



TAPE RECORDING

RADIO LUXEMBOURG VIA TAPE
TAPE RECORDER MAINTENANCE



FOLK SONGS BELONG ON TAPE. See page 20.

Mr. Sydney G. Brooks
Brooks Jewelry
Caddiz, Ohio

TAPE CROSBY
BUILD THIS MIKE MIXER.

Just A Minute--

Use this minute to take stock of yourself. After all, who in this wide world knows you as well as you do? Ask yourself these questions and let your conscience give straightforward answers:

1. Am I successful in my chosen profession?
2. Is my position secure?
3. Have I advanced or been content to lag?
4. Has my earning capacity reached a maximum?
5. Where am I heading?
6. Do I "belong," or am I an outsider—professionally and socially?
7. Do opportunities slip by me ungrasped?
8. What can I do to improve?

We can't answer the first seven for you—only you can. But we can point out the basic trouble if you gave yourself a majority of negative answers—you probably cannot speak well. Admit it, isn't this the biggest and perhaps the only factor holding you back?

You remember, don't you. You remember how your insides tighten and your voice quivers whenever the V.I.P.'s talk to you; or how embarrassed you were at the business convention when your mouth felt dry and zippered. Sure, you remember how later you thought of what you could have said—but didn't.

There are other considerations too which you sometimes find yourself dwelling upon. The successful lawyer who lives nearby and drives a swanky blue Cadillac; the used-to-be neighbors who built their dream house and moved recently (he was an engineer wasn't he); and it wasn't long ago you read about that old school chum who has become a prominent manufacturer in the toy industry. Why aren't you capable of having what they have?

WE'VE GOT THE ANSWER

Chances are you are just as capable, which brings up back to the eighth question—the one we've got the answer to. Those people, just like all successful people, speak well. They speak dynamically, positively—they know what they want to say and how to say it. YOU CAN TOO!

The Institute of Human Communication will help you along the road to success. You want success—the Institute wants to help you succeed. Therefore, a speech course with all lessons on tape has been developed by people with years of experience in teaching public speaking and voice, and experience in radio, TV and on the platform. You can learn at home, in your spare time, how to speak effectively. You learn to speak by speaking, you learn by hearing actual speakers and our instructors coach you to achieve the results you want.

INSTRUCTION ON TAPE

Tape is the ideal medium with which to acquire better speaking habits. Every student is given individualized, private instruction. Assignments are tailored to fit your needs and interests, to help you develop your abilities to the fullest. You will suffer no embarrassment such as you might in a group class. Our instructors work with you and guide your progress. They are interested in you and what they can do to help you accomplish what you want to do.

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at one time reticent and awkward in their vocal communication. All you need is to understand where your deficiencies lie and to correct them. Our instructors will help you do this. They will bring out your hidden speaking talents.

HERE IS WHAT YOU'LL LEARN

The Art of Communication, How to Develop Your Hi-Fi Voice, How to Organize Material, Effective Communication, How to Prove What You Say, How to Dramatize Ideas, How to Sell Your Ideas, How to Make a Speech of Introduction, Making a Speech to Inform, How to Hold an Audience in the Palm of Your Hand, How to Handle a Controversial Subject, How to Read a Radio Script, How to Stir Your Audience, etc.

FREE SPEECH TEST

Opportunity does not pick and choose its recipients. Get set to answer its knock. Use the coupon below to get our free speech test. We will give you an honest appraisal without obligation and tell you frankly where you need help. We will explain fully how our course can help you. Do it today—tomorrow just pushes your big chance a little further away.

TIME'S UP

Your minute, or two, or three, has slipped by and we are sure you will agree the time spent in reading this has not been wasted. Why not take just a few more minutes to fill in the coupon. At the close of the course, should you elect to try it, your answers to the questions above can look something like this:

1. I like my work and my family has a higher standard of living than ever before.
2. I've been with the firm ten years and expect to be there until retirement.
3. My name's up for another promotion next month.
4. Each promotion means a raise.
5. I'm heading toward a fuller, more stable, life.
6. I have more invitations to business and social functions than I can handle.
7. Opportunity is always welcome at my door.
8. CONTACT THE INSTITUTE OF HUMAN COMMUNICATION

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Severna Park, Md.

Department of Education
Approved by the Maryland State

SEND FOR FREE SPEECH TEST

Director
Institute of Human Communication
Severna Park 1, Maryland

Please rush me the FREE SPEECH TEST. I will be under no obligation and no salesman will call.

NAME

ADDRESS

CITYZONESTATE

OCCUPATION

MAKE AND MODEL OF RECORDER

CROSSTALK

from the Editors

THERE HAS been a lot of talk about "confusion" in the tape recorder industry. We have been looking into this rather carefully in the last month or so and we think we have found the reason. It stems from stories published in the trade press, and elsewhere which play up the things to come as if they were here and with the appearance of the stereo disc some dealers mistakenly thought that stereo tape was through. It is as simple as that.

* * * * *

THE GREATEST impact of this yak-yak has been on the dealer. He makes his living, feeds his children, pays his taxes and works off the mortgage by selling things to you and me. For the convenience of having him handy, or being able to take something back if it is not right and because he invests his money in stocking things he thinks we might need, we are quite willing to pay him the profit which keeps both him and his shop running for our convenience. When he hears that something new is on the way he slows down on buying the old—for two reasons. One, he does not want to be responsible for selling you and me a piece of equipment he has reason to believe will become obsolete and two, he does not want to invest his hard earned cash in something that he will not be able to sell and get his money back again. This is obvious and fundamentally right.

* * * * *

A LOT of this "confusion" talk has come about since RCA announced that they were going to bring out tape in a cartridge. This announcement was made over a year ago and it still is not on the market—nor is there any indication when it will be. The attitude was taken in some quarters that when this appears, the reel-to-reel recorders would be as out-of-date as the bustle and anyone in his right mind would not be caught dead with one. This line of reasoning is false.

* * * * *

WE CAN TELL YOU that someday your car will have no wheels. It will float above the highway and be guided by a cable buried in the paving. It will be equipped with anti-collision devices and all you will have to do is to play bridge with your passengers until you hear the destination signal and turn off the main road. This is not fantastic, it can be done today. But this is not going to stop you from drooling over a new 1959 model is it? Are you going to wait until the ultimate arrives. You know you're not.

* * * * *

AND ANY INDIVIDUAL or dealer who sits on his hands waiting for the ultimate tape recorder to come will go to his grave without one. There has always been progress, there will always be progress. The trend over the last eight years has been toward more tracks and lower speeds. There is no reason to believe this will stop.

* * * * *

WE ARE PROUD of the way the tape recording industry has made its changes. First came the transition from single track to dual track. Then we moved to staggered head stereo. This lasted for a few years and someone came up with in-line heads. Immediately there was a rash of worry about older recorders being made obsolete. True, you could not play a staggered tape on an in-line machine. So what happened? All of the responsible manufacturers in this industry made kits available so that existing recorders could be conveniently and inexpensively converted to in-line operation. The average cost was about thirty dollars. One firm, V-M, brought out a recorder that would play either stacked or staggered tapes and also provided a kit to convert staggered machines to combination stacked and staggered. This change took place about two years ago. It is interesting to note that the one house which still stocks staggered tapes from all makers, the Stereophonic Music Society, reports that 25% of their sales are of staggered tapes to people who never bothered to convert. Thus no one's tape library was rendered valueless by this change.

* * * * *

NOW LET US suppose that the RCA cartridge makes its appearance in the near future. Will this mean the end of reel-to-reel machines. Definitely not! One only needs look to what happened in the photo industry when giant Kodak introduced the magazine load cameras ten years ago. Even today the spool type cameras outsell the magazine loaded jobs, one reason being that they are cheaper.

(Continued on page 5)

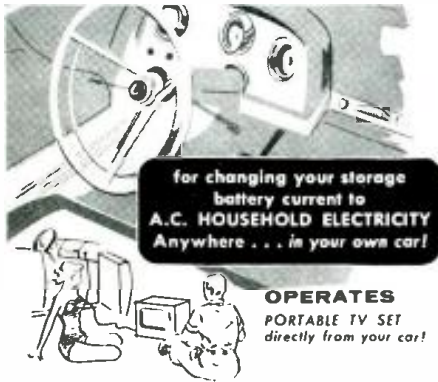
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HI-FI

TAPE RECORDING

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MARK MOONEY, JR.
Editor and Publisher

JOHN L. ALLEN
Circulation Manager

JEAN COVER
Assistant Editor

ROBERT W. LAPHAM
Art Director

JAMES H. MILLS, SR.
Technical Consultant

ANTHONY J. MORIN, JR.
National Advertising Manager
274 Madison Ave., New York 16, N. Y.

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CROSSTALK (Continued)

WILL RCA have the ultimate tape recorder in their cartridge unit, like the ultimate car? We don't think so. We'll bet our bottom dollar that shortly after it hits the market, someone will be out with a competitive unit and, not only that, some of the inventive geniuses that roam this nation will find a way to play reels on the cartridge machines and cartridges on the reel machines. So you can pay your money and take your choice, like the circus barker says, and be sure of not getting stuck either way.

* * * * *

THE NEWEST thunder on the horizon is the four track machine using reels. We have carried stories about it, its theories of operation, etc. in previous issues. This is not something that is coming, it is here in some quantity already. Five manufacturers now have four track machines available.

* * * * *

SO WHAT DOES THIS MEAN to you and me and our dealer friend? Will your present library of two track stereo tapes become obsolete should you buy a four track machine? Can you make a tape on a four track machine that will play on a two track machine? Can a two track owner and a four track owner voicespond with each other? Will our dealer get stuck if he buys two track machines and two track tapes and lose money? All of these are very pertinent questions and should be asked.

* * * * *

WHAT ARE THE ANSWERS? How do they effect your tape recording future and your pocketbook? First, and this is important to remember **TWO TRACK TAPES CAN BE PLAYED ON FOUR TRACK MACHINES**. This means your present stereo library will not be obsoleted. It also means your dealer can stock two track tapes without fear of financial loss. As four track recorded stereo tapes become available (only one firm HiFitape has them at present) they will be cheaper than two track. For the present then, you can get two track stereo tapes to play on the machine. There are over 1,000 different tapes on the market and estimates place the number of two track stereo machines capable of playing them at 500,000. Second, you can make a tape on a four track machine that will play on a two track simply by running the tape through once instead of twice. This is analogous to the fact that you can play a full track tape on a dual track machine but only in one direction. Third, since a two track tape can be played on a four track, you will be able to voicespond with two track owners. Our dealer will not get stuck in this orderly transition, nor will the consumer. Already heads are available for existing machines and the conversion is simple. The old head is removed and the new one installed. Even the same connections are used. Since most machines play both 3¼ and 7½ ips the speed question is academic. At this writing 7½ ips is still best.

* * * * *

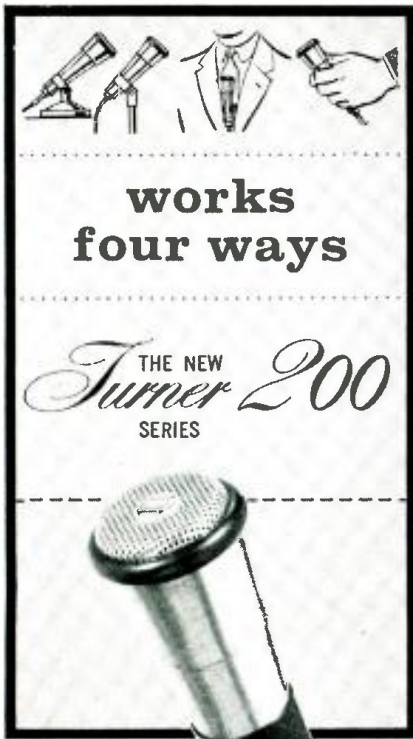
IT BOILS DOWN TO THIS: a dealer can, in perfect financial safety and with full confidence that he will not be called to task by his customers, stock and sell both two track and four track machines. He can stock and sell two track stereo tapes all through the transition period and beyond for there are a half million two track stereo machines in people's hands. While a four track tape, fully recorded on all tracks, will not play on a two track machine, a two track tape will play on a four tracker. As four track tapes come along, they can be added to the stock. As mentioned above two track recorders can be converted to four track easily when and if desired.

* * * * *

CAN YOU RECORD on all four tracks separately? Only one machine, the Tandberg, will record the tracks independently and play them back the same way. The others record tracks 1 and 3 in one direction and 2 and 4 in the other, when the reel is turned over. They might be thought of as dual track stereo.

* * * * *

AND FINALLY: last year, according to figures released by the Magnetic Recording Industry Association, 450,000 tape recorders were sold! From orders now on the books, it looks like 1959 will run as high as three-quarters of a million machines. If this industry was "confused" as some people claimed, just think what it is going to do when the confusion no longer exists . . . which is right now! Webcor reports recorder sales 52% ahead of last year for the first three months of 1959. Sales were actually 31% more for this period than during the Christmas season. If this is "confusion" let's have more of it!



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NEW TAPES

CLASSICAL ORCHESTRAL

GLIERE

Ilya Mourometz

(Symphony No. 3, B Minor, Op. 42)

Houston Symphony Orchestra

Leopold Stokowski

CAPITOL ZF-27

\$14.95 37 mins.

The folktales of pre-historic Russia have provided us with many cherished symphonic motifs, and Reinhold Gliere, who died in 1956, spanned the eras of Tchaikowsky, Ivanov and Shostakovich through his teaching and his composing. If you respond to the works of his contemporaries, such as Scheherazade, Prince Igor, Rite of Spring, you are a candidate for Gliere's epic symphony. The tales of the folk warrior-hero of 10th century are less interesting than the three recurrent themes, which are outlined in the informative album notes. Stokowski worked with the composer in preparing this edited score. The ringing climaxes, fine spun diminuendos, and primitive rhythms are matched by a most exacting stereo reproduction, and a performance that should bring this dominant conductor to the peak of his third career.—DSW.

BALLET

BILLY THE KID

Billy the Kid—Ballet Suite

Billy the Kid Waltz

Morton Gould and His Orchestra

RCA CCS-160

\$8.95 25 mins.

As Teddy Roosevelt would say—"Deeee-lightful." Here we have music telling a story, a Western yet. The plot is quite the usual thing, but when it is told in music, by a master such as Aaron Copland and played by a conductor such as Morton Gould, it is entirely different.

In the music you mentally see the pioneers moving West, the gun fighters, a fugitive's capture and escape, his dream of his girl while hiding in the desert, and his eventual downfall when the law catches up. Billy is shot when he lights a cigarette in the dark. You can almost smell the twirling smoke and the final shot that takes his life is just that—final. I would very much like to see this ballet.

Indeed yes, while listening to this the second time, the picture image created the first time had not faded. The music is just what you expect to hear and Mr. Gould and his orchestra play it just as it was meant to be played.

The recording is excellent in every way and a most worthy addition to your tape library.

ORGAN

THE ORGAN AT SYMPHONY HALL

Handel: Arrival of the Queen of Sheba

Handel: Suite from Water Music

Handel: Arioso

Raubke: Finale, Organ Sonata (94th Psalm)

Reginald Foort at Boston Symphony Hall

COOK 10545st, Vol. 2

\$12.95 24 mins.

Unfortunately, I have never had the opportunity to visit Boston Symphony Hall, but I can believe, after listening to this tape, that the Hall's acoustics must be quite remarkable. You feel as if you are seated in the center of a ring with organ music unfolding around you.

While I prefer to hear more serious music played by a full orchestra, these renditions are nevertheless stirring.

While this is not the highest of fi, it is still a most listenable rape.

POPULAR

JIMMY McHUGH IN STEREO

Medley: I'm in the Mood for Love, Don't Blame Me, On the Sunny Side of the Street, You're a Sweetheart, Where Are You?, Lovely to Look At, Candlelight and Wine, I Couldn't Sleep a Wink Last Night, Lost in a Fog, Blue Again; Rock-A-Bye Bluebird; Medley: Exactly Like You, I'm Shooting High, I Don't Care Who Knows It, How Blue the Night, Thank You For a Lovely Evening, A Lovely Way to Spend an Evening, My, How the Time Goes By, When My Sugar Walks Down the Street, I Can't Believe That You're in Love With Me, and I Can't Give You Anything But Love.

Urbie Green, His Trombone and Orchestra
RCA CPS-193

\$8.95 24 mins.

Here we have the "Big 3"—Jimmy McHugh, songwriter; Urbie Green and His Orchestra, performers; and RCA, recording engineering deluxe.

These are all Jimmy McHugh compositions. Jimmy has a knack of letting folks know he likes them through his music. To me it is a real pleasure to listen to this type music after hearing the radios blaring forth the raucous rock and roll tunes so much.

Urbie Green has a smooth group of guys who play well together and do a grand job on these selections, and Urbie's trombone manipulation is not to be ignored.

Arranging and style is well done, and while this tape scurries along through the melodies, it is emphatically danceable music.

