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Table I TESTS AT 75°F, 50% RELATIVE HUMIDITY

	Yield Strength	Breaking Strength
1 mil Acetate	3.7 lb.	3.9 lb.
0.9 mil "Mylar"	4.2 lb.	7.6 lb.
1.45 mil Acetate	5.0 lb.	5.5 lb.

Table II TESTS AT 75°F, 90% RELATIVE HUMIDITY

	Yield Strength	Breaking Strength
1 mil Acetate	1.8 lb.	2.5 lb.
0.9 mil "Mylar"	4.1 lb.	7.6 lb.
1.45 mil Acetate	3.0 lb.	4.1 lb.

The above test data, taken under conditions of both winter and summer humidity, show the marked superiority of 1-mil "Mylar," not only over the thin cellulose acetate base, but over the standard 1.45-mil acetate as well.

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Vol. 2 No. 2

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2. Grieg, Concerto in A Minor, Opus 16, for piano & orchestra. Grant Johannesen, pianist, Netherlands Philharmonic Orchestra; Walter Goehr, Conductor. MUSIKON PROGRAM No. 601.
3. Tartini, "The Devil's Trill" Sonata in G Minor for violin and harpsichord. Vitali, Chaconne in G Minor for violin and figured bass. Ricardo Odonoposoff, violin. Heinz Wehrle at the harpsichord and organ. MUSIKON PROGRAM No. 602.

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**MAGNETIC FILM &**

**TAPE RECORDING**

VOL. 2 No. 3

MARCH-APRIL, 1955

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**IN THIS ISSUE**

TAPE IS FOR FAMILIES .....	Mildred Stagg	21
MUSIC CAN MAKE YOUR MOOD .....	Doron K. Antrim	24
AUTOMATIC BROADCAST SYSTEM .....		28
AUTOMATIC TAPE PLAYER AND REEL .....		29
TAPE GOES TO SCHOOL .....	Daryl W. Pelletier	30
RECORDING THE ORCHESTRA, Part II .....	L. L. Farkas	32
TAPE MAKES IT EASIER .....	Dr. Hans Wolf	34
BUILD THIS RAMBLING SPEAKER .....	Robert W. Luebke	36
NEW PRODUCT REPORT—E-V SLIMAIR MIKE .....		40
TAPE RECORDING GLOSSARY .....	Ronald Anderson	42
NEW TAPES .....		7
NEW PRODUCTS .....		13
TAPES TO THE EDITOR .....		18
QUESTIONS AND ANSWERS .....		19
TAPE CLUB NEWS .....		39

Cover . . . The Pinneys by Mildred Stagg

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# NEW TAPES

By Charles D. Sigsbee

At long last I have heard binaural sound in my own home, made possible through the combined efforts of the Editor, Audiosphere, Inc., and Livingston Electronics.

For the occasion I invited a group of people from the local university. Included were a professor of musical history, two musicians (trombone and piano), and an electronics engineer. Oh yes, a marriage counselor dropped in later, but he was from a different school.

The basic piece of equipment used was an Audiosphere binaural tape playback unit. The channel A side (left) consisted of an old EU7E Presto recording amplifier and a borrowed Jensen coaxial 12" speaker in a utility bass-reflex housing. The channel B side (right) consisted of a Heathkit pre-amplifier, their two-chassis Williamson type amplifier, and an RCA 515S2 duo-cone 15" speaker in the RCA recommended enclosure.

Unfortunately, the left hand speaker could only be placed in a position immediately adjacent to the front door, so that all of the guests had to first arrive before the equipment could be completely set up. This is not the ideal method for demonstration. In fact, it could set binaural back several years. The next time I conduct one of these things, the guests will be asked to arrive via the back door, the level balance between the two channels will be pre-set and I am even toying with the idea of having the living room in total darkness.

Ideally, I would have had a two channel front end and everything else duplicated exactly. Approaching the ideal, I now have the whole system calibrated which I should have done prior to the premature demonstration.

Nevertheless, things were finally brought under control and we listened first to an Audiosphere recording of the Schubert "Unfinished," and Sibelius' "Finlandia," both reviewed monaurally several issues back. While the music was playing, I watched the reactions of the group.

The engineer moved forward to the edge of his chair for a bit, then to his knees on the floor, and by degrees inched up toward the speakers until reaching a point about three feet back and midway between the two, he sat down Indian fashion for a period. Every now and then he would get up and move between the two speakers, listening first to one, then the other, following which he would return to the Indian position.

The professor sat and stared at a point between the two speakers.

So did the pianist.

The trombonist would look first at one speaker, then the other, then the Presto amplifier, a closer inspection of the Presto, a look and close inspection of the Heathkit equipment, a close inspection of the tape tracking past the heads of the playback unit, and so on to the end of the demonstration.

The marriage counselor engaged in a quiet side conversation with a wife; normal for that profession.

As soon as the first tape ended I waited breathlessly for the comments. The engineer was the first to speak:

"Boy, I'd sure like to hear Red Foley on this stuff!"

The trombonist was next:

"Did you put this Heathkit together yourself?"

The marriage counselor:

"I'm sorry to have to do this, but I have

an early class in the morning and have to get some sleep."

The professor and pianist said nothing, so I said, "Well, what did you think of it?" The answers were unanimous:

"Wonderful, wonderful, I'll never be able to listen to my equipment again."

"Certainly is a great improvement over one speaker sound."

"It seems to add depth, as well as width."

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NEW JERSEY

"There was no mistaking the location of the sections, or solo instruments for that matter."

"I'd still like to hear Red Foley on it."

The demonstration continued and has been repeated many times since without one dissenting opinion to its improvement over monaural sound.

Although binaural reproduction creates quite an impression, even with the patch-work arrangement described above, I would still prefer to use either a binaural amplifier or a binaural preamplifier with two like amplifiers. Of course, this holds true for the speakers too. You will notice that I placed the speaker with the better bass response on the right side to accommodate the cellos and double basses.

The speakers were placed about ten feet apart facing directly into the room. The results were so good that I haven't attempted to move them to another position.

I feel that binaural systems will show a slow but steady increase in number and that tape offers the best practical method for reproducing two track sound. Consequently I will also review binaural tapes in future issues.

**AUDIOSPHERE** ✓

BN 701 (7.5 IPS)

Schubert: Symphony #8 in B minor ('Un-finished')

Sibelius: Finlandia

BN 703 (7.5 IPS)

Mussorgsky: Night On Bald Mountain

Borodin: Polovetsian Dances

Sibelius: Valse Triste

Florence May Festival Orchestra

Vittorio Gui, Conductor

There is almost no basis for comparison between these two channel tapes and their monaural versions reviewed in an earlier issue. Curiously, it is difficult to realize how good binaural is until you do without it. AB switching tests quickly reveal the startling difference to even the most confirmed skeptic.

For anyone contemplating a binaural system, I highly recommend these two tapes as a library nucleus. The "Finlandia" and "Night On Bald Mountain" are particularly fine as an introduction to binaural because of their varied orchestral colorings.

Everyone did a fine job, the orchestra, the conductor and the engineers.

**HACK SWAIN PRODUCTIONS**

Musikon Tape #604

Full track, 7.5 IPS

Beethoven: Symphony #5 in C minor, Opus 67

Zurich Tonhalle Orchestra

Otto Ackermann, Conductor

This is Hack Swain's first venture into the classical orchestra field and a firmer step couldn't have been taken. In keeping with the high standards maintained by this company, the tape is a superb orchestral reproduction from the familiar opening chords to the end of the heroic final movement.

The interpretation of the music is solid. Ackermann's orchestra follows the score without any added coloration of tone, if Beethoven's music needs any coloring!



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Musikon Tape #602

Full track, 7.5 IPS

Tartini: Sonata in G minor for Violin and Harpsichord.

"The Devil's Trill"

Vitali: Chaconne in G minor for Violin and Figured Bass

Ricardo Odnoposoff, violinist

Heinz Wehrle, harpsichord and organ

Two familiar violin works excellently played by Odnoposoff. If the name sounds vaguely familiar to you, you will find him as soloist on many Weingartner recordings.

The Tartini Sonata, presumably written as the result of a dream, is called "The Devil's Trill" although there is nothing satanical about it.

Again the reproduction is excellent and good balance is maintained between the two instruments.

A-V RECORDED TAPES

Catalog #1507

Full track, 7.5 IPS (Also available in double track)

Dvorak: Symphony #4 in C major

Cincinnati Symphony Orchestra

Thor Johnson, Conductor

I cannot understand why the Cincinnati Orchestra, and its conductor, Thor Johnson, is not better known. On recording it appears to be a polished group that plays with great spirit and a high degree of virtuosity.

This Brahms-like symphony is played with a tonal beauty that would be difficult to surpass. The strings and horns I particularly single out for their technical excellence.

Though not recommended for hi-fi fanatics, the recording is one of great beauty, highly recommended for music lovers.

Catalogue #1508

Full track, 7.5 IPS (Also available in double track)

Helsinki University Chorus

Sulo Saarits, Baritone

Cincinnati Symphony Orchestra

Thor Johnson, Conductor

Sibelius: The Origin of Fire

Song of My Heart

Finlandia

Pohjola's Daughter

As I reviewed this work in the April, 1954 issue of TAPE RECORDING, I normally would not bother with it again. The reason I am including it is to mention that the recording, for some reason, is better this time around! Don't know the cause, but that is the fact. This is truly a high fidelity recording of outstanding music.

Catalogue #251 B

Full track, 7.5 IPS (Also available in double track)

Smith-Glamann Quintet

This is not, as the title might suggest, classical music, but it could be a popular music classic.

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arrangements, even jazz, have a smooth mel-  
lowness that invites encores. To best de-  
scribe what I mean listen to "September  
Song."

This, too, deserves the "High-Fidelity"  
label given to it by A-V. The separation of  
instruments is good and upper range of harp  
to lower range of bass is quite a range!  
Recommended for high-fidelity fans is "Poin-  
ciana" which is complete with a great vari-  
ety of percussive instruments, and you  
would swear they were right in the room.  
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Mozart: Cello Concerto  
Corelli: Sonata in D-minor  
Vivaldi: Concerto in D-major  
Janos Starker, Cello  
Marilyn Meyer, Pianist  
Castle Hill Orchestra,  
Maximilian Pitzer, Conductor

The first "Connoisseur" tape received is  
sub-titled "The Janos Starker Recital" and  
certainly presents this young musician's  
virtuosity to a great degree. His interpre-  
tation is flawless and his technique skillful  
enough to impress even the most discrimi-  
nating critic.

A word of warning lest you be confound-  
ed by the Mozart Concerto as something you  
have heard before, but not this. It is actually  
the well-known horn concerto in E-Flat  
Major, transcribed for cello by composer-  
conductor, Alexander Sandor Fischer, for  
Pablo Casals.

The tape itself should prove to many  
skeptics that it is possible to get wide range  
reproduction from dual-track tape. The cello  
tone is very life-like in all registers. A final  
word for the excellence of Marilyn Meyer  
who accompanies Starker in the Corelli  
Sonata and Vivaldi Concerto.

### ATLANTIC TAPE LIBRARY

7.5 IPS, Double Track  
Fun With Mae Barnes:

You Turned The Tables On Me  
I Ain't Got Nobody  
Rinka Tinka Man  
I Ain't Gonna Be No Topsy  
On The Sunny Side Of The Street  
Old Man Mose  
What Will The Neighbors Say  
Laziest Gal In Town  
Sweet Georgia Brown  
Here Comes The Captain

If you think that you are familiar with  
the songs listed, wait until you hear the  
treatment given them here. Something like  
taking your first downhill sled ride.

I find it difficult to describe this girl's  
style. Nearest I can come to it is a com-  
bination of Ethel Merman, Sophie Tucker  
and Pearl Bailey; if that tells you anything.  
The title of the first song could well be the  
title of the album, because she does.

"I Ain't Gonna Be No Topsy" and  
"Laziest Gal In Town" have clever lyrics

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Scheel International, Inc.  
4237 N. Lincoln Ave., Chicago 18, Ill., U.S.A.  
Coble Address—Horsheel

and equally clever treatment. Miss Barnes is inspiringly accompanied by Garland Wilson and The Three Flames.

The tape quality is excellent.

7.5 IPS, Double Track

New Orleans Jazz by Wilbur de Paris and his Rampart Street Ramblers

Sensation

Hindustan

When The Saints Go Marching In

The Pearls

Prelude in C# Minor

The Martinique

Most of this tape is New Orleans jazz to be sure, but of the Parlor variety, not for street marching. Dyed-in-the-wool Dixieland jazz fans should be quite taken with Track #1 which includes the first three selections but the second track would arouse some arguments as to whether or not this was the real stuff. Jelly Roll Morton's "The Pearls" is excellent jazz, Dixieland or not, but I question completely the inclusion of Rachmaninoff's Prelude in C# Minor. With so much good Dixie available, why this?

No questions concerning the musicianship of the Ramblers, they all get up and go. This is a clear and life-like recording, both tapes adding to Livingston's growing reputation.

**WEBCOR**

Catalog Number 2922-5

Dual Track, 7.5 IPS

John Halloran Choir

Vinea Mea Electa

All Through the Night

Everything and Anything

A Prayer for our Country

Little David Play On Your Harp

Clouds

In The Still of the Night

Sourwood Mountain

As I have had much to say on the technical excellence and musical ability of the great Halloran Choir, I won't dwell on repeating it here, except to say that this album is, if anything, even better than the first; containing, as it does, an even greater variety of music.

Although it is all good I do single out the Vinea Mea Electa by Poulenc and Everything and Anything by Ella Rose Halloran. The latter is not only a difficult vocal arrangement but contains, also, a curious and intriguing piano obbligato. The reproduction is excellent.

Catalog # 2922-3

7.5 IPS, Double Track

Fine Arts Quartet

Mendelssohn—Scherzo from E Minor Quartet

Borodin—Nocturne from D Major Quartet

Schubert—Moment Musical

Raff—The Mill

Tschaikowsky—Andante Cantabile

Bocchorini—Minuet from Quintet in E Major

Haydn—Finale from Lark Quartet

An excellent recording of the more popular movements from well-known chamber

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Less than the cost of the raw tape



with membership in the

## Recorded Tape-Of-The-Month Club

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Recorded Tape-Of-The-Month Club has combed the entire field of entertainment to give you superb tape recordings of unusual material at only \$5.95 per 7" reel. Fill out the membership blank, and for the next six months you will receive Club "Previews" on a 4" reel for \$2.00. "Previews" feature the highlights of the coming month's regular selection . . . enough to provide entertainment and help in deciding if you want to order the next month's tape.

Members may order as few as two \$5.95 monthly selections during the six month period. For every three Club selections ordered, a FREE BONUS 7" reel may be selected among classics, pops, folk music and many other unique tapes.

**HIGHEST TECHNICAL STANDARDS**

Each tape has been reproduced by Dubbing Sales Corp., N.Y.C., leader in its field. The half-hour 7" reel is recorded at 7 1/2 ips, single track.

**COST TO NON-MEMBERS**

1 "Preview" tape . . . . . \$1.25  
1 Monthly Club Selection . . . . . \$8.95

<p>Our First Exciting and Exclusive Release</p>	<p><b>"Musical Notes From a Tourist's Sketch Book"</b> World Symphony Orchestra, Selection No. 101</p> <p>The works of Hans Lergsfelder are familiar to music lovers the world over. This renowned composer and world traveller has painted a musical picture of his impressions and experiences in far-flung and exotic lands. His palette ranges from the staccato excitement of "Typewriter Concerto" to the melodious serenity of "American in Venice." A delightful collection that is a "must."</p> <p>TYPEWRITER CONCERTO: BLUMBLEE BEE AT CARNEGIE GYPSY BLUES: BALL OF THE CRICKETS: TYROLIAN TANGO: AN AMERICAN IN VENICE: HAREM HARMONIES: CARAMBA LA SAMBA: SLEEPY CAROUSEL: WASHINGTON WALTZ.</p>
---	--

Watch for our forthcoming monthly Club Selection . . .

**THE INVESTIGATOR—Selection 102**

the most fabulous satire ever presented.



RECORDED TAPE-OF-THE-MONTH CLUB, BOX 195, RADIO CITY POST OFFICE, N. Y., N. Y.

**RECORDED TAPE-OF-THE-MONTH CLUB, INC., Dept. HF-1**  
Box 195, Radio City Post Office, New York, N. Y.

Please enroll me as a member. I understand you'll send six monthly "Previews" for \$2.00. I will order, in the next six months, at least two monthly 7-inch (1200 ft. of tape) Club selections at \$5.95 each. (Non-members' cost, \$8.95.) You will send me a free bonus tape of my selection for every three tapes I order.

Enclosed is \$2.00 (post paid) for 6 "Previews"  
 Send "Previews" C.O.D., I will pay \$2.00 (plus postage) on receipt of first tape  
 Enclosed is \$5.95; send Selection 101 post paid  
 Send Selection 101 C.O.D. for \$5.95, I'll pay postage.

N.Y.C. residents add 3% sales tax.

Name . . . . .  
 Address . . . . .  
 City . . . . . State . . . . .

works by the highly-polished Fine Arts Quartet of Chicago.

This tape could do much to popularize quarter music for those who have an antipathy toward it. This is undoubtedly a prejudiced statement based on the fact that I took to chamber music, after long resistance, only after hearing the Borodin Nocturne. Its beautifully melodic line and delicate interplay of instruments could scarcely help but wear down the most ardent quarter-phobe.

Definition between the instruments is very good in this recording and the frequency response is sufficient to label the tape "high fidelity."

Catalog # 2922-7 ✓  
7.5 IPS, Double Track  
Organ Moods by Adele Scott

Tea for Two  
Cielito Lindo  
Three Blind Mice  
Won't You Come Home, Bill Bailey  
Sea Chanty Medley  
The Band Played On  
Believe Me, If All Those Endearing Young Charms  
I've Told Every Little Star  
Sweet Genevieve  
Parade of the Wooden Soldiers

Remember the days when the feature film would end, the house lights would

come on and a spotlight would be focused on a point to the right of the proscenium; the sound of organ music would appear from nowhere and slowly, with majestic grandeur, from somewhere in the basement netherland would rise the "Golden Wurlitzer"?

This spangled giant, with its impressive rows of stops, was the pride of many a theater in the late twenties. And the half hour that followed the organ's appearance was one of wondrous aural delights. Sound movies did away with this musical giant, but its melody lingers on and Webcor has managed to capture some of it.

Adele Scott presents a most entertaining half hour, nothing profound, nothing stirring, just a lot of nostalgia and good sound from an almost forgotten instrument.

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**JAZZTAPE**  
high fidelity  
recorded tapes

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OMEGATAPE and JAZZTAPE are produced exclusively on Ampex high-fidelity equipment and every tape conforms to the Ampex Recording Curve. "Scotch" type 111A tape manufactured by Minnesota Mining and Manufacturing Co. completes the unbroken cycle from original recording to finished, duplicated tape of the finest quality pre-recorded tape available anywhere at any price.

### New Omegatape Releases

Liszt: *Malediction Concerto • Angelus • At the Grave of Richard Wagner* — Concert Artist Symphony of London, Mervyn Vicars, conductor; Irene Kohler, pianist . . . Omegatape 6005 (five inch reel, dual track, 7½ips.) \$6.45

Grieg: *Holberg Suite • Two Norwegian Melodies* — Concert Artist Symphony of London, Mervyn Vicars, conductor . . . Omegatape 5003 (five inch reel, dual track, 7½ips.) \$5.95

Beethoven: *Moonlight Sonata • Pathetique Sonata* — Bernard Vitelsky, pianist . . . Omegatape 6010 (five inch reel, dual track, 7½ips.) \$6.45

The Exciting MAMBO — 10 *Mambos played by Ramon Marquez and his Orchestra* — (Recorded in Mexico City) . . . Omegatape 5010 (five inch reel, dual track, 7½ips.) \$5.95

Piano Rio — featuring Maldonado and his rhythm . . . Omegatape 5008 (five inch reel, dual track, 7½ips.) \$5.95

Great Wurlitzer Pipe Organ — Gordon Kibbee, organist — selections from "Pal Joey" and "Jumbo" plus "Louise" and "The Continental" — recorded on the mighty Wurlitzer 5 manual Pipe Organ . . . Omegatape 5009 (five inch reel, dual track, 7½ips.) \$5.95

### New Jazztape Releases

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Jazztape 4004 (five inch reel, dual track, 7½ips.) \$5.95

Reel Jazz — George Lewis and his Creole Band . . . Jazz-tape 4005 (five inch reel, dual track, 7½ips.) \$5.95

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520 Fifth Avenue, New York 36, New York

### AMERITAPES

# 105  
7.5 IPS, Single track  
Soviet Folk Festival

11 selections of Georgian, Armenian, Ukrainian, and Moldavian choral groups, including "Kalinka" by the Soviet Army Ensemble of Song and Dance.

