THE

Aeolian-Skinner Organ

Calvary Church

MEMPHIS, TENNESSEE

Site survey conducted 15-17 April 2001
Draft report submitted 10 October 2001
Final report submitted 31 October 2001

Those readers less interested in the minute technical details of the organ's condition are directed to specifically to this page and the following summaries:

- "Description," "Valuation," and "Op. 932 Today" pages 9-12
- "Environmental Issues," page 19
- "Summary Conclusions," "Recommendations," and "Costs", pages 20-22

EMERGENCY CONDITION — TERMITE DAMAGE

In the North or left hand chamber, termites have eaten into one of the four structural support legs of the organ. This structure carries three heavy windchests, upon which sit more than 1,400 of the organ's 4,419 pipes (the two manual windchests of the Great, and the pitman windchest of the Pedal). This situation was discovered the day after Easter, and steps were taken immediately to stabilize the situation. As of this writing, the following can be stated:

- The infestation appears to have come up from the basement, where a previous termite situation was treated by Terminix.
- Terminix has reviewed the present situation.
- Mark Henderson has fitted a temporary brace to shift the load from the failed leg. However, the structural soundness of the floor itself is in question.
- Five organ restoration firms have been contacted to determine their availability to assist with this situation. Two have indicated willingness to act, and await further contact.
- At the very least, this entire structure should be taken down, the floor reviewed adequately, all chest elements reviewed, treated and replaced as necessary, and these portions of the organ re-instated. This is a very serious situation.
- During the time when these portions of the organ are removed, it may also be advisable to carry out other work, as mentioned below, making the best of a bad situation and seizing a logical opportunity to put this side of the organ in first-rate condition.
- Division of financial responsibility needs to be determined sooner rather than later. Before long, Terminix, organbuilder, owner and consultant should confer on how to determine responsibility.

INTRODUCTION

This report comes from a request from Thomas Pavlechko to survey the organ, compose a report of existing conditions, and make recommendations for a future program of maintenance and rebuilding.

It would be unrealistic to expect any organ survey to uncover every last problem. Rather, this document will blend with your experience and knowledge of conditions to produce an informed plan. Moreover, many negative comments are to be found in the following pages. Please understand that comments are offered in fulfillment of the brief you have set forth: to determine the state of the organ and bring it into the best possible condition. Therefore, nothing below should be interpreted as criticism — certainly not of church staff or musicians, nor of those who have worked on this instrument in good faith and with the best of intentions.

THE AEOLIAN-SKINNER ORGAN COMPANY

The Calvary organ was built by the Boston organbuilding company Aeolian-Skinner, America's most prominent organbuilder from 1930 to 1960. Aeolian-Skinner and its predecessor, the Skinner Organ Company, are considered the foremost names in American organbuilding from the years 1900 to 1960. In business from 1901 to 1971, the firm produced about 1,400 new instruments, as well as completing hundreds of rebuilding projects.

After training with George Ryder, Ernest M. Skinner joined the Boston organbuilder George S. Hutchings, acting as superintendent from 1890 to 1901. Hutchings had been Boston's most progressive organbuilder from the 1880s onward, increasingly due to the many technical refinements Skinner incorporated into the firm's organs. At a time when electric key-action for pipe organs was in its infancy, Skinner developed a reliable system and continually refined it. Coupled to impressive tonal resources and fine construction, the Hutchings organ set a new benchmark for the long-standing tradition of Boston organbuilding.

Skinner left Hutchings in 1901 to form his own company, intent on realizing his dream of an ever more orchestral-sounding instrument. He was soon successful, securing by 1910 several prestigious contracts, chief among them the new Cathedral of Saint John the Divine in New York City. By the end of the First World War, Skinner's was the next name in American organbuilding. His organs were conceived in an almost Wagnerian style, with ethereal-sounding strings, lush-toned flutes, surprisingly faithful orchestral colors such as English and French horns, and a sonorous grandeur—in all, a new sound to twentieth-century ears. Skinner was rewarded with immense popularity in both the sacred and secular arenas.

Ernest Skinner, c. 1905

Skinner never stopped refining his organs, and was constantly engaged in creating new orchestral colors. However, a trip to England in 1924 led him to revive his interest in the stricter, non-orchestral-toned organ ensemble. In England, he heard organs more

from a sales brochure, c.1928

brilliant than his own, due to telling stops known as "mixtures," which incorporate groups of higher pitches. Upon returning home, Skinner began to introduce his own version of such mixture stops. In 1927 the Boston-London alliance was further solidified when G. Donald Harrison, a director of the famous English organbuilding company Willis, emigrated to America and joined the Skinner company to assist with artistic development. Harrison infused the Skinner organ with sounds familiar to him from the British isles, marking a distinct change in the Skinner instruments built between 1927 and 1931. Diplomatic an unpretentious, Harrison easily assimilated himself into the American organ culture. His praise of technological progress and deference to Ernest Skinner adroitly forged the groundwork for future development.

The timing was fortuitous. By the early 1920s, American organists had started to re-evaluate their instruments and their repertoire. This younger generation started turning away from Wagnerian opulence, orchestral transcriptions and symphonic-style playing, and instead toward the music of J.S. Bach and his precursors. Baroque repertoire required a clarity and transparency the orchestral type of organ was never intended to provide. The bright English choruses were one step toward a clearer result, and Mr. Harrison was welcomed as a proponent of that tradition.

In 1932, the Skinner Organ Company merged with the organ department of the Æolian Company, the premier name in automatic musical instruments. The original makers of the "Pianola" (a roll-operated piano-playing device that wheeled up to the family piano), Aeolian branched out first to reed organs and ultimately to expensive pipe organs for "homes of distinction." In the days before sophisticated recording technology, a roll-playing residence pipe organ was a complete miniature symphony orchestra—a musical chameleon that could render the classics and operatic selections with surprising fidelity, as well as popular songs and dance tunes for parties.

As with so many other distinctly American cultural developments, the Depression brought this era of luxurious automated music to a brisk close. By 1930, business conditions for organbuilding were the worst they had been for a century. The merger represented by the Aeolian-Skinner Organ Company (as the new firm was called) demonstrated one strategy for survival in the face of an uncertain future.

By the time of the merger, Mr. Skinner's influence over his own company had waned in favor of Mr. Harrison's. Harrison had continued to move beyond organs of the Skinner pattern, settling upon a newer, eclectic type of instrument—one that sought to balance the needs of older organ literature with the instrument's evolved liturgical function. In Harrison's ideal, an intelligently-designed organ could faithfully serve Bach and baptisms, weddings and Wagner.

At first, Skinner admired Harrison and embraced his knowledge. But each man's fundamentally different musical goals would soon make the situation untenable. Skinner sought brilliance as another ingredient in his opulent palette: the culmination of a style, not the path to a different one. Harrison was destined to become a reformer, and it soon became clear that his new ideas were headed in an altogether fresh direction. By 1930,

G. Donald Harrison, c. 1955

just three years after Harrison's arrival, Skinner had cooled to Harrison's views. By 1932, when the Aeolian-Skinner merger occurred, Ernest Skinner had grown openly suspicious, and with good reason. Harrison's work, not his own, was increasingly in demand, and it was ever more "classical" in its aspirations.

Unfortunately for Skinner, the situation was no longer his to control. In 1919 Skinner had sold majority interest of the firm to Arthur Hudson Marks, a wealthy chemist-inventor who had perfected the technique for vulcanizing rubber. Something of an organ "nut," Marks' decade-long transformation of Skinner's firm turned a struggling company into a publicly-held world-class organbuilding establishment. Having secured Harrison's services, Marks set about quietly orchestrating the Englishman's ascendancy. Skinner fought rigorously against being phased out of the company he had started, but to no avail. Harrison was made technical director of Aeolian-Skinner in mid-1933, while Skinner was demoted. He eventually left the company and formed his own firm in 1936.

Backed by the technical know-how of the Skinner staff, Harrison became the champion of his generation. The Depression-era market was unquestionably tough, and organs had to be sold at ruinous prices just to keep work going through the factory. Harrison turned the situation to his advantage; the slow pace allowed him to dote over every instrument. Artistically, Harrison was already six years removed from what he considered to be the limitations of his inherited English tradition. Now in America, and with the era's finest organ artisans at his command, Harrison had a free hand to pursue his evolving convictions. Gently encouraged by those clients eager for a more classically-oriented organ, Harrison used his characteristic reserve to keep reform at a genteel pace, appealing to revolutionaries while appeasing conservatives.

