



LOU BURROUGHS

MICROPHONE FACTS

for the operating engineer

from *Electro-Voice*[®]



PAUL FRANKLIN

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A CASE HISTORY FROM PARAMOUNT PICTURES CORPORATION

The following paper was written by Bruce Denney, head of Paramount's Sound Engineering Department, to be read at an SMPTE meeting and for publication in a Microphone Facts letter.

For those not acquainted with Bruce, he is one of the top ranking sound engineers in the motion picture business. I have found him one of the most cooperative men it has been my pleasure to work with. Always interested in talking over problems and making tests of ideas and products that may solve some of them. At the moment, we are developing one of Bruce's ideas into a product that will be of help to many in various phases of the sound industry.

MICROPHONES AND JERRY LEWIS' "LADIES MAN"

I know that you are familiar with the set used on "Ladies Man". The publicity in LIFE magazine last spring showed its magnitude and beautiful color. Press and preview showings of the picture caused spontaneous applause as the camera pulled back to show the large many-roomed, three-floored set. This is a story in itself but our problem concerned sound pickup under unorthodox conditions.

The set designers caused each room to have ceiling beams of from 8 to 12 inches in depth. The major lighting and microphone facilities had to be concealed in and/or behind these beams.

Tests on the mock-up room indicated that the lighting problem could be solved with special reflectors using 500 or 750 watt lamps spaced 20" to 30" apart. A typical room of average size would require 6000 to 7000 watts of light; and heat. The temperature at the ceiling was measured as high as 180°F.

It was obvious that many microphones, each mounted adjacent to the lights and in an unusual acoustic situation would be required. Tests were made on several microphones to determine if they could survive a temperature that might possibly rise to over 200°F. and if their characteristics would change during or after such heat exposure.

It was also necessary to determine if the microphone quality and directivity would suffer by being placed into the boxes formed by the beams and acoustically treated ceiling. The Electro-Voice model 666 survived both tests. In the restricted areas the microphone lost some directivity and the final sound was more that of an omnidirectional microphone than that of a cardioid microphone. This was not a serious effect. It was to be a big set with large rooms and there was no requirement of cardioid quality and absence of all reverberation under such conditions. The intelligibility was excellent and the sound matched the picture.

Electro-Voice 666 and 642 microphones were used in the production recording of this unusual picture.

Over three miles of shielded microphone wire was used in wiring the many rooms to the mixer position. Sixty-three circuits were provided. Plug-in and switching facilities permitted as many as thirty-six microphone lines to be pre-arranged for any one sequence. A twelve dial mixer console was provided which, with the switching facilities, gave the sound engineer a method of following the actors through the most involved scenes. At one time, twenty-five microphones were in use including a lavalier type microphone concealed in the elevator and whose microphone line moved with the elevator cables.

Special brackets were built that permitted the microphones to be clamped to the strip lights and which permitted the microphones to be adjusted to any angle. Fortunately, the lights were operated from DC motor generator sources and with capacitive ripple filters. It was, therefore, possible to run the sixty-three microphone leads through and with the power wiring troughs and out to the twelve dial mixer-control position.

The Electro-Voice 666 microphones, having a cardioid pattern in both the horizontal and vertical plane, were less critical to "tip" angle and were used in the rooms.

There were times when the actors and actresses approached the front or near camera edges of the rooms and moved out of the areas served by the strip lights and the fixed microphones. In such cases, Electro-Voice 642 microphones were used hand-held or on stands at distances of from 10 to 15 feet from the actor to match the quality of the room microphones.

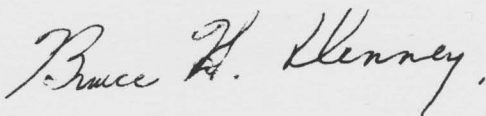
We feel that an excellent job of sound recording was done under these unusual conditions. The release print sound is good and matches the picture in perspective. Except as a prop in the TV sequence a microphone boom was never used.

