

LOU BURROUGHS

MICROPHONE FACTS

for the operating engineer

from *Electro-Voice*[®]

ELECTRO-VOICE, INC.
BUCHANAN, MICHIGAN
PHONE OX 5-6831

January 1963

TELSTAR BLACK HILLS PICKUP

The Telstar International Relay Program of July 23rd that officially inaugurated world-wide television was one of the most complex ever attempted by the American broadcast industry. This issue of Microphone Facts is devoted, principally, to an account of some of the problems encountered in one portion of this vast project. The information was supplied by Alvin J. Siegler, Manager of Technical Services, CBS-TV, New York, who was coordinating engineer for all networks participating in the Black Hills Telstar operation. I have known Al for many years and have relied upon him and his associates to keep me informed on microphone problems. I have always found him eager to hear of new ideas and to assist with tests of microphones that, in several instances, have resulted in new and useful tools for CBS.

This case history is just another illustration of Al's progressive thinking.

TELSTAR AND THE MODEL 642

The July 23rd Telstar Relay Program was made up of live originations from the Statue of Liberty, Niagara Falls, San Francisco, the Rio Grande river, baseball from Chicago, the State Department in Washington, Cape Canaveral, Quebec; Stratford, Ontario; the Seattle World's Fair, the Black Hills of South Dakota, and the United Nations in New York.

My particular concern was with the South Dakota, Black Hills segment. This consisted of live pickups of stampeding buffalo at Custer State Park, scenic views from the top of Mt. Coolidge, and the 350-voice choir of the Mormon Salt Lake City Tabernacle singing in the open air amphitheatre below the carved stone faces of Washington, Jefferson, Roosevelt and Lincoln on Mount Rushmore. For many reasons this remote was one of the most difficult ever attempted by the networks.

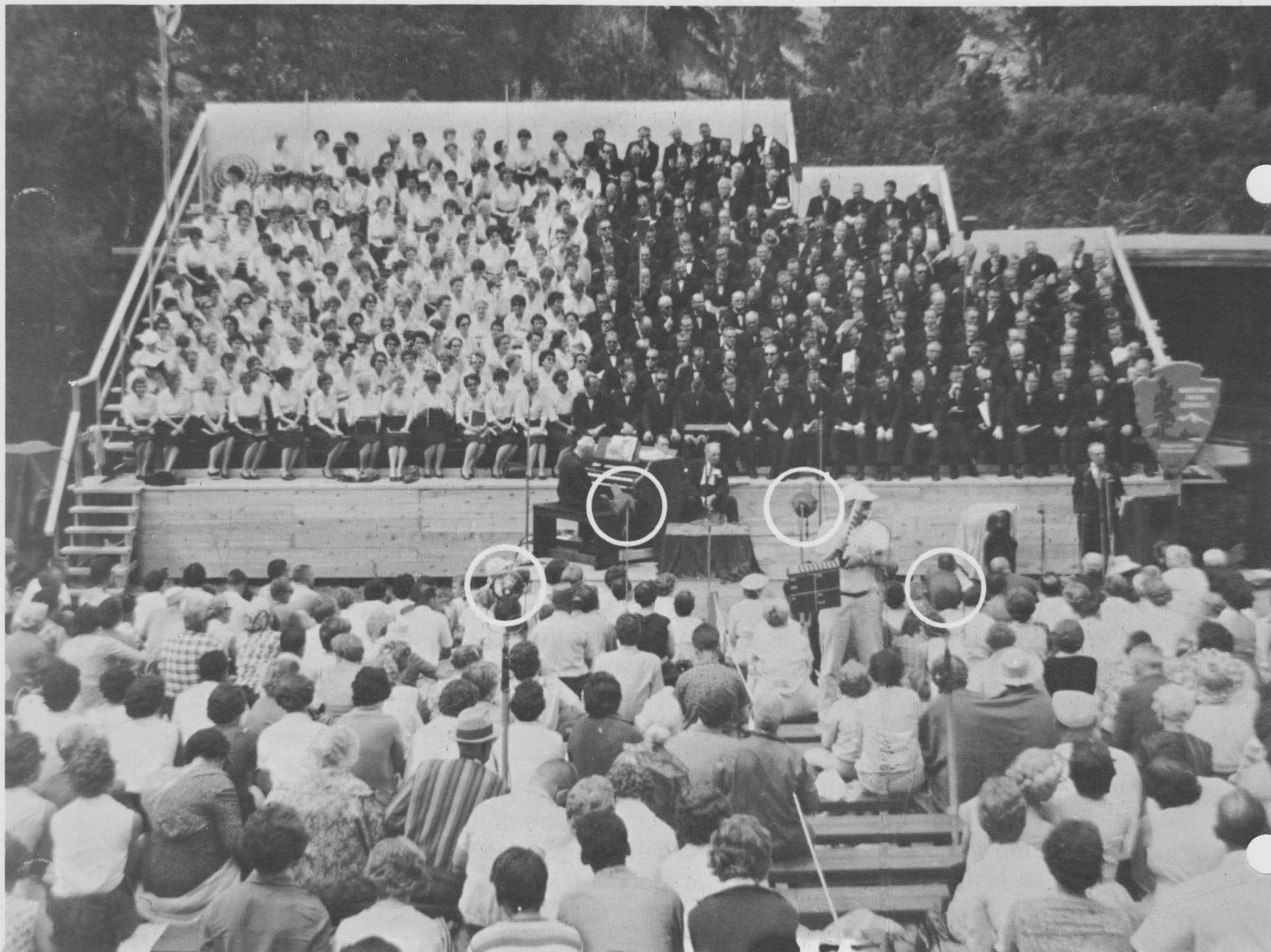
One of the problems we anticipated in the initial survey was the audio pickup of the choir. It had to be right since their sound is known the world over. Considerable thought went into the choice of microphones and monitoring speaker in order to do justice to the choir's magnificent voices.