Collectors of folk and ethnic music will find this a most fascinating collection that points up, vividly, the complex racial structure of the Soviet Union. Music lovers, too, will find the tape an interesting adventure as it displays the roots of Russian classical composition.

Everyone will enjoy the lively and entertaining collection of vocal and instrumental music recorded on tape with remarkable fidelity.

We have been taken to task from time to time by some of our contemporaries because of our enthusiasm for tape and for some of our predictions regarding it.

They have attempted to refute our claims for tape's advantages by complaints on its few disadvantages. We recall having said in a previous column, "let someone complain about a fault and almost as soon as the words are uttered, some manufacturer pops up with the solution."

If our crystal ball is still hitting on all eight we believe the new development of the self-threading magazine and its associated player not only solves a lot of complaints but has a bright future.

These units will not be on the market for some time but when they do get into widespread use we'll dust off a few other past predictions which were then called "rash."

The new self-threading magazine permits selectivity, its cost is such that it will be possible to sell music on tape at a price competitive with records, it can be used in juke boxes and it is easier to work than a manual record player. (See page 29) Ed.

Another interesting development in the music on tape field is the appearance of tape-of-the-month clubs. All in all, we think the progress that musical tape has made in the past year alone is phenomenal and the pace is increasing. We'll keep you posted.

# NEW PRODUCTS

## NEW FEDERAL RECORDER



F-M-E MODEL 37-C

Federal Manufacturing and Engineering Corp., 211 Steuben St., Brooklyn, N. Y., announces its new Model 37C, two-speed, dual-track tape recorder. According to the manufacturer, this machine has a two-belt system which completely eliminates wear or squeal, and several circuit modifications have been made to produce a greater fidelity of tone. This model has an attractive new two-tone gray color scheme and redesigned control knobs. It is priced at \$139.95. For full details, write to manufacturer, above address.

## RECORDER CONVERTER

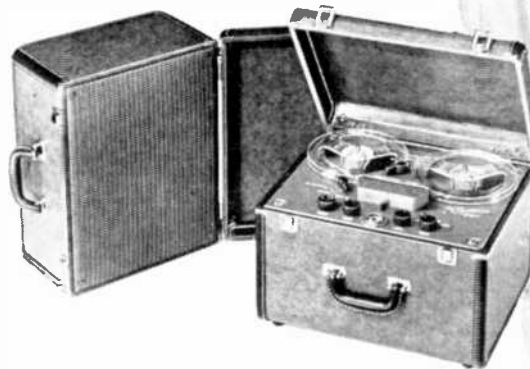


Terado Company, 1068 Raymond Avenue, St. Paul 14, Minn., is marketing the Trav-Electric "Chief" fully-filtered converter. It is available in two models, has an input of 6 volts D.C. and an output of 110 Volts, 60 Cycles A.C., has an automatic ON-OFF switch, a plug-in type vibrator, and can be mounted to the dash of a car with two screws. While it is intended primarily to operate tape recorders, it is also used for electric drills, small vacuum cleaners, business machines, etc. The list price is \$49.95. For full details, write to Terado Company, above address.

## CORRECTION

The address of Halvick Industries was incorrectly quoted in the last issue. The correct address should be 189 Miller Avenue, Mill Valley, California.

# *Crestwood* brings you new features...new models for 1955



CRESTWOOD new model 404 offers high fidelity response. (30 to 15,000 cycles at  $7\frac{1}{2}$ " per second tape speed.) Gives you crystal clear performance — free from wow, hum and distortion . . . combined with model 402 power amplifier and speaker makes a two-case portable package . . . fits nicely into your hi-fi system and your budget, too!

Exceptional fidelity (50 to 10,000 cycles at  $7\frac{1}{2}$ " per second tape speed) is featured in the new CRESTWOOD 304. New tape transport mechanism and professional type recording heads make the 304 one of the best values ever offered in a tape recorder . . . includes internal speaker, microphone, radio and TV connection cable.



The new CRESTWOOD consoles move tape recording enjoyment into a permanent and prominent position in your living room, den or recreation room . . . instantly ready to record or reproduce. Extended range dynamic speakers — fully baffled for complete range reproduction — give you truly outstanding sound quality . . . Choice of 300 or 400 Model Series in hand rubbed cabinets.



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## NEW TAPE-OF-THE-MONTH CLUB

The Recorded-Tape-Of-The-Month Club, Inc., P. O. Box 195, Radio City Post Office, New York, N. Y., now has available Hans Lengsfelders Compositions as its exclusive first release. This series of brilliant virtuoso showpieces is a reproduction as performed by the World Symphony Orchestra conducted by H. Andeau. This recording is single track, at a speed of 7½ ips, and the 7" reel has approximately 1,200 ft. of high fidelity recordings. It is priced at \$5.95. The Recorded Tape-Of-The-Month Club, Inc., has a program high in entertainment value in preparation and it welcomes suggestions for recordings.

### ADDITIONS TO LIBRARY

To further complement the BG-Library of Mood and Bridge Music, and as an additional service to subscribers to their music library, Audio-Master Corp., 17 East 45th Street, New York 17, has just released 40 sides of music. The new musical selections contain production numbers, dramatic and powerful openings and closings, as well as unusual commercial and industrial sound effects. The BG-Library now offers over 500 out-of-the-ordinary tunes, varied in scope and variety, such as bizarre, interplanetary themes, exotic melodies, etc. Every type of music, regardless of requirements and scope of production, is now available on a high artistic and professional level. They also have available at \$9.95 a 33 rpm, long-playing, high-fidelity record with a group of 16 musical selections composed of openings, closings, fanfares, and a variety of different types of mood and bridge music.

### HI-FI BOOKLET



An interesting booklet, written in non-technical language, explaining high-fidelity reproduction of voice and music is available without charge from Allied Radio Corporation, 100 N. Western Ave., Chicago 80, Ill. This publication relates the basic units used in home high-fidelity music systems, discusses what percentage of the hi-fi dollar should be appropriated for each component, and shows ways of modernizing existing equipment. Write today for a copy of *This Is High Fidelity*.

### IMPROVED FEDERAL RECORDER FIRMS COMBINE

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96 RX 675. Only.....\$97.45

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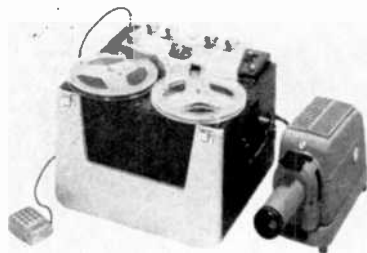
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Address.....

City..... State.....

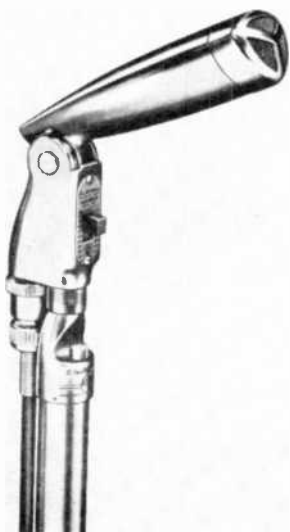
will now be included in the new Livingston Master Tape Listing. This features a diversity of material hand-picked from the libraries of many independent record companies.

## AUTOMATIC PROJECTOR



The Automatic Projection Corp., 29 West 35th Street, New York 1, N. Y., announces that their Models PS43, PS63, and PS65F Soundview projectors may be used in conjunction with the Webster Electric Ekotape Cinaudio Tape Recorder, Model 207, to provide automatic sound slidefilm presentations. The recorder can be used for recording and play back on its own; tapes can be erased, re-recorded, or cut and spliced. Pressing a button on the top of the recorder panel automatically applies a 1,000-cycle signal on one half of the tape. The Soundview projectors can be used for independent pushbutton remote control of 35mm stripfilm. They are small, light in weight and in combination with the Ekotape Cinaudio they present up to an hour of uninterrupted sight and sound continuity, automatically synchronized. For further information, write to Automatic Projection Corp., above address.

## E-V CRYSTAL MIKE



Electro-Voice, Inc., Buchanan, Michigan, is marketing a new Model 926 slim-type microphone for use in public address, paging, home tape recording and radio amateur communications. It is crystal type, finished

## New VU Magnemite\*



### Spring-Motor Battery-Operated Portable Tape Recorder

Now you can consistently make professional recordings under the most grueling field conditions. Tapes will faultlessly play back on all professional and home recorders. Ruggedly designed for maximum dependability and top-notch efficiency. Combines unlimited versatility of performance with extreme simplicity of operation. Choice of fourteen models available for every conceivable application.

Incorporates a multi-purpose VU monitoring meter for precise setting of recording level without earphone monitoring. Meter also accurately indicates condition of "A" and "B" batteries. Five single speeds as well as two, three and 4-speed models available. Units weigh only 19 lbs. with batteries and measure 6½" x 9½" x 14¼". Higher speed models meet NARTB standards. All recorders are guaranteed for One Full Year.

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### Electric-Motor Battery-Operated Portable Tape Recorder

The ideal recorder for newspaper reporting, recording lectures, telephone monitoring, field reports, traveling secretary, on-the-spot interviews, reference recording, customer interviews, salesmen reports and secret recording.

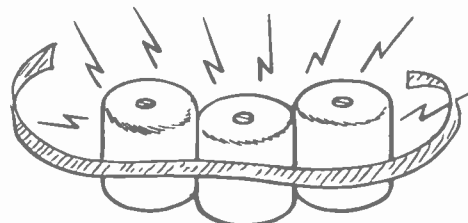
Combines for the first time, ease and efficiency of operation with maximum reduction of weight. Performs anywhere, producing professional results under adverse conditions. Fully shielded, fly-ball governor-controlled electric motor assures constant speed and freedom from hash. Weather-tight, satin-finished aluminum alloy case gives complete protection to recorder.

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- ✓ **BI-DIRECTIONAL PICKUP PATTERN** —enables you to arrange the artists around microphone to obtain the best balance between the different musical components.
- ✓ **VOICE-MUSIC SWITCH**—for utmost flexibility in achieving highest quality recordings.
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Model S33 Desk Stand List Price \$15.00

Model "300" Broadcast LIST PRICE \$135.00

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Please send me FREE Microphone Catalog 77A and list of Shure Distributors in my locality.

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City \_\_\_\_\_ State \_\_\_\_\_

TFRG-3

in satin chromium and is equipped with an 18-ft. cable. This microphone has a frequency response of 70 to 8,000 cps and output level —60 db. Its size is 1-5/16" x 6-3/4" and it features HI-Z impedance, and can be used in vertical or horizontal position. The price is \$24.50. For full information write to Electro-Voice, Buchanan, Michigan.

### REEL-STORAGE CABINETS ✓



Wallach and Associates, 1532 Hillcrest Rd., Cleveland 18, Ohio, is marketing a selection of metal tape recording reel cabinets which are constructed of 20 gauge steel and have a baked-on, gray crackle finish. They are available in three "sectional" models: type 542, which holds forty-two 5" reels and sells for \$11.50; type 742, which holds forty-two 7" reels and sells for \$13.50; and type 1021, which holds twenty-one 10½" reels and sells for \$9.90. There are also three "double door with lock" models: type 5384, which holds 384 5" reels and sells for \$114.00; type 7288, which holds 288 7" reels and sells for \$108.00; and type 192, which holds 10½" reels and is priced at \$110.00. For additional details, write to Wallach and Associates, above address.

### NEW FIRM IN RECORDED TAPE

The Burdett Sound and Recording Company, 3619 Henderson Blvd., Tampa 9, Florida announces its entry into the pre-recorded tape field with a new series of organ, piano and latin music on tape. Details of the new offerings will be made later according to a company official.

### MUSIC TAPE SOCIETY

The Music Tape Society, P. O. Box 661, Detroit 6, Michigan announces the first of its new offerings, David Oistrakh, world famous violinist playing with the USSR State Orchestra. The tape contains Mozart's Concerto #7 in D Major. All reels issued by the new company will be on Mylar base tape and contain 45 minutes of music on a 5 inch reel. The regular price for the reels will be \$6.75. Reels are attractively boxed, are marked for easy identification and program notes are furnished. For brochures and details write above address.

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Prevent spilling off reels. Keep tape and film tightly and smoothly wound regardless of length.

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without picking up reel. Disengages with fingertip pressure. Identification card holder.

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### RECORDER-RADIO COMBINATION



Capehart-Farnsworth Co., Fort Wayne, Indiana, is marketing its "Fifth Symphony," a combination AM-FM radio, 3-speed phonograph, and tape recorder entertain-



ment center in a complete high fidelity instrument. It has two 12-inch "woofers" and two 5-inch "tweeters." The dual-speed, dual-track high fidelity tape recorder plays 3¾ and 7½ ips tape from 5- and 7-inch reels for up to two hours of home or pre-recorded entertainment. In contemporary styling, it is priced at \$449.95 in mahogany finish with genuine mahogany veneers, and at \$469.95 in bisque finish oak. In French Provincial styling, it is priced at \$489.95 in cherry with fruitwood finish. For further details, write to Capehart-Farnsworth.

## NEW CARTER CATALOG

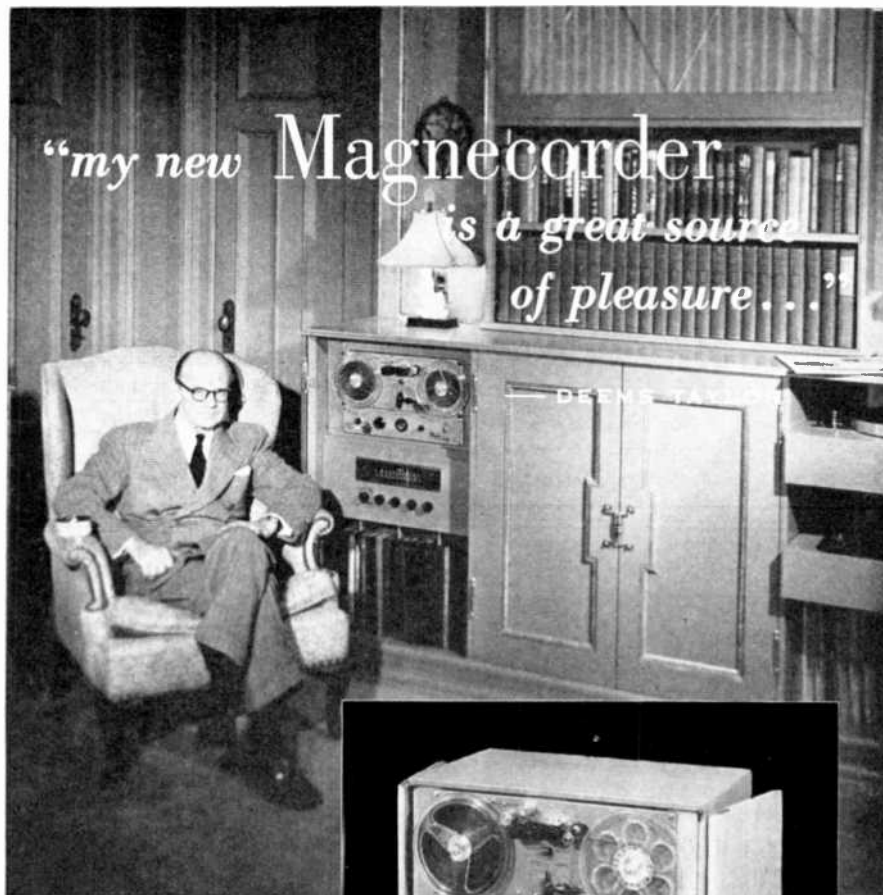


Carter Motor Company is distributing their latest Dynamotor Catalog with listings of the entire 1955 line of Carter dynamotor power supplies. This publication has been designed to aid distributors by making information on all Carter products conveniently available, and it provides complete electrical and mechanical specifications. Cataloged for the first time are the improved Carter Change-A-Volt Dynamotor and the new 6/12 Duovolt and Duovolt Super-Genemotors. Copies of this catalog, #155, can be obtained by writing to Carter Motor Co., 2644 N. Maplewood Avenue, Chicago 47, Illinois, Dept. 46.

## TAPE CATALOG

The Department of Audio-Visual Instruction, NEA, and the Association for Education by Radio-Television joined forces and established a national committee to devise a plan whereby the best taped educational programs in various localities could be made available nationally. Tape programs from 14 educational organizations were selected to start the collection. Kent State University accepted the honor of housing the master tapes and performing re-recording service. For a nominal fee these programs can be obtained from the repository by teachers and leaders in the educational field. Copies of the first issue of *National Tape Recording Catalog*, which lists the educational tapes available, can now be obtained. Such subjects as Citizenship, Literature, Music, Science, etc., are featured. Copies may be had by writing to the Dept. of Audio-Visual Instruction, 1201 Sixteenth St., N.W., Washington 6, D. C. Single copies are 50¢, and quantity discounts are allowed. Several new series of programs have been received, and a supplement to the catalog is also now available.

(Continued on page 41)



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\$339.00



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Whether you listen with the sensitive ear of the hi-fi music lover or the critical attention of the professional musician, the new Magnecorder is truly "a great source of pleasure."

Every sound is recorded and reproduced with the same exacting fidelity and performance that have made Magnecorders the most widely used professional tape recorders in the world.

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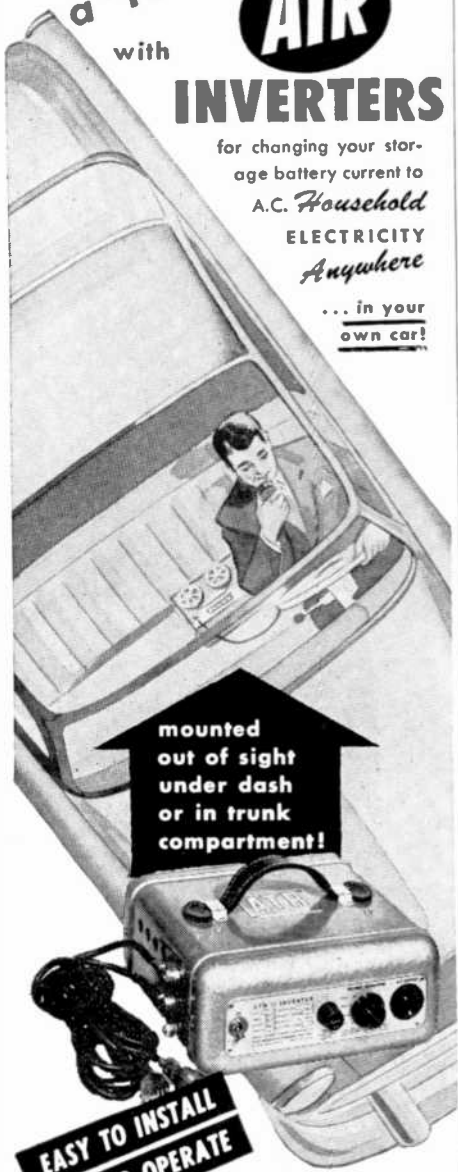
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**TAPES TO THE EDITOR**

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, Film and TAPE RECORDING, Severna Park, Md.

To the Editor:

Could you ask your readers if anyone of them may have recorded either the Metropolitan performance of Andrea Chenier or the television performance of Sister Angelica? I would be willing to compensate for the favor of a copy.

I enjoy your magazine immensely.—*Erwin W. Kelly, Whitestone, N. Y.*

To the Editor:

In answer to the letter from Paul H. Brobst regarding suggestions for detecting the end of the tape by a blind person, why not use a bell such as is used in grade schools, one ding at the beginning of the tape and one at the end.—*Lester L. Seymour, Wakefield, Mass.*

To the Editor:

In answer to Paul H. Brobst, Reading, Pa. in Feb. '55 issue, I would suggest a pre-recorded two-foot warning call reading "this is the end . . . there are exactly twenty feet left" or something similar depending on speed tape is used, person's talking speed, etc. with optional leader length at end.—*Ray Fuller, North Hollywood, Calif.*

To the Editor:

As to Paul Brobst's letter, I would suggest putting a set of pencil punctures four or five feet from the end of the tape, or tacking on about four strips of patching tape thereby giving the blind operator a finger warning while he is recording.—*Charles Swink, WGAR, Cleveland, Ohio*

To the Editor:

In answer to Paul H. Brobst's inquiry, I would suggest the use of a long leader tape at each end of the reel of recording tape. The length needed would depend on the speed of the recorder and the number of seconds time desired at the end for turning off the machine.—*Ernest Jennings, McPherson, Kansas*

To the Editor:

This is for what its worth to Paul Brobst, Reading, Pa. Why wouldn't a beep such as is used in monitoring telephone conversations on tape or a bell serve to indicate the end of the tape. Two bells could indicate 15 seconds for example, and one bell, five seconds to go.—*Robert Tracy, Moscow, Idaho*

Reader Charlie Swink's solution comes closest to meeting the need as the problem is not so much telling the blind person when the tape end is at hand when he is listening. The problem was how to tell the end was near when the blind person was doing the recording.