Many additional facilities were provided for this picture. Ampex two track recorders with Rangetone synchronizing equipment were used for protection recording and for the playback of musical numbers. A Mac-Kenzie loop repeater was used for effects which cued action. A closed circuit TV camera was mounted on the film camera to supply the director, actors, technicians, and the audience in the stage with a camera's eye view of the production.

One of the most remembered incidents occurred on the closing night of the production's shooting. The Los Angeles Section of the S. M. P. T. E. had arranged to have its monthly meeting in the big set. Over five hundred members and guests were present and Jerry Lewis, the actor, director, and producer, had agreed to address the group. We had been testing the Electro-Voice 643 microphone prototype with some success and had used it in one case to record dialogue from a distance of 30 feet. After Jerry's address, the meeting became a question and answer session wherein the 643 microphone was used for pick-up to record the audience's comments. At one time a question from a member 110 feet from the 643 could not be heard or understood by the speaker. Jerry ordered the recording played back and the voice was amazingly clear and distinct. The impact of the 643 on this large audience was most dramatic and is still a topic of discussion.

Although we have had very little experience with the 643 microphone, we are planning to use it on several scenes difficult to record. One case will occur where we hope to record good dialogue with a background of ocean surf. Our plans and preliminary tests indicate that the 643 microphone, placed low and beamed up and over the surf noise, may help us record creditable sound under usually impossible conditions.

The 642 microphone is being used more and more for location recording. Sometimes used with the 513 filter, it is regarded as heavy and clumsy to use. However, this microphone has saved many scenes that would otherwise have been lost due to wind noise, background noise, or inability to place a "regular" microphone near the actor. Several 642 microphones are used in our music recording sessions for "spot" pickups. Instruments such as the guitar and celeste can be readily extracted and soloed out of large and loud orchestras with this microphone, when desired. We regard it as a versatile and helpful addition to our "regular" microphone complement.



Bruce H. Denney
Head: Sound Engineering Department
Paramount Pictures Corporation

A REPORT ON THE SENTRY MONITOR

The following letter from Ron Malo, Chief Engineer of Chess Records, is so complete it requires no explanation except to say that at the time of his investigation of the Sentry speakers he was, and still is, in the process of rebuilding studios and equipment Chess had purchased from another recording company.

Due to his engineering background and experience in the recording field, Ron is particularly well fitted to make the analysis described in his letter.

