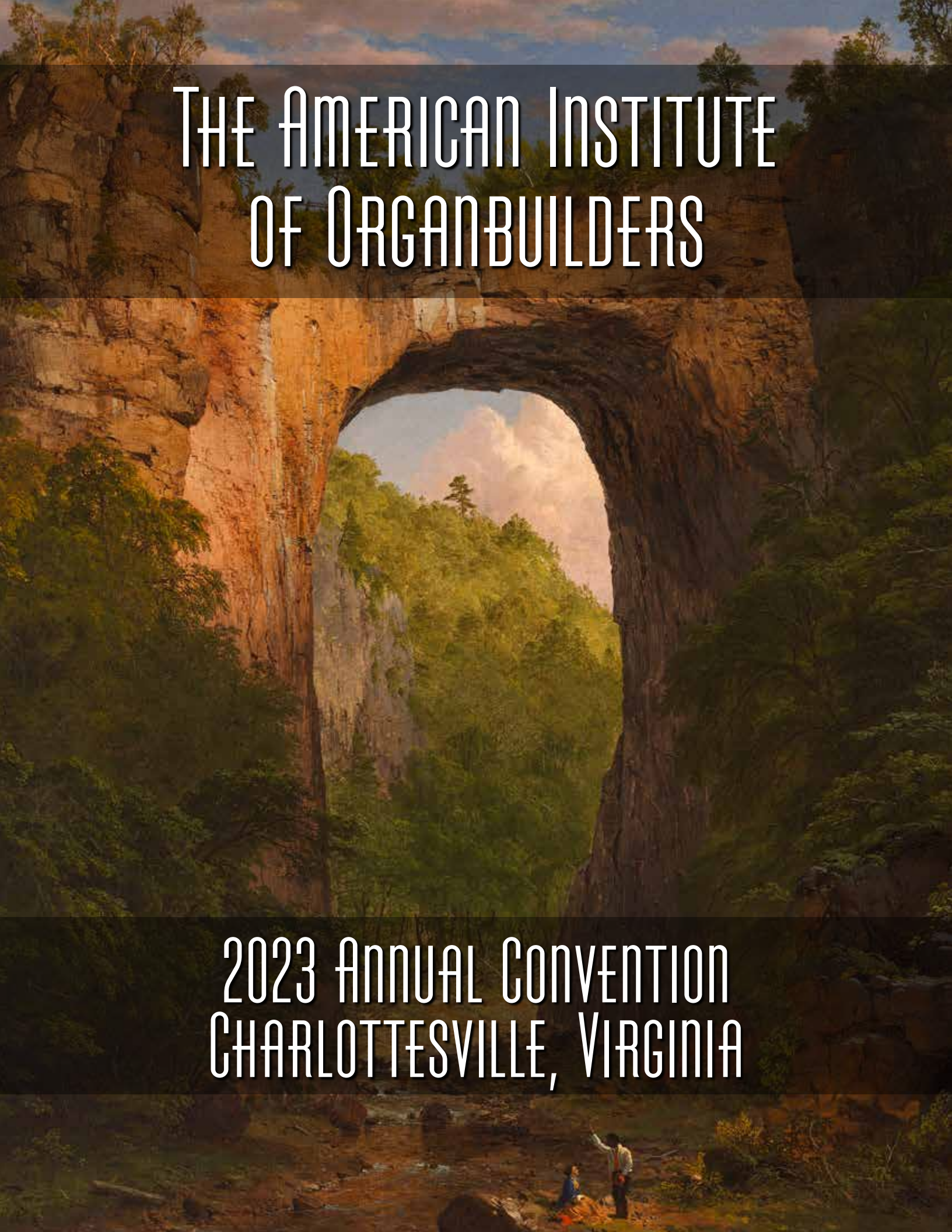

The American Institute of Organbuilders

2023 Annual Convention
Charlottesville, Virginia

Virtuoso

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Integrated Organ Technologies, Inc. proudly announces the completion of the installation of its Virtuoso control system for The Church of Jesus Christ of Latter-day Saints in the organs in both the Tabernacle and the Conference Center at Temple Square in Salt Lake City, Utah. These instruments are used for daily concerts and weekly live broadcasts that reach millions of listeners around the globe. The Virtuoso system handles all aspects of the organs' combination action, couplers, and switching in one compact, integrated package.

The 5-manual, 206-rank Aeolian-Skinner organ in the Salt Lake Tabernacle is one of the most recognized organs in the world as the centerpiece of the weekly live broadcast, *Music and The Spoken Word*, which has broadcast weekly since 1929. The original organ was installed in 1867 and has been expanded and rebuilt several times over the past 150 years by craftsmen from Kimball, Austin, Aeolian-Skinner, Schoenstein, and others.

The 5-manual, 131-rank Schoenstein organ in the Conference Center is a much newer instrument, having been completed in 2003. The Conference Center is a massive space with seating for 21,000 people. Such a large space presented significant challenges for Schoenstein and required many creative features in the organ and its control system. The lOTI team, including Dwight Jones, Sean O'Donnell, and Christopher Soer, worked on-site with Louis Patterson and Chris Hansford of Schoenstein and Temple Square Organ Curator Robert Poll to install the new Virtuoso control system.

The Virtuoso control system was installed in the Tabernacle organ by Temple Square Organ Curator Robert Poll and Temple Square staff. "The Tabernacle organ is really a world heritage instrument," said Poll. "We have a special responsibility to those who came before us to continue to maintain and enhance this marvelous instrument."

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INTEGRATED ORGAN TECHNOLOGIES, INC.

THE FORTY-NINTH NATIONAL CONVENTION
of
THE AMERICAN INSTITUTE OF ORGANBUILDERS

CHARLOTTESVILLE, VIRGINIA
September 9–14, 2023

The Organbuilder's Companion

for the cities of

Charlottesville, Lexington *and* Environs

Scot L. Huntington
Editor and Compiler

Mark Hotsenpiller
Program Editor

The American Institute of Organbuilders
Grass Valley, California
2023

Trinity Lutheran, Lancaster, Penn.
Post-Knauff rebuild 1854

THIS BOOK IS DEDICATED TO

David Tannenberg
(1728–1804)

Religious Refugee, Pioneer,
Colonial American Organbuilder
of Singular Distinction,
Father of American Organbuilding

Charlottesville Convention Committee

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Scot Huntington, CHAIR
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Len Levasseur, PRE-PRESS, GRAPHIC DESIGN
Ryan Luckey, BOARD LIAISON

Andrew Forrest, John Panning, Manuel Rosales, Joel VanderZee

Convention Overview Committee

Luke Tegtmeier, CONVENTION CO-ORDINATOR
Mark Hotsenpiller, EXECUTIVE SECRETARY
Manuel Rosales, EDUCATION COMMITTEE CHAIR
Charles Kegg, TREASURER

NOMENCLATURE: The European standard for note and key compass nomenclature is used throughout this book. When citing harmonic numbers, the Pedal pitch basis is 16′ and the manual is 8′, for pitch No. 1.

CCC (32′), CC (16′), C (8′), c^0 (4′), c^1 (2′), c^2 (1′), c^3 (½′), c^4 (¼′), etc.

ORGAN NUMBERING: Every effort has been made to use the numbering nomenclature specific to each firm's usage, and to avoid the ubiquitous and often incorrect use of "Opus" where not specifically appropriate. The various companies involving Ernest Skinner used "Organ No." or "No." on contracts and engineering documents, and Aeolian-Skinner continued the same usage from Skinner. Internally, both companies would often refer to an instrument only by its three-digit number, using the word "Opus" occasionally in correspondence and on the later signature plates. Since the various incarnations of the company used "No." in technical documents and "Opus" in various ancillary documents, either term is correct, and they can be used interchangeably. For consistency in nomenclature of official organ designations, AIO has adopted the use of Organ No. for Skinner instruments.

THE PRIMARY TYPEFACES USED IN THIS PUBLICATION ARE GARAMOND PREMIER PRO AND FUTURA.

Garamond Premier Pro was designed by Robert Slimbach on the model of the roman types of Claude Garamond and the *italic* types of Robert Granjon.

Futura is a geometric sans-serif typeface designed by Paul Renner and released in 1927.

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ORGAN DOCUMENTATION, CHARLOTTESVILLE AND ENVIRONS

ADVERTISER DIRECTORY

AIO STRUCTURE

- Board members are responsible for communicating with the first committee in their columns.
- Committees are chaired by the first person listed.
- Board and some committee terms expire following the annual convention in the year listed.

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Receive and review nominations for membership, recommend action to board. Seek new members, recommend action regarding inactive members

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Review by-laws, minutes of board and annual meetings. Review proposed amendments to the Bylaws

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MARK HOTSENPILLER
JOHN PANNING

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CARL HERSOM
SCOT HUNTINGTON
MATT PARSONS

CONVENTION OVERVIEW
Hold annual review session to evaluate previous convention. Help new convention committees with organization and hotel negotiations

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MARK HOTSENPILLER
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WEBSITE RESOURCES
Develop a comprehensive online website resource for pipe organ service information

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BENJAMIN YOUNG

NOMINATING
Select candidates for the annual election

2023
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CARL HERSOM
RYAN LUCKEY
PETE WEBBER
BENJAMIN YOUNG

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ABOUT THE AIO

THE INSTITUTE

THE AMERICAN INSTITUTE OF ORGANBUILDERS IS AN EDUCAtional organization dedicated to advancing the art of organbuilding "by discussion, inquiry, research, experiment, and other means." AIO members are professional organbuilders, service technicians, and suppliers who subscribe to the Institute's objectives and its Code of Ethics.

In 1973, a group of organbuilders met in Washington, D.C. to explore the possibility of forming a professional association. A provisional board was established, and a constitution committee was appointed. In September 1974, a convention was held in Dayton, Ohio, which adopted a constitution and bylaws, signed charter members, and elected a Board of Directors. Since that time, conventions have been held each year in cities throughout the United States and Canada. These meetings are structured around a full schedule of technical lectures, visits to local organ shops and instruments, product exhibits, and business meetings. The opportunity to meet other builders, technicians, and suppliers to share ideas and information is another important benefit of each convention.

AIO midyear seminars provide further opportunities for professional growth. These weekend seminars are held in shops throughout the country and are structured to provide hands-on training in a variety of small group settings.

JOURNAL OF AMERICAN ORGANBUILDING

THE INSTITUTE ALSO PUBLISHES A QUARTERLY JOURNAL FEATURing technical articles, product and book reviews, and a forum for the exchange of building and service information and techniques. Subscriptions are provided free to AIO members and are available to non-members through the main office at $50 per year, US addresses only.

MEMBERSHIP

AIO MEMBERSHIP IS OPEN TO THOSE CURRENTLY ENGAGED IN full-time organbuilding or organ maintenance work. Affiliate membership is open to those who are not full-time builders or technicians, as well as non-North American builders and those in allied professions supporting the pipe organ industry. Prospective members must obtain the nominating signature of a current AIO member and provide a brief summary of their work history on the nomination form. Further details about membership categories and annual dues are provided on the form.

WEBSITE

THERE ARE SEVERAL AIO RESOURCES AVAILABLE ONLINE AT www.pipeorgan.org. The membership roster includes links to the websites of companies employing individual AIO members. Members can change personal contact information at any time, as well as search for information of AIO colleagues, by signing into their individual accounts. Past and present convention information, seminar descriptions, past copies of the AIO *Journal*, and a copy of the membership application can also be found here. Enquiries may be made of the Executive Secretary:

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WWW.PIPEORGAN.ORG

ON THE COVER

THE NATURAL BRIDGE, VIRGINIA
PAINTING Frederic Edwin Church (1852)

In 1774, Thomas Jefferson purchased the Natural Bridge and 157 surrounding acres from King George III of England for 20 shillings. In 1791 he urged American artist John Trumbull to travel there, in order to "take to yourself and your country the honor of presenting to the world this singular landscape, which otherwise some bungling European will misrepresent." Frederic Church, the leading landscape painter of his day, painted the landmark after visiting Natural Bridge with his friend and patron Cyrus Field, who would also accompany the artist on his seven-month trip to South America. By this time, Church was steeped in Humboldt's writings, notably *Views of the Cordilleras,* which compared Virginia's Natural Bridge with similar South American landmarks.

WELCOME

AIO 2023 CONVENTION

Charlottesville, Virginia

HEADQUARTERED AT

Omni Hotel Charlottesville

212 RIDGE MCINTIRE ROAD
CHARLOTTESVILLE, VIRGINIA 22903

(434) 971-5500

Joel VanderZee CONVENTION CHAIR

WELCOME TO CHARLOTTESVILLE

CHARLOTTESVILLE IS AN IMPORTANT CENTER OF EDUCATION and culture in central Virginia and is surrounded by the natural beauty of the foothills, apple orchards, and horse farms. In addition to Jefferson, two other presidents made their homes in the area: James Madison and James Monroe. Shenandoah National Park is nearby, as are the Blue Ridge Parkway and Skyline Drive which connect Shenandoah to the Great Smoky Mountains National Park in North Carolina. Central Charlottesville features the Downtown Mall, one of the longest pedestrian malls in the nation, the newly renovated Paramount Theater, and the historic Jefferson Theater.

Over the Blue Ridge, just to the west, lies Staunton, and a bit further south, Lexington, in the fertile Shenandoah Valley. Both founded decades before the American Revolution, these towns would later play important roles in both that conflict and the Civil War, and are steeped in early American history and quaint Southern charm.

Though Charlottesville is not as large a city as we might be used to visiting, it contains a number of interesting organs, old and new, that will surely interest our members. Just outside nearby Staunton sits the fabled atelier of Taylor and Boody Organ Builders, overlooking the expanse of the Allegheny range of the Appalachian Mountains. Our post-convention tour to Lexington will showcase not only some of that city's organs, but also the area's natural beauty and rich history. The bus rides throughout the week will take us over mountains and down country roads with stunning vistas, and will hopefully avoid the congestion we necessarily encounter visiting grand organs in large metropolises.

CONVENTION HOTEL

THE OMNI CHARLOTTESVILLE HOTEL–WITH ITS GLASSED-IN atrium lobby–is at the west end of the Downtown Mall, a popular area of the city replete with fine food, drink, and night life. The hotel has all the amenities AIO convention attendees have come to expect, including complimentary Wi-Fi. The Pointe on the seventh floor serves light entrees and local craft beer, as well as views of the city and the Blue Ridge Mountains. Rooms include TV, refrigerator, coffee maker, ironing board, and a complimentary newspaper. The room rates will start at $165/night.

HOTEL PARKING

COMPLIMENTARY SELF-PARKING IS AVAILABLE FOR REGISTERED guests arriving by car.

WEATHER

A MAJOR CONVENTION THAT BOOKED EVERY HOTEL IN CHARlottesville bumped us out of our traditional early October dates, so we opted for the next available date still promising comfortably warm weather. The convention will be held September 10 through 13, beginning the weekend after Labor Day. This means that we should be experiencing prime late-summer temperatures, with 80°F (26°C) degree days, and perhaps 60°F (15°C) at night–harvest weather!

WELCOME

I would like to extend my sincere appreciation to the following for their invaluable assistance and contributions: Jonathan Ambrosino; Matthew Bellocchio and the Andover Organ Company; Jack Bethards and Schoenstein & Co.; Jerome Butera and *The Diapason;* Simon Couture and Casavant Frères; Philip T.D. Cooper; William F. Czelusniak; Mark Hotsenpiller; Allen Kinzey; Len Levasseur; Bynum Petty, Anne Walkenhorst, Sean Cureton, and the American Organ Archives; Daniel Hancock, Samantha Koch, and the Greenleaf Organ Co.; Michael Kraft, David Pike and C.B. Fisk, Inc.; Stephen L. Pinel; Rollin Smith; George Taylor, Robbie Lawson, and Taylor & Boody Organ Builders; William T. Van Pelt; Joel VanderZee; Martin Walsh; and the AIO Publications Committee.

— Scot Huntington, EDITOR

GETTING THERE

CHARLOTTESVILLE IS AT THE JUNCTION OF INTERSTATE 64 and US Highway 29 in central Virginia, an easy drive from many places on the East Coast.

Charlottesville-Albemarle Airport (CHO) is served by American, Delta, and United, with daily non-stop service to New York, Chicago, Charlotte, Philadelphia, Atlanta, and Washington, D.C., and for those who are farther afield, it is only one layover away. The airport is north of the city, eight miles from the hotel. Please note, the only option for transportation to the hotel is taxi service.

By rail, Charlottesville (CVS) is served by Amtrak's Cardinal (Train 50/51 running New York City-Chicago) and Crescent (Train 19/20 running New York City-Atlanta-New Orleans), and the Northeast Regional trains. The station is located just a couple blocks from the hotel, so those arriving by train have a short, pleasant stroll.

TOURS

THE SATURDAY PRE-CONVENTION TOUR WILL INCLUDE A VISIT to Monticello. This will involve a short amount of walking to Jefferson's house and around the grounds. The Thursday post-convention tour includes visits to the Natural Bridge and Caverns near Lexington. The Caverns tour involves a total of a half mile of walking. There are about 70 steps into the Caverns, although they are not continuous. The Bridge trail passes through the Bridge and continues to a lovely waterfall. One need not traverse the entire trail, as the Bridge can be viewed with only a short walk. If planning to take part in the tours, be sure to bring comfortable walking shoes.

WWW.PIPEORGAN.ORG

SCHEDULE

SATURDAY, SEPTEMBER 9
PRE-CONVENTION TOUR

8:00 AM **Registration Desk Open**
8:30 AM **Buses Depart for Keswick**
8:50 AM **Demonstration: Grace Episcopal, 2019 Taylor & Boody**
9:45 AM **Buses Depart for Monticello**
10:00 AM **Tour Monticello (box lunch provided)**
1:30 PM **Buses depart for University of Virginia, Charlottesville**
2:00 PM **Demonstration: Univ. of Virginia, Old Cabell Hall, 1906 The Ernest M. Skinner Organ Company**
2:50 PM **Walk to Westminster Presbyterian**
3:00 PM **Demonstration: Westminster Presbyterian, 1980 Taylor & Boody**
4:00 PM **Buses depart for Omni Hotel**
Dinner on one's own

SATURDAY, SEPTEMBER 9

HOTEL ACTIVITIES

8:00 AM **Registration Desk Open**
8:00 AM **Exam Review Session I**
12:00 Noon **Lunch on one's own**
1:00 PM **Exam Review Session II and Examination**
5:00 PM **Free Time**
6:00 PM **Dinner on one's own**
7:30 PM **Board of Director's Meeting I**

SUNDAY, SEPTEMBER 10

9:00 AM **Board of Director's Meeting II with Exhibitors**
10:00 AM **Exhibitor Setup, until 1:30 PM**
10:00 AM **Convention Overview Committee Planning Meeting**
12:00 Noon **Lunch on one's own**
12:30 PM **Registration Desk Open**
1:30 PM **Buses depart for Madison**
2:30 PM **Demonstration**
Hebron Lutheran, 1802 Tannenberg
3:30 PM **Buses depart for St Paul's, Charlottesville**
4:30 PM **Evensong**
St Paul's Memorial Church, 1926 Skinner Organ Co., under restoration by A. Thompson-Allen 2023
5:30 PM **Discussion of the current restoration by Nicholas Thompson-Allen**
6:00 PM **Buses depart for Omni Hotel**
6:30 PM **Dinner and Exhibitor's Night**
6:30 PM **35 and Under Dinner**
11:00 PM **Exhibits Close**

MONDAY, SEPTEMBER 11

7:30 AM **Registration Desk Open**
8:00 AM **Annual Business Meeting**
9:00 AM **Break with Exhibits**
9:30 AM **LECTURE Ryan Luckey**
Under New Management.
An increasing number of organ building and service firms are poised for a transition of ownership. Company founders are preparing for retirement. The next generation is ready to take the helm. But the transition isn't always easy. Ryan shares his insight and experience taking over leadership of the Bedient Pipe Organ Company from Gene Bedient. He will highlight various points that should be discussed and pitfalls to avoid. His lecture will be geared toward both current business owners and the new leaders, so there will be something of value for everyone.
10:45 AM **LECTURE Philip T.D. Cooper**
The Construction Methods of David Tannenberg.
Since the recent restoration of several of the nine surviving Tannenbergs, it has become clear that a thorough and well-documented technical examination of all the extant organs as well as various surviving organ parts is necessary to better understand Tannenberg's organ building methods as well as differences in construction between the organs. Using modest research techniques, this is a work in progress. Phil's presentation will highlight several of the more recent observations of Tannenberg's organbuilding style.
12:00 Noon **Lunch at Hotel with Exhibits**
1:00 PM **LECTURE John Boody**
Ten Commandments from the "Wood Guy" which will Relieve your Anxiety, Improve your Product, Increase your Profit, and Guarantee a Happy Life of Woodworking.
The Wood Guy will appear in person to present an essential short course in wood technology for organ builders. Among the topics covered will be wood selection, sawing, procurement, and drying, For your entertainment, there will be a discussion of common mistakes, failures, and other horror stories from the annals of organ building. At the end of the talk you can ask the Wood Guy your stumpiest questions. You will not be board with this talk.
2:15 PM **LECTURE John-Paul Buzard**
Welcoming and Training the Next Generation.
3:30 PM **Break**

3:45 PM **LECTURE Larry Pruett**
Leather: From Pasture to Pouchboard.
Larry will discuss the types of animals used and where they originate, a brief history of the tanning process as well as those used today, and the criteria used at his shop for selecting leather for a specific purpose.
5:00 PM **Free Time**
6:00 PM **Dinner at Hotel and Exhibits Open**
6:00 PM **APOBA Dinner**
10:00 PM **Exhibits Close**

TUESDAY, SEPTEMBER 12

8:00 AM **Registration Desk Open**
8:45 AM **Walk to Christ Church Episcopal**
9:00 AM **Demonstration**
Christ Church Episcopal, 1868 E. & G.G. Hook, restored by Andover 2011
10:00 AM **Buses depart for Staunton**
11:00 AM **Demonstration**
Trinity Episcopal, 2000 Taylor & Boody
12:00 Noon **Buses depart for Taylor & Boody Workshop**
12:15 PM **Box lunch at workshop**
Self-guided tour and demonstrations. Small shuttle takes groups of people between shop and sawmill for short sawing demonstrations
3:15 PM **Buses depart for Ivy**
4:00 PM **Demonstration**
St Paul's Episcopal, 2005 Schoenstein
5:00 PM **Buses depart for Omni Hotel**
5:30 PM **Arrive at Hotel**
6:00 PM **Dinner on one's own**

WEDNESDAY, SEPTEMBER 13

8:00 AM **Registration Desk Open; Exhibits Open**
9:00 AM **LECTURE Joel VanderZee**
Keyboard Construction: Keys to Success!
A number of simple tricks and tips take some of the mystery out of the dark art of making keyboards. Starting with the right materials, and using some novel techniques, one can make beautiful keyboards with either mechanical connections or electrical contacts.
10:15 AM **Coffee Break**
10:30 AM **LECTURE Sebastian Glück**
Contracts and Proposals, Part II.
12:00 Noon **Lunch at Hotel**
12:00 Noon **Board of Directors Meeting III**
1:45 PM **LECTURE John Bishop**
Perfect for the Space: The Art, Science, and Mysteries of Relocating Pipe Organs.
3:00 PM **Break**
3:30 PM **LECTURE Matthew Bellocchio**
Time, Taste, and the Organ Case.
Have you ever looked at historic organ cases and wondered, "What were they thinking?" This lecture will answer those questions, and forever change the way you look at organ cases.
5:00 PM **Free Time**
6:00 PM **Cash Bar**
7:00 PM **Banquet and Awards**

THURSDAY, SEPTEMBER 14
POST-CONVENTION TOUR

8:00 AM **Buses depart for Lexington**
9:15 AM **Demo: Grace Episcopal, 2021 Casavant**
10:00 AM **Buses to Lexington Presbyterian**
10:15 AM **Demo: Lexington Presbyterian, 2005 Fisk**
11:00 AM **Buses to Natural Bridge State Park and Caverns at Natural Bridge**
11:30 AM **Group A: Walk to Natural Bridge**
Group B: Caverns at Natural Bridge tour
12:30 PM **Lunch provided**
1:00 PM **Group A: Caverns at Natural Bridge tour**
Group B: Walk to Natural Bridge
2:30 PM **Buses to VMI and Civil War Museum**
3:45 PM **Buses depart for Omni Hotel**
5:00 PM **Buses arrive at Omni Hotel**
Dinner on one's own

VIEW OF WEST FRONT OF MONTICELLO AND GARDEN BY JANE BRADDICK PETICOLAS (1825)

PRESENTERS

MATTHEW BELLOCCHIO

MATTHEW M. BELLOCCHIO HAS OVER fifty years of organbuilding experience and is a member of the management team at Andover Organ Company, where he has worked since 2003.

He received a B.A. degree, *cum laude,* from St. Francis College in Brooklyn, studied architecture at Pratt Institute, and has made study tours of historic organs and architecture in United States, England, Europe, and Mexico.

Matthew has lectured about tracker action and organ case architecture at five previous AIO conventions, and at national conventions of the AGO and OHS. He has authored many articles on pipe organ history and technology published in national and international organ journals. In 2009 he received the AIO Otto Hoffman Literary Prize.

An AIO Charter Member and Fellow, Matthew chaired the AIO Education Committee (1997-2009), served two terms on the AIO Board (1993-1996; 2010-2012) and as AIO President (2012-2015.) He is currently President of the Methuen Memorial Music Hall, Inc., where he has served as a Trustee since 2017.

JOHN BISHOP

SINCE BECOMING DIRECTOR OF THE Organ Clearing House in 2000, John Bishop has managed the sale of around one hundred fifty organs. As the company had dismantled hundreds of instruments since its founding in 1962, John expanded the services by recognizing that screws can be turned in two directions, and as OCH merged with the Bishop Organ Company, started offering comprehensive relocation projects, renovating and installing select instruments. This led to offering the services of the OCH crew to assist colleague organ companies installing their new organs. In the past ten years, the OCH under the leadership of OCH President Amory Atkins has helped with the installation of over twenty new pipe organs.

John has a degree in organ performance from Oberlin. As a student, he worked part-time for John Leek in Oberlin, and switched to full-time after graduation. He worked for Angerstein & Associates in Stoughton, Mass. from 1984-1987, and founded the Bishop Organ Company in 1987, restoring, renovating, and maintaining organs in the Boston area and throughout New England.

John has written the monthly column, "In the wind..." for *The Diapason* since 2004. He has served on the board of directors of the Friends of the Kotzschmar Organ in Portland, Maine for twenty years.

JOHN BOODY

JOHN BOODY WAS BORN IN 1946 AND grew up in Wakefield, Massachusetts. He has had a lifelong interest in choir singing, majoring in music at the University of Maine, Orono, Maine. He graduated in 1968. Drafted into the U.S. Army, he spent thirteen months in Vietnam as a chaplain's assistant. He directed chapel choirs at II Field Force Headquarters Vietnam. His first organbuilding work was with Fritz Noack. After the Army service, he worked for seven years with John Brombaugh. In 1977, he and George Taylor founded Taylor and Boody. They built their workshop in Staunton, Virginia in 1979 and have built eighty organs in forty-five years. The firm is a member of APOBA, and John is a member of the International Society of Organ Builders, Allegheny Dry Kiln Club, and Trinity Episcopal Church. He has a particular interest in wood technology and sawmilling, and writes a regular column for the *ISO Journal,* "Ask the Wood Guy." John is now retired from active organ building and only works two days a week at the sawmill and dry kiln.

JOHN-PAUL BUZARD

JOHN-PAUL BUZARD IS THE ARTISTIC Director of Buzard Pipe Organ Builders, LLC of Champaign, Illinois. He received his Master of Music degree in Organ and Church Music from Northwestern University in 1980, and his Master Organbuilder Fellow Certificate from the American Institute of Organbuilders in 1985. Prior to founding the firm, Buzard was Curator of Organs and Harpsichords at the University of Illinois at Urbana-Champaign.

John-Paul is a member of the American Guild of Organists, The Organ Historical Society, and the Buzard firm is a member of APOBA and the International Society of Organ Builders. He is also a member of the Worshipful Company of Musicians of the City of London, having been sponsored by organbuilder Henry Willis 4 as the only non-English resident allowed into this ancient musicians' craft guild. (This distinction entitles him to drive a herd of sheep across London Bridge and legally whistle a tune while doing so!)

J-P has a long-standing passion for welcoming new people into our profession and marking their professional achievements in meaningful ways. This inspired him to develop an Apprenticeship Program for Organbuilders, which has been approved by the U.S. Department of Labor. The program's academic aspect mirrors the

AIO's examination process, adding practical hands-on experience requirements to the curriculum, allowing successful participants to achieve Journeyworker and Master certifications. This program is being made available at no charge to any established organbuilder who might like to formally train an apprentice.

PHILIP COOPER

A native of Maryland, Philip T.D. Cooper attended Towson State University where he studied organ and harpsichord with Thomas Spacht. In addition, he has also studied organ with Robert Bates (Stanford University), and has participated in several master classes with Harald Vogel (North German Organ Academy).

Phil Cooper has devoted the majority of his time to the study of 17th and 18th century keyboard repertoire with the applications of antique keyboard playing practices. He has given many recitals on important historic organs and his playing has been broadcast throughout the United States by Minnesota Public Radio. In the past decade, he has made a detailed study of the keyboard works of Johann Pachelbel and his students. He is currently working on a large project: the composing of 100 fugues in the style of a Pachelbel student for a work entitled Musikalische Geräumigkeit.

In addition, Phil Cooper has extensively researched the old organs of Pennsylvania and is considered the foremost expert on the organs of David Tannenberg and his followers. As such, he has often been called upon to serve as a consultant to both churches and historical societies for the restoration of these instruments. In addition, he has accomplished extensive research into early Pennsylvania-German keyboard music manuscripts, often performing this music in recitals.

SEBASTIAN M. GLÜCK

Sebastian M. Glück is artistic and Tonal Director of Glück Pipe Organs, located in New York City. While working as a corporate and residential preservation architect, he earned his A.B. in Architecture and M.S. in Historic Preservation from Columbia University, and the Colleague's Certificate from the AIO. He has served the Organ Historical Society as their National Councilor for Research and Publications, as well as on their Guidelines for Restoration and Conservation Committee and the Historic Organ Citations program. A conservatory-trained organist, he served for many years as Secretary of the Executive Board of the New York City Chapter of the AGO, and was appointed Chair of the AGO Region II Convention in 2007. A past editor of *The Journal of American Organbuilding*, Sebastian is a frequent lecturer and is an internationally published author of articles about organ building, restoration, history, musicology, technology, and tonal structure. He has served as an organ consultant and expert witness, both practically and forensically, for property-owning institutions, insurance companies, and law firms, with experience in both the office and the courtroom.

RYAN LUCKEY

Ryan Luckey is vice president and Project Manager for the Bedient Pipe Organ Company. He is involved in all aspects of service, design, construction, voicing, and project oversight. Ryan is a Colleague of the AIO and is currently serving on the Board of Directors. He graduated from the University of Nebraska at Lincoln, earning his bachelor's degree in Horticulture and Landscape Design and minoring in vocal performance. Ryan's love of organbuilding began several years before he came to Bedient, when he decided to build a two-manual, seven-rank practice organ in his home. In addition to AIO, he holds membership in the Organ Historical Society and the Westfield Center for Historical Keyboard Studies, serves as treasurer for the Lincoln AGO Chapter, and is an active church musician. Beyond his work at Bedient, he is co-owner of Second Nature Landscape Management, specializing in planting design, pruning, and other garden maintenance.

PRESENTERS

LARRY PRUETT

Larry is the president of Columbia Organ Works and Columbia Organ Leathers in Columbia, Pennsylvania. His first work with pipe organs began at the age of 16 when he installed a 1920s Estey organ in his parents' home. In 1980, he went to work for the Klug & Schumacher Organ Co. of Lakeland, Florida and worked mostly in the leather department.

In 1983 he became employed by the James R. McFarland & Co. of Millersville, Penn. and had become service manager by 1985.

Along with former McFarland employees William Duck and John Speller, he started Columbia Organ Works. In 1989 the firm opened Columbia Organ Leathers in an effort to provide high quality, chrome-tanned leathers to the industry. Since the firm's opening, they have provided materials and releathering services to more than 3,500 companies and individuals around the world.

JOEL VANDERZEE

Joel Vanderzee studied engineering at Purdue University, Music at Calvin College, and earned a Master's in Organ Performance at Western Michigan University. He currently works in all aspects of the organbuilding trade for Taylor and Boody Organ Builders, where he started in 2019. Prior to that, he worked in organ tuning and maintenance for 11 years in southwestern Ontario, Canada. During that time he also completed five small mechanical-action instruments. Joel has remained active as a church musician throughout his organbuilding career, and is currently Music Director at Grace Episcopal Church in Keswick, Virginia.

Joel is a Colleague of the American Institute of Organbuilders, an Associate of the American Guild of Organists, and a Fellow of the Royal Canadian College of Organists.

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CHRIST EPISCOPAL CHURCH

CHRIST EPISCOPAL CHURCH | CHARLOTTESVILLE, VIRGINIA

Andover Organ Company, Lawrence, Massachusetts, Opus R-345

ESSAY BY MATTHEW BELLOCCHIO

PHOTOS WILLIAM T. VAN PELT

Essay reprinted by permission from *The Diapason,* April 2014.