Aeolian-Skinner organs quickly found their way into America's finest liturgical and concert venues. The organs from 1931 were pioneering, both in their artistic advance and in their symbolic effort, the organ from Calvary Memphis among them. From there, Harrison and Aeolian-Skinner reigned supreme in American organbuilding until the 1950s.

ARTISTIC CONTEXT

The desire for a notable instrument at Calvary Church can be laid to the organist, Adolph Steuterman. Born in Saint Louis in 1894, Dr. Steuterman graduated from Christian Brothers College and studied organ with T. Tertius Noble, the much-lauded organist and master of the choristers at Saint Thomas Church, New York City. Dr. Steuterman held the f.a.g.o. certificate and, in 1914, was one of the founders of the Memphis chapter of the American Guild of Organists. In 1919 he became organist at Calvary, remaining for more than half a century until retirement in 1975. In 1936 Dr. Steuterman spent his summer vacation in China, Japan, and Hawaii, travelling some 25,000 miles by plane, train, ship, automobile, sedan chair, rickshaw and donkey. His series of articles for *The Diapason* about the excursion appeared started in October 1936 and extended well into the next year. In addition to his work at Calvary, he taught at Rhodes College for thirty-three years and was awarded an honorary doctorate by the University of the South at Sewanee. He died in July 1986.

It is not surprising that such a gentleman wanted the finest organ available and of the latest design. In this pursuit, the natural choice was Aeolian-Skinner. The Calvary organ falls directly in the course of G. Donald Harrison's most significant path of progress. Beginning in the early 1930s, each major Harrison Aeolian-Skinner contained new developments, designed both to further the art and to pique public interest. At the Chapel of Trinity College Hartford in 1931, Mr. Harrison turned his attention to chorus registers, thinning the metal, rebalancing the structure and aiming for a brighter effect; in the Choir department, he introduced a family of tapered principals, a Sesquialtera chorus mixture and a French-shallot chorus trumpet. At the Church of Saint Mary the Virgin in New York City in 1932-'33, bright French-type reeds appeared as a Swell chorus for the first time; other chorus reeds were only prepared, perhaps paving the way for the reed-less Great typical of the fully-evolved Harrison style. In 1934, two pivotal instruments at All Saints' Church Worcester and Grace Cathedral San Francisco explored lower wind pressures for the Great choruses (3¾″ rather than 5″). Quint mixtures replaced the more customary tierce-and-septième variety, and the scales of the Great chorus registers were considerably enlarged in the treble. Throughout this development, the overall style of tonal design resembled basic Skinner patterns and perpetuated the elegant Skinner orchestral color, providing a recognizable continuum with the firm's earlier work.

The next instruments in the continuum were for Trinity Church New Haven and Calvary Church Memphis. The Trinity organ, Opus 927, was contracted in late 1934 and finished by June of 1935. Just as Calvary's organ reused a few Kimball stops, the Trinity instrument retained a few stops from the church's previous 1907 Hall organ. Trinity's organist, G. Huntington Byles, had studied with Clarence Watters (organist of Trinity College Hartford) and admired Mr. Harrison's work. Some indication of the Depression economy can be seen in the $23,000 contract price, less than half what the Skinner Organ Company would have charged in 1929: down from an average of $800 a stop to less than $400.

It is helpful to consider the New Haven instrument in detail, as it provides the most reliable clues as to how the Calvary organ might have sounded in its unaltered condition. Opus 927 is a pivotal transition instrument between the organs of the early 1930s and the famous organs for the Groton School in Massachusetts (late 1935) and Church of the Advent in Boston (early 1936). By comparison to these later instruments, the Trinity organ contains Great reeds and does not include the signature unenclosed Positiv. However, it is the first sizable Aeolian-Skinner to employ moderate wind-pressures (3¼″, 3¾″ and 5″); located in an ideally-sited rear gallery, the instrument requires no forcing to be heard. Unlike later Aeolian-Skinner organs, the Trinity organ is conspicuous for gravity and weight at the unison and sub-unison level. Taking a cue from the 19th-century French organs he knew, particularly those of Cavaillé-Coll, Mr. Harrison established the Great and Swell as essentially equal partners in the ensemble. The Great forms the backbone, with its congregation-leading flue chorus and broad-scaled upperwork. The thinner-sounding reeds, narrow-scaled mixture and lean chorus of Geigens in the Swell contribute point, fire and drama. The Choir is secondary to both Great and Swell but in no way diminutive. Its family of tapered principals and Trompette are infinitely useful, as a minor Great, a second Swell, the first level of reed tone in the typical crescendo pattern of French romantic organ music, as an accompanimental partner to the other two manuals, and as a definite contribution to the full ensemble. The independent Pedal, one of the earliest Aeolian-Skinner examples, is characteristic. While no one voice dominates, the department as a whole possesses unmistakable

authority. These various features, plus the organ's smoothness and cohesion, make the Trinity organ an unusually comprehensive instrument. Since it survives unaltered, the Trinity organ offers clear insight into Harrison's thinking for its sister organ at Calvary — notable primarily for including every stop at Trinity as well as several additional voices.

If they were so wonderful, why have so many of these organs been changed? The answer lies in two primary perspectives. In 1935 little was known about the nature of the historic Baroque organs on which Harrison's reforms were increasingly based. A later perspective has viewed these early attempts as flawed attempts to recreate Baroque effect, rather than seeing them for what they really are: sophisticated, flexible late-Romantic organs. Another radical feature of these organs came in their reduced power. Later generations, surrounded by amplified sound and wanting ever-louder effects from all tone-generating equipment, often rebuilt these mild Aeolian-Skinners in an attempt at a more obvious sort of grandeur. In these revisions, Mr. Harrison's sophisticated musical results are often masked.

AEOLIAN-SKINNER OPUS 932

Judging from others of its period, Calvary's 1911 Kimball probably had a grand but muted tone, in keeping with late 19th-century American style. Though probably a serviceable church instrument, the Kimball was perhaps less suited to a serious exploration of solo organ repertoire. Additionally, the organ's mechanism was likely problematic. Kimball instruments of that era have an unusual windchest design. Normally in an electro-pneumatic organ, a pipe valve opens under the influence of air pressure and is closed by a spring. In the Kimball system, a lower pressure played the pipe, but a second, higher pressure was fed inside the pneumatic to close the valve. The mechanism necessary to accomplish this system was complicated and prone to unreliability; for example, to regulate the two pressures, Kimball devised bellows that were stored *inside* other bellows. These and other obstacles have led very few of these early Kimball organs to exist today.

Dr. Steuterman was in an ideal position to request a new organ. Not only did he preside over a malfunctioning, tonally out-of-date instrument, he had demonstrated obvious loyalty after sixteen years in the same position. The bargain prices of the mid-1930s probably cinched the decision.

The new organ was contracted in February of 1935 as Aeolian-Skinner's Opus 932. The general shortage of work in this period caused this particular instrument to be delivered in amazingly short order. It was completed at the factory by early July, and the site installation appears to have been concluded by August. To give some comparison, in the hectic post-War years, Aeolian-Skinner would have taken between three and four years to supply an organ of this size. With the lack of pressure, organs built during this period are often lavishly constructed and free from any deadline-driven corner cutting. Copious quantities of first-grade California sugar pine, excellent wood finish, superb pipework construction and a manifestly elegant console are all testament to the high standards of this period.

In 1935 the chancel configuration differed from its present arrangement. The entire organ was located in the South chancel, occupying not only its current space but also the bay in front of it, which now houses the the right communion rail, the organ console and the sacristy entrance. The Swell and Choir divisions were placed along the back wall of the organ space (as they still are), with the Great and Pedal located in front. The Kimball pipe façade remained unchanged, forming the bass of the present Great 16′ Sub Principal.

ONGOING MODIFICATION

The organ has had four major campaigns of change since 1935.

