be inserted, as it is in the Saint Louis Fox Special Wurlitzer. These 3 Diapasons could be combined in ways which could create, when needed, a church organ sound for silent films which, for the purpose, was very passable. The Tibia Clausa, a large scale quadrangular wood stop yielding a hollow, unimitative flute tone with a nearly pure fundamental, as Mr. Hope-Jones intended it, was to function as a filler-stop of neutral tone quality for providing volume, thickening ensembles, giving them the needed weight, and for carrying forward color-charged orchestral stops, making them more satisfactory. The tremmed Tibia sound quickly became associated in the minds of the public as the quintessential theatre organ sound. Two Tibias were inserted in this organ, the stop in the Choir [Tibia Minor] subject to the Choir divisional tremulant and the stop in the Swell [Tibia Clausa] is now running on a Wurlitzer tremulant.

The subject of this paper, as stated, is equipped with 6 ranks of diapason tone, unheard of even in the largest cinema/theatre organs. It also has an 8-rank string chorus with 6 more ranks of string stops peppered throughout the instrument. These 14 string-toned ranks comprise close to 1/4th of the total pipework, again something unheard of in cinema/theatre organs. These imitative pencil-width string pipes voiced by Kimball's head voicer, Mr. George Michel, are unsurpassed in quality and, even to this day, when builders are asked where to go to find the most beautiful imitative string-toned stops in the world, they're told to start with Kimball.

In this organ the only independent Pedal voice is the stupendous 16' Bombarde rank with its 32', 8', and 4' extensions stretching to 68 pipes. Every other Pedal stop is derived from extensions of 8' ranks in the manual divisions. By way of review, the Pedal 32' Contra Bourdon is wired to play the Swell Tibia Clausa rank extended downward by 12 pipes. The Pedal 64' Gravissima quints in its bottom octave only but not with itself, i.e. it's not formed strictly from a single rank of Tibia Clausa pipes, as some might suppose. It's bottom octave is formed from 2 different ranks by extending the less assertive Swell Lieblich Gedeckt downward an additional 5 pipes down to 32' G and wiring its lowest 12

pipes to sound with the 32' Contra Bourdon [Swell Tibia Clausa] a perfect 5th apart to generate the differential 64' tone. The Pedal 32' Acoustic Bass is formed in a similar way by wiring the Great English [Major} Diapason at 16' pitch with the Great Concert Flute [Pedal Bourdon] at 10-2/3' pitch, each pedal key from top to bottom sounding 2 pipes standing a perfect 5th apart to generate the differential 32' tone. Neither the Tibia Clausa nor Concert Flute were made available separately to the Pedal division at 21-1/3' or 10-2/3' pitches, respectively, although their pipework extends low enough to have made that possible and would have been preferable.

It should be noted here that Kimball engineers wanted any Pedal stop which generates the resultant, or differential tone, whether it quints throughout the compass of the pedalboard or only in its bottom octave, formed from 2 separate ranks when possible, with the 5th sounding rank less assertive than the unison sounding one. This wiring approach had as its objective a smoother and less abrupt transitioning across the split point at the C in the center of the pedalboard. The engineers also were careful to juxtapose windchests supporting pipes generating differential tones as close as possible to each other in the chamber to maximize the effect. In a crawl through the Main chamber one finds therefore the windchests having the largest Swell Tibia Clausa and Lieblich Gedeckt pipes, and the largest Great English [Major] Diapason and Concert Flute [Bourdon] pipes, respectively, positioned not far from each other.

The Acoustic Bass then, as stated, is wired to quint throughout the compass of the pedals whereas the Gravissima, as stated, is wired to quint in its bottom octave only [low C to the low B eleven chromatic semitones higher] and above that single notes wired from Contra Bourdon [Tibia Clausa] pipes. All upperwork in this organ of 4' pitch or higher, save for the Swell Soft Mixture, are formed by extending the windchests of 8' ranks: the Antiphonal Swell Claribel Flute is extended upward and plays at 4'-2' pitches, the Great Concert Flute is extended upward and plays at 4'-2-2/3'-2' pitches, and the Swell Lieblich Gedeckt is extended upward to play at 4'-2-2/3'-2'-1'3/5' pitches. All of these high-pitched voices sound all the way up to high C but in terms of strength they sound as if they were scientifically regulated so that the highest elements of the harmonic series decrease in intensity as they rise in pitch. Octave [4'] divisional coupling is inoperable in the top octave for stops of 2' pitch or higher. Suboctave [16'] divisional coupling in the bass octave is only operable on the following 15 ranks: the Great Principal (wood) Diapason, English (metal) Diapason, Concert Flute, Waldhorn, and Harmonic Trumpet; the Swell Horn Diapason, Tibia Clausa, Lieblich Gedeckt, Viole d'Orchestre, Viole Celestes II,

and Oboe Horn; the Solo Cello and Tuba Sonora; and the Antiphonal Claribel Flute. Octave [4'] divisional coupling is operable on all ranks in the top octave, save for: the Great Fifteenth [2' Concert Flute], the Swell 2' Flautino [Gedeckt], Tierce 1-3/5' [Gedeckt], Soft Mixture, and Vox Humana, the Solo Tuba Mirabilis and Tuba Sonora, and the Echo Vox Humana.

When an organ is constructed along these lines with every pipe of every division enclosed (a Kimball standard) the voices available to Great and Pedal which are unenclosed in so many other instruments are given remarkable and very unusual powers of flexibility and expression. In this style of building the Great/Choir ranks were often enclosed together by Kimball and shared some duplexed stops. Many consoles provided with multiple expression shoes had a slider panel built into the coupler rail above the highest manual to permit the assignment of divisional expression to any shoe or combination of shoes. This organ, like all Kimballs built after Mr. Elliot began heading the Organ Department in 1918, was supplied with electro-pneumatic action. It also has an array of many octave and suboctave couplers operated by tilting tablets including a Master Swell Coupler, an invention of Hope-Jones which made it possible through electrical coupling to express all divisions, simultaneously, through a single shoe. An electrically-operated moving combination action also permitted large clumps of stops to be added or retired with lightning speed. These features provided any organ like this one built in the orchestral paradigm with a massive tonal and dynamic palette for the blending of colors and nuancing the music.

As stated, Mr. Hope-Jones and Mr. Skinner moved and worked in the climate of the Anglo-American style of organ building around 1900 which was subject to this orchestral paradigm. The aural interest in this style, with its little or no harmonic development in the chorus, is not provided by the organ tone itself but in rapid changes of registration comparable to the moment to moment changes of timbre heard in the grand orchestra. It did not matter so much to the ear what the next color or combinations of colors were – they just had to be different. The prevalent thinking in America at the time was, in scheming a new organ, to minimize if not totally dispense with the inclusion of independent upperwork, off-unison mutation stops, and conventional mixture stops. The feeling was that no injury to the instrument's tonal structure would result provided that a generous supply of heavily-blown color stops, being naturally rich in harmonic upper partial tones, were introduced. It was presumed that organists and conductors have ears which can always discern the fundamental orchestral pitch no matter which stops are drawn at the organ, but that multiple

mutation stops and strong mixture work can confuse the ears of orchestral players and interfere with their ability to discern fundamental pitches. This was another reason why orchestral concert organs were provided with very few off-unison mutation stops, and, when they were provided, were often formed of refined flute tone derived from 8-foot extensions. The by-product of this method of building was an organ having striking individual effects and a dark-sounding ensemble. To make up for the scarcity of traditional independent upperwork color stops rich in harmonic upper partial tones were inserted, and higher wind pressures and octave coupling were employed. When entire organs were speaking on wind pressures of 3-5 inches Mr. Hope-Jones was employing wind pressures as high as 50 inches for some of his Diaphone and brass reed ranks, 29 inches for his Solo String ranks, 25 inches for his Violone and Tibia ranks, and 15 inches for his Solo Vox Humanas.

As strange as all of this may sound to the modern mind, American organ building of that day was experiencing a phase in which imitation of the orchestra was thought to be progress. This style of building seemed to solidify around 1920 as organists became just as much occupied with performing transcriptions of orchestral works and arrangements of music not originally written for the organ as they were with the standard repertoire, including the music of J.S. Bach. Dr. Charles Courboin who tonally designed and inaugurated this instrument began both of his recitals with a major Bach work. It was evident that he was interested in driving home the point that, while Bach the organist never knew an organ built like this one, it could still perform his music for modern audiences effectively, if not authentically. The truth of the matter is, provided that the organist playing it has learned to register and play this instrument in the special way it demands, it can perform complex contrapuntal music and fugues written in triple and quadruple counterpoint convincingly.

Many builders of the day were preoccupied with creating instruments with more orchestral color and power, hence higher wind pressures were employed to accomplish this end. As stated, knowing that some of the finest English Diapasons in existence were speaking on wind pressures of 3-5 inches, Mr. Hope-Jones figured out a way, in his organs voiced on higher wind pressures, to improve the tone of the larger flue pipes by gluing a very thin strip of leather to the pipe's upper lip to create a thick and smoothly rounded surface which is so desirable in stops of the diapason class. Many of the larger open metal cylindrical pipes and certain wood pipes in this organ were constructed having this feature, notably the Great 42 scale English (metal) Diapason and

(wood) Concert Flute, Swell (metal) 40 scale Diapason Phonon and (wood) Tibia Clausa, Solo (metal) 36 scale Diapason Stentor, and Antiphonal (metal) 41 scale Open Diapason (arguably the most beautiful Diapason in the whole instrument). The generic term "Diapason Phonon" was coined by the Hope-Jones firm to describe this type of treatment of the upper lip of a diapason pipe.

Not everyone in the organ world of the time however was happy with these trade methods, the concept of the orchestral-paradigm organ, and the thick-sounding, dark, opaque ensembles which were its by-product. It took less than a decade after this organ was constructed for orchestral influences in organ building to be viewed as having robbed the instrument of its former glory and integrity and made it less effective as a medium for stylistic renditions of early (pre-1800) music, and Bach in particular. The music-listening public of the Roaring Twenties may have been entirely satisfied with the size, majesty, color, beauty, and versatility of this type of organ, but as the country entered the following decade the economic engine which drove the construction of pipe organs died. The Kimball Company retained its Organ Department through 1942, but, realistically, for all intents and purposes, its organ shop closed in 1930. Concomitant with this, the orchestral-paradigm organ became viewed as an extreme capable of violent revolt and was reflected in the "organ reform movement" of the early 1930's. This was best exemplified in the instruments built by Mr. Walter Holtkamp of the Holtkamp Organ Company and those built under the supervision of Mr. G. Donald Harrison of the Aeolian-Skinner Company. As for most other builders, the majority were family-owned firms where change came slowly and was often viewed as a threat, thus the rest of the industry, for the most part, fell behind with these emerging trends. Most builders were reluctant to depart from stop lists that a decade earlier had worked so successfully for them, but nevertheless, right or wrong, the 1930's were a major turning point in the history of the pipe organ in America, one which embarked in a different direction altogether and abandoned the tonal design exemplified by the subject of this paper.

Kimball Organ Department manager Richard Pier Elliot, who had so much to do with the building of this instrument, is a little known figure today, but he was a nearly ubiquitous force in early 20th century American organ building. It's with Kimball that most people often associate him, but as a younger man he helped to organize the Austin Organ Company, first in Boston and then in Hartford. In 1903, while he was still there, Austin hired Robert Hope-Jones from England, and the two men formed a collegial friendship. Elliot left the Austin firm in 1905 to found the Kinetic Engineering Company

which, as stated, became the second largest supplier of blowers to pipe organs in America, the largest being Spencer. Ninety per cent of the pipe organs built during the first 3rd of the 20th century in America were equipped with Spencer or Kinetic blowers (the Kinetic firm was sold to M.P. Moeller in 1939). In 1905 Mr. Hope-Jones also left Austin to work for about a year with Ernest M. Skinner in Boston. In 1906, after only a year there, Mr. Hope-Jones left the Skinner firm with about 15 chest builders and branched out on his own to form the Hope-Jones Electric Organ Company in Elmira, New York. He was another extremely creative mind in the organ world of the time who went on to achieve fame as the "father" of the theatre organ. However, like any number of 20th century organ builders, living and dead, he valued artistic statement more than financial solvency. He also had a discerning ability to hire other talented organ builders, including fellow Englishman Joseph J. Carruthers who became his right-hand man from the first organ he built to his last. When Mr. Elliot received word in 1909 that the Hope-Jones firm was in some serious financial trouble he returned to serve as the Company's President. The following year, in 1910, the Hope-Jones firm was forced to file for bankruptcy and was absorbed by the Rudolph Wurlitzer Manufacturing Company of North Tonawanda, New York. Mr. Hope-Jones, while working for the Wurlitzer firm, tragically committed suicide in 1914, and, after his death, Mr. Carruthers was hired by Kimball and worked at first as a voicer with George Michel who was building a team of voicers at the time which could follow his lead. Soon afterward it became apparent that Mr. Carruthers had brought along with him many of Mr. Hope-Jones' technical philosophies for building organs, such as the triple-valve reservoir which Kimball adopted in 1930 (this system uses 3 valves to sequentially allow more pressurized wind into the chests as each valve opens, starting with the smallest, which results in greater winding stability at higher wind pressures, i.e., above 6"). Mr. Carruthers also did much work designing Kimball pipework, applying scaling principles he learned from his teacher, Mr. Hope-Jones. It was as if Kimball had hired Mr. Hope-Jones, himself. Mr. Elliot came back to Kimball in 1914 to accept a position as eastern United States Manager. This lasted 2 years after which, for some reason, he left Kimball to work for the California Organ Company (later the Robert Morton Company). After another 2 years there he returned to Kimball in 1918 as head of organ production. Over the next 7 years (through 1925), which takes in the time when the Saint Louis Kimball was constructed, R.P. Elliot oversaw major progress in the organ department through its best years. He was responsible for hiring a great number of immigrating English organ builders to the department, and his first major decision was the complete abolishment of tubular pneumatic action. All Kimball organs built after 1918 used electro-pneumatic chests similar to the

pitman chest design. These operated on the concept of controlling each note or key through the stop channel by means of electricity and pneumatics (a "pitman" is a small piston that moves up and down in the chest depending upon whether or not a stop is pulled). At first he was hesitant to build fully unified "Unit Orchestras" in the fashion of Hope-Jones, which is a bit surprising considering their close friendship, but at length Mr. Elliott gave up some of his ideals so that Kimball could thrive as a builder of many types of instruments.

The first cinema/theatre organs which appeared around 1895 were built and sounded very much like church organs, and it wasn't until Mr. Hope-Jones came to America and developed the unit organ concept with orchestral sound colors that any company was building organs for theatres much differently. But, under Elliot's guidance and broad approach to the organ market, "jumping on the bandwagon" early in the game, the Kimball theatre organ (with its modern horseshoe console, color-coded stop tabs, unified and duplexed ranks, and new stops such as the Kinura, Diaphone, and Tibia Clausa) became a new beast which could keep up with the best of the competition, including Wurlitzer. Kimball is said to have built more theatre organs than any other type, but the firm's flexibility in building styles lended itself to a few unique instruments constructed during some of Kimball's brightest years which blended more than one instrument "type." The first of these Kimballs to unite a classical and theatre design was not built for Minneapolis, however, as so many scholars presume. It was built four years earlier in 1924 for – guess where – Saint Louis.

The voicing genius of the Kimball pipe organ was Mr. George T. Michel. He joined Kimball in 1905 and by 1915 had become head voicer. His superb voicing talents, which embraced the full spectrum from reeds to strings to flutes to the principal chorus, were complemented by the skills and experience of other factory personnel including the aforementioned British voicer Mr. Carruthers, pipemaker Mr. Frank A. Meyer, Mr. Walter E. Hardy who worked in sales, as well as Mr. Elliot. The contract for building this organ has been preserved and was in fact signed by "W.E. Hardy, W.W. Kimball Co." on December 28, 1923 and countersigned on February 2, 1924 by "Robert Elliot, Organ Department manager"). It has been said that Michel's reeds were constructed with a jeweler's precision; they had distinctive tone colors, stood rock solidly in tune, and were perhaps more uniform note for note than any ever built. Michel's strings did set standards by which all others were judged; their richness, timbre, and incredible promptness of speech, even in the 32' octave, have never been surpassed. It was the superiority of Michel's voicing in fact, reinforced by the encouragement provided by the Store's Principal Organist Dr. Charles

Courboin, that convinced the Wanamaker Store in Philadelphia during the late 1920's to choose Kimball to construct the pipework for its massive new String division of 88 ranks.

Sadly, rather than being reconditioned and preserved as originally constructed, the vast majority of products from Kimball's Organ Department have been altered beyond recognition or junked completely and replaced by newer pipe organs or electronic imitations. Original Kimball windchests have been unnecessarily replaced or removed altogether simply to use the empty pipe chamber for storage. Original winding has been changed, actions converted to direct electric (no pneumatics), voicing negatively altered, pipes mutilated, and consoles either ripped out and replaced by newer ones or modified beyond recognition. Not surprisingly, the end result of this kind of ruinous tampering is an instrument all but destroyed – often without a name or a new label simply put over the old one – and what was once a wonderful Kimball organ that could be carefully and lovingly refurbished is something no longer looking, functioning, or sounding like one. There are many such stories among churches and schools, but there are far more tales of destruction of Kimball's theatre organs. After 1940, since neither the classically-minded crowd or popular culture of the time supported them, theatre pipe organs nearly passed into oblivion. Today about 95 per cent of those made by Kimball have disappeared, mostly to garbage piles. Of the remaining 5 per cent, just about all of these have either undergone major alterations or have been swallowed up in much larger rebuilds.