IN PROJECTS, JOURNEYS, AND LIVES, THERE ARE MILESTONE events that mark progress or achievements. The October 5, 2012, dedication of Andover Opus R-345, at Christ Episcopal Church in Charlottesville, Virginia was such an event. It was a milestone for three long journeys: the completion of a seven-year project for Andover; the culmination of a decade-long sanctuary renovation process for Christ Church; and the latest chapter in the odyssey of a much-travelled and resilient 19th-century New England organ.

With their simplicity and durability, it is not unusual for well-made vintage tracker organs to outlast the buildings or congregations for which they were originally made. Happily, they can often be relocated and repurposed to fit the musical needs and budget of a new owner. At Andover, we tune and maintain a large number of 19th-century instruments that are now in their second, third, or fourth homes.

The saga of the Christ Church organ certainly illustrates this! The core of the instrument is a three-manual, 29-stop organ built in 1868 by E. & G.G. Hook of Boston as their No. 472, and originally installed in Grace Episcopal Church in Chicago, Illinois. In 1902, it was moved to another Grace Episcopal Church, in Oak Park, Illinois. In 1922 it was sold again, this time to the Third Congregational Church of Oak Park, where it was rebuilt and electrified by Nicholas Doerr of Chicago. The organ was next moved to St. Ludmilla's Catholic Church in Chicago, probably in 1937 when the Third Congregational Church merged with another congregation. When St. Ludmilla's closed in 1991, the organ was put into storage. Robert C. Newton, who at the time was Andover's old-organ guru and a nationally recognized authority on Hook organs, learned of the organ's availability and purchased it. Hook No. 472 then made the long journey back to Massachusetts, where it sat in storage, awaiting its fifth home.

Meanwhile, Christ Church in Charlottesville, Virginia, had formed an organ committee to find a replacement for their failing 50-year-old electro-pneumatic organ. That organ had been cobbled together from a variety of used and new parts, and the builder had gone out of business before the organ was finished. Concurrently, plans were begun for a complete renovation of the sanctuary. After much study, the organ committee determined that the best location for the new instrument would be at the front of the church, speaking down the long axis of the room directly towards the congregation. This location was subsequently confirmed by each builder that the committee interviewed during the selection process.

Being responsible stewards of the church's resources, the organ committee also researched the option of installing a rebuilt historic organ. They determined that if the original organ were a well-made, quality instrument, the end result could be equal, or in some cases superior, to a new organ–yet at significantly reduced cost. John Whiteside, former dean of the Boston A.G.O. and who played one of our instruments during his time working in the Boston area, became Christ Church's Music Director in 2005. He contacted us and learned of E. & G.G. Hook No. 472. Built in 1868, the organ dated from the "golden period" (mid-1850s to mid-1870s), of the firm's century-long output.

Because the organ had lost its original case, console, framing structure, key action, and wind system during its travels, the surviving Hook pipes and windchests could easily be rearranged to fit the available space in Christ Church. The most essential parts of any organ are 1) the pipes, which define its tonal signature, and 2) the windchests, which influence how the pipes speak and blend.

The Hook firm was one of 19th-century America's premier organ builders. Their instruments, highly regarded for their mechanical and tonal excellence, were designed and voiced to work well in the dry acoustics of American churches. Though we at Andover build modern instruments designed to serve the needs of today's church musicians, we draw insight and inspiration from the surviving work of the Hook brothers Elias (1805–1881) and George Greenleaf (1807–1880), and their successor, Francis Hastings (1836–1916). We have been privileged to work on many of their important surviving instruments, including their monumental 101-rank 1875 masterpiece, No. 801, at the Cathedral of the Holy Cross, in Boston, and the famous 1876 "Centennial Exposition" organ, No. 828, sold after the exposition ended to St. Joseph Cathedral in Buffalo.

After careful deliberation, the committee recommended that Christ Church purchase and install Hook No. 472–to be completely renovated, rebuilt and enlarged by Andover–at the front of the church surrounding the rose window. This proposal was approved by the church's Vestry and in April 2005 a contract was signed.

The rebuilding work started in 2007, with Ben Mague as Project Team Leader. The Hook pipes were restored, and the windchests rebuilt and enlarged to accommodate additional stops. New and vintage ranks, scaled and voiced to be compatible with the original Hook stops, were added to augment the organ's tonal palette. Ben and Michael Eaton engineered a new console, structure, action, and wind system to fit the renovated chancel area. Don Olson designed

CHRIST EPISCOPAL CHURCH

the new casework, in consultation with noted church architect Terry Eason, who prepared the plans for the sanctuary renovation.

The organ is laid out horizontally with the Swell on the left, the unenclosed Choir in the center, and the Great on the right. The pedal stops are divided among these three locations. The bass of the Pedal reed is behind the Swell, its treble and all of the *16′ Subbass* are behind the Choir, and the Pedal *Double Open Diapason* pipes are behind the Great.

The organ's white oak casework was built in our shop. We take great care to design the exterior of each instrument to complement the architecture of its surroundings. Thus, the blind Byzantine arches of the lower casework were patterned after the existing chancel side wall woodwork. The polished tin facade pipes comprise the lowest notes of the Great *8′ Open Diapason* and the Pedal *8′ Violoncello*. The detached oak console has walnut interior woodwork and a walnut swirl veneered music rack. The pau ferro drawknobs, with 19th-century-style oblique heads and inset engraved labels, are arranged in stepped terraces. The manual keyboards have bone-plated naturals and ebony sharps.

The balanced manual key action is mechanical, with center-pivoted keys. All the manual and pedal couplers are mechanical. To facilitate the positioning of the Pedal pipes in the most advantageous spaces, all of the Pedal stops are on electro-pneumatic unit chests that we designed and built. The stop action is electric. The Solid State Organ Systems combination action, with 100 memory levels and a piston sequencer, affords the player seamless control of the organ's resources.

While the rebuilding was underway, Christ Church's rector departed for another parish. The church postponed the fund-raising for the sanctuary renovations and turned its attention to finding a new rector. Thankfully, during this period, a parish donor continued to fund the organ's rebuilding so the project would not lose momentum.

The completed instrument was unveiled at an open house at our shop on November 6, 2010. Although the organ was ready, the church was not. Bids had not yet been received for the chancel renovations. It was discovered that part of a rock ledge beneath the chancel would have to be removed to permit excavation for a basement to house HVAC equipment and the organ blower. This increased the scope of the project.

The organ sat, playable, in our shop until May of 2011 when, needing that space for other projects, we shipped it to Charlottesville and stored it in the church parish hall. The chancel renovations were finally begun in the fall of that year and nearly finished when we started the organ's installation in January 2012. Parts of the organ were playable when it was first used on Easter Sunday. The remaining flues and all the reeds were installed and regulated during the following months. On Friday evening, October 5, 2012, noted organ recitalist and recording artist Bruce Stevens played the dedicatory program to a large and excited congregation. It was a milestone event, the happy ending to a long road!

Just as a great organ is the sum of its parts, a great organ company is the sum of its people. Those who worked on Opus R-345 were Ryan Bartosiewicz, Matthew Bellocchio, Anne Doré, Michael Eaton, Donald Glover, Al Hosman, Lisa Lucius, Benjamin Mague, David Michaud, Tony Miscio, Fay Morlock, John Morlock, Robert Newton, Donald Olson, Casey Robertson, Jonathan Ross, Craig Seaman, David Zarges, and Jay Zoller.

Andover Organ Co. Opus R-345, 2012
Christ Episcopal Church,
Charlottesville, Virginia
INCORPORATING: E. & G.G. Hook, No. 472, 1868

		SOURCES	
GREAT (3″ w.p.)			
16′	Bourdon	Hook	58 Pipes
8′	Open Diapason	Hook, New [1]	58 Pipes
8′	Stopped Diapason	Hook	58 Pipes
8′	Viol d'Amour	Hook [2]	46 Pipes
4′	Octave	Hook	58 Pipes
4′	Harmonic Flute	Hook	58 Pipes
2⅔′	Twelfth	New	58 Pipes
2′	Fifteenth	Hook	58 Pipes
IV	Mixture	Hook, New [3]	232 Pipes
8′	Trumpet	Hook	58 Pipes
SWELL (3″ w.p.)			
8′	Open Diapason	Hook	58 Pipes
8′	Stopped Diapason	Hook	58 Pipes
8′	Keraulophon	Hook	58 Pipes
8′	Keraulophon Celeste	Vintage stock	46 Pipes
4′	Octave	Hook	58 Pipes
4′	Violina	Hook	58 Pipes
4′	Flauto Traverso	Hook	58 Pipes
2′	Flautino	New	58 Pipes
III	Mixture	New	174 Pipes
8′	Trumpet	New	58 Pipes
8′	Oboe	Hook	58 Pipes
	Tremolo		
CHOIR (3″ w.p.)			
8′	Geigen Principal	Hook	58 Pipes
8′	Melodia	Vintage stock	58 Pipes
8′	Dulciana	Hook	58 Pipes
4′	Fugara	Hook	58 Pipes
4′	Flute d'Amour	Hook	58 Pipes
2⅔′	Nazard	Hook [4]	58 Pipes
2′	Piccolo	Hook	58 Pipes
1⅗′	Tierce	Vintage stock	58 Pipes
8′	Clarionet	Hook, New [5]	58 Pipes
	Tremolo		
PEDAL (3″ w.p.)			
16′	Double Open Diapason	Hook	32 Pipes
16′	Subbass	Hook	32 Pipes
16′	Bourdon	(Great)	32 Notes
8′	Violoncello	Hook, New [6]	32 Pipes
8′	Flutebass	Vintage stock	12 Pipes
4′	Choralbass	Vintage stock	12 Pipes
16′	Trombone	New	32 Pipes
8′	Trumpet	New	12 Pipes

COUPLERS
Swell to Great
Choir to Great
Swell to Choir
Great to Pedal
Swell to Pedal
Choir to Pedal
38 Stops, 39 Ranks, 2,170 Pipes

NOTES:
1 – C-d♯⁰ pipes new, tin, in facade.
2 – From Hook No. 371 [1865, Mt. Pleasant Unitarian, Roxbury, Mass.] to replace missing original pipes; C-B grooved from *Stopped Diapason*.
3 – Enlarged from III to IV with one new rank.
4 – Original Great *Twelfth*
5 – Originally tenor-c, new C-B
6 – C-d⁰ new, tin, in facade.

CASEWORK: New, oak (original instrument was chambered and stacked)
KEY ACTION: Direct mechanical
CONSOLE: Detached, terraced jambs
CONTROL SYSTEM: Solid-state multi-level, drawstop and slider solenoids replacing original mechanical stop action
LAYOUT: Revised to fit Christ Episcopal
PITCH: Repitched from original A450 to A440, equal temperament

Dedication Recital - Left to right: Don Glover, John Morlock, Benjamin Mague, and Bruce Stevens

GRACE EPISCOPAL CHURCH

GRACE EPISCOPAL CHURCH | KESWICK, VIRGINIA

Taylor and Boody Organ Builders, Opus 77, 2019

ESSAY BY GEORGE TAYLOR

PHOTOS ROBBIE LAWSON

THE HISTORY OF GRACE CHURCH IN KESWICK BEGAN IN 1731 with the establishment of Fredericksville Parish under the aegis of the Church of England. The first sanctuary of wood was consecrated in 1748 on the site of a mountain chapel used by early settlers. Later known as Walker's Church, it was one of the six churches established in Virginia during the British Colonial period. When the Rev. James Maury became the Rector in 1751, he started a classical school in his home. Thomas Jefferson attended here as a student and subsequently served the church as a Vestryman. The present building was designed in the Gothic Revival style by William Strickland at the behest of Judith Page Rives and was completed in 1855. It was gutted by fire in 1895, leaving only the tower and four walls still standing. The bell, which was a gift from Mrs. Rives' daughter-in-law, Grace Sears of Sears and Roebuck, also survived the fire. The church was quickly restored and rededicated in 1896.

The earliest reference to an organ cites that in 1857 "the organ and choir moved downstairs," implying either that the instrument was a portable melodeon, or a small chamber pipe organ. Then there is mention of necessary repair to the organ, described as "a very old English organ" that had been imported by the Walters family for their house at nearby Belvoir in 1836. The house was eventually badly damaged by fire and the organ survived by being "taken apart and thrown out of a window." Mrs. Rives eventually acquired the organ and presented it to the new church (ca. 1855). After a year or so, the organ became too disordered to function, and noted Boston organbuilder William Simmons (1823–1876) was called to assess the situation. Wm. B.D. Simmons & Co. had just completed an organ on speculation and sold it to Keswick for 320 pounds ($1,400) plus the old organ in trade. [This would have bought a fairly complete one manual or a very modest two-manual instrument. This organ does not appear on a Simmons opus list. -Ed.] The organ was installed in the spring of 1869 and Frank Page was hired as organist with a salary of $30 a year. He was also "empowered to reorganize the choir." It is probable that the Simmons organ survived until the fire of 1895, after which "a reed organ with an air pump handle at the back" was purchased. There exists a photo taken after the fire that shows an organ case with keyboard and decorative pipes in the left/north transept.

The next pipe organ to be installed at Grace was in the late 1950s by Mark Wetzel, a German immigrant employed by Klann Organ Supply Company in Waynesboro. He subsequently started his own business tuning and refurbishing organs throughout the area. As chance would have it, I met Mr. Wetzel by holding keys for him when he came to tune the Estey organs in Orange, Virginia where we lived. He was a true gentleman. When I heard of his project in Keswick, I visited the installation crew. It was a two-manual instrument in the gallery with a Klann console in the north transept adjoining the chancel. Mr. Wetzel exposed the *Principal* basses in front of the Swell box located on the gallery rail. The design had architectural merit, but unfortunately blocked the view from the nave of the large stained-glass window in the tower, which also provided the primary light source for the nave. The Great and Pedal pipes were relegated to the sloping attic space under the south eave and spoke through a small balustrade into the nave. Access to that chamber was nearly impossible because its rear wall abutted the stairwell to the gallery–consequently, the organ was rarely tuned. The windchests were made by Klann, and other parts were sourced from a variety of supply houses as necessary. Mr. Wetzel charged only $8,500 for the project, which meant that many of its pipes were recycled from a number of previous projects. In 1995, the organ was refurbished with a few judicious additions for ten times the amount Mr. Wetzel had received.

The Wetzel organ served the church until 2015 when a torrential rainstorm flooded the organ chambers, rendering the instrument unplayable. Rather than repair it a second time, the church began a search for a new instrument, which culminated in a contract with Taylor and Boody in 2018. From the outset, imagining a workable design for the organ was no simple task. At our suggestion, the church engaged Dana Kirkegaard to make recommendations for acoustical improvements and to assist us with finding creative solutions to challenging problems regarding the organ layout and placement. Dana

discovered that the intimate nave, while not reverberant, was ideal for the performance of chamber music. The chancel however, was acoustically separated from the nave by a proscenium arch and was architecturally drab.

From the beginning, we had promised the church that the gallery would be reopened to seating, which implied that a two-manual organ would somehow have to be crammed into the north transept as the south transept was already reserved for a tiny chapel containing a single *prie-dieu*. In addition, the organist, Michael Latsko, had stipulated the instrument needed to have three manuals, which further complicated our layout challenges. With available real estate at a premium, we were beside ourselves until one day we dared wonder if the chapel concept might be abandoned so that half the organ could make use of its valuable space.

Fortunately, rector Miles Smith was immediately on board with the idea, allowing the organ's design to move forward in earnest. In the meantime, Dana had worked out a plan for raising the chancel ceiling several feet and removing the proscenium arch. The result is a chancel that is now acoustically and visually coupled to the nave. The elaborate decorative woodwork on the ceiling was crafted in our shop. The transept arches opening into the chancel and nave were enlarged to permit the maximum egress of sound. Walls in the transepts were doubly insulated and superb plasterers were employed to reshape the arches. The handsome new wood floors in the nave and chancel were a great improvement over the carpeting they replaced.

Thanks to the experience we gained designing our large organ for Grace Church, New York, we were comfortable with the necessity of dividing an organ on either side of a chancel. The greater challenge in Keswick was to fit the chests and pipes into two very tight quarters, each just eight feet square. Ultimately, having three manuals worked out to our advantage, because we could have access to the chambers through carved tracery gates we built within the nave arches. On the north side, the Great chest is cantilevered into the chancel above the console. The Choir chest is placed against the north wall of the same chamber, leaving space for a tuning walkboard between the two divisions. On the south side, the Swell box is similarly cantilevered, with the longest Pedal pipes arranged across the back wall and the shorter ones on floor-level chests. The Swell has shutters on both the rear and the front chancel-facing side so its sound can reach the congregation through the tracery of the nave arch. Service access to the chancel attic is through a hatch behind the Swell. The tallest pipes of the *Violonbass* and *Posaune* line the south wall.

The stop action utilizes electric solenoids with a solid-state multi-level combination action. There are separate wedge bellows on each side of the chancel, each with its own blower. Carbon-fiber trackers for the Swell and Pedal run through the basement in a plywood channel suspended from the underside of the chancel floor. It was necessary to excavate the area to provide service access to the action. Much of that work was done by congregation volunteers. The basement also houses the church's geothermal heating and air-conditioning equipment. The Great *8′ Principal* pipes stand in the facade down to bass F. Its open wood pipes for C-E are placed in the tracery arch facing the nave. These pipes are mounted as a discrete unit, hinged on one side, which swings out to provide access to the chamber. The Pedal *8′ Principal*, also in facade, mirrors the Great arrangement for chamber entry. We were asked to include the memorial Chimes from the Wetzel days and chose to hang them in the tower due to a lack of space up front. The handsome wrought iron gallery railing is the work of the talented blacksmiths at the Stokes of England company, several miles south of the church.

In such cramped quarters it was difficult to include all one wished for in any given division. What surprised us was the way the Choir with its *16′ Bourdon* and full-length *Spire Flute* work as invaluable extensions of the Great. When the prepared flutes and *16′ Cremona* are eventually added to the Choir, the organ's tonal palette will become much more complete. The modest Swell disposition was similarly constrained by the available space. Unification of the Pedal reeds and flutes at 16′ and 8′ pitch has musically worked out well.

Taken together, this small but versatile organ and the palpable improvements to the sanctuary acoustics make a convincing musical statement for such a small church. We like to think that Mrs. Rives would be delighted to see and hear how her generosity 170 years ago continues to bear remarkable fruit for the Keswick community.

Following Michael Latsko's departure earlier this year, the position of Organist-Choir Director has recently been accepted by AIO Convention Chair and valued Taylor & Boody employee, Joel VanderZee, who may be expected to realize the musical potential of this unusually farsighted parish.

TEMPERAMENT AFTER THAT DEVISED FOR GRACE CHURCH, NEW YORK CITY [2013]

Given as cents deviation from Equal Temperament:

C	+6
C♯	+1
D	+2
D♯	+2
E	0
F	+6
F♯	0
G	+4
G♯	+2
A	0
A♯	+4
B	–2

KESWICK, VIRGINIA

Taylor & Boody Organ Builders
Opus 77, 2019
Grace Episcopal Church
Keswick, Virginia

COMPASSES: 58/30
TEMPERAMENT: Grace Church, A440
ACTION: Mechanical, electric stop action
CONTROL SYSTEM: Solid State Organ Systems

GREAT
8′ Principal
8′ Rohr Flute
4′ Octave
2⅔′ Twelfth
2′ Fifteenth
1⅗′ Seventeenth
IV Mixture
8′ Trumpet

SWELL (Enclosed)
8′ Gedackt [cherry]
8′ Viol da Gamba
8′ Vox Coelestis [t.c.]
4′ Principal
4′ Rohr Flute
2′ Fifteenth
III-IV Mixture
8′ Oboe
Tremulant

CHOIR (prepared stops in *italics*)
16′ Bourdon
8′ Spire Flute
4′ Harmonic Flute
2⅔′ Nazard
2′ Piccolo
1⅗′ Tierce
16′ Cremona

PEDAL
16′ Violonbass [poplar]
16′ Subbass [poplar]
8′ Octave
8′ Bourdon [ext. *Subbass*]
4′ Octave
16′ Trombone
8′ Trumpet [ext. *Trombone*]

COUPLERS
Swell to Great
Choir to Great
Swell to Choir
Great to Pedal
Swell to Pedal
Choir to Pedal

ACCESSORIES
Great & Choir Tremulant
Swell & Pedal Tremulant
Wind Stabilizer
Zimbelstern

GRACE EPISCOPAL CHURCH

KESWICK, VIRGINIA

Taylor and Boody Organ Builders, Opus 77, 2019

All pipe metal hammered except facade

GREAT | 68mm w.p.	Material	MW	C	c^0	c^1	c^2	c^3	a^3	Remarks
Principal 8′	80%-28% tin	¼	113x144	84.0	49.0	30.0	18.0	12.4	C-D♯ oak, E-a^0 tin facade, then interior 28%
Rohr Flute 8′	98% lead	¼	110.0	70.0	45.0	28.5	20.0	14.5	Tapered open trebles from c^2
Octave 4′	28% tin	¼	81.0	47.0	28.0	17.0	10.5	7.3	
Twelfth 2⅔′	28% tin	¼	51.0	31.0	19.0	11.5	7.5	5.5	
Fifteenth 2′	28% tin	¼	42	25	15.5	9.5	6.5	5	
Seventeenth 1⅗′	28% tin	¼	35.0	21.6	13.0	8.3	5.8	4.4	
Mixture IV		¼	*C* *c^0* *c^1* *c^2* *d^3*	*1⅓* *2* *2⅔* *4* *4*	*1* *1⅓* *2* *2⅔* *2⅔*	*⅔* *1* *1⅓* *2* *2*	*½* *⅔* *1* *1⅓* —		Quints and unisons follow scale of the independent 2⅔′ and 2′ ranks respectively
Trumpet 8′			130.0	95.0	73.0	57.0	44.0	11.5	North German shallots, faced C-b^0, flues from f♯^{3}

SWELL | Enclosed, 75mm	Material	MW	C	c^0	c^1	c^2	c^3	a^3	Remarks
Gedackt 8′	cherry		77x98	44x68	28x43	17.5x27.5	25.0/10.5	18.3/9.0	Tapered open trebles, a♯^{2}-a^3
Viol da Gamba 8′	80% tin	¼	105.0	63.0	38.0	23.0	15.0	10.7	C-A Haskell basses
Vox Cœlestis 8′	80% tin	¼	—	56.0	33.0	20.0	13.0	9.4	from tenor-c
Principal 4′	28% tin	¼	81.0	47.0	28.0	17.0	10.5	7.3	
Rohr Flute 4′	28% tin	¼	66.0	43.0	27.5	18.0	13.5	10.4	f♯^{2}-a^3 open pipes
Fifteenth 2′	28% tin	¼	42.0	25.0	15.5	9.5	6.5	5.0	
Mixture III-IV			*C* *c^0* *f♯^{0}* *c^1* *a♯^{2}*	*1⅓* *2* *2⅔* *4* *4*	*1* *1⅓* *2* *2⅔* *2⅔*	*⅔* *1* *1⅓* *2* *2*	*⅔* *1* *1⅓* —		Scale follows *Fifteenth 2′*
Oboe 8′	80% tin		95.0	70.0	55.0	40.0	30.0	10.4	Tapered English teardrop shallots, flues from f♯^{3}

CHOIR | 68mm w.p.	Material	MW	C	c^0	c^1	c^2	c^3	a^3	Remarks
Bourdon 16′	98% lead	¼	126x160	75x96	63.0	39.0	24.0	17.3	C-$c^{\sharp 0}$ poplar, remainder metal
Spire Flute 8′	98% lead	Variable	119.0	75.00	62.0/22.0	39.0/15.5	25.0/10.5	18.3/9.0	C-$f^{\sharp 0}$ stopped, remainder tapered and open
Harmonic Flute 4′	28% tin	¼	84.0	57.0	36.0	23.0	14.0	9.2	Harmonic from c^1
Nasard 2⅔′									*Prepared*
Piccolo 2′									*Prepared*
Tierce 1⅗′									*Prepared*
Cremona 16′									*Prepared*

PEDAL | 75mm w.p.	Material	MW	C	c^0	c^1	f^1	Remarks
Violonbass 16′	poplar		145x145	88x88	52x52	43x43	
Subbass 16′	poplar		173x220	105x134	64x82	—	
Principal 8′	80%-28% tin	¼	113x144	86.0	50.0	40.4	C-E oak, F-a^0 tin facade, then interior 28%
Bourdon 8′	poplar		—	—	39x50	31x40	Extension of *Subbass*
Octave 4′	28% tin	¼	86.0	50.0	30.0	24.5	
Trombone 16′	80% tin		205.0	145.0	100.0	—	North German shallots, with lead face-plates throughout
Trumpet 8′	80% tin		—	—	80.0	71.0	Extension of *Trombone*

GRACE EPISCOPAL CHURCH | LEXINGTON, VIRGINIA

Casavant Frères, Opus 3941, 2021

ESSAY BY SIMON COUTURE AND ALAIN GONEAU

PHOTOS CASAVANT FRÈRES

GRACE EPISCOPAL CHURCH IN LEXINGTON, VIRGINIA, HAS resided on the corner of the Washington and Lee University campus since 1844. The present church was completed in 1884. The history of the parish is associated with General Robert E. Lee, who had been a member of the Grace Church vestry from 1865 until his death in 1870. In 1903, the name of the parish was changed to R.E. Lee Memorial Church to honor the old General, but in recognition of modern sentiment regarding the War period, the original name was restored in 2017.

The first organ for which we can find records was built by Hook & Hastings of Boston, Massachusetts (No. 1089, 2-21, 1882). In 1965, a new two-manual organ built by the Gress-Miles Organ Company of Princeton, New Jersey, was installed in the chancel. Despite the efforts made by organ technicians to keep this instrument working reliably, when we first visited the organ at the behest of the Director of Music Ted Bickish in 2014, we found it in rather poor operating condition.

After reviewing the options, it was decided to install the new organ in the same location as the Gress-Miles. The project negotiations continued moving forward until the parish shifted their focus to other pressing priorities, one being the renovation of the undercroft. We resumed our discussions in 2019, this time with Martha Ann Burford as Director of Music. The Interim Rector, Rev. James Hubbard, invited Terry Eason to make recommendations on a potential remodeling of both the chancel and the nave. What began as a remodeling of the chancel evolved into a redesign of the entire church. The chancel was enlarged, and a new stone floor was installed. This provided the new organ with an impressively effective reflecting surface. With only twenty-three ranks to fill this rather large space, the organ leads congregational singing quite convincingly. The nave was also extensively remodeled. The number of pews was reduced, providing more space between each row, thus improving the overall acoustics.

The major work done in the room brought a new dimension to the project, by creating a much better acoustical environment and by significantly beautifying this historic space. Our project became a winning combination between a good room and an organ that we could voice in a relaxed and unforced manner. Because of the rather limited space available for the organ, along with the need to make it look visually integrated and balanced in the room as an asymmetrical installation, we had to find creative ways to make the organ sound bold.

The Swell is truly the primary division of the organ, which makes sense in the Anglican tradition. It is installed on two levels in the "alcove", with over half of the organ's tonal resources contained under expression. It includes a *Bourdon 16′* and full-length *Bassoon 16′-8′* (in reality a chorus-trumpet stop) that is also used as the Pedal reed. Instead of the usual *Oboe 8′*, we elected to have a *Cremona 8′* that is colourful enough to be used as a solo stop and to blend as a chorus reed.

The Great is cantilevered to speak unimpeded in the room. The *Trumpet 8′* is quite bold and makes a very successful solo reed stop at eight- and four-foot pitches in the Swell.

Because of space, we had to place the Pedal *Subbass 16′* and *Octave 8′-Choral Bass 4′* ranks in a separate case. This proved to be a good solution to bring the bass tone into the room with more presence. Selected ranks from the two manual divisions are playable in the pedal for enhanced flexibility. Because of the nature of the specification, with several extended and borrowed ranks, we have used electro-pneumatic action, both pitman-type and unit-type throughout the instrument, allowing all ranks to speak with the same characteristics.

The low-profile two-manual console is easily moveable. In consultation with the organist, we elected to make the music rack position adjustable, so she can play Evensong on the lower manual only. The organ case is rather elaborate, to match the neo-Gothic style of the room. It was designed by Benoit Gendron, Casavant's designer for many years, in consultation with Terry Eason.

The organ was installed with on-site tonal finishing taking place in September and October 2021. In early November of that year, the Bishop of the Diocese of Southwestern Virginia presided at a special liturgy to bless the church and its new organ.

LEXINGTON, VIRGINIA

Casavant Frères, Opus 3941, 2021
Grace Episcopal Church
Lexington, Virginia

GREAT (61 Notes, Manual I)

1. Bourdon 16′ [Swell]
2. Principal 8′ [bass in facade]
3. Chimney Flute 8′
4. Bourdon 8′ [Swell]
5. Octave 4′
6. Flute 4′ [ext. *Chimney Flute 8′*]
7. Super Octave 2′
8. Mixture II-III
9. Trumpet 8′
   Great 16′
   Great Unison Off
   Great 4′
10. Cremona 8′ [Swell; not affected by couplers]

SWELL (61 Notes, Manual II, Enclosed)

11. Bourdon 16′ [ext. *Bourdon 8′*]
12. Salicional 8′
13. Voix Celeste 8′ [From tenor-c]
14. Bourdon 8′
15. Principal 4′
16. Spindle Flute 4′
17. Nasard 2⅔′
18. Piccolo 2′
19. Tierce 1⅗′
20. Mixture III
21. Bassoon 16′
22. Bassoon 8′ [ext. *Bassoon 16′*]
23. Cremona 8′
    Tremulant
    Swell 16′
    Swell Unison Off
    Swell 4′
24. Trumpet [Great; not affected by couplers]
25. Clarion [Great, *Trumpet* extension; top octave common with Great *Flute 4′*; not affected by couplers]
    Cymbalstern

PEDAL (32 Notes)

26. Bourdon 32′ [From *Subbass 16′*; 1-12 resultant 16′ + 10⅔′, 32′ from c[0]]
27. Subbass 16′ [32 pipes]
28. Bourdon 16′ [Swell]
29. Octave 8′ [41 pipes, bass in facade; 1-3 common with Great *Principal 8′*]
30. Chimney Flute 8′ [Great]
31. Bourdon 8′ [Swell]
32. Choral Bass 4′ [ext. *Octave 8′*]
33. Flute 4′ [Great]
34. Bassoon 16′ [Swell]
35. Trumpet 8′ [Great]
36. Bassoon 8′ [Swell]
37. Clarion 4′ [Great]
38. Cremona 4′ [Swell]

COUPLERS

Swell to Great	16′
Swell to Great	8′
Swell to Great	4′
Great to Pedal	8′
Great to Pedal	4′
Swell to Pedal	8′
Swell to Pedal	4′

DETAILS

ACTION: Electro-pneumatic, pitman and unit
CONSOLE: Drawknob, two manual and pedal in angled, terraced jambs
CONTROL SYSTEM: Syndyne MS8400

GRACE EPISCOPAL CHURCH
LEXINGTON, VIRGINIA

Casavant Frères, Opus 3941, 2021

All inner ø are in millimeters

	Pitch	Stop Name	Material	C	c^0	c^1	c^2	c^3	c^4	Remarks
GREAT (I)		**Wind Pressure: 75mm**								
	16′	Bourdon (Swell)		—	—	—	—	—	—	
	8′	Principal	70%	145	84	50	31	21	14	1-31 in facade, polished tin, on unit action
	8′	Chimney Flute	50%	116	82	49	29	22	14	
	8′	Bourdon (Swell)		—	—	—	—	—	—	
	4′	Octave	70%	86	48	29	18	12	9	
	4′	Flute	50%	—	—	—	—	—	—	Ext. of *Chimney Flute*
	2′	Super Octave	70%	44	26	16	11	8	5.5	
	1⅓′	Mixture II-III	70%	30.5	18	12	8	—	—	
				C	*1⅓*	*1*				
				a^2	*2⅔*	*1⅓*	*1*			
				a^1	*4*	*2⅔*	*1⅓*			
				d^3	*5⅓*	*4*	*2⅔*			
	8′	Trumpet	50%	131	96	75	62	54		Schopp's German tapered shallots (Casavant slot and width specs.)
	8′	Cremona (Swell)		—	—	—	—	—	—	
SWELL (II)		**Wind Pressure: 95mm**								
	16′	Bourdon	wood	149x180	94 x116 (B)	—	—	—	—	Extension *Bourdon 8*
	8′	Salicional	50%	—	—	—	—	—	—	*Expression* slotting
	8′	Voix Celeste	50%	—	—	—	—	—	—	From tenor-c; ⅔ taper and slotted
	8′	Bourdon	1-12 wood	90x110	59x70 (B)			—	—	
			13-61 50%	—	72	49	33	22	15	
	4′	Principal	50%	77	49	31	19	13	8	
	4′	Spindle Flute	50%	86	57	33.5	20	13	8	
	2⅔′	Nazard	50%	69	44.5	29	17	11.5	7	

2′	Piccolo	50%	60	36.5	23	14.5	9.5	6.5	
1⅗′	Tierce	50%	52	32.5	19	11.5	8.5	6	
1′	Mixture III	50%	23.5	14.8	9.3	5.6	3.7	—	
			C *c⁰* *c¹* *f¹* *f²*	*1* *2* *2* *4* *4*	*⅔* *1* *1⅓* *2* *2⅔*	*½* *⅔* *1* *1⅓* *2*			
16′	Bassoon (ext. Bass. 8)	Zinc	131	99 (B)	—	—	—	—	Casavant tear-drop shallots
8′	Bassoon	50%	96	75	62	54	48	—	Casavant tear-drop shallots
8′	Cremona	50%	37	33	30	27	25	—	Casavant tapered shallots
8′	Trumpet (Great)		—	—	—	—	—	—	
4′	Clarion (ext. Trumpet)		—	—	—	—	—	—	

Pitch	Stop Name	Material	C	c⁰	c¹	g¹	Remarks
PEDAL	**Wind Pressure: 85mm**						
32′	Bourdon		—	—	—	—	Fr. *subbass*: C16+10⅔: 32@c⁰
16′	Subbass	1- 32 wood	181 X 219	106 X 129	63 X 79	47 X 66	
16′	Bourdon (Swell)						
8′	Octave	70%	136 (D♯)	93	56	42	4-12 facade, 1-3 from Great *Principal 8′;* polished tin
8′	Chimney Flute (Great)		—	—	—	—	
8′	Bourdon (Swell)		—	—	—	—	
4′	Choral Bass	70%	—	—	—	—	Extension *Octave 8′*
4′	Flute (Great)		—	—	—	—	
16′	Basson (Swell)		—	—	—	—	
8′	Trumpet (Great)		—	—	—	—	
8′	Bassoon (Swell)		—	—	—	—	
4′	Clairon (Great)		—	—	—	—	
4′	Cremona (Swell)		—	—	—	—	

GRACE EPISCOPAL CHURCH
LEXINGTON, VIRGINIA

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With discs up to 40mm. Available in 58Ω (14V) and 135Ω (24V).