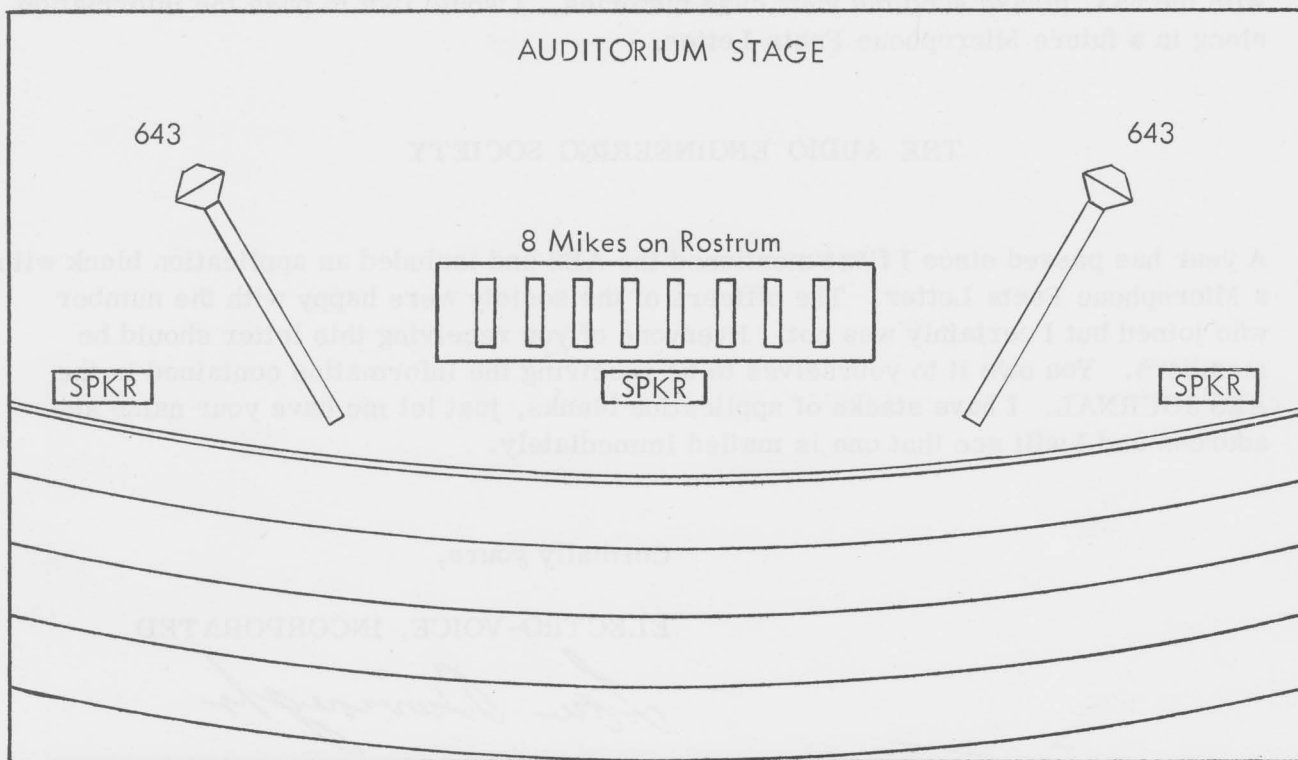
Since this letter was written, Ron has added three more Sentries and more are to follow as facilities are completed.

Why not follow Ron's example and let the Sentries help you solve problems. If you believe you have no problems, try a Sentry anyway and have double proof that your audio is all you believe it to be. I believe you are in for a surprise.

PA & THE MODEL 643

This case history was related to me by Robert Miller, Audio Technical Staff CBS-TV, New York City. Bob is responsible for sound on the Ed Sullivan Show and other important pickups. In this particular instance, Bob was with the crew in Washington for the Glenn and Titov press conference telecast.

The diagram below shows the arrangement of equipment used on the stage to cover the conference.



The speakers at the sides of the stage were mounted 15 feet from the floor and the 643's located almost directly below but a few feet to the rear. A center speaker was built into the rostrum on which eight microphones were located. The rostrum was positioned a few feet ahead of the 643's. Width of the stage is approximately 50 feet.

All microphones were used for both air and PA feed. The 643's were manned and aimed at the person in the audience asking a question. When a question was asked, the rostrum microphones were cut and the PA gain for the 643's adjusted below feedback, the amount of level reduction depending on the distance from which the question was asked. Often this distance was from 40 to 50 feet away. With careful gain control, no feedback was experienced and the speaker level was adequate for everyone in the auditorium to hear the question being asked by someone in the audience.

When the question was answered, the 643's were cut and the PA gain readjusted for the rostrum microphones.

This is proof the 643 can be used for PA, but it takes some doing as this type of setup is tricky. The fact that they could be used without feedback here does not mean they will do the same under your particular conditions. The amplifier, frequency response of and location of speakers and the acoustic conditions of the room are major factors controlling success or failure. Be certain your amplifier and speakers are peak free or you are in for trouble. The answer to flat speaker response is the E-V Sentry. When others fail because of feedback, try the Sentry — it has an outstanding record of success in this respect since it is completely peak free.

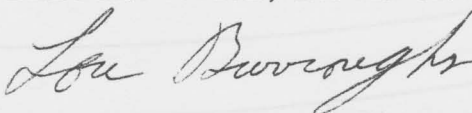
There are now about sixty of the 643's in use and we would very much appreciate receiving information on performance in the field. Those of you having experience with the 643, please send me your case histories. I would like to pass the information along in a future Microphone Facts Letter.