- **Relocation of the Great and Pedal in 1953.** During this year the chancel was renovated into its present arrangement. The Great and Pedal departments were relocated to the formerly empty North bay, with certain chests inverted to conform to the reversed ceiling architecture. New grills, designed by Aeolian-Skinner, were installed in front of the new chamber and the refashioned original one.

  During this project, certain pipes were returned to Aeolian-Skinner for mechanical overhaul. Three of the Choir stopped flutes (8′ Lieblich Gedeckt, 4′ Lieblichflöte, 2⅔′ Nazard) had their original cork-lined mahogany stoppers replaced with metal canister tops. Also, 121 cone-tuned pipes of the Great 4′ Octave, Choir 4′ Gemshorn, Choir 1⅗′ Tierce were trimmed and fitted with tuning sleeves. Factory records indicate the tone of these pipes was not changed.

  During this time the G. Donald Harrison signature plate was fitted to the console.
- **Console rebuilding, c. 1970.** After 35 years of regular use, the console required rebuilding. The 1935 console shell was retained, as well as possibly the pedalboard, toe terraces and swell shoes. The keyboards, tablet rail and stopjambs were provided new, as well as a new switching system and combination action. Aeolian-Skinner carried out this work.
- **The Reuter work, 1984-'85.** This project resulted in the largest single campaign of change. The project was conceived as a tonal renovation, with the goal of recasting the organ's tonal and musical identity. Without increase in contract price, the workscope grew to include more mechanical rebuilding than originally anticipated. Viewed from today's perspective, the artistic approach of the Reuter work was unfortunate: it removed the artistic integrity of the Harrison work without substituting a concept of like worth. However, the state of organ perspective in 1984 is not what it is today, and the organ's subtle artistic message would have been readily overlooked by most.

  The mechanical work was of standard factory competence, as was the quality of the new pipework. Some of the voicing was handled very well, including the Great Bourdon and Nachthorn. Reuter's techniques with existing pipework were responsible and in many cases admirably executed. Finally, the company documented their work with enviable thoroughness; never before have I seen such a complete and accurate description of work completed. Through the course of my examination, I uncovered no discrepancy between their documentation and the work performed.

  Sam Batt Owens was retained as a consultant to this work; John T. Hooker was the organist at the beginning of the project, succeeded by David Kienzle.
- **Ongoing minor rebuilding.** Under J.R. Neutel's care, several small rebuilding projects have been carried out. In almost every case, the goal has been to replace worn equipment with modern components rather than overhaul existing mechanisms. The success of these projects has been varied.

DESCRIPTION

In 1935 the Calvary organ contained 55 registers, 74 ranks and 4,314 pipes — an appropriate size for this church and music program, and certainly not extravagant. The various rebuilding efforts have increased the instrument slightly, to 60 registers, 79 ranks and 4,590 pipes.

In strict terms, the organ consists of four basic elements:

- the blower and static reservoirs, which live in a basement room. The blower provides wind to both organ chambers and originally provided wind to the console;
- the South chamber, which contains the pipes and mechanism for the Swell and Choir divisions, plus the Pedal Bourdon, Trompette en chamade, Chimes and Harp;
- the North chamber, containing the Great and Pedal divisions;
- the console, with its keys, stops and controls.

VALUATION

Many people entrusted with the stewardship of churches want to know the value of objects within the building. Unfortunately, a fair-market appraisal of the pipe organ can only be speculated. Unlike pianos, harpsichords or violins, pipe organs are rarely sold or traded. Most often they restored, rebuilt or replaced. Even a valuable instrument commands only a fraction of its true value, since purchase is only the first step in a long expensive process for the buyer: professional removal, storage, shipping, restoration and reinstallation in a new location. Since these expenses can easily equal that of a new, similarly-sized, any prospective purchaser would expect to pay only a small sum for the organ itself.

If Calvary's organ were in original condition, its market value would be higher: perhaps somewhere in the range of $40,000 to $50,000. Still, this would be a fraction of its true worth. The numerous changes and condition of the pipework downgrade the organ's market value to something between $20,000 and $25,000.

A more helpful indicator of worth is present-day replacement value. An organ of this size and scope from one of the country's reliable factory builders (Reuter, for example) would cost anywhere from $972,000 to $1,260,000. These figures do not take into account costs usually borne by the church in the acquisition of any pipe organ, which generally include (but are not limited to) sales tax, shipping, hoisting, insurance and site preparation costs. Some sort of visual design involving traditional casework would increase the price.

Most modern factory-built organs cannot claim equality with the top-notch Aeolian-Skinner quality still extant in the organ's chassis and much of the pipework — the difference between, say, Yamaha and Steinway. While both are surely fine, one emerges as the clear choice. If Calvary desired to replace the Aeolian-Skinner with a modern organ of similar excellence, the cost would likely run between $1,620,000 and $1.8 million.

It is not irresponsible to think that Calvary's decision to purchase the Aeolian-Skinner reflected a desire to obtain the best that money could buy — particularly at a time of unusually low prices. Therefore, it would be sensible if the Church's insurance policy reflect replacement of the organ at a minimum of $1.5 million. After the Church edifice itself, the organ may be the Church's single most valuable asset. These figures may appear daunting, particularly for an instrument that probably cost less than $25,000 in 1935. It is important to realize that an organ is one of the cheapest of hand-built items. With proper maintenance and restoration, an organ can literally last for centuries — many have — amortizing the cost of a fine pipe organ over seventy or eighty years demonstrates how reasonable the price is.

OP. 932 TODAY

It is never an easy task to summarize an organ in this condition. From the documentation evident in your files, the men and women of Calvary Church have clearly invested significant time and money in pursuing a fine organ in good working order. Decisions have obviously been made in good faith and with the best of intentions. Furthermore, work has been carried out at — from my perspective, at any rate — extremely reasonable prices. Of all the expenditures in your records, only the maintenance invoices from Quimby Pipe Organs seem to reflect current market rates for high-quality work. Reuter bent over backward to put the organ in responsible condition in the 1984 project, and their report states clearly that they lost money. The evidence amply justifies the claim. Projects accomplished since that time have been equally low-priced.

Unfortunately, the work has been equal in quality to the cost. The result is an instrument that functions in a basic way while in reality being in very rough shape indeed. The first signs of concern come at the console. The keys feel awful, the combination action malfunctions, and there are a handful of dead or intermittent notes. Visually, the console's appearance is of a once-fine object, rebuilt several times without aesthetic regard. A quick look inside the organ reveals an even more disturbing picture: a filthy blower room filled with junk; chambers strewn with haphazard wiring, untidiness and mechanical disorder; cigarette butts and ashtrays in the instrument, where smoking should be strictly forbidden; replacement of original equipment meant to improve performance, but instead creating new problems; damage to metal wind trunks; pipes stored willy-nilly in boxes; tenuous access to vital parts of the instrument; horizontally-mounted pipes collapsing under their own weight and unsoundly supported; and finally, frightening termite damage placing half of the instrument in considerable danger.

At no time since the 1953 re-engineering has organ work been carried out to the high standard of the original 1935 construction. From a practical viewpoint, the last two decades of rebuilding should at least have produced an organ more reliable and responsive than what currently prevails. From a musical standpoint, the changes have increased raw effectiveness at the cost of musical sophistication and elegance. From the historical standpoint, alterations have removed history and distinction from an instrument that once enjoyed both.


ashtray next to lower Great windchest


cigarette butt, under disused Great winker


very uneven keys, Great manual


Swell pipe "repaired" with tape


Swell Vox Humana, haphazard storage


horizontal trumpets, bending under pressure


piles of junk
in blower room

Probably most in the congregation have little notion of the organ's condition. After all, it continues to function in a basic way, and the musicians may be too polite to complain. If lesser mechanical and musical conditions alone were at issue, it would be a more straightforward manner to prescribe a quiet program of minor work to put the organ in first-class condition; fundraising and planning could look toward a brighter future with minimal disruption to the music program or liturgical life. However, given the emergency situation with the termites in the North chamber, some major project involving partial removal is unavoidable and needs to happen soon. Moving forward depends entirely on the goals the Church decides to pursue: either strictly functional, or with the possibility of recapturing the majority of the original tonal and musical effect. The options will be considered in greater detail under "Recommendations" below.