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20mm wide and 7mm of travel. Available in 58Ω (14V) and 135Ω (24V).

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Made in Germany

HEBRON LUTHERAN CHURCH | MADISON, VIRGINIA

David Tannenberg, 1802; renovated George Taylor, 1970

ESSAY I BY GEORGE TAYLOR

PHOTOS WILLIAM T. VAN PELT

HEBRON LUTHERAN CHURCH IN MADISON, VIRGINIA, IS THE oldest Lutheran worshiping community in the South. It was built in 1725 by German Lutheran immigrants who had arrived in Virginia in 1717 and found employment at the Germanna mining community in nearby Orange County. Worship services began in 1726 for the approximately sixty Lutheran families living in the area. The wooden building was originally rectangular with galleries at either end. The unique structure of its roof trusses and vaulted ceiling are of architectural importance, as they follow the medieval building techniques of German barns. The first clergyman, Pastor Klug, was buried under the building to protect his remains from being exhumed by Native Americans. In the 1950s his bones were discovered while the foundation underwent repair. It's worth noting in passing that the German word *klug* translates as "clever." In the 1780s the building was enlarged by the addition of a central wing to the east. It became the primary entrance, with its aisle facing the altar, thereby forming a traditional cruciform by incorporating the original rectangle, now oriented north-south.

In 1802, the church contracted with David Tannenberg of Lititz, Pennsylvania, to build a single manual, eight-stop organ. It was delivered by ox cart and installed in the new wing of the building by Tannenberg's son-in-law, Philip Bachmann. The Hebron organ is Tannenberg's second-to-last instrument. He died following a stroke two years later while voicing his large new instrument for Christ Lutheran Church in York, Pennsylvania. Here in Madison, we have the finest surviving unaltered example of his work. It has been in continuous use since it was built.

The mid-19th century brought a change in the style of church construction in the area, marked by Gothic revival and Victorian tastes. In 1856, Hebron changed the simple original appointments of the chancel and replaced them with new darkly varnished decorations. The ceiling was also lowered at this time by filling in the areas between the cross beams which support the roof. These plaster panels were decorated with fresco work by the Italian Giuseppe Odenino, a local artist. Only the bay in front of the organ loft was spared this change, which drastically altered the room's acoustics and obscured the vaulted ceiling in the rest of the building. Despite major structural repairs to the building in 1960 and the return of the chancel to something supposedly resembling its original appearance, the lowered ceiling unfortunately remains today. There is hope among architectural and organ circles that it can be taken down to expose the unique vaulted ceiling and thus restore the grandeur and acoustics of this amazing church.

When I was a boy living in nearby Orange County, I heard about a curious organ with black keys over in Madison. Unfortunately, I did not make a point of visiting it, for the simple reason that people in Orange thought the folks in Madison were odd. Years later, in 1968, and shortly after finishing my apprenticeship in Germany, I returned to Orange briefly to play for a friend's wedding. One afternoon with time on my hands, I decided to drive over to Madison and take a look. I located Bill Hall, Hebron's young new pastor, who was happy to show me around. When we walked into the church, I turned around to see the organ in the balcony and my jaw dropped! Here was an instrument like nothing I'd ever seen in this country. Its case proportions were perfect. Clearly it was a rare antique. I asked if I might play it, so Pastor Hall showed me upstairs, unlocked the keydesk, and switched on a very noisy miniature blower. When I drew a stop and played a note or two there was an awful squeaking from the wind system, which went away once more stops were drawn. It quickly became apparent that the organ was woefully under-winded. Pastor Hall took me around back, opened the case and showed me a tiny reservoir that a well-meaning person had installed along with blower (a vacuum cleaner comes to mind) in the base of the organ. There was a ¾″ plywood box about 2′ x 1½′ and 8″ high with a narrow wooden plate floating on a leather skin glued to the rim. A single brick was wired to the top as a bellows weight. As you played, the brick wobbled and bounced at first, then surrendered and fully opened the regulating valve. The only help I could offer was to set the

MADISON, VIRGINIA

blower on a small pew cushion, which kept its noise from resonating through the balcony. This pleased Pastor very much.

When he told me that they still used the organ regularly, I asked him if the church had any plans to repair it. Yes, he said, they were working with a local organbuilder in Waynesboro who was proposing to electrify the action. My jaw dropped again. I don't know that I've ever been so forthright, but I was so taken aback that I stared at him and said, "If you do that, you'll be making a Terrible Mistake!" If that weren't brash enough, I went on to say, "There are few people in this country who should be entrusted with this work, and I think I could do it as well as anyone." For some reason he took me seriously, caught his breath and said he would discuss the matter with his church Council. They were wise enough not to take an upstart like me at my word, so they wrote to none other than E. Power Biggs for advice. He, in turn, forwarded the question to Barbara Owen, a founding member of the Organ Historical Society, its first president, and a highly respected organ historian in her own right. Luckily, I knew Barbara personally and she sent them a convincing endorsement of my proposal. Two summers later, John Brombaugh (with whom I had begun working in Ohio), encouraged me to take off six weeks and restore the Madison organ.

The church offered me use of the parish house as a workspace. My first task involved releathering the two foot-operated wedge bellows, which hadn't been opened in 168 years. Surprisingly, the bellows still held some wind, a testimony to the skill of the original tanners. When I opened them, I was surprised to find that Tannenberg had glued narrow strips of newspapers in German over the joints in the plates. The pieces peeled off easily when wet. Through a librarian cousin, I reached out to a philologist in Philadelphia, who told me to get the papers out of the sun and bring them to him immediately. He was eager to conserve them by whitening and then reassembling them under invisible silk. Several copies can now be seen on display in the parish house. I installed a properly-sized Meidinger blower and regulating valve in a large box in the corner behind the bellows. Other work included repair of the metal pipes, some of which had been dented and damaged by mice or otherwise poorly repaired with solder. Toeboards were removed and cleaned thoroughly. Word had it that Tom Eader (a local OHS member who dabbled in organ work -Ed.), had been the most recent person to work on the organ, doing his best to keep it going. I found that the right-rear post supporting the key frame had shifted by about half an inch, so the keyboard did not meet the case on the treble end. That was easy to fix by tapping the support back into its original position on the floor frame. Bachmann had driven a nail at an angle through the post to hold it in place. Once shifted, the nail fit perfectly into its original hole in the floor frame.

Tannenberg's metal pipe construction was unique, with steep languid angles that are difficult to raise or lower. Speech correction was largely limited to re-aligning the upper lip with the wind sheet. The windways are generous, and the toes are fully open. Nicking, done with a knife, is sparse. The 4′ C facade pipe was assayed at 38.5% tin and 60.1432% lead. Metal pipes standing on the windchest are cone tuned while the facade pipes are precisely cut to length.

The quality of the joinery is astounding. No effort was spared on perfection where it mattered. Hand planing of the side panels is as smooth as glass–a smoothness so perfect that the wood surface catches the light. Where appearance was not important, as on the back panels, scrub planing was adequate. Tannenberg's wood pipe construction is also unique, done in the European style: i.e. the block and end spacer are first glued to the back, then the sides are attached, then the front plate, requiring three different and carefully sized pieces for each pipe. The edges of the pipe bodies were all painstakingly beveled. Master organbuilder Gerald Woehl, visiting later from Germany, remarked that Tannenberg must have had unusually sensitive hands to invest so much care in his wood pipe construction.

The windchest grids have sponsels [channel spacers] between the bars both above and below. They are subject to shrinkage and leaking in dry weather, but in Madison they do not leak enough to cause any significant pressure drop in the channels. Fortunately, the church has never been heated except briefly on Sundays. The sliders run directly against the table, wood to wood, and are shimmed with a minimum of friction. The key action is in original condition. Although the thin leather around the original willow *Pulpeten* [pull-down glands] had long since failed, it wasn't a problem that needed immediate attention. The bungboards are fitted on the inside of the pallet box rather than fitted externally against it on the outside. They have tapered edges and are force-fit into the pallet boxes with a packing-leather gasket. Each bungboard has two metal eyelets screwed into it, and Tannenberg thoughtfully hung an iron hook nearby for extracting the bungs. Today, after two centuries of air drying, they are so loose that rather than drilling holes into the historic fabric to install new bung straps, we hold them in place with a roll of thick felt wedged between the bungboard and back frame of the case.

Once the organ was assembled in the gallery it was possible to regulate the pressure. The extant bellows weights delivered 45mm water column, so the pipe speech was relaxed and the tone unforced. The *8′ Principal* with its gentle, haunting timbre was unlike anything else I knew. Both flutes spoke with a similar sweet quality, typical of pietistic Moravians. The rest of the plenum was more assertive, perhaps because it was intended to accompany Lutherans. The *Terzan* was an intriguing anomaly composed as 1⅗′ for the first two octaves breaking back to 3⅕′ in the treble. This both provides a reedy grit and a special gravity to the full ensemble.

Tannenberg relied heavily on the work of Georg Andreas Sorge for his logarithmic scaling. He was also ahead of his time in always using Equal Temperament, as espoused by Sorge. That feature was valuable in Mennonite churches where the cantor chose the pitch, and the organist was expected to chime in and match pitch.

James (Jock) Darling, organist of Bruton Parish Church in Williamsburg, was invited to play the opening concert in the fall. He was an excellent choice, conversant as he was with music of the Colonial period. He explained the importance of the instrument to a packed house and chose period pieces to show off the organ's colors. Most beautiful was a poignant Moravian hymn that he played on the *Principal* alone. His final selection, hands down the highlight of the concert, was Pachelbel's rousing variation on "Ein Feste Burg", written over a cantus firmus registered with an assertive pedal. There being no pedal in Hebron, it fell to me to provide the pedal part as a duet, playing the melody in the bass while Jock tore through the variations with wild virtuosity on full organ. It brought everyone to their feet.

Since moving to Virginia, we have tuned at Hebron occasionally. Our restoration of Tannenberg's two-manual organ in the Home Moravian museum at Old Salem in 2003 brought us back to Madison for intensive study. Bruce Shull was in charge of that project and meticulously documented all remaining traces of Tannenberg's career. In 2015, we returned to Hebron to repair minor details I had not addressed forty-five years before. The burlap covering of the tower tops has been reinstated and broken moldings have been restored. We were amazed to learn that the case of the huge lock behind the keydesk doors, while not original, is made of wood painted black to look like metal. Its large S-shaped key is a treasure. We determined that the ungilded pipe shade treatment was in fact original. The calligraphy labels recessed into the stop knobs are original and in surprisingly good shape for their age. Unfortunately, they have since been badly damaged by careless hands and are now almost illegible.

The Hebron organ has attracted much attention in the intervening years. It fascinated Charles Fisk, who on seeing it asked in his quiet way, "Tell me, what makes it so beautiful?" He was particularly interested in the bellows, since his Wellesley meantone organ reconstruction was underway at the time. He wondered if having more than one bellows affected the music. When we tested it, he was convinced that the pipes spoke more musically with two bellows always in freefall, than with just the one bouncing on blower wind. That evening he phoned his shop and told them to begin making a second bellows for Wellesley.

We have been surprised to learn that the Hebron organ is a singular example of a South German style, of which there are virtually no traces left in Germany today. It is living proof of the timeless integrity of simple one-manual instruments, many without pedals, which are often scorned as too limited to be of use. Thanks to its isolation in the foothills of the Blue Ridge Mountains, this little organ has survived the whims of fashion. Hebron's wise, conservative families have chosen to hold fast to their inheritance. We are eternally grateful to them.

HEBRON LUTHERAN CHURCH
MADISON, VIRGINIA

LOCATION: Hebron Lutheran Church, Madison, Virginia
BUILDER: David Tannenberg, 1802; renovated George Taylor, 1970.
COMPASS: C-f^3 54 notes
TEMPERAMENT: Equal
WIND PRESSURE: 45 mm; two wedge bellows in the attic, operated by ropes extending into the gallery
PITCH: A430

SOURCES: There are two sources of complete documentation for this instrument: George Taylor's notes taken during his 1970 sympathetic conservation of the instrument, and those taken by Raymond Brunner as part of his extensive research into Tannenberg and published in his book *That Ingenious Business Pennsylvania German Organ Builders;* Birdsboro: The Pennsylvania German Society, 1990. 212-213.

As the Brunner data is readily available, the editor has elected to print the unpublished Taylor documentation. There are minor discrepancies within an acceptable range of tolerance having to do with the brand of tool and its calibration, where the pipe was measured, etc. While differences of less than 0.4 mm are within a range of tolerance, differences greater than 1.0 mm might be considered significant. Brunner values differing by more than 1.4 mm are noted in ( ). Material thickness and nicking were noted in Brunner only. The measurements are inside dimensions and cut-up is measured from the top of lower lip. Where a pipe was out of round or the top deformed, a circumference was measured, corrected for metal thickness, and converted to diameter. All measurements are in millimeters.

HEBRON LUTHERAN CHURCH SCALES

SOURCES: Prior to 2002, clearly legible ink script on paper labels are believed by some historians to be original, (from Bachmann?). However, between 2002 and 2016, the labels deteriorated badly with major losses of material, and the original script was clumsily overwritten. This stoplist reflects the documented pre-2002 condition, and [brackets] indicate illegibilty.

Principal [**Dulci**] **8F.** C-B capped metal *Quintadena* with ears but without box beards, c^0-f^3 open metal, d^0-d^1 facade. Tannenberg used the *Principal Dulcis 8′* on rare occasions when an instrument was large enough to have a *Principal 8′* but did not include the usual *Viol da Gamba 8′*. The scale is midway between the two stops and the *Dulcis* pipes are slightly softer and have more speech in the midrange than a typical *Principal* but are not as bright or as consonant as Tannenberg's typically characteristic German-baroque *Gambas.*

Pitch	Dia.	MW	Cut-up	Toehole	Thick	Nicks
C	84.5 (81.5)	64.3	16	9.5	1.0	10
c^0	67.5 (69)	51.5	10.9 (13)	7.2	0.75	10
c^1	41	30.8	8.2	6.2	1.0	10
c^2	24.4	18.0	5.6	5.2	0.6	10
c^3	14.9 (13.5)	10.3	3.8	3.8	0.5	none

Principal 4F. Open metal, C-d^0 facade

C [1⅗]	81.2	60.4	15.0	9.8	1.0	20
c^0	48.7	36.1	9.9	7.0	1.0	10
c^1 [3⅕]	29.3	21.4	6.2	7.2	0.5	10
c^2	17.5	12.6	3.6	3.8	0.5	20
c^3	10.8	5.7	2.0	4.8	0.5	none

Quinta 3F Open metal

C	57.6	43.2 (41.2)	10.9	6.5	0.75	10
c^0	34.6	25.8	6.7	5.5	0.6	20 light
c^1	20.3	15.3	4.2	3.8	0.5	20 light
c^2	12.5	9.1	2.6	5.1	0.5	5 light
c^3	8.3	5.7	2.0	4.8	0.5	none

[**Octav 2F**] Open metal

C	46.4	34 (35.5)	9.2	8.0	0.75	10
c^0	29.8 (28.0)	20.9	5.1	4.6	0.5	10
c^1	16.5	12	3.1	3.6	0.4	none
c^2	10.2	7.0	2.3	4.6	0.4	none
c^3	7.1	4.6	1.6	3.8	0.4	none

[**Terzan**] Open metal, 1⅗′ breaks back to 3⅕′ at c^1

Pitch	Dia.	MW	Cut-up	Toehole	Thick	Nicks
C [1⅗]	39	29.5	7.9	6.0	0.75	10
c^0	23.5	17.2	4.5	4.0	0.6	25 light
c^1 [3⅕]	23.6	17.4	4.8	4.0	0.6	25 light
c^2	13.9	9.5	3.0	4.0	0.6	none
c^3	9.2	6.0	2.0	2.5	0.4	none

[**Mixtur**] Open metal, two ranks

			C	*1⅓′*	*1′*
			c^1	*4′*	*2⅔′*
C [1⅓]	34.5	25.8	6.4 (8.5)	7.6	1.0	10
c^0	20.5	15.0	4.1	4.8	0.5	none
c^1 [4′]	27.7	21.2	4.8	6.7	0.5	none
c^2	16.9	12.2	3.4	5.5	0.4	none
c^3	10.4	7.3	2.6	4.7	0.4	none
C [1′]	28.0	20.7	5.4	6.0	0.5	10
c^0	16.6	12.3	3.4	6.0	0.5	none
c^1 [2⅔′]	20.5	15.0	4.2	5.0	0.5	none
c^2	12.6	9.0	2.8	4.0	0.4	none
c^3	8.3	5.4	1.8	4.0	0.4	none

Gedackt 8F. C-c#^{1} stopped pine, d^1-f^3 stopped walnut; German blocks and caps

Pitch	Dia.	MW	Cut-up	Toehole	Thickness
C	86.4	68.4	25.0	15.0	12.5
c^0	52.7	41.2	15.0	9.0	9.5
c^1	31.8	25.3	9.6	7.0	4.5 (6.5)
c^2	19.1	14.8	5.5	4.5	4.0
c^3	11.5	8.6	3.5	3.5	3.0

[**Flute**] **4F** C-e^0 open pine; f^0-f^3 open, walnut, German blocks and caps

C	66.2	53.2	19.2	11.5	8.8
c^0	41.0	32.0	9.1	8.0	5.5
c^1	24.3	20.2	5.0	5.0	4.5
c^2	15.0	11.0	3.0	3.5	4.0
c^3	9.6	8.0	2.5	3.0	3.0

ANNOTATED WORKLIST OF DAVID TANNENBERG ORGANS, 1758–1804

COMPILED BY SCOT HUNTINGTON

ALL INSTRUMENTS ARE IN PENNSYLVANIA UNLESS STATED OTHERWISE.[1]

I Organs built in Nazareth 1758-1760, in association with Johann Gottlob Clemm [1690-1762].

1758 *Nazareth.* Built for the chapel in Nazareth Hall. Tannenberg replaced this organ in 1794 and the instrument was moved to a Moravian congregation in Emmaus for £30.

1758 *Nazareth.* A second, small instrument for another room in Nazareth Hall.

1759 *Bethlehem.* Moravian congregation. Organ delivered in January by Clemm and Tannenberg, replaced a 1746 Clemm instrument that was moved temporarily to Nazareth. Detached, reversed console. Replaced 1806 by John Geib of New York City.

1760 *Christian's Spring.* Moravian congregation chapel. Dedicated July 10. The Tannenberg clan moves with Clemm to Bethlehem in August.

II Organs built by David Tannenberg [1728-1804] in Bethlehem, 1760-1765.

1761 *Bethabra, North Carolina.* A one-rank *Positiv,* taken to North Carolina by a group of migrating settlers. The first organ in the South. Later, the Single Brethren House in Salem, then 1824 to the Moravian Church in Friedberg until 1900.

1761 *Lititz.* Relocates and installs the 1746 Clemm organ from Bethlehem in November. Clemm dies May 5, 1762.

1765 *Lancaster.* Chapel, Moravian congregation. Organ begun in 1761. Cost £50. Installed April-May.

1765 *Lancaster.* While installing the Chapel organ, he repairs the house organ for George Ross, a future Declaration of Independence signatory. Moves permanently to Lititz.

III Organs built by David Tannenberg in Lititz, 1865-1804.

1765/68 *York.* Moravian congregation. The exact date is unknown owing to the uncertain scholarship of an early church history. Said church history states the organ had three stops, *Principals* at 8′ and 4′ and a *Flute,* probably at 4′, with a pull-down pedal.

1. A compilation of two sources: William Armstrong, *Organs for America,* Philadelphia: University of Pennsylvania, 1967; and Raymond Brunner, *That Ingenious Business,* Birdsboro: The Pennsylvania German Society, 1990; Philip T.D. Cooper.

1766 *Philadelphia.* Noted in the daily diary of Tannenberg's Lititz congregation, "… for a man in Philadelphia". Nothing else known.

1766 *Lancaster.* Trinity Lutheran. £10 10s. Repair and set up the old organ in new church. Replaced by a new organ in 1774.

1767 *Albany, New York.* Noted in the Lititz congregation's daily diary that Tannenberg departed to install an organ in September and returned in November. The client is unknown but may have been the German Reformed church in that city. That congregation was reported to have been the first church in Albany with an organ. Circa 1804, Christ Church, Cooperstown N.Y. is reported to have sent a local cabinetmaker to Albany to study an organ there, that he might build a small organ for them.

1768 *Maxatawny. Lutheran Church (Lynn Township, Berks County).* Installed in November. New church buildings in 1791 and 1877. Rebuilt by Samuel Bohler in the 1870s, replaced by M.P. Möller in 1887. Once known as a "union" congregation, shared by the Lutherans and a German Reformed congregation. The organ was exhibited in Lititz prior to delivery, with many visitors coming from Lancaster.

1769 *New Goshenhoppen.* German Reformed Church. Completed in October. Rebuilt or replaced 1869 by Edwin Kraus with new case and supposedly reusing old pipes, replaced by C.S. Haskell 1917. Portions of the case remain in the attic and tacked to interior walls as decorations. Stylistically dissimilar to known Tannenberg cases with tall outer towers, a low central tower, and ungainly proportions suggesting Tannenberg had not yet achieved the elegant styling and proportions of his mature casework.

1770 *Moselem.* **EXTANT**. Zion Lutheran Church. One manual, eight stops, nine ranks. The oldest extant American-built organ, and the only known Tannenberg with a dark walnut case. Rebuilt by Samuel Bohler in 1894 with a new keydesk, rollerboard, winding, *Terz* and *Mixture* removed, one stop added, and key compass extended by three notes. Refurbished by Joseph Chapline in 1974 with a reconstructed keydesk and stoplist, but without appropriate breaks in the new upperwork stops. Restored R.J. Brunner & Co. 2010.

1770 *Frederick, Maryland.* German Reformed congregation. Church records are murky on the subject but suggest Tannenberg's work costing $193.37 was for repair and set-up of an existing organ rather than a new instrument.

1770 *Lancaster.* **CASE FRONT EXTANT.** German Reformed. £250. 2 manuals, 15 stops. Replaced in 1885 by Charles Durner, reusing the old case. The Tannenberg pipes were in the church attic as late as 1928, but have since disappeared. There is no longer an organ inside the historic case.

1771 *Philadelphia.* St. Michael's Lutheran Church. Repair of the 1751 Johann Adam Schmahl organ. £54 12s. This is a large sum for a "repair", suggesting a more extensive rebuild. Replaced by Andrew Krauss in 1815, reportedly reusing Schmahl pipework.

1771 *Reading.* Trinity Lutheran Church. £230. One manual and pedal, 11 stops. Repaired by Tannenberg in 1777, 1789, and 1794 when moved to new building. Sold to a church in Tinicum in 1873, where it was lost in a July 2, 1907 fire.

1772 *Unknown.* Known only from a Lititz Moravian church diary entry, as being exhibited in the workshop. The destination was not identified.

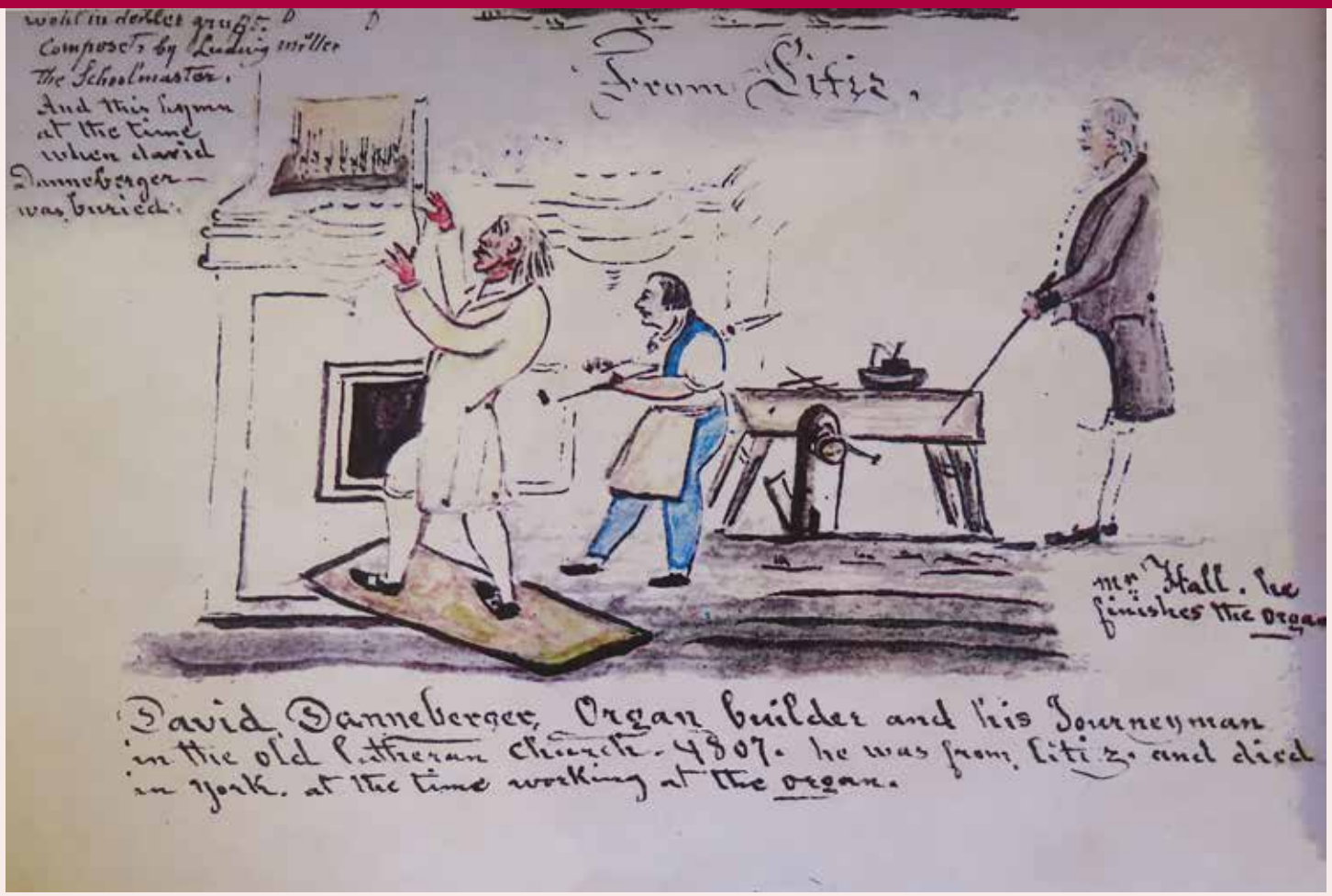
1773 *South Lebanon Township.* Hebron Moravian chapel. £45. Purchase of a completed organ in the workshop after negotiation of a purchase price. Installed by Tannenberg and one of his sons, dedicated November 1773. Congregation moved with organ to Lebanon in 1847 where the organ is destroyed by fire on July 29, 1858.

1774 *Lancaster.* **CASE PARTLY EXTANT.** Holy Trinity Lutheran Church. Replacement of an older organ moved here in 1766. Two manuals, presumably plus pedal. £150 partial payment recorded, probably for a total cost of £450. Dedicated December 26, 1774. Replaced in 1853 by Henry Knauff of Philadelphia, reusing the old case and pipework, then again by Hilborne Roosevelt in 1887 reusing the old case and some pipework; widened with side wings by Bernard Mudler 1893; new organ in the old case by Casavant 1923, and again by M.P. Möller 1962. Facade pipes restored by SDG Organ Service.

1775 *Lancaster.* **CASE PARTLY EXTANT.** St. Mary's R.C. One manual, four stops. Chippendale case with broken pediment and 2′ facade pipes behind folding doors. Sold in 1798 for $300 to the Lancaster German Reformed for the Sunday School Chapel. Preserved in an historical display in 1904, but later gutted and converted to a bookcase.

1775 *Frederick, Maryland.* Evangelical Lutheran Church. £400. Installed November 1775. Organ sold or discarded by 1855.

DAVID TANNENBERG
WORKLIST



A pen and watercolor cartoon depicting the installation of the 1804 organ in York, now archived at Burnside Plantation, site of Tannenberg's home and workshop while living in Bethlehem.

1776 *Easton.* Lutheran and Reformed Church (a union church). One manual, eight stops. The union dissolved in 1831 with the organ becoming the sole property of the Reformed congregation. Sold in 1832 to Lutherans in Plainfield. Rebuilt with detached, reversed console by Charles Heintzelman in 1852. Eventually discarded and stored in a shed before acquisition by the Northampton County Historical Society in 1920. Never erected, it was subsequently lost except for 43 wood pipes still in possession of the museum.

1776 *Bethlehem.* Moravian Single Brother's House *Saal* (chapel). £60 plus the old organ in trade, against which Tannenberg allowed £10. First used in November.

1777 *Lititz.* Moravian Single Brother's *Saal.* £50. Set up on August 29th and first played the following day. The previous instrument was a harpsichord.

1780 *York.* John Fischer residence, clockmaker, carver, portrait painter. Nothing else is known. German immigrant arriving in 1759, died 1808.

1782 *Hope, New Jersey.* Moravian congregation, "small organ". Delivered in October and consecrated on November 8. The congregation left the Hope community in 1808. Nothing else is known.

1783 *Hagerstown, Maryland.* Unknown. Tannenberg and one of his sons left in June of 1783 to install an organ there, with two church possibilities: St. John's Lutheran built a new building in 1770 (most likely), and Reformed (Zion) built a new building in 1774.

1784 *York.* German Reformed Church. Tannenberg and son Samuel installed the organ in August. President Washington attended services here on July 2, 1791, "…there being no Episcopal Minister present in this place…". Church and organ destroyed by fire July 4, 1797.

1786 *Egypt.* Lutheran and Reformed (union). £154 2s 5d. New building and organ dedicated June 4, 1786. Replaced in 1869 by Charles Heintzelman.

1787 *Lititz.* **EXTANT.** Moravian Church, Tannenberg's home congregation. £200. One manual and pedal, nine stops, detached, reversed console. A two manual and pedal organ was proposed for £350 but was not accepted by church officials. Dedicated August 13, 1787. Two wedge bellows were in the attic with ropes extending down into the gallery for the pumpers. Moved to the Moravian Church in South Bethlehem in 1879 (without its bellows) and used until 1910 when it was returned to Lititz and placed in storage. A fire in the Lititz church in 1957 destroyed the original bellows and parts of the organ case still stored there. Fortunately, the chest, pipes, and keydesk were stored elsewhere. Beginning in July 1976, the organ was restored by James R. McFarland & Co., reconstructing the missing parts, and rededicated in April 1983 in the Moravian Fellowship Hall.

1790 *Philadelphia.* Zion Lutheran Church. £1500 (excluding case and transportation). Three manuals and pedal, 34 stops. The contract for Tannenberg's *magnum opus* was signed on July 20, 1786. The instrument was dedicated in a series of public events on October 10-11, 1790. Five large wedge bellows. Tannenberg spent three months on-site during the summer and fall of 1790 tending to the installation. The *Bells* called for in the contract (it was the congregation's responsibility to procure them), were installed in 1792. Upon completion, three stops were different than what had been contracted for: Oberwerk *Gedackt 8'* instead of *Gemshorn 4'*;

Echo *Nachthorn 8'* and *Dulcian 4'* instead of *Dulcian 8'* and *Nachthorn 4'*. The organ was heavily damaged by a tower fire on December 26, 1794. Tannenberg submitted a letter stating he could rebuild the organ from the surviving parts for £3,000 but this was deemed too expensive by church officials. Organbuilder John Lowe was asked for rebuild proposals in 1802 and 1803, which were also tabled. He was eventually awarded a contract in 1811 to rebuild the organ with a specification nearly identical to Tannenberg's. The church authorized the sale of the surviving pipework in 1804, but it is unclear if this was ever done, and old pipes were said to be recycled in its replacement. The historic building was sold and torn down in 1868.

