April-May, 1952. Vol. 8, No. 4

audio record

Published by
AUDIO DEVICES, INC.
444 MADISON AVENUE, N. Y. 22, N. Y.

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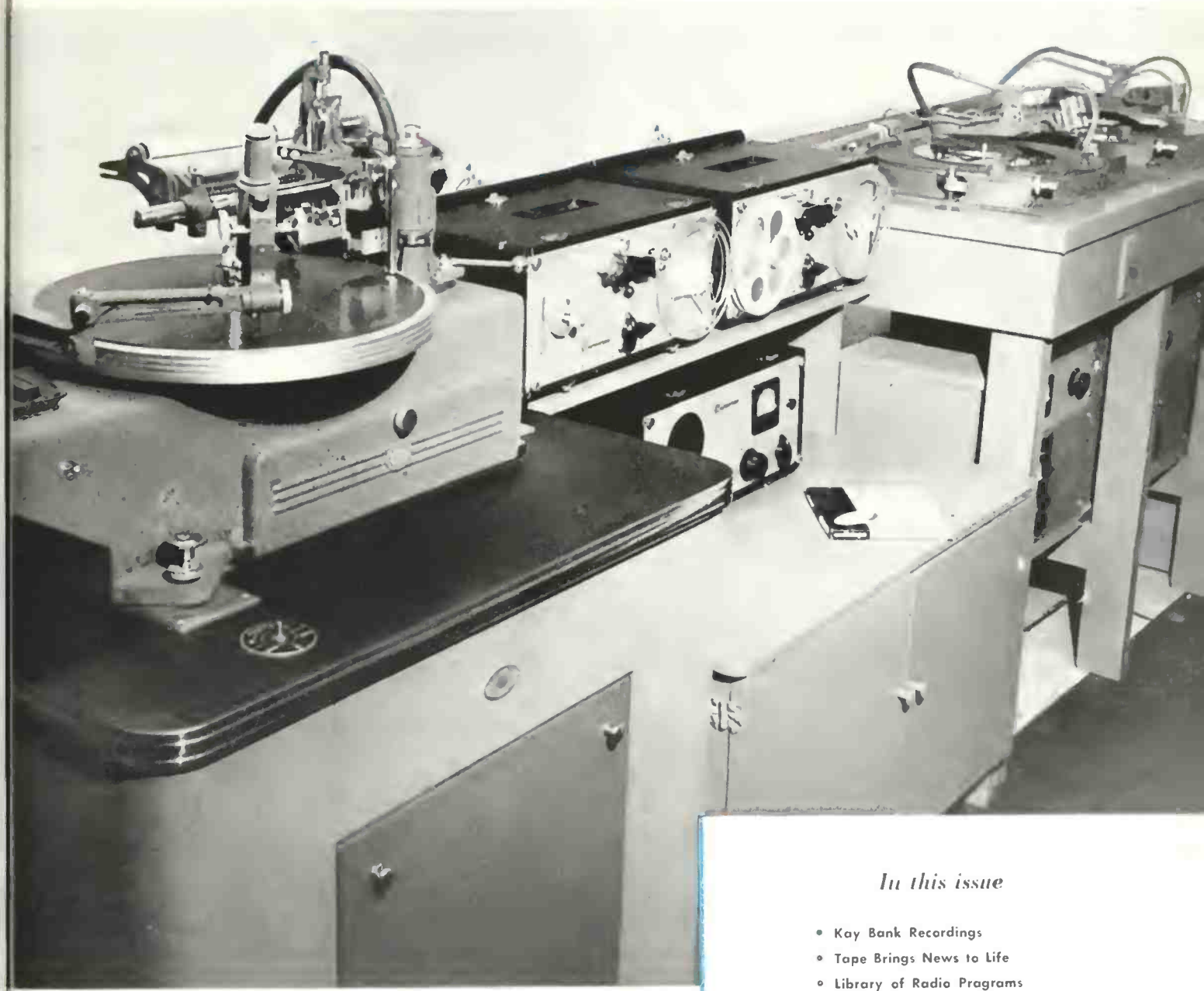


Part of the compact tape and disc recording room of Kay Bank Recordings, Minneapolis, Minn. In foreground is the Presto 8DG disc lathe with MacIntosh amplifier and Fairchild hot stylus cutting head used for cutting Audiodisc masters. Story on Page 2.