When this console was constructed 3 engraved drawknobs were placed in the console for the future addition of Piano stops at 8'-4' pitch in the Great and 16' in the Pedal. At the time of its installation in 1924 however, no piano was delivered, thus the organ has always lacked a playable piano as part of its tuned percussions. The following year, in 1925, Kimball built a large IV/19 horseshoe console theatre pipe organ for the old Saint Louis Theatre located on North Grand Avenue 2 blocks north of the Fox Theatre and about 3 blocks from Scottish Rite Cathedral. When the Saint Louis Theatre closed in 1966 the building was acquired at that time by the Symphony Society and, after extensive renovation, reopened in 1968 as Powell Symphony Hall, the new home of the Saint Louis Symphony Orchestra. When the old Theatre's fixtures were disbursed it was discovered that much of the Kimball organ was damaged and had been vandalized. Its remaining portions were rescued and stored to be put into an organ in the Kirkwood Community Center, but this plan failed. Parts of this organ were then spread around to members of Saint Louis Theatre Organ

Society (SLTOS) for storage. Two of its Kimball tremulants were salvaged: one was transplanted to this organ in 2011-2015 which restored the original Kimball Tuba Tremolo, and the other found its way into the lobby Wurlitzer in the Saint Louis Fox Theatre. The full-size 85-note upright Kimball piano from the Saint Louis Theatre percussions ended up in the possession of Mr. Ned Lustig who had it connected to the organ in his home in Sunset Hills. A few other parts were salvaged, such as the Chimes and 16' Pedal Bourdon which were added to the City Museum organ and are playing there. Ned Lustig's organ was eventually sold complete (except for the piano) to a group in North Carolina to be installed in a theatre there as a non-profit organization. The organization there reneged on the installation however and put that organ up for sale in North Carolina, but whether it was ever resold is unknown. During the 2011-2015 rebuild of the Scottish Rite Kimball this same piano was still available and so was installed in the Main chamber and wired to play from the Great and Pedal, thus carrying the original design for the Piano stops of this organ into execution after a passage of some 90 years. The only 2 known Kimball theatre organs which still remain in their original homes and still playable are 1) the 1925 III/19 instrument Op. 6781 in the Consistory [Scottish Rite] Building in Denver, Colorado and 2) the 1930 IV/55 instrument Op. 7073 in the Boardwalk Auditorium Ballroom, Atlantic City, New Jersey, but neither of these venues are theatres. As stated, while it is most definitely NOT a "theatre organ with drawknobs," the subject of this paper is one of very few surviving examples where modern ears can still hear the magnificent, towering sound of tonally unaltered Kimball theatrical pipework.

This organ is also supplied with 7 other tuned percussions stops, 9 traps (untuned percussions), and 6 special effects peppered throughout all 4 manuals and Pedal. These include, besides the full-size upright piano, a harp (marimba harp single stroke), marimba (marimba harp reiterate), glockenspiel (single stroke), orchestral bells (glockenspiel reiterate), xylophone, celesta, Solo chimes, Echo chimes, bass drum, snare drum, gong, tambourine, wood block, triangle, tom-tom, cymbal, castanet, 4-note bugle, thunder loud, thunder soft, and 3 sets of "birds," one in each chamber (Main, Antiphonal and Echo). The xylophone in this instrument is independent and wired to sound separately, not as a hard stroke marimba/harp. Save for the Solo glockenspiel/orchestral bells and chimes, Echo chimes, Swell celesta, and the "birds" in the Antiphonal and Echo, ALL of these tuned percussions/traps/effects are installed in the Main chamber directly beneath the front Great and Choir chests facing the swell shades. The gong, 3 "birds," and the extremely rare 4-note bugle are operated separately by means of their own "typewriter pistons," a feature promoted by Kimball,

situated above the top (Solo) manual.

The Pedal division in this organ is sometimes described as being entirely borrowed from manual divisions – a mostly but not completely true statement. Almost all (98 per cent) of the Pedal's playable pipework is borrowed, but 68 unit Bombarde pipes voiced on 25 inches of wind strictly belong to the Pedal and are not playable in the manuals (unless coupled to them). This Bombarde rank is a unified 16' reed sitting on extended windchests which make it available at the suboctave [32'], octave [8'], and 4' [superoctave] pitches, all of the same quality and strength of tone. It would be easy to conclude that the 4 unified stops of this Bombarde rank are part of a Great-Pedal chorus reed battery because of the way their drawknobs were engraved at the factory with "[Gt]", but this reed rank, as installed, makes up the only independent part of the Pedal Organ. Its bottom 26 pipes are formed of pyramidal wood with the remaining 42 pipes being of metal construction. These ginormous wood pipes are full length and lined up along the rear (west) concrete wall of the Main chamber. Since this chamber is only 28 feet high the bottoms of the lowest 4 pipes (32'C, C#, D, and D#) are mitred with their air columns making a complete 360^{o} turn. The stupendous bone-jarring 32-foot reed stop derived from this rank packs a tremendous wallop and lets all the other pipes in this chamber know who's in charge. This bad boy will make the tuner's eyes vibrate, but fortunately for the listener seated in the auditorium its commanding voice has been put under expressive control from top to bottom which also makes it capable of a hair-raising crescendo which few organists have ever heard emerge from an organ. It's now possible for these 4 unified Bombarde stops, along with any other Pedal stops drawn with them, to be coupled to and play from any manual due to a set of 4 new Pedal to Manual couplers installed during the 2011-2015 rebuild, enabling a mere two hands to produce ensembles of monumental volume and sonority. The full-size Kimball piano along with the triangle, Solo chimes, cymbal, bass drum stroke, bass drum roll, and snare drum roll all draw as Pedal stops.

The Great Organ of 9 ranks and 733 pipes playable from the 2nd manual makes up 19 per cent of the pipe count and is built around a 42 scale English Diapason of 97 cylindrical metal pipes unified at 16'-8'-4' pitches. This English Diapason does NOT belong to the Choir division but functions as the secondary in the Great and is the only one of the 6 diapasons inserted in this organ which does not have scale numbers etched on its pipes. When there is only one open metal Diapason or Principal inserted in the Great division of a church organ, what's considered "normal" scale among builders for its CC (8') pipe varies but

lies usually in the 40-50 range, with 42 considered standard. Since none of the other five diapasons in this organ are built to scale 42 it seems likely that Kimball pipemakers may have automatically understood any CC Diapason pipe of theirs without a scale number etched on it as being of that scale, thus this English Diapason rank is understood in this paper as being of scale 42. This rank and the Swell Horn Diapason rank are the only 2 diapasons in this organ wired to draw separately as Octave (4') stops in their respective divisions. Another fuller-toned 38 scale Principal Diapason of 8' pitch and 85 pipes was inserted as the primary diapason in this Great division, rendering the English Diapason secondary. This Principal Diapason is formed of cylindrical open metal pipes down to tenor C and quadrangular wood pipes in the bass 8-foot and 16-foot octaves. The Great upperwork derives from a unit Concert Flute (Bourdon) of 97 pipes of mostly open wood in the treble and stopped quadrangular wood pipes in the bass, a very common trade method of the time. Some of the treble pipes of this stop are harmonic. This stop draws at 16'-8'-4'-2'2/3'-2' pitches, this feature [a unit flute at 16'-8'-4'-2' pitches] becoming by then almost a trademark with Michel. Contrary to what some might suppose, the 2' stop labeled "Fifteenth" in this division is wired from the unified Concert Flute rank to play at this pitch and is NOT independent.

NOTE: As stated, this instrument is "an 8-foot organ," meaning that, save for the Swell Soft Mixture, NONE of the stops in this organ above 8' pitch are independent. Every one of them are derived by extensions of 8-foot ranks and speak with the same quality and strength of tone as the 8-foot stops from which they're derived. The same is true for every 16' stop in this instrument, save for the Pedal reed (Bombarde) unit. Brilliance in this organ is achieved not by drawing independent upperwork, which is lacking, but through use of the strings, reeds, and octave couplers.

The beautiful Great Waldhorn is a unified flue stop composed of 85 tapered metal pipes of medium scale yielding a horn-like flute tone of great beauty. All 3 of these ranks [English Diapason, Concert Flute, Waldhorn] are part of the Great, made available to the Choir manual by duplexing, and NOT duplexed to the Great from the Choir division as some may suppose. A unified 8' Clarabella, Gamba, Gemshorn, and Tromba, of 73 pipes each, completes the Great tonal palette. The Clarabella is a quadrangular open wood stop with a back bevel on the mouth yielding a clear flute tone of medium strength very useful in combination with other stops and for solos, with or without tremolo. This rank is stoppered in the bass, another practice very common for the time. The flute stops in this organ are colorful and cover a wide range of tonalities due

to their various constructions used by Kimball. They serve a very important function in the tonal scheme of this organ to provide body to the other stops, supply solo voices, and help complete the harmonic structure. This division has a string stop [Gamba] which in combination brightens the tone of the diapasons and flutes and gives definition in the lower registers. The Tromba voiced on 10" of wind, while it can be used for solos, has good blending qualities as a chorus reed. The more assertive Harmonic Trumpet is a high pressure (15") unit stop of 85 pipes drawing at 16'-8'-4' pitches yielding a very powerful brass-reed tone which, surprisingly, also has good blending qualities. This big reed with the Great shutters fully open could pass today for a Horizontal Trumpet (Trompette en chamade), but the fact that it's enclosed increases its utility over the latter stop by at least ten-fold. The Great tremulant has been completely rebuilt to Kimball standards. This chamber is also home to an 85-note Kimball piano, 49-note marimba/harp, 37-note xylophone, a bass drum, snare drum, gong, tambourine, wood block (reiterating), triangle, tom-tom, cymbal, castanets, and a very rare 4-note bugle. The 20-note Echo chimes are also wired to play from the Great manual and are close enough in tune with the 25-note Solo chimes that both can be coupled to play together on the Great or Solo manuals.

NOTE: The Great Waldhorn made playable at 8' pitch in the Great, 8'-4' in the Choir, and 16' in the Pedal is a rare and precious flue stop which departs from traditional pipework nomenclature. Such a stop, by name, is customarily a chorus reed with English eschallots voiced somewhere in tone between an Oboe and a Trumpet. However, in this example, unique to Kimball and employed briefly from 1922-1924, we find the name "Waldhorn" used to describe an open flue rank of medium scale composed of tapered (one-half) spotted metal pipes with high lead content very similar to a Gemshorn in shape and construction. These pipes yield a very full, horn-like flute tone having limited harmonics but with more definition than a stopped flute – more like a heavy Spitzflute in tone approaching the English Diapason in strength. A stop of the same construction, also from 1924, was inserted in the Great of the III/19 Kimball Op. 6781 theatre organ of 50 stops, 1,459 pipes in the Denver Scottish Rite Cathedral.

The diminutive Choir Organ in this instrument playable from the 1st or lowest manual is as much a subset of the Great as it is an independent division. It relies for its power upon three duplexed stops [English Diapason, Waldhorn, Concert Flute] sitting on Great windchests. It has only one 6-rank windchest of its own and a small offset chest with the bass pipes of the Tibia Minor which strictly belong to it. Upon these 2 windchests stand 438 pipes which represent 11

per cent of the total pipe count. This is important to understand because the English Diapason, Waldhorn, and Concert Flute (Bourdon), although playable from the Choir manual, do not belong to this division as the console's drawknobs might imply. The 6 Choir ranks [Tibia Minor, Dulciana, Unda Maris, Viola, Orchestral Oboe, Clarinet] sit on a windchest in the extreme northeast corner of the Main chamber where they are separated from Great pipework. The Dulciana in this division is too diminutive in scale to be considered in the diapason range but too large in scale to call it a muted viol, standing about midway between the two. With the Unda Maris tuned slightly flat the Dulciana is its "mate" tuned pure and automatically draws with the Unda Maris, the latter being the only mistuned stop in this organ wired to work this way. The Unda Maris drawknob face however was engraved at the factory for a single rank, which means that when retired it will retire the Dulciana also unless the latter stop is already drawn. Every other celeste stop in this organ draws by itself, necessitating a separate drawing of its "mate" for the undulating effect. The Glockenspiel and Orchestral Bells from the Solo division are also duplexed to the Choir manual, and, as stated, the Unda Maris, when drawn, is a 2-rank stop. This division has a pair of color reeds which are sometimes overlooked -- the nasal-thin Orchestral Oboe and the Clarinet – stops which are both good for solos, with or without Tremolo. Low chords played on the Clarinet have the usual and expected macabre sound. The Choir tremulant has been restored with a unit completely rebuilt to Kimball standards. When the organ is registered for "theatre mode" this manual assumes the function of the Accompaniment in a theatre organ and is thus home to most of the percussions and traps where they are most often used. The full-size 85-note Kimball piano along with the 49-note marimba/harp, 37-note xylophone, 37-note Solo glockenspiel, plus a tom-tom, wood block (reiterating), castanets (reiterating), tambourine, snare drum tap, and snare drum roll are all playable from the bottom Choir manual. The drawknob labeled "Orchestral Bells" playable from this manual is the Solo glockenspiel wired to reiterate.

The Swell Organ playable from the 3rd manual is by far the largest division in the instrument and is at the core of all major ensembles. It's supplied with 16 ranks, 5 tremulants, an 8-rank string chorus with mixture, and 2 luscious celestes. This Swell composed of 1,213 pipes representing 32 per cent of the total pipe count is built around a unit scale 43/46 Horn Diapason of 97 cylindrical metal pipes at 16'(mitred)-8'-4' pitches. This rank starts out at scale 43 at its 8' CC pipe making it the smallest scale diapason in the instrument, and, it too is wired to draw separately in this division at 4' pitch. Since it's built to 2 different scales (43/46) it's believed, although not confirmed, that the scale of

this rank changes to 46 at tenor C, rendering the tone in its higher ranges brighter and less assertive than it would otherwise be. This would allow it to blend well in combination with the Swell string chorus, imparting strength to the imitative voices in the chorus without overpowering them. A scale 40 Diapason Phonon, another cylindrical metal open stop having leathered upper lips, also was inserted in this division to play above the Horn Diapason. The bottom 10 pipes of this Diapason Phonon are made of wood with the rest being of open metal. The combination of the Swell Horn Diapason drawn at 16'-8'-4' capped by the 2' Gedeckt with the Phonon Diapason added is actually quite a bit more robust than the Great English Diapason drawn at 16'-8'-4' capped by the 2' Concert Flute with the Principal Diapason added. Save for the Soft Mixture, all of the upperwork in this organ derives from a unit Lieblich Gedeckt made playable at 16'-8'-4'-2'2/3'-2'-1-3/5' pitches. This is a covered stop formed of quadrangular wood pipes of a refined flute tone which in the treble range is formed of capped metal cylindrical pipes. This division is also built around a unit Viole of 85 pipes and a unit Oboe Horn of 85 pipes, both of these ranks also drawing at 16'(mitred)-8'-4' pitches. The Oboe Horn is the chief chorus reed in this division. It's voiced with a round Bassoon tone of medium strength and good blending qualities which is also good for solos, rendering it highly valuable. The Swell Tibia Clausa formed of 85 quadrangular covered wood pipes is a unit rank wired to play at 32'-16' in the Pedal and 8'-4' on the Swell manual. This stop has its own separate wind line and runs on a Wurlitzer tremulant (as do the Echo stops), both supplied during the 2011-2015 restoration. This chamber is also home to 5 additional Tibia Clausa pipes extended downward to 32-foot G used to form the Pedal 64-foot resultant [Vox Gravissima]. The Soft Mixture, a very tepid compound stop formed of 3 ranks of delicately-voiced Dulce pipes (17-19-22) having no breaks, caps the 8-rank Swell string chorus. This stop has a 3rd sounding rank which was very common for the time, is beautifully regulated throughout its compass, and, as its notes ascend above middle C, the tone gets softer until they virtually disappear from the ear in the top octave. That all of these very small pipes are in fact sounding all the way to the top can only be verified by climbing high in the Main chamber and standing next to the Swell front chest as its highest notes are played, it's that well regulated. While its 3rd-sounding rank may not blend so well in all applications with the diapasons and other stops whose tone is naturally deficient in odd-numbered harmonics, this stop works beautifully in combination with the strings and reeds. The pencil-width Violins in this division are all of extremely small scale and supplied with their own Vibratos operating at 2 different speeds (slow, fast). The stop labeled "Violins II" is a dual celeste stop meant to be mated with the pure-tuned Viole D'Orchestre. This dual stop was formed originally of a sharp

rank and a flat rank, but the flat rank, over time, was found to be unsatisfactory due to the fact that the ear can tolerate a little sharpness but not the same degree of flatness. It was therefore retuned during the 2011-2015 rebuild, and today it speaks with a sharp rank and a still sharper rank, an arrangement which has been found much more satisfactory. One of the mistakes players of orchestral organs like this one can make is that they complain of it lacking brilliance due to a lack of upperwork when in reality the brilliance in the choruses are meant to come from the strings with their octave couplers, and these Swell string stops are voiced that way to help serve that very function. This feature allows the string stops in this organ, when coupled, to merge orchestrally in a marvelous way almost imperceptively into the reeds. The Salicional in this division is mated with the Voix Celeste tuned sharp, and the Gedeckt is mated with the Flute Celeste composed of tapered metal pipes of a soft refined quality tuned flat. A Posaune of 73 pipes, the longest of which are also mitred, finds use as a larger chorus reed and is good for both solos and for lending power to the full Swell chorus. The Swell tremulant and both String trems have been replaced with units completely rebuilt to Kimball standards. The tremulant for the Vox Humana is original and of a fly-swatter design. It beats a bit less in depth and slightly slower than the Wurlitzer tremulant placed in the Echo, thus the Swell Vox is more classic in sound and the Echo Vox is more theatrical. The only percussion stop in the Swell chamber is a 49-note celesta. The Great stops are playable on the Swell manual by means of a Great to Swell 8' coupler.