THE AUDIO ENGINEERING SOCIETY

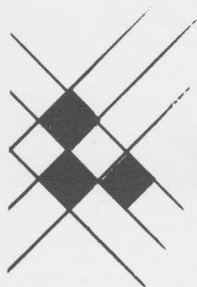
A year has passed since I first mentioned the AES and included an application blank with a Microphone Facts Letter. The officers of the society were happy with the number who joined but I certainly was not. Everyone of you receiving this letter should be members. You owe it to yourselves to be receiving the information contained in the AES JOURNAL. I have stacks of application blanks, just let me have your name and address and I will see that one is mailed immediately.

Cordially yours,

ELECTRO-VOICE, INCORPORATED



L. R. Burroughs, Vice President
Broadcast and Recording Equipment



CHESS · CHECKER · ARGO

records

2120 south michigan avenue · chicago 16, illinois



March 29, 1962

Mr. L. R. Burroughs, Vice President
Electro-Voice, Inc.
Buchanan, Michigan

Dear Lou:

I thought you would be interested in what has transpired since the installation of your Sentry Monitor Speakers.

In late December, I received a Microphone Facts Letter concerning these speakers and after reading it, I asked our distributor to send us a pair for test, as I was not satisfied with our existing Monitor Speakers.

The initial reaction of all concerned was not favorable. The sound we heard from these was very different from the sound we were used to hearing and some of the boys were ready to reject them after the first try.

Your letter had made such an impression on me that I decided to force the issue and continue the test. I realized that if I was ever going to improve our recordings, I would have to use a flat response listening source to evaluate the material to be recorded.

Since you stated the Sentries are flat and my experience with Electro-Voice microphones proved you to be truthful, I decided to accept the speaker curve as fact and question the rest of my equipment, whenever a problem came along.

The first problem appeared when we listened to some of the tapes that had been recorded while using our former speakers. Some of these now proved to be over-sibilant and over-bassed. On examination, I found that there was a 10 KC peak in the amplifier that had not been apparent before. As for the bass and the over-sibilance, we had been equalizing upward in both the bass and mid high frequency range and now realize we were just compensating for speaker deficiencies.

Now that our equipment has been reworked, response curves run and everything checks out flat, we find original opinions being reversed in favor of the Sentry. In using the revamped equipment, we seldom use any equalization and most sessions are recorded flat.

On playing back the tapes for the musicians, I met with enthusiastic comments. Everyone was happy with the overall pickup and especially the natural sound of each individual instrument. This, I am sure, is due to the increased transparency of the sound.

Mr. L. R. Burroughs
Electro-Voice, Inc.

March 29, 1962
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My microphone technique has also changed. I find I am using them at increasingly greater distances. Vocalists are working at from two to three times their former distance to eliminate the harsh, breathy presence we were putting on the tape but could not hear. Instead of mikeing piano under the lid, I am placing it about three feet away and obtaining better balance. Also, I find I can pinpoint some of our studio defects and through microphone placement am able to minimize them.

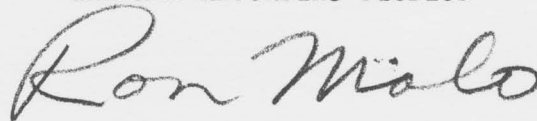
The selection of microphones has changed considerably since I am now able to more easily distinguish the difference between them. A few, I know, will not be used again in our studios.

We are more pleased than ever with our final products since the records not only sound excellent on the Sentries, but we find when played on various other speakers the average sound is improved over the past.

I am sending a tape for your comments. It is one of the first produced since the Sentries were installed. I am sure you will be as pleased with it as we are.

Sincerely,

TER MAR RECORDING STUDIOS

A handwritten signature in cursive script that reads "Ron Malo". The signature is written in dark ink and is positioned below the typed name and title.

Ron Malo
Chief Engineer

RM:rb