To the Editor:

Just wanted to write and comment on what a fine magazine you are publishing and how much I am enjoying it. I found the articles on microphone placement very interesting as are the new products reports. I just purchased a new recorder and before doing so, made an investigation into various makes and models. I found your descriptions of various models of machines an invaluable asset in helping me determine my choice.

I would like to see in the future, however, more articles on technique and on recording dramatic productions. Instead of dealing so much with professional applications of recorders, why not give we home users some more ideas. I would also like to see a teenage section started.—*Jerry L. Heisler, Hopkins, Minn.*

We are glad you enjoy the magazine, and we will keep your suggestions in mind for future articles.

To the Editor:

I have had over 40 years' experience in horticulture and my hobby is propagating and growing pot plants, both blooming and foliage.

I am becoming quite interested in the possibility of using tape recordings as a very practical means of exchanging proven ideas of propagating and growing many types of pot plants new to each other. I am thinking of this in connection with fellow horticulturists here and abroad and with clubs and schools.

Please give me the "low-down" on how to get started in the art of tape recording, where to get supplies and the probable cost of the necessary equipment.—*John P. Toberman, Bellaire, Texas.*

You can get started with as much of an investment as you care to make. Recorders run from under \$100 to more than a thousand with those in the \$200 price bracket enjoying the greatest popularity. We'd suggest you drop in at your nearest tape recorder dealer, radio shop, music shop or photo shop. The dealer can show you how to operate the machine in five minutes. The tapes are inexpensive and can be used over and over again. We would suggest you get a dual-track, two-speed machine, then you'll be able to play any tape that comes your way. We'd also suggest you join a tape club for you will be able to find kindred souls among their membership lists.—*Ed.*

**SIMPLE INDEX FOR YOUR TAPES**  
 Specially designed disc fits 5" or 7" reels. Gives you positive location of all recordings on your tapes "ATTA-GLANCE." Tested and approved by leading Tape and Recorder Manufacturers. Send \$1.00 for 8 discs. Specify size.  
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# QUESTIONS & 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," Film and 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**—Whenever I record a speech the recorder picks up a hissing sound when the speaker pronounces "c," "s," or "sh." How can I avoid this defect?—Y. E. S., Seattle, Wash.

**A**—We would suggest that you use a type of microphone that is proofed against what is known as "popping." The explosion-like sounds when the letter "p" is pronounced will also occasionally cause some difficulties. A mike equipped with a "blast" filter will prevent the defect. We would also suggest that you try covering your present mike with a handkerchief or turn it at an angle to the speaker so that the breath waves travel across the face instead of into it directly.

**Q**—I have a very good table model radio which I have tapped across the volume control to connect it to my recorder. However, I notice that the moment the connecting cord is attached to the radio, a hum appears. How could this be eliminated?—W. G., Berkeley, Cal.

**A**—Most table type radios do not have a ground potential with the power load. We would suggest that you isolate the connection between the volume control of your radio and your recorder with a 1-1, 20,000 ohm transformer. This is one in which both the primary and secondary are rated at 20,000 ohms. Connect one winding to the volume control on your radio and the other to the input on your recorder. This should eliminate the hum. It is also helpful to plug both machines into the same power receptacle, trying the plugs in different positions until minimum hum is secured.

**Q**—I got some new tape and it seems to stick together. When I record on it or play back, it shrieks and in playback you can hear the shrieking in the speaker. Is there a remedy?—A. J. B., Philadelphia, Pa.

**A**—Put some very fine talcum powder on a Kleenex and, holding it between the fingers, allow the tape to run through it. Use the powder very sparingly and, preferably apply it principally to the back of the tape. Do not get an excessive amount on the tape or it will collect on the heads. This will sometimes relieve the sticking you mention. Be sure to store the tape under proper conditions, avoiding excessive heat and moisture. If the tape is defective we would suggest you return it to the dealer.

In most cases the squealing or shrieking can be attributed to the accumulation of matter on the pressure pads which causes them to become glazed and hard. We would suggest you clean the pressure pads with lighter fluid, or spirits of petrolatum and then scrape the surface that contacts the tape with some square-edged instrument such as a fingernail file. This will remove the dirt and restore the pads to their original state. If they are badly worn, they should be replaced.

**Q**—When I record dual track, the sound of one track seems to spill over into the other, which comes out of the speaker backwards. Am I recording with too much volume, is the machine defective, or is there some error in my recording?—R. P., Brooklyn, N. Y.

**A**—In this case the machine is at fault and is in need of adjustment. Under proper operation, a narrow space is left between the tracks to prevent the crosstalk between the two channels. When the heads get out of line, especially on a machine that uses different heads for record and playback, the narrow safety space does receive some recording and will play back. We would suggest that you return the machine to the dealer for adjustment or procure an alignment tape and do the job yourself. Most recorders have provision for adjusting the heads. Faulty tape guides may also cause the trouble and we would suggest that you check those, too.

**Q**—I note that various firms are offering "head demagnetizers" for sale to remove accumulated magnetism from the heads. What is the advantage of using these devices? Also I find that in some of my tapes, the tape seems to cling to the reel and to produce jerkiness when it comes off. I am wondering if the cumulative magnetism of the whole tape is responsible for this and if it can be avoided?—E. C. B., Bryan, Texas.

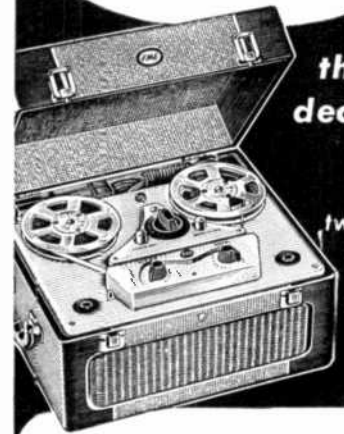
**A**—Heads will gradually accumulate magnetism and as they do, the playback suffers as the output drops off. The demagnetizers will remove this magnetism and restore the head to its factory condition. The magnetism on the tape is not sufficient to make it stick together.

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(See our big 'ad' page 8 Dec., 1954 "Tape Recording.")

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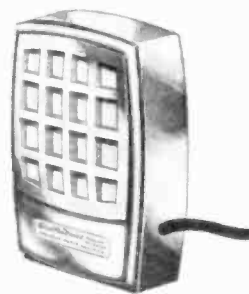
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Unique crystal Lavaller for chest or hand use. Supplied with neck cord, support clips and 18' cable. Output —60 db. Response 70-8,000 cps. For home recording, paging, PA and amateur radio. Pressure cast case in lustrous satin chrome finish. Wire-mesh head acoustically treated for wind and moisture protection. Hi-Z. Size 3-5/32" x 1-7/32".

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**Model 915 CENTURY**

Most popular microphone ever produced! Stands by itself. Fits in hand or on stand. Smooth response 60-7000 cps. Output —50 db. AC-DC insulated. Moisture-sealed crystal. Satin Chromium finish. Hi-Z.

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Model 915-S. With switch. List \$13.00



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**E-V QUALITY, AT LOW COST  
—IN NEW SLIM DESIGN**

The "926" crystal microphone combines handsome new styling with E-V quality features! Designed for public address, tape recording and communications. Frequency response is smooth, peak-free 70-8000 cps. Output level —60 db. Omnidirectional. Hi-Z. Moisture-sealed crystal. 5/16"-27 thread stand coupler. Die cast case, finished in Satin Chromium. Size 1 5/16 x 6 3/4" including swivel mount. 18 ft. cable. Net wt. 11 oz.

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With two brand new models, E-V again sets the pace in crystal microphones! This 1954 line makes selection easier... more complete... assures top performance... provides maximum value. Each has the advantage of E-V research-engineering, precision manufacturing and quality control. Each is styled to suit individual taste and purpose. Each offers smooth, clear reproduction of voice and music—and high output—for public address and paging, for amateur communications, for improved home tape recording. Write for full information.

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**Model 920 SPHEREX**

All-direction pick-up for round-table conferences, home recording and public address. Response 60-7000 cps. Output level —50 db. Omnidirectional. Acoustic filter protects against wind and breath blasts. Moisture-sealed crystal. Hi-Z. Satin Chromium finish.

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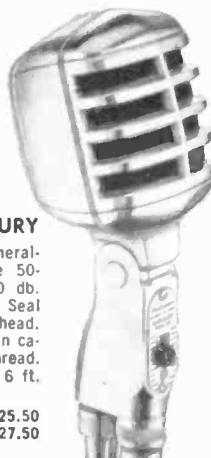


**Model 911 MERCURY**

Smartly designed for general-purpose use. Response 50-8000 cps. Output —50 db. Omnidirectional. Metal Seal crystal. Hi-Z. Tilttable head. "On-Off" switch. Built-in cable connector. 5/8"-27 thread. Satin Chromium finish. 6 ft. and 18 ft. cable.

Model 911-8. List \$25.50

Model 911-20. List \$27.50



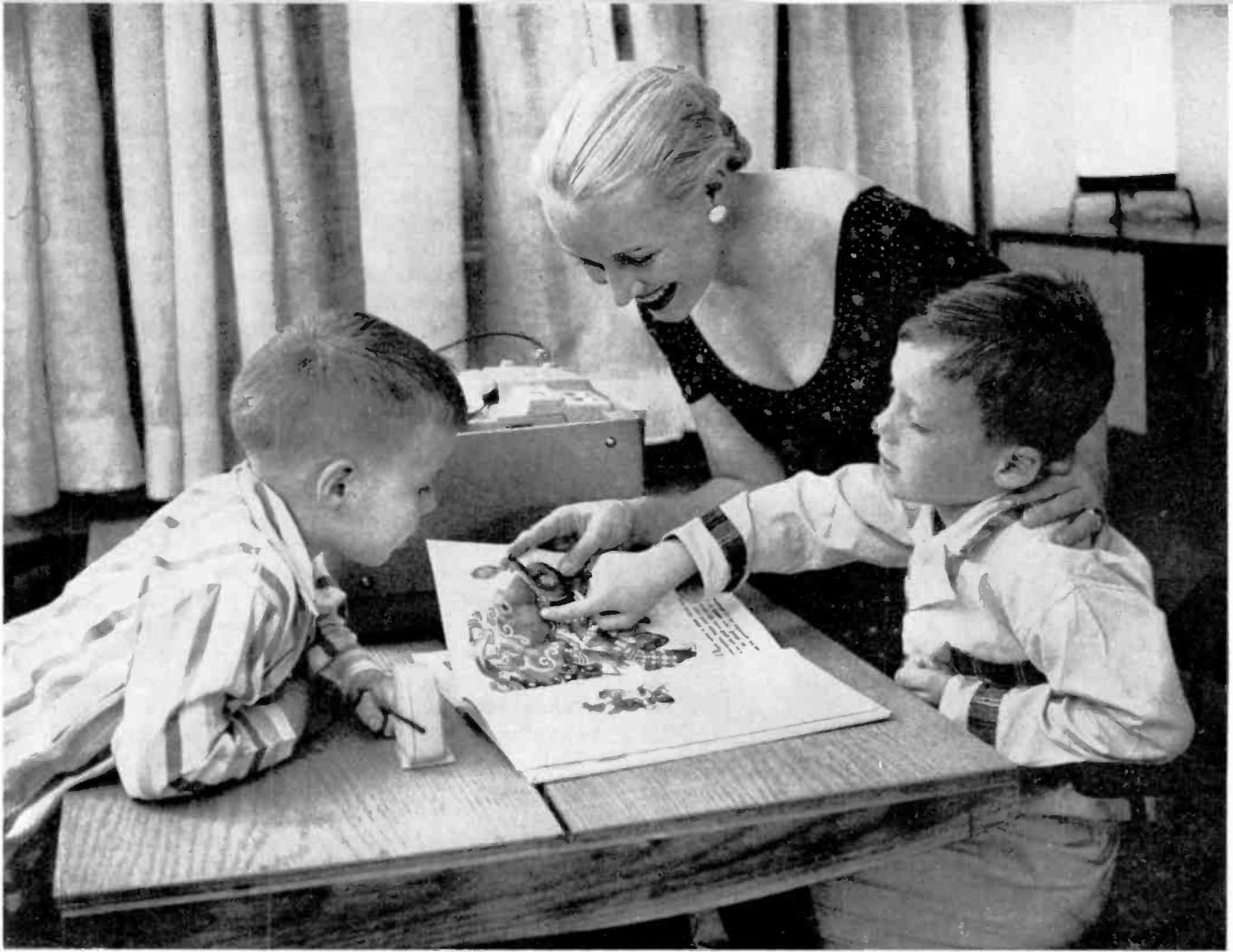
**Model 950 CARDAX**

World's favorite high level crystal cardiod\* with dual frequency response for high fidelity sound pick-up or for extra crispness of speech. Reduces feedback and background noise. Metal Seal Crystal. Hi-Z. "On-Off" switch. 5/8"-27 thread. Tilttable head. Satin Chromium finish. 18 ft. cable.

Model 950. List \$42.50



\* E-V Pat. 2,627,558



Doris Pinney with Roy Jr., and Tor recording a story from the book.

## Tape is for Families

*... Roy Pinney, famous magazine photographer, borrowed a recorder for a picture. And then—*

*by  
Mildred Stagg  
Photos by the author*

“I NEVER thought of buying a tape recorder!” said Roy Pinney, famous magazine photographer. “Somehow I had always associated tape machines with people who must have perfect reproductions of Toscanini conducting or practical jokers who like to play tricks on their friends by recording their conversations when they aren’t aware of the mike.”

When he was asked to include a tape recorder in a color photograph for the cover of *THE AMERICAN WEEKLY*, Pinney borrowed a Revere. The picture called for a home setting so he sent the recorder to his own apartment on New York’s Fifth Ave. where he took the photograph. The company that had lent him the recorder didn’t send for it immediately and the machine excited the curiosity of Roy’s wife, Doris, (an equally famous photographer who specializes in babies,) their two little sons and their small daughter. Roy explained to them how the gadget was operated.

Before a week had passed the recorder could have been removed only by a massacre of the Pinney family or—over their dead bodies.

The Pinneys use their tape recorder in ways that any average family might use one although some of their favorite tapes are unusual, to coin an understatement. Roy and Doris are a young, fun-loving, travel-minded couple. They have three children, Roy Jr., 6 yrs., Tor, 4, and Sara Lee, 2. The boys go to school and nursery school respectively while the baby tries to copy her brothers to the best of her ability. Roy and Doris’ recording experiences began when they first talked into the mike and listened eagerly to the playback. After a few minutes of this the young parents looked at one another in dismay. “Do I really speak that fast?” they asked almost simultaneously. The speech sounded almost incoherent and the consonants were slurred to the point of disappearance in some words. That was



Roy Pinney, one of the nation's most famous magazine photographers reads the newspaper to the recorder in order to detect and correct flaws in pronunciation or enunciation.

lesson number one.

They decided to work on their enunciation by slowing up their speech and trying consciously to emphasize the consonants that they usually ignore. The second try was better but they've continued to help one another by suggesting a slowdown whenever either one detects the other hurrying. After they had listened to their own corrected speech, Roy looked at Doris and said, "Joan!" Joan is their receptionist at the studio. Both Pinneys were aware that her speech was careless because they call the studio frequently when they are out on location. Although Joan is well educated and intelligent her speech was plain sloppy. "Yeahs" were punctuated by "Waaaaaaal" and neither sounded pleasant to the ear.

The morning after their initial recording session Roy brought the recorder to the studio with him. When Joan answered the phone he started it going and held the mike near her. When the call was completed he played the tape back. The girl was horrified. "Why didn't you tell me?" she pleaded. They had to explain that they had become conscious of their own speech defects only the night before. Joan seldom repeats her former errors and when she does, she catches herself almost at once. Even the quality of her telephone voice has improved because she detected a strained high pitch that wasn't present in her normal speaking voice.

The next recording scoop took place the following evening. Doris studies Spanish on Tuesday evenings and there was a program on radio that she wanted to hear. However she was unwilling to miss her class for it. "Suppose I try to tape it for you tonight?" Roy suggested. He put it on

Making a keepsake recording for the family sound album. When Reeves Soundcraft brought out the first mylar base tape, the Pinneys started using it for the "sound snapshots" they wanted to preserve for the future.

tape and chalked up another use for the borrowed recorder.

Wednesday night is the Pinneys night out. Like most young couples the problem of a baby sitter makes it difficult for them to spend more than one evening a week out. But this Wednesday a close friend called and told them she was appearing on a TV Quiz program. Not only had the sitter been engaged but the Pinneys wanted very much to see a travel movie that was appearing at a neighborhood movie house and that had been made by another of their friends. Tape came to the rescue. When the sitter arrived, they showed her just what button to press to turn on the tape when the program started, and how to turn it off when the show was over. After they came home they listened to the program they had missed and answered questions from the sitter about the recorder. She said she might use her baby-sitting earnings to buy one for her family. The student had already figured out plenty of ways to use it in her school work as well as for pleasure.

The argument that clinched the sale of a recorder to the Pinneys took place the following day. Roy Jr. and Tor are not the type of boy whose parents have to measure them for haloes and wings once a week. They're average children, healthy, energetic and scrappy. They fight often with vocal as well as physical vigor. This is one joy of parenthood that Doris and Roy would forego without regret. As usual Roy and Tor were mixing it up when their parents came home from the studio on Thursday. The cries, accusations and counter-accusations filled not only their playroom-bedroom but the rest of the apartment as well.

To Doris' and Roy's weary ears it sounded like bedlam, a bedlam with which they were too familiar. "Jut listen to that racket," Doris complained. Then a look of understanding passed between them. Roy carried the recorder to the open door of the bedroom where the boys were too intent on their fight to notice their father following them with the microphone. When the boys had quieted down and were allowed in the living room, Roy played back the fight. As shrill cries of "You stole my boat!" . . . "I did not!" . . . "You did too" . . . filled the room, the boys began to giggle. Sara Lee laughed 'til she cried, and finally Doris and Roy broke down and they all laughed loud and long. That tape is a valuable possession. As soon as the boys start fighting, some-



one, Doris, Roy, the maid, or even Sara Lee turns on the tape recorder and the boys stop to listen—and laugh. Roy sees to it that that particular tape is left on the recorder ready to be played at once. So far it's worked. Innumerable incipient fights have been stopped and the recorder isn't very old.

Since they've made the recorder their own the Pinneys have discovered many more ways for a family to use and enjoy tape. Strange as it may seem they haven't yet surprised guests at their home by eavesdropping on conversations nor have they taped a concert of fine music for their own use. The music that they do have on tape is a selection of Spanish and Mexican songs played by a local radio station several times a week.

Doris records not only the music but the commercials. She's found that commercials in Spanish are an excellent addition to her lessons. The announcer enunciates distinctly and he speaks slowly enough so that a person who isn't thoroughly fluent in the language can understand him. The language that he uses is the simple, conversational vocabulary that she will need in her future travels through Central and South America. The reason that Doris is concentrating on Spanish is that she and Roy hope to rent a cottage (not castle) in Spain and spend summer there with the children.

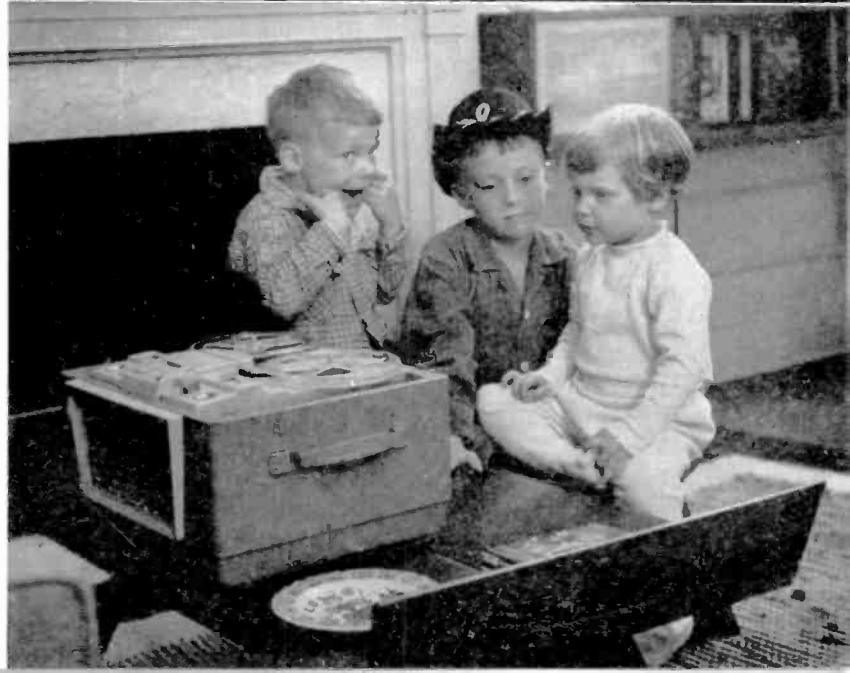
Along with Doris' Spanish studies she and Roy are working on their English via tape. Neither Doris nor Roy had suspected there was anything wrong with their speech until they heard themselves on tape. They then learned that they had several flaws. They share these errors with nearly everyone in the U. S. A. but the Pinneys have determined to correct themselves so their children will hear the language spoken properly. Each of them reads an article from the newspaper and then it's played back. During the playback, both point out anything wrong such as speaking too fast, slurring a consonant or flattening a vowel. They've learned how to color their speech by rising and falling inflections.