In this issue

The Story of KAY BANK RECORDINGS

How an ex-newspaper man made sound recording grow from a part-time job to a full scale studio operation

Visitors to the well equipped and completely modern sound studios of Kay Bank Recordings in Minneapolis might be surprised to know that this flourishing business started but a few years ago — as a spare time job with a home wire recorder. At that time Vernon C. Bank was a newspaper man at the Minneapolis Star. In order to pick up a little extra income, he and his wife Kay decided to get a Webster wire recorder and do a few weddings. This worked out pretty well and as soon as the news got around, they received numerous requests for recordings from local choir and chorus directors.

Within six weeks Vern and Kay Bank were in business with Presto turntables and amplifiers, turning out acetate copies at a pretty fast clip. This was still a spare time job, carried on at home after hours. As the business grew, the Banks moved to a larger residence, where the living room was set up as a sound studio — opening the way for studio work in addition to on-location recordings in schools, churches, etc. By fall of last year the recording load had grown to the point where it could no longer be handled on a part-time basis, along with the regular job. So Minneapolis lost a good newspaper man — and gained a skilled sound recordist. After leaving the Minneapolis Star, Mr. Bank lined up some investors, incorporated, and opened the present spacious studios at 111 North 11th St. Since the recording idea was originally conceived by Mrs. Bank — who still takes an active role in the business — the new organization was appropriately named "Kay Bank Recordings". It is a name that is already widely known in recording circles throughout the North Central States.

In speaking of his present facilities, Vernon Bank modestly states that "we have enough basic good equipment to do a good job and we are progressing to the point where we will give this area the kind of a studio it should have." The main Kay Bank studio is 32 by 35 feet, with 12½ foot ceiling so designed that it can be divided in half simply by closing a set of drapes. The "half size" studios are used for recordings by individuals, soloists and small groups — and the full studio, for television productions, choirs and choruses, bands, and certain types of dramatic presentations. Additional space includes a combined recording and control room, audition room, reception room, lounge and mail room, tape and disc storage room, and spare room for maintenance work and storage of extra equipment.

Part of the control room at Kay Bank Recordings, showing RCA 76B2 console with talk-back mike to studio, Ampex recorder for studio tape work, and transcription turntable.

Main recording studio at Kay Bank Recordings, showing drape arrangement for dividing the 32 by 35 foot space into two smaller studios. Modified sound truck at left, TV lamps in background.

Complete control facilities are provided by an RCA 76B2 console, through which studio programs are fed to Ampex or Magnecord tape recorders, or direct to a Presto 8DG disc lathe equipped with a Fairchild head and MacIntosh amplifier. For master discs, a Fairchild Thermo-Stylus cutter is used. The console type Ampex tape recorder is primarily for studio work, with portable Magnecord machines for remotes.

Choirs and choruses, which constituted practically all of the early recording work, are still an important part of the Kay Bank operation. Their recordists range all over

audio record
VOL. 8, NO. 4 APRIL-MAY, 1952

Published monthly by Audio Devices, Inc., 444 Madison Avenue, New York City, in the interests of better sound recording. Mailed without cost to radio stations, recording studios, motion picture studios, colleges, vocational schools and recording enthusiasts throughout the United States and Canada.

the area — from Iowa to North and South Dakota, Minnesota and Wisconsin—doing vocal and instrumental groups for churches, colleges, schools of all types, hospital choruses, industrial choruses and many others. Now, with the enlarged facilities, more and more time can be spent on commercial accounts. Many advertising agencies in Minneapolis and St. Paul are already bringing their work to Kay Bank Recordings, where they are offered a really complete service, including tape and disc recordings, transcriptions, phonograph records, jingle writers, producers, singing and acting talent, musical talent, arrangers — in short, everything needed to wrap up a program.

One Kay Bank project of particular interest is the current series of twenty-six 15-minute transcriptions for Sister Kenney — featuring such well-known talent as Duke Ellington, Rudy Vallee, Stan Kenton, Russell Nype, Les Brown and Xavier Cugat. Some of these artists recorded directly in the Kay Bank studios — others were dubbed in from tape recordings made elsewhere. This series, along with some short spots, will be offered to every radio station in the country.