MECHANICAL CONDITION

I. BLOWER

A good blower room environment and a happy blowing plant are essential to the good health of any organ. If the instrument is allowed to draw in dirty air or be exposed to extremes of climate (too damp, too dry, too hot, too cold), inevitably the mechanism will suffer. Moreover, if the rooms that house blowers are filled with non-organ items, neglect, dirt and poor treatment are sure to follow. Any organ blower room wants to be as clean as a guest bathroom at the Peabody. In pursuit of that standard, the Calvary blower room has some distance to travel.

A Spencer Orgoblo blower was provided new in 1935. This is a turbine-like machine with several large fans driven by an electric motor. Spencer blowers are exceedingly well made, and with proper care will last indefinitely. This one runs somewhat hot and cranky, with considerable vibration that indicates a balance problem. I'm not a motor specialist, so cannot diagnose whether the problem comes in the bearings of the motor or in the balance of the fans. The situation deserves further diagnosis.

The blower environment is poor, primarily because the room is being used as a junk pit. All manner of foreign items are stored here. An excellent first step would be to clean out the junk pile, then perform a thorough vacuuming and damp-wiping. After cleaning, a filter could be fitted to door intake, to ensure that the organ breathes clean, dust-free air.

ABOVE
blower room junk

FAR LEFT
Spencer blower

LEFT
Woods motor

II. ORGAN SPACES

an example of sloppy 110-VAC wiring in the South chamber

The organ proper — pipes, windchests and related mechanisms — lives in two chambers on either side of the chancel. As mentioned above, the organ originally was housed as a single unit in the South chancel behind the façade of the previous Kimball organ. The Swell and Choir department remain essentially as they were. The Great and Pedal were transplanted to the new North chamber space largely intact, although in some cases reversed to match the inverted ceiling line. Dual-chambered organs are notorious for living in two separate climates, leading to differences in tuning side to side. The organ's original layout shows forethought for tuning stability: the chorus reeds, which require the most frequent tuning, are on the same basic level and thus would theoretically enjoy similar temperature.

particulate dirt on the elevated Swell chest

Once inside the organ, access is generally easy to all divisions. Certain methods of access require improvement. The step just inside the North chamber door is flimsy, and should be replaced with a new one. The ladders, walkboards and perchboards are worn in places and could use review and renewal. An extra grab-handle here and there would make the technician's journey a surer one.

plaster dust in Choir

The electrical and lighting situation needs improvement. At present, it is a strewn aggregation of individual lamps, power strips and extension cords connected to various receptacles. Each chamber really should be rewired from scratch: new conduit, new fluorescent lighting fixtures, and a good supply of new electrical outlets to facilitate service work. All lighting should be centrally controlled, so the technician need only flip a single switch at the chamber door, rather than fumbling in dark corners to plug in a vital extension cord.

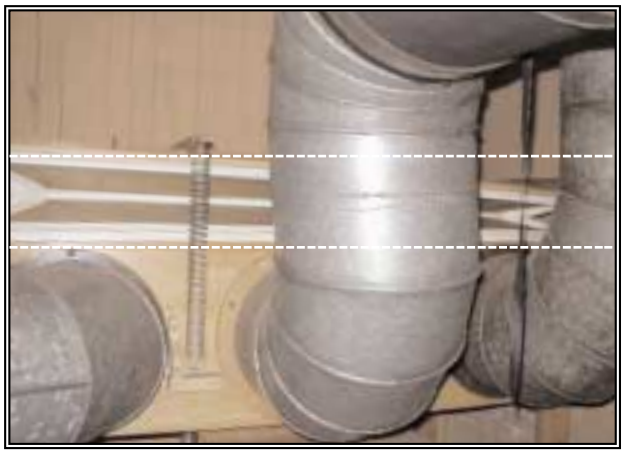
Next, housekeeping should be improved. Each chamber contains unused components, boxes of foreign items, and the improperly-stored Vox Humana pipes. Organ-related items should be inventoried and properly stored; non-organ items should be relocated or thrown away.

flimsy perchboard in upper Swell

Highly disturbing is the presence of ashtrays and cigarette butts, particularly in an object made from dry, aged California sugar pine covered in orange shellac: a textbook tinderbox. Smoking is strictly forbidden.

Finally, the chambers are dirty and look incredibly worn. This is perhaps an understandable state of affairs. Rather than a thorough restoration in 1984, the project undertook tonal matters only. When Reuter, of their own volition

and without increase in cost, opted to add certain releathering tasks to their workscope, they could hardly be blamed for deciding not to lose even more money by renewing the chamber environment. In a thorough-going restoration or rebuilding, the chambers would have been largely emptied of pipes and secondary mechanisms, the plaster walls patched as necessary, and everything given a fresh coat of paint.



main static bellows (note unevenly rising top)

III. WIND SYSTEM

RESERVOIRS: Preliminary wind regulation is accomplished by two bellows at the blower known as static reservoirs. One of these units was substantially rebuilt by Reuter in 1984. It raises concern because its top is substantially cock-eyed. The other unit is in adequate shape. From the static reservoirs, wind is conveyed through metal wind-trunks up to individual reservoirs inside the organ chambers. There are eight reservoirs in the organ: two for the Great, one each for the Swell and Choir, four for the Pedal and one for the Chamade. Some of these were recovered during the Reuter work of 1984, others have been recovered more recently. Apart from the cock-eyed static reservoir mentioned above, none seems to require immediate attention. One should expect to re-leather the reservoirs in the future, as an inescapable part of regular organ rebuilding. Leather decay is hard to predict, however, and a precise forecast is not possible.

recent bellows recovering work

TREMOLOS: Tremolos impart vibrato to the tone by mechanically introducing a recurring undulation in a particular wind supply. The Swell and Choir divisions were originally furnished with standard Skinner-type pneumatic tremolo units. Both have been replaced with electric motor inertia-style units, mounted directly on top of the reservoirs. The electric units operate well enough, but do not provide a true wave to the tone. The replacement of the original units is unfortunate, but perhaps understandable; in other organs of this vintage, Aeolian-Skinner sometimes tried to make one tremolo unit affect two different reservoirs, the adjustment of which could prove treacherous. The original tremolo duct work has been left lying around the chamber.

replacement electric inertia tremolo unit in the Choir

original Choir tremolo serpentine wind trunk

Great concussion bellows

CONCUSSION BELLOWS: These units absorb shock in the wind system to prevent shimmy and jiggle. There seems to have been a concussion bellows fitted to the Great organ originally. It has been disconnected and is lying beneath the lower-level Great windchest.

DUCTS: Although much of the ductwork is in decent shape, there is evidence of considerable trauma. Many smaller sections of duct require repair or replacement. Leaks have been patched with duct tape, which (despite the word) is no match for proper repair. Also, there are leaks at flanges that should be diagnosed and tightened, although the problem may be that the gasket leather on the flanges has failed. Diagnosing and remedying these leaks should make the organ quieter.

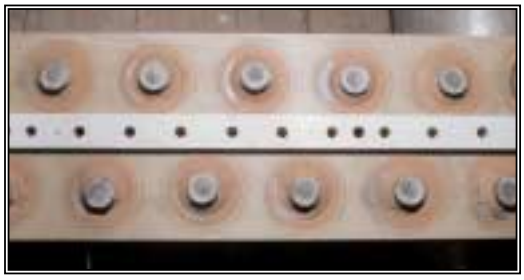
Swell duct: badly damaged, poorly repaired

VENTILATION SYSTEM: Sometime after 1984 a ventilation system was added to each chamber, presumably to better balance each chamber's temperature in an attempt to stabilize side-to-side tuning. At first glance it is hard to know the precise goal of the system, but one logical guess would be that the chambers tend to stay cold in winter, hot in summer. By circulating air, ambient conditions are drawn in from the sanctuary and bring the organ to temperature, and thus to pitch. One of the troubles of such a system, however, is that the circulation of air often leads to the increased distribution of airborne dust particles. Only long-term observation can determine the effects of this system.

ventilation system in South chamber

IV. WINDCHESTS

PITMAN CHESTS Most of the pipes are planted upon the original 1935 Aeolian-Skinner windchests. Underneath each note of every stop is a leather pouch and valve. The leather varies in thickness depending on the application, but is essentially that of fine ladies' gloves: about as thick as a few sheets of this report. As the organ is played, the leather pouches constantly flex. Just one church service entails thousands of individual pouch movements. As the leather decays, it develops punctures, causing notes to go silent or, worse, sound all the time. These unwanted alleluias are called "ciphers."



typical pouchrail inside a pitman windchest

Research over the past twenty-five years has shown that dirty air, more than dirt itself, plays the largest role in leather decay. Similar research has yielded valuable information on which types of leather work best for organbuilding use. Organs in urban areas seem prone to

crooked valve

earlier failure than their rural counterparts. Most organs from the 1930s have already been re-leathered once, and are approaching the need for a second re-leathering. That the organ would require releathering in the mid-1980s is entirely natural.