1791 *Spring City.* **EXTANT.** Zion Lutheran Church. £150. One manual, six stops. Consecrated on October 9, 1791. The organ was moved into the new building in 1861 and altered by Samuel Bohler in 1888 when it was moved to the front of the church. It remained in constant use until 1910 when it was supplanted by a new instrument, but the historic organ was kept and played once a year on the anniversary of its installation. In 1998, the organ was restored by Patrick J. Murphy & Associates and returned to its rear gallery location. A church history, now disputed, states the bellows were originally in the attic, and later placed inside the case.

1793 *Graceham, Maryland.* **EXTANT.** Moravian Church. £65. One manual, four stops. Installed in April and played for the first time on May 4. Housed in an elegant, broken pediment Chippendale-style case, the organ was still in use in 1957 when it was acquired by the Moravian congregation in Lititz and moved there by M.P. Möller. The organ was restored by James R. McFarland & Co. in 1984 and is now located in the Single Brother's House *Saal.*

1793 *Nazareth.* **EXTANT ARTIFACTS.** Nazareth Hall Chapel. £274. One manual and pedal, nine stops, detached and reversed console. This organ was built to replace the 1758 Clemm-Tannenberg no longer considered adequate. Built with the help of his son-in-law Philip Bachman. The organ was moved in 1840 with case wings added and again in 1861 to the present church. It was "overhauled" in 1895, but began malfunctioning soon thereafter. The organ was replaced by M.P. Möller in 1913, retaining the facade, *Floet Amabile, Grob Gedackt,* and pedal *Sub Bass,* substantially altered.

1795 *Philadelphia.* German Reformed Church. One manual and pedal. The organ was replaced by Henry Knauff in 1836, who took the old organ in trade.

1795 *Guts'town.* Unknown location. Could possibly refer to St. John's Lutheran and Reformed Church in Kutztown.

1795 *Lower Heidelberg Township.* St. John's Reformed Church (Hain's Church). One manual, eight stops including three-rank Mixture, white painted case, bellows on the floor above the organ. Remodeled by Thomas Dieffenbach in 1878. Used until 1904 when it was replaced by Elmer Palm using some parts of the old organ. Replaced by Austin in 1930.

1796 *Baltimore.* Zion Lutheran. £375. Tuned by Philip Bachman in 1798, moved to a new building in 1808. Destroyed by fire March 30, 1840.

1797 *Lower Macungie.* Zion's (Lehigh) Lutheran. £400. Rebuilt in 1864-65 by Charles Heintzelman.

1798 *Tohickon.* Lutheran and Reformed (union) congregation. £200. Installed in February. Remodeled in 1839 by Andrew Kraus with a new windchest, pedal division, and the case widened with side wings. Replaced in 1918.

1798 *Salem, North Carolina.* **EXTANT.** Chapel of the Moravian congregation. £150. One manual, five stops, detached, reversed console. Installed by Philip Bachmann, played for the first time on May 22, 1798. Placed in storage in 1864. Renovated with an incorrect stoplist and new pipework to replace missing stops by the McManis Organ Co. in 1964 and installed in the Single Brother's *Saal* (Salem Gemeinhaus). During a restoration by Taylor & Boody of the large Moravian Home Church organ, pipes originally thought missing were found for this organ, commingled with those of the larger church organ, sewn inside burlap bags in the attic. Following the restoration of the large Salem organ, this organ was restored by Taylor & Boody in 2007 with its original pipes, stoplist, and white-painted case decoration.

1798 *Lititz.* Single Sister's House. £50. Consecrated July 26. Nothing else known.

1799 *Lancaster.* Moravian congregation. Proposed £180 for six stops, completed organ with enlarged specification, £260. Dedicated January 26, 1799. Nothing else known.

1799 *Witepain Township.* St. John's Lutheran Church, Center Square £200. New church constructed, organ moved into rear gallery, consecrated September 8, 1834. Dismantled in 1888 and parts auctioned off to congregation members. Two wood pipes remain in the church safe.

1800 *Salem, North Carolina.* **EXTANT.** Home Moravian Church. Two manuals and pedal, 15 stops, detached and reversed keydesk. Installed by Philip Bachmann, who spent a year on-site installing the organ. A dispute arose between Bachmann and Tannenberg over money, causing a permanent rift in their relationship. Consecrated on November 9. Extensively rebuilt in 1870 by William Schwarze, using pipes from the Single Brother's organ to make tonal changes. Rebuilt again in 1910 by S.E. Peterson, put into storage in 1913. Restored by Taylor & Boody in 2004 and installed in the auditorium of the Visitors Center in Old Salem.

1801 *New Holland.* St. Stephen Reformed Church. £223 8s. One manual, eight stops. Organ replaced in 1920 and given to the newly formed Reformed church in Lititz, where it was placed into storage in the parsonage basement, whence it later disappeared.

1802 *Madison, Virginia.* **EXTANT.** Hebron Lutheran Church. £200. One manual, eight stops. Two bellows installed behind the organ. Installed in November by Philip Bachmann. Repaired in 1960 by Thomas Eader. Restorative conservation by George Taylor and Norman Ryan in 1970. This is the most pristinely intact of the nine surviving instruments of David Tannenberg.

1803 *Bethlehem.* Moravian congregation. **NOT BUILT.** A contract was executed for a major two-manual and pedal instrument of nineteen stops intended for the large new church already under construction, but which was abrogated by Tannenberg's death in 1804. The cost was estimated to be between £700 and £800 and the organ was to have a detached and reversed console.

1804 *York.* **EXTANT.** Christ Church. £355. One manual and pedal, eleven stops. While nearing the end of the organ installation on May 19, 1804, David Tannenberg suffered a stroke and died the following morning. The organ was finished by John Hall and played publicly for the first time during Tannenberg's funeral on May 21st. Moved several times and the case shortened before it was rebuilt by the Reuben Midmer & Son company in 1905 with a new wind system, an *Oboe* replacing the *Vox Humana,* raised wind pressure with some revoicing, and a tubular-pneumatic pedal action, "which may have removed an original *Posaun 16'.*" In 1945 the organ was given to the York County Historical Society and placed in storage. The organ was renovated in its Midmer state by Fred Furst in 1959 and erected in the Society's museum. The organ was featured on several recordings by E. Power Biggs in the 1960s and 70s as an example of superlative Early American organbuilding. The organ underwent a partial restoration by R.J. Brunner & Co. in 1990, and the Brunner shop is returning it to its 1804 state, completion 2024.

IV. Attributed to David Tannenberg

1758/1776 *Nazareth.* Whitefield House [now the Moravian Historical Society]. **EXTANT.** One manual, four stops. For many years attributed as "unknown". The Whitefield House was the "Nursery" for the children of parents engaged in church work and was the building where Clemm and the Tannenbergs moved in 1759 from their first residence, Nazareth Hall. This organ was once believed to be either the Clemm-Tannenberg instrument built for a "second building" in Nazareth in 1758, but now confirmed as the 1776 Bethlehem Single Brother's *Saal.* The Chippendale-style case suggests the later build date. Restored by R.J. Brunner in 1997, who authenticated the organ as being by Tannenberg.

DAVID TANNENBERG
EXTANT INSTRUMENTS

1770 ZION LUTHERAN CHURCH | MOSELEM SPRINGS, PENNSYLVANIA

8 F.	Principal	Manual compass: C–d^3, 51 notes
8 F.	Flaut Major	Pitch: A458
4 F.	Principal Octav	Temperament: Sorge, 1756 (modified)
4 F.	Flaut Minor	Wind pressure: 57 mm
3 F.	Quint	
2 F.	Sub Octav	PHOTO PHILIP T.D. COOPER
1⅗ F.	Terz	
2 Fach	Mixtur	

1776 MORAVIAN CHAPEL | BETHLEHEM, PENNSYLVANIA

[8]	Flaut Amabile	Manual compass: C–d^3, 51 notes
[8]	Viol da Gamba	Pitch: A430
[4]	Flöt	Temperament: Equal
[2]	Principal	Wind pressure: 45 mm
		Originally painted white
		PHOTO PHILIP T.D. COOPER

1787 MORAVIAN FELLOWSHIP HALL | LITITZ, PENNSYLVANIA

MANUAL		PEDAL	
8 f.	Principal Discant	16 f.	Sub:Ba*fs*
8 f.	Flaut Amabile	8 f.	Octav Ba*fs*
8 f.	Viol de Gambe		Koppel
8 f.	Qünt:Dehn		
4 f.	Principal		Manual compass: C–e^3, 53 notes
4 f.	Flöth		Pedal compass: C–g^0, 20 notes
2 f.	Sub Octav		Pitch: A440
			Temperament: Sorge, 1744
PHOTO PHILIP T.D. COOPER			Wind pressure: 48 mm

1800 VISITORS CENTER | OLD SALEM, NORTH CAROLINA

HAUPTMANUAL		HINTERWERK		PEDAL	
8 Fuß	Principal	8 Fuß	Flauta Amabile	Subbaß	Manual Coppel (shove)
8 Fuß	Groß Gedackt	8 Fuß	Viola di Gamba	Violon Baß	Manual compass: C–f^3, 54 notes
8 Fuß	Quintadena	4 Fuß	Flauta douce	Coppel	Pedal compass: C–c^1, 25 notes
4 Fuß	Principal Octav	4 Fuß	Salicet		Coppel (pedal coupler)
4 Fuß	Flauta				Pitch: A410
3 Fuß	Quinte	PHOTO PHILIP T.D. COOPER			Temperament: Equal
2 Fuß	Sub Octav				Wind pressure: 42 mm

1802 HEBRON LUTHERAN CHURCH | MADISON, VIRGINIA

8F.	Principal Dulci	Manual compass: C–f^3, 54 notes
8F.	Gedackt	Pitch: A430
4F.	Principal	Temperament: Equal
4F.	Flute	Wind pressure: 43 mm
3F.	Quinta	
2F.	Octav	PHOTO PHILIP T.D. COOPER
	Terzan (1⅗–3⅕)	
	Mixtur (II)	

1791 ZION LUTHERAN CHURCH | SPRING CITY, PENNSYLVANIA

8 F. Principal dulcis
8 F. Gedackt
4 F. Principal
4 F. Flaute
3 F. Quinte
2 F. Sub Octav

Manual compass: C–f^3, 54 notes
Pitch: A440 [orig. A465]
Temperament: Equal
Wind pressure: 51 mm

PHOTO LEN LEVASSEUR

1793 MORAVIAN CHURCH | LITITZ, PENNSYLVANIA

8 F. Gedact
8 F. Viola da Gambe
4 F. Flöth
2 F. Principal

Manual compass: C–f^3, 54 notes
Pitch: A394
Temperament: Equal
Wind pressure: 45 mm

PHOTO WILLIAM T. VAN PELT

1798 SINGLE BROTHER'S HOUSE | OLD SALEM, NORTH CAROLINA

8 fuß Gro∫s Gedact
8 fuß Viola di Gamba
8 fuß Quinta:Dena
4 fuß Principal
4 fuß Flauta
Calcant

Manual compass: C–f^3, 54 notes
Pitch: A412
Temperament: Equal
Wind pressure: 63.5mm

PHOTO OLD SALEM MUSEUMS & GARDENS

1804 YORK COUNTY HISTORY CENTER | YORK, PENNSYLVANIA

MANUAL
8 F. Principal
8 F. Groß Gedact
8 F. Viol de Gamba
4 F. Principal Octav
4 F. Flaute
3 F. Quinte
2 F. Sub Octav
II-III Mixtur (f^0 1⅗')
8 F. Trumpete
(orig. Vox Humana)

PEDAL
16 F. Sub Baß
4 F. Octav Baß
Coppel

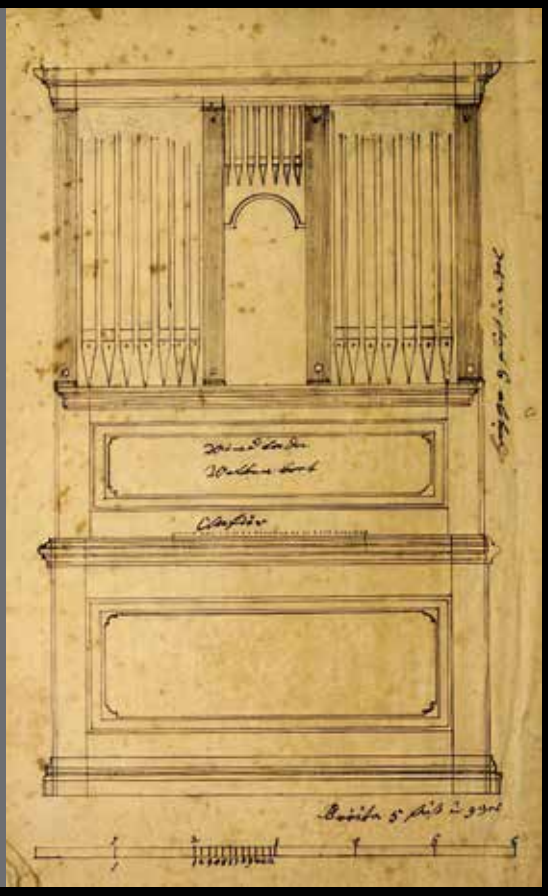
Manual compass: C–f^3, 54 notes
Pitch: A450
Temperament: Equal
Wind pressure: 67 mm (1901)

PHOTO PHILIP T.D. COOPER

OLD SALEM SKETCH PROPOSAL

The first organ that Tannenberg built for Salem was in 1798 for the Gemeinhaus (congregation house), a building that served many functions, including the worship space for the town. The image to the right is a preliminary sketch for the Gemeinhaus organ from the Old Salem archives. The unusual facade pipe arrangement and straight-line mouths suggests an early, pre-1780 design. This one-manual organ was installed by Philip Bachmann, Tannenberg's son-in-law. This organ now resides in the Single Brothers' House in Salem.

While Bachmann was in Salem in 1798, there were discussions with him and with Tannenberg via letter about ordering a new, large organ from Tannenberg for Salem's new church, then in the planning stages. It was decided to have an organ with two manuals and pedals. Ground was broken for the church by the end of May 1798 and the next month, on June 12th, the cornerstone was set. The following year, in November 1799, Philip Bachmann returned to Salem with one of the windchests and other parts of the organ. Bachmann worked with cabinetmakers, blacksmiths and other Salem craftsmen to complete and install the organ.



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ESSAY II BY **SCOT HUNTINGTON**

The Moravian Organ: the First American Continuo Organ

TO UNDERSTAND THE MORAVIAN ORGAN, ONE MUST FIRST UNderstand the Moravian people. Music making was an important part of their daily lives, both in church and at home. Everyone was expected to be a singer, unless they were tone deaf and admonished to sing to themselves so as not to create disharmony with a neighbor songster. Many were proficient on one or more instruments: the Trombone Choir called the town to worship and town meetings, announced births and deaths. Known instruments existing in various communities included the oboe, flute, spinets and clavichords, and all manner of string instruments. They were a devoutly religious group–sacred hymns and anthems formed the backbone of their musical world. There were approximately 150 hymns that the faithful parishioner was expected to know by heart as not everyone could read. The larger towns had a group officially known as the *Collegium Musicum*, a group of amateur and semi-professional singers and instrumentalists who both lead the congregational hymn singing and performed choral anthems as part of the myriad church services. The practice had its roots in the court chapel music traditions of the Renaissance and Baroque. Little of this music has survived, but what has is rather simple in texture and harmonic language. The Moravians were not given to anything showy or florid, technically difficult musical passages.

Like the Amish citizens existing privately in our midst today, the 18th-century Moravian settlements preferred to keep to themselves, isolated from the world around them. They maintained the use of the German language in their daily lives, along with the customs and traditions they brought with them from Saxony. Their unique tradition of elegantly understated organbuilding is one of these traditions.

The organ in the Moravian church was an integral part of the liturgical service, but seldom if ever played alone–unless there were no other instruments available to accompany the singing on a given day. The organist did not perform solo literature. Except for the small cabinet organs in the smallest churches, "choir halls", and single-persons residences, the typical Moravian organ had a detached console, so the organist faced the conductor as one member of a larger ensemble of musicians. The requirements of the organist were somewhat stringent by modern standards: the organist was expected to have perfect pitch–when the Cantor or instrumental ensemble started a hymn (and they were at the mercy of whatever group of instrumentalists showed up on a particular day), the organist needed to immediately know what key they had started in and be able to transpose a hymn into any key. If they had started into a particularly difficult key, like F# or G# major, the organist needed to have the ability to modulate the group seamlessly to a happier key. The organist had to be able to realize figured bass, as the organ part of many anthems consisted of only the bass note and chord inversion symbols. The organist was also expected to know the standard 150 hymns by heart, and not need to rely on a printed hymn book.

Every community would have a church large enough to hold all the citizens of the town. In addition, there would be separate residential halls (*Säle*) for the single brethren and sisters, which would also have small chapels for daily devotions and musical practicing–all furnished with organs, or at least a small spinet or harpsichord.

In the German village of Herrnhut, founded on the estate of Count Nicholas Ludwig von Zinzendorf in Saxony and from where the American Moravians originated, there was a chapel in addition to devotional chapels in the residential halls for single citizens. In the Herrnhut Archives are numerous references to organs, contemporary with the period of Tannenberg's organbuilding activity in America. One letter from an Elder in Herrnhut specifically to Johann Andreas Stein, a scion of a multi-generational family deeply involved in piano and organbuilding, requested a proposal for a "six-stop positiv" with the following registers:[1]

8′ Dolce Flöte
8′ Stille Gamba
4′ Principal
4′ Holzflöte
3′ Quint
2′ Octav

Taking the first four stops, with or without a *2′ Principal*, suggests the standard Tannenberg *Positiv*-style organs. The same Elder also wrote to Johann David Busch–son of the Schnitger pupil Johann

1. "Pleasing for Our Use", Barbara Owen, (Carol Traupman-Carr, editor), *"Pleasing for Our Use": David Tannenberg and the Organs of the Moravians;* Lehigh University Press: Bethlehem, 2000. 49-67

Daniel Busch of Itzehoe (Denmark)–who responded with a 1780 proposal for an organ having three 8′ stops and two at 4′, the same tonal complement of Tannenberg's extant organ in the Single Brethren's House in Old Salem, North Carolina. In another letter, Busch proposed a two-manual organ with the same number of stops on the first manual with the addition of a 2-foot, and on the second manual he proposed two stops at 8′, and one each at 4′ and 3′, and a reed. Also specified was a four-stop pedal including an 8-foot *Trumpet*. A slightly smaller organ was recorded as having been built in 1751 for the Moravian church in Barby with an identical first manual, and a secondary manual with a 2′ instead of the 3′ mutation, and a two-stop pedal.[2] That the Americans knew of such organ activity in the Old Country is supported by the disposition found in the Moravian Music Foundation Archives, Salem N.C., for an organ built by Samuel Edelmann in 1780 for the Moravian Church in Gnadenberg, Germany. [3]

MANUAL I	MANUAL II	PEDAL
8′ Principal	8′ Viola di Gamba	16′ Principalbass
8′ Großgedackt	8′ Flauto	16′ Sub Baß
8′ Salicet	8′ Flauto Douce	8′ Flaut Baß
4′ Octav	4′ Flauto	
3′ Quinta		
2′ Sedecima		
1′ Flageolet		

Tuned in *Kammerton* low pitch.

Strikingly similar to Moravian organs built by David Tannenberg, the only deviation from his typical Moravian dispositions is the presence of a one-foot stop.

Compare these dispositions for the organ Tannenberg built for the Home Church in Salem (1800):

HAUPT MANUAL	HINTERWORK	PEDAL
8′ Principal	8′ Flauta Amabile**	16′ Subbaß
8′ Groß Gedact*	8′ Viola di Gamba	8′ Violon Baß
8′ Quintadena	4′ Salicet	[Pedal coupler]
4′ Principal Octav	4′ Flauta Douce*	
4′ Flauta**		
3′ Quinte		
2′ Sub Octav		

* stopped wood
** open wood

2. *Ibid.*
3. *Ibid.*

And its smaller sibling in the Single Brothers' House built three years earlier:

8′ Gro*f*s Gedact*
8′ Viola di Gamba
8′ Quintadena
4′ Principal
4′ Flauta*
[Pedal coupler]

One is immediately struck by the absence of upperwork, the contrast of pipe forms and materials, the presence of multiple baroque string stops, and the amount of color and variety available to the organist, with an emphasis on gentle, *lieblich* voicing. The organs of Tannenberg are typically voiced on between 45 and 58mm (1¾″ and 2¼″) wind pressure, which we would consider uncommonly low. Where this tradition comes from has never been conclusively determined, although Italian organs are on such low pressures, and the Renaissance organs of England are believed to have been as well.

There are preserved today, letters and a contract between John Snetzler of London (1748) and the Moravian Church of Fulneck, Yorkshire, proposing a two-manual instrument of typical English disposition, which the client proceeded to whittle down, schooling Mr. Snetzler in what a Moravian organ needed to be in the process. The instrument included the novelty of an expressive second-manual Swell division, in addition to three baroque string stops–then a considerable rarity in Britain (Snetzler is credited with the introduction of the string-toned *Dulciana* to the British organ). As for the *Trumpet* originally specified, the client objected "...for the sake of the Trumpet the organ must have sharper wind than is required for a pleasant effect in the subtle stops." [4] The *Trumpet* was duly replaced with a *Sesquialtera,* and the "very pretty" Swell *Hautboy* was also a casualty of the whittling process, replaced with a four-foot flue stop. This is instructive, first, as to the delicacy of tone the Moravians were expecting from their new organ as well as their desire for low wind pressure to produce the desired effect of sweetness in the voicing. Second, this might hint that on the few occasions when Tannenberg provided reed stops, he too might have resorted to higher pressures sufficient for the stable production of reed tone. Except for his last Moravian instrument proposed in 1803 but never built, all the instruments containing reed stops were for Lutheran congregations who would not have been offended by the bolder organ tone from higher pressures.

By contrast, the organs Tannenberg provided for Lutheran churches, which generally were used alone, were less reticent in their voicing. Even the smallest organs contained a principal chorus up through 2′, and the larger instruments included *Mixture* stops to

4. Barnes and Renshaw, *The Life and Work of John Snetzler,* Cambridge: The University Press, 1994. 68-74

complete their hymn-singing principal choruses. His two largest organs were both for Lutheran churches: 1774 Lancaster 2-20 and 1790 Philadelphia 3-34. While the stoplist for Lancaster has unfortunately not survived, the case has, and indicates a stacked organ with an elaborate case showing facade principals for upper and lower manual divisions and the pedal in towers at each side. While his largest organ was destroyed only four years after its construction, its disposition has survived: in addition to a six-stop pedal with *Posaune 16′*, two manuals had mixture stops, each of the three manuals contained a reed, and the organ was also provided with a *Cimbalstern* and *Glockenspiel* (added a year later).

Tannenberg was an organbuilder with a unique client base having contrasting expectations from their instruments. The Moravians wanted what was essentially a large continuo organ with gentle voicing and variety of tone at eight- and four-foot pitches, that would provide the backbone of harmonic support to vocal and instrumental ensembles, often through the realization of figured bass. Their lack of interest in mutation stops, mixtures, and reeds (which could fight with the harmonic structure of string and wind instruments), was indicative of their conception of the organ strictly as an ensemble instrument. The Moravian organs were of two types, the small *Positiv* with a few stops, no pedals, and attached keydesk, while instruments of five stops or larger typically had a detached and reversed keydesk with the performer facing a Cantor or director, with the largest instruments having a pedal division of two stops or more.

The Lutherans, by contrast, wanted an instrument bold enough to lead congregational singing on its own, in addition to the ability to perform organ literature as the situation required. The Lutheran organs had attached keydesks recessed into the case behind locking doors. The largest Lutheran organs also had pedal departments, suggesting a musician skill set in the German communities that was lacking in the Colonies of largely British extraction.

Within a generation of Tannenberg's death, the "German" style of organbuilding was dead in Philadelphia, replaced by British expats like John Lowe and Thomas Hall, and while the old German organ persisted for several more generations in the more rural Lancaster County through the work of the Kraus family, Tannenberg's son-in-law Philip Bachmann, and the Dieffenbach clan, the Moravian taste in organs eventually embraced the English-style organs of 19th-century prevalent in the rest of the county. The community *Collegium Musicum* ensembles eventually disbanded, and the organ became the sole accompaniment in the service.

The instruments of David Tannenberg fell out of fashion by mid-century, replaced with more typical American instruments of a size that would have offended their Colonial ancestors. We are fortunate to have even the nine instruments that have survived as witness to the genius and excellence of Tannenberg's craft. The Moravian instruments are unique examples of Colonial heritage unlike anything else in American culture.

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ABOVE
Prospect Hill Cemetery, York, Pennsylvania.
PHOTO Find a Grave

OPPOSITE
Inside the Old Lutheran Church, York County, *one of several folk art depictions by artist Lewis Miller (1796–1882).*


"The Singing Chore," Ludwig Miller, John Barnitz, George
Christopher Stoehr, Daniel Lauman, Lewis Shive, William
George Barnitz, Steffe Horn. George Miller, Michael Eurich,
mis. Herman, mis. Laub. mis Stoehr, mis Cramer. mis. Hay.
the Organist
Pastor. Rev. Jacob Goering.
Mark. Luke
John. Paul
Peter. Joshua. Samuel. David.
In Side of the Old Lutheran Church in 1800, York, Pa.
the Sexton, henry bannix, and his wife, the fire maker,

DAVID TANNENBERG

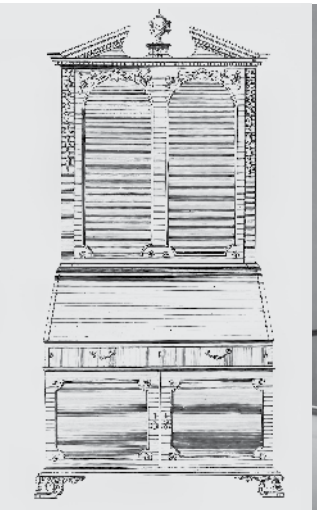
ESSAY III BY **SCOT HUNTINGTON**

Characteristics of Tannenberg Organs

WHILE ONLY NINE ORGANS REMAIN OF THE 50-PLUS Tannenberg built during his lifetime, they represent an arc of work spanning 35 years. The differences between the early and later instruments are small and indicative of refinement rather than wholesale changes in style. The oldest extant instrument, Moselem Springs, was built 15 years after Tannenberg began his career as an organbuilder. His style had already matured during the span of time between Moselem and his early work with Johann Clemm in the 1750s and the receipt of the Sorge treatise on organ pipe scaling, ca. 1764.

CASES Tannenberg's cases fall into three categories: the five-sectional construct with towers and flats for the larger instruments, the Chippendale bureau-style case for the small *Positiv* organs, and the simple box with a one or more groupings of facade pipes. The Moselem Springs organ (1770) is the only known example of a black walnut case, the standard being pine, painted white. The white painted case was atypical outside of Tannenberg's sphere of influence, although it is today considered the epitome of synthetic "Colonial" style. The traditional style elsewhere in the country from 1700–1900 was natural finished (or grained a grained imitation), wood, typically mahogany or oak early, later walnut and cherry, contrasting against white church walls.

Tannenberg's case proportions are light and elegant, suggesting a practical knowledge of the Golden Section proportions as well as an eye for form. The Moselem organ is the only known case with triangular towers, all the other surviving examples after this date have rounded towers. The mouth line of the facade pipes in early instruments is straight, but by the mid-1780s, Tannenberg adopted contrary-motion mouth lines, adding sophistication and bouyancy to his case fronts. The pipe tops are covered by carvings, typically gilded.



From The Gentleman & Cabinet-Maker's Director, *Thomas Chippendale, 1762.* Plate CVII

Organ: Tannenberg "Bookcase" organ, Single Brother's House, Lititz, Penn.
PHOTO William T. Van Pelt

KEYDESKS Tannenberg used detached and reversed keydesks for the larger Moravian instruments in which the organ is but one member of a larger musical ensemble, allowing the organist to face the ensemble and conductor. The bureau *Positivs* and Lutheran instruments have attached keydesks, the latter recessed into the case behind locking doors. The keyboards are reverse color, with ebony naturals and ivory-capped walnut sharps. In the larger organs with pedal divisions, the pedal keyboards are in the traditional German style. The stopknob styles vary, and the *Positiv* stops may be unlabeled; while the majority of surviving instruments have large diameter stopknobs with hand-lettered paper or parchment inserts.

ACTION Tannenberg's instruments use balanced actions, meaning the keyboards are center pinned rather than rear hinged as required by suspended actions. The transmission of motion between the key and pallet is through wood trackers with bent-wire connections, wood or brass squares, backfalls, and rollerboards. Manual to pedal coupling is done with a second set of pallets and channels in the windchest which are connected through the pedal action, rather than with a direct connection between the pedals and manual keys within the keydesk.

WINDING The wind pressure is typically between 1¾″ and 2¼″, although the pressure used in organs with reed stops is unknown. The *Positiv* organs have a wedge bellows (typically double-ribbed) with a single wedge feeder located in the base of the instrument which can be pumped by the player, while the more significant instruments have two or three large wedge bellows installed near the organ or in the attic above, operated either with attached foot treadles or with ropes descending through the ceiling to the gallery below. The large organ in Zion Lutheran, Philadelphia, had five bellows in the attic.

PIPEWORK Assaying the metal of selected pipework from Tannenberg's surviving instruments shows a tin content typically around 60%, i.e. a hard spotted metal, thicknessed by hand scraping, which would also remove the spots. Facade pipes have Roman mouths, slightly raised by working on a mandrel, and are highly polished, while interior pipes have a coarser surface and simple pressed mouths. Wood pipes have German blocks and thick walls, the larger pipes are of pine typically through two-foot c, and the smaller pipes are of walnut. The wood pipes typically have short, tapered feet, which are a tight friction fit plugging directly into cylindrical toeboard holes without a rack board, with thin wood wedges used for

volume control at the toe. Wood pipes are constructed in the European manner, with the block first glued to the narrow back piece, then the two sides, and finally the full-width top piece, a three-step process requiring three separately-dimensioned wood members.

The *Quintadena* pipes have moveable canisters gasketed with leather. The metal pipe languids are singularly unusual; the provenance of their design is a total mystery. Thicker than found in modern pipework, the bottom half of the languid face is a substantial 90° counter-bevel, with the top side of languid having an acute bevel of 45° or less (the photo below also shows the non-original nicking). The languids are heavily soldered in place and are immovable up or down as part of the voicing process. Was this to help them withstand

the jostling of long journeys without disturbing the voicing? The only parameters the voicer can control regarding pipe speech and speed, is by manipulating the upper and lower lips, and the windway thickness–typically narrow. Nicking, where present, is rather fine and done with a thin knife blade. Volume control occurs at both the toe and windway. With the exception of metal flutes and strings, the pipes have no ears. The string pipes are excellent examples of baroque string voicing with narrow scales, low cut ups, and pronounced speech transients. The construction of Tannenberg's various reed stops are a mystery, with no examples having survived.

GEORG ANDREAS SORGE Tannenberg had several treatises by Sorge in his possession, which he acquired either directly from the author, or via Johann Clemm. Sorge sends a second copy of his most thorough work, perhaps to replace one lost, with a cover letter addressed to his "friends in Pennsylvania". Sorge wrote several dissertations during his lifetime, dealing not just with organ scaling and construction, but also with harmony and music theory. The treatise that had the most profound effect on Tannenberg's methods was *The Secretly Kept Art of Organ Pipe Scaling* (1764).

Prior to Sorge's scaling theories based on mathematical principles, organ pipe scaling was a highly-guarded secret, generally based on geometric progressions. While Sorge was the first to apply logarithmic formulas to pipe scaling, he was attacked and discredited in the press over his theories of harmony by respected theorists (and friends of Gottfried Silbermann) such as Marpurg and Bach's biographer Spitta, limiting the circulation of his writings. In the 19th-century, Töpfer espoused nearly identical scaling theories, and is today credited (incorrectly) with their discovery. In the 20th century, theorists such as Paul Smets and Christhard Mahrenholtz give Sorge credit in passing, but it is not until Carl Bleyle's 1968 doctoral dissertation on Sorge's treatise and Tannenberg's scaling practice, that the cutting-edge work of Sorge is given full credit. There are today only two original copies of Sorge's master treatise extant, both in possession of American Moravian foundations.

Sorge gives mathematical formulas not just for pipe scaling (based on circumference and plate width, not diameter), but also speaking length, cut-up, mouth width, temperament (equal), tone channel, pallet size, wind gauge construction, and wind trunk dimensions based on wind consumption. Sorge provides three basic scaling patterns with halving ratios based on the eighth, ninth, or tenth whole step, with the last considered the most usable. Scaling Number III is based on the 10th whole step halving, the same as the 17th half step, the same as Töpfer's equation, the basis of the modern *Normal Mensur* system of scaling. Sorge also advocates mixing the three scale systems in one rank, based on the need to increase/decrease the pipe size in the bass or treble ranges–the equivalent of modern variable scaling. Comparison of Tannenberg's scales for the Salem and Madison instruments shows nearly identical adherence to Sorge's third scale.