Sometimes they switch from reading a newspaper to children's stories. And now when the maid is busy she turns on a tape that Roy or Doris have made for Sara Lee and she listens as attentively as if her parents were present.

The children seem to benefit as much as their parents from the tape recorder. The family spent the Easter holiday in Florida and the boys quickly lost their 7 PM-to-bed habit in the long, warm days down South with no school. Doris solved that problem by promising to let them listen to their favorite tape after they were in bed, and so far that has satisfied them. The favorite bedtime tape is the one made during the fight. The boys giggle awhile after the light is out and they often fall asleep still smiling.

The recorder that they use is a Revere and they don't bother about Hi-Fi. For speech correction, story telling and many other purposes the  $3\frac{3}{4}$  speed recording is satisfactory. Even for Doris' Spanish music it's adequate. So far they use the mike only for speech correction and story telling because the quality of the tape is less important than the content. "But don't be surprised if we turn to Hi-Fi one of these days," Roy warned. "This tape hobby is habit forming just like photography, and I wasn't satisfied for long with a box camera."

Top: Roy and Doris Pinney tape a bedtime story for use by the baby sitter on their night out. Doris also uses the recorder to tape commercials from South American radio stations to aid in her Spanish study. Middle: Roy, Jr. records a story for smaller brother Tor. Lower: the youngsters listening to a taped bedtime story.





Dr. Capurso of Syracuse University notes a patient's mood responses to a recorded composition before prescribing a "musical diet" for him.

## MUSIC CAN MAKE YOUR MOOD

*... the therapeutic value of music for the sick has long been known. Here is what it can do for a well person—you.*

**by Doron K. Antrim**

**N**EXT time you get up with a grouch, which is likely to give you a bad day, try this. Treat yourself to a tested musical prescription which you have taped from a phonograph record, and see if it doesn't change your outlook.

And that's not all. There are other musical prescriptions for what ails you which can be taped from tested phonograph records. Suppose you come home plenty burned up by the way the boss told you off. Listen to a musical prescription for that state of mind and peace of mind may be the result.

Or suppose you're just low in mind; nothing adds up. Just find the prescription for that on tape and play it. It will help raise your spirits, as it has others. For now, with a tape recorder, you can have your own kit of mood music on tap, ready for use.

That certain kinds of music have the power to banish bad moods, has been known for a long time. You recall the Bible story of how David dispelled the black mood of King Saul with harp and song. Since then, many others have experimented with music as mood conditioners, in-

cluding Hippocrates, father of medicine. Now we know more about the kind of music that engenders certain moods, thanks largely to Dr. Alexander Capurso, psychologist-musician, Director of Music at Syracuse University.

Using a carefully selected list of recorded music, Dr. Capurso catalogued the mood reactions of 2000 students at Syracuse and Kentucky Universities. If over half the students were rendered happy, sad, or what have you, by the record selection, it was retained in the library of mood music. If not, it was discarded. As a result, we have a library of laboratory tested mood music on regular phonograph records which you can put on tape and use for your own benefit.

This is one of the more recent research projects underwritten by the Music Research Foundation of New York, whose roster reads like a Who's Who of psychologists, psychiatrists, medical doctors and musicians. Their findings, including those of Dr. Capurso, are being made available to hospitals, where music therapy is a healing technique, and factories which play music while you work.

The Music Research Foundation did a lot of work on



mood music before Dr. Capurso took over. Eight years ago, it began isolating selections that might encourage healthy emotions. Top musical authorities combed the literature from Bach to present day composers and chose 1227 selections, mostly instrumental.

They fell into stimulating and relaxing groups. The first was further broken down into happy, joyous, triumphant, restless, etc., feeling tones. The relaxing pieces ranged from nostalgic, sentimental, soothing, meditative, prayerful to downright sad.

From the lilting waltzes, soothing symphonies, pulse raising marches, the list was narrowed down to 105 records which were considered best from the standpoint of sustained and definite mood, personality of performing artist, quality of recordings. Tried on hospital patients, the list was given to Dr. Capurso to try on normal people.

Students attending the listening sessions heard a selection and marked on a card the kind and strength of emotion they felt; if stimulating, whether it made them feel mildly joyous, moderately happy or up in the clouds.

Nor were students influenced by the name of composer or composition, since neither was mentioned. The majority of the pieces were unfamiliar to them. Few had ever been exposed before to Bach's Mass in B Minor (Crucifixus). Yet 70% said it put them in a pronounced prayerful mood.

Ninety per cent indicated that the fourth movement of Mozart's Symphony No. 35 in D Major stirred a high feeling of joy. Three-fourths found the fourth movement of Tchaikovsky's Sixth Symphony sad. Flight of a Bumble Bee was restless and Clair de Lune very, very soothing.

The students came to the listening sessions with emotions ranging from gaiety to gloom. One had just received an unexpected check from home. Another was worrying about a tough exam. Another had fumbled the ball on the two yard line in the Big Game. In spite of these mixed emotions, when they heard a military band play Stars and Stripes Forever via high fidelity phonograph, 93% said they were on top of the world.

When all returns were in and carefully computed, 61 selections emerged showing the highest agreement on kind and intensity of emotion. In addition to the use of these selections in hospitals, can they help us jinx the jitters or give us a lift when low?

"Why not?" said Dr. Capurso, and cites some examples.

A student facing a major operation was becoming more and more fearful and jittery as the dread hour approached. Dr. Capurso suggested Ave Maria (Bach-Gounod), a prayerful piece. She played it over and over. Finally her fears began to abate, her nervous tension to subside.

Another student had difficulty getting to sleep at night. Her mind, she said, was a "squirrel cage." Although unfamiliar with Bach, she found this composer particularly effective, notably his Goldberg Variations.

It is just a coincidence but Bach wrote these Variations for an insomniac count, and his pupil, Goldberg, played them nightly in the count's bed chamber. They had the desired effect, for the count retained the services of Goldberg, although the latter didn't take it as a compliment to his playing.

Students come to Dr. Capurso with assorted requests. "Look," one asked him one day, "mornings I get up with a grouch. Can you do something about that?"

The psychologist prescribed some Sousa marches, Moz-

art's Symphony No. 35 in D Major (fourth movement), Hallelujah Chorus from the Messiah, Finale from William Tell Overture, last movement of Beethoven's Fifth Symphony, and albums containing the music of Oklahoma and South Pacific. Played mornings on awakening, the Oklahoma and South Pacific music particularly helped him start the day on the up-beat.

"What music is good medicine for a person, however, depends on a number of variables," says Dr. Capurso. "Before a doctor writes out a music prescription, he considers the patient psychologically and physiologically. Has he any musical allergies? Brahms's Lullaby, for instance, was a favorite soothing number to the listening students. But it certainly wouldn't relax anybody allergic to it."

He cited the case of a hospitalized veteran. His mother sang this number. Her untimely death filled him with resentment, bitterness, which emotions were associated with the song.

Musical allergies caused by unpleasant memory associations, can be persistent and annoying. A retired violinist in a European orchestra couldn't play Tchaikovsky's 1812 Overture without a bad emotional reaction. He was always excused from performance of the work. As a young man in the Russian Army, he and his superior officer were in love with the same girl and on a trumped up charge, the latter had him banished to Siberia. When he was marched off, the band played a patriotic tune Tchaikovsky incorporated in his 1812 Overture. It always recalls the indignity.

There are other causes of musical allergy, said Dr. Capurso. High notes grate on some people like certain tones do on dogs. Dogs howl. Humans have the same impulse. There's the case history of a man allergic to high notes. He attended a social function unaware that a soprano was to perform. She essayed a high C. It was a bit flat which didn't help the situation. The man felt a twinge of pain in a front tooth. The dentist found his tooth perfectly sound. It could have been a case of "Psycho-somatic" pain said Dr. Capurso.

Some people are allergic to low notes. Others can't stand loud music. Walter Pitkin says fast music annoys him,

Patients practice in a corner of the music room at St. Alban's Hospital. Musical instruction is provided by the Hospitalized Veterans Music Service.





Two music specialists, sent to the hospital by the Musicians Emergency Fund perform for patients in New York City hospital. Music has often wrought improvements when other means have failed.

gives him the feeling of not being able to catch up.

Cultural background is also a factor. Our Western music would have little medicinal value for an Eskimo. There is the story of the hospitalized Scot who was cured by bagpipe music which proved fatal to two Englishmen in the next ward.

Too, personality traits are to be considered. An introvert might need a larger and more powerful dose of stimulating music than an extrovert. In fact, as a basic diet, the extrovert would probably require more relaxed than stimulating fare. Dr. Capurso cited Hitler, essentially an introvert and his addiction to Wagner, a musical shot in the arm, and Mussolini, an extrovert, who favored the soothing violin.

"Knowing your peculiarities is a help in being your own doctor," said Dr. Capurso. "Do you require relaxation? Try some slow, soothing pieces and note results. In hospitals music is proving very effective among people tied in knots."

A GI with part of his brain shot away paced endlessly back and forth, back and forth in his room at Walter Reed Hospital. He clawed at the walls as though trying to escape. This went on for days and the doctors were stymied.

What would calm this automaton? Soothing music—could it so much as make a dent in his consciousness?

A phonograph was brought to his room door. Liszt's *Liebestraum* No. 3, Schubert's *Serenade*, Casals' magic bow playing *The Swan*, Franck's *Organ Choral*, No. 1, Italian folk songs from his native Italy, were played.

No effect at first. Then he stayed his relentless pacing for a minute. His taut facial muscles began to relax. He listened as though trying desperately to recapture something from his forgotten past. For days he had turned a deaf ear to the pleading voices of nurses. But the music reached him. Finally he sat on his cot for fifteen minutes and listened.

Soothing music didn't cure this man, but it accomplished a near miracle in easing his maniac tensions.

Dr. Capurso offered some further suggestions. Suppose you're dispirited. Your breathing and pulse are no doubt below par. You're listless. You begin with a piece that matches your mood, say Handel's *Largo*. The first effect of this is to steady your breathing and pulse possibly step them up. The vibrations of the music tend to tone up your

body. This body response is a decided help in boosting your morale. Too, there's an emotional response. The aesthetic quality of the music is very likely to lift your drooping spirits. Gradually you get into more stimulating pieces and begin to see the silver lining.

A piece that recalls pleasant memories is one of your best antidotes for gloom. At Walter Reed Hospital, a lieutenant was morbidly depressed, anxious, listless, unkept. He refused to see his family or girl. The music had no effect on him at first. Then at a session, it was learned that he and his girl with whom he had been engaged, had been very fond of dancing, and one of their favorite tunes was from *The Student Prince*. Which one he didn't know. The musicians began playing the Romberg score. With the first few bars of *Deep in My Heart*, the patient brightened. That was it. It was played repeatedly for him. His depression began to lift. He tidied up and wanted to see his girl. After a total of twelve sessions over a period of three weeks, he was discharged.

When one is depressed, a happy memory piece can work little short of magic. A woman whose husband was killed suddenly found little that would relieve her extreme nervousness. She thought she couldn't stand it one night, when she caught the voice of someone singing over the radio, *Just For Today*, a song she adored and sang as a girl. She had not heard it in years. It was like meeting an old friend. She sang it to herself frequently thereafter, often through sobs. More than any one single thing, she said, it helped her get a grip on herself.

Here we might add to Dr. Capurso's hints and tell you how you can assemble and use your own kit of mood music. With this article, you'll find a list of Dr. Capurso's mood music classified in four categories: 1) Stimulating, 2) Relaxing, 3) Prayerful, 4) Sad. Pick out about 10 selections from the first and five or six from the other three as a starter. Choose them carefully. Possibly you know and like some of them. Listen to these selections. Do they have the emotional reaction on you as listed? If so, get them on tape under the proper classification. Most of these compositions have been recorded by different performers, if you have difficulty locating the listed records.

Add to each category any other selections which produce the mood reactions of that category on you. Remember that if you like a selection, it's good medicine for you, and if the number recalls a pleasant association, it's tops as a tonic.

When your kit is ready for use, try it first as a morning pick-me up. Music can have salutary effects on your morning mood, particularly if you get up with a grouch, or if it's just one of those bad mornings. Take your morning selections from No. 1. Play them while you are dressing, showering, shaving. You'll be surprised at what a difference this can make in your disposition.

You'll have other occasions to use selections from No. 1. Play them when you want to switch from a negative to a positive state of mind; when you're worried or anxious, dispirited, full of resentment. When in any of these states, you may find it more effective to start with a number in No. 2, such as *Largo*, which tends to steady your pulse and breathing. Then work up to No. 1 pieces.

Now suppose, you're restless, jittery, all keyed up. Try pieces from No. 2 and possibly Nos. 3 and 4. A nostalgic piece is good at such times, or a prayerful piece, even a sad piece.

A doctor tried Jesu, Joy of Man's Desiring (Bach), a prayerful piece, on a patient who was so jittery she couldn't keep still. After playing it for her repeatedly, the woman began to unwind and got some sleep for the first time in three days. Keep playing a piece of this nature until you begin to relax. Don't be discouraged if immediate results are not forthcoming.

While playing for relaxation, it will help for you to stretch out, close your eyes and keep this picture in your mind. You're sitting on the bank of a pond. There's not a ripple on its surface. It's a beautiful day. You lie back, look up at the clouds, and dream. Life is wonderful. Now keep this picture while the music soaks in.

If your trouble is insomnia, try any pieces listed in Nos. 2, 3, 4. In one hospital where twilight music was played for three months, the use of sleep inducing sedatives fell off a third. Nocturnes, lullabies and serenades were played.

A friend who taped his sleeping specifics found at first that it required nine selections to put him off. Now he does it in four.

Now, suppose you're very discouraged. In truth, you're sunk. A light, lively piece would jar your mood at this time. Try one that matches your mood, such as a selection in No. 4. Stay with these pieces until a little light begins to break. Then gradually work up to the silver lining and pieces in No. 1.

As you use your own specifics, you should begin to get some measure of control over your feelings and emotions. It's worth trying for, isn't it? You will be following an approved technique down the ages. Even Aristotle voiced the credo when he said: "Emotions of any kind are produced by melody and rhythm; therefore by music a man becomes accustomed to feeling the right emotions."

## CLASSIFIED LIST OF MOOD MUSIC

### I—Stimulating, Happy, Gay, Joyous, Triumphant

<i>Composition</i>	<i>Composer</i>	<i>Recording</i>	<i>Performed by</i>
Stars & Stripes Forever	Sousa	Decca 2132-A	Hollywood American Legion Band, Colling conducting
William Tell Overture (Finale)	Rossini	Victor 20607-B	Victor Symphony Ork., Bourdon conducting
Symphony No. 5, Fourth movement	Shostakovitch	Victor 16631-B	Philadelphia Ork., Stokowski, conducting
Symphony No. 35, Fourth movement	Mozart	Columbia MM-478-1	Cleveland Symp. Ork., Rodzinski, conducting
Washington Post March	Sousa	Decca 2133-B	Hollywood American Legion Band, Colling conducting
Grand March from Aida	Verdi	Victor 11885-A	Boston Pops Ork., Fiedler, conducting
Prelude to Act III, Lohengrin	Wagner	Victor 7386-B	Chicago Symp. Ork., Stock, conducting
Symphony No. 7 Third movement	Beethoven	Columbia MM-557-7	Philadelphia Ork., Ormandy, conducting
Moto perpetuo	Paganini	Victor 14325-B	Minneapolis Symp., Ormandy, conducting
Emperor Concerto Third movement	Beethoven	Victor II-8322-B	Chicago Symp., Schnabel, pianist
Midsummer Night's Dream, Scherzo	Mendelssohn	Columbia MM-504-4 Album record 11789-D	Cleveland Ork., Rodzinski, conducting
Symphony No. 5, Fourth movement	Beethoven	Victor 8511-B	London Phil. Ork., Koussevitzky, conducting
Polonaise in A Flat Major	Chopin	Victor 11-8848-A	Iturbi, pianist
Symphony No. 41, Jupiter, fourth movement	Mozart	Columbia MM-565-6	N.Y. Phil. Ork., Beecham, conducting
Humoresque	Dvorak	Victor 1170-B	Kreisler, violinist
Symphony No. 5, first movement	Beethoven	Victor 15831	NBC Symp. Ork., Toscanini, conducting
Symphony No. 4, first movement	Brahms	Columbia MM-335-1	London Symp. Ork., Weingartner, conducting
Hallelujah Chorus, Messiah	Handel	Victor 35767-B	Mark Andrews, organist
Etude in G Flat Major	Chopin	Columbia M-368	Kilenyi, pianist
Ritual Fire Dance	DeFalla	Victor 10-1135-A	Iturbi, pianist
An American in Paris	Gershwin	Victor 35963-A	Victor Symp. Ork., Gershwin, pianist
Mefisto Waltz	Liszt	Victor 18409-A	Boston Symp. Ork., Koussevitzky, conducting
Golden Age Ballet Suite-Polka	Shostokovitch	Victor 11-8239-B	Nat. Symp. Ork., Kindler, conducting
Blue Danube Waltz	Strauss	Victor 16658-A, 16659-A	Minneapolis Symp., Ormandy, conducting
Golliwog's Cake Walk	Debussy	Victrola 7148-A	A. Cortot, pianist
Fantasia—Impromptu	Chopin	Victor 10-1141-A	Iturbi, pianist
Die Walkyre, The Ride of the Valkyries	Wagner	Victor 9163-A	Victor Symp. Ork., Coates, conducting

## II—Relaxing, Nostalgic, Sentimental, Soothing, Meditative

<i>Composition</i>	<i>Composer</i>	<i>Recording</i>	<i>Performed by</i>
Rhapsody in Blue	Gershwin	Victor 13835-B	Boston Pops Symp., J. S. San-romo, pianist
Liebestraum No. 3	Liszt	Victor 11-8851-B	J. Iturbi, pianist
Serenade	Schubert	Columbia 7183-M	Charles Hackett, tenor
Clair de Lune	Debussy	Victor 11-8851	J. Iturbi, pianist
Lullaby	Brahms	Victor 20174-A	Violo solo
Pavane pour une Enfante Defunte	Ravel	Columbia 7361-M	Kostelanetz Ork.
The Swan-Carnival of the Animals	Saint-Saens	Victor 1143-A	Casals, cellist
Waltz of the Flowers	Tschaikovsky	Columbia MM-395, 70069	Chicago Symp. Ork., Stock, conducting
Air on the G String	Bach	Columbia MM-703-6	Liverpool Phil. Ork., Sargent, conducting
Lost Week End	Rozsa	Victor 46-0000-A	Al Goodman Ork.
Sonata Op. 27 No. 2 (Moonlight) first movement	Beethoven	Columbia MX-273-1	O. Levant, pianist
Symphony No. 8 (Unfinished) First movement	Schubert	Victor 6663-A	Philadelphia Ork., Stokowski, conducting
Schererazade Suite First movement	Rimsky-Korsakov	Columbia MM-398-1	Cleveland Symp. Ork., Rodzinski, conducting
Symphony No. 6, Second movement	Beethoven	Victor 11-9012-A	N.Y. City Symphony, Stokowski, conducting

## III—Prayerful, Reverent

Organ Choral, No. 1	Franck	Columbia CLX-2002	Albert Schweitzer, Organist
Mass in B Minor (Crucifixus)	Bach	Victrola 9966-A	Philharmonic Choir, London Symp., Coates, conducting
Largo from Xerxes	Handel	Victor 6648-A	Chicago Symp. Ork., Stock, conducting
Jesu, Joy of Man's Desiring	Bach	Victor 4286-A	Temple Church Choir, London, Ball, conducting
Ave Maria	Bach-Gounod	Mus. Ed. Series C-33-A	Violin, cello, piano

## IV—Sad, Melancholy, Grieving, Depressing, Lonely

Sonata Op. 10 No. 3, Second movement	Beethoven	Master's Voice D.B. 8382	Schnabel, pianist
Sonata, Op. 35, Funeral March	Chopin	Master's Voice D.B. 2020	A. Cortot, pianist
Romeo & Juliet Overture	Tschaikovsky	Columbia MM-478-1	Cleveland Ork., Rodzinski, conducting
Symphony No. 6 (Pathetique) Fourth movement	Tschaikovsky	Victor 16749-B	Philadelphia Ork., Ormandy, conducting
Symphony No. 3 (Eroica) Second movement	Beethoven	Victrola 9453-A	N.Y. Phil Ork., Coates, conducting
Liebestodt	Wagner	Victor 8859-A	Flagstadt, soprano
Tristan & Isolde			Ork., Hans Lange, conducting
Symphony No. 7, Second movement	Beethoven	Columbia MM-557-4	Philadelphia Ork., Ormandy conducting

## AUTOMATIC BROADCAST SYSTEM



The equipment that will automatically keep the station on the air for better than 10 hours.

