



Scenes from Audio Devices' movie "Audiorecords—They Speak For Themselves." Above: Engineer examining hygro-thermograph. Left Inset: Inspector testing aluminum bases for flatness with mirrorgraph. Right Inset: Engineer operating machine which tests wearing qualities of discs.

Audio Devices' 16 m.m. Full-Color Sound Movie "They Speak For Themselves" Recently Released

AUDIORECORDS — THEY SPEAK FOR THEMSELVES is the title of Audio Devices' new, full color, sound movie which depicts important phases in the production of Audiorecords as well as detailed information on the proper method of handling and using Audiorecords and Audiopoints.

Many Educational Scenes

The movie, 17 minutes in length, was produced by Pathescope Productions, New York-Hollywood in Audio Devices' plant and laboratories.

Among some of the interesting scenes in the movie are: the automatic washer which washes the aluminum blanks one by one to remove every trace of dirt and grease; the subsequent inspection of each base to insure that it is perfectly flat; the formulation and mixing of recording lacquers; the well equipped Audio laboratory where latest scientific devices tell just how every Audiorecord will behave today, tomorrow and every day thereafter; the noise level check — done by cutting a groove in the Audiorecord with the cutter terminals open; the wear test — where unmodulated grooves are cut and

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It's A Good Thing, Brother!

*Some day I'm going to murder the bugler
Some day they're going to find him dead*

That long-felt ambition of every G.I. took a setback recently when it was announced that the acute shortage of experienced buglers in the American occupation zone in Germany had necessitated a rush order to Army officials in the United States for 550 sets of recorded bugle calls. Seems that this distressing state of affairs came to light when the Special Service Section in Frankfurt became swamped with requests from organizations, minus buglers, who were having trouble routing sleepy G.I.'s from their warm bunks. The canned calls will be distributed throughout the European theatre as part of a new campaign to emphasize military discipline.

Great Value of Recording Stressed By Speech Head

Lectures on Theory Not Sufficient;
Students Must Hear Their Errors

The Speech Department at Northern Illinois State Teachers College, De Kalb, Illinois, has found that the use of the recording machine is one of the most forceful ways of teaching good speech.

"We realize," writes Mr. W. V. O'Connell, Chairman of the Department of Speech, "after long experience, that lecturing on theory is not sufficient. The student seems to have a propensity for forgetting rules on theory which is accompanied by a comforting belief that his speech is not defective in either quality or pronunciation. His complacency is usually shaken when he hears his first recording."

At Northern Illinois State Teachers College where the beginning course in speech is required of all students, a recording of the speech of each is made at the beginning and at the end of each quarter. After the initial recording, each student has a private conference with the speech clinician who discusses his errors and makes suggestions for improvement. This has proved to be one of the most successful teaching devices, since the student cannot hear himself as others hear him until he has recorded his speech and heard it played back. At the end of the quarter the student makes another recording. A comparison of the two recordings is made to check improvement.

Not only in the fundamentals class is the recording machine used. The radio classes record programs which are analyzed and discussed by the instructor. Students in Interpretation and Dramatic Production also make recordings.

"One of the most valuable uses of the recording machine," Mr. O'Connell remarks, "is the help which is gained by the students playing a role in the college productions. At this time a student is strongly motivated to improve his speech and often spends a great deal of time working on speech improvement."

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Wm. C. Speed, Audio Devices' president bids good luck to Clarence C. Pell, Jr., company's national sales manager, prior to initial hop of air-borne service unit.

Audio Devices Commissions Air-Borne Service Unit

National Sales Manager Estimates
Unit Will Cover 50,000 mi. This Year

Audio Devices' new air-borne service unit, designed to implement a program of accelerated customer contact and technical educational service, was commissioned a few weeks ago at La Guardia Field in New York by the company's national sales manager, Clarence C. Pell, Jr.

The unit consists of a specially-equipped, single-engined Waco cabin plane, a technician when needed, and such sales or service material as the occasion may warrant and will permit brief or extended trips on short notice to all parts of the country. "We plan," Mr. Pell said, "to cover more than 50,000 miles this year on service calls alone. Also, if necessary, the unit may be pressed into service as an emergency delivery device in the event of sudden curtailment in freight transportation."

Solving the disc problems encountered by broadcasting stations; helping new FM stations establish proper recording setups; demonstrating techniques of sound recording in audio-visual training at schools and teachers' conventions and educating radio parts distributors and radio service men in recording technique are but a few of the many applications to which the new air-borne unit will be put.