The "Big 3" combination does well by this tape. Fidelity is excellent.

RED CAMP HORIZONTAL

Yesterday

Contrapuntal Blues

Summertime

Tenderly

Cumpanchero

Laura

What Is This Thing

Out of Nowhere

Red Camp Playing a 9-foot Steinway Concert

Grand

COOK 1087st

\$12.95 24 mins.

Ordinarily I would be expecting music more in the classical vein to be played on a Steinway such as this one, but Red certainly makes the most of this impressive instrument. He has a touch which bespeaks well of his artistic talents on the keys.

Too much piano music can at times become most tiring and monotonous, but when you are in the mood to just listen and digest what you are hearing, you begin to ask yourself why you never took piano lessons. The music and Red's method of handling give you an appreciation that perhaps heretofore was lacking.

While recording a piano is a most difficult task, engineering-wise, the technicians seem to have overcome some of the problems on this tape. The music is precise and clear—also, most relaxing.

We note that the selections as listed on the box label are out of order.

Anyone who enjoys piano music will like this tape.

LATIN

MARIMBA BAND

Las Chiapanecas, La Sandunga, La Tonalteca, Cielito Lindo, La Juanita, La Llorona, Dias Nunca Muere, El Cachito

5-Man Buzzing Marimbas from Oaxaca, Mexico

COOK 5007st

\$12.95 . . . 24 mins.

The marimba is a truly versatile and entertaining instrument. Little is known of its origin. In Mexico City it is used to accompany all types of modern popular songs, but originally it was used to play regional songs and social dances.

In any event, no matter what the origin or present status, it is nevertheless a different sounding type instrument, well suited to Latin rhythms. The musicians in the band on this recording are well acquainted with the marimba and they give a terrific presentation.

There is some singing accompanying certain selections which is fair. Actually, the whole tape is meritorious in that it is authentic Latin music; undistorted sound. As with all Cook tapes, the recording was done in the field.

FIESTA IN HI-FI

Robert McBride, Mexican Rhapsody
Ron Nelson, Savannah River Holiday
Lyndol Mitchell, Shivarree, from Kentucky
Mountain Portraits

Eastman-Rochester Symphony Orchestra

Howard Hanson, Conductor

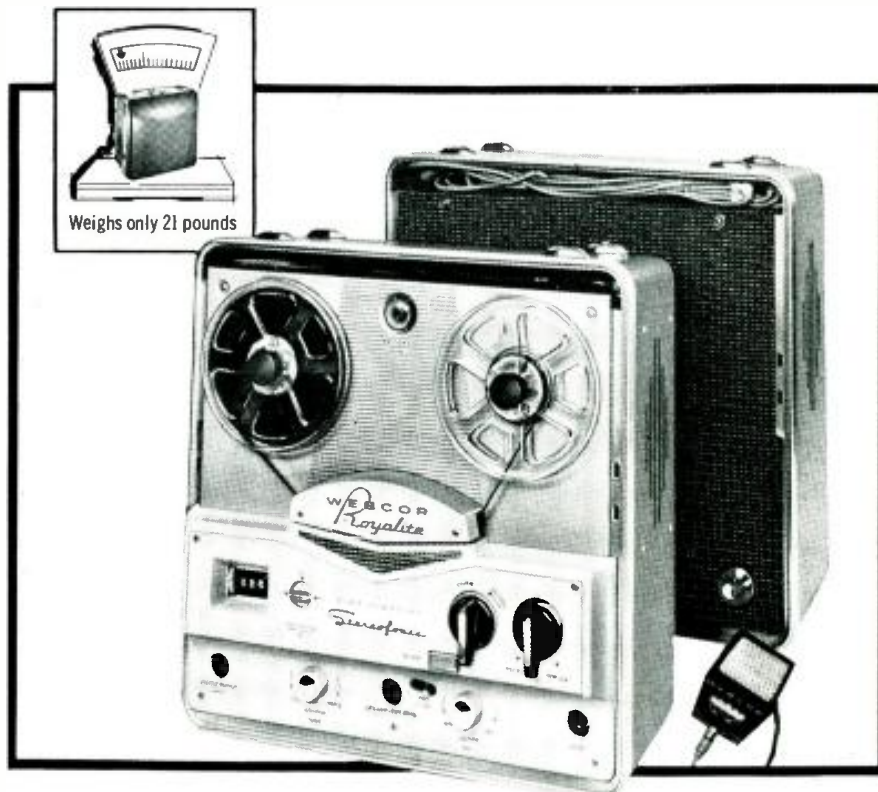
MERCURY MAS 5-28

\$9.95 . . . 24 mins.

Here is the 20th century, American composed equivalents of Offenbach, Ibert and Rossini. I think you will take pride and pleasure in meeting a made-in-America tape that really entertains. Howard Hanson, conductor and dean of American music educators, is one of the last great Romantic musicians of our time. He gives spirited understanding to these attractive compositions or his Eastman School graduates, themselves well established in teaching and the music business. We need many more such genuinely American works, so happily performed and recorded, to keep us and our families close to our native roots. This is an entertaining tape to own.—DSW.

STEREO WEBCOR

New! A really lightweight stereo tape recorder that gives true high fidelity performance



ONLY
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MODEL 2002

Until Webcor engineers developed the new Royalite, it was necessary to have a heavy, cumbersome tape recorder system in order to enjoy true stereo reproduction from stereo tapes. This new Webcor, however, is *really portable*—you can take it with

you on your travels, on vacations, wherever you like—and it gives finest stereo playback. And of course the new Royalite turns in a real championship performance when recording and playing back monaural tapes, too!

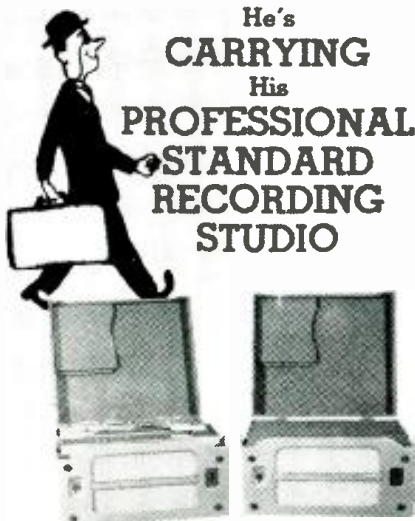
- Stereo tape playback—Monaural record and playback.
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TAPE IN EDUCATION

BY MAJOR JOSEPH J. KRAMP, USAF, RET.

ON the 6th and 7th of March, the Advisory Committee, Commissioner of Education, U. S. Dept. of Health, Education and Welfare, met in Washington to select proposed research programs to be funded under the National Defense Education Act. Some two hundred proposals had been received by the Office of Education during the previous months covering the broad requirements of radio, television, audio-visual, motion pictures, magnetic tape, etc. Several excellent proposals involving the use of tape were among those received. We have learned informally that no proposal involving tape was selected for funding by this Committee, although they did show interest in some isolated items contained in the tape proposals.

We feel strongly that the Committee was short sighted in not funding at least one research program in tape. We know that tape has enormous potential in the field of education. The limited experience accumulated with tape shows that it is invariably superior to the conventional teacher-classroom method of instruction. Teachers using tape can not only teach many more students in one class but can teach them better with more individual attention where needed. In contrast, the other mass media approaches to education offer much less. The rabid proponents of television teaching, stress the dramatic appeal and the capability of reaching hundreds of students simultaneously. However, these T.V. "fans" will not give you the entire story unless you press them, then they will admit that, at best, T.V. instruction is only "as good as" conventional classroom instruction, that the size of the viewing class is limited by the number of students that can be supervised by one teacher, and that the teacher in the classroom must be very well qualified and must work just as hard as before the advent of T.V. Thus it appears that although the use of T.V. does increase the productivity of the one teacher who is starred on the screen, the productivity of the whole school system is not helped appreciably.

The serious applications of tape to teaching, such as the notable work by the Benedictine Order of teaching sisters in the Midwest have demonstrated that in every case the productivity of each teacher and each school has been improved. It is true that the teachers must work harder at the present but now they have two jobs—one of teaching, which they feel has been made much easier, and the fundamental task of reorganizing material and Course Content, and development of the best techniques for the use of this medium. The burden on the teachers will be lessened as standard courses and techniques for teaching various subjects are developed. This development work is the type of research effort intended by Title VII of the National Defense Education Act and should rightfully be supported by it. Many proposals for the use of tape are being resubmitted for the next meeting

of the Advisory Committee some time this summer. We hope that their action at that time will be more consistent with the merits of tape in relation to the other mass media indicated in the proposals.

On Wednesday, 25th of March, we attended a symposium on "Psychology and Electronics in the Teaching-Learning System," sponsored by the Institute of Radio Engineers at the Waldorf-Astoria in New York. The chairman of this symposium was Dr. F. E. Ferman of Stanford University who pointed out that the art of teaching had, in fact, progressed very little since ancient times. He stressed the need for greater productivity in the schools and suggested that this might be achieved through the use of modern automation and electronic techniques and the proper reorganization of course content and material to optimize their use. The first speaker was Dr. B. F. Skinner of Harvard University who described the work done on his now famous "Teaching Machines." Dr. Skinner's machines are, at present, essentially mechanical and as such are somewhat limited in their application in that only one student can operate the machine at a time. Dr. Skinner believes that his techniques can be adapted to various electronic teaching methods which will improve their productivity. (We have talked with Dr. Skinner several times in the past about a teaching machine based upon his principles and using magnetic tape). Dr. H. E. White, of the University of California, spoke on his current project, the "Continental Classroom" currently being shown nationwide from six to six-thirty, five mornings a week. This is a very noteworthy course in physics for secondary school teachers and will be repeated next year along with a course in chemistry. Dr. R. F. Mager of the U. S. Army Air Defense Human Research Unit, Fort Bliss, Texas, spoke on his experiments on automated teaching. Dr. Mager has done some remarkable practical work in teaching and stressed the need for more engineers to start considering the educational problem and devising new machines and equipment to meet the increasing demands of education. Dr. C. R. Carpenter of Pennsylvania State University, spoke on the Problems and Possibilities of Electronic Systems in Higher Education. In the opinion of Dr. Carpenter, many electronic techniques can be adapted to improve the productivity of our schools.

Although none of the speakers at this symposium discussed tape directly, we know that tape in some form will appear in many of the techniques for automated instruction that will be developed. Even Dr. White, a dedicated T.V. man places his program on video tape to provide more flexibility of presentation and to smooth the rough spots in the presentation. Teaching machines of the future will undoubtedly use some form of tape and of course the position of tape in the teaching of language has not been challenged.

NEW PRODUCTS

WEBCOR ROYALITE



Webcor, 5610 W. Bloomingdale Ave., Chicago 39, Illinois, has introduced its Royalite portable tape recorder. This machine weighs only 20 lbs. and has a strong cover which prevents marring or scuffing. It features two elliptical speakers with a frequency range of 50 to 15,000 cps, 10 watts power output from the amplifier, and has speeds of $7\frac{1}{2}$, $3\frac{3}{4}$, and $1\frac{8}{8}$ ips. This recorder will play in horizontal or vertical position, and it has a safety interlock to prevent tape spilling, breaking or accidental erasure. It is priced at \$189.95. A stereophonic version of this machine will be available in the near future.

STEREO DUPLICATOR



Hartley Manufacturing Co., 10133 S.E. 8th, Bellevue, Washington, is marketing the Hartley Stereo Duplicator which plugs into your recorder and provides the machine's recording amplifier with an external output so that it can be used to record on another tape recorder. Thus one tie-in cord from the "Record Amplifier Output" on one recorder to the unused lower channel of any other stereo playback recorder synchronizes the two for stereo tape or record duplicating or for live stereo recording. No alteration of either recorder is necessary. Whatever is plugged into the recording inputs of the two recorders is recorded on just one of the stereo tape heads. This leaves the other stereo tape head free to play material for recording. Contact the manufacturer for complete information and price.

Which twin has the Audiotape?



NOT EVEN their mother can always tell these boys apart. But it's pretty easy to see which one is getting the rich, realistic performance that Audiotape consistently delivers.

Like twins, different brands of recording tape often look the same, but are seldom exactly alike. And though the differences may be slight, the discriminating tape recordist won't be completely satisfied with anything but the very finest sound reproduction he can get. Most of all, he wants this fine quality to be consistent—he wants *identical* results from every reel, regardless of when it was purchased. And so, he chooses Audiotape.

You'll find that Audiotape is different in other respects, too. For example, only Audiotape comes on the C-slot reel—the easiest-threading tape reel ever developed. Another example is quality. Audiotape has *only one* standard of quality: the finest possible. And that's true regardless of which of the eight types of Audiotape you buy. Don't settle for less. Insist on Audiotape. *It speaks for itself.*



Manufactured by AUDIO DEVICES, INC.
444 Madison Ave., New York 22, New York
Offices in Hollywood & Chicago

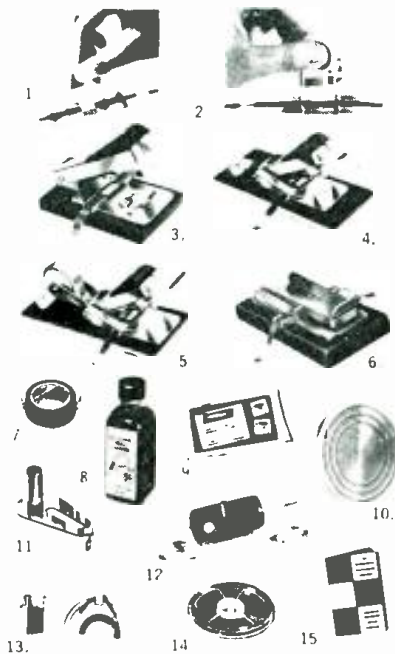
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TRADE MARK

15

ways to protect your
tapes...improve
hi-fi and
stereo performance

ROBINS
tape care
accessories

GIBSON GIRL TAPE SPLICERS



- | | | |
|----|----------------------------------|---------|
| 1 | Hobbyist H-4 | \$ 1.75 |
| 2 | Semi-Pro SP-4 | 3.50 |
| 3 | Junior TS4A-JR | 6.50 |
| 4 | Standard TS4A-STD | 8.50 |
| 5 | Deluxe TS4A-DLX | 11.50 |
| 6 | Industrial (5 sizes to 1" reel) | 55.00 |
| 7 | Splicing Tape ST-500 | .40 |
| 8 | Recording Head Cleaner HC-2 | 1.00 |
| 9 | Tape Cleaning Cloth JCT 2 | 1.00 |
| 10 | Tape Storage Can (7" and 5" TC-7 | .75 |
| | TC-5 | .55 |
| 11 | Tape Threader TT 1 | 1.00 |
| 12 | Tape Head Demagnetizer HD 6 | 10.00 |
| 13 | Tape Clips TC 12 | .35 |
| 14 | Tape Reel 7" TR-70 | .75 |
| 15 | Tape Editing Book TE-24 | .25 |

And a host of record care accessories including a new turntable level, a professional stylus microscope and record cleaning products.

WRITE FOR NEW CATALOG



TAPE CLUB NEWS

District Deputy Reelected

The Northeastern District of The Voice-
spondence Club has just reelected Carl
Williams of Amsterdam, New York, as
District Deputy and member of the Club's
Board of Advisors for another two-year term.
The Northeastern District includes the New
England states and New York, and is one
of the most heavily populated districts
voicesspondent-wise in the United States. A
very high percentage of the members partic-
ipated in the balloting, a token of the
esteem in which Carl is held. A rug weaver
and married, Carl has spent many week-ends
and much of his vacation time in travelling
about his District calling on the members
in person. The thrill of meeting face to
face a person whom you know only voice-
sponding is one that never fails, and Carl
has in this way managed to meet in person
more VS members than any other member
of the Club.

Voicespondence British Membership

The British membership of The Voice-
spondence Club has increased to such an
extent that the United Kingdom has been
divided into two separate districts. The
English District is comprised of members
living in England alone, and the Keltic-
British District consists of Scotland, North-
ern Ireland, and Wales. Cotemporaneously
with the separation into two districts, elec-
tions were held for Special Deputies to
represent the members in each district. Sir
Mark Dalrymple of Midlothian, Scotland,
now heads the Keltic-British District, and
Lee Lacy of London, editor of the Club's
British sound magazine "Voices in the Post,"
now leads in England.

Special Fund

Recording is an expensive hobby. And so
members of The Voicespondence Club have
for a long time contributed their nickels,
dimes, and dollars to the Club's Special
Fund to help furnish recorders and supplies
to handicapped people who could not other-
wise afford them. During the past 6 months
the Club's Special Fund has spent \$463 to
pay dues of 5 people, help purchase 6 re-
corders, and furnish 3-inch reels of 1 mil
Mylar tape at a special price to the handi-
capped. Contributions are entirely voluntary,
and the names of those helped are never
revealed by the Fund.