**A** COMPLETELY automatic broadcast station using tape has just been announced by Ampex after six weeks of field testing.

The machine will keep a station on the air for better than ten hours, making all station breaks, and commercial announcements, as well as presenting the program material.

After each segment of program material or announcement a sub-audible signal is recorded on the tape. The electronic brain "hears" this signal and starts the announcement machine. After

the announcement another tone starts the program again.

The use of the machine frees announcers to make up news without interruption and generally makes more efficient use of station staffs. Announcers would no longer be required to work late hours or on holidays. You can get the entire outfit for \$4,950 on 120-day delivery, including the tape playbacks, recorder-reproducer for local material, the electronic timer control and the special console.

## AUTOMATIC TAPE PLAYER— SELF-THREADING REEL ANNOUNCED

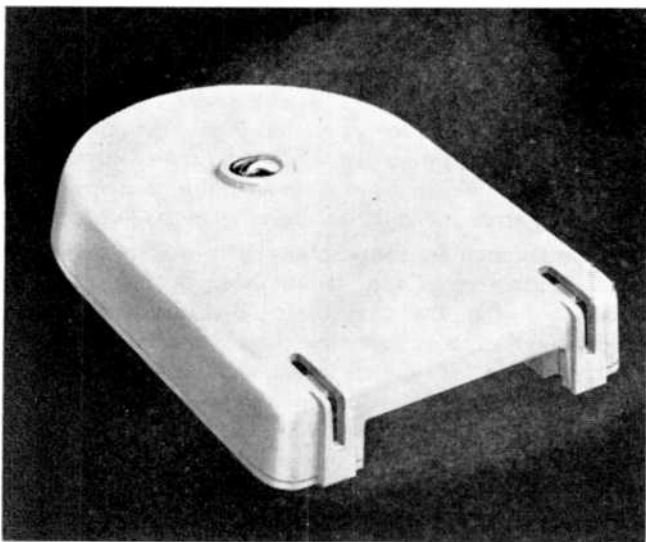
. . . new tape players and self-threading reels make taped music as cheap as disc recordings plus all of tape's advantages. Mass production started.

**A** NEW type of tape player and self-threading magazines made their public bow in Toledo recently when Bernard A. Cousino, of Cousino, Inc. revealed that plans were underway for the mass production of the units.

Already five tape machine manufacturers are tooling up to produce machines capable of handling the new self-threading magazine. It is believed that the first models will play both regular tape reels and the new magazines. Machines similar to the prototype shown above will also be produced. These will simply be playback units made to accommodate the self-threading magazines.

The magazines may eventually revolutionize the merchandising of music.

The magazines will be mass produced by the American Moulded Products Company at a price which will enable the music libraries to provide the customer with the same amount of music that is on an Extended Play record (16 minutes) at a price very close to the EP record price . . . with all the advantages of tape over disc in sound reproduction. The playback machines will also sell for a reasonable price (under \$50.00).



The self-threading tape magazine which may be used for music, like a disc, for repeating sales messages in show rooms and for juke boxes. It can hold 300 feet of tape.



The Audio Vendor Riviera, especially built to take the new self-threading magazines. Note the simplicity of the controls. These units are not yet available on the market.

The magazine requires no threading. It is merely inserted in the player, and the switch thrown to "play." At the conclusion of the number, the lever is positioned on the "eject" spot and the magazine pops out. The magazines hold 300 feet of regular  $\frac{1}{4}$ -inch tape giving a maximum playing time of 15 minutes at  $7\frac{1}{2}$  inches, or 30 minutes at  $3\frac{3}{4}$  inches. Provision has been made for removing the tape reel from the unit for recording on a regular recorder. The magazines will also have wide application for sales demonstrations and a unit is being developed that can be used for dictation in a car, in conjunction with the car radio.

When the magazine is inserted in the player, two small fingers position the tape on the head. No rewinding is necessary as the tape is in a complete loop.

Some people are already discussing the possibility of selling music via a vending machine. The customer would put the magazine in the slot, select his tune and deposit a coin. The machine would then record the music on his tape automatically. This would be a boon to party givers who might want new tunes late at night, if the vending machines had an outside-the-store connection.

Another possibility that suggests itself is that the music dealer of the future would need only to stock master tapes and blank magazines. The music could be dubbed on the customers' tapes as needed, for a fee.

The tape player, a prototype of which is shown above, is quite simple and can be operated by anyone. The model when demonstrated to recorder manufacturers, tape manufacturers and music producers has been received with great enthusiasm. The president of one company declared that he thought it was the device which will eventually surpass the record player in sales.

The basic Cousino patents are held by Browning Research of Toledo, who is licensing manufacturers to use the new development.

# Tape Goes to School

by Daryl W. Pelletier

*. . . here are some tips to improve the recording of children's groups.*



Pupils readily take to tape recorders. Here a group is recording a debate. The mike lays face up on the table.

**O**UR Radio Guild at Garland Street Junior High School in Bangor, Maine, was quite excited. We were certain that school-wise we had started something that would continue the success of the Guild. We had been doing a half-hour radio program called, "High Time" over one of our local radio stations, WGUY for two years. We had tried live shows at the studio and taped shows at our classroom studio. To climax our second anniversary we wrote, directed, and taped an exchange radio talk with a junior high school in Metropolis, Illinois. The theme of the exchange program was called, "Shaking Hands Across Eight State Borders."

The first transcription that Garland Street School sent to Metropolis was broadcast over Metropolis Station WMOK. On the same date on our local station, WGUY, the transcribed program by the Metropolis School was broadcast in Bangor. We found this a very successful way of meeting and knowing a little more about your neighbor. We followed this up with a second exchange with equal success.

Any teacher or interested parent can achieve the same stimulating results with a minimum amount of equipment. To those who would like to duplicate this interesting work, we offer some general procedures that will facilitate classroom tape recording. The average classroom with its plastered walls, slate blackboards, and glass windows isn't acoustically conducive to the best fidelity taping. With a little ingenuity, however, one can make any classroom more studio-like.

Place your maps above the blackboards on sleeve racks and pull them down over the slate blackboards. Draw the shades and if you have film curtains for audio-visual work, these should be lowered. This procedure will partially insure better resonant effects. Extraneous noise is standard child equipment so it is always a good idea to place a large sign on your door, "ON AIR KEEP OUT." This is for the boy who will open the door at the most inappropriate time to say, "Am I late?"

The materials needed are a tape recorder and a record player with musical recordings for theme and transitions. Let the children collect the sound effects needed. You'll be surprised at their ingenuity. Ours included everything from a class made wind-maker to a hammer and steel anvil. Your Industrial Arts teacher will be astonished at the flexibility of his equipment.

The manner in which you arrange your materials is of utmost importance. Here are a few tips that, in general, you will find helpful. Keep your microphone away from all motor apparatus, even the tape recorder itself. If you find your mike line too short, an extension can easily be made or inexpensively purchased. Motor noise is readily picked up on tape. Using a blotter or some cushioning material to absorb vibrations between the microphone and the table is always a good idea. Place your recorder mike close to the center of the room. This will allow ample space for participants. Keep your record player some ten feet away and carry mike over to the speaker to fade theme music or transitional selections. Your sound effect materials can be placed in any convenient spot from which the sound effect person can move in and off mike on relative cues. One precaution or rule to remember is the shorter the steps, the less possibility of footstep sounds.

Before doing any tape work it is wise to check your microphone. Most mikes that accompany tape recorders are pressure actuated, crystal type, and are quite sensitive in live areas. Note the pick-up pattern of the microphone, uni- and non-directional ones are the most widely used with tape recorders. If yours is a non-directional sensitive to all 360 degrees, your students will be able to sit around it for broadcasting. If your mike, on the other hand, only picks up sound from its face side, 180 degrees, it is a uni-directional. This is easily converted to a 360 degree mike by laying it face-up and having the participants talk over it.

The children at first will feel that microphone technique is unnecessary, but with your first playback distorted with moving feet, blasting, rustling papers, and playful noise, they'll realize the sharp-ear ability of the mike.

Adolescent voices are of such ranges that practice is essential. Generally two feet is a good distance to be away from a mike. We used a student to bring participants up to or back from the mike as voice range made necessary.

When children are using scripts, it is well to give some instruction on script use. Scripts used by inexperienced readers are often the cause of much distorted playbacks. Scripts should not be placed in front of microphone and speaker so that they diffuse sound waves. They should be laid at the stem of the microphone so that the children talk over the manuscript and just a little over the face of the mike. When children are standing around a microphone, the script can be placed on an angle to the microphone and a little lower than the microphone head. We found that standing always gave better results.

Instruction on how to discard used pages of script is essential, for the rattling of paper is annoying on playbacks.



Left: recording a play. The actors are taught to let script sheets drift to the floor to prevent paper rattles. Center: the sound effects crew uses a hand grinder to simulate an airplane motor. Right: the teacher of voice, or speech correction, finds the tape recorder invaluable.

Have children slide the pages off the script and let them float to the floor. They scatter widely, but paper noise is omitted.

There are physical techniques that help prevent mike consciousness with children. A variety are used depending on the age level of the child, but any psychological tip that promotes a relaxed atmosphere and alleviates tension is the one you will need. This will help prevent one of the things we found most disconcerting; we called it *blasting*. When young children start a sentence or come in on cue, the insecure instancy of their voices is apt to blurt and overload the tape. This is quite noticeable on playbacks. Confidence in a relaxed atmosphere is the only way to avoid this; taking deep breaths and a general calmness.

After a few tape productions your pupils will concentrate on the jobs they like best. We organized a complete staff, with a general manager, production director, script writers, engineers, and a sound effects crew. All our assignments were handled by the thirty-five members. Many of the interested students will become reasonably skilled at two or three tasks.

One of the most important assignments is the volume control operator. When recording, the electronic recording level indicator, bulb, eye, or meter, whichever you have, should be watched continually and manipulated carefully. Weak signals which do not cause the indicator to flicker will produce weak playbacks, while strong signals that cause the indicator to glow constantly will produce distortion. The best criteria we found was getting the wedge-like cloud in the bulb almost together on louder voices. This will usually produce the best results. Perhaps your equipment will differ slightly, but a thorough reading of your manual and following the directions will insure the best level quality in tape recording. Children with their present-day interest in science and technical apparatus will practice diligently to increase their efficiency at meaningful projects like program tape recording.

After your group has been instructed in the basic fundamentals of tape recording, you will find it feasible to spend some time on hand signals for cueing. All radio stations use a code method of silent communication. In restricted school work it isn't necessary to adopt this complete code, but some basic signals will have to be used. These should be confined to a few motions. The youngsters often make up their own and master them quickly. Don't be alarmed if mistakes are made even after instructions. On one occasion in one of our dramatic scripts, a gun shot was fired a minute ahead of cue. I needn't tell you what happened to our climax, but thanks to the principle of demagnetized

erasing we were able to replace the wail of laughter and record it over again.

The versatility of the tape recorder leaves you at liberty to erase mistakes and edit the complete recording. If you use a musical theme, as we did, for an introduction and for transitions, it is well to master one beginning and snip this portion of the tape for reuse. We worked for some time getting a perfect introduction of "School Days" that would spotlight our beginning and fade to a pianissimo of background music that would blend with an announcer's voice.

Always, always play back anything you send away, for it is better to be master of your own surprises than the source of a good laugh to the friends receiving the transcription.

If you are sending your tape recording to a friend or school or radio station to be played, use the first few minutes of the tape for instructions and directions. Tell exactly what speed you rolled your tape, the length of time the program will take, and where and under what conditions you recorded the program. Jim Firmin, General Manager at WMOK, and Cliff Reynolds at WGUY pointed out that radio engineers can at times enhance amateur performances when conditions are known.

Our school tape recorder has been more than a good investment. It has served as a rich source to the English and social studies teacher. It has been a must to the teacher of speech and music. It has served as a stimulant to the writing of scripts in English classes. It finds uses each day in other classes.

For our radio group it has been our main artery, for we have recorded school assemblies, operettas, play by play descriptions of our football games, and interviews with players and coaches. It has enabled us to get much informative material from tape libraries, all stimulating, instructive, and enjoyable. We're glad tape came to school.

As tapes are exchanged with another school and broadcast by local stations, the youngsters come into contact with professional equipment and techniques, which helps them to better understand the principles of sound recording—and get better results from their own tapes.



# Recording the Orchestra

Part II of four parts

. . . when the group is large and the studio small you can use the split setup.

by L. L. Farkas

THE arrangement of instruments in straight set-ups will work very well for recording small and medium-sized orchestras in places where there is plenty of room; but when you try to handle these or larger groups in a limited space, you may find it very difficult to maintain both a good balance and a close perspective. The split orchestra set-up was introduced to help solve this situation. By utilizing the duo-directional property of the ribbon microphone, the orchestra can be split into two parts and the various instruments arranged within the two pick-up beams of the microphone. This has the advantage of bringing closer in those sections previously far back from the microphone and naturally shortening the overall perspective.

With this kind of set-up, the strings and wind instruments are generally placed on opposite sides of the microphone. The guitar is left in its close position. Then you can set the bass viol and piano behind and slightly to one side of the violins, and the brass section on the other side, in a row behind the saxophones.

Where space is restricted there is often no room to place the bass and the drums back far enough to produce the correct balance. This can be remedied by setting these instru-

ments on the dead side of the microphone but still close enough to the pick-up beam so that the required volume and perspective are obtained.

One word of caution: when you place an instrument on the dead side of the microphone, you must take particular care to check the effect of its position on its recorded tones; for changes in volume and perspective from an on-beam to an off-beam location are quite sharp.

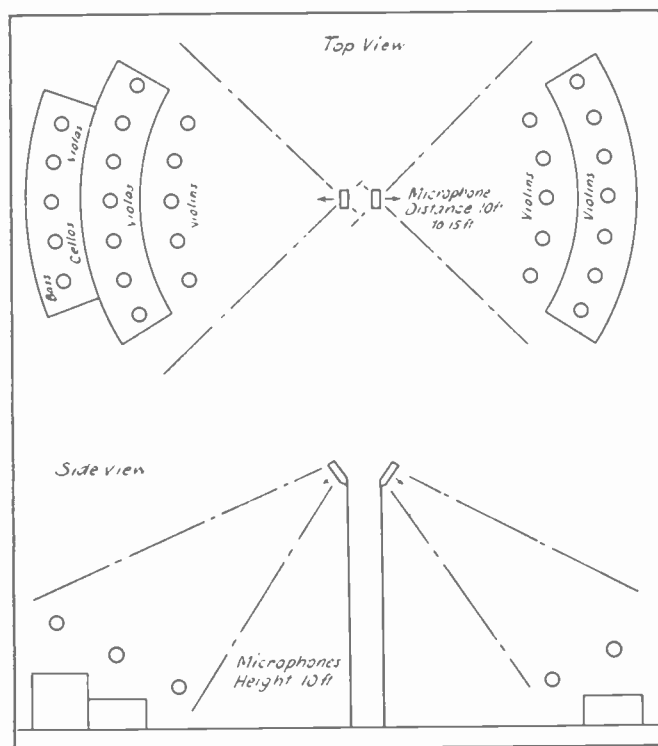
Usually the strings are set up in a close-knit arc about four to five feet away from one pick-up side of the microphone while the saxophones or woodwinds form a similar but slightly closer arc on the other side. The head of the microphone should be inclined toward the strings. This effectively raises the beam slightly above the wind instruments while it places the strings in the more direct pick-up path, thus compensating for their relatively lower intensity. In this way the tones of the two sections are equalized.

If the orchestra is fairly large, there may be too many violins to set them on one side of the microphone. In such case you must split them also, placing one row of violins on each side of the microphone. And if the orchestra is very large, with a great number of strings, then even two rows per side may be necessary: the first fiddles being placed in the first row of each side and behind them the second fiddles, the violas and the cellos.

Now when the split set-up is used for small orchestras a platform may not be needed for the brass section, but when the size of the orchestra is increased, the platform becomes a necessity to give the instruments in the back rows an equal shot at the microphone. For this reason the instruments in the third rows of our large orchestra—the saxophones on one side of the microphone and the woodwinds on the other side—must both be raised on single platforms while the brass section, still farther back, must be placed on a double platform.

The guitar occupies the same close position that it assumed with the small orchestra, but the piano must be pushed closer to the side of the strings to keep it from being crowded out of the microphone beam, especially when the first row is composed of four or more violins. You can then set the bass viol on the platform behind the piano, pushing the drums and other percussion instruments still farther back, to the last platform. When an accordion is used, it should be set at about the same distance from the microphone as the guitar but on the other side, close to the edge of the microphone beam.

The microphone must be kept fairly low, between four and five feet, as raising it higher would decrease the level of the nearest instruments while increasing the volume of the brass section by giving it a more direct shot at the microphone. Yet keeping the microphone low causes the singing quality or brilliance of the strings to be lost. One solu-



This shows a type of setup on strings using the distant perspective. The microphones are placed at a height of 10 feet, inclined downward to give an even pickup. They are placed 10 to 15 feet from instruments.

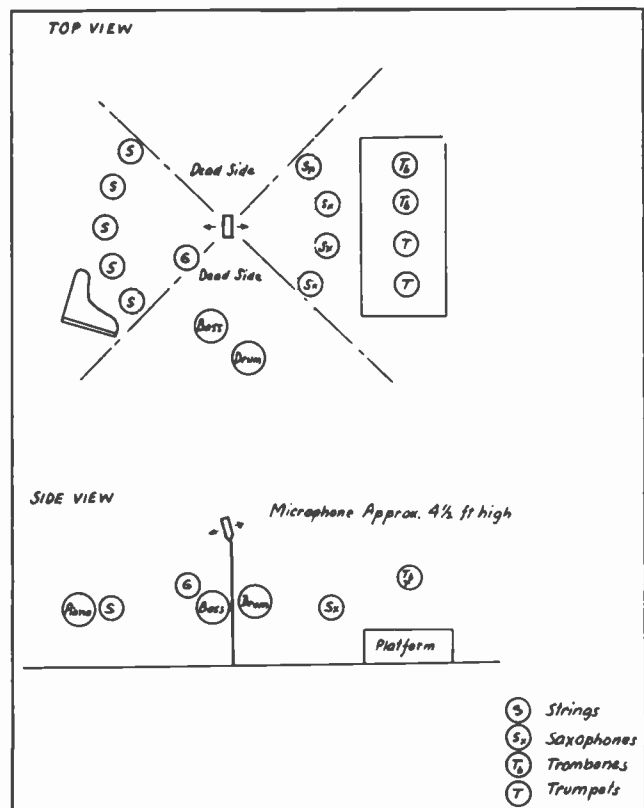


tion is to push back the whole orchestra on both sides, thus placing the first two rows farther back from the microphone to obtain the correct distance for the strings. Unfortunately the additional space required is not always available. You must then compromise. To maintain the closer perspective on all the instruments you must be willing to give up some of the brilliance of the strings. However in this kind of pick-up this is generally not too serious as an orchestra for which a close set-up is required usually is not the strict symphonic type for which the correct hall quality of the strings is a necessity. More often the solid tones of the violins fits its type of music more closely. Of course in such a case you must be the final judge. You have to decide whether or not the split set-up gives you the kind of pick-up you want for the orchestra you are recording. And the best way to choose correctly is to listen to the playback.

In spite of this slight drawback the split set-up can really be used to best advantage for making a close pick-up of a large orchestra. When called upon to handle too small an orchestra, it may cause the instruments to sound disconnected, their tones to seem hollow and thin. Sometimes this condition can be remedied by bunching the instruments very close together; but although this may result in a passable pick-up, it still will not produce the well-rounded and intimate quality obtained with the larger orchestra.

On the other hand some difficulties may also be encountered when using the split set-up for close perspective pick-up of a large orchestra. You may discover that at times the volume of the different sections of the orchestra will change in a way not specified by the orchestration. There are several causes for this effect. When the musicians of a section play a featured passage they either stand up or raise the bell of the instrument in order to increase the volume of their tones. Now if they do not have time to stand up, or they happen to hold the bell of their instrument down, or again if the tones of the bass instruments with their heavy characteristics mask some of the other voices, then the effect will be lost. Since it would be impractical if not impossible to make the musicians change their position for each effect, especially when they have numerous solos, muted passages, or other special parts to perform, the solution is to control the volume of the separate sections more closely. This means not only more microphones—possibly one to each section of the orchestra, but also some means of listening to the orchestra as it is being recorded so that compensation can be instantaneous. To do this you should have a multi-position mixer and also own a type of recorder which permits you to hear the sound that you are recording. (For instance with a Webcor 210 type this can be done by placing the output selector switch on position 4). Or, if you own a combination mixer and audio amplifier—often used to boost the low level of dynamic or ribbon microphones, then you may be able to monitor your recording with either headphones or through a power amplifier over a separate loudspeaker. Of course on headphones reception both the low and the very high tones may be lost, but with care you should still be able to tell when the tones from a section drop unusually low and be ready to counteract the change.