On the pouchboard I removed (treble of the Great 8′ Diapason), the leather gave every indication of being from the 1984 Reuter work. The leather used is the brown, vegetable-tanned variety, whose life span is shorter than the chrome-tanned leathers that have proven more long-lived. The valves are fairly crooked and have been saturated with graphite to assure a tight seal. This is typical of Reuter's leathering practice. While not the neatest work, it functions adequately.

Key primary actions of the Pedal and upper Great pitman windchests. The mufflers have been removed. Note new magnets (shiny metal units)

The key primary actions, which fire the common notes of a pitman windchest (all the middle Cs, all the middle C#s, etc.), were also releathered. These actions have had their muffler covers removed, so that they are fairly noisy. The covers should be reinstalled.

It is important to note that releathering alone is not the sole task of windchest restoration. Another key element is the regasketing of the chests and the fitting of new blow-leather. Sometimes the bottomboards loosen up with time, and it becomes necessary to re-think the method of screw attachment, in order for the chests to be windtight.

This offset windchest carries the tallest pipes of the Choir 16′ Flûte conique. One valve muffler cover is in place; both magnet mufflers has been removed.

OFFSET UNIT CHESTS The original Aeolian-Skinner offset chests carry the large bass pipes in each department. They are in essentially original condition, having been releathered once. They may need gasket attention, like the pitman chests.

VOX HUMANA In 1935, the Vox Humana was specified as

Windchest restoration goes beyond releathering to re-gasketing and concern for windtightness. The application of silicone sealant shown above is an expedient means of address leaks, which should have been addressed with re-gasketing.

The Vox Humana chest, with its front lid closed. This chest does not function properly, and is probably best replaced.

having its own chest and tremolo. This had been a feature of the 1911 Kimball. The Kimball chest was retained, converted from the double-pressure system described above to a traditional single-pressure operation with springs. (Walter Hardy, the Aeolian-Skinner salesman who closed the Calvary contract, had earlier worked for Kimball; he provided Mr. Harrison with a sketch of how to accomplish the modification.) The conversion was perhaps unsuccessful; the chest doesn't seem to work at present, and the pipes are stored in a box. The pipes should be inventoried and properly stored; the chest should probably be replaced with a new one — perhaps with an adjustable expression lid, so that the stop could be heard at several volumes?

ADDED CHESTS In the 1984 expansion, Reuter added several electro-pneumatic unit chests. One contains the Swell Nazard and Tierce; another carries the Trompette-en-chamade, also in the Swell (according to the documentation, these pipes were once mounted on the chancel arch, almost certainly with different windchests); a third added chest carries the Pedal 4′ Flute, using pipes of the original Swell Rohrflöte. It should be noted that the Swell Plein Jeu VI was planted on two separate stop actions. It was thus possible for Reuter to provide, with a simple wiring modification, two new mixtures in place of the original single stop.

The chests for the Pedal Flute and Swell mutations appear to be in decent shape. However, the Chamade chest is a potential hazard. It seems inadequately installed, and sways from side to side. In a perfect world, a better location would be found for this stop; or it would be removed altogether.

DEAD NOTES Most dead notes are due to electrical issues, or leather valves that require subtle adjustment — not, I stress, from any obvious leather failure.

Great

Principal	A# 22 (ciphered once on my visit) Sumner also reports BB 12 dead presently, 10/16/01
Cymbel iii	C 37 intermittent (tetchy valve)
French Horn	D# 40 (most likely dirty/dead magnet)

Swell

Contra Salicional	G 44 (most likely dirty/dead magnet)

The added chest in the Swell, carrying the Nazard and Tierce pipes. This windchest was built by Reuter and installed in 1984.

This picture does not adequately demonstrate the sub-standard method with which this vertically-mounted windchest is attached to the wall and structure. The chest moves with the slighest touch.

Voix Celeste	C 73 (pulled pipe)
Blockflöte	G 56 (pipe)
Clairon	DD# 4

Choir

Unda Maris ii	CC# 2 (offset chest, dirty/dead magnet)
Koppel Flute	D63 (pipe)

Pedal

Quint	CC# 2 (electrical)
Flute Conique borrow	E 29 (electrical)

Original whiffletree motor in the Swell; swell shades behind

V. EXPRESSION

Dynamic change in organ tone is achieved by louvers that open and shut in front of certain groups of pipes, controlling the egress of tone much as Venetian blinds admit or deny light. In the Calvary organ, two departments are so treated: the Swell and Choir. The system has undergone two major changes.

First, the shades themselves have been re-engineered to open 90 degrees, instead of their original 60. The is a questionable modification, inasmuch as the additional opening changes the timbre only to a slight degree and does not really provide additional volume. Moreover, the increased shade travel compromises the initial opening — critical to the success of a smooth crescendo — because it must translate the same movement potential of the engine over a greater overall distance.

New swell engine in Choir

Second, the original electro-pneumatic motors, called whiffletree engines, were originally connected through solid wood traces and metal linkages: a superior system. In the Choir, the whiffletree engine has been removed, superseded by modern pneumatic motors that connect to the shades via cables and pulleys. The same approach has been followed in the Swell, except that the original whiffletree engine still remains in place, de-winded. The operation of these shades is noisy and appears forced; the simple fact is that they were never designed to travel so far.

This is a perfect example of good intentions mixing with average work and new components to create a far-from-ideal situation. In hindsight, it probably would have been better simply to refurbish the original whiffletree engines and keep the system working within its original operating parameters.

The switch that turns on the organ power?

VI. ELECTRICAL SYSTEM

Electric-action organs, like automobiles, work on low-voltage direct current. Depressing a key closes a simple electrical circuit (much like a doorbell button), sending a signal to an electric air-magnet. From there the process is entirely pneumatic, signals of air collaborating through valves to make pipes sound.

Low-voltage power was originally supplied from a generator run off the main blower motor. This unit was superseded by a transformer rectifier. Normally some sort of relay operates the rectifier so as to ensure that the power is engaged only when the

wind is raised. I cannot be certain, but the switching of the power in this organ seems to be accomplished by a sensor of the kind you might find on a window in a home security system. This unit is crudely affixed to one of the reservoirs in the North chamber.

The electrical switching of the organ would originally have been comprised of electro-pneumatic mechanism within the console, and a subordinate relay in the chamber. All of this has been superseded by solid-state equipment at one time or another, in something of a patchwork of equipment. If disorganized, it nevertheless appears to function, but it lacks unity. It would be better if the entire control system were upgraded as a single unit. If it were desired to simplify the console's mobility (at present quite a cumbersome prospect), such an upgrade would be advisable anyway.

The original Aeolian-Skinner magnets have been replaced with modern ones (see photos, page 15). This was undertaken just a few years ago, presumably to provide greater reliability. During 1935 Aeolian-Skinner switched magnet types, and there are batches from this period that have proven troublesome. Calvary's may well have fallen into this category. The wiring of the new magnets sometimes lacks for neatness, and the cabling could be more elegantly dressed; but the units work well.

VII. CONSOLE

Aeolian-Skinner consoles are among the most elegant in 20th-century American organ-building. In its original incarnation, the Calvary console would have been no exception: solid quarter-sawn oak cabinetry, French-polished mahogany or walnut stopjambs, and a profusion of ivory hardware for the natural keys, stopknobs, tilting tablets, thumb pistons and indicator tags.

The pedal keys, toe terraces, toe studs and expression pedals appear original; newer toe studs have replaced the original kick pedals.