Here's a business that started, not on a shoe string, but on a spool of wire. Vernon and Kay Bank have made a lot of progress since then — in a field that still offers plenty of room for future growth.

Vernon and Kay Bank review a Sister Kenney script with stage and TV star, Russell Nype (right).

Rudy Vallee limbers up his vocal cords, while Vernon Bank (left) and chief engineer Norman Nelson (right) check the program material to be recorded for one of the Sister Kenney Foundation transcriptions.

Tape Brings News to Life

by Jim F. Palmer

Professor of Journalism, University of Houston

A news editor briefs the student announcer on narration parts of the tape-recorded "Newsreel" program.

Songstress Sophie Tucker recalls her early life on tape for the University of Houston "Newsreel" show, produced and edited by students. The young reporter is awed, but not enough to interfer with asking questions.

A new student crew is briefed on the tape editing of news by two members of the Radio Department faculty of the University of Houston.

Living news, as it actually happens, is recreated through tape recording in a new series of "Newsreel" radio programs produced by radio-news students at the University of Houston, in Houston, Texas.

Every day three news students tour the campus and the city with portable tape recorders, picking up the news as it happens, interviewing for the "feature" angle.

The students assemble every evening, and edit out the unwanted material, leaving anywhere from 10 seconds to a minute for each news event. They take notes as they go. Then, comes Thursday, and the news bits are assembled into the right order and timed to about 11 minutes, about right for a 15-minute program.

Narration for announcer is prepared by the student editor, who also selects suitable "bridge" music from the recording library. Friday morning, and the script is being written, complete with announcer narration, bridge music cues, tape cues (with exact time of each tape bit, in order to help the control engineer in cueing), and any incidental instructions. Then, the whole program is rough-timed, by estimating time of each bit of voice and music. It should add up to 14:30 minutes for a 15-minute show.

The whole program, then, is presented from a studio and control room. The editor serves as director, in the control room, cueing the engineer and announcer. As the job is somewhat complex, most of the student editors prefer to run the show through in its entirety, tape recording it throughout on a second studio recorder, for playback at the set time.

Thus, each Friday, the University of Houston "Radio Newsreel" hits the air over its own radio station, KUHF-FM. From its first dramatic musical fanfare, through its important voice of the mayor announcing an ordinance, the learned tones of a history professor, to the giggle of coeds talking about leap year — and to the closing music surge, the program is made possible due to the magic of high quality tape recording.

BUILDING A LIBRARY OF RADIO PROGRAMS ON TAPE

by Harold Hainfeld, Roosevelt School, Union City, New Jersey

(A first award winner in Audio Devices' educational recording contest)

What are the reasons your teachers give for not using radio more in the classroom? Some of them may be: (1) The radio program does not come on the air at the time of day when I can use it; (2) Programs are not at the proper time of the year to fit our curriculum; (3) I can not prehear a radio program and would like to know what my students will listen to; and (4) If I assign after school listening, it may not be heard by all students.

Once a radio program goes "off the air", it is usually difficult to borrow a transcription and almost impossible to keep it for use in the classroom. There are many radio programs worth saving for future school use.

One of the solutions to these problems is for the classroom teacher, radio chairman or audio-visual coordinator to save valuable radio programs on tape. In a short time the school or school system can have a library of important curriculum materials. If a radio program has enough merit for use in the classroom, serious consideration should be given to making a tape recording of it for future use when the program is unavailable on radio. It can easily be erased if the program is of limited value.

Being located in northeastern New Jersey, two FM educational stations are within our range; WBGO-FM, Newark and WNYE-FM, the New York City station. Both transmit a full schedule of programs during the school day. These programs, however, are designed to meet the curriculum needs of their schools. Many of the topics are also studied in other classes, but not at the same time. Making tape recordings of these programs makes them available at any time of the day or year.