Tape Clinic

One of the most useful features of The
Voicespondence Club's magazine is its Tape
Clinic. This is a service by mail to all mem-
bers of the Club answering their questions
about recording, audio, equipment, and
postal problems in exchange for a stamped,
addressed envelope. The most interesting
questions are printed in the magazine each
time, but all those writing in receive per-
sonal replies by mail. The Tape Clinic also
offers a free repair service to those who live
in isolated communities and cannot get
proper service for their machines. Only the
cost of transportation and parts is charged.

Service Committee

The Voicespondence Club has a Service
Committee, which exists to serve club mem-

bers in any way that it can. The committee
makes a special effort to see to it that
physically handicapped members get the
maximum use and pleasure from their re-
corders; special programs and items have
been devised for visually handicapped mem-
bers; any member with a problem is invited
to call on them.

Latest additions to the committee's staff
include Katherine and Eleanor Lamay of
New York. Other volunteers are welcomed.

WTP President Interviewed

On Sunday, December 7, a radio inter-
view with Harry Matthews, President of
World Tape Pals, was broadcast over CBS.
It brought a deluge of letters from folks
who heard it.

The interview was conducted by Eddie
Barker, news director of Radio Station
KRLD in Dallas, where it was taped and
sent to New York for editing into a 15-
minute program.

Veteran CBS newsman Paul Niven acted
as moderator. He characterized the club as
an international pen pal group with a mod-
ern touch in that the letters are talked
instead of written.

The program included a tape from an
Israeli soldier who told how tapes from
Americans had convinced his friends the
U. S. isn't peopled by imperialists interested
only in Arab oil.

A copy of the above program is obtainable
by members simply sending tape and postage
to club headquarters.

Prayer Tape-d

Conrad Hilton has put on a tape, for World
Tape Pals, his prayer "America On It's
Knees" and it will be sent to any members
who request it.

World Tape Pals Jamboree

The first international gathering of the
thousands who correspond by tape will be
held in Germany this summer. It is the
World Tape Pals Jamboree, set for June 20-
July 5, at Schliersee, Bavaria.

Plans for the gathering of WTP members,
who presently number more than 4,000
throughout the free world, already are be-
ginning to jell. Of course, anyone interested
in tape recording's many facets will be most
welcome.

Schliersee, a health resort, lies 30 miles
from Munich in the upper Bavarian Alps, a
region of flower-clad, breathtakingly beauti-
ful mountains. Ranking among the loveliest
resorts of South Germany, Schliersee has
available accommodations to suit almost
every purse. This is one reason it was chosen
for the Jamboree.

The affair is to be pitched on a basis of
friendship and informality. Recording ex-
perts are to meet nights to discuss technical
data. Others may gather to hear unusual
recordings.

There will be dancing evenings for young
and old. Folk dancing will be provided by
the people in their native costumes. The
local wine cellars are said to be among the
best in Europe. Also on tap will be sailing,
bathing, watersports, tennis, golf, tours,
mountain climbing and concerts. Excursions
are to be offered to nearby Lake Chiemsee,

Partenkirchen, Oberamergau, Innsbruck and Salzburg, among others.

"You name it and they'll have it," says Harry Matthews, Dallas, founder and president of WTP.

Tour arrangements for WTP members in the United States and Canada and their possessions are being made by International Travel Service, Inc., Irene Patoski, President, Western Hills Hotel, 6151 Camp Bowie Blvd., Ft. Worth, Texas. Flights are being arranged to go by British Overseas Airways Corp.

Dennis Cooper, 14 Guilford Street, London, W.C. 1, is in charge of European reservations.

Appointments

World Tape Pals, Inc. announces the appointment of new representatives, as follows: England: Len W. Watkins, 40 Ravenslea Road, London, S.W. 12, England; South Africa: John J. Albertse, P. O. Box 48, Beaconsfield, Cape Province; East Africa: Frank H. Weston, c/o H. M. Prison Service Hq., Dar es Salaam, Tanganyika.

British Club

Aims of the British Tape Recording Society are to encourage the use of tape recorders in hospitals and by the blind, for education, entertainment, all in addition to correspondence; to encourage tape recording clubs, which may be affiliated to the Society, to form regional groups; and to obtain technical, legal and general assistance whenever possible for members and affiliated clubs.

Tapespondence is an activity open to all members both at home and overseas, by use of a first-class printed directory issued on joining. The house journal of the Society is "The Recordist."

JOIN A CLUB

TAPE RESPONDENTS

INTERNATIONAL
Jim Greene, Secretary
P. O. Box 416, Dept. T, St. Louis 66, Mo.

THE VOICESPONDENCE CLUB

Charles Owen, Secretary
Noel, Virginia

WORLD TAPE PALS, Inc.

Marjorie Matthews, Secretary
P. O. Box 9211, Dallas 15, Texas

AUSTRALIAN TAPE RECORDISTS

ASSOC.
Jack A. Ferry, Federal President
Springbank Rd., Clapham, S. Australia

UNITED RECORDING CLUB

Richard L. Marshall, President
2516 S. Austin Boulevard
Chicago 50, Ill.

BRITISH TAPE RECORDING SOCIETY

Peter M. Bardach, U. S. Representative
210-16 Grand Central Parkway
Queens Village 27, N. Y.

AMERICAN TAPE EXCHANGE

Stuart Crouner, Secretary
181 E. Main St.
Gouverneur, N. Y.

BILINGUAL RECORDING CLUB OF CANADA

J. P. Paquette, Recruiter
1993 Morgan Boulevard
Montreal, Quebec, Canada

CLUB DU RUBAN SONORE

John-Paul Barabe, Publicity
1274 St. Elizabeth St.
Montreal, P. Quebec, Canada

AURORA SCIENCE TAPE SOCIETY

Walt Richard Sheasby, Jr.
215 North Baldwin Ave.
Sierra Madre, Calif.

Please enclose self addressed, stamped envelope when writing to the clubs.

Full details on application are available from the Executive Secretary.

Copyright Protection

In order to avoid infringement of copyright, the British Tape Recording Society is shortly to enter into an arrangement with the Mechanical-Copyright Protection Society Ltd. of London, whereby members of the B.T.R.S. and its affiliated clubs, regularize the position by obtaining a license of the above Society which will authorize recordings made under club auspices and by individual members where these are intended for playback to members or their families, provided no commercial use is made of same.

It should be appreciated that the Mechanical-Copyright Protection Society dealing with local clubs through the B.T.R.S. will not only cut the cost of administration, but enable more advantageous terms to be quoted and time saved than if they had to deal with each individual club and member.

It is hoped the above matter will receive the favorable attention of local club committees and the Council of the Society will look forward to their views on the subject at the earliest possible date.

A full list of members of the Mechanical-Copyright Protection Society Ltd. is held at B.T.R.S. headquarters.

FM Station Seeks Tapes

A new FM radio station in Chicago, Ill., Station WFMQ, is looking for members outside the United States to set up a tapespondence with them. Russell Butler of their production staff, has asked the American Tape Exchange Club to help them in their search for interesting international tapes. The club Taping Central is calling upon its members outside the United States, who are interested in contributing such tapes, to contact them.

Asst. Secretary-Treasurer Elected

At the last officers' meeting of the Bilingual Recording Club of Canada, it was decided that, due to the ever-increasing amount of work created by their recent recruiting and publicity campaign falling on the Secretary-Treasurer, an assistant would be named to share the load of work. Consequently, one of the directors, Ed Levasseur was voted and accepted unanimously "Assistant Secretary-Treasurer."

New Tape Library

The Bilingual Recording Club of Canada started a Tape Library this year. Subsequently, a Librarian was named. The responsible man is Ernie Rawlings. Congratulations to Ernie and good luck. Incidentally, this tape library is a new project and seems to be going in the right direction. The purpose of this is to have members provide tapes recorded on original subjects which would be of mutual interest to most members, as an example—"Life in the Arctic and Observation on Eskimo Life" provided by a member now working in the North. We feel very optimistic and predict that within a year we will have 25 to 30 such tapes which would be re-recorded for members on request. A list of such tapes will be published from time to time in the club's official quarterly bulletin.

SONY NEWSCASTER M4



A light weight precision spring and battery operated tape recorder with full professional quality.

- A SONY FP-2 professional dynamic microphone (50-10,000 cps).
- "Built-in" capstan strobe and viewing device.
- Variable speed adjustment control.
- Modular construction of electronic components.
- Output for headphone or external playback amplifier.
- Special capstan drive and extra large pinch roller.
- Graduated level control for record/playback.
- Automatic timing device indicates when to rewind (you can rewind while recording).
- All aluminum construction, with removable window lid and bottom cover.
- Instantaneous switching for Record or Playback.

OVERALL FREQUENCY RESPONSE: 100-6,000 cps within 2 db deviation
SIGNAL/NOISE RATIO: Better than 55 db @ maximum record level
TAPE SPEED: 7 1/2 ips

FLUTTER & WOW: Less than 0.3%
HEAD: Full track for 1/4" tape. Triple shielded, multiple laminar construction for maximum performance and wear
INPUT IMPEDANCE: 1 megohm on Microphone

OUTPUT IMPEDANCE: More than 100K ohm unbalanced
DISTORTION: Less than 2% at 3 db below maximum signal

BIAS FREQUENCY: 30 kc
BATTERIES: 3—1.5 volt "D" flashlight, 2—67.5 volt RCA VS 016 or equivalent

DIMENSIONS: 15" x 6 1/4" x 6 1/2"
WEIGHT: 14 lbs.

PRICE..... \$395.00

- Complete descriptive brochure available on request.



SUPERSCOPE

STEREORECORDER DIVISION INCORPORATED
SUN VALLEY, CALIFORNIA

TAPES TO THE EDITOR

When sending tapes to the editor please use the 3" reel and indicate the speed at which it was recorded and whether it is dual or single track. We will listen to your tape, make notes from it for use in this column and then reply on your tape. Please keep tapes reasonably brief.

If you do not own a recorder, a letter will be acceptable. Address tapes or letters to: The Editor, Hi-Fi TAPE RECORDING, Severna Park, Md.

A Reader Wrote—

To the Editor:

I have been buying HI-FI TAPE RECORDING for about one year and enjoy your publication very much. I have a Bell & Howell 300 M Recorder and would like to make use of it to supplement my present income.

In your July 1958 issue I read the article on recording weddings by Marx Cooper. I have also purchased the course "Tape Recording for Pleasure & Profit" by Leo Hammer. I made an attempt to record weddings, but have been completely halted in my efforts by the New York Musicians Union. It seems that when recording a wedding I must also record the Wedding March played by an organist who is a union member. I offered to pay a percentage of my fee to the musician, but the union would not even hear of it. It seems that in New York, at least, the union is preventing people like myself from earning some much needed extra money. Is there anything that can be done to get around this situation?

Has the union the right to prevent me from recording weddings? They claim that

if it is discovered the wedding is being recorded, they will order the musicians not to play, thereby ruining the wedding.

I would appreciate your advice on this matter. Thank you very much.—*Martin Kornbauer, New York.*

We Wrote the Union—

We received today a letter from a reader in the New York area who wishes to earn money with his tape recorder by recording weddings. He says in his letter "I made an attempt to record weddings but have been completely halted in my efforts by the New York Musicians Union. It seems that when recording a wedding, I must also record the wedding march played by an organist who is a union member. I offered to pay part of my fee to the musician but the union would not even hear of it. It seems that in New York, at least, the union is preventing people like myself from earning some much needed money. Is there anything that can be done to get around this situation? Has the union the right to prevent me from recording weddings? They claim that if it is



LOUIS ARMSTRONG, currently touring Europe, takes two NORELCO 'Continental' recorders wherever he goes. Says Louis, "I tape phono records and airshots all the time and if I'm in the room talking with friends, my NORELCO's keep right on copying with the volume turned down." Louis also finds the choice of three speeds convenient, using the slowest, 1½ ips for interviews and speech recording, the 3¾ speed for some music, and the 7½ speed for live recording. He says, "I've tried lots of tape machines since I got my first one in 1948, but NORELCO is the one for me." Recently he picked up two NORELCO 'Continental's in Copenhagen. Set to run on the European power frequency of 50 cycles, they will be reset for 60 cycles when he returns to the United States. Like all NORELCO recorders they can be set in a few minutes for any power voltage requirement anywhere in the world; from 110 to 250 volts. The NORELCO 'Continental' is a product of North American Philips Co., Inc., High Fidelity Products Division, Dept. 1P5, 230 Duffy Ave., Hicksville, L. I., N. Y.

discovered that the wedding is being recorded they will order the musicians not to play, thereby ruining the wedding. . . ."

I called the Local 802 and was told that the answer to recording weddings was a flat "No" and any arguments about it would merely be going around in a circle. I was also informed that they were following the rule laid down by the national organization, and suggested we contact you.

Frankly, this situation is incomprehensible to us. If true, it would mean that a father who owned a tape recorder would be barred from making a recording of his own child's wedding . . . nor could any other person make such a recording for him.

It is equally incomprehensible that a union would dare put any restrictions on one of the sacraments of the church or prevent the recording of perhaps the highest point in a human's earthly experiences.

We wish to get this matter cleared up for the benefit of our readers and would like a statement from you that we can publish.

I understand that there is a recording permit that may be had for making commercial recordings, such as is done by the professional recording companies. I also have heard that should a person take out such a license he also promises not to record non-union musicians.

As you know, most of the church organists are non-union people or members of the religious body, such as a nun in the Catholic faith. I presume the same would hold true of the Jewish cantors. Many of the soloists who sing at weddings are members of non-professional choirs, etc.

Thus if it were possible for a recording permit to be secured and if the restriction applied of not recording non-union musicians, assuming the paragraph above is true, then this would be of little use either.

We are sure that the union could not ban the recording of the actual ceremony, nor could it exercise any control over non-union groups.

In any event, a statement of your policy would be helpful.

Cordially,
Mark Mooney, Jr.
Publisher

The Union Replied—

This will reply to your letter of July 11th with reference to attempted tape recordings at weddings where members of the American Federation of Musicians are rendering musical services.

Our members are employed, under contract, to perform specific musical duties in playing at weddings and receptions. For this they receive the applicable wage scale as determined by the number of hours they are employed for. In negotiating the contract for their musical services the purchaser makes no mention of recordings to be made. If he had, he would be informed another fee for the musicians would be involved as this would be another service rendered by the musicians.

It seems to us your reader, in the New York City area, has purchased a tape recorder and now desires to make a living by capturing musical services of our members without paying the proper fees. We have no control over non-union people but certainly

will not permit the recording of musical services of our members by anyone unless proper wage scales are paid.

Very truly yours,
Herman D. Kenin
President

No comment—Ed.

Take Your Choice

To the Editor:

I don't expect you to print this, as I happen to know that you carefully refrain from running anything not in line with your particular pitches or likely to tread on the toes of your gods, the advertisers . . . nevertheless, perhaps writing this will relieve my feelings on this matter of misrepresentation in the ads of magazines such as yours.

First, a question—for years I've been hearing from you and others of the unquestioned superiority of tape-playback over disc playback for the music perfectionist.

Just what does this alleged superiority consist of?—I, for one, find the facts to be quite otherwise.

I have two tape decks, together with the requisite number of their playback and record/playback preamps, for which I paid through the nose—not only are these components highly touted, but are highly PRICED—for example, one can buy an excellent complete recorder for nearly the price of just one pre-amp.

For discs I use a Collaro record changer—which many hi-fi snobs would look down their noses at—and an Electro-Voice 21-D cartridge—again not necessarily among the more elite in the line of cartridges.

NOW HEAR THIS—in every case, disc playback is cleaner, with better frequency response and FAR less hum, hiss, and over-distortion than the tape!

I am no tyro in tape, having been heavily interested since early 1952, and have used, adjusted, repaired, traded, bought and sold, and otherwise been involved with tape recorders of various grades and makes since then. I have at least a smattering knowledge of electronics, and you can be assured that the poor results I get with the decks are not the result of my carelessness or ignorance.

My "cheap" Collaro, after years of use with no maintenance whatsoever, continues to perform to my complete satisfaction. My decks, on the other hand, require constant vigilance for barely acceptable performance. In spite of advertising claims, one deck is so much slower than the other that an A-440 recorded on one deck plays back a nearly perfect A-flat on the other! Correspondence with the deck manufacturer ignored the ad claims, and suggested that I have the motor-pulley on the up-to-pitch deck turned down to match the flat deck!

Add to this the extortionate prices of most pre-recorded tapes (and don't talk about the new 1/4 track tapes—results are already bad enough at 7 1/2 ips, with half-track heads!—so lower price or not—no, thanks!) and you'll see why I just can't go along with your self-seeking claims of tape superiority. Tape is good for only one thing—recording of those things one wishes to preserve, but, for playback of pre-recorded material, far from being superior to discs, it is far inferior, and under no circumstances should I ever again buy prerecorded

tapes now that stereo discs are available.—
Curtis D. Janke, Sheboygan, Wis.

