

Rebuilding a Great Cathedral Organ

*A graphic recounting of some
of the problems involved with
enlarging the noble instrument in the
Cathedral of St. John the Divine*

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HIGH on Morningside Heights in New York City, the Cathedral of St. John the Divine soars magnificently heavenward above the mean slums of Manhattan's upper West Side. Begun in the early years of this century as an Episcopal cathedral to rival the famous cathedrals of Europe, the building is a little more than half-finished today. The long groin-vaulted nave is roofed over; sealed up with masonry are the immense arches that will one day form the transept. Nowhere is there any sign of haste. The builders, like the men who took hundreds of years to erect the cathedrals of Notre-Dame and Milan, are building for the future.

In the long years of bringing the Cathedral of St. John the Divine to its present stage of partial completion, there have been regular services of worship in the unfinished edifice. The organ, an immense four-manual Aeolian-Skinner, after many years of use, is now being rebuilt by G. Donald Harrison of the Aeolian-Skinner Company.

Enough work already has been done to make it clear that the completed instrument will be one of the great organs of America. There are, to be sure, larger instruments, the one in Atlantic City, for example; that in the Mormon Tabernacle in Salt Lake City is in a class by itself; nevertheless the St. John's Cathedral organ is one worth going miles out of one's way to hear.

Mr. Harrison's first problem in rebuilding was learning to "know his building." The organ must be adequate for one of the largest buildings of its type in the world. The immensity of the cathedral is

difficult to grasp even when one is standing at its center. The nave is six hundred feet long. It is topped by an enormous dome which is nearly as big as that of the Capitol in Washington. Sound dissipates itself unpredictably in the vast reaches of the cathedral, echoing and rebounding from the stone walls and pillars.

The reverberation time, the time during which a note of music will continue echoing after it is first sounded, in this cathedral is at least five seconds. This is five times as long as the reverberation time of a fine "live" concert hall. Carnegie Hall, in New York, has a reverberation time of a fraction over one second.

To attain clarity in such a large, reverberant building has been an immense problem. And clarity is essential, both for recitals and for the organ's prime function, that of accompanying the services of the cathedral with all their splendor, pageantry and pomp.

In the interest of clarity, Mr. Harrison has made much of the tone stringier, from tenor C down. When reverberation is as great as it is in this cathedral, the bass is generally over-emphasized. The bass accordingly has been reduced. In order to give transparency to every division, there is a wealth of upper work in the form of mixtures.

Every division is well developed. There are English reeds on the swell in addition to the French reeds. The pedal organ is as adequate as anyone could ever want. There is plenty of bass, including three 32's, an Open Bass, Contre Violone and Contre Bombarde, eleven 16's, seven 8's, four 4's,

and 10 $\frac{2}{3}$, a 5 $\frac{1}{3}$, and eight ranks of mixtures.

The great has forty-one ranks of pipes, including some of the lovely low-pressure stops which all of us would like to have for the accompaniment of chants, and several types of ensembles in the 16', 8' and 4' series. Some of the light "positiv" or secondary ensemble stops, useful in playing the development sections of contrapuntal works, are as fine as any I have ever heard.

The choir has twenty-five ranks, including solo stops, lesser ensembles and accompaniment stops. The Solo Bombarde has twenty-four ranks of pipes, topped with a tremendous group of reeds and a nine-rank mixture.

No effort has been spared to provide numerous celestial sounds on every manual so that all schools of compositions can be played on this organ effectively.

The most arresting stop on the organ is the State Trumpet, shown near the top of the picture on the cover of this issue. The pipes are placed beneath the Rose Window of the cathedral, above its main entrance, and thus at the opposite end of the nave from the organ proper. The pipes operate on a pressure of fifty inches of wind. Because of this high pressure they require a special blower at their end of the nave. It was found that, in traveling the 600 feet from the main blower, air-lines could not compress air sufficiently to meet the requirements of these 61 pipes.

Nothing in my listening experience had prepared me for the sound of the State Trumpet. I have (Continued on Page 43)

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never heard anything quite like it. As Dr. Norman Coke-Jephcott, organist and choirmaster of the cathedral, played the organ for me, I sat about halfway down the nave. Dr. Coke-Jephcott improvised on a simple theme (he is a master of improvisation), adding one stop after another and working up to a tremendous climax.

At this moment he played a fanfare on the State Trumpet. The sound of the trumpet stops, above the rolling, reverberating sound of the full organ, pealed out with a brilliance and resonance absolutely beyond description. It was a thrilling sound. I was so moved that I had chills along my spine and tears in my eyes.

It is said that when Arturo Toscanini heard the State Trumpet he exclaimed: "These are golden trombones made by God!" No visitor to the cathedral can fail to be awed and moved by the sound of this noble instrument. The organ is worth a trip to New York City to hear.

The superb State Trumpet is the result of careful planning and diligent research. It was inspired by the trumpeters who play for high festivals of the church at Westminster Abbey. Mr. Harrison had a great deal of trouble, however, in achieving the same result with organ pipes. To decide on the proper location, he had the first trumpeter of the Boston Symphony Orchestra play for him again and again in various parts of the cathedral.

After the location was selected, there remained many mechanical problems to be solved. One of these was keeping the pipes in place. The pipes of the State Trumpet are so far above an observer on the floor of the cathedral that they appear to be pointing upward. Actually they extend straight out above the heads of the congregation. Because of the tremendous wind-pressure at which they operate, the pipes if left to their own devices would be blown clean out of the wind-chest and sent sailing down the nave.

To obviate this, each pipe is shackled to a steel-wire guy, which in turn is bolted to a metal plate set into the stone wall of the cathedral.

A few thousand other problems, mechanical as well as musical, were solved by Mr. Harrison, with results that now can be heard on Morning-side Heights. I doubt if there has ever before been anything in the world quite like this organ. No serious organist should miss the opportunity to hear the superb instrument at the Cathedral of St. John the Divine.

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