

Leslie®

Pipe Voice of the Electric Organ

The man behind the speaker that launched the electronic organ industry.

by Len Clarke

Don Leslie was not a child prodigy. Somewhat reluctantly, he did take a few piano lessons in his very early years. As with most other kids at that age, he had more interesting things to do. In his early twenties, however, he took up a new hobby — playing the piano by ear. The keyboard had always fascinated him and now he took advantage of any opportunity to play the piano or pipe organ.

Whenever possible he listened to well-known organists in the theatre and over the radio, and then spent considerable time studying the wave-forms of the pipe organ on an oscilloscope. He was trying to figure out what was happening to make this sound so good.

The introduction of the Hammond organ and the statement that it could duplicate or exceed the pipe organ sound was good news to him, "Now I can have a real organ in my home."

Don was employed by the Barker Bros. De-

partment Store in Los Angeles as a radio service engineer. They had received one of the first Hammond franchises. The Barker Bros. store featured a pipe organ in the lobby. It was removed and replaced by a Hammond. Within a few months Hammond decided to establish its own outlet by opening a store on Wilshire Boulevard. Barker Bros. lost the Hammond franchise and the pipe organ was then reinstalled.

As a radio service engineer Don was quick to realize that actually he did not know enough to be entrusted with the expensive radio sets he was to repair. He signed up for a radio/TV course by mail. It soon told him that neither he nor his co-workers had any notion of what they were supposed to be doing. This course helped him rise to the top of the 18-man department. To further bolster his confidence, he came out on top when G.E. decided to test 200 Los Angeles repairmen on their technical knowledge of the new TV me-

dium and receivers.

The new Hammond showroom on Wilshire Boulevard was a very narrow, long building with excellent acoustics. The organ sounded very good, even with the small speaker cabinet containing only two 12" speakers. Further inspired by this, Don finally saved enough for a down payment on a used console, Serial No. 58. He figured he could build some type of speaker and save a little money; nothing special, only something that would allow the organ to play.

He soon realized that the organ with his homemade speaker was a mistake, as "the sounds that came out in no way resembled a pipe organ." He also knew that when the Hammond was played in a large hall, the results were outstanding. He decided to see if he could do something to the system to make it good enough to salvage his purchase. He gave no thought at that time to the manufacture of a speaker.

For four years Leslie tried various methods to improve the basic Hammond sound. He felt it needed motion of some kind because the pipe organ had motion with sound coming from the different locations of the various pipes. One idea consisted of 14 small speakers mounted around the edge of a drum which was to rotate to introduce that motion into the output. It was a start, but sounded terrible with the flutter caused by the passing of each speaker regardless of the rotation speed. Changing the phase of half of the speakers, and with a slow rotation, made it sound different; as he increased the speed of the rotation, it sounded better. As it approached tremolo speed, it sounded very good. He disconnected speakers one by one until only one was operating and this sounded best. The Leslie speaker was born.

Later he discovered that it was not even necessary to rotate the speaker. A stationary speaker with a rotating 90-degree bent horn accomplished the same result. Suitable speakers for low and high frequencies, a proper horn design combined with a good bass reflex cabinet, and a modern high power amplifier all led to the result for which he was looking. Of the two bent horns, only one

Don Leslie and the rotating horns of his famous organ speaker.



works; the second is only a dummy for balance. This basic design has never changed.

Convinced he had something, Leslie arranged for a demonstration at the Hammond Los Angeles studio to which 50 organists were called in to listen. They thought the sound was a great improvement. He did his best to convince the Hammond people of the value of his new speaker and stated that if he did not hear from them within 30 days he would start manufacturing the speaker himself. As he says, "They liked it but they didn't take it," adding after a pause, "thank heavens." They did not reply for 17 years.

Leslie had managed to sell the speaker to radio stations in the United States and Canada prior to the demonstration. The CBS station in Los Angeles was one of the first. Radio stations had been quick to purchase the Hammond. Being portable and small, it relieved a serious station problem. Instead of several organists all using one pipe organ for their shows, a Hammond was purchased for each studio. Radio stations had tried many ways to improve the Hammond sound but the Leslie tone cabinet was the best answer.

Hammond made some very good speakers. Cost always was a factor and the open back of most cabinets basically was not good engineering. Although Hammond did not appreciate the Leslie, they purchased one of the first five he shipped. This was quietly purchased from a Denver music company. Hammond could not believe that people wanted the Leslie or theatre sound. It was not the quality of sound Hammond wanted for their

organ. They thought they could do something better, although not necessarily theatrical. They prohibited their dealers from handling the Leslie, making all customers buy a Hammond speaker with each console.

From the beginning, the Leslie was preferred for its tonal enhancement; it also offered considerably more power, plus an adjustable volume control. Hammond speakers did not have this feature and owners complained about the lack of power from their speaker cabinets.