Honest differences of opinion are what make horse races, and political campaigns possible. However, tests, using the best audio gear obtainable and identical recordings in the form of stereo tape, disc and cartridge have proved that tape is the superior medium at the 7 1/2 ips speed.

Tape is superior in surface noise and wearing ability as Mr. Janke will discover after he has played the discs for a while. Best thing to do with a stereo disc is copy it on tape and play the tapes. Tape does not suffer from channel shifting and there is no delicate cartridge in a tone arm to watch out for. An excellent disc, when new, can match tape in frequency response but not in dynamic range. Anyone else want to tell our reader why he should prefer tape?

Will History Repeat?

To the Editor:

There has been much discussion and speculation about 4-track magnetic tape magazines, but little practical results. The 8 mm photo film magazines as used in cameras may supply some clues as to the type of difficulties which may possibly be encountered with 1/4 inch magnetic tape magazines.

8 mm film magazines became available about 18 years ago accompanied by much advertising matter enthusiastically describing their many advantages. In 1942 I purchased a quality brand 8 mm magazine camera and had operational trouble from the beginning. The magazines increased the unevenness of the camera speed, resulting in annoying fluctuation in the intensity of the light projected on the screen, the video equivalent of audio's "Flutter" and "Wow." Not infrequently the magazine caused the camera to jam and stop completely even when the spring was fully wound, invariably in the midst of an important never-to-be-repeated action scene. Sometimes the jam could not be freed and there was no alternative but to send the partially-exposed magazine in for developing. Jamming was most pronounced at low shutter speeds.

In February 1959 I inquired about 8 mm films at a photo shop. The magazine cameras are more expensive than regular reel cameras, and the 50 foot 8 mm films are about \$1.25 higher list price in magazines than in reels (you cannot keep the magazines). The reel film is frequently sold at considerably less than list price, but the clerk told me he could not sell the magazine film at less than list price because the sales volume was so low on it as compared to reel film.

Photo film is available in much greater variety of speeds, color, and other characteristics on reels than in magazines.

The magazine film has had more than 18 years in which to prove itself, and after all that time it is still relatively unpopular as compared to reel film.

Ditto magnetic tape magazines??—Edwin F. Wiegand, San Bernardino, Cal.

Correction

In the March issue, this column carried a letter from Lynn McCracken, of Oregon. Unfortunately, his address was quoted incorrectly. It should be 4825 S.E. 94th Avenue, instead of 9th Ave. Sorry Mr. McCracken.



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RADIO CORPORATION OF AMERICA
Electron Tube Division
Harrison, N. J.

QUESTIONS AND ANSWERS

Questions for this department may be sent on tape or by means of a postcard or letter. Please address your queries to "Questions and Answers," HI-FI TAPE RECORDING, Severna Park, Maryland. The most interesting and widely applicable questions will be used in this department and all inquiries will receive a tape or letter reply.

Q—Can you help out a poor tape recorder fan who is confused and getting more so by the day?

A year ago I bought a Tandberg monaural machine. Since then they have made a 4 track head conversion and since it promises better frequency response, I was about to make the conversion when I noticed an ad from another manufacturer who does not recommend the 4 track head for home recording because of short gap heads, etc. That stops me cold as I use my recorder for off the air recording. Do you agree with them?

Just what is 4 track? As I understand it, it doubles the stereo playback. Does it also double the monaural recording and playback. Will the erase head have to be changed? It may sound silly but even my dealer can't answer me positively. He's confused too.

As part of the conversion kit, Tandberg offers a preamp for stereo playback. Is this unit necessary or could I feed the signal into a dual amplifier pre-amp for the same result? I will use the tape output of my amplifier for recording off the air. Will the use of a better amplifier improve my recordings—as it would improve the performance of my tuner?

I hope you can give me positive answers to my questions as I certainly can't get them here and therefore am at a dead end in my effort to improve my equipment.—*A. M., Union City, N. J.*

A—We would suggest that if Tandberg claims better frequency response with their heads on their machines you can believe them despite what other manufacturers may have to say about their own machines. Over the years we have checked two Tandberg recorders for consumers reports and have found them to live up to expectations and to their claims. If the other manufacturer does not feel 4 track heads are good for his machine, we fail to see how this would affect another machine. At this writing, Ampex, Tandberg, Telectro, Pentron and Ekotape have 4 track heads as standard equipment. They are available optionally on a number of other makes.

A 4 track head is a head having two pole pieces that contact the tape. The pole pieces are so positioned that, when the tape is turned over, as in monaural dual track recording, a second pair of tracks is laid down on the tape but in the opposite direction to the first. Thus an interlace is formed with tracks 1 and 3 going in one direction and 2 and 4 in the other.

You might think of 4 track as "dual track dual track"—if that is any help. Inasmuch as there are two pairs of stereo tracks on one tape, stereo playback time is doubled.

Only one machine, the Tandberg, will record all four tracks separately and play

them back separately, thereby doubling the monaural capacity of the tape as well. The other machines when used monaurally record two tracks at a time with the same signal so that the effective width of the two bands almost equals the width of a dual track produced by a regular machine. These recorders will not extend the monaural playing time but they will extend the stereo playing time.

If you make the conversion to four track, your erase head will have to be changed to match the new record/playback heads.

Regarding the preamp, if the input impedance matches that of the heads used you should be able to feed the tape input on the preamp of your dual amplifier. We would suggest you check this directly with the manufacturer.

In general, amplifier frequency response ranges are generally higher than those of either tuners or tape machines, or, in fact, the signal put out by the broadcast stations. We would suggest you check the specifications of your various pieces of equipment against each other. The weakest link in the chain will be your limiting factor.

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Processing	30.00	30.00	60.00	60.00	60.00	60.00	60.00	60.00
Pressing	Each 1.00	Each .95	Each .90	Each .85	Each .80	Each .75	Each .75	Each .65
10" Masters	25.00	25.00	25.00	25.00	25.00	25.00	25.00	25.00
Processing	25.00	25.00	50.00	50.00	50.00	50.00	50.00	50.00
Pressing	Each .85	Each .80	Each .75	Each .70	Each .65	Each .60	Each .60	Each .55
7" Masters	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Processing	20.00	20.00	40.00	40.00	40.00	40.00	40.00	40.00
Pressing	Each .70	Each .65	Each .60	Each .55	Each .50	Each .45	Each .45	Each .40

You must add the cost of masters and processing before the price of pressing can be ordered. You will note after 100 orders the processing has been doubled. The reason is after this many pressings the metal part is likely to break. Then a new master has to be made. You will be charged for it. No extra charge for masters or extra parts when full protection is paid. Good for thousands of records. There is no discount on masters or processing only on pressings. On tape recordings we make we cannot give custom prices. Stereo custom recording masters processing pressings, add 100%

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We maintain a repair service on all makes of hi fi equipment, amplifiers, microphones, tape recorders and motion picture equipment. Why not send us your equipment for repair or overhaul. Prompt service work guaranteed. Leave us your equipment during summer months. We go over everything and repair or replace parts as needed. The machine is returned to you when needed for coming year. You can rest assured of excellent performance. WORK GUARANTEED.

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Check or money order must be with order. No C.O.D.'s or billing. We are not set up for this service. This is why we have low prices. Make all checks payable to Hi Fi Sound & Recording Service.

WANTED

Used Ampex 600,601-400-A Altec 21B Microphone Telefunken Microphone. State price, condition of each.

TEEN TAPERS

BY JERRY HEISLER

THERE will be a lot more teen tapers in the future than there are today and it doesn't take a crystal ball to see that.

For one thing, since the Congress passed the Defense Education Act, there has been a great spurt in both interest and money to back that interest in the teaching of foreign languages.

As you probably know, the best way to teach a language is with tape, and schools by the dozens are installing language laboratory equipment right and left.

Of course, the heart of the language lab is a tape recorder, or more often a number of tape recorders. Teens will be using this equipment day in and day out and are going to be quite handy at using it.

It isn't going to take much showing to convince a teen that the tape recorder is useful for more than language instruction and that one at home will allow him to study other subjects with it too.

One way to use the recorder to study is to make up question and answer tapes. To do this you ask yourself the question, allow a silent spot on the tape long enough for you to make an adequate answer and then read the reply right out of the book. The process is repeated until the entire tape is full. You can use this method with almost any subject.

It is especially helpful when you have to practically memorize something in order to

pass an exam. The constant repetition will fix it in your mind very well.

Smaller brothers and sisters in the family can be helped in the same way and if you are the one elected to help them learn such things as a multiplication table, you can save yourself hours of time by putting the practice work on tape and letting them run the recorder themselves.

Not only will you be freer but they will have a lot more fun. The kids are getting tired of TV and its novelty has worn off but "electronics" is new and modern to them and they lap it up. This has been proved in those schools that have electronic teaching classrooms.

Electronic classrooms are really wired for sound. Perhaps someday most classrooms will be constructed along these lines but it's going to take a while.

The electronics classroom uses three recorders and each desk is wired into a teacher's console at the front of the room. The teacher can speak to any member of the class individually just by throwing a switch and speaking into a microphone. The mikes they use are just like those worn by telephone operators.

The student can answer the teacher through his own mike and the rest of the class does not hear the conversation.

Three tapes are played to the class, one for those who learn slowly, one for those

who learn at the normal rate of speed and the other for those who learn rapidly. Thus each student can progress at his own rate without upsetting the regular class routine. Those who are bright and need more work to keep them interested get it from the tapes and the slow learners are not swamped. All in all it looks like a very fine development and from what we have read about the results obtained, we will be able to learn more and faster than ever before.

This is all to the good for other nations are not asleep at the switch and unless we keep up, we may find ourselves in a sad plight some day.

The boys should welcome this rapid learning especially, for one way or another they must serve a term in the armed forces and from what we hear, they really have to know their stuff. Many of us will be put to operating some mighty complicated gear, like radar sets, fire control, TV and nuclear equipment. Unless we have a good basic knowledge and know how to study, we are going to be letting the country down.

Anything that can give us more knowledge faster and easier I am all for and I think all teens will be too.

With teens using tape more and more in school, the natural result is going to be, as we said at the beginning of this column, more teen tapes than ever in the future—and there's nothing wrong with that.



The Villa Louvigny, headquarters for Radio Luxembourg is one of the most modern broadcasting enterprises in all Europe.

RADIO LUXEMBOURG VIA TAPE

by C. H. Malmstedt

*... a taste of Americana
flavors European radio
broadcasts thanks to tape.*

THERE is a new phenomenon in Europe—an American phenomenon—and tape is the heart of it.

Few Americans who have not lived in Europe or spent a considerable time in it have seen this powerful new ally of ours, but even newcomers soon encounter its effects. A group of Americans recently did, while passing through an old English town, and the encounter was at once mysterious and gratifying.

This was the picture: The town, as dismal as only an old, unmodernized industrial town anywhere can be, seemed to be in the grip of a lethargy belonging to another age, the night streets dimly lighted and drab, the people appearing forlorn and devoid of enthusiasm, the same for mile after mile—and then the change came, faintly at first, then louder and dramatic.

It began in the form of distant sound that rapidly became a compelling one: many male voices singing, and singing well. The song: the American hit, *My Secret Love*. And then they appeared around the far corner—a dozen or more young men, locked arm in arm, swaying, not rowdy but in high spirits.

"The movie," one of the Americans said. "The Doris Day picture." Perhaps.

But a few blocks farther down a smaller group came along, and they were singing, "Oh, my papa, he was so. . . ."

The following evening in London the phenomenon continued. As the group of Americans crossed rain-splattered Trafalgar Square, it was cool and raw, no night for outdoor

merriment, and most faces reflected just that—but along came a youth and a girl, literally singing in the rain—and the song was another current American favorite: Sandman. Recollections now flooded in: there had been much of the same in other countries they had visited: Ireland, France, Belgium, Holland—an American song bringing flashes of gayety and brightness where none had been a moment before.

But what was doing such an effective job of spreading



In this German home the radio brings almost as many American tunes as old Fatherland favorites via Radio Luxembourg.

Right: Merriment in this Rhine country market place included concertina renditions of such American favorites as "Stardust" and Stephen Foster melodies. Below: This trio in Zurich sang many an American tune to the accompaniment of music from their car radio.



that kind of Americana? At a Soho tearoom they ran headlong into the answer, for the radio there, as in many places after that, was not tuned to the British Broadcasting Company or to the national radio of any other country, but to Radio Luxembourg—at that moment airing a hilarious and familiar American-style program: "People Are Funny."

This program, it turned out, had been tape recorded in the English midlands. Subsequent checking soon brought to light a full realization of the tremendous job tape was doing in making and keeping friends for the U. S. in Western Europe, via Radio Luxembourg.

With no connection with such U. S. enterprises as the Voice of America, the American Forces Network, and Radio Free Europe, this European-operated disseminator of the American way is quietly taking Europe by storm; quietly but tellingly—and at no cost to the U. S. taxpayer, but rather with a profit to both European and American enterprise. While the B.B.C. supplies an adequate staple diet of standard British programs, Radio Luxembourg, with offices and recording studios also in London, engages in a lively U. S.-style sponsored operation. How well it is succeeding is indicated by the report that Radio Luxembourg in the five years from 1948 through 1952 brought its business volume from 30,000 pounds to 520,000 pounds—and frequently elicits such newspaper headlines as "'People Are Funny' Convulses Croydon," which once appeared in the Weekly Sporting Review.

To attain and keep such popularity, Radio Luxembourg

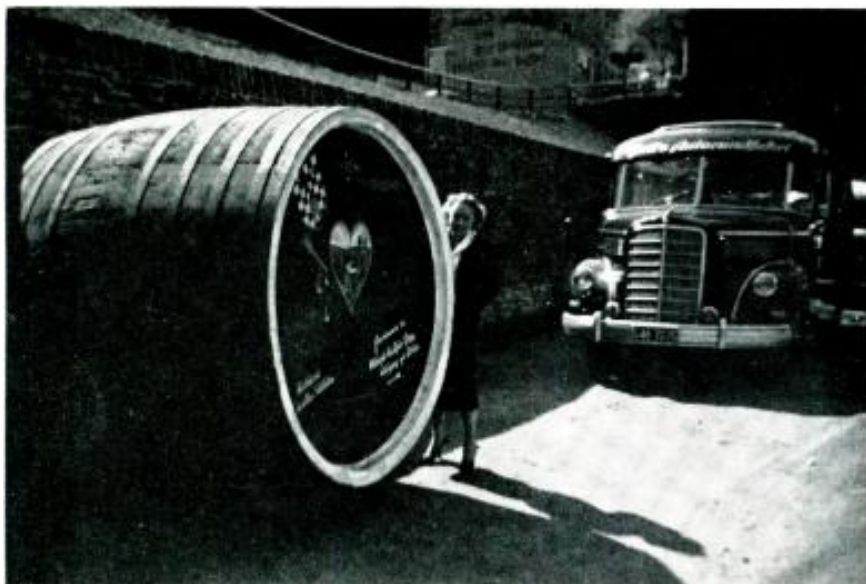
covers the field with its tape recorders. It also imports from the U. S. taped programs such as, Doctor Kildare, Frankie Lane, Hopalong Cassidy, Bing Sings, to mention a few. While the B.B.C. is an official British government service and subject to attendant limitations, Radio Luxembourg, with and through advertising agencies, produces sponsored programs with "a lift and a kick to them" as one listener put it. It also works with the International Broadcasting Company, of London, itself a pioneer in commercial broadcasting in Europe.

Between the I.B.C. and Radio Luxembourg are produced and aired such U. S.—type programs as, What's My Line, The Capitol Show (from Hollywood), Orson Welles' The Black Museum, and serials such as Bold Venture, starring the late Humphrey Bogart and Lauren Bacall—and with such success that, in Ireland alone, one million of its 3,000,000 population have been surveyed as regular Radio Luxembourg listeners.

One undoubted reason for the popularity of these U. S.-style programs is the American innovation of audience-participation, which, with the availability of tape recorders, covers not only the metropolitan areas but the countryside as well.

Most of the field work is done with a portable recorder which, complete, weighs 14.5 pounds, and is 14 x 7 x 8 inches in size, which includes the space for the self-contained batteries. To further reduce weight and space, earphones of the stethoscope variety (stethophones) are used. Three different models of this recorder are used, depending on playing time and quality required: 3.75"/second for 30 minutes; 7.5"/second for 15 minutes; and 15"/second for 7.5 minutes, the resultant tone fidelity being, respectively, flat within ± 2 db from: 50 to 7000 cps; 50 to 5000 cps; and 50 to 2500 cps, with a slight increase in attenuation above three frequencies. Freedom from wow is claimed to be better than 0.2 per cent at 15"/second, with a signal-to-noise ratio of about 45 db when played back on high-quality studio equipment. Separate recording and playback heads as well as amplifiers permit monitoring and double-checking before the field site is left.