The original console would have contained much of the electrical system (all couplers, pedal unit switches). The combination action was self-contained system, of the "vertical selector" type; a small remote-control memory, possibly located in the blower room, would have communicated with pneumatic motors to move the coupler tablets. Of all the Skinner and Aeolian-Skinner combination action varieties, the vertical selector system was the most particular in adjustment and operation. Few have survived.

The 1970 console renovation was done during the final years of the company's existence. The console shell was retained, and the pedalboard, toe terraces, swell shoes and lower portions (knee panel, kick panel) look original. The original kick pedals for the pedal coupler reversibles have been later replaced. An entirely new upper interior was provided: new stopjambs and stopknobs, nameboard, tilting tablets, new keyboards with pistons. The factory records are inconclusive, but I suspect this console might have been equipped with one of the earliest solid-state combination actions, manufactured either by Damon or ISS, or a copy of those systems that Aeolian-Skinner themselves built. This work was done well enough, but the elegance and finish does not equal the original standard. Also, the later keyboards have not proven to be as finely made or as renewable as those from the earlier organs.

During the 1984 Reuter rebuild, further modification of the knob arrangement was made to accommodate the added stops. To make room in the Swell and Choir divisions, the intramanual couplers were placed on additional tilting tablets. The combination action has been upgraded to a Peterson system. Over the last sixteen years, the console has not fared admirably:

- The manual keys are significantly out of adjustment, and require overhaul.
- The ivory key coverings are in rough shape; one needs to be reapplied.
- The pedalboard needs similar reconditioning.
- The combination action seems unreliable, relating possibly to battery failure in this era of Peterson unit.
- The drawknob solenoid units are of an early unperfected type. While they work adequately, better units have been developed since 1970, notably those from Harris Precision Products.
- The expression pedals are in good condition.
- The console shell is in good condition, and needs only minor touch-up to restore and preserve its original elegance.

The console's condition leads to an inescapable conclusion: the console should be entirely rebuilt, in the spirit of the 1970 work but to a standard equal to that of 1935. Such a rebuilding would entail new keyboards, stopjambs, nameboard and tablet rail. The lower portion of the console can once again be refurbished and reused. A new multi-level solid-state combination action should be incorporated into this work, in a project paired to a new, unified electronic control system for the entire instrument. This would put all organ control systems on a fresh, reliable footing, eliminating the current patchwork of original and later equipment.

VIII. PIPES & RACKING

The CCC pipe of the 1911 Kimball Double Diapason, the present Sub Principal

Few casual observers would presume that an organ of Calvary's size — by no means enormous — actually contains 4,500 pipes. Each pipe is a musical instrument in itself, being hand-made from either wood or various metal alloys. The pipes form the organ's soul. The mechanism can be in peak condition, but if the pipes are dirty, poorly voiced or altered, the instrument's message will always be compromised.

If the goal at Calvary is to restore some semblance of the organ's original elegance, a helpful starting point is to look at the respective vintages of the various pipes.

1911 VINTAGE: 147 pipes are from the 1911 Kimball. All appear never to have been altered.

- the first 22 pipes of the Great Sub Principal, those that comprised the 1911 façade retained in 1935 and moved inside in 1953;
- the first 32 pipes of the Swell 16′ Contra Salicional;
- the first 32 of the Choir 16′ Flûte conique, a stop that appears to have served in the Kimball as a Pedal Dulciana;
- the Swell Vox Humana, a Kimball specialty.

1935 VINTAGE: Of the organ's 60 stops, 33 are in essentially original 1935 condition. This includes virtually all the 1935 reeds: the only missing stop of this category is the Swell 16' Bombarde from 8' C. Although these reeds have been revoiced by Reuter, and the Reuter documentation indicates that shallots were milled open, the changes have been minor. These stops require regulation and possible attention to scrolls, but in general the original effect is either present or readily recaptured.

The English Horn is marked Op. 929, a residence player organ. It may have turned out too loud for a home, though perfect for a church.

The original flue stops look slightly tired, as one would expect after 66 years. The most consistent area of need is found in the slots of the larger zinc pipes. But in general, the only real cause for concern comes in the Swell Viole de Gambe and Celeste, which have been fiddled with and do not sound well. Restorative voicing should recapture their original tone. Of the original stops, the Great Harmonic Flute is the most altered. However, its effect is musical and attractive, and is probably best left alone.

The Choir Voce Umana is made up from the original Great 8′ and 4′ Gemshorns.

1935 STOPS THAT HAVE BEEN REBUILT: Ten flue stops have been rebuilt with new languids. These stops were the recipients of competent, professional work, and the approach reflects responsibility of intent on Reuter's part. Reuter's goal was to brighten the tone of these pipes by eliminating the nicks: the very careful knife cuts on the languid and lower lip that refine a pipe's speech and tone. Often in revoicing older material, many voicers (including some at Aeolian-Skinner in the company's later years) simply drew a knife across the languid to scrape the nicks away: a crude approach. The responsible course of action is to cut the pipe apart, replace the languid entirely, and voice the pipe afresh. This Reuter did, and with good technical consistency.

LEFT Flauto Dolce pipe with original languid and nicking
RIGHT Geigen pipe with new languid and sparse nicking

Since Reuter's replacement languids appear similar or identical in construction to the originals, and their nicking practices are consistent and clean, it would be readily possible to approximate the original tonal characteristics of the pipes without further mechanical modification. This is good news.

Of these ten stops, the Choir Gedackt has been radically rebuilt into an essentially new register.

The original Swell Rohrflöte is now in use as the Pedal 4′ Flute. "Rohr" is German for chimney, hence the thin tube atop each pipe. The canister caps have loosened with age. Shipping tape has been used to tighten this particular pipe.

NEW 1984 REUTER PIPES: Seventeen stops are entirely new. Reuter's pipes are of standard production quality, neither incompetent nor distinguished. A few voices are quite attractive, particularly the Great and Swell flute registers. The mixtures, however, are clearly out of character and are not successful.

Regardless of vintage, all pipework exhibits considerable irregularity in speech, timbre and volume. In a well-voiced and -finished organ, the effect is much like a finely regulated piano, with a beautiful evenness in tone and volume throughout the compass. At Calvary, not one stop meets this criteria. Run up the scale on any register and observe the considerable discrepancy among the notes. Making music on such an instrument can never provide really good results. Sometimes the musical repercussions are more subtle. When an out-of-regulation stop is used to lead a choir, only certain notes will stand out clearly for the choir to get its pitch.

The two most pressing pipework needs are the Trompette-en-chamade and the Vox Humana. The Chamade's poor chest installation is compounded by inadequate racking; several of the pipes are collapsing of their own weight. The Vox Humana is stored in a cardboard box. This stop is probably beautiful; at the very least the pipes should be stored in a proper tray until a new windchest can be built and installed.

For the long-term picture, it is hard to escape feeling that the organ as Aeolian-Skinner last left it in 1953 would have been a far more handsome-sounding and musical instrument. The goals of the 1984 work were clear, in their attempt to transform the organ into something it was never meant to be. The 1935 organ was surely of a piece, beautifully well-knit and cohesive. The 1984 organ was done with limited budget and inadequate perspective. Though honorable in intention, it reached for a goal beyond reasonable grasp.

IX. PERCUSSION

Percussion instruments in organs are luxury items, providing tones so distinctly non-organ like that they pique the interest of the listener. In this instrument, the percussion are a set of Chimes and a "harp."

The 1935 Aeolian-Skinner retained both Chimes and Harp from the previous Kimball. The Chimes are Deagan Class A, the best made; they were surely installed after 1911, as the tubes bear a patent mark of 1914. They work well, and give a lovely tone.

The so-called Harp is actually a celesta, metal bars struck by ball hammers (think of the "Dance of the Sugar Plum Fairy" from Tchaikowsky's *Nutcracker*). The unit appears to be of Kilgen manufacture; again, its installation date is uncertain but it seems to have been installed at some point after the 1911 Kimball installation. Although the action is slightly noisy, the effect is charming — and *big*.

ENVIRONMENTAL ISSUES

I. ACOUSTICS

The ideal acoustic for organ and music is one in which sound is conveyed without distortion or lack of dynamic impact to every corner of a room. Additionally, since organs lack built-in soundboards (unlike pianos or stringed instruments), they rely instead on their environments to amplify, blend and refine the tone.