There was a definite demand for the Leslie speaker and so independent dealers were established, such as Ed Harrington in Chicago and Jesse Crawford in New York. Harrington stopped taking Hammond speakers in trade — he had too many. The trade-in value for a Hammond speaker was very limited. As a result, many kept the original Hammond speaker and added a Leslie to their system. They found controls were available to allow the speakers to be used separately or together and this greatly improved the enjoyment of their investment.

Other electronic organ manufacturers were quick to work with Don Leslie. They realized the value of the Leslie sound. The Gulbransen spinet organ housed the first built-in Leslie speaker and others — Thomas, Lowrey and Conn — soon followed.

Baldwin was not exactly overwhelmed by the Leslie. They turned a deaf ear on any attempt to use one. The Baldwin tones were not compatible with the Leslie treatment. Another invention by Don Leslie, called "Isomonic," solved the problem caused by defective harmonic mixing found in most electronic organs even today. One of their earlier and most popular models, the Baldwin 5, could be hooked up to a Leslie by using a simple adapter supplied by Leslie, but this model was not expected to reach a market interested in the Leslie effect. While the Leslie Isomonic system was developed on the original Baldwin Model 5, Baldwin did not use the system. Eventually Leslie licensed Baldwin to use cer-

tain Leslie patents in the manufacture of organ and speaker cabinet models. The first commercial application was in the original Gulbransen Rialto console, and this is the reason that the string and reed voices were so clean and superior. Today, if one listens carefully to the complex voices in almost all electronic organs, the undesirable harmonic beating on fourth and fifth intervals will easily be heard and perhaps someday the Isomonic or some other system will be used to make these voices more natural and acceptable.

Today it is safe to say there is a Leslie tone cabinet for every make of electronic organ. The first multi-channel systems were introduced by Leslie in home and entertainment organs to keep various voices separate for different acoustical treatment. The first organ so equipped was the Conn with two channels. Later, more channels were added; and, in the case of the Gulbransen Rialto, eight separate amplifier and acoustical channels were provided. It is now standard practice to provide several channels for various functions.

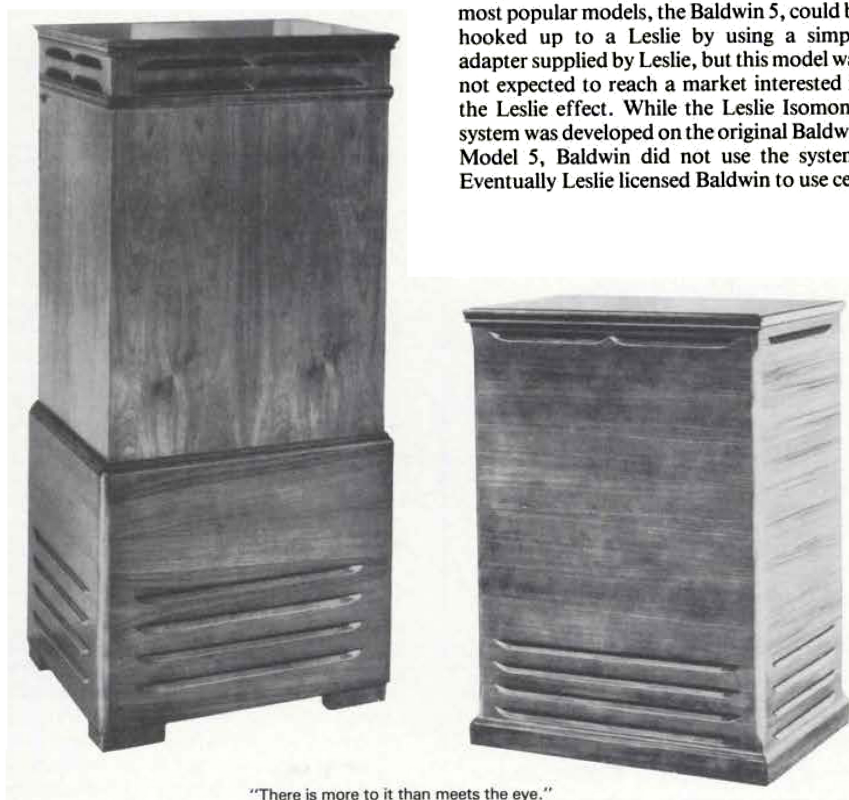
Once the Leslie was on its way, Don could spend more time developing his intricate model railroad, a setup that would permit independent or simultaneous control of 37 electric train engines sharing many scale miles of common track. The engines were all equipped with tiny radio receivers and each would take speed, direction and coupling orders by radio impulse on its own frequency. This system was also invented and patented by Don Leslie.

A now-retired Hammond executive once said during a demonstration at Lyon & Healy in Chicago that "The Hammond can produce 256 million different sounds, nine of which are good." Regardless, Leslie enhanced the complete Hammond range. The Leslie speaker is known throughout the world as the standard of quality organ sound.

