Volume 3 Numbers 3 and 4 Summer/Fall 1987

Common Bond

A newsletter on maintenance and preservation for owners of architecturally significant religious buildings

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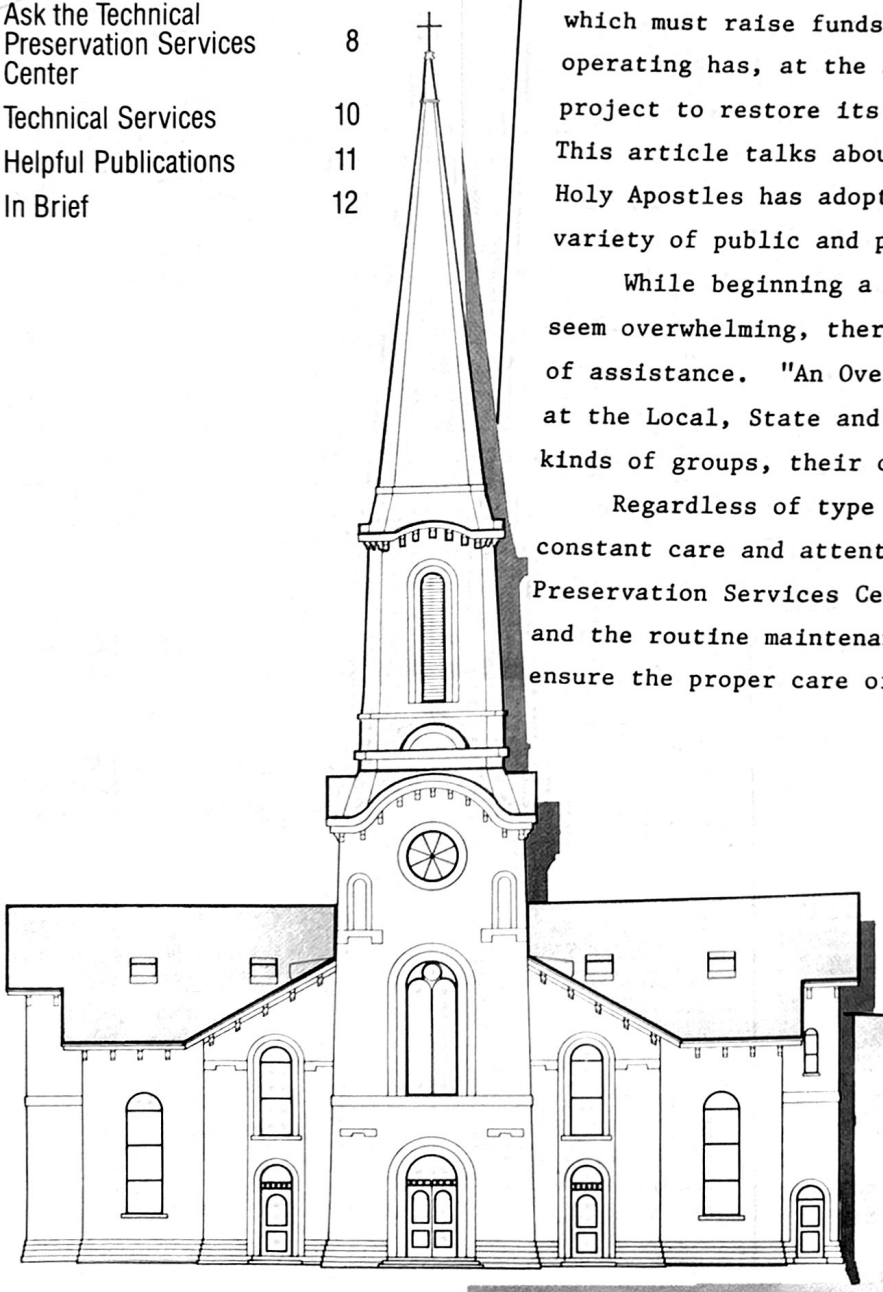
Dear Reader:

The landmark Church of the Holy Apostles, this issue's "Preservation Profile," operates a soup kitchen which serves lunch to over 1,200 people a day. This congregation, which must raise funds to keep its outreach programs operating has, at the same time, launched a $1.5 million project to restore its church building and mission house. This article talks about the business strategies Holy Apostles has adopted to compete successfully for a variety of public and private funds.