The Solo Organ of 9 ranks playable from the 4th or highest manual is composed of 669 pipes representing 17 per cent of the pipe count and is built around a powerful high pressure (20") unit Tuba Sonora of 85 pipes at 16'-8'-4' pitches. Conspicuous in this division's tonal palette is a French Horn, English Horn, Kinura, Cello with its Celeste (both mitred), and the crowning reed in the organ -- a high-pressure (20") Tuba Mirabilis. This chamber is also home to a 37-note glockenspiel, 25-note chimes, and bird whistle, with the marimba/harp from the Great being duplexed and the drawknob marked "orchestral bells" being the glockenspiel, reiterated. The English Horn in this division, a stop for which Kimball was famous, has a double-tapered bell and is good for solos. Both Tubas [Mirabilis and Sonora] are on their own separate Tuba Tremolo. The Cello is a cylindrical open metal stop which, like all imitative strings in this organ, is formed with a large harmonic bridge, or "beard," near the lower lip of the pipe. It's voiced with an uncanny richness of harmonic development, so rich in fact that it sounds almost like a reed all by itself at 8-foot pitch. With the octave coupler drawn with the 8-foot it creates a brightness in upper midrange

that makes the listener believe that they're listening to a mixture. This voice, the work of legendary voicer George Michel, is mated with the Cello Celeste which is formed of identical open cylindrical bearded pipes, but tuned sharp. The Mellophone is an open quadrangular wood stop yielding an assertive horn-like flute tone. Being the labial French Horn it represents the perfect tipping point between the flutes and reeds and, when drawn with the French Horn, is a bit more convincing. This division is home to the largest scale diapason in the organ, a 36 scale Diapason Stentor. This is a sturdy, heavily-built open metal cylindrical stop having a powerful tone inclining to a neutral timbre which lends itself to combination with the high pressure Tubas, providing additional power and body to the tone of these assertive reed stops without affecting their characteristic tonalities. This stop is metal throughout, and, since the Hope-Jones concept of large scale diapasons influenced many builders of the day, the idea of this stop being a sort of "superstar of the diapason family" found its way into many organs from that time. It was typically inserted in the Solo division where in that capacity it wouldn't upset the balance between the other choruses, it could work with tremolo as a solo stop in its higher ranges, and lend power in combination with the big Tubas as a "helper" for carrying a line over the top of the full organ. The borderline ridiculous inhabitant of this chamber is, of course, the Kinura, a reed stop consisting of little more than a pipe boot with almost no resonator which yields a buzzy sound like a bee in a bottle. It has little use on its own but when tremmed with flutes it provides a very unique, oriental-sounding color. At some time in the past the original Kimball Solo divisional tremulant in this organ was replaced with a large theatre organ tremulant of unknown origin. The original Kimball Tuba tremulant was replaced with a Kimball unit rescued from the IV/19 Kimball theatre pipe organ of the old Saint Louis Theatre. The Great stops are playable on this Solo manual by means of a coupler. As stated, the Solo section of the Main chamber is also home to a set of chimes, one of two in the organ, the other set being in the Echo.

NOTE: Pipe makers long ago found that the tonal balance of open metal cylindrical organ pipes of the diapason class seemed best if the diameters decreased by a fixed fraction as they go up, such that the diameter of the N^{th} pipe was half the diameter of the first. Counting the starting pipe as Number 1, American pipe makers decided that "N" should be 17. They also decided that the internal diameter of the largest pipe (Scale 1) of 8' length at CC would be 1 meter (39.37" or 1000 mm). This was probably chosen because no one imagined ever actually building an 8' pipe this large. Scale 17 therefore would be half that (19.76" or 500 mm), and Scale 33 would be half of that (9.84" or 250 mm), and

so on. Finding the intervening sizes between the halvings used to be done graphically, but what describes this relationship is the concept that each pipe gets smaller by a factor of 1 divided by the 16th root of 2. This number turns out to be 0.9576. If therefore the number 1 is multiplied by 0.9756, the result multiplied by 0.9756, and this is continued 16 times, the result will be one-half. If instead we start with Number 1 and use 39.37 inches to the meter, the results will be the intermediate numbers describing the American pipe scale (a table showing American pipe scales has been posted in a subpage of the "Photos 3" page on the OrganBench web site). The advantage of such a system is that once the size of the largest diameter pipe in a rank is decided upon it's easy to know the diameter of each pipe to be made. It also gives a simple, widely-understood method of thinking about organ pipes. One of the ways in fact of predicting how suitable a rank of pipes might be (aside from wind pressure) is the scale. Many builders, for example, look at 42 scale (6.66" or 169 mm for the CC pipe internal diameter) as being "normal" for the big metal 8' Open Diapason or Principal rank in the Great division of a church organ. If a second 8' Diapason were to be inserted in the Great it would be of different (smaller) scale, perhaps scale 44 (6.11" or 155 mm for the internal diameter of the CC pipe) – and if a third 8' Diapason were to be inserted it would be smaller still, perhaps scale 46 (5.60" or 142 mm for the CC pipe). As scale numbers increase the diameters of pipes decrease, and the tone of an Open Diapason pipe becomes brighter, slightly less powerful, and more horn-like. The chief metal Open Diapason stop in the Great of an organ built for a smaller space such as a small chapel or residence definitely would be made smaller than the builders "normal" for the Great of a church organ (perhaps scale 44 or 46). What this means is that the diameter of the open metal CC pipe of the 36 scale Diapason Stentor in the Solo division of this Kimball organ is 8.64" or 220 mm. That's huge for a Diapason, and, as expected, this makes its stentorian voice more neutral in color inclining to a flute tone. Considering its quality of tone it could belong equally to the flute-work of the organ, and its drawknob, with perfect justification, could have been labeled "Stentor Flute" or "Stentorphone" instead. By comparison the largest scale Diapason in the Saint Louis Fox Special Wurlitzer (a 38 scale Wood Diaphone) is smaller in diameter at its 8' C pipe, more like this Kimball's Principal (wood) Diapason rank.

The Antiphonal Organ contains 5 divided ranks of 389 pipes representing 10 per cent of the pipework which are wired to play on the Great, Swell, and Pedal only. Though on the small side, this division is sufficiently strong to pull the sound into the room from the Main chamber and is a very effective foil to it. The Antiphonal is built around a unit Claribel Flute of 97 pipes at 16'-8'-4'

pitches to which has been added a 2nd Viola (mitred), a Gemshorn, a scale 41 Open Diapason of beautiful tone, and a reed stop of sturdy tone. Some prefer to view this reed as an Oboe, but its tone matches more the Tuba Horn which was inserted in so many theatre/cinema organs of the day, hence its drawknob was simply labeled "Horn." This stop is not only a good chorus reed in fuller combinations but its location lends itself well to solos. The Viola of this division, when tremmed, enters remarkably well in combination with the celeste stops in the Main and Echo chambers, creating compound tones of incredible beauty. The Claribel Flute is an open quadrangular wood stop, stoppered in the bass, yielding a clear flute tone which is made playable in the Pedal at 16-foot pitch. The Open Diapason of this division is formed entirely of cylindrical open metal pipes yielding a smooth, round principal tone of great beauty. Some have stated in fact that the tone of this stop, in their opinion, is the most beautiful of the 6 diapasons inserted in this organ. The Kimball Antiphonal Tremolo is still original. This chamber is also home to another bird whistle, one of 3 in the organ [Main, Antiphonal, Echo].

The Echo Organ is made up of 5 ranks comprising 353 pipes which represent 9 per cent of the total pipe count. Among its resources are a Fern Floete of delicate flute tone and 2 strings – a mitred Viola Aetheria which is mated with a mitred Vox Angelica, the latter tuned sharp. This chamber is also home to a valuable reed stop labeled "Corno D'Amour" formed of capped Oboe pipes of beautiful tonality which add a thin layer of delicate and highly useful luster to combinations of medium-toned flue stops. A 2nd Vox Humana and a set of chimes completes this chamber's tonal forces. Two engraved drawknobs for Echo tremulants were placed in the console by the factory, one for the entire division, and one for the Vox Humana separately. The design of the Echo windchests indicates that Kimball wanted to have a separate tremulant for the Vox, but this tremulant box, curiously, was never installed. The divisional tremulant was wired instead to be operable on all 5 ranks, including the Vox. There were thus 11 tremulants operating in this organ from the beginning rather than 12 as the console's drawknobs tend to suggest. In 2011-2015 another tremulant could have been supplied in this chamber just for the Vox as the console drawknobs indicate, but people liked the sound so much the way it was that things were left just as Kimball installed it. There are thus 11 tremulants in this organ, not 12 as the console drawknobs would indicate. This chamber is also home to, as stated, a set of chimes and another bird whistle.

Some of the longest pipes found in all 3 chambers of this organ are mitred. Mitering is the term organ builders use to describe the means needed to adjust

the length of a pipe without reducing its air column to get it to fit into a restricted space. This redirecting of the air column can take various forms from 45, 60, 90, 180, or complete 360 degree turns. Kimball found it necessary to mitre certain pipes of the 1) Pedal Bombarde (by 360), 2) Swell Horn Diapason (by 45, 90), Viole (by 90, 180), & Posaune (by 360), 3) Solo Tuba Mirabilis (by 360), Cello (by 90), & Cello Celeste (by 90), 4) Antiphonal Viola (by 90), and 5) Echo Viola Aetheria (by 90) & Vox Angelica (by 90). Among these 10 ranks will be found 1 diapason, 3 reeds, and 6 strings, none of which are flute-toned; all of them save for one are made entirely of metal, the bottom half of the Bombarde's compass being composed of pipes made of pyramidal wood. All of them are mitred at the top of the pipe save for the longest Bombarde, Posaune, and Tuba Mirabilis pipes which are built with a circular air column mitred 360 degrees at the bottom. All others are mitred at angles of 45. 90, or 180 degrees. Every pipe in this organ sits vertically on its windchest save for the 16' octave of the Solo Cello and 32' octave of the Swell Tibia Clausa (Contra Bourdon); these pipes are mounted horizontally along the rear walls of their respective divisions.

Tonally, Kimball organs had always placed special emphasis on individual effects with particular excellence in orchestral strings and reeds. The subject of this paper was built during the zenith of theatre organ construction in the 1920's, with Mr. Pier Elliot making use of many design elements he had learned during his association with Mr. Hope-Jones, of whom he thought a very great deal. The pipes of both Vox Humanas in this organ, for example, are mounted in a box to muffle the sound ("Vox-in-a-box") for a more refined tone. Some of the other reed ranks in this organ, viz., the Kinura, Tuba Sonora, and Oboe Horn, were actually invented by Mr. Hope-Jones. He also spent much time developing the Diapason Phonon, Horn Diapason, Viole d'Orchestre, Tibia Clausa, and Tibia Minor, examples of which are included in this organ.

The W.W. Kimball Company was different than other organ building firms of the time. It began in 1857 as a Chicago manufacturer of melodeons (reed organs) and, later on, pianos which grew in a few short years to become a highly successful business venture. Around 1888 the Company built a 7-story factory on the south side of Chicago located on 7 acres at 26th and Rockwell Streets where pianos continued to be built and reed organ production continued, transitioning in 1891 into construction of portable and stationary pipe organs. By providing materials of only the highest quality and paying the highest wages, rank for rank, of any builder at the time, it was able to attract and hold some of the finest engineers, technicians, pipemakers, chest builders, and voicers in the world. Kimball built its reputation as an outstanding organ builder from then

on, even though some of its competitors defined Kimball as a strictly theatre organ manufacturer like Wurlitzer or Barton, companies which, judging from their output, produced wonderful theatre organs but had little clue about how to build an important classical instrument. This untruthful propaganda campaign by Kimball's competitors was an acknowledgement of the superiority of Kimball engineering and workmanship with its obvious purpose being the gaining of an advantage over this firm in the competition for contracts. The actual truth of the matter, which Kimball's competitors knew full well, was that the Kimball enterprise, since around 1887, had made and was still making quite a mark for itself in the building of melodeons and pipe organs. When Organ Department Manager Richard Pier Elliott made the decision to leave Kimball in 1933 during the heart of the Great Depression it had been his leadership which guided it to successfully build organs for almost every possible venue, in any space imaginable. No other organ builder of the time, save possibly for the M.P. Moeller firm of Hagerstown, Maryland, had truly succeeded in doing this, and Kimball never found anyone afterwards with an equally strong vision to take the lead.

By the late 1930's, after Wurlitzer's attempt to build classical instruments by marrying its own mass production methods to some of Mr. Elliott's suggestions did not succeed, Aeolian-Skinner generally had the upper hand in this market at a time when just about the only sectors in the industry still interested in buying pipe organs were churches and academic institutions. Kimball's organ shop pretty much fell idle in 1930 and stayed that way even though it was still competing for jobs, and it took great effort for the Company to make an organ sale of any kind. The last Kimball pipe organ of record, Op. 7326, was shipped from the factory on Sep 26, 1942 to Good Hope Lutheran Church, Bucyrus, Ohio. After the United States formally entered WWII, the U.S. Government War Production Board issued an order effective March 31, 1942, curbing the use of tin in order to ensure that this metal and other materials would be more readily available for the War effort. Shortly thereafter an order came to Kimball to halt production of pianos and organs entirely. Because the Kimball Board of Directors felt the need to keep factory operations running and its technicians were expert in woodworking, the Company moved to produce wood-based products for the War effort – everything from coffins to furniture to inventing a special variety of plywood used in applications for the Boeing Airplane Company, the Lockheed Aircraft Corporation, and Douglas Aircraft Company. This allowed Kimball to make it through the War and still be in operation although it suffered tremendous financial losses, in large part because of the need to retrofit the factory to accommodate production of these

War items. These financial losses, dwindling organ sales, a lack of sufficient foresight in projecting costs, skyrocketing inflation, the gradual shift in aesthetics in the organ world fueled by a progressive mentality – a thinking which was not shared by members of the Kimball staff – the loss of Mr. Elliott, and the fact that organs had never made much money for the Company all contributed to the Company's decision, sadly, not to resume production of pipe organs after the War. At that time it sold off its inventory in small amounts, apart from the majority of its unused pipework which went to Aeolian-Skinner. Kimball's lack of a system for marking their instruments with Opus numbers, not knowing how the Kimball Company catalog of Opus numbers was maintained, and the absence of an official written record makes it impossible to know today how many organs Kimball built or the order in which they were constructed. Thus its total output of organs remains unconfirmed and its use of KPO numbers uncertain. But with their superb electro-pneumatic action and refined pitman chest construction, their outstanding solo flute voicing, colorful stopped-flutes, and excellent Tibias, color reeds, brass reeds, and other high pressure stops, highly imitative string stops, enclosure of all departments as a standard, and 32' Pedal stops in the best earth-moving tradition, Kimball organs can stand proud to this day against any other builder's work, past or present.

Kimball continued to build pianos until the Company moved out of the Chicago factory in 1954, at which time it was purchased by the neighboring McCormick (International Harvester) Works. This building where the subject of this paper was painstakingly built, hand-crafted by some of the finest workmen and technicians in the world at the time, and expertly voiced, no longer stands today. In 1974 the structure was in the process of being demolished when it "mysteriously" caught fire at once in 4-5 locations on a Sunday afternoon in February. The blaze was so intense the firefighters couldn't get near enough to fight the fire for some time, and the heat was felt some 6 blocks away. It ranks as one of the city's larger fires and involved over 250 firemen (1/4 of the fighters on duty), 60 pieces of equipment, and the city's 3 water cannons before it was brought under control and extinguished finally.

Things were in turmoil for the entire pipe organ industry during the Great Depression of the 1930's. The church organ market found itself severely curtailed, the theatre organ market was all but gone, and, save for the mortuary segment of the market, the bottom had dropped out of all organ sales. Builders were in desperation to find work. In response to the need to encourage business and extol the virtues of its pipe organ manufacturing methods a 24-page

technical bulletin type catalog was issued by the Kimball Company around 1930 entitled "Kimball Organs from a Technical Standpoint." According to this sales-piece booklet the Kimball firm used many types of wood in constructing its pipe organs. All Kimball windchests, reservoirs, and wood pipes were composed of No. 1 clear white pine which, due to its resinous oils, had the characteristic of permanent resistance to warping or splitting from atmospheric changes. Clear hard maple was employed to form the mouths, fronts, and backs of certain wood flute pipes. Many console shells, as at Saint Louis, were built of mahogany, but whatever native cabinet wood which best harmonized with the environment was invariably chosen. Manual keys were surfaced with genuine ivory, with ebony for sharps. Pedal keys were surfaced with removable hard maple faces so that when worn these faces could be replaced without having to install new keys. In the supporting structure clear Douglas fir was typically used, with swell shades composed of chestnut 2 inches or more thick and laminated to prevent possible warping and sticking. All woodwork was completely sealed from the air with 2 coats of lacquer. The largest pipes of the Pedal Bombarde at Saint Louis were also stained to help further seal the material of these ginormous pipes for better sound. Any air passages bored through the wood were immersed in boiling hot varnish to seal the pores. Tremolos were of the bellows type and made of white pine which gave a true and gentle undulating effect.

The unusual thickness of the chestnut swell shutters described in the Kimball booklet was to secure the range of power for which Kimball organs were noted. The shutters were of graduated width, beginning very narrow with a steady increase in width. Unlike most shutters they were not operated all together but designed to open successively. With the old mechanically operated swells, a crescendo had to be started very gently because the first opening released so much of the tone. By making the first Kimball shutter open quite small and gradually increasing the size of the shutters in the order they operate it was found possible to obtain an electrically controlled crescendo fully as smooth, gradual, and responsive as the old mechanically operated swell gave when properly handled. When the contrary is desired however, i.e. when the organist is seeking an accent, this device also proved superior. A full front of heavy shutters weighs hundreds of pounds and to move it all suddenly requires a powerful and often noisy machine – and, once started, it is not easily stopped. Each Kimball shutter was equipped with its own motor which was graduated in size just as the shutter itself was. The motor was just strong enough to move the shutter quickly with the shutter and motor doing exactly the same work in the same way whether they come on in slow succession for a smooth gradual crescendo or all at once to make a sharp accent. There was no more force

required or momentum to absorb without noise, one way or the other. Shades moved on a hardened steel surface and in wooden bearings for relatively silent operation, making squeaks improbable and easily removed. Kimball swell shades were quite well engineered.

The many air reservoirs provided to the Saint Louis organ act as the means of conveying sufficient volume of compressed air from the blowing plant to the points where it is needed, to admit just as much air as the organ is using, and to maintain this air supply at even pressure to prevent pitch sag when many pipes are sounding at once. At the time the booklet was put together Kimball reservoirs, instead of having the usual single valve, had become equipped with 3 valves of graduated sizes. The smallest was a hardwood cone valve which opens first and is always working when the wind is on. As the rise and fall of the reservoir opens and closes it, just enough wind is admitted to offset the slight seepage of wind through the organ. The largest valve is of such dimensions that as much wind can enter through it as any possible requirement of playing can use. It comes into operation when a full organ chord makes a sudden heavy demand on the wind supply. The other valve is of medium size and comes into operation between the first two. It admits air as required for ordinary "piano" and "mezzoforte" playing and is adjusted in size to the tremolo that so it cannot admit air quite as fast as the periodic beats of the tremolo exhausts it, thus the pressure varies slightly and helps to impart a beautiful vibrato. This system of 3 valves is more costly than a single valve reservoir, but Kimball engineers found that the latter did not supply wind enough, supply it quickly enough, or maintain a sufficiently uniform pressure to meet their standards. The booklet emphasizes the obvious advantages of Kimball's durable lacquer finish, 3-valve reservoirs, and shutter system, but it leaves out the fact that not every Kimball organ, by name, was built to booklet specifications. The 3-valve reservoir, for example, was a later and improved version which Kimball copied from Wurlitzer. The earlier Kimball version reservoir prior to 1930 had just one large valve, which is what one finds throughout all the reservoirs of the subject of this paper.