In 1721, when Sorge arrives in Lobenstein, Germany (a fairy-tale Thuringian spa town south of Leipzig), as court and town organist at the age of 18, he finds a new 1714 organ at the Michaeliskirche built by Johann Matthaeus Obermueller, which burned in 1734 and was replaced by a new organ of Sorge's design by Johann Graef. The large number and variety of foundation stops, especially the inclusion of three baroque strings and a variety of flute forms, suggests an organ with a great deal of color. These traits are typical of Thuringian organs contemporary with J.S. Bach–instruments heavily influenced by the elegant, instrumental voicing style of the 1703 Görlitz Casparini instead of the paint-peeling congregational-singing ensembles of Schnitger, and Gottfried Silbermann's yet to come. Despite its paucity of reed stops, the Lobenstein organ suggests on paper a contemporary vehicle for performing Bach's mature organ works. Tannenberg's varied lexicon of stops and pipe forms is as varied as those employed by Graef. Sorge gives an ideal organ specification in an ancillary treatise, which is the basis for Tannenberg's *magnum opus* at Zion Lutheran, Philadelphia.

PITCH The Moravian organs needed to be pitched for use with instrumental ensembles tuning in "low pitch", the old German *Kammerton* or chamber pitch, roughly a half-step below modern pitch or ca. A415. While Sorge provided directions for a well-tempered tuning, he advocated equal temperament as the best all-around tuning for "modern" purposes. The Moravian instrumentalists needed to be able to play in any key established by the Cantor at a moment's notice, or to play with whatever group of musicians happened to show up on a particular Sunday morning. Equal temperament was the only tuning system that allowed the flexibility to play in any key without disharmony, the wildly sour equal-tempered third apparently not a problem to Moravian ears. Tannenberg applied the same pitch and tuning to his Lutheran organs.

ESSAY IV BY **SCOT HUNTINGTON**

David Tannenberg, Organbuilder

DAVID TANNENBERG [1728–1804] WAS NOT THE FIRST COLONIAL organbuilder by a long shot, neither was he the first American by 1776 default, but he was the most prolific Colonial builder prior to the 19th century and exhibited a technical and tonal artistry the equal of his European counterparts. His path to the American Colonies as a young man was circuitous and he seemed to stumble into the craft of organbuilding by assignment. His American world was an insular one, living in a religious community closed to outsiders and practicing his craft within a limited geographic area almost exclusively for Moravian and Lutheran congregations of German descent for whom the organ had a deep historical context. During his lifetime, he is known to have built almost fifty instruments and there were undoubtedly more. For the New England Colonies of primarily English extraction, the organ was a new and perhaps threatening intrusion into the sanctity of the church service. Scarcely forty years before Tannenberg began his career as an organbuilder in 1756, the good people of Boston wanted to throw the "damn'd box o'whistles" bequeathed to the Brattle Street Church into the harbor.[1] By 1790, two of Tannenberg's instruments had been witnessed in wonder by the new country's most honored dignitaries, including President Washington and Benjamin Franklin.

The first purpose-built church organ long believed to have been installed in a Colonial church, was the Richard Bridge two-manual organ installed in Trinity Church, Newport, Rhode Island, in 1733. Organs arrived from the Mother Country slowly thereafter, with crafty New England artisans making their own instruments after studying the imported organs in their midst. The Pennsylvania organ culture on the other hand, appears to begin with a small organ from "Prussia" sold to Christ Church, Philadelphia in 1728, predating the Newport organ by five years. Small organs continued to appear in Pennsylvania in the years preceding Tannenberg's arrival: Germantown Lutheran (1742), the Swedish Church, Philadelphia (Clemm 1858), Lancaster (Trinity Lutheran, before 1744), and a Catholic Church, Philadelphia (ca. 1748). The most significant imported organ to appear in Philadelphia was the 1750 two-manual instrument of twenty stops for St. Michael's Lutheran Church in Philadelphia, imported from Germany and built by Johann Adam Schmahl, scion of the Württemberg organbuilding dynasty in Heilbronn. David Tannenberg would eventually either repair or substantially rebuild this instrument in 1771, closing the circle as he was about to embark on still greater things.

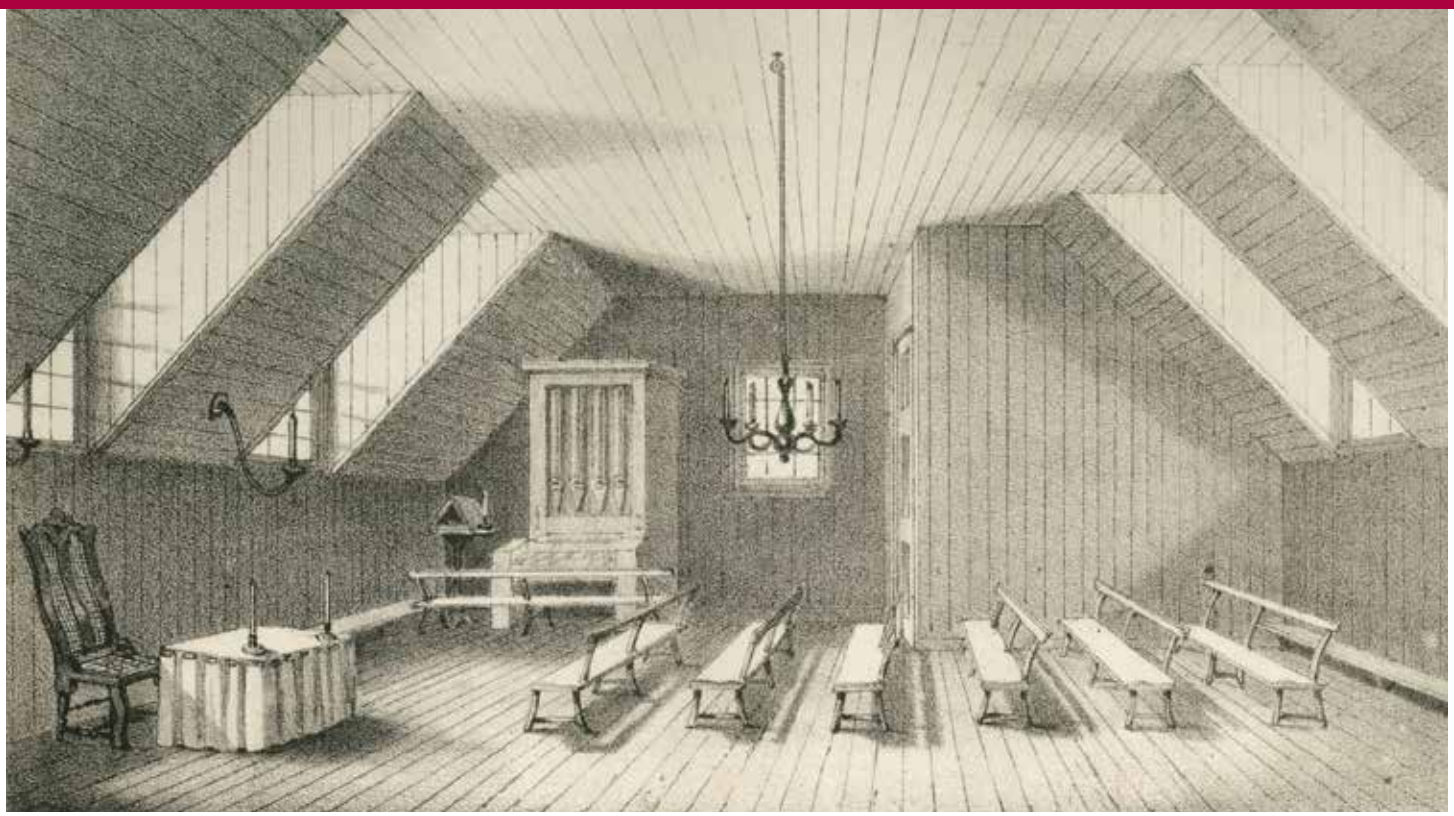
David Tannenberg was born in 1728 Berthelsdorf, Upper in Lusatia, a district in the Duchy of Saxony. Today the district lies partly on the extreme eastern edge of Germany, partly in Poland. The capital of old Saxony was Dresden and its largest city was Leipzig, both cities entwined with Johann Sebastian Bach during the mature period of his life, coincidentally during the years of Tannenberg's upbringing. David's parents, Johann and Judith (*née* Nitschman) Tannenberg were married in 1721 in Moravia, a Catholic province in Silesia, now part of Czech Republic. They fled to Lutheran Saxony to escape religious persecution but were subject to arrest and detention there as well. Seeking peace and religious freedom, the young family made its way to the protected village of Herrnhut on the large estate of the young Count Nikolaus Ludwig von Zinzendorf, who beginning in 1722, allowed Moravians fleeing religious persecution to settle in several small villages he established on his estate. Herrnhut is today in the district of Görlitz, sitting hard on the Polish border. Görlitz is a touchstone for organ historians, as the site of the landmark 1703 instrument by Eugenio Casparini in St. Peter's church in Görlitz, the famed 32-foot "Sun Organ". The beauty of this organ's elegant voicing influenced organbuilding in Saxony and Thuringia for several generations–even Bach made a pilgrimage there to inspect the organ.

After remaining in Herrnhut for several years, the family moves to nearby Berthelsdorf where David spends an idyllic childhood as a farmer. One day he's spotted in a field by Count Zinzendorf, who sees something promising in the boy and takes him under his wing, paying for a school education and taking him on trips to see the world, with visits to Görlitz, Dresden, and Magdeburg. These cities had masterpiece instruments by Casparini, Silbermann, and Schnitger respectively, each changing the course of organbuilding in their general locales and whose fame spread well beyond their provincial borders. It is doubtful the Count is simply taking young Tannenberg on an organ tour and more likely they are visiting Moravian missions. Although there's no proof that Tannenberg heard any of these instruments, or yet had any career interest in doing so, for a sect in which organs and hymn singing were of such importance, it would be unusual if they were in these cities and didn't find an opportunity to hear these musical wonders.

After breaking off his education to return home to his parents, he returns to Herrnhut in 1746 where he received formal training as a

1. The organ given by Thomas Brattle and which now bears his name is attributed to Bernard (Father) Smith and imported from London prior to 1708. Upon his death and the organ's refusal by the Brattle St. church, the organ was given to King's Chapel where it remained until it was replaced in 1756 by a 3-manual organ of 24 stops built by Richard Bridge of London-just two years before Tannenberg built his first small instrument. The Boston instrument was briefly the largest organ in the Colonies until it was superseded in that distinction by the Johann Snetzler organ built for Trinity Church, New York (3-man. 25 stops, 36 ranks), which replaced an organ built by Johann Clemm, the future partner of David Tannenberg. The rebuilt Brattle organ is extant at St. John's Church, Portsmouth, New Hampshire, now the oldest organ in church use in the United States.

DAVID TANNENBERG



Four-stop Positiv *in the "Hall" of the Philadelphia Moravian Church (image 1857), possibly built or repaired by Clemm, pre-1750 and repaired by Tannenberg in October 1769.* CREDIT Library of Congress

woodworker/joiner. If he received any tutoring in the art of instrument making before he came to American, this would have been the period when it occurred. Seemingly somewhat restless in his youth and with a pattern of making sudden decisions, he goes to a Moravian community in Zeist, Holland. While there he learns of a call from the Colonies for new recruits and he travels with the group thence to London for a farewell meeting with Zinzendorf before they sailed for the Colonies on February 20, 1749, arriving in New York on May 12th, and in the Moravian Colony in Bethlehem, Pennsylvania on the twenty-first of May. Tannenberg immediately began work as a joiner, responsible not only for furniture building but framing and building construction.

Eager for the group to multiply, the Elders, who controlled every aspect of life in the Moravian communities–even to the color of one's clothes–arranged marriages for the new recruits and Tannenberg weds Anna Rosina Kern on July fifteenth along with twenty-seven other couples in the Great Wedding. The young couple will eventually have five children, among them two sons who would eventually learn the trade of organbuilding. David Junior (a rebellious youth who eventually left the community to seek his fortune in Philadelphia) and Samuel, an able worker in the organ shop, who dies of appendicitis at 23. His youngest daughter Anna Maria will marry a young man named Philip Bachmann, who was called from Herrnhut to learn organbuilding from an aging Tannenberg and assist him with his sizeable workload–the passing on of knowledge from master to pupil as his teacher Johann Clemm had done with him thirty-five years earlier.

The family moves from Bethlehem to Nazareth in August 1752, but fearing persistent indian attacks, returns to Bethlehem two years later. The first documented connection between Tannenberg and organbuilding is a note in the Bethlehem church diary for 1754 that the matter of an organ for Nazareth Hall was "charged to David Tannenberg". Whether that implies he came to the community with some prior knowledge of organbuilding (potentially unlikely) or it became his responsibility to make happen is unclear, but the organ was not actually built until a year later when the aging and contrite "Father" Clemm is readmitted into the faith and the community. He is assigned to the Tannenberg clan for both elder care and to train David as an organbuilder.

Johann Gottlob Klemm (also Clemm; 1690–1762) was born near Dresden, Saxony, and arrived in Bethlehem in 1733 to undertake the craft of instrument making. It is presumed he learned the trade of organbuilding in or near Dresden, and further presumed with Gottfried Silbermann (active 1710 Freiburg-1753 Dresden).However, at the time Clemm was active in Dresden, Silbermann's shop was in Freiburg, some distance west, and to date no proof has been found the two actually met. Silbermann's two masterpiece instruments in Dresden were both built after Clemm had emigrated to the Colonies. However, there might have been a chance for a meeting in 1720 when Silbermann was installing his first organ in Dresden,

Tannenberg's home in Lititz. It is believed the organ shop is the building immediately to the left of the house.

at the Sophienkirche (1720). The organs that devolved through the Clemm-Tannenberg connection don't bear even a fleeting resemblance to any aspect of Silbermann's instruments, but they do have more than a glancing similarity to the instruments being newly constructed in J.S. Bach's Thuringian-Saxon orbit, which were descended tonally from Casparini's highly influential Görlitz organ.

Klemm arrives in Philadelphia with a group of Schwenkenfelders in 1733, anglicizing his name to Clemm. He is credited with building a small positive organ and several stringed keyboard instruments before he is commissioned in 1739 to build the first organ for New York City's Trinity Church. Contemporary references to the organ are not overly enthusiastic and it is replaced by a large English organ imported from John Snetzler in 1761. While the first assumption might be Clemm's relatively new organ was replaced because it was inferior, to be fair, the church's improving finances, social position, and newly hired English organist might suddenly have been the reason the Clemm organ fell out of favor.

The evidence of Clemm's activity was not well documented during his lifetime and he undoubtedly built more instruments than are currently known. Late in life, Clemm rejoins the Moravian community in Bethlehem. Tannenberg is assigned to Clemm as an assistant so the master might pass on his organbuilding knowledge to a successor who already showed great aptitude as a wood worker. The association between Clemm and Tannenberg produces five small instruments, all for Moravian congregations.

Following Clemm's death in 1762, the church Elders recommended that Tannenberg pursue joinery and discontinue his association with the organbuilding profession, as the latter is "tied up with a good deal of disorder" and installations would take him out of the protection of the community, exposing him to the sins and evil temptations of the world at large. Tannenberg declines their advice, which would not be the first time he incurred the displeasure of the narrow-minded Elders. This may account for only two organs being built between Clemm's death in 1762 and Tannenberg's departure from Bethlehem in 1765–and could possibly be the reason he leaves. However, it is during this period of seeming inactivity that he writes to Georg Andreas Sorge and receives a copy of one of his groundbreaking treatises on organbuilding.[2] Sorge's detailed scaling formulas and advocacy of equal temperament were radical at the time, but form the technical basis for all Tannenberg's subsequent work. In 1765 the family moves to the growing Moravian community in Lititz, where Tannenberg would spend the rest of his life and enter his most productive period as an organbuilder.

From 1765 onward, Tannenberg had a steady supply of work, producing one or two organs per year. Except for one organ built for a Catholic congregation in Philadelphia and one known residence organ, Tannenberg only produced organs for German Lutheran, Reformed, and Moravian congregations. This may partly have been due to the reluctance of Episcopalians and Congregationalists to accept organs in church. It is also possible the ruling Elders would not allow his exposure to "radical" outside influences and they exerted a strong degree of control over his business dealings. Tannenberg was, euphemistically, Moravian intellectual property.

Until 1776, Tannenberg and his fellow Pennsylvanians were English colonists. Like many independent religious sects, the Moravians were anti-war, and initially pledged their support to King George III, hoping the Revolution would pass them by and leave them in peace. After repeatedly refusing to gather a militia in defense against the British, a random group of men were arrested, including Tannenberg, and taken to Bethlehem where they were paraded through the streets to shouts of "Tory," and released after the night in jail. The Moravian seclusion was shattered during the winter of 1777 when General Washington commandeered the large Single Brothers' House in Lititz for a hospital to house the sick, maimed, and dying war casualties, and within days there were over two hundred patients. Its new organ was scarcely four months old, but the patients were too injured or sick to have the energy to cause it harm. The idyllic life in the Moravian communities was rent by the war and the exposure of the citizenry (including Tannenberg's teenage sons) to the worldly ideas of outsiders. The Moravian communities and the Tannenberg boys would never fully return to the way things had been in the before times.

When the "Test Act" of 1778 required citizens to swear an oath to the new government, the Moravian Elders forbade communion to anyone who did so. Tannenberg Senior and Junior (now 18) both took the oath in spite of the ban. Tannenberg Junior, while a good student, was precocious, rebellious, headstrong, and in the eyes of the Elders, was a disruptive and dangerous influence upon the town's

2. Georg Andreas Sorge, *The Secretly Kept Art of Scaling Organ Pipes*. 1764, unpublished manuscript in the Archives of the Moravian Church, Bethlehem, Penn. Facsimile reprint and English translation: Carl Bleyle, Bibliotheca Organologica, Vol 33: Frits Knuf, 1978

young ladies. His joining the local militia against express community orders to remain neutral and consequently swearing allegiance to the new government was the last straw; Tannenberg Senior was "advised" it was time for Junior to go, and he was sent packing to a Moravian Colony in North Carolina. He married, returned to Philadelphia where he established himself as an instrument maker, and seemingly estranged from his father, bid against him successfully for a local tuning contract. He was eventually hired as an organbuilder by the Krauss family and had in his possession one of the Sorge treatises that had likely once been his father's.[3] He died in 1800 from one of the Yellow Fever outbreaks for which Philadelphia was infamous.

The disruption of the War essentially brought organbuilding to a temporary halt. Between 1777 and 1781, Tannenberg only built two small instruments, and vehemently resisted the quartering of soldiers in his idle workshop. The banishment of his able-assistant son was a blow; however, with the resumption of business activity in 1782, his son Samuel was now 16 and capable of taking his brother's place learning the trade. During the idle War years, the Elders worried that without organbuilding to occupy him, Samuel would be subject to dissolution like his dissipated older brother and urged the father to find him an occupation lest he become despoiled by his friendship with hospital soldiers and the temptation to evil and idleness that could ensue. Tannenberg again defies them, and allows his second son to also find his own way as an organbuilder apprentice. Samuel became an invaluable assistant for his father through the 1780s when the workshop was again in full production. Tragically, in 1788 young Samuel is stricken and quickly dies of an apparent burst appendix, leaving his father both bereft and short-handed.

At the time of Samuel's death, Tannenberg, now 60, is fully involved with the construction of his *magnum opus*, the large 34-stop, three-manual and pedal organ for Zion Lutheran Church in Philadelphia, a project which would ultimately take three years to complete. This instrument was the largest built in America until the 1820s. Excluding the *Echo*–a division largely without precedent in America–the instrument was otherwise a virtual copy on paper of the organ Sorge describes in his landmark pipe scaling treatise.

The organ is dedicated in October 1790 in a multi-day festival of events, attended by Benjamin Franklin and an assembly of dignitaries. The organ is short-lived, heavily damaged by a tower fire in 1794. Although the organ proper cost £1,500 (the lavish case was built by local craftsmen), Tannenberg proposed £3,000 to restore it, which was too much for the church fathers to swallow. Proposals to restore the organ suggest it was salvageable, but nothing was done until a decade after Tannenberg's death. Ultimately, a new organ was built by the Englishman John Lowe, supposedly reusing the surviving pipework and with a stoplist nearly identical to the original.

3. Carl Bleyle, *Georg Andreas Sorge's Influence on David Tannenberg and Organbuilding in American During the Eighteenth Century.* (Ph.D. diss., University of Minnesota, 1969). I-iii

Sorge Treatise of 1764[4]
Also: Michaeliskirche 1734–1740[6]
Lobenstein, Johann Graef
[indicates Lobenstein differences]

Zion Lutheran Church, 1790[5]
Philadelphia, Pennsylvania
David Tannenberg

HAUPTWERK

16′	Quintadoena
8′	Principal
8′	Gemshorn
8′	Salicional
8′	Gedackt
4′	Octav
4′	Querflöte
2⅔′	Quinte
2′	Superoctav
V	Mixtur 2, 1½, 1, ⅔, ½
II	Cymbel 1, ⅔

HAUPT MANUALE

16′	Quinta den
8′	Principal
8′	Gemshorn
8′	Gamba
8′	Gedackt
4′	Octave
4′	Flöte
3′	Quinte
2′	Octave
IV-VI	Mixture
8′	Trumpete

BRUSTWERK

8′	Viola di Gamba [Augusta]
8′	Gedackt [Lieblichgedeckt]
8′	Quintatoena
4′	Principal
4′	Flöte [Sordinflöt]
2⅔′	Fistelquint
2′	Octave
II	Sesquialtera ⅘, ⅔
III	Mixtur 1, ⅔, ½
8′	Vox Humana

OBERWERK

8′	Princip. dulc.
8′	Gedackt
8′	Flöte amab.
8′	Quinta dena
4′	Solicet
4′	Nachthorn
3′	Fistel quint
2′	Hohlflöte
IV	Cimbel
8′	Vox Humana
	Glockenspiel [1792]

OBERWERK

8′	Augusta [Barbata]
8′	Still Gedackt
4′	Principal
4′	Rohr Flöte
2′	Spitzflöte
1⅓′	Quinte
II	Cymbel ⅔, ½ [Cimbel III]

ECHO [TENOR-F]

8′	Dulcian
8′	Flöt Traver
8′	Rohr Flöt
4′	Fistula octav
4′	Nachthorn
8′	Hautbois
8′	Echo Baß

PEDAL

16′	Principal
16′	Subbass
8′	Violoncello [Octav]
8′	Dulcian
5⅓′	Quinte
4′	Octava
16′	Posaune
	[Pedalkoppel]
	[Tremulant]
	[All 3 manuals can be coupled together]

PEDAL

16′	Principal Baß
16′	Subbaß
8′	Octav Baß
6′	Quinta
4′	Octave
16′	Posaune
	[Manual Coppel (OW-HW)]
	[Pedal Coppel (HW)]
	Sperr Ventill
	Cimbel Stern
	Tremulant

4. Carl Bleyle, translator: *G.A. Sorge, The Secretly Kept Art of the Scaling of Organ Pipes [1758].* Bibliotheca Organologica [Vol. 33]. Frits Knuf, 1978. 109-110

5. Raymond Brunner, *That Ingenious Business.* Birdsboro: Pennsylvania German Society, 1990. 86. Facsimile of organ dedication program.

6. Jacob Adlung, *Musica Mechanica Organoedi [Berlin 1768].* Kassel: Bärenreiter facsimile, 1931. 251-252

DAVID TANNENBERG

In 1793, Tannenberg was elderly by Colonial standards but still receiving orders for new organs on a regular basis. Shorthanded after the loss of his two organbuilder sons, he received Elder permission to send to Herrnhut for an assistant, and a 30-year old craftsman, Johann Philip Bachmann [1763–1837] answered the call. Bachmann becomes his son-in-law after marrying his daughter Anna Maria. The builders have a steady backlog of work throughout the 1790s, with at least 14 organs built before the end of Tannenberg's life. This period saw orders coming from more remote locales in Virginia, Maryland, and North Carolina, for which travel would have proven arduous for the elder builder. Bachmann delivers the organs and, in some cases, such as the pair of organs installed in Salem, North Carolina, constructing major parts of the organs on site. Bachman remains in Salem almost a year in 1800, installing the organ for the Home Church, Tannenberg's only extant two-manual organ, restored in 2004 by Taylor & Boody. However, Bachmann and Tannenberg's relationship deteriorated, likely over how the payment was split between them, after which the two collaborated on several instruments but maintained separate shops.

The one-manual organ installed in Hebron Lutheran Church in Madison, Virginia, which the AIO is visiting at the 2023 convention, is Tannenberg's second-to-last organ, installed by Bachmann. The most pristinely intact of the nine surviving instruments, it was judiciously conserved in 1970 by George Taylor. Tannenberg signs a contract in 1803 for the large Moravian Church in Bethlehem (his first American home), which would have been only one stop smaller than his largest two-manual instrument, built in 1774. He completes one final organ for the Lutheran Church in York in 1804, suffering a stroke while installing the pipework, and dying the next day. The organ was finished by his assistant John Hall and played for the first time at Tannenberg's funeral on May 21, 1804. The large organ destined for Bethlehem was never built.

David Tannenberg built more organs during his lifetime than existed in the rest of the continental United States combined. He worked within a bubble of German culture affecting architecture, art, textiles, pottery, and musical instrument construction, beyond the reach of English influences strongly entrenched in the Colonies of Virginia, New York, and New England. In spite of the large number of instruments Tannenberg constructed, the German-baroque nature of Pennsylvanian organbuilding diminished after Tannenberg's death, as the nature of the instruments built by his successors increasingly assimilated English attributes. Largely forgotten since his death, Tannenberg faded into anonymity until the post-World War baroque organ revival and the formation of the Organ Historical Society, which during its first decade of existence spent a great deal of time researching America's Colonial organ history. The first notice of Tannenberg in our time was by E. Power Biggs and his landmark 1960 LP recording for Columbia, *The Organ in America,* which showcased the 1804 York instrument Biggs characterized as one of the finest in America. Tannenberg is brought out of the shadows in 1967 with the publication of *Organs for America,* a biography and opus list by William Armstrong, whose wife was a lineal descendant of Tannenberg through his daughter Anna Maria. At the time of publication, two significant organs had been in storage for nearly 80 years, and the remaining seven existed in various sketchy states of disrepair. Coincidentally, the first headquarters of the O.H.S. in the mid-1960s shared space in the York County Historical Society with Tannenberg's final instrument. Slowly, beginning in 1964, his surviving instruments began to be noticed and restored with increasing sensitivity. Following Armstrong's definitive biography, organbuilder Raymond Brunner began a life study of Tannenberg and the Pennsylvania German school of organbuilding that culminated in the 1990 publication of his seminal study *That Ingenious Business: Pennsylvania German Organ Builders*. The Bicentennial observances in 1976 brought further attention to America's Colonial organ culture, out of which both William Harrison Barnes and Orpha Ochse published broad studies of American's two centuries of organ history, with Tannenberg receiving prime attention.

In 1970, George Taylor conserved the most authentically preserved Tannenberg in Madison, Virginia, with an approach that was ground-breaking for its time, being both conservative and non-invasive. In 1983, in another milestone project for its era, James R. McFarland & Co. reconstructed the 1783 instrument in Lititz from the surviving parts in storage for 80 years. In 2004, Taylor & Boody completed a reconstructive restoration of the Salem Home Church organ, Tannenberg's largest extant instrument, after nearly a century in storage. The pipes were found co-mingled with those of the Single Brother's instrument, sown into burlap bags and stored in the attic. Following the discovery of the missing pipes for the Single Brothers' instrument, it was restored with its original stoplist. In the decades since the publication of Armstrong's biography, all of Tannenberg's instruments have been restored or re-restored to historically authentic condition.

Born a German, coming to the New World to flee religious persecution, Tannenberg began his organbuilding career as an English subject and finished it as an American citizen. Today, Tannenberg has been restored to his rightful place as Colonial America's most gifted and prolific organbuilder, producing handcrafted instruments of sterling quality at the very moment the country was forging its identity as a new nation, founded on the principles of democracy and religious freedom.

UPPER LEFT *The extant bellows stack in the attic of the Home Moravian Church in Salem, North Carolina.*
UPPER RIGHT *Zion Lutheran Church, Moselem, pre-1896.*
CENTER LEFT *Mid-1960s postcard, Single Brothers' House, showing post-1800 faux-graining, once thought to be original.*
ABOVE RIGHT *St. Stephen Reformed Church, New Holland, Pennsylvania, pre-1920 image. Note elaborate side carvings.*
BOTTOM LEFT *Home Moravian Church, only extant two-manual detached and reversed keydesk, as found in storage pre-restoration.*

DAVID TANNENBERG

Trinity Lutheran, Lancaster, Pennsylvania, after the 1887 Roosevelt rebuild and prior to 1893 widening. Tannenberg's largest two-manual organ (1774), case by Peter Frick.

LEXINGTON PRESBYTERIAN CHURCH

LEXINGTON PRESBYTERIAN CHURCH | LEXINGTON, VIRGINIA

C.B. Fisk, Opus 128, 2007

ESSAY BY DAVID PIKE

PHOTOS C.B. FISK

LEXINGTON PRESBYTERIAN CHURCH, A FINE AND MUCH-prized edifice in Greek Revival style, was designed in 1843 by architect Thomas U. Walter, designer of the U.S. Capitol building dome. Completed in 1845, the facade features a Doric pedimented portico consisting of six wooden columns and full entablature. The church is topped by a tower with louvered belfry and spire, downtown Lexington's premier landmark. It is included on the National Register of Historic Places and the Virginia Landmarks Register. Notably, starting in 1851, General Thomas J. "Stonewall" Jackson was a member of the church and taught Sunday school there. In 1863 he was buried in the church's cemetery, now named for him.

On 18 July 2000, the church experienced a stunning, spectacular setback. A fire started accidentally when paint was being stripped from the building's exterior, and the resulting blaze destroyed all but the original brick walls. The pipe organ was completely destroyed [M.P. Möller, Opus 9293, 1959 -Ed.]. Undeterred, the congregation quickly set about rebuilding. The restored sanctuary, nearly identical to the original, includes improvements such as a quality sound system, better lighting, and fewer pews (offering more legroom). We were asked to make a proposal for an organ in the fall of 2000, and a contract was signed on 9 January 2001. Opus 128 was delivered six years later, in November of 2006, replacing a loaned instrument–Taylor & Boody Organ Builders, Opus 37, which had been temporarily installed in the church in January 2003 while its future home, St. Mark's Lutheran in San Francisco, awaited a major seismic retrofit.

An early photograph of the Geo. Jardine & Son one-manual organ installed in the Lexington Presbyterian Church in Nov. 1867, later replaced by Felgemaker. S.L. HUNTINGTON COLLECTION

By early 2006 we had begun discussions in earnest with Organist William McCorkle regarding tonal design, and the specification reflects these conversations. While the stoplist is eclectic in nature, it has a definite French bias (though surely not so much as its sister Fisk, Opus 124, fifty miles to the south at Christ Church Episcopal, Roanoke). William had made it clear early on that he wanted an organ that could "speak two languages". Thus, a concept comprising a Great division emphasizing 18th-century French and German antecedents and a Swell division modeled after 19th-century French examples was adopted. Highlights include a hammered spotted metal Great *Montre 16′* in the facade from bass-F, a hammered, mostly tin Great chorus, a pair of French reeds–*Trompette* and *Cromorne*–on the Great; and in the Swell a chorus of Cavaillé-Coll-inspired harmonic flutes at 8′, 4′, and 2′ pitch, Cavaillé-Coll strings outfitted with brass harmonic bridges, a four-rank *Plein Jeu*, and three French Romantic reeds–*Basson 16′, Trompette 8′,* and *Hautbois 8′*. Conceived primarily as an organ to proficiently lead congregational song and to adeptly accompany the choir, Opus 128 nonetheless possesses sufficient resources to convincingly play a large majority of the solo repertoire.

According to Fisk practice, a scale model of the front of the church was built for realizing the case design. The handsome Doric portico and the elegantly spare Greek Revival interior of the restored church invited us to consider what sort of organ might have been sent to Lexington from New England in 1845 when the church was first built. A number of period instruments were studied for inspiration during the visual design, most notably those of Thomas Appleton, one of the finest Boston builders of the period. The resulting case design is a new statement of these classical ideals and shares much with our organ designs at St. James's Episcopal in Richmond (Opus 112) and First Presbyterian in New Bern, North Carolina (Opus 89).

