JOHN BONTEMPI

Single Microphone Recording

A WELL ORGANIZED AND WELL rehearsed church choir can touch the soul of a congregation and bring its members to a deeper awareness of the presence of God. Such is the case with the forty voice choir of First Presbyterian Church of Huntington, Long Island. Under the direction of Mr. Andrew Householder, this choir fills the church with some of the most beautiful sounds on earth.

This is only part of what makes Old First Church special. The church was founded in 1658 and has been at its present site since 1715. It served as a British barracks in 1777, and was torn down so its timbers could be used for the construction of a fort in 1782. The present building was erected in 1784.

Unlike many modern churches that incorporate electronic sound reinforcement into their construction, Old First Church was designed well before the electric light bulb in such a way that a pastor's message of salvation could be heard in every pew with just the right amount of reverberation. The same principle holds true for the choir loft and pipe organ located at the rear of the church. Music from the organ and choir is reinforced by the gently arched ceiling and carried throughout the church. The sound is rich, and naturally reverberant. When Householder wanted to record these beautiful sounds, he contacted Ray Nostrand, vintage audio buff and student of acoustics.

There are several problems that come into play in this recording situation. The choir loft is not very large. The pipes for the organ are immediately behind it. A typical multitrack situation would call for recording the organ and then playing it back through a monitor system and overdubbing the choir. This overdubbing could be accomplished on location via remote truck or by renting the equipment necessary and setting up the mics, wires, console, recorders, etc. right in the church. Of course, this means the recording would not be a "live" worship service, but rather, a performance. What Householder wanted to record was the actual Easter morning service and an Advent service. Any mics placed near the choir would pick up the overpowering sound of the organ and reduce the choir to little more than background noise. Nostrand had just the solution for this situation.

Nostrand is a firm believer in monophonic, single mic recording. His years of ear training and live recordings have given him the ability to find the "sweet spot" of a room or outdoor bandshell, place a mic, and record music that has depth, clarity, and excellent frequency characteristics. While many recording engineers rely on mathematical formulas and fre-

Figure 1. The choir mic is all set.

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quency analyzers, Nostrand trusts his ears. This is not to discount the value of technology, but sometimes a simple back-to-basics approach works very well.

Nostrand listened to the choir rehearse and determined that the mic should be suspended in mid air about thirty feet in front of the organ pipes and twenty feet from the front of the choir loft rail. The mic also needed to be a few feet lower than the choir rail. This enabled the choir, standing on risers, to act as a baffle for the organ. Nostrand did a few test recordings of the rehearsal and made some minor adjustments until he got the balance he was looking for. The mic was all set (*Figure 1*).

By now you may be asking, "What kind of mic is going to give that kind of response from thirty feet away?" There are a number of adequate condenser mics that can do the job, ranging in price from a couple of hundred to a couple of thousand dollars. For a single event recording it would probably be wise to rent a mic. The Crown PZM, AKG 414, and Neumann U87, are three likely choices.

Some years ago Charles Nostrand, musician, audio buff, and Ray's father, came to possess an AKG C12. This vintage tube mic has been Ray's workhorse for single mic recording.

SOMETHING OLD

The C12 is not small by any standards. It consists of four components all housed in metal cases. (*Figure 2*) First there is the mic head. It is about a foot long and one and one half inches in diameter. It contains the multi-pattern element, the tube, and its circuitry.

Next there is a box that selects the pattern. Omnidirectional, bidirectional, cardioid, and unidirectional patterns are selectable. This is accomplished by varying the phase in the dual elements located in the mic head so that it will either accept or reject sound waves approaching the back or sides of the mic. .Following that is an "L" pad control box. This enables the user to adjust the impedence of the mic to any console or recording situation.

The whole set up is fed by a power supply about the size of a shoe box. You can forget about batteries or phantom power. The C12 requires 110 volts as its power source.

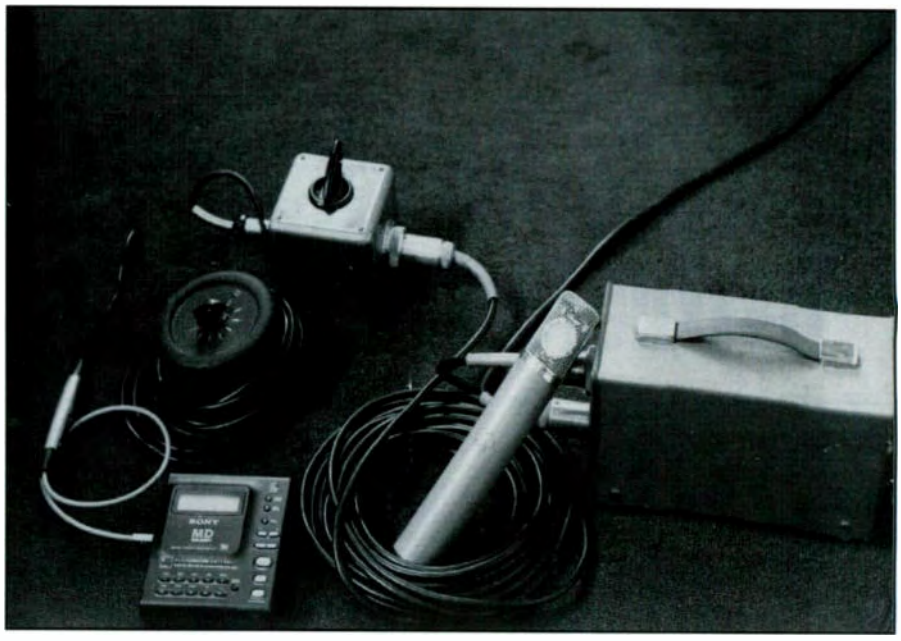

Figure 2. The C-12 system.

SOMETHING NEW

Given the vintage status of the mic you probably think that the recording is going to be done on an old warhorse like an Ampex 600 or 300. Not quite. This huge, power-sucking and incredibly sweet-sounding mic is fed directly into a Sony MD1 minidisc recorder. All the sound, all the majesty, the ambience, the grandeur, gets encoded and stored on a piece of plastic a little larger than a matchbook.

The Sony MD1 uses a special magneto/optical head to encode binary pits onto the disc. The discs are relatively inexpensive and can be re-recorded up to a million times. In order to conserve disc space, the MD1 employs a logic that permits it to reject certain frequencies not critical to the recorded signal. This is combined with a time compression circuit that further conserves disc space. The sampling rate of the MD1 is 32 kHz. What all this technical information boils down to is that the MD1 is clean. Some audiophiles say it's too clean. Its rejection circuitry and limited sampling rate give it a crisp sound that is somewhat devoid of richness and warmth. However, the C12 mic is known for its warmth and richness. The two teamed together produced a well balanced recording of the Old First Church Choir

A recorder that would produce a richer sound at a comparable price would be the Tascam DA 30-Digital Audio Tape (DAT) recorder. Nostrand has used this machine on several occasions with extremely good results. The DA 30 samples at 32, 44.1 and 48 kHz, and is able to reproduce the richness and warmth to a greater degree than the minidisc.

The DA 30 is a professional machine and is easily rented for those single event recordings, whereas the MD1 is a consumer machine and might be harder to find as a rental. The DAT format is widely accepted for dubbing onto cassettes, whereas the MD1 disc would have to be mastered onto a DAT or 2-track tape or cassette master, bringing the end result another generation from the original.

Recording a church choir does not have to be a complicated or expensive affair. All you really need is a decent microphone, a DAT recorder or MD1 minidisc recorder, and most importantly, a good set of ears. db