As for this organ's electro-pneumatic action, viz., the train of operations starting at the key and ending at the valve under each pipe – electricity is used to transmit the impulses, and compressed air necessarily present to blow the pipes is used for power. It is not desirable in a pipe organ where compressed air is available to use electricity for power because sufficient current for power purposes would burn the key contacts rapidly, nor is it desirable to carry the transmission of impulses part way by means of electricity and then turn this

electric impulse into some train of mechanical devices. The ideal is to get the speed of electricity (which travels at the speed of light, 186,000 miles per second) right up to the point where power is needed and then to use the force of the compressed air. Kimball contacts were durable, constantly clean, and unable to accumulate dirt because the 2 elements were of cylindrical shape and set so that one element was at right angles to the other, thus securing always a point of contact on which dirt cannot lodge. The motion of the key also caused a slight rubbing action between the 2 elements which aided in keeping them bright and polished. The booklet states that these Kimball key contacts, like Kimball magnets, were as near trouble-proof as science and experience could make them. Contacts were durable partly because they operated magnets which consumed very little current (being wound for the high resistance of 400 ohms), the coils of which acted as condensers to prevent any sparking. Twenty-seven of these magnets, for example, required but one ampere at 15 volts. No other organ magnets of the time consumed so little current. Naturally contacts are subject to burning in proportion to the quantity of current passing and the resulting intensity of the spark when the contact breaks. They were also durable because they were made of silver. At Saint Louis the key contacts are of silver as stated in the booklet. However, contacts in the relay and in the coupler mechanism were phosphor bronze which tends to corrode when the organ is not used regularly, as at Saint Louis.

Kimball magnets, whose function was to transform the incoming electric impulse into a puff of compressed air which can be stepped up in power to whatever strength was required, were very superior and permanently reliable. They lifted an armature which opened an exhaust port, starting the train of pneumatic mechanism. When the electric impulse arrived at the magnet the action became pneumatic, the succeeding functions being operated by compressed air controlled by valves, of which the magnet armature was the first. This operated a small pneumatic bellows called the primary, about one inch square, which moved a 2-way valve. The primary valve in turn operated the valves under the pipes. Kimball valves floated on the center of a round disk of soft English tanned pneumatic leather and thus moved absolutely without friction. This was located directly under the center of the pipe foot so that the air traveled the shortest possible distance from valve to pipe. The pipe valve was also counter-bored so as to be considerably larger at the point of entrance of air than at the point of exit into the pipe. This ensured that a supply of air larger than the pipe could possibly use was instantly released. The shape of the boring acted like a steam injector to increase the velocity with which it entered the pipe. By this additional precaution all the preceding costly effort to get the

impulse to the pipe instantly was not neutralized by choking or long travel of the air from the pipe valve to the pipe – again, a quality type of engineering.

As stated, not all windchests in the Saint Louis organ are pitmans as the booklet implies for Kimball organs. About 60 per cent (2,332 pipes) of the pipework of this organ is on pitman windchests. The other 40 per cent sits on unit windchests which have one magnet and primary valve under each pipe. This allows a rank to be available at multiple pitches, such as the Great Concert Flute which can be drawn at 16'-8'-4'-2-2/3'-2'. This cannot be done with pitmans. There are also other inconsistencies with the booklet, perhaps as a result of oversimplification. Kimball was known to exaggerate in its advertisements. When their organ in the Roxy theatre in New York City was installed in 1927, for example, Kimball boasted about it being the largest in the world when in fact they had just built one in 1924 for the Forum Theatre in Los Angeles which was larger by 3 ranks. Other examples of exaggerated advertising appeared in Kimball brochures and in trade journals and magazines. Thus the Kimball booklet, whose purpose it was to help generate sales and which provides a glimpse today into the way its organ department viewed its own operations and promoted its products, has lots of "purple prose" – obtrusively ornate writing meant to deliberately define it as the industry leader.

According to the booklet, Kimball diapason pipes are made of heavy alloys of lead and tin (never under 25 per cent tin), and nothing else – tin enough to give proper rigidity, no antimony to cause later crumbling, no coned pipes, no pipes with rolled tuners. These were carried down into the big pipes of the lower octaves farther in cast metal than diapason pipes of many other makes. Zinc had to be used in some of the largest pipes because the alloys would crush of their own weight if carried too far into the bass, but the use of zinc was restricted to a minimum. The additional cost however was justified by the fine, firm tones which hold their character right down to the lowest notes. Regarding principal chorus pipes, it was Mr. George Michel, after ascending to the position of head voicer at Kimball in 1915, who was responsible for employing pure tin in all pipes from 4' pitch. Like all Kimball metal pipes, these diapasons were never cut to length and tuned by coning because that is sure to result in ultimate injury and loss of tone. They are also never slotted and tuned by rolling down a strip of the metal because this roll would be certain to break off with repeated bending and thus leave the pipes without any means of tuning. All were equipped with slide tuners which cling tightly to the pipes, stay where set better than any other tuning device, and can be moved up or down indefinitely without

injury to the pipes. In small pipes these slides are sprung on, in medium pipes they're taped on, and in very large pipes they're clamped tight with a screw tension. These are engineered to yield firm foundation tones which combine pure fundamental with desired overtones. Their walls are made firm and heavy so as not to vibrate sympathetically with the vibrations of the air column and thus impart undesirable harmonics.

In string pipes the opposite is the case. These tones have little fundamental and are rich in harmonics. Here it is desirable to have a very light, hard pipe wall which can vibrate freely in sympathy with the air column and aid in developing harmonics. Kimball string pipes are made of an alloy containing at least 45 per cent tin, or often of so-called "pure tin" (90 per cent tin, balance lead). Where a slot has been found helpful in building up string or horn tones, the metal is cut away, never turned down to form a tuning roll, which would be still more likely to break off because of the thin construction. These too have slide tuners.

Kimball flute pipes were made of metal and wood according to the character of tone desired and their position on the windchest. It was not uncommon for open wood flute pipes to be made of metal in their higher octaves and with stoppers in their lowest octave. An example of this type of treatment may be seen with the Concert Flute (Bourdon) in the Great division of this organ. The common tonal characteristic was always the presence of few harmonics over a strong fundamental tone. Whether of metal or wood they were of fairly heavy construction with mouths very accurately and substantially made to hold the adjustment given to them by the voicer. Metal pipes were generally made of "spotted metal" (45 per cent tin, balance lead), occasionally of "diapason metal" (25-33 per cent tin, balance lead); clear white pine was typically chosen for wood pipes, and some of the shorter of these were given hardwood (maple) mouth parts, fronts, and backs for added strength.

The tone of Kimball reeds was produced by the beating of a brass tongue (similar to the reed of a clarinet or saxophone) amplified by the air column of the pipe which acted as a resonator. The tonal outcome depended mainly on the formation of the tongue, the character of the eschallot inside the boot, and the material of the pipe. At least 1/3 of the area of Kimball reed pipes was of heavy metal with tongues constructed of heavy burnished brass which beat against eschallots which, in most cases, were bored out of solid brass. These were secured in place by machined brass wedges instead of the usual wooden wedges. The tuning wire was heavy and passed through an extra heavy block which was

cast with a shoulder that supported the eschallot against the pressure of the tuning wire. All of these factors gave such a rigidity and mechanical grip to the elements which had to be moved in tuning the pipes and which the vibration was always trying to move out of place that Kimball reeds tended to remain in tune just about as well as Kimball flue pipes. This Company spared no expense to create a quality product.

*****

As stated, certain information about this organ's number of stops, ranks, and unification has been submitted in the past to various writers, editors, and coordinators of databases by well-meaning individuals. We find however that the factory-engraved labeling on an instrument's drawknobs cannot always be trusted to reflect how the instrument was finished and wired, not 100 per cent of the time. In the case of Pedal stops labeled duplexed from manual divisions, one can verify the accuracy of this by pulling the drawknob marked borrowed from a manual division, checking that pipe's volume and tone quality while holding down a pedal key, then checking it against the same pipe in the equivalent octave of the manual division and listening to whether it's the same pipe or a different pipe. At times one may notice that 2 separate pipes are involved when the drawknob indicates otherwise. In this organ the Pedal Bombarde rank is playable there as 4 different stops all of the same quality and strength of tone. These play at 32'-16'-8'-4' pitches with their drawknobs engraved "Contra Bombarde, Bombarde, Tromba, Clarion," respectively, with the inclusion of "(Gt)" on their drawknob faces, implying incorrectly that this Bombarde rank is part of the Great and playable there as a third reed. All 4 of these stops are in fact derived from one rank of 68 Bombarde pipes strictly belonging to the Pedal – in fact the only independent rank strictly belonging to the Pedal. Kimball evidently engraved these drawknobs this way in the earliest stages of construction before the disposition of this instrument was finalized and either deliberately or accidentally left them that way. Time needs to be spent with each instrument at its console, experimenting using the ear and possibly also crawling within it or talking with a reliable source who has, when the purpose is to ascertain which pipes are controlled by which drawknobs.

*****

This paper would not be complete without mentioning a story of unknown origin which used to be passed down through the Organist Staff to the effect that the Saint Louis firm of George Kilgen & Son was allegedly the first builder

contacted to construct an organ for the Saint Louis Scottish Rite Cathedral. As the story goes, in 1923 as the new Scottish Rite building on Lindell was under construction and Mr. Charles Kilgen was in charge of the Kilgen firm at the time, he and his family happened to be staunchly Roman Catholic by faith. It's true that the organ maintenance and contract work received by his firm which was largely a result of the trustworthy relationship he had built over time with the archdiocese of Saint Louis represented a very substantial part of his company's business. It's also true that, at the time, the Kilgen firm had something close to a monopoly on maintenance and building contracts for Roman Catholic parish churches in the Midwest area. The story relates how Mr. Kilgen had allegedly contracted with the Valley of Saint Louis to build an organ for the Auditorium, that a contract for its construction and installation had been signed by both parties, and that this organ was already partially built when Mr. Kilgen decided to abruptly break off work and cancel the contract. The story further alleges that Mr. Kilgen placed supreme value upon the favor shown to him by the archbishop, that it had come to the archbishop's attention what Mr. Kilgen was doing for the Masons, that the archbishop expressed his disapproval, Mr. Kilgen feared losing business over it, and that this is what led him to cancel the contract with the Scottish Rite. The story goes on to say that this builder ended up with a half-built pipe organ at his factory with no buyer until the archbishop encouraged him to finish it for the St. Francois Xavier Jesuit College Church located on the campus of Saint Louis University directly across the street, at 3628 Lindell Blvd., from the Scottish Rite Cathedral. The story relates how the archdiocese offered to pay for its finishing and installation because that parish Church, at the time, also was interested in a pipe organ which could serve its needs. The story went on to claim that this Church wound up with the instrument originally meant for the Scottish Rite, and that the cancelling of the Kilgen contract is what prompted the Valley authorities to reach out to the geographically more distant W.W. Kimball Company in Chicago for the building of an organ for the Auditorium.

Thus ends the story, for a time it was generally believed, but much of it however is contradicted by certain facts, as follows: 1) firstly, no evidence is extant that the Kilgen firm was ever contacted at all by the Saint Louis Valley, let alone that it was the Valley's first choice in a builder … while the Saint Louis Valley office is known for its meticulous record keeping, no original signed contract with Kilgen for the building of an organ or any record of breach of that contract has survived, even though the original signed contract with Kimball along with 6 appendant pages of specifics concerning its stop list have been carefully preserved. This is an incredibly rare series of valuable and important

documents concerning this rare, national treasure of an organ. The Kimball contract bears the date of December 28, 1923. It originally specified a purchase price of $50K, but the actual cost came in under that amount. Construction of the organ began at the Kimball factory in Chicago in February, 1924 and was completed in 8 months. The organ was reassembled, connected, voiced, tuned, regulated, and tested in the Auditorium during a 10-day period in early October, 1924 (the skill and finesse required to erect all of this instrument in its home without damaging the building or its fixtures was an engineering feat all by itself). An initial good-faith payment of $5K was made to the Kimball Company on June 30, 1924. The bulk of the remainder was made on December 20, 1924, 2 months after its installation and dedication, in the amount of $41,700.00. A final payment was made on February 11, 1925, 4 months after its installation and dedication, in the amount of $1,105.34, bringing the total purchase cost of the organ in 3 payments to $47,805.34. Back in 1924 the dollar had over 15 times the buying power than it does in 2020, and, considering the quality and workmanship that went into this organ's construction, reliable sources in the organ building industry have estimated that to reproduce it today down to the finest detail using the same materials constructed to an identical plan with equivalent craftsmanship would require something in the neighborhood of $5M … 2) secondly, it took until January 31, 1925, a full 14 months after Mr. Kilgen would have allegedly cancelled his contract with the Scottish Rite, for him to contract its sale to the Saint Louis Jesuits, all the while losing money on a partially finished product. Why an astute businessman like Mr. Kilgen, who made his reputation on manufacturing a first-rate product in timely fashion, would have cancelled a contract for an unfinished organ under construction over a year before he signed another another contract to be given the green light to finish that same instrument and move it out of his factory, especially when the financing of it supposedly presented no problem – this just doesn't add up … 3) thirdly, this story never made mention that the Kilgen contract at this College Church involved the building of not just one organ but was a dual project which included a new II/12 Sanctuary organ and a new IV/52 Gallery organ which were both built and installed together. Thus the tale that this Church actually wound up with "the organ meant for the Scottish Rite" shows a lack of knowledge about what exactly it was that Kilgen installed in this Church. Both instruments were completely autonomous, i.e. no pipes from either organ were playable from the other console. Installation of these double organs was in January, 1927, but there's no evidence whatsoever that any part of this project had been begun anterior to the time when the contract with Kilgen was signed in January, 1925. Additionally, since this project involved 24 consecutive months of uninterrupted building, the probability of it being given any kind of

head start prior to the signing of that contract seems remote … and 4) finally, during these 2 years while this construction was supposedly going on, Mr. Kilgen also was actively engaged in the building of another important organ for the Scottish Rite Temple in Omaha, Nebraska, an instrument which was completed and installed in 1926. Mr. Kilgen was a highly respected builder whose instruments were among the finest in the world, and, if as the story implies he was under strong pressure during the years 1923-1927 to steer clear of any building projects he may have contemplated with Scottish Rite Masons, the very existence of the Omaha Scottish Rite organ contradicts that whole idea – not to mention that it unfairly assigns a shallow and tawdry character to the ruling clergy of the archdiocese of Saint Louis who we can presume would have found no advantage, much less pleasure, in playing any part with any injury to Mr. Kilgen's business. The story is no longer given any credit for being true and is included in this paper merely for its history.

The fact that the IV/52 gallery organ which Mr. Kilgen did build for the Jesuit parish of Saint Louis University, that it was one of the greatest and mightiest instruments in the Midwest at the time, and that it ended in destruction, is relevant to this paper. The world-famous French organist/composer Louis Vierne played a recital from its keys on Sunday, April 3, 1927 when he was traveling through Missouri on his American tour. The Scottish Rite Kimball organ was 3 years old at the time. Vierne's recital attracted 2,000 people, more than any other organ recital ever held in the City. This installation also included a smaller 2-manual chancel organ of 12 ranks. Both instruments were wired to play only their own pipework, autonomously. While Mssr. Vierne may have thought this gallery organ a bit of an odd duck (all of its Great upperwork was derived from 8-foot extensions, the 2nd Diapason being made playable at 4'-2-2/3'-2' pitches capped by a separate 5-rank Mixture – a practice very common for the time), he officially gave it his enthusiastic approval and posed for a historic photo while seated at its console (see subpage photo, Vierne in St. Louis). For all its glory however, problems arose for this Kilgen installation over the ensuing decades. By 1947 the Church's gallery organ was far overdue to receive routine maintenance and tuning which the Jesuits and archdiocese evidently could not afford to carry out. From then on, until around 1980, it's believed that it received zero maintenance and gradually deteriorated finally to where it fell completely silent. For reasons unknown this instrument, which by then was unplayable and merely awaiting rebuilding, was dismantled during the 1980's when the Church underwent a very expensive interior renovation. With no organist-choirmaster generating interest in and guiding the rebuilding effort there was insufficient impetus at the time to raise

or direct the needed funds to bring the gallery and sanctuary organs back to life. And, with no one leading the charge to develop and implement a long-range plan to rebuild them, both organs were dismantled. It's believed that a few pipes were rescued and taken to a church in Indiana, but some of it went missing altogether, and the remainder, consoles and all, wound up in a dumpster. The magnificent 4-manual gallery organ which once graced this Church with its majestic sound is now only a distant whisper of a memory. There are literally thousands of stories like this from the pipe organ world – from churches, chapels, schools, theatres, civic auditoriums, and the like – stories of neglect and/or calamity ending in willful and deliberate destruction. In the modern society in which we live – a throw-away society still evolving in which instant results are the expected norm and apathy and indifference abounds – the disappearance of such irreplaceable treasures which at one time contributed to and were such a large part of American musical culture are staggering. If the Saint Louis Scottish Rite Cathedral building and all of its fixtures should ever be sold and this Kimball organ is left in place as a fixture of the building, it wouldn't be difficult to conjure its fate without a preservation plan for it being in place. There are proven ways to successfully raise the needed funds gradually over time to rebuild an important pipe organ like this one. To essay these ways would be outside the scope of this paper. What's important to understand however is that, when any fund-raising program is set up to help maintain, tune, repair, or renovate any historic, highly esteemed pipe organs like these, those who donate to this noble cause should know that they aren't doing it for that space exclusively … it's much more broad than that: They're supporting great organ music which spans hundreds of years which will be heard by countless numbers of people indefinitely into the future.