During the actual pickup, the choir was arranged on the amphitheatre stage, thirty singers across, on fourteen tiers, with the male voices on the right, female voices on the left, as shown in the accompanying photograph. Two E-V 642 microphones with their 327 wind screens, set at 8 feet high and about 25 feet back, were directed at the center of each section.

A storm had passed over, some time before our pickup was made, leaving a gusty wind to cope with. We thought we were in trouble but, surprisingly, no wind distortion was heard.

The assistant choir director, who acted as the audio consultant for the networks rehearsed the choir from the control room. He stated that he was quite pleased with the sound of the pickup and gave his approval for broadcast. The control room speaker selected for this auspicious occasion was the E-V Sentry II Studio Monitor.

After the Telstar relay, the choir gave a concert which was recorded for the Tabernacle archives. We were not surprised to see them also using two E-V 642's for their recording session.



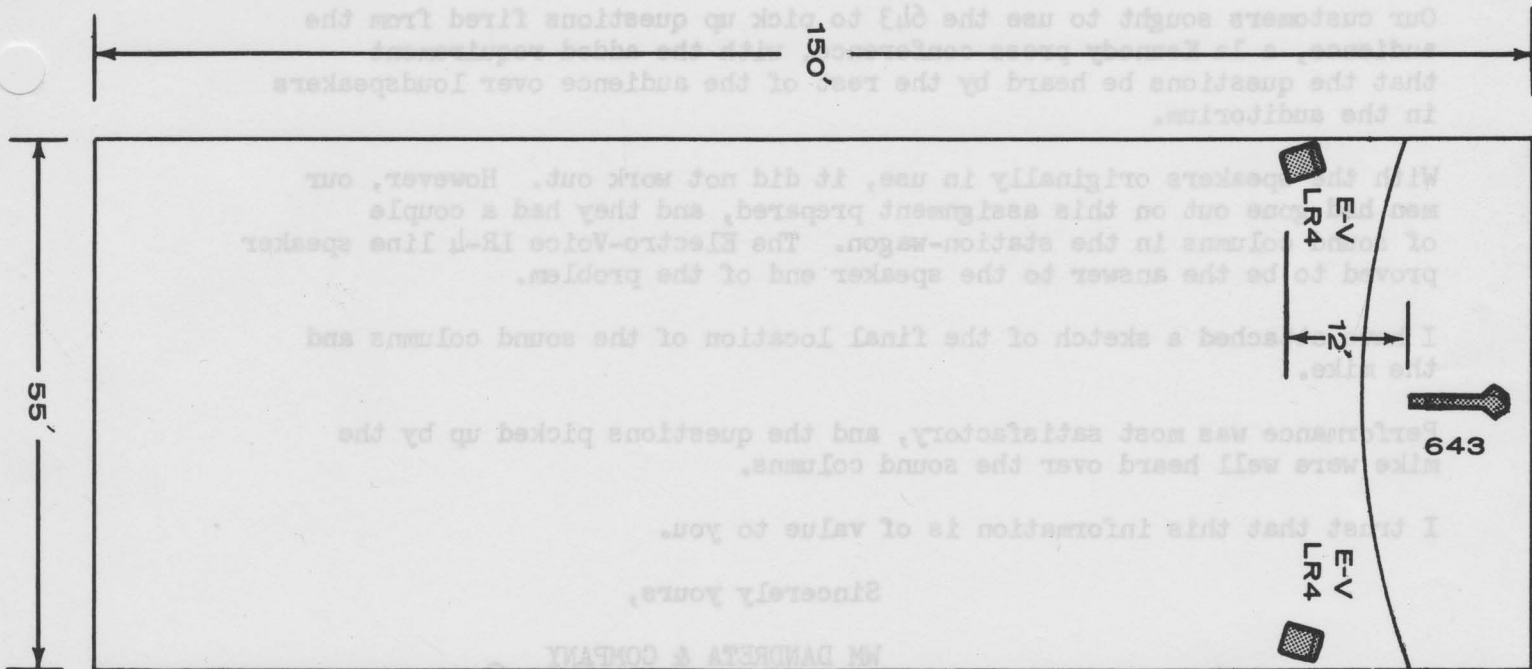
The picture shows two pair of 642 microphones; the forward pair were for Telstar pickup and the rear pair were there for the choir recording following the telecast.

Incidentally, an E-V 646 microphone was also used to pick up the hoof beats of the stampeding buffalo at Custer. In this case, the microphone was placed on the ground, right in their anticipated path; even though we considered it expendable, the microphone came through unscathed and in fine working order.

643 MICROPHONE USED IN A PUBLIC ADDRESS APPLICATION

One day in early spring, I received a phone call from Anton Langhammer (Manager, Audio-Visual Division of Wm. Dandreta & Company in Providence, R.I.) stating that he had a request for a public address system in which the microphone must pick up questions asked in an audience and feed them back through speakers so that the balance of the audience could hear them.