C.B. Fisk, Opus 128, 2007
Lexington Presbyterian Church
Lexington, Virginia

GREAT (58 Notes, Manual I)

1. Montre 16′
2. Montre 8′
3. Spillpfeife 8′
4. Octave 4′
5. Offenflöte 4′
6. Quinte 2⅔′
7. Doublette 2′
8. Terz 1⅗′
9. Mixture IV-VI
10. Trompette 8′
11. Cromorne 8′

SWELL (58 Notes, Manual II, Enclosed)

12. Viole de gambe 8′
13. Voix céleste 8′
14. Flûte traversière 8′
16. Bourdon 8′
17. Prestant 4′
18. Flûte octaviante 4′
19. Octavin 2′
20. Cornet II
21. Plein jeu IV
22. Basson 16′
23. Trompette 8′
24. Hautbois 8′

PEDAL (30 Notes)

25. Montre 16′ [Great]
26. Soubasse 16′
27. Octave 8′
28. Spillpfeife 8′ [Great]
29. Octave 4′
30. Posaune 16′
31. Trompette 8′ [Great]

COUPLERS

Swell to Great
Great to Pedal
Swell to Pedal
Swell Super to Pedal

ACCESSORIES

Tremulant
Wind Stabilizer
Balanced Swell Pedal
Cymbalstern

DETAILS

COMPASSES: 58/30 notes

KEY ACTION: Direct mechanical (tracker) except for large bass pipes. Stop Action: Electric solenoid.

CONTROL SYSTEM: Solid State Organ Systems, multiple levels of memory with appropriate thumb pistons and toe studs.

KEYDESK: Built into the case, two manuals and pedals; manual naturals of cowbone, sharps of ebony.

CASEWORK: One single, free-standing case in the front of the sanctuary, painted. Front pipes of hammered and polished spotted metal.

LEXINGTON PRESBYTERIAN CHURCH

LEXINGTON, VIRGINIA

C.B. Fisk, Opus 128

GREAT | 58 notes, w.p. 3″ [77mm]		**Pipes**		**C**	**c^0**	**c^1**	**c^2**	**c^3**	**a^3**	**Conception**
1. Montre 16′	*Wood*	5		251x197	210x164 (E)	—	—	—	—	New scale; C-E wood
	HaSpot	53		201 (F)	147	85.5	50	30	21	From F in the facade
2. Montre 8′	*HaTin*	58		155	89	51	32	21	14	New scale; 250mm feet
3. Spillpfeife 8′	*HaLead*	58		157	99	62.2	39.2	25	18	Welleseley/Tallahassee (Stellwagen)
4. Octave 4′	*HaTin*	58		89	50.5	30	19	12	8.5	New scale
5. Offenflöte 4′	*HaLead*	58		94.5	61	40	25	16	11	New scale; 250mm feet
6. Quinte 2⅔′	*HaSpot*	58		54	30	18	11.1	7.1	5	Tallahassee scale
7. Doublette 2′	*HaTin*	58		48	27	17.2	10.8	6.8	4.9	Tallahassee scale; 250mm feet
8. Terz 1⅗′	*HaSpot*	54		34.5	20.5	12.5	7.9	5.1	4.2 (f^3)	Tallahassee, from Great 12th
9. Mixture IV-VI	*HaSpot*	278	1⅓′	29	18	11.1	7.1	4.4	—	Tallahassee scale
			C:	*1⅓*	*1*	*⅔*	*½*			Richmond/Roanoke composition
			c^0:	*2*	*1⅓*	*1*	*⅔*			
			$f^{\sharp 0}$:	*2⅔*	*2*	*1⅓*	*1*	*⅔*		
			c^1:	*4*	*2⅔*	*2*	*1⅓*	*1*		
			$f^{\sharp 1}$:	*5⅓**	*4*	*2⅔*	*2*	*1⅓*	*1*	
			c^2:	*5⅓**	*4*	*2⅔*	*2*	*1⅓*	*1⅓*	
			$c^{\sharp 3}$:	*5⅓**	*4*	*2⅔*	*2*			
			$f^{\sharp 3}$:	*5⅓**	*4*	*2⅔*				
				** 5⅓′ rank sounds only if Montre 16′ is also drawn.*						
10. Trompette 8′		58		125	99	79	63	50	45 (f^3)	"E3" Cavaillé-Coll scale, 5/6 cut
11. Cromorne 8′		58		44	39	34	29	29		Diameters are not graduated

SWELL| 58 notes, w.p. 3″ [77mm]		**Pipes**	**C**	**c^0**	**c^1**	**c^2**	**c^3**	**a^3**	**Conception**
12. Viole de gambe 8′	*HaTin*	58	100	64.5	41.5	26.4	17	11.8	Greenville; 4/17 MW
13. Voix céleste 8′	*HaTin*	46	—	57	36	22.3	14	10	Greenville; 2/9 MW
14. Flûte traversière 8′	*HaSpot/HaTin*	58	135	78	56	42	28	19	New scale; C-c^0 tapered
					51 (e^1)	52.2 (f^2)			7:8, diameters graduated to cylindrical at c^1

15. Bourdon 8′	*Wood*	12		130x102	78x60 (B)	—	—	—	—	Chicago; chimneys g^0-c^3
	HaLead	46		—	73	47	30.5	21	17	$c^{\sharp 3}$-a^3 open & tapered 2:3
16. Prestant 4′	*HaSpot*	58		82	46	27	17.2	11	7.4	New scale; no *expression* slots; 250mm feet
17. Flûte octaviante 4′	*HaTin*	58		68	51	38	25.5	16	11	Gainesville/Tallahassee; harmonic at g^0
					44.5 ($f^{\sharp 0}$)	45.7 (g^0)				
18. Octavin 2′	*HaTin*	58		54	39	23	14	9	6.2	Rice/Tallahassee; harmonic at c^0
				38.2 (B)						
19. Cornet II	*HaLead*	58	2⅔′	62.5	41.2	26.2	17.5	13	8.2	Chicago/Tallahassee/12th; taper 2:3, 250mm feet
	HaLead	54	1⅗′	41.2	27.1	17.9	11.8	8.4	6.5 (f^3)	Chicago/Tallahassee/17th; 250mm feet
20. Plein jeu IV	*HaTin*	223	2′	43	23	14	8.7	5.6	3.6	Shoreview/Tallahassee scale
			C	*2*	*1*	*⅔*	*½*			Chicago/Tallahassee composition
			$f^{\sharp 0}$	*2*	*1⅓*	*1*	*⅔*			
			$f^{\sharp 1}$	*2⅔*	*2*	*1⅓*	*1*			
			$f^{\sharp 2}$	*4*	*2⅔*	*2*	*1⅓*			
			$c^{\sharp 3}$	*4*	*2⅔*	*2*				
21. Basson 16′		58		138	107	84	65	51	34	“H5” C.-C. scale, *Taille II*
22. Trompette 8′		58		111	88	70	56	44	39 (f^3)	“E5” C.-C. scale, 6/7 cut
23. Hautbois 8′		58		66	51	63	51	52	47 (f^3)	C-b^0=“G4” C.-C. Basson/Meyerson Hautbois
					38 (b^0)			47 (e^2)	58 (f^2)	Harmonic-length resonators from f^2

PEDAL | 30 notes, w.p. 3½″ [88mm]				**C**	**c^0**	**c^1**	**f^1**	**Conception**
24. Montre 16′				—	—	—	—	From No. 1 [Great]
25. Soubasse 16′	*Wood*	30		240x188	136x106	83x65	70x55	Chicago
26. Octave 8′	*HaLead*	30		155	92	57	46.5	Evansville/Tallahassee; 5:6 Taper
27. Spillpfeife 8′				—	—	—	—	From No. 3 [Great]
28. Octave 4′	*HaLead*	30		91	52	32	26	Tallahassee
29. Posaune 16′	*Common*	30		209	150	108	94	Seattle, Gainesville, Shoreview
								Dedesdorf shallots [Köhler 1742]
30. Trompette 8′				—	—	—	—	Alternates with No. 10 [Great]

LEXINGTON PRESBYTERIAN CHURCH
LEXINGTON, VIRGINIA

LEGEND

~	Approximate
BurTin	Burnished tin
C.-C.	Cavaillé-Coll
Stellwagen	Refers to an extraordinary stop of surprisingly large scale still extant in the Friedrich Stellwagen organ at St. Jakobi, Lübeck, Germany [1637]
Cut	Refers to the width of the shallot cut-away in proportion to the segment of a circle, a factor thereby affecting the depth.
Grosse taille	Large size
HaLead	Hammered lead
HaSpot	Hammered spotted metal
HaTin	Hammered tin
Taille II	Shallot size #2
w.p.	Wind pressure
MW	Mouth width

PLACE NAME LEGEND

The conception for a stop can come from historical precedents or special scales created for previous projects and acoustic/cubic size.

These are assigned a code stating opus/division/stop/pitch, for instance: 127G4F would translate as Opus 127, Great Spire Flute 4′. For this table, the code has been translated simply as the place name.

OPUS	INSTRUMENT
72	Wellesley College, Wellesley, Massachusetts
98	First Presbyterian, Evansville, Illinois
100	Meyerson Concert Hall, Dallas, Texas
109	Rice University, Houston, Texas
112	St. James' Episcopal, Richmond, Virginia
114	Benaroya Hall, Seattle, Washington
119	First Presbyterian, Gainesville, Florida
122	Shepherd of the Hills Lutheran, Shoreview, Minnesota
123	St. Chrysostom's Episcopal, Chicago, Illinois
124	Christ Church, Roanoke, Virginia
126	St. Paul's Episcopal, Greenville, North Carolina
127	St. John's Episcopal, Tallahassee, Florida

CAVAILLÉ-COLL SCALING IS BASED ON STRICT MATHEMATICAL formulas, and is primarily concerned with only two numbers: the starting diameter of C1, and the diameter of C49. What happens in between is straight-line scaling based on a specific halving ratio selected by the builder. Standardized scales are found in once-secret factory ledgers and manuscripts that are now becoming more widely disseminated. The starting C1 diameters of various flue and reed stops are referenced by numbers or number-letter combinations, such as *Salicional* "5" or *Gamba* "8"; the larger the number, the smaller the starting diameter. Next, the size of note C49 is chosen by selecting a halving formula, referred to as a *Progression*. Number 8 is the highest, and equals halving on the 17th note. As the *Progression* number gets smaller, the halving ratio increases, or slows down. Therefore, as one selects decreasing *Progression* numbers, the size of note C49 gets larger, and by virtue of the straight line scaling, the treble pipe scales increase. For reed pipes, where the scale progression will be much slower than flue pipes, the reed scales will have lower *Progression* numbers, perhaps as low as "2", where the C49 resonator would be fully half as large as bass C1. *Diapason* refers to the basic scale patterns for the principal-toned foundation stops, whereas *Diapason normal* referred to the late-nineteenth century standardized pitch of A435.

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Classic ORGAN WORKS

OLD CABELL HALL
UNIVERSITY OF VIRGINIA | CHARLOTTESVILLE, VIRGINIA
The Ernest M. Skinner Company, Organ No. 127, 1906

ESSAY I BY **JONATHAN AMBROSINO**

The Old Cabell Hall Skinner

ERNEST M. SKINNER'S OPUS 127, BUILT IN 1906, IS THAT BUILDER'S oldest extant instrument. It was retrofitted into Old Cabell Hall, which had not been designed to house a pipe organ. The instrument is divided into two chambers at the front balcony edges behind large facades, with Great and Pedal on the left, Swell and Choir at the right.

Now 117 years old, Opus 127 provides a window into Skinner's earliest mechanical and tonal style. The windchests continue a pattern Skinner developed for the Hutchings firm, in which the rows of pipe pouches are mounted vertically within each stop chamber, admitting wind up the chest partitions (as opposed to the style perfected in 1911, with pouch rails mounted horizontally directly under the toeholes). Another early feature found here is the so-called "bat-wing" console, a miniaturized and all-electric mobile keydesk (doubtless inspired by Robert Hope-Jones' pioneering electrical work of the 1890s), in which the stopjambs hinge inward for storage purposes, the whole operating on a blind combination action with a setterboard.

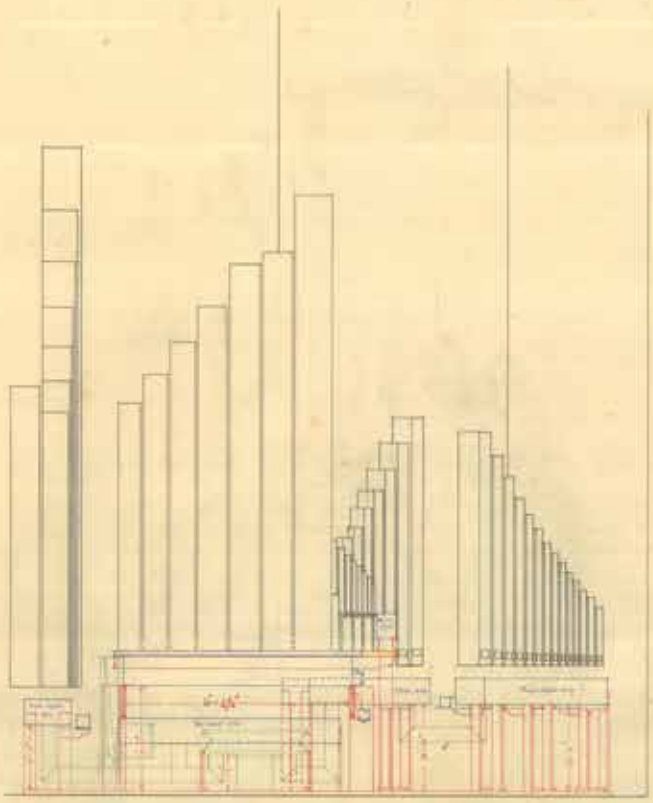
These early organs featured an unusual type of coupling and electrical signaling. In almost all electric-action organs prior to the advent of solid-state control systems, contacts under the keys either included individual contacts for every coupler on the affiliated clavier, or drove a remote relay. In these early Skinner organs, as with later Hutchings examples, coupling was achieved within the magnets themselves, individual windings corresponding to the specified couplers. This system proved too complex for practicability and was abandoned by 1911.

Tonally, one sees novelty less in the stops themselves and more in how they are made available to the player. Having the Swell and Choir share an enclosure is typical in other smaller pre-1918 Skinners. Here the Swell seems the master department, lending some stops to the Swell and others to the Choir, providing the organ's swelling power over the Great's stolid foundations. The organ is early enough that pressures more common in turn-of-last-century organs are employed, as is the voicing style–more a late-nineteenth-century product than foretelling the symphonic style yet to come.

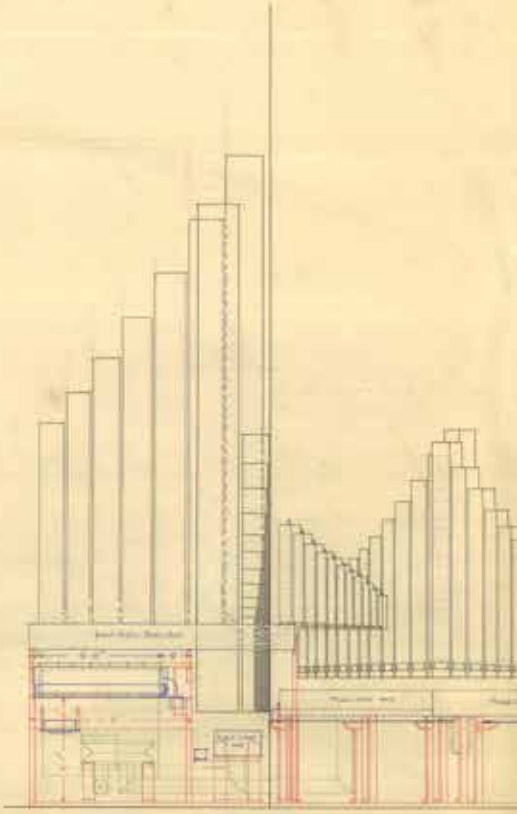
PHOTOS ABOVE AND BELOW RIGHT William T. Van Pelt

CHARLOTTESVILLE, VIRGINIA

OLD CABELL HALL

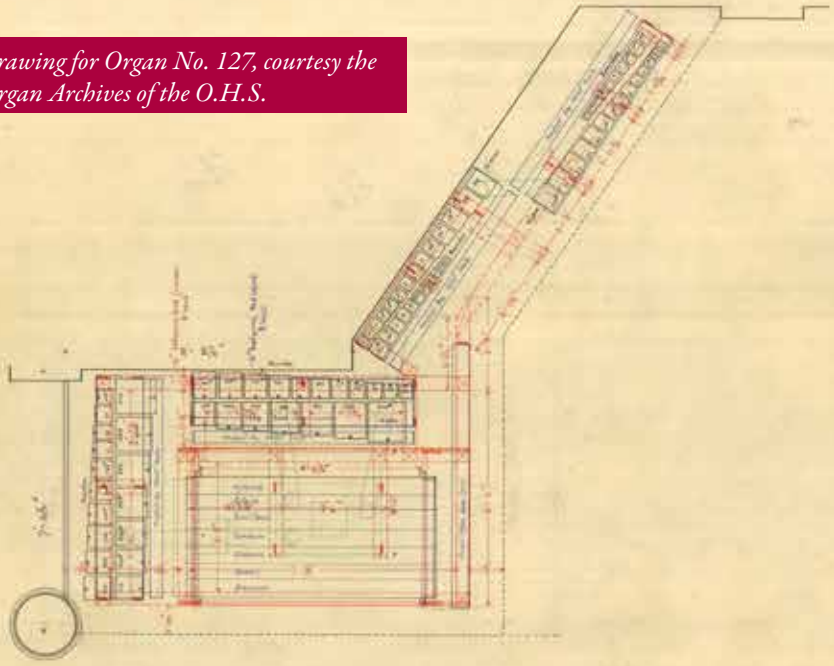


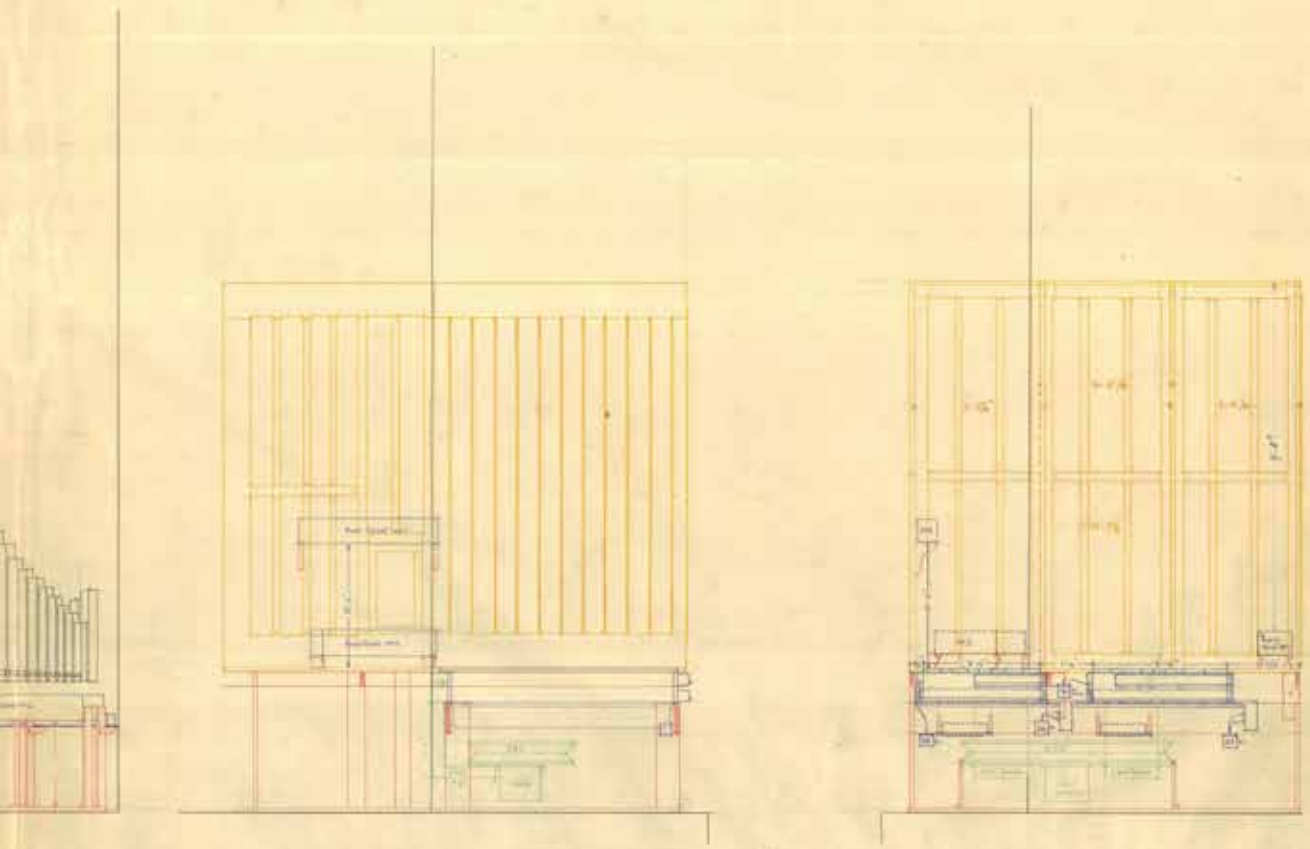
Elevation of Great Organ Front View



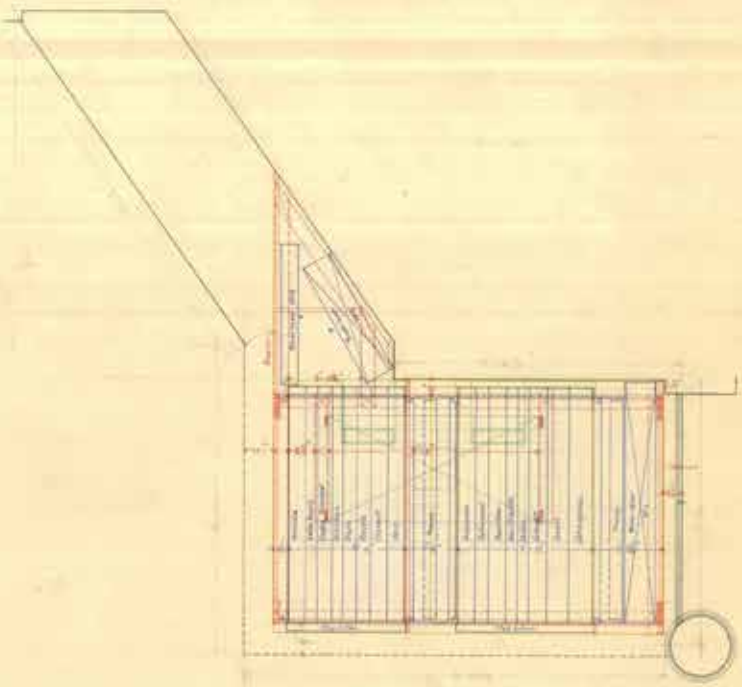
Elevation of Great Organ Side View

The layout drawing for Organ No. 127, courtesy the American Organ Archives of the O.H.S.






Couplers
Swell to Swell 4'
Swell to Swell 16'
Swell to Great
Swell to Great 4'
Swell to Great 16'
Swell to Choir
Great to Pedal
Great to Swell
Choir to Great
Choir to Choir 16'
Choir to Pedal
Swell to Pedal
Combinations
Great to Pedal
Swell to Pedal
Choir to Pedal
General Release
Pedal Release
Great to Pedal Reversible
Balanced Swell Pedal
Balanced Crescendo
Electric Action
Motor



OLD CABELL HALL

ESSAY II BY **SCOT HUNTINGTON**

The Hutchings-Skinner Side-bar Actions

THE SIDE-BAR PITMAN ACTION WAS PIONEERED BY ERNEST Skinner while working for Geo. S. Hutchings in Boston (1890–1902). Previous to the invention of the pitman, the single stop-channel actions all utilized a ventil stop action to energize and exhaust the stop cells. There were several disadvantages to the ventil actions using leather pneumatics instead of cone valves: the stressing of the valve pneumatics each time the cell was winded, with large combinations the number of pneumatics exhausting at once choked the exhaust channel causing sluggish response, and the on-off action of a stop was slow by performer standards.[1] Skinner's invention of the pitman eliminated both problems–all stop channels were live-winded whenever the organ was on, and the stop action via the pitman movement was instantaneous.

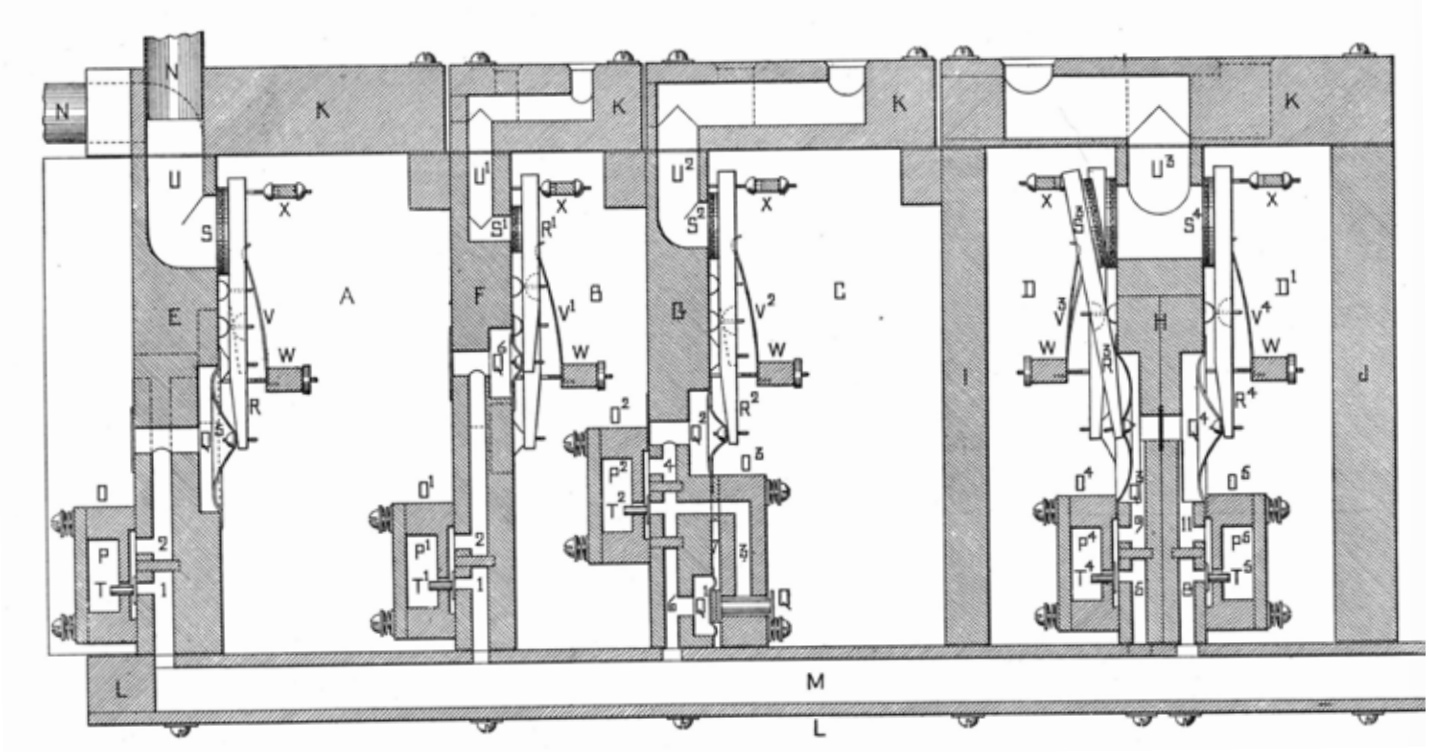
The side-bar chest developed by Roosevelt used a small wedge pneumatic connected to a valve and lever. The units were held in place by small dags and were easily removable for repair or adjustment. The Hutchings-Skinner refinement replaced the individual pneumatics with circular pneumatic bowls bored into the side bar and covered with long continuous sheets of pneumatic leather. While access to repair an individual valve problem was difficult at best, an entire action bar was individually removable from the chest frame so it could be releathered on a bench. It is a mystery to modern restorers how the pneumatics were leathered with such broad leaves of leather, giving the proper bag to each note. Modern restorations of these chests use individual pneumatic valve punchings instead with the same effect and much less labor-intensive installation.

Ernest Skinner saw the circuitous wind path in the side-bar chest with its three 90° bends as a disadvantage[2], leading him to develop the modern chest refinement with the valve directly below the pipe foot. Voicers realize the pneumatic blow from the under-action into the pipe foot requires a high-languid, nicked approach with the pipe voicing tending to the slow side. Voicers can also appreciate the circuitous wind path of the cone-valve and side-bar pneumatic chests, which functions as effective expansion chambers, cushioning the pneumatic blow into the pipe foot. This allows for quicker voicing treatments and reduced nicking, with a more relaxed pipe speech onset–today considered an asset rather than a liability. Restorers need to consider the type of action a legacy pipe was voiced for when debating the issue of historic chest restoration versus replacement. Realizing the shortcomings of the side-bar pitman chest and how to remedy them, can help the restorer make a side-bar chest as reliable as a modern under-pipe pitman action.

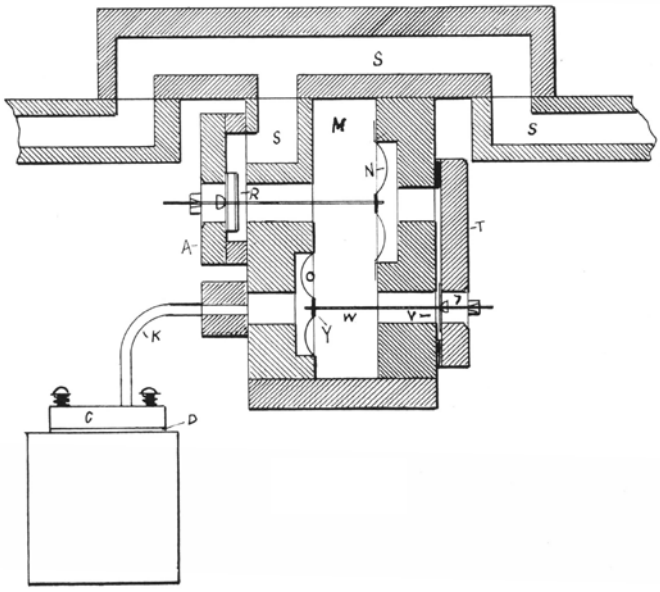
The early forms of the standard ventil and Hutchings actions were seasonally unstable, with leaking at both the toeboard and bottom board junctions, requiring a constant tightening of their screws to get rid of ciphers, runs, and pipe robbing from leaks. At some point, Hutchings realized that by covering the top side of the windchest with rubber cloth, it could be made airtight even with all the toeboards removed, solving the leakage problem (a loose toeboard might still leak under the pipe, but without the attendant ciphering.) The invention and eventual application of the screw compression spring kept toe and bottom boards under constant tension and could be retrofitted in the restoration of older ventil actions exhibiting similar leakage malfunctions. The restorer can further increase airtight reliability of the toe and bottom board by increasing the compressibility and thickness of the gasket material. The original gasketing in Hutchings actions was bellows and pallet-grade sheep skin, which will compress, becoming thin and hard over time, losing sealing ability. Substituting a supple, medium-thickness packing leather (cow) or an evenly-thicknessed gasometer leather in combination with compression springs will solve the leakage problems.

1. Ernest M. Skinner, *The Composition of the Organ.* Ann Arbor; Melvin Light, 1981. 96
2. *Ibid.,* 98-99

CHARLOTTESVILLE, VIRGINIA



Hutchings-Skinner old-style side-bar pitman chest action. The pouch leather is laid down in sheets, exactly how is a mystery. Detailed description in Audsley The Art of Organbuilding, Vol. II; *1905, 344-348.* FROM LEFT TO RIGHT: *action to facade tubing; small valve; large valve; duplex action with primary-note impulses fed through adjacent channels in the bottom board.*



The improved Skinner e-p double primary, adapted from early electric and tubular primaries he developed for Hutchings and early Skinner actions. In the Hutchings side-bar pitman chests, the magnet is part of the primary action assembly, not a separate unit as it was in the Skinner actions. The double primary was developed to overcome the slowness of the early low-voltage, battery-powered magnets operating on 11 volts or less.

EDITOR: The organ in Old Cabell Hall is the oldest extant instrument by Ernest Skinner, and miraculously, survived to present times in unaltered condition. In recognition of this singular distinction, the A. Thompson-Allen Company approached the instrument's 1983 restoration in a very conservative and sympathetic manner in order to preserve the only intact example of such early technology. One aspect of the instrument's problematic early technology was its all-electric console and detachable cable–required by the customer so the console could be stored away in an off-stage closet. A second issue proved to be the windchest bottom boards which resisted being kept tight and required successive modifications to overcome the problem. Following the reinstallation, the original antique cable connector proved unreliable, and the cable was hard wired, then later, again made detachable by another builder. In the intervening decades since the restoration, a number of technicians have worked on the instrument, changing several aspects of the restoration that were carefully conserved in 1983. The magnets contain separate windings for each of the couplers as well as the duplexed stops. The organ is used for ceremonial occasions and student practice. Ken Cowan played the 100th-anniversary concert in October, 2006.