Dr. Courboin, the tonal consultant for this Kimball organ, played his public performances entirely from memory and enjoyed much popularity in America during the 1920's. It was he who was primarily responsible for adding the massive orchestral string and reed sections, all built of Kimball pipework, to the monumental organ in the Wanamaker Store (now Macy's) in Philadelphia during its second enlargement. At the time he also served as tonal consultant for several other prominent American organ building firms for whom he helped to guide the building of many other notable instruments. As an organist he thought orchestrally according to the paradigm of the time, and the same is evident in this instrument's complex tonal scheme.

A thorough crawl through this organ reveals that some of the longest pipes which inhabit the Swell, Solo, Antiphonal, and Echo chambers are "mitred,"

which is how organ builders refer to their pipes when their full length exceeds the available height of the room in which they're to be installed. This can be seen with the Swell Horn Diapason, Viole, & Oboe Horn, Solo Cello & Cello Celeste, Antiphonal Viola, and Echo Viola Aetheria and Vox Angelica, where the tops of some of the longest pipes are diverted on a 45 or 90 degree bend to preserve the length of the air column. Some of the longest metal pipes of the Swell Viole are even mitred 180 degrees. The bottom 4 wooden pipes (C, C#, D, D#) of the 32' Contra Bombarde are mitred just above the boot to circle the air column 360 degrees because they're mounted vertically in a Main chamber only 28 feet high; this type of 360 mitre also helps to eliminate shear stress in heavier reed pipes where the resonator attaches to the boot and is also readily seen in some of the longest pipes of the Swell Posaune and Solo Tuba Mirabilis. This manner of construction thus had to be employed among these 11 ranks to fit the longest pipes into the available space. Other pipes, notably the 12 pipes of the 16' octave of the Solo Cello and the 12 largest pipes of the Swell Tibia Clausa [32' Contra Bourdon] in the Swell section are mounted horizontally for the same reason.

During the 2011-2015 renovation work it could not be determined which pipes from the original electro-mechanical relay were used to quint with the 16' English Diapason in the Pedal to generate the differential tone for the 32' Acoustic Bass. Using the new Uniflex control system to produce this voice, 5 pipes from the bottom octave of the Great Concert Flute [Bourdon] were wired to play at 10-2/3' pitch a perfect 5th above the 16' English Diapason. As previously mentioned, the 5 largest pipes of the Gedeckt extension in the Swell section downward to 32' G were paired in the new system to sound at 21-1/3' pitch a perfect 5th above the 32' Contra Bourdon to produce the voice of the 64' Gravissima. Dr. Courboin evidently felt that having the effect of 64' pitch was important enough to figure in this organ's tonal scheme for production of the fullest effects, but, truthfully, on scientific and musical grounds, there is no need to insert any stop lower in pitch than 32' in ANY organ, even those of monster size. When the downward limit of determinate musical pitch for human hearing has been scientifically measured at 40Hz, a frequency which corresponds to low E of the organ's 16' octave or the double bass of the grand orchestra, the 4 remaining chromatic notes of the organ's 16' octave down to low C are thus below the lower limit of the human ear to discern musical tone. The grave sounds of the octave below that at 32' pitch vibrating at frequencies of 16Hz-32Hz down to low C are thus felt more than heard. The chief benefit of drawing a 32' stop is to provide the gravity needed to support the mass of tone above it and possibly (depending on its tone color) in the production of a series of

harmonic upper partial tones which tend to reinforce the sounds of the other stops of higher pitch drawn with it. Nevertheless the fundamental of every note it generates in the bottom half of the pedalboard where a good bit, if not most, of the pedal playing takes place is below the ability of the ear to recognize musical pitch. One may rightly wonder then of the benefit to be derived from stops pitched yet another octave below that, which wander in the sound tombs of the 64' octave, generating tones at frequencies of 8Hz-16Hz. The 64' low C sounds at only 8Hz, and between the highest and lowest note in the bottom octave of a 64' stop a difference of only 8Hz over a distance of 12 chromatic notes would be measurable. The frequencies thus produced by the 12 notes from 32' C down to 64' C differ from one another by less than 1 Hz. Recording equipment typically does not do justice to the sonic effect produced by such low frequencies, which must be experienced in person to really experience it, however, while rhythmic, rattling noise like this can be produced by organ pipes and may succeed in shaking someone bodily, the bottom line is: it fails to impress the listener's musical sense.

Many of the metal pipes in this organ are formed either fully or partially of "spotted metal," so named because the spots on the metal are the visible alloy of lead and tin, with the tin being the bright white color amidst the lead islands. Different percentages of alloys produce different pipe timbres as well as different visual effects. Because this Auditorium space of well over one million cubic feet had to be filled with sound and the instrument is relatively deficient in upperwork (4' stops and higher) in order to blend better with an orchestra, he specified some medium-strength reeds in the scheme which could be used in ensemble along with 5 very big reeds (Great Tromba and Harmonic Trumpet, both Solo Tubas, and Pedal Bombarde). A large array of octave and suboctave manual couplers operable on 8' ranks and a 3-rank Mixture in the Swell composed of soft Dulce pipes were also specified.

What we have here is one of the most unique and complex tonal schemes ever constructed for a pipe organ. Organists today expect to find in an organ a Great principal chorus with mixture topped by other stuff. They do not find it here. And, while the octave couplers ordinarily take no part in the ensemble and are included only for color possibilities with single stops, that is not the case here. Starting with 8-foot diapason tone which is sufficiently supplied the organist learns to contrive a synthetic ensemble by using the strings for brilliance along with certain small unified pipes of refined flute tone and octave couplers to create something of the same thing for playing the major repertoire. It's quite remarkable therefore that Dr. Courboin opened both of his dedication

recitals with a major Bach work, but it's important to remember that these recitals were intended to display the instrument's versatility, and his desire to demonstrate the organ's capability of performing a major Bach work (and any other highly contrapuntal music, for that matter) in an effective if not stylistic way had to be on his mind.

It takes considerable judgment when drawing the stops on this organ to make the moving contrapuntal lines in Bach's writing come across. Obviously, this instrument cannot and was never designed or built to produce anything like the type of sound that Bach knew -- it reflects instead the application of electricity to organ building and improvements, developments, and thinking which had accumulated over the three successive centuries since his time. But, while he never knew or played an organ like this, that is not the same as saying that it would meet with his total disapproval or that he would be reticent about using it to its fullest if given the opportunity. It also is fair say to say that, had he been one century later, he would have written some of the most beautiful Romantic music the human mind could imagine. It would have come at a heavy price, though -- of depriving the world of the greatest fugues in existence.

Building an ensemble for contrapuntal playing is a bit tricky and involves some judgment and using the ear to get something of the same subtle layering of sounds needed for Bach-playing. One might begin by 1) coupling all manuals to the Great manual, 2) engaging Swell, Antiphonal Swell, and Choir octave couplers and Choir sub-coupler, and 3) coupling Swell, Antiphonal Swell, Great, and Choir to the Pedal. The Great English Diapason and Swell Horn Diapason with its 4' extension might then be drawn along with the Swell Gedeckt at 2-2/3' and 2' pitches, the Soft Mixture, and the Echo Corno D'Amour with the possible addition of the Swell Oboe Horn and Oboe Clarion. One might then add to that the Pedal 16' English (metal) Diapason, Bourdon, Bassoon (duplexed Oboe Horn), and Antiphonal Pedal Bourdon, adding the 8' Flutes and upperwork in the Antiphonal Swell along with the 8' Horn. Strings also might be added to this mix depending upon the degree of brilliance desired, but any large scale, tubby-sounding Tibias or Diapasons and the biggest reeds would, of course, be kept retired. Here the Echo reed and the Swell mixture coupled into the Pedal lend a much needed luster there but are so tame that their presence fails to intrude or compromise the left hand line. For a larger sound one might keep the same coupler configuration and add to that the beautiful Antiphonal Open Diapason and any remaining 4' Flute stops, the Swell Posaune and 16' Contra Fagotto, and the Pedal 16' (Wood) Diapason, 8' Octave, and 32' Contra Bourdon. For the next level of sound, one might add the Great Principal (wood) Diapason and

Tromba, the Pedal 32' Acoustic Bass, 4' Super Octave, and 16' Trombone, the Solo Cello, and engage all Choir to Swell couplers and the Solo and Echo sub-couplers. One might hold in reserve the Great Double Trumpet, Swell Contra Viole, and Pedal 16' Tuba Sonora for a final punch.

There is no way of knowing how closely Dr. Courboin may have followed this approach, but it could not have been too far removed from what has just been described, and he obviously felt that Baroque-style contrapuntal and Romantic-style organ music does not always have to be performed on period instruments to connect with the audience. Both of his dedication recitals are reported to have enjoyed overflowing crowds and clearly demonstrated that this organ excels at transcriptions, arrangements of music not originally written for organ, certain Romantic and Modern repertoire, and even Bach-playing.

When this organ was installed a few changes were introduced which deviated from its original conception. The contract called for the 20" Solo Tuba Sonora to be unified and wired to play in the Pedal at 16'-8'-4' pitches to serve there as the Pedal's chief chorus reed battery with the independent Pedal Bombarde rank made available there at 32' pitch only. The Tibia Clausa rank in the Swell was also to be unified and wired to play at 16'-8'-4' pitches there. In its final configuration however the Solo Tuba Sonora was wired to play in the Pedal at 16' pitch only, and the 25" Bombarde was unified to play at 16'-8'-4' pitches to serve as the Pedal's chief chorus reed battery. This powerful reed finds its greatest use as Dr. Courboin conceived it, i.e. at 32' pitch only, particularly for climactic passages where its assertive voice can be worked up to gradually and brought on for a dramatic, final punch.

NOTE: It's possible that the introduction of a separate 32-foot Diaphone rank for this organ may have been contemplated at first, the longest pipes of which would have to be top-mitred and lined up probably along the back wall of the Main chamber where the bottom 32-foot octave of the Bombarde currently stands, with its own bottom 4 mitered pipes facing forward like an upside down "L". The Kimball Company was a very capable builder in inserting Diaphone stops in its cinema/theatre organs that were being constructed in large numbers at the time, and it also was noted for its ability to successfully cram as much organ into a chamber as possible. However, because the longest quadrangular wooden pipes of the 16-foot octave of the Principal Diapason in this chamber happen to be lined up next in front of the rear wall and very close to it, they allow no room for any top-mitred pipes placed between themselves and the back wall itself. Any mitred pipes placed in this narrow space would have to be

mitered at the bottom, if at all, in order to provide sufficient room for the pipes standing directly in front of them to remain unmitred, as all Diapason stops should be. It's also entirely possible that Dr. Courboin's preference in the tonal scheme for a 32-foot voice of commanding tone was for the time-honored Bombarde over the much newer Diaphone first patented by Mr. Hope-Jones in 1894, a stop whose durability, considering the mechanical apparatus it uses for producing musical sound, had not been judged for longer than 3 decades up until then.

The Tibia Clausa of this organ was not wired to play at 16' pitch in the Swell either, as originally contracted. In its place the Horn Diapason and Viole were both extended downward an octave to play at 16' pitch. Certain pipes in the 16' octaves of the Horn Diapason and Viole are mitred at their tops to fit within the available vertical space in the Swell section of the Main chamber. Initially Kimball also meant for the Vox Humana rank in the Echo to be on its own tremulant; during installation however, it was wired to play from the divisional tremulant operable on all the other Echo stops, and it has always played that way from Day One. The Echo Vox Humana Vibrato drawknob therefore remains inoperable.

The English drawknob console of this organ with its stop jambs slanted on 45-degree angles counts 158 drawknobs. Twelve of these were marked for tremulants (the Echo Vox Vibrato was never wired, and the instrument has only had 11 functioning trems from the beginning) and one drawknob wired to control the Main Great, Swell, and Pedal Off for the Antiphonal division. A blank drawknob was also placed among the stops of the Great division, presumably for a future addition, leaving 144 drawknobs to control the instrument's speaking stops. As stated, by a very fortunate circumstance the same full-size, electrically-operated 85-note Kimball upright piano (rescued from the 1925 IV/19 Kimball theatre organ removed from the Saint Louis theatre after the building was sold in 1966 to the Saint Louis Symphony Society) happened to be located during the 2011-2015 rebuild and was inserted in this organ at that time. It was wired to play as the Kimball factory originally prepared the console drawknobs for its future addition, i.e. on the Great manual at 8'-4' pitches and in the Pedal at 16' pitch. As for possibilities for wiring the single remaining blank drawknob, considering where it's placed among the other drawknobs of the Great division, this could logically take the form of 1) the Piano made playable there at 16' pitch, 2) a different tuned percussion stop, such as the Glockenspiel duplexed from the Solo, OR, what probably would be the most useful, 3) an additional 16' flue stop – the most likely candidates for

this being the 16' Horn Diapason duplexed from the Swell or the 16' Cello duplexed from the Solo.

Wind volumes and wind pressures in a pipe organ are interactive to a point, but not the same. The blower selected should be a little larger than the minimum capacity required to supply adequate volumes of air to the regulators (air reservoirs), the latter functioning to keep the pressure steady when many stops are drawn and large chords are played. String and reed pipes, even when voiced at high pressure, require smaller volumes of air than do the largest flute pipes, which may require up to 10 times more air volume. Wind pressures are regulated at 10" for the entire organ including the Great Tromba, save for the Swell Vox Humana and the Echo division which are on 7-1/2". The Great Harmonic Trumpet is on 15", both Solo Tubas are on 20", and the Pedal Bombarde is on 25". The Echo Corno D'Amour, a capped Oboe on 7" of wind, adds a beautiful luster to passages of polyphonic music and permits the 10" Swell reeds (Oboe Horn and Posaune) to enter more gradually in the buildup to full organ. As for the Great Harmonic Trumpet, both Solo Tubas, and the Pedal Bombarde, these 4 big reeds are lions voiced on 15, 20, and 25 inches of wind, respectively, and they dominate all ensembles into which they're introduced.

Dr. Courboin specified 7 mistuned ranks, or celestes, operable from 6 stops for this instrument, but none were supplied to the Great division, nor are any found in the Antiphonal chamber. These mistuned ranks comprise 535 pipes – just short of 14 per cent of the total pipework – a relatively large number. The 1) Swell Voix Celeste is tuned sharp, and its "mate," the Salicional, is tuned true. In the standard Swell division this pair of stops is typically found, and when drawn together a very pleasant undulating effect is created, suggestive of a celestial voice. The 2) Swell Violins II is a dual stop composed of 2 ranks of highly imitative string-toned pipes, one tuned sharp, the other rank tuned sharper. The Viole d'Orchestre which is tuned true is designed to be drawn with them. Likewise the 3) Solo Cello Celeste is tuned sharp and meant to be drawn with its mate, the Cello, which is tuned true. The 4) Echo Vox Angelica is also tuned sharp, and its mate, the Viola Aetheria, is tuned true and typically drawn with it. The 5) Swell Flute Celeste is tuned flat and is mated with the Gedeckt, which is tuned true. The 6) Choir Unda Maris is also tuned flat and is a dual stop (i.e., when drawn, it also automatically draws its mate, the Dulciana, which is tuned true). The Choir Unda Maris is the only stop in this organ wired to work this way. Drawing the divisional tremulant whenever a celeste stop and its mate in that same division are drawn tends to spoil their effect, but the beauty of their tone can be enhanced greatly when another softly voiced stop tuned true

from some other division, such as the Antiphonal Viola, can be tremmed and coupled with them at a very soft dynamic, creating refined and beautiful compound tones of great charm.

In this organ the Antiphonal division of 5 ranks has the Viola, [Tuba] Horn, and Claribel Flute subject to the Antiphonal Swell Tremolo. Both Flute stops of the Antiphonal Pedal, save for the bottom octave of the 16' Flute, are also subject to the Antiphonal Swell Tremolo. The Diapason and Gemshorn in the Antiphonal Great are on a separate wind supply, thus both of these voices along with the Pedal Bombarde are the only 3 ranks in the entire instrument which are not subject to a tremulant.

*****

From the time of its installation and final voicing in its intended home to the present day this rare and unusual instrument has experienced its share of honors and indignities. Its life has been a checkered pavement of ups and downs … a mix of intended service and unintended disuse, intentional supervision and accidental calamity, required operative procedure and questionable surgery, a subject at times of congenial agreement and bitter disagreement … all intertwined over a period of nearly a century. As its centennial approaches in 2024 this paper was produced for the express purpose of rendering an accounting of the interaction of the many and varied influences which shaped its creation and application, how these arranged themselves in order of occurrence, the rough and rugged road it had to travel, and how it was brought back to life, almost miraculously, to arrive where it is today. This detailing, as such, does not, and is not meant to, reflect upon the judgment, planning, stewardship, or character, motives, capabilities, opinions, predilections, or dislikes of any institution, firm, individual, or assemblage of people but merely attempts to archive a complete chronological record of significant individuals, groups, and events related to its story, and, where applicable, an explanation of causes.

During the first 12 years of its existence, i.e., up through 1936, this organ was serviced by Kimball factory technicians from Chicago. Throughout this time the Hollywood movie-making industry was still using the old, highly combustible nitrocellulose film which turned out to be the cause of many projection booth fires in theatres all around this country and the world. Such fires were relatively common in those days, and toxic nitrate gas fumes released by these types of fires were proving just as deadly to theatre patrons and employees as the fires themselves. Some theatre fires back in the day also got

started in orchestra pits, which meant that merely having a pit in front of the stage became risky. In 1926 fires had broken out in 2 different theatres in Saint Louis in the same week. Since the Auditorium was originally built with an orchestra pit in front of the stage and a projection booth which worked with the same kind of combustible nitrocellulose film, there was fear that if such a fire ever were to get started in the Auditorium the stage workers and other crew, officers, class members, choir, and the musicians in the pit due to slow egress might not make it out in time. Indeed, a few pit musicians of that era who worked in theatres lost their lives this way.