Tony then asked whether I thought the Model 643 Cardiline microphone would solve the problem of picking up the questions. Since this was to be a P.A. setup where acoustic feedback would be the limiting factor, I said it was almost a foregone conclusion that it would fail, but if he wanted to make a test I would most certainly make a 643 available. Shortly thereafter, a 643 was sent to Tony for his investigation and I heard nothing further until I received the following letter.



NOTES

1. Mike on stage, about 3' above auditorium floor.
2. Bottom of columns about 6' above auditorium floor.

Wm. Dandreta & Company

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PROVIDENCE 8, R. I.

November 2, 1962

Electro-Voice Incorporated
Carrol & Cecil Streets
Buchanan, Michigan

Attention: Mr. Lou Burroughs

Dear Lou:

You no doubt recall that some time ago we were involved in some tests involving the 643 microphone, and subsequently were successful in selling one for an application which on the face of it appeared doomed to failure.

Because this was successful, and because the state of the art is such that any information from the field may still be of value to you, we feel that it is worthwhile for us to report to you on our experiences.

Our customers sought to use the 643 to pick up questions fired from the audience, a la Kennedy press conference, with the added requirement that the questions be heard by the rest of the audience over loudspeakers in the auditorium.

With the speakers originally in use, it did not work out. However, our men had gone out on this assignment prepared, and they had a couple of sound columns in the station-wagon. The Electro-Voice LR-4 line speaker proved to be the answer to the speaker end of the problem.