For field work at sites where regular power sources are available, larger portable recorders similar to standard U. S. types are employed, most of them of the same manufac-



Left: Roll Out the Barrel now applies to Mosel wine as well as to the sudsy brew. Below: Many a ski party in the Alps is enlivened by American music from Radio Luxembourg.

turer* as the recorder described above, but designed for operation from power sources of 200-250 volts at 50 cycles.

Studio equipment to handle tape work at Radio Luxembourg's and I.B.C.'s London studios is also by the same manufacturer and is similar to our Ampex studio models, featuring, among other things, unit-by-unit removal of most items to improve service accessibility. But from where are these tapes aired with such power that Belgium, Holland, France, the British Isles, and most of Western Europe are daily inundated with "American zip and snap"?

The answer takes tape—and broadcasting itself—back to a time when most of us had never even heard of tape—for the embryo Radio Luxembourg had a *magneto* in operation back in 1939.

Alone in Europe with its budding U. S.-type commercial operation, Radio Luxembourg had almost finished new studios, including a room for reproduction of magnetic tape when, at 1:19 p.m., September 21, 1939, the start of World War II forced the station into a silence that was to last until 7 o'clock the morning of November 12, 1945.

There was drama that morning in the re-opening of this station that a few years later was to rise to an eminent place in radio. His voice breaking with emotion, a Luxembourg announcer that morning re-introduced to his audience the radio of peace. He then played the Luxembourg national anthem, a record of which had been found undamaged in the ruins left by the Nazis.

But there was, that morning, also the other side of the coin to be faced, for the war and four years of occupation had left Radio Luxembourg with very little for a new beginning: no regular transmitter installation, no telephones, no teletypewriters; the serviceable items consisted only of: a single microphone, a few intact rooms, some vacuum tubes of German make which, if they failed, could not be replaced; a few old amplifiers; a dynamited basement with the remains of a power and telephone center—and a tape recorder reconstructed from parts found in the ruins; plus this: no income, and no financial support in view.

Yet, this is the station which with its U. S.-style programs today is taking Western Europe by storm. There is good reason for this, aside from the appeal of its pro-



grams. The Villa Louvigny, the station's headquarters in Luxembourg, today stands as a monument to man's genius and perseverance: where in 1671 rose a lone fortress, in 1773 the "Louvigny defense envelope," in 1882 a restaurant, in 1945 the ruins of a dream—now stands one of the most modern broadcasting enterprises in all Europe, consummating an idea and an ideal born as far back as 1931, when the Luxembourg Broadcasting Company laid the first cornerstone of a transmitting station on the Junglinster plateau, 17 kilometers from the present Grand Villa Louvigny.

Today, the tapes carrying the youth and vitality of America to Europe are aired over superpower stations of Radio Luxembourg. Its former longwave station, now completely modernized, pumps out a signal of 250,000 watts, and its new ultramodern medium wave station 150,000 watts on 208 meters (1439 kc.), broadcasting in English, Luxembourgian and Flemish, while a new shortwave transmitter puts out 50,000 watts on 6090 kc., broadcasting in French. A fourth transmitter puts out 5,000 watts on 15,350 kc., in Flemish. The 1439-kc transmission, incidentally, is often heard clearly, during the evening hours, by ships as far west on the Atlantic as the Grand Banks off Newfoundland.

*Electric and Musical Industries, Ltd.

Radio Luxembourg uses this new auditorium studio for live broadcasting and for taping of programs requiring large numbers of personnel. TV did not intrude on Radio Luxembourg to any great extent.



Among Radio Luxembourg's studios for live broadcasting and for taping of programs requiring large aggregations of personnel, is a new auditorium studio, one of the largest and most beautiful of its kind anywhere—embodying accommodations for TV as well. Meanwhile, however, the popularity of Radio Luxembourg's programs has given very little way indeed to the encroachment of TV (during a period in which TV audiences in England, for example, increased 6.2 per cent, a survey showed Radio Luxembourg's audience to have dropped by only 1.1 per cent, while the B.B.C. Home and Light services were reported to have dropped 6.0 per cent and 5.5 per cent respectively).

Because of such figures and the instantaneously-positive post-war response to their U. S.-style programs, Radio Luxembourg in May of 1953 inaugurated an entirely new headquarters installation, including a master control room and studio control rooms, which employ Bell and Telefunken audio equipment and tape recorders by AEG. Amplifiers

used in the consoles are of the plug-in type, about one-sixteenth the size of earlier models, and each containing its own power supply. The above-mentioned studio is a part of the new installation. Fifty-seven feet wide and ninety-three feet long, it is designed to accommodate an orchestra of more than 100 members, plus an audience of 400 spectators. Two control rooms handle the studio's output. Each is insulated from the studio by a wall more than three feet thick, and by double-glass windows. Sound proofing and acoustical treatment consists of oak panels which, according to location and particular function, are either solid or perforated at one-half per cent or at eight per cent. Behind this film of wood, with which the walls are entirely covered, has been placed a layer of acoustically-absorbent material.

Thus it turns out that, with U. S.-style programming and progressive engineering, Radio Luxembourg, even before all its war wounds had fully healed, had not only regained its pre-war audience but had added to it considerably.

To anyone who has listened to Radio Luxembourg, the reason for their success is as plain as the proverbial handwriting on the wall, for the present and the future—for the real tribute lies not in statistics and technicalities but in the reactions that are apparent virtually everywhere one turns within sight and sound of a radio. And the reaction is always one of approval and expectation for more, more of the new-world lift expressing in song and a buoyancy of spirit what a prominent French literary man recently acclaimed as America's philosophy of happiness.

Disseminating that, gives tape another important job—for it may well be that these buoyant American songs will accomplish what no national radio, no propaganda-by-design ever will.

Many indications in that direction already exist in far, ancient corners of Europe, where tape is carrying American voices ranging from Gene Autry and Jo Stafford to those on such programs as the Old Fashioned Revival Hour. And few reels of tape, we are told, are more eagerly awaited than those typified by such songs as *My Secret Love* . . . which in Europe apparently no longer cares to remain a secret.



Most of Radio Luxembourg's field work is done with a portable recorder such as the Electric & Musical Industries, Ltd. machine above. However, at sites where regular power sources are available, larger recorders are employed.

Folk Songs Belong On Tape

by Stark Auringer

“THERE was never ane o’ my songs prentit till ye prentit them yoursel’ an’ ye hae spoilt them ategither. They were made for singin’ and no’ for readin’ but ye hae broken the charm now and they’ll never be sung mair.”

Sir Walter Scott, ballad collector as well as novelist, had been busying himself collecting folk songs in the Scottish hinterlands, and heard these words of gentle reproach from a humble countrywoman who had been one of his “sources.”

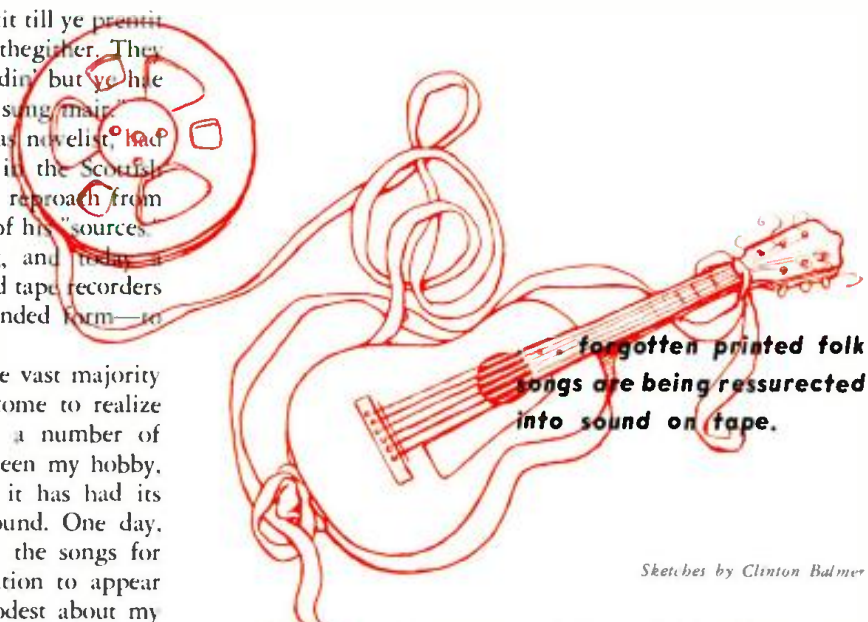
We hope the good woman was wrong, and that a promising partnership between balladeers and tape recorders bids fair to restore the folk song in its intended form—to be sung and heard, not “prentit” and read.

I am one such balladeer, an amateur as the vast majority of the tribe has always been, and I have come to realize how inevitable such a partnership is. For a number of years, learning and singing folk songs has been my hobby, and as sometimes will happen to hobbies, it has had its periods of being crowded into the background. One day, after I had been away from the guitar and the songs for some time, I received an unexpected invitation to appear on a program. Now I have reason to be modest about my vocal attainments, and in a state verging on mild panic I went out and rented a tape recorder to learn how I really sounded—and ended by buying the recorder.

And so my Revere started its work in the role of vocal coach. I daresay most of us amateur collectors and singers of folk songs would never think of being caught in the purlieus of a vocal studio. The recorder does its valiant best to make up for this deficiency. It reminds its master when his pitch is off, when he’s picked a key too high or too low for him, when his diction is unclear, when he drags, or gets to running on too fast. Reminds him in a delightfully impersonal way, but quite objectively and with authority.

When its promptings have succeeded in taking the most obvious flaws out of his singing, the recorder goes on from there to present him with the next challenge: How can this song be made more entertaining or more meaningful? How much more can be put into it—by more animation here, a retard there, a change in volume or in vocal shading? Songs which have lasted, in many instances, through several centuries, without benefit of radio, record, or audio equipment, generally have an ample reason for their longevity. A little something called universality. There’s as much beneath the surface of words and melody as is to be found in many an art song. If it can be made to come alive. Sometimes, in the wee hours of the morning, the enthusiastic balladeer who is not of professional calibre can get something onto his tape of which he need not be ashamed.

Of course it’s only a step from there to inviting kindred spirits over for an evening of recording and listening—and to the fairly innocent piracy of getting down some of their songs to add to one’s own collection. Before long the dreams and plans have galloped far ahead of the realization, and the balladeer is thinking in terms of a library of folk songs on tape.



Sketches by Clinton Balmer

What keeps the quest ever fresh is the fact that, as many times as some of these songs have been recorded and performed in public, there’s always a new and different version just around the corner—and one with just as good a claim to authenticity. This is due, of course, to the evolutionary quality of folk songs. They grew gradually, by dropping stanzas and adding others, changing the melodic line, borrowing from another folk song of similar theme. They were undergoing these changes, in most cases, long before they were heard by any man now living, or printed in any book. And as long as they keep the folk song trait of being passed informally from one person to another, they will continue to undergo these changes. The verses, the melody, the mode of accompaniment, all vary from singer to singer, and the most untutored, even unmusical tyro may have a variant up his sleeve that would be the envy of the six-figure recording artist.

Here’s where the tape really comes into its own. You may have a shelf full of Burl Ives, Susan Reed or Richard Dyer-Bennet. But a friend of yours from another part of the country may be carrying around in his head a version of an old American ditty which you like better than any they’ve done. It’s really an “open-end” situation: all the recordings in the world don’t add up to completeness in this field.

Most people who hear the term “folk song” used promptly visualize a rural locale, and it’s with good reason that earnest students of the subject ultimately hit the trail for the mountain country, if they are free to do so. Most of us are not in that happy position, but as a big-city man myself, I find that my own milieu has its compensations. “The trail” is a two-way thoroughfare. People from all parts of the country, from all parts of the world are coming here, people of various occupations, of various cultures. I’ve swapped tapes with an ex-seaman who in his travels picked up some songs I’ve

heard nowhere else. And if I don't set up a barrier to folk songs in other languages, I can get plenty of them too.

Of course one of my chief sources has been and remains the books compiled by ballad collectors. Notwithstanding the remark made to Sir Walter Scott, we are very fortunate that so many of the ballads worth singing have found their way into print. That's good for cold storage. Now, with the accessibility of tape, it's up to those of us who read notes readily to bring such ballads back where they belong—into sound.

If you are one of those who feel the urge to put some folk songs on tape, don't be deterred by the feeling that your voice isn't up to the task. Years ago there was an expression current that the phonograph was "a great leveler." It brought the giant of the opera stage down to parlor size, and opened the way for the man with a voice of ordinary volume. The PA system has continued the trend; and now the tape recorder is carrying on in the same tradition. It too is a leveler insofar as "big" voices are concerned. The pair of bellows which can fill an auditorium loses its advantage over the little voice of pleasant quality whose owner can breathe at close range into the mike. This places the emphasis where it belongs as far as folk songs are concerned: who can do the best job of interpreting, or who can make a song come alive, and carry the indefinable element of good entertainment? Folk songs were made by and for people with everyday, untrained voices. The tape recorder, with the amateur making his own recordings of songs he knows, brings us back to the basic spirit of the art: the singing, by ordinary people, of songs shaped for ordinary voices.

The tape recorder will not have the mission of making professionals out of amateurs. But it can improve one's singing if given a chance to do so. And by making simpler

the exchanging of folk songs and other musical materials, it will stimulate a much greater and more widespread interest.

And so, predictably, my own case history is repeating itself many times over in all parts of the country. I know, because I'm acquainted with enough amateur balladeers who see the potentialities in tape recording. We now fall into two categories: those who have recorders, and those who wish they had. Just as predictably, over the next few years, millions of man-hours will be spent before millions of mikes, recording songs whose number and variety would tantalize any aficionado. Many little groups will be forming, getting together to exchange tapes, to learn each others' songs—most of them people who would never think of collecting song books or reading notes. Their social evenings ought to be fun! But no true ballad collector would get thru more than a fraction of his repertory in the course of such an evening. No need to monopolize the party! Let tape-swapping solve the problem!

But don't neglect the first step, wandering minstrel! The first step, for those of us who use tape in this way, is the matter of rehearsing. We have our respect for these old songs, and before we start collecting or swapping, it's natural to want to put each one in as good shape as we can. To a perfectionist I suppose this could become an unending process. I'm among those who can be pretty self-critical, but I find that the more work I go thru on these songs the more fun I have. Here's my operating procedure, which may contain tips for anyone using tape for rehearsing solo material, either vocal or instrumental.

I generally make a list of a half-dozen or more songs which fall into the same category, by geographical origin, age, or subject matter. Before going into séance with my recorder I select a time when interruptions are apt to be at



Sir Walter Scott was a ballad collector as well as a novelist and he often collected folk songs in the Scottish hinterlands. Many of the old ballads which were printed are now being converted back to sound.

a minimum. Being a nighthawk helps here. I then run off the songs—two or three or the full half-dozen, or until I get even more dissatisfied than usual with my voice, or until I make a boo-boo. Each song is begun on a multiple of five or ten on the footage indicator, with a little cushioning between numbers. Then when I really write at something I have done, I can redo it and fit it into the same spot without danger of overlapping.

The songs are thus pretty well organized by subject-matter from the first. So when I feel in a mood to do old English ballads, or American work songs or railroad songs or cowboy songs, I can just pick up the reel which contains my most recent efforts in that department—with the certainty that I can find something there which can be improved! When the whole tape is as good as I feel I can do at the present time, I'm ready to give it away or swap it, or use it to build my own collection. I've a feeling such a system can go on for years and years. I like it that way!

Taping folk songs does not place heavy demands on equipment—with one exception I'll mention later. I find that ordinary single-track recording, at 3.75 speed, is ample for the hobbyist who isn't taking himself too seriously. Of course the slower speed makes good sense if your ultimate goal is assembling and storing hundreds of songs on tape. And a single voice line with simple accompaniment seems to come thru as well at that speed as at 7.50. I use the six-hundred-foot length of tape, as it makes easier the locating of an individual number.

So far so good. But one who uses tape more often for rehearsing than for any other purpose develops at least one phobia—tapes which snap. We give them ample provocation for such breakage. We're forever running back a few hundred feet to do a song over. So in respect to tapes, I've become a particular buyer. I'm not going to do anybody's commercial for free in these columns, and in any event it's less a question of brand name than of grade. Give me a good heavy tape with an acetate base! As long as it's being

used for rehearsing, you're being a very economical user, running the same reel thru over and over as you perfect your work. No need to worry about the pennies which go to buy a tape which will hold together.

In rehearsing, one develops techniques of his own, which not only help him get the best result on each individual song, but teach him a lot about the use of his own voice. I've tried the trick of doing a song thru in one key, then putting a capo on the guitar (a little gadget which raises its pitch a note or two) and fitting in alternating verses in a higher key. If anyone's in doubt about where his voice sounds best, this system will quickly inform him. In the same way, I like juxtaposing the same song done in different styles or at different tempos.