In making school-made tape recordings of radio programs it is important to have good equipment. This is not necessarily expensive. The Freed-Eisman "Educator" radio used in many schools has ample frequency response. Don't impare the quality of the reproduction of the radio program by using a recorder with less. One with a higher frequency response is unnecessary for this purpose. There are many tape recorders that have this response, priced about $200.00. The radio has an outlet to permit direct recording from it into the tape recorder and any outside noise will not be reproduced on the tape.

This class at the Roosevelt School is "all ears" as the portable tap recorder plays back an educational radio program. Programs recorded on tape can be kept indefinitely — used whenever needed at any time of the day or term.

Principal of Roosevelt School, Charles E. Brown and Miss Anne Naddeo, teacher, listen to a radio program from WNYE-FM being recorded on tape by 8B student Rhoda Lampidis of the school Audio-Visual Squad.

Schools with a radio and tape recorder can build up a library of useful radio programs. Federal Communications Commission regulations permit the use of tape for this purpose, provided the recording is not sold as a commercial project.

The storage of tape reels is no problem. They are small and compact. The tape reel is approximately the same size as a reel of 8 mm. film. Many photographic dealers have cans and containers for the home movie maker. Schools can use this 8 mm. equipment for permanent storage of their tapes.

Don't overlook the possibilities of making tape recordings from commercial radio programs. Most of these stations, in addition to transmitting on AM wavelengths, are also broadcasting on static free FM. Record from the FM band; it has a higher frequency response and almost no interference. With the program on tape, it is easy to edit it and eliminate the advertisements and announcements. Thus, a 30 minute broadcast can be made into a 23 minute tape recording, leaving plenty of time in the usual 45 minute period for the teacher to introduce the program to his class and time for follow-up activities afterward. The recorders are light and portable and easy to bring home from school to make after-school recordings for in-school listening.

There is another possibility for the radio-tape recording combination. WNYE-FM presents a science quiz, where students from two junior or senior high school classes try to answer questions on their science studies. Having the program on tape enables the teacher to let his students hear the question and stop the recorder before the answer is given. Thus, the students in class can answer and discuss the question before the answer is given. This procedure would be impossible with the radio.

Schools, school systems and county educational departments are building film and visual aids libraries. Audio-Visual and Curriculum personnel should not overlook the possibilities of inexpensive audio libraries of valuable radio programs on tape.

Radio and recording equipment are usually less expensive in comparison to projectable equipment. The combination of radio and tape recorder will allow the teacher to pre-hear programs. Previewing films before use is an important part of proper utilization. With the program on tape, it is possible for the teacher to know in advance what his students will hear. Building an audio library of radio programs that meets curriculum needs is an important step in using these aids in teaching.

New Tape-Disc Recording Console

The Henry G. Dietz Company, 12-16 Astoria Blvd., Long Island City 2, New York, is now offering a new line of console type tape-disc recorders, designed for industrial, business, home and school applications. Three different applications are available — Model 130-A, as illustrated, with tape-disc recorder, FM receiver and console cabinet; Model 130-B, without FM receiver; and Model 130-C, with table-top cabinet.

The Model 130-A unit is designed to perform the following recording and reproducing functions:

Record on magnetic tape or acetate discs
Reproduce from tape or discs
Record from tape to disc or vice versa
Record from microphone, internal FM radio, external radio or phono to tape or disc. Can mix microphone with recorded disc to record on tape.

Equipment includes automatic PM erase, neon recording level indicator, fast forward and rewind speeds and 6" PM speaker. Tape speed is 3¾" per second, dual track, giving one hour recording time on 5" reel. Disc recorder cuts and plays back up to 10" discs at 78 rpm. When pivot of arm is lifted, it snaps into recording position. Arm

is pushed down to disengage lead screw for playback. Cutting stylus and playback needle easily interchanged.

The console type cabinet allows the unit to be built to customer's specifications, including FM or AM receiver, amplifiers, or other equipment necessary for a particular application. Further information can be obtained by writing to the manufacturer.

An "A" in Advertising Via Tape Recording

by Vincent Lee

Recently I completed my term assignment for my Advertising course at New York University.

Since Advertising is, in my opinion, a subject of originality, I decided to do a project which was unique. As a basis for my report I chose the Marketing Research phase of Advertising and the result was an "A".