A major renovation project was therefore undertaken not long after the building was built to provide the most safety in the event of a fire. During the Great Depression of the 1930's the Saint Louis Valley, not surprisingly, experienced a very serious deficiency of monies to keep the building in operation at all, thus this renovation project, while its exact date cannot be pin-pointed, is more likely to have taken place while the necessary funds could still be appropriated, which corresponds to the interval 1926-1929. The original Auditorium pit was spacious enough to accommodate a large orchestra. It was constructed with 6-inch thick concrete walls rectangular in shape, oblong from east to west, and was about 50 feet long on its outer measurement, 9 feet wide on its inner measurement, 5 feet deep, centered about 2 feet 8 inches in front of the lowest step of the stage, stretched outward from the stage to about 20 feet from the first row of seats, and was equipped with 2 sets of submerged steps, one on each end, for ingress and egress. When the decision was made to do away with this pit it was closed under a false wooden floor supported from beneath by 4 rows of closely spaced 6 X 6-foot wooden posts each 2 feet apart, with 22 posts in each row. This necessitated covering the false floor with additional dark red wall-to-wall carpeting to match the rest of the floor and stage curtain. The ceiling and all exposed areas on the east and west walls also were covered at this time with brown fire-retardant asbestos tile.

The installation of non-original sound-absorbing materials during this renovation work decreased the reverberation time of the Auditorium which, according to organist Jack Jenkins, fell from more than 2 seconds down to less than half that. What the ear perceives depends upon one's placement in the Auditorium. Using a stopwatch positioned over the chute, multiple testings measured and confirmed by Dr. Keith Tomazi and Dr. Steven Monrotus upon release of spread chords for both hands and double pedal with the full organ drawn, all 5 big reeds added, and all swell shades fully opened showed a reverberation period of about 0.9 seconds. Measured from the console this

figure measures differently and records differently to the tune of about 1.1 seconds – still dry but not unduly so. Even though the instrument was voiced to speak into an acoustical environment with more than twice that amount of bounce, its original voicing, fortunately, has been retained. This reduction of the reverberant field forces today's organist to make some adjustments to compensate – changes which affect touch, tempo, and changing the manuscript "mentally" from the way the composer wrote the notes on the page -- holding detached chords and shortening the values of intervening rests in order to get the music to come across in this interestingly dry space.

The way this building was architecturally designed the downspouts from the roof go right through the building and into the sewer in the basement, and some of these vertical drain pipes, sad to say, pass right through the interior walls of the Main and Antiphonal pipe chambers. Installing windchests, wind regulators (reservoirs), and pipes in such vulnerable places means that it's only a matter of time before the inevitable scenario wreaks havoc on the organ's mechanism. Old leaks from many years ago are evident from what can be seen today in the back of the Main chamber along the rear wall and ceiling over the largest Contra Bombarde and Principal (wood) Diapason pipes, some of which are still streaked with water stains. The roof and walls in these areas were repaired and repainted and there are no more leaks there, but other portions of the instrument in the northeast end of the Main chamber, particularly the Choir windchest toeboards, were also destined to sustain water damage and permanent water streaking. Water leaks also mandated removal of the stoppers in the Tibia Minor pipes for repair. The tell-tale evidence of this sad history is still visible in the photo crawl of this chamber posted on the www.OrganBench.com web site. While unsightly none of this, thankfully, has interfered with the playability of the instrument.

When Kimball left Saint Louis in 1936 this instrument went without any servicing, for the most part, through the remaining lean years of the Great Depression. After WWII its maintenance was resumed by Mr. Walter A. "Gus" Brummer with Midwest Organ Service of Granite City, Illinois. Mr. Brummer in his early years had been on the staff of the Reuter Organ Company and the M.P. Moeller Company, organ builders, before branching out on his own to help form Midwest Organ Service. It's believed that he continued to spot-repair and spot-tune this organ on a non-regular basis off-and-on until around 1960. It was around that time that the Valley contracted with the Kavanaugh Pipe Organ and Belfry Service, a family-owned firm based in Saint Louis and Columbia, Missouri, to maintain the instrument. During the 1960's this firm made some

curious alterations in this organ which involved 1) removal of most of the Kimball tremulants in the Main chamber which were experiencing trouble and replacing them with all-new Austin fans, 2) removal of the console's original combination action which was no longer in working order, and 3) changes in certain reservoir wind regulation in the Main chamber. It's possible that the decision to replace the Kimball trems may have had something to do with the work required to rebuild or remake them to original Kimball standards which is obviously a more labor-intensive, time-consuming, and expensive process than to simply remove and replace them. The motive may have been simply to make whatever monies were budgeted at the time for the organ's maintenance stretch as far as possible. Once these these new Austin units were installed however the original Kimball trems were not stored anywhere in the building and simply disappeared. Whoever did the Kimball trem removal work at this time missed the ones in the Antiphonal and Echo, which to this day are still original.

After the Kavanaugh years which are believed to have ended around the early to mid-1970's when this firm's center of operations shifted to Columbia, Missouri, nearly a decade elapsed during which this organ was not maintained at all. Around 1980 the instrument entered its "Dark Ages" and had to wait 30 more years for needed renovation. Mr. Marlin Mackley of Mackley Organ Service of Saint Louis was retained to service the instrument during the difficult 1980's and 1990's to keep it as playable as possible in the most cost-effective manner . By 1997, after 73 years of most everything in the organ still running on 1924 leather, and considering that the average life of a pipe organ before its leather components wear out and need rebuilding is about 40 years, the fact that anything in the organ was still playable by then was nothing short of a minor miracle. The only thing that kept it from multiple point failure back then was the quality and built-in longevity of Kimball materials and workmanship. The fact was that Mr. Mackley (who coincidentally in 1981 began bringing back to life the Fox Special Wurlitzer of 36 ranks and 348 stops at the fabulous Fox Theatre on Grand Avenue one block away and who had worked on that organ for over 20 years) was handed the overwhelming task of trying to rescue and keep alive this considerably larger Kimball of formidable size single-handedly on a shoe-string budget. It was a yeoman's undertaking which had him crowding his way, crawling and falling through every nook and cranny in the Main chamber, a cramped cave of seemingly endless pipes, just to sort and allocate priorities.

NOTE: This wasn't nearly as easy or as simple as it sounds. To get an idea of task involved, the Kimball engineers, as stated, had the ingenuity to

cram pipes into very small spaces with a near inability to access them for maintenance purposes. Kimball was in fact notorious for over-engineering chambers for too many pipes, the premise being that it was the customer who bought the organ, not the local organ maintenance technician (for better or worse). To say that the Main chamber in this organ is barely big enough for half the organ it contains is no exaggeration. The simplest maintenance procedures there entail squeezing through constricted passages and forcing the body into desperately cramped positions only to reach a very limited working space. In some Kimballs it's hard to imagine how some of it could have been installed at all presuming that the installation teams were composed of average size men.

Certain Valley members at the time expressed an interest in helping Mr. Mackley to whatever extent they could, and therefore, to help divide the work, he gave one of them plans for rebuilding all the trems in the Main chamber to Kimball specifications. In the meanwhile he removed the Austin fan trem-replacements from the 1960's which by then were having problems. The Scottish Rite members meanwhile reconstructed the Kimball trems in a workmanlike manner after which they were laid aside and remained in storage for future use. As it turned out, several more years would elapse before any of them would be installed. Mr. Mackley also proceeded to replace the original Kimball combination action which went missing in the 1960's with a new solid state unit. One of the chief problems with this organ has always been that it sits for months on end with no one playing it, being seldom and irregularly used compared with most church and theatre/cinema organs. A pipe organ really needs to be turned on and run, if not played, at least 15 minutes every week if for nothing else to keep moisture from building up in its wind lines. Since it was not being used very much, the battery in this new combination action had trouble remaining fully charged and eventually proved unreliable.

An old photo of the console taken in 1997 shows 2 side banks of toe studs, one on each end of the pedalboard, which are no longer there. These were additions which Mr. Mackley constructed according to Kimball designs that he felt would make fullest use of the new Peterson combination action. These new toe studs were positioned close to and just outside the pedal keys on both sides of the pedalboard. Significant time was invested in building and installing these additions, but, while the premise was good, they were well crafted, and the industry displayed was commendable, they were just as dependent upon a working combination action as were all the other pistons and toe studs in the organ. Those on the left side also got in the way of the organist a bit when sliding on and off the bench (one may only get on and off the bench from the left

side of the console). Since these additions were not original with the console they were not made part of the new computer control system's general definition during the 2011-2015 renovation work and were disconnected and removed at that time.

The year 1998 saw the organ's playability continue downhill to where deterioration could not be fixed in time before another issue sprang up elsewhere which demanded attention. That was when calamity struck …

That year the instrument suffered a major catastrophic setback when one of the vertical drain pipes from the roof backed up and leaked over the northeast corner of the Main chamber. The blocked drain pipe was fixed on the roof, but it leaked again due to a clog in the boiler room probably 60 feet below the roof. None of this was in time to prevent water and dirt from getting into the 4th floor top section pipework and windchests of the Great/Choir divisions closest to the swell shades, bringing ruination to everything there. The result was an organist's nightmare: extensive damage to 1) the Great front unit chest [5-ranks (Principal Diapason, Gamba, Concert Flute, Gemshorn, Harmonic Trumpet)], 2) the front Choir pitman chest [3-ranks (Tibia Minor, Dulciana, Unda Maris)], 3) the rear Choir pitman chest [3-ranks (Viola, Clarinet, Orchestral Oboe)], and 4) an offset chest for the Pedal Bourdon (Concert Flute) along with its pressure regulator (reservoir), both of which are situated to the rear of and very close to the Choir chests. Choir chest rackboards were warped and severely water stained, leather gaskets in the stoppers of the Tibia Minor pipes were ruined, and many other pipes were dirty and leaning; there were multiple cyphers, legions of dead notes, stalagmites of wet falling plaster forming on portions of the organ, swell shades streaked with water stains, ruined leather on swell shade pneumatics, air leaks everywhere – it was a disaster scene. The worst thing that can happen to a pipe organ save for destruction by fire or total building collapse is for water, without or without the fire department's help, to reach its mechanism like this. It was nothing short of sickening even for non-musicians to behold.

In response to this development Mr. Mackley had to suddenly abandon the combination action, console wiring, and tremulant work with nothing soldered or labeled yet and turn his attention to immediate emergency windchest work in the northeast end of the Main chamber. All 4 windchests involved had be completely shut off to stop the awful hissing noise, thus crippling all speaking stops in the bottom 2 manuals. This action rendered 30 per cent of the organ's sounding pipework, including most of the ranks used to

accompany the choir, non-functional. With all stops of the Choir division silenced and over half of the Great division stops, including all of its top end, also out of commission, the instrument was mortally crippled, and its condition lapsed from serious to dire.

Separate proposals from 2 other major out-of-state organ building firms (one of which happened to be the same one exclusively endorsed by the Principal Organist) were sought to find out what it would take to make the repairs needed to bring this organ back to pre-1998 condition. When both of these firms performed their preliminary evaluations of the chambers and console they were amazed that anything in the organ was still playing, a fact which, by then, was only explainable by the enduring quality of Kimball materials and workmanship and the dedication of its current technician. One of these competing firms (the one not endorsed by the Principal Organist), during its evaluation of the Main chamber, discovered a cut line to a percussion box. Who was behind this act, what their motive was, and what exactly was to be gained from it, was never found out and need not be dwelled upon. It was however part of the overall condition of the instrument at the time these firms examined it. Both of these proposals were in the neighborhood of $150K, but neither one could be accepted; insurance money had been received by then to cover the water damage to the roof and organ, but, after the roof was repaired, nothing was spent on the organ, and what remained of the insurance pay-off was directed elsewhere.

This diversion of the insurance money away from restoration work this organ so crucially and desperately needed was a huge disappointment to everyone connected including the Principal Organist who needed an instrument in reliable working order to follow through with the responsibilities entrusted to him. In the aftermath the latter sensed it his duty to do whatever he could to help safeguard and shield the instrument from any future devastating repair costs. At that time he insisted that, from then on, no one be given access to the instrument at all without his personal approval. In consultation with the builder he preferred, he then submitted a greatly expanded restoration plan for this organ with an estimated price tag of $500K to rebuild it from top to bottom, with all the work contracted to that same builder. Part of this plan included converting the entire organ from its original electro-pneumatic key action to direct electric action, which he then promoted as the most cost-effective path to take while at the same time involving no detrimental effects.

NOTE: With direct electric action the valve beneath each pipe is opened

directly by an electromagnet solenoid, whereas with electro-pneumatic unit action the electromagnet's movement admits air into a leather pneumatic, or small bellows, which in turn operates the pipe valve. The larger valve sizes required for the pipes in bass octaves can often be too close to the operational threshold for direct electric actions without cranking the voltage up to uncomfortable levels, which creates concerns about 1) reliability and 2) noise. Both of these effects are exaggerated when higher wind pressures are used. Electro-pneumatic actions are therefore preferable to direct electric actions for any pipe ranks voiced on wind pressures of 6 inches (6") or more and for ranks having valve pads larger than 1-1/4" in their bass octaves, no matter what. This instrument is voiced to be a high pressure organ that runs on 10" throughout, with the Swell and Echo Voxes on 7-1/2", the Great Harmonic Trumpet on 15", both Solo Tubas on 20", and the Pedal Bombarde on 25". The factory engineers were well aware of the pros and cons of ALL organ actions currently in use at the time including direct electric which had been invented 10 years earlier in 1914, and they easily could have built ANY kind of action for ANY organ, if they wanted to. The fact that the Kimball Organ Department built its reputation partly on reliability, and that, in THIS organ, electro-pneumatic action was the action of choice, is telling.

When this restoration plan was proposed to the Valley authorities for consideration and approval Bro. Jenkins, who was present and happened to be 1st Vice-President of and spokesman for the same builder that the Principal Organist was endorsing pointed out that Kimball did NOT build this organ that way, although it could have, and that direct electric would not work so well on a high pressure organ like this one. He explained that he was not trying to be contrary but was simply thinking in terms of reliability and keeping noise reduced, that it was important to keep this organ's pipework speaking at its reliable best even if it meant talking his own Company out of a potential business contract. He also added that the Valley could do whatever it wanted to, but, if this were carried out, it would NOT be so happy with the result. In that he was talking his own company out of a job in the process this warning of his was clothed within an admirable display of integrity, and, the cost of the direct electric proposal combined with Bro. Jenkins warning combined to convince the Valley authorities to reject it.

It was around this same time (2001) that the organ maintenance monies usually included in the budget which had not been used for some time was removed from the budget altogether, these monies being redirected for other uses, and that the Principal Organist's job for the first time ever was made a

non-paying position. By the winter of 2001-2002 the funding needed to bring the organ back to pre-1998 condition was nowhere in sight, the insurance payout was gone, no fund-raising effort for the same was being entertained or promoted, and a complete breakdown of the organ in the middle of an important event was anticipated. With his plans for restoring the organ having wound up on the cutting room floor, his compensation eliminated, a severely dysfunctional and progressively deteriorating pipe organ which could break down at any moment with which to work, and, to top it all off, there being talk of possibly having to use a digital keyboard run through the Auditorium's speaker system for an organ, that the Principal Organist expressed no further interest in continuing under such discouraging circumstances. What followed was another decade of waiting during which the instrument remained on life support with its continuation hanging in the balance. The likelihood of ever hearing its voice again was looking grave.

Thinking that making its historic importance more widely known would raise awareness and interest in restoring it, and that such a move was long overdue, this was the time that Ill. Bro. Monrotus chose to nominate it for citation status with the Organ Historical Society (OHS), citation status being the highest level of recognition the OHS can bestow upon an instrument of historic merit. In response to the submission of this nomination in 2002, and considering that it had received no "major alterations" such as a change in the organ's original action which would have rendered it of minimal historic importance, the OHS issued a citation (No. 291) to this organ the following year. This came with an engraved console nameplate and a very large, beautifully framed certificate suitable for wall hanging, both of which were received by Ill. Bro. Monrotus and hand-carried to the proper Valley officer – the Personal Representative of the Sovereign Grand Inspector General of Missouri. While this did not succeed in bringing a single dead note in the organ back to life, remove a single speck of dirt, bring a single inch of old wiring up to Code, or clean, regulate, or tune a single pipe, it did succeed as a crucial first step in raising awareness of this rare and precious machine, establish its historic merit status among a panel of experts, and certify the need for its preservation.

In January of 2003, a time when this organ was barely operating at all and hope was being lost, a Committee of 6 members of the Saint Louis Valley was appointed and charged with researching the electronic organ market to come up with a recommendation for the purchase of a digital instrument which might serve as a substitute for the Kimball when it was down for repairs and rebuilding. This task immersed this Committee into the intensely competitive

electronic organ market. Being among the 2 committeemen the Principal Organist of the time notified the chairman that a pre-owned digital electronic theatre organ of 3 manuals and 21 equivalent ranks in mint condition was available from a dealer he knew. This instrument originally sold for $180K, the party who bought it had defaulted on the payments, and it had been repossessed and offered for sale by the dealer merely for the remaining payoff figure, which was $67K. A day and hour was arranged by the Principal Organist and agreed upon by the chairman for the Committee to meet with the dealer and hear it demonstrated by the former. All members of the Committee, save for one, were notified when and where this scheduled dealer visit was to take place, after which all members present agreed to recommend its acquisition for the choir. According to Brother Jack Jenkins, this was made possible through the extraordinary generosity of two members of SLTOS, Mrs. Mary Lou Ammann and her husband, Dennis. This couple very kindly donated the required sum to arrange this deal on the condition that the Allen could be made at the disposal of SLTOS from time to time for its regular meetings. Their offer was gratefully accepted, the Allen was delivered and installed in and above the choir balcony in June 2003, and it was used exclusively from that time forward by the Principal Organist for the next 12 years, a bit past the time that the Kimball was brought back into full service. Upon his passing in 2015 Bro. Jenkins agreed to resume the duties of Principal Organist for the second time, and Ill. Bro. Fiete agreed to take on the duties of Director. With the Kimball brought back into full service by then, the Allen fell into disuse after that by the Rite and remains largely so to this day.

When the new electronic console was installed it was positioned flat against the west wall of the choir balcony as far south as possible. It was unclear why this console location was even considered at all since it was far to the left of the Director, in very dim light, and forced the organist to face the west wall from a place where he had to turn his head 90 degrees to see the choir and 180 degrees to see the floor and chute. This not only seriously impaired the organist's vision but it also made it impossible to rotate the console to the north to improve the organist's view without cutting a hole in the platform which supported the choir seating. When this was brought to the attention of the Director the console was then moved to its permanent place on the other side of the balcony to the right of and parallel with the Kimball console which has the organist facing north-northwest close to the choir in brighter light from where he can better see the floor and view the chute through a mirror.