Or sometimes I'll suddenly follow a mood and break with system altogether, just singing something which occurs to me at the moment for no known reason. It'll be out of order on my tape, of course, and I'll replace it later. But at least I've been reminded of it. Thru such a lapse from strict regime, I've learned that some nearly forgotten ditty may come thru better than one I'd been working hard at. The tape is a leveler of prejudices as well as of voices.

A more recent trick I've found useful when I want to produce the best-quality tape I can: I run a series of ballads "two-up." That is, I'll be putting the same sequence of songs on two tapes, working on each one by turn, virtually setting up competition between the two. Whichever loses the tug-of-war, I win, because I can later combine the best results on a single tape.

Here ends my catalog of preferences and procedures. A balladeer is lucky, tho, if he can control the domestic arrangements as well as he can the mechanical—if he can shout out a verse of "John Henry" the way it ought to be without fear of waking the household. And there's one other small factor which will take quite an improvement in technology, or a considerable outlay in cash, to control—those x x x x x low-flying airplanes!

NEW ELECTRONIC-LANGUAGE LABORATORY

A REVOLUTIONARY development in the teaching of languages was announced by the University of San Francisco recently.

Beginning with the 1959 Freshman class, students in the USF Colleges of Liberal Arts



Father P. Carlo Rossi, S.J., University of San Francisco linguist, recording tapes for use in the new \$40,000 electronic language laboratory on that campus.

and Science must demonstrate the following language skills in order to obtain an undergraduate degree:

1. Ability to *read* and *comprehend* a normal prose passage;
2. Ability to *write* a foreign language and *translate* a normal prose passage from English;
3. Ability to *speak* a foreign language (with a pronunciation readily understandable to a native on a non-technical matter);
4. Ability to *understand* a spoken foreign language (of a non-technical nature).

In discussing the new development, Father Connolly, USF president, said that it was an attempt of the University to correct a recognized weakness in the American educational system. He pointed out that higher education in this country has been often criticized for its failure to produce students who have a proficiency in at least one foreign language.

The Language Department considered the design and construction of a language laboratory a necessary means to accomplish the desired results: the four-skills of understanding, speaking, reading and writing.

Therefore, under the direction of Father P. Carlo Rossi, S.J., a member of the University faculty and noted linguist, the University constructed a \$40,000 Electronic

Language Laboratory which is now ready for operation.

Located in the Liberal Arts Building, the Electronic Language Laboratory is able to handle sixty students every hour. Each of the sixty booths is equipped with dual turntable, earphones, microphone, intercommunication system with central control room, and sectional control posts.

This ultra-modern laboratory will allow the University to change its language class schedule. Students will now attend class only two hours per week instead of the traditional four. Four hours each week, however, will be spent in the Laboratory. Two of these hours will be under the supervision of a member of the Language Department.

The Electronic Language Laboratory will allow each student to proceed in his language study at the level of his own ability. Dual turntables allow the student to listen to the master record as many times as he thinks necessary, to repeat and record on his student record until he has perfected the understanding, speaking, reading and writing exercise of each lesson.

Father Connolly pointed out that the University adopted this particular type of laboratory because it allows each student to reach his potential in the shortest possible time.



Courtesy MGM

"Tape Crosby" features lively discussion of recorded material from Crosby pictures such as "High Society" (scene from film above), film reviews, sound track material, records and road shows. Information of great interest to collectors is relayed in this fashion. Rare, out of distribution items, are traded and copied for all to enjoy.

Tape Crosby

by Sheldon O'Connell

. . . Bing Crosby tape recording fans build their collections by exchange.

WHEN the Blue of the Night meets the Gold of the Day, a chain of inveterate Crosby collectors in England, the United States, Canada and Australia are taping notes in their collections for enthusiasts all over the world. Its a unique kind of exchange called Tape Crosby, featuring discussions and comparisons about different phases of the performer's work. Each of the members is invited to pose a question, really a topic for discussion, as the tape passes along, other members add their comments, snatches of music, unusual episodes of Crosbyana, odd recordings, out of the way material, a fascinating hour of listening for the most jaded collector.

Since the Crosby radio show was the first to realize and

promote the taping of broadcasts rather than go along with disc or live performances, its somehow fitting that Crosby be the subject of this novel tape exchange, yet the two are completely unrelated. Tape Crosby was begun by a large number of collectors, quite spontaneously, as a means of keeping in touch and listening to recordings not in their own collection. Something new is always added, not only have there been thousands of records made, but program material from radio shows, dubbings, film sound tracks, airshots and a variety of material from other sources.

Individual collections are sometimes quite small, numbering just a few records, but collectively, the enthusiasts have or can account for just about every record Crosby has made.



An early recording session that featured Bing, Frances Langford and Louis Armstrong. Sound wafers or biscuits provided noise-proof studio sound. Microphone helps place the date around the late 30's.

Some little known facts become known thru this tape exchange. How one can look at a record and soon decipher those strange markings, each in its own way as distinctive as a fingerprint; the approximate year and date a number was made, the number of takes required before the technical or artistic level merited its release, sometimes two takes of the same selection are released, one later than the other. Occasional errors are made, a faulty label, a call-back, scrapped master, a forgotten line, maybe someone laughed or otherwise marred a take. These records assume a peculiarly high value in the eyes of collectors. Tape Crosby is not a fan club, it features a genuine comparing and differing of opinion on the worth of the performer. Various performances, sides, even past films are reviewed. Instead of ecstatic reviews and comment by the film archivist, remarks are right to the point, penetrating and highly entertaining. Since anyone with projectionist equipment can see even the early Max Sennett two reelers in which Crosby appeared and hear the soundtrack, it makes for an interesting comparison of today's and yesteryear's style. Many of these old films have been made available for the home viewer market, they've been tightened up, edited, given a new title to cover the variety of scenes that encompass perhaps the best material from two or three pictures. Much of the music was never released on record, and is now finding its audience on tape.

A companion piece that complements the tape is a bi-monthly Crosby Collector, a small mimeographed publication that lists the serial numbers and sides in a lighthearted compilation of data for those on the Road to Crosby. While this is the first international tape devoted to the work of a single performer, another is planned by a group who cherished the big band sound of Glenn Miller, they plan to call their tape, The Moonlight Serenaders. Material for it is just about everywhere too. 'V' discs, those were the Victory discs made for Allied servicemen during World War II, non-commercial performances for the men in uniform. Some priceless performances were etched on the big transcriptions, these were given a play then filed away, some were lost, and others recognized for their worth were carefully preserved. This hobby of taped discussions about recording dates, matrix numbers, takes, sides and labels is spoken of as knowledgeable by women as well as men, it is not a male occupation only. One avid collector did a con-

siderable amount of research to learn if Crosby had ever made any records with the Glenn Miller orchestra. He checked carefully through the Miller discography which listed actual broadcasts the two had done together, but nothing about record material. However another collector able to provide the missing information reported that in fact two had been made. These were non-commercial and especially for the Stage Door Canteen in London. It was during the year 1944, though the exact date remains a mystery. One of the sides was "Why Don't You Fall in Love with Me," the other, "I'll Be Seeing You," each with the full American Expeditionary Forces orchestra.

When a rare record is found or traded the material is at once transferred to tape to preserve it from wear or other dangers, since old records are notoriously fragile and subject to breakage with each playing. The record is first given a



Two of the stars from Berlin's Blue Skies sang "A Couple of Song and Dance Men," later went through the motions of performing it in film by synchronizing lip movements to the recording.

mild bath in lukewarm water, this won't harm it and in cases where dust and grime have been allowed to collect in the grooves for a period of years, this treatment is necessary. The record can be cleaned in this fashion without wetting the label which can be damp wiped after. However, the label if it's a pressing wont be harmed by a good soaking too. A gentle soap first put on the hands rather than to the face of the disc will loosen up the sludge and dust in no time, after which it is rinsed in free running water. The record dries after a few turns in the air and blotting with a lint free cloth. Even in mint condition the old shellac base records were inclined to be a little noisy after just a few playings. When the material is transferred to tape the recorded performances can be enjoyed time and again, studied for those qualities that brought them to the collection, and there's no ensuing drop in quality. In many cases it is vastly improved by filtering out the high frequency hiss during the feed from phono to tape. There is another important factor to be considered in the re-recording of old 78 rpm records. In this context, "old" is anything in the record line that pre-dates 1927. A number of the early records, those which have become collector's items, were made to be used with a 2.5 stylus. Modern day 78's employ a 3-mil tip, therefore each playing with present day stylus will increase the noise level, imperceptibly at first, but more evident with repeated playings. For this reason alone, no time is lost in transferring to the tape. Not all records before

1927 were pressed for the 2.5 needle tip, and short of a photomicrograph there's no way of knowing for sure except by using both sides of styli to determine which produces the least surface noise, and is thereby correct. Collector's items can be greatly enhanced when dubbed from record to tape by using a filter-equalizer. Since there is often a wide range of characteristics prominent in some records, missing in others, compensation offered by the various equalization settings can make a dramatic improvement in the finished copy. Indeed the copy comes to sound as an original should. However it shouldn't be felt that this extra equipment is vital to the successful transfer of record to tape. Except in extreme cases, excellent results can be had by a direct, unaltered feed from output to input. Some purists in fact do not want the original record changed in any way, cleaned yes, and dubbed direct, but that's all. Some rare and unusual material has found its way into these highly specialized collections. One example is a record that owes its distinction not to an unusual presentation, flubbed line or special arrangement, but to its unique label. The only one in existence. The record is a 10 inch 78 of "After Sundown," on one side backed by "Beautiful Girl" on the other, the same commercial tunes and masters as used on Brunswick 6694 with two exceptions, the labels have no printed record number on either side, and the name of the artist is given as Bill Williams. A couple of gagsters at Brunswick doctored the label and presented it to Jack Kapp as a rare find they'd made of a voice that sang just like Crosby, not only could this "Williams" sing like Bing, but he was most willing to sign a contract and join the Kapp camp. Kapp who was in New York at the time, deserves to be congratulated on his



The big RCA 44 microphone captured much of the Crosby voice during the era of golden records. This selection recorded with Louis Jordan is an item for collectors.

business acumen, he at once left for L.A. to meet Bill Williams, upon arrival he learned the truth, that the audition record was simply a dubbing of Bing's voice with fixed labels. This remained in his personal record library until his death, perhaps as a gentle reminder to hold enthusiasm in check when presented with a ringer, and that things too good to be true, usually are.

Crosby, aware of the interest shown his recordings by Collectors, and of the bewildering array of dates and conditions under which he recorded, has been happy to provide what clues his memory holds about the different sides, and of their possible origin. Like that one hilarious afternoon

when everything went wrong except the mechanism that recorded it. At a signal from the director the orchestra began to play, it was a number called "Wrap Your Troubles in Dreams," the voice that launched a thousand dealers began to sing the sentimental verse, that when skies are cloudy or grey the only thing that will help is to just wrap your troubles in dreams, and dream those troubles away, . . . and that's when the trouble began, because someone had been dreaming right along and neglected to inform the singer of an important last minute change in the arrangement, as a result the voice seemed to head down one road, the orchestra, another. Without pausing, Crosby continued the melody but changed the words to express his chagrin at being caught unaware. As a novelty that test record was put to one side and copies of it, too, became collector's items. However, the significant thing about that recording session, was that "Wrap Your Troubles in Dreams" in spite of its setbacks arriving at a proper take, went on to become a solid gold record for its time.

It's the hope of many collectors that the "V" discs which carried the work of so many front rank entertainers will be released on tape. Rather than see them destroyed, some of the Victory discs fell into the hands of collectors, others fell to the Pirates, those are the record buccaneers who sail the choppy waters of illegal practice. However, the vault originals, for the most part intact, have since been dubbed to tape and eventually may appear on the market. These performances had an ad-lib, open air sound, and were often recorded just like that, a platform rigged up for the Crosby, Goodman, Hope, James, Miller tours of duty, surrounded on all sides by eager-faced G.I's. The cheers, laughs, banter and applause make those moments come to life.

It's material ranging from the Coconut Grove in Los Angeles, and the days of Gus Arnheim and Paul Whiteman, forward to the Jet age with the Buddy Bregman orchestra and Bob Scobey's band. Teeing off in music from Pebble Beach to the Western sounds of Elko Nevada, with lots of stops along the way for anecdotes, novel and outstanding records that make Tape Crosby a full hour of fascinating listening. When the Blue of the Night, meets the Gold of the Day, tape dons a sport shirt, takes a few puffs from a comfortable pipe and winds its way on the Road to Playback.

Below: One of the quiet sportshirts that provided gag material during the Kraft music hall days on radio. That program was the first to tape record rather than restrict itself to the limits of live broadcasting. With Bing, Al Jolson harmonized, "Alexander's Ragtime Band."



Tape Recorder Maintenance

by Harold D. Weiler

From the book "Tape Recorders and Tape Recording," published by Radio Magazines, Inc.

... for longer recorder life and better performance your equipment needs care.

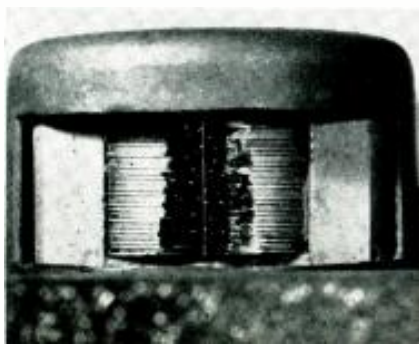
ONE of the most important factors in maintaining consistently good performance from a tape recorder is to be certain that the tape transport mechanism operates at the correct speed, at all times. Any change or variation in speed is indicative of the fact that some physical change has taken place within the mechanical section of the recorder. The importance of tape speed becomes quite obvious when we stop to consider that reproducing a tape at any speed greater than that at which it was originally recorded, increases the pitch of the reproduction. Conversely reproducing a tape at any speed slower than that at which it was originally recorded, will decrease the pitch of the reproduction. The degree of pitch change is dependent upon the amount of deviation from normal operating speed.

Reduced tape speed is the most common variation from normal operation and is often accompanied by mechanical sounds which are created by excessive friction. The recorder mechanism should be removed from its case and a visual inspection made, with the tape transport mechanism in operation, but with the volume control in zero position so that no sound issues from the loudspeaker. A common source of reduced speed accompanied by noise is due to the ventilating fan blades, attached to the motor, hitting a loose connecting cable. Another source of mechanical noise is loose or bent fan blades. Reduced speed alone without any accompanying noise is invariably caused by increased friction, due to lack of oil, on the moving mechanical components, particularly the motor and capstan bearings. These should be oiled regularly. When oiling a capstan bearing great care must be exercised that no oil is allowed to leak onto the pressure roller since it will result in tape slippage which itself is another cause of reduced speed. As a precaution, after oiling close by a rubber roller or drive belt, the roller or drive belt itself and the metal component it contacts should be thoroughly cleaned with alcohol. While on the subject of rubber rollers and drive belts, it is advisable to clean all rubber surfaces regularly since due to the condensation of the oil on bearings and shafts these surfaces may and usually do acquire a thin film of oil which often results in slippage. Rubber rollers which contact the dull side of the tape should also be cleaned regularly since the mi-

croscopic particles of iron oxide worn from the tape may clog the pores of the rubber, making its surface smooth. This too is a common cause of tape slippage.

Excessive tape speed is invariably due to worn or loose pressure pads. This condition can easily be determined through the use of the alignment tape discussed in future paragraphs. The method will be explained in detail. The majority of modern tape recorders have some means of adjusting these pads for wear, however care should be used in making any adjustments of this nature since if these pads are adjusted too tightly the tape movement may be restricted, thus increasing head wear and also reducing the speed. Before any adjustments are made the speed of the instrument should be checked, since any changes which affect it, as we have found, also affect the pitch of any recordings made previously. This is one of the reasons we strongly advocate periodic checking for example; you have made a number of important recordings without having checked the recorder speed for some time. At some later date the instrument is checked and found to operate too slowly, because of increased friction, it is then oiled and found satisfactory. All tapes which were made during the period the recorder was operating at reduced speed will now reproduce at a higher pitch since they will move past the playback head at a speed greater than the speed at which they were originally recorded.

Should a test reel be intended for use with a recorder which operates at $7\frac{1}{2}$ I.P.S. it must contain at least 375 feet of tape. The start is marked with a grease pencil, the next



Left, Figure 1: Close-up of record-playback head showing dust particles which may prevent close contact with head which is necessary for optimum results. Right, Figure 2: "A" illustrates the magnetic field created by a recording head. "B" shows the same field as a tape passes through it. "C" illustrates the separation between tape and head caused by foreign particles. (Drawing courtesy Reeves Soundcraft.)