The project consisted of interviewing various people on questions pertaining to the brand of shaving cream they used. The uniqueness of the report was that I presented it via tape recording machine and color slides. I recorded the actual interviews among ten men and took color pictures of each. In the classroom I projected the slides and using the tape recording played back the dialogue as it had occurred. The results were nothing short of sensational. The class was impressed and even more important "interested" in my project. Professor Dale Houghton, my prof, liked it to the extent that I presented it in two of his other classes.

To achieve more sufficient data for the survey I interviewed one hundred students at N.Y.U. The same questions were asked.

Vincent Lee (left) puts another student interview on tape for his Market Research report.

After I computed the percentages I recorded this information and thus presented the whole report on tape without saying a word in class.

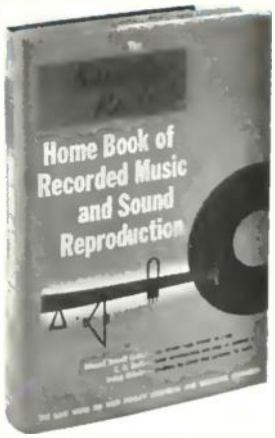
Some of the Statistics estimated are as follows:

27% use electric razors and 73% use safety razors

Of the 73% — 55% use brushless cream and 45% use lather.

By percentage the four most popular brands are 1) Palmolive 19%, 2) Colgate 13%, 3) Rise 12%, 4) Noxema 10%

NEW BOOK FOR "AUDIOPHILES"



The *Saturday Review* Home Book of Recorded Music and Sound Reproduction

. . . by Edward T. Canby, Cornelius G. Burke and Irving Kolodin

This 312-page book for home recordists and music lovers is divided into three separate sections — each by a recognized authority in his field — giving an unusually complete three-dimensional picture of this fascinating subject.

In "The Record from Studio to Store," Edward Tatnall Canby offers a brief history of the recording industry, then describes how new high fidelity equipment records all of the nuances of the music as it is performed. Recent advances in recording techniques are explained in the simplest terms. A recording session is described, and the reader is taken into a factory to watch the manufacture of the various discs now available.

Cornelius G. Burke's "Home Reproduction and How to Improve It" answers all the music-lover's questions about what home equipment is best and how much it costs. Concentrating on essentials, he shows how to connect and set up speaker arrangements, amplifiers, pick-ups, needles, turntables, and other equipment. A series of "how-to" sketches emphasize the practical nature of this book.

In "Learning to Listen and Listening to Learn," Irving Kolodin, America's foremost music critic, tells how to sharpen your critical faculties and become your own critic. Using a remarkable and entirely original approach, Mr. Kolodin explains how any record collector can judge for himself the best of the half-dozen or more recordings of his favorite piece.

Published by Prentice Hall. New York. Price, $4.50.

THE AUDIO QUESTION BOX

Here are a few of the many questions which we have received from sound recordists, in response to the "ANY QUESTIONS?" item in the February issue of Audio Record. We believe that the questions and answers listed below will be of interest to many of our readers.

QUESTION: Will you please advise how I can determine if the head on my Magnecord tape recorder is magnetized.

Answer: If the noise level of the recorded tape has gone up significantly and if the reproducing preamplifier is not defective (particularly the input tube) then it is quite probable that the head is magnetized. For best results, a machine which is used 8 hours a day should have the heads demagnetized once or twice a day.

QUESTION: We make on-the-spot tape recordings of weddings and other events — then re-record on Audiodiscs. Will Yellow Label Audiodiscs give a satisfactory cut in comparison to the Red Label?

Answer: Yes. This type of service probably does not require the flawless perfection of surface which characterizes the Red Label Audiodisc. Any microscopic surface imperfections in the Yellow Label Audiodisc would not be noticeable in recordings of this nature — and the saving in cost is probably an important factor both to you and your clients.

QUESTION: For the application mentioned above, is it better to buy a *used* professional tape recorder (which would cost about $600 to $800 new), or a *new* low priced home recorder in the $200 class?

Answer: If the recorder is to see a great deal of use and you want an ample margin of safety in frequency response, signal-to-noise ratio and distortion, a used professional machine would probably be the best investment. If you don't know anyone who has such a machine for sale, it might pay you to run a want ad in one of the trade publications.