When using a loudspeaker to listen to the sound being recorded you must make sure that the tones from the loudspeaker are not being fed back into the pick-up microphones. You can detect this effect by the hollow quality of the tones or in an extreme case, by the howl built up in the loudspeaker. To remedy the condition, the microphone should be



A type of split setup for close perspective on a medium size orchestra. This uses one ribbon mike set about 4 1/2 feet high. The brass and drums are placed in the dead area to the side of the mike as shown above.

turned away from the loudspeaker, the amplifier and the loudspeaker should be removed from the vicinity of the microphones, or the monitoring volume should be cut down. In a very live room you may have to resort to all three of these remedies, and you may even have to isolate the recorder and monitor system to another room, as is done in broadcast stations by means of the control booth. However this is entering into commercial type of operation which cannot be used by the average recordist. In most cases placing the loudspeaker at a good distance from the microphone and keeping its volume fairly low will furnish the necessary sound monitoring without affecting the quality of the recording. By this method you can maintain a constant check on the volume balance of the different sections. And if a solo part or section fails to be heard when it should, you can immediately boost the level of the sound from their microphone to supply the missing volume.

With the necessary monitoring facilities multi-microphone split set-ups can be used for close or distant perspective. In the close set-up the strings are generally split around one microphone while the woodwinds, brass and percussion instruments are arranged in a straight type of set-up and picked up on another microphone whose beam is at right angles to the unit picking up the violins. To isolate the two microphones further, the instruments in the straight set-up can be placed on platforms. In this way the microphone must be raised much higher than the unit used for the split set-up portion of the orchestra. And since its head must be tilted downward to aim its beam at the desired sections, possibility of pick-up from its back, if it happens to be a duo-directional type, or interfering pick-up from around the sides of a single beam microphone will be kept down to a minimum. (to be continued)



# Tape Makes it Easier

by  
DR. HANS WOLF

*Musical Director, Livingston Electronics*

*. . . recording a symphony is a painstaking, difficult task, made easier by tape.*

recorded portion into the original tape (after cutting out the unsatisfactory part).

3. I could erase all music on tape and use the same tape all over again.

These discoveries made me feel very happy and I started my recording session with a wonderful feeling of relaxation. Playback, re-recording, erasing—these were the magic words which made me feel at ease. Now any mistakes could be eliminated without repeating endless stretches of music. Now I could check and recheck sound and balance on tape before I actually started recording.

I began rehearsing the orchestra while my sound engineer fixed microphone positions, checked the sound picture and then started the tape machine for a try-out. After he had recorded a few loud and soft spots of the music "to set the level" he called me for listening. Now when you listen to a tape playback with the thought in the back of your mind that thousands of people will eventually listen to that recording, there are so many things you want to watch for that you wonder if you can keep track of them all. Here are the most important ones: 1. mistakes in the music, 2. interpretation, 3. quality of sound, 4. true instrumental color, 5. instrumental balance and definition, 6. balance of dynamics, and 7. extraneous noises.

I listened and then listened again, asking for two or three playbacks of the tape. (It is almost impossible to be aware of all defects in one playing.) This is what I discovered. My woodwinds, especially the flutes, sounded too distant. My strings had a piercing quality, not quite true to their natural color. Chairs of some players squeaked. There was too much of a hall echo and my brass section was poorly defined, sounding muddled and not crisp. All this and more I heard crystal clear on the tape as it was played back to me with brutal realism.

Then all faults were corrected—partly by moving microphones, partly by adjusting the positions of some of the players. Then the same procedure was repeated. I recorded another small portion of music—listened again, adjusted again, until I was satisfied.

And now I was ready to record one movement of the symphony. I started out with the second movement of Beethoven's "Fifth." Why the second movement? I was in the mood for it—that is the best guarantee of a good performance. After I had completed the movement, I doubled my listening efforts during the playback and found only one poorly blended woodwind passage. There was also one short click which I had caused with my baton while conducting. The click was short enough so that it could be cut out of the tape without damaging the music. (To cut out

THE medium of tape has brought about a revolution in the recording industry. The cry of a baby, a birthday message, a business letter, a patient's heart beat, speeches, radio shows, symphonies (live or pre-recorded) all are being reproduced on tape. But this type of reproduction is like "photography" of sound. It is the closest image of the original source of sound yet achieved. Apart from its value from the standpoint of fidelity and "presence," tape has set a spectacular new standard of artistic performance. How could such a result be achieved by the application of this new medium?

Many musicians, familiar with present-day recording techniques and the use of magnetic tape, remember well the days when recording a piece of music meant the cutting of a master record on wax or acetate. There was no possibility of eliminating mistakes except by cutting a new master. What difference today for a singer, instrumentalist or conductor!

When I conducted my first symphony on tape, the most exciting moment was when I made what I considered to be three amazing discoveries:

1. I could immediately play back the music I had just recorded on tape, and could listen to it any number of times. I could start the tape anywhere—stop it anywhere.
2. I could cut the tape and splice it together. That meant that I could re-record any small portion of music of which I did not approve. I could then splice the re-

longer pieces of tape would interrupt the musical flow.) As to the faulty woodwind passage, I looked for some favorable cutting point in the music (usually a rest or some kind of a break), at which the defective bars could be cut out of the tape without damaging the musical texture. (See illustration.)

This was done and the tape was cut at the points indicated on the illustration. Then I re-recorded a short part of the music, cut out the woodwind passage in question and spliced it into the original tape. The splicing had to be done at the exact spots in the music where the bad version was cut out. Now the operation was finished and one movement was recorded.

The cutting and splicing operation is called "editing." Endless situations demonstrate the possibilities where in the musical score cuts can be made and where they cannot. Often artistic considerations rule out certain cuts and splices although they may be technically possible. A musical phrase, for instance, should not be cut off in the middle (even if technically possible), as the melodic or dynamic balance might suffer. Rather should the whole phrase or more be re-recorded.

There are certain hazards in connection with the new tape-editing procedures: the danger of becoming too technical; the possibility of becoming super-sensitive; the temptation to re-record too many sections, so that the great line of interpretation as a whole will be lost. In my experience, as musical director of many recording sessions, such artists as Vittorio Gui, the late Fritz Busch and Albert Spalding, have always preferred a better interpretation to minor instrumental or technical improvements. Sometimes they have even refused to conduct a "retake" (re-recording) because they succeeded in achieving the artistic interpretation they wanted and would not sacrifice it for a minor imperfection. Sometimes it happens that the constant dealing with tape makes an artist hypercritical. He might thus erase an excellent portion of music for some minor defect and not be able to re-record it musically with the same vigor and intensity. Therefore, all retakes must be kept for final selection until all editing has been done. The selecting must be done with careful consideration from artistic and technical viewpoints. After completion of the master tape the rejected versions can be erased.

A sensitive editing job which received wide newspaper publicity was performed at a recent recording session. The famous Wagnerian soprano, Kirsten Flagstad, was not satisfied with her high "c" during one of her recording sessions and promptly invited her famous colleague Elizabeth Schwarzkopf to substitute her high "c". The "borrowed" "c" was spliced into Miss Flagstad's tape.

There is no doubt that tape has set new artistic standards of performance. The medium is so flexible that, if used wisely, it permits the artist to correct his performance continuously during the session. Repeated listening to the playback toughens his self-criticism, and in consequence his artistic demands increase amazingly.

The record industry today has given proof of its plans to promote tape recordings for home consumption. A number of firms are taking the lead in this new endeavor. They have already released binaural tape and binaural playbacks (with two loudspeakers for playback). This means that concert hall fidelity will come into the average home, and at a reasonable price. The near future will demonstrate a steady continuance of this development, which would be



When it is necessary to re-record part of a composition it is only necessary to record the faulty part, not the whole piece as was done in disc days. The score is marked as shown for the conductor's guidance.

a revolutionary conversion similar to the appearance of the LP not so long ago.

The most stunning experience in this field, however, is binaural reproduction on tape—the equivalent in sound of the 3-D motion picture. I remember a scene during a recent recording appointment at the famous Teatro Comunale in Florence, Italy. I had just supervised a series of sessions with the Florence May Festival Orchestra under Vittorio Gui, and was busy, one evening, editing tapes in a small room of the Teatro Comunale. Vittorio Gui was conducting a concert in the big auditorium. During the intermission I was called up by two unexpected and prominent visitors from Vienna. They were the chief of Vienna's largest radio station and his wife, Prof. and Mrs. Heinrich Kralik, who happened to be passing through Florence. Prof. Kralik, who is one of Vienna's leading music personalities, dean of critics, bearer of the Mozart Medal of the City of Vienna, could be called, "the man most exposed to tape recordings in the country of Austria." I therefore immediately took advantage of this splendid opportunity to expose this authority to my just-completed binaural tapes. The reaction was more than I ever had expected. Since my loudspeakers had already been dismantled I offered my earphones to Prof. and Mrs. Kralik. After they had heard the first bars of the Tannhaeuser Overture, an actual battle took place between the couple who tried to snatch the earphones from each other. The new sound experience was such a sensation to them that they jumped around like children, acting as if they had never heard the Tannhaeuser overture before. No further triumph was necessary for me.

If these highly sophisticated people could react so enthusiastically it was sufficient proof that binaural tape recording is here to stay. For the benefit of the "earphones only" fans of the binaural *avant garde* I would like to say that I found that two correctly placed loudspeakers produced the same reactions as with the earphones. It is not a question of earphones vs. loudspeakers—it is the binaurally recorded tape which creates the sensation. What is the mystery of it? Photography of sound in space. When does it come? It *has* come.—It has come, along with new tape-recording techniques and with hitherto unheard-of standards in musical performance.

# Build this RAMBLING SPEAKER

*... it's much easier to take the speaker to where you are than to lug the recorder.*

by  
Robert W. Luebke

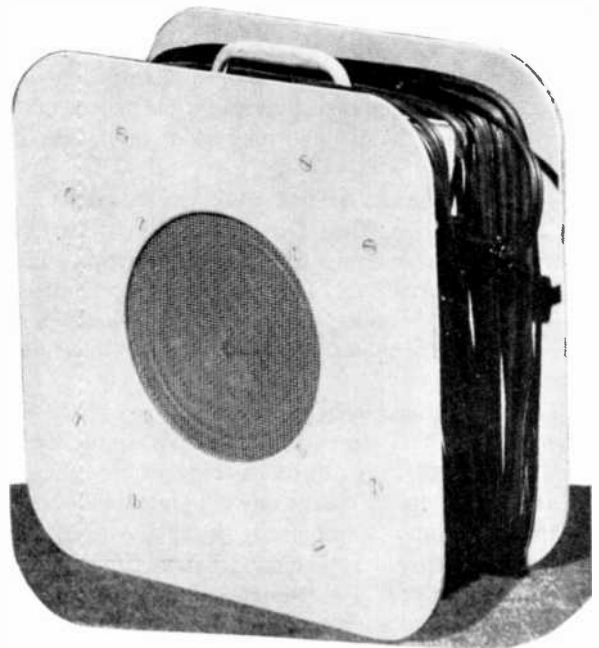
**M**OST tape recording machines are equipped with a jack marked "speaker." The use which this handy facility receives will depend on whether or not the machine's owner has a speaker that is convenient to use. This article explains how a speaker of good utility can be built inexpensively in the home-workshop. This speaker is planned to make possible listening to tapes in almost any room of the house without moving the recording machine. A long wire enables listening at the dining table; kitchen; living room; bedroom; screen porch; or bathroom.

Built in facilities for earphones allows listening while relaxing on the living room sofa without interfering with TV or any other living room activity that might be in progress. It is small enough to fit on the dining table. The wire by which the speaker is attached to the recorder can be made as long or as short as required by merely un-reeling as much wire as needed.

The speaker building project begins with getting the



Earphones can be plugged into the jack for listening without disturbing other members of the family. The author shows how to get a bit of solid comfort without lugging the recorder to the spot.



necessary materials. Any hardware store can supply:

8—2" brads	.02
1—Drawer pull or sash handle	.10
22—#6 x 1/2" flat head wood screws	.30
7—1/8" x 1/2" flat head bolts	.25
1 pc.—6" x 8" window screen wire	.15
1—Small tube wood glue	.10
1—Sheet medium rough sandpaper	.10

Any radio parts company can supply:

1—5" PM (Permanent Magnet) speaker	2.26
1—Speaker or phone plug	.33
1—Closed circuit phone jack	.26

30 to 50-feet P.O.S.J. type lamp cord 3 1/2¢ per foot

Any lumber yard; cabinet shop; or planning mill can supply:

1 pc. 10" x 20" 1/8" tempered Masonite	.50
(or 2 pcs 9" x 9"; 1 pc 1 1/2" x 2 1/2"; 1 pc 2" x 5" cut to order thus assuring accurately square cuts)	
1—pc 1/2" x 4" x 30" white pine lumber	.35
(or 2 pcs 1/2" x 4" x 6" and 2 pcs 1/2" x 4" x 7" cut to order thus assuring accurately square cuts)	

The total cost, with about 35-feet of cord would be just less than \$5.00.

The tools required are common ones found in most home-workshops: Hammer; screwdriver; steel square; hand saw; compass (keyhole) saw; auger brace; 3/8" bit; 1" bit; countersink bit; hand drill; 1/8" drill; 1/16" drill; soldering iron and rosin core solder; tin snips (to cut screen wire to size).

To build the speaker, cut 2 pcs. 1/2" x 4" (actually 3-5/8") 6" long (Parts A and B in accompanying sketch) Cut 2 pcs 1/2" x 4" (Parts C and D in sketch) later these will be nailed and glued together to form a box measuring 3-5/8" wide and 7" x 7" square (outside measurements).

Now cut 2 pcs. 1/8" tempered Masonite to 9" x 9" (Parts E and F in sketch) Round the corner to a 1" radius with saw and sandpaper. Mark out holes (but do not drill just now) as shown in sketch to form front and back for the 7" x 7" box. Cut 1 pc. 1/8" tempered masonite to 5" x 2" to form Part G in sketch. This piece will fit behind Part E to

hold screen wire in place. Cut 1 pc.  $\frac{1}{8}$ " tempered Masonite to form Part H in sketch,  $2\frac{1}{2}$ " x  $1\frac{1}{2}$ ". This piece supports the closed circuit jack which peeks through the 1" hole in Part A.

Next drill and cut all the holes. Begin with the speaker opening in Part E. It is easily cut to shape with a carpenter's compass (keyhole) saw. To smooth the saw cut use a piece of sandpaper held over a tin can or bottle just slightly smaller than the hole. With a little patience and care this will produce an opening of pattern maker's quality. Drill and countersink holes for screws and bolts in Parts E and F.

Now drill center  $\frac{1}{8}$ " hole only in Part G. Fasten Part G and Part F together through the center hole with one of the  $\frac{1}{8}$ " bolts; and line it up evenly. Now drill the  $\frac{1}{8}$ " holes at the ends of Part G and place a bolt in each to hold it in place. Now drill the 1" holes and they will line up perfectly to hold the screen wire in place. After drilling the holes remove the bolts and separate Parts F and G until final assembly when the screen will be attached.

Drill a  $\frac{1}{8}$ " hole in the ends of Part H as marked on the sketch. Then drill a  $\frac{1}{16}$ " "line-up" hole in the center of Part H and also drill a  $\frac{1}{16}$ " "line-up" hole in Part A as marked on sketch. Line up Part H on the rear side of Part A by placing a nail through the  $\frac{1}{16}$ " hole made in these two parts.

Line up Part H on Part A so it is even, or square, then place wood screws in the outside holes of Part H and temporarily screw it to Part A. Now remove the screws so that Part H is separate from Part A and drill a  $\frac{3}{8}$ " hole in the center of Part H. This hole will accommodate the closed circuit jack in the final assembly. Now drill a 1" hole in Part A at the place of the  $\frac{1}{16}$ " "line-up" hole. Round the outside edge of this 1" hole with sandpaper.

Begin the final assembly by fastening the closed circuit jack to Part H so the smooth side of Part H is toward the front. Next, screw Part H, with the jack in place, to the back of Part A so the jack peeks through the 1" hole. Then nail and glue together Parts A-B-C and D to form the 7" box.

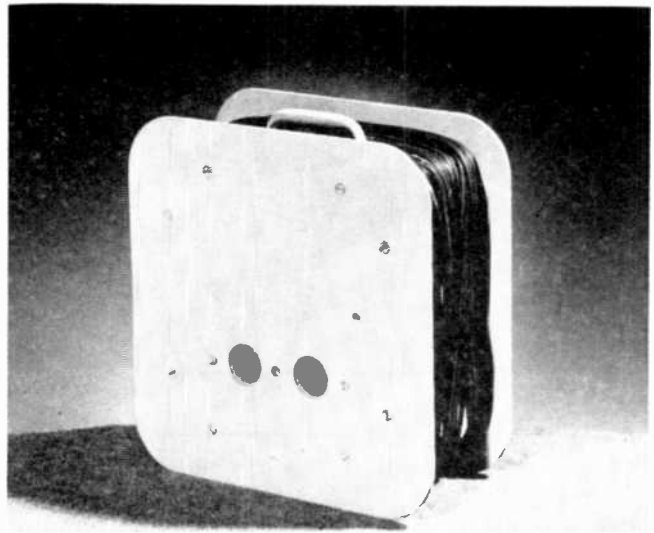
Next, cut a piece of screen wire to the same size as Part G (2" x 5") place it between Part F and Part G, put some glue around the edges of the screen; then bolt it into place with three of the  $\frac{1}{8}$ " x  $\frac{1}{2}$ " bolts. Part G should be on the back of Part F and if placed correctly will line up perfectly with it. The glue is used to keep the screen from vibrating.

Fasten the speaker in place on Part E with the screen bolted between the speaker and Part E. The use of screen is important to prevent damage to the speaker. It is especially necessary where there are small children that might puncture the speaker if left unprotected.

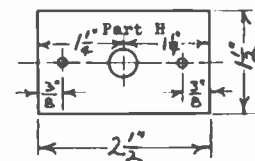
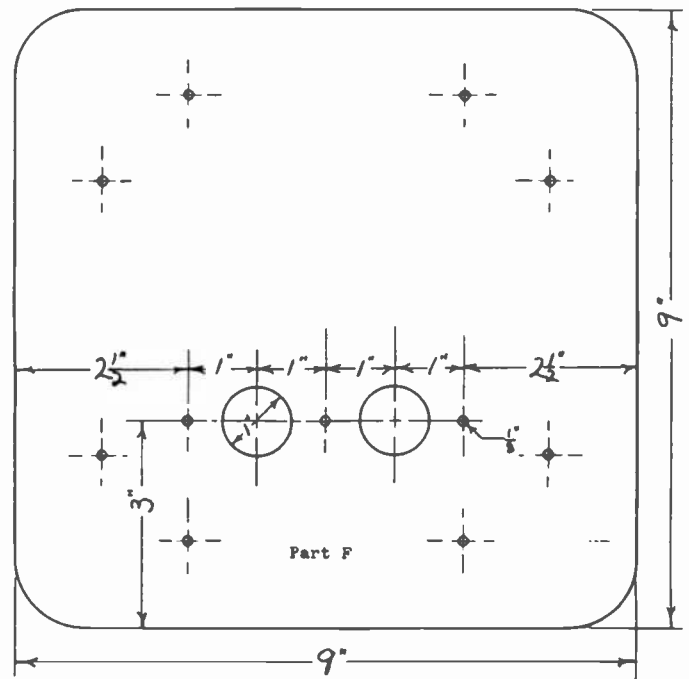
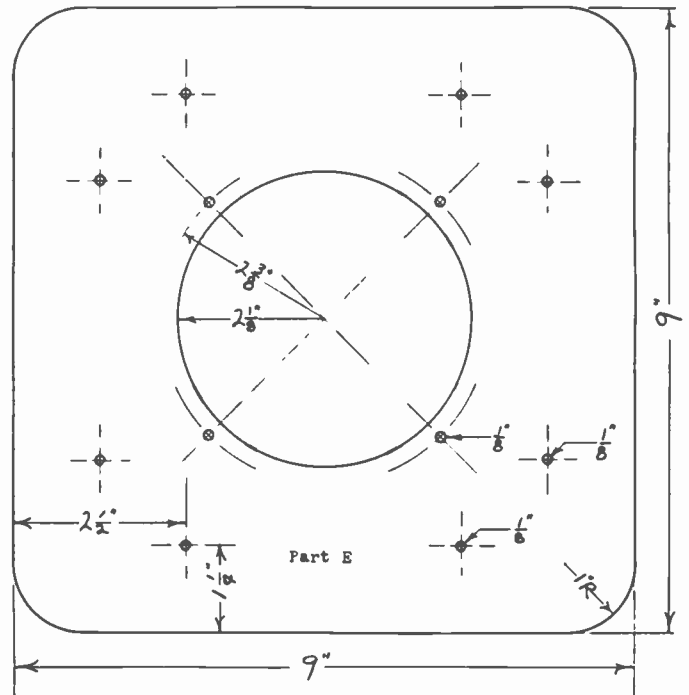
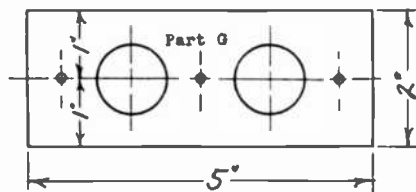
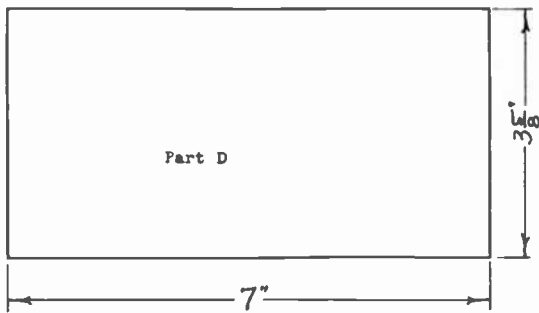
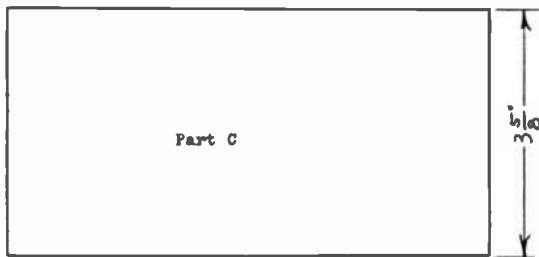
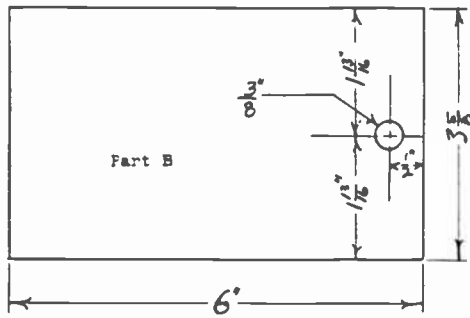
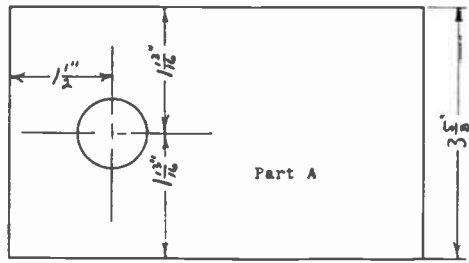
Line up and fasten Part F to the 7" x 7" box using the #6 x  $\frac{1}{2}$ " flat head wood screws and glue, (nails and glue will work just as well).