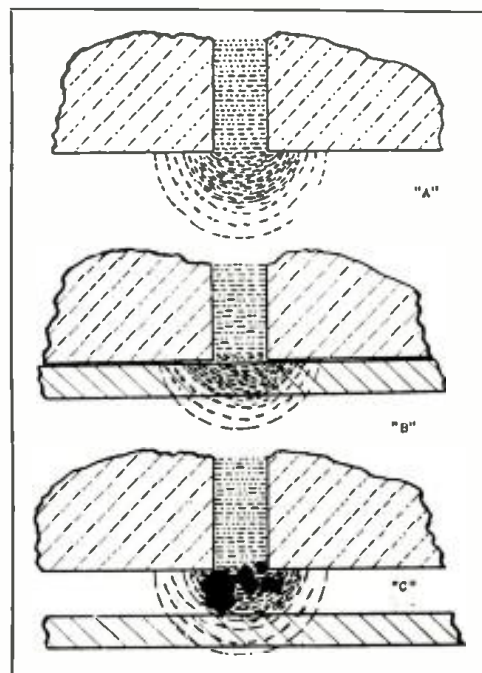
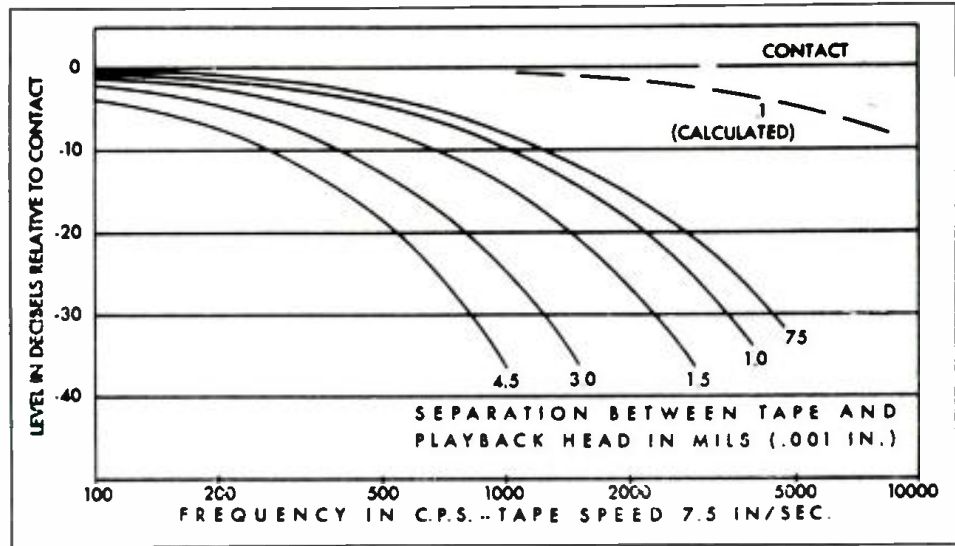


Figure 3: This chart shows the results of poor contact between tape and playback head. (Courtesy Minn. Mining and Mfg. Co.)



mark is placed at 187½ feet which indicates a five minute interval. A third mark is placed at 375 feet. This is the final check point and indicates a ten minute interval. When the rest reel is to be used for checking the speed of recorders which operate at 15 I.P.S. the length of the tape and the distances between marks should be exactly double the above-mentioned figure. Should a test tape be required for checking 3¾ I.P.S. recorders the length of the tape and the distance between marks should be reduced by exactly half the figures given for 7½ I.P.S. This tape is then placed on the recorder under test. With a stop watch or the second hand of a clock, time the interval between the first and last marks. It should be exactly ten minutes.

We have thus far mentioned only one of the results of tape slippage, namely, reduced speed, tape slippage may also be and often is periodic. This type of slippage will usually result in annoying cyclic variations in the pitch of the reproduced sound. Pitch variations may occur at the relatively slow rate of less than ten times per second, in which case they are described as "Wow." Variations which occur at a higher rate of speed (over ten times per second) are described with the term "Flutter." These changes in pitch are particularly noticeable in the reproduction of any of the higher pitched sounds (3000 cycles and above) such as would be made by a violin, clarinet, etc. Since the human ear is extremely sensitive to any change in pitch, at these frequencies, during a sustained note, this type of music should be used for testing. A far superior method is the use of the "Sonafax" Wow and Flutter Test Tape, which consists of a high frequency signal recorded at zero level. This tape runs for about four minutes allowing sufficient time to locate the source of any speed variation.

Periodic speed variations (Wow and Flutter) are always due to some specific element in a recorder's moving system. These variations usually have a constant rhythm which may often be counted. By checking the number of revolutions

per minute made by the various elements in the recorder's moving system such as the capstan, pressure roller, motor, pulleys, etc., the source of wow or flutter can be discovered quite easily.

Most common sources of wow and flutter are, uneven pressure on the tape pressure pads, worn capstan or motor bearings, a flat on the pressure roller or idler wheel, warped reels or sticky tape due to poor splicing and rubber drive wheels or belts which have become glazed through use and therefore slip.

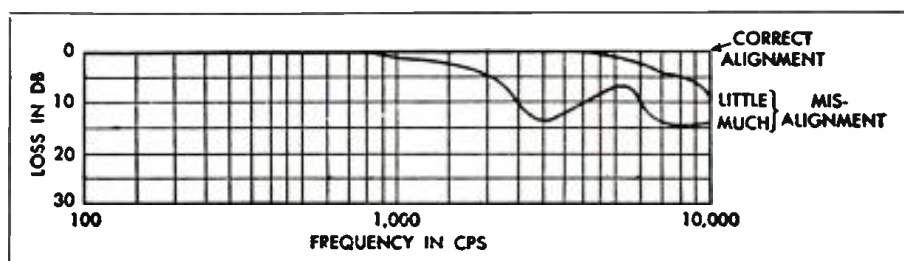
Quite a common tape recorder complaint is that the quality of the tapes originally made on an instrument sound muddy, distorted and lack brilliance. Usually the owner blames the tape manufacturer and changes his brand. Manufacturers of pre-recorded tapes are often accused of releasing poor tapes since the same recorder will also reproduce these poorly. The fault lies not with the manufacturer in either case but with the particular recorder used or more specifically its owner. Lack of brilliance is invariably due to reduced high frequency response and most often occurs because of airborne dust and the microscopic particles worn from the tape itself which have accumulated on the record/playback head itself and in the gap as shown in Figure 1.

These particles may prevent the close contact between the tape and the head which is required for optimum results.

In tape recording and reproduction with modern heads it is imperative that the tape maintain an extremely close (less than .0001 inches) and constant contact with the head. Poor contact between the record or the playback head and the tape manifests itself in reduced high frequency response and distortion. This is because the strength of the magnetic field from the poles on the head falls off with distance and is not impressed on the tape with the correct intensity.

Figure 2 A illustrates the magnetic field created by a recording head. From this illustration we can see just how the intensity of this field falls off as the distance from the head

Figure 4: Here the effect of misalignment of record-playback head on frequency response is indicated. (Chart courtesy Audio Devices, Inc.)



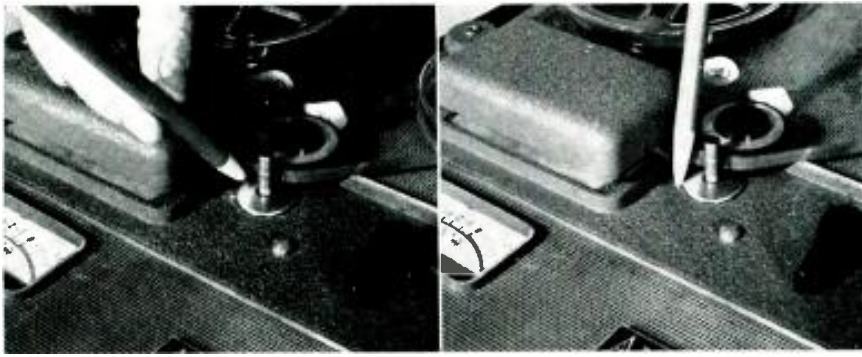


Figure 5, Left: An alignment tape is "skewed" to check head alignment by gently pressing a wooden pencil against the bottom of it. Right: Pressing a wooden pencil or dowel against the top of the tape to check head alignment.

is increased. Figure 2 B shows the same magnetic field as the tape passes through it, in recording. We can see from this illustration that the tape is in extremely close contact with the head and thus passes through an area of greater intensity than the tape illustrated in Figure 2 C, which has been separated from the recording head by dust, oxide particles, etc. This separation obviously results in a reduction of the amount of magnetism impressed upon the tape. This effect appears principally at the higher frequencies and is even more pronounced in reverse, when applied to the transfer of magnetic energy from the tape to the playback head as in reproduction.

Robert Von Behren of Minnesota Mining and Manufacturing Co. has made a series of tests to determine the effects which occur when tape is separated from the playback head in reproduction. During these tests a tape was recorded using various frequencies and played back on a high quality system with good tape contact. This tape was then reproduced a number of times, each time using a paper shim of a different thickness between the head and the tape, in such a manner as to separate them by known amounts. The chart in Figure 3 shows the result of these tests. From this chart we can see that a separation of only $\frac{3}{4}$ of a mil. (.001 inch) at a tape speed of 7.5 inches per second is sufficient to cause a dropping off of 30 Db. at approximately 5000 cycles, which would result in very little audible reproduction of this frequency or any frequency above it, on the average recorder.

From the author's investigations, during the writing of "The Wear and Care of Records and Styli", he found that one speck of airborne dust or grit is often as large or larger than this figure ($\frac{3}{4}$ of a mil.) and if it should become lodged in the head gap can create this effect. Any accumulation of dust and tape particles may easily be removed with a Q-tip, pipe cleaner or a cotton swab saturated with carbon-tetra-chloride or alcohol. Audio Devices Inc. has recently introduced a head cleaning fluid which is much more effective than either of the above mentioned liquids.

Worn or loose tape pressure pads are quite often responsible for poor high frequency response since they too allow poor contact between the tape and the head. Reduced high frequency response due to worn or loose pressure pads is usually accompanied by abnormal tape speed. These pads should be adjusted as per the manufacturer's instructions. Worn or loose pressure pads can easily be located through the use of the "Sonafax" alignment tape. This test tape is run through the recorder and the pressure pads are lightly pushed in toward the head. When the pressure pad on the playback head is so manipulated and results in an increase in signal output, the pressure of this pad is insufficient and should be increased. As previously mentioned, care should be used since if the pad is adjusted too tightly the tape speed

will be reduced and in this manner affect the pitch of any reproduction and also result in increased head wear. In the event adjustment does not correct the complaint the pads are too badly worn and should be replaced.

When consistently good reproduction is required the playback head must always be perpendicular to the edge of the tape as illustrated in Figure 6. When the recorder was new, the head was undoubtedly in this position but due to jars, bumps and the constant vibration created by the loudspeaker and motor the head may have shifted. This misalignment results in poor reproduction with greatly reduced high frequency response as shown by the chart in Figure 4. The greater degree of misalignment, the poorer the high frequency response. From this illustration we can see that a misalignment of eight minutes of arc can reduce the output of the recorder about six Db. at higher frequencies, on full track tape. Six Db. reduction in output will make quite a noticeable difference in the reproduction.

The alignment of the playback head can be checked by obtaining one of the alignment tapes now available such as the Audiotape or Sonafax. This tape is placed on the recorder under test and the volume control set to a position at which the test tone is barely audible. The test tape is then skewed. A wooden pencil or dowel is gently pressed against the bottom of the test tape as shown in Figure 5. If as a result of this procedure the signal intensity increases, this fact should be noted. This test is repeated once again, however this time the pencil or dowel is pressed against the top of the tape. You may find this action decreases the signal intensity or you may discover the reverse is true, that is "skewing" the tape at the top causes a decrease in intensity and "skewing" the tape at the bottom causes the level to increase.

Should the signal rise in intensity when the tape was "skewed" at the top and drop in level when it was "skewed" at the bottom or vice versa, the playback head is out of alignment. Proper alignment is indicated if the output intensity decreases when the tape is "skewed" at both the top and the bottom.

Should the recorder under test have a visual intensity level indicating device, which functions in the playback position, such as a magic eye or a V.U. meter, an even more accurate indication of any variation can be obtained. There is available an inexpensive device which may also be employed to provide a more accurate indication than can be obtained aurally. The unit is connected across the loudspeaker terminals of the recorder under test. The record is turned on with the test tape in position. The volume control is then adjusted in such a manner that the bulb marked zero just lights. The test tape is then "skewed" as previously outlined. The zero bulb will grow brighter or dimmer as

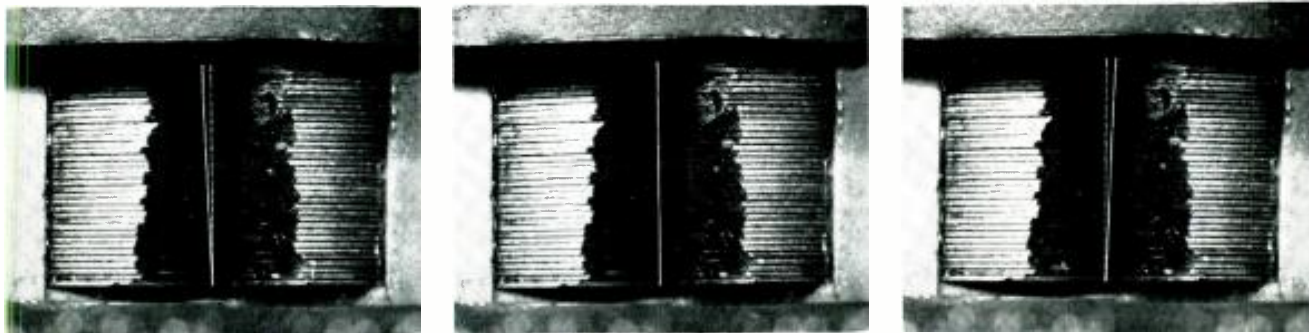


Figure 6, Left: For consistently good reproduction the record-playback head must be perpendicular to the path of the tape. Middle and Right: Misalignment of record-playback head results in poor reproduction with greatly-reduced high-frequency response.

the signal intensity is varied and indicate misalignment.

When the preceding test indicates misalignment of the playback head it may be correctly aligned by running the same tape through the recorder. The volume control is set at a position where the test tone is barely audible. The nuts or screws which hold the playback head in position are loosened slightly, (just enough to allow some movement of the head) and the head is rocked back and forth. A change in the level of the test tone will be heard or seen as it is moved. The head should be so positioned that the maximum signal level is obtained, either visually or aurally. The screws or nuts which hold the head should then be tightened while the test tape is in operation, since tightening them may change the position of the head. This method of alignment also results in the alignment of the recording head function, on those recorders which utilize the same head for both operations.

With recorders employing separate heads for the recording and playback functions, the alignment of the recording head can be accomplished using the same equipment and procedure outlined previously. This can be done by first aligning the playback head and then disconnecting it. Its leads are then connected to the record head, whose leads have been previously disconnected. When using this method of alignment the function switch of the recorder remains in the playback position at all times. The recorder head, which is now being used as a playback head is then aligned as described in our previous paragraphs.

A more accurate method of alignment and one which may be more convenient, for the layman, requires a signal source which will provide a 6000 cycle tone for the alignment of $7\frac{1}{2}$ I. P. S. recorders, one half this frequency for $3\frac{3}{4}$ I.P.S. recorders and double this frequency for 15 I.P.S. recorders. A convenient source is the "Sonafax" alignment record or any frequency record which provides the correct frequency. These records are used in conjunction with a motor and a

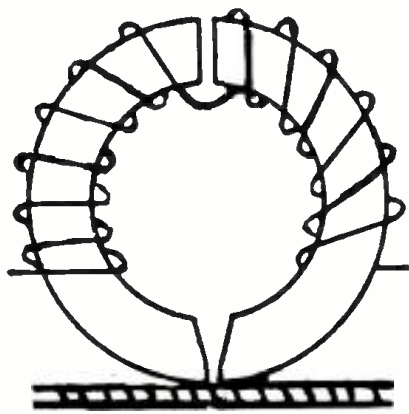


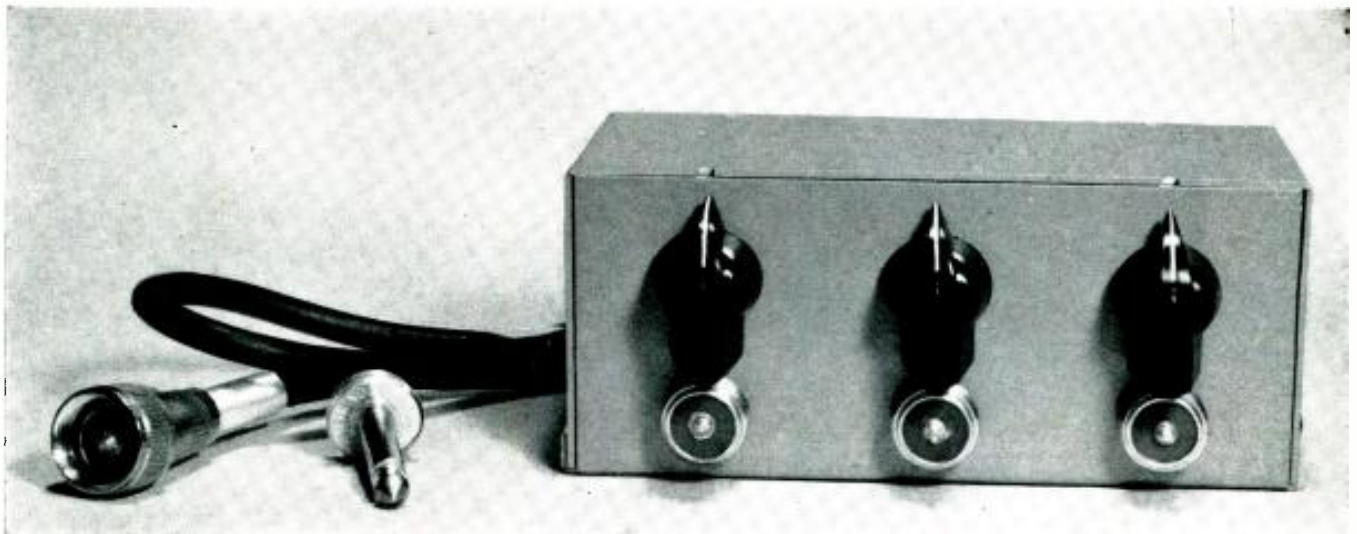
Figure 7: Frequency response of a record-playback head remains constant until wear exposes the flare in the head gap.

phonograph pickup. This signal source is then connected to the input of the recorder under test. The signal from the record is then recorded on a blank tape. All recorders using separate record and playback heads allow almost instantaneous monitoring, therefore we will be able to hear and/or see the results of any adjustments made. The screws or nuts holding the record head in position should then be loosened slightly (just as we did with the playback head) and the recording head rocked back and forth. Due to the time delay caused by the difference in the positions of the record and playback heads this operation should be performed quite slowly, each position should be held for two or three seconds before moving the head further. When the position which provides maximum signal level is obtained, the record head is locked. The same precautions should be observed as when locking the playback head.