I have attached a sketch of the final location of the sound columns and the mike.

Performance was most satisfactory, and the questions picked up by the mike were well heard over the sound columns.

I trust that this information is of value to you.

Sincerely yours,

WM DANDRETA & COMPANY

Anton E. Langhammer
Anton E Langhammer, Mgr
Audio - Visual Division

AEL:br

Enc:l/cc:M.Scott Co.

NORM DEWES AND HIS BAZOOKA SPEAKER

During a recent visit to CBS TV City it was my good fortune to find Norman H. Dewes (Audio Engineering Department) at leisure for a few moments to discuss various problems concerning microphones and their use. During our discussion, Norm mentioned a speaker he had developed as a stage play-back unit for lip-sync of pre-recorded music.

Norm has had the audio problems of several of the CBS networks top programs to solve and is an old hand at coming up with the answers. The speaker Norm calls the Bazooka is his contribution toward solving the play-back speaker problem.

Norm showed me his unit, but I did not have the opportunity to hear it. Since I am not able to discuss the Bazooka first hand, I will pass Norm's letter and sketch on to you with the hope you find his information of help in solving your problems.

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

Hollywood, California
January 21st, 1963

Dear Mr. Burroughs

Enclosed is a very hasty set of measurements made on the "Bazooka" Speaker, set up in Studio 31 at TV City yesterday. The stage was completely empty and quiet, but due to several resonant points and reflections, the readings obtained are probably not of much value. It was too windy to set up on the roof, and we are not blessed with an anechoic chamber, however the measurements were made in a somewhat normal operating environment, so perhaps they are of some interest.

As I mentioned in our telephone conversation, this speaker has worked out very well as a stage play-back unit, for lip-sync of pre-recorded musical numbers where reception of articulation is important, with minimum spill or leakage into the boom microphones. Also for orchestra reinforcement, to overcome the acoustical lag between a vocalist and the accompaniment. We use it normally mounted on a regular lighting floor stand, in a lamp "U" bracket or yoke, so that it can be panned or tilted and wheeled around to follow movements of the artist. It has been found to be particularly useful in making a vocal track to a pre-recorded orchestra track where the vocal group is placed on both sides of a bi-directional microphone. The speaker can be placed at ear level on the dead side of the microphone, and only a foot or two away and operated at quite a high level without objectionable spill, much to the delight of the vocalists.

I have tried several other versions of the "Bazooka" baffle, of smaller diameters, as the Sonotube material comes in many sizes. The 5" and 3" models are considerably more directive and are useful in close-up shooting, and for semi-private two-way interview programs where one side of the conversation comes from a remote point, and it is desirable for the person being interviewed on camera not to wear headphones. Also, a 12" version was tried, but while a more powerful speaker can be used, directivity is lost to the point where there is little advantage over a conventional floor speaker. However, the 12" model was still preferred by performers, since it provides a "point source" for playback of musical tracks or orchestra P.A. and hence is easier to follow. Also, better bass response can be achieved, which is an advantage where the singer is singing to a "beat".

I believed I mentioned that the whole "Bazooka" concept came about as an emergency measure, several years ago, to provide an acceptable playback unit in a musical show starring Mr. Bing Crosby. It proved to be most satisfactory, and has been used in many musical shows since, including those of Red Skelton, Danny Kaye, Jack Benny and others.

Again may I say that it was a great pleasure to have you visit CBS, and your very informative talk was well received and will prove to be of considerable value to the furtherance of the cause of audio, which is rather a step-child in the world of instant pictures.

I wish to thank you for your interest in the "Bazooka", and hope to see you again, when you are out this way.