While beginning a restoration project may at first seem overwhelming, there are many organizations that can be of assistance. "An Overview of Preservation Organizations at the Local, State and National Level," describes different kinds of groups, their objectives and programs.

Regardless of type or vintage, pipe organs require constant care and attention. This issue's "Ask the Technical Preservation Services Center" addresses common problems and the routine maintenance that must be undertaken to ensure the proper care of these instruments.

The Rev. Thomas F. Pike
Chair, Advisory Committee



Church of the Holy Apostles
Drawing: John S. Hagmann, Architects

Ask the Technical Preservation Services Center

Question:

Our church contains an old pipe organ. We are having problems maintaining the instrument; how can we plan for its upkeep?

The Rev. Edward E. Johnson
Mt. Moriah Baptist Church
New York, New York

Answer:

Pipe organs are among the most expensive investments a church or synagogue will ever make. Yet, like the buildings which house them, these instruments are often subject to deferred maintenance and stop-gap solutions. Most people have no real idea of how an organ works; even many organists have only a vague understanding of what happens beyond the keyboard or console. As a result, potentially serious problems, such as a cracked wind chest, can go unnoticed until damage is severe and repair expensive. Other problems, such as ciphers (pipes which sound when not played) and dead notes, can be used as an excuse to scrap the instrument, when the problems may be minor and easily remedied.

The most important first step in any organ maintenance program is to secure the services of a professional company or individual experienced in organ repair, tuning and restoration. A contract for these services usually includes twice yearly visits for tuning and ongoing maintenance, and emergency visits as necessary. A professional provides the expertise needed to spot possible major problems before they become irreversible. A professional can also allay fears about the seriousness of other problems and make necessary repairs. If the organ is in need of a major overhaul, a technician will help plan a program of phased restoration which can keep part of the instrument operable as funds are raised to pay for repairs.

An organ is played from the console, which is made up of one to five keyboards and often a pedal board. Each keyboard controls a division within the organ; a division is comprised of sets of pipes called ranks. Each rank has a particular sound; the organist determines which ranks will play through the use of stops activated at the console.

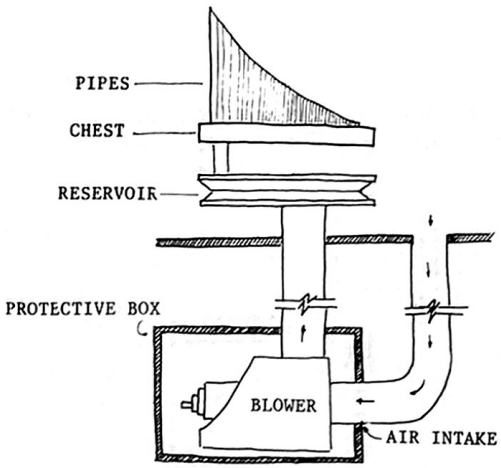


Figure 1 This diagram illustrates the relationship of the various parts of the organ (not drawn to scale). Drawing: Christopher Jenks

In most organs, the air or wind is supplied by a large fan called the blower. The blower feeds wind into a large bellows called the reservoir. The reservoir regulates the air pressure and conveys wind into the chests--large, airtight compartments made of wood. The tops of the chests are pierced with holes on which the organ pipes rest. Playing the organ opens valves beneath the pipes, which allows wind to enter the pipes, causing them to sound (Figure 1).

The oldest and most reliable type of organ is the mechanical action or tracker instrument. Almost any organ built before 1875 is this type; many new organs built within the past thirty years also use mechanical action. Mechanical action organs have direct mechanical connections between the keys and the valves or pallets beneath the pipes (Figure 2). If your institution has a mechanical action instrument, consider yourself lucky. The construction of these organs is easily understood. Members of the staff or congregation who are mechanically-inclined can be taught to eliminate dead notes and ciphers and make other minor adjustments which are frequently necessary.