There are several reasons a "live" building is desirable for any church:

- Congregational singing is immeasurably aided in a live room, since people are naturally encouraged to sing when they can readily hear those around them. This aspect is often overlooked in trying to determine the root of weak congregational singing.
- Music flourishes in a live room; the tone of a choir comes alive effortlessly, without having to force.
- Speech is often at its most effective when mostly naturally conveyed, using minimal and subtle amplification.

I am not an acoustician, and can only give general remarks on acoustics. Calvary's acoustical environment is average, neither truly helpful nor harmful to organ tone. I attended both Easter services, as chorister for the first and congregant for the second. My experience was that the general effect of the organ seems surprisingly constant, little affected by the presence of a congregation. While there is not a great deal of reverberation, the church seems to have certain resonant properties. Bass tones from the organ resonate well throughout the building—a helpful agent in leading hymns, since the congregation can always "feel" the bass line.

One feels, however, that significant improvements could be made. First of all, the organ locations are slightly problematic. Each chamber has a considerable tone pocket at the top, acting as a sort of sound trap. This is less of a concern in the South chamber, where the swell boxes and shades tend to direct sound out and do not rely upon the chamber ceiling for reflection. In the North chamber, the pocket is surely having some effect. If the chamber is emptied with regard to the termite situation, an ideal opportunity would exist to re-think its ceiling architecture.

Second, each chamber speaks into a vaulted arched bay, which surely presents additional sound traps. The arches are long-established elements of the interior architecture, and it would be undesirable to change them. However, it would be interesting to learn an acoustician's perspective on how better to treat the vaulted ceilings in the bays.

In the nave, it would seem that a more lively acoustical environment would benefit every aspect of the liturgy. It may be found that the soft wood ceiling is tending to absorb rather than reinforce tone. If any further building renovation work is to be undertaken, certainly no further sound-absorptive materials should be introduced, and the possibility of strengthening the ceiling should be investigated.

II. CLIMATE

Stability of temperature and humidity are critical factors in the health of any pipe organ. The pitch of the organ depends upon stable temperatures; good operating condition relies upon a comfortable range of relative humidity. Tuning should be carried out at the temperature established for Sunday services. Having been so tuned, the organ should always come up to pitch on Sunday mornings. In a clean organ with even climate, proper humidity control, well-made and -voiced pipes, an organ should hold in steady tune Sunday to Sunday, and require only periodic tuning.

The presence of the ventilation system in each chamber points to a problem keeping the organ in tune, either the two sides in tune with each other, or merely bringing the entire instrument up (or down) to proper tuning temperature. It would be imprudent to diagnose the cause on the basis of a single visit. Also, many of the pipes are in a rough enough condition that they simply may not hold tune well.

The first step to learning how the chambers behave, thus plotting a course for stable tuning, is to install simple temperature monitoring equipment in each chamber. With these devices, daily and weekly patterns of temperature fluctuation can be observed, environmental controls fitted or adjusted, and tuning practices established to follow the evidence.

SUMMARY CONCLUSIONS

As a musical staff and as a vestry, I urge you to take a look inside your expensive pipe organ. From that perspective one might more readily see evidence of what this report attempts to describe, leading one to empathize with the struggle facing any consultant who must advise on an organ in this condition.

From the mechanical standpoint, the organ works well enough, but hardly at peak condition. It is wrenching to think that so much rebuilding has been carried out, and yet without consistency or an overall plan of action. The result is unreliable and haphazard. Most rebuilt organs look wonderful on the inside, and they function transparently: organists need not be aware of the mechanism, because it has been made an invisible conveyance of their musical intentions.

From the tonal standpoint, the many changes have surely been well meaning and were not without musical basis. Perhaps it is better seen in hindsight that the alterations have resulted in an undistinguished instrument where one once proudly stood. Happily, though, with diligent work and an organized, sophisticated approach, this instrument can be restored almost certainly very close to its original condition, not only honoring Mr. Harrison's elegant style but providing a far more effective and suitable instrument for Episcopal liturgy and choral work. The brittle, brash and antiseptic tone now present would be transformed into something warm, handsome and grand — a change people might not realize consciously but rather on an intuitive level, as it moves their souls in the course of worship.

Churches that pride themselves on being among a city's finest and most dynamic are often concerned with providing the highest quality tools, both practitioner and parishioner alike. People flock to Calvary because of excellence in all areas: architectural, liturgical, musical and missionary. Your support facilities are first-class, and affairs are conducted with distinction. When new, the Aeolian-Skinner organ spoke with fluency Calvary's language of elegance. Changing tastes and fashion caused the work described above. Now, it seems prudent to recapture once more one of Memphis's finest organs — if not *the* finest.

RECOMMENDATIONS

There is no question in my mind that Calvary should begin a far-reaching organ project, as part of its musical and liturgical ministry. This project would seek to achieve the following goals:

- Review acoustical conditions and seek to make improvements
- Review the chamber architecture, cleaning, repairing and revising as necessary
- Devise a master plan for the organ — tonally, mechanically, console — and use that document as a basis for all future work
- Completely re-think the blower room
- Restore the organ mechanically; saving the Reuter leather work where it is currently adequate, but otherwise addressing all those factors that the various rebuilds have not dealt with, and in general putting things in really first-class shape. Not only would this include the checking and possible rebuilding of mechanisms, but also providing a new windchest for the Vox Humana; reconsidering the Chamade and its location; and carrying out any other mechanical modifications in accord with the tonal plan. For example, if the mutation stops were to be put back into the Choir organ, it may be possible to remove the two-stop added chest in the Swell.
- Rebuild the console, to give it the appearance, touch and feel of the original, while providing modern controls. Additionally, re-engineer the console's mobility and rewire the organ so as to make the electrical connection between console and organ simpler and more reliable.
- Approach tonal restoration in a deliberate and careful manner, paying attention to every stop, recapturing as much of the original tone as possible, and where stops have been discarded, make prudent decisions as to obtaining other Aeolian-Skinner pipes, recreating original stops or providing new stops in like fashion.

Under normal circumstances, such an organ project could happen at an enviably leisurely pace, ensuring that decisions were not made hastily and that the benefit of each successive stage of the work could be brought to every subsequent project.

However, the termite situation puts the organ project in a context of urgency. I do not see any prudent alternative other than to empty the North chamber of most of its pipes and mechanisms. Not only does the one structural leg require replacement, but it will be necessary to inspect for termites or any other infestation in all the mechanism of that area of the chamber. In this unfortunate situation, however, lies a tremendous silver lining:

- The chamber can be repaired and made fresh and clean, including a check of the floor and any possible termite damage there.
- New, centralized lighting and electrical outlets can be installed, as described above.
- All mechanisms can be reviewed and restored as necessary.
- The climate control system can be reviewed and upgraded as necessary.
- Access issues can be re-engineered; at a minimum the entry step and ladders.
- If there is approval and funding, tonal work on these divisions could also be accomplished at this time, more cost-effectively than later on.
- Although this course of action would be ideal in any case, part of the removal and reinstallation

would naturally be the financial responsibility of the termite eradication firm, as their guarantee surely covers the situation that gives rise to the need for removal of organ components.

Once complete, the North chamber would be an example of how the South chamber should be treated, offering a demonstration of the worthiness of this approach.

Below is an outline of immediate work. The termite situation indicates a project for a company of at least several employees.

ADMINISTRATION

- Establish that your insurance covers the recommended organ replacement value at $1,500,000.
- Set your annual maintenance budget at a minimum of $6,000.

IMMEDIATE ORGAN WORK

- Continue the organ restorer selection process, and engage a firm that can not only accomplish the immediate termite-related needs but has a proven record of excellent electro-pneumatic restoration work, particularly with Skinner and Aeolian-Skinner organs.
- Convene a site meeting of all associated parties: Terminix, organ vendor, church officials and consultant, to devise a plan for moving forward with the termite situation.
- Empty the blower room of trash.
- Have a motor technician diagnose the blower motor to determine whether the bearings are in decent shape and whether the fans require balancing. Since the blower is eminently worthy of retention, funds will not be wasted here.
- Clean the chamber of all extraneous materials.
- Steady the Chamade chest.
- Inventory the Vox Humana pipes and store them properly in a tray, possibly in the blower room once that area is cleaned up.
- Research other Aeolian-Skinner organs of similar vintage, including Trinity New Haven (1935), Central Congregational, Jamaica Plain (Boston, 1936), Columbia University (1939), and Plymouth Church of the Pilgrims, Brooklyn Heights (1937).
- Develop and finalize organ master plan.
- Research vendors for each aspect of the plan.
- Solicit bids and review contractual terms.
- Commence project.