QUESTION: With my Bell tape recorder, how can I find the exact point at which to cut the tape in order to eliminate unwanted material? What methods do the professionals use to do such a perfect job of editing?

Answer: The professional depends largely on a trained ear — plus lots of experience. Also, most professionals use a 15"/second tape speed, which gives a wider tape spacing between words and makes it easier to do an accurate editing job. Obviously, the slower the tape speed, the more difficult it is to avoid cutting at the wrong place. Our advice would be to keep trying. It's just a matter of skill which can be developed with practice.

QUESTION: I am interested in purchasing a tape recorder, but haven't been able to get much comparative information. Would you please list the output responses of four or five tape recorders that retail below $250. Also, how does the response of these recorders compare with that of the average home radio-phonograph combination?

Answer: Probably the best compilation of comparative performance data and prices on tape recorders available today is the "QUICK FACTS ON MAGNETIC TAPE RECORDERS", published in the August-September 1951 issue of Audio Record. This lists 69 different models of 28 different manufacturers, and includes all of the basic information needed for selection of the recorder best suited for any particular application and budget. Reprints of this section are still available and will be sent on request without cost or obligation.

As to the second question, the frequency response range of tape machines selling for under $250 is well below that obtainable from a good commercial phonograph record.

QUESTION: Without laboratory equipment, how would a home recordist be able to check frequency response of his equipment? Is there any relatively simple way of at least getting some idea of the range of frequencies his recorder is capable of reproducing?

Answer: Without laboratory equipment, a trained ear is the only measure of frequency response — and this is often surprisingly accurate. For a rough approximation, we suggest recording and playing back some simple piano scales, and noting the point at which tone quality begins to suffer. In this connection, the following frequency figures may prove helpful. Middle C on the piano represents a frequency of 256 cycles, and the frequency is *doubled* for each octave higher — *halved* for each octave lower. C^1 (first octave above middle C) is therefore 512 cycles; C^2 (second octave) is 1024 cycles; C^3, 2048 cycles; C^4, 4096 cycles. These, of course, are the *fundamental* frequencies which, with their harmonics or overtones produce the sound quality or *timbre* which characterizes a particular musical instrument. The fundamental alone is not at all pleasing to the ear. For suitable musical reproduction, therefore, a recorder must have an upper frequency limit at least three or four times the fundamental frequency of the highest musical note which it must reproduce. The upper sensitivity limit of the normal human ear is about 20,000 cycles.

QUESTION: On my tape recorder I find that in rewinding I can hear a faint signal (going backwards) of what is on the tape and yet with this model the tape is moving at least an inch *away* from the play-back part of the head. What would be causing this and could it be a sign that the recorder is breaking down or is faulty in some way and in need of expert attention?

Answer: This is a perfectly normal phenomenon, due to the extreme sensitivity of the head, which picks up the magnetic pattern on the tape even at a distance of about an inch away. If it is annoying, all you have to do is turn down the output volume during rewind.

PROFESSIONAL COACHING VIA TAPE

by Daniel Seidman
2 Peter Cooper Road, N. Y. C.

(Second award winner in Audio Devices' educational recording contest)

I am a Junior High School teacher and almost all teachers of grades three through nine must present plays. Since I am a health education teacher, my ability as a dramatic director is sorely limited. I discovered an easy way out of my predicament which proved to be most successful.

I recorded a play directly onto my tape. I took it off a long playing record but it isn't necessary to tell you that I could have taken it from almost any source . . . radio, television, etc. I then cut the tape after every two minutes of playing time, especially where the natural break came in the dramatic presentation. I then spliced onto the tape blank, unrecorded tape . . . about 5 minutes of playing time. In other words, I had two minutes of the original play followed by five minutes of blank tape, two minutes of play continued from where it was cut, five minutes of blank tape and so on.

The final step was to record the children on the blank tape after they listened to the characters present their parts on the two minutes of the recorded tape.

The children heard and reheard their parts presented by the professional actors and then listened to their own voices in imitation of the experts. Of course, all their errors were easily noted.

Incidentally, I used leader tape after each splice upon which I wrote all pertinent information . . . the names of the characters, children, etc.

audio pointers for the Recordist

by C. J. LeBel, Vice President
Audio Devices, Inc.