The vast majority of organs in this country are electro-pneumatic instruments. This type of organ, developed

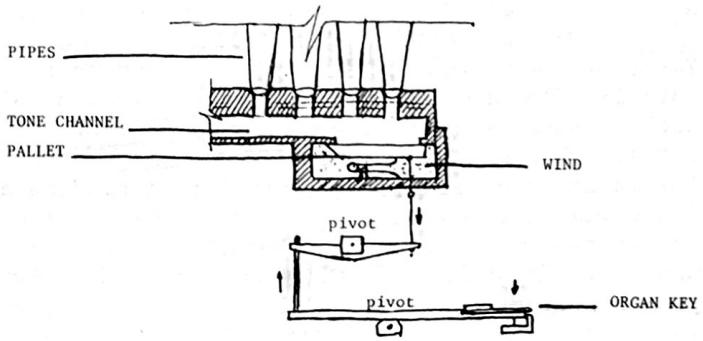


Figure 2 A simple mechanical or tracker action: when the key is depressed, a series of mechanical connections cause the pallet to be pulled down allowing wind into the pipes. Drawing: Christopher Jenks

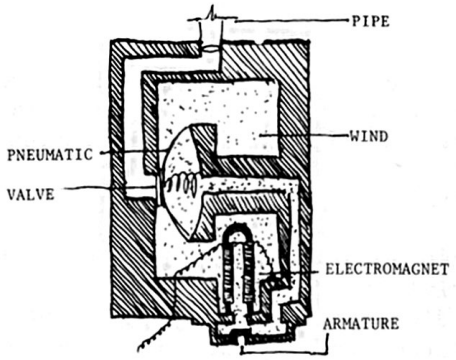


Figure 3 A simple electro-pneumatic action: the electromagnet is activated when the key is depressed. This attracts the armature, which shuts off the wind to the pneumatic, causing it to collapse. This opens the valve allowing wind to enter the pipe. Drawing: Christopher Jenks

in the latter half of the 19th century, is less easily understood and more difficult to repair. One of the principal components of this type of organ are hundreds of small leather pouches called pneumatics. Pneumatics control the valve beneath the pipes and many other features of the organ (Figure 3). Depending on the chemical content of the atmosphere in the area in which you are located, pneumatics will need releathering every twenty to twenty-five years. This is an expensive process and can cost up to 20% of the value of the instrument. Because of the problems associated with this technology, maintenance of these organs tends to be more expensive than for mechanical action instruments.

Yet another type of organ, developed in the 1940s, is one which utilizes direct electric action. This type of organ relies heavily on the use of electromagnets (Figure 4). One of its major problems is permanent magnetizing; this can cause permanent ciphers, which are not easily repaired, and make it impossible to shut off stops. When these problems begin to occur, a major overhaul is usually in the offing.

In all types of organs the most important component, next to the pipes themselves, are the chests. The wood used in construction of the chests is extraordinarily sensitive to humidity; any extreme changes in the humidity level can damage the chests. For instance, if a leak in the roof section over the organ occurs, the accumulation of water on the chests can cause the wood to warp and crack. In addition to the sound of leaking air, this can cause runs--where several adjacent pipes will sound when only one is actually being played. In severe cases, these cracks in the chest can cause a significant lowering of the air pressure within the chests and make the organ inoperable. If a leak should develop around the organ area, make sure to properly protect the organ from damage until repairs are made.

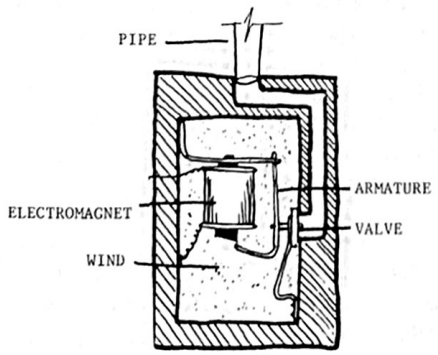


Figure 4 Direct electric action: when the key is depressed, the electromagnet is activated. This attracts the armature, which pulls open the

Dry heat can cause similar damage to the chests. This is a problem in buildings which are heated daily throughout the winter. To minimize the effect of a central heating system on the organ, humidifiers can be set up around the instrument and the humidity level kept between 30% and 50%. If the humidity level drops below 25%, it endangers the organ, as well as other wooden furniture and fixtures in the building. Cold temperatures will not harm an organ; however, the low humidity level associated with central heating can cause serious damage. By controlling interior temperature and humidity, an institution can do a great deal to provide a favorable environment for an organ. Temperature has an effect on the tuning of an organ. This is why organ tuners will insist that the church be at room temperature when an instrument is being tuned. If an organ is tuned at 45° it will sound great at 45°, but at 70°, will be terribly out of tune.