COSTS

I feel it is inappropriate for a consultant to set figures for project costs. As with all labor-based companies, organbuilders and technicians set their prices based on variables unique to their situations, based upon cost-of-living, overhead, location and experience.

One helpful indication, however, is to state that if the organ had never been rebuilt and required it today, the cost would run between 35 and 40 percent of replacement value — from $650,000 to $700,000. Perhaps this gives some notion of the scope of the work proposed above.

MAINTENANCE & TUNING

Once the organ is back in first-class condition, it will require maintenance as would any other complicated machine. As a part of high-quality service work, you should come to expect the following:

- Competent and regular tuning, within the limitations imposed by the condition of pipe voicing
- Regular vacuum cleaning of inside the blower room and both organ chambers
- Regular cleaning of console keys and pedalboards
- Checking the lubrication and condition of the Spencer blower
- Noting and informing the client in writing of any impending problems observed in the course of service calls
- Leave a written report as to precisely what work was accomplished on any given service call
- Keeping a record of all service, with dates visited

Yearly maintenance budgets are often determined as a percentage of replacement value. A church should expect to pay somewhere between three-quarters and 1¼ percent of an organ's replacement value for annual tuning, service, blower checking and cleaning work. Your current annual organ maintenance budget for this instrument alone should be no less than $5,000 and probably $6,000 — and even this is a rough guess, since to obtain first-class service work, it may be necessary to import talent from distant cities. The organ is regularly before both its congregation and a wider public, and really ought to be in peak condition at all times.

Your role in this process is to record problems in clear terms, and to note in the maintenance log how problems have been addressed. Often it is easiest to diagnose long-term difficulties when they have been clearly and consistently documented.

* * * *

Obviously this is a long document containing much information, surely some of it raising concern and controversy. I view my role here not as a one-time observer, but as someone to guide you through a long and hopefully rewarding process. Should questions arise, I hope that anyone at Calvary will feel free to contact me directly.

Thank you again for the opportunity to be of assistance.

Yours sincerely,

Jonathan E. Ambrosino

JEA/ja

1935 SPECIFICATIONS

TRINITY CHURCH, OP. 927
NEW HAVEN, CONNECTICUT

Great — 3¼″ & 5″ wind pressure

16′	Sub-Principal	61	3¼″
8′	Principal	61	3¼″
8′	Diapason	61	3¼″
8′	Bourdon	61	3¼″
8′	Gemshorn	61	3¼″
4′	Octave	61	3¼″
4′	Gemshorn	61	5″
2⅔′	Quint	61	5″
2′	Super Octave	61	5″
1⅗′	Tierce	61	3¼″
	Fourniture IV	244	3¼″
8′	Trumpet	61	5″
4′	Clarion	61	5″
	Chimes *(enclosed in Choir)*		

Swell — 5″ wind pressure

16′	Lieblich Gedeckt	73
8′	Geigen Principal	73
8′	Viole de Gambe	73
8′	Viole Celeste	73
8′	Stopped Diapason	73
8′	Flute Celeste II *(celeste tenor c)*	134
4′	Octave Geigen	73
4′	Flûte harmonique	73
2′	Fifteenth	61
	Plein Jeu VI	366
16′	Bombarde	73
8′	Trompette	73
8′	Oboe	73
4′	Clairon	73
8′	Vox Humana	61

(prepared in 1935; added 1971; pipes from Op. 851, Trinity College, Hartford)

Tremolo

CALVARY CHURCH, OP. 932
MEMPHIS, TENNESSEE

Great — 3¼″ & 5″ wind pressure

16′	Sub-Principal	61	3¼″
8′	Principal	61	3¼″
8′	Diapason	61	3¼″
8′	Flûte harmonique	61	3¼″
8′	Gemshorn	61	3¼″
4′	Octave	61	3¼″
4′	Gemshorn	61	5″
2⅔′	Quint	61	5″
2′	Super Octave	61	5″
	Fourniture IV	244	3¼″
	Cymbel III	183	3¼″
8′	Trumpet	61	5″
4′	Clarion	61	5″
8′	French Horn	CH	
	Chimes *(enclosed in Choir)*		

Swell — 3¾″ wind pressure

16′	Contra Salicional	73
8′	Geigen	73
8′	Viol de Gamba	73
8′	Viol Celeste	73
8′	Rohrflöte	73
8′	Flauto Dolce	73
8′	Flute Celeste *(tenor c)*	61
4′	Octave Geigen	73
4′	Flûte triangulaire	73
2′	Fifteenth	61
	Plein Jeu VI	366
16′	Bombarde	73
8′	Trompette	73
8′	Oboe	73
4′	Clairon	73
8′	Vox Humana	61

(retained from 1911 Kimball)

Tremolo

Choir — 3¾″ wind pressure

16′	Contra Gemshorn	73
8′	Spitzflöte	73
8′	Lieblichgedeckt	73
8′	Dulciana	73
8′	Unda Maris *(tenor c)*	61
4′	Gemshorn	73
4′	Lieblichflöte	73
2⅔′	Nazard *(stopped)*	61
2′	Piccolo *(stopped)*	61
1⅗′	Tierce *(open, tapered)*	61
	Sesquialtera V *(prepared, never installed)*	
8′	Trompette	73
8′	Clarinet	73
8′	English Horn	73
	Tremolo	
8′	Tuba *(unenclosed, 8″ wind)*	61

(added in 1978, pipes and windchest from Op. 851, Trinity College Hartford)

Pedal — 5″ wind pressure

32′	Soubasse *(ext. Bourdon)*	12
16′	Principal	32
16′	Sub-Principal	GR
16′	Violone	32
16′	Gemshorn	CH
16′	Bourdon *(ext. Soubasse)*	12
16′	Lieblich Gedeckt	SW
8′	Octave	32
8′	Flûte ouverte	32
8′	Gemshorn	CH
8′	Still Gedeckt	SW
5⅓′	Quint	32
4′	Super Octave	32
4′	Flûte Harmonique	32
2′	Blockflöte *(prepared in 1935, not installed)*	
	Mixture IV *(prepared 1935, not installed)*	
16′	Bombarde	32
8′	Trumpet	32
4′	Clarion	32
	Chimes	GR

as originally built in 1935
51 stops — 60 ranks — 3,585 pipes

Choir — 3½″ & 10″ wind pressure

16′	Flûte conique	73	3½″
8′	Spitzflöte	73	3½″
8′	Lieblichgedeckt	73	3½″
8′	Dulciana	73	3½″
8′	Unda Maris *(tenor c)*	61	3½″
4′	Gemshorn	73	3½″
4′	Lieblichflöte	73	3½″
2⅔′	Nazard *(stopped)*	61	3½″
2′	Piccolo *(open, harmonic)*	61	3½″
1⅗′	Tierce *(open, tapered)*	61	3½″
	Sesquialtera V	305	3½″
8′	Trompette	73	3½″
8′	Clarinet	73	3½″
8′	English Horn	73	3½″
8′	French Horn	73	10″
	Tremolo		
	Harp		

(Kilgen, perhaps added between 1911 and 1935)

Pedal — 5″ wind pressure

16′	Principal	32
16′	Sub-Principal	GR
16′	Violone	32
16′	Flûte conique	CH
16′	Bourdon	12
16′	Contra Salicional	SW
8′	Octave	32
8′	Flûte ouverte	32
8′	Flûte conique	CH
8′	Salicional	SW
5⅓′	Quint	32
4′	Super Octave	32
4′	Flûte conique	CH
	Mixture VI	192
16′	Bombarde	32
8′	Trumpet	32
4′	Clarion	32
	Chimes	GR

as originally built in 1935
55 stops — 74 ranks — 4294 pipes