"A service innovation in the recording industry, the unit," Mr. Pell said, "will permit Audio Devices to give many more times the service than could be rendered through use of other transportation methods."

New Technical Series

The first in a new series of technical articles, based on timely recording subjects and written by men prominent in the recording industry, appears in this issue of Audio Record. (See Page 2, Col. 1)

Army Features "Duckworth Chant" in Current Recruiting Drive

The U. S. Army Second Service Command, in an effort to stimulate recruiting in the peacetime Army, recently forwarded to all radio stations in New York, New Jersey and Delaware a recorded transcription of three versions of the Army's famous Duckworth Chant, one of the most infectious and interesting drill chants developed in World War II.

Requesting that these stations cooperate in the current recruiting drive by using these transcriptions (2 min—1 min—and 50 sec spots) in whatever free time they had available in the course of daily broadcasting, the Army pointed out that it was their belief that the Duckworth Chant was a more entertaining way of aiding the drive than the usual one and two minute spot announcements of straight dialogue.

The Chant was recorded in the NBC Recording Studios in New York.



The Man With the Story

Mercer McLeod, world traveler, actor, writer and master storyteller, brings his best talents to the fore in the brilliant new NBC Recorded Series—MERCER MCLEOD . . . THE MAN WITH THE STORY. Recognized as one of Canada's greatest actors, McLeod enacts the parts of all male characters in his stories with astounding voice changes and differences of pacing. The strange, improbable but not impossible eerie tales are currently being heard over radio stations throughout the United States and Canada. Recorded in cooperation with RCA Victor, Ltd. in Toronto, Canada, MERCER MCLEOD . . . THE MAN WITH THE STORY is produced under the supervision of the NBC Radio-Recording Division.

Great Value of Recording Stressed By Speech Head

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In addition to the above work, the department also has an audiometer which is not only used by the Speech Department but also by the Health Clinic and the Training School in order to ascertain possible hearing defects of students. The department likewise has a mirrorphone which is used extensively for drill purposes and is considered a most valuable aid to students.



By E. Franck, Research Engineer

Overmodulation and Overload

The correction of some faults in recording technique tends to be automatic, because the bad result is obvious and the method of correction is simple. An example of this is overmodulation. When too loud a signal is recorded, the cutting stylus vibrates so far that the grooves cut into one another. When the record is played back, this is detected immediately by distortion at the loud parts of the record, or advanced echos or cross talk caused when a groove is cut into or deformed by the next following groove. In extreme cases, as in the diagram, there may even be tracking failure. All these results are easily recognized and the correction is a simple matter of recording at a lower volume.



Overmodulation (use of too much volume) results in one groove cutting into the next. Occasional absence of "land" permits the playing needle, impelled by curving wave forms, to follow such a course as is indicated by the dotted line while normally it should follow the broken line.

Another fault usually found in records cut on portable machines is not so easily detected and we see signs of it repeatedly in discs cut by conscientious recording fans who make otherwise excellent records. We are referring to overload.

As a general practice, it is good to record close to maximum possible loudness for loud passages of music. This results in the greatest signal to noise ratio and minimizes scratch noise. However, many people using portable machines do not realize that their equipment cannot record to full volume without considerable distortion. This distortion is due either to overload in the amplifier because it cannot handle the necessary power or in the cutting head. It can be in both places. The remedy is the same as before, merely record at a lower level even though the modulation never reaches maximum at the loudest parts. The scratch level with good cutting styli and blanks is low enough to permit quiet records even though not recorded to top level.

The best check for this kind of overload is to record some music at top level and then again at 6 to 10 db lower. Both sets of grooves are then played back adjusting the volume control so that they are equally loud. If there is overload present, the portion recorded at a lower level will sound better. On some machines it is astonishing how much improvement there is when the recording level is kept below the overload region.

Tips for Handling Discs for Processing

By K. R. Smith, Vice-Pres.

MUZAK CORP., New-York-Chicago

(This is the first in a series of articles by leading figures in the recording field.)

A metal negative from your master disc cannot be better than the master recording supplied to Muzak. We are just as interested in helping our clients to supply a better product as they are themselves.

A fine original product means a perfect transcription, which results in increased sales for you and more work for us.

We have a few tips that will help us give you a better transcription.

1. Cleanliness — most important — assuming

K. R. Smith

of course, your actual recording is good. Avoid dust, lint, finger marks especially. We can remove most of the free particles of dirt but finger marks etch into the coating and invariably cause noise.

2. Package your discs correctly. Where practical, use a glassine envelope. Don't pack so tightly that corrugated marks will be pressed into the surface of the recording. Results are noise and latticed appearance of finished product.