Another problem encountered in many organs which affects the tuning is the location of the blower. Newer organs usually have a compact, quiet blower which is placed within the organ case. However, in older instruments the blower is larger and noisier, and thus placed some distance away from the organ, often in the cellar or the tower. If the air around the blower is at a significantly different temperature from the air around the organ, the instrument will gradually go out of tune, while it is being played, as colder air works its way through the wind system. Blowers located in towers and cellars also attract dust and grit which clog the pipes and wind lines. One solution is to install a duct which runs from the organ to the intake of the blower. This will ensure that the

air running through the blower is the same as that around the organ. Another solution, which has the added benefit of keeping dirt out of the system, is to build a box around the blower which is then vented from the organ space (see Figure 1).

In addition to regular servicing of the organ by a professional, members of the staff or congregation, if properly instructed, can help carry out many of the regular maintenance tasks. Choir members, and others with a good ear, can often assist a professional in the twice yearly tuning and even learn to tune some reed stops, such as the trumpet, clarion and oboe, which need frequent attention.

Organs are resilient instruments. Some European organs are still in use 500 years after their initial installation. With regular maintenance and an occasional overhaul, American organs can be expected to last as long.

The Organ Historical Society, a national, non-profit organization, has published Guidelines for the Conservation and Restoration of Pipe Organs. For more information contact: The Organ Historical Society, Box 26811, Richmond, Virginia 23261, (804)353-9226.

This article was written with the assistance of The Reverend Culver Mowers, Rector of St. Thomas Episcopal Church in Slaterville Springs, New York and a professional organ restorer.

WE WANT TO HEAR FROM YOU. PLEASE CALL THE TECHNICAL PRESERVATION SERVICES CENTER WITH YOUR QUESTIONS: (212)995-5260. ■

Technical Services for Religious Property Owners

In July of 1986, The Not-for-Profit Energy Conservation Program was created by the New York State Legislature to support energy conservation programs and services to benefit non-profit organizations throughout the State. The funds allocated for this program--a total of $15 million--come from New York State's share of the restitution settlement awarded in the landmark settlement of U.S. v. Exxon.

The State Legislature designated community foundations to work as partners on this program with the State Energy Office. Sixteen community foundations have expanded their service areas to cover the entire state and will develop grant programs that address the specific energy conservation needs and priorities of non-profit organizations within their communities. Different eligibility requirements may apply for certain program services.

Funds will be available for a wide range of activities including energy audits, technical studies, financial planning and loan packaging related to implementing energy conservation measures. Under federal guidelines, capital improvements, such as the purchase or installation of energy conservation materials, are not eligible for funding, but grants will be available to reduce the interest rate on loans taken out for these purposes.

At this time, each community foundation is collecting information to assess the energy conservation needs of non-profit organizations in their area. Grantmaking guidelines will be made available by each foundation at the end of this planning period--approximately January of 1988. In the interim, foundations want input from organizations located in their service areas. If you have not yet been contacted, you are encouraged to call the community foundation serving your county (Figure 1).

The New York Community Trust, a community foundation based in New York City, is the coordinator of The Not-for-Profit Energy Conservation Program. For further information contact Ellen Jouret-Epstein at (212)758-0100.

The Environmental Quality Bond Act provides matching grants for rehabilitation projects undertaken by non-profit organizations or municipalities on properties in New York State which are listed on the State or National Registers of Historic Places. The next deadline for funding requests is December 30. Applications are available from regional Parks offices located throughout the State. To obtain information, contact Michael Lynch, Historic Site Restoration Coordinator, New York State Office of Parks, Recreation and Historic Preservation, Agency Tower #1, Empire State Plaza, Albany, New York 12238, (518)474-7750.

The Sacred Sites and Properties Fund provides matching grants of up to $15,000 to religious institutions in New York State for restoration projects. Grants are available to help fund planning, restoration and capital improvement work. Priority is given to essential repairs and restoration. Deadlines for grant requests are January 1, May 1 and September 1. Funds for emergency work are available on an ongoing basis. For information, please contact the New York Landmarks Conservancy, 141 Fifth Avenue, Third Floor, New York, New York 10010, (212)995-5260.