The project is now far enough along to begin wiring it. First pull one end of wire into the box by passing it through the  $\frac{3}{8}$ " hole in Part B. Put a knot in the wire so any pull will be on it rather than on the soldered connections. Connect the speaker and jack according to the wiring diagram shown. Connecting it this way makes the speaker operative until the earphones are plugged in at which time it is automatically silenced.

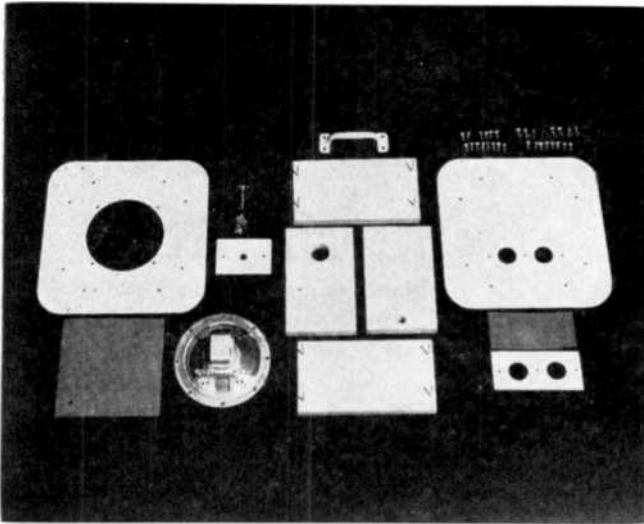
With the wiring completed, Part E can be screwed into place. Use screws only *DO NOT USE GLUE*. This panel must be removed in case of repairs or changes and therefore should be left in a demountable condition, that is, it



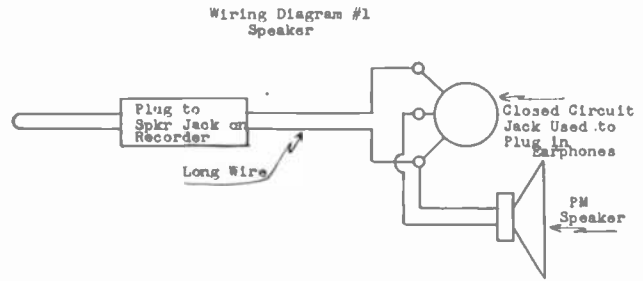
Top: rear view of rambling speaker. All holes are covered with screen wire to prevent inquisitive fingers from poking holes in speaker diaphragms, etc. Wire coils around unit and handy handle makes it easy to carry. Center: the speaker in use in the living room. It is compact enough to be placed almost anywhere. The recorder is in another room where it is connected to a radio and 45 rpm record player. Lower: dining and listening to tapes go well together. The author is shown catching up on the latest tape gossip as he eats his lunch. Moving the speaker to the listener is much easier than moving the recorder and plugging it in.



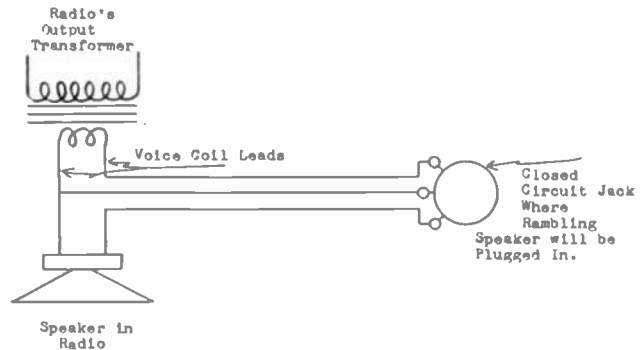
Above is shown the plan for each piece. The holes in piece "F" which forms the back of the rambling speaker should be one inch as called for in order to make the speaker sound right. One-eighth inch tempered Mascnite is used for the front and back (parts E & F) and for the small parts (H & G). Parts A, B, C & D are made from 1/2" x 3 5/8" white pine.



Above: The parts for making the rambling speaker just prior to final assembly. Everything is shown here except the rubber covered lamp cord used to connect the speaker to the recorder. Right: the hook-up diagram, at top is shown how the lead from the recorder is connected to a closed circuit jack in the speaker. The lower drawing shows how a closed circuit jack is wired in the radio or TV set, or in the recorder if it does not already have an external speaker jack. The plug on the wire leading to the speaker is inserted in it.



Wiring Diagram #2  
Installing Spkr Jack Into Radio



should not be glued in place. Line up Part E with Part F which is already in place, so it will stand firmly without "wobble." Line it up by sight or by measurement; then fasten *one* screw, with this *one* screw firmly in place set the speaker right side up; if it wobbles, gently push it into shape then drill 1/16" "line-up" holes and finally screw in the 8-screws firmly. Fasten the plug to the other end of the long wire. Attach a handle to the top of the box and the project is finished. The jack for the earphones provides a handy

place for the end of the wire (speaker plug) when the wire is reeled up.

To use the speaker plug it into the recording machine then pay out as much line as you need to get where you want to listen; leaving any extra wire on the speaker.

If you like the idea of a rambling speaker and want to use it in connection with the radio just wire a jack (just like the one used in this project) into the radio's voice coil leads (see wiring diagram) and plug it in.

## TAPE CLUB NEWS

Victor Goss of California has suggested that a tape recording of a reading of each issue of *The Voicispondent* be sent "round-robin" to all blind members. Such a tape will be prepared.

Vic would also like to have all blind members get acquainted with each other, so if you are blind and hear of this or if you know of such a member, please send a card to Vic, c/o the Voicispondence Club.

The John Claytons of 6905 Gleason Avenue, Dayton 7, Ohio, are members of four tape correspondence clubs. These folks were bitten by the "photographic bug" as well as the "tape bug" and they have a friendly way of sending their pictures along with tapes they exchange. The pictures are attached to the outside of the box holding the reel of tape, one on each side. While listening to the tape you can associate voices with faces. This provides a pleasurable method of corresponding which fellow club members may be interested in following.

J. M. Donovan, P. O. Box 97, Belle Glade, Florida, would like to correspond

with anyone interested in the Big Brothers of America Association. This versatile gentleman is adept at creating varied, humorous trick voices and it is enjoyable listening to him on tape. He would be glad to answer tapes from juveniles in these voices which the children should be quite pleased with.

The Voicispondence Club is calling on its overseas members to send in all changes in Directory listings before May 15, 1955, at which time work will commence on the next annual Directory.

Voicispondent Roy Howard of California has tabulated all of the occupations listed in Voicispondence Directory and his findings proved quite interesting. The most popular occupation is that of student, followed by that of teacher. Then come machinists, merchants, accountants, sales managers, electronic equipment, radio and TV broadcasting, ministers, and postal clerks, in that order.

Harry H. Garrison, P. O. Box 84, Campus Station, Cincinnati 21, Ohio, would like to organize a tape club in Cincinnati. Anyone interested in tape recording and corresponding who would like to join can contact Mr. Garrison either by mail at above address,

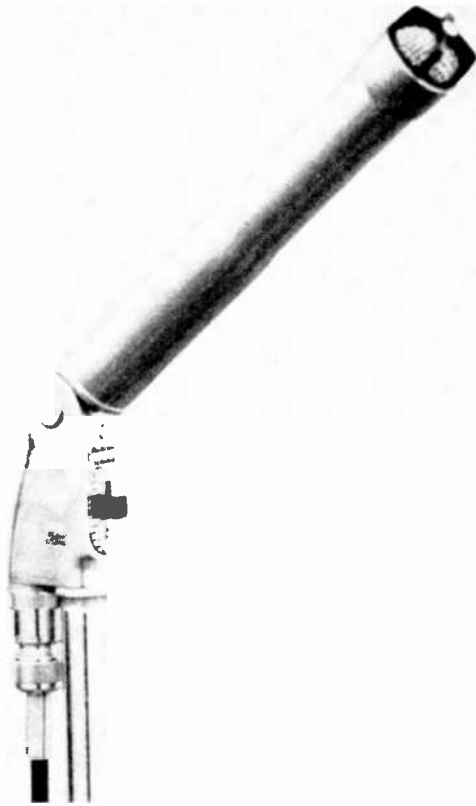
or by phone, PLaza 0363, for complete information.

International Tape Worms is expanding and is now affiliated with an Australian tape recording club known as A.T.R.A. The Australian representative for the club is D. H. Greenlees, 56 Richmond Road, Westbourne Park, Sth. Australia. I.T.W. also has a representative in England, Bernard Brown, 196 Abbey Street, Derby, England, and reports that its membership is growing rapidly.

### JOIN A CLUB

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Fred Goetz, Secretary  
P. O. Box 1404T, San Francisco, Cal.  
THE VOICISPONDENCE CLUB  
Charles Owen, Secretary  
Noel, Virginia  
WORLD TAPE PALS  
Harry Matthews, Secretary  
P. O. Box 9211, Dallas, Texas  
INTERNATIONAL TAPE WORMS  
Art Rubin, National Chairman  
P. O. Box 215, Cedarhurst, L. I., N. Y.  
GLOBAL RECORDING FRIENDS  
A'fred L. Sferra, D.D.S., Secretary  
125 Hamilton Street, Bound Brook, N. J.

# NEW PRODUCT REPORT



## ELECTRO-VOICE "SLIMAIR" MICROPHONE ... a rugged and versatile mike with excellent characteristics, has blast filter, on-off switch.

**T**HE model 636 "Slimair" Electro-Voice Dynamic microphone is the junior partner of the fine model 655 Broadcast Dynamic. It has most of that model's excellent characteristics and is very similar in design.

The E-V 636 is only 1-3/32 inches in diameter and about 10 inches long. It has a self-contained line matching transformer and an on-off switch in the mounting, which has the standard threads.

The case of the mike is substantially made of extruded brass with a satin chrome finish. The acoustically treated filter grille reduces syllabic blasting and "pops" and also cuts wind noise when used outdoors. The mike may be used straight up or inclined, as desired.

The extended swing of the "Acoust-alloy" diaphragm of the dynamic unit provides maximum flexibility and sup-

port. The after chamber is vented and resonated for extended frequency response. The pickup pattern is omnidirectional, becoming directional at high frequencies.

The mike has very high resistance to mechanical damage and may be used out of doors in bad weather without ill effects. It is also resistant to temperature extremes, humidity and corrosive effects.

The frequency response of the unit tested exceeded the specifications and was flat, by program standards (+ or - 2 db), from 50 to 13,000 cycles; with usable response well beyond those limits! A surprising result of the tests was the high signal output. Usually the better the mike, the lower the output. This mike has both a high output and an excellent frequency response.

It is, we feel, an excellent choice for

STAFKSTED

Product: Slimair Model 636

Price: \$70 with 20 foot cord.

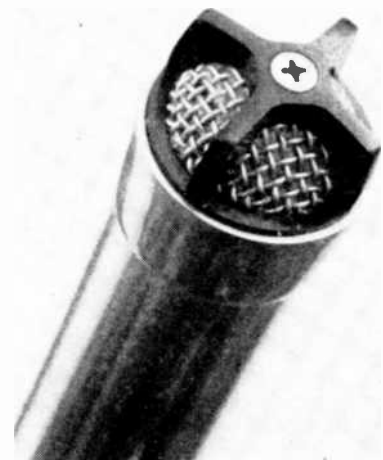
Manufacturer: Electro-Voice Inc.,  
Buchanan, Mich.

recorders in general. Most recorders are designed to handle high quality crystal mikes which have an output of -50 db or less (-55 to -60 db.). As this microphone has an output of -55 db. it is suitable for most recorders. In addition it has many advantages for PA work and similar jobs where its narrow shape makes it inconspicuous.

Transformer coupling to the line is provided by two impedance connections (150 ohms and high impedance). The change is effected by changing the position of the wires in the microphone connector.

In addition to the frequency tests with calibrated lab equipment, the mike was also used in the field. Two weddings were recorded using the mike, with very satisfactory results. An orchestra pickup was also made with the mike and it performed very well.

After using and testing this mike we feel that we can unhesitatingly recommend it for quality tape recording both indoors and outdoors, and for any type of programming from amateur to professional level.



The business end of the 636. The pickup is omnidirectional. The mike may be used vertically or at an angle and the special grille prevents blasts, pops and noises caused by the wind.



(Continued from page 17)

## VU MAGNEMITE



The Amplifier Corporation of America, 398 Broadway, New York 3, N. Y., now has in production the VU-Magnemite self-powered portable tape recorder. This recorder incorporates a VU meter to act as recording level indicator, output level indicator, and "A" and "B" battery meter. The recorder is available with speeds of 15/16 to 15 ips; models with speeds of 7½ and 15 ips meet primary and secondary NARTB standards. It has sound quality up to 15,000 cps, is 6½" x 9½" x 14" in size and weighs 19 lbs. Other features include flashlight-type batteries which have an operating life of 100 hrs., flyball governor controlled motor, precision-made tape transport mechanism, removable dynamically balanced flywheel, quick change of speeds by changing capstans, automatic equalization for different speeds, and it is available in one, two, three or four speed models. Write for full details and prices to Magnemite Div. of Amplifier Corp. of America at above address.

## CONTROL UNIT

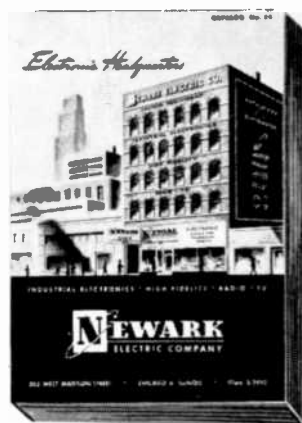


Altec Lansing Corp., 161 Sixth Ave., New York 13, N. Y., has introduced the A-440A, a self-powered, pre-amplifier-control unit. It has 2 low-level and 3 high-level inputs with individual gain controls, selection for either conventional volume or loudness control, choice of 25 recording characteristics, separate wide-range bass and treble controls and a special tape monitoring facility. The A-440A is styled in a furniture type cabinet with a hinged door that hides all controls except the on-off volume control. For those who prefer a minimum of dial twisting, the door is kept closed, but for those who wish to achieve numerous results, with the door open, all controls are accessible and the inside of the door contains complete information for the selection of the proper recording characteristic. For additional information and price, write to Altec, above address.

## NEW CONCERTONE RECORDER



Berlant-Concertone, 4917 W. Jefferson Blvd., Los Angeles 16, Calif., announces the new Concertone 20/20 high fidelity tape recorder for home or semi-professional use. It has speeds of 7½ and 15, or 3¾ and 7½ ips, frequency response of 20 to 20,000 cps, less than .1% flutter and wow, and comes in a maximum reel size of 10½". Other features include 2,400' rewind in less than 1 min.-fast forward, 3 heavy-duty motors, head mount with provision for 5 heads, two-channel line and microphone mixer, AB test fader, 4½" signal meter, simplified cueing and editing, dual or single track, binaural-monaural, panel finish in hammer-tone brown with fittings of copper, and it may be had for custom, rack mounting or in portable carrying cases. Prices are as follows: \$445 (dual track), \$470 (single track), and \$695 (binaural-monaural). For additional details write above address.



Newark Electric Company, 223 W. Madison Street, Chicago 6, Illinois, announces its Catalog No. 58, with a complete listing of thousands of electronics products, components and equipment of the very latest models. It features a 64-page high fidelity section, and an augmented industrial equipment and apparatus section. Write Newark Electric Company for your copy, Dept TR.

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# A Glossary of Tape Recording Terms

by

RONALD ANDERSON

Minnesota Mining and Manufacturing Co.

**T**APE recording has given new meaning to many words in the English language. Numerous terms long used in the field of sound have become important to the tape recorder user. Here—in non-technical language—is a glossary of some of the most common tape recording terms.

**ACETATE FILM**—The super-smooth, transparent plastic film which forms the tough backing for approximately 90% of the magnetic recording tape made in the world today.

**"A" WIND**—(rhymes with kind) Magnetic tape wound on the reel with the dull, oxide-coated side of the tape toward the inside. The wind almost universally used today. Recorder design determines whether "A" or "B" wind tape is required.

**AUDIBLE TONES**—Sounds with wave frequencies which the average human can hear and which range from 30 to 15,000 cycles per second.

**"B" WIND**—Tape wound with oxide out. Seldom used today. Wind can be changed from "A" to "B" by putting half twist in tape and rewinding on recorder.

**BIAS**—A high frequency alternating current fed into the recording circuit to eliminate distortion.

**BINAURAL RECORDER**—A tape recorder which employs two separate recording channels or systems, each with its own microphone, amplifier, recording and playback heads and earphones. Recordings using both systems are made simultaneously on a single magnetic tape on two parallel tracks, which, upon playback, reproduce the original sound with depth and realism unequalled by any other recording method. Use of headphones for listening is necessary for true binaural effect.

**BULK ERASER**—A 110 volt A.C. device used to erase an entire reel of magnetic tape at once without running it through a recorder. It uses a strong magnetic field which neutralizes the magnetic patterns on the tape.

**CAPSTAN**—The spindle or shaft—often the motor shaft itself—which rotates against the tape pulling it along at a constant speed on recording and playback.

**CYCLES PER SECOND**—The unit for measuring the frequency, or "pitch," of any sound. Abbreviated cps.

**DECIBEL**—Abbreviated "db," it is a relative measure of sound intensity or "volume." It expresses the ratio of one sound intensity to another. One db is the smallest change in sound volume that the human ear can detect.

**DISTORTION**—Any difference between the original sound and that reproduced by a recording machine. Distortion takes on

many forms, and although it can never be completely eliminated, it can be reduced to a minimum in a good recording and reproducing system. Tape offers the maximum potential in distortion-free recording.

**DUAL TRACK RECORDER**—Usually a tape recorder with a recording head that covers half of the tape width, making it possible to record one track on the tape, then turn the reels over and record a second track in the opposite direction. Sometimes called a half-track recorder.

**DUPE**—Sometimes called a "dub" or "dubbing." A copy of a tape recording made by recording on one machine what another machine is playing. Tape recordings are easy to duplicate simply by re-recording and there is a minimum loss in quality from the original to the copy.

**DYNAMIC RANGE**—The ratio between the softest and loudest sounds a tape recorder or other device can reproduce, without undesirable distortion. Usually measured in db's.