3. Don't be, "penny wise and pound foolish," about changing the stylus. If there is the slightest doubt about it being dull or chipped, replace it. Generally speaking, a bright reflective cut is an indication of a good stylus. As a precaution, every so often play back your test cut and listen for noise — don't forget a slight noise in your original is greatly increased on the vinylite pressing.

4. Proper cut depth is important — 60% for groove and 40% for wall—too deep may cause you to lay down less amplitude of modulation, too light — poor tracking.

5. Lay down, with proper depth cut, full modulation. This can be approximated by feeding your cutter with a 200 cycle frequency. Note VU meter for reading at full modulation of cut. You can see when this is attained by means of your microscope. Ride gain so that voice and middle low frequencies do not drive your VU beyond this point.



The Madison College orchestra; Clifford T. Marshall, directing. (All orchestra programs are recorded on Red Label Audiodiscs)

Recorded Discs Play Major Role In Obtaining Jobs For Talented Madison College Students

"Our recording equipment is the greatest aid I could hope for in orchestral training," says Mr. Clifford T. Marshall, director of instrumental music at Madison College, Harrisonburg, Virginia.

Glossary of Disc-Recording Terms

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(Continued from Page 4 of the June issue of *Audio Record*)

Needle: (reproducing needle): A replaceable reproducing stylus (which see).

Needle drag: Same as stylus drag (which see).
Needle pressure: Same as stylus pressure (which see).

Optical pattern: The pattern which is observed when the surface of a record is illuminated by a beam of parallel light.

Orange peel: Mottled surface of a defective disc having an appearance similar to the skin of an orange.

Original recording: See lacquer original and wax original.

Overcutting: Excessive level in recording to an extent that one groove cuts through into an adjacent one.

Pickup: A mechanoelectrical transducer which is actuated by the undulations of the record groove and transforms this mechanical energy into electrical energy.

Pinch effect: A pinching, or in some cases a lifting of the reproducing stylus, twice each cycle in the reproduction of lateral recordings, caused by the recording stylus cutting a narrower groove when moving across the record while swinging from a negative to a positive peak.

Playback: An expression used to denote the immediate reproduction of a recording.

Poid: The curve that the center of a sphere traces when the surface of the sphere is rolling along a sine wave.

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"Also," Mr. Marshall relates, "it is used for a great many purposes other than for music. For example, the English department uses it in connection with the Speech department. And here, like at many other colleges throughout the country, students record on one side of a disc at the beginning of the fall term and the other side the following spring. As the same script is used for both sides, progress is easily gauged by the teacher who does not have to rely on memory in estimating the student's grades. For this work, only 10" Yellow Label Audiodiscs are used."

Discs—Employment Aids

Madison College has also found that a recorded disc can play an important role in obtaining a job for a talented student when the distance does not permit a personal interview with the prospective employer. "For a matter of record," Mr. Marshall says, "on all but one occasion our student secured the position she applied for."

Audiodiscs for Speech and Music

"At Madison, we are very anxious to attain the highest fidelity that it is possible to obtain and we stress the faithful reproduction of the high frequencies. Our recording equipment is tailor made and includes the best components available. After trying every type and make of disc, we settled on Yellow Label Audiodiscs for speech recording and Red Label Audiodiscs for music."



Chas. Baltin, WHOM program director, conducting "Pulse of the People" interviews. Show is recorded and rebroadcast at a later time.

New Transcribed Forum Heard Over WHOM

Current Topics Discussed

A new type of recorded forum program in which the man-on-the-street is given an opportunity to voice his opinion on current topics was launched recently on WHOM—New York—Jersey City, when "Pulse of the People" made its debut.

Charles Baltin, WHOM Program Director, discusses briefly the pros and cons of the subject and then proceeds to interview men and women on the street, seeking their opinions. After a representative group of passers-by have been interviewed, Baltin analyzes and summarizes the opinions expressed.

The show is recorded at noon on Thursday and broadcast the following Sunday evening from 5:05 to 5:30.

Audio Sound Movie Released

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subjected to several hundred playings as a device measures increase in noise level; the controlled weather room where every kind of climatic condition can easily be regulated for rigid tests; the misuses of Audiodiscs—scratching and scoring the recording surface with the drive pin—finger marking the disc—dropping the cutting head haphazardly on the disc; the proper method of inserting an Audiopoint—the correct angle and depth of cut . . . and many other educational scenes that will interest every recordist.

Film Available For Local Showing

Audio Devices plans to show this educational film throughout the country to distributors, engineers of radio stations, motion picture and commercial recording studios, colleges and home recordists.