HOW TO HELP YOUR PROCESSOR

C. J. LeBel

We are afraid that the subject of this article is in the man-bites-dog class: studios have often complained about their processing laboratories, but here's a case where the laboratories have a few justifiable complaints of their own. After talks with several large processing organizations, it becomes evident that hurry, carelessness, and new studio personnel unused to the stringent requirements of master recording are injuring record quality and sometimes even making processing impossible.

Faults may be separated into these three classes:

A. Prevent a disc from being processed.
B. Produce noisy pressings.
C. Make unnecessary trouble for the processor.

Faults Which Make Processing Impossible

Incorrect diameter of the disc is inexcusable — it is necessary to use a master size larger than the disc to be pressed: 12-inch for a 10-inch pressing, 13¼-inch for a 12-inch pressing, and 17¼-inch for a 16-inch pressing. A 16-inch lacquer cannot be processed to produce 16-inch pressings, and that's that.

Incorrect dimensions of the recorded area may make it impossible to produce a saleable record, even tho pressings can be made—for example if the modulation starts at too large a diameter, the outer grooves cannot be played on an automatic changer. Omitting the coarse pitch lead-in groove will also make automatic playing impossible. Both RTMA and NARTB have dimensional standards, so use them as your guide.

Wrong groove dimensions can also create trouble. Processors may have trouble pressing a 16-inch disc if it was recorded with a small-radius microgroove stylus. If the groove/land width ratio is too small, a disc is unplayable even though pressings may be made. Use a 60/40 ratio for transcriptions, and a 70/30 ratio for microgroove discs.

Misguided economy can lead to trouble, too. Lacquer masters cost more than regular discs, for they are especially selected for perfection of surface. The difference in sound may be imperceptible, but occasionally a groove will go through a minute surface imperfection, producing a groove irregularity which makes it impossible to press. Masters are picked to avoid such faults.

Occasionally a stylus gets a notch in the edge as the result of wear. Such a stylus should not be used for masters, for the metal master will have a ridge which makes it impossible to produce good pressings. As shown in figure No. 1, the pressing stock catches on the ridge, and the pressing cannot be stripped from the metal part without ruining the groove wall.

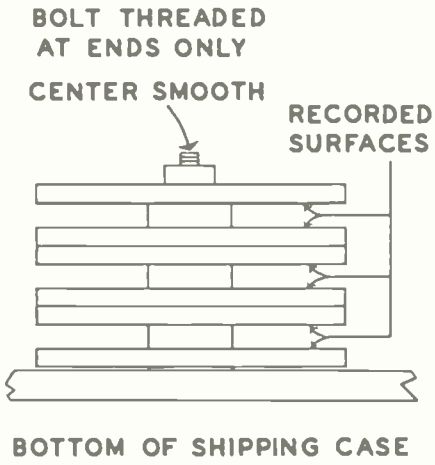


Figure 1. Enlarged cross sectional diagram showing why a disc cut by a notched stylus often cannot be pressed without ruining the groove wall of the pressing.

A serious problem results if lacquer masters are forced on an oversize metal spindle. The resulting buckle makes the disc useless. This seems to happen most often during packing.

Causes of Noisy Pressings

Strange as it may seem, the worst source of noise is very simple; use of a worn recording stylus. The pressing can be no quieter than the original lacquer.

Another source is equally simple; too low recording level. The signal to noise ratio of commercial pressings of the highest quality will seldom average far better than 50 db, so a recording level whic his 10 db too low will produce a signal to noise ratio of 40 db — commercially disastrous. Some have reduced their recording level because of high frequency overload when using the 16 db of preemphasis of the NARTB recording characteristic; this problem is overcome by changing to the AES characteristic and using only 10 to 12 db of preemphasis.

Carelessness can add swishes, clicks, and pops. Finger marks are the most common cause of swishes. Once a finger mark has been made, it is virtually impossible to remove. Handle a disc by the *edges* only. Clicks and pops result from dirt. Ask your processor to suggest a design for a shipping case. Most important, do not ship masters with the recorded surfaces in contact, for this will imbed any dirt on the surface. Ship masters back to back, with spacing washers between the pairs, and with the outer discs facing inward, as in figure No. 2. Do not ship in envelopes.