**EDITING**—Selecting certain sections of a tape recording, or of a number of different tape recordings, then splicing them together in the desired sequence. Magnetic tape is unsurpassed for editing purposes, since it can be easily cut and spliced.

**ERASURE**—Neutralizing the magnetic pattern on tape by placing it in a strong, magnetic field, thereby removing the recorded sound from the tape. An "erase" head on the tape recorder does this automatically to any sound previously recorded on the tape just before the tape reaches the "record" head. A permanent magnet can also be used to erase magnetic tape.

**EQUALIZATION**—Either boosting or decreasing the intensity of the low, middle or high tones of a recording during recording or playback or both. This compensation is made automatically by the recorder and serves to correct any deficiencies in the recording system and to increase the signal-to-noise ratio.

**FLAT RESPONSE**—The ability of a sound system to reproduce all tones—low and high—in their proper proportion. A high fidelity sound system might be specified as having an essentially flat response, plus or minus one db, from 30 to 15,000 cycles per second.

**FLUTTER**—Very short, rapid variations in tape speed causing similar variations in sound volume and pitch, not present in the original sound. A form of distortion.

**FREQUENCY RANGE**—The range between the highest and lowest-pitched sounds which a tape recorder or other sound system can reproduce at a usable output, or volume, level.

**FREQUENCY RESPONSE**—The output level of a recorder or sound system over a given range of frequencies. A more specific term than "frequency range." Usually in the form of a curve plotted on a chart.

**GAIN**—The ratio between the input level and output level of a piece of sound equipment. Gain is increased by means of an amplifier.

**GAP**—The tiny distance between the poles of the recording head, measured in mils. The head gap of home recorders may range from 1 mil down to ¼ mil. The smaller the gap, the higher the frequency range of the tape recorder can be.

**HEAD**—The ring-shaped electromagnet across which the tape is drawn, and which magnetizes the iron oxide-coated tape in a series of patterns. Most tape recorders employ a combination record-playback head and also an erase head. Some professional machines also employ a monitor head for listening to the recorded sound a split second after it has been put on the tape.

**INDEX COUNTER**—An odometer type counter which makes it possible to note the location of any particular selection of a tape, thereby making it easier to find. Many late model tape recorders feature built-in index counters.

**INPUT**—An electrical voltage fed into an amplifier.

**LEADER AND TIMING TAPE**—Special, tough, non-magnetic tape which can be spliced to either end of a tape to prevent damage or breaking off of the magnetic tape ends and possible loss of part of the recorded material. White in color, it features a one-inch plaid marker every 15 inches ("Scotch" brand leader and timing tape No. 43). Used as a timing tape, therefore, it can be spliced between musical selections on a tape providing a pause of a given number of seconds, depending on the tape speed.

**LEVEL INDICATOR**—A device on the tape recorder to indicate the level at which the recording is being made, and which serves as a warning against under-recording or over-recording. It may be a neon bulb, a "magic eye," or a VU meter.

**MAGNETIC TAPE**—A high-quality plastic or paper tape which has been precision-coated by the manufacturer with a layer of magnetizable, iron oxide particles. The result is a recording media that is subject to virtually no wear, can be erased and re-used, and offers the highest fidelity of reproduction possible today.

**MOTOR BOARD**—Also called tape transport mechanism. The platform, or assembly, of a tape recorder on which the motor (or motors), the reels, the heads and the controls are mounted. It includes those

parts of the recorder other than the amplifier, pre-amplifier, loudspeaker and case.

**OUTPUT**—An electrical voltage coming from an amplifier and normally fed into a loudspeaker.

**OXIDE**—Microscopically small particles of ferric oxide dispersed in a liquid binder and coated on a tape backing. Red oxide is used on most tapes, although "Scotch" No. 120 "High Output" magnetic tape employs a dark green oxide. These oxides are magnetically "hard"—that is, once magnetized, they remain magnetized permanently, unless they are demagnetized by exposure to a strong magnetic field.

**PATCH CORD**—Sometimes called "attachment cord." A short cord, or cable, with a plug on either end (or with a pair of clips on one end) for conveniently connecting two pieces of sound equipment such as a phonograph and tape recorder, an amplifier and speaker, etc. Not used for 110 volt current.

**POLYESTER FILM**—Plastic film backing for magnetic tape used for special purposes where strength and resistance to humidity change are important.

**POWER AMPLIFIER**—An amplifier designed to operate a loudspeaker.

**POWER CORD**—Cord for connecting the tape recorder to 110 volt A.C. current.

**PRE-AMPLIFIER**—An amplifier that raises extremely weak signal levels such as those from a microphone, magnetic playback head, or a phonograph pickup to a level usable by the power amplifier. Some tape recorders combine the pre-amp and the power amplifier. Others—especially the tape recorders designed for use in high fidelity music systems—may feature a separate pre-amplifier. In such cases, the pre-amp includes an equalization circuit. In addition, the bias oscillator (necessary to record on tape) is often mounted in a unit with the pre-amp.

**PRESSURE PADS**—Felt pads mounted on spring-brass arms which hold the magnetic tape in close contact with the heads on some machines.

**PRESSURE ROLLER**—Also called "capstan idler" or "puck." A rubber-tired roller which holds the magnetic tape tight against the capstan by means of spring pressure to insure constant tape speed and prevent slippage.

**PRINT THROUGH**—Transfer of the magnetic field from layer to layer of tape on the reel. Virtually non-existent in high-quality magnetic tape today.

**RAW TAPE**—A term sometimes used to describe tape that has not been recorded. Also called "virgin" tape.

**RECORDED TAPE**—A recording on tape that is commercially available. Also called a "pre-recorded" tape, or—in the case of music—"music on tape." Sometimes, however, any tape that has been recorded—whether commercially available or not—is called a recorded tape.

**RECORDING NOISE**—Noise induced by the amplifier and other components of the recorder. High quality magnetic tape itself is inherently noise-free.

**SELF-POWERED RECORDER**—Tape recorder containing its own power supply, either a combination of wet and dry cells to

power the unit, or dry cells in conjunction with a spring-driven motor.

**SIGNAL-TO-NOISE RATIO**—The ratio between the loudest, undistorted tone recorded and reproduced by a recorder and the noise induced by the recording system itself. Normally measured in db's.

**SINGLE-TRACK RECORDER**—A tape recorder which records only one track on the tape. Usually a full-track recording head is used which covers the full width of the 1/4-inch tape although some machines use a narrower, half-track recording head which records a single track down the middle of the tape. Output of a full-track recording is theoretically double that of a half-track recording, although actually the output is

only slightly greater because of improved half-track head design.

**SPlicing TAPE**—A special, pressure-sensitive, non-magnetic tape used for splicing magnetic tape. Its "hard" adhesive will not ooze and consequently will not gum up the recording head, or cause adjacent layers of tape on the reel to stick together. Cellophane tape should never be used as it has a "soft" adhesive.

**TAPE GUIDES**—Grooved pins of non-magnetic material mounted at either side of the recording head assembly to position the magnetic tape on the head as it is being recorded or played.

**TAPE LOOP**—A length of magnetic tape with the ends joined together to form an

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. . . who are interested in recording  
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Please send a copy of *Tape Record-*  
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endless loop. Used either on standard re-  
corder, special "message repeater" type units,  
or in conjunction with a cartridge device,  
it makes it possible to play back a recorded  
message repetitively without rewinding the  
tape.

**TAPE SPEED**—Speed at which tape  
moves past the recording head. Standard  
tape speeds for home use are 3¾ inches per  
second (abbreviated ips) and 7½ ips.  
Faster speeds are 15 ips and 30 ips. Slower  
speeds sometimes used are 1⅞ ips and  
15/16 ips. Faster speed makes possible im-  
proved high-frequency response, while slower  
speed means greater tape economy. If a  
tape is recorded at 3¾ ips, then played back  
at 7½ ips, all sounds will be raised one  
octave in pitch. Cutting the speed in half  
lowers a tone one octave.

**TELEPHONE PICKUP**—Type of induc-  
tion coil device which slips over a telephone  
receiver, or upon which entire telephone  
may rest, used to pick up both voices during  
a telephone conversation for recording on  
tape.

**THREADING SLOT**—Slot in recording  
head assembly cover-plate into which tape  
is slipped in threading up the reels for use  
of the recorder.

**TONE CONTROL**—Control knob on  
tape recorder amplifier used to vary bass

and treble response to achieve most de-  
sirable balance of tone.

**VOLUME**—An acoustic—rather than  
electrical—measurement, which refers to  
the pressure of the sound waves in terms  
of dynes per square centimeter. The louder  
the sound, the greater the pressure. Most  
technicians prefer to talk in terms of  
decibels.

**VTR**—Video tape recording. Recording  
and reproducing television picture tube sig-  
nals on standard—but highest quality—  
magnetic tape such as Instrumentation tape.  
It is extremely difficult to design a tape  
recorder capable of handling wide frequency  
range up to 4 million cycles per second.  
Usually several magnetic tracks are recorded  
side by side on a ½-inch tape at a con-  
siderably higher speed than used in home  
recording, each track recording a certain  
range of frequencies. Improved quality and  
lower operating cost are expected to enable  
it to replace movie film for television use.

**VU METER**—A "volume unit" meter  
which indicates the relative levels of the  
various sounds being recorded by measuring  
the electrical voltages.

**WOW**—Slow variations in tape speed  
causing similar variations in sound volume  
and pitch not present in the original sound.  
A form of distortion.

## OFF THE TAPE

### ELECTRONIC EXTERMINATING

We have long since ceased to wonder  
at the many, many uses to which a tape  
recorder can be put.

The Starner-Ray Company of Scarsdale,  
New York has been using recorders effec-  
tively to rid places of pigeons and starlings.

During the past 30 years there has been  
a rapid increase in the pigeon and starling  
population, creating quite a pest problem.  
In some cases large flocks of starlings (up  
to 60,000 birds) have literally taken over  
whole towns.

Dr. Hubert Frings and Joseph Jumber  
of the Department of Entomology of Penn  
State University evolved a method of rep-  
elling starlings by applying a special re-  
cording of the starling "distress call."

In Millheim, Pa., 10,000 birds had two  
roosting areas. Two sound units were used  
and the operation was directed by an ob-  
server on a building. After three nights of  
treatment, starting as the birds began to  
arrive and ceasing at night-fall, fewer than  
100 birds remained in the town. The town  
was free of starlings until the birds left for  
the winter. The trees and buildings from  
which they had been frightened were avoid-  
ed even by new birds flying in from other  
places. The birds fly toward the trees as if  
to settle but veer off before alighting. Ap-  
parently the areas treated with repellent  
sound are marked by the birds as being  
dangerous.

Pigeons were put to rout at a New York  
City School by the Bird-E-Vict units and

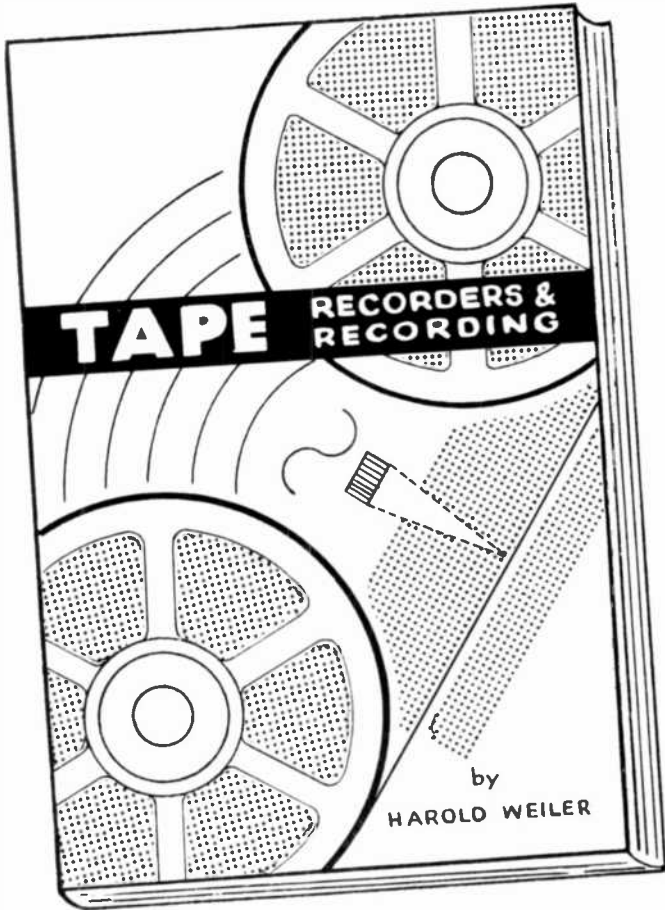
have since remained away after permanent  
units were installed.

The sea gull problem proved tougher be-  
cause gulls "won't talk" when captured.  
They refuse to become excited. But the  
researchers discovered that if one gull sees  
another in trouble he will give an alarm  
call. It was this call that was captured on  
tape. Seagulls present a menace to fish  
canneries where they eat up the by-products  
that are normally converted into fertilizer  
and cat food.

A well organized system enables the  
birds to locate food as soon as it is avail-  
able. A string of gulls will rest just off the  
shore line and keep the area under observa-  
tion. If one spots some food, he will in-  
vestigate. If there is only a little, he will  
not call the others but if the supply is  
adequate he gives a food finding call and  
flies a Figure 8 pattern over the water to  
bring the rest to the free lunch.



O. K, you guys. This is a stickup!



**Here's the kind of helpful information you get in Weiler's remarkable new book**

Check through these few topics which have been selected at random from "Tape Recorders and Tape Recording." See for yourself if this isn't just what you've been looking for:

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- ✓ How to set up for solos with accompaniment—also quartettes with accompaniment.
- ✓ How to create aural perspective or depth in music recordings.
- ✓ Plain facts about sound—its creation and travel—pitch and frequency—tones and overtones.
- ✓ Sound waves and microphones—preamps and mixers—recording levels and equalization—techniques for different types of mikes.
- ✓ Sound effects—how to create them and record them on tape.
- ✓ Recording outdoors—animal calls, bird notes, insect sounds.
- ✓ Editing and splicing tape — maintenance of your recorder.
- ✓ How to put sound on film — how to prepare sound accompaniment for slide shows.

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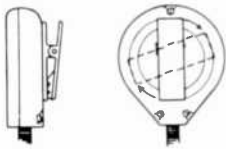
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Cedar Rapids, Iowa

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## SHOP OR SWAP

Advertising in this section is open to both amateur and commercial ads. TAPE RECORDING does not guarantee any offer advertised in this column and all swaps, etc., are strictly between individuals.

RATES: Commercial ads, \$3.00 per word. Individual ads, non-commercial, \$.95 a word.

Remittances in full should accompany copy. Ads will be inserted in next available issue. Please print or type your copy to avoid error. Address ads to: Swap or Shop, Tape Recording Magazine, Severna Park, Md.

STAMP COLLECTOR will exchange high fidelity equipment for fine stamps. Prefer U.S. and British Empire. Completion of personal hi-fi system has resulted in surplus of excellent equipment, including all components with new guarantee on a try-it-first basis. All correspondence will be answered. Box 73, Tape Recording Magazine, Severna Park, Md.

FOR SALE: Western Electric professional transcription tone arm with 9-A head with diamond stylus for lateral and vertical playback, equalizer and transformer for 500 ohms output included. Original cost over \$200.00, sell for \$75.00 or best offer. V. S. Barker, 1326 West Stephenson Street, Freeport, Ill.

FOR SALE: Popular operas on plastic tape by world famous artists from private collection . . . \$6.00 for 7-inch reel (1.200 foot) records at 3 1/4 I.P.S., double track for two full hours of playback. Selections include Carmen, Fleidermaus, Tosca, Traviata, etc. Contact Earl J. Hauser, 2265 University Avenue, The Bronx 68, N. Y.

FOR SALE: Used McIntosh 20-watt amplifier, Brocner control amplifier and pre-amplifier, equalizer, 2 chassis, new tubes, \$95.00 both. James Lansing 2-way speaker system, D-130 woofer, DL-175 horn, 1200 network, mahogany heathergrey special finish, beauty. Bargain price, \$220.00 F.O.B., H. Gellhorn, 7138 Euclid Ave., Chicago, Ill.

SYNCHRONIZER HOOKUP: Make sound movies with your tape recorder, \$10.00. Anderson, 2424 Phelps Street, Stockton, Cal.

TAPE-RESPONDENTS, International (T-R-I) members throughout the world cordially invite all readers of TAPE RECORDING MAGAZINE to join them. Swap talking and musical tapes everywhere. It's educational, it's fun, makes for good fellowship and helps create international good will. Best of all, it costs very little—only about a penny a day. For information write Box 1404-S, San Francisco 1, Calif.

FOR SALE: Slightly used Revere tape recorder, Model T-100, good condition. Has all features. Price \$100.00. L. M. Grant, 511 E. Hincley Ave., Ridley Park, Pa.

PRE-RECORDED chime tapes for church towers 7 1/2", half hour, \$5.00. Wesley Beans, 1715 LaCrescenta Ave., LaCrescenta, Calif.

LATEST WEBSTER recorder 2030, three speakers, \$150.00. Model 6201 University dual range coaxial speaker housed in walnut cabinet 36" x 39" x 17", \$125.00. S. S. Holland 34-41 85th Street, Jackson Heights 72, N. Y.

FOR SALE: Masco M52 tape recorder with built-in radio, dual track, two speeds, two outputs, inputs, good frequency response. New \$290.00, sell for \$125.00. Bill Blonde, 173 Bleecker St., Brooklyn, N. Y.

HI-FI SPEAKER, Altec 602A, in factory-sealed carton, guaranteed, not a demonstrator, 1955 model, originally \$114.00 Net, now \$95.00. Foran, 3452 Hackett, Milwaukee, Wis.

OWNER DIED. Must dispose of Magnecord binaural recording equipment. Lot includes Altec-Lansing speaker in cabinet; Jensen co-axial speaker 15"; Altec amplifier 15 watt Model A323; HH Scott equalizer amplifier Type 120-A and Dynaural converter Type 111-B; Craftsman AM/FM tuner; Bogen amplifier with rack panel; Magnecordette amplifier with rack panel; 2 Magnecorder PT6-AHX tape transports; Magnecorder PT6-R amplifier with dubbing channel; Bogen A/M tuner; Garrard 78 RPM changer model RC 60/L16; Garrard turntable Model M with mounting board; 2 back panels blank; Budd deluxe rack 5'10" high with door; custom built cabinet for changers and tuner. Seymour Silver, 46 South Water Market, Chicago 8, Ill.

TAPE RECORDERS and accessories. Consult us about your recording problems. Liberal trade-in allowances on high fidelity recorders. Boynton Studio, 10 Pennsylvania, Dept. 305, Tuckahoe, N. Y.

REVERE TAPE recorder for sale. Model T100, including equipment, 5" reels, used three years. Just factory serviced, nothing wrong, need cash, \$75.00, no less. Georges Pitour, 31-49 36th Street, Long Island City 6, N. Y.

FOR SALE: Webster Ekotape Model 102-9 announcer. Foot switch and 500 ohms input and output. 7 1/2" speed, full track, instruction book, used, in first-class condition, \$200.00, or best offer—F.O.B. V. S. Barker, 1326 West Stephenson Street, Freeport, Ill.

SLIGHTLY USED HI-FI Stereotone portable tape recorders, three motors, dual speed, 10" speaker, 8 watts audio. New, \$249.50, now \$196.00. Robert Forman, 210 Burr Oak St., Kalamazoo, Mich.

CRESTWOOD HI-FI, professional tape recorder, Model 401, little used, new condition, \$125.00. Noble, 523 Walhalla Road, Columbus 2, Ohio.

FOR SALE or trade: 1 Rek-O-Kut model RKD-16 16" recording turntable with Rek-O-Kut M-5 16" lathe, Astatic 500 ohm magnetic cutter, 3 sapphire cutters. Audiopoint; Clarkstan 16" playback arm with GE triple-play magnetic cartridge, all mounted in heavy wood base approximately 30" x 30". \$200.00 1 Bell RT-65-B 3-speed tape recorder, new heads, capstan, pressure rollers, drive idler, \$90.00. With Triplet 3" VU meter, \$105.00, or trade all of above for Magnecorder or Magnecordette tape recorder, any age or model. Condition must be good. Jim Jones, Campus Recording Studio, Cary Hall, Box 447, W. Lafayette, Ind.

DISCS FROM your tape, \$1.00 up. Send for free list of services. Sales Recording Service, 3540 W. Jackson Blvd., Chicago 24, Ill.

WANTED: Used professional type tape recorder, preferably Concertone or Magnecorder in good condition. Must have 15 ips speed. Send description and price to C. W. Rossow, Rt. 1, Box 143, Mission, Tex.

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**FERRO-SHEEN** combines:

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ALBERT PULLEY, *Chief Recording Engineer, RCA Victor Record Division*

*Photo by Arnold Newman*

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