For information on when AUDIODISCS—THEY SPEAK FOR THEMSELVES can be shown in your city, write to Audio Devices, Inc., 444 Madison Ave., New York 17, N. Y.

Glossary of Disc-Recording Terms

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Postemphasis: The complement in reproduction of pre-emphasis (which see).

Pre-emphasis: A method of recording whereby the relative recorded level of some frequencies is increased with respect to other frequencies.

Pressing: A record produced in a record-molding machine from a matrix or stamper.

Processing: Making the master, mother, and matrix (which see).

Recording head: Same as cutter (which see).

Re-recording: A recording made from the reproduction of a recording. (See also dubbing.)

Reference recording: Recording of a program or other material made for the purpose of checking same.

Reproducing stylus: The "needle" or jewel which follows the undulations in the record groove and transmits the mechanical motion thus derived to the pickup mechanism.

Rumble: Low-frequency vibration mechanically transmitted to the recording or reproducing turntable and superimposed on the reproduction.

Safety: A second recording, made simultaneously with the original, to be used for duplication should the original be damaged.

Shaving: Process of removing material from a wax disc of recording material to obtain a plane surface.

Shell or shell stamper: A thin metal matrix (generally 0.015 to 0.020 inch thick).

Spew: The excess record material which is ejected from the record press in the manufacture of pressed records.

Spread groove: A groove, with greater than normal pitch, cut between recordings of short-time duration, thus separating the recorded material into bands while still enabling the reproducing stylus to travel from one band to the next.

Sputtering: A process sometimes used in the production of the metal master, wherein the wax or lacquer original is coated with an electrical conducting layer by means of an electrical discharge in a vacuum. Sometimes called cathode sputtering.

Stamper: A negative (generally made of metal) produced from the mother (which see) and from which the finished pressings are molded. (See also matrix.)

Stylus drag: The expression used to denote the effect of the friction between the record surface and the reproducing stylus.

Stylus force: Effective weight of reproducer or force in vertical direction on stylus when it is in operating position.

Stylus pressure: Term sometimes erroneously used to denote effective weight of reproducer or stylus force (which see).

Stylus weight: Actually stylus force (which see).

Surface noise: The noise reproduced in playing a record due to rough particles in the record material and/or irregularities in the walls of the groove left by the cutting stylus.

Throw-out spiral: A blank spiral groove at the end of a recording, generally at a pitch that is much greater than that of the recorded grooves.

Throw-out tail: End of throw-out spiral (which see).

Tracing distortion: A harmonic distortion introduced in the reproduction of records because of the fact that the curve traced by the center of the tip of the reproducing stylus is not an exact replica of the modulated groove. For example, in the case of a sine-wave modulation in vertical recording, the curve traced by the center of the tip of a stylus is a "poid" (which see).

Tracking error: The angle (in a lateral recording) between the vertical plane containing the vibration axis of the mechanical system of the reproducer and a vertical plane containing the tangent to the record groove.

Transition frequency: The frequency at which the change-over from constant-amplitude recording to constant-velocity recording takes place.

Translation loss: The loss in high-frequency reproduction which occurs as the groove velocity decreases.

Turnover frequency: Same as transition frequency (which see).

Vertical compliance: The ability of a reproducing stylus to move in a vertical direction while in the reproducing position on a record.

Vertical recording (hill-and-dale recording): A recording wherein the groove modulation is in a plane tangent to the groove and normal to the surface of the record.

Vertical stylus force: See stylus force.

Wax: A blend of waxes with metallic soaps (also see cake wax).

Wax master: A term improperly applied to a "wax original" (which see).

Wax master: A term improperly applied to a "wax original" (which see).
master.

William (or willy): A negative produced from a mother to produce still another mother.

Wow: A low-frequency flutter (which see).



Parts Show Huge Success

The 1946 Radio Parts & Electronic Equipment Conference & Show, held a few weeks ago in Chicago, was the most outstanding event in the history of the radio industry, according to figures released by Kenneth C. Prince, General Manager of the Show. More than 7,500 individuals registered for admission, and of these almost 2,500 were affiliated with distributing firms. The largest previous attendance at any trade show in this industry was 4,400, exclusive of radio servicemen and amateurs. 169 manufacturing lines and 14 publications occupied booths. Audio Devices' booth at the show is pictured above. This had four display cases showing steps in the manufacture of Audiodiscs, production of phonograph records from master discs by the gold sputtering process, the various types of Audiopoints and the complete line of Audiopoints for recording and playback.