During the ensuing weeks of the summer of 2003 the Valley authorities,

satisfied for the time being that the choir had a working organ, entertained the idea of selling the mostly disabled Kimball which, by then, had acquired historic merit status and could thereby, in their estimation, bring a higher selling price. This national treasure of a pipe organ worth millions was then listed for sale on the internet for the ridiculous giveaway price of $60K with the buyer to pay for its disassembly and removal and to make any repairs to the building from any possible damage done to get the organ out. This listing captured the attention of many in the organ world, including Dr. John Schwandt, a professor of Organ from Indiana University at Bloomington, who came to inspect it. Indiana at the time wanted an historic American organ of this style and vintage to install and renovate in its Auer Hall for teaching students enrolled in its Organ program -- a versatile concert organ which could do justice to any style of music in the classical canon at least reasonably well and also had a theatrical side.

After Dr. Schwandt's initial evaluation of the Kimball he wished to present the idea of acquiring it to the Indiana music faculty and administration for approval and funding. Before doing so however, he wanted this organ to be in a more playable state. He and a crew of several others from Indiana then came to Saint Louis and spent 3 whole weeks working virtually around the clock every day to get the Main chamber pipework back to some semblance of normal, tuning right up to the very hour when the people from Indiana arrived for the showing. After his team's presentation they all went back to Indiana to ponder the question of whether or not Indiana should invest in this organ. The Valley gave the Indiana administrators 6 months to come to a decision, which was extended, as it turned out, for 18 more months.

By November of 2003 however, while Indiana was deliberating about acquiring the Kimball, it became clear that not all was well between the choir and the new digital organ. That dissatisfaction has been made a part of this paper because it led to a critical rekindling of interest in keeping and renovating the Kimball, without which the fate of the Kimball would have taken a very different turn. The new electronic, if properly registered, could have sufficed as a provisional substitute for the Kimball when used judiciously for that purpose, however the Principal Organist had formed the habit of never playing the Kimball publicly in anything other than "theatre mode," and from 2003 he used the electronic exclusively for its reliability rather than wrestle with the dysfunctional Kimball. The highly color-charged registrations and sobbing Tibia tremulant with its wide pitch excursions he habitually preferred and invariably drew when accompanying every hymn, choral song, or vocal solo, while alluring in themselves, tended to compete with rather than support the

singers' voices and made it more difficult for them to center on pitch. The Director officially expressed a modicum of satisfaction with the new digital organ (after all, he had to because he was among those who enthusiastically endorsed its acquisition for the choir), but artistically and privately he was quite unhappy about how it was competing with rather than supporting the singers and interfering with their sense of pitch. Any discussions he may have had with the Principal Organist about adjusting its sound for the sake of the singers evidently produced no results, and, at length, after trying to work with him and the remaining committeemen who were reticent about discussing the issue at all, he sought advice finally from the same member of the Commitee who had been discounted and disregarded before about "how to get the new organ to sound better with the choir." Considering that this individual was among the last to learn that a new instrument already had been purchased and installed, it was by then far too late for him to offer anything meaningful. The Committee having completed its task was dissolved, and the choir for the time being had a fully working instrument to lead it which on its surface solved the problem of a dysfunctional pipe organ.

Working in good faith an attempt was made by the dealer after that to revoice the electronic which did not address the real problem of the way it was being used and therefore failed predictably to produce the results the Director had in mind. The musical offerings the choir and its new organ created through the next 12 years were gratefully accepted and applauded, but the choir and its Director continued to struggle with it. What the choir needed in an organ was the same gravity, dignity, and refinement of tone to support the singers that the Kimball was partially built to provide. To be fair, the electronic was entirely capable of a more than passable sound for this purpose when registered accordingly, but being a first rate Unit Orchestra it begged a registration and performance style geared to showcase its own strengths at entertaining audiences. When one realizes the real importance of preserving the very few of these theatre pipe organs which still survive in some original or reincarnated condition and keeping their sound before the public, one easily becomes, as was the Principal Organist at that time, an intensely loyal devotee to that cause. As stated, many thousands of these pipe organs rolled off factory assembly lines in the early 1900's, their factory production peaked during the 1920's, every theatre back then had one, but today less than 600 still survive. The overwhelming majority of the rest were either disassembled and sent to the dumpster in pieces, console and all, or destroyed by the wrecking ball when the theatre building was demolished. Very, very few of these instruments have survived.

NOTE: The heyday or "golden era" of the cinema/theatre organ occupied two decades (c.1910-1930) and came at a time when the position of the organ in American culture was at a different place than it is today. Motion picture accompaniment by the theatre organist was considered a definite art form to be cultivated back then, and the theatre organist commanded a real place in American music culture in how the public was entertained. The instrument itself was state-of-the-art for its time, but the economic motor which drove production of these musical wonders disappeared during the Great Depression, and this combined with the emergence of "talking pictures" in 1927 made it seem like these instruments were gone in a flash save for those moments when they might be heard playing before or after a show, or maybe during intermissions. With the emergence of motion picture sound technology theatre organs seem to have paid a high price for their specialization, but it's true with every type of pipe organ that the more highly specialized it is for performing a certain type or style of music from one national school or historical period, the less well it will do everything else. This can be observed in many areas of music and within the fine arts in general. Among brass players, for example, a certain style of mouthpiece with a thick rim and deep cup will produce easy low notes but will give trouble producing the highest notes in the top octave; conversely, a mouthpiece with a thin rim and shallow cup will produce easier high notes but poor quality low notes. Since symphonic horn players are expected by their conductors to have full and complete command of the entire possible range of their instrument including lowest and highest extremes, such players are necessarily faced with selecting a compromise mouthpiece which, for them, produces all possible extreme notes at least fairly well and none poorly. It's the same with pipe organs: when built according to one national or historical school of organ building (and that includes theatre organs) they will perform certain music with wonderful authenticity; with everything else, something small or large gets lost in the translation. It would be no stretch to think of the organ as an ancient tree with the theatre organ being just one branch … a new one at that. Under a master hand that one new branch – the theatre/cinema organ – can charm and captivate an audience with thrilling sounds which cannot be had on any other type of organ ever built, bar none. During the first 40 years of the motion picture industry the theatre organist commanded a more than legitimate art form which held an important place in American culture and the way people were entertained. The concentrated personal study that's entailed to develop one's skill to bring out all that this type of instrument had to offer in accompanying silent motion pictures or for entertaining audiences during intermissions, as stated, takes many years to perfect. At the same time, the

organs which J.S. Bach, Reger, or Franck and Vierne knew and what they had in mind when they wrote their music sounded utterly different. While one would never think of performing a recital of Franck's music on the same style or type of instrument that Bach knew, a Wurlitzer theatre organ from the early 20th century is just as much a period instrument as any organ ever built by, for example, Silbermann in 18th century Germany, Walcker in 19th century Germany, Willis in 19th century Britain, or Cavaille-Coll in 19th century France. Each was supplied with its own unique voices and stop controls for which a body of music was either written or arranged with these same voices and controls in mind, if not specified. Knowing that to perform all national and historic schools of organ music in a stylistically authentic way would require an organ of over 400 stops, the Kimball builders created in this organ an instrument which could perform everything at least fairly well with a passable sound, but nothing poorly … a compromise machine large enough and sufficiently supplied with the colors and mechanical accessories needed to serve the repertoire, blend with instrumental ensembles, engage in orchestral dialogue, supply vocal accompaniments, and perform transcriptions and theatrical music. The price any organ like this pays for such amazing versatility is that it plays everything in the standard repertoire with about 60 per cent authenticity and nothing with absolute authenticity.

By the summer of 2005 with Indiana still not reaching a decision and with the Director and choir even more unhappy by then there was talk of selling the electronic and using the money to help bring the Kimball into full service. In the end, thankfully, this road was never taken. The electronic was a fine instrument in its own right that the Valley was very fortunate to have and very wise to safeguard. Interest continued to be rekindled in keeping and restoring the Kimball however, and it was removed for sale at that time and taken down from the internet. The Valley then contacted the officials at Indiana to inform them that this organ, being an original part of the building, was worth far more than the selling price Indiana had been quoted, and, since no word had been forthcoming in 2 years, it was no longer being offered for sale. This was hugely disappointing at the time, especially for those who had invested so much time and effort working with this organ and coordinating with the authorities at Indiana.

The following Spring, in 2006, Dr. Schwandt recontacted the Valley leadership to inform them that he had accepted a position as professor of Organ and chair of the Organ Department at the School of Music of Oklahoma University at Norman where he was to become the driving force behind the

creation of a new American Organ Institute, and that the Dean at Oklahoma was committed to obtaining an important pipe organ like this one, removing it, transporting it, renovating and rebuilding it, and installing it finally in Oklahoma University's Sharp Concert Hall. He said Oklahoma was prepared to offer a sizeable sum for the organ, but by this time the Kimball was no longer for sale. But this decision to stay the course with this wonderful historic Kimball, as history would show, was the right one for the Valley and for the organ world at large, but the Valley at that moment had no inkling that this instrument's full strength, wholeness, efficiency, and capability for service would be fully restored during the next 8 years. Nor did the Valley have any clue then that the engine which would drive that project was already meeting right around the corner on Grand Avenue a mere one block away at the fabulous Fox Theatre.

The following year, in 2007, the late Mr. Jim Ryan, then President of SLTOS, inquired of the Principal Organist as to whether SLTOS might hold its meetings in the Auditorium from time to time and if the Kimball could be made available for that purpose. As far back as 2004, and at Mr. Ryan's suggestion as President of SLTOS (he served in that office for about 15 consecutive years), a volunteer crew from SLTOS led by organ technician Mr. Alan Haker, affectionately known among the members of SLTOS as "the Organ Doctor," took a look at the condition of the organ, and during the ensuing years a thorough diagnostic examination of this organ was done. It was abundantly clear that the organ was in a seriously crippled condition and needed a very great deal of labor-intensive work to make up for decades of neglect, work which involved a total upgrade of materials and certain machinery and parts. To get a sense of what needed to be done, this evaluation took a number of trips and involved some deliberately cautious climbing up and down high, narrow, vertical wooden ladders, crawling and squeezing into and out of tightly cramped places and around obstacles in dim light, at times leaning off balance, at times perched high in the air on a barely long enough, elevated, narrow, wooden passageboard making sure not to accidentally walk off of it and take a terrible tumble to the bottom and ending up very seriously injured.

In October of 2011 after several years of examination, discussions, investigating, and organizational planning, Mr. Haker presented a proposal to the Scottish Rite Preservation Association Board for the SLTOS to renovate the entire organ from top to bottom as close to Kimball standards as could be done on site, with the SLTOS agreeing to furnish all-volunteer labor free of charge and the Valley paying for any necessary new parts, machinery, or other

materials. While this treatment proposal did not make possible the removal of portions of the organ to any outside shop, it represented an 80-90 per cent savings over any other estimates provided by for-profit organ building firms and presented a very favorable prognosis for the instrument, financially and otherwise. Since Mr. Haker's SLTOS team had already proven themselves fully capable of conducting this type of operation on site in a workman-like manner for other large organs in the Saint Louis area, this proposal was unanimously accepted by the Board, and the team began working shortly thereafter.

NOTE: There is no instrument which cannot benefit from being revisited thoughtfully and sympathetically after it has been lived with for a time, though that ought to be done with a gentle hand in most cases and rarely is. Fortunately Mr. Haker and his team from SLTOS approached this project with a very gentle hand and engaged in no revoicing or other drastic measures which would have changed its sound, thus it remains tonally unaltered. Save for a reduction in its reverberant field by about half due to additional Auditorium construction in the late 1920's, what the listener gets to hear today is just as this organ sounded back in 1924 with no missing pipes, no unplayable stops, and everything working. Mr. Haker continues to maintain it along with 1) the IV/36 Fox Special Wurlitzer in the pit of the fabulous Fox Theatre situated just one block away, 2) the II/7 Wurlitzer in the Fox Theatre lobby transplanted from the Majestic Theatre in East Saint Louis and expanded to 11 ranks, 3) the III/18 Wurlitzer in the Saint Louis City Museum transplanted from the Rivoli Theatre in New York City (augmented with Chimes and 16' Bourdon from the old Saint Louis Theatre's IV/19 Kimball), and 4) the III/15 "hybrid" Wurlitzer in the Lincoln Theatre in Belleville, Illinois. By a curious coincidence the subject of this paper and the Saint Louis Fox Special Wurlitzer, both sole surviving specimens of their kind produced which are still in their original locations and kept fully playable … AND both have exactly 128 operable swell shades which can be made to operate all at once (the Fox Wurlitzer actually was built with 10 more shades operable only on the Percussion chamber, but their action has been disabled and the shades left wide open to allow these sounds to emerge at their fullest).

The rebuilding and renovation work on this Kimball organ which had been piecemeal since 2004 began in earnest in late 2011 and was largely completed during the next 4 years. It was a rescue mission which involved literally thousands of man-hours doing whatever was necessary to remove, clean, replace, convert, overhaul, repair, tune, and regulate this organ to get it back into full service. Water damage had caused the paint on the ceiling in the

northeast end of the Main chamber to start flaking and falling into the mechanism, thus when all the pipes in the Great/Choir were removed for cleaning the crew scraped all the loose paint off the ceiling and painted the affected areas with white paint on a roller to prevent the peeling paint from starting again. It was quite a mess, but, the crew cleaned it up, and no problems have developed since. The original Kimball windchests were retained with all new leather, and rackboards were kept original despite the unsightly water staining. Many of the Tibia Minor pipes ruined by water were redone with new leather stoppers. Due to a more recent leak the leather on nearby swell shade pneumatics had to be replaced twice.

The original Kimball electro-mechanical relay/switching system which distributes the circuitry from the keyboards to the pipes was in very poor condition and accounted for many dead notes in the organ. The relay is the "brain" of a pipe organ in that it receives all the information the organist sends it from the console, sorts it out, and sends it to the proper pipes. It was evident that this either needed to be completely rebuilt or replaced with a new custom-built solid state system, and the latter option was chosen. Mr. Jim Ryan from SLTOS was the "brains" behind the programming of the new Uniflex 3000 computer control system which replaced the old Kimball relay/switching system. Besides being familiar with the software he also made several phone calls to Mr. Dick Wilcox, the software programmer, to solve several problems unique to the organ. Mr. Haker and Mr. Ryan spent many hours together inputting all the necessary information needed to make this new system work. All of the original 1924 double cotton-covered (DCC) wiring had also become unreliable and needed replacement with modern polyvinyl chloride (PVC) wiring throughout the entire instrument in compliance with National Electrical Code (NEC) guidelines. The swell shades in the Great/Choir also needed to be removed and cut as needed to allow them to open freely.

The current status of the instrument's 11 tremulants is as follows: During the 1960's, after 8 of the 9 original Kimball tremulant boxes from the Main chamber were removed and thrown out save for the "fly-swatter" trem to the Swell Vox Humana, they were not rebuilt to Kimball standards but replaced at that time with all-new pref-fab units from another much larger builder of long standing and good reputation. For some reason these did not hold up very well and by the early 1980's most of them had stopped working. As stated, a member volunteer from the Scottish Rite helped reconstruct copies of the original Kimball trems according to plans provided by Mackley Organ Service. All of these member-made copies were formed of redwood with no finish on the

wood. During the 2011-2015 renovation work 5 of these reconstructed copies were placed in the organ at that time operable on the Great, Choir, and Swell divisions and both Swell String trems. The Swell Vox Humana trem, as stated, is original, and certain wind lines were replaced and redirected at that time to some of the Swell chests. Both Solo trems were also restored at that time. The divisional trem for the Solo is now a large theatre organ trem of unknown origin. The separate Tuba trem operable on the Tuba Mirabilis and Tuba Sonora is not original, but it is a Kimball which was recovered along with other parts including the piano from the IV/19 Kimball theatre pipe organ of the old Saint Louis Theatre when it closed in 1966. The Echo and Antiphonal trems remain original, having been missed by whoever removed and threw out the Kimball trems in the 1960's. As stated, the Echo trem works on all 5 ranks in the attic, but the design of the Echo windchests indicates that Kimball wanted to have a separate trem for the Vox Humana. A separate Vox trem was never installed however even though a drawknob was provided for it on the console. A separate trem could have been provided for this Vox rank during the 2011-2015 renovation work, but people always liked the way it sounded without it, it's been that way since 1924, so, this was not done.

Once every pipe in each rank was made playable and regulated the organ was tuned by volunteers from SLTOS led by Mr. Haker. This isn't as easy as it sounds. The auditorium which is heated with steam and cooled with A/C is not in use most of the time and is subject to wide temperature fluctuations. The pitch of organ pipes varies with temperature. Organ pipes tuned true at 70 degrees will come back to that pitch every time the room temperature comes back to 70 degrees, but they will sound flat whenever the air is cooler (because cooler air oscillates slower) and sound sharp when the air is warmer (because warmer air oscillates faster). As it turns out, any miniscule temperature expansion or contraction of material to increase or decrease the speaking length of a pipe is negligible. This isn't a problem for organs in environments where the temperature stays within 5 degrees plus or minus of the tuning temperature – IT IS a problem however if the temperature excursion is greater. On top of that, with 5 ranks installed in an attic location where the roof of the building is also the ceiling of the pipe chamber the pipes will move out of tune more often because attic temperatures shift so widely back and forth. The ambient air temperature in the auditorium itself fluctuates so much seasonally that most pipes won't hold pitch throughout the whole year, and during the height of summer when the auditorium gets up to 87 degrees and in the dead of winter when it may fall to 62 degrees, good tuning is simply impossible.

The approach adopted by SLTOS volunteers to tune this organ in the spring and summer when the auditorium air temperature can be kept around 72 degrees is as follows: firstly, ranks in the Great and Choir are tuned true to the Great Principal Diapason. The Swell Horn Diapason is then tuned true to the Principal Diapason and then the rest of the Swell to the former. The Solo Cello is then tuned true to the Principal Diapason and the rest of the Solo is tuned to the Cello. A tuner is then set to the Principal Diapason and carried to the remote chambers where a strobe is used to tune the Echo Flute and Antiphonal Diapason, then the rest of these divisions to them. No attempt is usually made to tune the bottom 5 pipes of the Pedal 32-foot Bombarde below 20Hz, but the rest of the rank is tuned to the 16-foot. This method has kept the flues staying pretty close and not very raucous-sounding throughout the year, but in the summer and winter months the reeds are all over the place.