OLD CABELL HALL

The Ernest M. Skinner Company, Organ No. 127, 1906
Old Cabell Hall
University of Virginia
Charlottesville, Virginia

COMPASSES: 61/30
CONSOLE: Moveable, batwing
COMBINATION ACTION: Blind with setterboard

GREAT [UNENCLOSED]

16′	Diapason[1]	
8′	Diapason	
8′	Gross Floete	
8′	Gamba[2]	
8′	Erzähler[3]	
8′	Gedackt	SW
4′	Octave	
2′	Fifteenth	
8′	Cornopean	SW

SWELL [ENCLOSED]

16′	Bourdon	
8′	Diapason	
8′	Salicional	
8′	Voix Celestes[4]	
8′	Gedackt	
8′	Dulciana	
4′	Flute	
4′	Violin	
2′	Piccolo	
3 Rks.	Cornet	
8′	Cornopean	
8′	Oboe	
	Tremolo	

CHOIR [ENCLOSED WITH SWELL AND DUPLEXED]

8′	Geigen Principal	
8′	Melodia	
8′	Dulciana	SW
8′	Unda Maris[5]	[t.c.]
4′	Flute	SW
2′	Piccolo	SW
8′	Clarinet	
8′	Oboe	SW
	Tremolo	

1. C-E stopped 8′ with 5⅓′ "monkey quints".
2. Prepared-for in the contract, installed during construction.
3. Contract: Gemshorn 8′
4. Draws Salicional 8′
5. Draws Dulciana 8′

PEDAL [UNENCLOSED]

16′	Diapason	
16′	First Bourdon	
16′	Second Bourdon	SW
8′	Floete	[ext. Diap.]
8′	Gedackt	SW
8′	'Cello[6]	SW

COUPLERS

Swell to Swell 16′, 4′
Swell to Great
Swell to Great 16′, 4′
Choir to Great
Choir to Great 16′
Great to Swell
Swell to Choir
Great to Pedal
Swell to Pedal
Choir to Pedal

MECHANICALS

Balanced Swell Pedal
Balanced Crescendo Pedal
Great to Pedal Reversible
Blind Combinations with Indicator Lights:
- 0-4 Swell and Pedal
- 0-3 Great and Pedal
- 0-2 Choir and Pedal

SOURCE: 1906 contract, courtesy the American Organ Archives.

6. Draws both Salicional and Voix Celeste ranks

TOP LEFT: *Hutchings-Skinner style side-bar chest, bottom board removed showing the single-sheet leather pouch coverings, the pitman rail mounted to the side of the valve bar, the lever-action valves, and note-channel borings into the underside of the side bars to receive the pneumatic note signal from the bottom board channeling.*

TOP RIGHT: *Stop-action box at bass end of a Hutchings-Skinner style windchest for energizing or exhausting the pitman rails.*

LEFT: *Scot Huntington, with John van Houten of Czelusniak et Dugal, review a Hutchings chest under restoration with new rubber cloth top-side covering added to seal the stop cells. Note the oval wind inlet holes for the stop channels at the treble end of the windchest, constantly live-winded from a chest-end plenum.*

ALL PHOTOS COURTESY CZELUSNIAK ET DUGAL

ST. PAUL'S EPISCOPAL CHURCH

ST. PAUL'S EPISCOPAL CHURCH | IVY, VIRGINIA

Schoenstein & Co., Opus 152, 2005

ESSAY BY JACK BETHARDS

PHOTOS WILLIAM T. VAN PELT

SOLVING PIPE ORGAN PROBLEMS IS ENDLESSLY FASCINATING. I find each new job as intriguing as when I took my first look behind the front pipes in 1948, when the Schoensteins came to electrify the 19th-century Thomas Whalley organ in our church–the wonders of tracker and e-p in one mysterious package! Meeting challenges keeps organbuilding exciting. Just about every job has them–acoustics, placement, space, environment, unrealistic stoplist dreams, limited funds, etc. These are the spices of the organ business. St. Paul's Episcopal Church, Ivy, Virginia, offered two obstacles. One was the usual lack of space for a design as comprehensive as what the client envisioned. The second was unique in our experience–a very large acoustically dead spot with a significant amount of congregational seating area *under* the choir loft. Here is how we approached each of these.

Supporting the Anglican choral service requires exceptional color variety and dynamic range. Without the spatial depth needed for a double-expressive Swell, we decided to put the chorus reed, mixture and keen strings in a separate box with borrows to both Swell and Great. This allowed the power elements (*Trumpet* and *Mixture*) and the ethereal element (*Celeste*) to be used at various loudness levels in either the Great or Swell and make a convincing Full Swell crescendo possible. This concept was first used on an even smaller two-manual job at the historic Franklin Presbyterian Church in Franklin, Tennessee with great success. Since a third manual is helpful, especially in complex choir accompaniment, a Solo manual with the afore mentioned tonal elements along with selected accompanimental stops borrowed from the Swell and Great was added.

As to the acoustical blind spot, one's first thought is usually an Antiphonal division. We, however, try to make that our last thought. In our experience, Antiphonals can be grossly expensive, difficult to service, often out of tune, and sometimes so loud and piercing that they reflect badly on the main instrument. If the problem is simply giving people in the back pews something to hang on to while singing a hymn, all that is needed is a tone in unison with the voice to support the melody line. Our ideal Antiphonal is a single eight-foot diapason of moderate scale. This has worked well even in large rooms. Upperwork is not needed, and sixteen-foot tone is helpful only if the room is very bass weak and a processing choir needs rhythmic support. In light of the unusual acoustical situation at St. Paul's, and after considering our options, we ultimately decided to add a tiny "Antiphonal" on the main floor in the narthex behind the last row of pews. Its single tonal element is a tenor-c *Dulciana*–the name we use for the smallest member of the diapason family. It is quite surprising how it gives the illusion of the entire ensemble of the main organ reaching the back pews, yet it is soft enough to remain unnoticed as a separate instrument. Like the ideal Echo organ, its tone is not focused to one location and seems to come from everywhere.

A few other design elements may be of interest. Room for space-consuming pipework was severely limited, requiring judicious planning for the disposition of the bass elements. We placed the *16′ Bourdon* unenclosed in the Great for maximum tone projection. Conversely, the harmonically-rich *16′ Diapason* is found in the Swell where it can effectively be put under maximum dynamic control. The *Nazard* borrow may raise eyebrows. We have found this a very useful color element on small instruments. Due to the breadth of *Chimney Flute* tone, the slight tuning difference between a borrowed pipe in equal temperament and a pure-tuned independent fifth-sounding mutation rank is not noticed in normal playing. The two wood flutes found here and in many of our instruments have an interesting origin. The *Claribel Flute* and *Stopped Diapason* are exact copies of stops made by the Murray M. Harris (later the Los Angeles Art Organ Co.) organ companies. Sadly, the name *Melodia* is now passé, so we now typically refer to the open-wood flute stop as a *Claribel Flute* or *Concert Flute.*

We are honored to have this instrument included in the AIO Convention program accompanying the most powerful hymn singers in America!

Antiphonal Dulciana

IVY, VIRGINIA

ST. PAUL'S EPISCOPAL CHURCH

IVY, VIRGINIA

Schoenstein & Co., Opus 152, 2005
St. Paul's Episcopal Church
Ivy, Virginia

Three manuals, 16 voices, 18 ranks, drawknob console

GREAT II (Unenclosed)

		PIPES
16′	Bourdon	12
8′	Open Diapason	61
8′	Claribel Flute	61
8′	Dulciana [Nave]	
8′	Stopped Diapason [Swell]	
4′	Principal	61
2′	Mixture [Solo]	
8′	Trumpet [Solo]	
	Great 4′	

SWELL III (Enclosed)

16′	Diapason	12
8′	Small Open Diapason	61
8′	Gamba [Solo]	
8′	Celeste [t.c. Solo]	
8′	Stopped Diapason	61
4′	Fugara	61
4′	Chimney Flute	61
2⅔′	Twelfth [t.c.] *ext. Nineteenth*	
2⅔′	Nazard *ext. Chimney Flute*	
2′	Fifteenth	12
1⅗′	Seventeenth [t.c.]	42
1⅓′	Nineteenth	56
16′	Contra Oboe	12
8′	Trumpet [Solo]	
8′	Oboe	61
	Tremulant	
	Swell 16′	
	Swell Unison Off	
	Swell 4′	

SOLO I (Enclosed)

8′	Open Diapason [Great]	
8′	Claribel Flute [Great]	
8′	Small Open Diapason [Swell]	
4′	Fugara [Swell]	
2′	Mixture [III ranks]	183
8′	Gamba	61
8′	Celeste [t.c.]	49
8′	Trumpet	61
8′	Oboe [Swell]	
	Solo 16′	
	Solo Unison Off	
	Solo 4′	
	Cymbelstern	

NAVE I (Unenclosed)

8′	Dulciana [t.c.]	49

PEDAL

16′	Diapason [Swell]	
16′	Bourdon [Great]	
8′	Principal	32
8′	Open Diapason [Swell]	
8′	Stopped Diapason [Swell]	
4′	Fifteenth	12
4′	Flute [Swell]	
16′	Contra Oboe [Swell]	
8′	Trumpet [Solo]	
4′	Oboe [Solo]	

COUPLERS AND MECHANICALS

Swell to Great	Swell to Solo
Swell to Great 16′	Great to Pedal
Swell to Great 4′	Swell to Pedal
Solo to Great	Swell to Pedal 4′
Solo to Great 16′	Solo to Pedal
Solo to Great 4′	Solo to Pedal 4′

Swell to Great reversible piston
Great to Pedal reversible piston and toe stud
Swell to Pedal reversible piston and toe stud
Cymbelstern reversible piston and toe stud
Swell and Solo balanced expression pedals

DETAILS

Three manual and pedal American-style drawknob console with bench.
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Ebony drawstops with brass shanks
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- Generals pistons 1-10 and toe studs
- Great 1-6
- Swell 1-8
- Solo 1-6
- Cancel
- Setter
- Programmable piston range for each memory level.

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ST. PAUL'S MEMORIAL CHURCH

ST. PAUL'S MEMORIAL CHURCH | CHARLOTTESVILLE, VIRGINIA

Skinner Organ Company, Inc., Organ No. 597

ESSAY BY JONATHAN AMBROSINO

The Skinner Westfield Plant

IN 1921, ERNEST SKINNER'S BUSINESS WAS IN A POST-WAR delirium. Since 1905, The Ernest M. Skinner Company had completed some 200 instruments, among them prestigious installations in Boston, New York, Chicago, and Portland, Oregon, as well as specialized roll-playing instruments. In 1919, the company was reorganized as the "Skinner Organ Company" after the injection of a fount of capital from rubber baron Arthur Hudson Marks. Having taken fourteen years to produce its first 200 organs, the Skinner Organ Company produced its next hundred in just three years and would reach a pace of 50-60 instruments annually through the middle of 1930.

Part of this expanded capacity came in 1914, when Skinner enlarged his Dorchester (Boston) plant to incorporate a pipe shop and additional workspace. In 1920, additional capacity came through the acquisition of the Steere Organ Company of Springfield, Massachusetts, upon the latter's failure that year following a disastrous fire. In Skinner's absorption of Steere, all the open SOC contracts were transferred to Skinner, the ruined Springfield plant was abandoned and its staff of 45 reorganized at Westfield, Massachusetts in premises formerly occupied by the Emmons Howard and William Johnson & Son concerns. In 1924, George Catlin, the Skinner treasurer, wrote that Skinner's southern agent, Harchung Tchakarian, alone sold enough organs to justify the Westfield plant's existence.

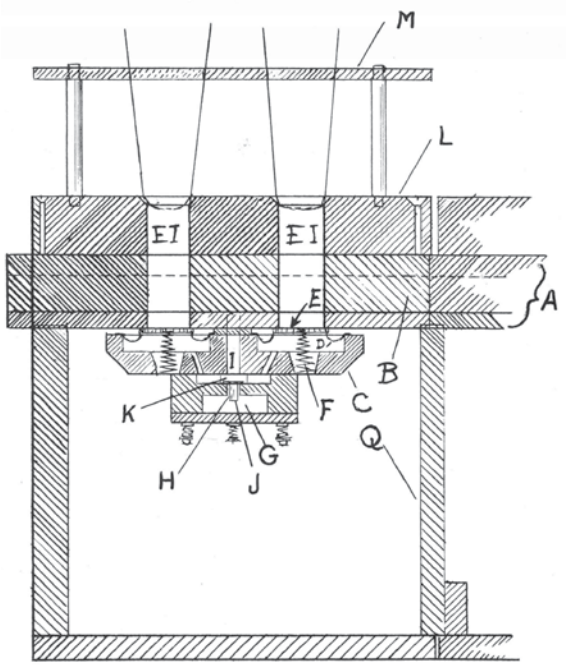
Seen broadly, Steere work up to 1920 can be viewd as a variant of Skinner's, with almost identical mechanical and tonal principles, simply expressed differently. For example, Steere developed a horizontal pouch rail pitman chest almost simultaneously with Skinner (1911 for Skinner, 1912 for Steere), and much about their tonal and console approach remained alike. Indeed, Steere might have proved a formidable 1920s rival to Skinner, with decades of successful work and the bulky triumph of their immense organ for Yale University's Woolsey Hall in 1915. At first, Westfield Skinners were nothing more than the standard Steere product with a new nameplate. The wind systems, windchests, pipes, and console technology all remained as they had been developed by Steere. Beginning in 1924, more precise details of Dorchester factory construction began to be assimilated into Westfield practice, and by late 1928, when the Skinner company closed the Westfield plant, the differences were subtle indeed: segmented primary valve boards; bifold chamber doors; more generous curving on reservoir corners; the occasional triple-valve primary for 16-foot notes–to name the most obvious.

Harry Van Wart, Steere's superintendent and a former colleague of Skinner's from Geo. S. Hutchings in the 1890s, ran the Westfield plant until 1922, when a domestic divorce action compelled him to leave Massachusetts. He remained out of organbuilding until 1929, when he was engaged by Midmer-Losh to superintend construction of the Atlantic City Convention Hall Organ. He was succeeded at Skinner by Leslie Leet who, in turn, left abruptly in 1926 to manage Aeolian's organ factory at Garwood, New Jersey. The nature of his departure, coupled with Leet's cheeky plagiarism of the 1928 Princeton University Skinner stoplist for Aeolian's 1932 organ for Duke University, were doubtless still fresh in the minds of Skinner management when Aeolian and Skinner merged in early 1932.

Regardless of factory origin, all Skinner specifications were approved by Skinner himself or Vice President William E. Zeuch. For example, the scaling indications for Opus 708 are all clearly in Skinner's own handwriting. The progress of Westfield jobs seems to have been at least partly managed through the Boston office, as there is more and revealing correspondence about these jobs than most. Westfield contracts tended to be less prestigious, but not location-specific (there were several on the island of Manhattan, for instance). When G. Donald Harrison joined Skinner in July 1927, detailed revisions to customary diapason voicing practices were issued to both factories; the one for Westfield survives.

EDITOR: The "Shop Notes" for Westfield organs, i.e. the detailed annotations of contract specifications with scaling data and mixture compositions, are no longer in the contract files held by the O.H.S. Archives. Such data was not kept in the Dorchester office, and while these files presumably existed in the Westfield office while it was in operation, they were not transferred to Dorchester when the plant was closed in 1928. According to Allen Kinzey, ex-Aeolian-Skinner employee, Oscar Pearson, Skinner's head reed voicer, would be dispatched to Westfield to voice reeds for that plant's organs–why they weren't made and voiced in Dorchester and shipped by train to Westfield is a valid question and would seem to have been a more efficient use of manpower than shipping the voicer to Westfield in order to voice the reeds there. Pearson fastidiously kept a log of the reeds he voiced in Dorchester, and presumably did in Westfield as well, and that log, too, did not make the transition to the home office after the plant was shuttered.

2023 console PHOTO William T. Van Pelt



Standard post-1911 Skinner pitman chest as shown in: Skinner, The Composition of the Organ, *1981, 97-102.*

Design proposal for 2023 facade, under construction by the Greenleaf Organ Company.

ST. PAUL'S MEMORIAL CHURCH

Skinner Organ Company, Inc., 1926, Organ No. 597
St. Paul's Memorial Church
Charlottesville, Virginia

Original stoplist (contract), with ca. 2000 tonal changes in *blue*.

(41 Stops, 36 Ranks, 2,359 pipes)

GREAT ORGAN (unenclosed)

16′	Bourdon (Ped.)	17 pipes
8′	First Diapason	61 pipes
8′	Second Diapason	61 pipes
8′	Claribel Flute	61 pipes
4′	Octave	61 pipes
2⅔′	*Twelfth*	*61 pipes*
2′	*Fifteenth*	*61 pipes*
8′	*Duisit Tromba*	*61 pipes*
4′	*Clarion*	*12 pipes*

SWELL ORGAN (Expressive)

16′	Bourdon	73 pipes
8′	Diapason	73 pipes
8′	Gedeckt	73 pipes
8′	Salicional	73 pipes
8′	Voix Celeste	73 pipes
8′	Flauto Dolce	73 pipes
8′	Flute Celeste (t.c.)	61 pipes
4′	Octave	73 pipes
4′	Flute Triangulaire	73 pipes
V	Mixture	305 pipes
8′	Cornopean	73 pipes
8′	Flügel Horn	73 pipes
8′	Vox Humana	73 pipes
	Tremolo	

CHOIR ORGAN (Expressive)

8′	Concert Flute	73 pipes
8′	Dulciana	73 pipes
4′	Flute	73 pipes
2⅔′	*Nazard*	*61 pipes*
2′	*Piccolo*	*61 pipes*
1⅗′	*Tierce*	*61 pipes*
8′	Clarinet	73 pipes
	Tremolo	

SOLO ORGAN (Expressive)

8′	Tuba Mirabilis	73 pipes
8′	French Horn	73 pipes
	Tremolo	

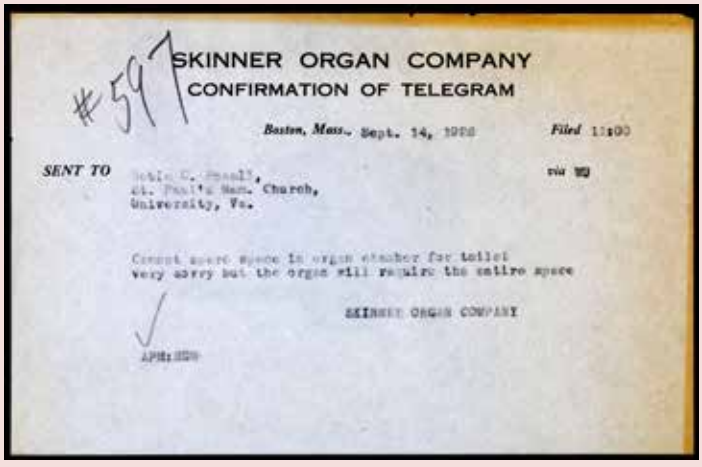
PEDAL ORGAN (two ranks, unenclosed)

32′	Resultant	—
16′	Diapason	32 pipes
16′	Bourdon	32 pipes
16′	Echo Bourdon	(Swell)
8′	Octave	12 pipes
8′	Gedeckt	12 pipes
8′	Still Gedeckt	(Swell)
4′	*Flute*	*12 pipes*
16′	*Tuba Profunda*	*12 pipes*
8′	*Trumpet*	*(Great)*

COUPLERS

Great 4′
Swell 16′, 4′
Choir 16′, 4′
Solo 16′, 4′
Swell to Great 16′, 8′, 4′
Choir to Great 16′, 8′, 4′
Solo to Great 16′, 8′ 4′
Swell to Choir 16′, 8′, 4′
Solo to Choir 16′, 8′, 4′
Great to Solo
Great, Swell, Choir, Solo to Pedal
Swell, Choir, Solo to Pedal 4′

SOURCES: O.H.S. American Organ Archives and Pipe Organ Database


SKINNER ORGAN COMPANY
CONFIRMATION OF TELEGRAM

1926 Telegram from the Skinner Organ Company

Skinner Organ Company, Inc., Organ No. 597
St. Paul's Memorial Church
Charlottesville, Virginia

POST-RESTORATION SPECIFICATION: A. Thompson-Allen Co., 2023

All pipework original except as noted.
+ Added to original specification
* Prepared for in original specification

GREAT (6″ w.p.)

16′	Bourdon (Ped)	
8′	First Diapason	
8′	Second Diapason	
8′	Claribel Flute	
4′	Octave	
4′	Harmonic Flute+	Repurposed Skinner pipework
2⅔′	Twelfth+	New, replica
2′	Fifteenth*	New, replica
8′	"Duisit" Tromba*	From No. 659

SWELL (7½″ w.p.)

16′	Bourdon	
8′	Diapason	
8′	Gedeckt	
8′	Salicional	
8′	Voix Celeste	
8′	Flauto Dolce	
8′	Flute Celeste	
4′	Octave	
4′	Flute Triangulaire	
V	Mixture	Formula A12, "English Chorus"
16′	Waldhorn*	New, replica
8′	Cornopean	
8′	Oboe D'Amour	Contract: "Flugel Horn"
8′	Vox Humana	
	Tremolo	

CHOIR (6″ w.p.)

8′	Concert Flute	
8′	Dulciana	
8′	Unda Maris+	Repurposed Skinner pipework
4′	Flute	
2⅔′	Nazard*	Repurposed Skinner pipework
2′	Piccolo+	From No. 205
1⅗′	Tierce+	Repurposed Skinner pipework
8′	Clarinet	
	Tremolo	

SOLO (7½″ and 10″ w.p.; enlarged 2023)

8′	Gamba*	From No. 659
8′	Gamba Celeste*	From No. 659
8′	Orchestral Flute+	From No. 659
8′	English Horn*	From No. 659
8′	French Horn	Original, 10″ w.p.
8′	Tuba Mirabilis	Original, 10″ w.p.
	Tremolo	

PEDAL (6″ and 8″ w.p.)

32′	Resultant	16′ + 10⅔′, *Bourdon*@32′ from c^0
16′	Diapason	
16′	Bourdon	
16′	Echo Bourdon (Sw)	
8′	Octave	ext. *Diapason*
8′	Gedeckt	ext. *Bourdon*
8′	Still Gedeckt (Sw)	
4′	Flute+	ext. *Bourdon*
16′	Trombone*	From No. 659, 8″ w.p.
16′	Waldhorn* (Sw)	
8′	Tromba*	ext. *Trombone*

COUPLERS

Great 4′
Swell 16′, 4′
Choir 16′, 4′
Solo 16′, 4′
Swell to Great 16′, 8′, 4′
Choir to Great 16′, 8′, 4′
Solo to Great 16′, 8′ 4′
Swell to Choir 16′, 8′, 4′
Solo to Choir 16′, 8′, 4′
Great to Solo
Great, Swell, Choir, Solo to Pedal
Swell, Choir, Solo to Pedal 4′

Swell *Mixture V* ("Willis" English Chorus)

C	*2*	*1⅓*	*1*	*⅔*	*½*	17 notes
f^0	*2⅔*	*2*	*1⅓*	*1*	*⅔*	11 "
e^1	*4*	*2⅔*	*2*	*1⅓*	*1*	14 "
$f♯^2$	*5⅓*	*4*	*2⅔*	*2*	*1⅓*	7 "
$c♯^3$	*8*	*5⅓*	*4*	*2⅔*	*2*	12 "

LEGACY PIPEWORK SOURCES:

No. 205: St. Thomas Episcopal Church, New York City, 1913. Altered repeatedly thereafter, including a thorough rebuild under G. Donald Harrison in 1956 as No. 205-A, altered repeatedly still further, replaced by new Dobson Opus 93, 2018.

No. 659: Residence with player attachment, M.J. Warner, Pine Orchard, Conn. 1927, enlarged 1932 as No. 659-A. Recently rescued following the sale of the property.

TRINITY EPISCOPAL CHURCH

TRINITY EPISCOPAL CHURCH | STAUNTON, VIRGINIA

Taylor and Boody Organ Builders, Opus 34, 2000

ESSAY BY GEORGE TAYLOR

PHOTOS ROBBIE LAWSON

TRINITY PARISH WAS FOUNDED IN 1746, AN ESTABLISHMENT offspring of the Church of England. From the outset, the congregation has been central to the history of the Shenandoah Valley. The first church was built on the current site and measured 40′x 25′. It was Colonial in style, with box pews and a raised pulpit. At the beginning of the Revolutionary War when Colonial parishes separated from the Church of England, Trinity closed its doors until 1781, with one notable exception. In June of that year, as the British army approached Richmond, the Virginia legislature fled first to Charlottesville and subsequently to Augusta Parish, i.e., Trinity Church. Although Governor Thomas Jefferson did not come to Staunton, Patrick Henry and Thomas Nelson, along with the rest of the legislature did. Trinity thus served as the state capitol for two weeks in June of 1781. Today we have a chair standing in the southwest corner of the chancel as a relic of that watershed moment.

The original building was replaced in 1831 and lasted until 1855 when the current church (measuring 46′ x 85′) and its tower were built in Gothic Revival style, once again on the same property. It had a central aisle and pulpit, and in keeping with Reformation sentiments–no altar. Twenty years later, the building was widened to the present 70′, adding the chancel and altar in keeping with the Oxford Movement's liturgical traditions which were just coming into vogue. When the construction work required the relocation of graves, some influential members of the congregation were infuriated and left to build a new church, Emmanuel, several blocks away. Staunton prospered during the late-19th century and no money was spared on improving Trinity's facilities. Most significant was the acquisition of an extraordinary collection of stained-glass windows, including thirteen by Louis Comfort Tiffany, all due to the beneficence of the parish's most affluent members. The fame of the collection has made the church and its windows a primary destination for visitors to the city. Four of the original windows can still be seen in the back corners under the gallery.

The first organ for Trinity was made by Henry Pilcher in 1848, and likely stood to one side at the front. It was replaced in 1854 by Henry Erben, which in turn was followed by a two-manual Pomplitz Church Organ Co. instrument in 1881. A three-manual tubular-pneumatic Emmons Howard organ replaced the Pomplitz in 1903. Together with its console, the Howard instrument occupied a great deal of prime floor space on either side of the crowded chancel and would last until it was scuttled in 1956.

Music at Trinity took a sharp turn for the better in 1939 with the appointment of Carl Broman as organist and choral director. Dr. Broman had recently joined the faculty of Mary Baldwin College. He quickly raised the standards of the choir, notably training a fine men-and-boys choir, which he took on tour to New York City to sing in the Cathedral of St. John the Divine. His most famous pupil was Frederick Swann, who grew up in Staunton as a teenager and first studied with Broman. For a musician of Broman's standards, the church's aging and outdated Howard organ, over-crowded chancel, and dead acoustics were a constant burden. Gradually he persuaded the congregation to accept the idea of moving both the organ and choir to the rear gallery. The plan coalesced in 1954 when a bequest of $44,000 enabled the church to buy a new organ. Austin Organs Inc. was invited to tender a proposal and submitted a visually striking contemporary design for a three-manual organ with 52 registers and a specification drawn up by their newly-appointed British tonal director, Richard Piper. It was a typical example of the American Classic style popular at the time and included a Positiv division on the gallery rail. In preparation for its arrival, the old gallery had to be rebuilt, framed with steel, and its railing extended to provide space for the Positiv windchest and console. The church took this opportunity to remove the original oak floor in the nave and replace it with concrete. Acoustically, this was a step in the right direction–despite the retention of carpeting in the aisles along with mite-ridden pew cushions and kneelers.

The Austin made quite a splash both visually and acoustically with its functionally-exposed pipework on the Great and Positiv. The Swell and Choir divisions were enclosed in large chambers on either side over the stairwells and camouflaged with a span of gossamer cloth covering the inward-facing shutters. The walls facing the nave were hung in heavy red velvet! Unfortunately, the height in the gallery was only 17 feet, which meant that the Great windchest, which

STAUNTON, VIRGINIA

Taylor & Boody Organ Builders
Opus 34, 2000
Trinity Episcopal Church
Staunton, Virginia

COMPASSES: 56/30
TEMPERAMENT: Bach-Kellner, A440
ACTION: Mechanical key action, electric stop action
CONTROL SYSTEM: Solid State Organ Systems

GREAT

16′ Bourdon
8′ Principal
8′ Rohrflöte
8′ Viol da Gamba
4′ Octave
4′ Spielflöte
2⅔′ Twelfth
2′ Fifteenth
IV Cornet
IV-V Mixture
16′ Fagott
8′ Trumpet

CHOIR (adjustable doors)

8′ Gedackt [oak]
8′ Viol & Celeste [f⁰]*
4′ Principal
4′ Blockflöte [oak]
2′ Octave [Flute]
8′ Trechterregal
*double-draw

COUPLERS

Choir to Great [shove]
Rückpositiv to Great
Great to Pedal
Rückpositive to Pedal
Choir to Pedal

RÜCKPOSITIVE

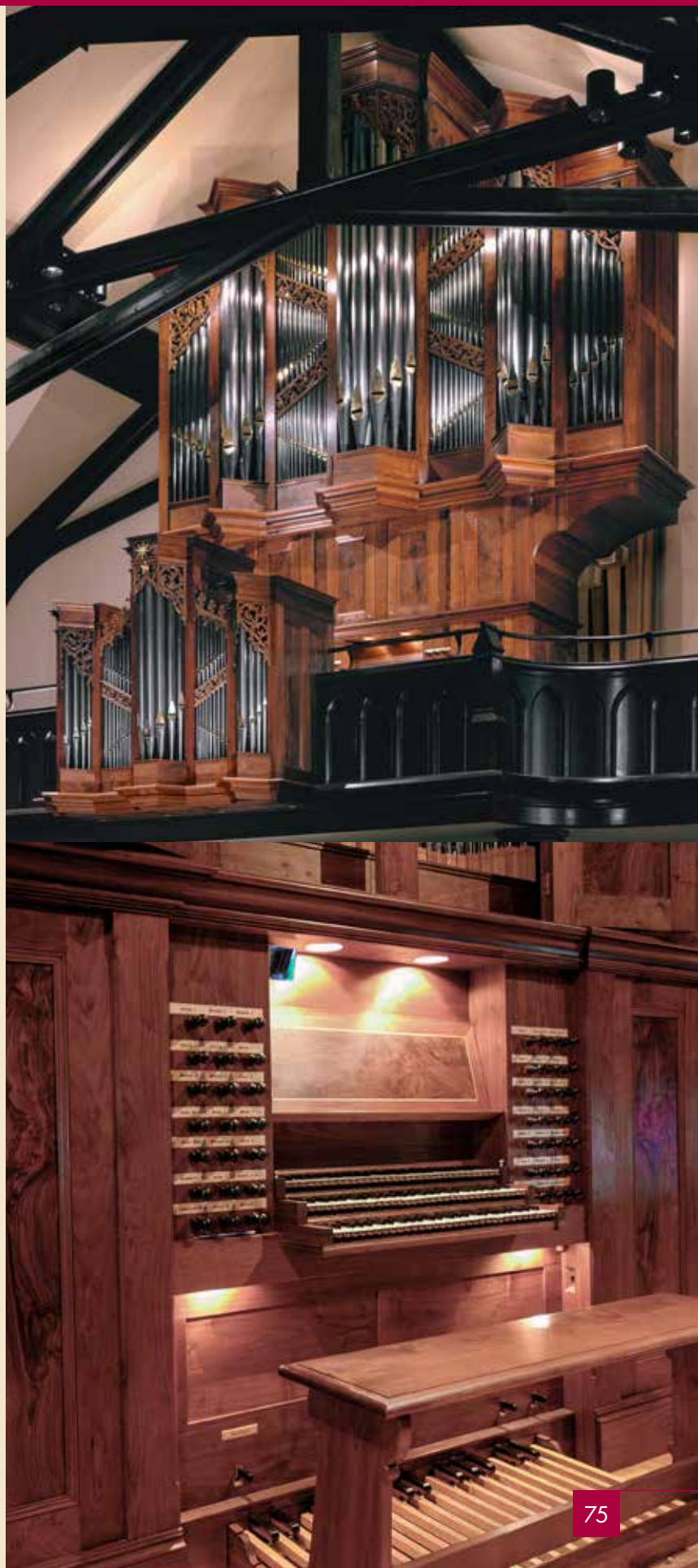
8′ Gedackt
8′ Quintadena
4′ Principal
4′ Rohrflöte
2⅔′ Nasat
2′ Octave
2′ Waldflöte
II Sesquialtera
III-IV Scharff
8′ Dulcian

PEDAL

16′ Principal
16′ Subbass
8′ Octave
4′ Octave
2′ Nachthorn
V Mixture
16′ Posaune
8′ Trompet
4′ Trompet

ACCESSORIES

Tremulant
Wind Stabilizer
Cimbelstern
Nachtigal



TRINITY EPISCOPAL CHURCH

THE KELLNER "J.S. BACH TEMPERAMENT" [1976]

This is not an antique tuning system, but rather a modern one devised by Dr. Herman Anton Kellner based on numerology, hidden meaning found in the design of Bach's signet ring, Bach's few mentions of tuning and interval relationships, and a general study of the spirituality of the Baroque epoch. The core of the temperament, the C-G-D-A-E relationship of fifths, plus the fifth B-F♯, are tuned narrow of pure by ⅕ of the Pythagorean comma, (equal temperament tempers the fifths only slightly narrow by 1/12 of the Phythagorean comma, similarly yielding a wildly out of tune third). This ⅕-comma tempering can be checked with the impure third C-E beating almost as fast as the fifth C-G, about 6 beats per second, (this interval would be a pure third in a tuning system like Kirnberger that tempers this same group even more slightly narrow in the ¼-comma meantone relationship). The remaining fifths are tuned pure, as they are in an un-tempered Phythagorean tuning (i.e. all pure fifths). The location of the pure and tempered intervals is identical with Werckmeister III [1691], with the exception that Dr. Kellner replaced Werckmeister's ¼-comma tempered intervals with ⅕, still preserving the Baroque ideal of key color, but perhaps to a less pronounced degree. In spite of empirical evidence used to develop the temperament, it is a good tuning with all keys being usable, with less tension in certain keys than are found in Werckmeister and Kirnberger.