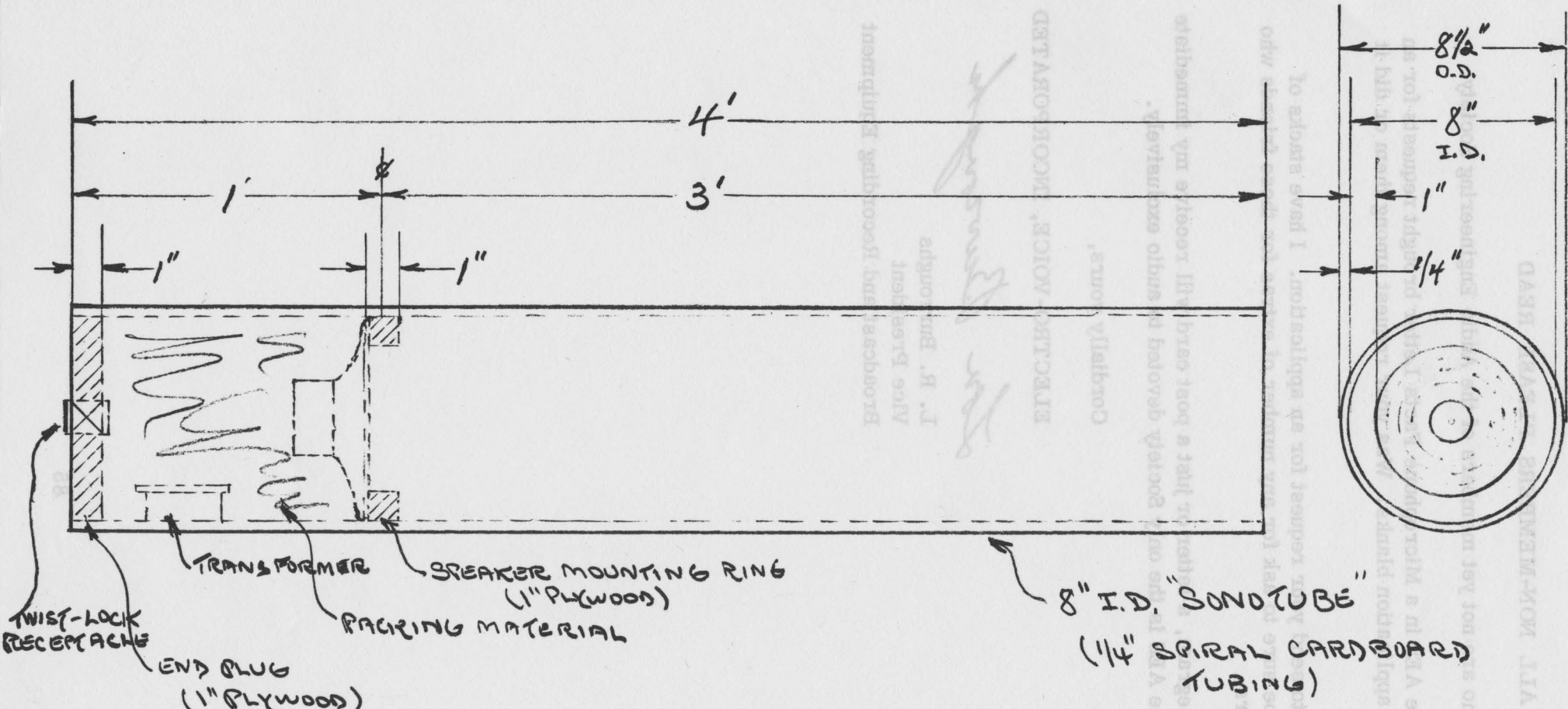
Sincerely,

Norman H. Dewes,
Engineering Department,
CBS Television
Hollywood, California

SOUND & THE MERCURY SHOT

On my last trip to New York, I ran into my old friend Sam Laine of CBS TV, New York. In the course of conversation, I found that he was in charge of the Audio Pool at Cape Canaveral during the last astronaut shot. Following is information on how Sam made the pickup.

There was a 642 located at 3500 feet from the launching pad and a 643 two and one half miles away. When the shot was made, cameras and microphones followed the rocket for several seconds which placed it many miles away. As I remember when watching TV, there was sound being picked up from the rocket almost as long as there was a picture to see. It would be interesting to know just how many miles away the sound was actually being recorded.



"BAZOOKA" STAGE
SPEAKER

DESIGNED BY
NORMAN H. DEWES
10-13-57

SCALE
1" = 6"
(APPROX.)

SPEAKER UNIT
8" CONE TYPE