As for the console, it was found to be in serious need of a basic internal rebuild with all new wiring. The main cables which form the many connections between the console and the 3 pipe chambers contain thousands of small wires which transmit D.C. voltage from the keyboards to the chamber relays. These cables were old and also had DCC wires subject to failure. These were replaced with new, up to Code, PVC wiring, and the size of the building and the chamber locations made this approximately 675 feet of wiring. A new Uniflex 3000 organ control system operable from a computer and duplicated by a second back-up computer was installed in the left side of the console shell which, among other things, can be programmed to operate a separate memory bank for each organist for the storage of their own programmable piston combos. It also includes a programmable Crescendo with 187 positions and a "juke box" feature which allows the organist to record a performance, store it, and then play it back automatically note for note at any future time with a click of a mouse, complete with swell shade, drawknob, and coupler tilting tablet movements. The original Pedal Separation tilting tablet had hardly received any use whatsoever since the organ was built and was not working at the time. This tilting tablet was rewired and relabeled to work a Master Swell Lock which, when engaged, permits all 128 swell shades in the instrument to be operated from the Swell shoe, simultaneously. To keep it authentic and with the sound, power, and effect for which this organ was known, when the new solid state system was programmed the super couplers did not affect any stop above 4-foot pitch. That way, as original, adding a super coupler to a division gives the "woomf" but no screech or squeal (every organ should operate in like manner – it would certainly cut down on distasteful registrations and distortions of mixtures and upperwork).

The manner in which the new Uniflex 3000 control system was installed in this organ is also novel and unique. The left side panel of the console shell was revamped into a hinged door which opens to reveal a shelf inside the console upon which will be found a surge bar, computer keyboard, mouse, and display screen. When the organ is turned on by means of a keyed lock underneath the left front of the console the computer automatically boots up as the wind is being raised. After about 30 seconds the screen reveals a series of boxes which can be clicked, and the mouse is used to click the box which says "Select Organist." On the next display the organist clicks their own name inside the box which contains it. Clicking the box with one's name then sets the combinations which were previously set and stored in that organist's memory bank. This start-up procedure is followed each and every time the organ is used. The console is equipped with a "juke-box" feature which permits the recording and playback of any piece or song, complete with any changes in stops, couplers, or swell shades that were involved in the making of the recording, and, on playback, the computer also allows viewers to watch on a display screen which manual and pedal keys were depressed when making the recording, moment to moment, as the playback proceeds.

It was verified during the 2011-2015 renovation work that the 4 original Crescendo Separation tilting tablets which permitted strings, flutes, diapasons, or reeds to selectively join with or been out of commission for a long time. At the request of the Principal Organist all 4 of these unwired Crescendo tilting tablets were configured as Pedal to Manual couplers. These 4 new couplers are not part of the general definition of this organ's new computer control system and remain inoperable unless wired to do so for each organist's capture memory. These are polyphonic, operate on all 61 notes of each manual, and, when engaged, do not silence the Pedal stops on the pedalboard. Since all the Pedal voices save for one rank of 68 unified Bombarde pipes are derived from extensions of manual 8' windchests, these 4 new couplers provide an additional dimension of flexibility in mixing tone colors and pitches and extraordinary gravity to any manual ensemble when the demand calls for it. For the new organist coming to the organ from the piano who is just beginning to learn the pedals and may be reluctant just yet to play the pedals in public, these new couplers allow the Pedal stops to sound by playing in so-called "keyboard style" with a chord in the right hand and a single bass note in the left hand – but additionally, and more importantly, by duplexing all 33 Pedal stops to any manual or combination of manuals, the Pedal takes on the function of an auxiliary manual division considerably larger than any of the manual divisions.

This greatly expands the tonal palette of each manual and reduces the need for intermanual coupling. By this means EVERY rank in the organ including the stupendous unit Bombard rank in the Pedal can be electrically coupled to play on the Great manual, simultaneously. Compound tones of overwhelming power and sonority, while not original, may now be realized.

The original Kimball moving combination action was preserved in the 2011-2015 rebuild and remains fully operable. This permits the organist to set and select combinations using any of the following: 1) 12 universal (general) thumb pistons situated on the left beneath the Swell and Great manuals, operable on the whole organ, 2) 8 divisional thumb pistons centered beneath each of the manuals operable on Choir, Great, Swell, and Solo stops, respectively, 3) 4 divisional pistons situated on the right beneath the Swell and Great manuals, operable on Antiphonal stops, 4) 8 universal (general) buttons ("typewriter pistons") centered above the keys of the Solo manual duplicated by toe pistons (studs) on the toeboard to left of the Antiphonal expression shoe, operable on the whole organ, and 5) 5 divisional toe pistons (studs) located to the right of the Crescendo shoe, operable on Pedal stops. The original 4 pistons on the right beneath the Solo manual, operable on Echo stops, have been rewired with a transposer which can put the organ into any key. Here piston 1 transposes down by half steps, piston 2 releases, piston 3 transposes up by half steps, and piston 4 is blank. Each group of combination pistons is supplied with its own "C" (cancel) piston operable on the whole organ or each division, respectively. Combinations are set by engaging the desired drawknobs and tilting coupler tablets, holding in the setter piston on the far left beneath the Choir manual, pressing the desired piston to capture the combination, then releasing the setter piston. Combinations for each organist are stored by the console's computers, may be backed up using a thumb drive, and are easily programmed upon startup. Another universal "C" (general cancel) piston on the far right beneath the Choir manual, operable on the whole organ, is also supplied.

Five expression shoes (left to right, Antiphonal, Solo, Great/Choir, Echo, Swell) and a Crescendo shoe (far right) were provided to this organ. Five sliders placed in the center of the coupler rail gave the organist the freedom to assign expression of any section of the organ (Antiphonal, Solo, Great/Choir, Echo, Swell) to any shoe, in any combination desired. Immediately below these 5 sliders a 10-position lighted panel was placed to indicate the relative degree of opening of these 5 shoes and the Crescendo shoe. From left to right these sliders were labeled Antiphonal, Solo, Great/Choir, Echo, and Swell, respectively, as the

shoes themselves are designated left to right. The sliders were named from top to bottom in the coupler rail in the same order. This meant that when all sliders in the array were moved to the far left default position the expression of all 5 sections of the organ remained assigned to its own shoe; when all were moved to the far right position the expression of all 5 sections of the organ was assigned to the Swell shoe which then functioned as a Master Swell. A 10-position lighted display for all 5 sections of the organ, plus the Crescendo, was provided immediately below these sliders to indicate how far each shoe was open. From left to right this lighted display is also labeled Antiphonal, Solo, Great/Choir, Swell, Echo, and Crescendo. The mechanism in these sliders was delicate and could be easily damaged with rough handling; none of them were working in fact as far back as the 1990's and very probably from much earlier. Today the expression of all 5 sections of the instrument is assigned to its own shoe with all sliders sitting at the far left default position. During the 2011-2015 rebuild, since these sliders were not working at the time and served no immediate need, the Pedal Separation tilting tablet in the coupler rail was reconfigured as a Master Swell coupler which, when engaged, assigns expression of all 5 sections of the instrument to the Swell shoe. The 10-position indicator lights for the Crescendo shoe are still functioning with as many as 187 individual Crescendo positions possible from the new computer control system. For best use and control of the Crescendo feature however, the organist would want to program the Crescendo for only 10 positions to correspond with the lighted display.

During the 2011-2015 rebuild it was discovered that the 4 original Crescendo tilting tablets above the Solo manual had not been working for some time, and these were not wired to function as originally intended in the new computer control system, being ignored for the time being. These tablets are now wired to play as Pedal to Manual couplers operable on all 4 manuals. Left to right on the coupler rail these tilting tablets now read as follows: 1) Pedal to Swell (formerly Strings to Crescendo), 2) Pedal to Choir (formerly Flutes to Crescendo), 3) Pedal to Great (formerly Diapasons to Crescendo), and 4) Pedal to Solo (formerly Reeds to Crescendo). This new Pedal to Manual coupler feature opens up a whole new dimension of capability with registrations. It was never made part of this organ's general definition when the new computer control system was installed however, the main reason being that no one at the time actually wanted it configured that way. This was only implemented in 2019 at the request of the Principal Organist, for his own memory bank. If desired however, each and every organist's memory bank can be configured individually that same way, again, if requested. By means of these 4 new couplers ANY duplexed stops in the Main Pedal may now play on ANY manual division, in

ANY combination. This means also that the Pedal's stupendous Bombarde rank is playable now from ANY manual, even in spread chords for both hands. Since this Bombarde rank is comprised of 68 pipes and the compass of the manuals is a Guild standard 61-notes, when coupled to any manual the 32' stop can play all the way to the top, the 16' stop can play up to high G, the 8' stop can play up to alto G, and the 4' stop can play up to middle G, and all 4 stops when drawn together play from middle G down. With such a mighty 25" unified reed battery like this coupled to the Great manual at 32'-16'-8'-4' pitches with both Great reeds drawn, Swell reeds coupled, Solo Tubas coupled, the Antiphonal [Tuba] Horn coupled, all sub and super couplers engaged, and all swell shades wide open, the playing of spread chords with both hands releases an apocalyptic, deafening, heart-stopping blast sufficient to crack a diamond and places this organ, as stated, in the world-class category in terms of sheer, thrilling power. ALL of this raw, awesome capacity is also completely enclosed – which means that the kind of decibel gain possible as this massive wall of sound undergoes a full crescendo has been experienced only rarely in the pipe organ world – one which never before has issued from the chambers of this organ and one which anyone sitting on its bench will not soon forget. This new feature also permits the new organist who's moving to the organ from the piano and is still learning the pedals to play the whole organ in public with confidence right away, in so-called "keyboard style," i.e. with notes or chords in close position in the right hand and a single moving bass note in the left, all on the same or 2 different manuals, without having to use the feet. When the choir is rehearsed in advance at the piano, the accompaniment when moving to the organ would then involve the same identical finger and hand movements.

Upon completion of the 2011-2015 rebuild, and to recognize the fact that the instrument had been brought back to full life again, Dr. Schwandt performed a rededication recital on this historic Kimball organ on November 6, 2015 under the auspices of the Saint Louis Chapter, American Guild of Organists. This performance was recorded on the instrument's new sequencer and was well attended. The program for this recital included a stop list which accurately described the 53 ranks supplied to this organ and how the various divisions are apportioned. Today, due to the volunteer work and countless labor-of-love man-hours spent by Mr. Haker and other volunteers from the SLTOS – a signal achievement in the organ world – this nearly century-old instrument has been brought up to full speed and is being maintained that way. This remarkable and unique pipe organ of complex tonal design offers the artist organist virtually unlimited flexibility and expression to nuance the music and allows the instrument to sound with every dynamic between a barely audible

whisper and a roar. Organists have at their command here a vast machine that's a literal symphony orchestra of colors and pitches from which an endless variety of tints can be summoned to nuance the music – a sound to which home stereo systems fail to do justice and must be heard and experienced in person in the Auditorium to be fully appreciated.

Most recently, in December of 2020, Organ Media Foundation created by Mr. Brent Johnson, organist at Third Baptist Church in Saint Louis a mere 2 blocks away from the Scottish Rite Cathedral, in collaboration with Dr. Steven Ball, Mr. Alan Haker, and Dr. Andrew Schaeffer, narrated, recorded, and produced a series of three YouTube videos about the Saint Louis Valley of the Scottish Rite, its Auditorium, and its historic Kimball pipe organ. In Part One Dr. Ball seated at the console describes and demonstrates the operation of the console, the tonalities of the stops of its various divisions, and reflects upon how this unique instrument must be played. In Part Two Mr. Haker conducts a guided crawl through the chambers of the instrument. And in Part Three Dr. Schaeffer introduces the Scottish Rite of Freemasonry, explains what it is, gives an overview of its history, and describes the type of pipe organ which lends itself to the ritualistic and other ceremonies of the Rite. Input from the author of this paper, the Principal Organist who presided at the instrument at the time, was not requested by Organ Media Foundation before Part One of this video series was created; this might have helped prevent certain untruths being mistakenly included in Part One, which was unintentional: 1) the English Diapason and Concert Flute, for example, are NOT Choir ranks duplexed to the Great but are actually part of the Great Organ duplexed to the Choir, 2) the Great Fifteenth is NOT an independent stop but rather unified from the Concert Flute, 3) we are NOT hearing the original Kimball design for the winding system and how ALL the Kimball tremulants should sound as some changes were made to the winding system in the 1960's at which time some of the original Kimball tremulants also were removed and replaced with different units, 4) when demonstrating the Chimes there was no mention of the fact that there are 2 sets, the larger set being in the Solo, that the Great Chimes are wired to play from the Echo, or that both sets can be coupled to play together, and 5) the Antiphonal reed is NOT an Oboe but a full-toned Tuba Horn, its drawknob being labeled simply "Horn." Additionally, when this trio of videos was made the building which is heated with steam was very cold, parts of the chambers heated up, some of the flues went sharp, and the reeds tended to stay the same. This caused some tuning issues, but the fact that these videos preserve the sound of this precious, historic instrument, that Organ Media Foundation recognized Kimball's singular achievement with the creation of this landmark instrument, and that Dr. Ball's

explanation of its very complicated tonal design and quality of workmanship was nothing short of outstanding is nevertheless something for which the organ world can be extremely proud and grateful.

*****

This is not an easy organ to play. Guest organists seated at its keys for the first time, as with any unfamiliar instrument, need to spend some time in advance with it – to try ALL of its many voices individually and become thoroughly familiar with what they sound like in terms of strength and timbre in midrange and low and high ranges, and then in combination. One simply cannot brush that need aside, try to "wing it," and draw the stops merely based upon past experience and an expected sound judging from what is engraved on the drawknob faces. Something that isn't so obvious to those who never play the instrument is that the many combination piston buttons recessed underneath the manual keys sit in the shadow of the overhead lighting of the choir balcony which make them hard for the organist to see at a glance. Supplemental lighting installed on the balcony rail directly behind and to the left and right of the organist which can be directed straight at the console would go far to improve visibility of these controls. This organ is a large and versatile hybrid specially designed and built to serve multiple functions and to approach the sound of instrument from many different national and historic schools of organ building. The price it pays for this versatility is that it performs all repertoire with about 60 per cent authenticity in sound and nothing with complete authenticity. Three of the 6 Diapasons supplied to this organ – the Great Principal Diapason, Swell Diapason Phonon, and Solo Stentor Diapason – are all extremely big and commanding in tone. Their primary function – a limited one at that -- is to provide additional body to the biggest reeds (Harmonic Trumpet, Tubas, and Bombarde) to help carry a line over the top of the full organ. This specialty also makes them poor in general ensemble combinations where they are guaranteed to swamp everything else. The player of this instrument is presented with a large 4-manual nearly-walk-in console sitting on top of most of its major tonal resources with a pair of somewhat powerful divisions situated very far away. This makes it difficult if not impossible for them to do anything other than imagine what mix of effects the other two remote divisions may be having with listeners seated on the other side of the auditorium. Performers find a hybrid mix of liturgical, symphonic, and cinema/theatre colors and controls in front of them and one of the most complex tonal designs in an organ that they will ever encounter in their careers. They find the largest division in the instrument being the Swell and that it must enter into all full ensembles. They also discover

the magical effect the Echo pipes have on any combination drawn. They encounter an instrument with all of its pipes enclosed from top to bottom behind 128 swell shades which can generate a crescendo unlike anything they may have ever previously heard from an organ. They find very little upperwork, the upperwork they do find is gently voiced, they search in vain to find a principal chorus anywhere in the instrument, and for playing repertoire they learn to build a combinational tone somewhat suggestive of a chorus by first drawing the small scale Swell Horn Diapason along with either the Great English Diapason or the beautiful Antiphonal Open Diapason and adding a) some less imitative string stops plus the Swell Mixture to give a little definition and upper shimmer, b) certain small pipes of refined flute tone, and c) octave couplers to create some sense of upper brilliance (in playing organs from this era the organist can expect the use of octave couplers to be a way of life). In the process they find themselves in command of a dark and smokey ensemble very suggestive of British organ building of the time. Performers also find themselves playing in a space of one-and-one-quarter million cubic feet unexpectedly dry acoustically for its size. This demands of the player a whole series of well-calculated mental changes in what's written on the page – big detached chords which rely upon reverberation for their proper effect, for example, must be held longer than what is written – which means a reduction in the values of the rests between them – this all the while gauging what effect the Antiphonal and Echo pipes placed at a distance could be having on pulling the sound into the room. They also learn that seasonal fluctuations in auditorium temperatures have the organ always more or less in tune but never quite true, something like a huge celeste. The tops of the mammoth pipes in the bottom half of the 32-foot Pedal Bombarde situated in the Main chamber are also dangerous to reach, so deafening in power that they can only be approached for tuning wearing ear protection, and have remained out of tune for many decades (the volunteers from SLTOS, for safety's sake, don't even attempt to tune any of these extremely low-pitched pipes and leave them rumbling as close to pitch as they decide on their own). In short, the organist sitting at its keys learns to play absolute gem of an organ in a very special way and to explore its tonal wonders within all of these parameters knowing that the challenges just described are overshadowed through-and-through by the beauty, joy, and sheer, thrilling power of this wonder of a musical instrument.

Above all, performers notice the superb and remarkable quality of Kimball engineering and the superb materials, superior workmanship, and masterful voicing evident in this organ. In a day and age when cheaper trade methods meant higher profits this firm was using silver for contacts in its stop

and key actions, lacquer instead of varnish to seal woodwork, and alum-tanned sheepskin hinges and gussets on its reservoirs – celeste ranks were never short-changed in compass and always ran 73 pipes, just like all the other ranks in the Swell and Choir divisions – and some of its methods such as the triple-valve reservoir system for high pressure stops adopted in 1930, unfortunately too late in its history to have much impact, took great engineering but also provided the best wind stability for its time. Its considerable success in the theatre/cinema organ sales realm may have tainted its reputation to some extent perhaps as a serious organ builder, a premise largely due to competitor propaganda which was neither truthful nor fair. Nevertheless Kimball excellence has earned and received the begrudging admiration of competing builders, and, to this day, many knowledgeable and reliable sources agree that Kimball orchestral stops, especially the strings, were the finest in the industry for their day and quite probably the finest ever made.

*****