The iron oxide coating on magnetic tape is quite similar to crocus cloth in its physical action on the pole pieces of the record, playback and erase heads. The friction created as the tape passes over these pole pieces combined with the abrasive action of the magnetic tape results in the gradual wear of the heads. However, due to the various types of heads in general use today it is impossible to provide an average figure for head life. With some types the initial period of use results in a polishing action which causes a slight improvement in the frequency response. The response of the head then remains fairly constant until the wear progresses to a point at which the flare in the head gap is encountered, as illustrated in Figure 7. At this point the frequency response of the head begins to fall off. This reduction in response is due to the increase in gap width as the head is continued in use. The life of tape heads is also dependent upon a number of other variable factors such as tape pressure, tape speed, etc. At the present writing the best method of checking for worn heads is to substitute a new unit.

There are a number of reasons for high noise level in a recorder. The most common is a magnetized recording head. As the head becomes magnetized the noise level of a recording may rise as much as ten Db. This rise in noise level is most noticeable on soft passages in a recording of music or during a distant pickup with a microphone. The magnetization is usually caused by the cumulative effects of starting and stopping a recorder while a strong signal is being applied to the record head, by line noise, switching transients, etc. Contact with a magnetized object such as a screw-driver will also result in a magnetized head.

When a minimum of background noise is important recording heads should be demagnetized after every five to ten hours of use.



Build This Mike Mixer

by George M. Thompson
 ... a simple, inexpensive 3 channel mixer.
Reprinted by reader request.

SOONER or later, if you try to do any serious tape recording, you're going to need a microphone mixer. A mixer is just what the name implies: it is used to mix the sound coming from two or more mikes into the one channel that goes into the recorder. For instance, you might use one mike to pick up the voice of a singer and another to record the piano accompaniment. Feeding both mikes into the mixer you could then adjust the relative loudness of both singer and piano to get the best result.

The mixer shown here is the simplest type anyone can build. It can be used to mix three high impedance crystal or dynamic microphones to any tape recorder or amplifier having a high impedance input. Because of its simplicity, it does have limitations. It should not be used with different types of high impedance microphones. I would suggest that

three dynamic or three crystal microphones having the same sensitivity (or Db rating) be used. This will eliminate any interaction between the microphones when the mixer controls are varied.

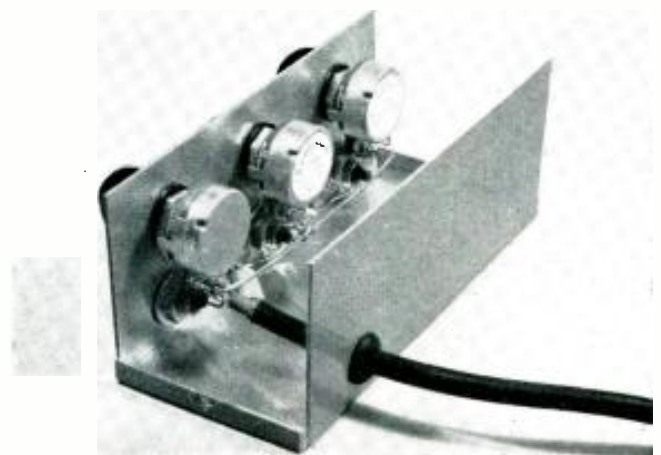
I do not recommend attempting to mix phono and mike with this unit as the amount of power put out by the crystal of the phono pickup is so great that distortion will result. An electronic type mixer should be used for this.

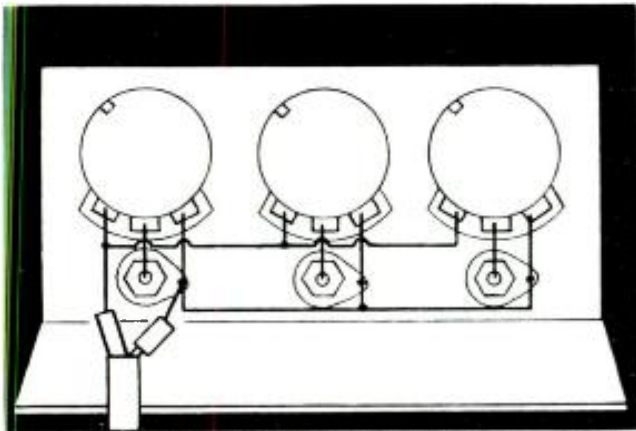
Construction

The complete three channel mixer is housed in a gray hammertone Minibox, size $2\frac{1}{4} \times 2\frac{1}{4} \times 5$ ". The circuit is quite simple. It uses three 500,000 ohm potentiometers connected in parallel across the output connector which feeds into the tape recorder or amplifier. The center ter-



Top: the completed mixer which handles three microphone channels and measures only $2\frac{1}{4} \times 2\frac{1}{4} \times 5$ inches. It may be built and wired in one evening. Above: the mixer with two channels in use. Right: the interior construction. All leads should be kept as short as possible and the tiny 390K $\frac{1}{2}$ watt resistors can be placed inside the Amphenol 75-PC-1-M connectors for better shielding. All connections should be carefully soldered using rosin core solder.





Wiring of the mixer is simple. The ground terminal of each microphone connector is wired to the ground side of each potentiometer and also to the shielded side of the mike cable. Opposite sides of the potentiometers are wired together and connected to the inner conductor of the microphone cable which leads to the recorder.

terminal of each potentiometer is connected to a 390K ohm $\frac{1}{2}$ watt resistor.

The other end of each resistor is connected to the center terminal of the 75-PC-1-M chassis-type microphone connector. To keep the leads as short as possible, the resistors may be put inside the connector, affording greater shielding.

The chassis side, or ground terminal of each 75-PC-1-M connector is wired to the ground side of each potentiometer and also to the shielded side of the microphone cable. The opposite sides of the potentiometers are wired together and connected to the inner conductor of the microphone cable which leads to the recorder. The pictorial diagram shows how to make the hook-up.

The end of the single conductor shielded microphone cable which runs to the recorder or amplifier is connected to an Amphenol 75-MC-1-F or a regular phone plug, depending upon the type of connection on your recorder. This microphone mixer can easily be assembled and wired in one evening.

Space the connectors and potentiometers carefully so clearance is provided between the knob and the ring on the 75-MC-1-F. An inch and a quarter between centers should be enough. The unit has deliberately been kept small so that it may be packed easily and be kept near the recorder when in use.

Parts List

- 1—2 $\frac{1}{4}$ x 2 $\frac{1}{4}$ x 5" gray hammertone Minibox
- 3—Amphenol 75-PC-1-M, or equivalent Microphone Connectors (chassis type)
- 3—500K Volume Controls with audio taper (Centralab or equivalent)
- 3—1 $\frac{1}{4}$ " Bar Knobs
- 3 ft. Single Conductor Shielded Microphone Cable
- 1—Microphone Line Plug (to fit your recorder or amplifier)
- 2 ft. #16 B & S Tinned Hookup Wire
- 3—390K ohm $\frac{1}{2}$ watt Resistors

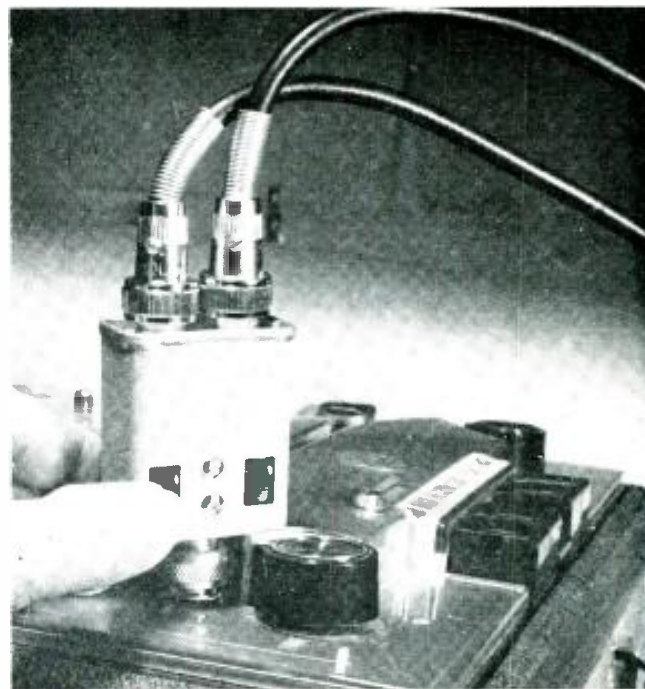
If you are not too handy with a soldering iron and prefer to purchase a mixer you have a number of good ones from which to choose. Some of these are shown in the column at right and can be supplied by any radio parts house.



Pentron CA-14, 4-channel mixer with 6 high impedance inputs: 4 microphone, 2 phono (phono input receptacles are on rear of unit; microphone inputs are on front panel); provides 8 db gain in microphone channels. Tubes are 2—12AX7.



Masco model EMM-6 electronic mixer-pre-amplifier has six inputs (4 microphone and 2 phono). Three 12AX7 tubes, selenium rectifier. Cathode follower output—allows 400-foot separation from amplifier; any four channels are separately controlled.



Switchcraft "Mini-Mix," a miniature 2-input audio mixer. Accommodates two high impedance inputs; resistance type mixer. Separate gain controls, recessed inside housing. Brown finished case, nickel plated accessories.

NEW PRODUCT REPORT

STAFF TESTED



Product: Reslo Symphony Microphone

Distributed by: Ercona Corp. 16 W. 46th Street, New York 36, N. Y.

Price: Model RBH/WS \$64.50 (hi-z), \$59.50 (lo-z).

The dynamic mike operates by means of a coil attached to the diaphragm which moves in a magnetic field created by a strong magnet—it is almost a dynamic loudspeaker in reverse.

The ribbon microphone uses a metallic foil ribbon suspended in a magnetic field with both sides of the ribbon accessible to the air. The ribbon is vibrated by the difference in sound pressure on the two sides, causing a current to flow.

The Reslo type R.B. microphones, of which the microphone under consideration is one, are ribbon mikes.

The crystal mike must be protected against heat and humidity and shock, the dynamic is more rugged and the ribbon, while unaffected by heat and humidity is generally sensitive to shock. We were invited to drive a nail (small one) using the shank of the Reslo mike after wrapping it in a cloth to protect the finish. We did and it still functioned.

Generally the output of the better mikes is lower than that of the crystal microphones, sometimes so much that their use with a regular home-type recorder becomes impractical because

RESLO RIBBON MICROPHONE

... a tough little microphone with excellent characteristics for recording or PA work.

WE have mentioned many times before on these pages that a better microphone can definitely improve tape recordings.

Not that the microphone supplied with the recorder is of poor quality, for it is not, being adequate for the average jobs for which it is used.

But as you progress in the tape recording art there comes a time when you become interested in getting top

quality recordings, not just good recordings. It is then that you are ready for a new mike.

The microphone usually supplied with recorders is a crystal mike. This functions by means of a crystal of Rochelle salt which is bent back and forth by the sound waves hitting the diaphragm of the mike. The bending produces electric currents which are amplified and recorded on the tape.



The microphone may be tilted back to the angle shown. The large illustration is approximately $\frac{3}{4}$ natural size.



Above: the polar pattern characteristics of the mike may be altered by inserting felt and fabric pads as shown. These are placed in the back of the case. Right: the microphone may be had with or without switch. Knurled knob on bottom of case turns mike on and off.



there is not enough amplification in the recorder amplifier to put sufficient signal on the tape.

The Reslo mike, on the basis of tests with regular recorders and the mikes supplied with them showed no lowering of the input of any consequence. The mike is rated at 58 db down. The usual crystal mike has about the same rating.

We were more interested in the kind of recordings produced by this mike than in measuring the frequency response of 18-20,000 cps. for the "naturalness" of tone is far more important. On this point the mike scored impressively.

The ribbon in the mike has a mass of only 1/960th of an ounce yet because of the mike construction is well protected. The magnet which encloses it is a powerful one and we advise keeping the microphone away from the tapes—we don't mean in another room, just don't store the two together in close proximity.

The ribbon is triple shielded by a nylon screen, wire cloth and the outside perforated shell.

One unusual feature of the mike is the ability to change the pickup pattern by inserting baffling pads in the back of the mike case.

To insert the pads the top screw is removed and the rear shell is eased back at the top. For bass reduction one felt is inserted into the shell, for bass reduction with rear discrimination one felt and the yellow fabric is inserted, for close talking a sandwich of felt-fabric-felt is placed in the case. The rear shell is then replaced and the screw reinserted.

As delivered the mike is hooked up for hi-impedance, which is necessary for most tape recorders. However the impedances may be changed by using a different line cord available for \$7.50. If low impedance is desired the mike may be ordered already hooked up for low impedance and at a lower price.

As with all ribbon mikes, the pickup pattern is in the shape of a figure 8 with pickup front and back and almost no pickup on the sides. This has many advantages, especially in cutting down on unwanted sounds in some locations or, since the mike increases in front sensitivity as the frequency is increased, i.e. 2 db at 1000 cps to 20 db more sensitive at 10,000, the rear can be used for low frequency pickup and the front for the higher frequencies.

The model shown has a switch incorporated in the base so, in public address work, the mike can be turned on and off at will. The switch is a knurled knob which looks like part of the base.

The ribbon cartridge is pre-set and is detachable. Should it be damaged in any way, the "works" may be replaced with a new unit from the factory.

The cable length supplied with the microphone is 18 feet. The cable is three conductor and with the hi-z mike the center wire goes to the inside plug terminal and the other two wires go to the outside or ground terminal. No plugs are supplied on the cord so you must install one to fit your own recorder.

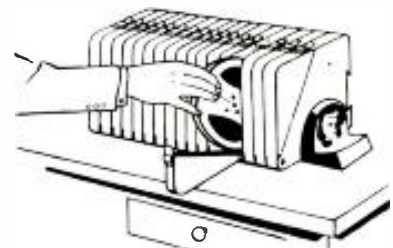
Quite frankly we were pleased with the performance of this microphone and we believe it to be worth your consideration. We bought one.

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SELL: DeJur TMB-8.0 with Nortronic SK100 stereo head, two RA100 traps and Fisher PR6 pre-amp. \$275. Needs only one amp. and two spkrs. for record playback stereo. Paul K. Damar, 21 Detroit St., Calumet City, Ill.

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SELL: Ampex 601-2 with Mic Transformers, Ampex 612, 2-50 foot mic cables with XL-3 11 and XL-3 12 cannon connectors, 2 Film Industries of London M9 low impedance mics, 2-Atlas MC105 mic stands. Block price \$1150 plus postage. John Pavlar, Electrical Engineering Dept., Iowa State College, Ames, Iowa.

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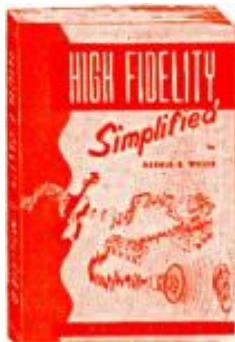
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