Cents deviation from Equal Temperament, on A:

C	+10
C♯	+1
D	+3
E♭	+4
E	-3
F	+8
F♯	+1
G	+7
G♯	+2
A	0
B♭	+6
B	-2

was cantilevered over the choir, had to be crowded so close against the ceiling that it could not hold the longest pipes of an eight-foot stop. To a young organ enthusiast like me, the Austin was exciting to visit. On one hand, I recall being happy to hear the percussive chiffing *Gedackt* on the Positiv at a recital in 1961, but I was not impressed by the unrefined sound of full organ in such a dead room. Dr. Broman however, was thrilled with the instrument and under his musical hands the organ was well-received. For the last twenty years of his life, he was able to enjoy the fruits of his efforts at Trinity with an instrument up to his standards.

In the spring of 1978, John Boody and I, having recently set out on our own and working out of a small workshop in Ohio, purchased a redundant school building several miles west of Staunton for our new shop. I was the first to arrive in town on July 1st. The rest of the crew and chattels were due to show up the following week. Only later would I learn that Carl Broman had died the very day I had come to town. One cannot help but wonder about the timing of this coincidence. Two weeks later, John and I attended a recital at Trinity in Broman's memory played to a packed house by none other than Alec Wyton [St. John the Divine, St. James Madison Ave. -Ed.]. Following that event, our contact with Trinity ceased for the foreseeable future, and music making at the church was assumed for the time being by local musicians.

But then in January 1988, John Lane became Trinity's new rector and one day he suddenly appeared in our shop with a problem. Both his organist and his choir director had resigned, and he wondered if we could suggest how he might find replacements. We said would do our best to help. After several months of head scratching with no results, it suddenly struck me that Carol Harris, a professional organist and choral director from Montreal, whom I just happened to be dating, might be interested in the job. It wasn't long before the pieces fell into place, and she not only agreed to take the position at Trinity–but also to marry me. Carol made her acceptance of the position conditional on Trinity's willingness to explore ways to make acoustical improvements in the nave. A committee was duly formed and took several field trips to sing in reverberant spaces, but somewhat surprisingly, took no action. Meanwhile, she worked diligently to build an excellent choir and Trinity was once again recognized for the quality of its music. Both Boody and I even joined the choir. The Austin, which was beginning to suffer mechanically, was endured. I did have the guilty pleasure of raising the cutups of the chiffing *Gedackt* that had once so enamored me–it became a warm and lovely stop after losing its exaggerated speech. But beyond that, the church's organ future looked bleak.

However, as fortune would have it, eight years later while I was installing our first organ for New York City [St. Thomas gallery organ, 1996 -Ed.], Carol called me excitedly to say that a choir member and his wife had dropped by to tell her they would like to pledge $250,000 toward a new organ, but the gift came with four bold stipulations: first, the organ must be built by Taylor & Boody; second, the gift would have to be matched; third, the contract had to be signed by the end of the following year; and fourth, the project must include major improvements to the acoustics.

At that point the church was under serious financial strain with a huge renovation of the parish house already in progress. Although the Vestry was tempted by the organ challenge, in no way was it interested in additional fund raising or dipping further into the church's hallowed endowment. The Vestry would approve the organ project only if additional backers stepped forward to come up with the cash. An enthusiastic organ committee was duly formed and immediately set to work. Despite naysayer predictions to the contrary,

they succeeded in raising more money than had been contributed for the entirety of the parish house renovation. All the donors and Vestry conditions were now met, and on time.

The design of the new organ was shaped by the same height restrictions that had crippled the Austin. The obvious solution would require the removal of the original flat ceiling panels in the nave that filled the space between the horizontal hammer beams of the roof trusses. That would add six feet of working height by opening attic space up to the peak of the gable. Selling the idea was not easy because it would require an invasive structural change of the historic building. To win support, an elaborate and intricate model of the building was made, replete with gallery, organ, pews, and stained-glass windows. It was scaled so it could be viewed at eye level perspective from the chancel end. The model was so convincing that many folks were not able to tell what changes had been made to the historic interior.

With that hurdle crossed, the next step was to decide on the organ's specifications. Planning for the Great, Pedal, and a Rückpositiv was simple, but figuring out where to put a Swell division was a challenge that couldn't be easily brushed aside in a liturgical Episcopal church. In spite of our previous experience building a Swell, there really wasn't enough room to place one either behind, above, or below the Great. Making a dinky Swell didn't make sense, so we fell back on our standard solution of having a Brustwerk with doors above the keydesk. To keep that from looking like a cop-out, I agreed to John's idea of replacing the *Quint 1⅓′* with a narrow string (*Viol*) while the windchest was already in construction. It was a daring move for us, given our reputation for sticking to the 18th-century North German tradition of open-toe voicing and high cut-ups. After the chest was finished, we went the next logical step further and added a *Céleste* by placing a slider and toeboard under the back edge of the grid. This stop's pipes stand behind the chest in the front of the Great roller-board. The result is an invaluable pair of strings in the space between the grid and rollerboard, on one knob. The bottom octave of the *Viol* is made as a narrow *Quintadena*, scaled after the stopped bass of David Tannenberg's *Principal Dulcis* in Madison, Virginia.

After this positive experience we have happily included eight-foot strings in a number of our organs and similarly discovered that a *4′ Salicet* is an extremely useful stop in a secondary chorus. Parenthetically, it is worth noting that string stops were popular in Central and South Germany long before the Schnitger school showed any interest in them. It took Greg Hand at the University of Iowa in 2022 to move us even further by adding a wildly assertive and speechy *8′ Viola da Gamba* to our organ there. He requested that the pipes be made and voiced by Andreas Saage, Klais Orgelbau's expert on historic strings. It is scaled after the *Viola da Gamba* at the Joachim Ehrlich organ in Bad Wimpfen, Germany [Stadtkirche Marktplaz, 1748 -Ed.]. The resulting stop in Iowa is a great success, so much so that we may well build another when the right occasion arises.

The bass of the Pedal *16′ Principal* occupies the center tower facade down to A#. The remaining basses are open wood pipes on the floor against the back wall next to the pine resonators of the *Posaune*.

The mechanical *action suspendu* is hung from the grids and utilizes pine trackers, wood rollers, and is unfelted. The windchest grids are made of poplar covered with thin western red cedar tables, along with pine toeboards and white oak rackboards. The Rückpositiv pallets are vertically mounted to keep the windchest as low as possible within its case. The Great windchests are located in the center of the impost, flanked by the Pedal chests. The case is walnut and the pipe shades of are fumed white oak. The panels beside the keydesk are made of Claro walnut from California. The metal pipes are entirely of hammered lead and tin alloys. The facade pipes were hand-scraped and all pipes are lacquered. This is the first organ in which we built a sixteen-foot half-length conical *Fagott* for the Great, following historic examples in Thuringia. Three wedge bellows are located in the tower behind the rear wall and are winded by a blower. Unfortunately, there are no levers for manual pumping because very restricted access behind the walkboard makes that virtually impossible.

The acoustics of the church were improved by the renovations, but the results fell short of what we had hoped for. The new wood floor free of any carpeting deserves most of the credit. We floated the idea of removing the pew cushions and covering the low, flat pew boards with contoured boards, but this idea was not accepted. The allure of plush red velvet and soft cushions is simply too hard to overcome. The wind pressure of the organ was originally set at 74mm. We subsequently came to realize that this was too low in this acoustic and have now raised it to 78mm. On rare occasions we have removed both the pew cushions and the kneelers, making a tremendous improvement in the sound of the organ.

It is our hope that the new organ will serve the church and weather changes of fashion for generations to come. The current Director of Music, Gen Bolena, is doing an exceptional job of playing and directing enthusiastic choirs. John and I are grateful to have had the opportunity to build an organ for our home parish–one which we hope will be the last organ Trinity needs.

TRINITY EPISCOPAL CHURCH
STAUNTON, VIRGINIA

Taylor and Boody Organ Builders, Opus 34, 2000

Three manuals and pedal, mechanical action
78mm wind pressure, three wedge bellows

GREAT											
Stop	**Pitch**	**Material**	**MW**		**C**	**c^0**	**c^1**	**c^2**	**c^3**	**g^3**	**Remarks**
Bourdon	16′	98% lead	¼		—	95.4	62.8	37.4	23.7	18.9	C-D common with *Subbaß*
Principal	8′	98% lead	¼		140.9	80.6	46.3	27.5	17.6	13.6	
Rohrflöte	8′	98% lead	¼		121.5	81.3	50.0	32.3	22.3	17.6	
				CL x CØ	—	153x17.8	72x12.3	33.5x9.1	18x7.2	12.4x6.3	
Viol da Gamba	8′	77% tin	¼		114.5	66.0	39.4	24.0	15.1	11.8	
Octave	4′	98% lead	¼		81.8	46.3	28.6	17.5	11.1	8.9	
Spielflöte	4′	28% tin	¼.5		94.3/48.6	66.1/30.4	43/16.3	28.3/11.1	19.1/8.6	14.9/8.8	Tapered
Twelfth	3′	28% tin	¼		56.2	33.3	20.5	12.5	8.1	5.8	
Fifteenth	2′	28% tin	¼		44.6	27.0	16.6	10.3	6.6	5.0	
Cornet	IV	28% tin	⅕		—	41.1 (g^0)	34.4	21.3	13.7	9.6	All ranks follow the 4′ scale
				C	*4′*	*2⅔′*	*2′*	*1⅗′*			Compass g^0-c^3
Mixture	IV-V	28% tin	¼	1′	26.1	15.8	9.8	6.4	—	—	All ranks the same scale
				C	*1⅓′*	*1′*	*⅔′*	*½’*			
				c^0	*2′*	*1⅓′*	*1′*	*⅔′*			
				c^1	*4′*	*2⅔′*	*2′*	*1⅓′*	*1′*		
				$f^{\sharp 1}$	*4′*	*2⅔′*	*2′*	*1⅓′*			
				$c^{\sharp 3}$	*4′*	*2⅔′*	*2′*				
Fagott	16′	28% tin			105.0	74.0	70.0	55.0	45.5	41.8	C-$c^{\sharp 0}$ half-length; Schnitger shallots, lead-faced from C-f^2
Trompet	8′	28% tin			138.0	98.0	73.0	57.0	44.0	40.0	Schnitger shallots, lead-faced from C-f^1

RÜCKPOSITIV										
Stop	**Pitch**	**Material**	**MW**	**C**	**c^0**	**c^1**	**c^2**	**c^3**	**g^3**	**Remarks**
Gedackt	8′	98% lead	¼.5	110.2	67.6	43.9	28.5	20.3	17.3	
Quintadena	8′	28% tin	variable	90.7	58.0	34.2	22.5	12.5	9.2	
Principal	4′	98% lead	¼	79.8	44.3	26.5	15.9	10.2	8.0	

Rohrflöte	4′	28% tin	variable		66.4	44.1	29.8	19.9	14.5	11.1	Open from $g^{\sharp 2}$
				CL x CØ	146.5x23.4	69x18.3	30x13.2	13.8x9.9	—	—	
Nasat	3′	28% tin	⅕		71.1	50.4	33.2	19.4	11.6	8.9	
Octave	2′	28% tin	¼		44.2	26.0	11.9	10.2	6.2	5.2	
Waldflote	2′	28% tin	variable		63.9/19.7	41.5/17.1	27.7/12.0	18.9/10.4	12.9/7.6	11.2/6.9	Tapered
Sesquialtera	II	28% tin	variable	—	31.4	19.3	11.5	7.4	—		2⅔′ rank, both ranks the same scale
				C	*1⅓′*	*⅘′*					
				c^0	*2⅔′*	*1⅗′*					
Scharff	III-IV	28% tin	¼	(1′)	25.6	15.7	9.6	6.3	—	—	All ranks the same scale
				C	*1′*	*⅔′*	*½′*				
				c^0	*1⅓′*	*1′*	*⅔′*				
				c^1	*2⅔′*	*2′*	*1⅓′*	*1′*			
				c^2	*4′*	*2⅔′*	*2′*	*1⅓′*			
				c^3	*4′*	*2⅔′*	*2′*				
Dulcian	8′	28% tin			44.6	35.3	29.8	25.1	20.7	18.0	Cylindrical; Schnitger shallots, lead faced from C-f^1

CHOIR

Stop	**Pitch**	**Material**	**MW**		**C**	**c^0**	**c^1**	**c^2**	**c^3**	**g^3**	**Remarks**
Gedackt	8′	oak	—		58x80	34x64	28x43	17.5x27.5	12x17	7.5x10.7	
Viol da Gamba*	8′	77% tin	¼.7		65.2 ($F^{\sharp}$)	60.6	37.0	22.7	14.7	11.2	C-F common with *Gedackt;* $F^{\sharp}$-B *Quintadena; expression* slotting from c^0
Celeste*	8′	77% tin	¼.7		—	46.3 (f^0)	35.6	21.6	14.0	10.9	Plays through a *Viol* knob double-draw; f^0-g^3
Principal	4′	28% tin	¼		77.5	44.1	27.1	16.5	10.4	8.0	
Blockflote	4′	oak	—		40x68	31.3x52.5	20x32	13x19	10x13.5	8.5x11.1	C-B stopped
Flute	2′	28% tin	¼.5		54.1	31.9	20.2	16.2	10.1	7.7	
Trechterregal	8′	28% tin	*Top* Ø		74.6	61.8	48.9	40	32.1	18.7	*Oboe*-style resonators, quarter-length; Schnitger shallots, lead-faced from C-f^1
			Mid Ø		25.1	22.8	18	13.8	10.9	9.6	
			Bot Ø		15.3	12.0	9.6	7.1	5.4	4.7	

TRINITY EPISCOPAL CHURCH

STAUNTON, VIRGINIA

PEDAL										
Stop	**Pitch**	**Materials**	**MW**		**C**	**c⁰**	**c¹**	**f¹**		**Remarks**
Principal	16′	98% lead	¼		180x240	150.7	87.0	70.1		C-G pine open wood
Subbaß	16′	98% lead	¼		165x220	123.4	82.4	70.7		C-F poplar, F♯-f¹ metal
Octave	8′	98% lead	¼		140.9	87.0	51.6	41.0		C, C♯ common with Great
Octave	4′	28% tin	¼		82.4	48.1	30.0	24.4		
Nachthorn	2′	28% tin	⅛		69.3	48.8	32.6	27.8		
Mixture	V	28% tin	¼	2′	45.2	26.8	16.2	9.6		All ranks the same scale
				C	*2′*	*1⅓′*	*1′*	*⅔′*	*½′*	
				c⁰	*2⅔′*	*2′*	*1⅓′*	*1′*	*⅔′*	
Posaune	16′	poplar			190.0	136.0	97.0	85.0		Square resonators; Schnitger shallots, lead face plates
Trompet	8′	98% lead			157.0	108.0	79.0	68.0		Schnitger shallots, lead face plates
Trompet	4′	28% tin			100.0	72.0	53.0	46.0		Schnitger shallots, lead-faced C-f⁰

LEGEND

MW Mouth width
CL Chimney length
CØ Chimney top diameter

98% lead alloy: Remaining 2% contains ≈1% tin and trace elements of antimony, bismuth, copper

*Viol da Gamba added during construction to replace Quint 1⅓′; Celeste added on a jump slide.

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- pitch on request
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felt hammers

bronze mallets

plastic mallets

References | organ builders: Orgelbau Albiez, Orgelbau Goll (CH), Hermann Eule Orgelbau, Orgelbau Hubert Fasen, Orgelbau Hoffmann & Schindler, Kaps Orgelbau, Orgelbau Klais, Orgelbau Kuhn (CH), Werkstätte für Orgelbau Mühleisen, Orgelbau Pieringer (A), Organbuilder Pole & Kingham (CAN), Orgelbau Reichel, Orgelbau Richard Rensch, Orglarstvo Škrabl (SVN), Brondino Vegezzi-Bossi (I), Vleugels - die Orgelmanufaktur, Orgelbau Waltershausen, Georg Weishaupt Orgelbauwerkstätte

Built-in Celesta | sound example

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WESTMINSTER PRESBYTERIAN CHURCH | CHARLOTTESVILLE, VIRGINIA

Taylor & Boody Organ Builders, Opus 3

ESSAY BY GEORGE TAYLOR

PHOTOS ROBBIE LAWSON

EARLY IN 1976 AN INQUIRY FOR A NEW ORGAN AT WESTMINster Presbyterian Church, Charlottesville, appeared on the desk of John Brombaugh & Associates in Ohio, where John Boody and I were partners in the firm. The letter caught my attention. I had attended a service there as a twelve-year-old and remembered thinking that the building was beautiful, but something about its vintage Hammond sounded very wrong. John Brombaugh showed no interest in the inquiry because he was focused on moving the firm to Oregon to escape the political mindset of his home state. He gladly offered me the opportunity to send a reply, which I did. Meanwhile, the company was busy finishing the large three-manual organ for Central Lutheran Church in Eugene, Oregon, but Boody and I were undecided about making the big move west. As my correspondence with Westminster progressed, I came to realize that I should tell the client about my possible interest in starting my own company. After first checking with Charles Fisk, the church decided to continue our conversation. By Christmas, Boody and I agreed to remain in Ohio and take on the Charlottesville project as Taylor & Boody Organ Builders. Simultaneously, Brombaugh was relieved to be able to assign to us his existing contract with the Presbyterians in Coshocton, Ohio. The result was that, in a very real sense, we can thank Westminster Church for starting our company.

This church was built in 1939 with a gift from Mary Royster White of Norfolk, and situated near the University of Virginia campus–all too close to the mainline of the Chesapeake & Ohio Railroad (which earned it the facetious moniker of St. Mary's by the C&O.) The elegant Colonial design of the building is a copy of the historic Abingdon Church in Gloucester County, Virginia (1755), albeit somewhat reduced in size. The acoustics created by the vaulted ceiling are ideal for organ tone. As originally built, a wall separated the current choir loft and organ space from the nave to provide space for the pastor's study. Later, when the new Sunday school building behind the church was added, the partition was removed.

From the outset, it was clear that the organ should have two manuals and pedal. After the seven years we spent working with Brombaugh in the North German style, this meant that the second manual in an organ of this size would naturally be a Brustwerk. However, in this case it was not a given, because the client made clear from the outset that one division had to be under expression. We demurred with assurances that plain doors within easy reach of the organist would be adequate to control volume when registration changes were not practical. As the committee insisted on an expression pedal, we persuaded them to accept the novel idea of placing shutters behind the Brustwerk pipes. Their dynamic range is minor at best, but it does get used and has proved useful for choral accompaniment.

The stoplist was severely constrained by the amount the congregation was willing to spend, which originally was $50,000. The most we could offer for that amount was fifteen stops, which would limit the Brustwerk to four. Fortuitously, the church was able to employ Bruce Stevens as Director of Music shortly before the contract was signed. He was able to persuade the Session that fifteen stops would be inadequate for the space. The church agreed to provide an additional $12,000, making possible the inclusion of a Brustwerk *Quinte 1⅓′* and *Zimbel* (II), bringing the total to eighteen stops.

Designing the organ's case from the standpoint of architecture was a pleasure, thanks to the chaste, simple design of the building. Wherever possible, we incorporated proportional relationships such as the Golden Section, which is music for the eyes. The upper case lent itself to the classic arrangement of bass pipes in the center flanked by treble fields arranged in major thirds in between, with the tenors at the sides. We proposed a painted case of poplar in lieu of oak or walnut, which would have been visually overbearing in the lightness of the space. With the shadow of Thomas Jefferson looming nearby, it was a challenge to come up with appropriate moldings and stylistic details which would satisfy and entertain the viewer. Since it was our aim to optimize the natural resonance characteristics of wood throughout the instrument, we chose not to use any plywood, which is acoustically dead. The case was hand-planed smooth and unsanded in the traditional style to leave an acoustically-advantageous open pore structure.

The mechanical stop action is made of steel with wooden linkages. Likewise, the mechanical key action uses white pine trackers, steel rollers, brass squares, maple studs, and pine key levers. To avoid friction, there is no felt in any bearings. The horizontal rollers are mounted on oak boards, stacked in individual 100mm-wide sections to minimize the effects on the action of expansion and contraction inherent in wide glued-up rollerboard frames, and the individual sections are mounted on oak suspenders that run up through the pallet boxes and are bolted to the underside of the grids. This method of construction assures the minimal vertical displacement of the rollers through seasonal humidity swings. On later organs we tried mounting the rollers on plywood, which is certainly easier and less costly to build, but this caused problems of alignment for long rollers as we discovered plywood proved to be unstable lengthwise. The result was rollers which didn't line up with either the pallet or key spacing or both, so we have gone back to using the stack of narrow boards. The manual keys are hinged at the tail and suspended from

CHARLOTTESVILLE, VIRGINIA

Taylor & Boody Organ Builders
Opus 3, 1980
Westminster Presbyterian Church
Charlottesville, Virginia

COMPASSES: 56/30
TEMPERAMENT: Kirnberger III, A440
Mechanical key and stop action

GREAT
16′ Bourdon
8′ Principal
8′ Rohrflöte
4′ Octave
2⅔′ Quinte
2′ Superoctave
2′ Gemshorn
1⅗′ Tertia
IV Mixture

POSITIVE
8′ Gedackt [oak]
4′ Rohrflöte
2′ Octave
1⅓′ Quinte
1′ Octave [orig. *Zimbel II*]
8′ Trechterregal

PEDAL
16′ Subbass
8′ Octave
8′ Trompet

MECHANICALS
Positive to Great
Great to Pedal
Positive to Pedal
Tremulant
Zimbelstern [1989]

the pallets to give the most sensitive touch. In some old European organs, the builders would suspend the pedal keys as well.

We gave that a try in this organ, but we also learned that acting like purists has its limits. For the suspended pedal idea to work, it's necessary to have really strong springs under the pallets to hold up the heavy pedal keys, and that puts a strain on the action. It wasn't long before Bruce persuaded us to add springs under the pedals. The shove coupler for Brustwerk to Great is unusual in that the bottom arms of the Great key action squares, which are mounted just above the keyboards, extend forward beyond the pull point and are sloped slightly upward at the front end. This allows little blocks on top of the Brustwerk keys to slide under the Great squares when the Brust keyboard is pulled forward to engage the Brustwerk to Great coupler. As the Great key is played, the bottom leg of the square contacts the little Brustwerk key blocks and depresses the key.

The windchests have spruce grids and are covered, top and bottom, with western red cedar 5mm thick, which is glued on with epoxy. While cedar is normally considered a splintery wood, when used dimensionally thin, it has tremendous strength and resilience across the grain, which makes it an ideal material to resist seasonal effects on chest tables, plus it's extremely resonant. The mahogany sliders run on Schmidt seals and are sprayed with graphite. The toeboards are pine and the rackboards are white oak, also a highly-resonant material when placed next to the pipe mouths. The Great and Pedal share the same windchest and their channels are commingled for 30 notes throughout the bass and tenor ranges.

There is a surprising amount of borrowing between the Great and Pedal flue stops. The bottom twelve wood pipes of the Pedal *Subbaß*, sharing the *Great Bourdon 16′*, are mounted on the back wall, and are winded with Orgaflex and wooden channels running beneath the walkboard. The remaining eighteen pipes of the *Subbaß* are common with the bass of the *Röhrflote 8′*. In other words, the *Subbaß* effectively has no pipes of its own. You might think that this would cause problems, but no one has ever commented on it. What surprised us was how well the rich bottom octave of the *Bourdon* works to support the chorus. The bass of the Pedal *Octave 8′* is similarly borrowed from the Great *Principal*.

The wind system is simple, with one wedge bellows placed under the choir risers on the C-side and a blower suspended from the choir room ceiling below. The wind responded well with the music but was a bit fluttery so we put a cigar box-shaped winker enclosing a small concussion bellows under each of the upper windchests. These boxes are airtight except for adjustable slots underneath that vent the enclosed cavity to atmosphere. Opening or closing the slide controls the backpressure acting as a cushion or a brake on the concussion bellows, which controls the amount they dampen the wind. The wind pressure was set at 85mm.

This was the first organ for which we made the metal pipes, all of which are 99% lead. We had put together a pipe shop in the last two years at Brombaugh's, where we cast all the pipes for his large organ in Eugene. Here we were fortunate to attract Lou Dolive, who had worked for Fisk, to run the pipe shop. The lead was alloyed with traces of bismuth, antimony and copper, for stiffness and to minimize creep, thereby helping keep the pipes from collapsing of their own weight. All pipes are thicker at the bottom than at the top to minimize the weight stress at the mouth. Thickness was controlled by the casting process, which naturally made the sheets thicker at the pouring point than at the end of the casting table. Subsequently, all of the sheets were hammered to improve their musicality, but we did not plane them. Contrary to popular belief, hammering does not make the metal stiffer, but does close the pores of porous alloys like high-lead compositions, and by relaxing the structural tensions produced by casting, effectively ages the metal significantly, making it easier to manipulate and voice. From the standpoint of appearance, the front pipes looked pretty crude when they were polished. Their finish was improved with auto body polish, which blackened them and made them look antique.

The organ was three months late for delivery, which angered the pastor. Bruce was ecstatic with the organ's arrival but it did not help our case that the Hammond suddenly died in action, making ugly noises and spilling yellow liquid on the floor. Our delay was in part due to the fact that we could not test any pipes in the shop until the organ was winded and playable. We had yet to build a voicing jack, so voicing was largely done in the church–an exciting but tedious process. The head of the organ committee came to watch as we worked to draw out relaxed and yet intense tones from the facade pipes. He watched and waited patiently for a while until he left abruptly, saying "This is just trial and error!" Slowly, the larger tonal palette unfolded. Our aim was to find the most beautiful, relaxed vocal sound for each pipe, by raising the cutups to the point that any given pipe would not work if the stop knob was shoved in slightly. The result was a unique singing quality. Slight nicking was used sparingly.

The reeds were a different story. It began with the previous organ in Coshocton, Ohio. Metal flue pipes and reed resonators for that organ were made by Stinkens. We had little experience making shallots at that time, and virtually none for designing and voicing reeds from

scratch. All we had to go on was historical information and some documentation of Brombaugh's work. For the Coshocton organ we had to build a *Posaune*, Great *Trompet* and Brustwerk *Rankett*. The *Posaune*, half-length in the bass, worked out well because the wide, lead-plated shallots were covered with leather. All brass tongues were heat tempered and filed to thickness. Conical resonators were dead-cut to their natural tuned length without slotting, so they could adjust pitch to temperature changes and track with the flues. The short *Rankett* with its wooden resonators was fairly easy to make work, but the manual *Trompet* was a different story. It was a struggle to get a good fundamental tone rather than the thin and brassy sound of too many neo-baroque organs. The result was passable, yet frankly deserved our shop's nickname for it, "Dumpet". Fenner Douglass, then Chair of the Oberlin Conservatory Organ Department, played the opening recital. Afterward, when asked what he thought of the *Trompet*, he replied, "I think I know what you were after...".

We couldn't afford to repeat that mistake in Charlottesville, where the Pedal *Trompet* would be crucial to the tonal design. Fortunately, several years before, I had an opportunity to examine the excellent Pedal *Trompet* that Jürgen Ahrend had built for his new concert organ at the University of Oregon. David Nott and I carefully measured the stop by night and given the problem we were facing, I had no qualms about copying Ahrend's work here. The result was a set of reeds which were a dream to voice and exactly what we hoped for. Years later when I told this to Paul Fritts, he said "A good artist knows what to copy!" The *Trechterregal* is our own creation, voiced for a colorful yet fundamental tone. It has proven remarkably stable and easily tuned.

Several shortcomings have with time become apparent in Opus 3. The organ begs for a sixteen-foot Pedal reed, for which, unfortunately, there is no space. Also, the two-rank *Zimbel* proved too brash to appeal to players. Recently we replaced it with a *1′ Oktave* that is far more versatile. It makes it possible to play the full Brustwerk an octave lower, if the music does not call for notes below tenor-c. A magical effect can be had by playing the *Trechterregal* at sixteen-foot pitch, allowing the Brustwerk to serve as a valid counterpart to the Great.

Fairly recently, the railings separating the choir from the chancel platform and the pulpit have been made moveable, so that the performer can be seen from the audience during recitals. The change altered the acoustics, making the organ more aggressive. In response to this challenge we have lowered the wind pressure from the original 85mm to 76mm, which somewhat stresses the high cut-ups and makes the facade pipes a bit more speechy.

Fortunately, three very fine organists have held the music position at Westminster. Bruce founded the Friday Night Concert Series featuring excellent artists for four or five events during the season. It has been running successfully for forty-three years. Linda Hanson and now Jonathan Schakel have continued to maintain the high standards set by Bruce.

THE KIRNBERGER III TEMPERAMENT [1779]

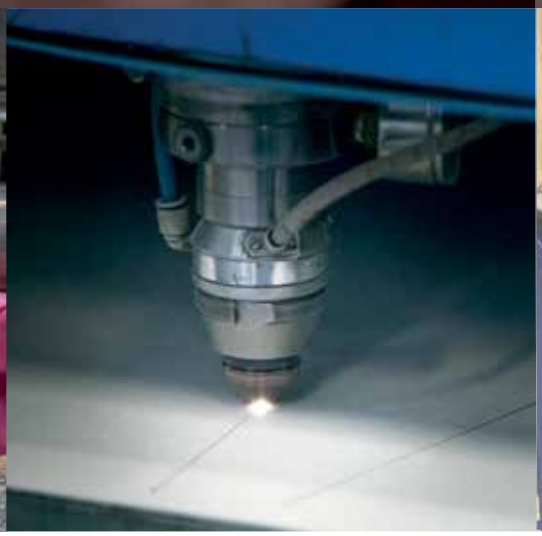
Johann Phillip Kirnberger [1721–1783] was one of the last of Bach's most noted pupils. As such, it is thought his temperaments are imbued with the wisdom of the master, when in fact his well-known admonition "to tune all thirds sharp" does not apply to the same degree to any of Kirnberger's systems, although his third temperament comes the closest. The harshness of the key-color found in systems I and II makes them more appropriate for stringed instruments with sound decay, but which "sounds too intense" on the sustained-tone of an organ, especially when played with a mixture plenum. For this reason, number III is the most harmonious on the organ and the closest perhaps to Bach's admonition concerning the major thirds. Perhaps Kirnberger thought his system to be an improvement of the old master's. The Baroque ideal of key color is fully preserved in this temperament, the old meantone wolf E♭-G♯ is avoided, but certain keys like E-flat and F-sharp major are rather too intense in their "spiciness". However, Bach's *Well-Tempered Clavier* is ideally suited to this temperament, with the music languishing in the sweet harmonies of the most pure keys, and flittering about with quick harmonic rhythm and arpeggios instead of held intervals in the "heroic" keys.

Of the many well-tempered tuning systems available, this is the easiest to tune by ear. One begins by tempering the fifth progression C-G-D-A-E equally narrow by ¼ Syntonic Comma (as in classic meantone), meaning rather fast, and the check is the third C-E must be dead pure. If it isn't, review the tempering of the fifth circle again. If one has an A fork instead of a C fork, and wishes a dead-tuned A440 or A415, start on A and temper the same degree in both directions around the circle to C and E, using the same check of C-E pure.

Next, continue tuning the fifth circle by pure fifths, E-B-F♯. Now, starting at C again, tune the other side of the fifth circle, also pure: C-F-B♭-E♭-G♯-C♯. The check here, if you have established the opening ¼-tempered sequence correctly, is the remaining untuned fifth, C♯-F♯, should beat between almost pure and the same speed as a typical equal-tempered fifth. If C♯-F♯ is beating faster than a slow beat, either the pure tuning of the preceding fifths was not dead pure, or the beginning ¼-comma sequence is slightly out of kilter.

Cents deviation from Equal Temperament, on A:

C	+10
C♯	+1
D	+3
E♭	+4
E	-3
F	+8
F♯	+1
G	+7
G♯	+2
A	0
B♭	+6
B	-2



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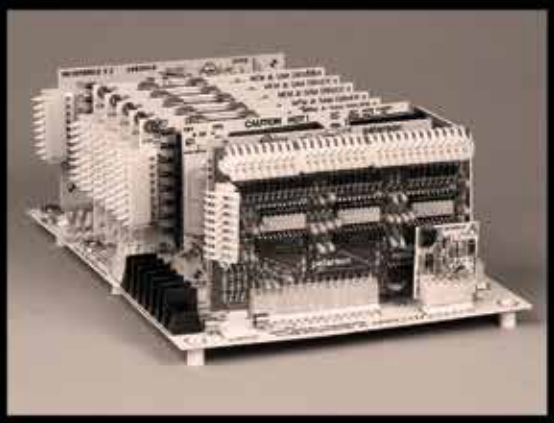

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