The famous Hammond X66 did not have a Leslie as standard equipment. The X66 speaker was made by Hammond. It was an excellent speaker and proved what could be done electronically without moving parts. Nevertheless, entertainers also insisted on using a Leslie and it was possible with the Leslie adapter.

The first cooperative endeavor of Leslie and Hammond was the development of the X77 organ. Hammond approached Leslie with the idea of getting together to have Hammond design and build a console especially aimed at the entertainment field and to have Leslie work with Hammond to design and build a special speaker cabinet to be used with this console.

The program went very well as the two companies worked together and arrived at an agreeable speaker design which included some of the latest Leslie developments, among them the unique acoustical tremolo device that was introduced in the Leslie Model 60 unit. Also, a new development at Leslie was the solid-state amplifier that sounded like a tube amplifier. This was one of the first designs to use current feedback circuits, which resulted in the superior musical sound. The speaker contained four separate channels:



"There is more to it than meets the eye."



Don Leslie showing a friend the elaborate model railroad system he designed and built.

pedal, organ tremulant, a non-tremulant channel, and an acoustical tremulant channel which sounded like a vibraharp on the keyboard sustained outputs found on the X77.

The console was designed for flexible switching into these channels from the two manuals, and a variety of effects could be obtained. The four 60-watt amplifiers produced a total of 240 watts of electrical output, making it very satisfactory for the commercial use for which it was designed.

After the design of the console and speaker cabinet was completed, Leslie produced the speaker and Hammond produced the organ. Dealers would purchase the console direct from Hammond and the speakers direct from Electro Music.

The success of the Leslie interested CBS,

which was in the process of acquiring music-related companies. They eventually acquired Leslie, Steinway, Rodgers, Gulbransen, Lyon & Healy and others. Don was retained as a consultant by CBS. Later, CBS had a change of heart on some of their acquisitions and finally sold Leslie to the Hammond Organ Company.

The battle between Don Leslie and Hammond was ended when he was honored by the Hammond Organ Company at their Frankfurt Fair dinner. "All these years my speakers have generally been looked on as necessary evils. To have Hammond — and where would I be today without Laurens Hammond? — publicly acknowledge that I shared importantly in the development of the electronic organ was my greatest reward." □

NOTICE OF ANNUAL MEETING

To: Members of the American Theatre Organ Society

From: David M. Barnett, National Secretary

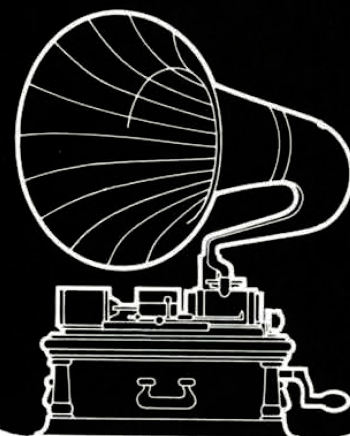
Subject: Notice of Annual Meeting

Date: June 1, 1986

The Annual Meeting of the members of the American Theatre Organ Society will be held on Tuesday, July 8, 1986, at the Mosque Auditorium, Six North Laurel Street, Richmond, Virginia 23220, beginning at 11:30 a.m. The meeting will be held immediately following the 1986 Convention performance by Jim Roseveare.

David M. Barnett
National Secretary

For The Records



*Manufacturers, distributors or individuals sponsoring or merchandising organ recordings are encouraged to send review copies to the **Record Reviewer**, THEATRE ORGAN, 3448 Cowper Court, Palo Alto, California 94306. Be sure to include purchasing information (post-paid price, ordering address) and a photo of the artist which need not be returned.*

COMMAND PERFORMANCES VOL. 3, Selected Gems from the Library of the Detroit Theater Organ Club. Stereo Dolby cassette only, available postpaid for \$10 from DTOC, 6424 Michigan Avenue, Detroit, Michigan 48210.

With Volumes 1 and 2 behind them, the folks from the land of American know-how have conjured up another formidable program from their extensive archives. First let it be said that the reproduction of the Wurlitzer 4/34 on tape is marvelous. The various new gimmicks introduced since most of these performances were mastered — whether digital, direct-to-disc, half-speed masters, or compact discs — really are no substitute for careful engineering at the source. Hats off to Ted Amano and Frank Laperriere. Nor is there any substitute for a superb Wurlitzer in the right theatre. Producers Don Jenks and Mac McLaughlin had the magic combination before they ever started this project. All they had to do was pick four odds-on favorites from the last two decades of DTOC concerts.

From his concert of December 1967, the legendary Don Baker couldn't do anything wrong. He opens with "Zing Went the Strings of My Heart," which he had probably played more times than Judy sang "Over the Rainbow," and the results are high voltage excitement all the way. The launch starts as a snappy march with full organ and then goes into orbit. The jazz riffs are perfectly registered, and Don's breath-taking "triple tongue" ef-