Helping the Processor

Unless you like to play games (at your own expense), be sure to put an identification number on each disc, for otherwise the processor has to guess which disc is which. The marks should be placed at the very center, or outside the recorded area. Make numbering an integral part of recording room routine for a single slipup may be costly.

Information on the faults most frequently encountered in masters submitted for processing was contributed by Columbia Records, RCA Victor Recording Division, and K. R. Smith Division of Allied Record Manufacturing Company. Additional specific information on the proper preparation of masters for processing is available in the free publication, "Suggestions for Professional Master Recording", published by Allied. Copies can be obtained by writing to the K. R. Smith Division of Allied Record Manufacturing Company, 619 West 54th St., New York, N. Y. — or Allied Record Manufacturing Company, 1041 North Las Palmas Ave., Hollywood 38, California.

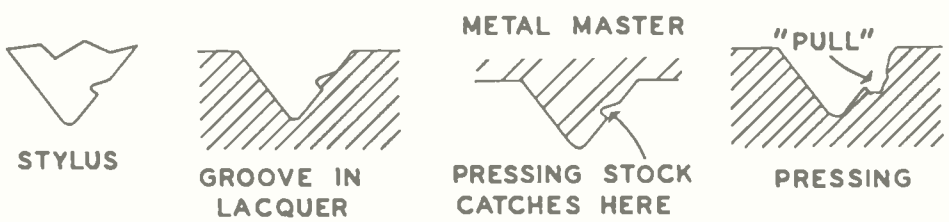
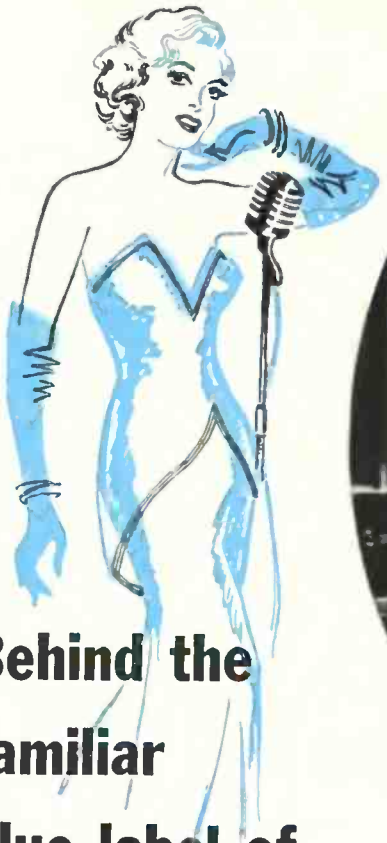


Figure 2. Proper method of packing lacquer masters for shipment to processor. Note that recorded surface is always protected from contact with other surfaces. Case should be dust-tight.



Behind the familiar blue label of WOR recording studios...

the finest in modern sound recording methods and equipment

Radio stations from coast to coast recognize this label as the mark of a top quality transcription. One that can be depended on to meet or exceed the extremely high broadcast standards of sound quality.

To maintain this reputation, WOR Recording Studios, one of the largest in the world, use the finest and most costly tape and disc recording equipment obtainable. And—what's equally important—their engineers have found that Audiotape and Audiodiscs are an ideal combination for meeting the exacting requirements of broadcast transcription and commercial recording work. This same record-making combination is also being used with outstanding success by America's leading producers of fine phonograph records.

With Audiotape and Audiodiscs, you can achieve this same sound perfection in *your* recording work, too. Their consistent, uniform quality is the result of more than 12 years of specialized experience by the only company in America devoted solely to the manufacture of fine recording media, both tape and discs.

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...including

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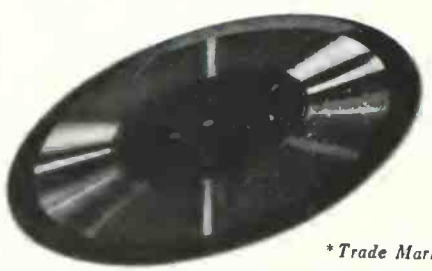
and **audiodiscs***



**Trade Mark*